

HARDIN COUNTY, IOWA

2016



**ENGINEER'S
REPORT ON
REPAIR TO
LATERAL 2 OF
DRAINAGE
DISTRICT 8
HARDIN 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, P.E.

DATE

LICENSE NUMBER: 15745
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2016
PAGES OR SHEETS COVERED BY THIS SEAL:
SHOWN ON TABLE OF CONTENTS

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Engineer's Report on Repair to Lateral 2, Drainage District 8, Hardin County, Iowa

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Engineer's Report on Repair to Lateral 2, Drainage District 8, Hardin County, Iowa

1.0 INTRODUCTION

- SCOPE OF WORK – The Hardin County Board of Supervisors, acting as District Trustees, requested Ryken Engineering to investigate and report concerning repairs to the Lateral 2 tile of Drainage District No. 8. This report will investigate the necessity and feasibility of said repair and present an opinion of probable construction costs associated with said repair. At the landowner meeting held on August 31, 2016, the recommend actions shown in the Repair Summary for Work Order Requests #132 (copy included in Appendix A) were discussed and reviewed by the District Trustees. As a result, the District Trustees requested Ryken Engineering to move ahead with preparation of this report.
- LOCATION – The area of investigation included the Lateral 2 tile, located in Section 30, Township 88 North, Range 19 West, Hardin County, Iowa. Specifically, the downstream limit was the Lateral 2 tile outlet at the Main tile located in the SE¼ NW¼ Section 30, approximately ¼ mile east of T Avenue and approximately ½ mile south of County Highway D35. The lateral tile then goes northerly across Section 30 with the upstream limit being just south of County Highway D35 at approximately ¼ mile east of T Avenue near the north line of said Section 30. For reference, a copy of the Investigation Map, showing said limits and the district boundary is included in Appendix B.

2.0 DISTRICT HISTORY – Per the landowner's budgetary requests, the history of the Lateral 2 tile was not compiled or reviewed. The drainage district history for Lateral 2 can be obtained from the Hardin County Auditor's Office.

3.0 INVESTIGATION – See the Repair Summary for Work Order Request #132 (copy included in Appendix A) and Investigation Map (copy included in Appendix B) for the investigation methods, limits and procedures that have been performed on Lateral 2. Per the landowner's budgetary requests, no further discussions concerning the investigation will be presented.

4.0 DISCUSSION AND CONCLUSIONS – Based on the Repair Summary for Work Order Request #132, it is obvious that the installed Lateral 2 tile is in need of repair to flow correctly. The tile is physical in good condition for its age, but there are 3" to 6" tall peaks in the flowline of the Lateral tile that are either due to faulty installation or shifting since the original installation. These peaks have allowed debris and rock to accumulate in the tile flowline. This combined with the flat slope and misaligned joints have reduced the available capacity and the tile does not flow to its original design capacity.

5.0 **REPAIR METHOD** – To repair the existing Lateral 2 tile, the following option is the most straightforward available:

Tile Replacement

- Remove and replace the existing Lateral 2 tile with new tile of equal or comparable size.
- Typically, the replacement tile would be in the same location as the existing tile in order to locate and reconnect private tile. For reference, the route is shown on the Repair Map included in Appendix C.

With the above mentioned repair method, the following should be noted:

- The proposed pipe sizes shown in Appendix D are those that are currently manufactured that most closely meet the current Lateral 2 tile size.
- Repairs have historically been viewed as not having an impact on jurisdictional wetlands. As such, individual landowners should consult with applicable staff at the Hardin 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, the above actions would be considered a repair. As such, Subsection 1, paragraph c of Chapter 468.126 states "If the estimated cost of the repair does not exceed fifty thousand dollars, the board may order the work done without conducting a hearing on the matter. Otherwise, the board shall set a date for a hearing. . ." The opinion of probable construction cost contained in the Opinion of Probable Construction Costs section of this report exceeds said \$50,000 limit. Therefore, it is our understanding that a hearing will be required. It is also our understanding that per Iowa Code Chapter 468.126.1.g, the right of remonstrance does not apply to the proposed repairs.

6.0 **OPINION OF PROBABLE CONSTRUCTION COSTS** – Using the above method of repair, an itemized list of project quantities and associated opinions of probable construction cost for each option was compiled and are included in Appendix D of this report. A summary of said costs are as follows:

<u>METHOD</u>	<u>DRAINAGE COEFF.</u>	<u>TOTAL COST</u>
Tile Replacement (Repair)	Existing	\$ 95,700.00

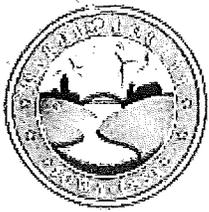
It should be noted that said costs include materials, labor, and equipment supplied by the contractor to complete the necessary repair and includes applicable engineering, construction observation, and project administration fees by Ryken Engineering. However, said costs do not include any interest, 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 opinions of Ryken Engineering based on previous lettings on other projects. Said costs are just a guideline and are not a guarantee of actual costs.

- 7.0 **OWNERSHIP AND CLASSIFICATIONS** – Any and all information concerning ownership of lands and classifications of said lands within Lateral 2 of Drainage District 8 can be obtained from the Hardin 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 repair were to move forward.

- 8.0 **RECOMMENDATIONS** – There is a definite need to perform the repair (mentioned above) to restore the drainage capacity to the original design levels. Therefore, it is recommended that the Hardin County Board of Supervisors, acting as District Trustees, should take action to accomplish the following:

- Approve the Engineer’s Report as prepared by Ryken Engineering.
- Hold the required hearing on the proposed repair.
- Adopt the recommendations of the Engineer’s Report.
- Direct Ryken Engineering to prepare plans and specifications for the proposed repair.
- Direct Ryken Engineering 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.



Drainage Work Order Request For Repair

Hardin County

Date 3/4/2016 Project # _____ Work Order # 132
 District # 122 Lateral 1 Fund # 51137
 Township Clay Section 30 Twp 88 Rge 19 Qtr Sec NW1/4

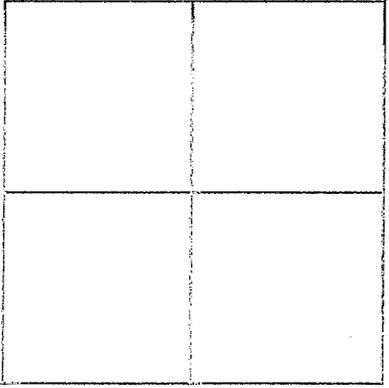
Repair Requested By Dwight Schuneman
 Address _____ Phone (641) 640-0570

Landowner Ray Taylor
 Address _____ Phone _____

Request Taken By Tina Schlemme

Available for Repair Now? Yes No Date Available _____

Problem Description Tile runs NW/SE in SE corner of pond (?Priv or Lat 1 tile). Believes there's a problem there & would like televising done by Williams. Work done last yr to the East on same tile lines in DD 8.



Repair labor, materials and equipment _____

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

Repaired By: _____
 Date: _____

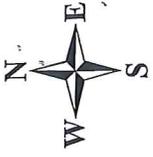
Please send statement for services to:
 Hardin County Auditor's Office
 Attn: Tina Schlemme
 1215 Edgington Ave, Suite 1
 Eldora, IA 50627
 Phone (641) 939-8111
 Fax (641) 939-8245

For Office Use Only

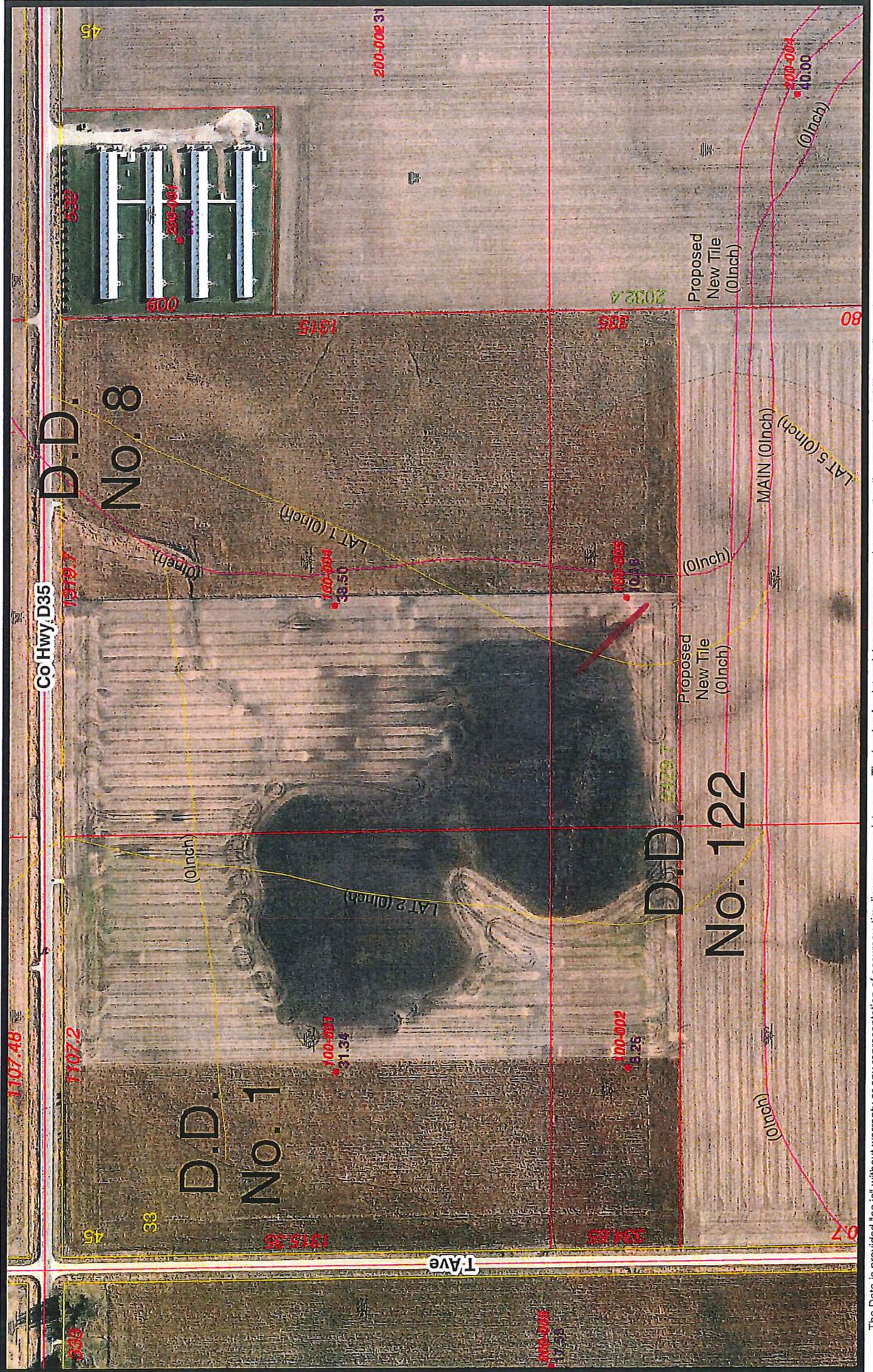
Approved: _____ Date: _____



Hardin County Auditor's Office



Date: 3/4/2016



The Data is provided "as is" without warranty or any representation of accuracy, timeliness or completeness. The burden for determining accuracy, completeness, 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. Digital Orthophotography flown in Spring 2008. Cadastral Data represents land ownership, but does not define it. This Data does not replace a legal survey.

Drainage District:

#8 Lat 2

Repair Summary:

Tenant in the NW¼ of Section 30, Township 88 North, Range 19 West reported slow drainage in southeast corner of ponded area. Visually inspected area and found an intake with moving water in it, but no sign of blocked drainage. District Trustees authorized CCTV inspection and landowner requested that CCTV inspection wait until either crops are harvested or crops drowned out. Arrived on-site with contractor and landowner indicated that there is now a blowout/sinkhole visible in the field at his area of concern.

- Excavated at blowout/sinkhole and found collapsed 15" VCP lateral 2 tile near connection with main tile with slow moving water and debris (rock, silt, broken tile pieces) in flowline. Attempted to televise upstream and downstream in lateral 2 tile, but was unable to do so due to broken VCP and debris.
- Excavated at main tile and found 18" VCP main tile with slow moving water and debris (rock, silt, broken tile pieces) in flowline.
 - Televised downstream for 315'±, but was unable to continue farther due to misaligned joint.
 - Attempted to televise upstream into DD 122 main tile, but was unable to do so due to broken VCP and debris.
- Per District Trustees direction, removed VCP lateral 2 tile (starting at VCP main tile and working upstream) until condition of VCP lateral 2 tile allowed televising. Removed 250'± and televised 500'± upstream in VCP lateral 2 tile, but was unable to continue farther due to debris.
- Moved upstream to just south of south right of way line of County Highway D-35, excavated and found 12" VCP lateral 2 tile.
 - Televised 460'± downstream in VCP lateral 2 tile, but was unable to continue farther due to debris.
 - Attempted to televise upstream and was unable to do so due to utility cable plowed through CMP tile in south right of way of County Highway D-35. After contacting utility company, contractor removed utility line and repaired broken CMP tile with CMP band clamp (to be billed to utility company).
 - Televised upstream for 315'±, but was unable to continue farther due to misaligned joint.

No repairs were performed and trench from removed lateral 2 tile is still open.

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

17.5 hours of Mini Backhoe and Operator

35 hours of Workman

1392' of CCTV Inspection

Additional Actions Recommended:

Based on the above, the following are at issue:

- The 250'± of lateral 2 tile that has been removed needs replaced. However, this length did not have a consistent grade (i.e. several 3" to 6" humps) and a straight grade between the ends of removed tile has only 2"± of fall. Therefore, additional pipe should be removed to provide adequate fall across the length of pipe already removed and to eliminate humps and sags (i.e. debris pockets) in pipe not already removed. To that end, I would recommend replacing existing

VCP lateral 2 tile from the connection with the main tile to County Highway D-35 (1400'±), which would provide 2.5'± of fall.

- The lateral 2 tile upstream of the County Highway D-35 has too much debris to be televised to determine its condition. It needs to be jet/vac cleaned and CCTV inspection performed.
- The DD 8 main tile has many cracks, but is still round except for 1 pipe length. That pipe length needs to be spot repaired.
- The DD 8 main tile has 100'± of debris just downstream of the connection with lateral 2 and needs jet/vac cleaned since much of this debris is rock and will not flush out.
- The DD 122 main tile just upstream of the connection with lateral 2 has too much debris to be televised to determine its condition. It needs to be jet/vac cleaned and CCTV inspection performed.

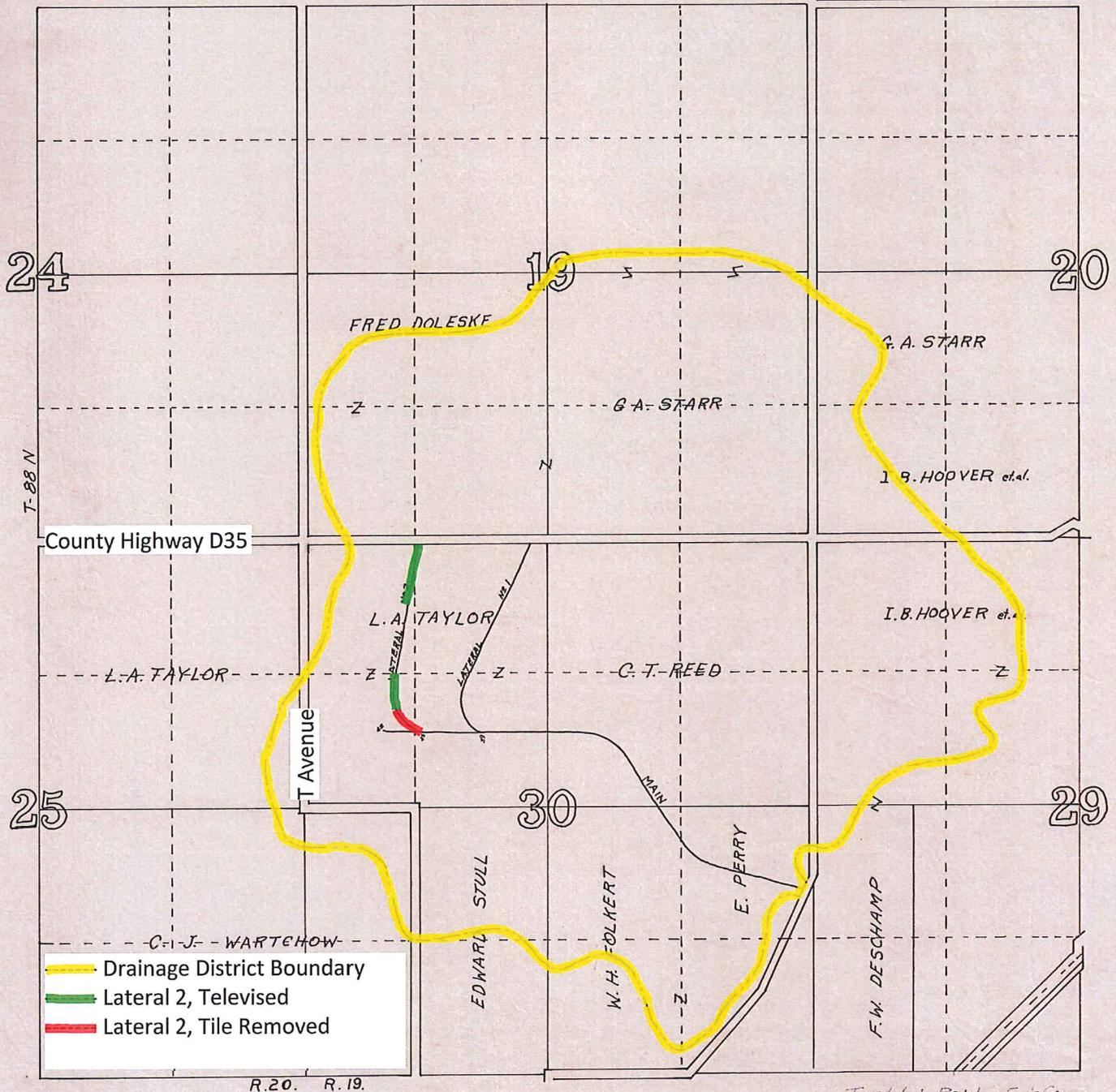
Based on the first item above, the cost would be over \$50,000. This cost is high enough that a hearing and engineering report would be required for said repair. It should also be noted, that no investigation was performed upstream of County Highway D-35 (second item above), so it is unclear at this point if that is a logical point to stop any proposed project or not.

It is my opinion that the third, fourth, and fifth items above should be considered separately from the above mentioned report as they either concern the main tile of DD 8 or the main tile of DD 122.

Crop damage has not been measured at this time as it is unclear how much more crop damage will occur if any of the above actions are taken.

PLAT OF THE HAYDEN DRAINAGE DISTRICT No 8

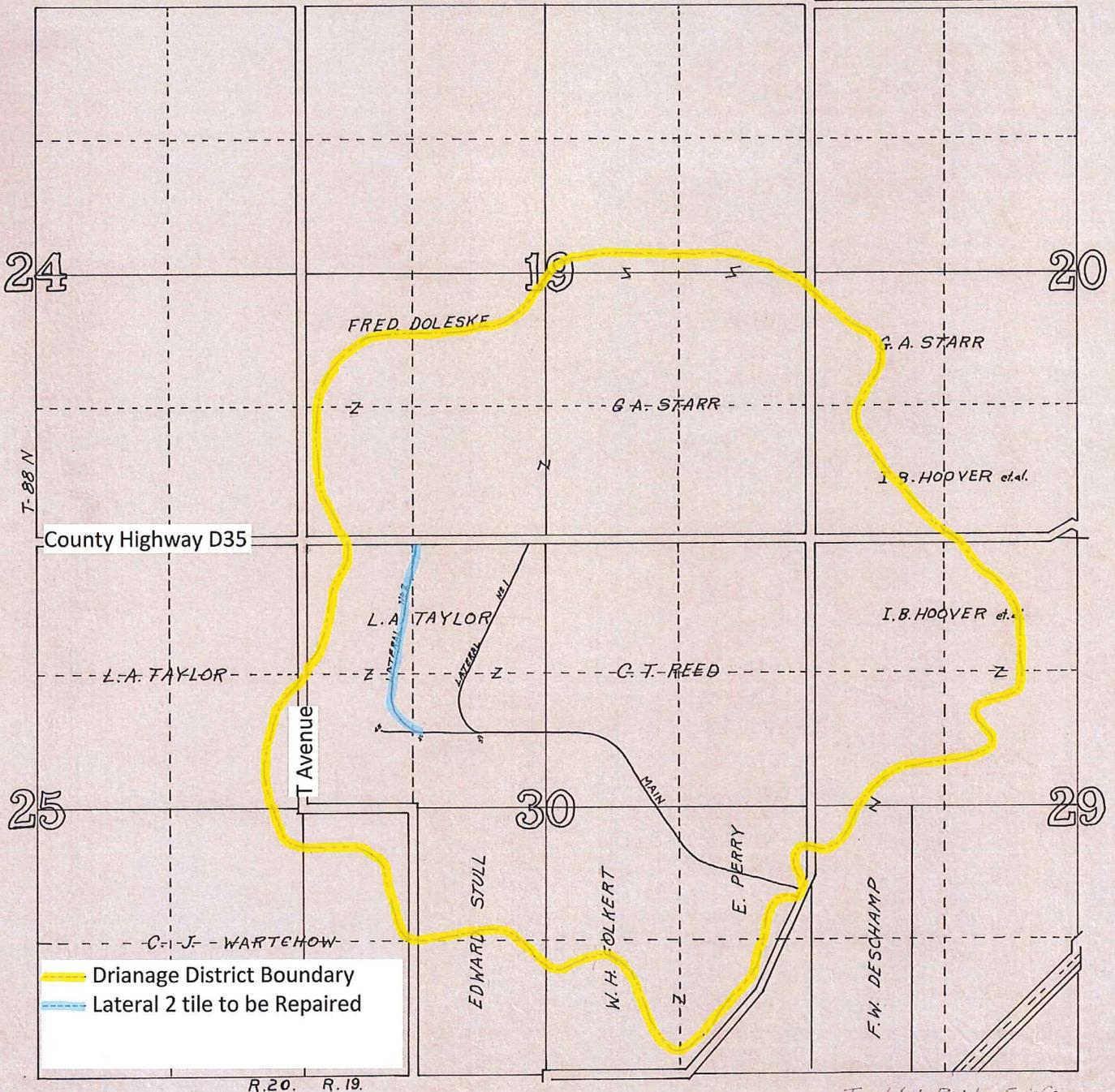
CONTAINING 888 ACRES *C14Y*
1908
SCALE
1 IN. = 600 FT.



Traced by: Reigles Engr. Co.
Feb. 1965 No. 8

PLAT
OF
THE
HAYDEN
DRAINAGE DISTRICT

No 8
CONTAINING 888 ACRES *CLAY*
1908
SCALE
1 IN. = 600 FT.



Traced by: Reigles Engr. Co.
Feb. 1955 No. 8



ENGINEERING & LAND SURVEYING, INC.

By: Z.J.S.
 Date: 9/6/2016
 Checked By: L.O.G.
 Date: 9/15/2016

Engineer's Opinion of Probable Construction Cost

Project: Lateral 2 Repair for D.D. #8

Location: Section 30, T88N, R19W, Hardin County, Iowa

TILE REPLACEMENT	ITEM #	DESCRIPTION	Unit Cost	Units	Quantity	Units	Total Cost	
	CONSTRUCTION COSTS							
	101	15" RCP TILE	\$ 37.00	LF	1000	LF	\$ 37,000.00	
	102	12" RCP TILE	\$ 32.00	LF	400	LF	\$ 12,800.00	
	103	15" X 12" RCP REDUCER	\$ 1,500.00	EA	1	EA	\$ 1,500.00	
	104	CONNECTION WITH MAIN TILE	\$ 1,500.00	EA	1	EA	\$ 1,500.00	
	105	CONCRETE COLLAR	\$ 400.00	EA	10	EA	\$ 4,000.00	
	106	PRIVATE TILE CONNECTIONS	\$ 500.00	EA	9	EA	\$ 4,500.00	
	107	REMOVE EXISTING TILE	\$ 3.00	LF	1400	LF	\$ 4,200.00	
			CONSTRUCTION SUBTOTAL					\$ 65,500.00
		Contingency (10%)					\$ 6,550.00	
		CONSTRUCTION TOTAL					\$ 72,050.00	
		Engr. & Const. Observation (20%)					\$ 14,410.00	
		TOTAL COST					\$ 86,460.00	