

Faribault County, Minnesota

County Ditch #83

Staff Repair Report

May 2021

FARIBAULT COUNTY
Drainage Dept

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CD83 Repair

BACKGROUND

The system was inspected by the Drainage Department in 2019. During the inspection, two field crossings were observed to be in poor condition, along with several tile outlets. The top end of the open ditch was cleaned in 2018, indicating that sediment accumulation could be a problem in other areas of the system. The downstream portion of the open ditch has tree growth that has contributed to beaver activity.

DATA COLLECTION

Drainage Department staff surveyed the open ditch in April 2021. Legal grade was determined from the 1960 establishment maps. The local datum was converted to Faribault County Coordinates via two original benchmarks on box culverts under CR29 and 210th St. by an adjustment of +1023.43.

PROPOSED REPAIR DETAILS

The open ditch bottom is largely at or below legal grade. A headcut in the downstream portion of the open ditch is evident and has migrated to the 210th St. crossing. The downcutting of the channel bottom has resulted in steep and unstable side slopes and coarse gravel and cobble substrate. The channel bottom from station 60+00 to 110+00 is also largely below grade. It is unclear if this is a result of over-excavation of the channel or downcutting. Interestingly the invert of the field crossing in this portion of the open ditch (at Station 86+00) is several feet below legal ditch grade. Either the culvert was installed below legal grade during the establishment of the ditch or it was later lowered to its current elevation. The mostly stable condition of the ditch side slopes in this stretch makes over-excavation of the channel more likely than downcutting being the cause.

Being the channel is mostly at or below legal grade, repair activities will focus on structural components. Two **42"** CMP field crossings are in very poor condition and should be replaced. Wide joints in the upstream and downstream side of the **36" RCP County Road 29** crossing were also observed. The pipe itself is in good condition, however the ties holding the different sections together have gave way causing soil to deposit in the pipe. The Faribault County Public Works Department has been made aware of the issue. The remaining repair activities include small tree and brush removal, tile outlet repair, and side inlet repair.

Field Crossing Replacement: See Detail

1. Station 27+50 – **50 linear feet of 42" CMP** or RCP
2. Station 58+00 – **40 linear feet of 42" CMP** or RCP

Tile Outlet Repair: Repair tile outlets with 20 lf of HDPE dual-wall non-perforated tile. See Detail

1. Station 10+00 (S) – **8" CMP**
2. Station 18+00 (E) – **12" CMP**
3. Station 18+50 (E) – **8" CMP**
4. Station 26+20 (S) – **12" CMP**
5. Station 26+20 (N) – **12" CMP**
6. Station 30+60 (W) – **15" CMP**
7. Station 35+00 (S) – **12" CMP**
8. Station 45+75 (S) – **15" CMP Branch 1**
9. Station 56+25 (S) – **8" CMP**
10. Station 59+40 (S) – **15" CMP Branch 2**
11. Station 66+00 (S) – **12" CMP**
12. Station 90+40 (W) – **10" CMP Branch 3**

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Side Inlet Repair: Replace side inlet with Alternative Side Inlet. See Detail.

1. Station 68+30 (S) – Replace **12" CMP with 12" ASI with trash grate top**
2. Station 70+20 (N) – Install **12" ASI with Slotted Hickenbottom top**

TIMELINE

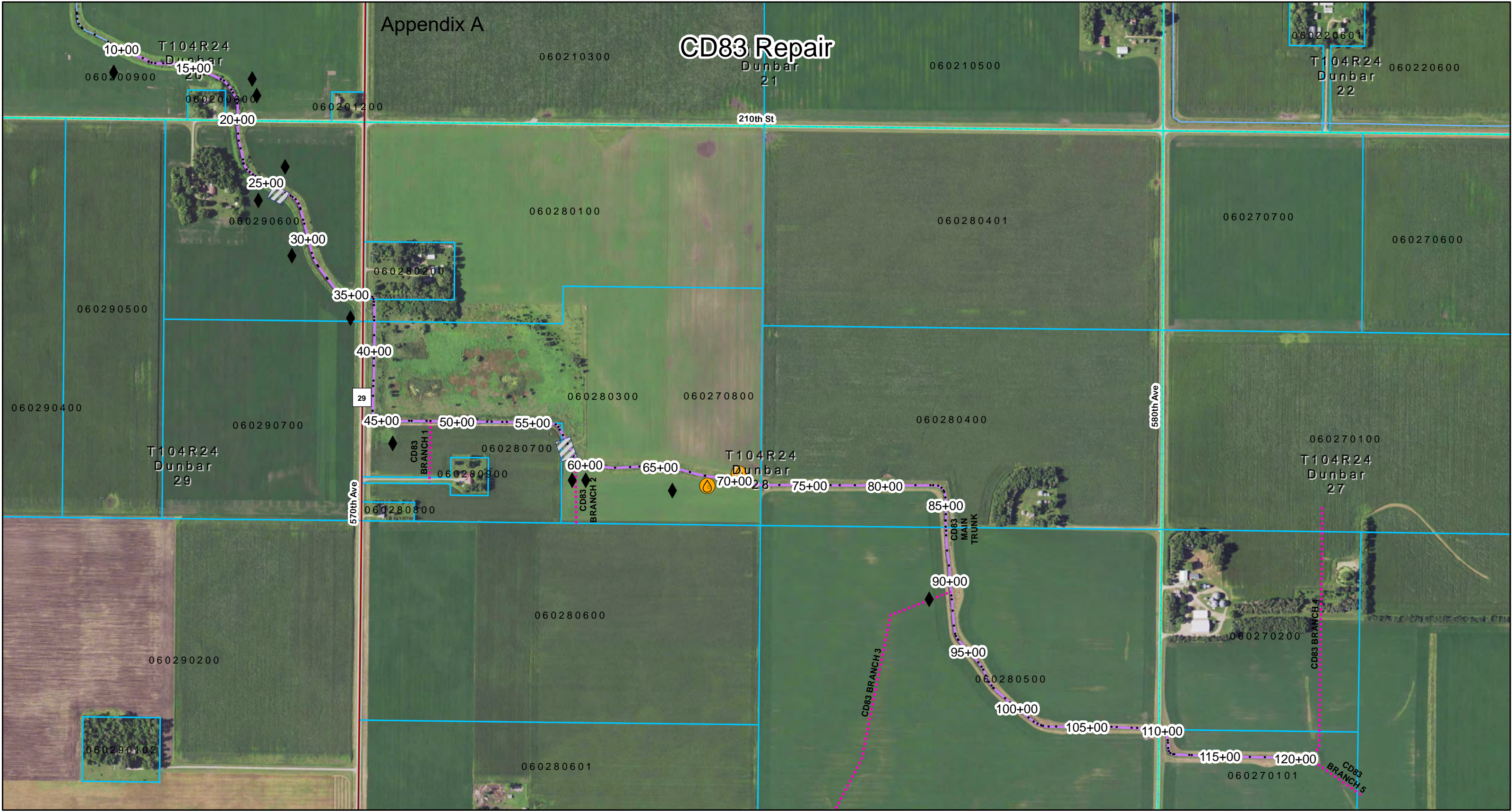
All repair activities can be completed with little crop damage. Faribault County has already contracted with a local contractor for tree removal. It is not anticipated that tree removal will impact the proposed construction activities. The deadline for this project is October 31, 2021.

ESTIMATED COST

Item	Unit	Quant	County Est Unit Price	County Est Amount
Mobilization	LS	1	\$ 3,000.00	\$ 3,000.00
42" Corrugated Metal Pipe for Field Crossings	LF	90	\$ 200.00	\$ 18,000.00
Granular Foundation for Field Crossings	TON	38	\$ 30.00	\$ 1,140.00
Backfill for Field Crossings	CY	100	\$ 7.00	\$ 700.00
Class III Riprap w/ Type IV Geotextile Fabric for Field Crossings	TON	60	\$ 40.00	\$ 2,400.00
8" Tile Outlet Repair	EA	3	\$ 800.00	\$ 2,400.00
10" Tile Outlet Repair	EA	1	\$ 850.00	\$ 850.00
12" Tile Outlet Repair	EA	5	\$ 900.00	\$ 4,500.00
15" Tile Outlet Repair	EA	3	\$ 950.00	\$ 2,850.00
12" Alternative Side Inlet	EA	2	\$ 2,200.00	\$ 4,400.00
Contingency 10%				\$ 4,024.00
				\$ 44,264.00

APPENDICES

Appendix A: Repair Overview Map
Appendix B: Repair Profiles



- Legend**
- Public Open Ditch
 - Public Shallow Ditch
 - Public Tile

- Field Crossing Replacement
- Parcels
- Tile Outlet Repair
- Alternative Side Inlet

