

**ENGINEER'S REPORT  
ON REPAIR OR  
IMPROVEMENT TO  
LATERAL 9 AND 9C  
TILES, DIVISION 3,  
DRAINAGE DISTRICT 55  
HARDIN COUNTY**

	<p>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</p> <p><i>Lee O. Gallentine, P.E.</i> LEE O. GALLENITINE, P.E. DATE <i>July 22 2015</i></p> <p>LICENSE NUMBER: 15745 MY LICENSE RENEWAL DATE IS DECEMBER 31, 2016 PAGES OR SHEETS COVERED BY THIS SEAL: SHOWN ON TABLE OF CONTENTS</p>
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**RYKEN**  
ENGINEERING & LAND SURVEYING, INC.

**RECEIVED**  
**JUL 02 2015**  
**HARDIN CO. AUDITOR**

**OFFICE LOCATIONS**

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**Engineer's Report on Repair or Improvement to  
Lateral 9 and 9C Tiles,  
Division 3, Drainage District 55, Hardin County, Iowa**

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- 1916, Aug. 24 & 31 Publication of Notice for hearing on establishment, Drainage District No. 55.
- 1916, Sep. 25 Petition from landowners affected by Lateral 9, Drainage District No. 55, for withdrawal from "county drainage" as they "... decided to have the tiling done ourselves."
- 1916, Oct. 9 Supplement to Engineer's Report was filed in the County Auditor's Office by C. M. Carrel, Engineer. It stated "... Lateral #9, and all its tributaries, should be embraced in the general drainage scheme as it will mean draining of numerous ponds and roads, and I would therefore recommend that it be left in."
- 1916, Oct. 17 Supplement to Engineer's Report was filed in the County Auditor's Office by C. M. Carrel, Engineer. It stated "... property owners situated along, and affected by the proposed Lateral #5 and its tributaries, desire to construct independently, and without cost to balance of the District..." and "The above also applies to that part of...Lateral #9 above Station."
- 1916, Oct. 24 Board of Supervisors approved the Preliminary Engineer's Report and both Supplements thereto.
- 1920, Jul. 20 An Engineer's Report for extension of Drainage District 55 and consolidation with other small districts was filed in the County Auditor's Office as a result of a petition subsequent to the above mentioned 1912 petition. It stated that as a result of the 1912 petition, a "... large amount of Engineering work was done by S. B. Gardner, E.L. Chamberlain, and C. M. Carrel, whose work, and maps are now on file in the Auditor's office." It also stated that as a result of the subsequent petition, "... J. M. Wells from Nevada, was selected as Engineer on preliminary survey, but died before he made the report thereon... W.S. Porter, the duly appointed Engineer by the resolution of the Board of Supervisors entered on April 5, 1920... completed said preliminary survey and made his report thereon, which is now on file in the Auditor's Office..." and "... that the E.L. Chamberlain report be accepted and adopted... " In said 1920 report, no mention is made of the length, size, or cost of Lateral 9C, but Lateral 9 is called for to be 4,700 feet long with diameters from 22 inch to 18 inch at a cost of \$7,001.
- 1920, Aug. 9 Appointment of Commission to inspect and classify land in Drainage District 55.
- 1920, Aug. 26 & Sep. 2 Publication of Notice to Contractors, Drainage District No. 55 for the construction of the open work in drainage district.
- 1920, Dec. 9 Publication of Notice of Assessment of Benefits, Drainage District No. 55.
- 1922, Dec. 12 Appointment of J.R. Maher as Drainage Engineer for construction of Drainage District No. 55.
- 1925, Oct. 16 - 23 Publication of Notice of Assessment of Benefits, Drainage District No. 55, Division 3, Extension 1.
- 1944, Sep. Plat of Mutual Drainage District by H.A. Little Engineer. Said plat showed installation of a new tile system combined with conversion of

existing tile systems to allow land in Sections 3, 10, and 11 to drain across the drainage district boundary and discharge in Section 15.

1980, Dec. 19 Appointment of Commission to inspect land in Drainage District 55, Division 3.

1981, Sep. 24 Reclassification Report for Drainage District No. 55, Division 3 was filed.

1981, Nov. 19 Publication of Notice of Reclassification of Drainage District No. 55, Division 3.

1981, Dec. 7 Board of Supervisors approved the Reclassification Report.

1991, Jul. 26 Letter from Hollis Ryken, requesting confirmation from the Board of Supervisors that Lateral 9 is part of the Drainage District. Said request was a result of a tile repair request located in Section 2.

1991, Jul. 31 Discussion of request for repair of broken Lateral 9 tile in Section 2 by Gene Bunte.

1991, Aug. 6 Letter from Lundy, Butler & Lundy stated "This is in response to your request for my opinion as to the status of Drainage District 55, Division 3, Lateral 9, Hardin County, Iowa. It is in my opinion that this district is a part of the drainage district system of Hardin County." (copy included in Appendix C)

1991, Aug. 6 Ryken Engineering field notes for Lateral 9 tile repair located in Section 2 stated that one of the Secondary Road Crew talked to Mr. Paul Brinkmeyer who farmed this land. Paul said that he installed the 10" tile years ago and it was a private tile. He also repaired it several times when it was exposed by the waterway.

1991, Aug. 14 Approval of repair to broken Lateral 9 tile in Section 2 for Gene Bunte.

1991, Aug. 21 Approval of the proposal of replacement of 110 feet of broken 12 inch diameter Lateral 9 tile below the waterway in Section 2.

1998, Jul. 7 Request for repair of 2 broken Lateral 9 tile in Section 2.

2003, May 10 Request for repair of Lateral 9 tile blowout in Section 3.

2004, Aug. 4 Request for repair of Lateral 9 tile blowout in Section 2.

2008, Apr. 22 Request for repair of broken Lateral 9 tile and Lateral 9 tile blowout in Section 2.

2009, Jan. 7 Request for repair of Lateral 9 tile blowout in Section 2.

2014, Sep. 24 Request for repair of Lateral 9 and 9C crumbling tiles in Section 11.

3.0 INVESTIGATION – Review of district history shows that landowners on Lateral 9 and 9C

reported blowouts, collapsed tile, and broken tile at 10 locations in the last 23 years. In addition, the most recent repair request indicated that the tile itself was crumbling. Based on this, the decision was made to televise or visually inspect as much of the Lateral 9 and 9C tiles as possible in 2014. It should be noted that both tiles showed evidence of previous repairs at several locations.

For the televising of the Lateral 9 tile, the tile was televised from 290th Street upstream to approximately 400 feet east of F Avenue. During this televising, it was discovered that the tile has:

- 5 locations that have been replaced with HDPE tile.
- 1 location that has a broken VCP tile or a soil void visible above the tile.
- Interior of the pipe in severely deteriorated condition (evidenced by spalled pipe interior, multiple cracks, partially collapsed pipe along entire tile route, and tile collapsed on camera while televising).
- Restricted flow through a large majority of the televised tile (evidenced by pieces of broken tile, rocks, mud, and silt in the tile and uneven water levels throughout the televising).

For the visual inspection of the Lateral 9 tile, the route of the tile was walked and viewed from the outlet on G Avenue upstream to the end of televising at 290th Street. Several sinkholes visible from the surface (above the tile) were located.

For Lateral 9C, only televising was performed. The tile was televised from its outlet with Lateral 9 upstream to the south right of way of 290<sup>th</sup> Street. During this televising, it was discovered that the tile has:

- 2 locations that have been replaced with HDPE tile.
- 1 location that has a broken VCP tile and a soil void visible above the tile.
- Interior of the pipe in severely deteriorated condition (evidenced by spalled pipe interior, multiple cracks, and partially collapsed pipe along entire tile route).
- Restricted flow through a large majority of the televised tile (evidenced by pieces of broken tile, rocks, mud, and silt in the pipe and uneven water levels throughout the televising).

4.0 DISCUSSION AND CONCLUSIONS – Based on the above, it is obvious that the original

VCP tile on these laterals is past the end of its useful life. This is evidenced by the above investigation and the fact that neither the contractor excavating for the televising or our firm has ever seen a VCP tile in such a fragile state. Although some repairs have been made, they are few and far between. This provides only an occasional length of stable pipe linked together by VCP that has either failed or is in imminent danger of failure. Therefore, the tile will only continue to collapse which will lead to the creation of sinkholes. As a result, further siltation in the tile and blockage of the tile with tile pieces and soil will occur, further restricting drainage.

5.0 REPAIR METHOD – To repair the above discussed issue, the most straightforward method is to replace the existing Lateral 9 and 9C tiles in the same corridor, drainage pattern, and size (nearest currently manufactured) that they currently use. Given the severe condition of the tile and its shallowness, this replacement would be for the entire length of the tile and would be with reinforced concrete pipe for both laterals (copy of map showing repair locations included in Appendix D).

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

- The drainage capacity of the Lateral 9 and 9C tiles would be as shown in Appendix F.
- 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 repair is more than fifty thousand dollars but less than the competitive bid threshold in section 26.3, the board shall conduct a hearing on the matter of making the proposed repair.” and “shall provide notice of hearing as provided in sections 468.14 through 468.18.” The opinion of probable construction cost contained in the next section of this report exceeds said limits. Therefore, a hearing will be required. Per Iowa Code Chapter 468.126.1.d, the right of remonstrance does not apply to repairs.

6.0 IMPROVEMENT METHODS – To improve drainage for the above discussed areas, the most straightforward method is to replace the existing Lateral 9 and 9C tiles in the same corridor and drainage pattern, but increase the size of the tile that they currently use. Given the severe condition of the tile and its shallowness, this upsizing would be for the entire length of the tile and would be with reinforced concrete pipe for both laterals (copy of map showing improvement locations included in Appendix E).

With the above mentioned improvement, the following should be noted:

- The pipe sizes (nearest currently manufactured) required for ½" and 1" drainage capacity for the Lateral 9 and 9C tiles would be as shown in Appendix F.
- Improvements have historically been viewed as having an impact on jurisdictional wetlands. As such, individual landowners should consult with applicable staff at the Hardin County NRCS office to determine the existence of said jurisdictional wetlands and what said impact may be on them.

Per Iowa Code Chapter 468.126, the above actions would be considered an improvement. As such, Subsection 4, paragraph B of Chapter 468.126 states “If the improvement is more than fifty thousand dollars but less than the competitive bid threshold in section 26.3, the board shall conduct a hearing on the matter of making the proposed improvement.” and “shall provide notice of hearing as provided in sections 468.14 through 468.18.” The opinion of probable construction cost contained in the next section of this report exceeds said limits. Therefore, a hearing will be required. Per Iowa Code Chapter 468.126.4.c, the right of remonstrance does apply to improvements.

7.0 OPINION OF PROBABLE CONSTRUCTION COST – Using the above recommended method of repair or improvement, an itemized list of project quantities and associated opinions of probable construction cost for each option was compiled and is included in Appendix G of this report. It should be noted that said costs includes materials, labor, and equipment supplied by the contractor to complete the necessary repair or improvement 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, 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.

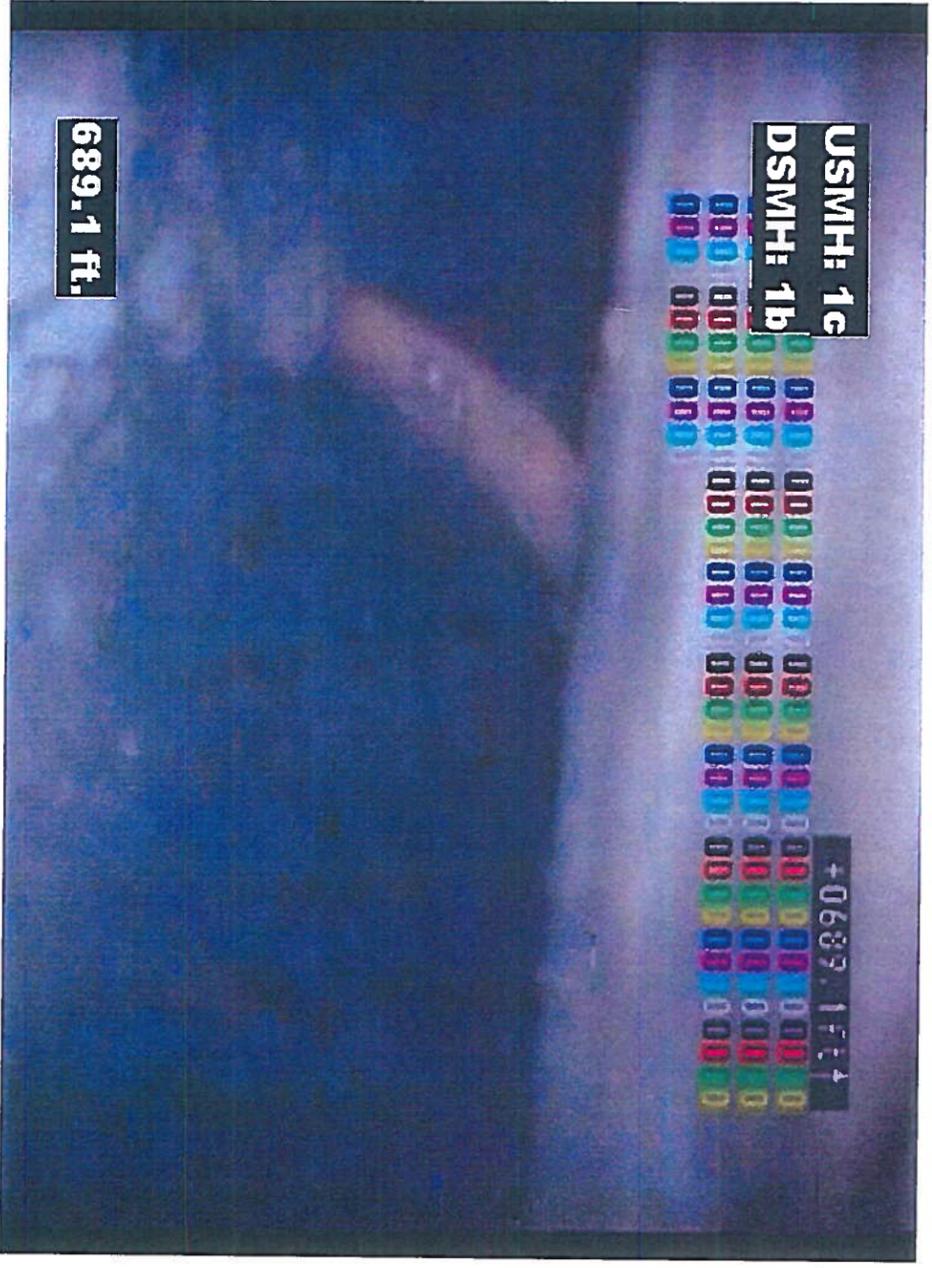
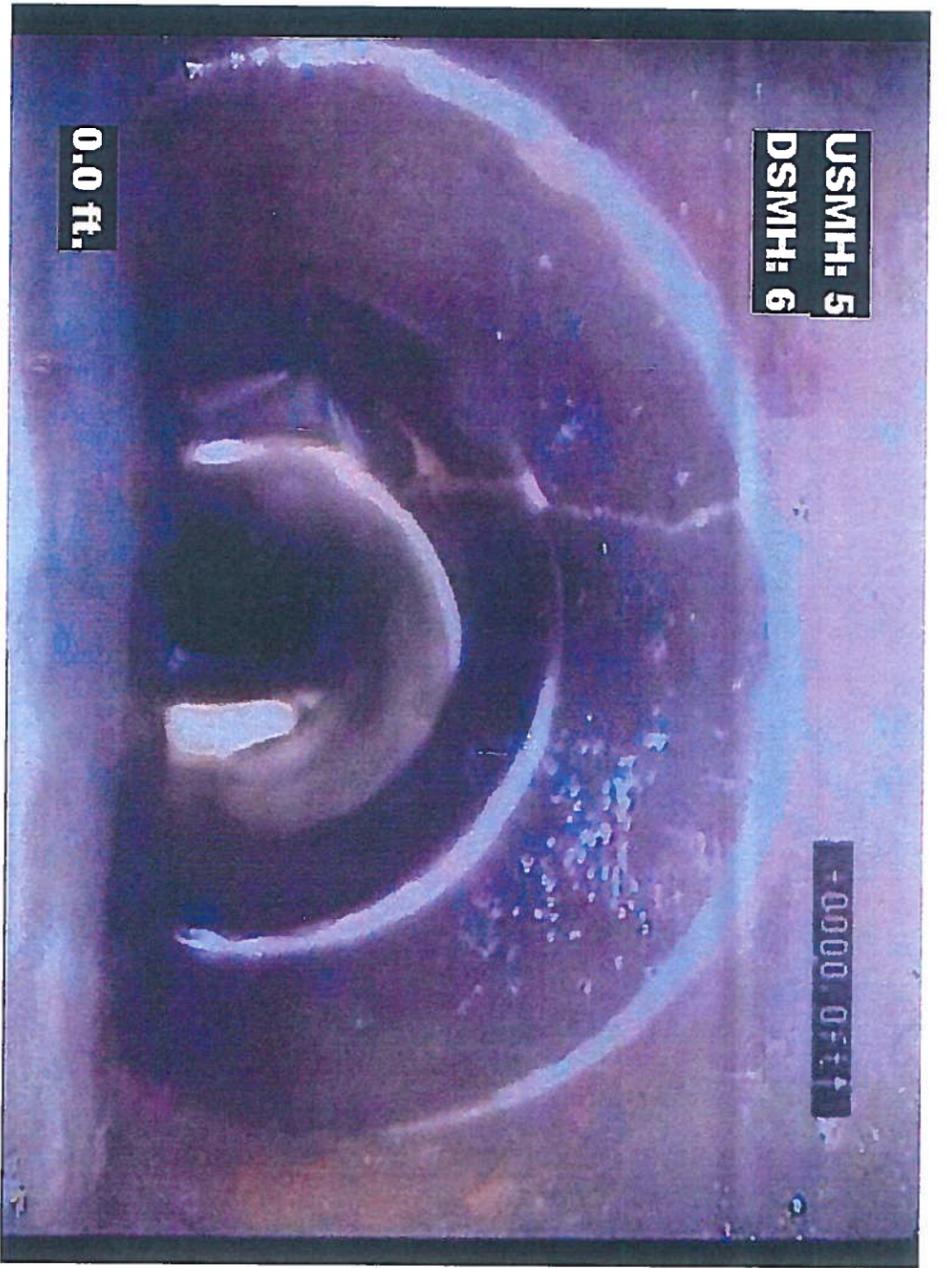
8.0 OWNERSHIP AND CLASSIFICATIONS – Any and all information concerning ownership of lands and classifications of said lands within Lateral 9 and 9C of Division 3 of Drainage District No. 55 can be obtained from the Hardin County Auditor's office. It appears that the 1981 classification is still in effect. It should be noted that it appears the 1981 classification did not have separate classifications for the Laterals.

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 . . . order a reclassification . . . " Based on this, a reclassification may be required if the repair were to move forward.

Iowa Code Chapter 468.131 states "When an assessment for improvements . . . exceeds twenty-five percent of the original assessment and the original or subsequent assessment . . . did not designate separately the amount each tract should pay for the main ditch and tile lateral drains then the board shall order a reclassification . . . " Based on this, a reclassification separating Laterals 9 and 9C would be required if the improvement were to move forward.

9.0 RECOMMENDATIONS – There is a definite need to perform the above mentioned repair or improvement. These are necessary to fix and prevent collapses and plugged tile which result in restricted drainage and loss of crop productivity. 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 or improvement.
- Adopt one of the recommendations of the Engineer's Report.
- Direct Ryken Engineering to prepare plans and specifications for the proposed repair or improvement.
- 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 for Laterals 9 and 9C.







# Drainage Work Order Request For Repair

## Hardin County

Work Order # 29

Date 9/24/2014

District # 55 Div 3 Lateral 9

Concord Section 11 Twp 86 Rge 22 Qtr Sec NW1/4

Repair Requested By Lee Gallentine made aware Phone \_\_\_\_\_

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

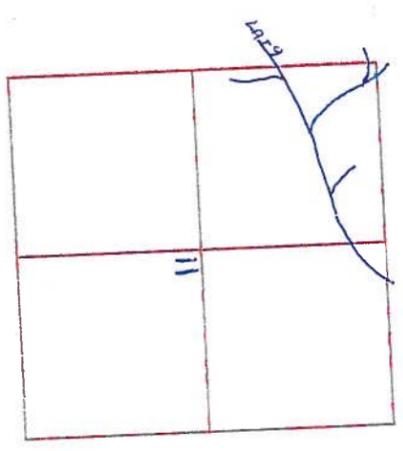
Handowner \_\_\_\_\_ Phone \_\_\_\_\_

Address \_\_\_\_\_

Request Taken By Tina Schlemme Date Available \_\_\_\_\_

Available for Repair Now?  Yes  No

Problem Description Tile crumbling



labor, materials and equipment 2 1/2 hrs Trench mini EXCAVATOR OPERATOR + 1 LABORER

12" HDPE, 11.2' OF 10" HDPE, 45' OF 8" HDPE, 6' OF 6" HDPE, FABRIC @ TRENCH

Hands?  Yes-Repair existing tile only  No-Repair and maintain tile

Date: David Handak Handak On Excavating

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

Approved: [Signature] Date: \_\_\_\_\_

For Office Use Only

Drainage District:

#55 - Division 3, Laterals 9 and 9C

Repair Summary:

The existing clay tile on Lateral 9 was reported to be collapsing when tied into with private tile. Upon arriving on-site, it was determined that Lateral 9C was also collapsing similar to Lateral 9. Televising was performed at several locations to determine the condition of both tile. Several collapsed tile were discovered and in some spots, the tile collapsed on the camera while televising. All collapsed tile locations and televising access points were repaired with dual wall tile.

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

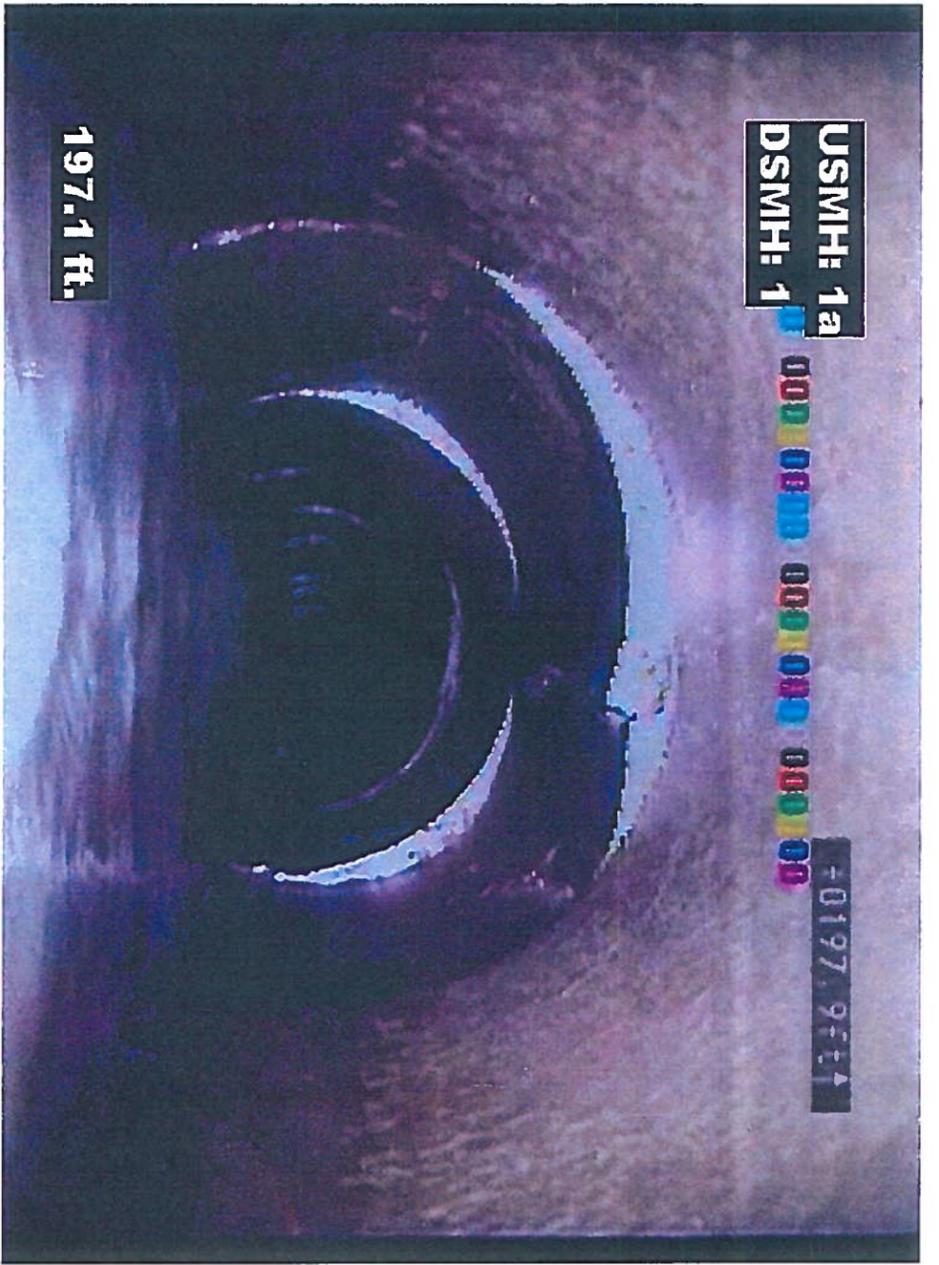
2' of 12" Dual Wall Tile  
11.2' of 10" Dual Wall Tile  
45' of 8" Dual Wall Tile  
6' of 6" Dual Wall Tile  
21.5 hours of Mini Excavator and Operator  
21.5 hours of Workman  
14.5 hours of Televising Crew

Additional Actions Recommended:

The remaining clay tile is on the verge of collapsing along the majority of the lengths televised. Although only the portions of Lateral 9 and 9C tiles in Section 11 were televised, I would assume that the remainder of Lateral 9 and 9C tiles north and west of Section 11 would be in similar condition. Based on this, the total cost of repair would be well over \$50,000. This cost is high enough that a hearing and an engineer's report would be required for a repair.

It should be noted that the existing tile is adequate to drain approximately 70 acres using the standard 1/2" per acre per day drainage coefficient. A quick review of the record drainage area reveals that this tile serves closer to 700 acres. Since so much of the tile needs replacement, if an improvement (upsizing a tile) is desired, this is probably the time.

It also should be noted that to date, we have not been able to find a separate classification for just Lateral 9. If a repair or improvement were to move forward, a classification would be required.





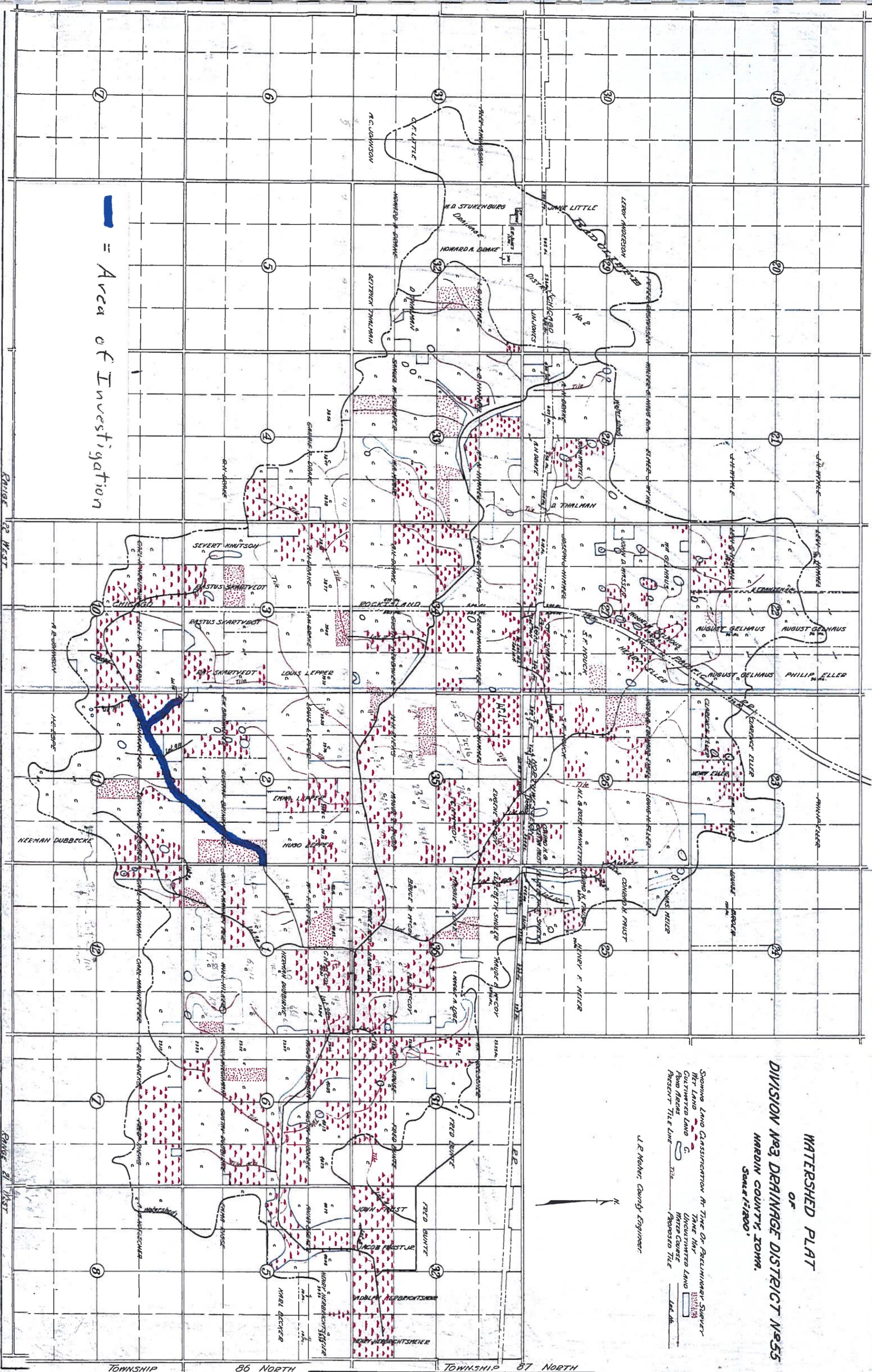
**WATERSHED PLAT**  
OF  
**DIVISION No. 3 DRAINAGE DISTRICT No. 55**  
HARDIN COUNTY, IOWA.  
Scale 1:1000'

Showing Land Classification at Time of Preliminary Survey  
 Wet Land   
 Cultivated Land **7th Hwy**  
 Road Areas **Uncultivated Land**  
 Present Tile Line **Water Course**  
 Proposed Tile **Proposed Tile** **Lot No.**

J.E. Maher, County Engineer



= Area of Investigation



TOWNSHIP 86 NORTH      TOWNSHIP 87 NORTH

RANGE 22 West

RANGE 21 West

7      6      5      4      3      2      1      1      2      3      4      5      6      7      8

19      20      21      22      23      24      25      26      27      28      29      30      31      32



Lundy, Butler & Lundy, P. C.

Lawyers

Eldora, Iowa 50627-0306

Telephone 515-858-2311

Fax 515-858-2613

August 6, 1991

Edward H. Lundy  
(1871-1959)

Lyman R. Lundy  
(1896-1985)

John L. Butler  
Michael A. Smith

Hardin County Board of Supervisors  
Hardin County Courthouse  
Eldora, IA 50627

Re: Drainage District 55,  
Division 3, Lateral 9

Gentlemen and Madam:

This is in response to your request for my opinion as to the status of Drainage District 55, Division 3, Lateral 9, Hardin County, Iowa.

It is my opinion that this district is a part of the drainage district system of Hardin County.

Very truly yours,



For the Firm  
JLB:lw

*Will be discussed  
at Board meeting  
8/14/91. Did not  
have Mr. Butler's letter  
on time for the meeting  
the last week.  
Sincerely,*

FILED



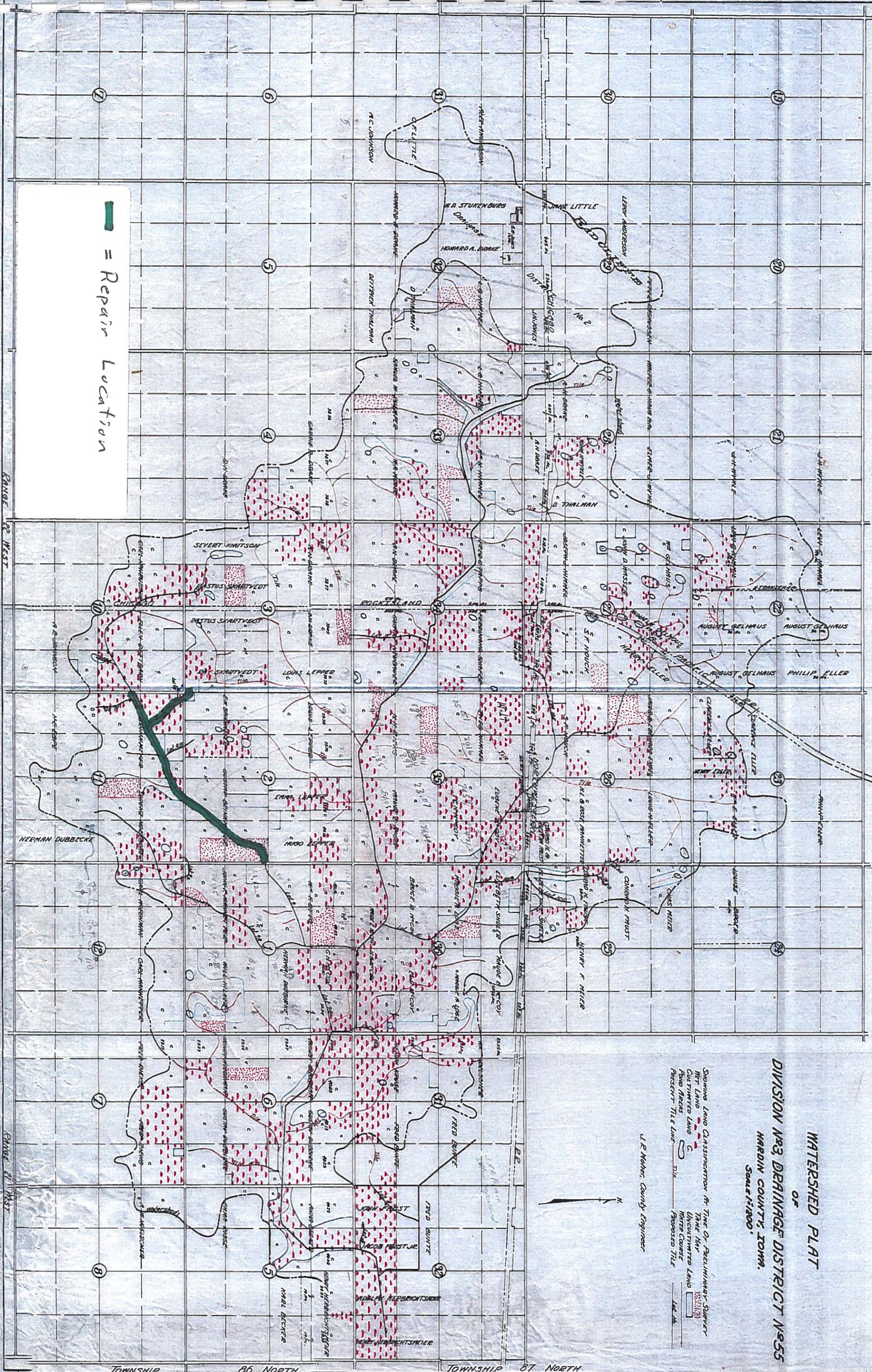
**WATERSHED PLAT**  
**OF**  
**DIVISION No. 3, DRAINAGE DISTRICT No. 55**  
**HARDIN COUNTY, IOWA.**  
**Scale 1:1800.**

SHOWING LAND CLASSIFICATION AT TIME OF PRELIMINARY SURVEY  
 CULTIVATED LAND  
 UNCULTIVATED LAND  
 RAIN FEEDS  
 WATER COURSES  
 PRESENT TILE LINES  
 TILES  
 REPOSED TILE  
 L&L

L. P. Mohr, County Engineer



**█ = Repair Location**





WATERSHED PLAT

OF

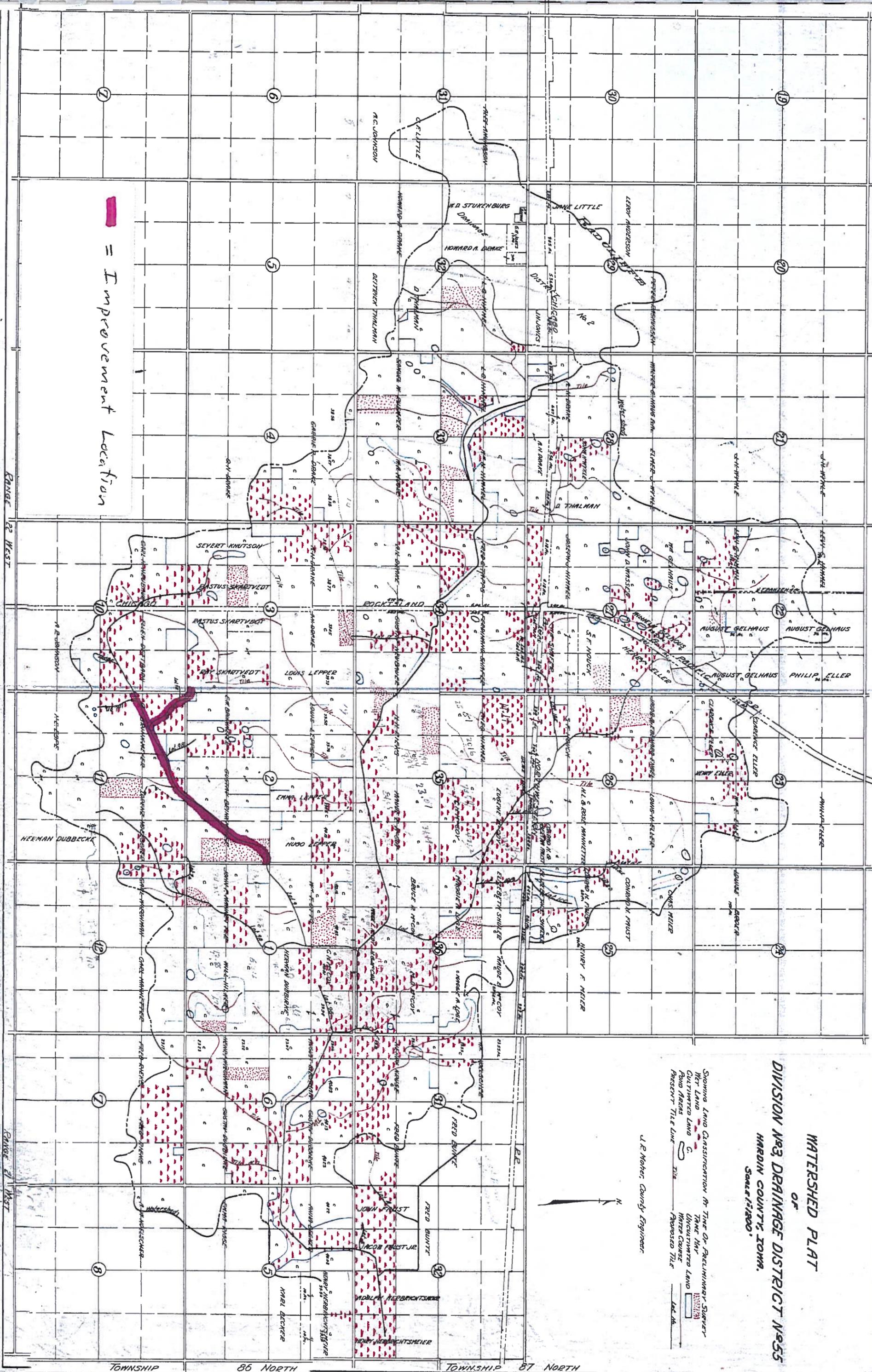
DIVISION No. 3, DRAINAGE DISTRICT No. 55

HARDIN COUNTY, IOWA

Scale 1:17,000

SHOWING LAND CLASSIFICATION BY TIME OF PRELIMINARY SURVEY  
 Wet Land TRAIL HAY  
 CULTIVATED LAND WINTER GRASS  
 ROAD AREAS PROPOSED TILE  
 PRESENT TILE LINE L&L No.

L. R. Mohr, County Engineer



= Improvement Location

RANGE 22 WEST

RANGE 21 WEST

TOWNSHIP

86 NORTH

TOWNSHIP 87 NORTH





**Tile Capacities**

**Project: Repair or Improvement for D.D. #55 Div. 3 Lats. 9 and 9C**  
 Location: Sections 2 and 11, T86N, R22W, Hardin County, Iowa

By: L.O.G.  
 Date: 6/27/2015  
 Checked By: L.O.G.  
 Date: 7/2/2015

STA	DESCRIPTION	1916 PROPOSED TILE SIZE (in)	INSTALLED		REPAIR		IMPROVEMENT			
			INSTALLED TILE SIZE (in)	INSTALLED TILE CAPACITY (in*acres/day)	REPAIRED TILE SIZE (in)	REPAIRED TILE CAPACITY (in*acres/day)	½" DRAINAGE COEF.		1" DRAINAGE COEF.	
							IMPROVED TILE SIZE (in)	IMPROVED TILE CAPACITY (in*acres/day)	IMPROVED TILE SIZE (in)	IMPROVED TILE CAPACITY (in*acres/day)
<b>Lateral 9</b>										
45+58	Start Lateral 9 Tile at Outlet on west side of G Avenue	18	10	0.08	12	0.22	18	0.5	24	1.0
93+81	Connection with Lateral 9B	16	10	0.17	12	0.27	18	0.5	21	1.0
104+49	Connection with Lateral 9C	16	10	0.29	12	0.46	15	0.5	18	1.0
113+23	Connection with Lateral 9D	16	10	8.45	12	13.75	12	13.8	12	13.8
115+98	End Lateral 9 Tile at Mutual Drain	16	?		12		12		\$ 12.00	
<b>Lateral 9C</b>										
0	Start Lateral 9C Tile at Sta 104+49 on Lateral 9 Tile	8	8	0.09	12	0.26	18	0.5	21	1.0
12+85	Connection with Lateral 9H	8	8	0.13	12	0.39	15	0.5	18	1.0
14+75	Crossing with 290th Street	8	8	0.67	12	4.26	12	4.3	12	4.3
17+00	End Lateral 9C Tile	6	?		12		12		12	





**Engineer's Opinion of Probable Construction Cost**

By: L.O.G.

Project: **Repair** for D.D. #55 Div. 3 Lats. 9 and 9C

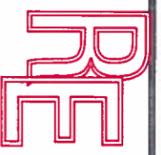
Date: 6/27/2015

Location: Sections 2 and 11, T86N, R22W, Hardin County, Iowa

Checked By: L.O.G.  
Date: 7/2/2015

ITEM #	DESCRIPTION	Unit Cost	UNITS	QUANTITY	Units	Total Cost
<b>CONSTRUCTION COSTS - LATERAL 9</b>						
1	12" REINFORCED CONCRETE PIPE	\$ 35.00	LF	6980	LF	\$ 244,300.00
2	12" REINFORCED CONCRETE PIPE (ROAD CROSSING)	\$ 100.00	LF	60	LF	\$ 6,000.00
3	CONCRETE WYE (LATERAL CONNECTION)	\$ 1,500.00	EA	3	EA	\$ 4,500.00
4	CONCRETE COLLAR	\$ 400.00	EA	3	EA	\$ 1,200.00
5	HICKENBOTTOM INTAKE	\$ 1,500.00	EA	2	EA	\$ 3,000.00
6	PRIVATE TILE CONNECTIONS	\$ 500.00	EA	10	EA	\$ 5,000.00
7	OUTLET RECONSTRUCTION	\$ 1,500.00	LOC	1	LOC	\$ 1,500.00
<b>CONSTRUCTION COSTS - LATERAL 9C</b>						
101	12" REINFORCED CONCRETE PIPE	\$ 35.00	LF	1640	LF	\$ 57,400.00
102	12" REINFORCED CONCRETE PIPE (ROAD CROSSING)	\$ 100.00	LF	60	LF	\$ 6,000.00
103	CONCRETE WYE (LATERAL CONNECTION)	\$ 1,500.00	EA	1	EA	\$ 1,500.00
104	CONCRETE COLLAR	\$ 400.00	EA	1	EA	\$ 400.00
105	HICKENBOTTOM INTAKE	\$ 1,500.00	EA	2	EA	\$ 3,000.00
106	PRIVATE TILE CONNECTIONS	\$ 500.00	EA	5	EA	\$ 2,500.00
<b>CONSTRUCTION SUBTOTAL</b>						\$ 336,300.00
Contingency (10%)						\$ 33,630.00
<b>CONSTRUCTION TOTAL</b>						\$ 369,930.00
Engr. & Const. Observation (20%)						\$ 73,986.00
<b>TOTAL COST</b>						\$ 403,560.00

Note: Per Iowa Code, road crossings (highlighted yellow) are not district expense



**Engineer's Opinion of Probable Construction Cost**

By: L.O.G.

Date: 6/27/2015

Project: **Improvement (1/2")** for D.D. #55 Div. 3 Lats. 9 and 9C

Checked By: L.O.G.

Location: Sections 2 and 11, T86N, R22W, Hardin County, Iowa

Date: 7/2/2015

ITEM #	DESCRIPTION	Unit Cost	UNITS	QUANTITY	Units	Total Cost
<b>CONSTRUCTION COSTS - LATERAL 9</b>						
1	18" REINFORCED CONCRETE PIPE	\$ 45.00	LF	5831	LF	\$ 262,395.00
2	18" REINFORCED CONCRETE PIPE (ROAD CROSSING)	\$ 110.00	LF	60	LF	\$ 6,600.00
3	15" REINFORCED CONCRETE PIPE	\$ 40.00	LF	874	LF	\$ 34,960.00
4	12" REINFORCED CONCRETE PIPE	\$ 35.00	LF	275	LF	\$ 9,625.00
5	CONCRETE WYE (LATERAL CONNECTION)	\$ 1,500.00	EA	3	EA	\$ 4,500.00
6	CONCRETE COLLAR	\$ 400.00	EA	3	EA	\$ 1,200.00
7	HICKENBOTTOM INTAKE	\$ 1,500.00	EA	2	EA	\$ 3,000.00
8	PRIVATE TILE CONNECTIONS	\$ 500.00	EA	10	EA	\$ 5,000.00
9	OUTLET RECONSTRUCTION	\$ 1,500.00	LOC	1	LOC	\$ 1,500.00
<b>CONSTRUCTION COSTS - LATERAL 9C</b>						
101	18" REINFORCED CONCRETE PIPE	\$ 45.00	LF	1285	LF	\$ 57,825.00
102	15" REINFORCED CONCRETE PIPE	\$ 40.00	LF	130	LF	\$ 5,200.00
103	15" REINFORCED CONCRETE PIPE (ROAD CROSSING)	\$ 105.00	LF	60	LF	\$ 6,300.00
104	12" REINFORCED CONCRETE PIPE	\$ 35.00	LF	225	LF	\$ 7,875.00
105	CONCRETE WYE (LATERAL CONNECTION)	\$ 1,500.00	EA	1	EA	\$ 1,500.00
106	CONCRETE COLLAR	\$ 400.00	EA	1	EA	\$ 400.00
107	HICKENBOTTOM INTAKE	\$ 1,500.00	EA	2	EA	\$ 3,000.00
108	PRIVATE TILE CONNECTIONS	\$ 500.00	EA	5	EA	\$ 2,500.00
<b>CONSTRUCTION SUBTOTAL</b>						\$ 413,380.00
Contingency (10%)						\$ 41,338.00
<b>CONSTRUCTION TOTAL</b>						\$ 454,718.00
Engr. & Const. Observation (20%)						\$ 90,943.60
<b>TOTAL COST</b>						\$ 496,056.00

Note: Per Iowa Code, road crossings (highlighted yellow) are not district expense



**Engineer's Opinion of Probable Construction Cost**

By: L.O.G.

Project: **Improvement (1")** for D.D. #55 Div. 3 Lats. 9 and 9C

Date: 6/27/2015

Location: Sections 2 and 11, T86N, R22W, Hardin County, Iowa

Checked By: L.O.G.  
Date: 7/2/2015

ITEM #	DESCRIPTION	Unit Cost	UNITS	QUANTITY	Units	Total Cost
<b>CONSTRUCTION COSTS - LATERAL 9</b>						
1	24" REINFORCED CONCRETE PIPE	\$ 55.00	LF	4763	LF	\$ 261,965.00
2	24" REINFORCED CONCRETE PIPE (ROAD CROSSING)	\$ 120.00	LF	60	LF	\$ 7,200.00
3	21" REINFORCED CONCRETE PIPE	\$ 50.00	LF	1068	LF	\$ 53,400.00
3	18" REINFORCED CONCRETE PIPE	\$ 45.00	LF	874	LF	\$ 39,330.00
4	12" REINFORCED CONCRETE PIPE	\$ 35.00	LF	275	LF	\$ 9,625.00
5	CONCRETE WYE (LATERAL CONNECTION)	\$ 1,500.00	EA	3	EA	\$ 4,500.00
6	CONCRETE COLLAR	\$ 400.00	EA	3	EA	\$ 1,200.00
7	HICKENBOTTOM INTAKE	\$ 1,500.00	EA	2	EA	\$ 3,000.00
8	PRIVATE TILE CONNECTIONS	\$ 500.00	EA	10	EA	\$ 5,000.00
9	OUTLET RECONSTRUCTION	\$ 1,500.00	LOC	1	LOC	\$ 1,500.00
<b>CONSTRUCTION COSTS - LATERAL 9C</b>						
101	21" REINFORCED CONCRETE PIPE	\$ 50.00	LF	1285	LF	\$ 64,250.00
102	18" REINFORCED CONCRETE PIPE	\$ 45.00	LF	130	LF	\$ 5,850.00
103	18" REINFORCED CONCRETE PIPE (ROAD CROSSING)	\$ 110.00	LF	60	LF	\$ 6,600.00
104	12" REINFORCED CONCRETE PIPE	\$ 35.00	LF	225	LF	\$ 7,875.00
105	CONCRETE WYE (LATERAL CONNECTION)	\$ 1,500.00	EA	1	EA	\$ 1,500.00
106	CONCRETE COLLAR	\$ 400.00	EA	1	EA	\$ 400.00
107	HICKENBOTTOM INTAKE	\$ 1,500.00	EA	2	EA	\$ 3,000.00
108	PRIVATE TILE CONNECTIONS	\$ 500.00	EA	5	EA	\$ 2,500.00
<b>CONSTRUCTION SUBTOTAL</b>						\$ 478,695.00
Contingency (10%)						\$ 47,869.50
<b>CONSTRUCTION TOTAL</b>						\$ 526,564.50
Engr. & Const. Observation (20%)						\$ 105,312.90
<b>TOTAL COST</b>						\$ 574,434.00

Note: Per Iowa Code, road crossings (highlighted yellow) are not district expense

