

Drainage District No. 44

Main Tile & Branch 37+50 Tile Improvements
Dickinson County, Iowa

May 3, 2024

Project No. 23-29502



Architecture
Engineering
Environmental
Planning
ISGInc.com

REPORT FOR:
Dickinson County
Board of Supervisors
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SIGNATURE SHEET

I HEREBY CERTIFY THAT THESE CALCULATIONS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.



A handwritten signature in blue ink that reads "Spencer D Pech".

Spencer Pech, **PE**
Project Engineer
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**Drainage District No. 44 Main Tile & Branch 37+50 Tile Improvements
Dickinson County, Iowa**

Engineer's Project Number: 23-25902

Dated this 3rd day of May 2024

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INTRODUCTION

Scope of Work

The following report is presented to provide information relative to a proposed tile improvement for the Drainage District No. 44 (DD44), Dickinson County, Iowa. On June 20, 2023, a petition was filed with the Dickinson County Board of Supervisors, requesting the DD44 Main Tile (MT) and Branch 37+50 (Br37+50) Tile be investigated to provide drainage relief to lands in the District. On June 27, 2023, the Dickinson County Board of Supervisors appointed ISG to investigate the need for drainage relief. On November 2, 2023, ISG presented their preliminary capacity findings to the Board of Supervisors. This was followed by an Informational Meeting for Landowners on December 19, 2023, with the Board of Supervisors, acting as Trustees for DD44, directing ISG to prepare a Final Engineer's Report including a preconstruction reclassification for the District.

This is the Final Engineer's Report addressing the landowners' petition associated with Drainage District No. 44 Main Tile and Branch 37+50 Tile and the associated costs for the recommended improvements.

Location + District Facilities

The Main Tile is approximately 6,900 feet long and ranges in size from 8-inches to 20-inches, installed on varying grades. The tile traverses Sections 18, 19, and 20 of Lakeville Township. The Main Tile outlets into the DD44 Main Open Ditch in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 20 of Lakeville Township. The Main Tile outlet ditch is 200 feet long with a 4' wide ditch bottom and flows into an unnamed ditch which then flows into the Little Sioux River. There are eight (8) branch tile facilities which utilize the Main Tile as an outlet. The watershed of the Main Tile was determined to be approximately 469 acres and is shown on the District Plat in Appendix E.

The Branch 37+50 Tile is approximately 2,500 feet long and ranges in size from 8-inches to 14-inches, installed on varying grades. The tile traverses Sections 18 and 19 of Lakeville Township. The Br37+50 Tile outlets into the DD44 Main Tile in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 18 of Lakeville Township. There are 2 branch tile facilities which utilize the Br37+50 Tile as an outlet. The watershed of Branch 37+50 was determined to be approximately 109 acres.

INVESTIGATION

History Summary

Based on county records, Drainage District No. 44 was established in 1918. No additional improvements or major repairs have been documented since the establishment of DD44.

Through reviewing the existing documentation for DD44, records such as the original Engineers Report of Proposed Drainage District No. 44 and the as-constructed tile records were found, but no tile grade or profile information was found. Existing tile sizes were confirmed through the original report and district plat, but grade of existing tile was estimated based on watershed topography and known cut depths. This estimated grade was refined and confirmed through survey of the existing tile at intakes, wherever possible.

Survey + Field Review

A visual field review of DD44 was conducted in July 2023. This included a review of drainage conditions throughout the watershed from roads, review of culverts and intakes, and visual review of the DD44 Main Tile outlet. Despite dry conditions at the time of field review, evidence of previous crop loss due to drown-outs were identified. In general, intakes and culverts were found at or near county secondary road crossings where expected. The DD44 Main Tile was functioning as expected at its outlet, and the

existing outlet channel was not restricting flow. There was a suck-hole discovered just upstream of the DD44 Main Tile outlet. The DD44 Main Tile appears to have collapsed in this location. No immediate disruptions to drainage are expected, but if the DD44 Main is not improved or replaced, this section of the tile should be repaired.

Aerial Imagery Review

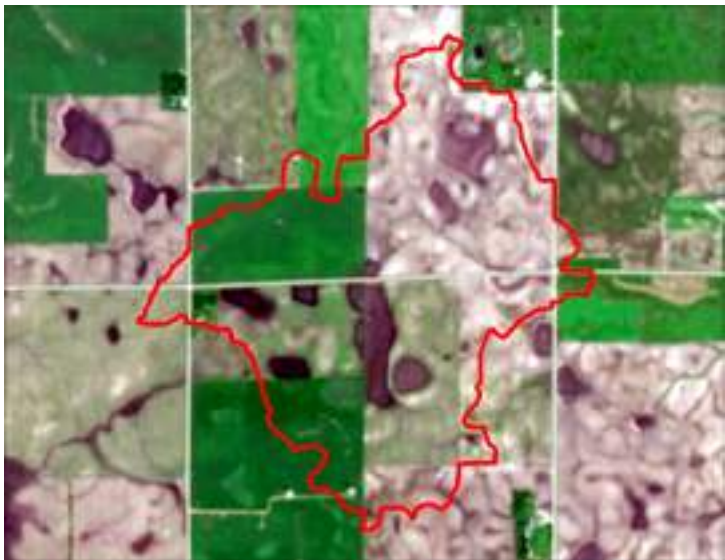
Due to drier climate and below average rainfall over the previous 2-3 years, historical aerial imagery was reviewed to better understand the conditions within the watershed during normal or wet weather climate. The figures below show stunted crop production and even complete crop loss down outs in multiple years of wet weather. Regular crop loss and down outs are typical of undersized drainage systems.



August 2011



July 2016



June 2018



August 2018

Tile Condition Evaluation

Beyond the tile collapse mentioned above, no evidence of complete failure of the existing DD44 facilities was found within the watershed. Additionally, there is no record of any major repairs completed to the system since its original construction. However, the system is over 100 years old and likely near the end of its useful life. It is typical of systems of this age to have cracking, joint misalignment, and minor failures throughout. Further investigation by televising the existing facilities with a pipe crawler would be required for a more detailed evaluation of the condition of the facilities.

Tile Capacity Evaluation

After field review, the original plans of the District were reviewed and an evaluation of the existing capacity for the Main Tile and Branch 37+50 Tile was completed. Current standards for agricultural drainage recommend a tile be sized to drain a minimum of ½ inch of water per acre over a 24-hour period when lands have insufficient surface drainage. It is also a common practice to size tile for ¾ inch of stormwater per acre over a 24-hour period in areas with poorly drained soil and/or where the natural topography provides little to no surface drainage relief. Based on our preliminary evaluation, we have found the lands within the Main Tile and Br37+50 Tile have insufficient surface relief. Existing capacities for the DD44 facilities typically range from 0.24-0.55 inches/acre/day. These capacities are slightly more than what is typical for tile systems constructed in the early 1900's, which rarely have the capacity to meet standards for current cropping practices. The Table 1 below summarizes the existing capacity of the MT and Br37+50 Tile.

Table 1: Main Tile and Branch 37+50 Tile Summary

Area	STA	Existing Size (in)	Existing Slope (%)	Drainage Area (Acres)	Existing Drainage Coefficient (in/day)	% of 0.5" Drainage Coefficient	% of 0.75" Drainage Coefficient
Main Tile							
Outlet to Br 6+31	0+00	20	0.44%	468.8	0.47	94.0%	62.6%
Br 6+31 to STA 11	6+31	20	0.40%	447.3	0.47	93.9%	62.6%
STA 11 to Br 14	11+00	18	0.40%	436.8	0.36	72.6%	48.4%
Br 14 to STA 23	14+00	18	0.60%	416.1	0.47	93.3%	62.2%
STA 23 to Br 32	23+00	20	0.23%	311.5	0.51	102.7%	68.4%
Br 32 to Br 37+50	32+00	20	0.23%	291.0	0.55	109.9%	73.3%
Br 37+50 to Br 45	37+50	16	0.12%	171.1	0.37	74.1%	49.4%
Br 45 to Br 54	45+00	15	0.12%	163.9	0.33	65.2%	43.4%
Br 54 to Br 55	54+00	15	0.12%	137.6	0.39	77.6%	51.7%
Br 55 to Br 59	55+00	12	0.12%	63.6	0.46	92.6%	61.7%
Br 59 to STA 64	59+00	10	0.12%	42.7	0.42	84.9%	56.6%
STA 64 to STA 71	64+00	8	0.12%	21.1	0.47	94.6%	63.0%
Branch 37+50							
Main to Br 37+50 - 7	0+00	14	0.10%	109.3	0.37	74.2%	49.5%
Br 37+50 - 7 to STA 12	7+00	12	0.10%	77.6	0.35	69.3%	46.2%
STA 12 to Br 37+50 - 21	12+00	10	0.10%	69.0	0.24	47.9%	32.0%
Br 37+50 - 21 to STA 25	21+00	8	0.10%	25.3	0.36	72.1%	48.1%

MAIN TILE

The tile capacity of the Main Tile varies throughout the system, with the tile being limited to 94.0% of the recommended drainage coefficient at its outlet. However, it should be noted approximately 1,100 feet upstream of the outlet is restricted to 72.6% of the recommended drainage coefficient, therefore restricting nearly the entire watershed to a 0.36"/day drainage coefficient.

BRANCH 37+50 TILE

The tile capacity of the Branch 37+50 Tile varies throughout the system, with the tile being limited to 74.2% of the recommended drainage coefficient at its outlet. However, it should be noted approximately 1,200 feet upstream of the outlet is restricted to 47.9% of the recommended drainage coefficient. On average, the Br37+50 Tile has approximately 66% of the recommended drainage coefficient.

PROPOSED OPTIONS

Our original evaluation of proposed improvement considered multiple improvement options (0.5" and 0.75" drainage coefficient). However, further evaluation found the existing facilities could be replaced with the same or next available size larger than existing, and the facility could provide nearly a 0.5' drainage coefficient throughout. Therefore, our proposed options include a repair option and an improvement option. The repair option represents approximately a 0.5" drainage coefficient, and the improvement option represents approximately a 0.75" drainage coefficient. The enclosed preliminary plans in Appendix E are representative of the improvement options, however the repair options would follow the same alignment and design, with modifications in tile size and grade to match the repair design as described below.

Tile Repair Options

MAIN TILE REPAIR OPTION

The existing Main Tile outlets into an open ditch in the NW ¼ NW ¼ of Section 20 of Lakeville Township. The tile traverses Sections 18, 19, and 20 of Lakeville Township with crossings on 170th Avenue and 180th Street. The proposed tile repair would follow a similar alignment with minor grade adjustments compared to the existing Main Tile. The tile would be replaced with a new pipe with the same size tile or next larger, commonly available size. For example, the existing Main Tile contains 20" tile, which is no longer a commonly manufactured size, so in those instances, the tile would be repaired with a 24" tile, which is the next largest commonly manufactured size. As result, along with minor grade adjustments, the repair option will result in slightly greater drainage coefficients as shown in the Proposed Tile Repair Summary table below. However, the most restrictive drainage coefficient is 0.46 in/day, which is below the recommended minimum of 0.5 in/day.

BRANCH 37+50 TILE REPAIR OPTION

The existing Br37+50 tile outlets into the DD44 Main Tile in the SW ¼ SE ¼ of Section 18 of Lakeville Township. The tile traverses Sections 18 and 19 of Lakeville Township with crossings on 180th Street. The proposed tile repair would follow a similar alignment with minor grade adjustments compared to the existing branch tile. The tile would be replaced with a new pipe with the same size tile or next larger, commonly available size. For example, the existing Br37+50 contains 14" tile, which is no longer a commonly manufactured size, so those instances, the tile would be replaced with a 15" tile, which is the next largest commonly manufactured size. As result, along with minor grade adjustments, the repair option will result in slightly greater drainage coefficients as shown in the Proposed Tile Repair Summary table below. However, the most restrictive drainage coefficient is 0.45 in/day, which is below the recommended minimum of 0.5 in/day.

Table 2: Proposed Tile Repair Summary

Area	Existing Size (in)	Proposed Size (in)	Existing Slope (%)	Proposed Slope (%)	Drainage Area (Acres)	Existing Drainage Coefficient (in/day)	Proposed Drainage Coefficient (in/day)
Main Tile							
Outlet to Br 6+31	20	24	0.44%	0.25%	468.8	0.47	0.62
Br 6+31 to STA 11	20	24	0.40%	0.25%	447.3	0.47	0.65
STA 11 to Br 14	18	18	0.40%	0.55%	436.8	0.36	0.46
Br 14 to STA 23	18	18	0.60%	0.60%	416.1	0.47	0.51
STA 23 to Br 32	20	24	0.23%	0.20%	311.5	0.51	0.84
Br 32 to Br 37+50	20	24	0.23%	0.20%	291.0	0.55	0.90
Br 37+50 to Br 45	16	18	0.12%	0.20%	171.1	0.37	0.71
Br 45 to Br 54	15	15	0.12%	0.20%	163.9	0.33	0.46
Br 54 to Br 55	15	15	0.12%	0.20%	137.6	0.39	0.54
Br 55 to Br 59	12	12	0.12%	0.20%	63.6	0.46	0.65
Br 59 to STA 64	10	10	0.12%	0.20%	42.7	0.42	0.59
STA 64 to STA 71	8	8	0.12%	0.20%	21.1	0.47	0.66
Branch 37+50							
Main to Br 37+50 - 7	14	15	0.10%	0.20%	109.3	0.37	0.68
Br 37+50 - 7 to STA 12	12	12	0.10%	0.20%	77.6	0.35	0.53
STA 12 to Br 37+50 - 21	10	10	0.10%	0.30%	69.0	0.24	0.45
Br 37+50 - 21 to STA 25	8	8	0.10%	0.20%	25.3	0.36	0.55

Tile Improvement Options

MAIN TILE IMPROVEMENT OPTION

Based on our investigation and analysis, a drainage coefficient of 3/4-inch/day is recommended for the Main Tile. The topography of the watershed does not provide surface drainage relief; historically a 1/2-inch coefficient would be considered adequate for a watershed with minimal surface relief. However, it is typical to recommend a 3/4-inch coefficient be utilized for areas without sufficient surface relief, and particularly in a watershed similar to DD44, where the existing facilities are near .4-inch coefficient and there still are low lying areas that historically experience crop drown out and ponding. The proposed Main Tile improvements will include a new pipe that generally follows the alignment of the existing Main Tile with some adjustments to allow the proposed roadway crossings to be perpendicular with the roadway. The proposed Main Tile ranges in size from 10 to 30 inches and is displayed in Table 3 below, along with the proposed tile grades and capacity. Preliminary plans for the improvement of DD44 Main Tile and Branch 37+50 can be found in Appendix E.

BRANCH 37+50 TILE IMPROVEMENT OPTION

To align with the design of the Main Tile, a drainage coefficient of 3/4-inch is recommended for the Br37+50 Tile. The proposed Br37+50 Tile improvements will include replacing the existing tile with a new pipe that will generally follow the alignment of the existing tile with some adjustments to allow the proposed roadway crossings to be perpendicular with the roadway. The proposed Br37+50 Tile ranges in size from 10 to 18 inches and is displayed in Table 3 below, along with the proposed tile grades and capacity.

Table 3: Proposed Tile Improvement Summary

Area	Existing Size (in)	Proposed Size (in)	Existing Slope (%)	Proposed Slope (%)	Drainage Area (Acres)	Existing Drainage Coefficient (in/day)	Proposed Drainage Coefficient (in/day)
Main Tile							
Outlet to Br 6+31	20	30	0.44%	0.25%	468.8	0.47	1.13
Br 6+31 to STA 11	20	24	0.40%	0.40%	447.3	0.47	0.83
STA 11 to Br 14	18	24	0.40%	0.40%	436.8	0.36	0.85
Br 14 to STA 23	18	24	0.60%	0.40%	416.1	0.47	0.89
STA 23 to Br 32	20	24	0.23%	0.25%	311.5	0.51	0.94
Br 32 to Br 37+50	20	24	0.23%	0.25%	291.0	0.55	1.00
Br 37+50 to Br 45	16	18	0.12%	0.30%	171.1	0.37	0.87
Br 45 to Br 54	15	18	0.12%	0.30%	163.9	0.33	0.91
Br 54 to Br 55	15	18	0.12%	0.30%	137.6	0.39	1.08
Br 55 to Br 59	12	15	0.12%	0.12%	63.6	0.46	0.91
Br 59 to STA 64	10	12	0.12%	0.15%	42.7	0.42	0.84
STA 64 to STA 71	8	10	0.12%	0.12%	21.1	0.47	0.93
Branch 37+50							
Main to Br 37+50 - 7	14	18	0.10%	0.20%	109.3	0.37	1.11
Br 37+50 - 7 to STA 12	12	15	0.10%	0.20%	77.6	0.35	0.96
STA 12 to Br 37+50 - 21	10	15	0.10%	0.20%	69.0	0.24	1.08
Br 37+50 - 21 to STA 25	8	10	0.10%	0.20%	25.3	0.36	1.00

Tile Outlet Repair

The DD44 Main Tile outlets into 200' of Open Ditch that flows into an unnamed ditch and then into the Little Sioux River. Included within the proposed scope for either the repairs or improvements is a clean out of silt and sediment from the 200' of Open Ditch to provide a consistent grade along the flowline with a 4' wide bottom and 2.5:1 side-slopes cross-section. Along with open ditch repairs, the design includes installation of a precast concrete apron at the tile outlet and reinforcing the outlet channel with riprap to stabilize the outlet and mitigate erosion of the ditch.

IMPROVEMENT WORK SUMMARY

Existing District Tile

Wherever feasible, the existing DD44 tile to be replaced or improved would be crushed & buried in place or removed from road right-of-way. In some low-lying areas, it may be preferable to leave the existing tiles in place to serve as a collector for drainage. In such locations, the existing tile will be connected to the new system. Additionally, if landowners wish to have tiles left in place in their fields, they may submit a written request to the Dickinson County Auditor's Office. If requested to be left in place, these tiles will then be abandoned by the district and will become private tiles and future repairs will be the responsibility of each individual landowner. Additionally, any drainage district branch tiles that are not a part of this project, will be connected to the repaired or improved mains, to ensure that they utilize the improved outlet capacity. These connections are sized for adequate drainage capacity, so that if a branch is improved in the future, the connections can be utilized without replacement.

Private Tiles

All private tiles that are encountered during construction will be connected to the new mains, unless the private tile appears to be abandoned or is silted in. Landowners and their tenants have the best knowledge of private tiles within their individual fields and are encouraged to share private tile maps and information with the drainage district, so that private tiles can be taken into consideration in design of the new DD mains. If private tile maps are provided, the approximate location of the tiles will be shown in the final plans and design, so the contractor can ensure all tile are connected.

Intakes

Any existing surface existing intakes will be replaced with the same or larger size, additionally intakes may be added in low areas or other locations that show excess ponding. Intakes will also be added within road right-of-way where requested by the road authority. Finally, drop intakes will be added where necessary throughout the system, which allow for pipe televising access and observation of the pipe if needed.

Fence

Survey of the watershed included a visual evaluation of fence within the normal 100-foot work limits along the tile alignments. There was little to no fences found within the normal work limits parallel to the proposed tiles. In addition to parallel fence, there are perpendicular fences that will need to be cut to complete construction.

Fence within the construction limits judged to be maintained and in good condition will be salvaged and stockpiled. Poor fencing will be removed and disposed of. ISG will encourage property owners to remove their own fences, since they know better what to do with the materials. Landowners may claim reimbursement for replacement of fence cut during construction with proof of replacement.

Trees + Brush

No locations of significant trees or brush were found along the proposed improvements.

Road Crossings

The proposed DD 44 Tile improvements have five (5) Dickinson County secondary gravel road crossings. Iowa Law (Code Section 468.108) requires that the costs of crossing secondary roads or public highways be paid for from the appropriate road funds. It will be the County Engineer’s decision as to the method of installation of these crossings, whether it be open cut or jack and bore; however, below are our recommendations. In addition, the Dickinson County Engineer will make the decision on the type of pipe used to cross the roads.

DD44 MAIN TILE

170 th Avenue	66 LF 30” Ag Drain Tile – Open Cut
180 th Street	66 LF 24” Ag Drain Tile – Open Cut
180 th Street	66 LF 24” Ag Drain Tile – Open Cut

BRANCH 37+50 TILE

180th Street	66 LF 15” Ag Drain Tile – Open Cut
180th Street	66 LF 10” Ag Drain Tile – Open Cut

The Dickinson County Engineer may choose to separately contract the crossing work. If the work is to be included in the District project under one construction contract, the District will be reimbursed for the cost of construction by the appropriate road fund.

Utility Crossings

The contractor will be responsible to notify the utility companies and to cooperate in locating, marking, and protecting the utilities encountered during the project, including those within county and state road right-of-way. According to the National Pipeline Mapping System, there are no known gas or ammonia pipelines crossing the proposed alignments. As part of our design, an Iowa One Call design information request (DIR) was completed. There are overhead powerlines within the road right-of-way at multiple crossings of the tile improvements. All poles, guy wire, and other structures associated with these powerlines shall be protected during construction. In addition, there are multiple underground electric, fiber and/or water lines within the Dickinson County Secondary Road Right-of-Way that will need to be protected during construction. After the project has been approved and before construction, a One Call locate request will be completed, and utilities will be marked to determine any potential conflicts. Based on our preliminary review of utility information provided, there are no major conflicts expected.

District Right-of-Way

Permanent easement for drainage districts is discussed in the Code of Iowa Section 468.27, “Following the establishment of the drainage district, the district is deemed to have acquired by permanent easement all rights-of-way for drainage district ditches, tile lines, settling basins and other improvements...” The permanent easement includes the right of ingress and egress across adjoining land and the right of access for maintenance, repair, improvement, and inspection. The owner or lessee shall be reimbursed for any crop damages incurred in the maintenance, repair, improvement, and inspection except within the right-of-way of the drainage district. During review of existing drainage district documents, no record of right-of-way within the drainage district was discovered.

TILE EASEMENT

Typically, districts do not acquire right-of-way for their tile facilities, but by Section 468.27 are deemed to have easement for the upkeep and improvement of their facilities. However, since no damages have been paid for right-of-way, crop damages will be paid to the landowners traversed by construction. To help reduce damages and long-term effects from construction of the tile, the contractor will be required to segregate and separately stockpile 8 inches of topsoil from 50 feet of width over the tile trench. For deeper installations, topsoil will be stripped wider as needed. This topsoil shall be spread over the top of the finished tile trench to reduce fertility issues from construction.

CROP DAMAGES

Crop damages from construction may be difficult to avoid since farming and construction activities are both dependent on seasonal weather patterns. Therefore, it is expected crop damages will occur during the project. To limit crop damage, we will notify traversed landowners of the project, so they can limit farming activity within the work area. On average, the contractor needs 50 feet on each side of the tile centerline to complete the work. To accurately determine crop damage, a survey will be conducted at the end of project construction to determine crop damages on a parcel-by-parcel basis.

Opinion of Probable Cost

As part of our analysis, we have developed our opinion of probable construction cost for the different options outlined in this report for improvements to the DD44 MT and Br37+50 Tile. Below in Table 4 is a summary of these costs; the detailed cost estimates for each improvement option, including non-construction costs, are contained in Appendix C. These estimates represent our best judgement of the probable cost based upon our experience with similar projects. The quantities and unit costs for construction are believed to be reasonably accurate for use in this report. Actual costs are subject to the market for the respective components and to other economic forces. These estimates carry no actual or implied guarantees.

Table 4. Summary of Estimated Costs

Facility	Construction Cost Estimate	Total Project Cost Estimate	Cost Per Acre*	Cost Per Acre Per Year (20 yrs, 6%)*	Estimated Levy Multiplier
Main Tile					
Option #1: REPAIR	\$386,178	\$592,965	\$1,264	\$110	5.93
Option #2: 0.75 INCH/DAY IMPROVEMENT	\$417,537	\$629,633	\$1,343	\$117	6.30
Branch 37+50					
Option #1: REPAIR	\$117,084	\$186,822	\$1,714	\$149	18.68
Option #2: 0.75 INCH/DAY IMPROVEMENT	\$132,000	\$200,279	\$1,837	\$160	20.03

*Based on Average Cost Across Watershed. Landowners can estimate their cost by use of the Levy Multiplier and their assessment units on the preconstruction reclassification assessment schedules enclosed in Appendix D.

Economic Feasibility

To help landowners better understand the value of drainage improvement, Iowa State University, in conjunction with the USDA Soil Conservation Service completed a special report evaluating numerous drainage districts throughout Northern Iowa. Within this report, average expected yield improvement for corn and soybeans was provided based on the level of drainage provided and soil drainage class. Utilizing an annual yield trend adjustment, the data which was originally from 1983 was adapted to reflect current average yields.

The updated yield data and soil drainage class for acres within the DD44 watershed were utilized to estimate an average yield increase across the entire DD44 Main Tile watershed. This yield improvement data is meant to reflect conditions in which the tile

is being used to its full capacity (i.e., “wet years”). Therefore, historical rainfall data was utilized to determine how often the DD44 MT watershed can expect to fully utilize the tile system and see its full benefit. An analysis of the rainfall data near Milford, Iowa found 7 of the last 20 years were high rainfall years, or “wet years”. If similar weather conditions and rainfall patterns happen in the future, the resulting expected annual yield improvement due to drainage improvements in this watershed is 11% (19.3 bu/ac) for corn and 13% (7.0 bu/ac) for soybeans.

To consider a level of payback for this project, corn and soybean prices of \$4.50 and \$11.75, respectively, and a 50/50 split of the two crops were utilized to calculate an expected average benefit of \$241.50/ac for lands in the DD44 MT watershed on wet years or \$84.50/ac on average across all years. With similar weather conditions to years past, the expected payoff timeframe for DD44 Option #2 total project cost (\$1,761/ac) is 23 years.

ANNEXATION + RECLASSIFICATION

Assessment Schedule Evaluation

As part of our field investigation, we mapped the watershed boundary of the Main Tile using LiDAR data, aerial photography, and district plat maps to determine the lands which drain by surface and/or subsurface to the District. From this review, it became apparent there are lands potentially draining to the facilities of DD44 which are not included on the assessment schedule. As a result, detailed in the attached District Plat in Appendix E, it was determined approximately 5 acres of land, contained in 2 parcels, draining to facilities of DD44 are not included in the assessment schedule. Additional review of existing tile(s) in these fields is necessary to confirm whether they should be considered for annexation.

Reclassification Evaluation

PRECONSTRUCTION RECLASSIFICATION

At the informational meeting held on December 19, 2023, for DD44, the Board of Supervisors directed ISG to complete a preconstruction reclassification of DD44, including the Main Tile and Branch 37+50, to better estimate and understand what the landowners' portion of the cost of each improvement project will be. This preconstruction reclassification has been completed and the preliminary assessment schedules for the Main Tile and Branch 37+50 Tile have been included in Appendix D of this report. These schedules are preliminary but will provide the landowners with realistic estimates of their assessments if these options move forward. As part of the notice of hearing on this report, a letter will be sent to landowners summarizing the preconstruction reclassification and demonstrating how landowners can calculate their total estimated assessment for each of the improvement options. Landowners will be encouraged to calculate these estimates prior to the public hearing, so they may be more prepared to decide on their level of support of the proposed improvements. In general, a landowner can take the assessment units for their individual parcels of land and multiply them by the Levy Multiplier listed in Table 4: Summary of Estimated Costs. This will yield the estimated dollar of assessment for each of the options presented.

RECLASSIFICATION

It should also be noted when this District was originally established, all the facilities of the District were paid for under one (1) assessment schedule. The District has not been reclassified since its original assessment schedule was adopted in 1918. Therefore, when work is done on any branch of the District facilities, all landowners in the District pay for this work even if they receive no benefit. Section 468.131 of the Iowa Code states, “When an assessment for improvements as provided in Section 468.126, exceeds twenty-five percent of the original assessment and the original or subsequent assessment or report of the

benefit commission as confirmed did not designate separately the amount each tract should pay for the main ditch and tile lateral drains then the board shall order a reclassification in accordance with the principles and rules set forth in Section 468.41.”

Therefore, even if the none of the improvement projects are approved we would recommend the additional lands benefitting from the facilities of the District be annexed and the District reclassified to designate separately the amount each tract should pay for the upkeep and maintenance of the lateral tile systems separately from the Main Tile and to redistribute the benefits to all lands in the District with the incorporation of the annexed lands. The work completed for the preconstruction reclassification would be utilized in the overall DD44 reclassification.

OTHER PROJECT CONSIDERATIONS

Conservation Reserve Program (CRP) and Farm Service Agency (FSA).

The proposed tile options cross one parcel of land within the watershed out of crop production and potentially in a Conservation Reserve Program (CRP). If the land within the watershed is in CRP, construction may disturb portions of this reserve land and it will be the landowner's responsibility to notify the Farm Service Agency (FSA) about the project and temporary soil spoil being placed on their ground. In April 2023, the Iowa FSA issued a memo stating any disturbance to existing CRP during the primary nesting season must be permitted through the State FSA office. This permit must be applied for by the individual landowner, therefore coordination between the landowner, ISG, and the Drainage District will be crucial to ensure no delays in construction. The FSA will need to permit the work and approve a continuation of their contracts. Each landowner will be responsible for reseeding their grounds according to their contracts after the completion of the District's improvement project. The landowners will be eligible to claim damages for reseeding any portion of their ground affected by the proposed tile improvement project.

Jurisdictional Wetlands

The USDA Farm Program includes wetland conservation compliance “swampbuster” provisions administrated by the Natural Resources Conservation Service (NRCS). These rules and policies require that the lost functions, values, and area of each converted (better drained) farmed wetland be replaced (mitigated). Under Part 12 of Title 7 of the Federal Regulations, “activities of a water resource district, drainage district, or similar entity will be attributed to all persons within the jurisdiction of the district or other entity who are assessed for the activities of the district or entity. Accordingly, where a person's wetland is converted due to the actions of the district or entity, the person shall be considered to have caused or permitted the drainage.”

The United States Army Corps of Engineers (USACE) in conjunction with the United States Environmental Protection Agency (USEPA) also have jurisdiction of wetlands under the Federal Clean Water Act, Section 404. However, for the wetlands to be jurisdictional, they must be connected to waters of the United States and not isolated wetlands. A review of the USFWS Wetland Mapper shows there are no potential wetlands that could be impacted by the proposed improvement options. Therefore, we do not expect there to be wetlands under the USACE jurisdiction.

If this improvement option is approved, impacts to the wetlands need to be considered under the swampbuster rules of the USDA. To verify no farmed wetlands would be impacted, the NRCS requires all lands in the watershed must have a wetland determination completed prior to any construction of an improvement by the District. The landowners or their tenants are the only individuals able to request these determinations. If any of the options proposed are approved, all landowners will be asked to provide a certified wetland determination for their land. If landowners do not have wetland determinations, certified wetland determinations can be requested by signing a 1026 form at the Dickinson County FSA office. If these determinations cannot be completed in a timely manner, the District may choose to complete 3rd party wetland determinations to expedite permitting.

Other Permitting Considerations

As part of the project evaluation and preliminary design, ISG has completed a due diligence evaluation of potential project permitting requirements. If any of the proposed options are approved and the project proceeds, additional consideration and research will need to be given to US Fish & Wildlife Service (USFWS) Endangered Species, State Historical Preservation Office (SHPO) and Iowa Department of Natural Resources (DNR) regarding the permitting requirements, if any, related to this project.

Water Quality

The hydrologic impacts to tile drainage entail a complex interaction of processes dependent upon landscape, climatic and human influences, watershed scale, soil permeability and rainfall event size. There is a popular and often accepted idea an increase in subsurface drainage facilities adds to an increase in both peak and total rainfall values thereby increasing flooding. Recently published research from the University of Iowa's IIHR – Hydroscience and Engineering Center refutes that perception. This University of Iowa report was the result of a water model study of the Clear Creek Watershed in Iowa and Johnson Counties and found an increase in field tile and subsurface drainage decreases peak flows for most storm events. The field scale DRAINMOD model was used in the research in conjunction with a simplified routing equation to analyze the impact of tile drains in the Clear Creek Watershed.

However, additional steps are required to slow, impound, or infiltrate water to receive benefits in water quality. Water quality is a growing topic throughout the nation and more recently throughout Iowa. The particle loads and nutrient levels within drainage water is a concern receiving increased scrutiny. Processes and reduction practices are being developed and incorporated on farms and into projects throughout Iowa which reduce nitrogen loss and improve water quality. Enhancement of water quality is possible through many different drainage applications, seeing both immediate and long-term benefits.

We encourage the landowners of this District to consider multi-purpose drainage management, which incorporates Best Management Practices (BMPs) to utilize effective measures aimed at reducing sediment and nutrient loading and improving water quality. Funding options are available to landowners through the Environmental Quality Incentives Program (EQIP) and the Iowa Water Quality Initiative. EQIP is a voluntary program that provides financial assistance to individual landowners for various conservative practices as identified above. Also, the State of Iowa, through the Iowa Water Quality Initiative, provides cost share funds to participating landowners to voluntarily install nutrient reduction practices.

DISCUSSION + RECOMMENDATIONS

Discussion

Our investigation confirms the need for drainage relief in the DD44 watershed. Therefore, we recommend one of the improvement options for the Main Tile and the Branch 37+50 Tile be completed to provide drainage relief. It should also be noted the areas within the Branch 37+50 sub-watershed petitioned for drainage relief, could possibly be drained into the DD44 Main Tile within the petitioning landowner's field South of 180th Street. This could be completed privately and would be a possible alternative to either of the Branch 37+50 options, depending on the Branch 37+50 landowners' input.

Recommendations

MAIN TILE IMPROVEMENT RECOMMENDATION

We recommend improvements to the Main Tile, as the investigation shows a need for drainage relief within the watershed. Our design, with an improvement coefficient of 0.75 in/day, will provide greatly improved drainage relief to the land within the

watershed. If landowners do not support the improvements, we recommend further investigation of the physical condition of the existing tile with the use of a pipe crawler to determine necessary repairs to the facilities, if any. The condition of the existing tile should be confirmed prior to further consideration of the complete repair option.

If neither of the proposed options are proposed, the Main Tile, where collapsed near its outlet, should be repaired.

BRANCH 37+50 IMPROVEMENT RECOMMENDATION

We recommend improvements to Branch 37+50 tile, as the investigation shows a need for drainage relief within the watershed. An improvement coefficient of 0.75 in/day will provide greatly improved drainage relief to the land within the watershed. If landowners do not support the improvements, we recommend further investigation of the physical condition of the existing tile with the use of a pipe crawler to determine necessary repairs to the facilities, if any. The condition of the existing tile should be confirmed prior to consideration of the complete repair option. Additionally, if other landowners do not support either of the options for Branch 37+50, the petitioning landowner may consider completing private tile improvements within their own field to provide drainage relief to the petitioned lands.

ANNEXATION + RECLASSIFICATION RECOMMENDATION

Further review and consideration of annexation of the lands receiving benefit and currently not assessed by the District is recommended. The reclassification section above explains the need to update the District Schedule and provide individual schedules for each District facility.

INSTALLMENT PAYMENTS

Iowa Drainage District Law provides large assessments may be paid in up to ten (10) or twenty (20) annual installments at the discretion of the Board of Supervisors. Based on the estimated cost of the project, we recommend twenty (20) annual installments be considered by the Board for each facility.

RECOMMENDED ACTION

Therefore, we recommend the Board of Supervisors, acting as Trustees for Drainage District No. 44, take appropriate action, with legal guidance, to accomplish the following:

1. Tentatively approve this Engineer's Report as filed.
2. Hold a public hearing and consider the input of the District's landowners.
3. Adopt the proposed plan, modified as deemed appropriate, to satisfy the desires of the District.
4. Initiate wetland determination proceedings along with impact assessments.
5. Direct Engineer to prepare plans and specifications, obtain necessary permits, and proceed toward bid letting.
6. Adopt a resolution of necessity for annexation of additional lands.
7. Proceed with reclassification proceedings.

Appendix A: Petition

DRAINAGE PETITIONTO THE BOARD OF SUPERVISORS OF Dickinson COUNTY, IOWA.The undersigned ask that a drainage study of improvement of Drainage District No. 44 Main Tile and Branch 37+50 Tile commencing at Main Tile - NW-NW Section 20 Lakeville Township
Branch 37+50 - SW-SE Section 18 Lakeville Townshipand running thence Main - approx. mately 1 mile Southwest
Branch 37+50 - approximately 1/2 mile Westand terminating at Main - NW 1/4 of Section 19 Lakeville Township
Branch 37+50 - SW SW Section 18 Lakeville Township
to Improved for Drainage ReliefYour petitioners further state that the lands situated in Section 19 of Lakeville Township

are subject to overflow (or are too wet for cultivation or subject to erosion or flood danger), and the public benefit, utility, health, convenience and welfare will be promoted by the above mentioned project.

NAMES

NAMES

- We further request that ISG be appointed as civil engineer to complete
 - this study of improvement. We have worked with ISG previously and
 - they have completed multiple improvement studies and projects
 - involving my land in Osceola County.

Goodwin Sonstegard

Goodwin Sonstegard (owner, 2010/01/01)

Goodwin Sonstegard, Landowner
 and managing partner of
 Sonstegard Family Farms

Appendix B: Drainage Calculations

Dickinson County
Drainage District No. 44

ISG

MAIN TILE AND BRANCH 37+50 EXISTING TILE SUMMARY

Area	STA	Existing Size (in)	Existing Slope (%)	Drainage Area (Acres)	Existing Drainage Coefficient (in/day)	% of 0.5" Drainage Coefficient	% of 0.75" Drainage Coefficient
Main Tile							
Outlet to Br 6+31	0+00	20	0.44%	468.8	0.47	94.0%	62.6%
Br 6+31 to STA 11	6+31	20	0.40%	447.3	0.47	93.9%	62.6%
STA 11 to Br 14	11+00	18	0.40%	436.8	0.36	72.6%	48.4%
Br 14 to STA 23	14+00	18	0.60%	416.1	0.47	93.3%	62.2%
STA 23 to Br 32	23+00	20	0.23%	311.5	0.51	102.7%	68.4%
Br 32 to Br 37+50	32+00	20	0.23%	291.0	0.55	109.9%	73.3%
Br 37+50 to Br 45	37+50	16	0.12%	171.1	0.37	74.1%	49.4%
Br 45 to Br 54	45+00	15	0.12%	163.9	0.33	65.2%	43.4%
Br 54 to Br 55	54+00	15	0.12%	137.6	0.39	77.6%	51.7%
Br 55 to Br 59	55+00	12	0.12%	63.6	0.46	92.6%	61.7%
Br 59 to STA 64	59+00	10	0.12%	42.7	0.42	84.9%	56.6%
STA 64 to STA 71	64+00	8	0.12%	21.1	0.47	94.6%	63.0%
Branch 37+50							
Main to Br 37+50 - 7	0+00	14	0.10%	109.3	0.37	74.2%	49.5%
Br 37+50 - 7 to STA 12	7+00	12	0.10%	77.6	0.35	69.3%	46.2%
STA 12 to Br 37+50 - 21	12+00	10	0.10%	69.0	0.24	47.9%	32.0%
Br 37+50 - 21 to STA 25	21+00	8	0.10%	25.3	0.36	72.1%	48.1%



PROPOSED TILE REPAIR SUMMARY

Area	Existing Size (in)	Proposed Size (in)	Existing Slope (%)	Proposed Slope (%)	Drainage Area (Acres)	Existing Drainage Coefficient (in/day)	Proposed Drainage Coefficient (in/day)
Main Tile							
Outlet to Br 6+31	20	24	0.44%	0.25%	468.8	0.47	0.62
Br 6+31 to STA 11	20	24	0.40%	0.25%	447.3	0.47	0.65
STA 11 to Br 14	18	18	0.40%	0.55%	436.8	0.36	0.46
Br 14 to STA 23	18	18	0.60%	0.60%	416.1	0.47	0.51
STA 23 to Br 32	20	24	0.23%	0.20%	311.5	0.51	0.84
Br 32 to Br 37+50	20	24	0.23%	0.20%	291.0	0.55	0.90
Br 37+50 to Br 45	16	18	0.12%	0.20%	171.1	0.37	0.71
Br 45 to Br 54	15	15	0.12%	0.20%	163.9	0.33	0.46
Br 54 to Br 55	15	15	0.12%	0.20%	137.6	0.39	0.54
Br 55 to Br 59	12	12	0.12%	0.20%	63.6	0.46	0.65
Br 59 to STA 64	10	10	0.12%	0.20%	42.7	0.42	0.59
STA 64 to STA 71	8	8	0.12%	0.20%	21.1	0.47	0.66
Branch 37+50							
Main to Br 37+50 - 7	14	15	0.10%	0.20%	109.3	0.37	0.68
Br 37+50 - 7 to STA 12	12	12	0.10%	0.20%	77.6	0.35	0.53
STA 12 to Br 37+50 - 21	10	10	0.10%	0.30%	69.0	0.24	0.45
Br 37+50 - 21 to STA 25	8	8	0.10%	0.20%	25.3	0.36	0.55



PROPOSED TILE IMPROVEMENT SUMMARY

Area	Existing Size (in)	Proposed Size (in)	Existing Slope (%)	Proposed Slope (%)	Drainage Area (Acres)	Existing Drainage Coefficient (in/day)	Proposed Drainage Coefficient (in/day)
Main Tile							
Outlet to Br 6+31	20	30	0.44%	0.25%	468.8	0.47	1.13
Br 6+31 to STA 11	20	24	0.40%	0.40%	447.3	0.47	0.83
STA 11 to Br 14	18	24	0.40%	0.40%	436.8	0.36	0.85
Br 14 to STA 23	18	24	0.60%	0.40%	416.1	0.47	0.89
STA 23 to Br 32	20	24	0.23%	0.25%	311.5	0.51	0.94
Br 32 to Br 37+50	20	24	0.23%	0.25%	291.0	0.55	1.00
Br 37+50 to Br 45	16	18	0.12%	0.30%	171.1	0.37	0.87
Br 45 to Br 54	15	18	0.12%	0.30%	163.9	0.33	0.91
Br 54 to Br 55	15	18	0.12%	0.30%	137.6	0.39	1.08
Br 55 to Br 59	12	15	0.12%	0.12%	63.6	0.46	0.91
Br 59 to STA 64	10	12	0.12%	0.15%	42.7	0.42	0.84
STA 64 to STA 71	8	10	0.12%	0.12%	21.1	0.47	0.93
Branch 37+50							
Main to Br 37+50 - 7	14	18	0.10%	0.20%	109.3	0.37	1.11
Br 37+50 - 7 to STA 12	12	15	0.10%	0.20%	77.6	0.35	0.96
STA 12 to Br 37+50 - 21	10	15	0.10%	0.20%	69.0	0.24	1.08
Br 37+50 - 21 to STA 25	8	10	0.10%	0.20%	25.3	0.36	1.00

Appendix C: Cost Estimates

PROPOSED REPAIRS

Main Tile Repairs

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 16,720.00	\$ 16,720
102	TILE INVESTIGATION	HR	7	\$ 200.00	\$ 1,400
103	TOPSOIL STRIP, STOCKPILE, RESPREAD (50')	STA	64.2	\$ 280.00	\$ 17,976
104	24-INCH AGRICULTURAL TILE	LF	1091	\$ 44.00	\$ 48,004
105	18-INCH AGRICULTURAL TILE	LF	1519	\$ 35.00	\$ 53,165
106	15-INCH AGRICULTURAL TILE	LF	850	\$ 31.00	\$ 26,350
107	12-INCH AGRICULTURAL TILE	LF	522	\$ 28.00	\$ 14,616
108	10-INCH AGRICULTURAL TILE	LF	568	\$ 25.00	\$ 14,200
109	8-INCH AGRICULTURAL TILE	LF	200	\$ 20.00	\$ 4,000
110	24-INCH AGRICULTURAL TILE, INSTALL DEPTH OVER 15'	LF	1450	\$ 50.00	\$ 72,500
111	24-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	8	\$ 600.00	\$ 4,800
112	18-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	3	\$ 500.00	\$ 1,500
113	12-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	2	\$ 400.00	\$ 800
114	8-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	1	\$ 350.00	\$ 350
115	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	31	\$ 450.00	\$ 13,950
116	DISTRICT TILE CONNECTIONS (SIZE & MATERIAL MAY VARY)	EA	5	\$ 1,750.00	\$ 8,750
117	24-INCH CROSS-CONNECT W/40 LF OF SPECIFIED PIPE	EA	3	\$ 2,500.00	\$ 7,500
118	12-INCH CROSS-CONNECT W/40 LF OF SPECIFIED PIPE	EA	1	\$ 1,350.00	\$ 1,350
119	10-INCH CROSS-CONNECT W/40 LF OF SPECIFIED PIPE	EA	1	\$ 1,300.00	\$ 1,300
120	6-INCH CROSS-CONNECT W/40 LF OF SPECIFIED PIPE	EA	1	\$ 1,000.00	\$ 1,000
121	GRANULAR FOUNDATION MATERIAL	CY	100	\$ 60.00	\$ 6,000
122	INSTALL DROP INTAKE (18-INCH)	EA	4	\$ 1,800.00	\$ 7,200
123	INSTALL DROP INTAKE (12-INCH)	EA	4	\$ 1,200.00	\$ 4,800
124	INSTALL 8-INCH FIELD INTAKE (HICKENBOTTOM)	EA	2	\$ 500.00	\$ 1,000
125	OPEN DITCH EXCAVATION	CY	194.5	\$ 10.00	\$ 1,945
126	SPOIL BANK LEVELING (ONE SIDE)	STA	2	\$ 500.00	\$ 1,000
127	FURNISH & INSTALL RIPRAP	TN	75	\$ 65.00	\$ 4,875
128	OPEN DITCH FERTILIZING & SEEDING	STA	2	\$ 250.00	\$ 500
129	24-INCH RCP APRON	EA	1	\$ 950.00	\$ 950
130	CRUSH & BURY TILE (SIZE & MATERIAL MAY VARY)	LF	4190	\$ 3.00	\$ 12,570
SUBTOTAL CONSTRUCTION COST					\$ 351,071
10% UNFORSEEN					\$ 35,107
TOTAL CONSTRUCTION COST					\$ 386,178
TEMPORARY DAMAGES		AC	14.74	\$ 1,000.00	\$ 14,738
TELEVISIONING (POST CONSTRUCTION)		LF	6200	\$ 1.25	\$ 7,750
SURVEY					\$ 5,000
TOTAL MAIN TILE REPAIRS COST					\$ 413,666

PROPOSED REPAIRS

Branch 37+50 Tile Repairs

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 4,720.00	\$ 4,720
102	TILE INVESTIGATION	HR	3	\$ 200.00	\$ 600
103	TOPSOIL STRIP, STOCKPILE, RESPREAD (50')	STA	26.29	\$ 280.00	\$ 7,361
104	15-INCH AGRICULTURAL TILE	LF	689	\$ 31.00	\$ 21,359
105	12-INCH AGRICULTURAL TILE	LF	400	\$ 28.00	\$ 11,200
106	10-INCH AGRICULTURAL TILE	LF	1134	\$ 25.00	\$ 28,350
107	8-INCH AGRICULTURAL TILE	LF	275	\$ 20.00	\$ 5,500
108	15-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	1	\$ 450.00	\$ 450
109	12-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	2	\$ 400.00	\$ 800
110	10-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	2	\$ 375.00	\$ 750
111	8-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	2	\$ 350.00	\$ 700
112	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	13	\$ 450.00	\$ 5,850
113	GRANULAR FOUNDATION MATERIAL	CY	50	\$ 60.00	\$ 3,000
114	INSTALL DROP INTAKE (18-INCH)	EA	3	\$ 1,800.00	\$ 5,400
115	INSTALL DROP INTAKE (12-INCH)	EA	2	\$ 1,200.00	\$ 2,400
116	INSTALL 8-INCH FIELD INTAKE (HICKENBOTTOM)	EA	1	\$ 500.00	\$ 500
117	CRUSH & BURY TILE (SIZE & MATERIAL MAY VARY)	LF	2500	\$ 3.00	\$ 7,500
SUBTOTAL CONSTRUCTION COST					\$ 106,440
10% UNFORSEEN					\$ 10,644
TOTAL CONSTRUCTION COST					\$ 117,084
TEMPORARY DAMAGES		AC	5.85	\$ 1,000.00	\$ 5,849
TELEVISIONING (POST CONSTRUCTION)		LF	2498	\$ 1.25	\$ 3,123
SURVEY					\$ 1,000
TOTAL BRANCH 37+50 TILE REPAIRS COST					\$ 127,056

PROPOSED REPAIRS

Other District Costs

Type	Amount
DISTRICT ADMINISTRATION COSTS (Legal, Staff, Advertisement)	\$ 2,500
REPORTS, PLANS AND SPECIFICATIONS	\$ 80,000
CONSTRUCTION STAKING & ADMINISTRATION	\$ 55,000
PERMITTING	\$ 5,000
ANNEXATION AND RECLASSIFICATION	\$ 27,500
WARRANT INTEREST	\$ 69,065
TOTAL OTHER DISTRICT COSTS	\$ 239,065

Dickinson County Road Crossings

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	OPEN CUT, 24-INCH AGRICULTURAL TILE	LF	66	\$ 130.00	\$ 8,580
102	OPEN CUT, 18-INCH AGRICULTURAL TILE	LF	132	\$ 105.00	\$ 13,860
103	OPEN CUT, 12-INCH AGRICULTURAL TILE	LF	66	\$ 84.00	\$ 5,544
104	OPEN CUT, 8-INCH AGRICULTURAL TILE	LF	66	\$ 60.00	\$ 3,960
105	TRAFFIC CONTROL	JOB	1	\$ 5,000.00	\$ 5,000
106	REMOVE EXISTING TILE	LF	330	\$ 6.50	\$ 2,145
SUBTOTAL CONSTRUCTION COST					\$ 39,089
10% UNFORSEEN					\$ 3,909
TOTAL DICKINSON COUNTY ROAD CROSSINGS COST					\$ 42,998

TOTAL REPAIR COST

Main Tile Repairs	\$ 413,666
Branch 37+50 Tile Repairs	\$ 127,056
Other District Costs	\$ 239,065
Dickinson County Road Crossings	\$ 42,998
COMPLETE REPAIR COST	\$ 822,785
DRAINAGE DISTRICT CONSTRUCTION COST	\$ 503,262
TOTAL DRAINAGE DISTRICT COST	\$ 779,787

PROPOSED IMPROVEMENT - 0.75 Coef.

Main Tile Improvements

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 17,480.00	\$ 17,480
102	TILE INVESTIGATION	HR	7	\$ 200.00	\$ 1,400
103	TOPSOIL STRIP, STOCKPILE, RESPREAD (50')	STA	64.2	\$ 280.00	\$ 17,976
104	30-INCH AGRICULTURAL TILE	LF	240	\$ 55.00	\$ 13,200
105	24-INCH AGRICULTURAL TILE	LF	1829	\$ 44.00	\$ 80,476
106	18-INCH AGRICULTURAL TILE	LF	1410	\$ 35.00	\$ 49,350
107	15-INCH AGRICULTURAL TILE	LF	348	\$ 31.00	\$ 10,788
108	12-INCH AGRICULTURAL TILE	LF	548	\$ 28.00	\$ 15,344
109	10-INCH AGRICULTURAL TILE	LF	220	\$ 25.00	\$ 5,500
110	24-INCH AGRICULTURAL TILE, INSTALL DEPTH OVER 15'	LF	1605	\$ 50.00	\$ 80,250
111	30-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	2	\$ 800.00	\$ 1,600
112	24-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	9	\$ 600.00	\$ 5,400
113	18-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	1	\$ 500.00	\$ 500
114	15-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	1	\$ 450.00	\$ 450
115	12-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	1	\$ 400.00	\$ 400
116	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	31	\$ 450.00	\$ 13,950
117	DISTRICT TILE CONNECTIONS (SIZE & MATERIAL MAY VARY)	EA	5	\$ 1,750.00	\$ 8,750
118	24-INCH CROSS-CONNECT W/40 LF OF SPECIFIED PIPE	EA	3	\$ 2,500.00	\$ 7,500
119	12-INCH CROSS-CONNECT W/40 LF OF SPECIFIED PIPE	EA	1	\$ 1,350.00	\$ 1,350
120	10-INCH CROSS-CONNECT W/40 LF OF SPECIFIED PIPE	EA	1	\$ 1,300.00	\$ 1,300
121	6-INCH CROSS-CONNECT W/40 LF OF SPECIFIED PIPE	EA	1	\$ 1,000.00	\$ 1,000
122	GRANULAR FOUNDATION MATERIAL	CY	150	\$ 60.00	\$ 9,000
123	INSTALL DROP INTAKE (18-INCH)	EA	4	\$ 1,800.00	\$ 7,200
124	INSTALL DROP INTAKE (12-INCH)	EA	4	\$ 1,200.00	\$ 4,800
125	INSTALL 8-INCH FIELD INTAKE (HICKENBOTTOM)	EA	2	\$ 500.00	\$ 1,000
126	OPEN DITCH EXCAVATION	CY	194.5	\$ 10.00	\$ 1,945
127	SPOIL BANK LEVELING (ONE SIDE)	STA	2	\$ 500.00	\$ 1,000
128	FURNISH & INSTALL RIPRAP	TN	100	\$ 65.00	\$ 6,500
129	OPEN DITCH FERTILIZING & SEEDING	STA	2	\$ 250.00	\$ 500
130	30-INCH RCP APRON	EA	1	\$ 1,100.00	\$ 1,100
131	CRUSH & BURY TILE (SIZE & MATERIAL MAY VARY)	LF	4190	\$ 3.00	\$ 12,570
SUBTOTAL CONSTRUCTION COST					\$ 379,579
10% UNFORSEEN					\$ 37,958
TOTAL CONSTRUCTION COST					\$ 417,537
TEMPORARY DAMAGES		AC	14.74	\$ 1,000.00	\$ 14,738
TELEVISIONING (POST CONSTRUCTION)		LF	6200	\$ 1.25	\$ 7,750
SURVEY					\$ 5,000
TOTAL MAIN TILE IMPROVEMENTS COST					\$ 445,025

PROPOSED IMPROVEMENT - 0.75 Coef.

Branch 37+50 Tile Improvements

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	\$ 5,720.00	\$ 5,720
102	TILE INVESTIGATION	HR	3	\$ 200.00	\$ 600
103	TOPSOIL STRIP, STOCKPILE, RESPREAD (50')	STA	26.29	\$ 280.00	\$ 7,361
104	18-INCH AGRICULTURAL TILE	LF	689	\$ 35.00	\$ 24,115
105	15-INCH AGRICULTURAL TILE	LF	1534	\$ 31.00	\$ 47,554
106	10-INCH AGRICULTURAL TILE	LF	275	\$ 25.00	\$ 6,875
107	18-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	1	\$ 500.00	\$ 500
108	15-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	5	\$ 450.00	\$ 2,250
109	10-INCH DIA. ELBOW SECTION, FABRICATION ONLY	EA	1	\$ 375.00	\$ 375
110	CONNECT EXISTING TILE (SIZE & MATERIAL MAY VARY)	EA	13	\$ 450.00	\$ 5,850
111	GRANULAR FOUNDATION MATERIAL	CY	50	\$ 60.00	\$ 3,000
112	INSTALL DROP INTAKE (18-INCH)	EA	3	\$ 1,800.00	\$ 5,400
113	INSTALL DROP INTAKE (12-INCH)	EA	2	\$ 1,200.00	\$ 2,400
114	INSTALL 8-INCH FIELD INTAKE (HICKENBOTTOM)	EA	1	\$ 500.00	\$ 500
115	CRUSH & BURY TILE (SIZE & MATERIAL MAY VARY)	LF	2500	\$ 3.00	\$ 7,500
SUBTOTAL CONSTRUCTION COST					\$ 120,000
10% UNFORSEEN					\$ 12,000
TOTAL CONSTRUCTION COST					\$ 132,000
TEMPORARY DAMAGES		AC	5.85	\$ 1,000.00	\$ 5,849
TELEVISIONING (POST CONSTRUCTION)		LF	2498	\$ 1.25	\$ 3,123
SURVEY					\$ 1,000
TOTAL BRANCH 37+50 TILE IMPROVEMENTS COST					\$ 141,972

PROPOSED IMPROVEMENT - 0.75 Coef.

Other District Costs

Type	Amount
DISTRICT ADMINISTRATION COSTS (Legal, Staff, Advertisement)	\$ 2,500
REPORTS, PLANS AND SPECIFICATIONS	\$ 80,000
CONSTRUCTION STAKING & ADMINISTRATION	\$ 55,000
PERMITTING	\$ 5,000
ANNEXATION AND RECLASSIFICATION	\$ 27,500
WARRANT INTEREST	\$ 72,945
TOTAL OTHER DISTRICT COSTS	\$ 242,945

Dickinson County Road Crossings

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	OPEN CUT, 30-INCH AGRICULTURAL TILE	LF	66	\$ 165.00	\$ 10,890
102	OPEN CUT, 24-INCH AGRICULTURAL TILE	LF	132	\$ 130.00	\$ 17,160
103	OPEN CUT, 15-INCH AGRICULTURAL TILE	LF	66	\$ 90.00	\$ 5,940
104	OPEN CUT, 10-INCH AGRICULTURAL TILE	LF	66	\$ 75.00	\$ 4,950
105	TRAFFIC CONTROL	JOB	1	\$ 5,000.00	\$ 5,000
106	REMOVE EXISTING TILE	LF	330	\$ 6.50	\$ 2,145
SUBTOTAL CONSTRUCTION COST					\$ 46,085
10% UNFORSEEN					\$ 4,609
TOTAL DICKINSON COUNTY ROAD CROSSINGS COST					\$ 50,694

TOTAL IMPROVEMENT COST

Main Tile Improvements	\$ 445,025
Branch 37+50 Tile Improvements	\$ 141,972
Other District Costs	\$ 242,945
Dickinson County Road Crossings	\$ 50,694
COMPLETE IMPROVEMENT COST	\$ 880,636
DRAINAGE DISTRICT CONSTRUCTION COST	\$ 549,537
TOTAL DRAINAGE DISTRICT COST	\$ 829,942

Appendix D: Preconstruction Reclassification

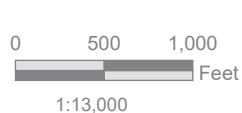
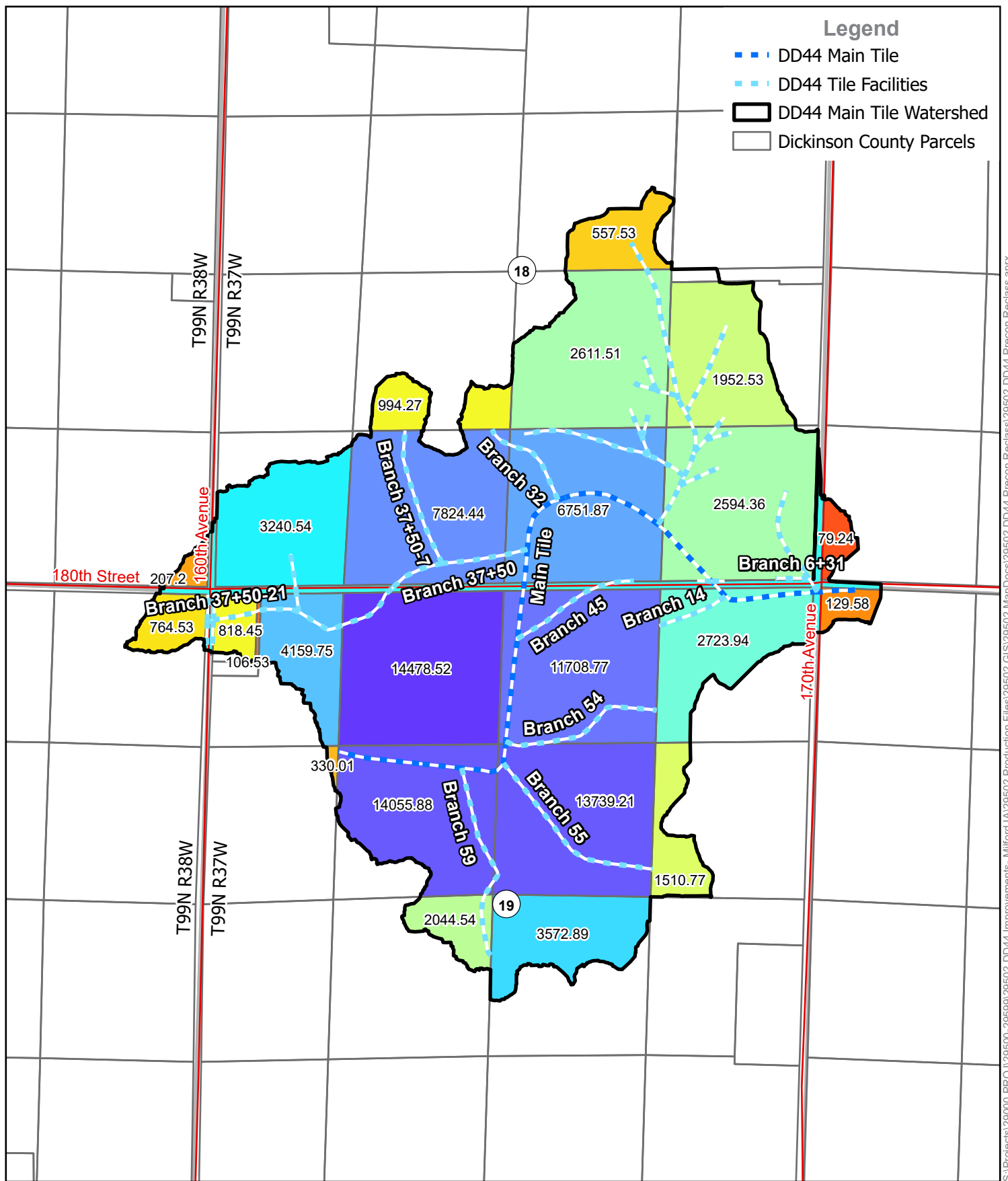
Drainage District No. 44 - Main Tile: Preliminary Assessment Schedule

LANDOWNER(S)	PIN	S-T-R	BENEFITED PARCEL	ACRES	CLASS (%)	ASSESSMENT UNITS	% SCHEDULE
T99N R38W, EXCELSIOR TOWNSHIP							
EARLY, ANITA R REV TRUST	0513400005	13-99-38	SE SE 13-99-38	2.00	1.43	207.20	0.21%
SONSTEGARD FAMILY FARMS	0524200002	24-99-38	NE NE 24-99-38	5.50	5.28	764.53	0.76%
T99N R37W, LAKEVILLE TOWNSHIP							
BARNHART, MATTHEW S AND MEAGAN M	0619100005	19-99-37	5.409 AC TRT IN NW COR NW NW (PARCEL A) 19-99-37	4.00	5.65	818.45	0.82%
	0619100007	19-99-37	IRREG TRT NW NW AKA PAR "D" 19-99-37	0.50	0.74	106.53	0.11%
FAIRBANKS, DAVID C AND WENDY M	0618300003	18-99-37	SW SW SEC 18-99-37	25.00	22.38	3,240.54	3.24%
	0618300004	18-99-37	SE SW 18-99-37	38.00	54.04	7,824.44	7.82%
GOODELL, BRIAN TRUSTEE	0618300002	18-99-37	NE SW 18-99-37	8.00	6.87	994.27	0.99%
GOULD, GARY AND DONNA	0617300003	17-99-37	SW SW 17-99-37	3.00	0.55	79.24	0.08%
	0618200003	18-99-37	SW NE 18-99-37	9.00	3.85	557.53	0.56%
	0618400001	18-99-37	NW SE 18-99-37	35.00	18.04	2,611.51	2.61%
	0618400002	18-99-37	SW SE 18-99-37	39.00	46.63	6,751.87	6.75%
	0618400004	18-99-37	NE SE EXC TRACT N SIDE 18-99-37	23.50	13.49	1,952.53	1.95%
	0618400005	18-99-37	SE SE 18-99-37	38.00	17.92	2,594.36	2.59%
PACKEBUSH, EDWARD M AND BRENDA J	0618400003	18-99-37	TRACT ON N SIDE OF NE SE 18-99-37	1.00	0.25	35.94	0.04%
SONSTEGARD FAMILY FARMS	0619100002	19-99-37	NE NW 19-99-37	39.26	100.00	14,478.52	14.48%
	0619100008	19-99-37	NW NW EXC TRTS NW COR 19-99-37	14.00	28.73	4,159.75	4.16%
	0619200001	19-99-37	NW NE 19-99-37	39.00	80.87	11,708.77	11.71%
	0619200003	19-99-37	SW NE 19-99-37	40.00	94.89	13,739.21	13.74%
SUMMIT FARMLAND IV LLP	0619200002	19-99-37	NE NE 19-99-37	24.00	18.81	2,723.94	2.72%
WARBURTON, DIANE MARIE	0619200004	19-99-37	SE NE 19-99-37	9.00	10.43	1,510.77	1.51%
WARBURTON, JAMES L AND ANN F	0619400001	19-99-37	NW SE 19-99-37	18.50	24.68	3,572.89	3.57%
WILD PRAIRIE FARMS, LLC	0620100001	20-99-37	NW NW 20-99-37	3.00	0.89	129.58	0.13%
WUEBKER, RICHARD	0619100003	19-99-37	SW NW 19-99-37	0.50	2.28	330.01	0.33%
	0619100004	19-99-37	SE NW 19-99-37	32.00	97.08	14,055.88	14.06%
	0619300002	19-99-37	NE SW 19-99-37	7.50	14.12	2,044.54	2.04%
Dickinson County Secondary Roads	100		RIGHT-OF-WAY	12.00	20.77	3,007.20	3.01%
Totals	26 Parcels			470.26		100,000.00	100.00%

Drainage District No. 44 - Branch 37+50: Preliminary Assessment Schedule

LANDOWNER(S)	PIN	S-T-R	BENEFITED PARCEL	ACRES	CLASS (%)	ASSESSMENT UNITS	% SCHEDULE
T99N R38W, EXCELSIOR TOWNSHIP							
EARLY, ANITA R REV TRUST	0513400005	13-99-38	SE SE 13-99-38	2.00	5.07	117.86	1.18%
SONSTEGARD FAMILY FARMS	0524200002	24-99-38	NE NE 24-99-38	5.50	18.72	434.87	4.35%
T99N R37W, LAKEVILLE TOWNSHIP							
BARNHART, MATTHEW S AND MEAGAN M	0619100005	19-99-37	5.409 AC TRT IN NW COR NW NW (PARCEL A) 19-99-37	4.00	25.34	588.73	5.89%
	0619100007	19-99-37	IRREG TRT NW NW AKA PAR "D" 19-99-37	0.50	3.39	78.78	0.79%
FAIRBANKS, DAVID C AND WENDY M	0618300003	18-99-37	SW SW SEC 18-99-37	25.00	94.97	2,206.45	22.06%
	0618300004	18-99-37	SE SW 18-99-37	35.00	64.16	1,490.69	14.91%
GOODELL, BRIAN TRUSTEE	0618300002	18-99-37	NE SW 18-99-37	4.50	3.32	77.13	0.77%
GOULD, GARY D AND DONNA L	0618400002	18-99-37	SW SE 18-99-37	3.00	1.40	32.55	0.33%
SONSTEGARD FAMILY FARMS	0619100002	19-99-37	NE NW 19-99-37	15.50	78.23	1,817.49	18.17%
	0619100008	19-99-37	NW NW EXC TRTS NW COR 19-99-37	12.00	100.00	2,323.36	23.23%
Dickinson County Secondary Roads	100		RIGHT-OF-WAY	5.50	35.81	832.09	8.32%
Totals		11 Parcels		112.50		10,000.00	100.00%





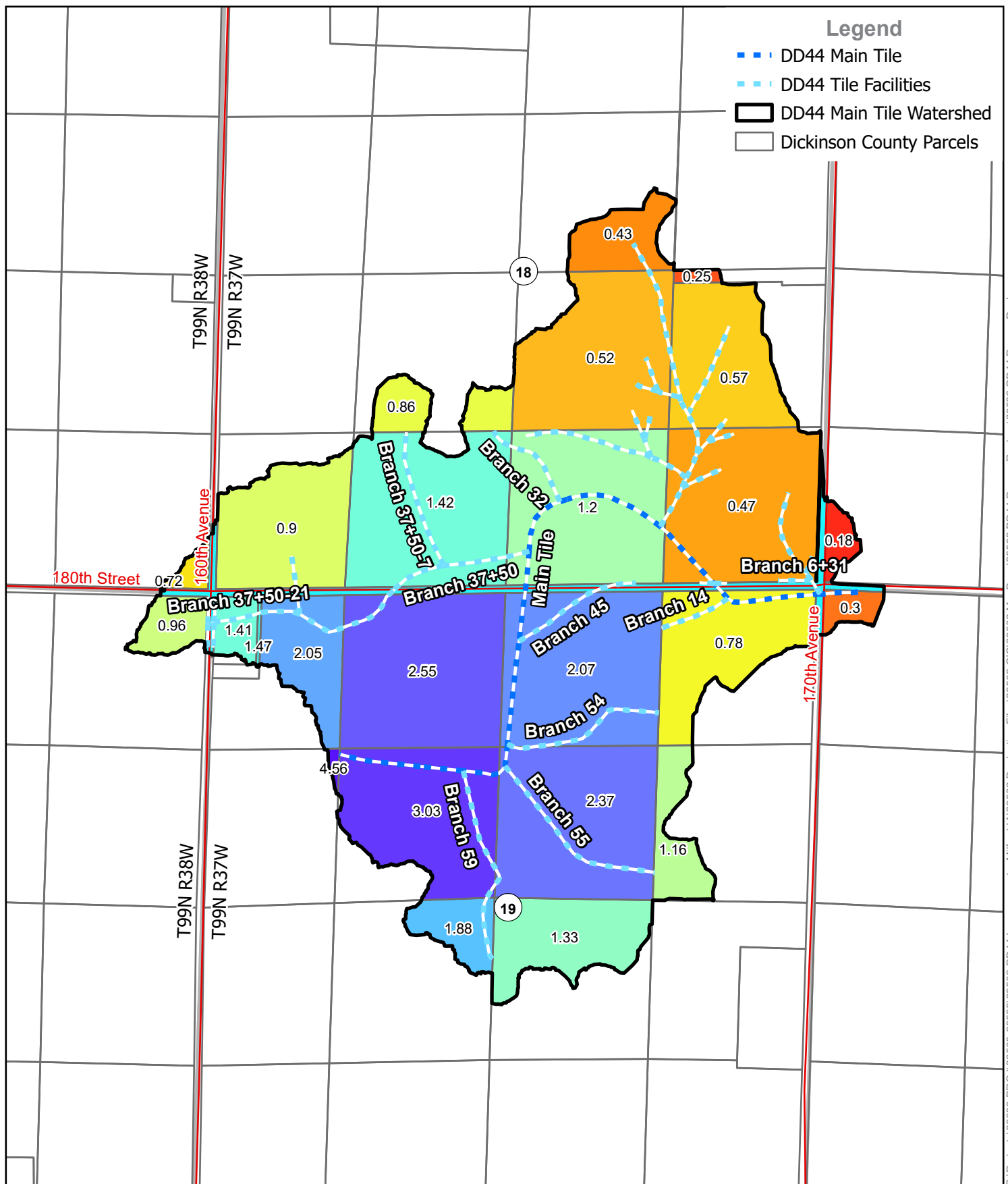
Assessment Units

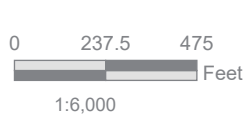
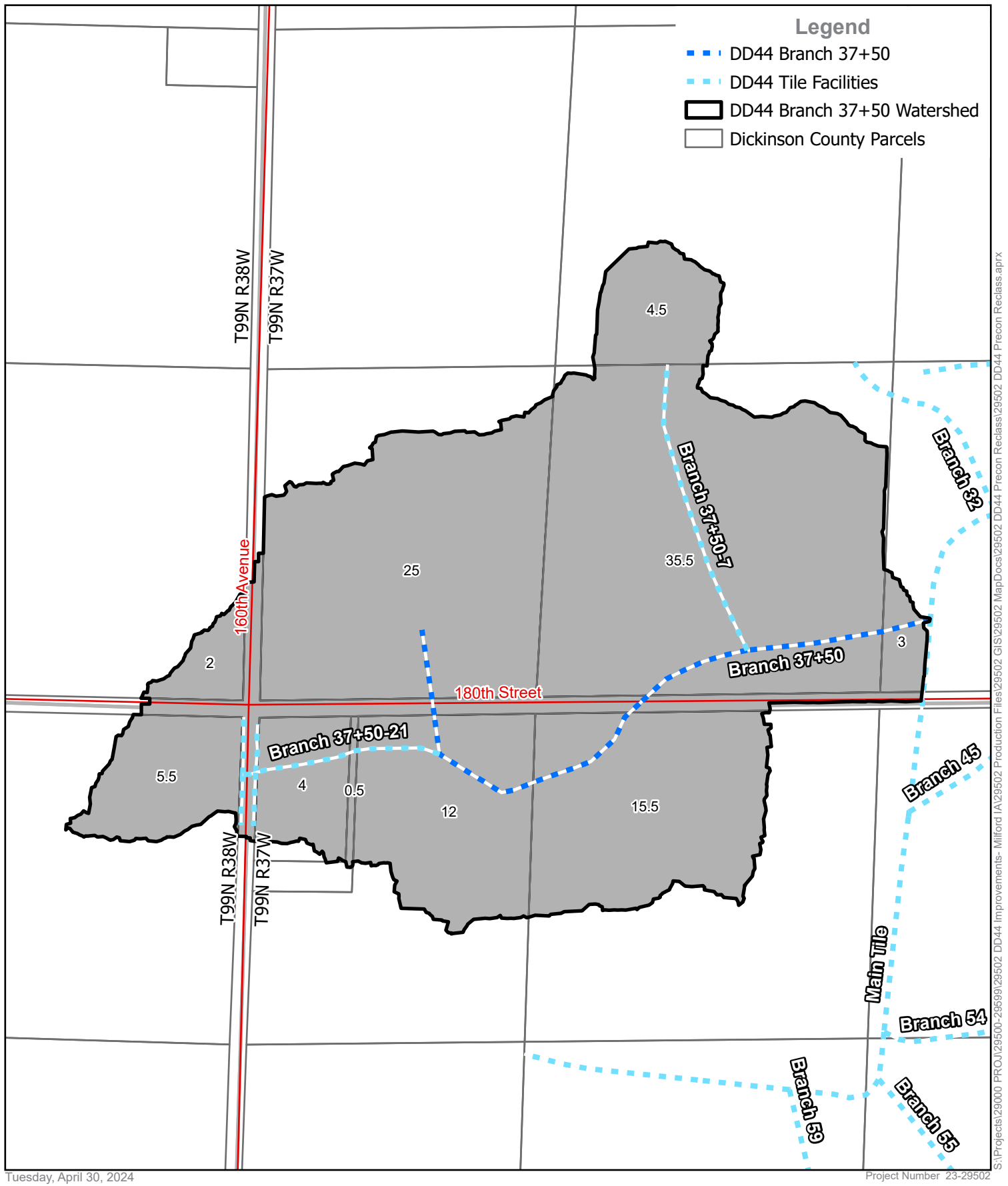
DD44 Main Tile

Dickinson County, Iowa

Source(s):
Roads (IA DOT, 2014)
Parcels (Dickinson County, 2024)



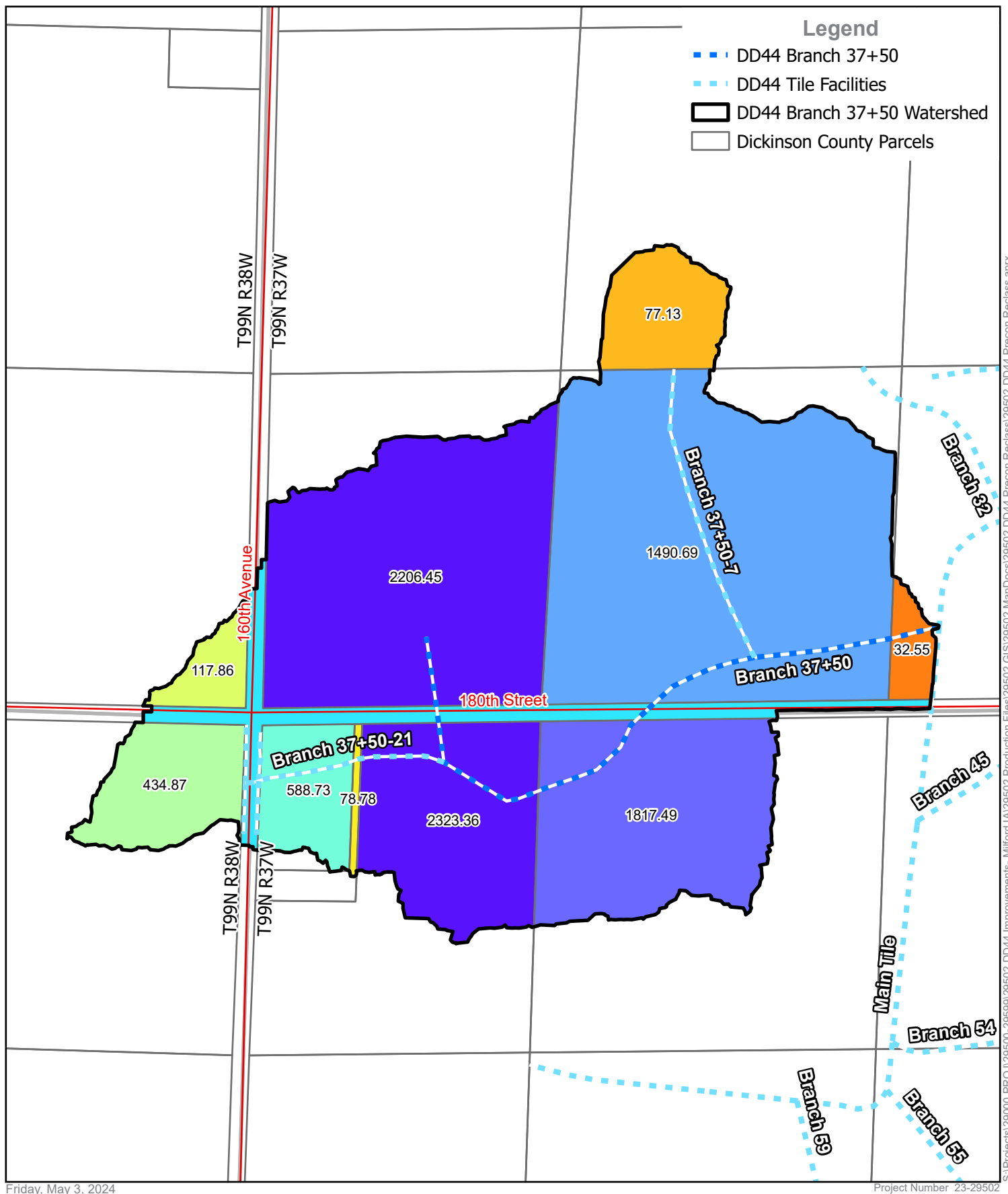




Net Acres
DD44 Branch 37+50
Dickinson County, Iowa

Source(s):
Roads (IA DOT, 2014)
Parcels (Dickinson County, 2024)





0 237.5 475
Feet
1:6,000



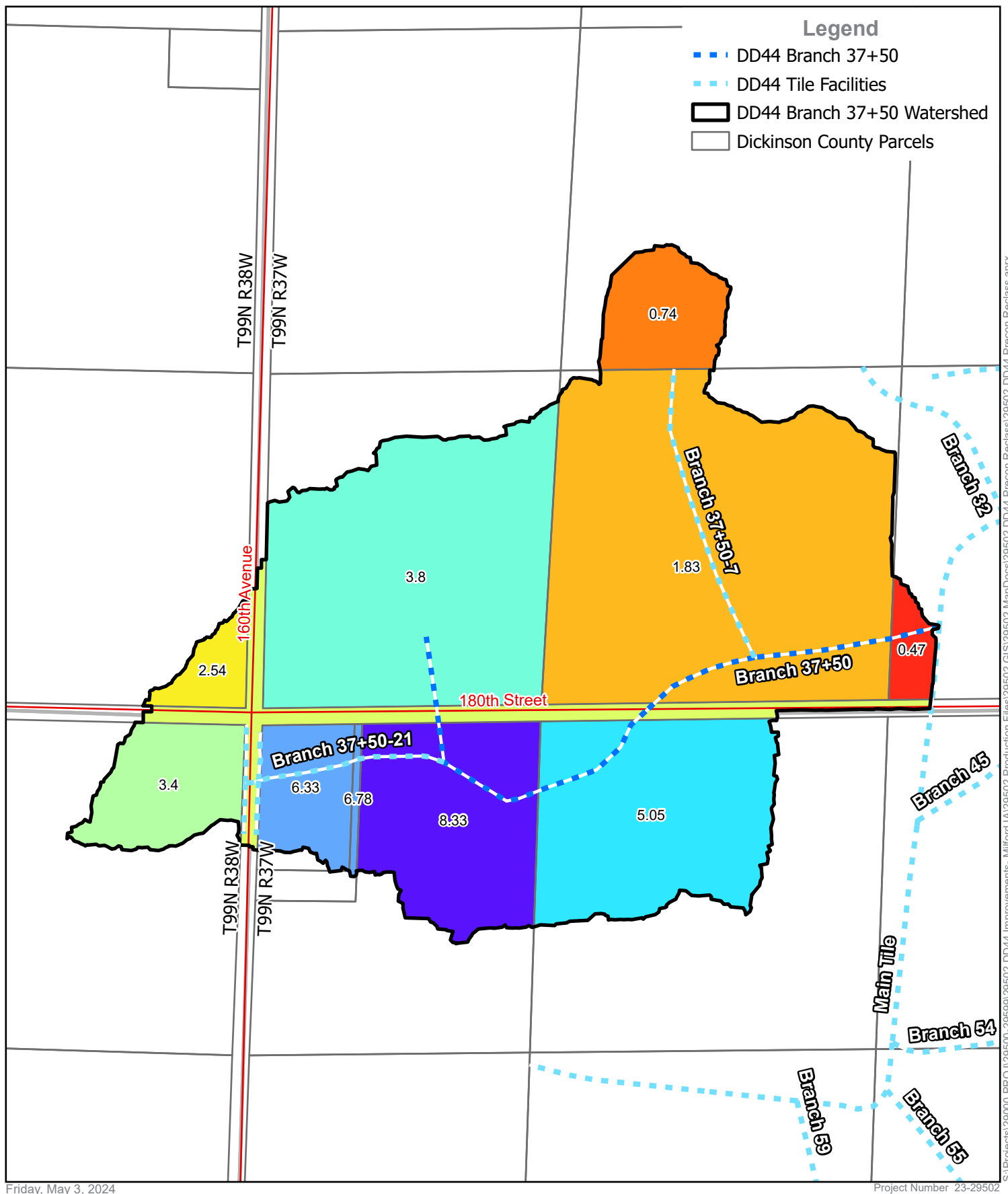
Assessment Units

DD44 Branch 37+50

Dickinson County, Iowa

Source(s):
Roads (IA DOT, 2014)
Parcels (Dickinson County, 2024)

ISG



Friday, May 3, 2024

Project Number 23-29502

0 237.5 475
Feet
1:6,000



Classification per Acre
DD44 Branch 37+50
Dickinson County, Iowa

Source(s):
Roads (IA DOT, 2014)
Parcels (Dickinson County, 2024)



Appendix E: Preliminary Construction Plans

DRAINAGE DISTRICT NO. 44 TILE IMPROVEMENT PROJECT

MILFORD, IOWA

FINAL ENGINEERING REPORT

ISG PROJECT # 23-29502



LEGEND

EXISTING	
	WATERSHED BOUNDARY
	CITY LIMITS
	SECTION LINE
	QUARTER SECTION LINE
	RIGHT OF WAY LINE
	PROPERTY / LOTLINE
	EASEMENT LINE
	ACCESS CONTROL
	WATER EDGE
	WETLAND BOUNDARY
	FENCE LINE
	EXISTING OPEN DITCH
	CULVERT
	TILE
	PRIVATE TILE
	WATER
	GAS
	OVERHEAD ELECTRIC
	UNDERGROUND ELECTRIC
	UNDERGROUND TELEPHONE
	UNDERGROUND TV
	OVERHEAD UTILITY
	UNDERGROUND UTILITY
	UNDERGROUND FIBER OPTIC
	CONTOUR (MAJOR)
	CONTOUR (MINOR)
	DECIDUOUS TREE
	CONIFEROUS TREE
	TREE LINE
	DROP INTAKE
	HYDRANT
	POWER POLE

PROPOSED	
	EASEMENT
	PROPOSED OPEN DITCH
	OPEN DITCH REPAIR
	CULVERT (RCP)
	CULVERT (CMP)
	CULVERT (HDPE)
	TILE
	TILE (PIPE WIDTH)
	PRIVATE TILE
	WATER
	GAS
	OVERHEAD ELECTRIC
	UNDERGROUND ELECTRIC
	UNDERGROUND TV
	CONTOUR (MAJOR)
	CONTOUR (MINOR)
	DROP INTAKE
	SLOUGH REPAIR
	SPOIL PLACEMENT
	TREE CLEARING
	REMOVE TREE
	BUFFER



LOCATION MAP

SHEET INDEX

A.01	TITLE
A.02	DISTRICT PLAT
D.01	PLAN & PROFILE MAIN TILE
D.02	PLAN & PROFILE MAIN TILE
D.03	PLAN & PROFILE MAIN TILE
E.01	PLAN & PROFILE BRANCH 37+50 TILE
E.02	PLAN & PROFILE BRANCH 37+50 TILE
F.01	MAIN TILE REMOVALS
G.01	BRANCH 37+50 REMOVALS

GIS DISCLAIMER:

INFORMATION FOR THE BOUNDARY / LOT LINES, AND UNDERGROUND UTILITIES SHOWN WAS DERIVED FROM DIGITAL DATABASES AND IS FOR INFORMATIONAL PURPOSES ONLY. DATA MAY NOT HAVE BEEN PREPARED FOR, OR BE SUITABLE FOR, LEGAL, ENGINEERING, OR SURVEYING PURPOSES.

PROJECT GENERAL NOTES

- ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS, AND CLARIFICATIONS ISSUED BY ARCHITECT/ENGINEER.
- CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
- WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
- FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
- DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN, WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
- ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
- ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
- THE LOCATION AND TYPE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
- THE CONTRACTOR IS TO CONTACT "IOWA ONE CALL" FOR UTILITY LOCATIONS A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-292-8989).

PROJECT INDEX:

OWNER:

DICKINSON COUNTY BOARD OF SUPERVISORS, AS TRUSTEES FOR DRAINAGE DISTRICT No. 44 DICKINSON COUNTY, IOWA

PROJECT ADDRESS / LOCATION:

SECTIONS 18,19 & 20 / T99N R37W DICKINSON COUNTY, IOWA

MANAGING OFFICE:

STORM LAKE OFFICE
1725 LAKE AVE. NORTH
STORM LAKE, IA 50588
PHONE: 712.732.7745

PROJECT MANAGER: SPENCER PECH
EMAIL: SPENCER.PECH@ISGINC.COM

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH DICKINSON COUNTY'S REQUIREMENTS AND WITH THE 2024 EDITION OF THE STATEWIDE URBAN DESIGN AND SPECIFICATIONS (SUDAS) FOR PUBLIC IMPROVEMENTS, UNLESS DIRECTED OTHERWISE.

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), ON THE IOWA REGIONAL (ZONE 1) COORDINATE SYSTEM, IN U.S. SURVEY FEET. ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=1463.1

MAG NAIL IN CULVERT
NORTHING: 9667982.65
EASTING: 11499167.48

TOPOGRAPHIC SURVEY

THIS PROJECT'S TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN JANUARY 2024 BY ISG.



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PROJECT

DRAINAGE DISTRICT NO. 44

TILE IMPROVEMENT PROJECT

MILFORD IOWA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

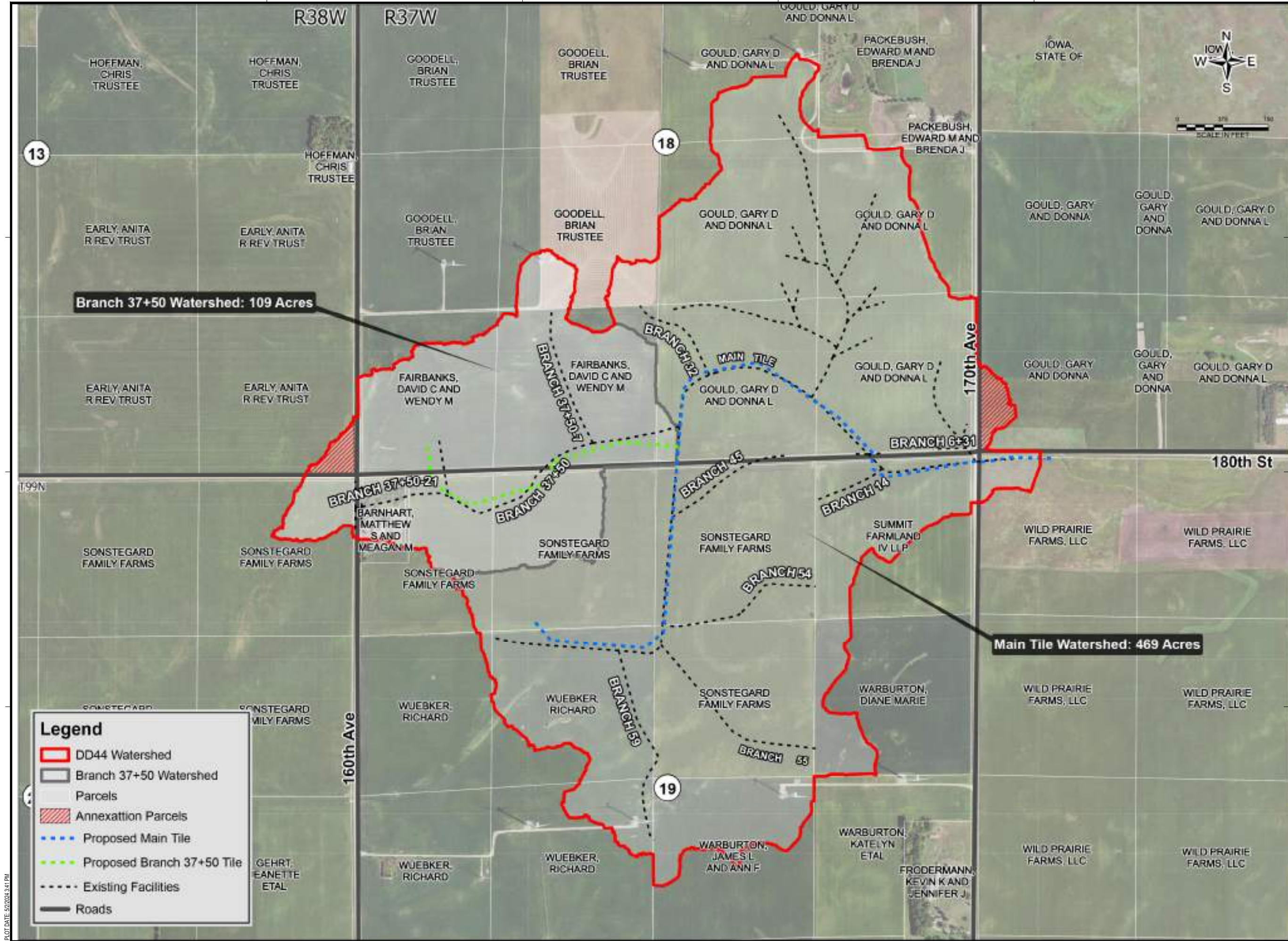
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FILE NAME	29502-TITLE
DRAWN BY	OBO
DESIGNED BY	SDP/LCC
REVIEWED BY	SDP
ORIGINAL ISSUE DATE	11/1/24
CLIENT PROJECT NO.	-

TITLE

TITLE

SHEET

A.01



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PROJECT
DRAINAGE DISTRICT NO. 44
TILE IMPROVEMENT PROJECT

MILFORD IOWA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

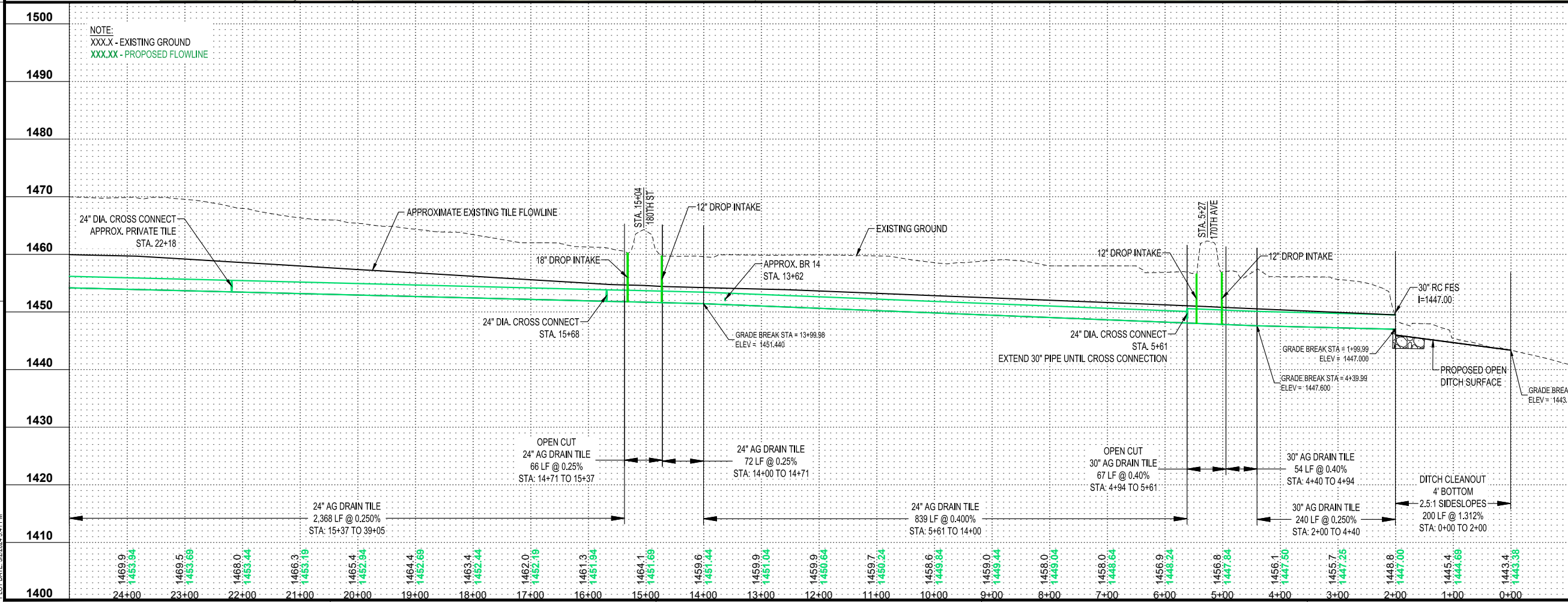
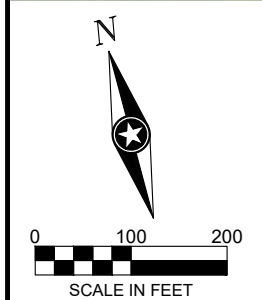
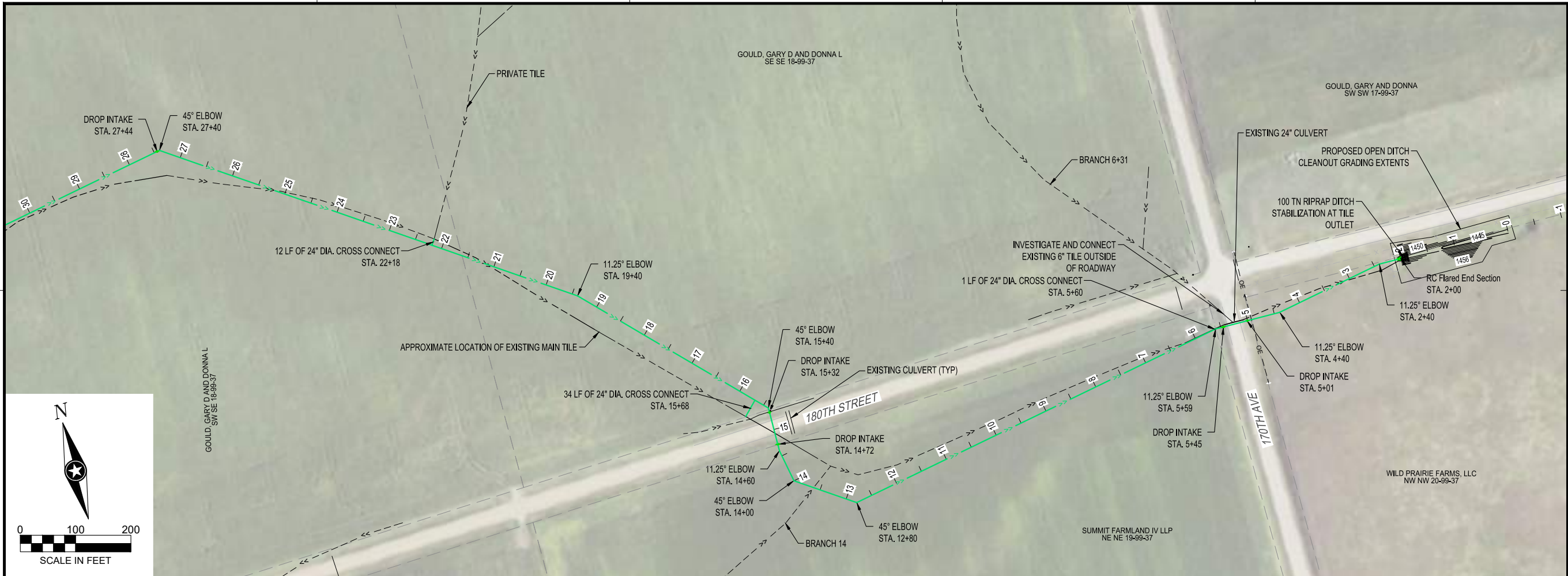
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FILE NAME	29502-TITLE
DRAWN BY	OBO
DESIGNED BY	SDP/LCC
REVIEWED BY	SDP
ORIGINAL ISSUE DATE	11/1/23
CLIENT PROJECT NO.	-

TITLE
DISTRICT PLAT

SHEET
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PLOT DATE: 5/2/2024 3:41 PM

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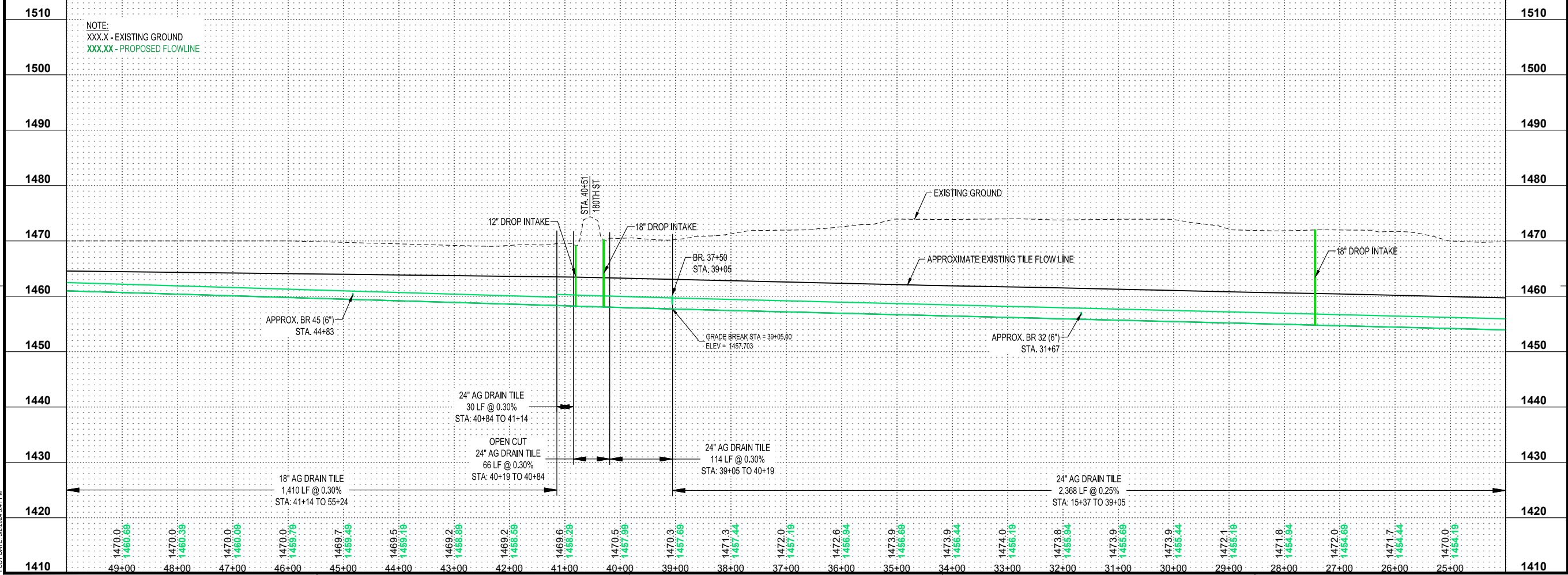


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PROJECT		
DRAINAGE DISTRICT NO. 44		
TILE IMPROVEMENT PROJECT		
MILFORD		IOWA
REVISION SCHEDULE		
DATE	DESCRIPTION	BY
PROJECT NO. 23-29502		
FILE NAME 29502-PROF		
DRAWN BY OBO		
DESIGNED BY SDP/LCC		
REVIEWED BY SDP		
ORIGINAL ISSUE DATE --/--		
CLIENT PROJECT NO. -		
TITLE		
PLAN & PROFILE MAIN TILE		
SHEET		
D.01		

PRELIMINARY NOT FOR CONSTRUCTION



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PROJECT

**DRAINAGE DISTRICT
NO. 44**

**TILE IMPROVEMENT
PROJECT**

MILFORD IOWA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	23-29502
FILE NAME	29502-PROF
DRAWN BY	OBO
DESIGNED BY	SDP/LCC
REVIEWED BY	SDP
ORIGINAL ISSUE DATE	11/1/2023
CLIENT PROJECT NO.	-

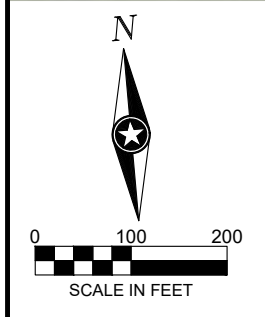
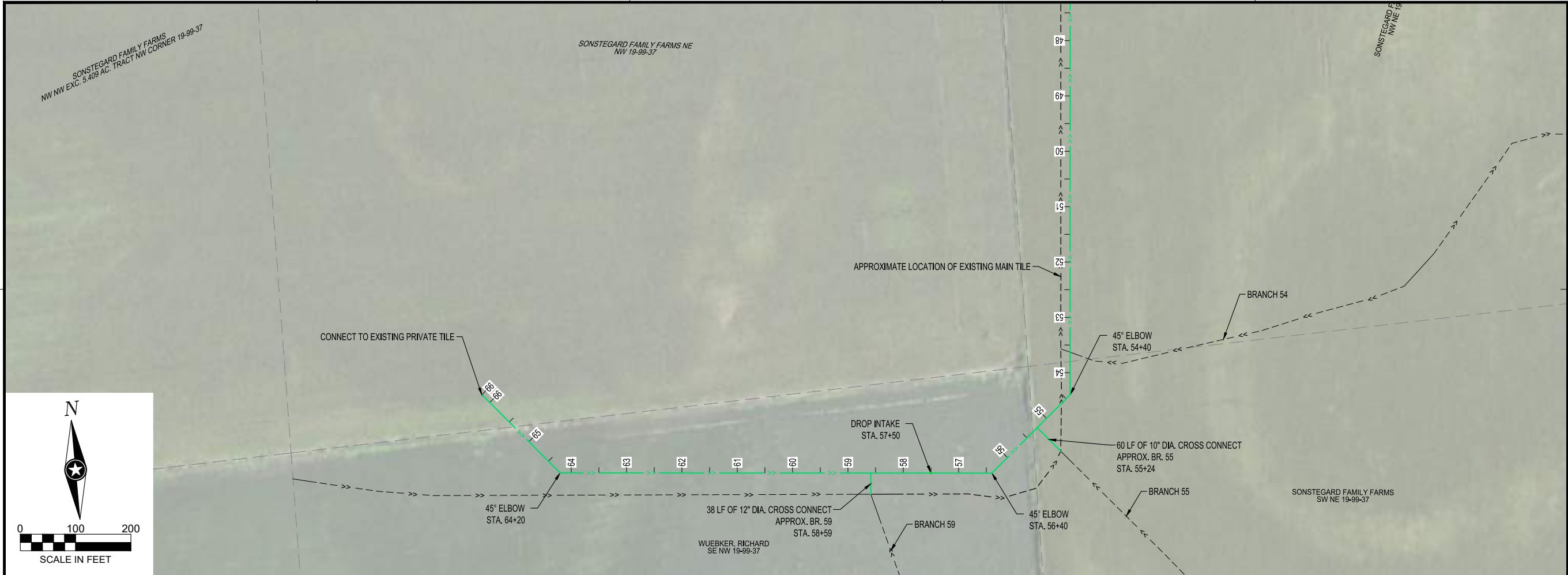
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**PLAN & PROFILE
MAIN TILE**

SHEET

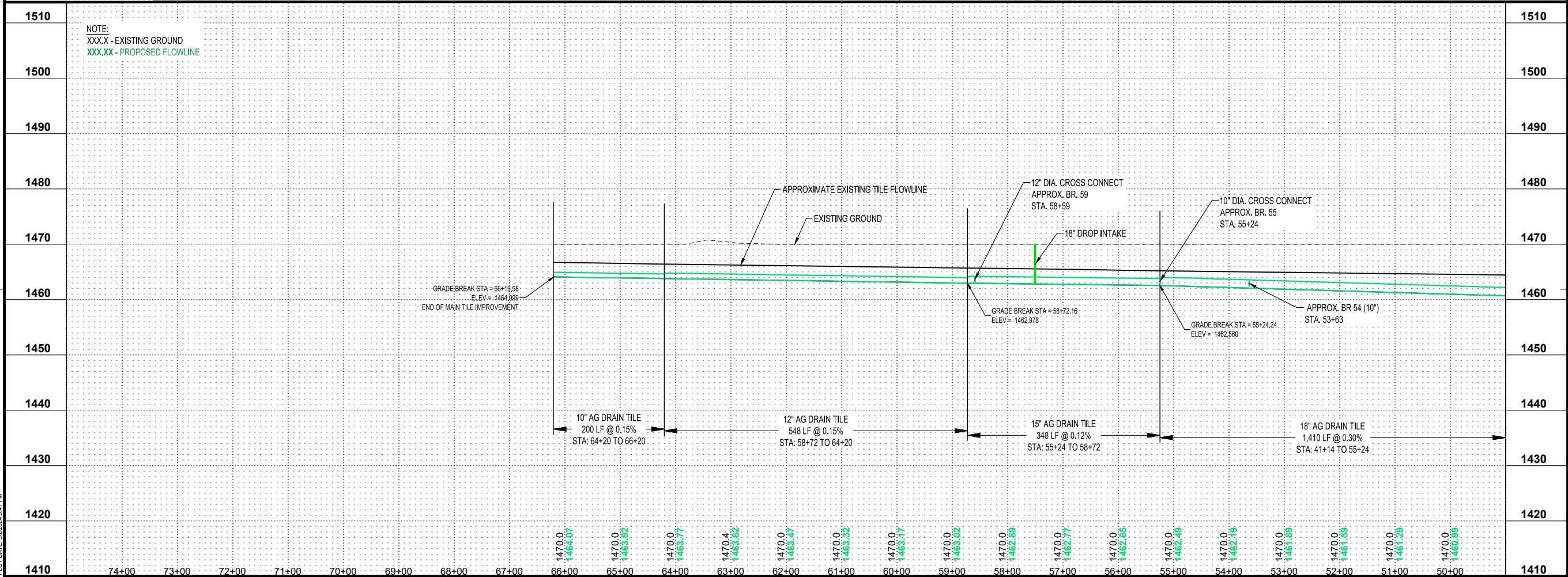
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PRELIMINARY NOT FOR CONSTRUCTION



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PROJECT

DRAINAGE DISTRICT NO. 44

TILE IMPROVEMENT PROJECT

MILFORD IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO. 23-29502

FILE NAME 29502-PROF

DRAWN BY OBO

DESIGNED BY SDP/LCC

REVIEWED BY SDP

ORIGINAL ISSUE DATE 11/1/24

CLIENT PROJECT NO. -

TITLE

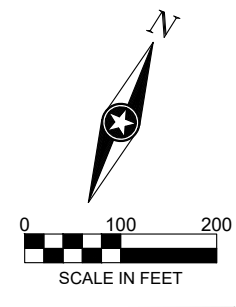
PLAN & PROFILE MAIN TILE

SHEET

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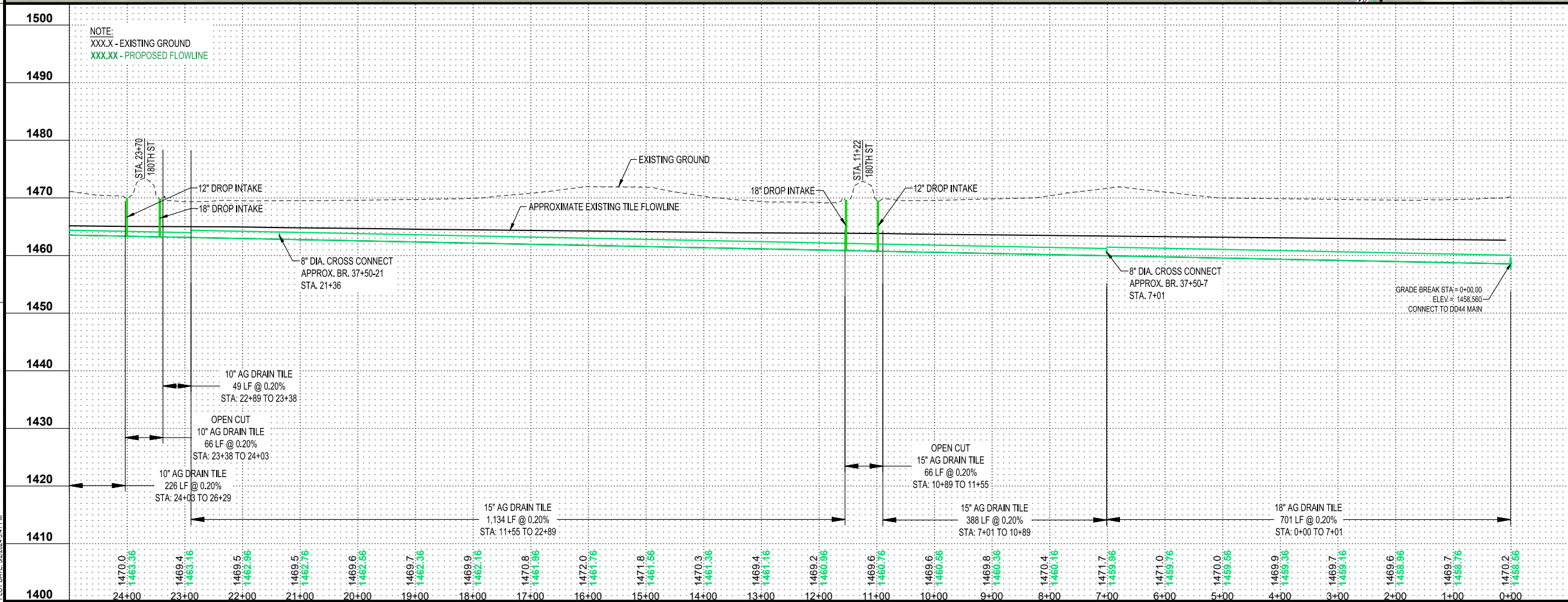
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1500	PROJECT		
1490	DRAINAGE DISTRICT NO. 44		
1480	TILE IMPROVEMENT PROJECT		
1470	MILFORD IOWA		
1460	REVISION SCHEDULE		
	DATE	DESCRIPTION	BY
1450	PROJECT NO. 23-29502		
1440	FILE NAME 29502-PROF		
	DRAWN BY OBO		
	DESIGNED BY SDP/LCC		
	REVIEWED BY SDP		
1430	ORIGINAL ISSUE DATE --/--		
	CLIENT PROJECT NO. -		
1420	TITLE		
1410	PLAN & PROFILE BRANCH 37+50 TILE		
1400	SHEET		
	E.01		

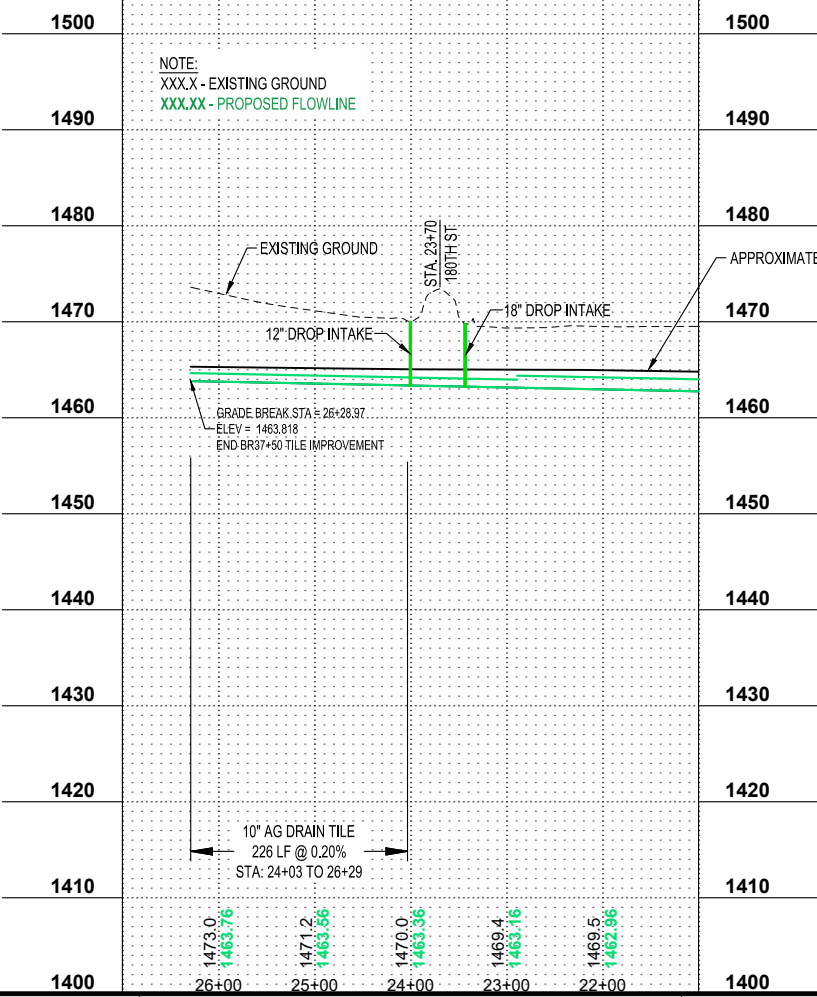
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PROJECT
**DRAINAGE DISTRICT
NO. 44**

**TILE IMPROVEMENT
PROJECT**

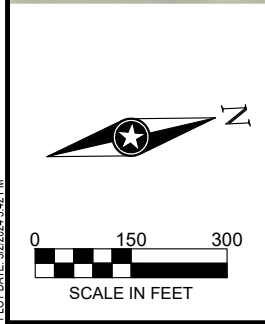
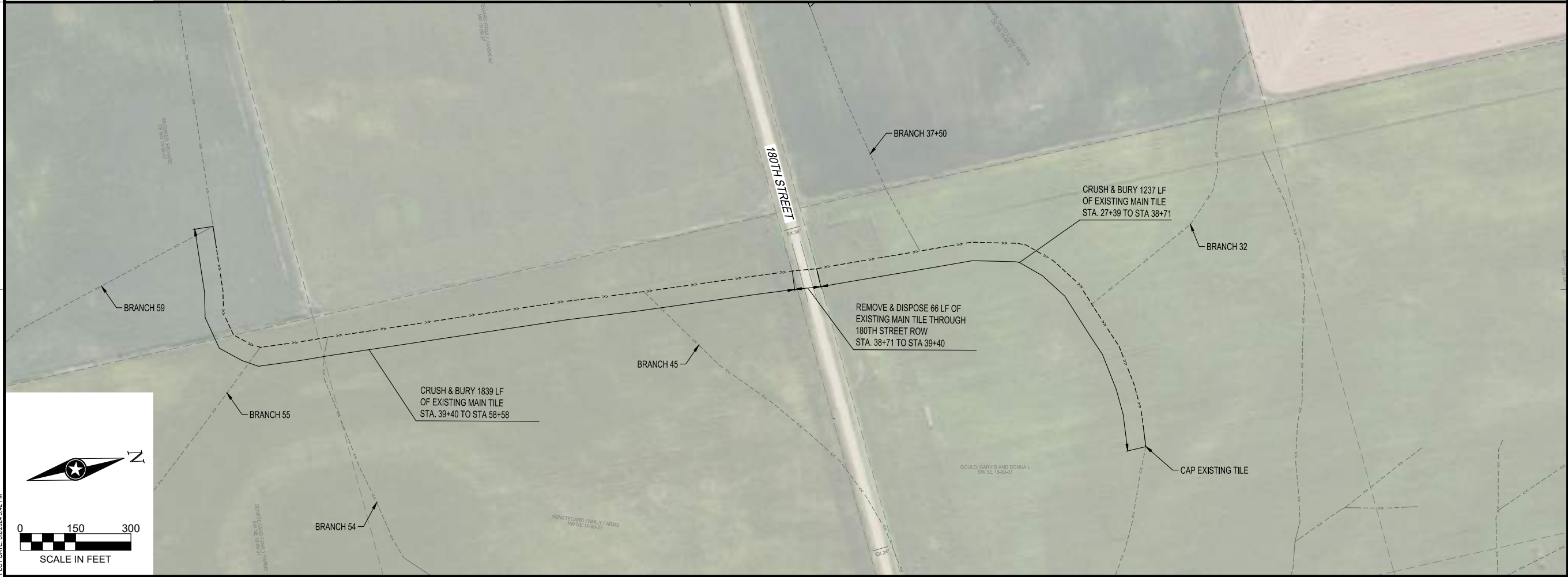
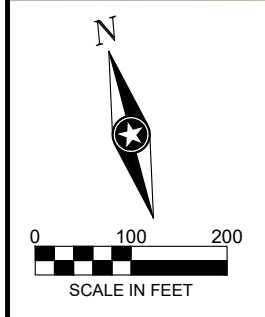
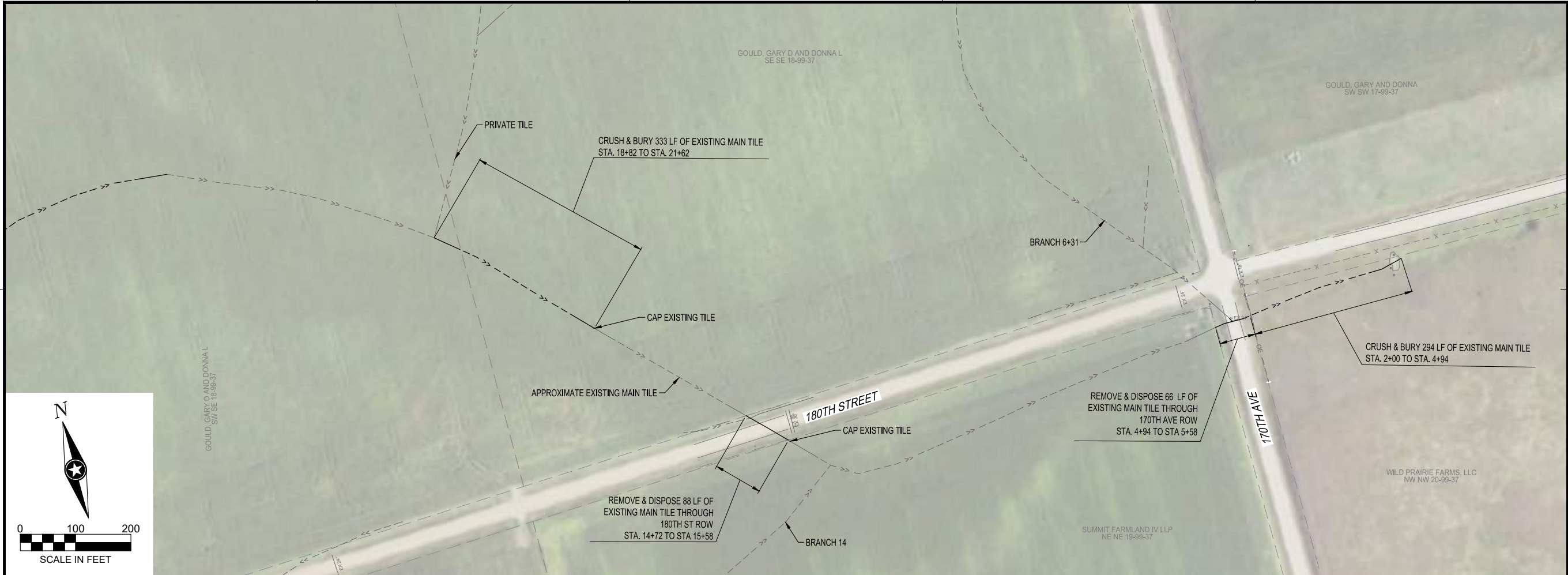
MILFORD IOWA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	23-29502
FILE NAME	29502-PROF
DRAWN BY	OBO
DESIGNED BY	SDP/LCC
REVIEWED BY	SDP
ORIGINAL ISSUE DATE	11/1/2023
CLIENT PROJECT NO.	-

TITLE
**PLAN & PROFILE
BRANCH 37+50 TILE**

SHEET
E.02



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PROJECT

DRAINAGE DISTRICT NO. 44

TILE IMPROVEMENT PROJECT

MILFORD IOWA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	23-29502
FILE NAME	29502-EXIST
DRAWN BY	OBO
DESIGNED BY	SDP/LCC
REVIEWED BY	SDP
ORIGINAL ISSUE DATE	11-1-24
CLIENT PROJECT NO.	-

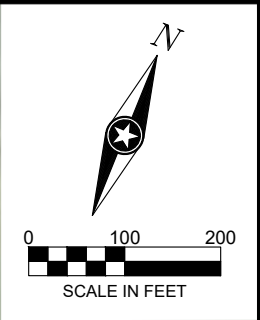
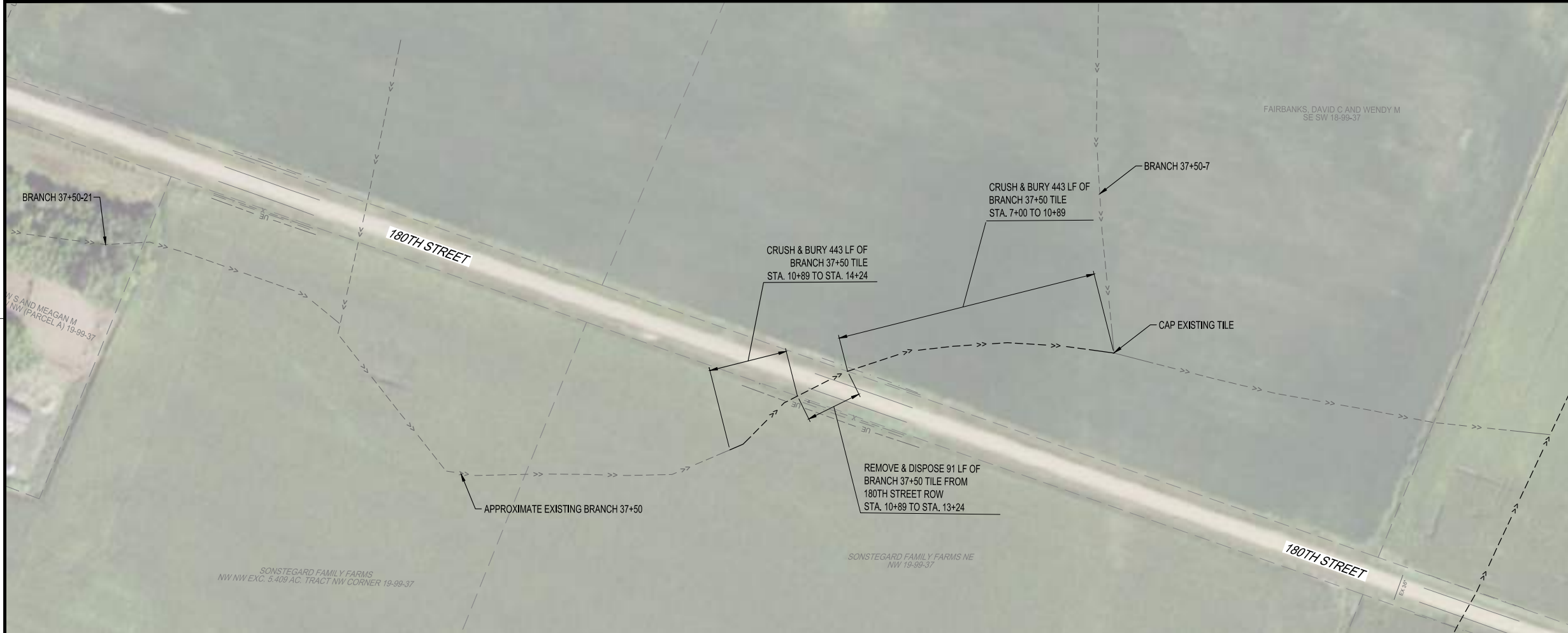
TITLE

MAIN TILE REMOVALS

SHEET

F.01

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PROJECT

**DRAINAGE DISTRICT
NO. 44**

**TILE IMPROVEMENT
PROJECT**

MILFORD IOWA

REVISION SCHEDULE		
DATE	DESCRIPTION	BY

PROJECT NO.	23-29502
FILE NAME	29502-EXIST
DRAWN BY	OBO
DESIGNED BY	SDP/LCC
REVIEWED BY	SDP
ORIGINAL ISSUE DATE	11-1-24
CLIENT PROJECT NO.	-

TITLE

**BRANCH 37+50
REMOVALS**

SHEET

G.01