

HARDIN COUNTY, IOWA

2016



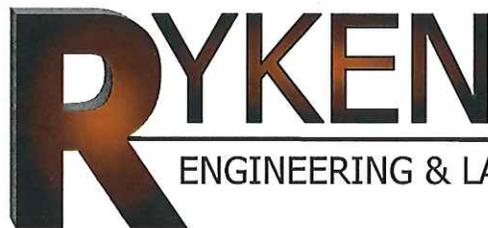
**SUPPLEMENT TO
ENGINEER'S
REPORT ON
REPAIR AND
IMPROVEMENT TO
MAIN OF
DRAINAGE
DISTRICT NO. 143
HARDIN COUNTY**



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. Feb 29, 2016
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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**Supplement to Engineer's Report on Repair and Improvement to
Main of Drainage District No. 143,
Hardin County, Iowa**

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Supplement to Engineer's Report on Repair and Improvement to Main of Drainage District No. 143, Hardin County, Iowa

1.0 INTRODUCTION – The Hardin County Board of Supervisors, acting as District Trustees, requested Ryken Engineering to supplement the original report concerning repair and improvement to the main of Drainage District No. 143. The purpose of this supplement is to add an alternative of replacing the existing main tile with an open ditch through the golf course (i.e. that portion of Section 28 Township 87 North (T87N), Range 22 West (R22W), Hardin County, Iowa north of the abandoned railroad). For reference, this request occurred at the regular drainage meeting held on February 24, 2016.

2.0 IMPROVEMENT METHOD – To improve the plugged existing main tile issues through the golf course as discussed in the original report, the following is an additional option:

Partial Open Ditch Installation

- Replace the 3 broken pipe or pipe in disrepair upstream of the golf course.
- Replace the 6 broken pipe lengths ready to collapse downstream of the golf course.
- Install an open ditch (at the same location or a different location than the existing main tile) through the golf course to avoid as many of the existing trees as possible. For reference, a map with a suggested location is included in Appendix 1.
- Construct a headwall and outlets to discharge the existing main tile and existing main relief tile on the west side of the golf course at the start of the open ditch . If the open ditch follows a different route than the existing main tile and existing main relief tile, the downstream ends of the existing main tile and the existing main relief tile must be plugged.
- Install a storage basin on the south side of the golf course to store excess discharges during high flow events.
- Construct a headwall and a riprap funnel at the existing main tile on the south side of the golf course to funnel discharges back into the existing main tile.
- Extend all private tile encountered to discharge into the open ditch.

With the above mentioned improvement the following should be noted:

- Unless the open ditch is at the same location as the existing main tile, no guarantee can be made that all private tile connected to the existing main tile will be discharged at the open ditch unless excavation is performed on both sides of the existing main tile along its entire length. This will affect the costs shown in following section of this report.
- The combined drainage coefficient of the existing main tile and the existing main relief tile at the west edge of the golf course is 0.3± inches per acre per day. Said improvement will not increase the drainage capacity upstream from this point.
- The drainage coefficient of the open ditch through the golf course will be 11± inches per acre per day.
- The drainage coefficient of the existing main tile at the south edge of the golf course is 0.3± inches per acre per day. Said improvement will not increase the drainage capacity downstream from this point.

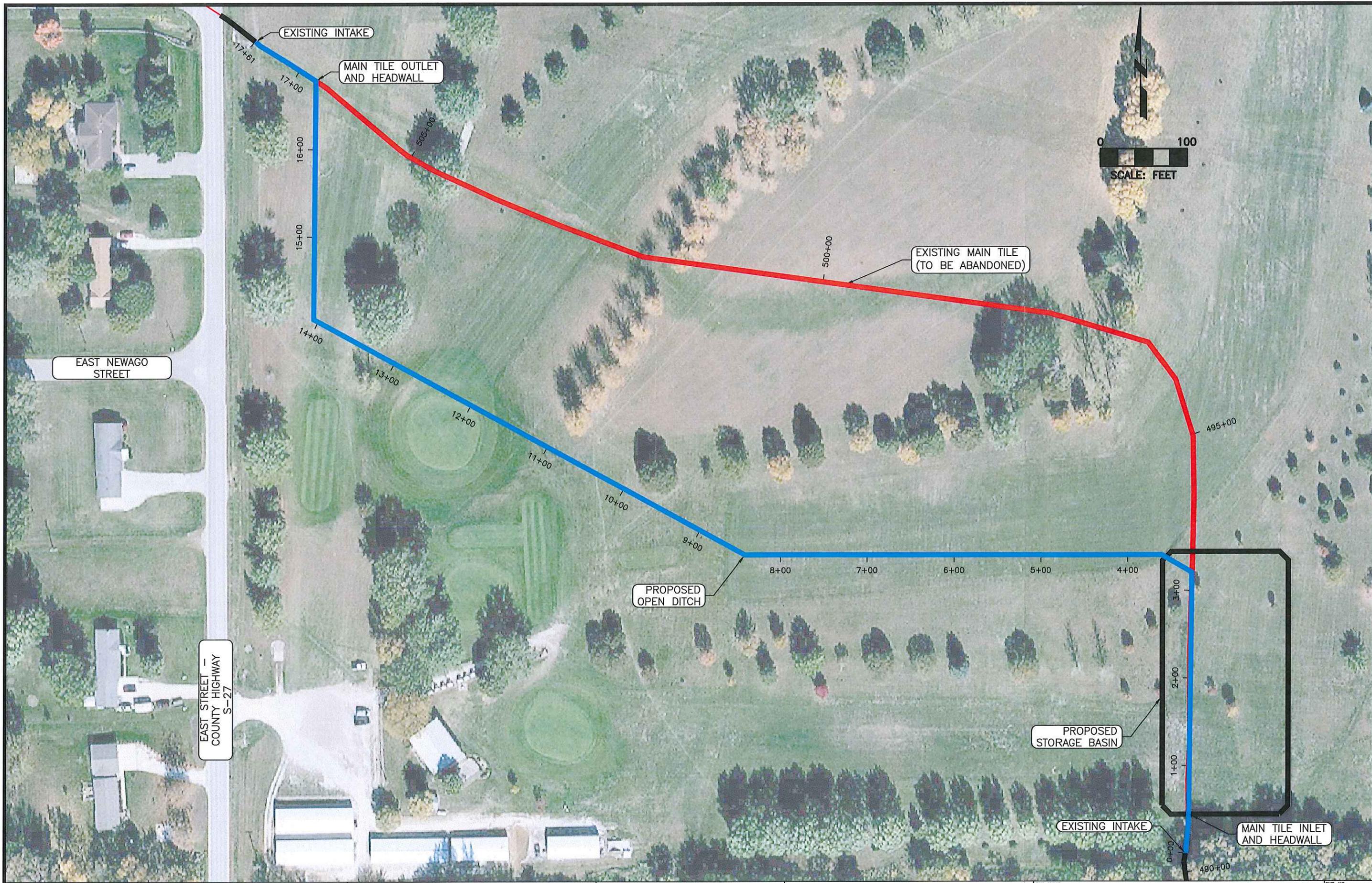
- The above improvement method is for the portion of the main tile through the golf course. No improvements are proposed for the remainder of the existing main tile or the existing main relief tile.
- The above improvement method includes repairs for those portions of the main tile that have been televised outside of the golf course. No repairs are proposed for those portions of the existing main tile that have not been televised or for the existing main relief tile.
- This method would involve the taking of right of way. However, this right of way is in the grassed portion of the golf course.
- 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 c of Chapter 468.126 states "If the estimated cost of the improvement 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 on whether to construct the proposed improvement and whether there shall be a reclassification of benefits for the cost of the proposed improvement." The opinion of probable construction cost contained in the Opinion of Probable Construction Costs section of this report exceeds said \$50,000 limit. Therefore, a hearing will be required. Per Iowa Code Chapter 468.126.4.e, the right of remonstrance may apply to the proposed improvements.

3.0 OPINION OF PROBABLE CONSTRUCTION COSTS – Using the above method of improvement, an itemized list of project quantities and associated opinion of probable construction costs was compiled and is included in Appendix 2.

It should be noted that said costs include materials, labor, and equipment supplied by the contractor to complete the necessary improvement and includes applicable engineering, construction observation, and project administration fees by Ryken Engineering. It also includes right of way acquisition (assumed to require 6 acres at \$12,000 per acre). 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.

4.0 RECOMMENDATIONS – There is a definite need to perform the above improvement or one of the repairs or improvements mentioned in the original report. Therefore, it is recommended that the Hardin County Board of Supervisors, acting as District Trustees, should take the actions stated in the original report.



DRAWN BY: ZJS	APPROVED BY: LOG	REVISIONS:
DATE: 10-07-2015	PROJ. NO.: 6771	
FIELD BK: P:\6771\CADD\CONCEPTS\6771 - SUPPLEMENTAL CONCEPT.DWG; 2/29/2016		

RYKEN
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PROJECT:
 DRAINAGE DISTRICT #143
 HARDIN COUNTY, IOWA
 2016

SHT. NAME:
 PARTIAL OPEN DITCH
 MAP



ENGINEERING & LAND SURVEYING, INC.

By: L.O.G.

Date: 2/26/2016

Checked By: L.O.G.

Date: 2/29/2016

Supplement to Engineer's Opinion of Probable Construction Cost

Project: Main Improvement for D.D. #143

Location: SE¼ Section 29 and SW¼ Section 28, T87N, R22W, Hardin County, Iowa

PARTIAL OPEN DITCH INSTALLATION	ITEM #	DESCRIPTION	Unit Cost	Units	Quantity	Units	Total Cost	
		CONSTRUCTION COSTS						
	1001	OPEN DITCH CONSTRUCTION	\$ 2,500.00	STA	17.5	STA	\$ 43,750.00	
	1002	CMP OUTLET	\$ 55.00	LF	120	LF	\$ 6,600.00	
	1003	HEADWALL	\$ 10,000.00	EA	2	EA	\$ 20,000.00	
	1004	RIP-RAP	\$ 40.00	TN	300	TN	\$ 12,000.00	
	1005	CONCRETE COLLAR	\$ 400.00	EA	3	EA	\$ 1,200.00	
	1006	STRUCTURE REMOVAL	\$ 500.00	EA	1	EA	\$ 500.00	
	1007	CONCRETE PLUG	\$ 400.00	EA	3	EA	\$ 1,200.00	
	1008	SURFACE DRAINS	\$ 2,000.00	EA	5	EA	\$ 10,000.00	
	1009	PRIVATE TILE OUTLETS	\$ 2,000.00	EA	5	EA	\$ 10,000.00	
	1010	SPOT REPAIR	\$ 1,500.00	LOC	9	LOC	\$ 13,500.00	
	1011	SEEDING (OPEN DITCH)	\$ 500.00	STA	18	STA	\$ 9,000.00	
	1012	TREE REMOVAL	\$ 400.00	EA	15	EA	\$ 6,000.00	
	1013	TILE REMOVEAL	\$ 10.00	LF	350	LF	\$ 3,500.00	
	1014	BASIN GRADING	\$ 20,000.00	LS	1	LS	\$ 20,000.00	
1015	RIGHT OF WAY	\$ 12,000.00	AC	6	AC	\$ 72,000.00		
	CONSTRUCTION SUBTOTAL						\$ 229,250.00	
	Contingency (10%)						\$ 22,925.00	
	CONSTRUCTION TOTAL						\$ 252,175.00	
	Engr. & Const. Observation (20%)						\$ 50,435.00	
	TOTAL COST						\$ 302,610.00	