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PRELIMINARY ENGINEERING REPORT

**DRAINAGE DISTRICT NO. 17—BRANCH 36
TILE IMPROVEMENTS
DICKINSON COUNTY, IOWA**

JWA PROJECT NO: E14161

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.

Richard A. Hopper

Date 9/8/15

Richard A. Hopper, P.E., License number 8106

My license renewal date is December 31, 2015

Pages or sheets covered by this seal: Title, P1-3, Location map



I. INTRODUCTION/HISTORY

A petition was submitted requesting a drainage improvement be considered on the 8-inch tile in Drainage District No. 17 (DD#17) commencing at the open ditch in the southwest quarter of Spirit Lake Township, Section 36, and running south and easterly under Highway No. 9 into the northwest quarter of Center Grove Township, Section 1. This petition describes Branch 36 of DD#17. Branch 36 watershed includes land in the southwest of the southwest and the southeast of the southwest quarter quarters of Section 36, Spirit Lake Township, and the northwest of the northwest and the northeast of the northwest quarter quarters of Section 1, Center Grove Township.

There are few drainage records available for this district. An Engineer's Report describing the land lying within the limits of a proposed drainage district and proposed tile quantities matching those of DD#17 was found along with preliminary plan and profile sheets for DD#17 dated November, 1913, a permanent map of DD#17 dated May, 1914, and an assessment schedule that totaled the original construction cost of \$5,304.60.

II. STARTING POINT, ROUTE TERMINUS

Branch 36 begins at the property line 1320 feet east and 162 feet south of section corner common to Sections 35 and 36-100-36 and Sections 1 and 2-99-36 thence north westerly across the county highway at a point 1161 feet east of said section corner, thence north westerly and northerly along the natural watercourse in the west half of the southwest quarter of Section 36-100-36 and there terminating at Station 36 of the main.

Branch 36-21+50 commences at the quarter quarter line 174 feet north and 1320 east of the section corner common to Sections 35 and 36-100-36 and Sections 1 and 2-99-36 thence westward 181 feet in the southwest quarter of the southwest quarter of Section 36-100-36 and there terminating at station 21+50 of Branch 36.

Branch 36-19+50 commences at the present outlet of the four-inch tile on the south line of the county highway in the northwest quarter of the northwest quarter of Section 1-99-36 thence northward 198 feet and terminating at Station 19+50 of Branch 36.

II. EXISTING IMPROVEMENTS

Very little information is available regarding existing district improvements.

III. PROPOSED IMPROVEMENTS

This report will summarize improvements to Branch 36 for a 1" coefficient system. The Iowa Drainage Guide recommends 1" of runoff from the drainage area be removed in a 24 hour period. The route of the proposed improvements was described earlier in this report and can be seen on the attached drawings.

IV. RIGHT-OF-WAY

The proposed improvements will be done within the existing right-of-way for the district. A wider area may be necessary for the installation of improvements. If crops are damaged as part of the improvements, crop damages should be paid.

V. COST ESTIMATES

The estimated cost for a 1" coefficient is found below:

ITEM NO.	ITEM DESCRIPTION	QUANTITY & UNIT	UNIT PRICE	TOTAL PRICE
1.	12" RCP Apron with riprap and guard	1 Each	\$ 1,500.00	\$ 1,500.00
*2.	12" Steel Casing, Jacked & Bored	120 L.F.	\$ 250.00	\$ 30,000.00
3.	15" Polypropylene Pipe	700 L.F.	\$ 18.00	\$ 12,600.00
4.	12" Polypropylene Pipe	1959 L.F.	\$ 15.00	\$ 29,385.00
5.	Tile Connections	7 Each	\$ 350.00	\$ 2,450.00
6.	Exploratory Excavation	10 Hours	\$ 200.00	\$ 2,000.00
7.	Trench Stabilization Material	20 Ton	\$ 25.00	\$ 500.00
SUBTOTAL CONSTRUCTION COST				\$ 78,435.00
ESTIMATED CONSTRUCTION COST	TOTAL DISTRICT			\$ 48,435.00
CONTINGENCIES (10%)				\$ 4,844.00
ENGINEERING, LEGAL, ADMINISTRATION				\$ 18,500.00
RECLASSIFICATION				\$ 1,500.00
INTEREST				\$ 3,000.00
ESTIMATED TOTAL PROJECT COST				<u>\$ 76,279.00</u>

*IOWA DEPARTMENT OF TRANSPORTATION

AVERAGE COST PER ACRE = \$1,271.32/acre (Based on 60 acres)

VI. CONCLUSION/RECOMMENDATION

The proposed improvement is for a 1" drainage coefficient. The project would improve drainage in the drainage district, especially to the area south of Highway No. 9 where the existing drainage coefficient is just over one-quarter inch. The larger 12" pipe is needed in one area because the grade is flatter in that area (from STA 14+50 to STA 21+50).

Increasing the pipe size from 6" to 8" for STA 21+50 to 24+98 should be considered as an option for this project. There is currently a $\frac{1}{2}$ " drainage coefficient in this area.

We recommend that the board, as trustees for the district, accept this report and proceed with improvements to the district.

Once a bid date is set, we recommend the Trustees notify the landowners that there will be an informal hearing following the letting to discuss the options and costs.

A reclassification will be required with any of the options.

COUNTY MAP

