

Faribault County, Minnesota County Ditch #8/42 Staff Repair Report

January 2023



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CD8/CD42 Open Ditch Repair

BACKGROUND

County Ditch #8 (CD8) is a combination open ditch and tile system that was established in 1910. In 1915, County Ditch #42 (CD42) was established and extended the CD8 open ditch upstream another 90 stations to its current extent. The CD42 establishment also included several branches of tile. Together, the greater CD8/42 watershed is approximately 7,970 acres.

The CD8/42 open ditch system was inspected in 2019. The open ditch appeared to have accumulated sediment in the upper reach as evidenced by the submerged outlet of the CD42 Main Tile Outlet and intense vegetation growth in the ditch bottom (Figure 1). Also revealed during the scheduled inspection was tree and brush growth ranging from small and sporadic to mature and dense. Tree removal began in early 2021 and early 2022 in preparation for a potential ditch cleanout.

Record of the most recent ditch cleaning project on the CD8/42 Main Open Ditch is from 1952. The repair profile showed more than 4 feet of sediment accumulating in the top end of the CD42 open ditch. The repair report called for removing sediment from the entire 9,000-foot stretch of CD42 plus the first 1,000 feet of CD8. The CD8 open ditch was surveyed in 1942 and came to the same conclusion as the 1952 repair report, but it's unclear if any work was completed at that time.



Figure 1. The wooden headwall at the beginning of the CD42 open ditch (left) serves as the outlet for the CD42 Main Tile. The 2019 inspection revealed that the Main Tile did not have an unimpeded outlet. Vegetation growth and the lack of a definable channel downstream from the headwall (right) indicate that sediment has accumulated in the open ditch.

DATA COLLECTION

Drainage Department staff surveyed the open ditch bottom and field and road crossings in the Fall 2022. The legal grade of the CD8/42 was based off a correction of the 1942 and 1952 repair profiles. The Faribault County Public Works has replaced several road crossings over CD8. Before replacing these road crossings, the Public Works surveyed benchmarks identified on the 1942 repair profile. A correction factor of +1001.1 applied to the 1942 repair profile local datum (based off the historic benchmarks) provided an excellent fit for the CD8 and CD42 open ditch.

Survey shots of the clay bottom of the ditch and remaining field and road crossing invert elevations also support this correction. Drainage Department staff also noted the condition and location of existing tile outlets and side inlets.

PROPOSED REPAIR DETAILS

Open Ditch Cleaning: Remove sediment from the channel to the original grade of the open ditch. Level spoils.

1. CD42 Station 0+00 to -91+00.
2. CD8 Station 0+00 to 57+00.

Tree & Brush Removal: Remove trees and brush from open ditch banks and buffer

1. CD8 Station 137+00 to 150+00

Level Existing Ditch Spoils: Old ditch spoils left from previous cleanouts need to be levelled to provide access to the ditch from the buffer strip

1. CD42 Station -58+00 to -74+00 (N)
2. CD8 Station 148+00 to 154+00 (N)

Remove and Dispose of Concrete Structures:

1. CD42 Station -59+00 (S) has 5 sections of RCP pipe in the buffer to be removed and disposed of.
2. CD42 Station - 3+00 has a concrete bridge in poor condition that needs to be removed.
3. CD8 Station 36+50 has existing concrete crossing structure that needs to be removed.

Tile Outlet Repair: Repair existing tile outlet with 20' of dual wall, non-perforated tile.

1	CD42 Station -85+00 (N)	6" CMP	23	CD8 Station 166+00 (W)	12" CMP
2	CD42 Station -81+00 (N)	10" CMP	24	CD8 Station 176+30 (W)	10" CMP
3	CD42 Station -78+50 (S)	12" CMP	25	CD8 Station 178+60 (E)	18" CMP Branch D
4	CD42 Station -57+50 (S)	10" CMP	26	CD8 Station 184+90 (W)	Unknown CMP
5	CD8 Station 1+20 (S)	15" CMP	27	CD8 Station 205+60 (E)	8" CMP Branch C
6	CD8 Station 1+40 (N)	8" CMP	28	CD8 Station 216+60 (E)	15" CMP
7	CD8 Station 18+00 (S)	18" CMP	29	CD8 Station 216+70 (E)	6" PVC
8	CD8 Station 29+00 (N)	7" Concrete	30	CD8 Station 225+00 (S)	8" CMP
9	CD8 Station 32+00 (N)	8" CMP	31	CD8 Station 234+60 (S)	6" CMP
10	CD8 Station 33+40 (N)	8" CMP	32	CD8 Station 238+80 (S)	14" Concrete Branch B
11	CD8 Station 38+50 (N)	8" CMP	33	CD8 Station 239+15 (S)	18" CMP Branch B-A
12	CD8 Station 42+00 (N)	8" CMP	34	CD8 Station 248+50 (S)	6" CMP
13	CD8 Station 45+50 (S)	8" CMP	35	CD8 Station 280+00 (N)	12" CMP Branch A
14	CD8 Station 49+30 (N)	18" CMP	36	CD8 Br G Sta 32+50 (N)	12" CMP
15	CD8 Station 54+40 (S)	24" CMP	37	CD8 Br G Sta 52+80 (N)	10" CMP
16	CD8 Station 75+30 (W)	8" CMP	38	CD8 Br G Sta 62+50 (N)	6" CMP
17	CD8 Station 78+00 (E)	Unknown Clay Tile	39	CD8 Br G Sta 63+50 (S)	4" CMP
18	CD8 Station 91+80 (E)	15" CMP Branch K	40	CD8 Br G Sta 65+10 (S)	10" CMP
19	CD8 Station 97+70 (N)	10" CMP			
20	CD8 Station 97+80 (N)	18" CMP			
21	CD8 Station 134+60 (S)	15" CMP Branch F			
22	CD8 Station 138+70 (S)	12" CMP			

Armor Existing Tile Outlets: Tile outlets that don't need to be repaired but require outlet protection shall have riprap placed under them to protect the ditch bank.

1. CD42 – Estimate 9 outlets to be armored.
2. CD8 – Estimate 16 outlets to be armored.

Side Inlet Repair: Replace existing side inlet with alternative design.

1	CD42 Station -69+30 (S)	Existing 12" PE, & 12" CMP	17	CD8 Station 241+00 (W)	Existing 18" CMP
2	CD42 Station -46+50 (S)	Existing 12" PE	18	CD8 Station 249+00 (S)	Existing 18" CMP
3	CD42 Station -44+50 (N)	Existing 12" CMP	19	CD8 Station 255+60 (E)	Existing 18" CMP
4	CD42 Station -30+00 (N)	Existing 12" CMP	20	CD8 Station 265+00 (S)	Existing 18" CMP
5	CD42 Station -20+00 (S)	Existing 18" CMP	21	CD8 Station 270+50 (S)	Existing 18" CMP
6	CD8 Station 42+20 (N)	Existing 15" CMP	22	CD8 Br. G Sta 10+50 (E)	Existing 12" CMP
7	CD8 Station 49+30 (N)	Existing 15" PE	23	CD8 Br. G Sta 13+90 (W)	Existing 12" CMP
8	CD8 Station 59+80 (W)	Existing Size Unknown	24	CD8 Br. G Sta 14+00 (E)	Existing 15" CMP
9	CD8 Station 71+00 (W)	Existing 15" PE	25	CD8 Br. G Sta 51+50 (N)	Existing 10" CMP
10	CD8 Station 91+00 (E)	Existing 18" CMP	26	CD8 Br. G Sta 54+00 (N)	Existing 12" CMP
11	CD8 Station 164+00 (W)	Existing 10" CMP	27	CD8 Br. G Sta 61+20 (N)	Existing 12" CMP
12	CD8 Station 185+00 (W)	Existing 15" CMP	28	CD8 Br. G Sta 62+50 (S)	Existing 12" CMP
13	CD8 Station 205+50 (W)	Existing 12" CMP	29	CD8 Br. G Sta 65+00 (S)	Existing 12" CMP
14	CD8 Station 214+60 (E)	Existing 15" CMP	30	CD8 Br. G Sta 66+00 (S)	Existing 15" CMP
15	CD8 Station 227+20 (S)	Existing 18" CMP			
16	CD8 Station 234+70 (S)	Existing 18" CMP			

TIMELINE

Landowner informational meetings and a repair hearing could happen this winter/spring with construction to begin this summer. An anticipated repair completion date would be December 2023.

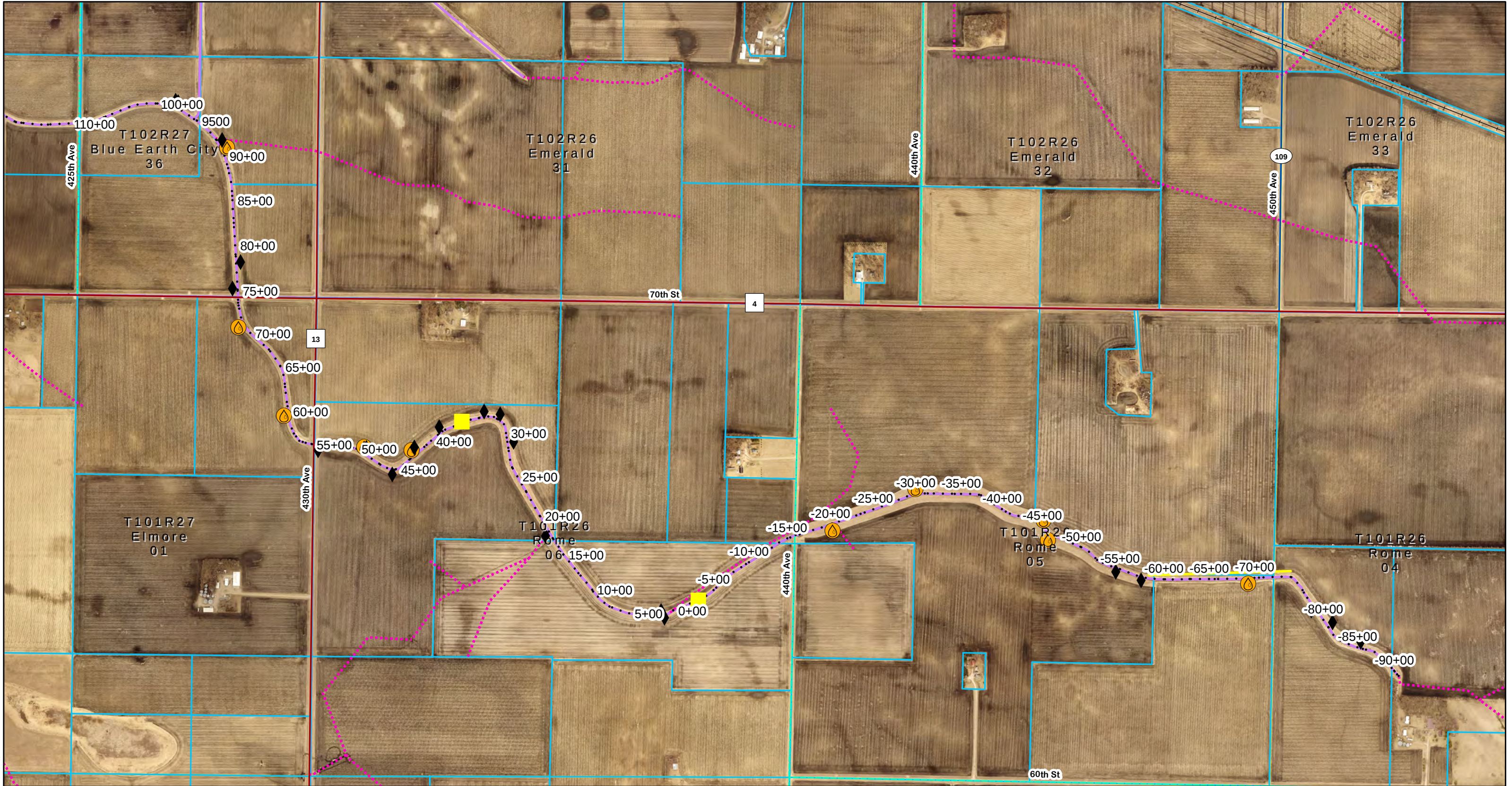
ESTIMATED COST

Item	Unit	Quant	County Est Unit Price	County Est Amount
CD42 Repairs				
Mobilization	LS	1	\$ 1,000.00	\$ 1,000.00
Open Ditch Cleaning, 5' bottom	LF	9100	\$ 3.00	\$ 27,300.00
Tile Outlet Repair (6-12")	EA	4	\$ 850.00	\$ 3,400.00
Armor Existing Tile Outlet	EA	5	\$ 350.00	\$ 1,750.00
Side Inlet Repair	EA	5	\$ 1,600.00	\$ 8,000.00
Remove & Dispose of Concrete	EA	2	\$ 2,500.00	\$ 5,000.00
Level Existing Spoils	LF	2000	\$ 1.00	\$ 2,000.00
Buffer Strip Seeding	AC	3.5	\$ 600.00	\$ 2,100.00
<i>10% Contingency</i>				\$ 5,055.00
CD42 Subtotal				\$ 55,605.00
CD8 Repairs				
Mobilization	LS	1	\$ 2,000.00	\$ 2,000.00
Open Ditch Cleaning, 5' bottom	LF	5700	\$ 2.50	\$ 14,250.00
Tile Outlet Repair (6-12")	EA	25	\$ 850.00	\$ 21,250.00
Tile Outlet Repair (15-24")	EA	11	\$ 1,500.00	\$ 16,500.00
Armor Existing Tile Outlet	EA	10	\$ 350.00	\$ 3,500.00
Side Inlet Repair	EA	25	\$ 1,800.00	\$ 45,000.00
Remove & Dispose of Concrete	LS	1	\$ 2,000.00	\$ 2,000.00
Remove Trees and Brush	LS	1	\$ 2,000.00	\$ 2,000.00
Level Existing Spoils	LF	600	\$ 1.00	\$ 600.00
Buffer Strip Seeding	AC	2.4	\$ 600.00	\$ 1,440.00
<i>10% Contingency</i>				\$ 10,854.00
CD8 Subtotal				\$ 119,394.00
				\$ 174,999.00

APPENDICES

Appendix A: CD8/42 Repair Overview Maps

Appendix B: CD8/42 Open Ditch Profiles



Legend

 Public Open Ditch	 Alternative Side Inlet
 Public Tile	 Tile Outlet Repair
 Parcels	 Level Existing Spoils
	 Dispose of Waste Concrete

1 inch = 1,000 feet

Disclaimer: Faribault County and Faribault County SWCD do not warrant or guarantee accuracy of the GIS data. The data is meant for reference purposes only and should not be used for official decisions. The data contained in the maps were compiled from the best available records that could be found and may contain errors or omissions.

Stationing Note: Station 0+00 marks the end of CD42 and the beginning of CD8. CD42 stationing is negative

CD8/42 Overview Map

Appendix A



Legend

- Public Open Ditch
- Public Tile
- Parcels
- Alternative Side Inlet
- Tile Outlet Repair
- Level Existing Spoils
- Dispose of Waste Concrete

Appendix A

1 inch = 1,000 feet



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CD8 Branch G Overview Map

Appendix A



**Faribault County
Drainage Department**
www.co.faribault.mn.us

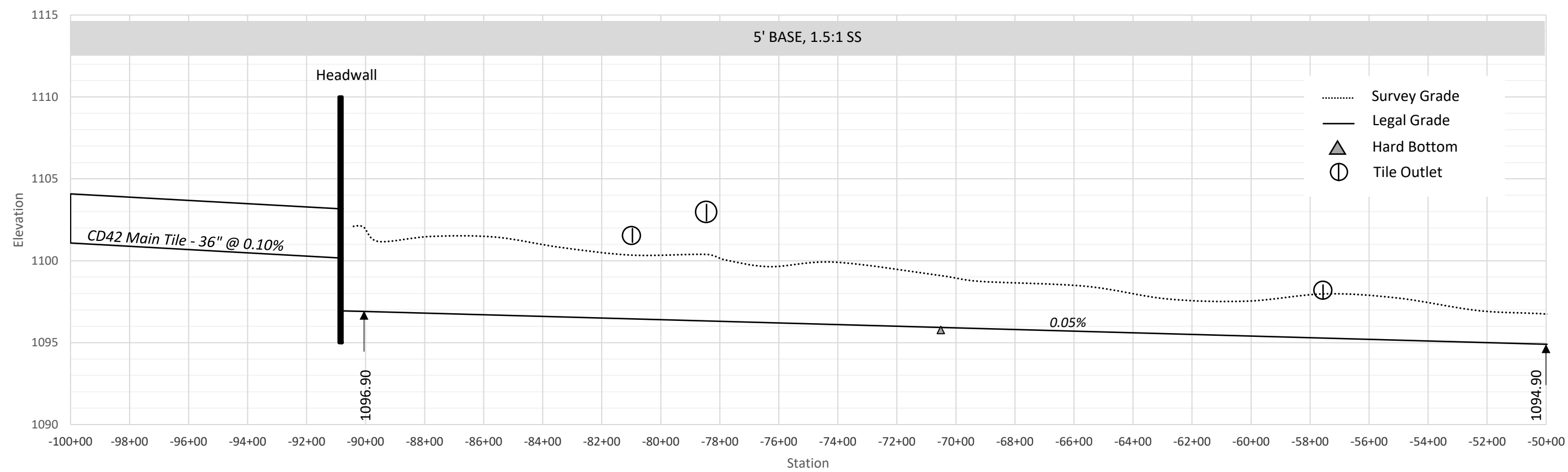
- Public Open Ditch
- ⋯ Public Tile
- Parcels
- Alternative Side Inlet
- ◆ Tile Outlet Repair

1 inch = 500 feet

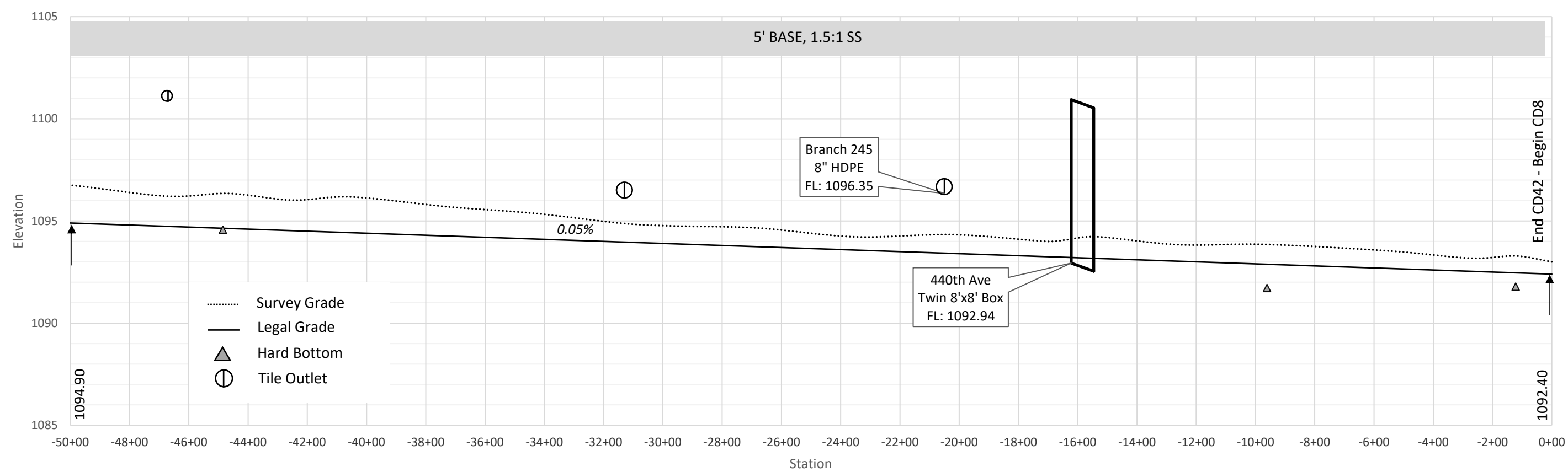


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CD42 Main Open Ditch Profile

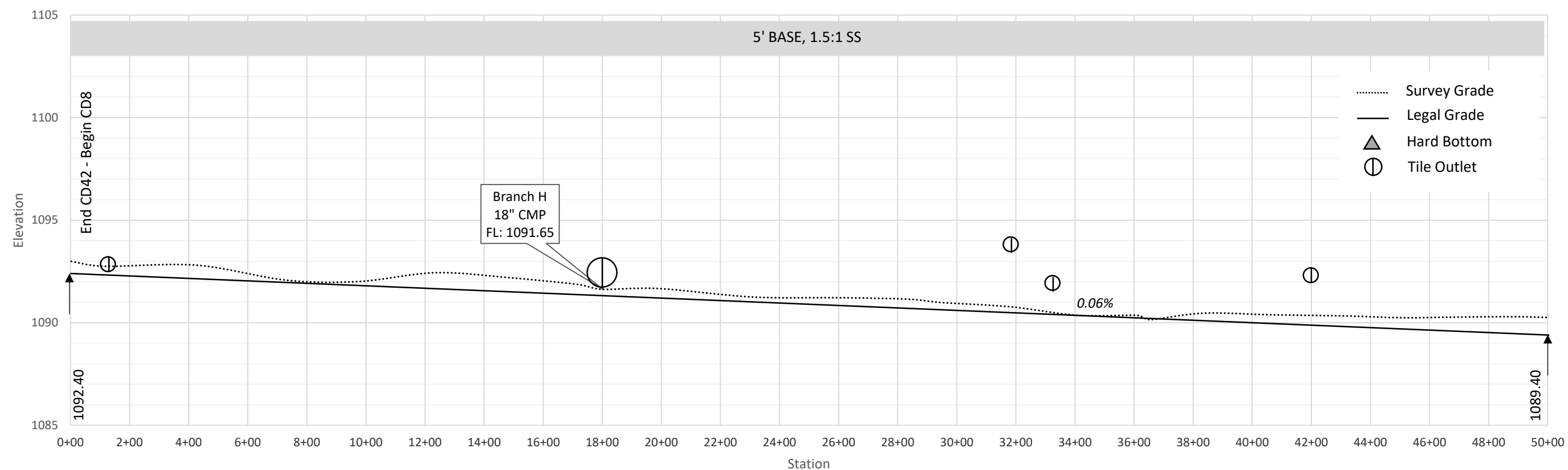


CD42 Main Open Ditch Profile

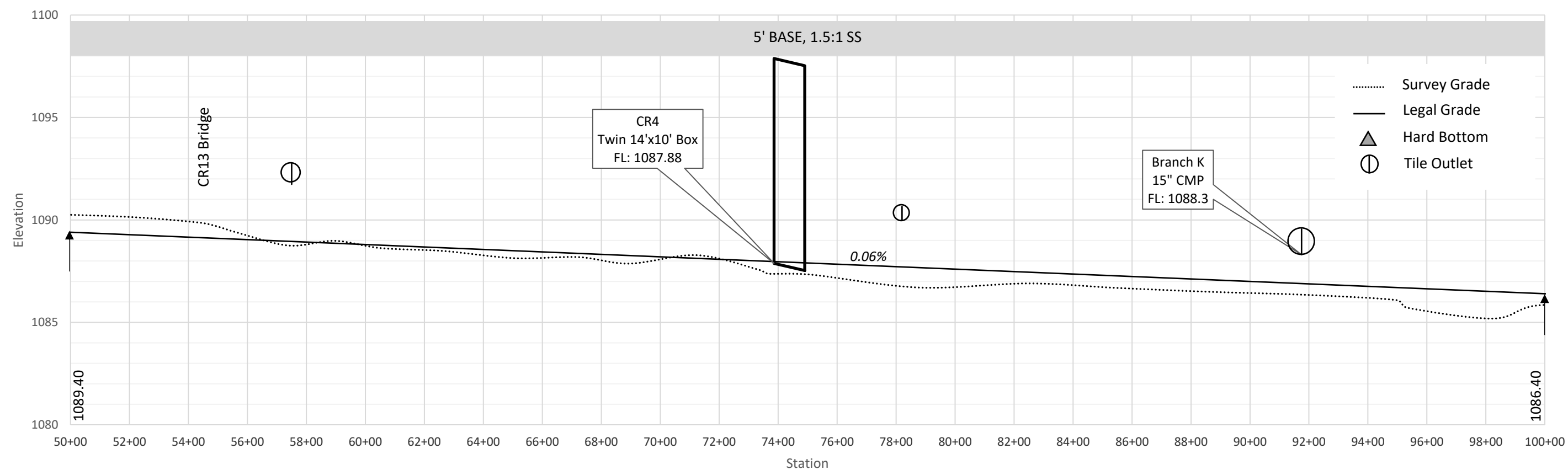


Appendix B

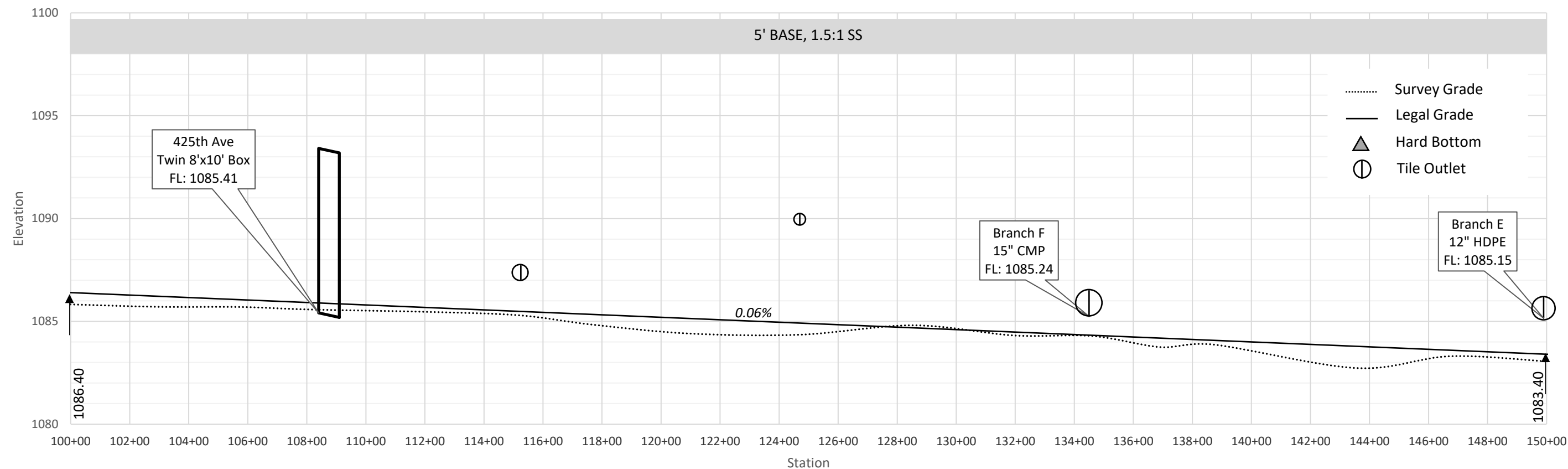
CD8 Main Open Ditch Profile



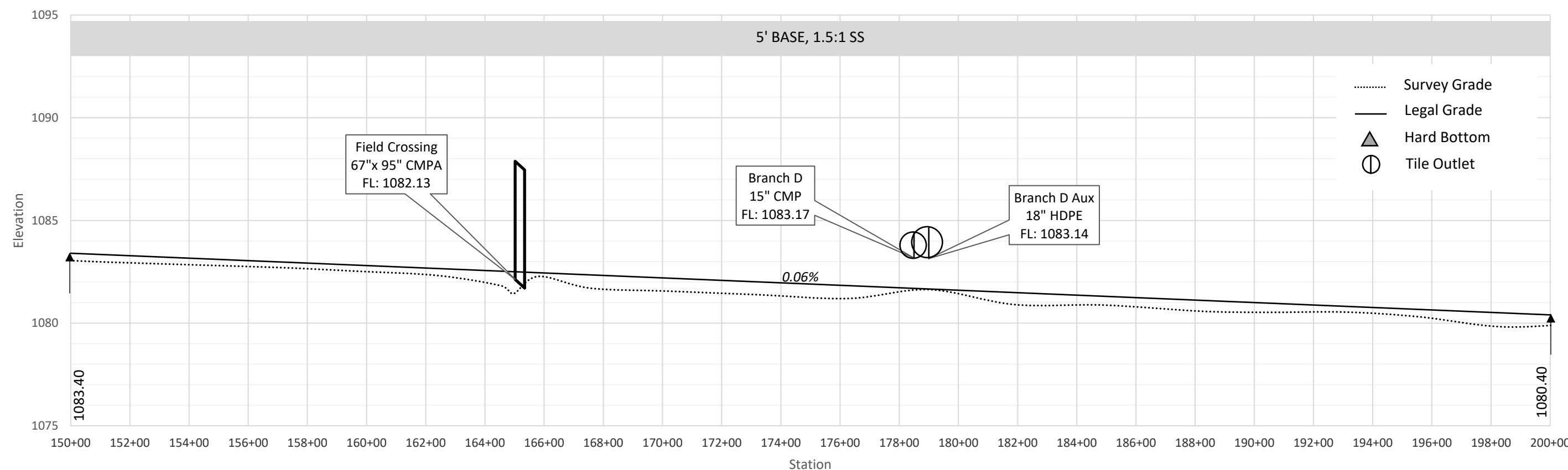
CD8 Main Open Ditch Profile



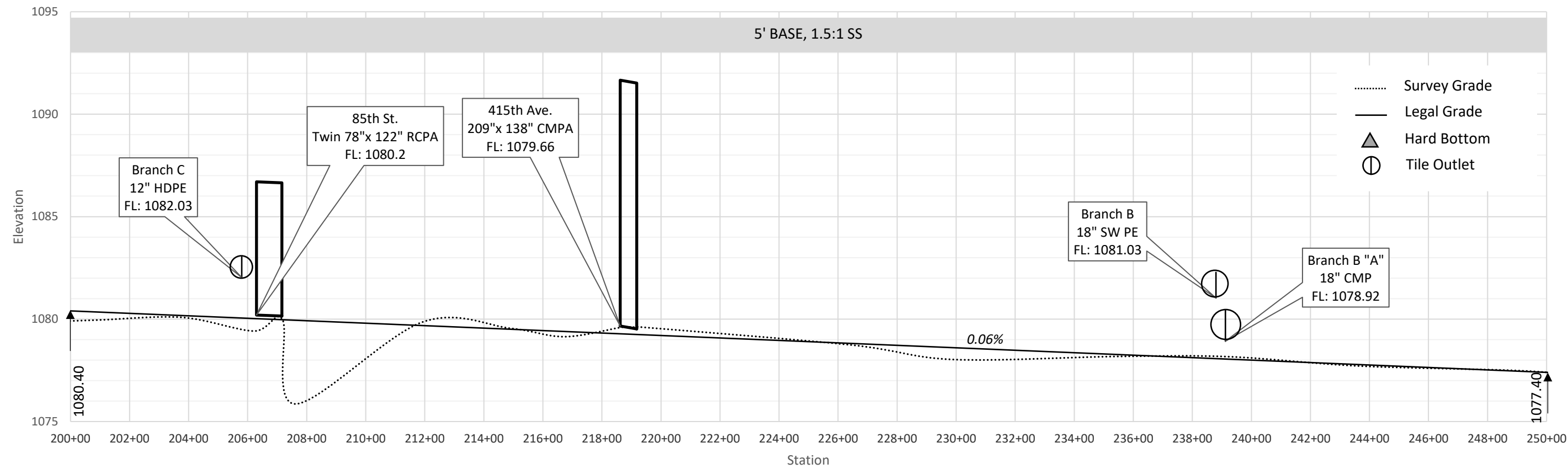
CD8 Main Open Ditch Profile



CD8 Main Open Ditch Profile



CD8 Main Open Ditch Profile



CD8 Main Open Ditch Profile

