

Faribault County, Minnesota

County Ditch #43

Staff Repair Report

June 2020

FARIBAULT COUNTY
Drainage Dept

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CD 43 System Repair

BACKGROUND

Several landowners are concerned about perceived drainage issues throughout the CD43 watershed. CD43 consists of subsurface drain tile and alternating reaches of shallow ditch and deep ditch. The shallow ditch system has an 8' bottom width and 8:1 (H:V) side slopes and the deep ditch has a 4' bottom and 2:1 side slopes. The subsurface drain tile system largely follows the route of the surface ditches. In several locations, the Main tile is in the centerline of the surface ditch system, with very little cover over the tile.

In 2019, an engineering firm, HEI, was hired to survey a targeted area of the CD43 open ditch system. An informational meeting was held February 2020 to talk about the results of that survey and the landowners requested that the remainder of the system be surveyed. Drainage Department staff surveyed the remaining portions of the surface ditch system in the Spring 2020.

DATA COLLECTION

The legal grade of the CD43 surface ditch system was determined from the 2003 improvement report that utilized a local datum. The local datum was converted to mean sea level utilizing existing culvert invert elevations. A correction factor of 962.85 provided a good fit to the existing culverts on the system. No culverts appear to be too high to significantly impact drainage, however the 210th St. Township Road Crossing and Field Crossing just upstream appear to be set slightly too low. A concrete slab at Station 101+00 does appear to be approximately 0.5 feet too high and may need to be removed. According to the public record, Lateral A was incorporated into the legal system during the Final Order and no legal grade was established. Drainage Department Staff designed a grade to drain the low area at the beginning of the Lateral.

According to the profiles, there are areas that have accumulated sediment (0-1 feet), some areas that are on grade, and other areas that appear to have been excavated below legal grade. The "deep ditch" near the outlet of the system appears to have down cut, resulting in the exposure of the Main tile in the bottom of the ditch channel. Several blowouts of the Main tile were also evident in the shallow waterway, primarily in Lura Township Section 21. Some areas of the shallow waterway system are seeing sediment deposition due to surface erosion of surrounding farm fields.

PROPOSED REPAIR DETAILS

Tree and Brush Removal: Trees and brush could be removed from the ditch bottom and side slopes to prevent flow restrictions.

- Main Trunk Station 10+00 to 18+00, 252+00 to 262+00
- Lateral F Station 5+00 to 24+00, 38+00 to 47+50

Surface Ditch Cleaning: Spot cleaning and grading of the Main Trunk should be done with extreme caution to ensure that the tile is not damaged by excavation or heavy equipment traffic. Shallow ditch spoils shall be spread in a manner to ensure overland flow is diverted into the shallow waterway.

- Main Trunk Station 25+00 to 224+00

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- Lateral D Station 0+00 to 11+00, 39+00 to 44+50
- Lateral A Station 0+00 to 52+00

Shallow Waterway Crossings: Crossing a grassed waterway with heavy equipment when conditions are not ideal can lead to poor functioning of the system. Adding heavy use area shallow ditch crossings could prevent future ditch maintenance and allow for easy access to farmland. The concrete slab at Station 101+00 should be removed or lowered.

Drain Tile Spot Repair: Several blowouts on the Main Tile were observed during the survey and should be repaired.

1. Main Trunk Station 20+00. Large blowout on Main Tile, 32" inch
2. Main Trunk Station 36+50. Tile hole, unknown tile size.
3. Main Trunk Station 57+50. Tile hole, unknown tile size.
4. Main Trunk Station 59+00. Tile hole, unknown tile size.
5. Main Trunk Station 60+00. Tile hole, unknown tile size.
6. Main Trunk Station 66+00. Tile hole, unknown tile size.
7. Main Trunk Station 74+00. Tile hole, unknown tile size.
8. Main Trunk Station 87+00. Tile hole, unknown tile size.
9. Main Trunk Station 88+50. Tile hole, unknown tile size.
10. Main Trunk Station 93+00. Tile hole, unknown tile size.
11. Main Trunk Station 101+00. Tile hole, unknown tile size.
12. Main Trunk Station 114+00. 3 Tile holes, unknown tile size.
13. Lateral F Station 24+00. Tile hole, unknown tile size

Re-Seeding Disturbed Areas: All buffer strip areas used for spreading spoils and shallow ditch areas scraped or cleaned should be re-seeded.

TIMELINE

The completion date for this project is June 1, 2021.

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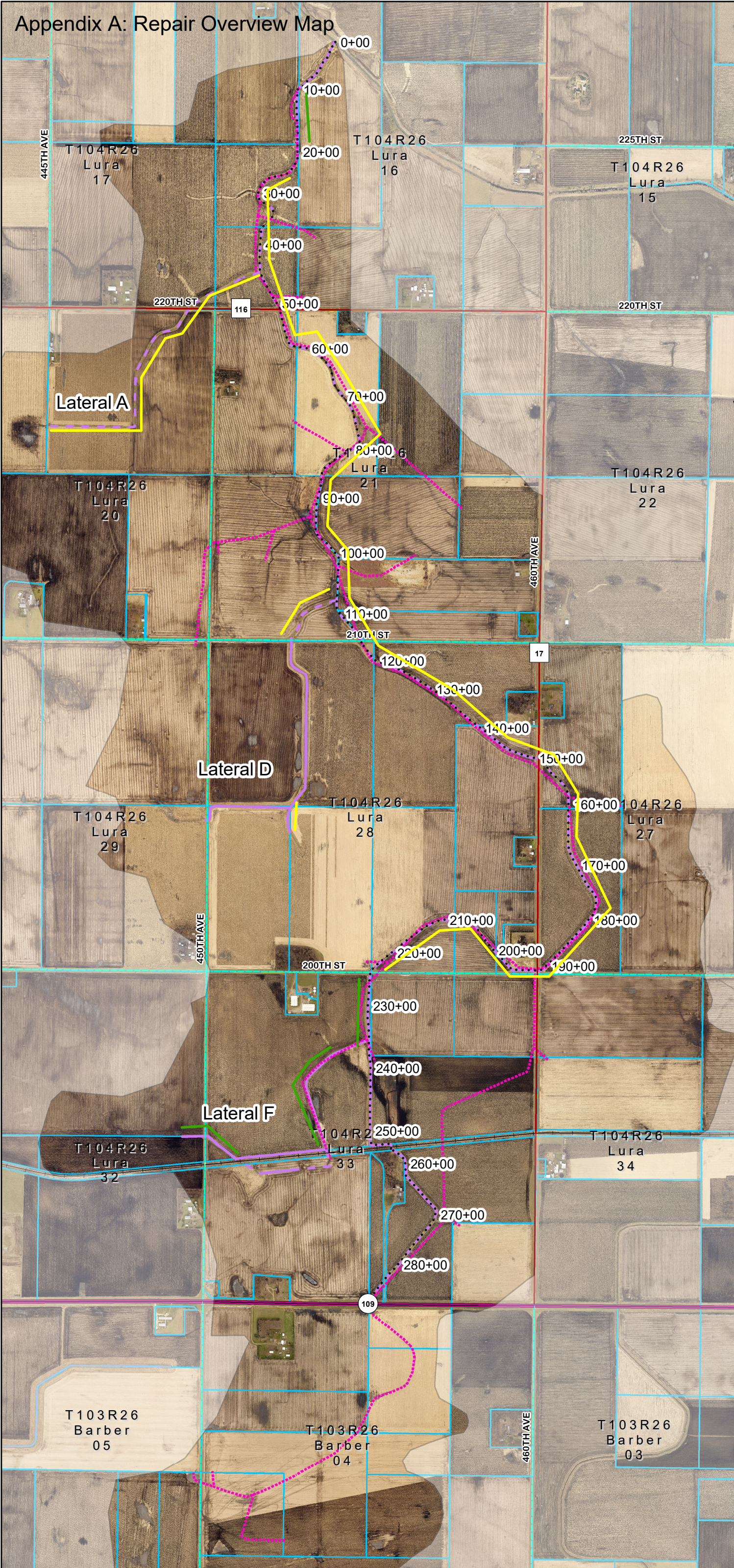
ESTIMATED COST

Item	Unit	Quant	Unit Price	Amount
Mobilization	LS	1	\$5,000.00	\$5,000.00
Surface Ditch Cleaning, 4' bottom and 8' bottom	LF	22,400	\$2.50	\$56,000.00
Tree & Brush Removal	LS	1	\$25,000.00	\$25,000.00
Shallow Waterway Crossing	EA	3	\$1,000.00	\$3,000.00
Drain Tile Spot Repair (size varies)	EA	15	\$750.00	\$11,250.00
Buffer Strip Tilling and Seeding	AC	8.9	\$500.00	\$4,450.00
10% Contingency				\$10,470.00
Total Estimated Cost				\$115,170.00

APPENDICES

Appendix A:	Repair Overview Map
Appendix B:	Plan Profiles
Appendix C:	Typical Ditch Cleaning Drawing
Appendix D:	Tree and Brush Removal Standards and Specifications

Appendix A: Repair Overview Map



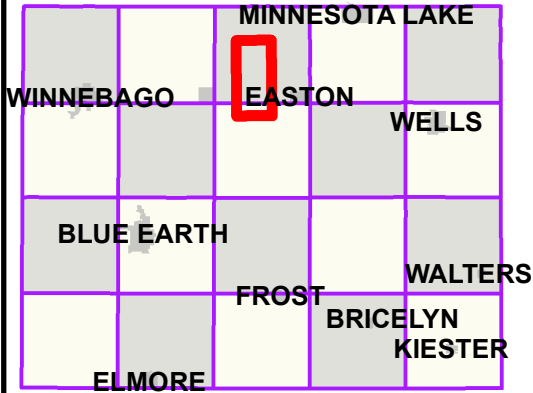
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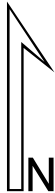
Legend

- Deep Ditch
- Shallow Ditch
- Tile
- Parcels
- Township
- Section
- Surface Ditch Cleaning
- Tree & Brush Removal

Project Location

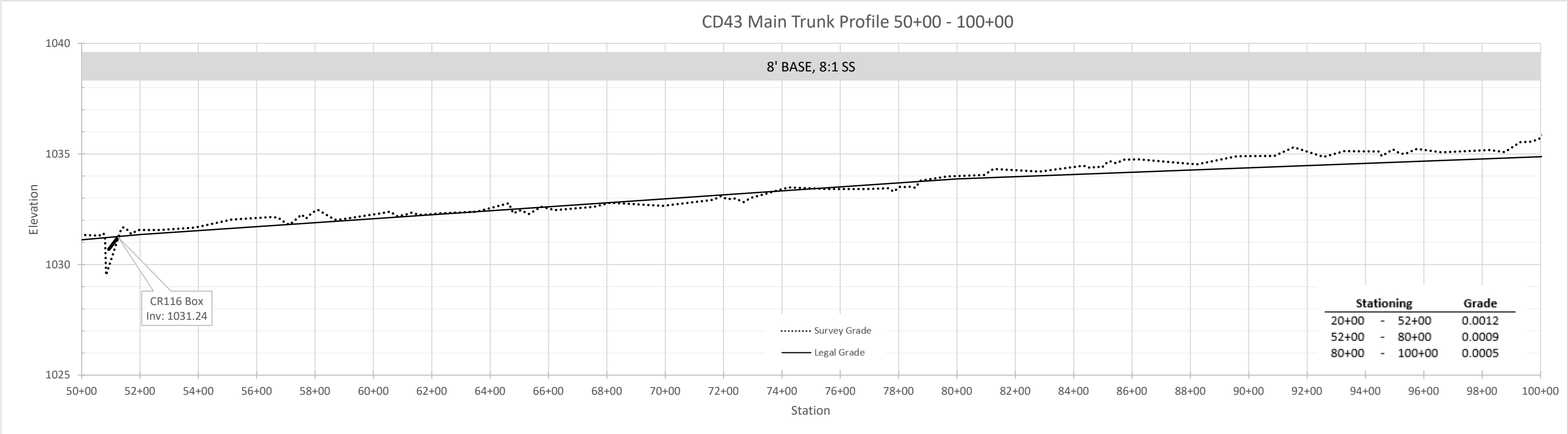
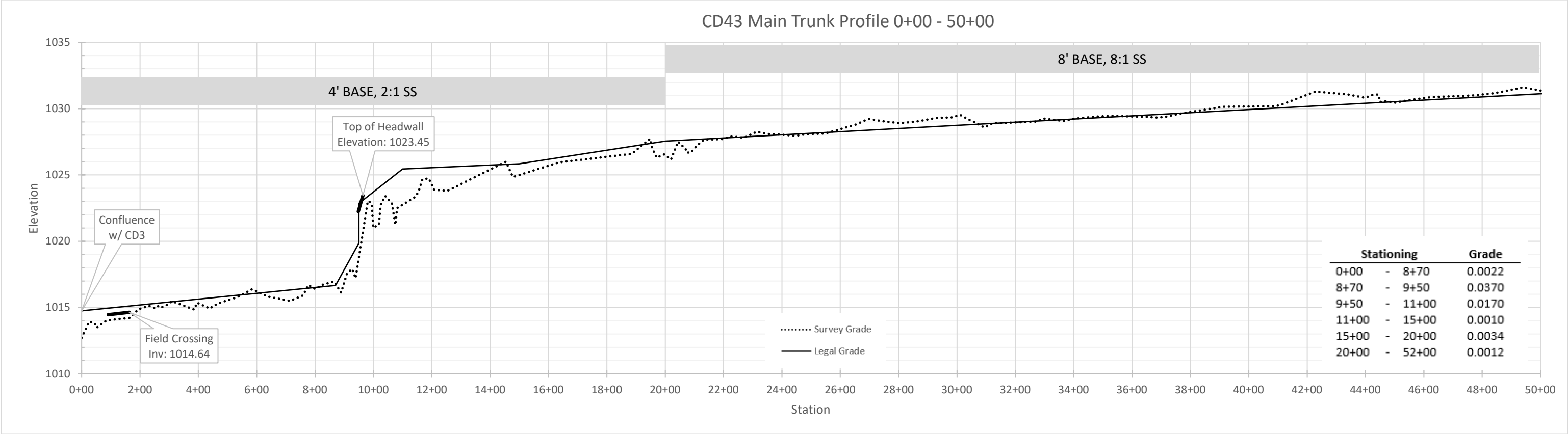


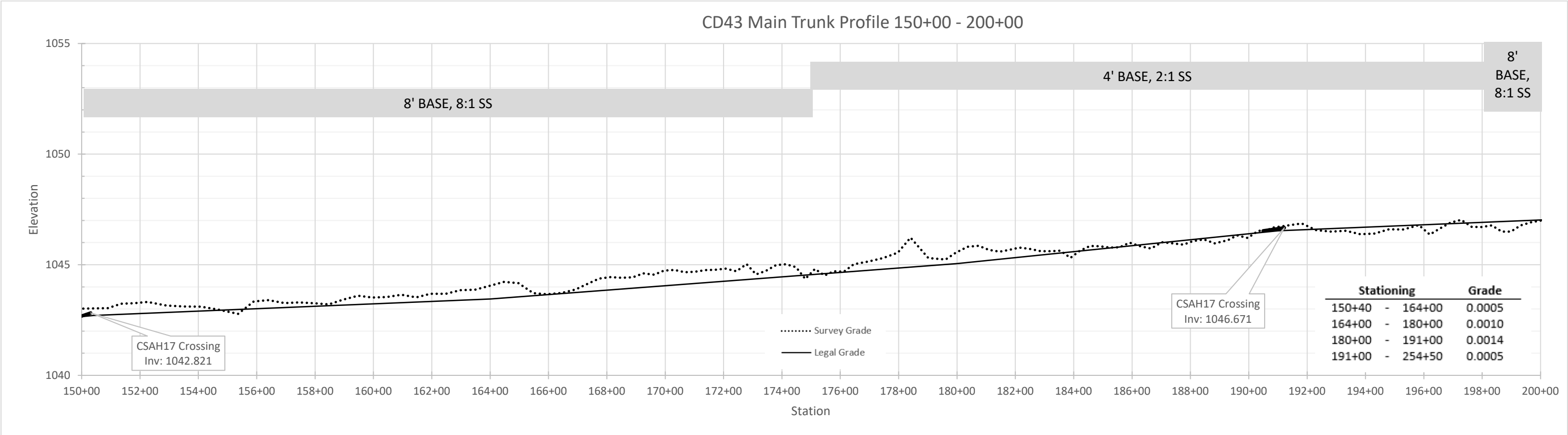
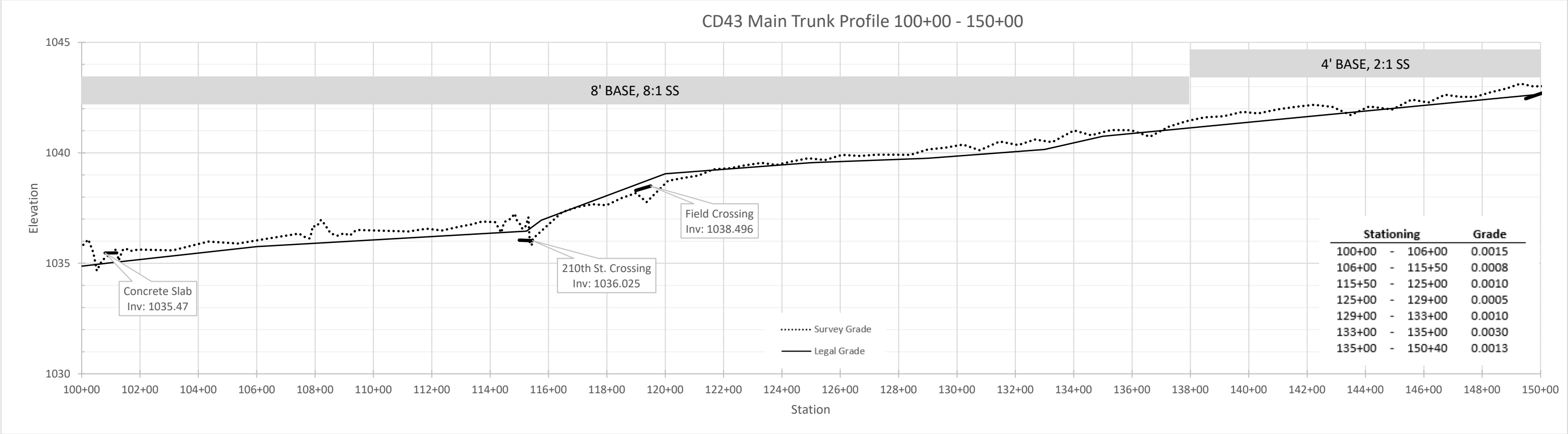
1 inch = 1,500 feet

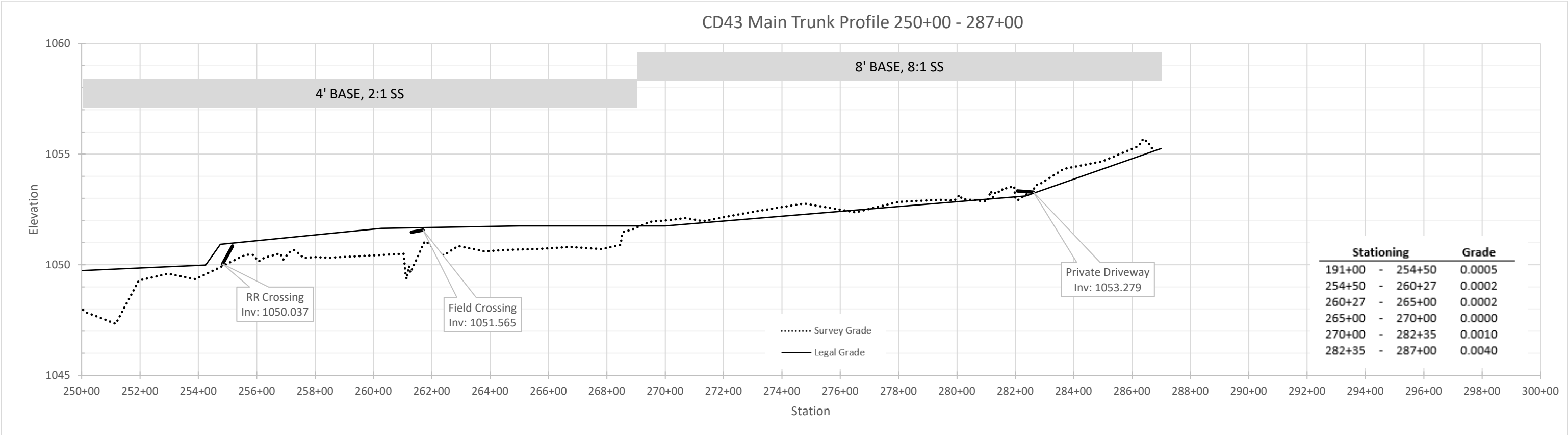
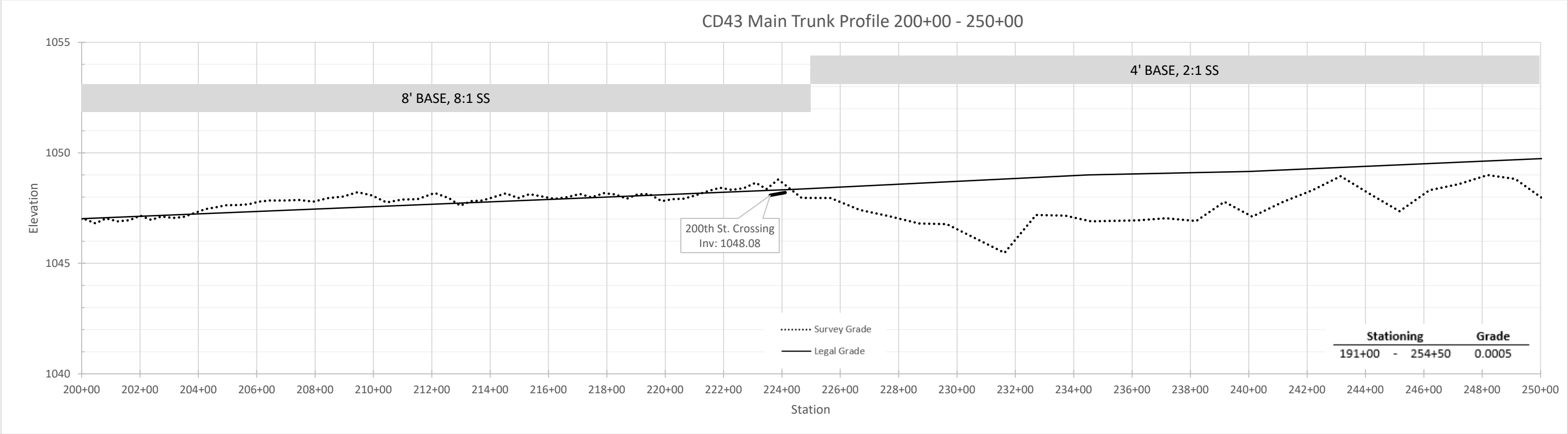


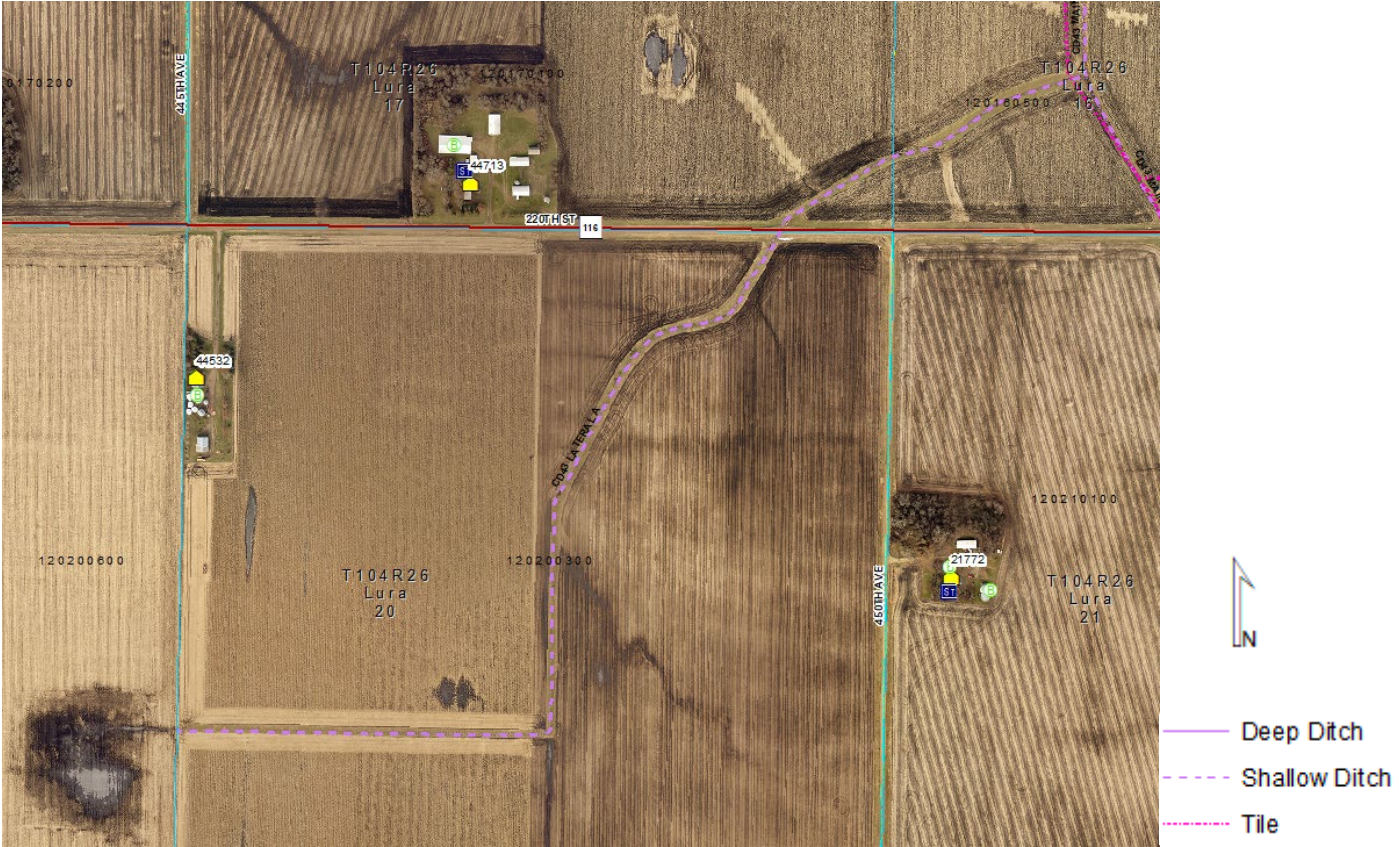
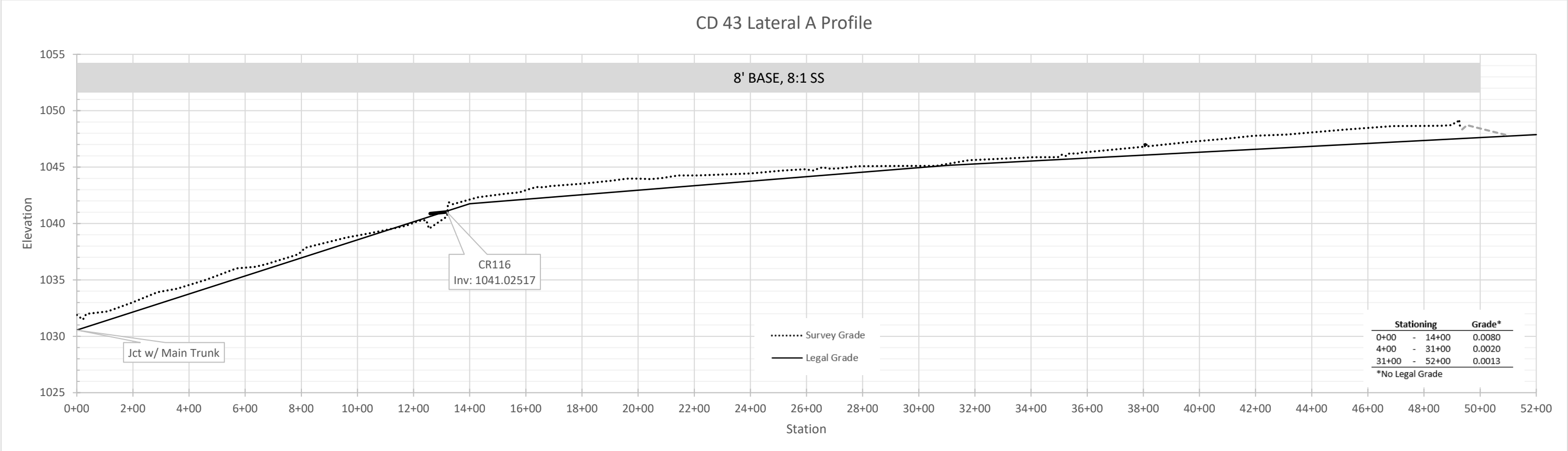
Disclaimer: Faribault County and Faribault County SWCD do not warrant or guarantee accuracy of the GIS data. The data is meant for reference purposes only and should not be used for official decisions. The data contained in the maps were compiled from the best available records that could be found and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

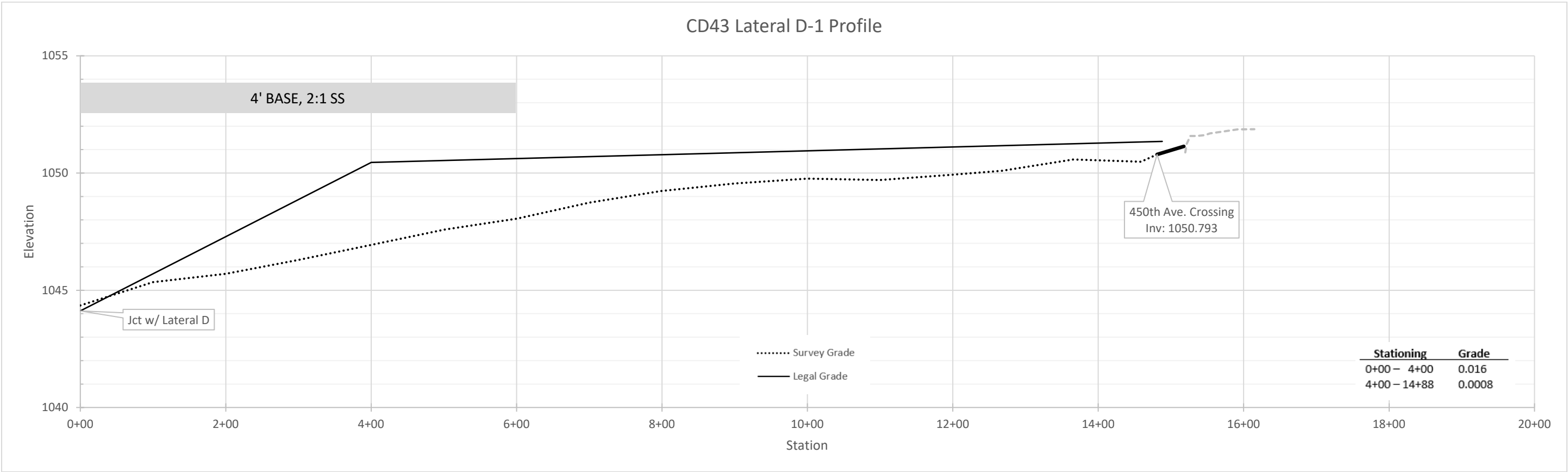
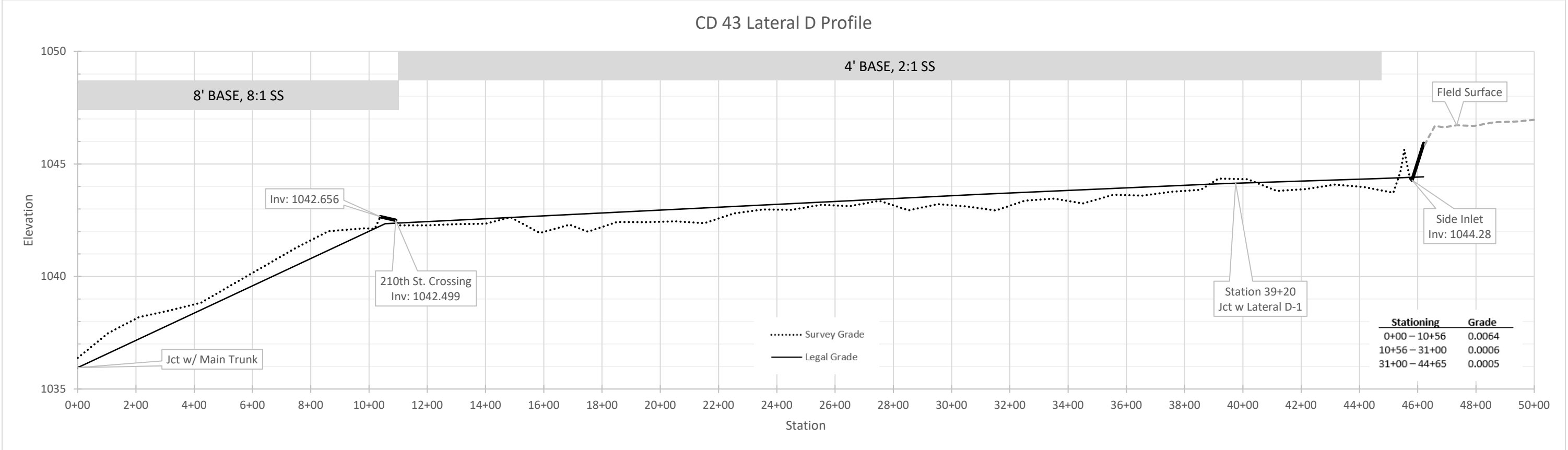
Appendix B: Plan Profiles



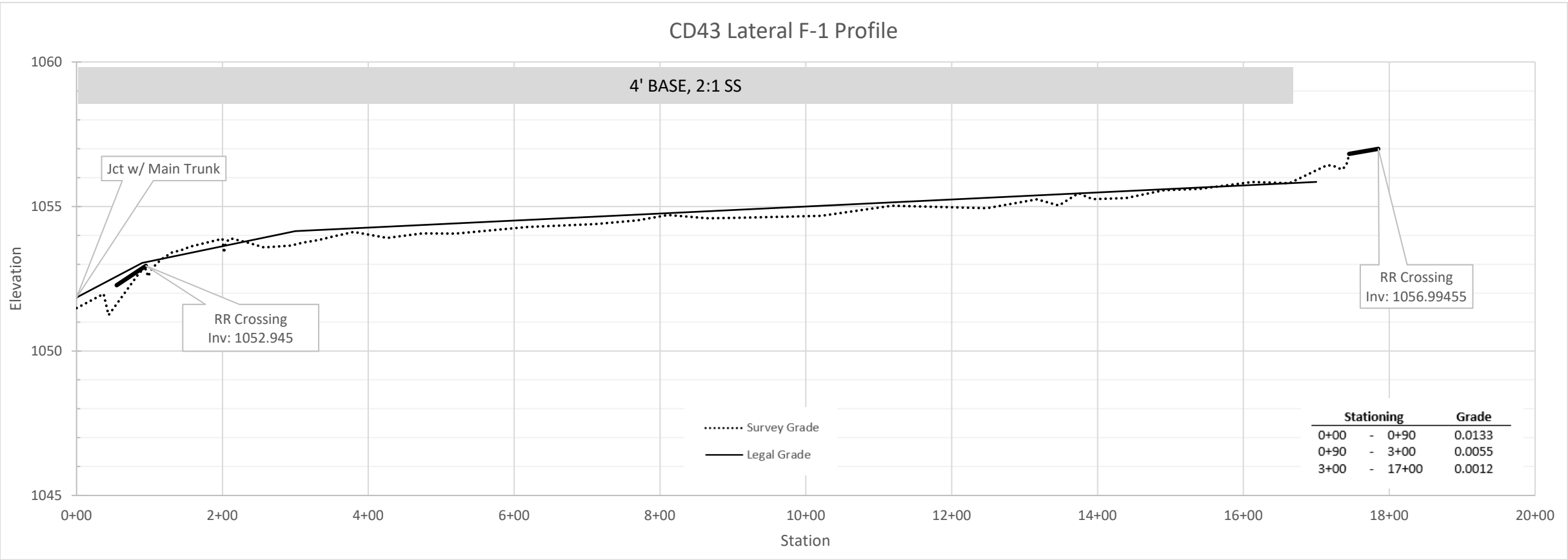
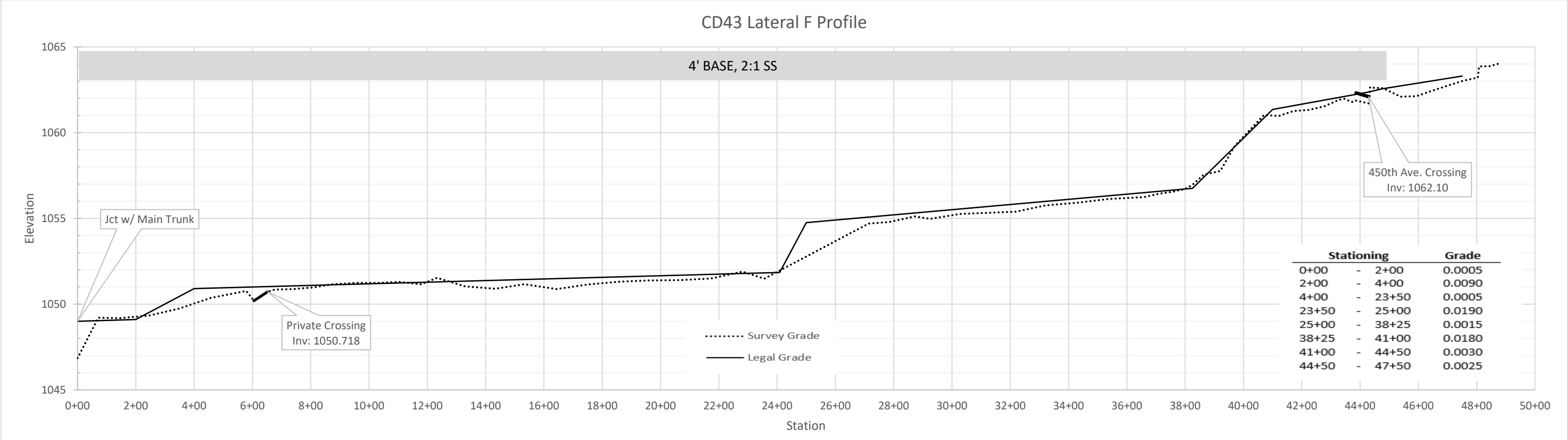














Notes:

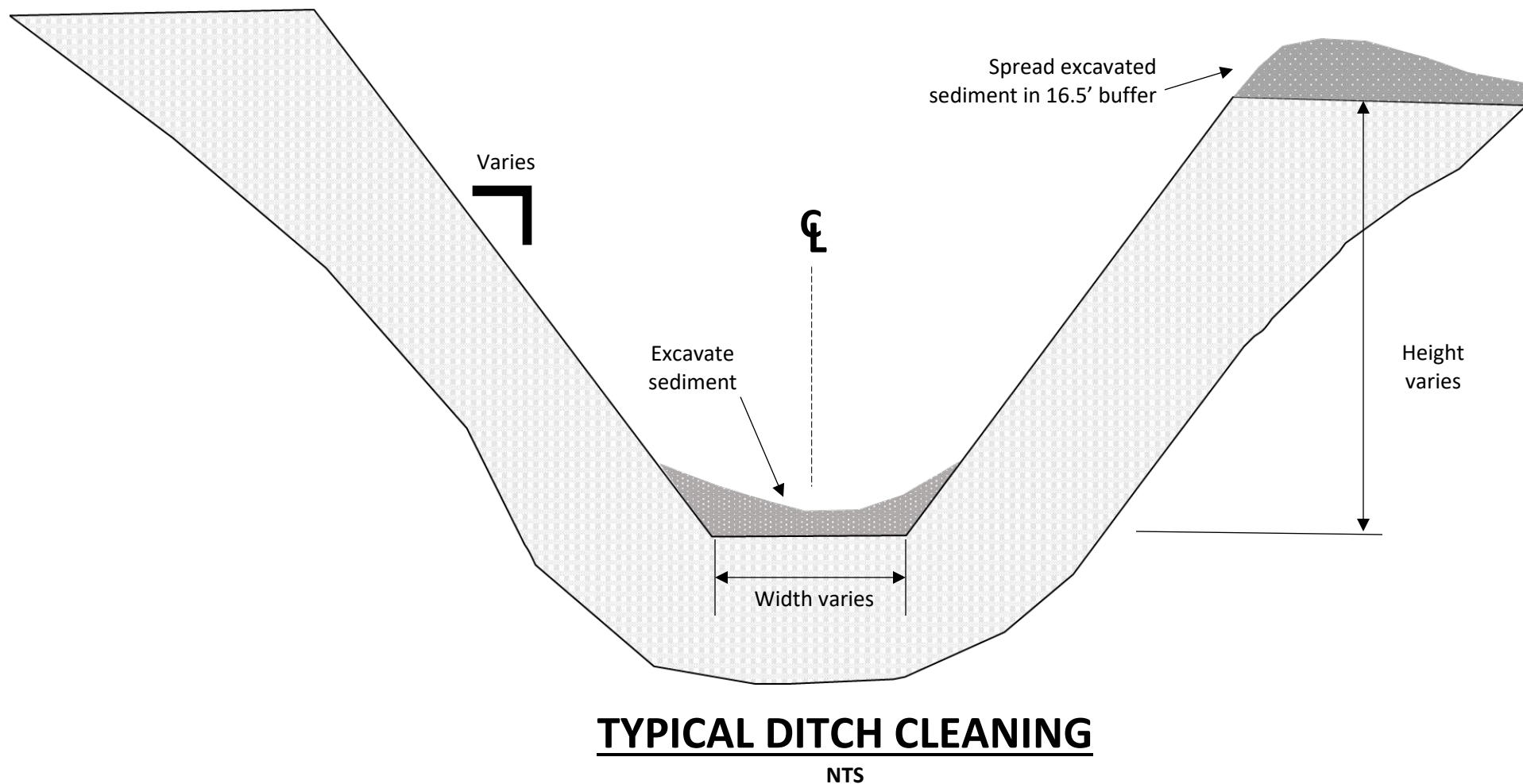
Place all spoils from ditch cleaning on the lower side of the ditch (as feasible), no wider than 16.5' wide from the top of the slope.

Miscellaneous tree clearing shall be incidental to normal ditch cleaning as needed.

Do not place spoils in areas that may inhibit the function of drop intakes and side inlets.

Re-slope side slopes if needed (incidental)

Appendix C: Typical Ditch Cleaning Drawing



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Tree Clearing and Grubbing Standards and Specifications

REQUIREMENTS

The Contractor agrees to provide all labor, materials, tools, and equipment necessary or incidental to clear, grub, and remove trees, brush, stumps, roots, and other vegetation including dead or decaying matter indicated in the Contract Documents, Scope for Work, or as directed by the Drainage Department. For additional standards, please refer to MnDOT Specification Section 2101 – Clearing and Grubbing

PAYMENT

Heavy and/or light vegetation removal shall be paid by linear foot OR at an agreed upon lump sum price.

SITE PREPARATION

Coordinate work with utility companies and obtain required permits from permitting authorities. Notify utility companies and the Drainage Department before starting work.

EXTENT OF WORK

Do not remove or damage vegetation beyond the limits of Easements held by the Drainage Department

1. All woody vegetation within 16.5 feet from top of bank shall be removed unless otherwise specified
2. Additional removal outside the 16.5-feet from top of bank may take place with approval from the Drainage Department or private landowner for safe construction practice at no additional cost to the landowner.

CLEARING AND GRUBBING OPERATIONS

In-Slope: All stumps (includes existing stumps) on the in-slope of the drainage ditch shall be removed to a maximum of 12 inches above the grade or as indicated by the Drainage Department.

Buffer Strip Area (16.5 feet from top of bank): All stumps (includes existing stumps) shall be removed or grubbed/grinded 18 inches below the ground surface. Fill holes left by removal of stumps and roots using a suitable fill material, with top surface neat in appearance and smooth.

DISPOSAL

The Contractor shall ensure the proper disposal of trees, brush, stumps, roots, and the debris or byproducts by (preference given to on-site uses):

- Chipping or grinding
 - Byproducts may be disposed of on site in a manner and location agreed upon by the Drainage Department

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- Burning
 - Inert and unburned remnants may be buried on site to a depth so as not to interfere with farming operations (>30 inches below the field surface) and in a location agreed upon by the Drainage Department and/or private landowners.
- *Marketing. Contractor reserves the rights to all vegetation after removal
- *Removal from site.

*Refer to MnDOT Specification Section 2101 – Clearing and Grubbing for reference to disposal methods that prevent the spreading of insects and disease pests.

PROTECTION OF ITEMS TO REMAIN

For items designated to remain, the Contractor shall perform clearing and grubbing operations in a manner that will not damage or jeopardize the surrounding plant life, property, and drainage system components.

CLEAN UP

Leave site in a clean condition, ready for subsequent work. Clean up spillage and wind-blown debris from public and private lands.