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County Auditor &
Commissioner of Elections

Engineer's Report

Proposed Open Ditch Repairs

Drainage District No. 41

Pocahontas County, Iowa

2020

Submitted by:

Bolton & Menk, Inc.
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Certification

Engineer's Report

For

Proposed Open Ditch Repairs

Drainage District No. 41
Pocahontas County, Iowa
A14.119089

2020



I hereby certify that this plan, specification or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Iowa.

By: Jonathan P. Rosengren
Jonathan P. Rosengren, P.E.
License No. 21661

Date: May 8, 2020

Table of Contents

I.	Introduction	1
A.	Scope of Work	1
B.	Location	1
C.	History.....	1
II.	Investigation	2
A.	Upper End DD 41 Main – Station 460+00 to 774+00	2
B.	Branch No. 2	2
C.	Branch No. 6	3
D.	Ditch Crossings.....	3
E.	Utilities.....	3
F.	District Right-of-Way	3
III.	Farm Program Compliance	4
A.	CRP Damage Waivers.....	4
B.	Nesting Season Restrictions	4
IV.	Water Quality	4
V.	Proposed Work	5
A.	Proposed Repair	5
VI.	Assessment Schedule Review	7
A.	Benefited Lands Not Now Assessed	7
B.	Common Outlet	7
C.	Existing Assessment Schedule Review.....	7
VII.	Discussions & Recommendations	8

Tables

Non-Interfering Crossings – Main Open Ditch.....	3
Non-Interfering Crossing- Branch No. 2.....	3

Appendix

Appendix A: Petition

Appendix B: Existing Assessment Schedule Review

Appendix C: Right-of-Way Tabulation

Appendix D: Engineer’s Opinion of Probable Cost

Preliminary Plans

I. Introduction

A. Scope of Work

On May 17th, 2019 a petition signed by a landowner in the district was filed with the Board of Supervisors requesting investigation of necessary repairs or improvements needed to bring drainage relief to lands of the petitioners. The Board appointed Bolton & Menk, Inc. to complete the necessary survey, study, plan and report. This report addresses the petitioners' request for repairs to the open ditch within Drainage District No. 41. A copy of the petition is contained in Appendix A of this report.

B. Location

The watershed of Drainage District No. 41 encompasses approximately 35,127 acres within Sections 1, 2, 10-12, and 15 of Poland Township (T-93-N, R-35-W) in Buena Vista County, Sections 27-35 of Booth Township (T-94-N, R-34-W) in Palo Alto County, Sections 25, 35, and 36 of Garfield Township (T-94-N, R-35-W) in Clay County, Sections 2-11, 13-30, and 32-35 of Swan Lake Township (T-93-N, R-34-W), Sections 2-5, 8-17, 20-28, and 34-36 of Marshall Township (T-92-N, R-34-W), Sections 13, 24, 25, and 31 of Sherman Township (T-92-N, R-33-W), Sections 1-3 and 11-13 of Dover Township (T-91-N, R-34-W) and Sections 6 and 7 of Grant Township (T-91-N, R-33-W) in Pocahontas County.

The outlet of the Drainage District No. 41 Main Open Ditch lays in the SW NE of Section 7 in Grant Township (T-91-N, R-33-W), five miles west and one and a half miles south of Pocahontas, where it joins with the Drainage District No. 21 Main Open Ditch to form the top end of the Joint Drainage District No. 181 Big Cedar Open Ditch. The watershed of Drainage District No. 41 fully encompasses Drainage District Nos. 175, 24, 84, 105, and portions of Drainage District No. 8. DD 41 provides an outlet for Joint Drainage District Nos. 73 and 85.

C. History

Drainage District No. 41 is a large district with a long history of repairs. This review will be limited to the Main Open Ditch.

1904-6-4	Petition filed by W. E. Crowder and others
1904-8-3	C. J. Crawford, Engineer hired
1906-1-31	Petition filed
1908-8-4	W.B. Warrington, Engineer hired
1908-9-19	Engineer's Report filed – 19,737 acres to be drained by 44 branch tiles at an estimated cost of \$170,923.61.
1908-12-14	Report of Appraisers filed.
1910-7-23	Final Hearing and DD #41 is established
1911-2-21	Bid Letting – Contract awarded to Horton & Mosely for 6.38 cents per cubic yard for Section nos. 1 and 4, and to J.W. Convey for 19 cents per cubic yard for Section no. 40
1911-2-22	Engineer's Report filed and approved
1911-3-17	Bid Letting – Contract awarded to Geo. W. McCarter for 16.75 cents per cubic yard for Section no. 9
1911-8-31	Bid Letting – Contract awarded to Tuscola Supply and Construction Co. for \$46,109.25 for Section nos. 5-8, 10, 11,13-23, 37-39, and 41-46

- 1911-8-10 Engineer's Report filed – proposed to increase tile size in Branch nos. 22 and 23.
- 1911-8-21 Appointed P.J Shaw, T.E. Meredith and J.P. Moore, Engineer as commissioners to assess benefits.
- 1912-2-9 All proposed improvements approved.
- 1912-2-9 Report of Appraisers filed.
- 1912-4-12 Bid Letting – Contract awarded to W.E. Crowder for 18 cents per cubic yard for Section No. 26. Contract awarded to Frank Forbes for \$5,175 for Section nos. 25, 27, 28, 31, 32, 35, and 36. Contract awarded to Dallas Country Brick & Tile Works for \$8,645.55 for Section nos. 24, 25, 27, 28, 31, 32, 35, and 36
- 1951-12-3 Petition filed for repairs by Gilbert Ellis.
- 1951-12-31 Rowat & Murray, Engineers of Belmond, hired.
- 1952-5-28 Engineer's Report filed – cleaning and repair.
- 1952-8-25 Bid Letting – Contract awarded to Cooper Construction Co. for \$131,381.11
- 1953-3-3 Reclassification filed.
- 1966-3-29 Petition filed.
- 1966-4-4 N.C. Otts of Sac City, Engineer, hired
- 1994-4-19 Etler Engineering Co. of Emmetsburg, Engineer, hired.
- 1994-8-16 Engineer's Report filed – repairs for Flood of 1993.
- 1995-2-3 Bid Letting – Contract awarded to Valley Contracting of Estherville for \$87,833.50.
- 2001-11-13 Engineer's Report filed – plan to install new tile for Branches L & N.
- 2009-8-18 Contract awarded to Valley Contracting of Estherville for \$64,992 for FEMA-funded repairs.

II. Investigation

Full survey of the upper 6 miles of the Main Open Ditch, Br. No. 2 Open Ditch, Br. 6 Open Ditch was completed in the winter of 2019. Using the survey and profiles, several cross sections were made and all points of water entry, both surface and subsurface were analyzed. All trees, interfering fences, rock piles and large debris located near or in the open ditch were measured.

A. Upper End DD 41 Main – Station 460+00 to 774+00

The investigation found from Station 460+00 to 693+00 the existing ditch is at or below design grade. Branch No. 6 flows into the Main at Station 693+00. Upstream of this, an average of two feet of sediment has deposited on the bottom with some reaches having up to six feet of sediment. This silting above the junction with Branch No. 6 open ditch is most likely because of steep grade downstream.

B. Branch No. 2

The investigation found an average of two feet of sediment, up to three feet in some reaches. Several reaches of severe bank erosion were also found.

C. Branch No. 6

The investigation found the Branch No. 6 open ditch to be at the design grade. The design grade is 0.22%, this is steeper than typical of an open ditch and is likely why it is not silted in. Branch No. 6 was recently cleaned out using a modified grade due to silt in the Main. Several reaches of bank erosion were found during the survey.

D. Ditch Crossings

There are three city, two county, one state, one railroad, and one private crossing on the DD 41 Main Open Ditch from Station 467+07.52 to the upper end. All the crossings are designed at or below the design grade of the ditch. Some will need cleaned out as part of the proposed repairs. Below is a table of the crossings.

Non-Interfering Crossings – Main Open Ditch			
Station	Existing Structure Flowline Elevation	Ditch Design Flowline Elevation	Description
559+80	1266.4	1266.84	450 th Street (County) – Bridge
569+75	1268.1	1267.69	Laurens Prairie Preservation Trail (City) – Bridge
591+12	1268.70	1269.57	East Veterans Road (City) – 14’ x 14’ Concrete Box Culvert
606+62	1276.5	1270.85	Union Pacific Railroad- Bridge
618+16	1270.73	1271.90	East Section Line Road (City)– 14’ x 14’ Concrete Box Culvert
721+96	1278.1	1276.56	130 th Ave. (County)- Bridge
734+20	1278.7	1277.1	Private Crossing- Bridge

DD 41 Branch No. 2 has a wooden bridge crossing at Station 2+20 on land owned by Pocahontas County. Descriptive tables of this crossing is shown below.

Non-Interfering Crossing- Branch No. 2			
Station	Existing Structure Flowline Elevation	Ditch Design Flowline Elevation	Description
2+20	1280.6	1277.85	County-owned Crossing – SE NW 16-93-94

E. Utilities

Overhead power lines and other utility lines will parallel or cross the ditch at various locations; extra care will need to be taken when working under or near these utility lines. The contractor will be responsible to determine and notify utility companies and to cooperate in locating, marking and protecting their facilities

F. District Right-of-Way

The existing district right-of-way along the open ditch varies but is generally 100’ (50’ each side of centerline) for both the main ditch and its branches. The existing right of way is shown in Appendix C and additional right-of-way for some parcels should be acquired as part of the project.

III. Farm Program Compliance

A. CRP Damage Waivers

The destruction of CRP vegetation by construction activities places the landowner in technical violation of farm program conservation rules. The penalties can include loss of the CRP contract, forfeiture of back CRP payments and financial penalties. To avoid these penalties, landowners are advised to request a waiver from the USDA Farm Service Agency County Committee. The county committee will grant waivers for ditch or tile work if CRP vegetation restoration, in compliance with NRCS requirements, is timely done after the work is complete. If the project is authorized, all CRP owners in the path of construction must independently seek the FSA County Committee waivers. This process should be initiated immediately if the project is authorized.

B. Nesting Season Restrictions

The CRP rules also restrict disturbances during the primary nesting season, which covers the period of May 15th to August 1st in Pocahontas County. Recent relaxations of this rule, although specific to drainage district maintenance of open ditches having CRP buffers, likely would now favor allowing tile installation work without penalty on CRP during the primary nesting season. It makes no sense for a drainage district to wait for up to 3 months during ideal work weather. This is another situation where only the landowner can seek and secure the needed waiver.

IV. Water Quality

The hydrologic impacts to tile drainage entails 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 that 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 – Hydrosience 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 that 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 in order 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 that is 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 that can see 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) which utilize effective measures aimed at reducing sediment and nutrient loading, and improving water quality. These BMPs are divided into three (3) areas: preventative measures, control measures, and treatment measures.

Preventative Measures that can be applied throughout the watershed including crop rotation, cover crops, residue management, and nutrient management. These measures are aimed at controlling sediment, minimizing erosion and nutrient loss, and sustaining the soils health, all without dramatically changing the current land use of the landscape.

Control Measures are practices aimed at improving water quality directly associated with the flow of water by reducing peak flows, providing in stream storage, sedimentation, and nutrient uptake. Examples of control measures include alternative tile intakes, grassed waterways, two (2) stage ditches, water control structures, and controlled subsurface drainage. These practices are directly linked to the conveyance of subsurface tile water or open channel ditch flow.

The function of **Treatment Measures** is to improve water quality by directly removing sediment and nutrients from the subsurface or surface water flow throughout a watershed. Examples of treatment measures include surge basins (storage ponds), filter/buffer strips, wetland restorations, woodchip bioreactors, and water and sediment control basins (WASCOBs).

These practices may be incorporated to either the public or private drainage systems. Funding options are available to land owners through the Environmental Quality Incentives Program (EQIP) and the Iowa Water Quality Initiative. EQIP is a voluntary program that provides financial assistance to individual land owners 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.

A unique opportunity may exist when a wetland is created within the district for the treatment of the tile and/or surface waters of the watershed. A properly sized and created wetland may be able to be utilized as a mitigation site for any farmed wetlands that are found within the drainage district. With the possibility of a large share of the created wetland being funded by the Iowa Water Quality Initiative program, any potential farmed wetlands could be mitigated at a much-reduced cost.

If there is landowner interest in any of these water quality features and funding options, further study and review would be required to select, site and fund the water quality measures appropriate for the area.

V. Proposed Work

A. Proposed Repair

The investigation has confirmed the need for drainage relief within the district. To restore the original drainage efficiency, it is necessary to remove accumulated sediment from the Drainage District No. 41 Main, Branch No. 2, and Branch No. 6 Open Ditches. It is recommended that the Main Open Ditch be cleaned from Station 460+00 to the end at Station 774+00. In areas where little sediment is to be removed, the banks will be reshaped to remove any sloughing and meanders. This work will necessitate the removal of much of the bank vegetation, however, this will be limited to only as necessary for the work. We have included an estimated cost of this work in our engineer's opinion of probable cost.

Upstream of the Main Open Ditch, the creek meanders and could be improved to better serve the upper lands of the DD 41 watershed including JDD 73. We recommend a high-water overflow channel be constructed to remove large storm flow events more quickly. This concept has not been fully studied. If there is interest in improving this stretch of creek, it can be added to the proposed work.

To protect the functional life of the restored open ditch, it is recommended that the entire set of drain tile extension pipes and surface drainpipes be individually evaluated and be placed or replaced as found necessary during the ditch restoration work. It is estimated that this pipe work would include 21 surface water pipes and 48 tile outlet extensions. It's likely additional pipes will be found during construction which should be replaced.

If any fences are cut or removed during construction, the district is not obligated to pay damages associated with fences within the existing right-of-way. Damages can be claimed for fence damages occurring outside the ditch right-of-way within the work limits. Fence owners are encouraged to remove their own fences where it is necessary to do so, especially where they wish to salvage part of the materials.

It is recommended that the newly exposed open ditch banks be fertilized and seeded. NRCS research indicates that broadcasting the seed and fertilizer at the end of each day's work is the best way to secure good growth and because additional seedbed work isn't needed, the cost is more reasonable than for other methods. Economically successful seeding remains a difficult goal for drainage ditches, it being so dependent upon favorable weather. Typically, the best that is achieved is a sparse growth that supplements and aids the progress of natural re-vegetation.

There are some locations along the open ditch where we recommend erosion stone be placed to prevent bank scour during and after construction. The actual location and length of riprap placed will be determined in the field at the time of the repair.

The spoil material is recommended to be uniformly leveled and shaped to a typical cross section with a fairly flat top (2% slope) about 16 feet wide, adjacent to the ditch with a 10 to 1 back slope pushed out onto the adjacent land. The leveled spoil will then be deep tilled by the contractor and exposed rocks and debris are to be gathered and disposed of.

1. Buffer Strips & CRP

We note that there are several buffer strips in place along the open ditch where repairs are proposed. There are some manageable drawbacks that must be addressed by the owners of impacted buffer strips and CRP tracts.

The destruction of buffer strip or CRP vegetation by construction activities places the landowner in violation of Farm Program conservation rules. The penalties can include loss of the CRP contract, forfeiture of back CRP payments and penalties. To avoid these, landowners must request a waiver from the USDA Farm Service Agency County Committee. The county committee will grant waivers for ditch maintenance if seeding restoration, in compliance with NRCS requirements is done. If the project is authorized, all farm program buffer strip and CRP owners in the path of construction must independently seek the FSA County Committee waivers. This process may take two or three months and should be initiated immediately if the project is authorized.

2. Right-of-Way Needs

The current right-of-way varies between 40' to 60', but is generally 50' each side of centerline. We recommend a uniform 100' (50' each side of centerline) for all parcels on the DD 41 Main Open Ditch and Branch No. 2 Open Ditch. Branch No. 32 and Branch No. 6 have both previously established a 100' right-of-way along their ditches (Br. 32 in 1983, Br. 6 in 2014).

Drainage district open ditch right-of-way are exempt from real estate taxes and drainage assessments. Under Iowa law, landowners have the right to the beneficial use of the spoil bank in the right-of-way subject only to the district's use of the right-of-way to protect and maintain the open ditch.

Because landowners may use the right-of-way in this manner, drainage districts may acquire the easement at much below land market values. If right-of-way is to be acquired, an appraisal commission, made up of two landowners from the county and the engineer, are appointed to recommend fair payment. The right-of-way appraisers' report is considered at a public hearing prior to adoption.

3. Work Area

The permanent right-of-way is not intended to be wide enough to accommodate construction activities associated with major repairs or improvements. The district will need a larger area within which to perform the excavation and to dispose of the spoil. The work limits on the open ditch will typically be out to 100 feet from the open ditch centerline on the side or sides in which work will be done. Landowners will also be entitled to compensation for damages in the work area outside the right-of-way both now and in the future. Within the permanent right-of-way, future construction-related damages will not be compensated. It is recommended that whenever possible, a landowner should not crop the work area and instead should request fair rent for the land. Compensation for use of and damages within the temporary work area is normally determined at the project completion hearing.

B. Engineer's Opinion of Probable Cost

The estimated total cost of the proposed repairs is \$767,000. A detailed opinion of probable cost for the recommended work is included in Appendix B of this report.

VI. Assessment Schedule Review

A. Benefited Lands Not Now Assessed

There are approximately 35,127 acres within the Drainage District No. 41 watershed, including 17,851 acres that have never been assessed for benefits from the Main Open Ditch. This area is shown on the Benefitted Lands Map in Appendix C of this report.

A large portion of the acres not assessed for benefit from the Main Open Ditch are on DD 41 lateral tiles and lateral open ditch schedules. Those parcels that are already included in at least one of the several DD 41 schedules will not need to be annexed, but will need to be classified for benefit on the Main Open Ditch schedule. Therefore, the actual acres to be annexed will be significantly smaller than the 17,851 acres. Additional review will need to be done to determine the total acres to be annexed.

Annexation is expected to cost approximately \$10,000. It would be cost effective to do this annexation as part of the proposed project. Most landowners now in the district would likely support the annexation; those being annexed would likely be opposed. It should be emphasized to the owners of the annexed lands that assessments are based upon relative benefits and that if this benefit is small, the assessment will also be relatively small.

B. Common Outlet

Two Joint Drainage Districts—JDD 85 and JDD 73—drain to DD 41 which could be assessed a common outlet if so desired. JDD 85 is already assessed as a common outlet for DD 41, however annexation of approximately 743 acres on the upper end of DD 41 would need to occur before the hearing to make JDD 73 eligible for common outlet assessments.

It is recommended that annexation be completed before this Engineer's Report is approved to annex the 743 acres to allow common outlet assessments on JDD 73 for these proposed repairs.

C. Existing Assessment Schedule Review

Drainage District No. 41 was last reclassified in 1953. Appendix C contains a map showing the existing benefited units assessed per acre in the currently assessed area of DD 41 Main Open Ditch. In addition to a one-time use schedule for this project, we recommend the main open ditch be reclassified on a single maintenance schedule for more regular repair work.

D. Recommended Schedules

Since this project is a repair of the ditch serving only the upper lands of the district watershed, a one-time use assessment schedule could be created for this project. This schedule will include 14,123 acres draining directly to the proposed open ditch repairs. All lands downstream of the proposed repairs will not be assessed for this repair.

It has become common practice with reclassification to separate all facilities within a district into individual schedules to prevent landowners who receive no benefit from a particular named facility from having to pay to maintain that facility. We also recommended that the lateral open ditches and tiles be divided into separate maintenance schedules and reclassified at this time, to make the cost of future repairs more equitable. Those laterals which have been recently reclassified will not be revised at this time.

E. General Classification Methodology

The process of reclassification uses several factors to equitably spread project costs based upon benefits received. The three common factors are: Use; Proximity; and Wetness.

The Use Factor considers how much of the facility is required to bring an outlet to a particular location. The more a facility is used by any given property, the higher the Use Factor on that property. A parcel using one mile of a facility should pay less than a parcel using 5 miles of the facility.

The Proximity Factor considers the portion of the outlet provided. Lands nearer to the ditch receive a higher assessment because they have easy access to district facilities. Lands farther from the facility must invest in additional private drainage to access the facility. A 40 acre tract which is crossed by a ditch should pay more than a 40-acre tract a mile away which must build a private system to reach the open ditch.

The Wetness Factor accounts for the soil types' varying natural wetness and need for drainage. Wet soils in a pothole are high because the soils have more need for drainage than drier soils on the hill tops.

Other considerations may be necessary to achieve equitable assessments.

VII. Discussions & Recommendations

The Drainage District No. 41 Main Open Ditch has not been cleaned out since the 1950's. Typically, in Pocahontas County, repairs to an open ditch occur every 30-40 years. This report confirms the need to repair the drainage efficiency and capacity of the upper end of the Drainage District No. 41 Main Open Ditch and Branch 2 Open Ditch. The work described herein can accomplish that repair.

Repair Recommended. The repairs proposed will restore the original design capacity of the open ditch. The estimated assessable cost of the recommended repair is \$767 ,000. We find that the proposed repairs will be practicable, feasible, and beneficial to the public.

Annexation Recommended. Approximately 50% of the lands now served by Drainage District No. 41 (17,851 acres) appear to benefit from the Main Open Ditch but have not been assessed for maintenance costs of the facility. For these lands to now be assessed to help pay for future maintenance, it is necessary to bring them into the Drainage District No. 41 Main Open Ditch benefited area.

Common Outlet Recommended. The 7,842 acres of Joint Drainage District No. 73 and Joint DD No. 85, which drains into Drainage District No. 41 should be assessed as a common outlet. The annexation laid out above must be completed prior to assessing JDD 73.

Reclassification Recommended. The existing assessment schedule is inequitable and should be reclassified as should all laterals which have not been recently reclassified. Reclassification is expected to cost approximately \$1 per acre for each schedule developed.

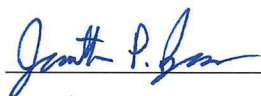
Installment Payments. Iowa drainage district law provides that large repair assessments may be paid in not less than ten nor more than twenty annual installments at the discretion of the Board of Supervisors. Typically, the board would spread assessments of the magnitude contemplated in this report over ten years. If we assume that the board will allow ten annual installments at 5% interest, repair costs for lands now in the district would be about \$6 per acre per year. If a one-time use schedule is used to assess only these lands benefited, the cost would increase to \$7/acre. Be reminded that assessments are based upon benefits received and that some parcels will likely bear two to three times the average assessments.

It is recommended that the Board of Supervisors of Pocahontas County, acting as trustees for Drainage District No. 41 take appropriate action, with legal guidance, to accomplish the following:

- Initiate procedures to annex benefited lands to Drainage District No. 41.
- Conduct a public hearing on Annexation and Common Outlet.
- Tentatively approve this engineer's report.
- Conduct a public hearing on the proposed repairs.
- Adopt the proposed repair plan, modified as deemed appropriate to satisfy the needs of the district.
- Direct the engineer to prepare the necessary plans and specifications and to proceed toward a bid letting.
- Initiate reclassification procedures.

Respectfully submitted,

Bolton & Menk, Inc.



Jonathan P. Rosengren, P.E

Appendix A: Petition

DRAINAGE PETITION

TO: THE BOARD OF SUPERVISORS OF POCAHONTAS COUNTY, IOWA, ACTING ON BEHALF OF DRAINAGE DISTRICT NO. 41 WHICH BENEFITS LANDS SOLEY IN POCAHONTAS COUNTY, IOWA.

COMES NOW, the undersigned Petitioners, being owners of the real estate in this established branch of the drainage district and in making this petition for drainage relief for the drainage of said lands respectfully state to the Board of Supervisors of Pocahontas County, Iowa:

1. That the lands of these petitioners are a part of and are included in Drainage District No. 41 in Pocahontas County, Iowa, and that said lands are assessed for drainage tax by virtue of the improvements in said branch of the district.
2. That the drainage facilities of Drainage District No. 41 in their present condition in section 15 ~~8-25~~ 93-34 are not sufficient to properly drain the water from the lands of these petitioners as well as other lands; that such lands are too wet for timely cultivation, too wet to support good crop production, and are subject to erosion and flood danger; that if the original improvements in said drainage district were properly improved to correct the current situation, the public benefit, utility, health and welfare would be promoted.
3. That these petitioners do not have exact knowledge or information as to the exact nature of the work to be done to correct the situation, but that these petitioners are of the belief that an investigation of the situation by a qualified engineer would determine the exact nature of the work required to provide adequate drainage for the lands of these petitioners and adjoining lands.
4. That these petitioners, being the owners of lands which are part of the benefited area of Drainage District No. 41, are entitled to adequate drainage from improvements of the drainage district.
5. That these petitioners are signing this petition pursuant to Section 468.126 of the Code of Iowa.

WHEREFORE, these petitioners respectfully request that the Board of Supervisors of Pocahontas County, Iowa, acting on behalf of the owners of lands benefited by Drainage District No. 41 appoint an qualified engineer to investigate the drainage situation herein referred to with respect to petitioners land and other lands; and that the board order that district facilities be improved, to provide adequate drainage relief for the lands of these petitioners and adjoining lands as described above.

Dated this 17th day of May, 2019

LANDOWNERS

John W. Reese

DESCRIPTION OF LAND

15-93-34

APPROVED
BY

BOARD OF SUPERVISORS
POCAHONTAS COUNTY

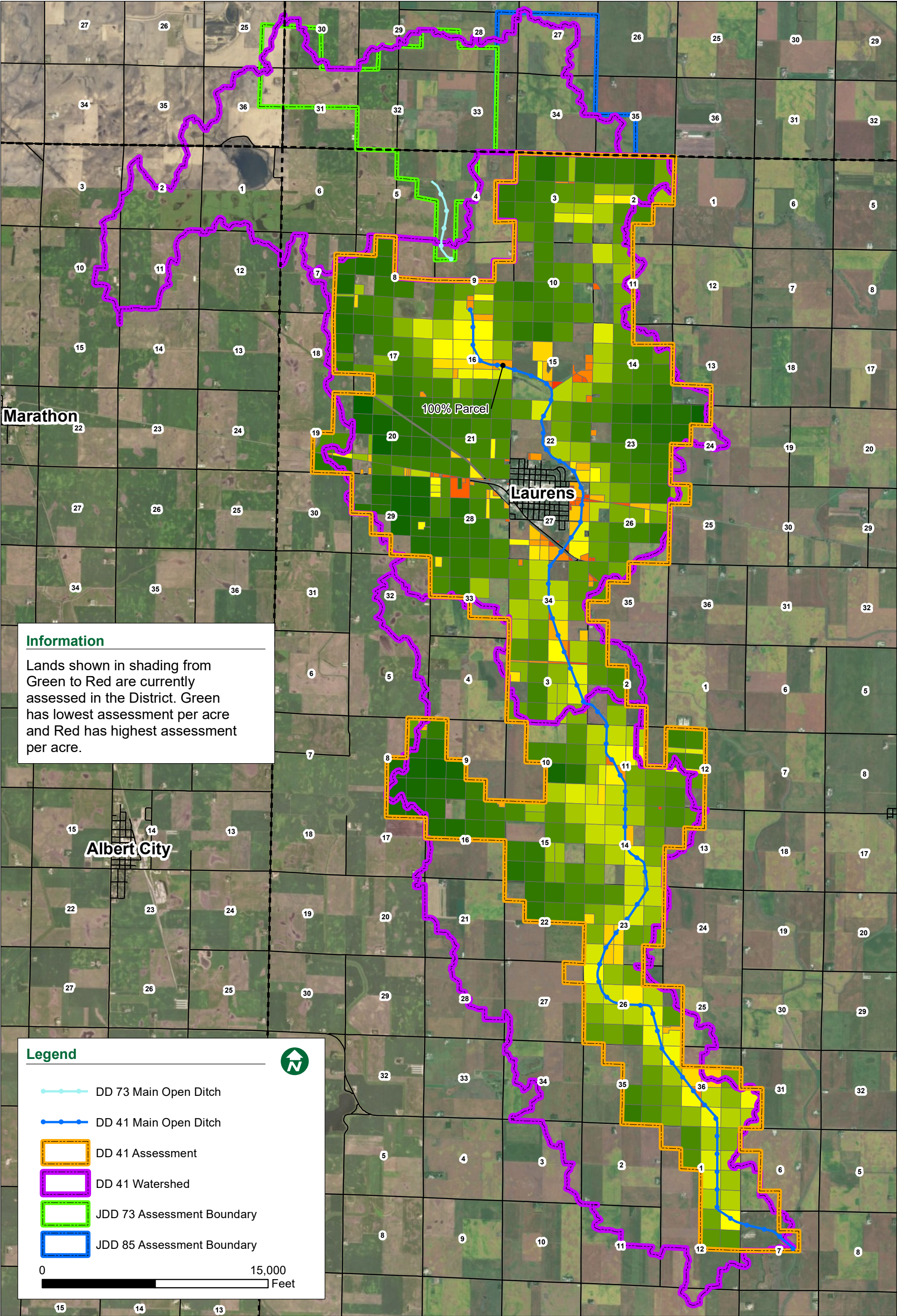
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RECEIVED

MAY 17 2019

**COUNTY AUDITOR &
COMMISSIONER OF ELECTIONS**

Appendix B: Existing Assessment Schedule Review



Appendix C: Right-of-Way Tabulation

APPENDIX C

RIGHT-OF-WAY TABULATION UPPER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 PROPOSED OPEN DITCH REPAIRS POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Cowan, Elmer E Residuary Trust	3-92-34	NW NE E OF DD DD 1.59	1.59	1.67	
Cowan, Elmer E Residuary Trust	3-92-34	W 4.23 AC NE NE	0.00	0.24	
			1.59	1.91	0.32
Dahl, Arthur L ; Dahl, Roselyn P	3-92-34	S 3.61 AC NE NE RD .25	0.25	0.29	
Dahl, Arthur L ; Dahl, Roselyn P	3-92-34	SE NE RD .75 DD 3.18	3.18	3.30	
			3.43	3.59	0.16
Morgan, H & R Farms Corp	3-92-34	NE SE RD 1.10 DD 3.42	3.42	3.52	0.10
Ryon, Barbara	3-92-34	NW NE W OF DD(EXC S 3.61 AC) DD 1.59	1.59	1.68	0.09
				Section 3 Total	0.67
Hamilton Heidemann & Associates	9-93-34	SE SW (EXC 6.16 AC TR NE COR) WILDLIFE HAB RD .58 DD 1.16	1.16	1.16	0.00
Lund, Richard Lund, Carolyn	9-93-34	6.16 AC TR NE COR SE SW RD .42 DD .60	0.60	1.27	0.67
				Section 9 Total	0.67

APPENDIX C

RIGHT-OF-WAY TABULATION UPPER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 PROPOSED OPEN DITCH REPAIRS POCAHONTAS COUNTY, IOWA

2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Booge Properties Limited Partnership	15-93-34	E 1/2 LOT H DD .77	0.77	0.79	
Booge Properties Limited Partnership	15-93-34	LOT O	0.00	0.08	
Booge Properties Limited Partnership	15-93-34	LOT C N OF DD DD 1.20	1.20	1.23	
			1.97	2.10	0.13
Long, Daryl H Long, Dorothy M Et Al	15-93-34	LOT 2 DD 1.38	1.38	2.70	1.32
Reese, Chris E Reese, Martha E	15-93-34	NW SW S OF DD(EXC TR SW COR) RD .42 DD 1.56	1.56	1.28	
Reese, Chris E Reese, Martha E	15-93-34	W 1/2 LOT H S OF DD DD .44	0.44	0.30	
Reese, Chris E Reese, Martha E	15-93-34	SE SW(EXC 6AC IN NE COR) DD 2.23	2.23	1.56	
			4.23	3.14	-1.09
Reese, John W Reese, Luann D	15-93-34	NW SW N OF DD RD .60 DD 1.56	1.56	1.94	
Reese, John W Reese, Luann D	15-93-34	W 1/2 LOT H N OF DD DD .44	0.44	0.53	
			2.00	2.47	0.47
				Section 15 Total	1.92

APPENDIX C

RIGHT-OF-WAY TABULATION UPPER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 PROPOSED OPEN DITCH REPAIRS POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Carlson, Bruce Et Al	16-93-34	LOT 4 S OF DD & S PT LOT B S OF DD FOREST COVER RD 2.24 DD 1.29	1.29	1.16	-0.13
Pocahontas County	16-93-34	NE NW DD 1.72	1.72	1.95	
Pocahontas County	16-93-34	SE NW DD 2.30	2.30	2.72	
Pocahontas County	16-93-34	NW NE DD 2.31	2.31	0.89	
Pocahontas County	16-93-34	SW NE DD 6.02	6.02	7.08	
Pocahontas County	16-93-34	N 20.85 AC NW SE DD 1.29	1.29	1.10	
Pocahontas County	16-93-34	NE SE N OF DD RD .57 DD .57	0.57	0.92	
			14.21	14.66	0.45
				Section 16 Total	0.45
Hopkins, Gary W Hopkins, Joy M	22-93-34	S 1.84 AC SE NW DD .20	0.20	0.06	
Hopkins, Gary W Hopkins, Joy M	22-93-34	NE SW (EXC TR IN SW COR) DD 2.55	2.55	2.51	
			2.75	2.57	-0.18

APPENDIX C

RIGHT-OF-WAY TABULATION UPPER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 PROPOSED OPEN DITCH REPAIRS POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Hopkins, Richard G c/o Constance Hopkins; Hopkins, Contance L ; Hopkins, Trevor R ; Stewart, Cathy L ; Hopkins Revocable Living Trust, Richard c/o Constance Hopkins;	22-93-34	NE NW DD 3.94	3.94	0.66	
Hopkins, Richard G c/o Constance Hopkins; Hopkins, Contance L ; Hopkins, Trevor R ; Stewart, Cathy L ; Hopkins Revocable Living Trust, Richard c/o Constance Hopkins;	22-93-34	N 38.69 AC SE NW DD 3.45	3.45	0.59	
			7.39	1.25	-6.14
Hubbell, Jonathan C ; Hubbell, Amy L	22-93-34	6.60 AC SE SE S & W OF DD RD .45	0.00	0.98	0.98
City Of Laurens	22-93-34	TRACT 2 DD 1.47	1.47	0.54	-0.93
Litwiller, James ; Litwiller, MaryJo	22-93-34	LOT 4 BLK 2 EASTVIEW 5TH ADD	0.00	0.14	0.14
Lorenzen Farms Inc	22-93-34	NW SE EXC SW COR DD 1.67	1.67	4.12	
Lorenzen Farms Inc	22-93-34	NE COR SW SE	0.00	1.13	
Lorenzen Farms Inc	22-93-34	SE SE N & E OF DD (EXC 9.93 AC TR) RD 1.82 DD 2.57	2.57	4.42	
			4.24	9.67	5.43

APPENDIX C

RIGHT-OF-WAY TABULATION UPPER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 PROPOSED OPEN DITCH REPAIRS POCAHONTAS COUNTY, IOWA

2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Madsen, Scott T	22-93-34	1.43 AC TR IN NE PT SW SE S OF DD	0.00	0.30	
Madsen, Scott T	22-93-34	.10 AC SE SE S & W OF DD	0.40	0.03	
			0.40	0.33	-0.07
Oehlertz, Troy D Oehlertz, Susan K	22-93-34	LOT 2 BLK 2 EASTVIEW 5TH ADD	0.00	0.12	0.12
Tendal, Brad A ; Tendal, Amanda K	22-93-34	LOT 3 BLK 2 EASTVIEW 5TH ADD	0.00	0.13	0.13
				Section 22 Total	6.80
Bobalee Inc c/o Gomaco Corporation	27-93-34	PT E1/2 NE1/4 N OF RY & W OF DD RD .62 DD 1.01 RR .48	1.01	1.07	0.06
Hersom, Ronald D	27-93-34	N PT E 1/2 NE 1/4 S OF RY & W OF DD DD .64 RR .77	0.64	0.47	-0.17
Larson, Dixie Et Al	27-93-34	3.58 AC E OF DD & N HWY 10 SW SE RD 1.89 DD .15	0.15	0.46	
Larson, Dixie Et Al	27-93-34	N PT SE SE RD 6.00 DD .43 RR 1.20	0.43	1.05	
			0.58	1.51	0.93
Laurens Sportsmens Club	27-93-34	N PT SE NE W OF DD	0.00	0.31	0.31

APPENDIX C

RIGHT-OF-WAY TABULATION UPPER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 PROPOSED OPEN DITCH REPAIRS POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Laurens, City Of	27-93-34	LOT 1 OF NE SE RD .58 DD 1.58	1.58	1.48	
Laurens, City Of	27-93-34	LOT F OF SW SE RD .47 DD 1.01	1.01	0.84	
Laurens, City Of	27-93-34	SW SE S OF RY & E OF DD RD .83 DD 1.01	1.01	1.01	
			3.60	3.33	-0.27
Laurens, City Of(Use &Benefit) Laurens Mun Comm Utility	27-93-34	3.42 AC TR N PT NE NE E OF DD RD .52 DD .56	0.56	0.67	0.11
Laurens, Inc Town Of	27-93-34	SE 2.97 AC NE NE N OF RY & E OF DD RD .37 DD .62	0.62	0.67	
Laurens, Inc Town Of	27-93-34	BAL SE NE W OF DD DD .64	0.64	0.46	
			1.26	1.13	-0.13
Lawman, Larry L	27-93-34	LOT IN N PT SW SE RD .73 DD .40	0.40	0.30	-0.10
Mather, Steven R Mason, Carol C	27-93-34	NE SE E OF DD EX CEM RD 1.00 DD 1.40	1.40	1.91	0.51
Mather, William C ; Mather, Kristina	27-93-34	NE NE S OF RY & E OF DD RD .47 DD .25 RR .77	0.25	0.23	
Mather, William C ; Mather, Kristina	27-93-34	SE NE E OF DD RD 2.20 DD 1.23	1.23	1.80	
			1.48	2.03	0.55

APPENDIX C

RIGHT-OF-WAY TABULATION UPPER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 PROPOSED OPEN DITCH REPAIRS POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Pocahontas County	27-93-34	N PT NE NE N OF RY & E OF DD(EXC 3.42 AC TR) RD .14 DD .11	0.11	0.03	-0.08
Section 27 Total					2.47
Cowan, Elmer E Residuary Trust	34-93-34	NW SE E OF DD DD .89	0.89	0.63	
Cowan, Elmer E Residuary Trust	34-93-34	SW SE E OF DD DD 1.45	1.45	1.99	
			2.34	2.62	0.28
Dahl, Arthur L ; Dahl, Roselyn P	34-93-34	NE NW RD 1.67 DD 1.02	1.02	0.77	
Dahl, Arthur L ; Dahl, Roselyn P	34-93-34	SE NW DD 1.94	1.94	1.34	
Dahl, Arthur L ; Dahl, Roselyn P	34-93-34	NW NE W OF DD RD .38 DD .43	0.43	0.27	
			3.39	2.38	-1.01
Dubbert, James W Trustee Dubbert, Carolyn Z Trustee	34-93-34	NE SW DD .82	0.82	0.47	-0.35
Ryon, Barbara	34-93-34	NW SE W OF DD DD .89	0.89	0.71	
Ryon, Barbara	34-93-34	PT SW SE W OF DD DD 1.45	1.45	1.23	
			2.34	1.94	-0.40

APPENDIX C

RIGHT-OF-WAY TABULATION UPPER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 PROPOSED OPEN DITCH REPAIRS POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Wenell, John P ; Wenell, Jean E	34-93-34	SW NE	0.00	1.71	
Wenell, John P ; Wenell, Jean E	34-93-34	NW NE E OF DD RD 1.28 DD .60	0.60	0.99	
			0.60	2.70	2.10
				Section 34 Total	2.38
				TOTAL RIGHT-OF-WAY TO BE ACQUIRED	15.36

APPENDIX C

RIGHT-OF-WAY TABULATION LOWER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 NO REPAIRS PROPOSED POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Spahr Family Limited Partnership W T & R W	1-91-34	NW NE RD 1.80 DD 2.69	2.69	3.51	
Spahr Family Limited Partnership W T & R W	1-91-34	SW NE DD 2.69	2.69	3.03	
Spahr Family Limited Partnership W T & R W	1-91-34	NW SE DD 2.69	2.69	2.95	
Spahr Family Limited Partnership W T & R W	1-91-34	SW SE DD 2.05	2.05	3.07	
			10.12	12.56	2.44
				Section 1 Total	2.44
Scott Farms Inc C/O Lloyd Scott	7-91-33	NE NW RD 1.00 DD 1.27	1.27	1.88	
Scott Farms Inc C/O Lloyd Scott	7-91-33	SE NW DD 1.65	1.65	1.48	
Scott Farms Inc C/O Lloyd Scott	7-91-33	NW NW(EXC .12 AC TR SW COR) RD 1.99 DD 2.27	2.27	2.99	
			5.19	6.35	1.16
Nedved Farms Inc A Corp	7-91-33	SW NE DD 2.72	2.72	3.01	0.29
				Section 7 Total	1.45

APPENDIX C

RIGHT-OF-WAY TABULATION LOWER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 NO REPAIRS PROPOSED POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Kramer, Gerald	12-91-34	NW NE DD 1.11	1.11	0.48	-0.63
Scott Farms Inc C/O Lloyd Scott	12-91-34	NE NE WILDLIFE HAB RD 1.00 DD 3.65	3.65	3.5	-0.15
				Section 12 Total	0.00
Egertsen, Ronald D ; Egertsen, Peggy L	2-92-34	NW SW RD 1.10	0.0	0.53	
Egertsen, Ronald D ; Egertsen, Peggy L	2-92-34	SW SW RD 2.00 DD 4.23	4.23	3.82	
Egertsen, Ronald D ; Egertsen, Peggy L	2-92-34	SE SW RD 1.00	0.0	0.27	
			4.2	4.62	0.39
				Section 2 Total	0.39

APPENDIX C

RIGHT-OF-WAY TABULATION LOWER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 NO REPAIRS PROPOSED POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Appleton, Jane Hawley ; Appleton, Charles E ; Appleton, Brett J	11-92-34	SE NW S & W OF DD DD .72	0.72	0.89	
Appleton, Jane Hawley ; Appleton, Charles E ; Appleton, Brett J	11-92-34	NE SW S & W OF DD DD 1.46	1.46	1.65	
Appleton, Jane Hawley ; Appleton, Charles E ; Appleton, Brett J	11-92-34	SE SW RD 1.66 DD 1.23	1.23	1.28	
			3.41	3.82	0.41
DeWall, Robert G ; DeWall, Bruce R	11-92-34	NE NW RD 1.00 DD 1.48	1.48	1.72	
DeWall, Robert G ; DeWall, Bruce R	11-92-34	SE NW N & E OF DD DD 2.85	2.85	2.11	
			4.33	3.83	-0.50
Egertsen, Ronald D ; Egertsen, Peggy L	11-92-34	NW NW RD 2.00 DD 1.48	1.48	1.32	
Egertsen, Ronald D ; Egertsen, Peggy L	11-92-34	SW NW RD 1.00 DD .72	0.72	0.57	
			2.2	1.89	-0.31
Gilchrist Farms Inc	11-92-34	NE SW N & E OF DD DD 1.45	1.45	1.71	
Gilchrist Farms Inc	11-92-34	NW SE	0.0	0.11	
Gilchrist Farms Inc	11-92-34	SW SE RD 1.66 DD 1.00	1.0	1.74	
			2.45	3.56	1.11
				Section 11 Total	1.52

APPENDIX C

RIGHT-OF-WAY TABULATION LOWER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 NO REPAIRS PROPOSED POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
DeWall, Robert G ; DeWall, Myrna E	14-92-34	NW SE DD 4.71	4.71	4.19	
DeWall, Robert G ; DeWall, Myrna E	14-92-34	NE SE RD 1.00	0.0	0.22	
DeWall, Robert G ; DeWall, Myrna E	14-92-34	SW SE RD 1.00 DD 1.98	1.98	0.11	
DeWall, Robert G ; DeWall, Myrna E	14-92-34	SE SE RD 2.00 DD 1.69	1.69	2.96	
			8.38	7.48	-0.9
Hawley, Leland J ; Hawley, Leland John	14-92-34	NE NW RD 1.66 DD 1.31	1.31	1.09	
Hawley, Leland J ; Hawley, Leland John	14-92-34	SE NW DD 2.93	2.93	0.93	
			4.24	2.02	-2.22
Vial Farms Ltd	14-92-34	NW NE RD 1.66 DD 1.31	1.31	1.96	
Vial Farms Ltd	14-92-34	W 17.50 AC SW NE DD 1.38	1.38	2.16	
			2.69	4.12	1.43
				Section 14 Total	1.43

APPENDIX C

RIGHT-OF-WAY TABULATION LOWER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 NO REPAIRS PROPOSED POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
DeWall, Bruce R	23-92-34	E 1/2 NE SW DD 1.80	1.8	2.14	0.34
Drong, Michael J	23-92-34	W 1/2 SE SW RD .50 DD 1.49	1.49	1.55	0.06
Eberle, Benita J ; Eberle, Benita J ; Eberle, Charles H	23-92-34	SE NW DD .46	0.46	0.43	-0.03
Halder, Charles L	23-92-34	SW SW RD 2.00 DD 1.79	1.79	1.72	-0.05
Tuma, Marian F ; Tuma, Marian F ; Tuma, Frank J ; Efobi, Kelly A	23-92-34	NW NE RD 1.00 DD 1.99	1.99	2.03	
Tuma, Marian F ; Tuma, Marian F ; Tuma, Frank J ; Efobi, Kelly A	23-92-34	NE NE RD 2.00 DD 1.37	1.37	1.4	
Tuma, Marian F ; Tuma, Marian F ; Tuma, Frank J ; Efobi, Kelly A	23-92-34	SW NE DD 2.98	2.98	3.28	
			6.34	6.71	0.37
Wagner, Bernard A ; Drong, Michael J	23-92-34	W 1/2 NE SW DD 1.49	1.49	1.49	0
				Section 23 Total	0.77

APPENDIX C

RIGHT-OF-WAY TABULATION LOWER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 NO REPAIRS PROPOSED POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Halder, Charles L	26-92-34	NW NW RD 2.00 DD 2.96	2.96	3.13	0.17
Halder, Charles L ; VanderZeyden, Linda	26-92-34	SW NW RD 1.00 DD 1.48	1.48	1.53	
Halder, Charles L ; VanderZeyden, Linda	26-92-34	SE NW DD 3.82	3.82	3.52	
Halder, Charles L ; VanderZeyden, Linda	26-92-34	WRP-\$250 PER ACRE	0.0	0.03	
			5.30	5.08	-0.22
Hudek Family Farms LLC	26-92-34	SW NE DD 3.72	3.72	2.01	
Hudek Family Farms LLC	26-92-34	SE NE RD 1.00	0.0	0.68	
			3.72	2.69	-1.03
Nedved Trust, Richard A & Joan P	26-92-34	NW SE	0.0	1.02	
Nedved Trust, Richard A & Joan P	26-92-34	NE SE RD 1.00 DD 3.67	3.67	3.56	
Nedved Trust, Richard A & Joan P	26-92-34	SE SE RD 2.00 DD 3.27	3.27	3.17	
			6.94	7.75	0.81
				Section 26 Total	0.98

APPENDIX C

RIGHT-OF-WAY TABULATION LOWER MAIN OPEN DITCH DRAINAGE DISTRICT NO. 41 NO REPAIRS PROPOSED POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Potter Revocable Trust, Mary Ellen Nedved	35-92-34	NE NE RD 2.00 DD .46	0.46	0.48	0.02
Section 35 Total					0.02
Bouma Family Limited Partnership	36-92-34	NE SW S & W OF DD DD 1.20	1.2	1.37	
Bouma Family Limited Partnership	36-92-34	NW SE S & W OF DD DD .65	0.65	0.53	
			1.85	1.90	0.05
Nedved, Matthew M	36-92-34	NE SW N & E OF DD DD 1.20	1.2	1.33	
Nedved, Matthew M	36-92-34	NW SE N & E OF DD DD .65	0.65	0.78	
			1.85	2.11	0.26
PokyMack LLC	36-92-34	NW NW RD 2.00 DD 2.87	2.87	3.26	
PokyMack LLC	36-92-34	SW NW RD 1.00 DD 1.67	1.67	1.74	
PokyMack LLC	36-92-34	SE NW DD 2.29	2.29	2.16	0.33
			6.83	7.16	0.33
Whitfield, Rachel E Irrevocable Trust	36-92-34	SW SE RD 1.81 DD 4.00	4.0	3.63	-0.37
Section 36 Total					0.64
TOTAL RIGHT-OF-WAY TO BE ACQUIRED					9.64

APPENDIX C

RIGHT-OF-WAY TABULATION BRANCH 2 DITCH DRAINAGE DISTRICT NO. 41 PROPOSED OPEN DITCH REPAIRS POCAHONTAS COUNTY, IOWA 2020

Landowner	S-T-R	Legal Description	Existing Right-of-Way (ac)	Right-of-Way Required (100') (ac)	Right-of-Way to be Acquired (ac)
Pocahontas County	16-93-34	SW NW DD 2.25	2.25	3.12	
Pocahontas County	16-93-34	SE NW DD 2.30	2.30	2.68	
			4.55	5.80	1.25
				Section 16 Total	1.25
Siddall, Mary J Trust	17-93-34	SE NE DD 1.44	1.44	1.44	
Siddall, Mary J Trust	17-93-34	NE NE DD .81	0.81	1.43	
			2.25	2.87	0.62
				Section 17 Total	0.62
TOTAL RIGHT-OF-WAY TO BE ACQUIRED					1.87

Appendix D: Engineer's Opinion of Probable Cost

**Engineer's Opinion of Probable Cost
Proposed Open Ditch Repairs
Drainage District No. 41
Pocahontas County, Iowa
2020**

Construction Division 1--Private Landowners

Item	Description	Unit	Quantity	Unit Price	Total
100	Excavation	CY	45,656	\$3.50	\$159,796
101	Slough and Menander Removal	STA	261	\$150	\$39,150
102	Spoil Leveling (Both Sides)	STA	388	\$175	\$67,900
103	Seed & Fertilize Banks	STA	388	\$150	\$58,200
104	Tile Extension- 12" CMP Pipe	LF	840	\$20	\$16,800
105	Tile Extension- 15" CMP Pipe	LF	280	\$22	\$6,160
106	Tile Extension- 18" CMP Pipe	LF	200	\$24	\$4,800
107	Tile Extension- 24" CMP Pipe	LF	180	\$32	\$5,760
108	Tile Extension- 30" CMP Pipe	LF	60	\$44	\$2,640
109	Tile Extension- 36" CMP Pipe	LF	80	\$56	\$4,480
110	Surface Drain- 18" CMP Pipe	LF	900	\$40	\$36,000
111	Surface Drain- 24" CMP Pipe	LF	620	\$48	\$29,760
112	Surface Drain- 30" CMP Pipe	LF	160	\$62	\$9,920
113	Surface Drain- 36" CMP Pipe	LF	120	\$78	\$9,360
114	Surface Drain- 48" CMP Pipe	LF	40	\$96	\$3,840
115	Erosion Management Plan	LS			\$1,000
117	Riprap, Class D	TN	390	\$60	\$23,400
118	Mobilization	LS			\$25,000

Estimated Assessable Construction Subtotal \$504,000

Construction Contingency \$25,200

Total Estimated Construction Cost \$529,200

**Engineer's Opinion of Probable Cost
Proposed Open Ditch Repairs
Drainage District No. 41
Pocahontas County, Iowa
2020**

Construction Related Damages	
Damages	\$25,000
Right-of-way Acquisition	\$25,000
Basic Engineering Services	
Survey, Study & Report. Meetings & Hearing	\$60,000
Construction Plans, Specifications, & Bid Letting	\$20,000
Construction Engineering Services	\$60,000
Legal Services, Publications, Mailings, Etc..	\$10,000
Finance, Interest & Contingency	<u>\$38,000</u>
Total Estimated Assessable Project Cost	\$767,000
Estimated Average Cost Per Currently Assessed Acre (17,850 ac)	\$43
Estimated Average Cost Per Acre Per Year (10 years)	\$6
Estimated Average Cost Per Acre Per Year (20 years)	\$4
Estimated Average Cost Per Benefited Acre (14,123 ac)	\$54
Estimated Average Cost Per Acre Per Year (10 years)	\$7
Estimated Average Cost Per Acre Per Year (20 years)	\$4

Preliminary Plans

PRELIMINARY PLANS FOR

DRAINAGE DISTRICT NO. 41

OPEN DITCH REPAIRS

POCAHONTAS COUNTY, IOWA

2020

PLAN REVISIONS		
REV	ISSUED FOR	DATE
-	-	-

GOVERNING SPECIFICATIONS

THE 2019 EDITION OF THE "SUDAS SPECIFICATIONS FOR PUBLIC IMPROVEMENTS" SHALL GOVERN.

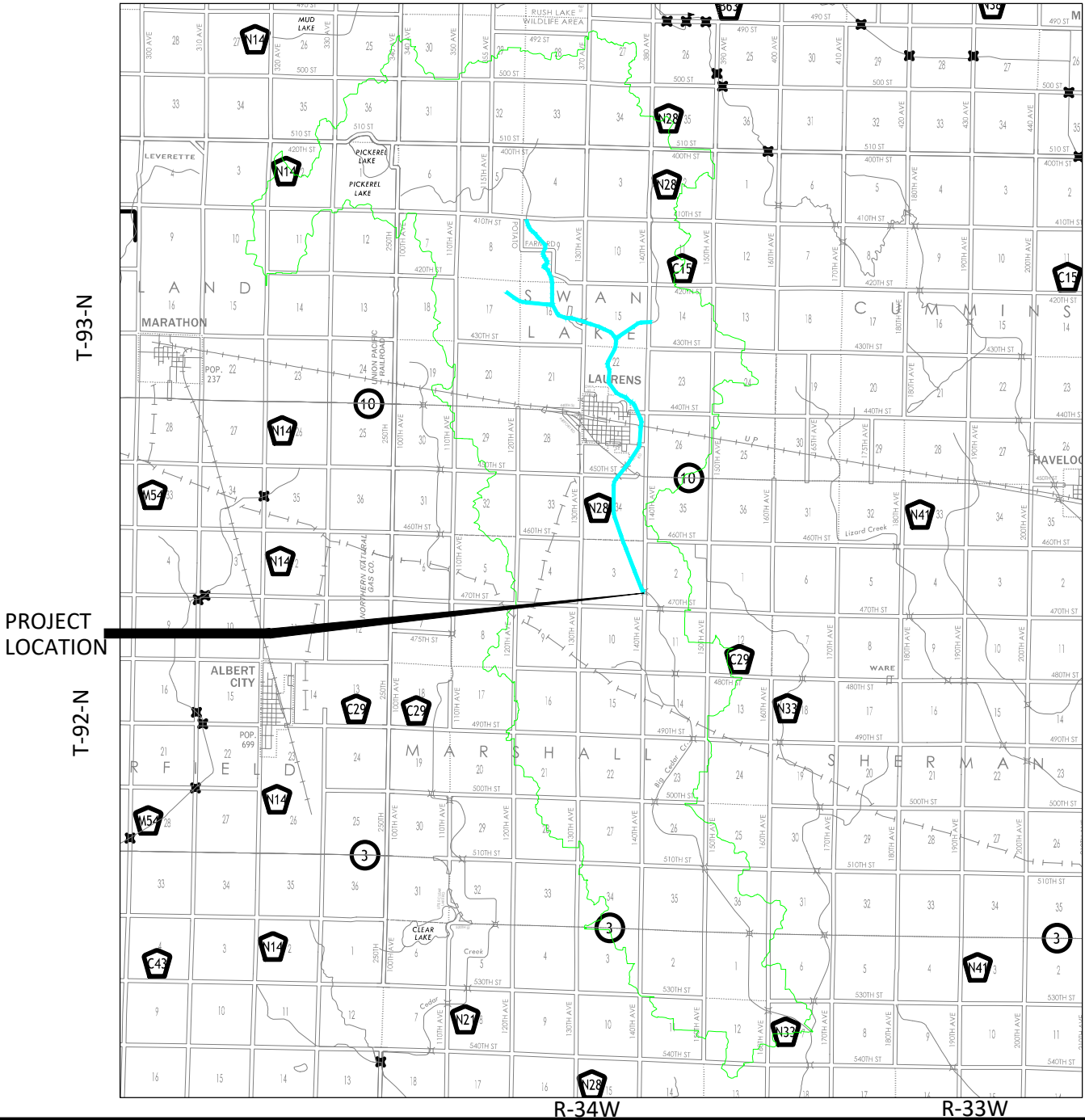
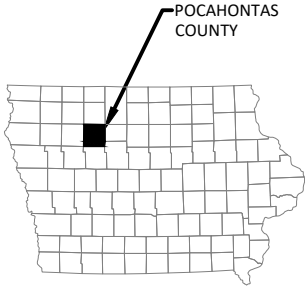
IOWA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION", SERIES 2015 AND ALL CURRENT GENERAL SUPPLEMENTAL SPECIFICATIONS AND MATERIALS INSTRUCTIONAL MEMORANDUM SHALL GOVERN AS REFERENCED.

ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.



NOTE: THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY IOWA ONE CALL, 811 OR 1-800-292-8989.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."



SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
A.01	TITLE SHEET
A.02 - A.03	LANDOWNER PLAT
C.01	OPEN DITCH PIPE TABLE
D.01 - D.11	PLAN & PROFILE - MAIN OPEN DITCH
D.12 - D.13	PLAN & PROFILE - BRANCH No. 2 OPEN DITCH
D.14 - D.15	PLAN & PROFILE - BRANCH No. 6 OPEN DITCH
G.01	ALIGNMENT GEOMETRY - OPEN DITCHES
X.01 - X.02	CROSS SECTIONS - MAIN OPEN DITCH
X.03	CROSS SECTIONS - BRANCH No. 2 OPEN DITCH
X.04	CROSS SECTIONS - BRANCH No. 6 OPEN DITCH

DATUM EQUATION DRAINAGE DISTRICT No. 41 1952 DATUM + 1157 = 2019 DATUM	PROJECT DATUM: IOWA STATE PLANE - NORTH - US FEET HORIZONTAL: NAD 83 VERTICAL: NAVD 1988
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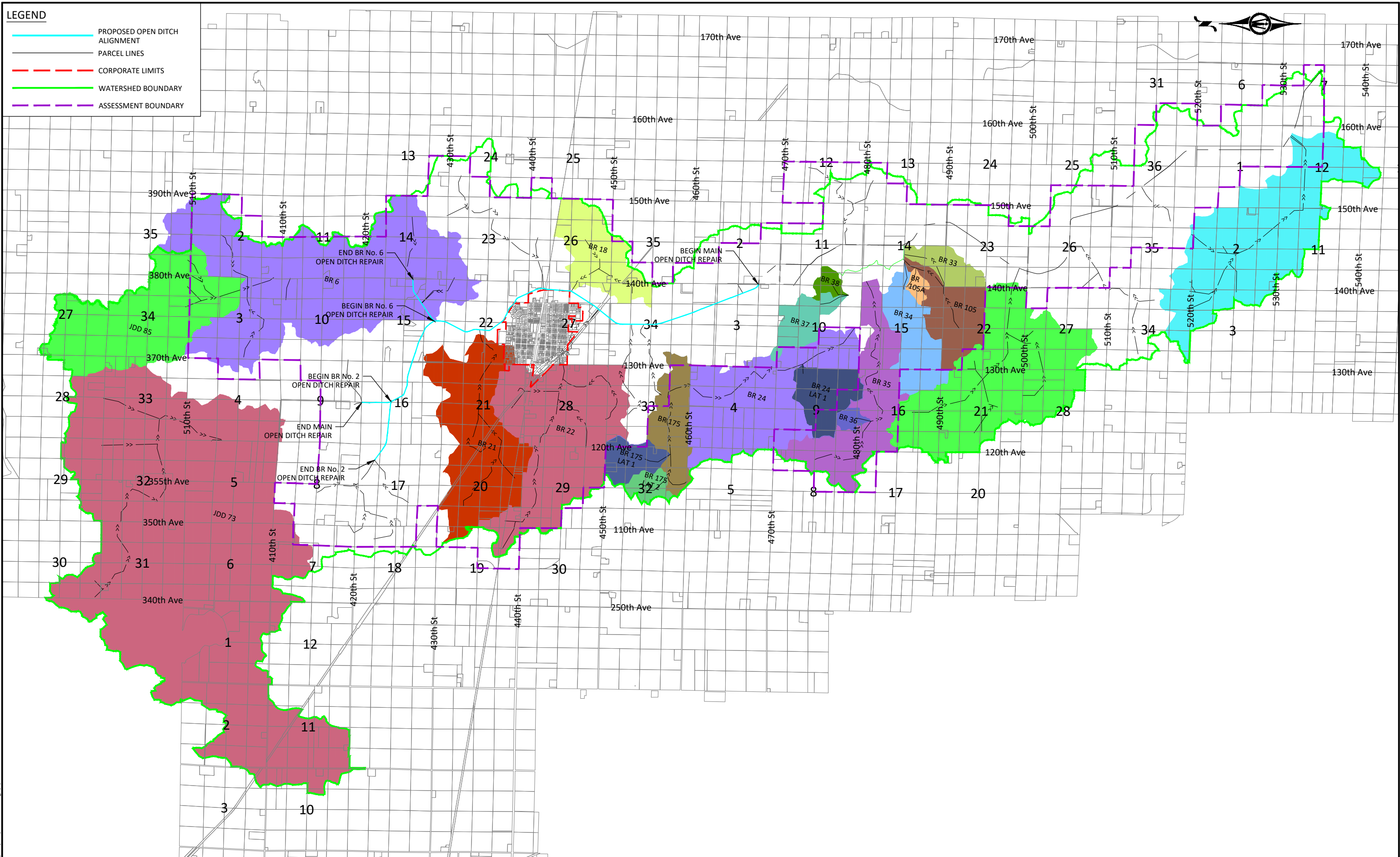
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DD 41 OPEN DITCH REPAIR
POCAHONTAS COUNTY, IOWA
TITLE SHEET

SHEET
A.01

LEGEND

- PROPOSED OPEN DITCH ALIGNMENT
- PARCEL LINES
- CORPORATE LIMITS
- WATERSHED BOUNDARY
- ASSESSMENT BOUNDARY



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POCAHONTAS COUNTY, IOWA

LANDOWNER PLAT

SHEET

A.02



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MAIN OPEN DITCH PIPE WORK TABLE							
EXISTING							
STATION	L or R	TYPE	DIAMETER	LENGTH	MATERIAL	CONDITION	REASON TO REPLACE
			(IN)	(LF)			
462+01	Rt	TE	12"		CMP		
462+02	Rt	TE	18"		CMP		
466+50	Lt	SD	36"		CMP		
466+63	Lt	TE	15"		CMP		
469+96	Rt	SD	24"		CMP		
470+42	Lt	TE	12"		CMP		
471+08	Lt	SD	36"		CMP		
471+93	Rt	TE	18"		CMP		
475+46	Lt	SD	24"		CMP		
475+52	Lt	SD	24"		CMP		
475+63	Lt	TE	15"		CMP		
491+99	Lt	SD	36"		CMP		
494+12	Lt	TE	6"		CMP		
499+59	Rt	TE	8"		CMP		
503+29	Lt	TE	8"		CMP		
506+74	Rt	SD	12"		CMP		
511+59	Lt	TE	18"		CMP		
512+42	Rt	TE	12"		CMP		
512+73	Rt	SD	24"		CMP		
518+69	Rt	TE	12"		CMP		
524+36	Lt	TE	12"		CMP		
525+02	Lt	SD	18"		CMP		
530+69	Lt	SD	36"		CMP		
534+59	Lt	TE	18"		CMP		
536+04	Rt	TE	12"		CMP		
540+19	Lt	SD	15"		CMP		
546+82	Lt	TE	24"		CMP		
547+07	Lt	TE	21"		CMP		
551+62	Rt	SD	15"		CMP		
551+72	Rt	TE	10"		CMP		
561+08	Rt	TE	10"		CMP		
562+15	Lt	SD	30"		CMP		
562+17	Rt	TE	12"		CMP		
562+59	Lt	SD	18"		CMP		
569+60	Rt	TE	12"		CMP		
571+16	Lt	TE	36"		CMP		
571+24	Lt	SD	18"		CMP		
571+31	Lt	TE	42"		CMP		
572+18	Lt	TE	18"		CMP		
581+03	Rt	SD	18"		CMP		
582+35	Lt	TE	15"		CMP		
582+50	Lt	TE	15"		CMP		
583+02	Lt	TE	12"		CMP		
587+11	Lt	SD	12"		CMP		
589+96	Lt	SD	12"		CMP		
591+91	Rt	TE	30"		CMP		
592+22	Rt	TE	24"		CMP		
592+62	Rt	SD	48"		CMP		
593+59	Rt	TE	8"		CMP		
593+66	Lt	TE	30"		CMP		
594+01	Rt	TE	12"		CMP		
596+46	Rt	TE	18"		CMP		
596+63	Lt	TE	15"		CMP		
598+28	Rt	TE	12"		CMP		
602+14	Lt	TE	15"		CMP		
602+41	Lt	TE	15"		CMP		
608+36	Lt	TE	36"		CMP		
609+86	Rt	SD	30"		CMP		
610+09	Rt	TE	24"		CMP		
619+37	Lt	TE	10"		CMP		
619+51	Lt		Rectangular		RWBC		
619+51	Lt		Rectangular		RWBC		
620+67	Lt	SD	24"		CMP		
621+42	Rt	TE	15"		CMP		

MAIN OPEN DITCH PIPE WORK TABLE							
EXISTING							
STATION	L or R	TYPE	DIAMETER	LENGTH	MATERIAL	CONDITION	REASON TO REPLACE
			(IN)	(LF)			
628+00	Rt	TE	24"		CMP		
628+78	Rt	SD	24"		CMP		
630+80	Lt	TE	12"		CMP		
631+22	Lt	SD	15"		CMP		
635+14	Lt	TE	18"		CMP		
635+85	Lt	TE	24"		CMP		
636+67	Rt	SD	24"		CMP		
640+80	Lt	SD	15"		CMP		
646+77	Lt	TE	12"		CMP		
647+55	Lt	TE	15"		CMP		
647+84	Lt	SD	24"		CMP		
649+69	Rt	SD	24"		CMP		
650+18	Lt	TE	15"		CMP		
658+91	Rt	SD	15"		CMP		
659+04	Rt	TE	12"		CMP		
660+31	Rt	TE	18"		CMP		
662+09	Lt	TE	30"		CMP		
662+33	Lt	TE	36"		CMP		
667+52	Lt	SD	24"		CMP		
667+66	Lt	SD	24"		CMP		
681+65	Lt	TE	12"		CMP		
682+12	Lt	SD	24"		CMP		
686+22	Lt	TE	15"		CMP		
701+75	Rt	TE	6"		CMP		
702+46	Rt	TE	10"		CMP		
708+94	Lt	TE	6"		CMP		
723+18	Rt	TE	15"		CMP		
723+59	Lt	TE	12"		CMP		
724+36	Rt	TE	12"		CMP		
726+00	Rt	TE	12"		CMP		
742+78	Lt	SD	18"		CMP		
746+02	Lt	TE	18"		CMP		
746+53	Lt	SD	24"		CMP		
747+99	Lt	TE	36"		CMP		
757+45	Lt	TE	24"		CMP		
773+84	Rt	TE	24"		CMP		

BR NO. 2 OPEN DITCH PIPE WORK TABLE							
EXISTING							
STATION	L or R	TYPE	DIAMETER	LENGTH	MATERIAL	CONDITION	REASON TO REPLACE
			(IN)	(LF)			
28+54	Rt	SD	30"		CMP		
28+91	Lt	TE	8"		CMP		
30+06	Rt	TE	8"		CMP		
39+87	Lt	SD	24"		CMP		
40+93	Lt	TE	24"		CMP		
40+95	Rt	TE	15"		CMP		

BR NO. 6 OPEN DITCH PIPE WORK TABLE							
EXISTING							
STATION	L or R	TYPE	DIAMETER	LENGTH	MATERIAL	CONDITION	REASON TO REPLACE
			(IN)	(LF)			
2+36	Rt	TE	8"		CMP		
3+72	Rt	TE	8"		CMP		
13+08	Rt	TE	12"		CMP		
15+09	Rt	TE	24"		CMP		
15+32	Rt	SD	24"		CMP		
16+04	Lt	TE	12"		CMP		
16+58	Rt	TE	12"		CMP		
28+18	Rt	TE	12"		CMP		
32+05	Rt	TE	8"		CMP		
32+10	Lt	TE	8"		CMP		
33+21	Rt	SD	15"		CMP		
33+28	Lt	TE	12"		CMP		
33+28	Rt	SD	15"		CMP		



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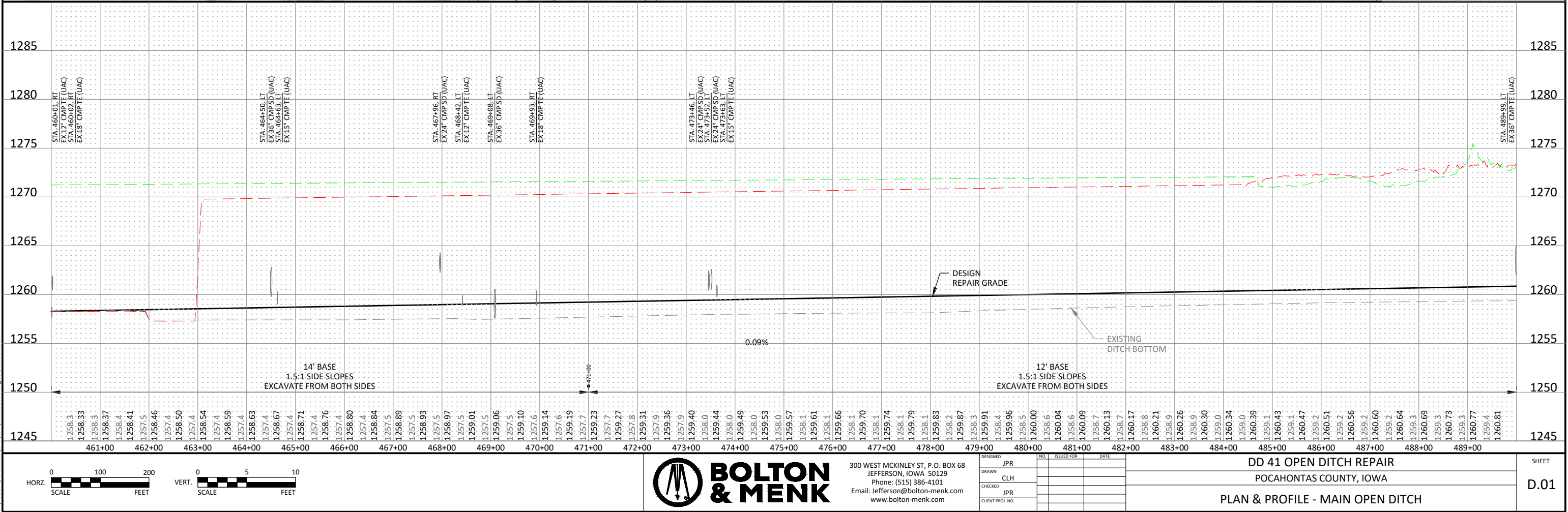
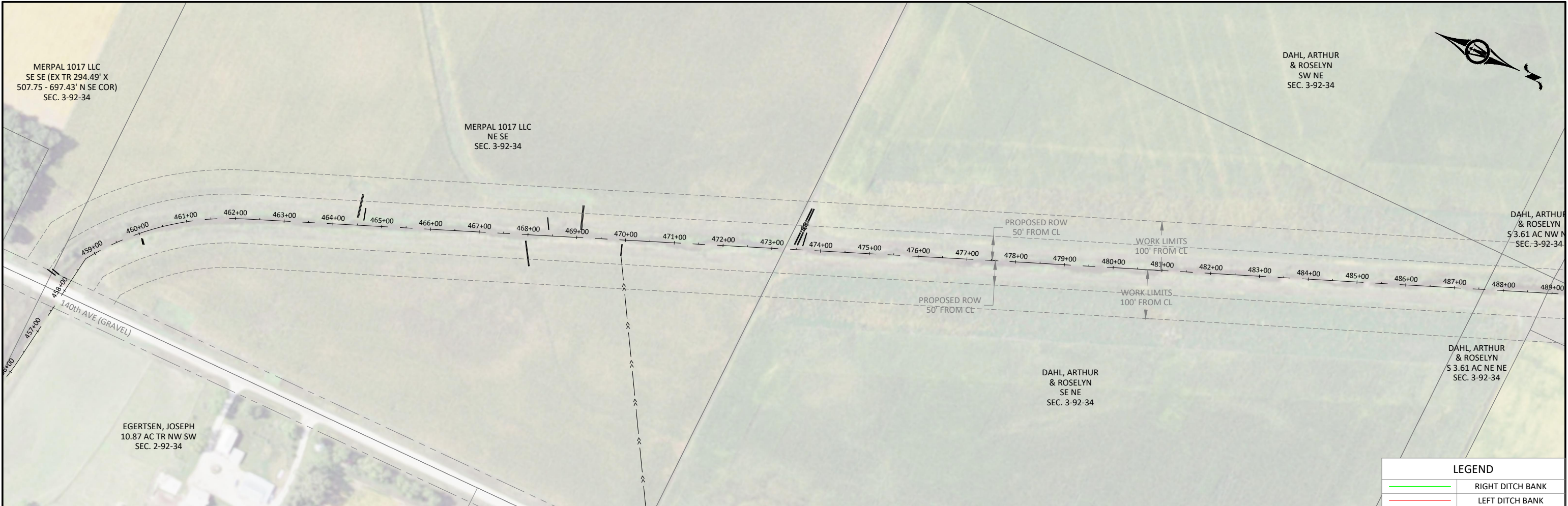
DD 41 OPEN DITCH REPAIR

POCAHONTAS COUNTY, IOWA

OPEN DITCH PIPE TABLE

SHEET

C.01



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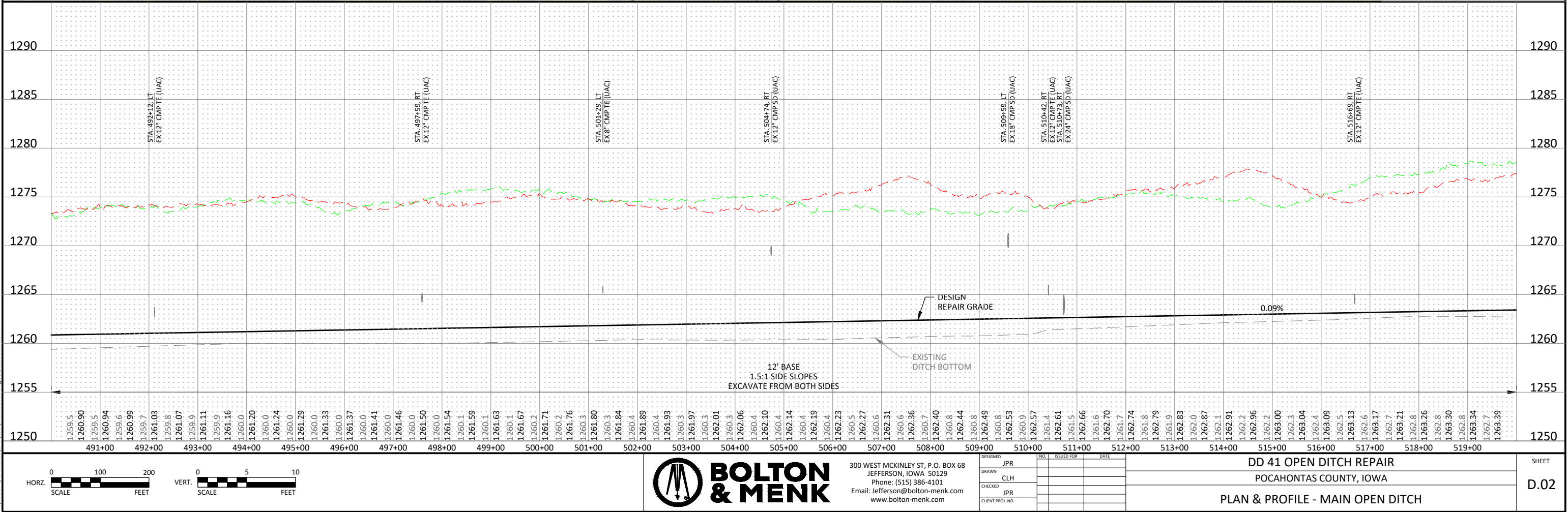
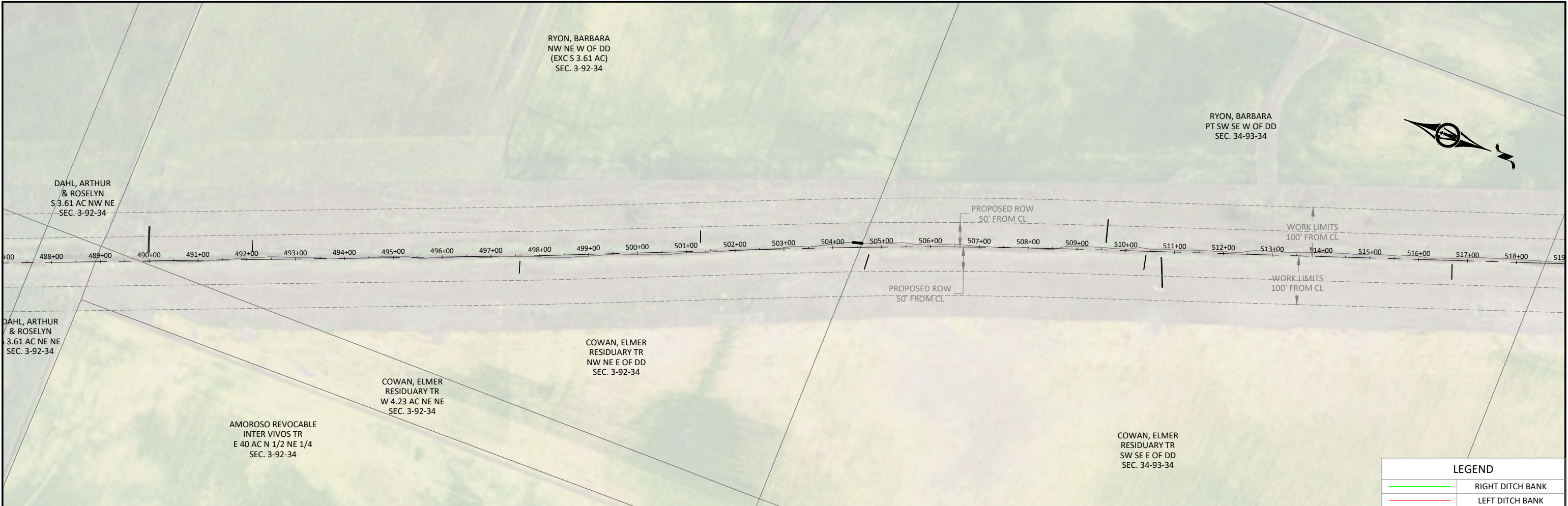


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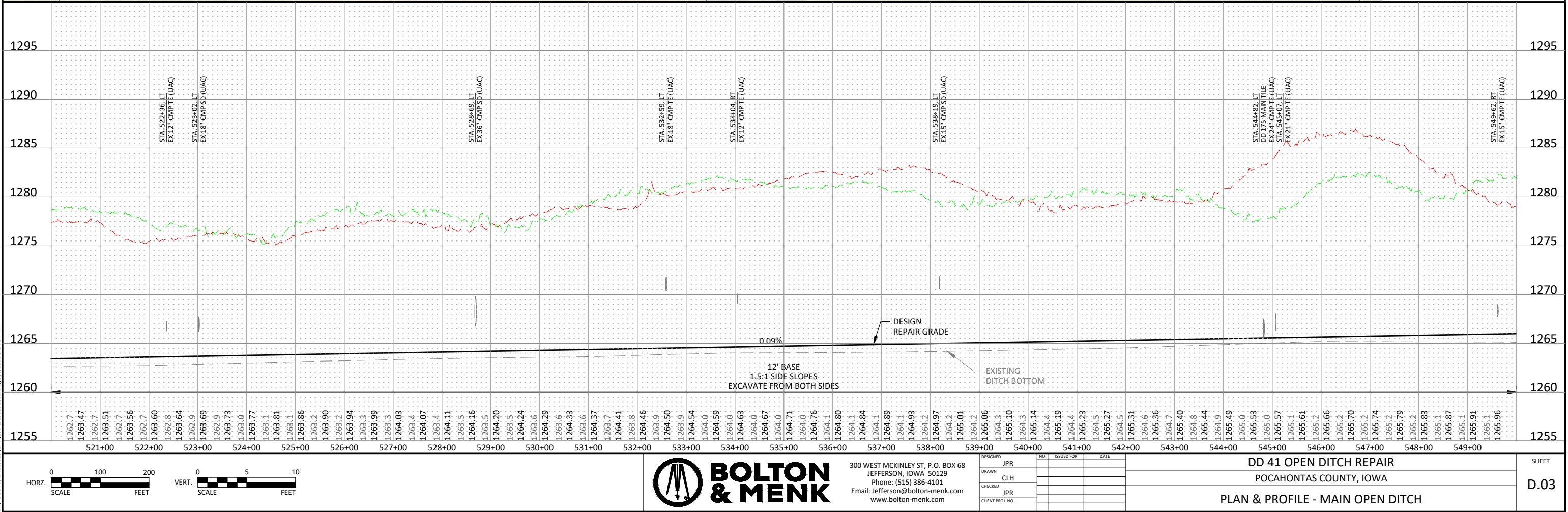
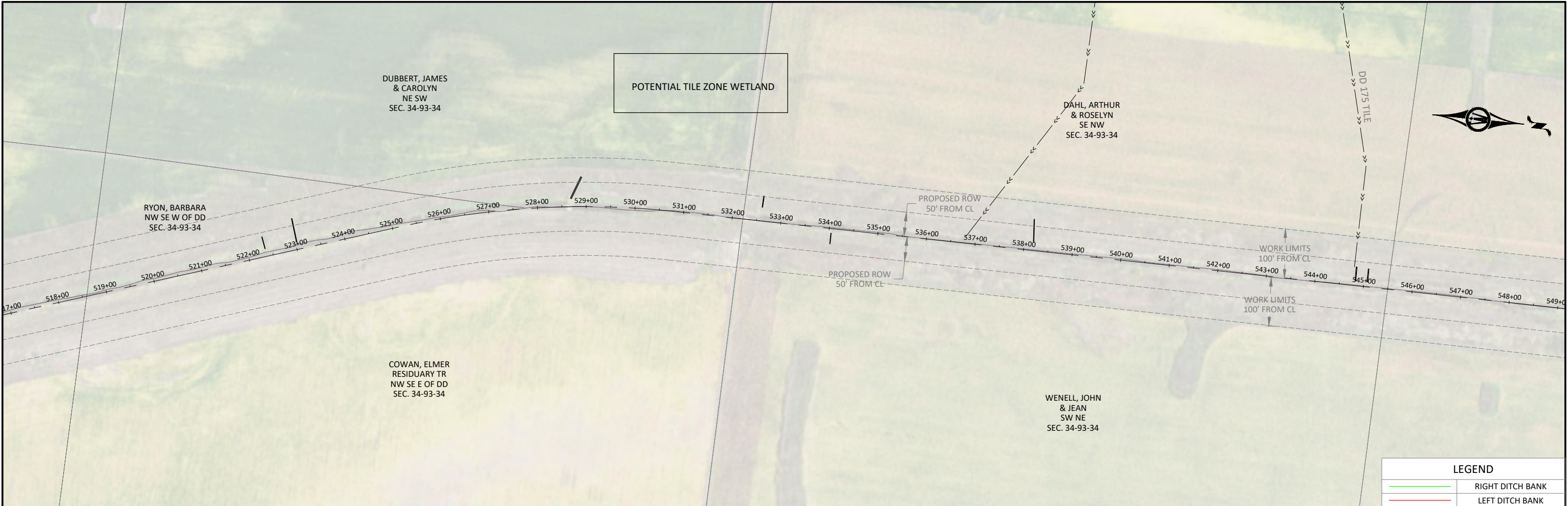
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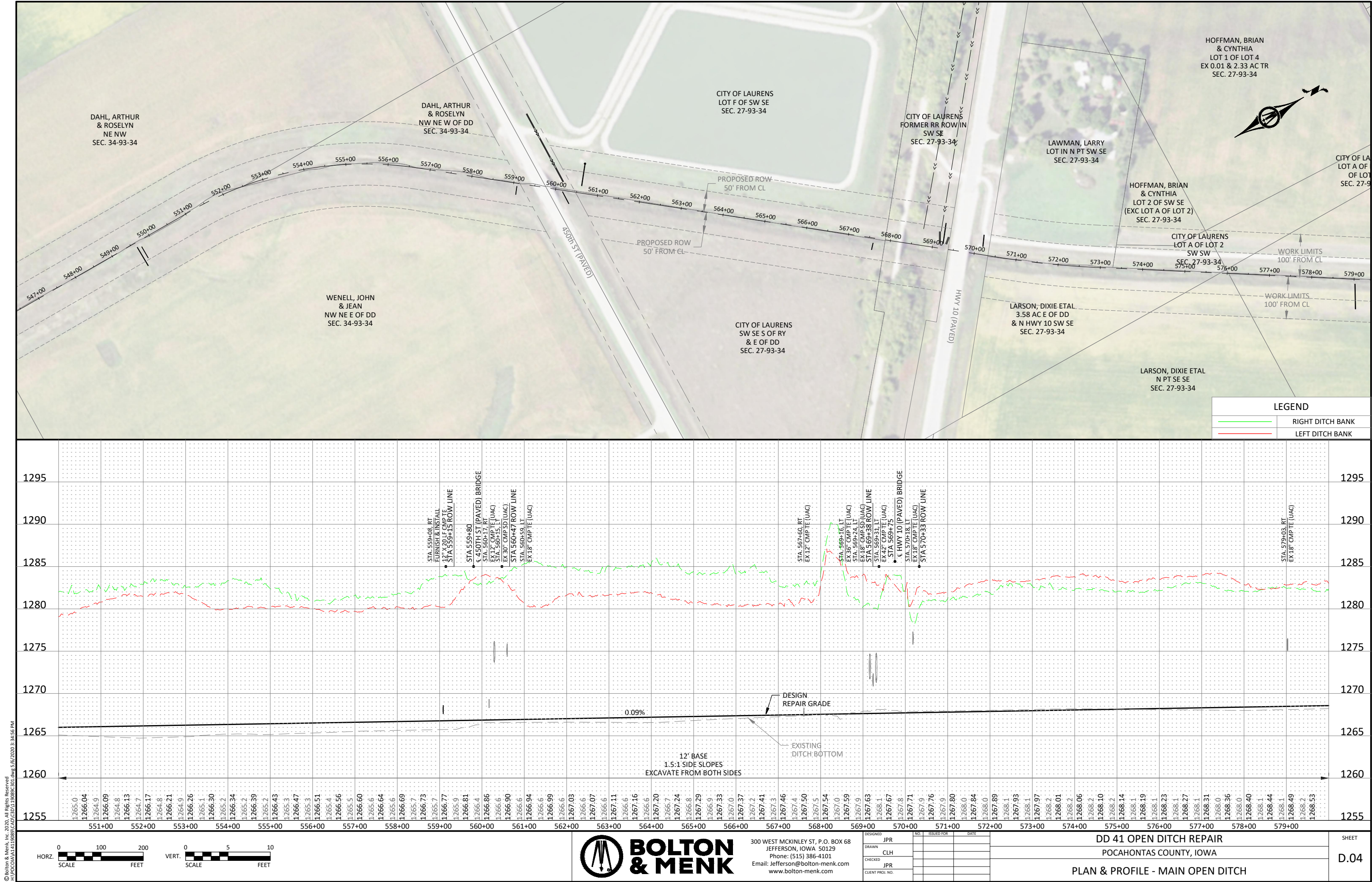
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POCAHONTAS COUNTY, IOWA
PLAN & PROFILE - MAIN OPEN DITCH

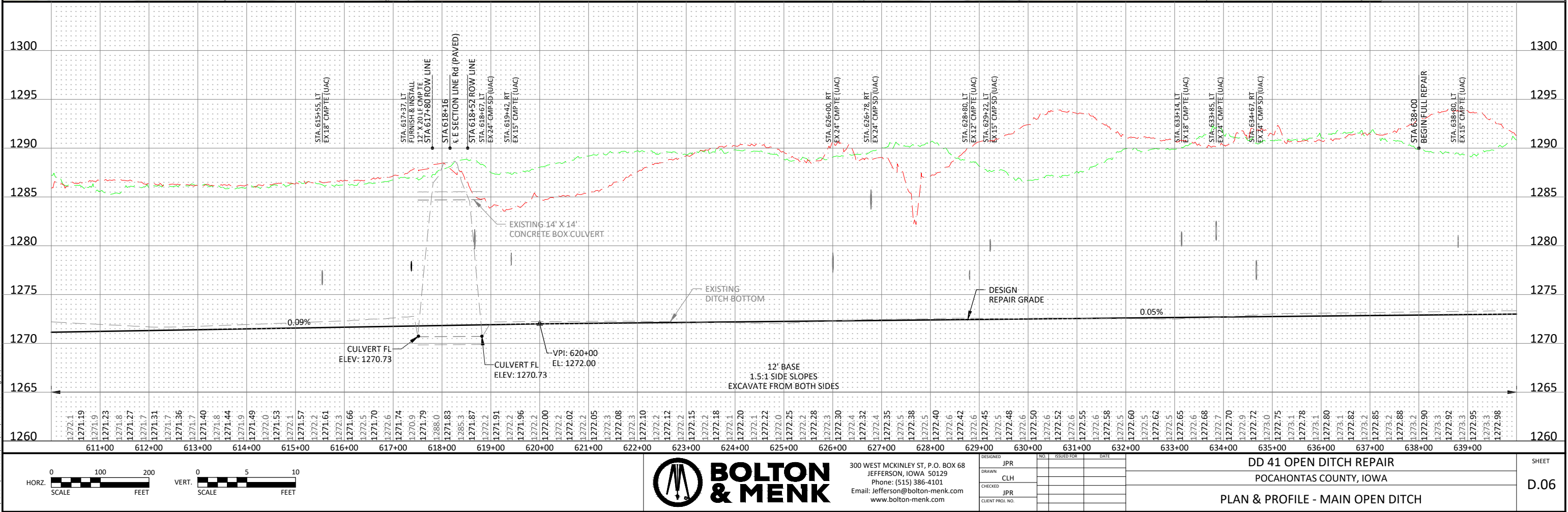
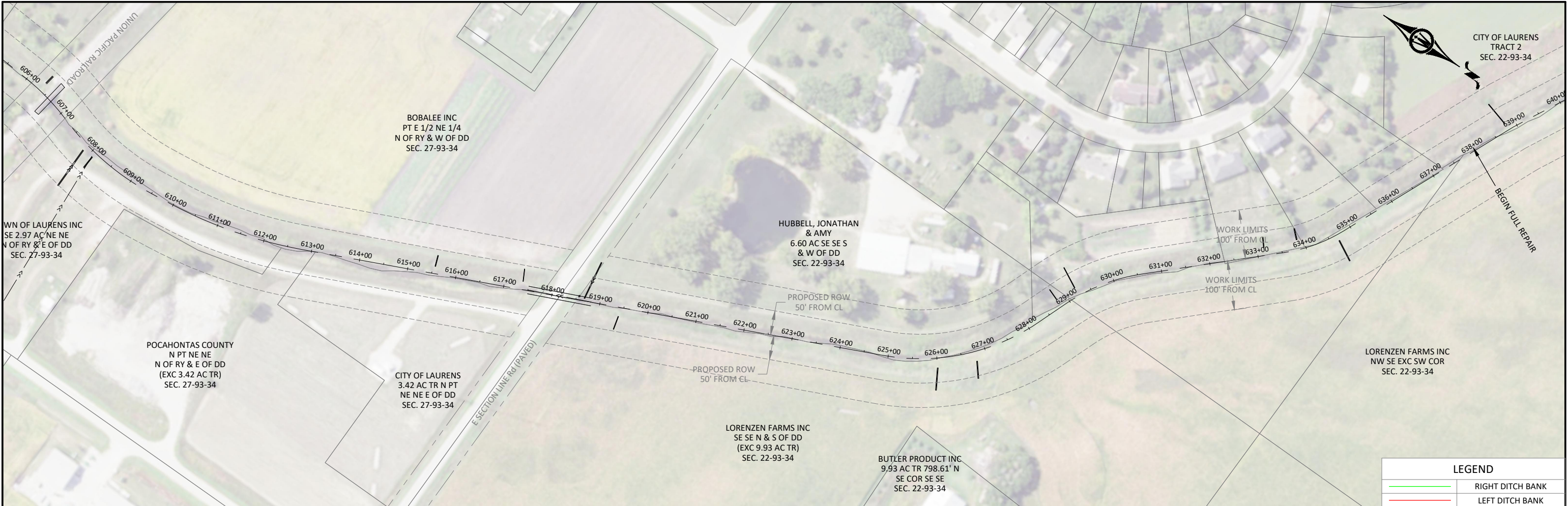
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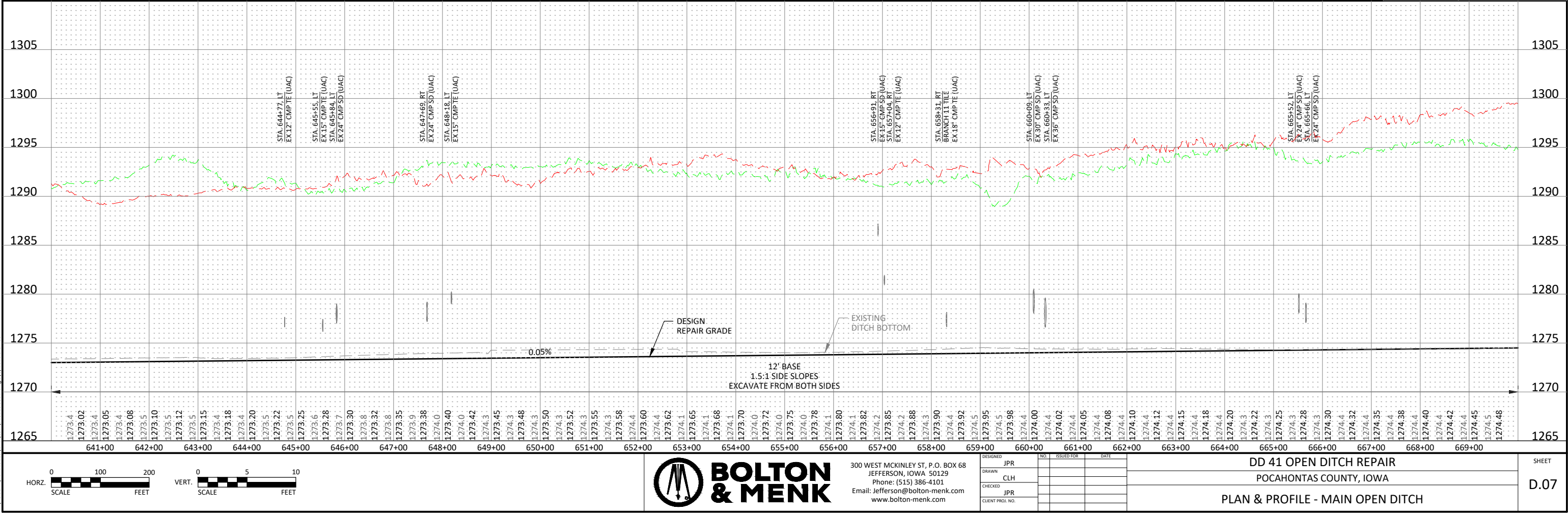
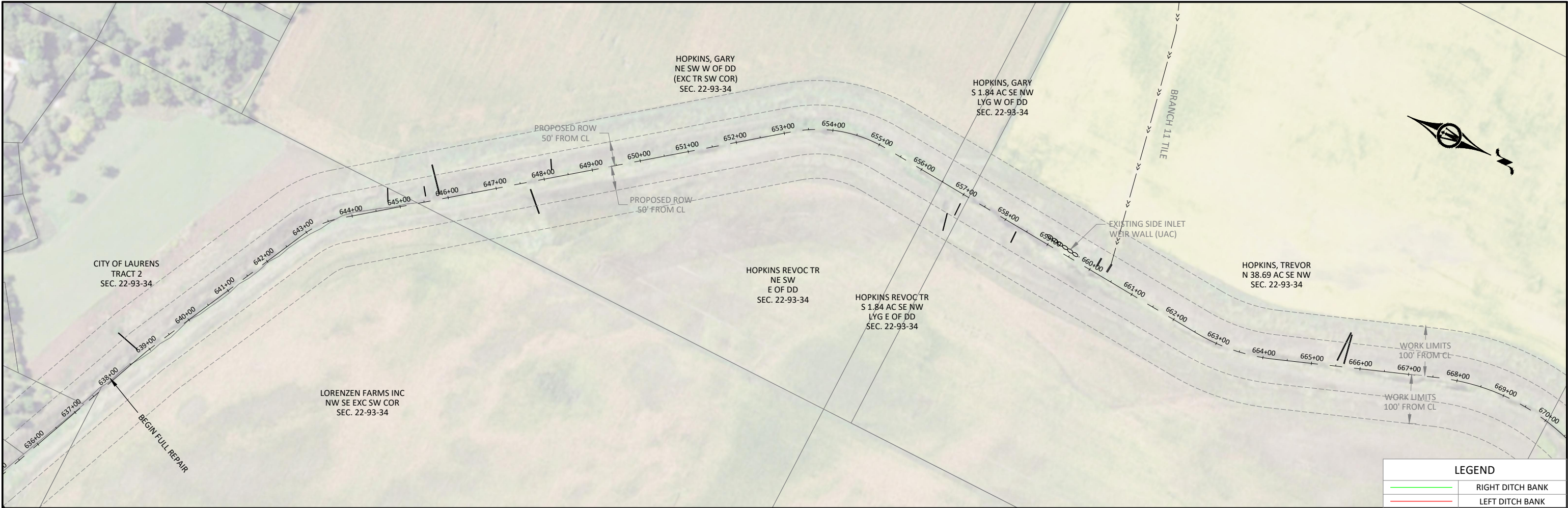
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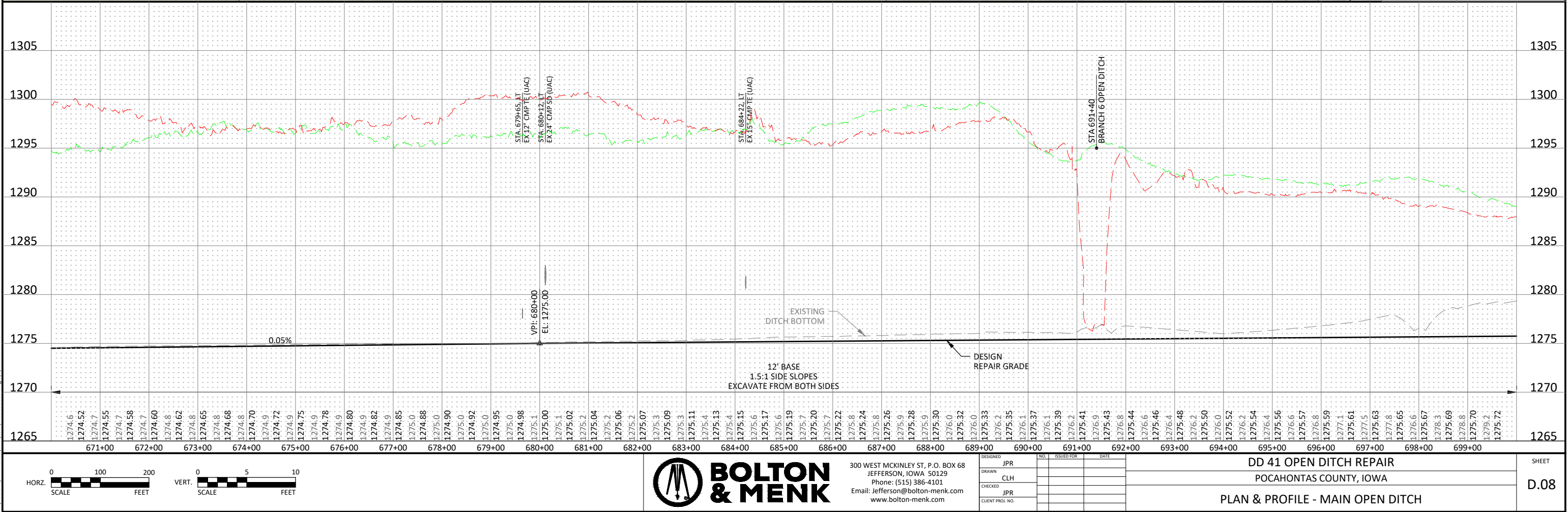
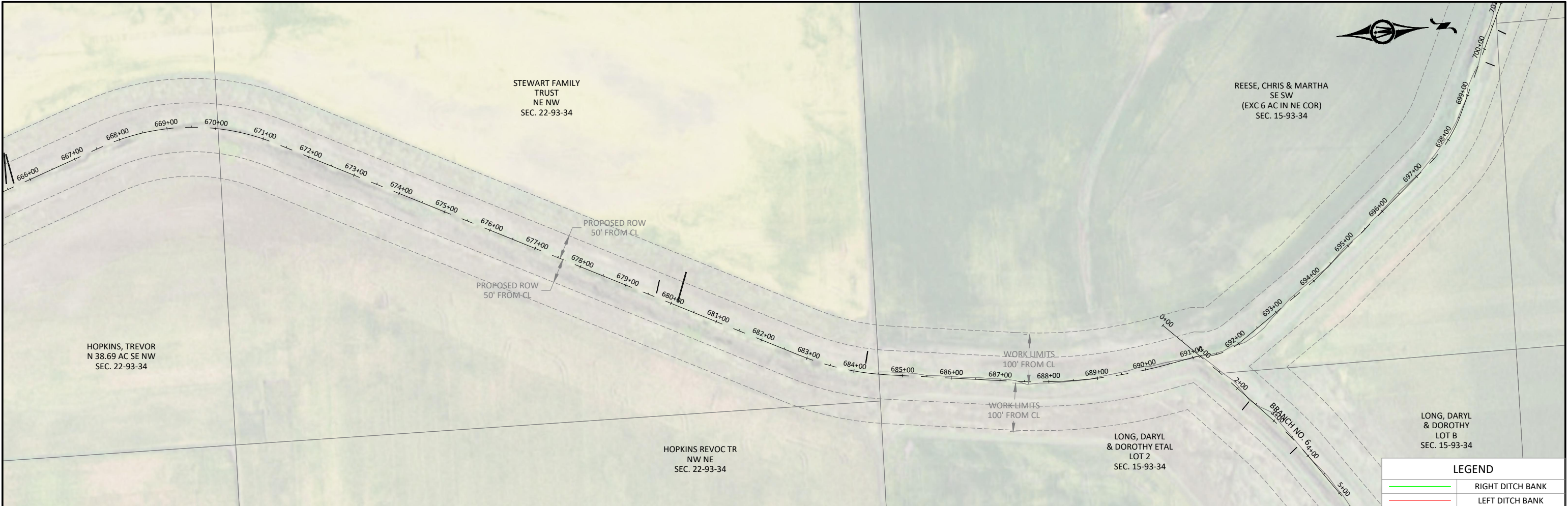
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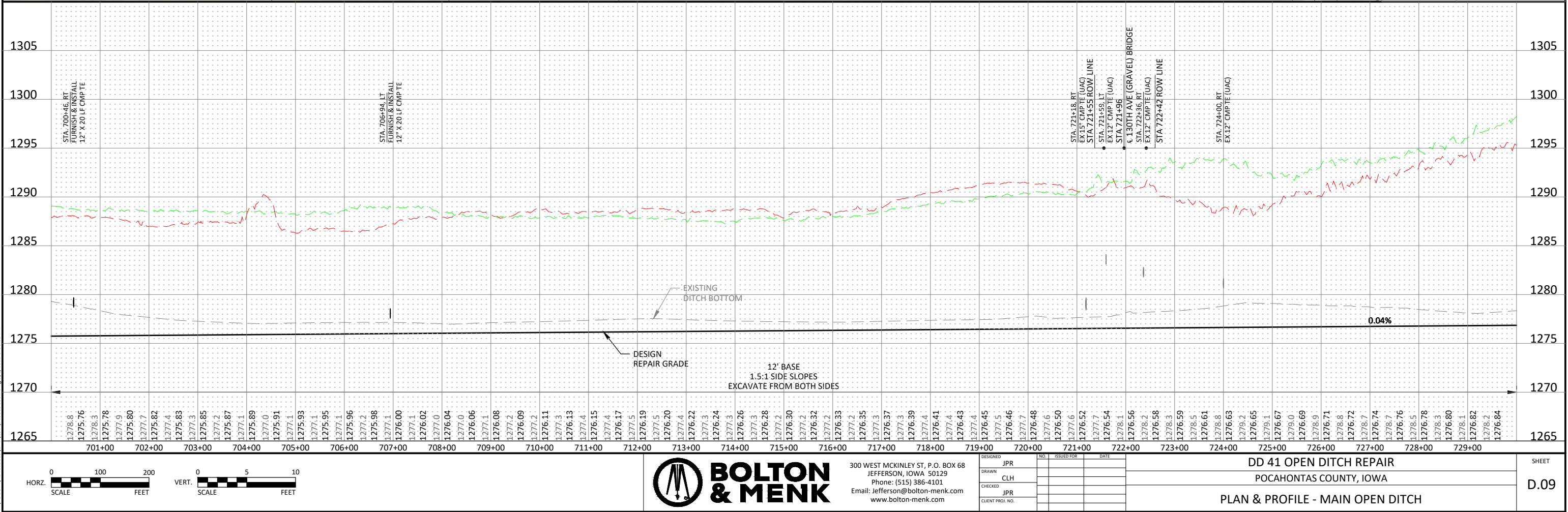
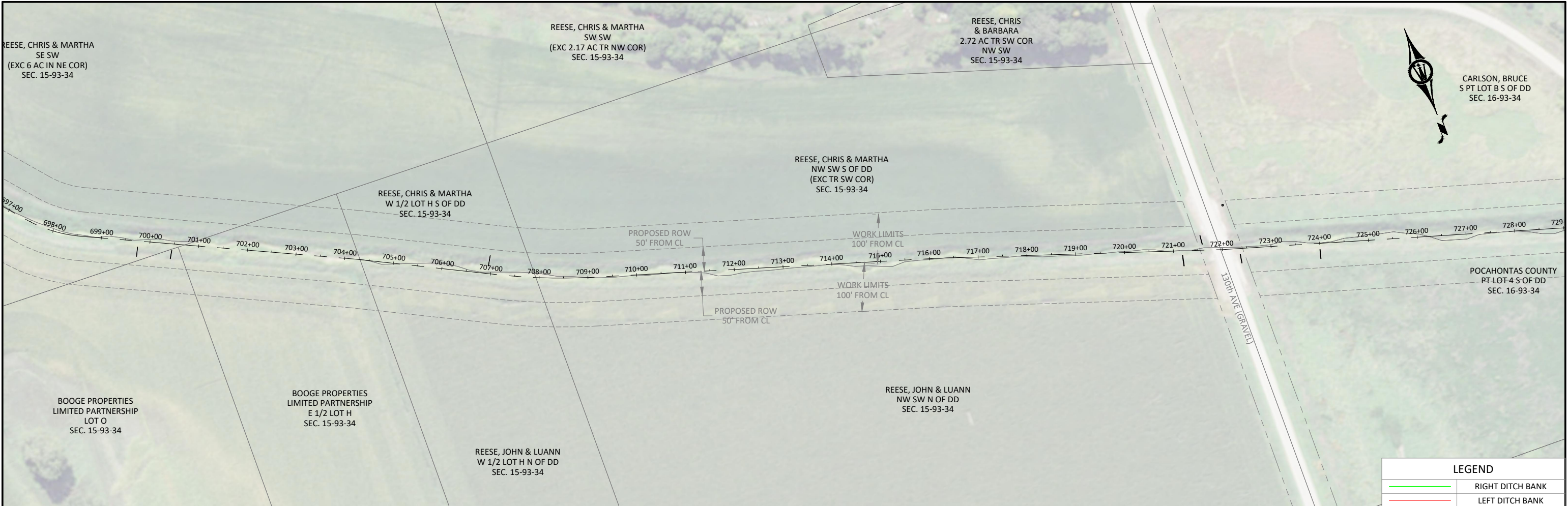
DD 41 OPEN DITCH REPAIR
POCAHONTAS COUNTY, IOWA
PLAN & PROFILE - MAIN OPEN DITCH

SHEET
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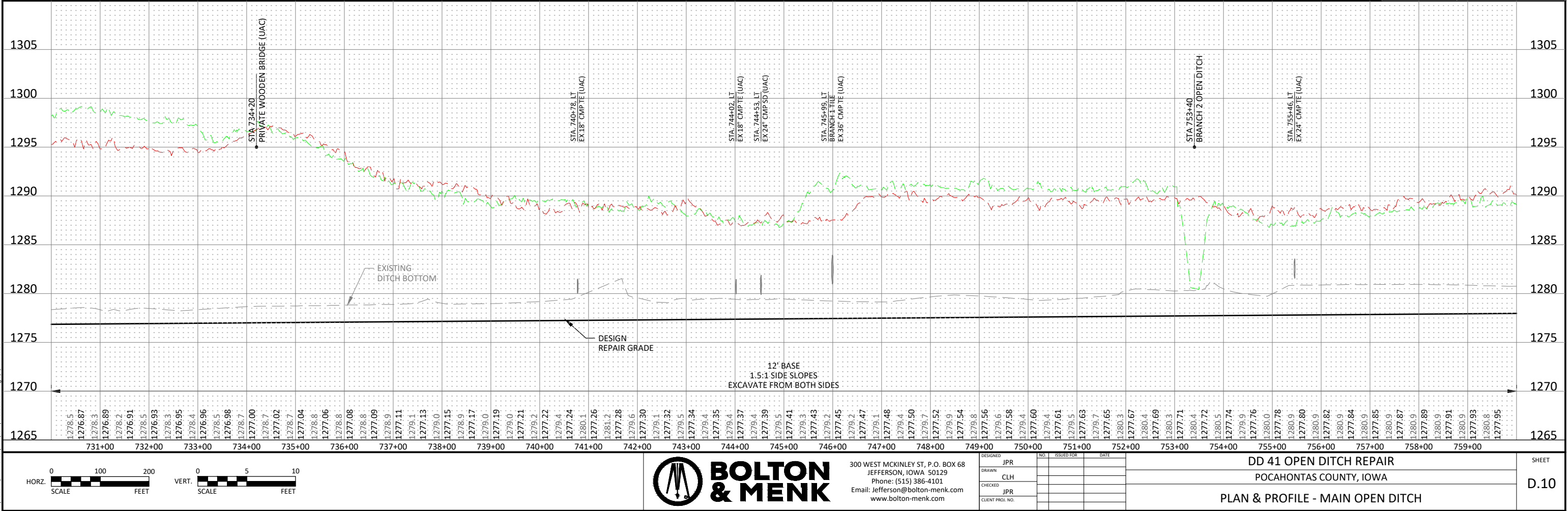
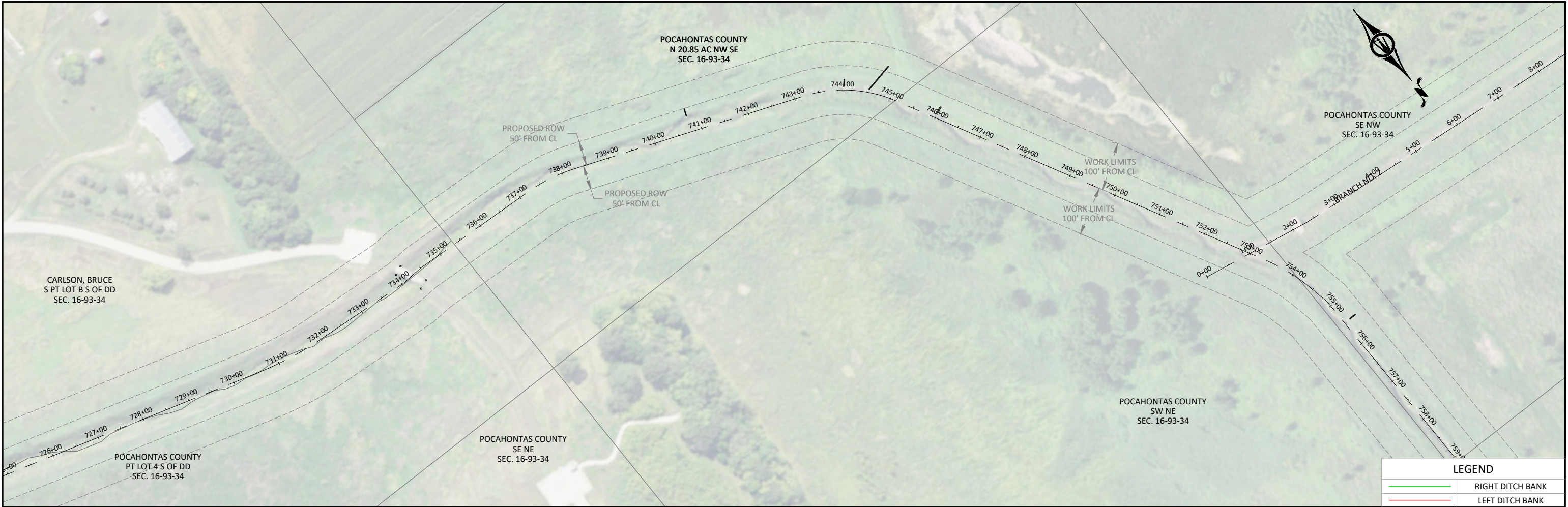


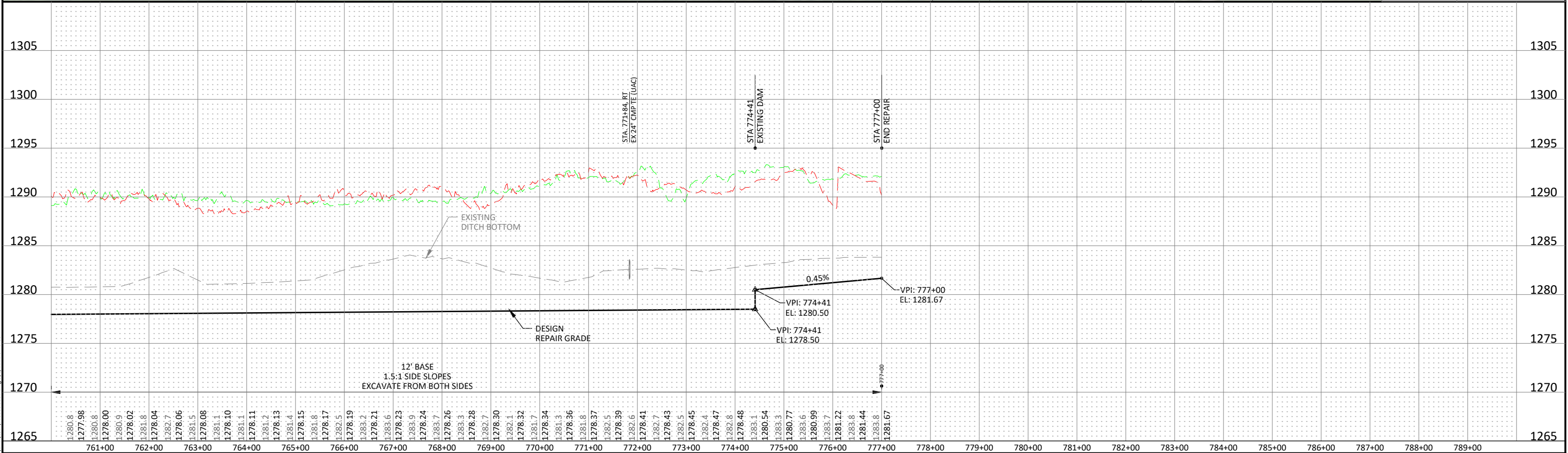
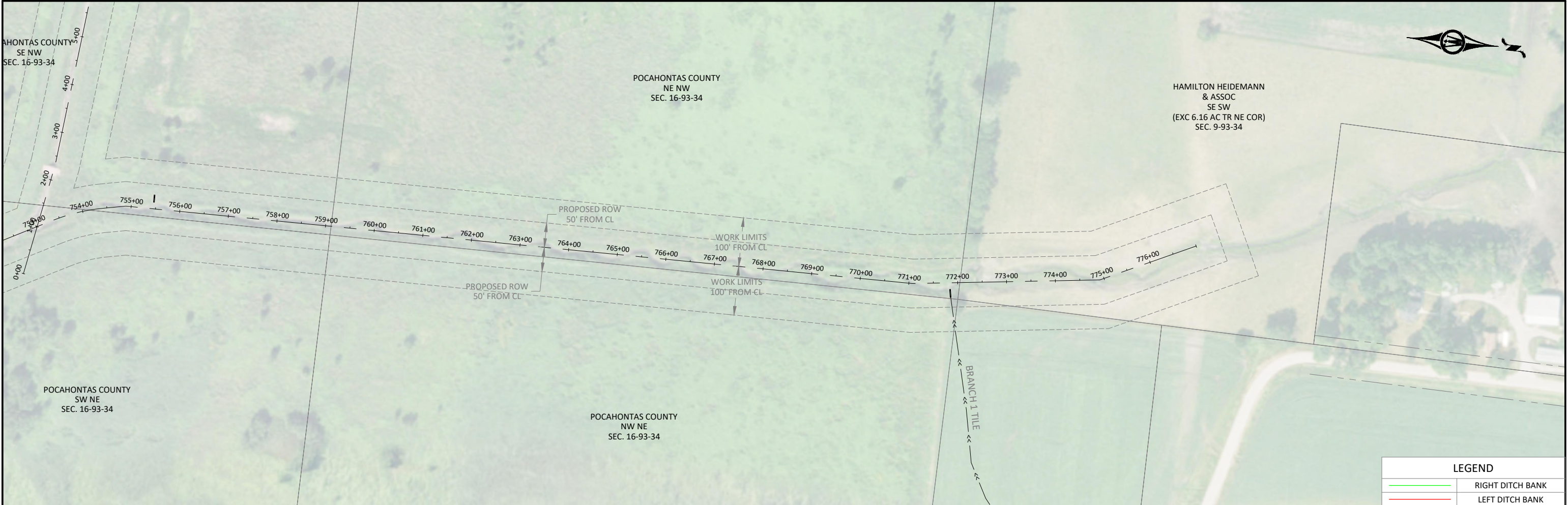


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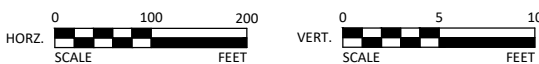


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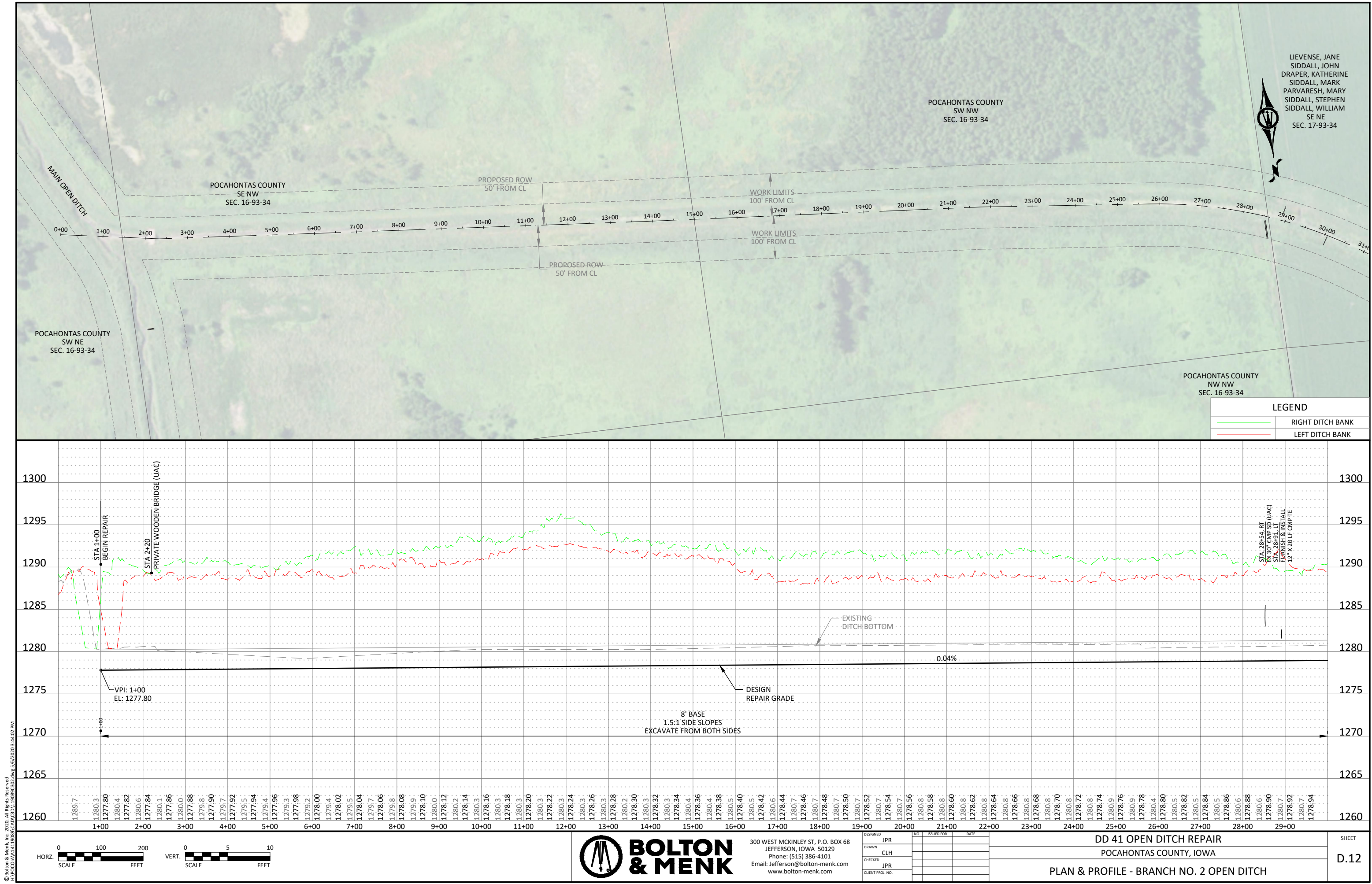


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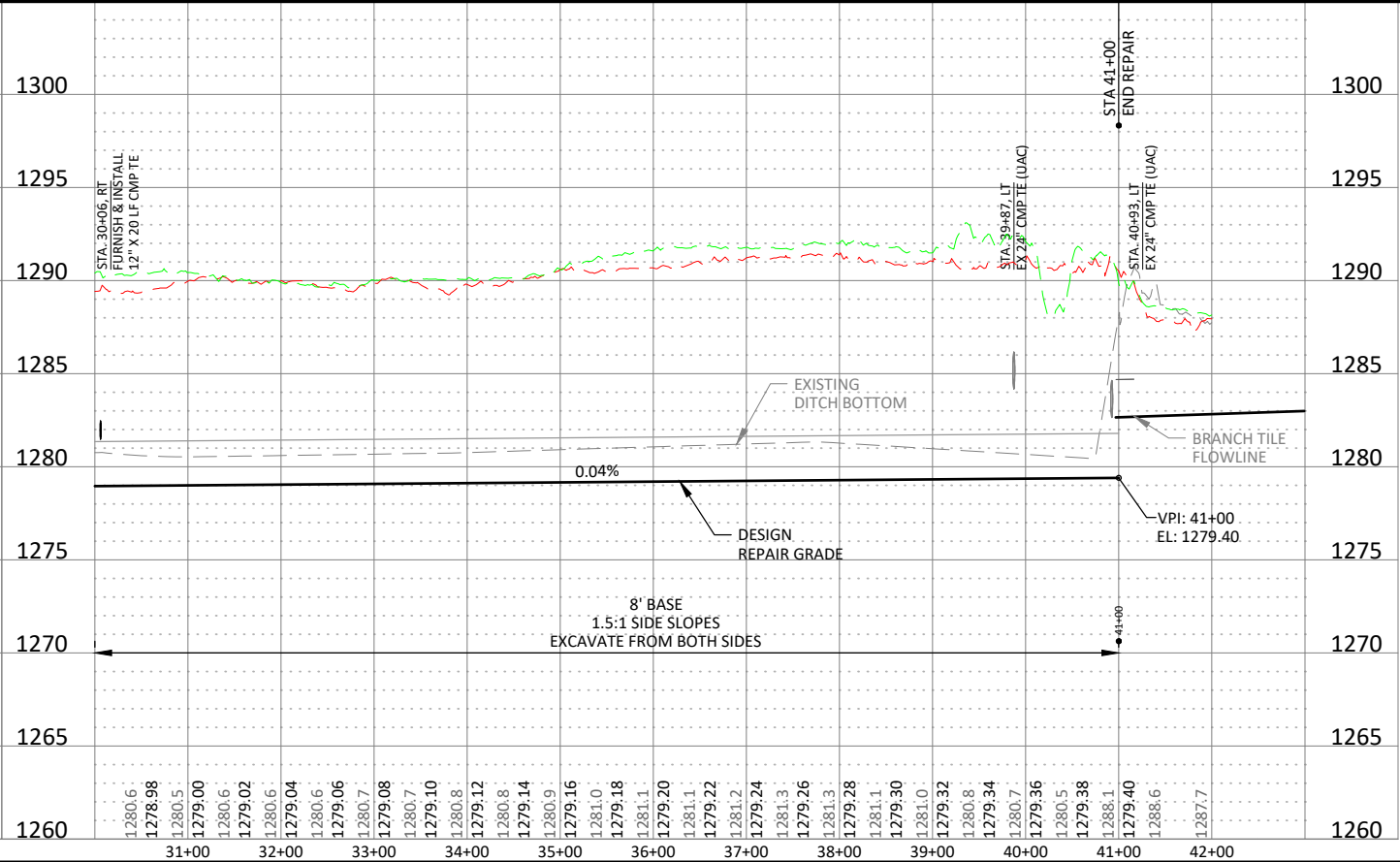
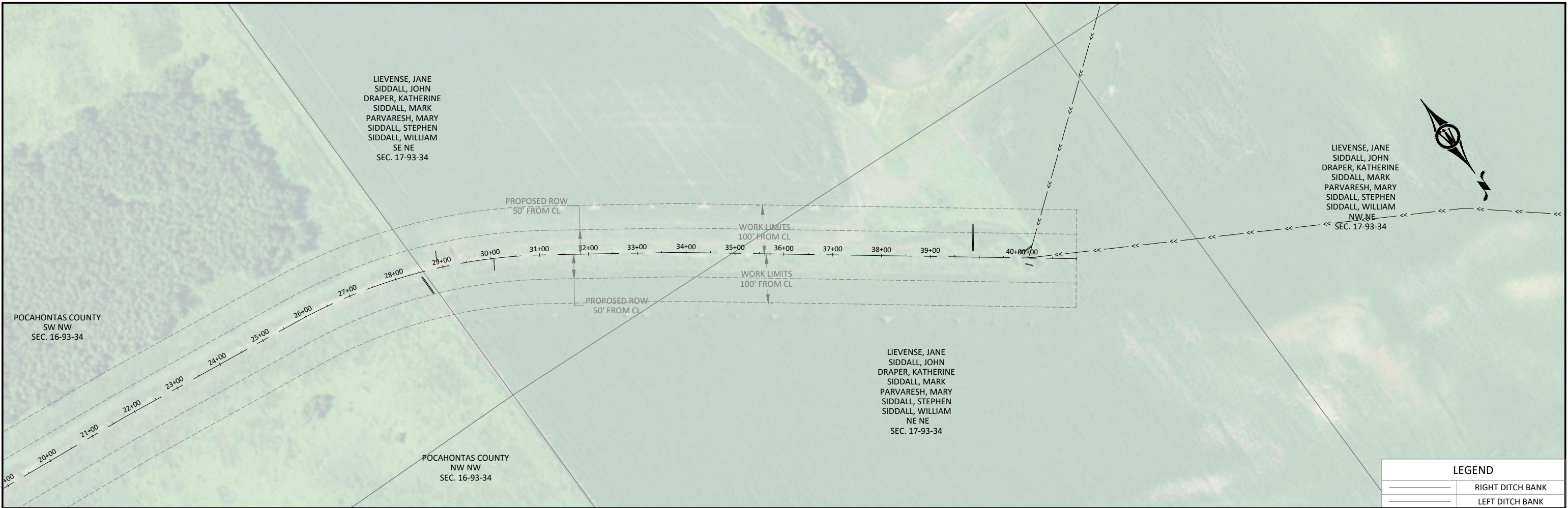
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POCAHONTAS COUNTY, IOWA
PLAN & PROFILE - MAIN OPEN DITCH

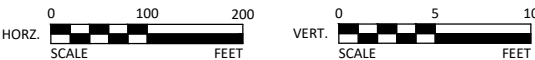
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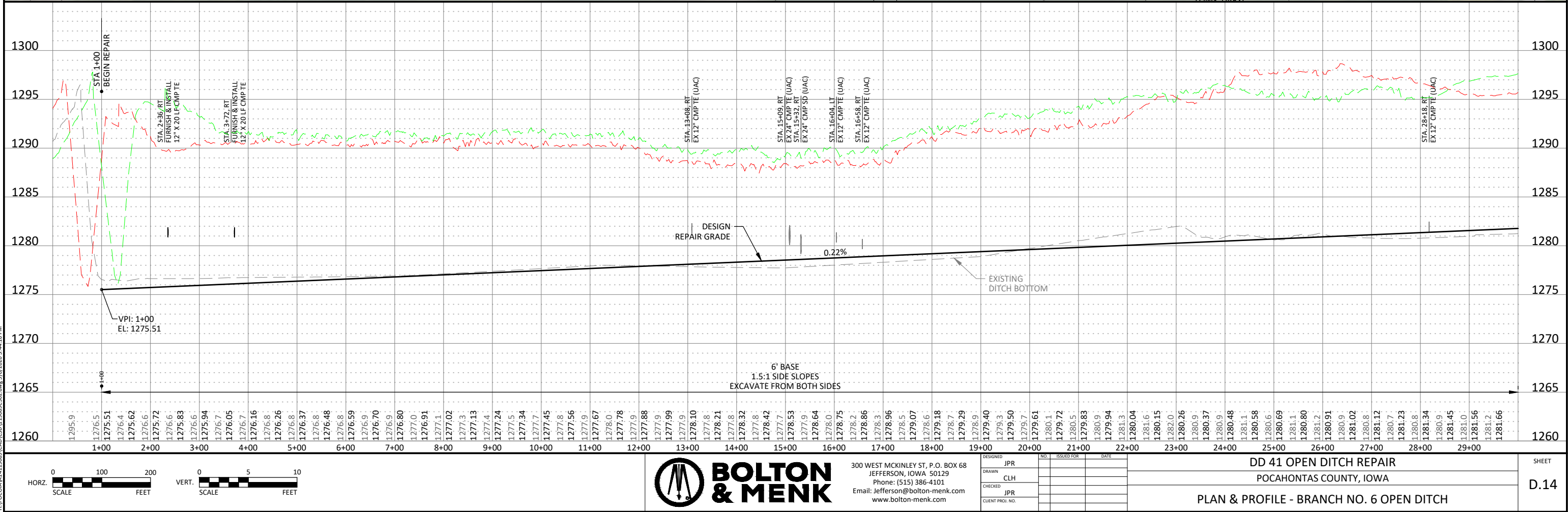
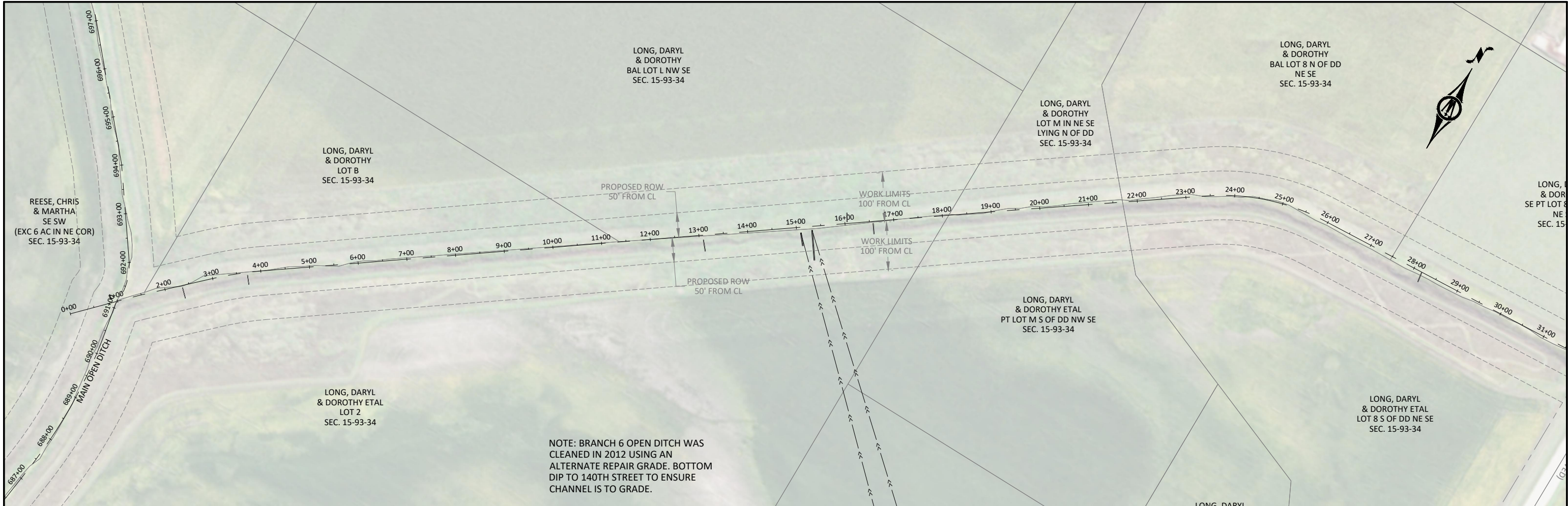
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DD 41 OPEN DITCH REPAIR
POCAHONTAS COUNTY, IOWA
PLAN & PROFILE - BRANCH NO. 2 OPEN DITCH

SHEET

D.13



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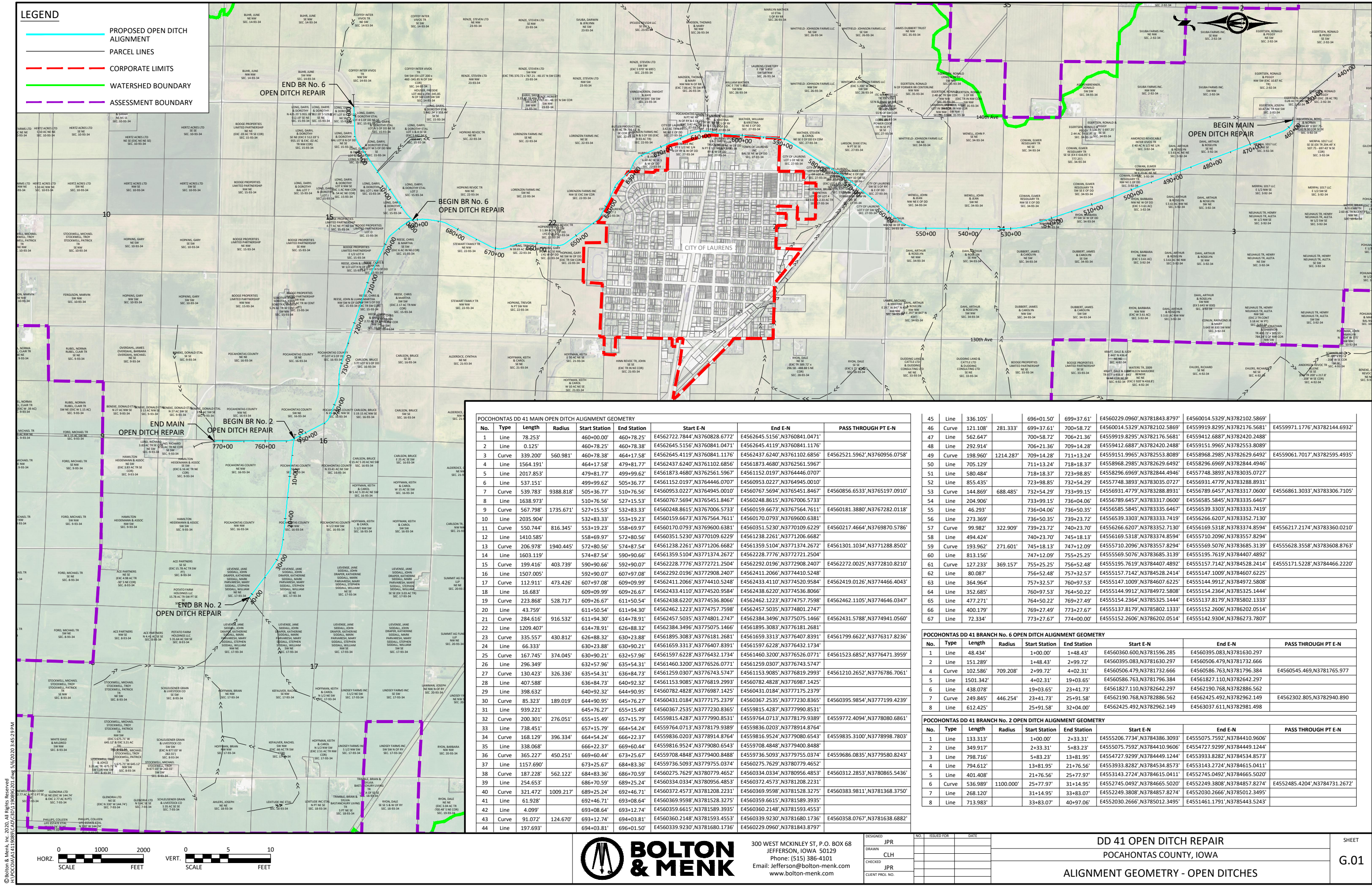
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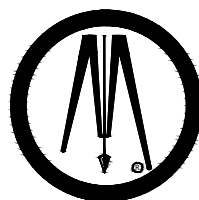
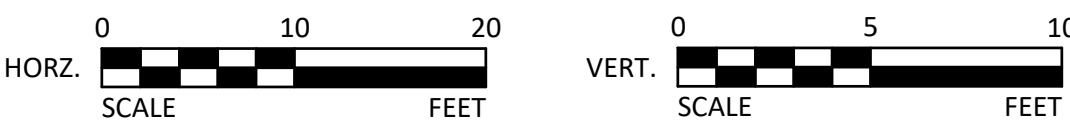
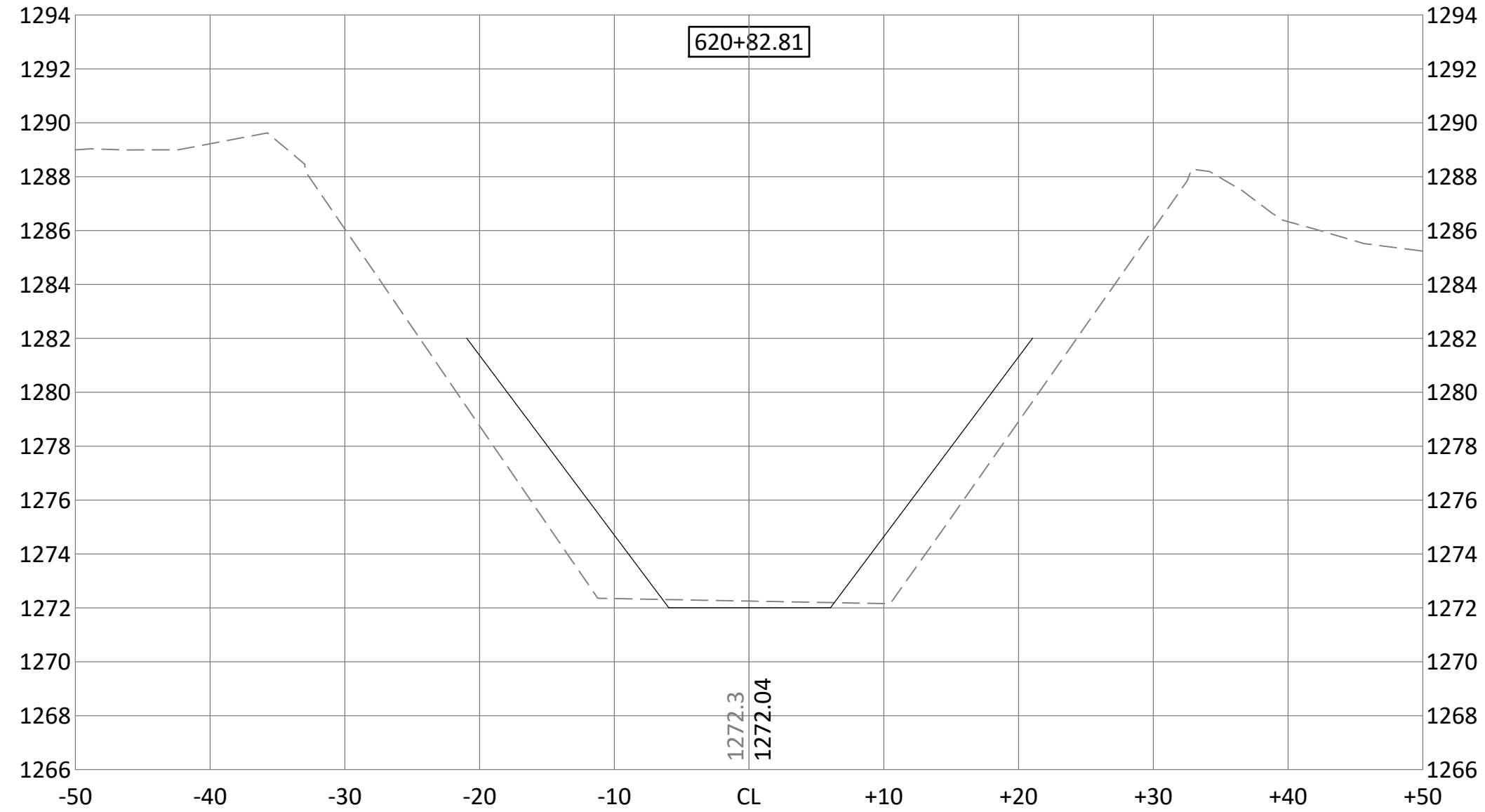
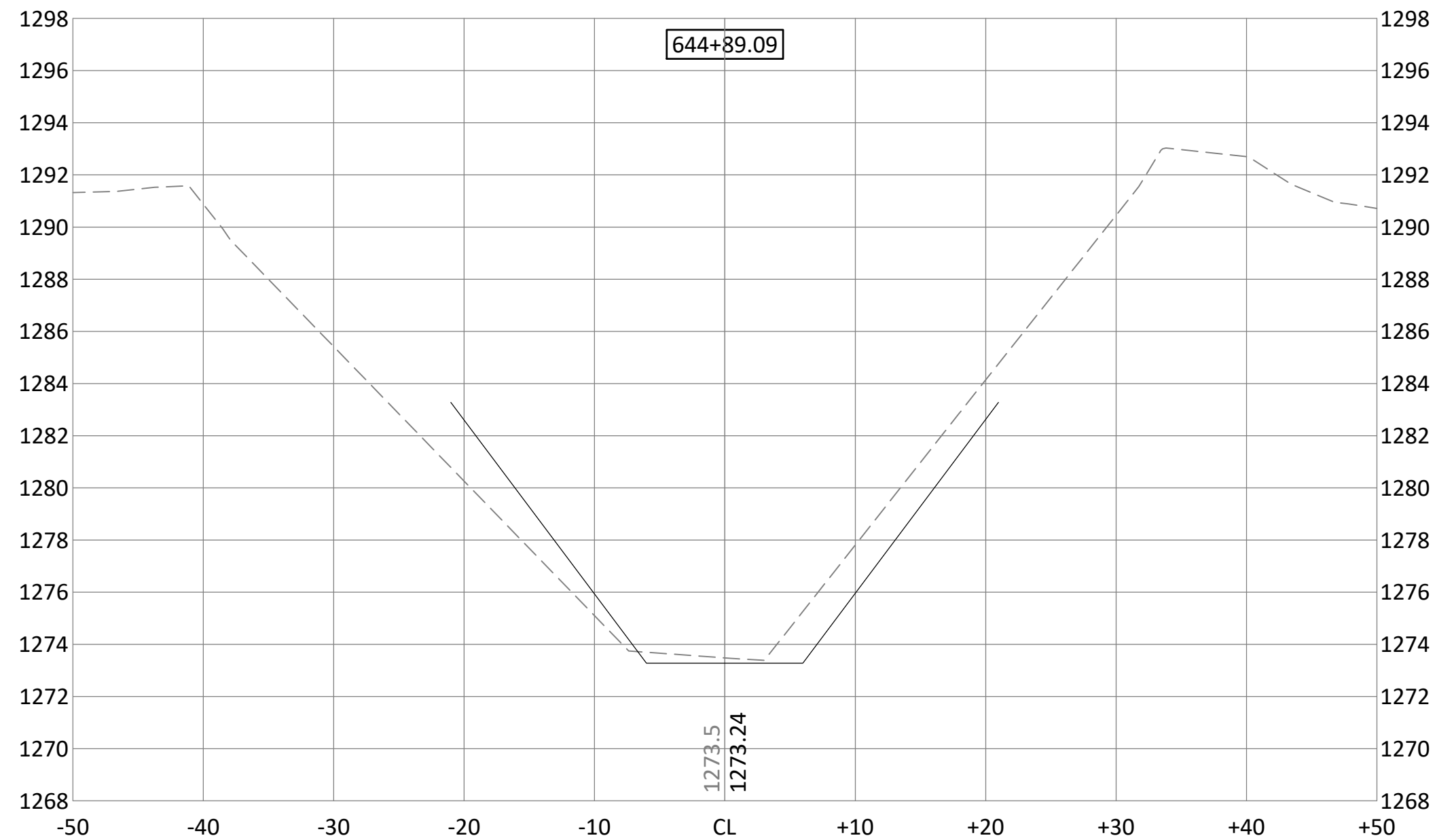
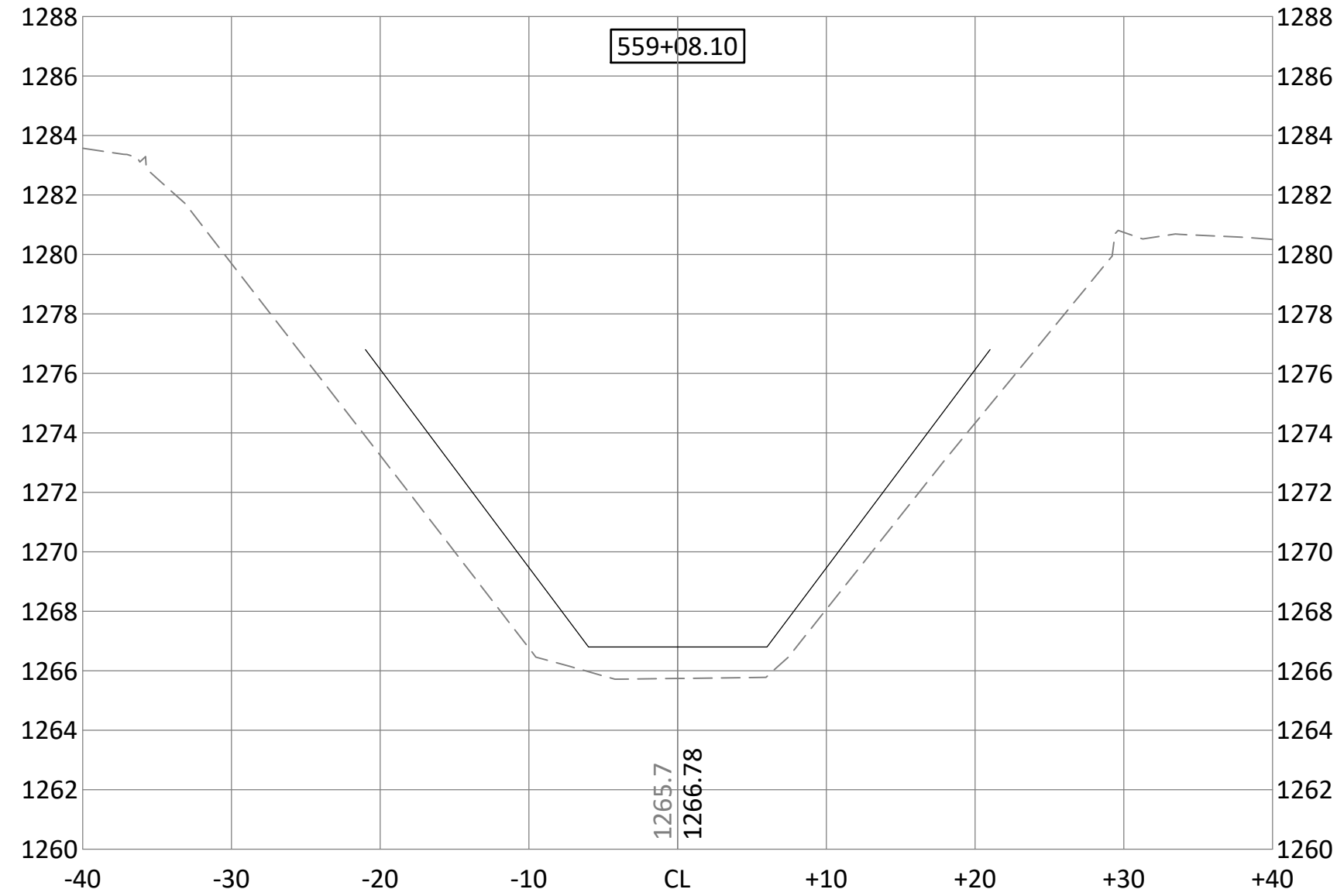
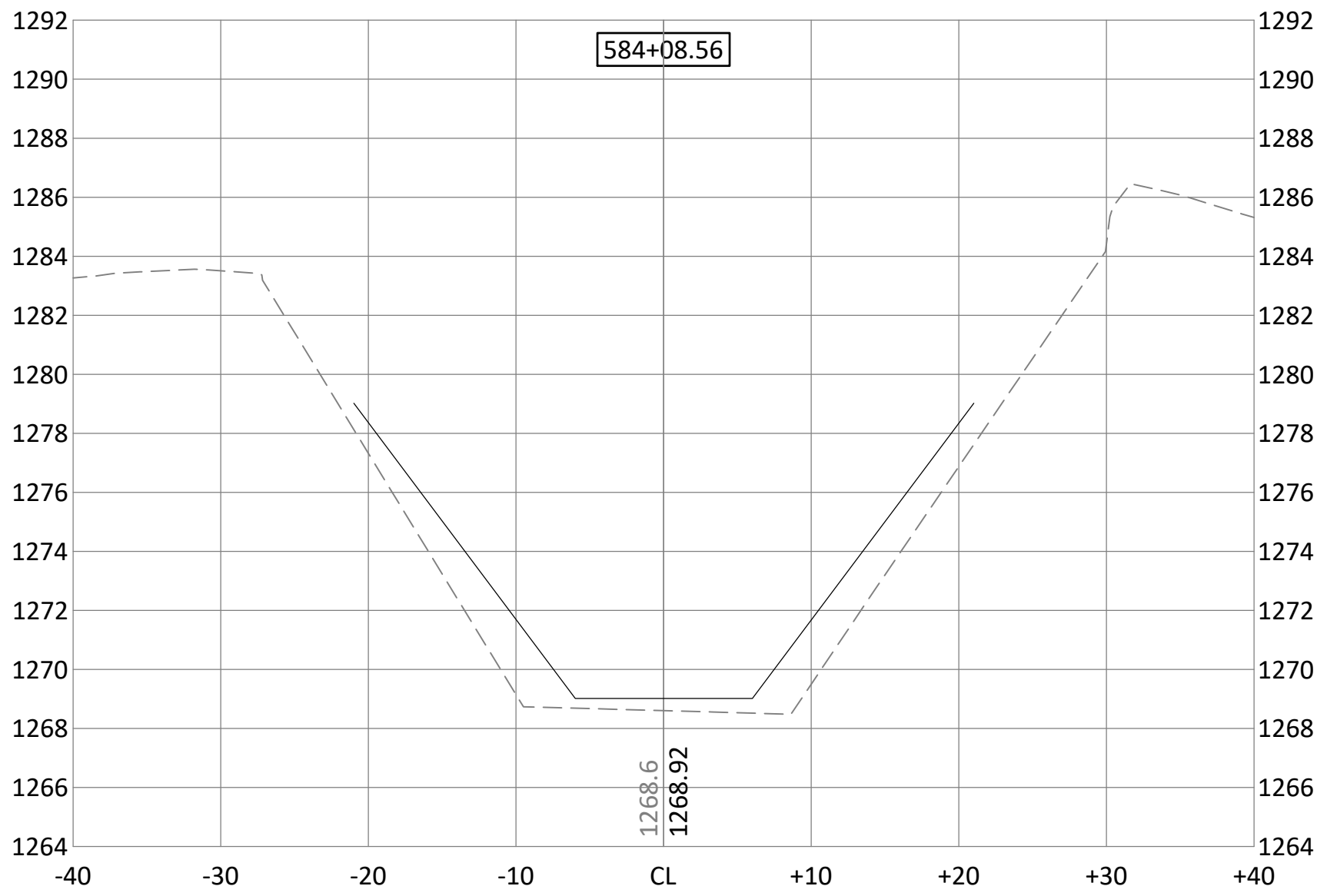
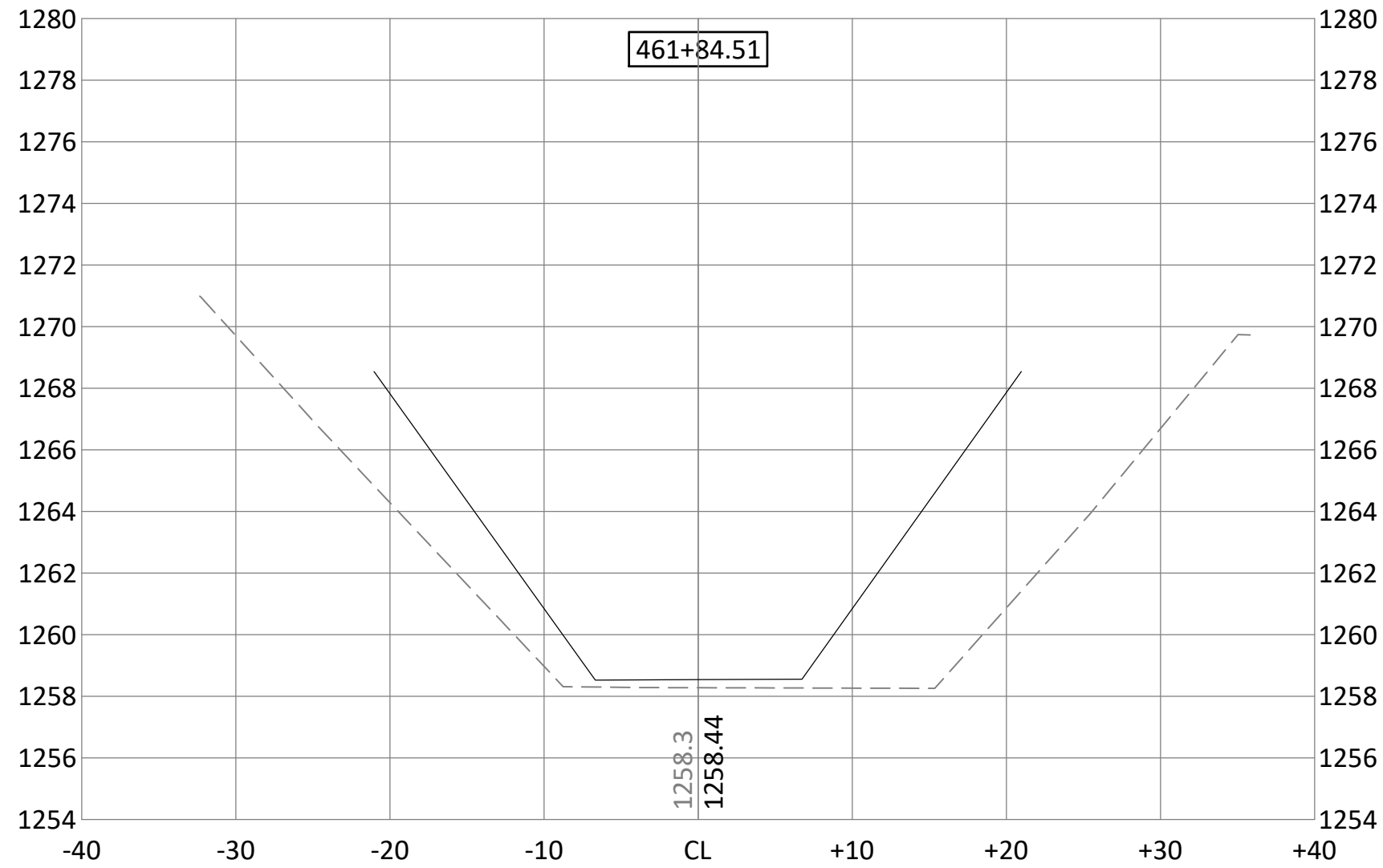
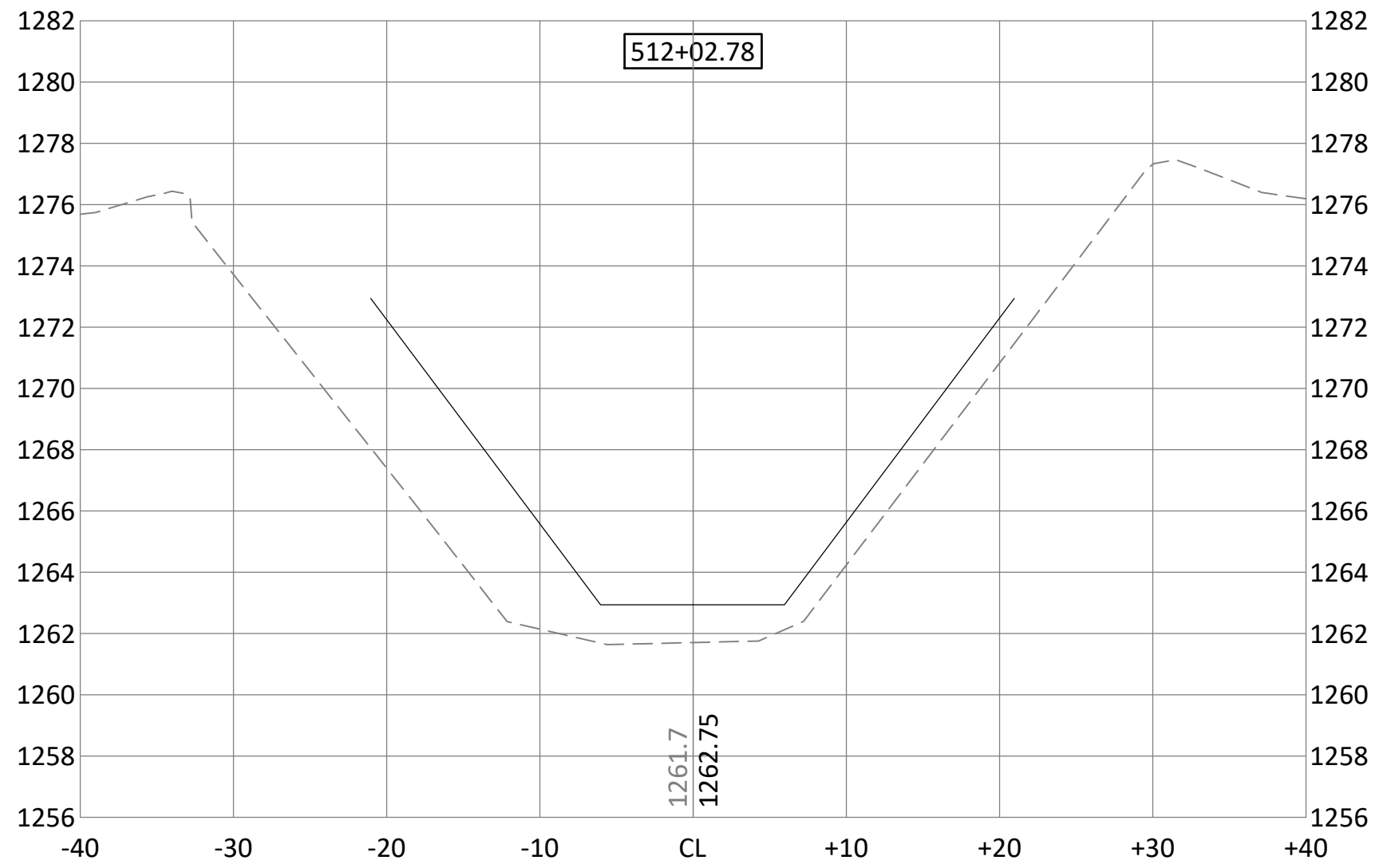
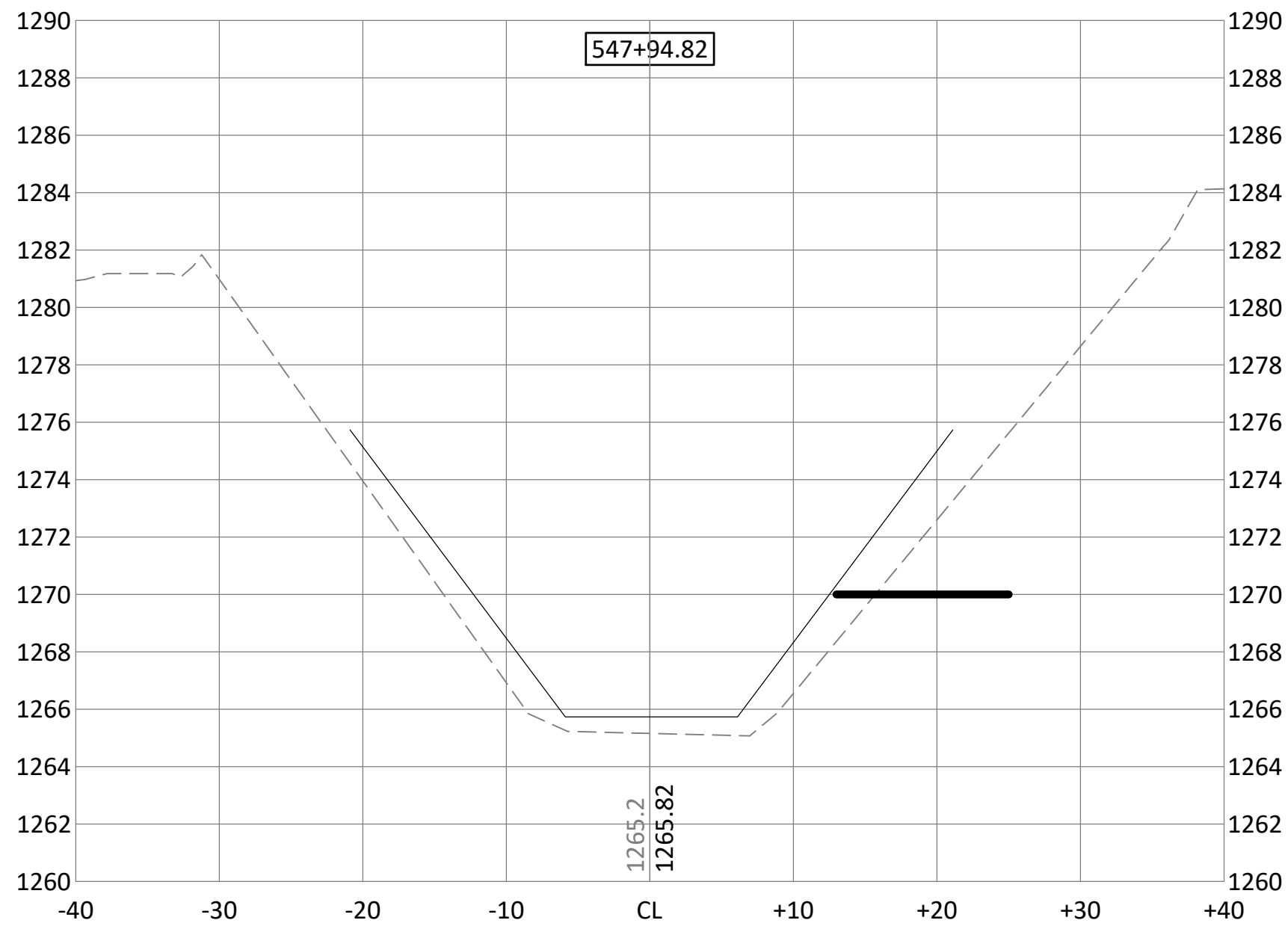
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POCAHONTAS COUNTY, IOWA
PLAN & PROFILE - BRANCH NO. 6 OPEN DITCH

SHEET
D.14



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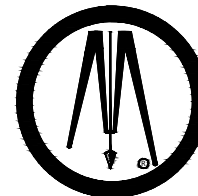
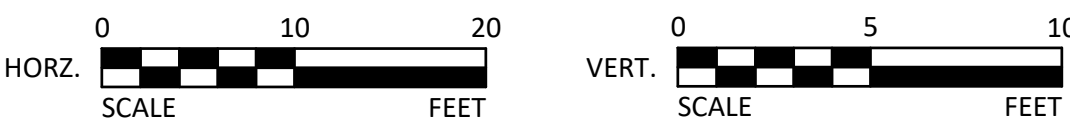
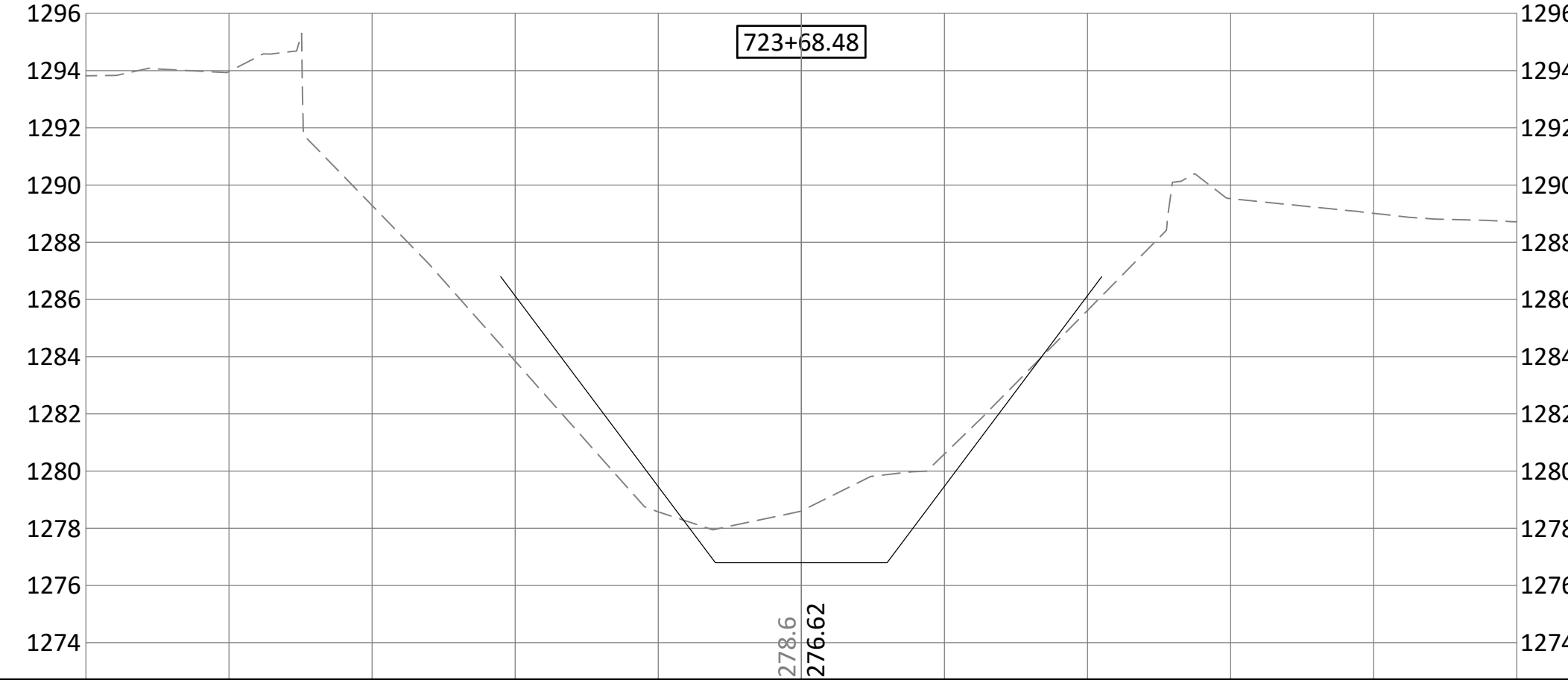
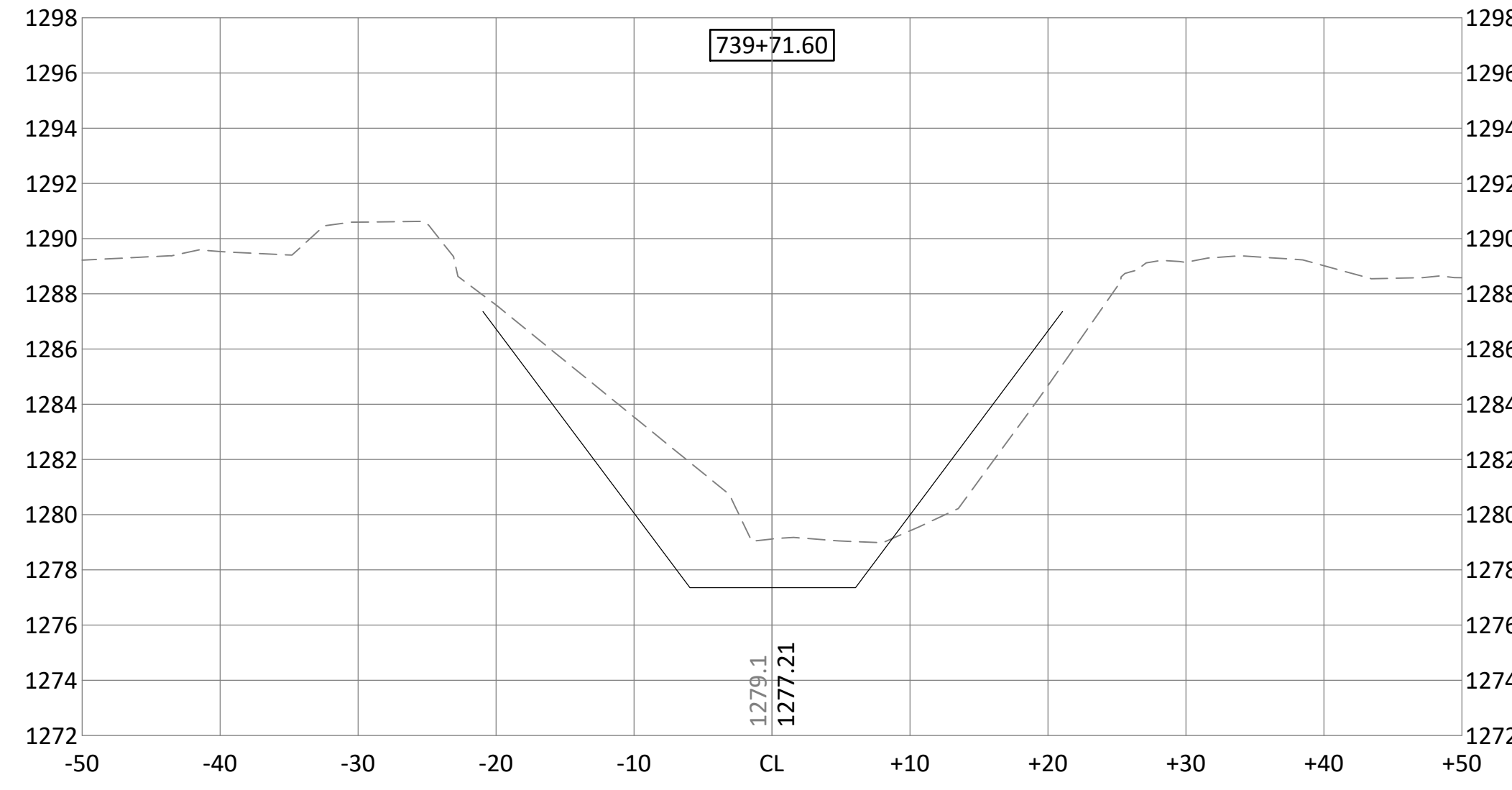
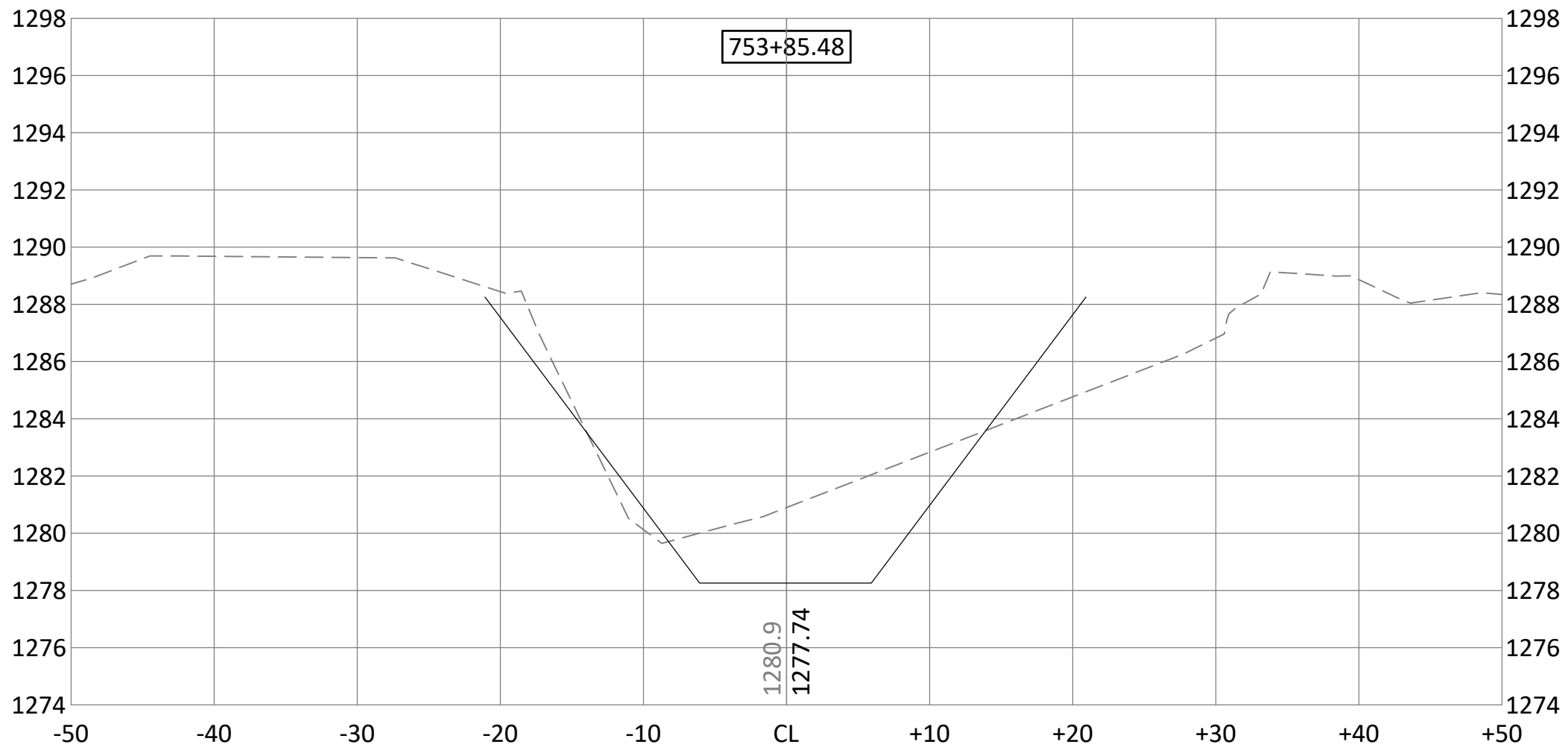
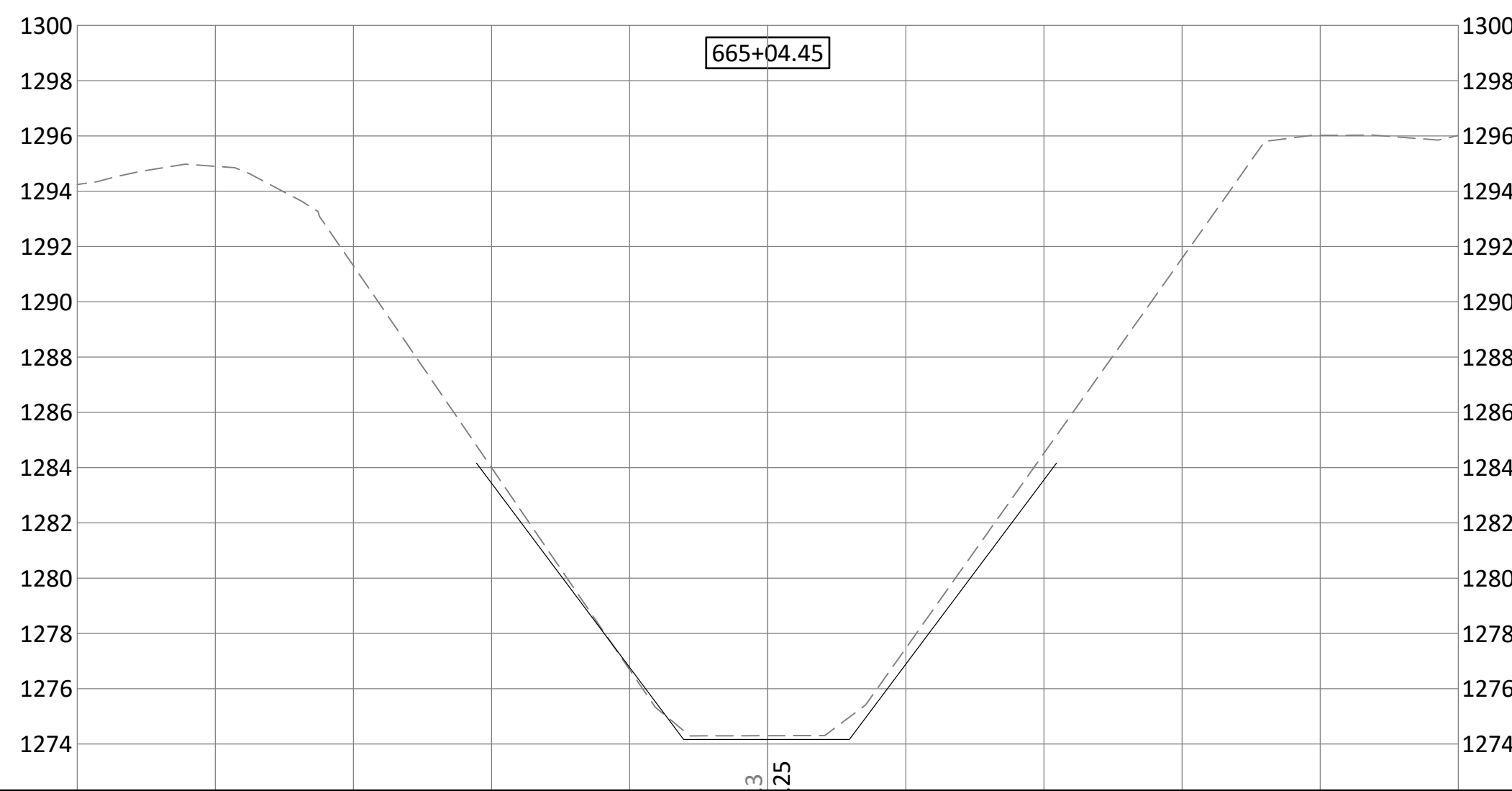
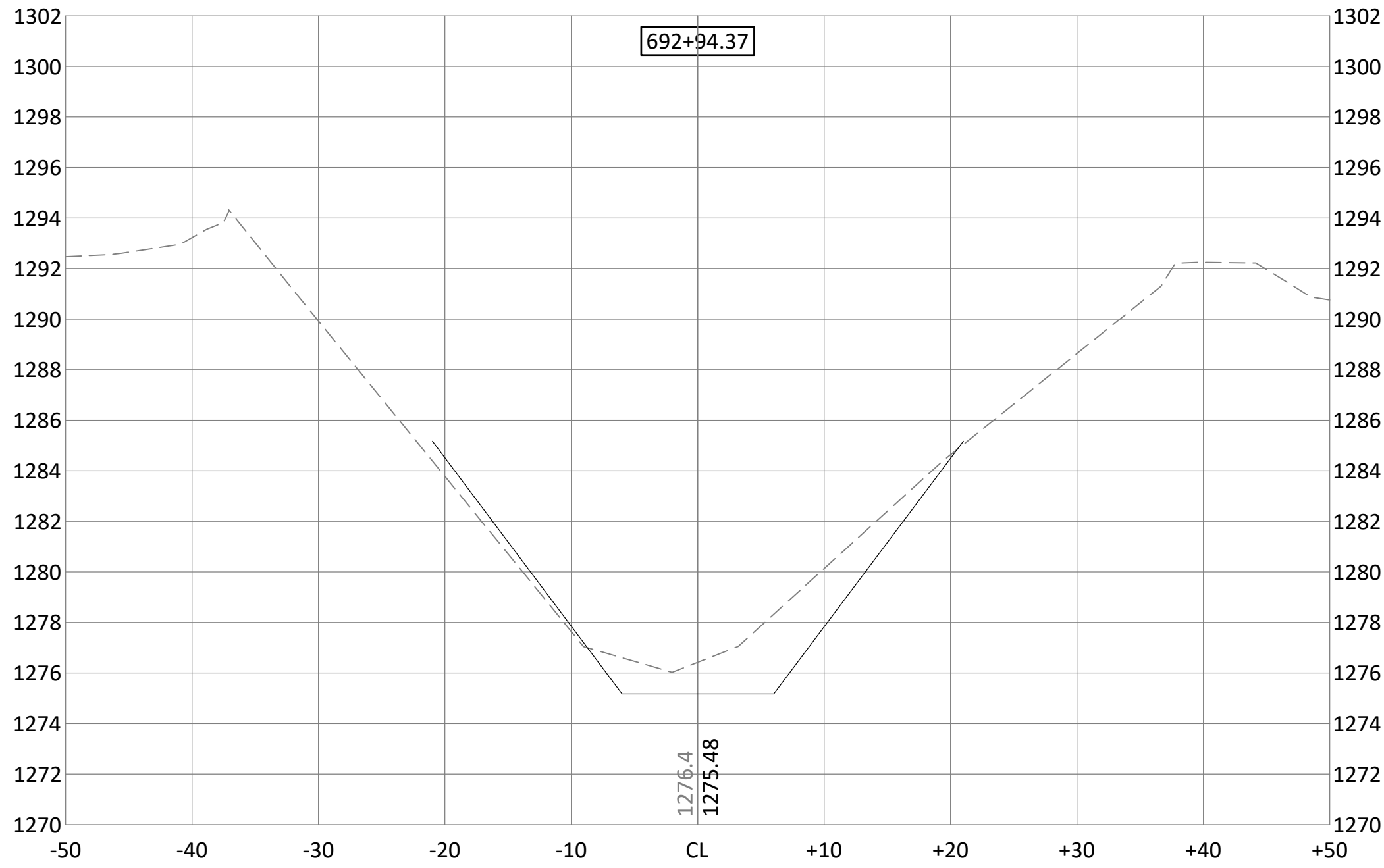
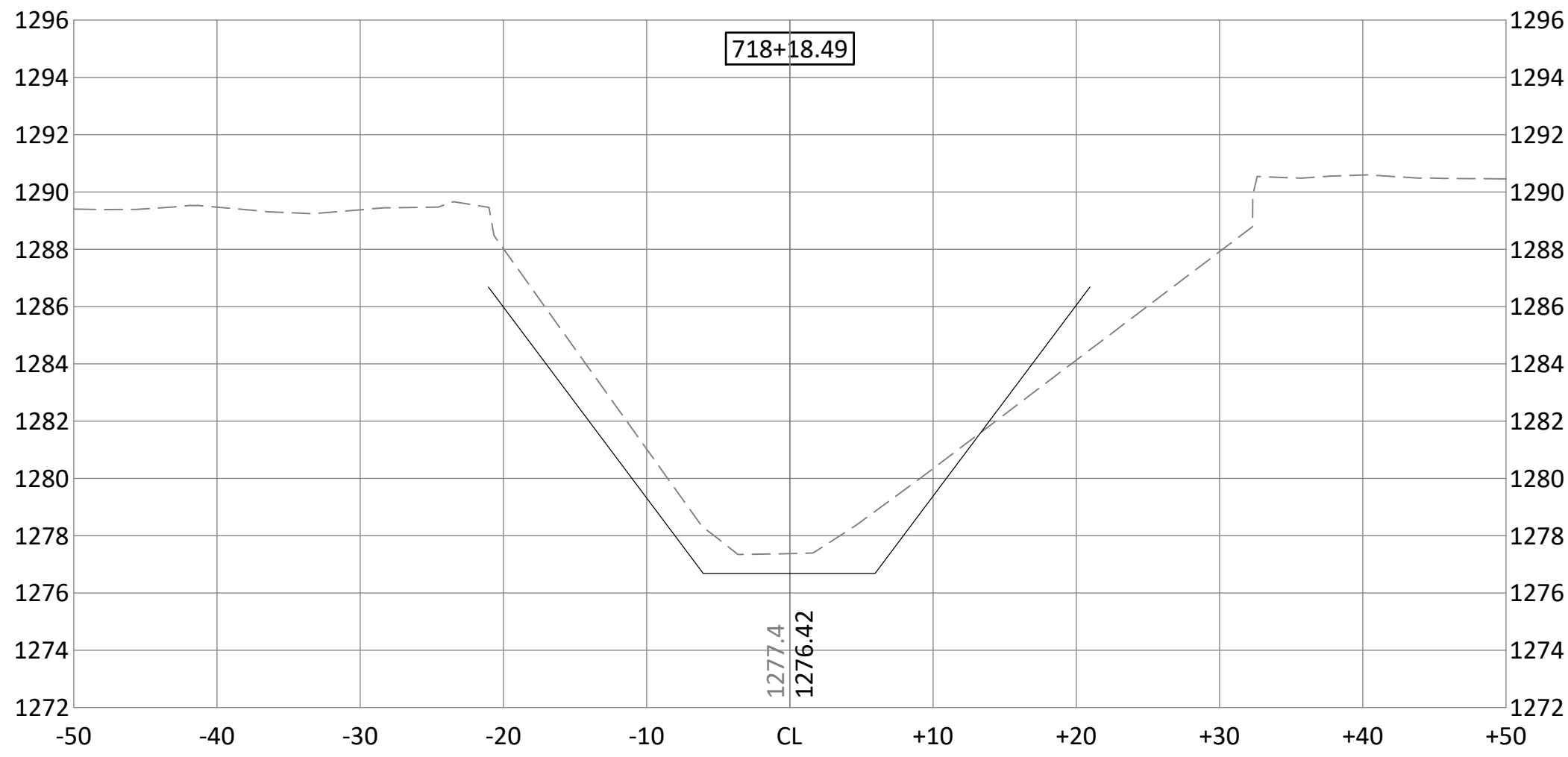
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DD 41 OPEN DITCH REPAIR
POCAHONTAS COUNTY, IOWA
CROSS SECTIONS - MAIN OPEN DITCH

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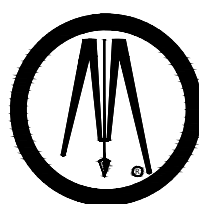
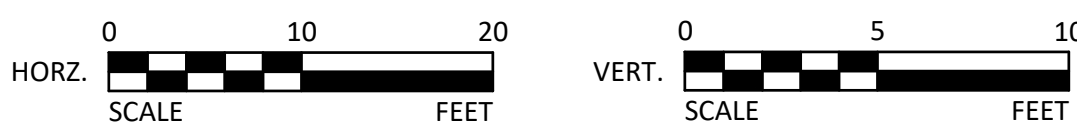
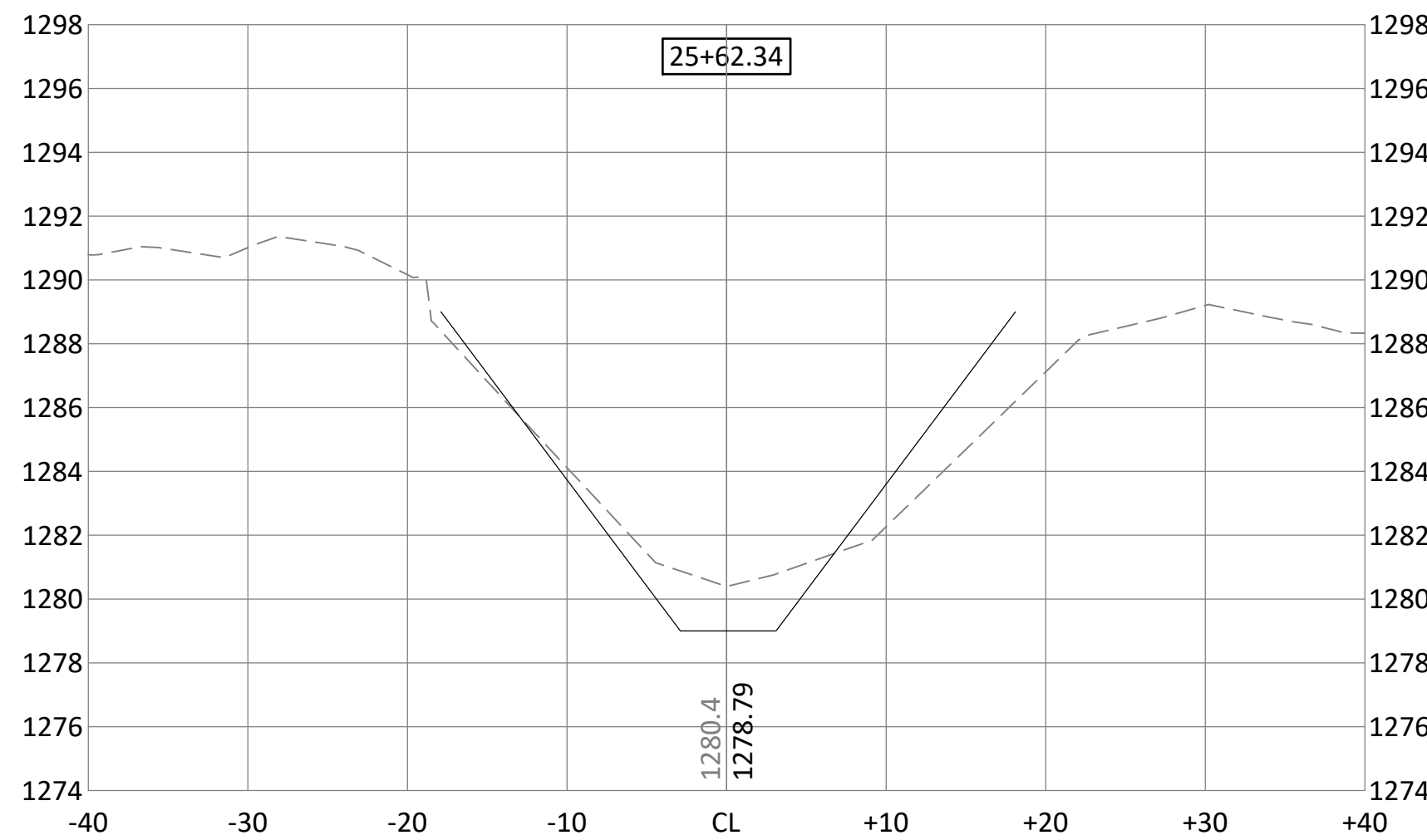
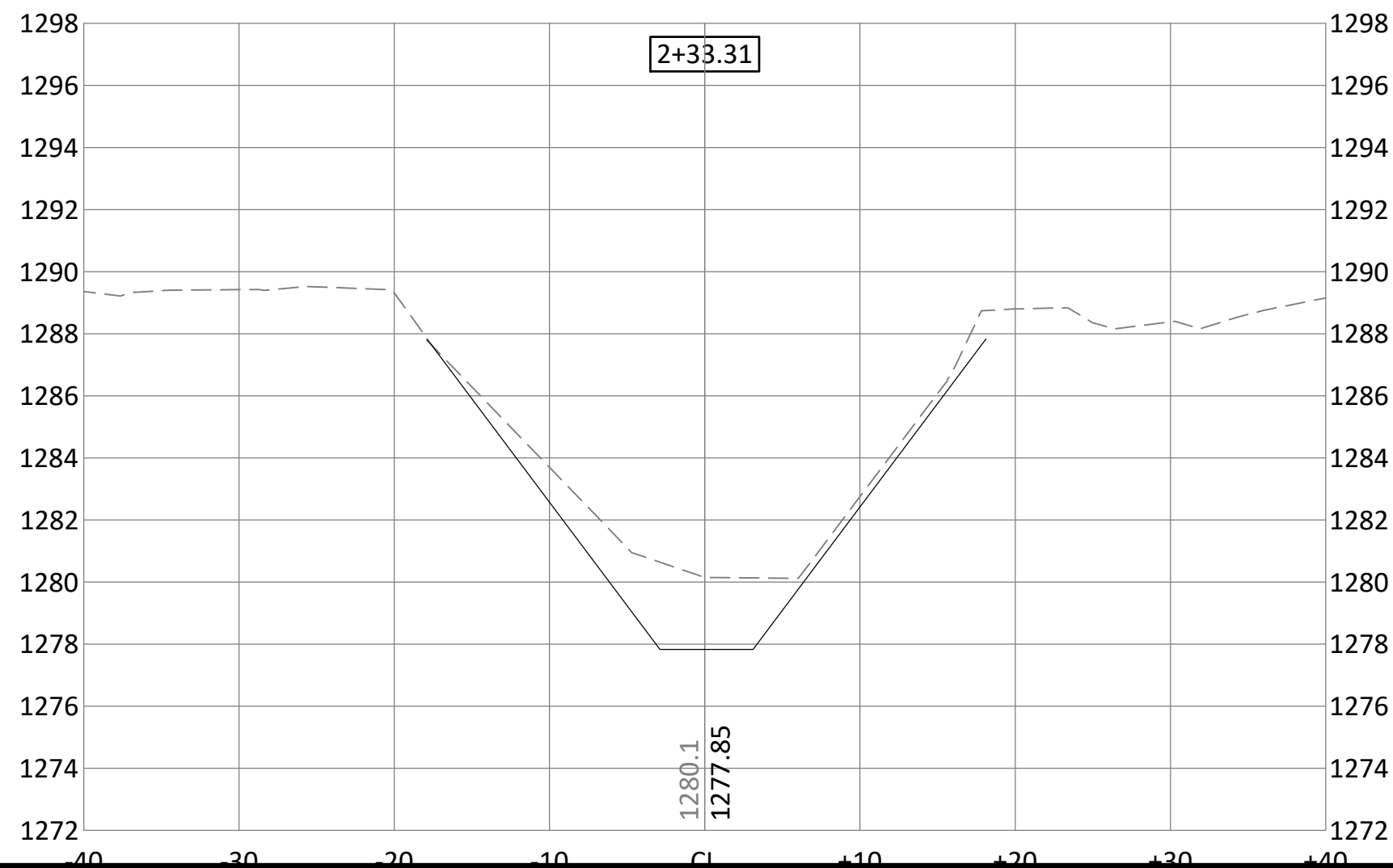
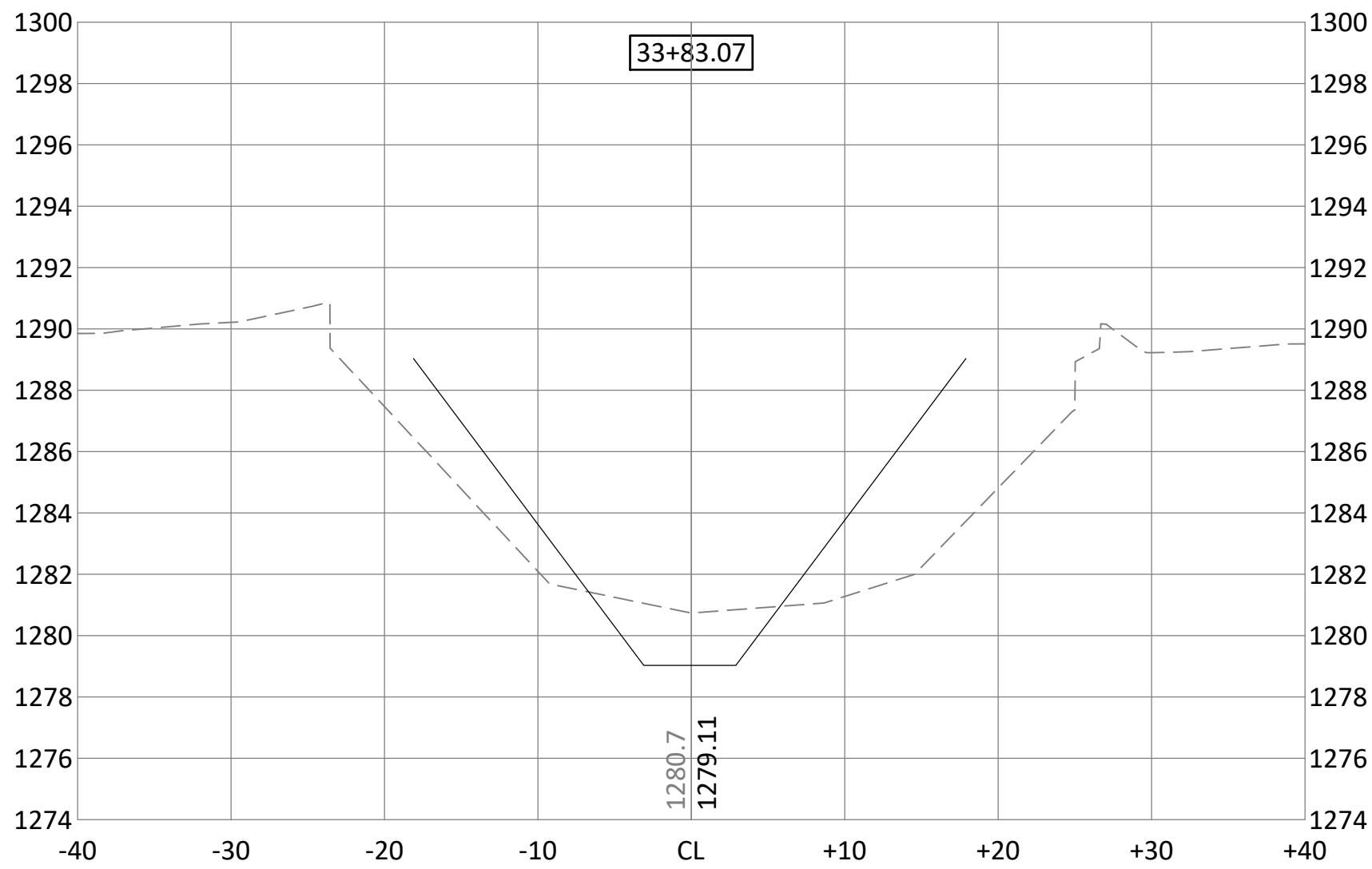
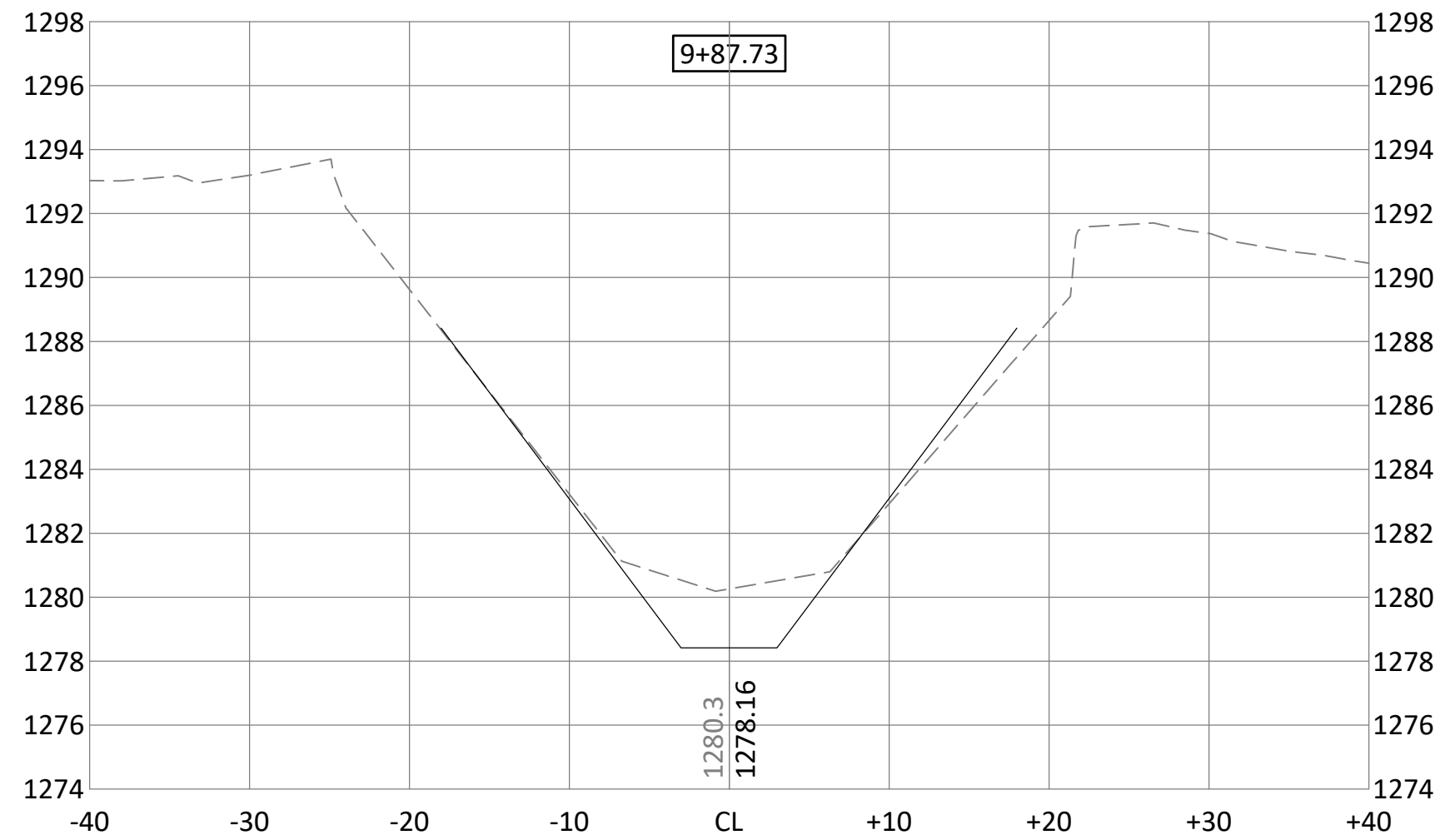
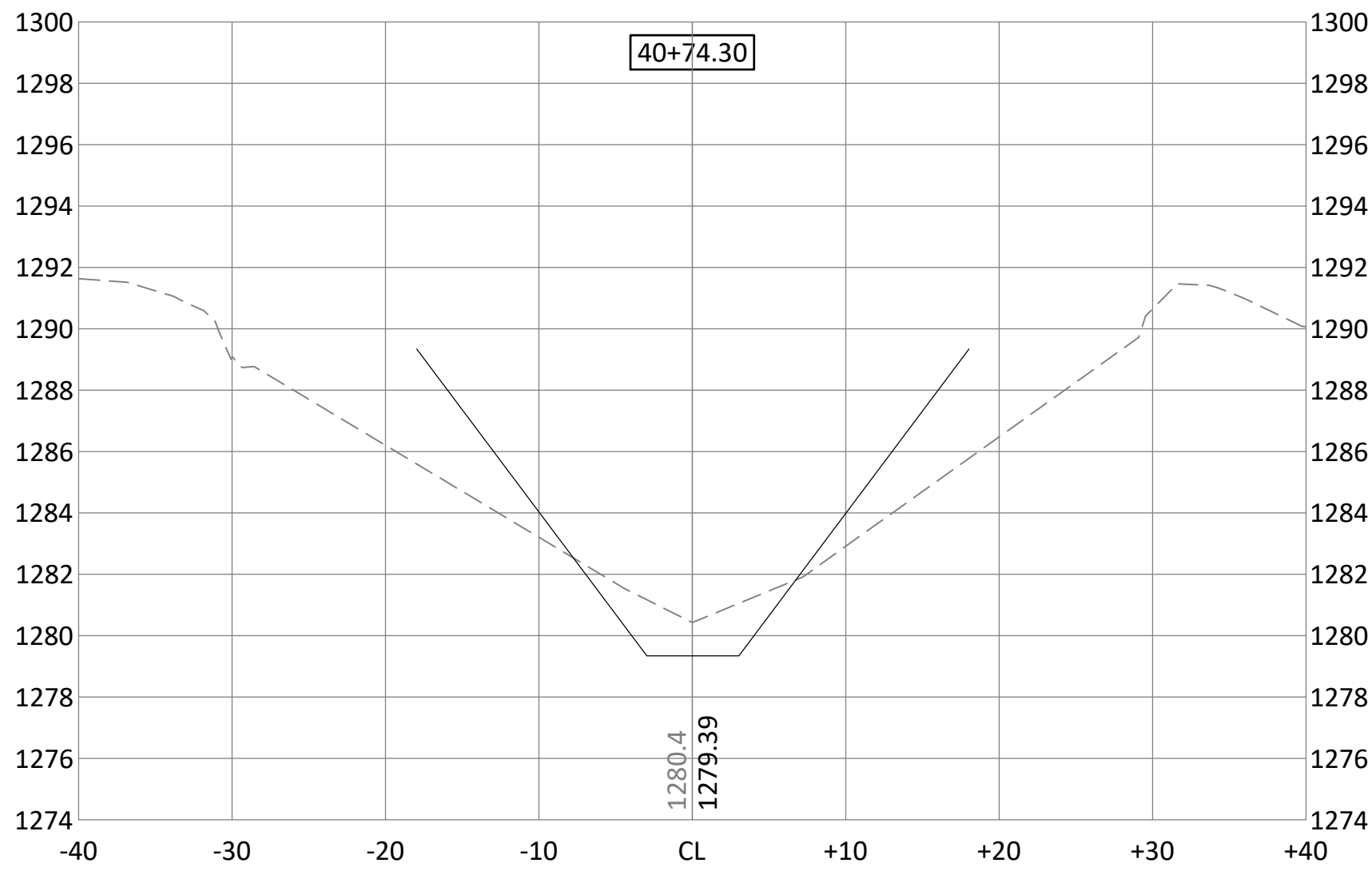
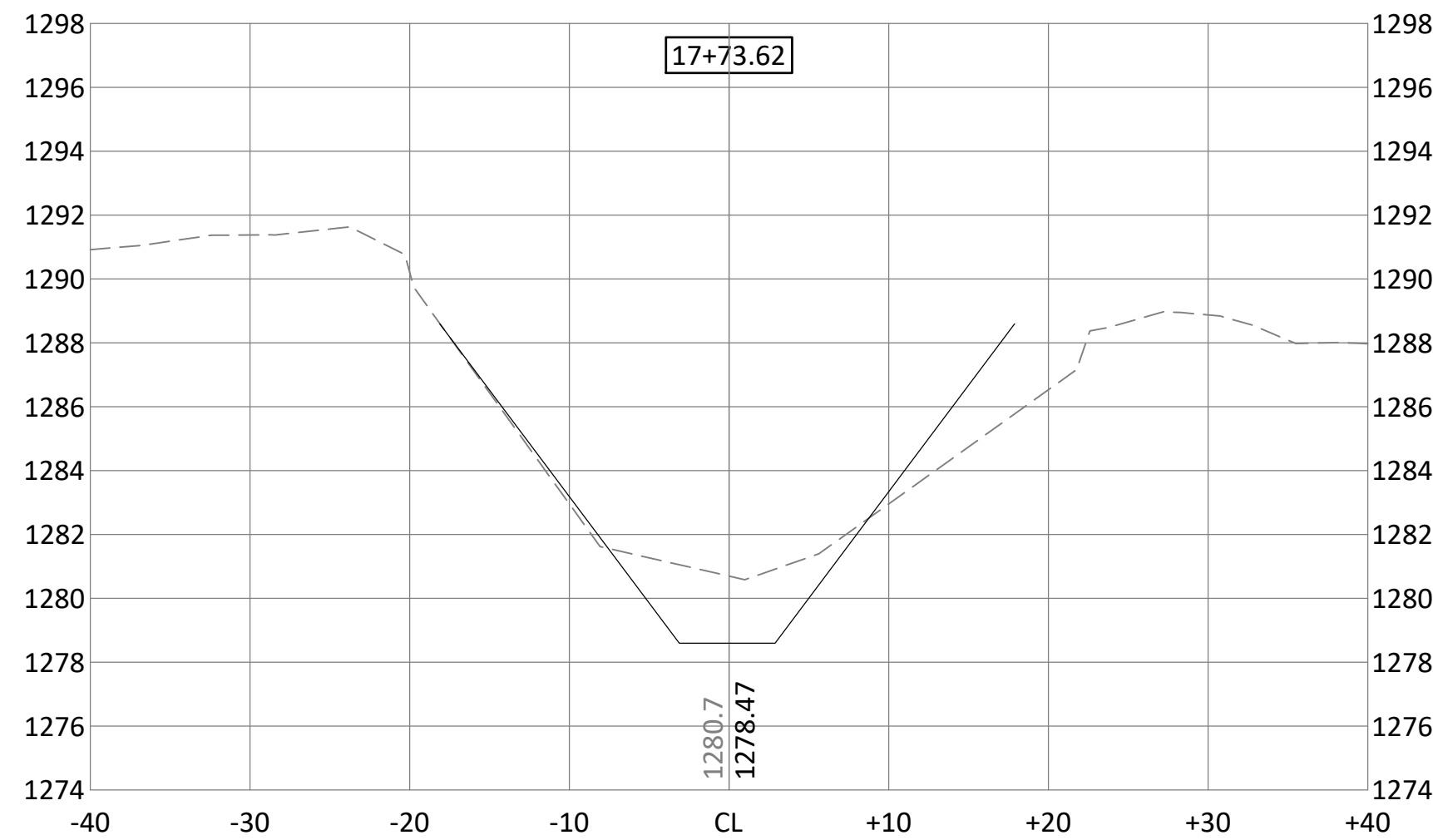
300 WEST MCKINLEY ST, P.O. BOX 68
JEFFERSON, IOWA 50129
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Email: Jefferson@bolton-menk.com
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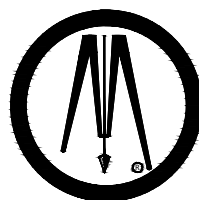
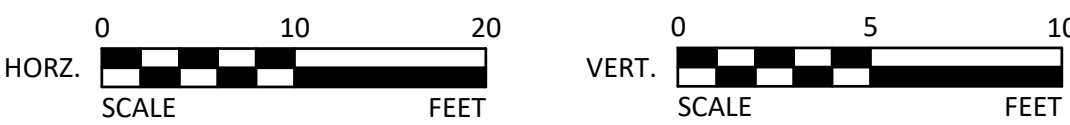
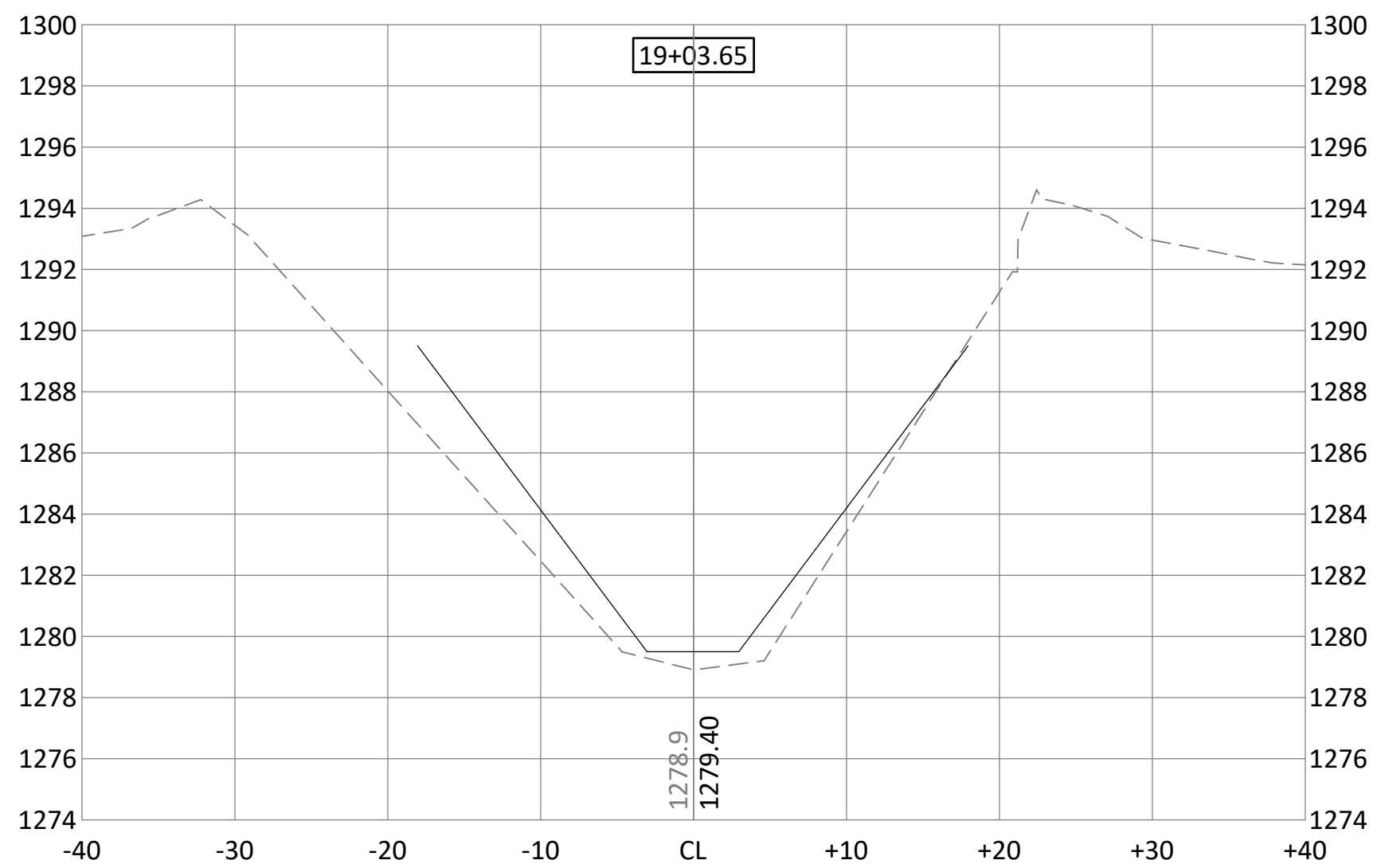
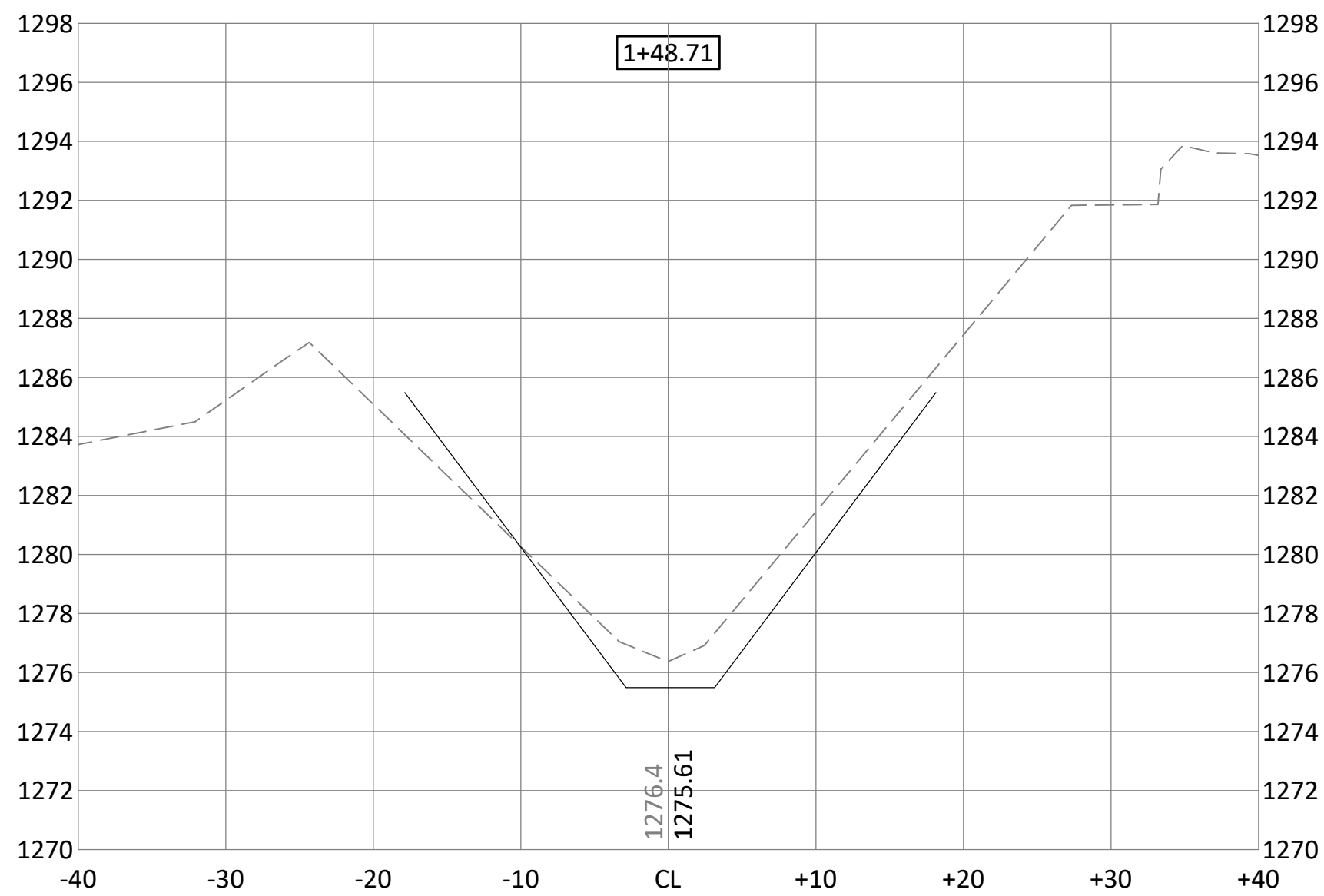
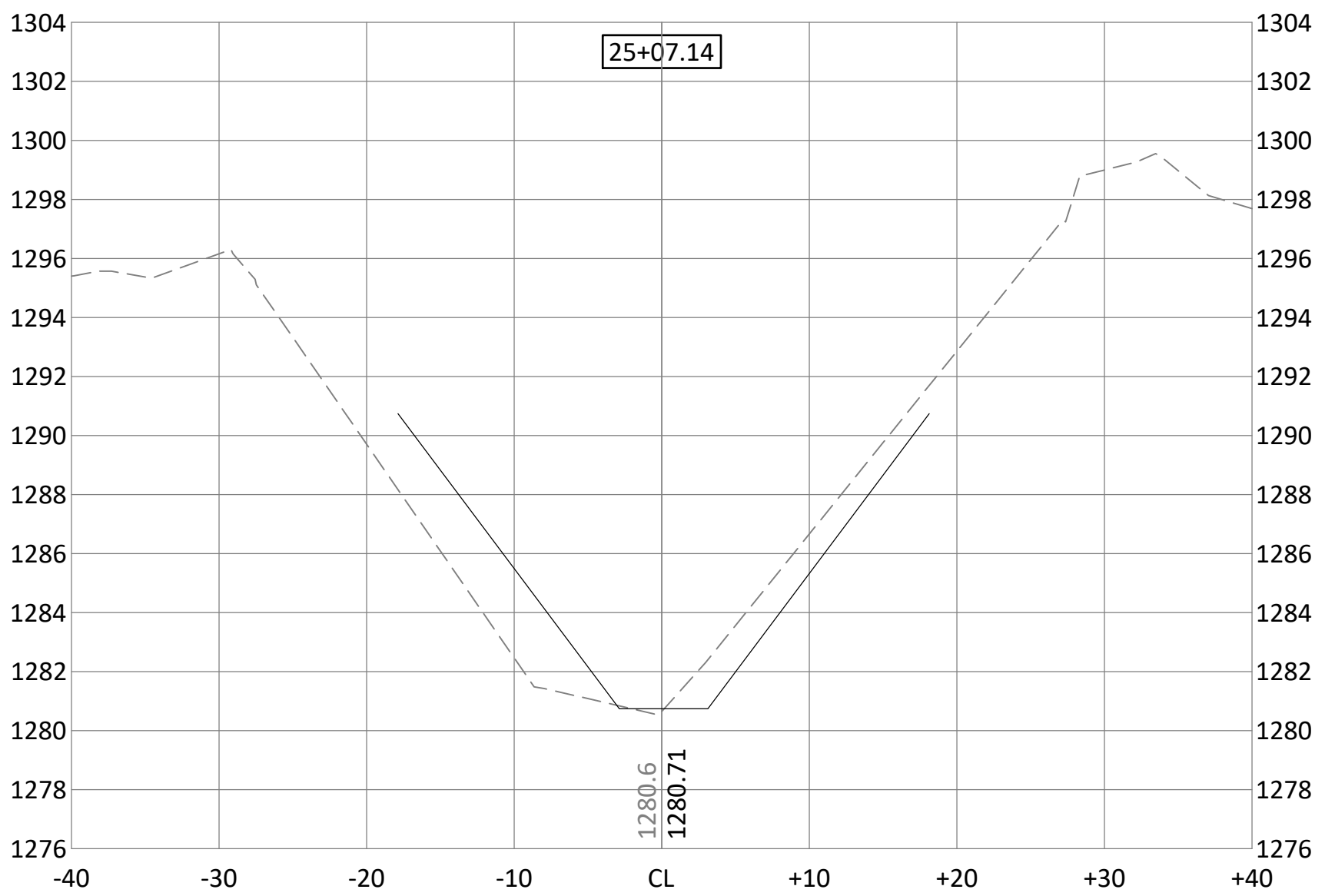
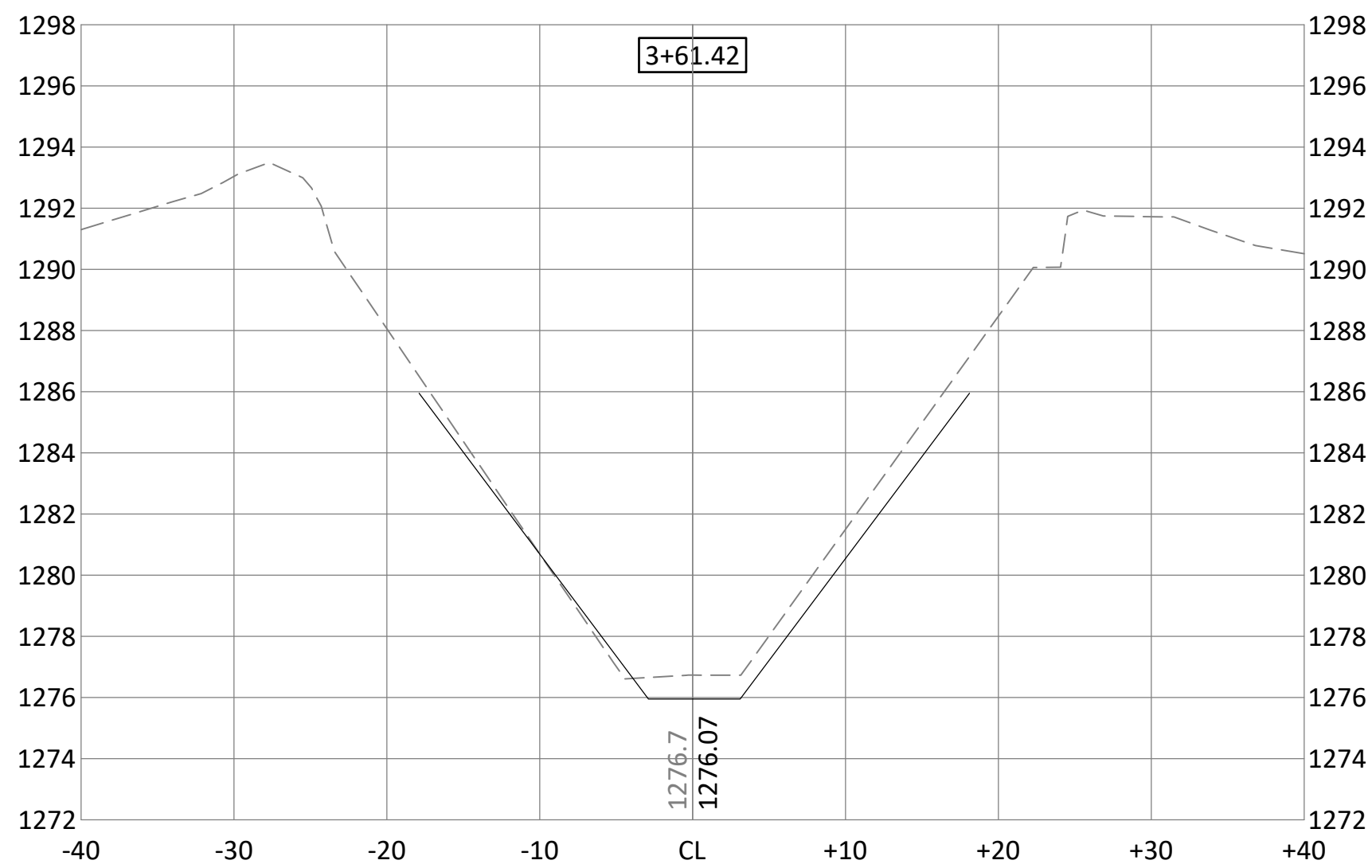
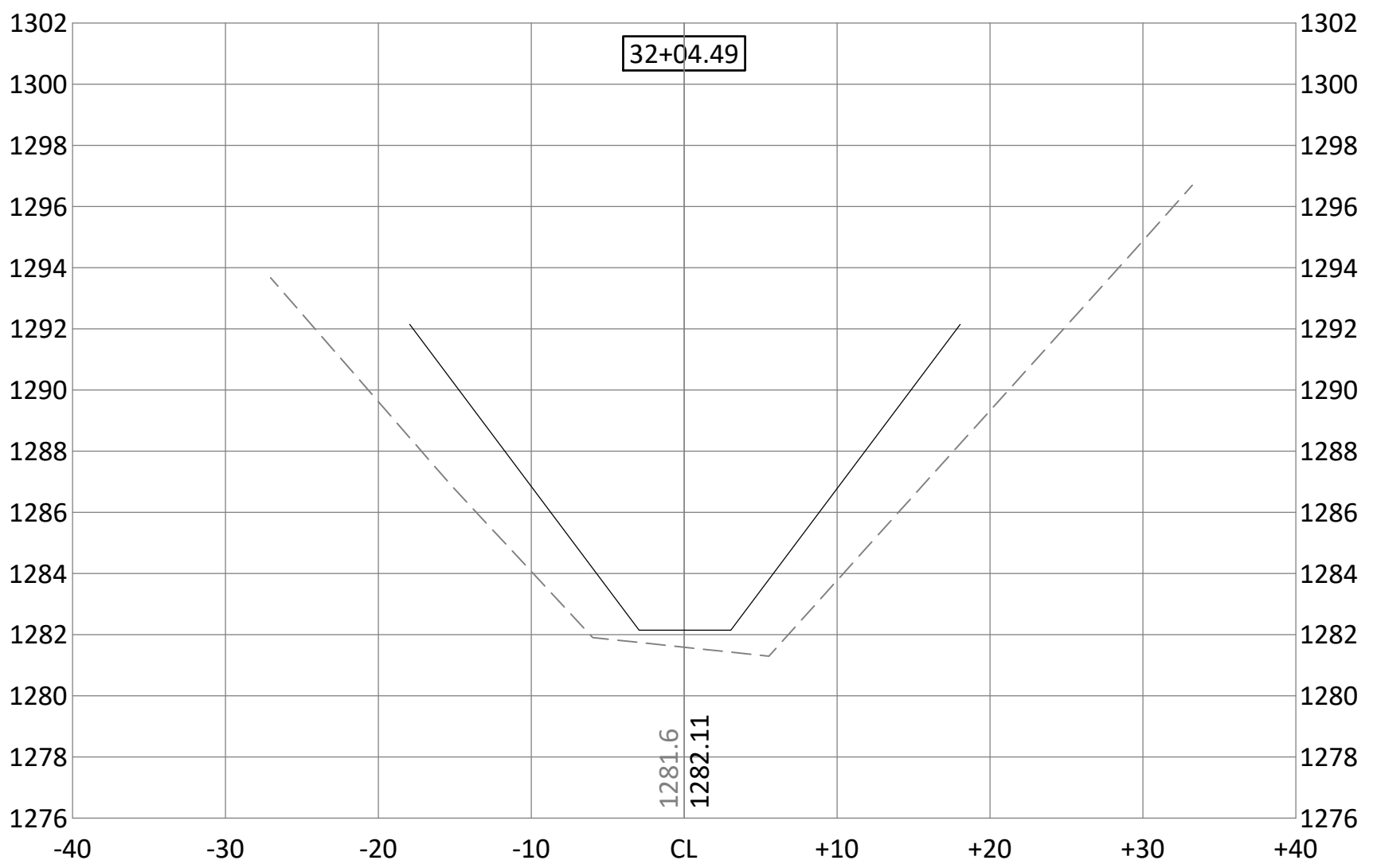
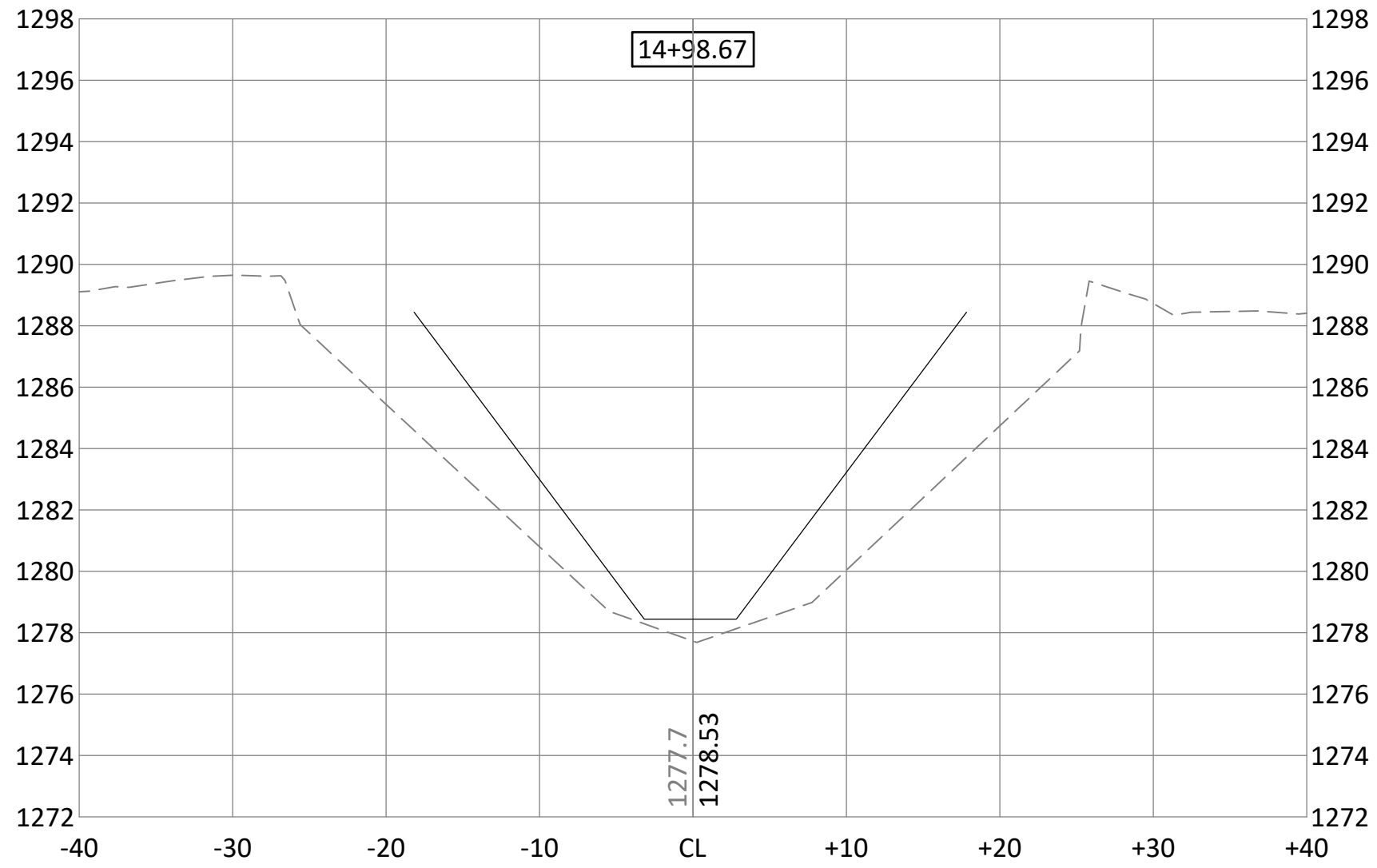
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