



Le Sueur County, MN

Tuesday, September 1, 2015

Board Meeting

Item 5

10:00 am Reconvene County Ditch #58 Public Hearing (30 min)

Staff Contact:

July 9, 2015

Le Sueur County Drainage Authority
88 South Park Avenue
Le Center, MN 56057



Re: Amendment No. 2 to the Le Sueur County Ditch No. 58 Repair Report

Members of the Le Sueur County Drainage Authority:

At the previous hearing for Le Sueur County Ditch No. 58 (CD 58) ISG was asked to determine the actual condition of Branch 2. The area in question was the lower half of Branch 2 from Station 0+00 to approximately Station 15+00. This area was assumed to be in disrepair but the actual condition was unknown. An exhibit showing the location of the televising and pictures taken from the video are attached to this amendment and referenced herein.

On Wednesday, July 1st Martin County televised Branch 2 from Station 0+40 to Station 14+20 or approximately 1380 linear feet of the outlet of Branch 2. The first run with the camera started at the drop intake structure at Station 0+40. The pipe started out as a 14-inch HDPE pipe that had been previously installed as a repair by the county. After 20 feet the pipe transitioned to the original 14-inch concrete tile. Between the two pipes a large tree root has entered through the gap in the pipe. This can be seen in Picture A. A tile that is ready to collapse can be seen shortly after in Picture B. 40 feet after entering the pipe the camera encountered what looks to be a concrete cinder block lying in the bottom of the pipe (Picture C). The camera was unable to pass around the cinder block so the first run ended at approximately 0+80.

The second run with the camera started at approximately Station 6+35 and traveled downstream. At Station 6+25, large gaps can be seen between the tiles (Picture J). Closer inspection shows water and soil entering the pipe in this location. Farther downstream numerous root systems can be seen growing in the tile (Pictures D, F, G and I). There are several locations where the soil has washed away from behind the pipe (Pictures E, F and H). When this happens the pipe loses the confinement pressure provided by the soil causing the pipe to flex outward and eventually collapse. A collapsed tile will restrict water moving through the pipe and can likely cause a sinkhole up to the surface.

The third and final run with the camera started at approximately Station 14+20 and traveled downstream. Between Station 6+25 and Station 14+20 there are multiple locations where roots are entering the tile system (Pictures K, L, M, O, P and Q). There are also multiple locations where the tile has cracked and in some cases the tile are near collapsing (Pictures N, O, Q, R, S, T, U, V, W and X). Also the water got deeper the further south the camera went which indicates that the tile has back fall or sag in it. This is reducing the capacity of the system.

115 East Hickory Street, Suite 300 + Mankato, MN 56001

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P: 507.387.6651

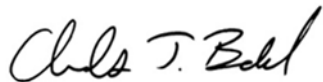
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Based on the request to determine the actual condition of Branch 2, the tile has been televised and the amendment has been made to the CD 58 Repair Report. It is our opinion that the televising clearly shows that Branch 2 is in disrepair along its entire length. Branch 2 has already failed at several locations upstream of Station 14+20 and will begin to fail in multiple locations between the outlet and Station 14+20 in the coming years. Televising Branch 2 has proven that Branch 2 needs to be repaired in its entirety. It is our recommendation that the Drainage Authority move ahead with the repair option that was proposed in Repair Report Amendment No. 1 at the continuance of the repair hearing.

Please contact us with any questions or comments.

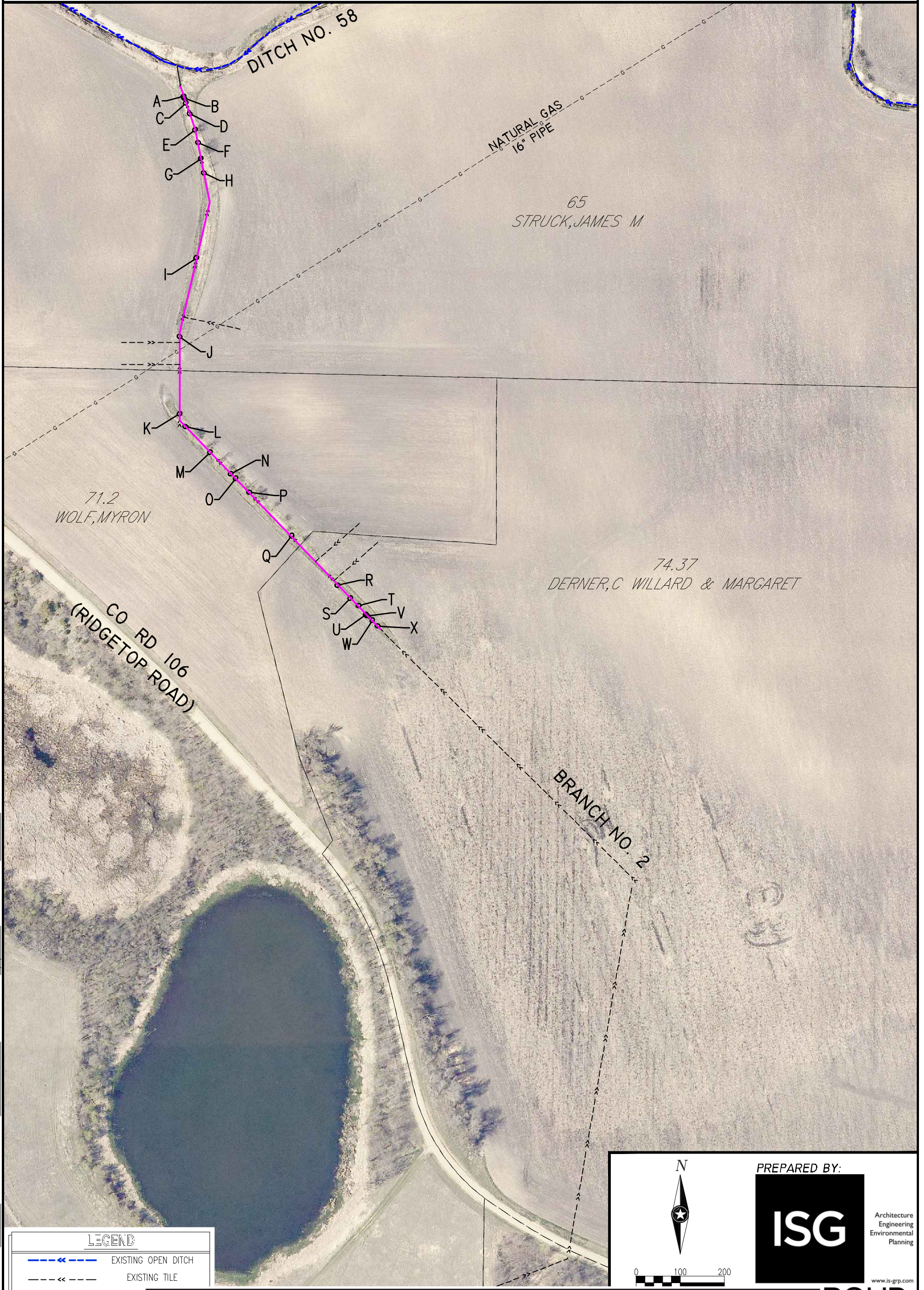
Sincerely,



Chuck J. Brandel, PE
Civil Engineer/Principal

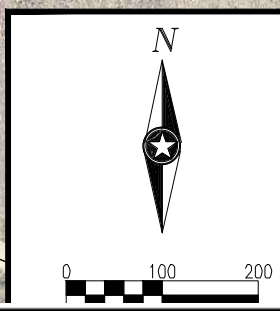
LE SUEUR COUNTY DITCH NO. 58

LE SUEUR COUNTY, MINNESOTA
BRANCH No. 2 TELEVISING



PROJECT NO. 14-17265 CAD FILE NAME 17265 LS CO DITCH #58 TELEVISING DATE 7/6/2015 DRAWN BY RJA

LEGEND	
	EXISTING OPEN DITCH
	EXISTING TILE
	TELEV



PREPARED BY:

Architecture
Engineering
Environmental
Planning

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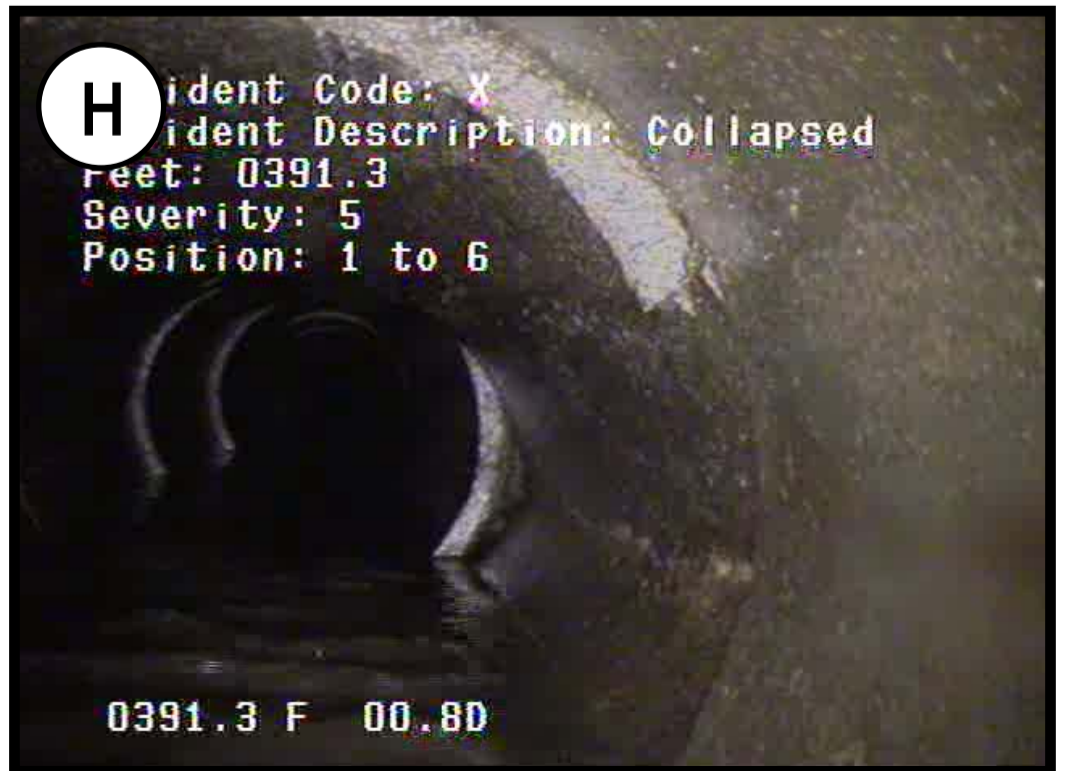


COUNTY DITCH 58

Le Sueur County, Minnesota



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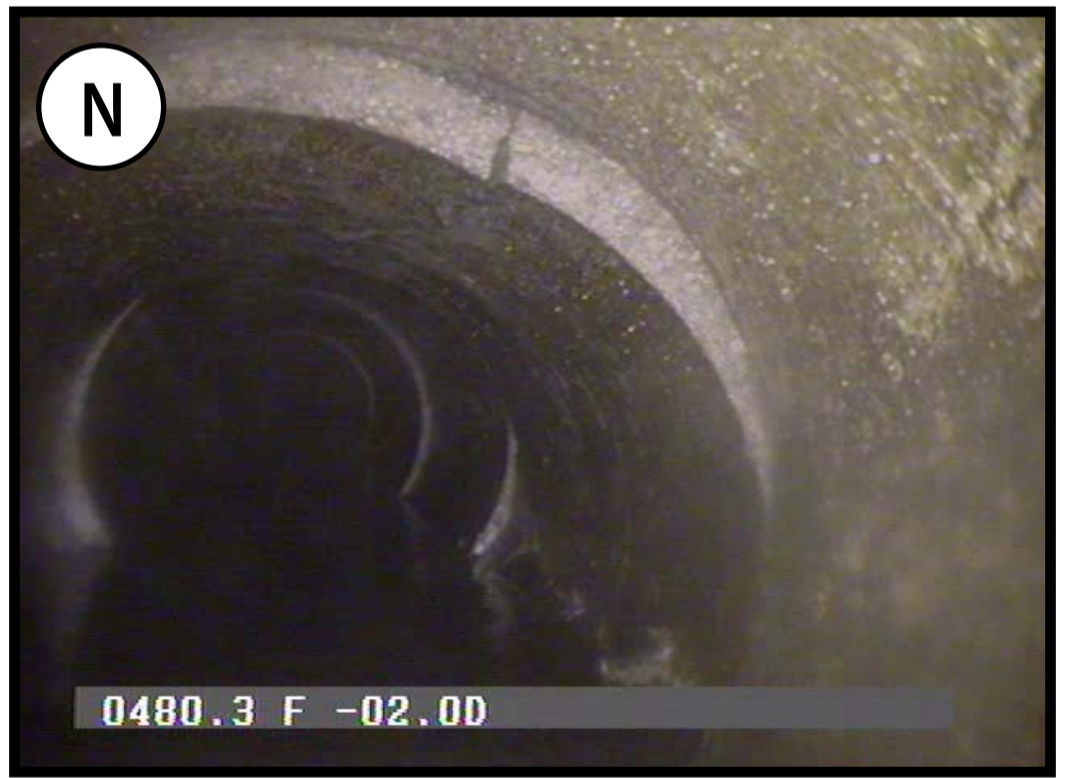


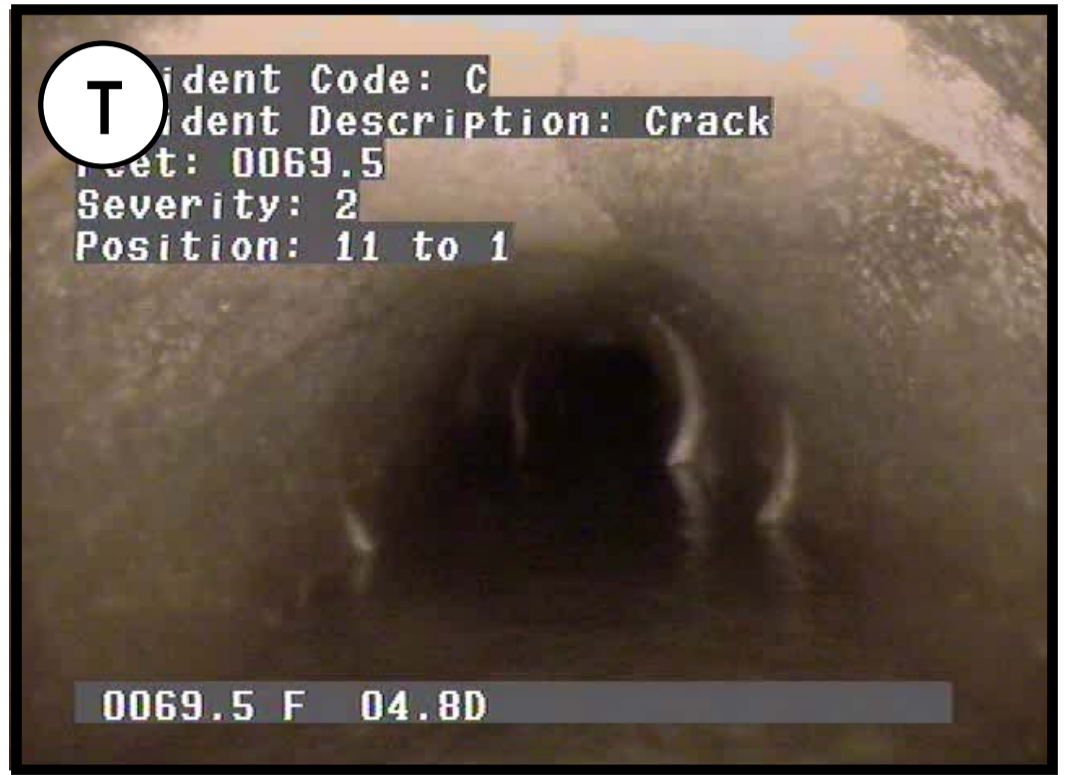
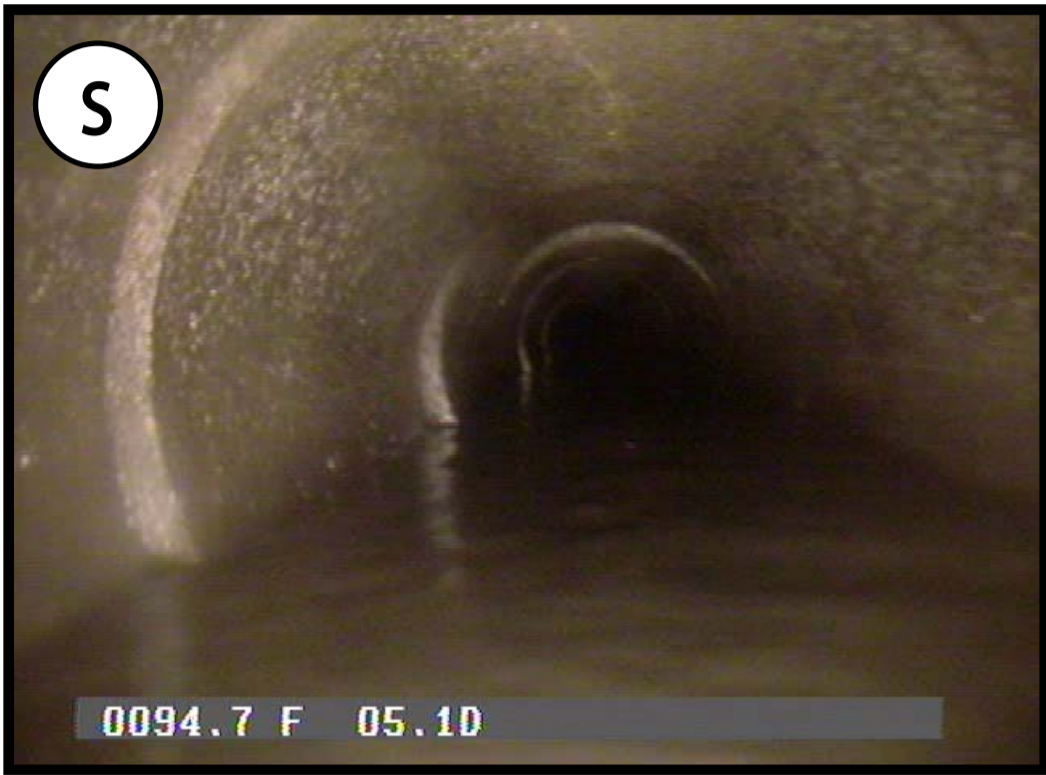
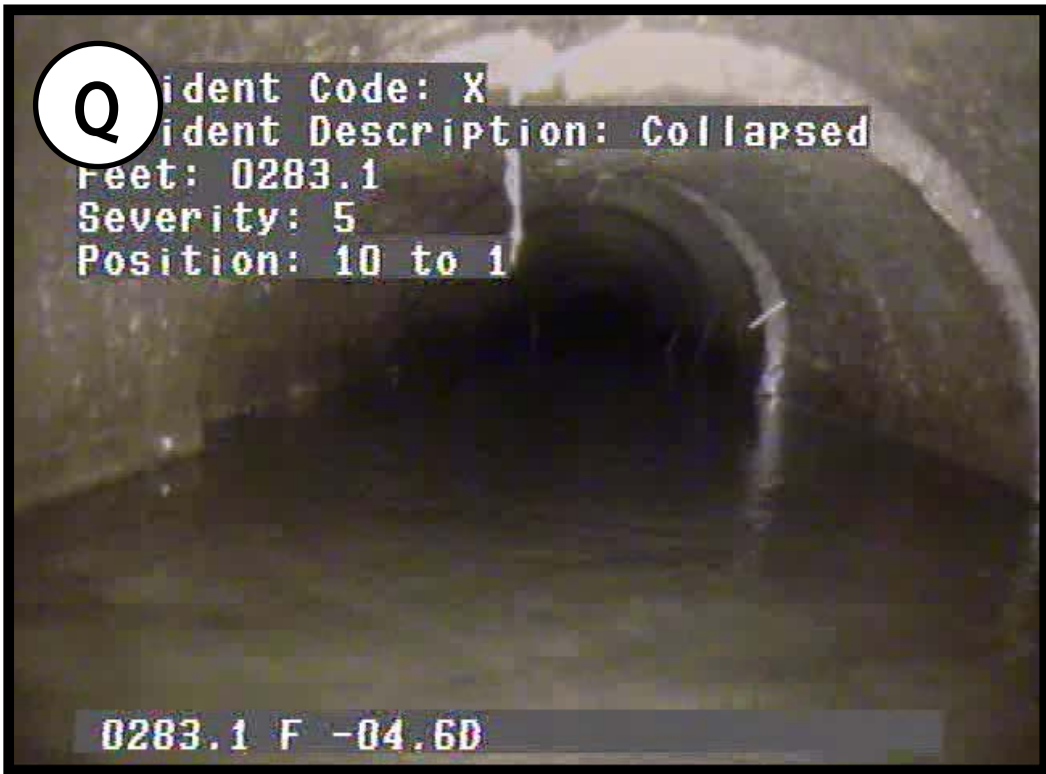
COUNTY DITCH 58

Le Sueur County, Minnesota

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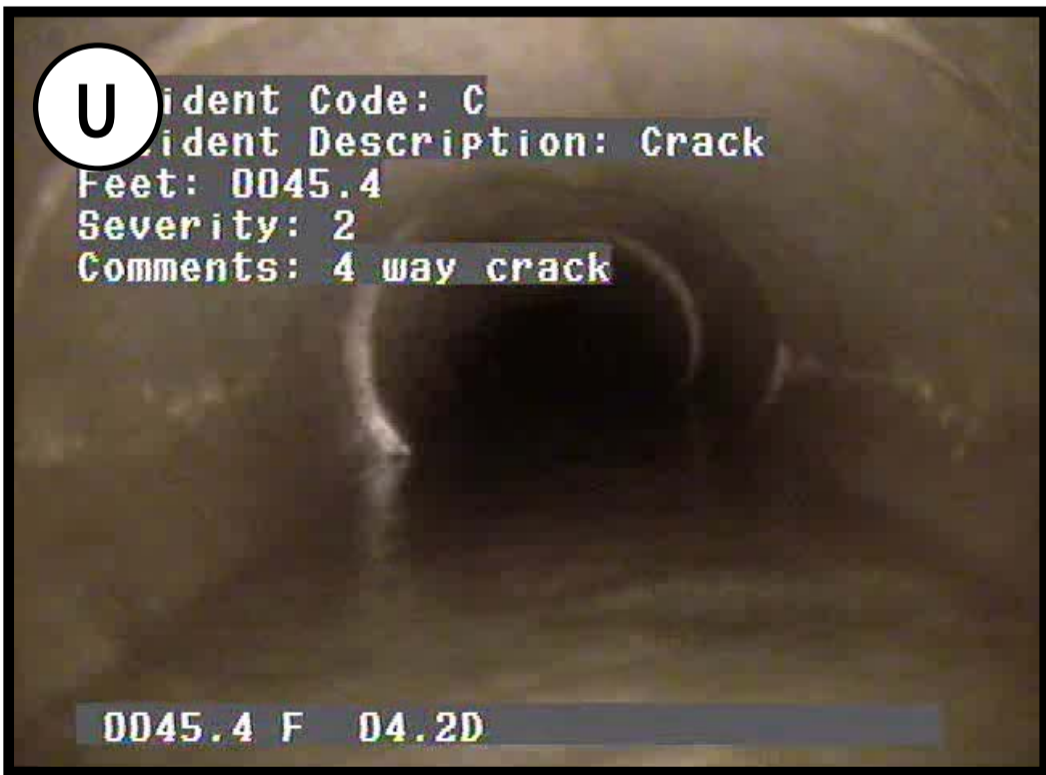


COUNTY DITCH 58

Le Sueur County, Minnesota

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June 10, 2015

Le Sueur County Drainage Authority
88 South Park Avenue
Le Center, MN 56057



Re: Amendment to the Le Sueur County Ditch No. 58 Repair Report

Members of the Le Sueur County Drainage Authority:

At the previous hearing for Le Sueur County Ditch No. 58 (CD 58) ISG was asked to look into different options to repair Branch 2 of CD 58 in a cost effective and feasible way. ISG has looked into multiple options and has presented the best option as referenced herein.

The most cost effective way to repair Branch 2 is for the proposed tile to closely follow the alignment of the existing Branch 2 tile. This requires the least amount of tile needed for the repair. The problem with following the existing tile alignment is that the soils have subsided after the original Branch 2 was installed and there is no longer adequate cover over the pipe. ISG has proposed to repair the first 1,100 linear feet of Branch 2 with a larger tile that will be installed at a flatter grade. This will restore the amount of cover above the tile without increasing capacity of the system.

The original profile drawings of Branch 2 show the tile having between four to six feet of cover above the pipe at the upper end of the Branch. Installing the larger tile at a flatter grade will restore close to the original amount of cover above the pipe. This can be seen in the profile drawing attached to this amendment.

It is proposed that the original 14-inch tile be replaced with an 18-inch tile. The 14-inch tile was installed at a 0.18% slope. Using Manning's equation, the original tile has a capacity of 2.29 cfs. The proposed 18-inch tile will be installed at a 0.04% slope; this gives the proposed tile a capacity of 2.11 cfs.

The cost to repair Branch 2 with this option is \$109,200. This amount is for the repair of the tile system and does not include the costs to repair the existing swale, when the swale is added the total cost for the repair is 161,443. A detailed cost estimate is attached.

Based on the request to look into different options for repairing Branch 2, the amendment has been made to the CD 58 Repair Report. ISG feels that this option is both cost effective and feasible. It should be noted that even though a larger tile is being proposed it has been shown that this will not increase the capacity of the system and therefore is still considered as a repair and not an improvement. It is our recommendation that the Drainage Authority move ahead with this option at the continuance of the repair hearing.

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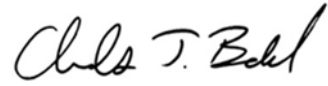
P: 507.387.6651

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Please contact us with any questions or comments.

Sincerely,

A handwritten signature in black ink that reads "Chuck J. Brandel". The signature is written in a cursive style with a large initial 'C'.

Chuck J. Brandel, PE
Civil Engineer/Principal



REPAIR COSTS

BRANCH 2

Item No.	Item	Unit	Quantity	Unit Price	Amount
001	Mobilization	LS	1	\$ 2,709.20	\$ 2,709.20
002	18" Tile Outlet (Riprap & Geotextile Fabric)	LS	1	\$ 600.00	\$ 600.00
003	18-Inch Agricultural Tile (Original 14-inch)	LF	1,100	\$ 28.00	\$ 30,800.00
004	12-Inch Agricultural Tile	LF	1,200	\$ 22.00	\$ 26,400.00
005	8-Inch Agricultural Tile	LF	810	\$ 16.00	\$ 12,960.00
006	Drop Intake	EA	3	\$ 1,300.00	\$ 4,043.00
007	Tile Connections	EA	8	\$ 325.00	\$ 2,600.00
Total					\$ 80,200.00
10% Unforeseen					\$ 8,020.00
Subtotal					\$ 88,220.00
Temporary Damages		AC	7.2	\$ 800.00	\$ 5,760.00
County Administration Costs					\$ 3,088.00
Topographic Survey					\$ 2,427.00
Repair Plans, and Specifications					\$ 3,970.00
Construction Staking & Administration					\$ 5,735.00
Total Tile Repair Cost					\$ 109,200.00

SWALE REPAIR COSTS

BRANCH 2

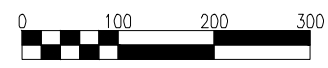
Item No.	Item	Unit	Quantity	Unit Price	Amount
001	Mobilization	LS	1	\$ 2,430.00	\$ 2,430.00
002	Clear & Grub Existing Trees	LS	1	\$ 3,200.00	\$ 3,200.00
003	24" Tile Outlet (Riprap & Geotextile Fabric)	LS	1	\$ 1,000.00	\$ 1,000.00
004	24-Inch Culvert Outlet	LF	40	\$ 34.00	\$ 1,360.00
005	24-Inch Drop Intake	EA	1	\$ 1,200.00	\$ 1,200.00
006	24-Inch CMP Culvert (Crossing)	LF	130	\$ 40.00	\$ 5,200.00
007	Clean & Regrade Swale	LF	1,500	\$ 5.00	\$ 7,500.00
008	Seed Disturbed Swale Area (Mix 34-261)	AC	1.50	\$ 2,000.00	\$ 3,000.00
009	Install MnDOT Category 4 Erosion Control Blanket	SY	1,500	\$ 7.25	\$ 10,875.00
010	Random Riprap Class III (On Type 4 Geotextile Fabric)	CY	50	\$ 80.00	\$ 4,000.00
Total					\$ 39,800.00
10% Unforeseen					\$ 3,980.00
Subtotal					\$ 43,780.00
Temporary Damages		AC	1.1	\$ 800.00	\$ 909.09
County Administration Costs					\$ 1,533.00
Topographic Survey					\$ 1,204.00
Repair Plans, and Specifications					\$ 1,971.00
Construction Staking & Administration					\$ 2,846.00
Total Swale Repair Cost					\$ 52,243.09
Total Repair Cost					\$ 161,443.09

LEGEND

- <<--- EXISTING TILE
- <<--- PROPOSED TILE
- <<--- EXISTING OPEN DITCH
- G--- EXISTING GAS MAIN

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Scale: 1" = 100'

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
CHARLES J. BRANDEL

DATE _____ LIC. NO. 43359

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE _____ LIC. NO. _____

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PROJECT
LE SUEUR COUNTY

COUNTY DITCH NO. 58 REPAIRS

CLEVELAND TWP. MINNESOTA

REVISION SCHEDULE	
NO	DESCRIPTION

PROJECT NO. 17265
FILE NAME 17265 CD 58 PROFILES
DRAWN BY ASB/KDS
DESIGNED BY ASB/KDS/CJB
REVIEWED BY CJB
ISSUE DATE ---
CLIENT PROJECT NO. ---

TITLE
REPAIR PROFILE

SHEET

