

AGENDA
REGULAR DRAINAGE MEETING
JANUARY 2, 2018

1. Open Meeting
2. Approve Agenda
3. Approve Minutes Of December 13, 2017 Meeting
4. Approve Claims For Payment
Pay Date of Friday, January 5, 2018
5. DD 1 - Approve Change Order #2 With Gehrke, Inc.
Change order with Gehrke, Inc. to increase contract price from \$149,749.00 to \$173,902.75.

Documents:

[6749 - CHANGE ORDER 2 SIGNED.PDF](#)

6. DD 22 - Discuss, With Possible Action, Repair Summary For Work Order #192
Repair Summary for Investigation of Work Order #192.

Documents:

[DD 22 INVESTIGATION SUMMARY WO 192.PDF](#)

7. DD 22 - Discuss, With Possible Action, Repair Summary For Work Order #198
Repair Summary for Severing Tile per Work Order #198

Documents:

[DD 22 REPAIR SUMMARY SEVERING TILE 12-13-2017.PDF](#)

8. Other Business
9. Adjourn Meeting

Change Order

No. 2

Date of Issuance: December 19, 2017

Effective Date: October 1, 2017

Project: Repairs to Main Tile, Outlet, and Waterway on DD 1	Owner: Trustees of Drainage District 1	Owner's Contract No.:
Contract:		Date of Contract: April 27, 2017
Contractor: Gehrke, Inc.		Engineer's Project No.: 6749

The Contract Documents are modified as follows upon execution of this Change Order:

Description: During construction, the project quantities needed adjusted for additional items that were needed for construction. Also, accommodations to the contractors means and methods were requested.

Attachments (list documents supporting change):

List of items included in the change order. Revised list of project prices and quantities. Contractor supplied info.

CHANGE IN CONTRACT PRICE:	CHANGE IN CONTRACT TIMES:
Original Contract Price: \$149,749.00	Original Contract Times: <input checked="" type="checkbox"/> Calendar days Substantial completion (date): 11-30-2017
Decrease from previously approved Change Orders No. 1 to No. 1: \$ 200.00	[Increase] [Decrease] from previously approved Change Orders No. 1 to No. 1: Substantial completion (days): 0
Contract Price prior to this Change Order: \$149,549.00	Contract Times prior to this Change Order: Substantial completion (date): 11-30-2017
Increase of this Change Order: \$ 24,353.75	Increase of this Change Order: Substantial completion (days): 0
Contract Price incorporating this Change Order: \$173,902.75	Contract Times with all approved Change Orders: Substantial completion (date): 11-30-2017

RECOMMENDED By: <u>[Signature]</u> Engineer (Authorized Signature) Date: <u>12-19-17</u> Approved by Funding Agency (if applicable): _____	ACCEPTED: By: _____ Owner (Authorized Signature) Date: _____	ACCEPTED: By: <u>[Signature]</u> Contractor (Authorized Signature) Date: <u>12/19/17</u> Date: _____
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Project items included in this Change Order:

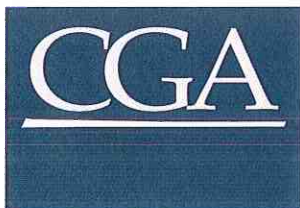
- CCTV inspection revealed that spot repairs (pipe, tile removal, and concrete collars) were needed in the portion of main tile previously untelevised.
- Additional lengths of pipe and tile removal were needed on several spot repairs after they were uncovered.
- Additional private tile connections were encountered during spot repairs that needed to be reconnected.
- The open ditch construction and seeding were extended 100' upstream to allow for a smoother transition with the existing ground.
- The waterway cleanout and seeding were extended 100' to allow for a smoother transition with the existing ground.
- Traffic control was not used on this project.
- Reduced length of CCTV of the existing tile was required.
- An intake that was offset from the main tile had to be removed and replaced (see attached contractor pricing request).

Project deviations to accommodate contractor's means and methods included in this Change Order:

- Landowner preferred existing tile to be removed, crushed, and buried on-site instead of being trucked offsite (see attached signed agreement from landowner).
- The sheet pile headwall was installed without the engineer being notified or allowed to view the installation (see attached statement from contractor). The contractor assumes all liability for this installation (expect for design errors) and holds the engineer harmless.p

<u>Item No.</u>	<u>Description</u>	<u>Estimated Quantity</u>	<u>Unit</u>	<u>Installed Quantity</u>	<u>Unit Price</u>	<u>Extended Price</u>
1*	24" Ø Polypropylene Tile	741	LF	741	\$ 86.25	\$ 63,911.25
2*	Type PC-2 Concrete Collar	43	EA	43	\$ 300.00	\$ 12,900.00
3*	Private Tile Connection	6	EA	6	\$ 300.00	\$ 1,800.00
4*	Tile Removal	1391	LF	1391	\$ 5.00	\$ 6,955.00
5^	30" Ø CMP Tile	20	LF	20	\$ 65.00	\$ 1,300.00
6	Sheet Pile Headwall	404	SF	404	\$ 41.00	\$ 16,564.00
7	Riprap	7.5	CY	7.5	\$ 70.00	\$ 525.00
8	Grouted Riprap	14	CY	14	\$ 165.00	\$ 2,310.00
9*	Open Ditch Construction	8.5	STA	8.5	\$ 1,800.00	\$ 15,300.00
10*	Open Ditch Seeding	8.5	STA	8.5	\$ 250.00	\$ 2,125.00
11*	Waterway Cleanout	21.5	STA	21.5	\$ 1,025.00	\$ 22,037.50
12*	Waterway Seeding	21.5	STA	21.5	\$ 170.00	\$ 3,655.00
13	Seeding Warranty	1	LS	1	\$ 2,500.00	\$ 2,500.00
14*	Traffic Control	0	LS	0	\$ 500.00	\$ -
15*	CCTV Existing Tile	510	LF	510	\$ 2.00	\$ 1,020.00
16	Tree Removal	1	LS	1	\$ 20,000.00	\$ 20,000.00
17*	12" Hickenbottom Intake	1	EA	1	\$ 1,000.00	\$ 1,000.00

Revised Contract Total \$ 173,902.75



Gehrke Inc.

P.O. Box 228 • 1405 21st Avenue
Eldora, Iowa 50627

641-858-3821 • Fax 641-858-2564

To: Hardin County Board of Supervisors

From: Gehrke Inc., Eldora, Ia.

Re: Change Order Request: Remove/Replacement of 12" Hickenbottom intake, DD 1
(project 6749 + 6749.1)

As per conversation with project management from Ryken Engineering, it has been determined to remove and replace a 12" intake on the 24" main tile near station 55 + 45.

Gehrke Inc. is requesting \$1000.00 for all materials, equipment, and labor, to complete this additional work. Materials include: hickenbottom middle and top sections, saddle tee, and coupler.



1405 21st Avenue
Eldora, Iowa 50627
641-858-3821
Fax 641-858-2564

To: Hardin County Supervisors
From: Gehrke Inc.
Re: Landowner approval DD1

This memo is confirming the landowner's agreement that the existing tile will be buried at a location to be provided by the landowner on project 6749 and 6749.1 {DD1}.

All the existing tile will be exposed, checked for and incoming tile, and then removed and buried at a location provided by the landowner. Any laterals will be routed to the new ditch and connected according to specifications. Once all sections are checked they will be crushed flat. Any steel materials are found will be removed. Once the tile is removed the clay and black dirt will be placed back on top and graded.

By signing this document as the land owner (or land owner's legal representative), the land owner is agreeing to the terms listed in this letter for this project.

Name

A handwritten signature in blue ink, appearing to read "Ken R...", written over a horizontal line.

Date

10-9-17

Legal Description: W 1/2 SW 1/4 Section 25 Jackson Twp Hardin Co Ia

Gehrke Inc.

P.O. Box 228 • 1405 21st Avenue
Eldora, Iowa 50627

641-858-3821 • Fax 641-858-2564

To: Hardin County Board of Supervisors

From: Gehrke Inc., Eldora, Ia.

Re: Installation of headwall, DD 1 (project 6749 + 6749.1)

The purpose of this letter is to document details of the installation of the sheet pile headwall (bid item #6) by Gehrke Inc on Hardin DD 1, project 6749 + 6749.1. This letter is in response to requests for clarification on this matter, as requested by Mr. Lee Gallentine, Ryken Engineering.

On Saturday, September 16th, Gehrke Inc. employees performed the installation of the headwall in accordance with all specification outlined for bid item #6 by Ryken Engineering. However, a representative of Ryken Engineering was not present. Mr. Ken Reece, landowner, was present for the majority of the installation. Shortly after installation, we were contacted by Mr. Lee Gallentine, informing us that the absence of an inspector was not permissible, that his office needed to be notified before this installation, and that he would be informing the Supervisors of this occurrence.

Sheet pile installation was performed with a vibrating plate to a depth that is at minimum 3 inches deeper than recommended by project specification as prepared by Ryken Engineering. The sheet pile was ordered 1 foot longer than specified and driven to elevations of 1033 and 1040 as specified in Ryken Engineering design documents.

Gehrke Inc. stands behind this installation in accordance with the signed contract. Installation was performed in accordance with design specifications. Gehrke Inc. will not be held liable should maintenance or structural problems occur that are a result of project design or specifications.

Drainage District:

#22

Repair Summary:

- Landowner reported a sinkhole/blowout on the original Main tile in the SE¼ of Section 19, Township 88 North, Range 22 West.
- Visually inspected area and found 6'± diameter hole with 24" diameter VCP original main tile running half full of water. Tile has 4½'± to 5'± of soil cover. The District Trustees authorized CCTV inspection of original main tile.
- Conducted CCTV inspection of the original main tile from sinkhole/blowout location for 1,473'± downstream and only 44'± upstream (couldn't go any further as this is the pipe size change and wye where the original main tile and original lateral 1 tile meet). Findings are tabulated on attached sheet (key issues highlighted in yellow) with specific observations described in CCTV reports.
- No repair was performed as the purpose was to investigate to determine extent of problem.

Contractor Time and Materials (spent while CGA was on-site):

See attached Tabulated Contractor Time and Materials Sheet.

Additional Actions Recommended:

- Even with adequate soil cover, almost 10% of the existing main tile is either partial or imminent collapsed at 20 different locations along the length of televising. In addition, much of the remaining VCP is cracked and egged shaped. When these factors are combined, it is obvious that the VCP is at or past the end of its useful lifecycle.
- It is unclear if the remaining stretches of the original main tile are in similar condition. Based on this, I would recommend additional televising (probably just at road crossings) to determine if this is an isolated situation or not. Based on those findings, a comprehensive recommendation could be made as to a repair plan.
- If the District Trustees choose not to pursue additional televising, the original main tile at the existing sinkhole/blowout should be repaired. It is my opinion that based on the amount of soil cover, dual wall polypropylene, dual wall HDPE, or RCP (all with rock bedding) would be adequate for repair.



Tabulated Contractor Time and Materials

Date	Totals	11/8/2017
Workman (hrs)	11	10.5
Backhoe (hrs)	5	5.25
CCTV (ft)	1518	1518

Tabulated Defects

	Total	GPS #100 Downstream	GPS #130 Upstream
Total Length Televised (ft)	1518	1473.6	44.4
Date:		11/8/2017	11/8/2017
Top crack (ft)	751	749	2
Side crack (ft)	0	0	0
Bottom crack (ft)	0	0	0
Partial or imminent collapse (ft)	123	119	4
Full collapse (#)	0	0	0
Debris (ft)	117	117	0
Offset Joint (#)	188	188	0
Joint Gap (#)	3	3	0
Single Wall HDPE (non-deformed) (ft)	0	0	0
Dual Wall HDPE (ft)	0	0	0
CMP (rusty) (ft)	0	0	0
Holes (non-fixed) (#)	0	0	0
Holes (fixed) (#)	2	2	0
Alligator Cracks (ft)	0	0	0
Radial Cracks (# of tile)	0	0	0
Egg Shaped (ft)	48	48	0



Drainage Work Order Request For Repair

Hardin County

Date 10/10/2017 Work Order # 192
District # 22 Lateral Main Fund # 51045
Township Buckeye Section 19 Twp 88 Rge 22 Qtr Sec SE1/4

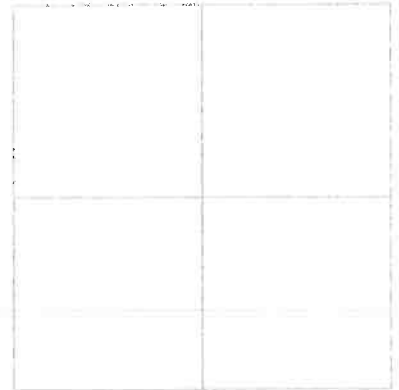
Repair Requested By Randy Silvest
Address _____ Phone (641) 640-0171

Landowner Randy Silvest
Address _____ Phone _____

Request Taken By Tina Schlemme

Available for Repair Now? Yes Date Available _____

Problem Description Hole in field in old tile near the NW corner of grove. Crops are out.



Repair labor, materials and equipment _____

Potential Wetlands? Yes-Repair existing tile only No-Repair and maintain tile

Repaired By: _____

Date: _____

Please send statement for services to:

Phone (641) 939-8111
Fax (641) 939-8245

Hardin County Auditor's Office
Attn: Tina Schlemme
1215 Edgington Ave, Suite 1
Eldora, IA 50627

For Office Use Only

Approved: _____ Date: _____



Hardin County Auditor's Office



Date: 10/10/2017



The Data is provided "as is" without warranty or any representation of accuracy, timeliness or completeness. The burden for determining accuracy, timeliness, merchantability and fitness for use rests solely on the requester. Hardin County makes no warranties, express or implied is to the use of the Data. There are no implied warranties of merchantability or fitness for a particular purpose. The requester acknowledges and accepts the limitations of the Data, including the fact that the Data is dynamic and is in a constant state of maintenance, correction and update. Cadastral Data represents land ownership, but does not define it. This Data does not replace a legal survey.

CONSTRUCTION ENGINEERING
OBSERVATION REPORT

DATE:

10/19/17

DAYS OF WEEK:

S | M | T | W | T | F | S

SHEET NO.

1 OF 1

PROJECT NUMBER:

Co. WO# 192

COUNTY, ROUTE, ROAD:

DD 22

LOCATION:

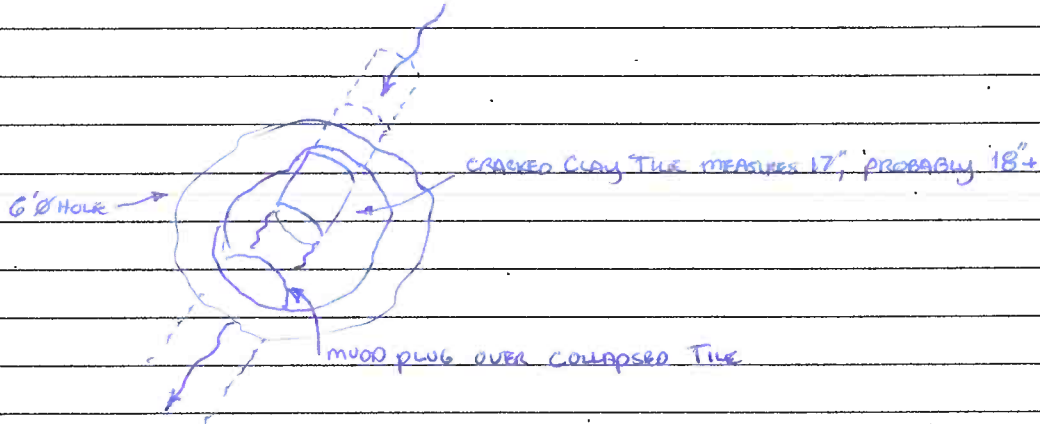
SEC. 19-88-22, SE 1/4, Buckeye Twp.

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB NAME, ITEM NO. AND LOCATION

Sunny, calm, 37°, drying conditions

ARRIVED @ Randy SILVEST FARM, PARKED IN FARM DRIVE, NE OF HIS HOUSE, WALKED TO HOLE JUST NW OF HIS FARM ACARRAGE. FOUND 6' Ø HOLE WITH BROKEN 18"± CLAY TILE RUNNING 1/2 FULL ± FROM NE TO SW. TILE HAS 45-50' OF COVER. TOOK PIC. UPSTREAM (DOWNSTREAM BLOCKED BY MUDD + DIRT.

Fix ASAP, CROPS ARE OUT



I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature:

[Handwritten Signature]

Date Prepared:

10/19/17

Reviewed by:

Engineer

Date Reviewed

Looking SE @ Randy Scurst Farm



UPSTREAM 18" CLAY TILE



18" TIE Looking Upstream



TILE BLEW-OUT



Looking due North



CONSTRUCTION ENGINEERING
OBSERVATION REPORT

DATE:

11/8/17

DAYS OF WEEK:

S M T **W** T F S

SHEET NO.

OF

PROJECT NUMBER: 6532.2
 COUNTY, ROUTE, ROAD: DD 22
 LOCATION: Sec. 19-88-22 Buckeye Twp.

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB NAME, ITEM NO. AND LOCATION

Sunny, 31°, Calm Dry Conditions
 Arrived @ Home NW of Rana Sylvan House @ 9:00 A.M., Paul Williams
 TV TRUCK WITH PAUL ON SITE WAITING FOR BACK HOE.
 9:45 2 man crew with Back Hoe Arrives.
 I HAVE BASE ON CRT #2, (5/8" IR IN FIBER DUCT) JOB: 6532.

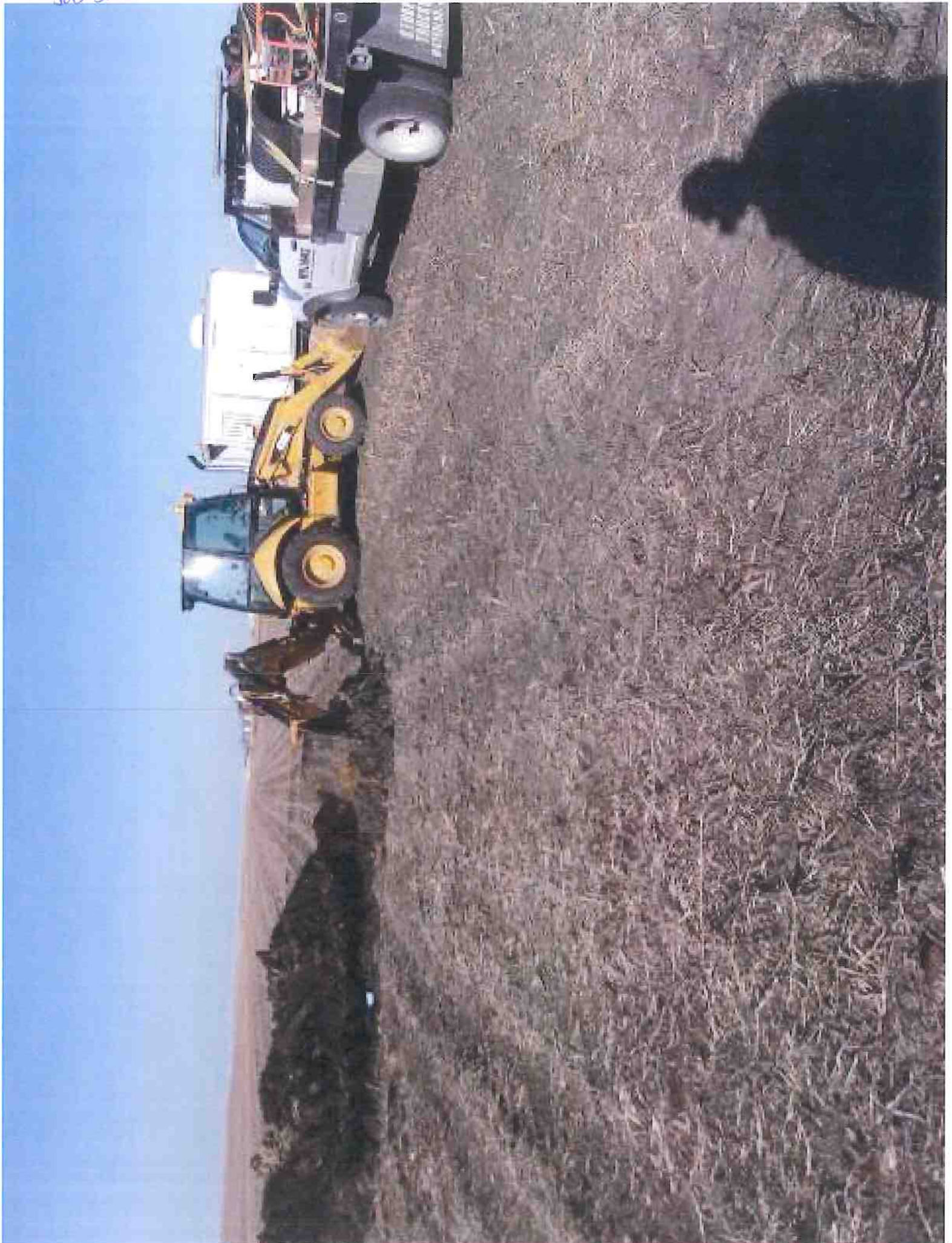
STARTED TV @ GPS #100 DOWNSTREAM ON 24" CLAY TILE, [0.00' TOP CRACK] AIRIAL FX,
 [140' HINGE TOP/SIDE CRACK], [180' VERY BAD PIPE], [35' TOP BROKEN REPAIR], [51' TOP CRACK], [90' OLD REPAIR]
 [109' SOIL INFILTRATION] [144' OLD REPAIR] [194, LAT. RT.] [262' SIDE CRACKS] CONTINUOUS TOP CRACK
 [311' TILE IN FX] **STAGNANT WATER** [341' DEBRIS IN FX?] MULTIPLE CLAY TILE CHARDS.
 [392' GOOD TILE] [438' CHARD IN FX] [471' TOP CRACK CONTIN] [569' MUD, CHARDS IN FX] [583' BAD ALIGNMENT]
 [606' CHARD IN FX] [TOP CRACK] [627' CHARD/ROCK IN FX] MORE CHARDS [640' BAD TILE CRACKS] [644' BAD TILE]
 [932' LAT. LT. CLAY] [944' BAD TILE] [978' CHARD IN FX] [984' CHARD IN FX] BAD TILE.
 [1016' BAD HINGE TOP] 1023, COLLAPSED TILE FRESH CRACK [1047' BOTTOMS UP] [1049' LAT. RT.]
 [1070' MISSING TILE] [1087' BAD TILE] 1098 4" PLASTIC FROM TOP & INTRUSION, INTAKE?
 [1114' GOOD TILE] 1145' TOP CRACK [1228' BAD JOINT] 1239' LAT TOP [1252' CHARDS IN FX] TOP CRACK
 HINGE TOP [1284' 4' SIDE CRACKS] BAD ALIGNMENT [1320' BOTTOMS UP] TOP CRACK CONTINUOUS
~~1320'~~ [1401, BAD TILE HINGE TOP COLLAPSED] TV TRACTOR IS HAVING TRACTION PROBLEMS, CREW
 IS UNWINDING CABLE AHEAD OF TRACTOR'S NEEDS. 1475', CAN STILL SEE BAD TILE AHEAD.

2:00 P.M. START TV UPSTREAM @ GPS #130 [12' LAT. RT. 12" CLAY] [CONTINUOUS BROKEN TOPS/HINGED]
 [13.0' SIZE REDUCTION?] END TV SHOT "Y" IN MAIN GPS #131
 LEFT JOB 3:00 P.M.

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature: [Signature] Date Prepared: 11/8/17
 Reviewed by: _____ Engineer _____ Date Reviewed _____

Job Site



UPSTREAM TIER @ GPS #130

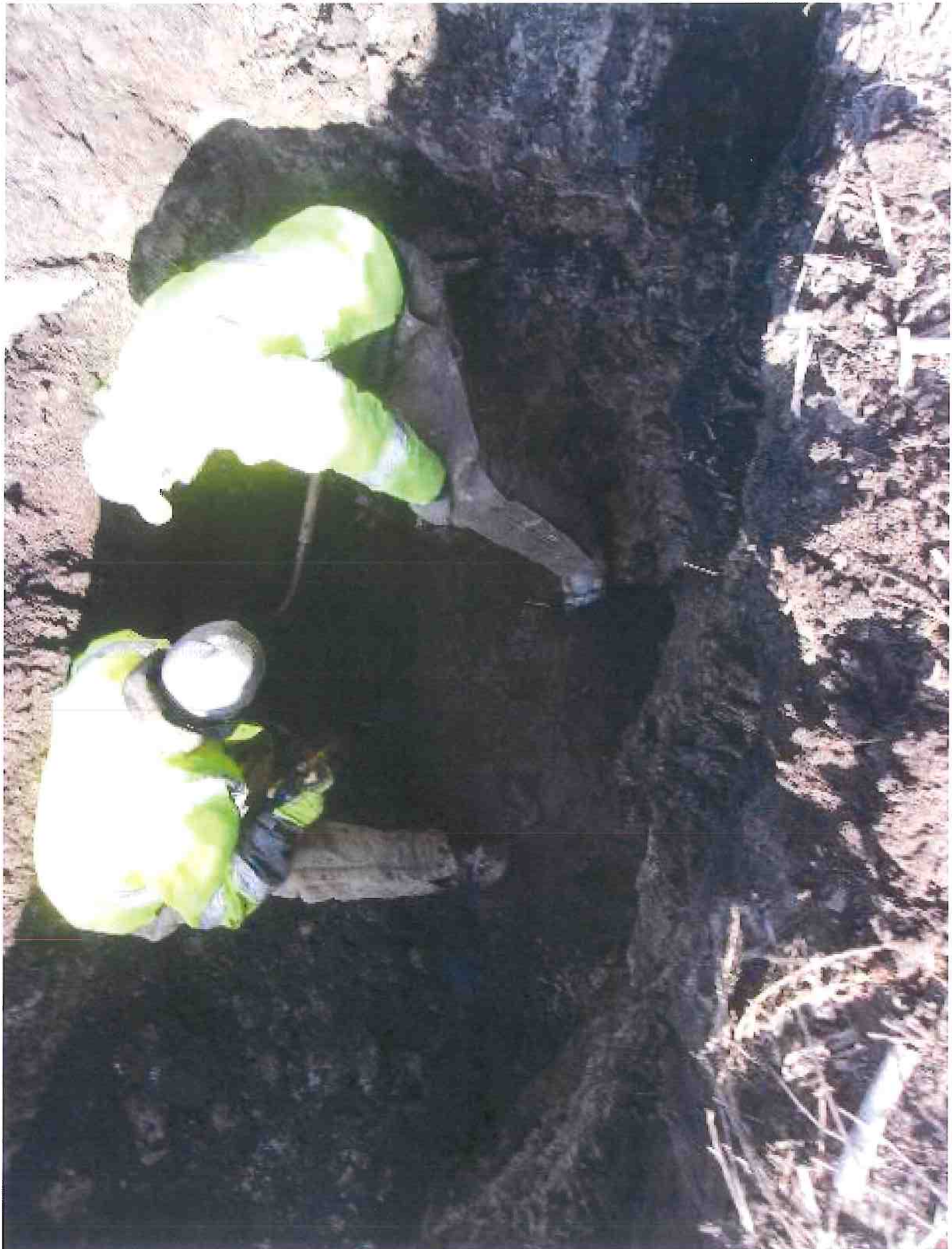


downstream From #100



UPSTREAM FROM 180







Williams Excavation &
 Directional Boring
 102 Industrial Dr.
 Ackley, IA
 Phone: 641-485-3925

Main Inspections Small Photos

Mainline ID: 11/8/17 DD 22	City: N/W OF RANDY SILVEST FARM	Address: GPS #100	Project name: 11/8/17 DD 22 W/O #192
Start date/time: 11/8/2017 10:55 AM	Asset length: 1,473.6 ft.	Weather: Dry	Operator: Paul
Upstream node:	Depth US:	Downstream node:	Depth DS:
Pipe shape: Circular	Pipe material: Clay	Pipe height: 24.0 in.	Pipe width:

Comments: START AT GPS#100, GOING DOWNSTREAM

Observations

Distance	Dir.	Length	From/To Code	Modifier/Severity	Rating	Comments
0.0 ft.	D	6.1 ft.	12 / Crack			CONTINUOUS TOP CRACK

0+00 => START TOP CRACKED - START SOIL IN FLOWLINE



Observations

Distance	Dire Length	From/To Code	Modifier/Severity	Rating	Comments
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0.0 ft.	D	148.1 ft.	5 / 7 Debris		CONTINUOUS MUD/DEBRIS
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0+04 => END TOP CRACKED - CONTINUE SOIL IN FLOWLINE - PIPE ROUND



13.9 ft.	D	34.2 ft.	11 / 3 Crack		CONTINUOUS TOP AND SIDE CRACKS/HINGES
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0+14 => START TOP CRACKED - CONTINUE SOIL IN FLOWLINE - PIPE ROUND
 0+16 => CONTINUE TOP CRACKED - CONTINUE SOIL IN FLOWLINE - PIPE 'VED
 0+18 => " " " " " " " " " " " "



0+26 => END TOP CRACK - CONTINUE SOIL IN FLOWLINE - PIPE ROUND

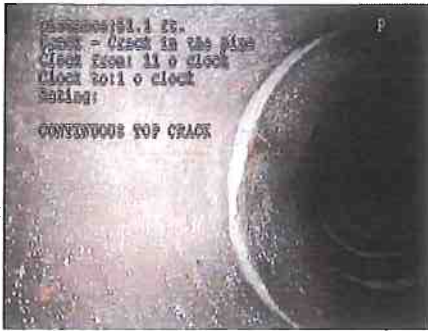
35.6 ft.	D	10 / 11 Broken			BROKEN AND REPAIRED WITH ANOTHER TILE OVER TOP.
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0+36 => BROKEN PIPE - CONTINUE SOIL IN FLOWLINE - REPAIRED WITH BRICK BATS
 0+42 => START TOP CRACK - CONTINUE SOIL IN FLOWLINE - PIPE ROUND



Observations

Distance	Dire Length	From/To	Code	Modifier/Severity	Rating	Comments
51.1 ft.	D	340.9 ft.	11 / 1	Crack - CONTINUE TOP CRACK - PIPE ROUND		CONTINUOUS TOP CRACK



0+78 => CONTINUE TOP CRACKED - START JOINT OFFSETS - PIPE ROUND

79.2 ft.	D		7 / 11	Joint - Separated - CONTINUE TOP CRACKED - CONTINUE JOINT OFFSETS - PIPE ROUND		WIDE JOINT/VOID
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0+87 => CONTINUE TOP CRACKED - CONTINUE JOINT OFFSETS - PIPE 'V'ED

89.9 ft.	D		10 / 12	Broken		BROKEN AND REPAIRED WITH ANOTHER TILE OVER TOP
0+90 => CONTINUE TOP CRACKED - CONTINUE JOINT OFFSETS - REPAIRED TOP - ROUND						
0+94 => CONTINUE TOP CRACKED - END JOINT OFFSETS - PIPE ROUND						



Observations

Distance	Dire Length	From/To Code	Modifier/Severity	Rating	Comments
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109.4 ft. D **3 / 6 Infiltration**
 1+10 => END TOP CRACK - JOINT GAP - REPAIRED WITH BRICK BATS - PIPE ROUND
 1+20 => START TOP CRACK - PIPE ROUND

SOIL INFILTRATING INTO PIPE FROM WIDE JOINT



144.2 ft. D **11 / 1 Broken**
 1+40 => END TOP CRACK - HOLE IN TOP OF PIPE - REPAIRED
 1+83 => TOP CRACK - PIPE ROUND

TOP BROKEN OUT AND REPAIRED






194.0 ft. D **3 / Lateral - TOP CRACKED - PIPE 'V'ED**

LAT RIGHT



1+97 => LATERAL VCP - PIPE ROUND
 2+04 => TOP CRACKED - PIPE 'V'ED
 2+22 => START TOP CRACKED - PIPE ROUND
 2+47 => CONTINUE TOP CRACKED - PIPE 'V'ED

Observations

Distance	Dire Length	From/To Code	Modifier/Severity	Rating	Comments
262.5 ft.	D	8 / 9	Crack		2 TILES WITH SIDE CRACKS
2+62 => CONTINUE TOP CRACK - JOINT OFFSET					
2+92 => CONTINUE TOP CRACK - PIPE 'V'ED					
					
2+98 => CONTINUE TOP CRACK - PIPE 'V'ED					
3+00 => CONTINUE TOP CRACK - JOINT OFFSET - PIPE 1/4 FULL OF WATER					
3+02 => CONTINUE TOP CRACK - SIDE OF PIPE CRACKED					
305.3 ft.	D	3 /	Crack		SIDE CRACK
					
311.2 ft.	D	5 / 7	Debris		LARGE PIECE OF TILE LAYING IN FLOWLINE
3+11 => CONTINUE TOP CRACK - BROKEN TILE IN FLOWLINE					
3+25 => END TOP CRACK - JOINT OFFSET					
3+39 => START TOP CRACK - START EGG SHAPED PIPE					
					

Observations

Distance	Dire Length	From/To Code	Modifier/Severity	Rating	Comments
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345.2 ft.	D	5 / 7	Debris - CONTINUE TOP CRACK- CONTINUE EGG SHAPE - BROKEN TILE IN FLOWLINE		MULTIPLE PIECES OF DEBRIS IN FLOW LINE
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3+46 => CONTINUE TOP CRACK - PIPE 'VED - BROKEN TILE IN FLOWLINE



3+66 => CONTINUE TOP CRACK - START EGG SHAPED

3+80 => CONTINUE TOP CRACK - END EGG SHAPED

3+90 => END TOP CRACK - PIPE ROUND

4+70 => START TOP CRACK - START JOINT OFFSETS - PIPE ROUND

471.5 ft.	D	651.6 ft. 11 / 1	Crack -CONTINUE TOP CRACK - CONTINUE JOINT OFFSET		CONTINUOUS TOP CRACK
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4+84 => CONTINUE TOP CRACK - CONTINUE JOINT OFFSET - PIPE 'VED

4+90 => CONTINUE TOP CRACK - CONTINUE JOINT OFFSET - PIPE 'VED



5+10 => CONTINUE TOP CRACK - CONTINUE JOINT OFFSET - PIPE 'VED

5+19 => CONTINUE TOP CRACK - CONTINUE JOINT OFFSET - PIPE 'VED

5+40 => CONTINUE TOP CRACK - CONTINUE JOINT OFFSET - START EGG SHAPE




5+56 => END TOP CRACK - CONTINUE JOINT OFFSET - END EGG SHAPE

569.3 ft.	D	106.3 ft. 5 / 7	Debris		CONTINUOUS DEBRIS IN FLOWLINE
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5+70 => CONTINUE JOINT OFFSET - DEBRIS IN FLOWLINE






Observations

Distance	Dire Length	From/To Code	Modifier/Severity	Rating	Comments
583.2 ft.	D	/	Joint Offset		WTH? 5+88 => CONTINUE JOINT OFFSET - DEBRIS IN FLOWLINE - JOINT OFFSET REPAIRED WITH BRICK BATS
 <p>Distance: 583.2 ft. Debris - Joint Offset in the Pipe Clock from: 12 o'clock Clock to: 12 o'clock Rating:</p>					
6+04 => CONTINUE JOINT OFFSET - START TOP CRACK - DEBRIS IN FLOWLINE					
606.6 ft.	D	5 / 7	Debris		LARGE PIECE OF TILE IN FLOWLINE
6+08 => CONTINUE JOINT OFFSET - CONTINUE TOP CRACK - PIPE 'V'ED					
 <p>Distance: 606.6 ft. Debris - Clock from: 5 o'clock Clock to: 7 o'clock Rating: LARGE PIECE OF TILE IN FLOWLINE</p>					
6+25 => CONTINUE JOINT OFFSET - CONTINUE TOP CRACK - JOINT GAP					
627.1 ft.	D	5 / 7	Debris		TILE IN FLOWLINE
6+27 => CONTINUE JOINT OFFSET - CONTINUE TOP CRACK - DEBRIS IN FLOWLINE					
 <p>Distance: 627.1 ft. Debris - Clock from: 5 o'clock Clock to: 7 o'clock Rating: TILE IN FLOWLINE</p>					

Observations

Distance	Dire Length	From/To Code	Modifier/Severity	Rating	Comments
639.8 ft.	D	9 / 3	Broken		MULTIPLE BROKEN TILE AHEAD
6+43 => CONTINUE JOINT OFFSET - CONTINUE TOP CRACK - START 'VED PIPE					
6+50 => CONTINUE JOINT OFFSET - CONTINUE TOP CRACK - END 'VED PIPE					
6+62 => CONTINUE JOINT OFFSET - CONTINUE TOP CRACK - SOIL VISSIBLE					
6+68 => END JOINT OFFSET - END TOP CRACK					
6+80 => START TOP CRACK - PIPE ROUND					
7+65 => END TOP CRACK - PIPE ROUND					
7+72 => START TOP CRACK - PIPE ROUND					
7+79 => END TOP CRACK - PIPE ROUND					
7+95 => START TOP CRACK - PIPE ROUND					
8+09 => CONTINUE TOP CRACK - JOINT OFFSET - PIPE ROUND					
8+21 => CONTINUE TOP CRACK - JOINT OFFSET - SOIL VISSIBLE - PIPE ROUND					
8+60 => CONTINUE TOP CRACK - JOINT OFFSET - PIPE ROUND					
9+16 => CONTINUE TOP CRACK - JOINT OFFSET - ROCKS VISSIBLE - PIPE ROUND					
932.5 ft.	D	10 /	Lateral		LAT LEFT
9+34 => END TOP CRACK - PIPE ROUND - LATERAL VCP					
					
944.6 ft.	D	/	Joint Offset		MULTIPLE OFFSETS AHEAD
9+48 => START JOINT OFFSET - PIPE ROUND - REPAIRED WITH BRICK BATS					
9+52 => CONTINUE JOINT OFFSET - PIPE ROUND - SOIL VISSIBLE					
9+65 => CONTINUE JOINT OFFSET - TOP CRACKED - PIPE 'VED					
					

Observations

Distance	Dire Length	From/To Code	Modifier/Severity	Rating	Comments
979.7 ft.	D	5 / 7	Debris		TILE IN FLOWLINE
9+80 => CONTINUE JOINT OFFSET - PIPE ROUND - BROKEN TILE IN FLOWLINE					
					
984.8 ft.	D	5 / 7	Debris		TILE IN FLOWLINE
9+85 => END JOINT OFFSET - TOP CRACKED - PIPE ROUND					
9+92 => TOP CRACKED - PIPE EGG SHAPED					
9+95 => TOP CRACKED - PIPE EGG SHAPED					
10+05 => TOP CRACKED - START 'VED PIPE					
10+23 => TOP CRACKED - CONTINUE 'VED PIPE - BROKEN TILE IN FLOWLINE					
					
1,031.7 ft.	D	91.4 ft.	9 / 3	Broken	SEVERELY BROKEN AND COLLAPSING AHEAD.
10+35 => TOP CRACKED - CONTINUE 'VED PIPE - SOIL VISSIBLE					
					

Observations

Distance	Dire Length	From/To	Code	Modifier/Severity	Rating	Comments
1,049.7 ft.	D	2 /	Lateral	- LATERAL VCP TILE		LAT RIGHT



10+52 => END 'VED PIPE
 10+68 => TOP CRACKED - START JOINT OFFSET - SOIL VISSIBLE
 10+76 => TOP CRACKED - END JOINT OFFSET
 10+92 => TOP CRACKED - PIPE 'VED

1,096.9 ft.	D	12 /	Lateral	- HDPE LATERAL - INTRUDING		LAT TOP
-------------	---	------	---------	----------------------------	--	---------



11+88 => JOINT OFFSET - SOIL VISSIBLE - PIPE ROUND
 12+25 => START JOINT OFFSET - TOP CRACKED - SOIL VISSIBLE

1,226.1 ft.	D	175.4 ft. 11 / 1	Crack			CONTINUOUS TOP CRACK
-------------	---	------------------	-------	--	--	----------------------



12+36 => CONTINUE JOINT OFFSET - TOP CRACKED - SOIL VISSIBLE - PIPE 'VED

Observations

Distance	Dire Length	From/To	Code	Modifier/Severity	Rating	Comments
1,240.1 ft.	D	12 /	Lateral	- LATERAL - VCP - NON INTRUDING		LAT TOP



12+48 => CONTINUE JOINT OFFSET - TOP CRACKED - PIPE EGG SHAPED
 12+54 => CONTINUE JOINT OFFSET - TOP CRACKED - PIPE EGG SHAPED

1,273.9 ft.	D	9 / 3	Broken			SEVERELY BROKEN AND COLLAPSING
----------------	---	-------	--------	--	--	---



12+78 => CONTINUE JOINT OFFSET - TOP CRACKED - START 'VED PIPE
 13+01 => CONTINUE JOINT OFFSET - END 'VED PIPE
 13+06 => CONTINUE JOINT OFFSET - START SOIL VISSIBLE
 13+18 => CONTINUE JOINT OFFSET - CONTINUE SOIL VISSIBLE - PIPE 'VED

1,322.4 ft.	D	5 / 9	Broken			BOTTOM BROKEN AND CRUSHING INTO FLOWLINE
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13+25 => CONTINUE JOINT OFFSET - CONTINUE SOIL VISSIBLE - PIPE 'VED
 13+28 => END JOINT OFFSET - END SOIL VISSIBLE - PIPE ROUND
 13+93 => JOINT GAP - SOIL VISSIBLE

Observations

Distance	Dire Length	From/To	Code	Modifier/Severity	Rating	Comments
1,401.5 ft.	D	2 /	Crack			MULTIPLE CRACKED TOPS AHEAD
				14+04 =>		TOP CRACKED - PIPE 'VED
				14+09 =>		TOP CRACKED - PIPE 'VED
				14+13 =>		JOINT GAP - SOIL VISSIBLE
				14+35 =>		TOP CRACKED - PIPE ROUND
				14+41 =>		JOINT GAP - SOIL VISSIBLE - START TOP CRACKED - PIPE EGG SHAPED



1,473.6 ft. D / END OF SURVEY - END CCTV



Inspection's photos

Main Inspections Small Photos

Mainline ID: 11/8/17 DD 22	City: N/W OF RANDY SILVEST FARM	Address: GPS #130	Project name: 11/8/17 DD 22 W/O #192
Start date/time: 11/8/2017 2:17 PM	Asset length: 44.4 ft.	Weather: Dry	Operator: Paul
Upstream node:	Depth US:	Downstream node:	Depth DS:
Pipe shape: Circular	Pipe material: Clay	Pipe height: 24.0 in.	Pipe width:

Comments:

0+00 => START AT GPS#130 GOING UPSTREAM - PIPE ROUND

Observations

Distance	Dir. Length	From/To Code	Modifier/Severity	Rating	Comments
44.0 ft.	U	3 /	Lateral - VCP TILE - NON INTRUDING		LAT RIGHT

0+12



13.6 ft.	U	11.9 ft.	9 / 3	Broken - TOP CRACKED - 2 PIPE 'VED - REPAIRED WITH - BRICK BATS	CONTINUOUS BROKEN TOPS
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0+14



Observations

Distance	Dire Length	From/To Code	Modifier/Severity	Rating	Comments
14.6 ft.	U	/	Pipe Size		POSSIBLE SIZE REDUCTION?



44.4 ft.	U	10 /	Lateral - VCP TILE - NON INTRUDING - END SURVEY		LAT LEFT
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Inspection's photos



Start date/time: 11/8/2017 10:55 AM
Project name: 11/8/17 DD 33 W/O #192
Operator: Paul
Address: N/W OF RANDY SILVEST FARM GPS #
100
Upstream node:
Downstream node:
Direction: With the flow
Surface condition: Farm field
Pipe height: 24 in.
Pipe width:
Pipe shape: Circular
Pipe material: Clay
Weather: Dry







11/8/2017A
79 1 ft.
11:05 16 A
M



11/8/2017A
85 3 ft.
11:06:28 A
M



11/8/2017P
89 9 ft.
11:06:50 A
M



11/8/2017A
109 4 ft.
11:09:06 A
M













11/8/2017A
623 8 ft.
11:30 40 A
M





11/8/2017P
639 8 ft.
11:32 21 A
M



11/8/2017P
658 3 ft.
11:33 25 A
M



11/8/2017P
806 4 ft.
11:35 41 A
M



11/8/2017A
817 5 ft.
11:35 49 A
M





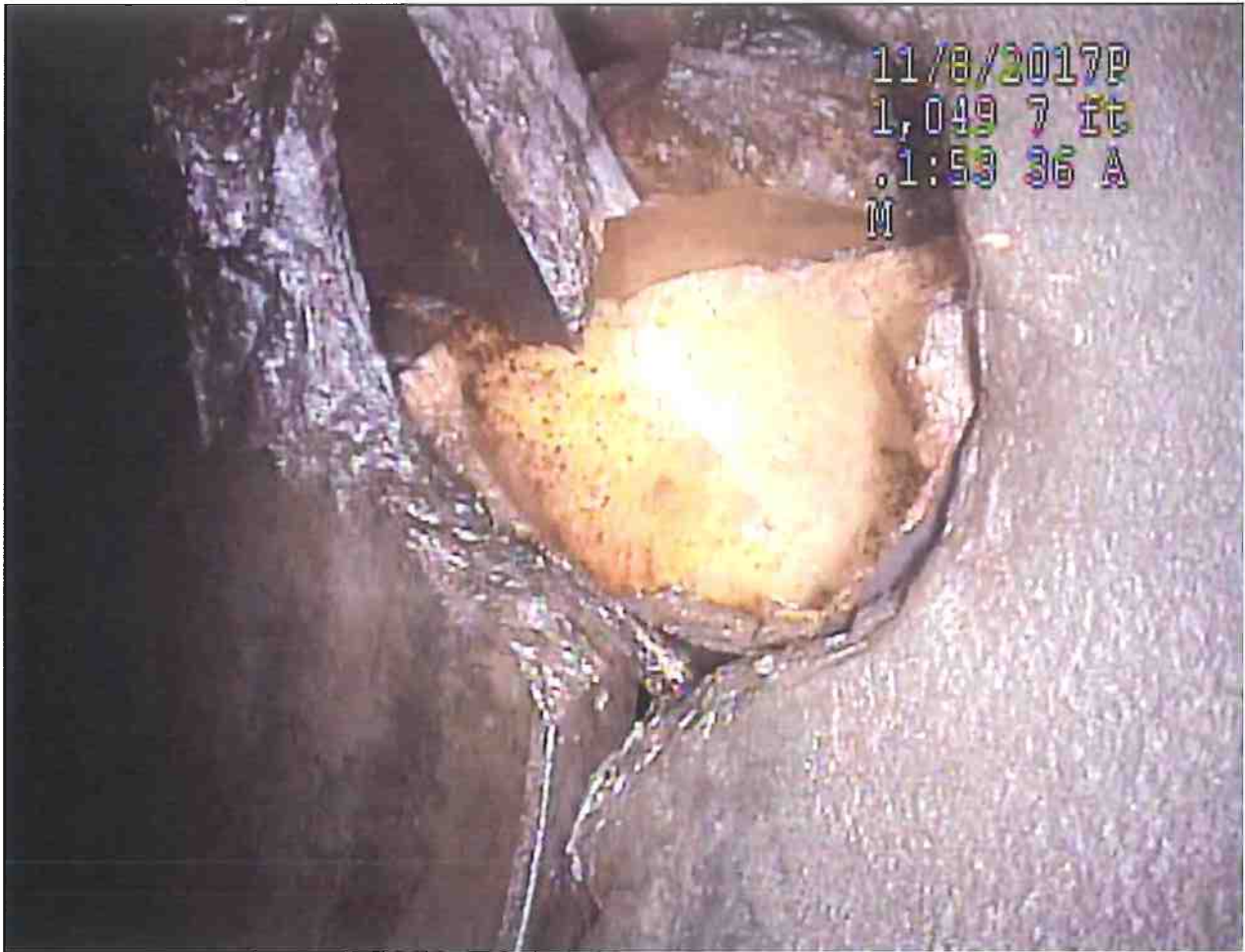
11/8/2017A
961 1 ft.
11:40 27 A
M



11/8/2017B
978 3 ft.
11:41 07 A
M













11/8/2017A
1,304 ft
.2:10 57 P
M







Distance: 1473.6 ft.
END OF SURVEY -
Clock from:
Clock to:
Rating:



6532 DD22 11-8-17RB

1,3618652.172,4946891.121,1169.627,8016 USGS
 2,3613451.482,4936402.471,1141.781,IRS 58 .3DOWN
 3,3614390.279,4936478.933,1141.330,GS
 4,3614409.308,4936478.137,1133.585,TOP PIPE
 5,3614111.011,4936475.708,1141.304,GS PIPE ALIGN
 6,3614094.158,4936475.811,1132.121,TOP 30"COLAPSED
 7,3614067.789,4936477.692,1132.726,45 BEND TOPPIPE
 8,3614089.958,4936476.981,1133.319,TOP PIPE NEW JOINT
 9,3614109.552,4936477.111,1133.288,TOP PIPE NEW JOINT
 10,3614120.749,4936476.938,1131.316,TOP PIPE NEW JOINT COLLAR
 11,3614205.851,4936477.371,1133.461,TOP PIPE NEW JOINT COLLAR
 12,3614220.029,4936477.653,1133.411,TOP PIPE NEW JOINT COLLAR
 13,3614417.832,4936478.796,1133.764,TOP PIPE NEW JOINT
 14,3614437.575,4936478.697,1133.917,TOP PIPE NEW JOINT
 15,3614457.194,4936478.456,1133.922,TOP PIPE NEW JOINT
 16,3614631.616,4936484.580,1131.871,TOP PIPE NEW JOINT
 17,3615196.524,4936486.155,1135.196,INSPECTION HOLE
 18,3614651.387,4936484.927,1134.427,JOINT TOP PIPE
 19,3614659.421,4936484.410,1134.293,JOINT TOP PIPE
 20,3613988.167,4936393.665,1141.205,GS INSPECTION HOLE
 21,3614053.021,4936463.140,1133.289,TOP PIPE CONC COLLAR
 22,3614037.679,4936448.230,1132.950,TOP PIPE CONC COLLAR
 23,3614004.506,4936454.979,1142.358,GS CROP DAMAGE
 24,3614006.251,4936502.392,1143.007,GS CROP DAMAGE
 25,3614034.616,4936534.213,1142.895,GS CROP DAMAGE
 26,3614085.502,4936544.050,1142.013,GS CROP DAMAGE
 27,3614160.415,4936539.911,1141.524,GS CROP DAMAGE
 28,3614249.647,4936543.819,1141.436,GS CROP DAMAGE
 29,3614353.151,4936534.108,1141.778,GS CROP DAMAGE
 30,3614423.137,4936550.697,1142.135,GS CROP DAMAGE
 31,3614491.173,4936531.358,1142.259,GS CROP DAMAGE
 32,3614549.526,4936521.611,1142.618,GS CROP DAMAGE
 33,3614600.124,4936551.225,1142.350,GS CROP DAMAGE
 34,3614629.215,4936570.402,1141.511,GS CROP DAMAGE
 35,3614691.082,4936568.682,1141.781,GS CROP DAMAGE
 36,3614728.206,4936493.978,1142.812,GS CROP DAMAGE
 37,3614888.820,4936493.046,1142.953,GS CROP DAMAGE
 38,3615213.695,4936498.592,1140.763,GS CROP DAMAGE
 39,3615213.975,4936480.756,1140.757,GS CROP DAMAGE
 40,3615027.301,4936479.733,1142.362,GS CROP DAMAGE
 41,3614808.185,4936478.214,1143.048,GS CROP DAMAGE
 42,3614704.740,4936478.614,1142.796,GS CROP DAMAGE
 43,3614700.807,4936460.218,1143.018,GS CROP DAMAGE
 44,3614596.240,4936460.099,1144.029,GS CROP DAMAGE
 45,3614596.188,4936472.754,1143.742,GS CROP DAMAGE
 46,3614497.825,4936475.997,1142.732,GS CROP DAMAGE
 47,3614474.069,4936457.801,1142.049,GS CROP DAMAGE
 48,3614430.056,4936456.679,1141.851,GS CROP DAMAGE
 49,3614422.234,4936463.850,1142.059,GS CROP DAMAGE
 50,3614358.479,4936470.083,1141.534,GS CROP DAMAGE
 51,3614244.265,4936472.027,1141.552,GS CROP DAMAGE
 52,3614231.103,4936457.318,1140.966,GS CROP DAMAGE
 100,3614934.457,4935913.722,1136.326,TOP CLAY
 101,3614929.915,4935916.147,1140.868,GS
 102,3614901.869,4935895.397,1140.844,GS TILELOCATE
 103,3614856.565,4935871.953,1140.872,GS TILELOCATE
 104,3614810.517,4935845.560,1140.973,GS TILELOCATE
 105,3614755.111,4935815.640,1141.099,GS TILELOCATE
 106,3614707.792,4935787.822,1140.771,GS TILELOCATE
 107,3614660.999,4935759.922,1140.707,GS TILELOCATE
 108,3614612.400,4935731.469,1140.801,GS TILELOCATE
 109,3614566.375,4935702.684,1140.741,GS TILELOCATE
 110,3614520.959,4935671.160,1140.632,GS TILELOCATE

6532 DD22 11-8-17RB

111,3614474.369,4935647.614,1140.747,GS TILELOCATE
112,3614423.363,4935634.097,1140.631,GS TILELOCATE
113,3614372.079,4935626.105,1140.540,GS TILELOCATE
114,3614320.119,4935622.381,1140.450,GS TILELOCATE
115,3614267.951,4935621.002,1140.253,GS TILELOCATE
116,3614215.850,4935620.584,1140.235,GS TILELOCATE
117,3614165.152,4935620.208,1140.279,GS TILELOCATE
118,3614116.011,4935621.164,1140.211,GS TILELOCATE
119,3614064.388,4935622.774,1140.170,GS TILELOCATE
120,3614012.774,4935634.511,1140.018,GS TILELOCATE
121,3613963.151,4935652.922,1139.870,GS TILELOCATE
122,3613920.548,4935679.732,1139.835,GS TILELOCATE
123,3613881.508,4935716.292,1139.725,GS TILELOCATE
124,3613842.420,4935753.864,1139.624,GS TILELOCATE
125,3613804.811,4935793.965,1139.472,GS TILELOCATE
126,3613768.137,4935833.637,1139.447,GS TILELOCATE
127,3613732.808,4935871.029,1139.254,GS TILELOCATE
128,3613696.697,4935909.778,1139.359,GS TILELOCATE
129,3613665.042,4935939.393,1139.514,GS TILELOCATE
130,3614950.070,4935922.715,1136.115, TOP CLAY
131,3614962.001,4935929.547,1140.687,GS Y LOCATE
8005,3618706.090,4931325.380,1161.460,ALUM DISK CONC
8005_GNSS,3618706.090,4931325.380,1161.460, Autonomous Setup

Drainage District:

#22

Repair Summary:

- District Trustees requested that the supplemental main tile be severed in south road ditch of 180th Street in the NE¼ of Section 17, Township 88 North, Range 22 West.
- Visually inspected area found that a Hickenbottom intake in the north road ditch of 180th Street in the SE¼ of Section 8, Township 88 North, Range 22 West is connected to supplemental main tile and that severing the tile in the south road ditch would disconnect said intake.
- Based on this, revised the location of the tile to be severed to the north road ditch of 180th Street (i.e. upstream of the intake connection).
- Excavated in north road ditch of 180th Street, found 8" Dual Wall HDPE supplemental main tile, removed several feet of tile, and installed two 8" expansion plugs into both ends exposed ends to prevent soil infiltration.

Contractor Time and Materials (spent while CGA was on-site):

- None as no work was done at District Expense.

Additional Actions Recommended:

- If District Trustees want tile severed in south road ditch of 180th Street, arrangements should be made with the Secondary Roads Department to provide drainage to the north road ditch of 180th Street. Then tile could be severed in said south road ditch.





Drainage Work Order Request For Repair

Hardin County

Date 11/13/2017 Work Order # 198
District # 22 Lateral _____ Fund # 51045
Township Buckeye Section 8 Twp 88 Rge 22 Qtr Sec SE1/4

Repair Requested By Landowners of DD 22

Address _____ Phone _____

Landowner Hoversten

Address _____ Phone _____

Request Taken By Tina Schlemme

Available for Repair Now? Yes Date Available _____

Problem Description Sever the tile south of 180th Street to disconnect the tile that was added during the 2011 project but never approved. See Ryken Annexation Report, Project #6532.1. This tile is to be severed at no cost to the DD.

Repair labor, materials and equipment _____

Potential Wetlands? Yes-Repair existing tile only No-Repair and maintain tile

Repaired By: _____

Date: _____

Please send statement for services to:

Phone (641) 939-8111
Fax (641) 939-8245

Hardin County Auditor's Office
Attn: Tina Schlemme
1215 Edgington Ave, Suite 1
Eldora, IA 50627

For Office Use Only

Approved: _____

Date: _____

CONSTRUCTION ENGINEERING
OBSERVATION REPORT

DATE: 11-29-17

DAYS OF WEEK:

S	M	T	W	T	F	S
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SHEET NO. 1 OF

PROJECT NUMBER: 6532.3
COUNTY, ROUTE, ROAD: 180th Street
LOCATION: DD # 22 Hardin County.

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB NAME, ITEM NO. AND LOCATION

Arrived at job site at 3:00 p.m. Set up G.P.S. on Hardin County G.P.S Monument # 8016 and checked into # 4236 (Clood).

3:30 p.m. = Contractor started digging on south side of 180th Street. per work order.

Contacted Engineer and he inquired if there was a Hicken-bottom in North side of 180th St. and Field Observer reported there was. Engineer instructed Field observer to dig and cut 8" tile North of hicken bottom in North ditch of 180th street.

Contractor filled hole on south side of 180th street and exposed 8" dual wall HDPE North of 180th. several feet of 8" HDPE were removed and 8" expansion plugs were installed upstream and downstream. Field Observer staked out Tee for Hicken bottom and it is downstream from plugs so hicken bottom on North side of 180th is connected to 8" Dual Wall HDPE.

G.P.S Pts # 63 and # 64 are top of 8" plugs in 8" HDPE.

4:10 p.m. = Plugs installed and back filling complete.

Field observer left for day.

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature: James Van Hove Date Prepared: 12-7-17

Reviewed by: Engineer

Date Reviewed

Top of 8" tile exposed

2017/11/29





Installing plugs in 8" dual wall HDPE

2017/11/29

Plugs installed upstream and downstream
in 8" HDPE after removing chunk of tile

2017/11/29



South side of ditch where 8" tile was uncovered and covered orange hickenbottom was laying in ditch when contractor arrived on site

2017/11/29

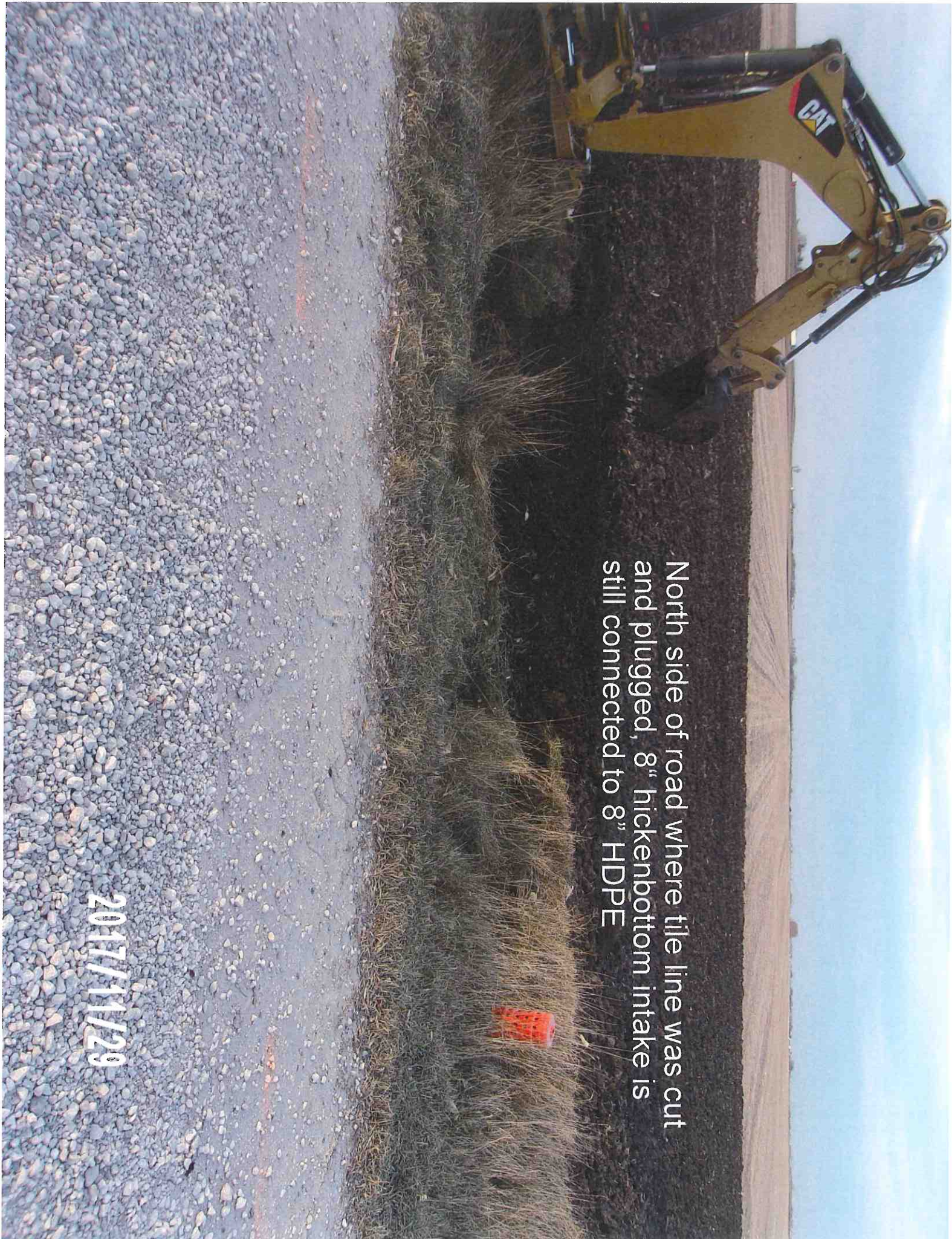


South side of ditch showing 8" hickenbottom and 6" hickenbottom

2017/11/29

North side of road where tile line was cut
and plugged, 8" hickenbottom intake is
still connected to 8" HDPE

2017/11/29



1,3602878.030,4947844.310,1135.050,HCGPS 8015
1_GNSS,3602878.030,4947844.310,1135.050,1
2,3586774.843,4946810.299,1151.546,HCGPS 8014
3,3602802.970,4951422.312,1125.773,nw prop cor
3_GNSS,3602802.970,4951422.312,1125.773,3
4,3606791.517,4946863.103,1127.637,tcp-3/4" rod
4_GNSS,3606791.517,4946863.103,1127.637,4
5,3602867.580,4951375.198,1127.899,CP 5 58IR
5_GNSS,3602867.580,4951375.198,1127.899,5
6,3610519.485,4946895.209,1152.180,cp 6 58 ir
6_GNSS,3610519.485,4946895.209,1152.180,6
7,3606246.397,4946915.013,1116.938,18" beehive-gs
8,3606246.115,4946915.636,1115.234,18" beehive-fl
9,3606241.849,4946914.634,1115.972,top 30" clay
10,3606242.647,4946916.080,1115.735,top 8" clay
11,3606225.829,4946910.042,1118.166,fl road ditch
12,3606240.836,4946913.562,1118.103,fl road ditch
13,3606256.863,4946912.524,1118.347,fl road ditch
14,3606272.242,4946912.696,1118.549,fl road ditch
15,3606205.689,4946899.186,1123.644,eg
16,3606240.149,4946898.649,1123.917,eg
17,3606269.499,4946899.315,1124.040,eg
18,3606292.452,4946896.142,1124.152,eg
19,3606293.340,4946896.455,1124.194,brg deck
20,3606308.982,4946896.270,1124.083,brg deck
21,3606308.722,4946879.578,1124.211,brg deck
22,3606293.051,4946879.682,1124.231,brg deck
23,3606292.566,4946897.991,1124.617,top wood wing
24,3606283.754,4946902.654,1124.480,top wood wing
25,3606309.492,4946898.070,1124.476,top wood wing
26,3606311.910,4946900.233,1124.435,top wood wing
27,3606318.095,4946902.591,1124.368,top wood wing
28,3606309.857,4946896.318,1124.070,eg
29,3606328.368,4946899.253,1123.814,eg
30,3606357.134,4946900.293,1123.404,eg
31,3606358.348,4946910.445,1118.542,fl road ditch
32,3606336.107,4946909.735,1118.607,fl road ditch
33,3606321.274,4946910.043,1118.200,fl road ditch
34,3606359.630,4946889.616,1123.543,c
35,3606326.362,4946888.311,1124.032,c
36,3606300.361,4946887.541,1124.333,c
37,3606267.549,4946887.987,1124.238,c
38,3606215.699,4946888.018,1123.985,c
39,3606184.022,4946887.132,1123.952,c
40,3602841.034,4949464.725,1132.668,scf sq 348822
41,3606710.361,4939007.626,1119.050,topcmp
42,3608094.692,4941353.659,1124.733,s bore
43,3608150.308,4941436.658,1124.513,n bore toppipe
44,3610586.607,4941990.546,1131.227,top mh 4 nrim
45,3610845.524,4942501.851,1134.563,top 12" vcp
46,3610823.334,4942488.273,1134.477,top 12" vcp
47,3608387.331,4941777.152,1129.708,6" clay tile
48,3610737.584,4942328.948,1132.146,top 12" vcp
49,3611373.228,4942790.146,1136.847,top 12" vcp
50,3612142.727,4943189.974,1140.142,top 12" vcp
51,3610996.037,4942596.772,1132.586,top 6" vcp
52,3618348.222,4944601.880,1149.772,top new tile
53,3618659.376,4938195.436,1155.296,check shot
54,3611090.629,4936254.774,1126.285,rip rap area
55,3611072.496,4936267.281,1126.679,rip rap area
56,3618601.977,4936840.165,1155.075,34 irs
57,3618234.727,4936491.155,1149.511,34 irs
58,3618234.983,4936838.154,,calc prop corner

59,3614687.127,4936497.211,1143.124,GS N HOLE
 60,3614671.729,4936498.110,1143.013,GS S HOLE
 61,3616588.149,4936394.602,1147.938,GS S HOLE
 62,3616607.544,4936391.810,1147.478,GS N HOLE
 63,3623915.468,4939408.066,1151.555,top 8" hdpe piug
 64,3623912.384,4939406.623,1151.617,top 8" hdpe piug
 1000,3601896.395,4952104.849,1110.976,bm-x on nw cor
 1001,3601651.219,4946826.693,1115.370,bm-x on nw cor
 1002,3602875.907,4942942.778,1122.602,bm-x on nw cor
 1003,3601691.196,4951381.721,1100.549,edge ditch
 1004,3601703.919,4951377.476,1105.582,top bank
 1005,3601688.649,4951370.118,1100.414,edge ditch
 1006,3601688.168,4951362.894,1100.356,edge ditch
 1007,3601692.992,4951355.846,1103.234,edge ditch
 1008,3601697.302,4951351.694,1104.678,edge ditch
 1009,3601693.827,4951339.434,1104.964,edge ditch
 1010,3601688.711,4951334.312,1104.311,edge ditch
 1011,3601683.435,4951336.305,1101.730,edge ditch
 1012,3601679.268,4951337.197,1099.812,edge ditch
 1013,3601672.739,4951314.795,1100.132,edge ditch
 1014,3601670.791,4951310.531,1098.187,edge ditch
 1015,3601665.018,4951296.564,1098.630,edge ditch
 1016,3601661.090,4951280.461,1098.318,edge ditch
 1017,3601675.920,4951275.199,1106.001,top bank
 1018,3601683.528,4951302.484,1106.117,top bank
 1019,3601688.340,4951324.956,1105.742,top bank
 1020,3601694.038,4951336.567,1105.197,top bank
 1021,3601701.928,4951365.753,1105.542,top bank
 1022,3601705.268,4951380.716,1105.690,top bank
 1023,3601734.668,4951356.560,1104.824,top bank
 1024,3601719.591,4951332.412,1105.298,top bank
 1025,3601715.290,4951321.497,1106.021,top bank
 1026,3601706.025,4951302.853,1105.246,top bank
 1027,3601696.807,4951279.934,1105.481,top bank
 1028,3601710.514,4951267.317,1104.571,top bank
 1029,3601734.501,4951261.584,1104.522,top bank
 1030,3601692.387,4951280.333,1105.748,gs
 1031,3601700.071,4951309.470,1105.426,gs
 1032,3601703.342,4951320.995,1106.314,gs
 1033,3601706.380,4951329.161,1106.495,gs
 1034,3601709.414,4951341.003,1105.707,gs
 1035,3601716.860,4951364.510,1105.662,gs
 1036,3601741.964,4951353.511,1103.777,toe
 1037,3601731.884,4951329.823,1103.357,toe
 1038,3601725.044,4951319.097,1102.600,toe
 1039,3601723.418,4951313.136,1102.304,fl
 1040,3601720.372,4951307.846,1102.656,toe
 1041,3601730.017,4951294.851,1103.053,toe
 1042,3601724.804,4951274.933,1104.278,top bank
 1043,3601712.196,4951261.565,1104.529,gs
 1044,3601734.304,4951293.894,1103.491,gs
 1045,3601738.230,4951298.767,1102.859,fl
 1046,3601740.977,4951302.336,1103.771,gs
 1047,3601731.017,4951310.503,1102.985,gs
 1048,3601757.471,4951349.577,1103.808,gs
 1049,3601790.459,4951327.347,1103.971,gs
 1050,3601763.811,4951302.498,1104.390,gs
 1051,3601756.797,4951290.726,1103.884,gs
 1052,3601756.124,4951288.043,1102.858,fl
 1053,3601752.629,4951284.482,1104.208,gs
 1054,3601741.579,4951263.066,1104.582,gs
 1055,3601729.766,4951241.689,1104.813,gs
 1056,3601760.290,4951216.488,1104.118,gs