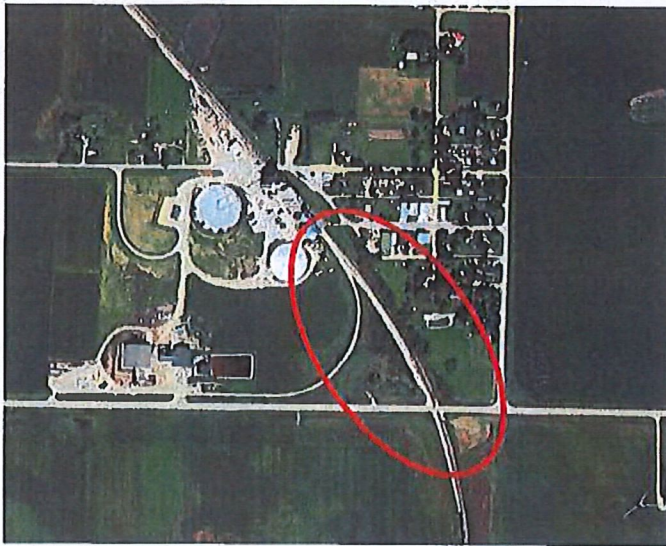


JAN 02 2024

FRANKLIN CO. AUDITOR  
HAMPTON, IOWA



# REVISED ENGINEER'S REPORT ON REPAIRS TO MAIN TILE SUBDISTRICT NO. 1 DRAINAGE DISTRICT NO. 9 FRANKLIN COUNTY,



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA

*Lee O. Gallentine*, PE Jan 22 2024  
LEE O. GALLENTINE, P.E. DATE

LICENSE NUMBER: 15745  
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2024  
PAGES OR SHEETS COVERED BY THIS SEAL:  
SHOWN ON TABLE OF CONTENTS

**CGA**  
ENGINEERS • LAND SURVEYORS

## CLAPSADDLE-GARBER ASSOCIATES OFFICE LOCATIONS

16 East Main Street, PO Box 754 | Marshalltown, IA 50158  
1523 S. Bell Avenue, Suite 101 | Ames, IA 50010  
5106 Nordic Drive | Cedar Falls, IA 50613  
739 Park Avenue | Ackley, IA 50601

Project Office  
739 Park Avenue  
Ackley, IA. 50601  
Phone: 641-847-3273  
Fax: 641-847-2303

**Revised Engineer's Report on Repair to  
Main Tile of Subdistrict No. 1  
of Drainage District No. 9  
Franklin County, Iowa**

<b>Table of Contents</b>	Pg. 1
 <b>Report</b>	
Introduction	Pg. 2
District History	Pg. 3
Investigation	Pg. 4
Discussion and Conclusions	Pg. 4
Repair Methods	Pgs. 5-6
Opinion of Probable Construction Costs	Pg. 7
Ownership and Classifications	Pg. 7
Recommendations	Pg. 8
 <b>Appendices</b>	
First Pages of Repair Summary for Work Order #36	App. A
Drainage District No. 66 Map	App. B
Cost Division Map	App. C
Opinions of Probable Construction Costs	App. D

# **Revised Engineer's Report on Repair to Main Tile of Subdistrict No. 1 of Drainage District No. 9 Franklin County, Iowa**

## **1.0 INTRODUCTION**

1. **SCOPE OF WORK** – On May 15, 2017, the Franklin County Board of Supervisors, acting as District Trustees, requested Clapsaddle-Garber Associates to investigate and report concerning repairs to the main tile of Subdistrict No. 1 of Drainage District No. 9. As a result, an Engineer's Report was drafted summarizing the history of improvements and repairs, investigate the necessity and feasibility of said repairs, and present opinions of probable construction costs associated with said repairs. Then a hearing was held, and a large project was determined to not be feasible at that time. At the regular drainage meeting held on November 13, 2023, the recommended actions shown in the Repair Summary for Work Order #36 (copy of first pages is included in Appendix A) were discussed again by the District Trustees. As a result, at said drainage meeting the District Trustees requested Clapsaddle-Garber Associates to update the Engineer's Report concerning repairs to said main tile.
  
2. **LOCATION** – The area of investigation was limited to the lower end of the main tile located in Sections 6 and 7, Township 90 North (T90N), Range 20 West (R20W), Franklin County, Iowa. Specifically, the downstream limit is where the main tile connects to the upstream end of the lateral no. 2 tile of Drainage District No 66. Said connection point is on the south side of County Road C55 just east of the Union Pacific railroad tracks. Going upstream, the main tile then goes west under said railroad tracks for approximately 1/8 mile along the south side of County Highway C55. It then turns north, crosses County Highway C55, and continues northerly for approximately 1/4 mile. In this 1/4 mile, it crosses under the following:
  - Private Railroad spur track (twice)
  - Union Pacific railroad tracks
  - Railroad/Main Street in Bradford
  - First Street in Bradford
  - Second Street in Bradford.

Said main tile then continues northerly, but the upstream limit of the investigation is the south side of Second Street in Bradford. For reference, a copy of a portion of a Drainage District No. 66 map by Vernon Finkle showing said main tile and the subdistrict itself is included in Appendix B.

1.0 **DISTRICT HISTORY** – The following is a summary of the history of the Main of Subdistrict No. 1 of Drainage District No. 9 as obtained from the Franklin County Auditor's drainage minutes and records.

- 1914, Apr. 23 Petition and Bond for establishment of Subdistrict No. 1 of Drainage District No. 9 was filed. Said petition indicated that a main drain, submains, and laterals should be installed. Specifically, it indicated that the drain should start "at about the Northwest corner of the South half of the Northwest quarter of the Southwest quarter of said Sec. 5" and run westerly and southerly through Bradford and then southerly to connect with Drainage District No. 9.
- 1914, Jun. 20 G.L. Mechem was appointed Engineer for the project and was charged to make a preliminary survey.
- 1914, Sept. 14 Engineer's Report was filed by Geo. L. Mechem, Engineer. A portion of it called for 2,700 feet of main tile (14-inch diameter to 8-inch diameter) at a cost of \$401.
- 1914, Sept. 25 Publication of Notice of Hearing on establishment.
- 1914, Nov. 14 Publication of Notice to Contractor for construction of drainage district facilities with bid date of Dec. 1, 1914.
- 1914, Dec. 1 Construction contract with Hawkeye Construction Co. for \$1,570 for construction of drainage district facilities was entered.
- 1915, Oct. 7 Appointment of Commission to inspect and classify lands.
- 1915, Oct. 7 Engineer's Report by G. L. Mechem on completion of construction.
- 1915, Oct. 16 Assessment of Benefits was filed.
- 1915, Nov. 5 Publication of Notice of Assessment of Benefits.
- 1916, May 17 Condition of district facilities was reported and Engineer G.L. Mechem was advised with instructions to take the matter in charge at once.
- 1990, Sept. 27 Request for repair of blowout on lateral 2 tile in Section 6.
- 1991, Apr. 4 Request for repair of blowout on lateral 2 tile in Section 6 north of 3<sup>rd</sup> Street in Bradford.
- 2003, Jul. 9 Request for repair of plugged tile on lateral 1 tile in Section 6 on Main Street in Bradford.
- 2004, May 17 Relevy for repair of drainage district facilities was called for in the amount of \$1,755.62.
- 2007, May 11 Request for repair of plugged tile on lateral 2 tile in Section 6 on 5<sup>th</sup> Street in Bradford.
- 2007, Aug. 23 Request for repair of plugged tile on lateral 2 tile in Section 6.
- 2009, Apr. 13 Request for repair of blowout on lateral 2 tile in Section 6.
- 2010, May 24 Relevy for repair of drainage district facilities was called for in the amount of \$4988.49.
- 2011, Apr. 22 Request for repair of blowout on main tile on 2<sup>nd</sup> street in Bradford.
- 2014, May 25 Request for repair of Lateral 2 located on 5<sup>th</sup> Street in Bradford.



2.0 **INVESTIGATION** – All investigation for this report was performed under **Work Order #36**. Said investigation was limited to visual observation (with and without excavation) and CCTV inspection. For reference, see the map and summary of results contained in the first pages of the Repair Summary for Work Order #36 included in Appendix A. For additional details, see the complete Repair Summary on file in the County Auditor's office.

3.0 **DISCUSSION AND CONCLUSIONS** – Based on the above, it is obvious that the main tile through the area of investigation is at or past the end of its useful lifecycle and is being influenced by outside factors. Much, if not all of the existing VCP tile are cracked. This is definitely an indication of end of lifecycle, but more concerning are the many issues listed that restrict drainage. These are an indication of physical pipe failure and outside influences on the tile. The following are key issues that definitely need to be repaired to insure continued drainage:

- 55 offset joints with voids or soil visible.
- 6 locations of egg shape tile.
- 5 locations of partial or imminent tile collapses.
- 1 location of broken tile with top missing.
- Northern UPRR railroad crossing is ¼ full of rock and railroad ballast.
- Depression in ground surface visible above tile route upstream of northern UPRR crossing.
- Spots with tree root restrictions between County Highway C55 and northern UPRR crossing.
- Stretches with tree root and grease restrictions between Railroad/Main Street and Second Street in Bradford

If repairs are not performed, the main tile will continue to deteriorate and the tree roots will continue to grow. Both of these will only continue to reduce and impede drainage. In addition, the apparent broken tiles near or under County Highway C55 and the northern UPRR crossing not only impede drainage, but could be a hazard to the public in the event of tile collapses and resulting accidents. When all these issues are combined, it will only lead to reduced drainage and public hazard by the drainage district main tile.

On a separate topic, it should be noted that four private tile connections are connected to the existing main tile and appear to be draining lands outside the existing drainage district boundary. Said private connections are connected to the existing main tile where it runs east-west along the south side of County Highway C55 west of the UPRR. These connections come into the existing main tile from the south and it is unclear if they drain only the right of way of County Highway C55 or drain additional private land to the south. If they do drain land outside of the district boundary, the land at issue should either be annexed, or the private tile connections plugged so that they do not use drainage district facilities.

4.0 **REPAIR METHODS** – To repair the above discussed issues there are several options, but the following are the most straightforward ones:

**Spot Tile Replacement**

- Remove all trees and stumps within 50 feet of either side of the existing main tile.
- Remove and replace the existing main tile at only the locations of the key issues identified above.
- For the tile under County Highway C55 and railroad/spur crossings that need repaired, a new main tile would be installed offset from the existing main tile and the existing main tile would be abandoned (i.e. filled with flowable mortar).
- Disconnect all private tile connections encountered from the existing main tile.
- Reconnect all private tile connections that were disconnected to the repaired main tile.

**Full Tile Replacement**

- Remove all trees and stumps within 50 feet of either side of the existing main tile.
- Remove and replace all the existing main tile at the same location except at County Highway C55 and railroad crossings.
- For the tile under County Highway C55 and railroad/spur crossings, a new main tile would be installed offset from the existing main tile and the existing main tile would be abandoned (i.e. filled with flowable mortar).
- Disconnect all private tile connections encountered from the existing main tile.
- Reconnect all private tile connections that were disconnected to the new main tile.

**Rerouted Tile Replacement**

- Install a rerouted main tile that connects to the existing lateral no. 2 tile of Drainage District No 66 at the same location of the existing main tile. Said new main tile would then cross under County Road C55 parallel the easterly right of way line of the UPRR until it intersects the existing main tile near Railroad/Main Street.
- Remove all trees and stumps within 50 feet of either side of the existing or rerouted main tiles.
- Remove and replace the existing main tile at the locations of the key issues identified above (except for the issue associated with the northern UPRR crossing and northern private spur crossing).
- For the existing main tile under County Highway C55 and railroad crossings (except the northern UPRR crossing and northern private spur crossing) that need repaired, a new main tile would be installed offset from the existing main tile and the existing main tile would be abandoned (i.e. filled with flowable mortar).
- For the northern UPRR crossing and northern private spur crossing, the existing main tile would be abandoned (i.e. filled with flowable mortar) and no new main tile would be installed.
- Disconnect all private tile connections encountered from the existing main tile.
- Reconnect all private tile connections that were disconnected to either the new or rerouted main tiles.

With the above-mentioned repairs, the following should be noted:

- The Spot Tile Replacement and Rerouted Tile Replacement would require higher maintenance costs in the future as the remaining portions of the existing main tile are over 100 years old.
- The Rerouted Tile Replacement option would require the taking of right of way.
- The Rerouted Tile Replacement option would require annexation to extend the district boundary to the east to allow for installation of the rerouted main tile.
- The Rerouted Tile Replacement would turn the main tile downstream of Railroad/Main Street into a separate lateral.
- The above repair methods are for those portions of the main tile downstream of Second Street. No repairs are proposed for those portions of the main tile upstream from Second Street as that area is outside of the area of investigation.
- There is one existing private connection under the northern spur track crossing that cannot be reconnected unless said spur track is excavated. It is unknown whether this connection is active or not and what it may serve.
- All pipe sizes to be used are those that are currently manufactured that most closely meet or exceed the existing main tile size.
- Due to the soil types present, all replacement main tile would be bedded with rock bedding for additional stability and strength.
- The only roots, rocks, and debris in the existing main tile that will be removed are at the areas new tile will be installed.
- It is our understanding of Iowa Code that the removal of hedges, trees, and obstructions is a power given to the Drainage District Trustees through Iowa Code Chapter 468.138 and 468.139.
- Repairs have historically been viewed as not having an impact on jurisdictional wetlands. As such, individual landowners should consult with applicable staff at the Franklin County NRCS office to verify the existence of said jurisdictional wetlands and that there will be no impact on them.
- Per Iowa Code Chapter 468.126, any of the above actions that do not intend to increase capacity would be considered a repair. Per Iowa Code Chapter 468.126.1.g, the right of remonstrance does not apply to the proposed repairs.

- 5.0 **OPINION OF PROBABLE COSTS** – Using the above methods of repair, an itemized list of project quantities and associated opinion of probable construction costs for each option was compiled and are included in Appendix D of this report along with a map showing the location of each distributed cost. A summary of said costs are as follows:

<b><u>METHOD</u></b>	<b><u>DISTRICT COSTS</u></b>	<b><u>ROADWAY CROSSING COST</u></b>	<b><u>RAILROAD RIGHT OF WAY COST</u></b>	<b><u>RAILROAD SPUR CROSSING COST</u></b>	<b><u>TOTAL COST</u></b>
<b>Spot Repair</b>	\$97,807.50	\$110,328.13	\$301,875.00	\$157,406.25	\$667,416.88
<b>Full Tile Replacement</b>	\$192,567.50	\$110,328.13	\$301,875.00	\$157,406.25	\$762,176.88
<b>Rerouted Tile Replacement</b>	\$248,845.63	\$170,703.13	\$176,381.25	\$80,356.25	\$676,286.25

It should be noted that said costs include materials, labor, and equipment supplied by the contractor to complete the necessary repair and includes applicable engineering, construction observation, and project administration fees by Clapsaddle Garber Associates. However, said costs do not include any interest, legal fees, county administrative fees, crop damages, other damages, previous repairs, engineering fees to date, or reclassification fees (if applicable). As always, all costs shown are the opinions of Clapsaddle Garber Associates based on previous lettings on other projects. Said costs are just a guideline and are not a guarantee of actual costs.

- 6.0 **OWNERSHIP AND CLASSIFICATIONS** – Any and all information concerning ownership of lands and classifications of said lands within Subdistrict No. 1 of Drainage District No. 9 can be obtained from the Franklin County Auditor's office.

It should be noted that Iowa Code Chapter 468.65 states "When, after a drainage . . . district has been established . . ." and ". . . a repair . . . has become necessary, the board may consider whether the existing assessments are equitable as a basis for payment of the expense of . . . making the repair . . ." and "If they find the same to be inequitable in any particular . . . they shall . . . order a reclassification . . ." Based on this, it is our opinion that a reclassification may be required if the Spot Tile Replacement or Full Tile Replacement options were to move forward. If the Rerouted Tile Replacement option were to move forward, it is our opinion that a reclassification would be required as part of the existing main would become a lateral and a rerouted main would be installed.



- 7.0 **RECOMMENDATIONS** – There is a definite need to perform one of the above-mentioned repairs. The repair would remove the current restrictions in the main tile and extend the lifespan of the same. Therefore, it is recommended that the Franklin County Board of Supervisors, acting as District Trustees should take action to accomplish the following:
- Approve the Engineer's Report as prepared by Clapsaddle-Garber Associates.
  - Seek legal counsel opinion regarding who is allocated the cost of railroad spur crossing.
  - Hold the required hearing on the proposed repair.
  - Adopt one of the recommendations of the Engineer's Report.
  - If the Rerouted Tile Replacement option is selected, adjust the drainage district boundary by annexing additional lands into the drainage district on the east.
  - Determine if the private tile connections on the south side of County Highway C55 provide drainage to lands outside the existing drainage district boundary. If so, either adjust the drainage district boundary by annexing additional lands into the drainage district on the south or plug the private tile connections so that they do not use drainage district facilities.
  - Direct Clapsaddle-Garber Associates to prepare plans and specifications for the proposed repair.
  - Direct Clapsaddle-Garber Associates to proceed with receiving bids from interested contractors.
  - Award contract to the lowest responsible contractor.
  - If desired or required by Iowa Code, proceed with reclassification proceedings.

## App. A

## Drainage District:

9 Sub 1

## Investigation Summary:

Landowners in SE¼ Section 6, Township 90 North, Range 20 West reported water boiling up into the street at intersection of Railroad Street and Main Street in Bradford. To investigate situation, performed following actions (reference map for locations and dates):

- Excavated at existing intake on south side of 1<sup>st</sup> Street east of Railroad Street and found 12" VCP district tile ½ full with slow flowing water. Tile has heavy roots and grease (from sewage discharges) restricting flow. Replaced tile that was removed.
- Excavated at point #30 on west side of railroad tracks north of coop spur track and found 14" VCP district tile ½ full with slow flowing water. Tile is cracked, but round.
  - Performed 270' of CCTV inspection upstream and found following:
    - 13 offset joints
    - 13 offset joints with void or soil visible
    - 2 chipped pipe
    - 1 protruding tile connection
    - Crossing at UPRR is steel pipe, but tile is about ¾ full of rock (including railroad ballast in flowline)
    - Depression is visible at ground surface on east side of UPRR
    - CCTV could not continue due to rock in flowline
  - Performed 536' of CCTV inspection downstream and found following:
    - 21 offset joints
    - 25 offset joints with void or soil visible
    - 1 chipped pipe
    - 2 holes/broken pipe previously repaired with tile batts
    - 6 locations with rock/debris in flowline
    - 3 locations with egg shaped pipe
    - 1 location with large amount of roots
    - CCTV could not continue due to roots in flowline

Replaced tile that was removed. Also excavated at location of roots and found 15" VCP district tile. Removed as many roots as possible and replaced tile that was removed (some roots are still in place).

- Excavated at point #84 (existing intake in field) on east side of railroad tracks south of County Highway C55 and found 15" VCP district tile ¼ full with slow flowing water. Tile is cracked, but round.
  - Performed 775' of CCTV inspection upstream and found following:
    - 9 offset joints
    - 9 offset joints with void or soil visible
    - 7 locations with rock/debris in flowline
    - 6 locations with egg shaped pipe
    - 1 location with 'V'ed top pipe
    - CCTV could not continue due to debris/rock in flowline

Replaced tile that was removed with dual wall HDPE.

- Excavated at point #101 on east side of railroad tracks south of County Highway C55 and found 15" VCP district tile ¼ full with slow flowing water. Tile is cracked, but round.





- o Performed 151' of CCTV inspection upstream and found following:

- 4 offset joints with void or soil visible
- 1 location with rock/debris in flowline
- 3 holes/broken pipe previously repaired with tile batts
- 3 locations with egg shaped pipe
- 1 previous repair with single wall HDPE
- 1 previous repair with dual wall HDPE
- 1 location of previous repair with engineering fabric restricting the flow in the tile
- CCTV could not continue due to debris/rock in flowline

Replaced tile that was removed with dual wall HDPE and fabric wrapped joints. Also excavated at location of engineering fabric restricting the flow and removed the engineering fabric.

- Excavated at point #210 on east side of railroad tracks just south of County Highway C55 and found 15" VCP district tile ½ full with slow flowing water. Tile is cracked, slightly egg-shaped, and ¼ full of rock/debris.

- o Jet cleaned repeatedly upstream, performed 587' of CCTV inspection upstream and found following:

- 13 offset joints
- 12 offset joints with void or soil visible
- 3 locations with rock/debris in flowline
- 3 locations with egg shaped pipe
- 5 locations with 'V'ed top pipe
- 1 protruding tile connection
- 1 location with top of tile missing
- CCTV could not continue due to broken tile in flowline

Replaced tile that was removed with fabric wrapped joints.

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

83.5 hours Workman	21.5 hours Rubber Tire Backhoe	7 hours Mini Excavator
7 hours Jet and Vac Truck	2319' Televising	Engineering Fabric
5' of 15" Dual Wall HDPE	4.5' of 6" Dual Wall HDPE	2 Factory HDPE Bands
2 Factory HDPE Internal Couplers		

### Additional Actions Recommended:

Based on the above, it is obvious that portions of the district tile are at the end of their useful life and others are restricted by outside influences (i.e. tree roots and sanitary discharges). Based on this, I would recommend either of the following:

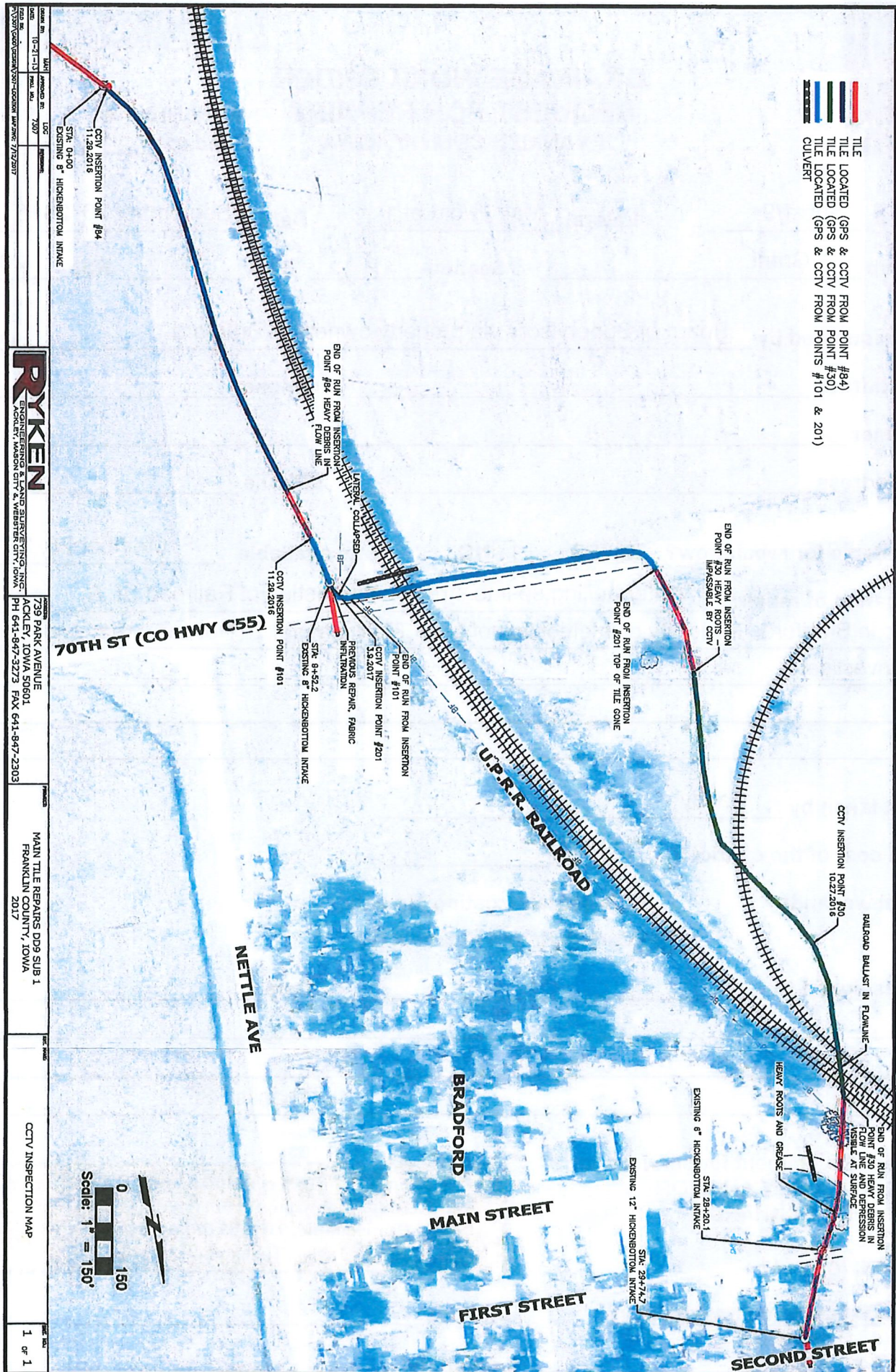
1. Repair the above mentioned highlighted issues (including tree removal) on the district tile and jet clean the areas with debris.  
OR
2. Replace the entire district tile along its current route or a different route to avoid railroad crossings.

Based on the above, the cost for either option would be well over \$50,000 and both options have pros and cons. Either way, the cost is high enough that a hearing and engineering report would be required for said repair. It should also be noted that all of the district tile had CCTV inspection performed on it.





- TILE
- TILE LOCATED (GPS & CCTV FROM POINT #84)
- TILE LOCATED (GPS & CCTV FROM POINT #30)
- TILE LOCATED (GPS & CCTV FROM POINTS #101 & 201)
- CULVERT



DATE	10-21-17	PROJECT	739 PARK AVENUE	PROJECT	MAIN TILE REPAIRS DD9 SUB 1	DATE	1 OF 1
CLIENT	ACKLEY, IOWA 50601	PROJECT	ACKLEY, IOWA 50601	PROJECT	FRANKLIN COUNTY, IOWA	DATE	
PROJECT NO.	PH 641-847-3273	PROJECT	PH 641-847-3273	PROJECT	FRANKLIN COUNTY, IOWA	DATE	
PROJECT NO.	PH 641-847-3273	PROJECT	PH 641-847-3273	PROJECT	FRANKLIN COUNTY, IOWA	DATE	
PROJECT NO.	PH 641-847-3273	PROJECT	PH 641-847-3273	PROJECT	FRANKLIN COUNTY, IOWA	DATE	



**RYKEN**  
ENGINEERING & LAND SURVEYING, INC.  
ACKLEY, IOWA 50601  
PH 641-847-3273 FAX 641-847-2303

CCTV INSPECTION MAP





Warrant #

**DRAINAGE WORK ORDER  
REQUEST FOR REPAIRS  
FRANKLIN COUNTY, IOWA**

Work Order #: 36  
Fund #: 51170

District # Sub 1/9 Lateral Main &/or Lat 1 Date September 26, 2016  
Township Grant Section 6 Twp 90 Rge 20

Repair requested by Board of Supervisors via property owners in Bradford

Address \_\_\_\_\_ Phone \_\_\_\_\_

Landowner \_\_\_\_\_

Address \_\_\_\_\_ Phone \_\_\_\_\_

Site available for repair now? ☒ YES ☐ NO Date available September 26, 2016

Identification of repair: Water boiling up into street - intersection of Railroad St. &  
Main St. in Bradford. In vicinity of intersection of Main Tile & Lateral 1. Not sure what's going on -  
please investigate!

Request taken by Sandy

Original cost of the district \$ 2141.00

Potential wetlands? ☐ YES--Repair existing tile only  
☒ NO--Repair and maintain tile

Repair assigned to \_\_\_\_\_ Date \_\_\_\_\_

Thanks!! SE

Please send statement for services to:  
FRANKLIN COUNTY AUDITOR  
ATTN: SANDY ECKHARDT  
PO BOX 26  
HAMPTON, IA 50441

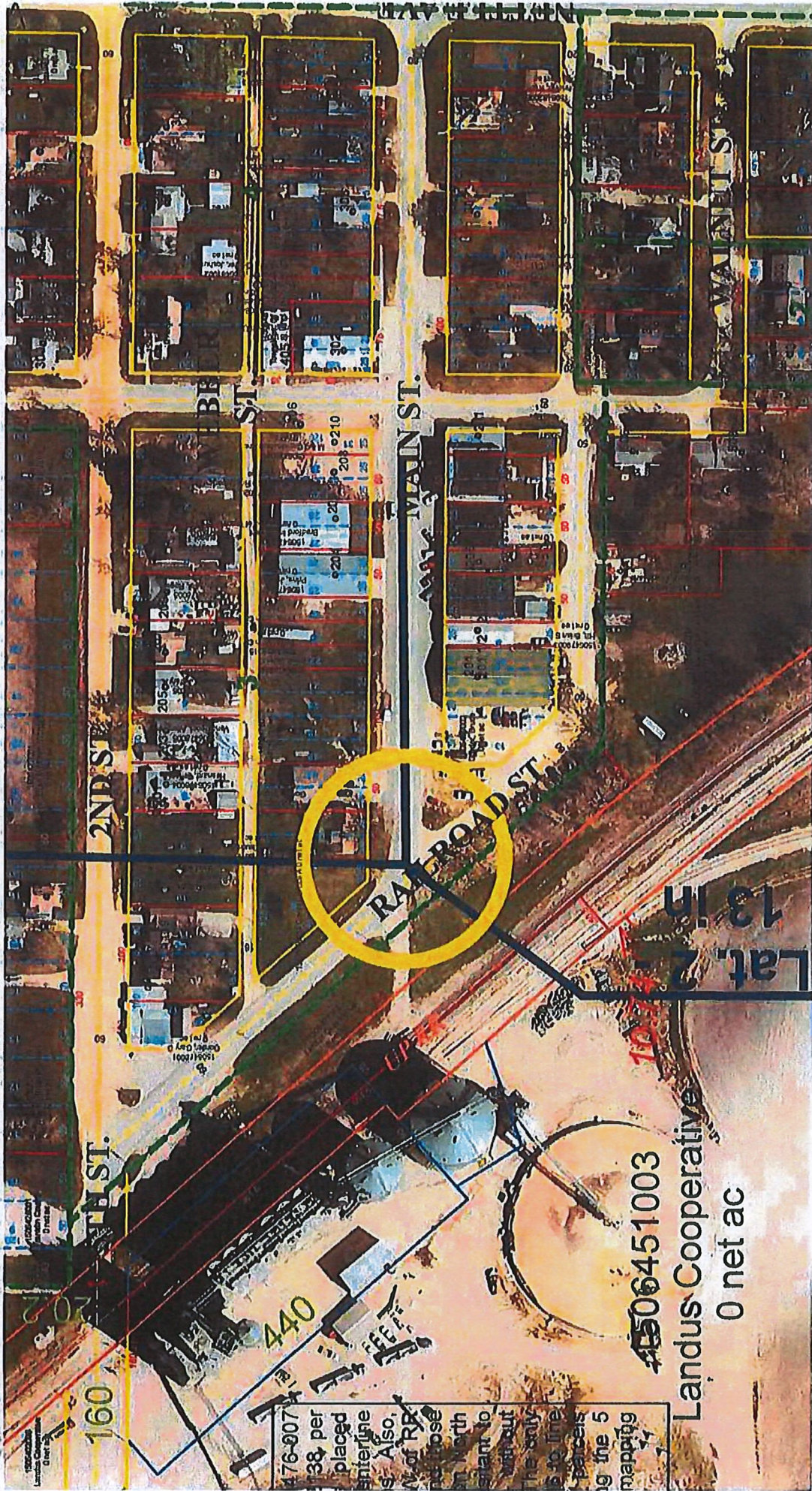
Email: [seckhardt@co.franklin.ia.us](mailto:seckhardt@co.franklin.ia.us)  
Phone: (641) 456-5622  
Fax: (641) 456-6001

Please include the GPS coordinates of the location of the  
repair on your bill to Franklin County  
(For example, 93°18'39.67 W 42°39'31.7 N)  
Thank you!!

Latitude: \_\_\_\_\_

Longitude: \_\_\_\_\_





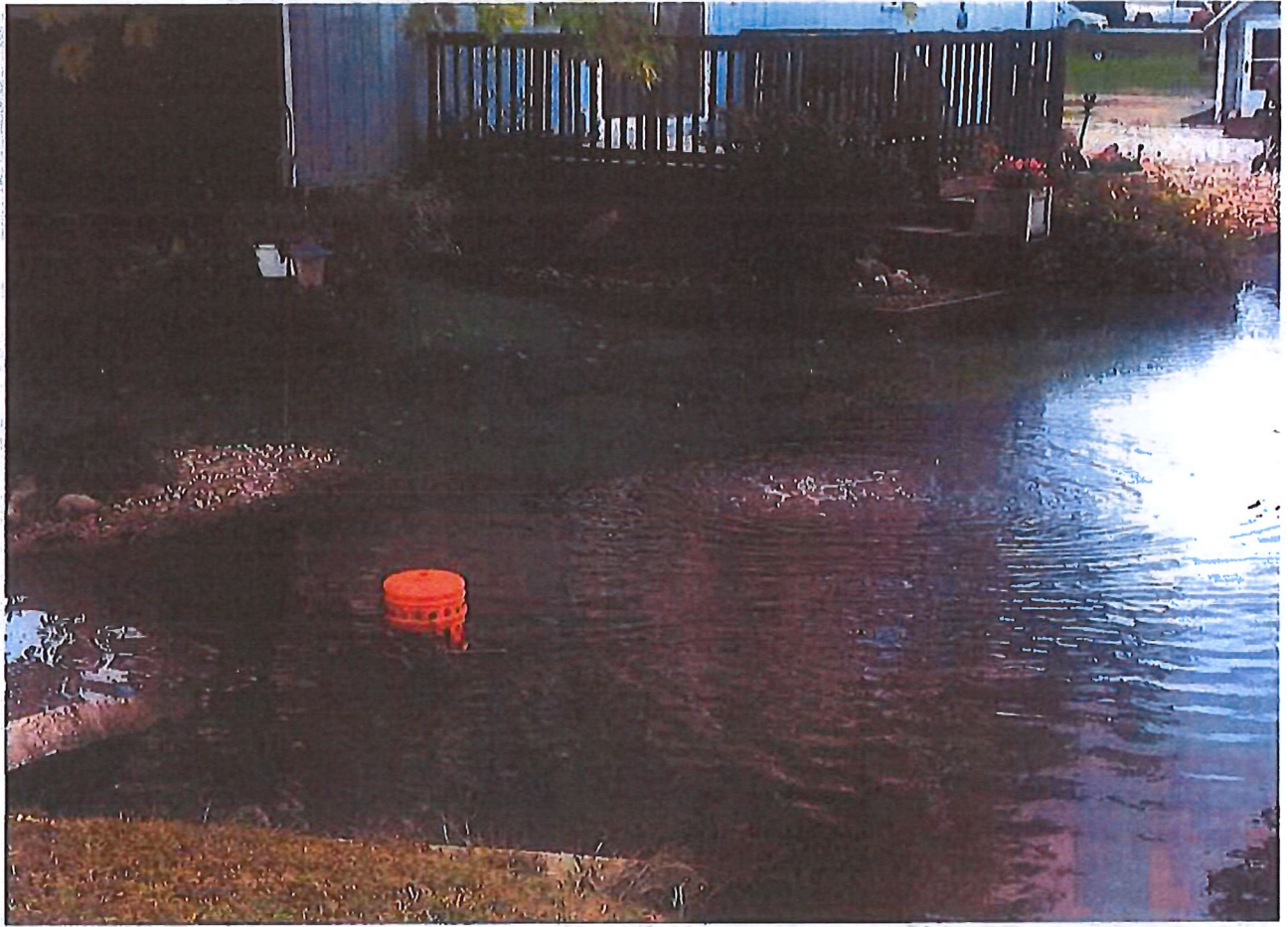
476-007  
38 per  
placed  
entire  
s. Also.  
N. of RR  
not pose  
in North  
want to  
without  
The only  
5.0 line  
parcels  
g the 5  
mapping

4506451003

Landus Cooperative

0 net ac





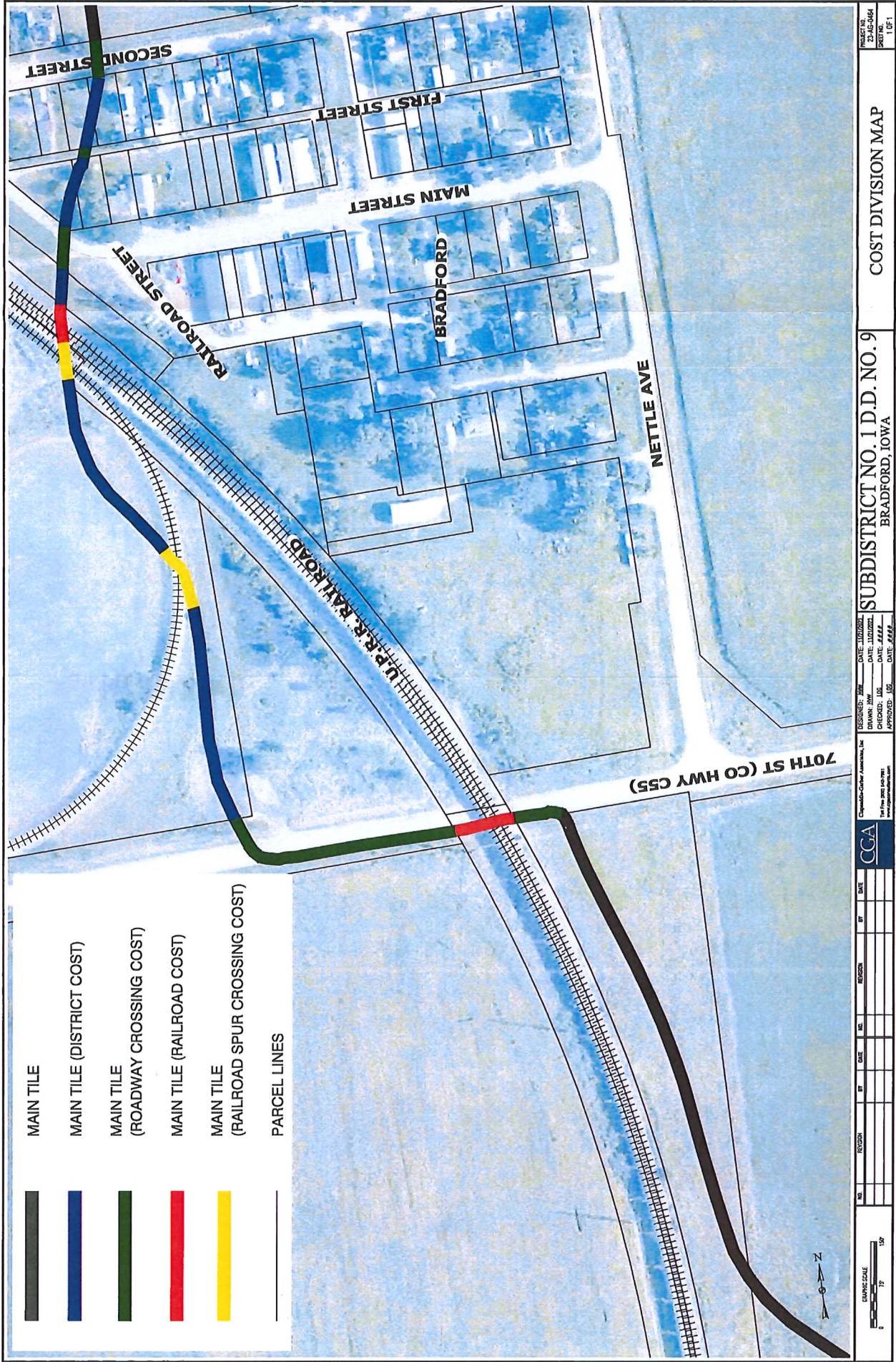


## App. B



App. C





PROJECT NO. 22-AS-004		COST DIVISION MAP	
SUBDISTRICT NO. 1 D.D. NO. 9		BRADFORD, IOWA	
DESIGNED BY	DATE 11/02/02	CHECKED BY	DATE 11/02/02
APPROVED BY	DATE 11/02/02	APPROVED BY	DATE 11/02/02

CCG

GRAPHIC SCALE  
0 75 150



## App. D



By: HAV  
Date: 11/15/2023  
Checked By: LOG  
Date: 11/28/2023

**Engineer's Opinion of Probable Construction Cost**  
**Project: Drainage District #9 Sub. District #1 Main Tile Repairs**  
**Location: Sections 6 and 7, T90N, R20W, Franklin County, Iowa**

Full Tile Replacement

ITEM #	DESCRIPTION	Unit Cost	Units	Quantity	Units	Total Cost
<b>CONSTRUCTION COSTS</b>						
200	15" POLYPROPYLENE OR RCP TILE	\$ 70.00	LF	1387	LF	\$ 97,090.00
201	CONCRETE COLLAR	\$ 1,000.00	EA	2	EA	\$ 2,000.00
202	EXISTING TILE REMOVAL	\$ 10.00	LF	1387	LF	\$ 13,870.00
203	PERMANENT SEEDING AND WARRANTY	\$ 4,000.00	LS	1	LS	\$ 4,000.00
204	TREE REMOVAL	\$ 5,000.00	LS	1	LS	\$ 5,000.00
205	PRIVATE TILE CONNECTIONS	\$ 800.00	EA	15	EA	\$ 12,000.00
<b>CONSTRUCTION SUBTOTAL</b>						<b>\$ 133,960.00</b>
Contingency (15%)						\$ 20,094.00
Engr. Cost (25%)						\$ 38,513.50
<b>CONSTRUCTION TOTAL</b>						<b>\$ 192,567.50</b>
<b>ROADWAY ITEMS</b>						
205	SEEDING (ROAD CROSSINGS)	\$ 2,000.00	LS	1	LS	\$ 2,000.00
206	28" JACK & BORE (C55 CROSSING)	\$ 700.00	LF	60	LF	\$ 42,000.00
207	ABANDON C55 CROSSING	\$ 100.00	LF	60	LF	\$ 6,000.00
208	15" POLYPROPYLENE OR RCP TILE (RAILROAD/MAIN AND 1ST)	\$ 70.00	LF	55	LF	\$ 3,850.00
209	EXISTING TILE REMOVAL	\$ 20.00	LF	55	LF	\$ 1,100.00
210	ACC REMOVAL AND REPLACEMENT (RAILROAD/MAIN)	\$ 200.00	SY	65	SY	\$ 13,000.00
211	GRAVEL REMOVAL AND REPLACEMENT (1ST)	\$ 60.00	SY	30	SY	\$ 1,800.00
212	TRAFFIC CONTROL	\$ 5,000.00	EA	1	EA	\$ 5,000.00
213	CONCRETE COLLAR	\$ 1,000.00	EA	2	EA	\$ 2,000.00
<b>CONSTRUCTION SUBTOTAL</b>						<b>\$ 76,750.00</b>
Contingency (15%)						\$ 11,512.50
Engr. Cost (25%)						\$ 22,065.63
<b>CONSTRUCTION TOTAL</b>						<b>\$ 110,328.13</b>
<b>RAILROAD ITEMS</b>						
214	26" JACK & BORE (SOUTH UPRR)	\$ 800.00	LF	110	LF	\$ 88,000.00
215	26" JACK & BORE (NORTH UPRR)	\$ 800.00	LF	100	LF	\$ 80,000.00
216	ABANDON RAILROAD CROSSINGS	\$ 100.00	LF	200	LF	\$ 20,000.00
217	15" POLYPROPYLENE OR RCP TILE	\$ 80.00	LF	180	LF	\$ 14,400.00
218	EXISTING TILE REMOVAL	\$ 20.00	LF	180	LF	\$ 3,600.00
219	CONCRETE COLLAR	\$ 1,000.00	EA	4	EA	\$ 4,000.00
<b>CONSTRUCTION SUBTOTAL</b>						<b>\$ 210,000.00</b>
Contingency (15%)						\$ 31,500.00
Engr. Cost (25%)						\$ 60,375.00
<b>CONSTRUCTION TOTAL</b>						<b>\$ 301,875.00</b>
<b>PRIVATE ENTITY RAILROAD COSTS</b>						
220	26" JACK & BORE (NORTH SPUR TRACK)	\$ 800.00	LF	50	LF	\$ 40,000.00
221	26" JACK & BORE (SOUTH SPUR TRACK)	\$ 800.00	LF	55	LF	\$ 44,000.00
222	15" POLYPROPYLENE OR RCP TILE	\$ 80.00	LF	110	LF	\$ 8,800.00
223	EXISTING TILE REMOVAL	\$ 20.00	LF	110	LF	\$ 2,200.00
224	CONCRETE COLLAR	\$ 1,000.00	EA	4	EA	\$ 4,000.00
225	ABANDON RAILROAD CROSSING	\$ 100.00	LF	105	LF	\$ 10,500.00
<b>CONSTRUCTION SUBTOTAL</b>						<b>\$ 109,500.00</b>
Contingency (15%)						\$ 16,425.00
Engr. Cost (25%)						\$ 31,481.25
<b>CONSTRUCTION TOTAL</b>						<b>\$ 157,406.25</b>

Note: Per Iowa Code, road crossings (highlighted pink) are not typically a district expense

Note: Per Iowa Code, railroad crossings (highlighted green) are not typically a district expense

Note: Items highlighted in orange are railroad spur crossing and not clearly defined in Iowa code with regards to responsibility



**Engineer's Opinion of Probable Construction Cost**  
**Project: Drainage District #9 Sub, District #1 Main Tile Repairs**  
**Location: Sections 6 and 7, T90N, R20W, Franklin County, Iowa**

Spot Tile Replacement

ITEM #	DESCRIPTION	Unit Cost	Units	Quantity	Units	Total Cost
<b>CONSTRUCTION COSTS</b>						
100	15" POLYPROPYLENE OR RCP TILE	\$ 70.00	LF	313	LF	\$ 21,910.00
101	CONCRETE COLLAR	\$ 1,000.00	EA	22	EA	\$ 22,000.00
102	EXISTING TILE REMOVAL	\$ 10.00	LF	313	LF	\$ 3,130.00
103	PERMANENT SEEDING AND WARRANTY	\$ 4,000.00	LS	1	LS	\$ 4,000.00
104	TREE REMOVAL	\$ 5,000.00	LS	1	LS	\$ 5,000.00
105	PRIVATE TILE CONNECTIONS	\$ 800.00	EA	15	EA	\$ 12,000.00
<b>CONSTRUCTION SUBTOTAL</b>						<b>\$ 68,040.00</b>
Contingency (15%)						\$ 10,206.00
Engr. Cost (25%)						\$ 19,561.50
<b>CONSTRUCTION TOTAL</b>						<b>\$ 97,807.50</b>
<b>ROADWAY ITEMS</b>						
105	SEEDING (ROAD CROSSINGS)	\$ 2,000.00	LS	1	LS	\$ 2,000.00
106	26" JACK & BORE (C55 CROSSING)	\$ 700.00	LF	60	LF	\$ 42,000.00
107	ABANDON C55 CROSSING	\$ 100.00	LF	60	LF	\$ 6,000.00
108	15" POLYPROPYLENE OR RCP TILE (RAILROAD/MAIN AND 1ST)	\$ 70.00	LF	55	LF	\$ 3,850.00
109	EXISTING TILE REMOVAL	\$ 20.00	LF	55	LF	\$ 1,100.00
110	ACC REMOVAL AND REPLACEMENT (RAILROAD/MAIN)	\$ 200.00	SY	65	SY	\$ 13,000.00
111	GRAVEL REMOVAL AND REPLACEMENT (1ST)	\$ 60.00	SY	30	SY	\$ 1,800.00
112	TRAFFIC CONTROL	\$ 5,000.00	EA	1	EA	\$ 5,000.00
113	CONCRETE COLLAR	\$ 1,000.00	EA	2	EA	\$ 2,000.00
<b>CONSTRUCTION SUBTOTAL</b>						<b>\$ 76,760.00</b>
Contingency (15%)						\$ 11,512.50
Engr. Cost (25%)						\$ 22,065.63
<b>CONSTRUCTION TOTAL</b>						<b>\$ 110,328.13</b>
<b>RAILROAD ITEMS</b>						
114	26" JACK & BORE (SOUTH UPRR)	\$ 800.00	LF	110	LF	\$ 88,000.00
115	26" JACK & BORE (NORTH UPRR)	\$ 800.00	LF	100	LF	\$ 80,000.00
116	ABANDON RAILROAD CROSSINGS	\$ 100.00	LF	200	LF	\$ 20,000.00
117	15" POLYPROPYLENE OR RCP TILE	\$ 20.00	LF	180	LF	\$ 3,600.00
118	EXISTING TILE REMOVAL	\$ 20.00	LF	180	LF	\$ 3,600.00
119	CONCRETE COLLAR	\$ 1,000.00	EA	4	EA	\$ 4,000.00
<b>CONSTRUCTION SUBTOTAL</b>						<b>\$ 210,000.00</b>
Contingency (15%)						\$ 31,500.00
Engr. Cost (25%)						\$ 60,375.00
<b>CONSTRUCTION TOTAL</b>						<b>\$ 301,875.00</b>
<b>PRIVATE ENTITY RAILROAD COSTS</b>						
120	26" JACK & BORE (NORTH SPUR TRACK)	\$ 800.00	LF	50	LF	\$ 40,000.00
121	26" JACK & BORE (SOUTH SPUR TRACK)	\$ 800.00	LF	55	LF	\$ 44,000.00
122	15" POLYPROPYLENE OR RCP TILE	\$ 80.00	LF	110	LF	\$ 8,800.00
123	EXISTING TILE REMOVAL	\$ 20.00	LF	110	LF	\$ 2,200.00
124	CONCRETE COLLAR	\$ 1,000.00	EA	4	EA	\$ 4,000.00
125	ABANDON RAILROAD CROSSING	\$ 100.00	LF	105	LF	\$ 10,500.00
<b>CONSTRUCTION SUBTOTAL</b>						<b>\$ 109,500.00</b>
Contingency (15%)						\$ 16,425.00
Engr. Cost (25%)						\$ 31,481.25
<b>CONSTRUCTION TOTAL</b>						<b>\$ 157,406.25</b>

Note: Per Iowa Code, road crossings (highlighted pink) are not typically a district expense

Note: Per Iowa Code, railroad crossings (highlighted green) are not typically a district expense

Note: Items highlighted in orange are railroad spur crossing and not clearly defined in Iowa code with regards to responsibility





By: HAV  
Date: 11/15/2023  
Checked By: LOG  
Date: 11/28/2023

**Engineer's Opinion of Probable Construction Cost**  
**Project: Drainage District #9 Sub. District #1 Main Tile Repairs**  
**Location: Sections 6 and 7, T90N, R20W, Franklin County, Iowa**

Perouted Tile Replacement

ITEM #	DESCRIPTION	Unit Cost	Units	Quantity	Units	Total Cost
<b>CONSTRUCTION COSTS</b>						
301	15" POLYPROPYLENE OR RCP TILE	\$ 70.00	LF	1524	LF	\$ 106,680.00
302	CONCRETE COLLAR	\$ 1,000.00	EA	22	EA	\$ 22,000.00
303	EXISTING TILE REMOVAL	\$ 10.00	LF	343	LF	\$ 3,430.00
304	PERMANENT SEEDING AND WARRANTY	\$ 5,000.00	LS	1	LS	\$ 5,000.00
305	TREE REMOVAL	\$ 20,000.00	LS	1	LS	\$ 20,000.00
306	PRIVATE TILE CONNECTIONS	\$ 800.00	EA	20	EA	\$ 16,000.00
<b>CONSTRUCTION SUBTOTAL</b>						<b>\$ 173,110.00</b>
Contingency (15%)						\$ 25,966.50
Engr. Cost (25%)						\$ 49,769.13
<b>CONSTRUCTION TOTAL</b>						<b>\$ 248,845.63</b>
<b>ROADWAY ITEMS</b>						
307	PERMANENT SEEDING AND WARRANTY	\$ 2,000.00	LS	1	LS	\$ 2,000.00
308	26" JACK & BORE (C55 CROSSING)	\$ 700.00	LF	120	LF	\$ 84,000.00
309	ABANDON C55 CROSSING	\$ 100.00	LF	60	LF	\$ 6,000.00
310	15" POLYPROPYLENE OR RCP TILE (RAILROAD/MAIN AND 1ST)	\$ 70.00	LF	55	LF	\$ 3,850.00
311	EXISTING TILE REMOVAL	\$ 20.00	LF	55	LF	\$ 1,100.00
312	ACC REMOVAL AND REPLACEMENT (RAILROAD/MAIN)	\$ 200.00	SY	65	SY	\$ 13,000.00
313	TRAFFIC CONTROL	\$ 5,000.00	EA	1	EA	\$ 5,000.00
314	CONCRETE COLLAR	\$ 1,000.00	EA	2	EA	\$ 2,000.00
315	GRAVEL REMOVAL AND REPLACEMENT (1ST)	\$ 60.00	SY	30	SY	\$ 1,800.00
<b>CONSTRUCTION SUBTOTAL</b>						<b>\$ 118,750.00</b>
Contingency (15%)						\$ 17,812.50
Engr. Cost (25%)						\$ 34,140.63
<b>CONSTRUCTION TOTAL</b>						<b>\$ 170,703.13</b>
<b>RAILROAD ITEMS</b>						
315	26" JACK & BORE (SOUTH UPPER)	\$ 800.00	LF	110	LF	\$ 88,000.00
316	ABANDON RAILROAD CROSSINGS	\$ 100.00	LF	185	LF	\$ 18,500.00
317	15" POLYPROPYLENE OR RCP TILE	\$ 80.00	LF	130	LF	\$ 10,400.00
318	CONCRETE COLLAR	\$ 1,000.00	EA	2	EA	\$ 2,000.00
319	EXISTING TILE REMOVAL	\$ 10.00	LF	130	LF	\$ 1,300.00
<b>CONSTRUCTION SUBTOTAL</b>						<b>\$ 122,700.00</b>
Contingency (15%)						\$ 18,405.00
Engr. Cost (25%)						\$ 35,276.25
<b>CONSTRUCTION TOTAL</b>						<b>\$ 176,381.25</b>
<b>PRIVATE ENTITY RAILROAD COSTS</b>						
320	26" JACK & BORE (SOUTH SPUR TRACK)	\$ 800.00	LF	55	LF	\$ 44,000.00
321	15" POLYPROPYLENE OR RCP TILE	\$ 80.00	LF	110	LF	\$ 8,800.00
322	CONCRETE COLLAR	\$ 1,000.00	EA	2	EA	\$ 2,000.00
323	EXISTING TILE REMOVAL	\$ 10.00	LF	110	LF	\$ 1,100.00
<b>CONSTRUCTION SUBTOTAL</b>						<b>\$ 55,900.00</b>
Contingency (15%)						\$ 8,385.00
Engr. Cost (25%)						\$ 16,071.25
<b>CONSTRUCTION TOTAL</b>						<b>\$ 80,356.25</b>

Note: Per Iowa Code, road crossings (highlighted pink) are not typically a district expense

Note: Per Iowa Code, railroad crossings (highlighted green) are not typically a district expense

Note: Items highlighted in orange are railroad spur crossing and not clearly defined in Iowa code with regards to responsibility