



A Stanley Group Company
Engineering, Environmental and Construction Services - Worldwide

January 14, 2011

Mr. Mark Arentsen
City Administrator
City of Bondurant
200 Second Street NE
Bondurant, Iowa 50035

Dear Mr. Arentsen:

Subject: Multi-Use Trail Routing Study along WRA Sewer Alignment – Mud Creek Trail

Background

The Des Moines Metropolitan Wastewater Reclamation Authority (WRA) plans to construct the Mud Creek Interceptor, Phase 23 Project as part of its wastewater collection and conveyance system improvements. The proposed route follows Mud Creek beneath Interstate 80 (I-80) in Altoona and extends in a northwesterly direction to the existing sewage treatment lagoons in Bondurant, Iowa.

The City of Bondurant is interested in constructing a multi-use trail following the same alignment. This Multi-Use Trail Routing Study identifies a single route from the Altoona corporate limits along Mud Creek into the City of Bondurant to the existing sewage treatment lagoons. From there, the proposed trail continues easterly along the Farmers Cooperative Company Railroad corridor to downtown Bondurant where it will eventually connect with the Second Street NE/NW Multi-Use Trail that was constructed in 2009.

Additionally, this Multi-Use Trail Routing Study identifies a single route along the City's drainage channel adjacent to Meadow Brook North Plat 1 to Lincoln Street SE and Meadow Brook North Plat 11 to 2nd Street SE providing a neighborhood connection within the City.

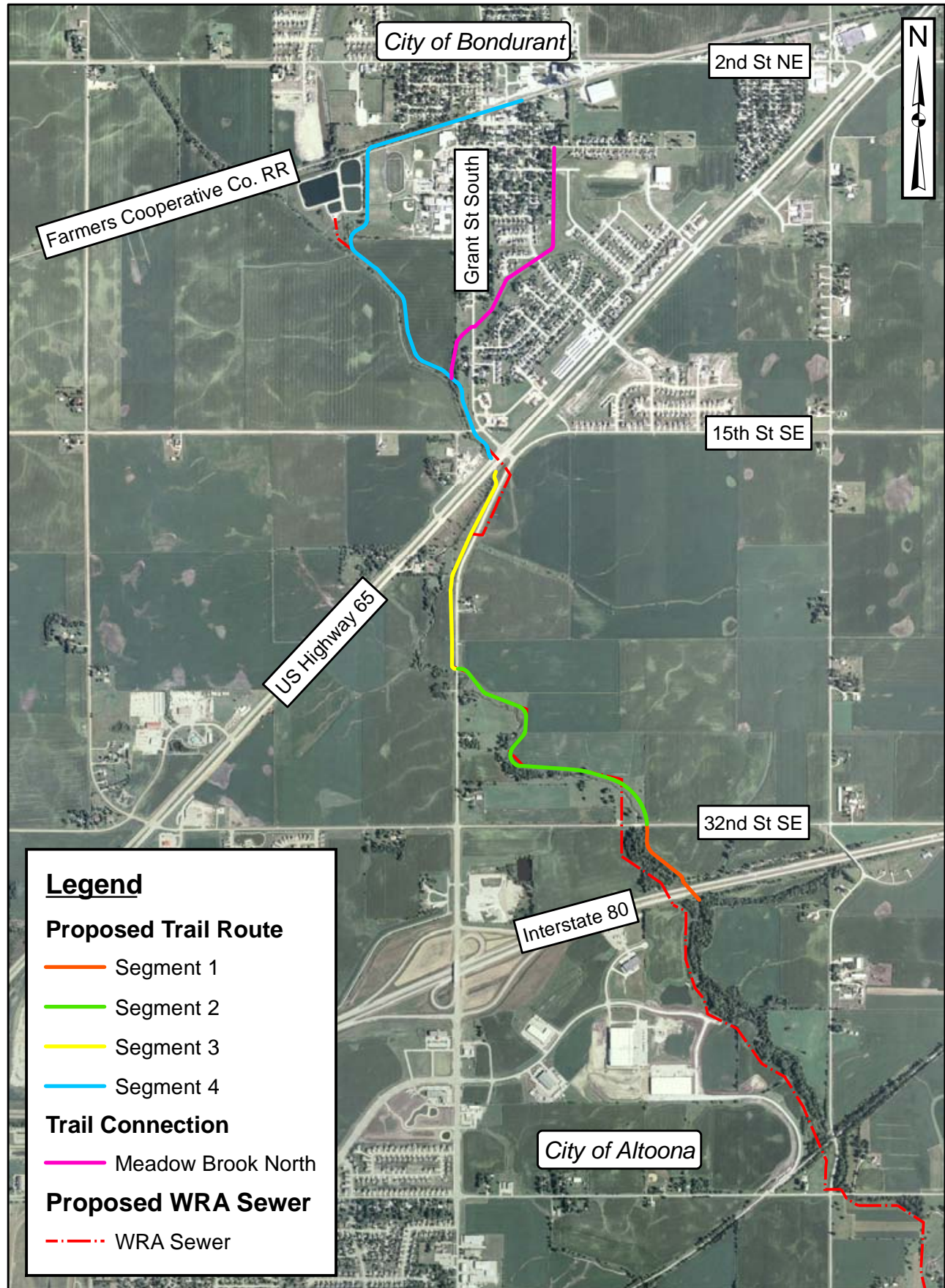
Stanley Consultants has obtained the preliminary WRA Mud Creek Interceptor Sewer alignment from Veenstra & Kimm for the purpose of comparing sewer and trail alignments.

Future trail projects will connect the Mud Creek Trail with the Chichaqua Valley Trail, east of Bondurant providing regional connectivity between the Cities of Baxter, Ira, Mingo, Valeria, and Bondurant in Jasper and Polk Counties.

Route Alternative

For the purpose of this study, the proposed Mud Creek Trail is broken into four (4) segments as shown in Figure 1. See Appendix A for Trail Plan and Profile Drawings and Appendix B for Existing Site Photos.

Multi-Use Trail Routing Study Along WRA Sewer Alignment



0 0.5 1 Miles

**Location Map
Figure 1**



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Segment 1

Segment 1 begins at the existing reinforced concrete box (RCB) culvert along Mud Creek beneath Interstate 80 and extends northerly to 32nd Street SE (NE 62th Avenue in Polk County). The City of Altoona intends to work with the Iowa Department of Transportation (Iowa DOT) to construct the trail to the south utilizing the eastern most barrel of the RCB beneath I-80 as a tunnel for the trail route. This segment lies within an unincorporated part of Polk County and is within the jurisdiction of the Polk County Conservation Board (PCCB). The route varies from the proposed WRA sewer alignment; therefore, the entire segment will require acquisition of separate trail easements.

Segment 2

Segment 2 begins at 32nd Street SE and continues on the east side of Mud Creek in a northwesterly direction to Grant Street South.

The proposed trail route varies from the proposed WRA sewer alignment for approximately the first ¼ mile north of 32nd Street SE; therefore acquisition of separate trail easements will be required for this segment.

Segment 3

Segment 3 begins at the Grant Street South and Mud Creek crossing and continues north on the west side of Grant Street South to US Hwy 65.

The majority of the proposed trail route follows the proposed WRA sewer alignment; however, acquisition of separate trail easements may be required for a portion of this segment.

Segment 4

Segment 4 begins at US Hwy 65 and continues northwesterly along the east side of Mud Creek to the existing sewage treatment lagoons. The trail will continue to the north along the west property line of the Bondurant-Farrar Community School District property to the Farmers Cooperative Company Railroad corridor where it will turn east towards Main Street in downtown Bondurant.

The majority of the proposed trail route follows the proposed WRA sewer alignment; however, acquisition of separate trail easements may be required for a portion of this segment. This route is dependent on the Bondurant-Farrar Community School District allowing an easement across its property in addition to acquisition of easements along the Farmers Cooperative Company Railroad corridor.

For the purpose of this routing study, it is assumed that the trail will utilize the northern most barrel of the existing triple 12'x12' RCB in similar fashion to the I-80 crossing to the south. Other alternatives, including a grade separation structure over US Hwy 65 and an at-grade crossing of US Hwy 65 at Grant Street South are presented as cost alternatives.



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Neighborhood Connection

The following neighborhood trail connection was also reviewed as part of this study:

Meadow Brook North Connection

The Meadow Brook North Connection will begin at the confluence of the Meadow Brook North drainage ditch and Mud Creek. The trail connection will extend northeasterly along the north and west side of the drainage ditch crossing Grant Street South, Lincoln Street SE, and 3rd Street SE before terminating at 2nd Street SE.

The proposed route for this trail connection falls within existing City owned property; therefore, acquisition of additional easements should not be required.

US Highway 65 Crossing

Three alternatives for crossing US Hwy 65 at Grant Street South were reviewed for feasibility and are described below:

Existing US Highway 65 RCB Culvert

Utilizing the existing US Hwy 65 RCB culvert south of the Grant Street South intersection is the proposed alternative for this study. One drawback to this alternative is that during periods of high flows in Mud Creek, this crossing would have to be closed due to high waters. The Iowa DOT was contacted and has provided stipulations that are included in the Permitting and Environmental Documentation section of this study.

At-Grade Crossing

An at-grade crossing of US Hwy 65 at Grant Street South would require modifications to the existing traffic signal. New pedestrian push buttons, pedestrian signal heads, and pavement markings would be required. This intersection has experienced several traffic accidents over the past several years. Introducing pedestrians and bicyclists would most certainly increase the accident rate at this location, creating the least safe of the three alternatives. For safety purposes, the at-grade crossing alternative has been eliminated from consideration.

Overhead Grade Separation

An overhead grade separation is the safest alternative; however, it is also the most costly. A prefabricated pedestrian truss bridge would cost approximately \$420,000 or more depending on the decking material selected. In addition to the cost of the initial structure, either an earthen berm or circular or switchback ramp structure would be required to get the trail to the proper elevation.



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Typical Section

The American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities recommends a minimum paved width of 10 feet for a two-way shared use path on a separate right-of-way. For the purpose of this study, a 12 foot paved width is recommended as shown in Figure 2. Other critical measurements include:

- A. Two feet of graded area should be maintained adjacent to both sides of the path.
- B. Three feet of clear distance should be maintained between the edge of the trail and trees, poles, walls, fences, guardrails, or other obstructions.
- C. Eight feet of vertical clearance to obstructions should be maintained; rising to 10 feet in tunnels and where maintenance and emergency vehicles must operate.

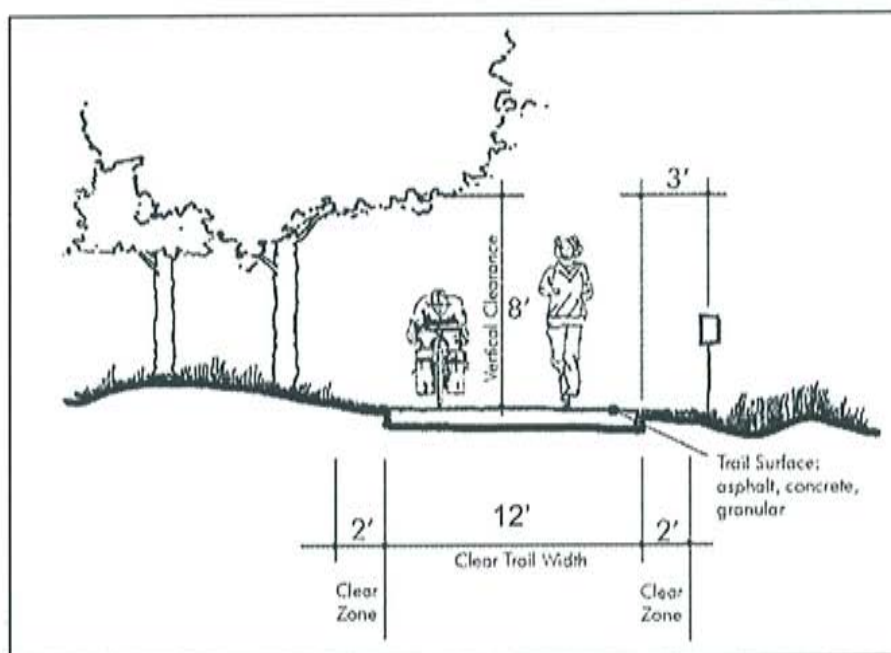


Figure 2 Typical Trail Section



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Permitting and Environmental Documentation

It will be necessary to obtain several permits before construction begins on the trail(s). If the construction bares the soil of an area greater than or equal to one (1) acre, including clearing, grading, or excavation, it will be necessary to obtain a National Pollutant Discharge Elimination System (NPDES) General Permit No. 2 from Iowa Department of Natural Resources (IDNR). The permit process involves preparation of a Notice of Intent (NOI) and preparation of a Storm Water Pollution Prevention Plan (SWPPP) that must be kept on site and available for agency inspection.

A Section 404 Permit will be required by the U.S. Army Corps of Engineers (USACE) if fill material will be deposited into "Waters of the United States". This permit issue will arise for areas where the proposed trail crosses a designated wetland. It will be necessary to perform a "Wetland Delineation" for the selected route(s). This delineation is a field effort that will identify the location and extent of any wetlands being crossed by a proposed trail. The delineation report will be submitted to the USACE along with the Section 404 permit application. The application will also be sent to IDNR for review by their floodplain, sovereign lands, and water quality staff. Sovereign lands and floodplain permits may be required. On projects requiring a Section 404 permit, IDNR will also have to issue a Section 401 Water Quality Permit. The USACE usually waits to issue the Section 404 permit until the Section 401 Certification has been issued by IDNR. This process will be simplified if the trail qualifies for a "Nationwide Permit". The Nationwide Permit process is a streamlined permitting process used for projects that have minimal environmental impacts. IDNR has "pre-approved" Water Quality Certification for projects that qualify for a Nationwide Permit. The USACE and IDNR will impose planning, design, and construction constraints on any trails crossing wetlands. It will be necessary to identify alternatives, avoid or minimize the area of impact, avoid alteration of the existing wetland hydrology, and return grades to pre-existing elevations.

If federal funds are used for this project, some type of "Environmental Documentation" will be required by the funding agency. If that agency determines that the likely environmental impacts warrant, they may require preparation of an Environmental Assessment. This document would not be extensive or complex but it will have to address the existing environment, all alternatives considered and anticipated impacts to all socio-economic and environmental resources. It is possible that the funding agency may determine that the project qualifies for a "Categorical Exclusion" if anticipated environmental impacts are considered to be minimal and/or minor. Environmental documentation for a Categorical Exclusion would be less extensive than required for an Environmental Assessment.

An "Application to Perform Work Within State Highway Right-of-Way" (Iowa DOT Form 810028) will be required for both the I-80 and US Hwy 65 crossings. In addition, preliminary discussions with the Iowa DOT Preliminary Bridge Design Section indicate that it appears feasible to use the existing RCB culvert at Mud Creek for the trail with the following stipulations:

- A. Hydraulic modeling of the existing condition and the proposed condition with the trail in place will be required.
- B. A comparison of the headwater in each case will be made to determine the impact of the trail.
- C. This culvert is in a Zone A flood hazard area so water surface elevations have not been established.
- D. Possible impacts on upstream properties and structures due to the presence of the trail must be determined.



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Funding Sources

There are several funding sources that may be applicable for the Mud Creek Multi-Use Trail. The following list shows examples of possible funding sources:

- A. State Funds:
 - 1. State Recreational Trails Program (SRT).
 - 2. Statewide Transportation Enhancement (STE).
 - 3. Resource Enhancement and Protection Program (REAP).
- B. Federal Funds:
 - 1. Federal Recreational Trails Program (FRT).
 - 2. Federal Transportation Enhancements Program.
 - 3. Federal Surface Transportation Program (STP).

Cost Estimate

The cost estimates were developed separately for each segment and are considered conceptual costs for the purpose of this study. These costs have been developed using current year dollars and do not include right-of-way acquisition costs. The majority of the unit prices shown were taken from the Iowa DOT, Office of Contracts, Summary of Awarded Contract Prices, November 2009 through October 2010. Refer to Appendix C for detailed breakouts of each segment's Conceptual Cost Estimate.

Table 1 Opinion of Probable Project Costs ⁽¹⁾

Route Alternative	Conceptual Cost (2010 Dollars)
Segment 1	\$ 255,000.00
Segment 2	\$ 643,000.00
Segment 3	\$ 638,000.00
Segment 4	\$ 1,242,000.00
Existing RCB Culvert	\$ 194,000.00
Total Probable Cost	\$ 2,972,000.00
Neighborhood Connection	Conceptual Cost (2010 Dollars)
Meadow Brook North	\$ 386,000.00
Total Probable Cost	\$ 386,000.00
US Hwy 65 Crossing Alternatives	Conceptual Cost (2010 Dollars)
Existing RCB Culvert	\$ 194,000.00
At-Grade Crossing	\$ 50,000.00
Overhead Grade Separation	\$ 1,454,000.00

⁽¹⁾ Probable costs include construction, contingency, engineering, and administration costs.

Source: Stanley Consultants, Inc.



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Summary

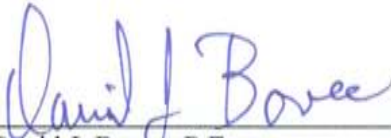
A single route has been identified for the Multi-Use Trail along the WRA's Mud Creek Interceptor alignment from the City of Altoona to the City of Bondurant's sewage treatment lagoons. The majority of the alignment will follow easements established for the WRA's Mud Creek Interceptor; however, separate trail easements will be required where the trail alignment deviates from the sewer alignment. The preferred alternative for crossing US Hwy 65 is utilizing the existing triple 12'x12' RCB south of the Grant Street South intersection due to cost and safety concerns with the other alternatives.

We appreciate the opportunity to provide the above information for your review and consideration. We welcome the opportunity to review these materials with you at your convenience.

Sincerely,

Stanley Consultants, Inc.

Prepared by


David J. Bovee, P.E.
Transportation Engineer


Approved by


Edwin R. Slattery, P.E.
Principal Environmental Engineer

cc: Project File (22914.01)

DJB:djb:2291401

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

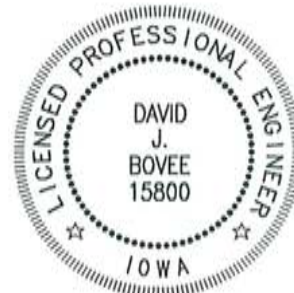

January 14, 2011

Printed or typed name David J. Bovee, P.E.

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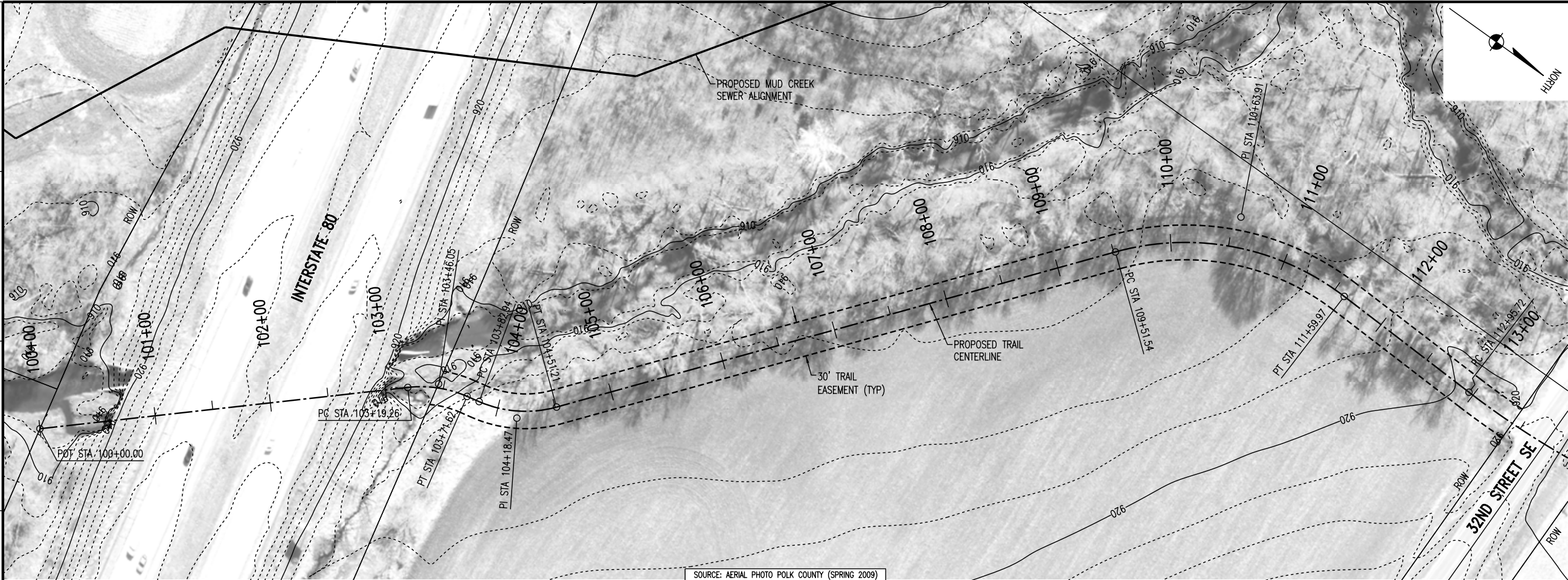
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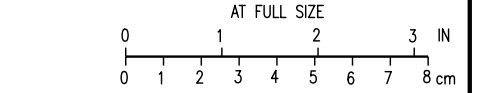
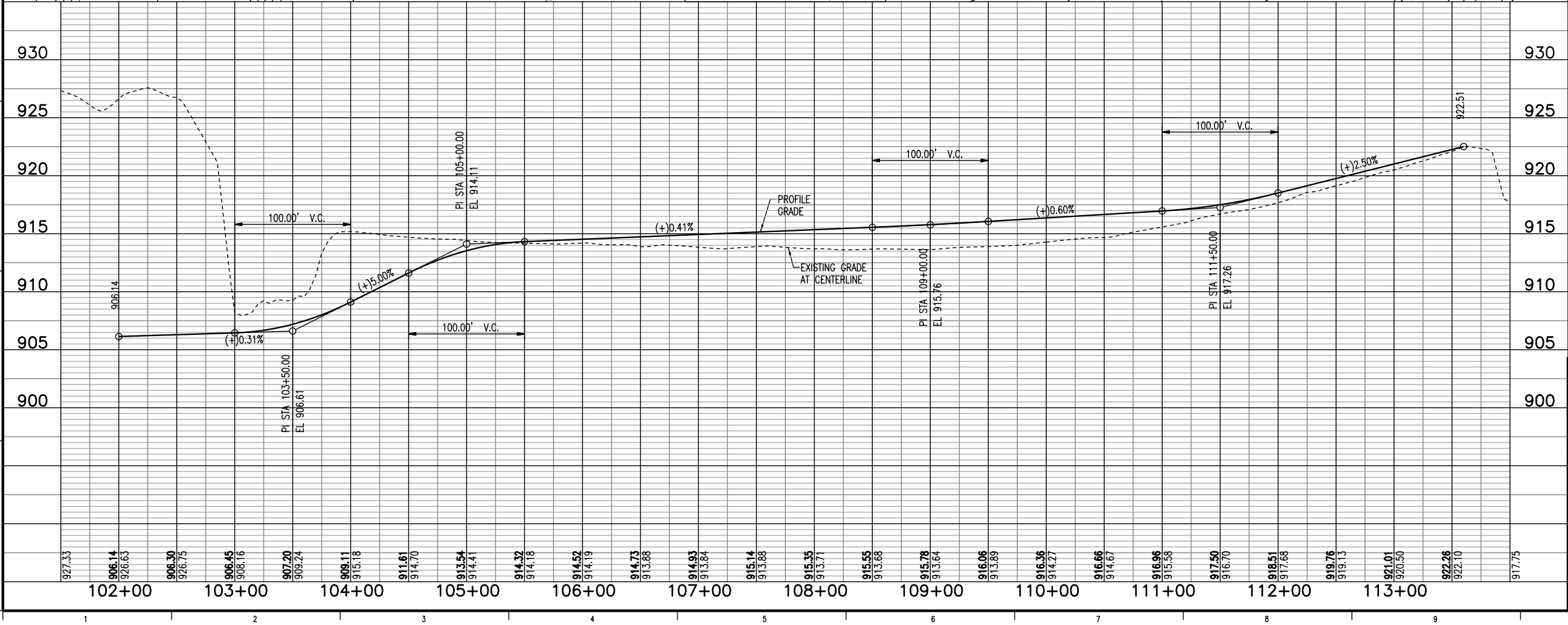


Appendix A

Trail Plan and Profile Drawings



- NOTES:**
1. CONTOURS AND EXISTING PROFILE ELEVATIONS WERE GENERATED USING LIDAR DATA FROM THE IOWA DEPARTMENT OF NATURAL RESOURCES (IDNR).
 2. PROPOSED MUD CREEK SEWER ALIGNMENT PROVIDED BY VEENSTRA & KIMM, INC.



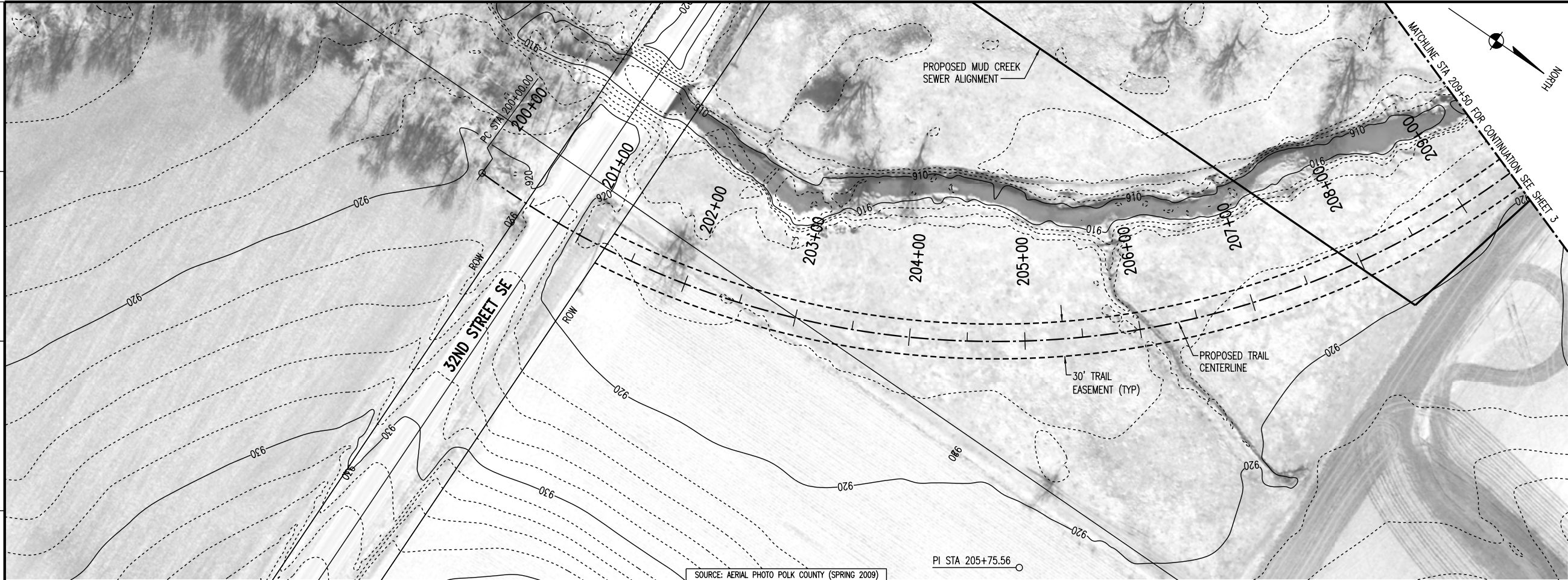
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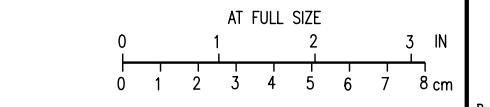
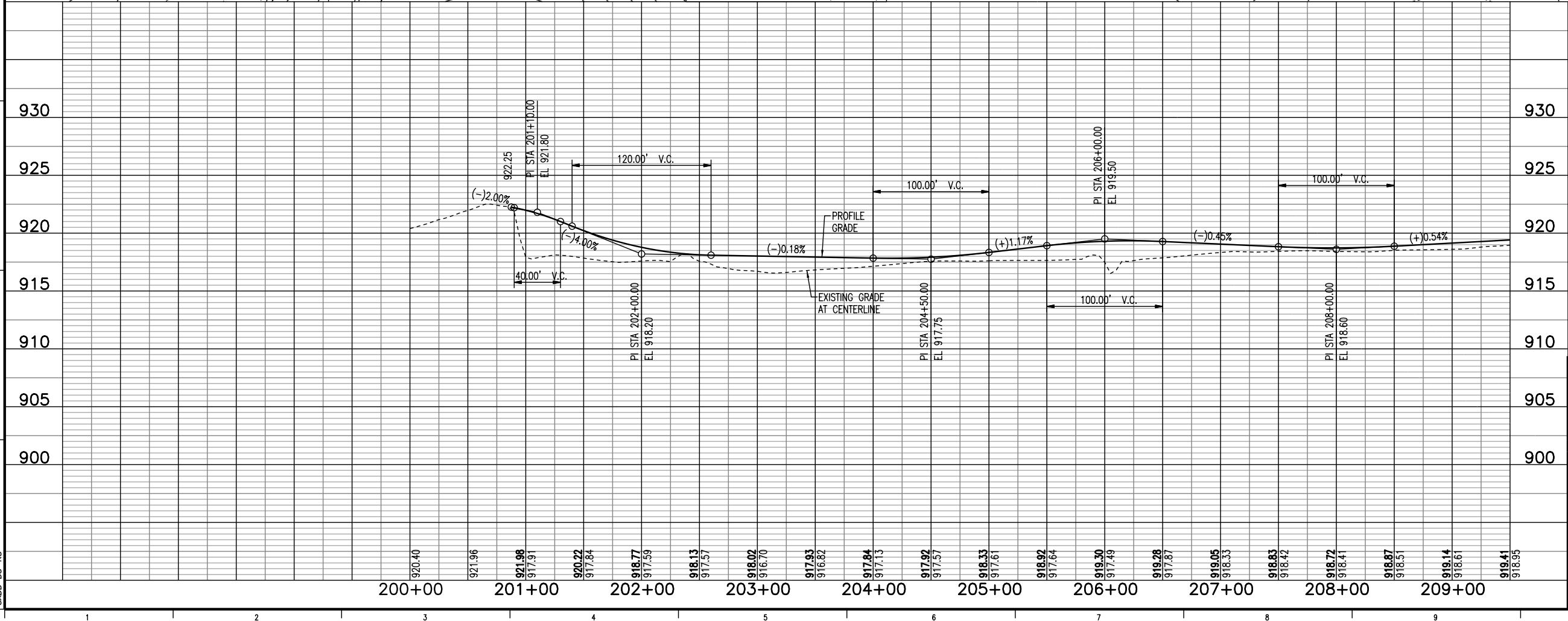
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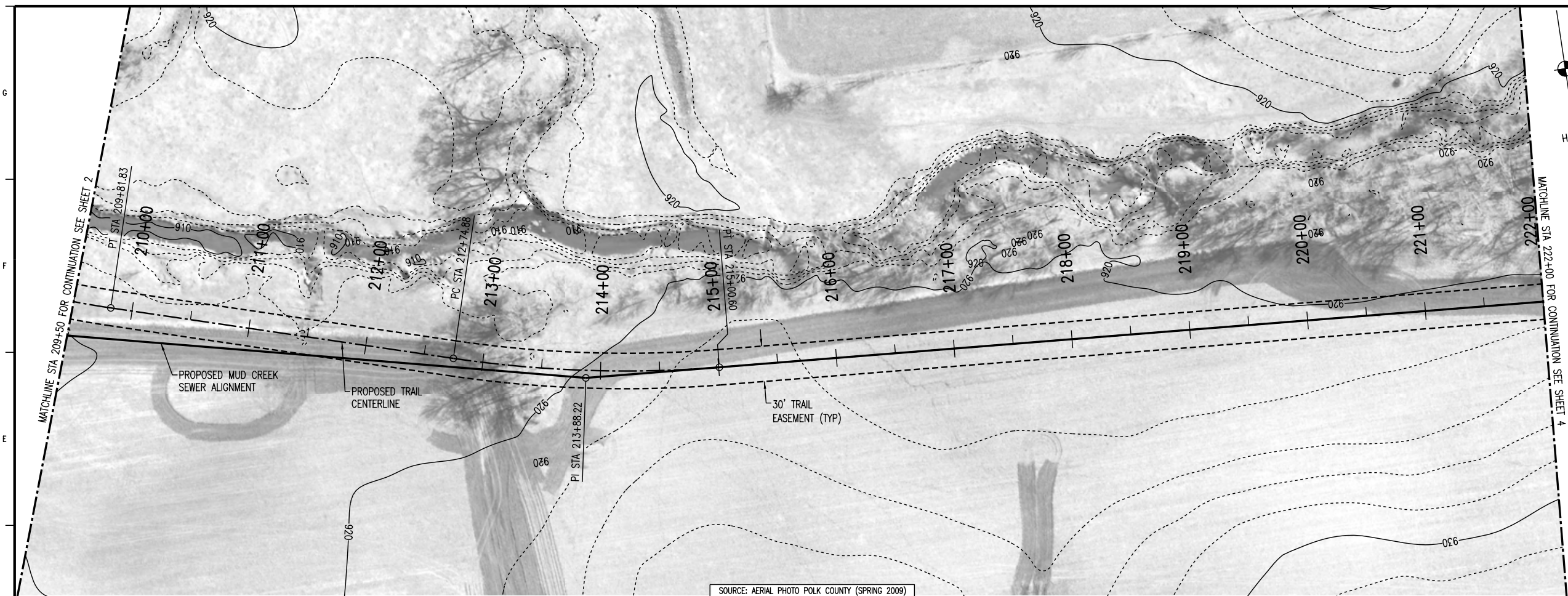
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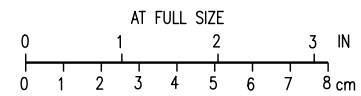
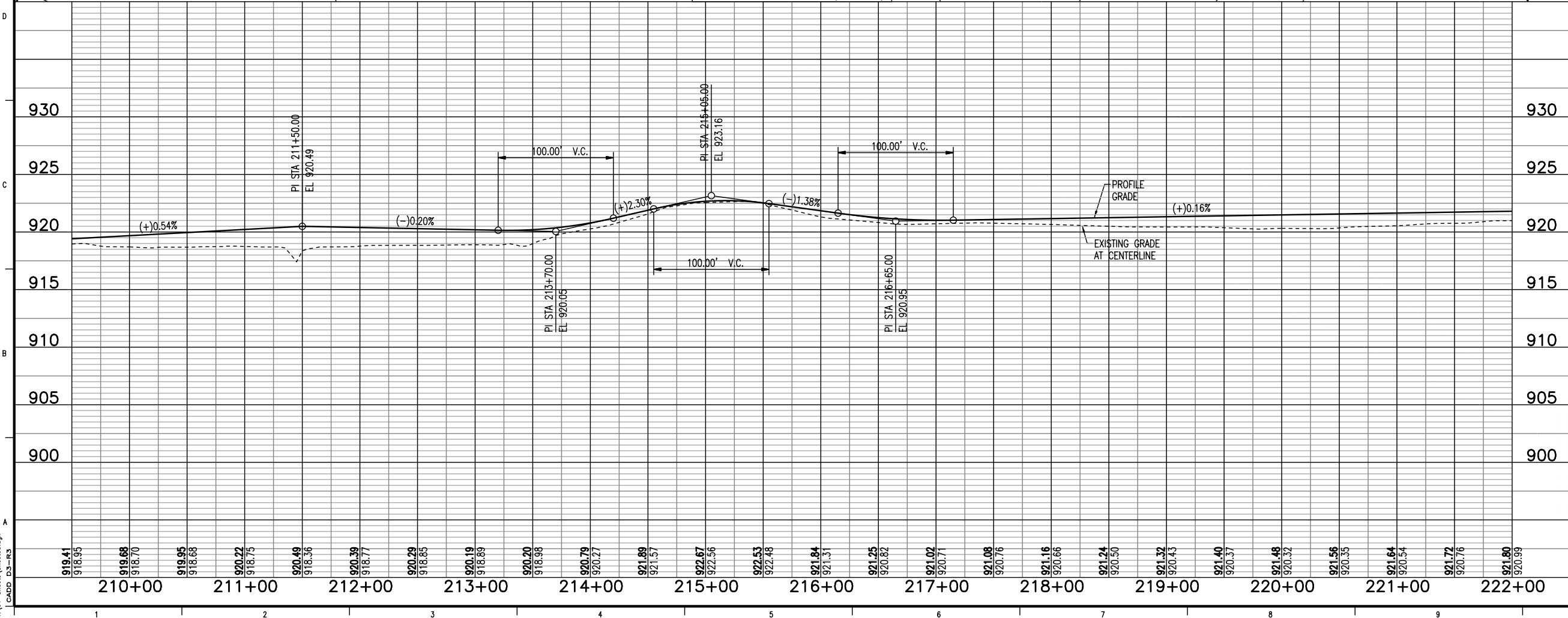
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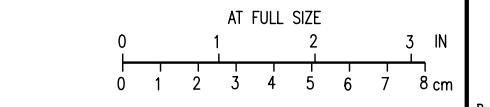
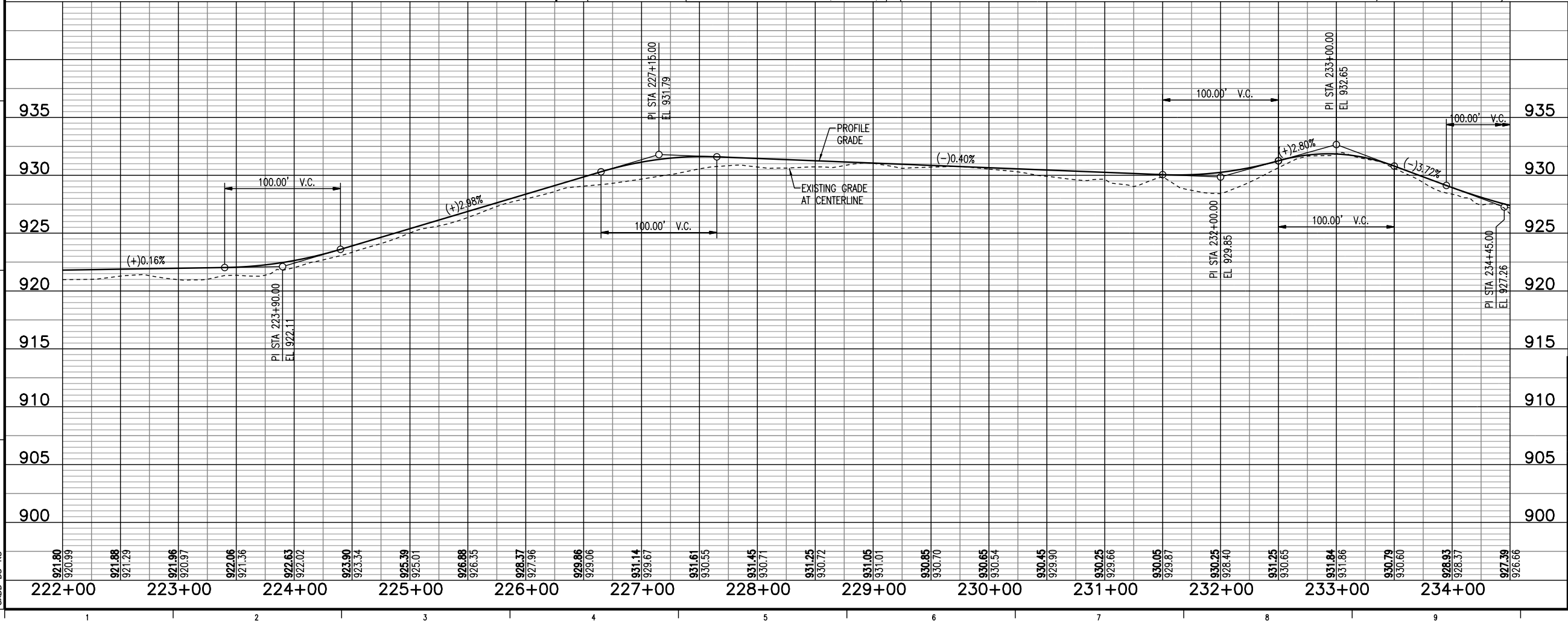
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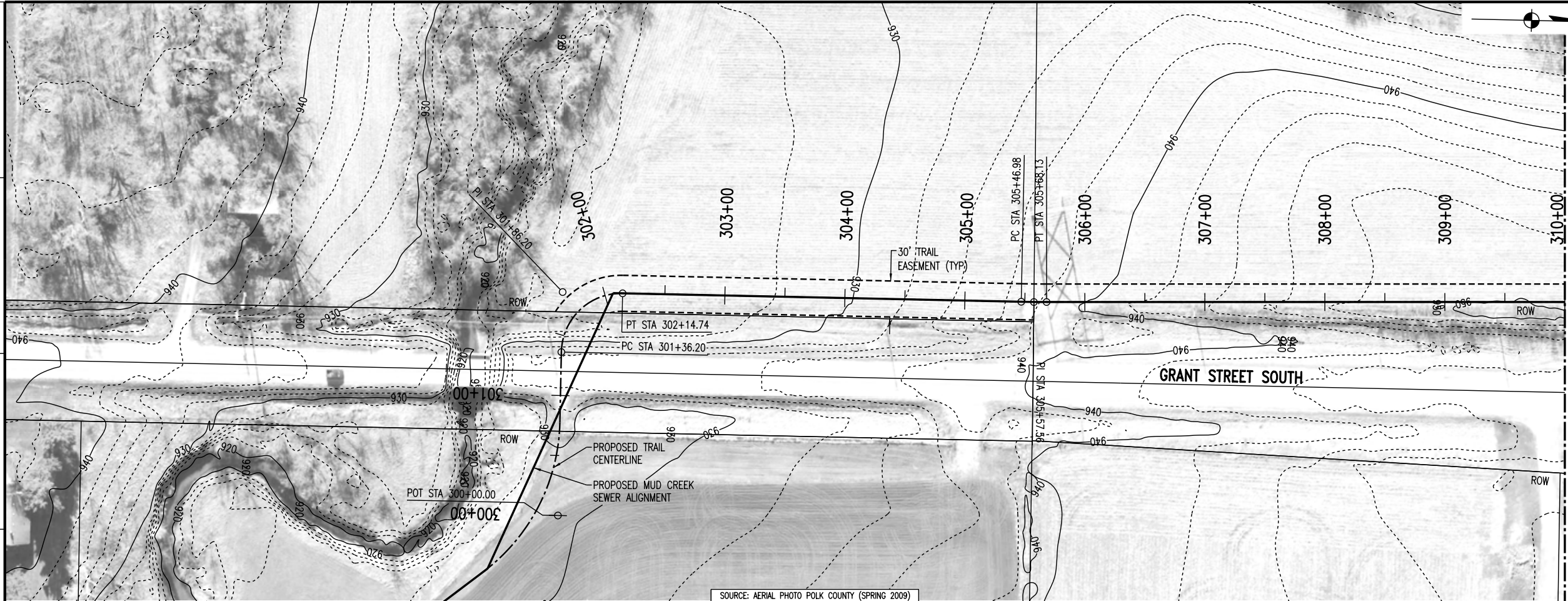
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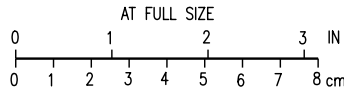
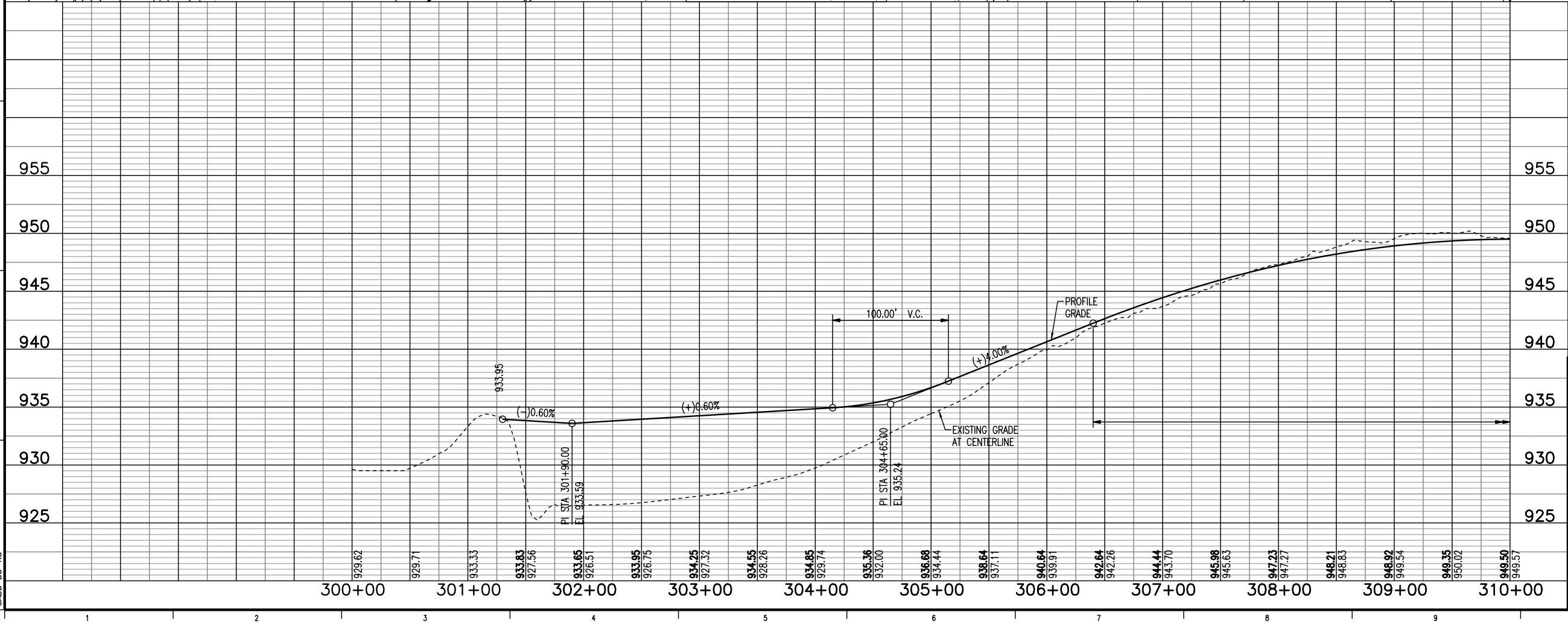
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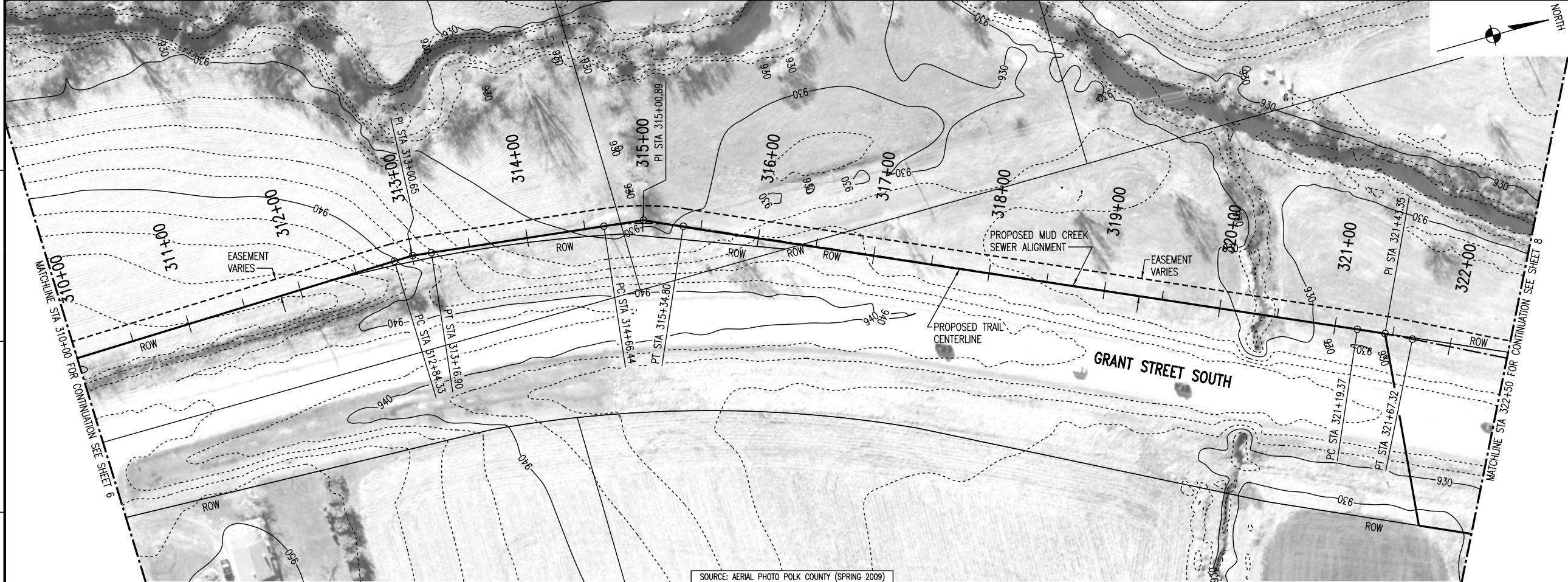
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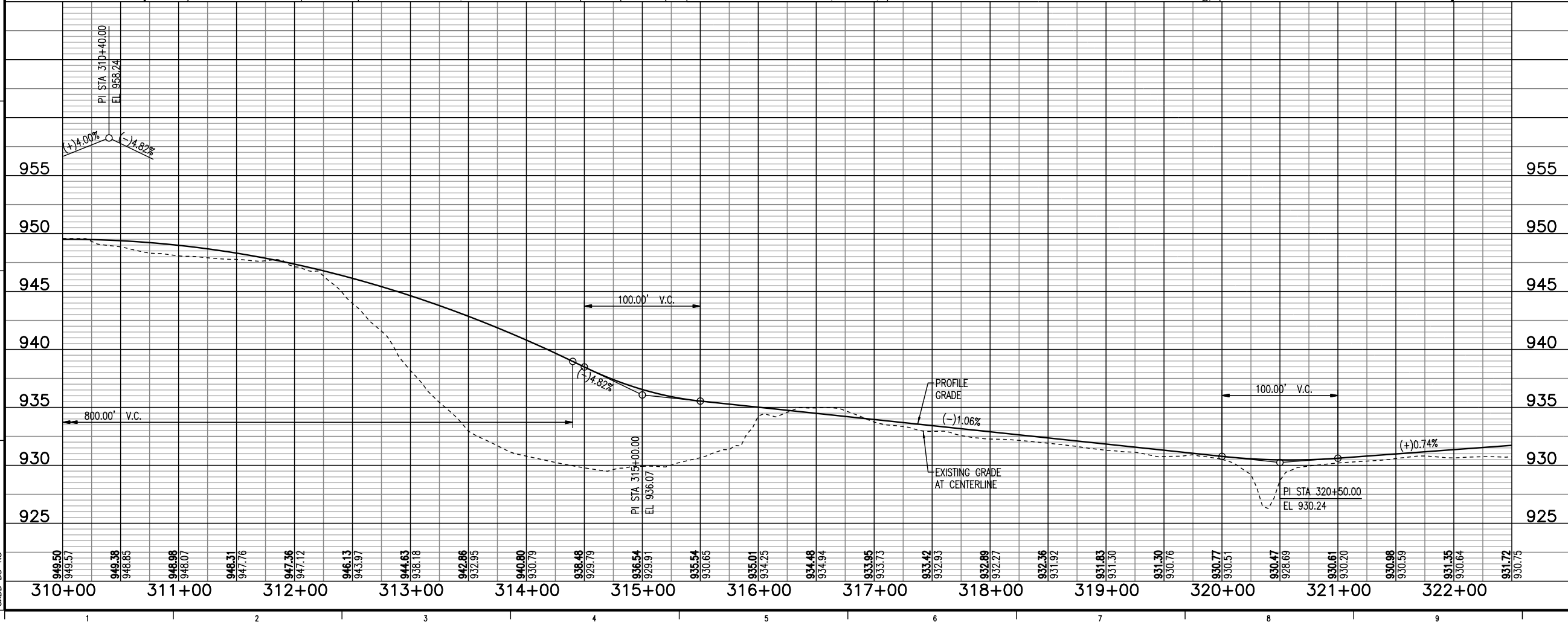
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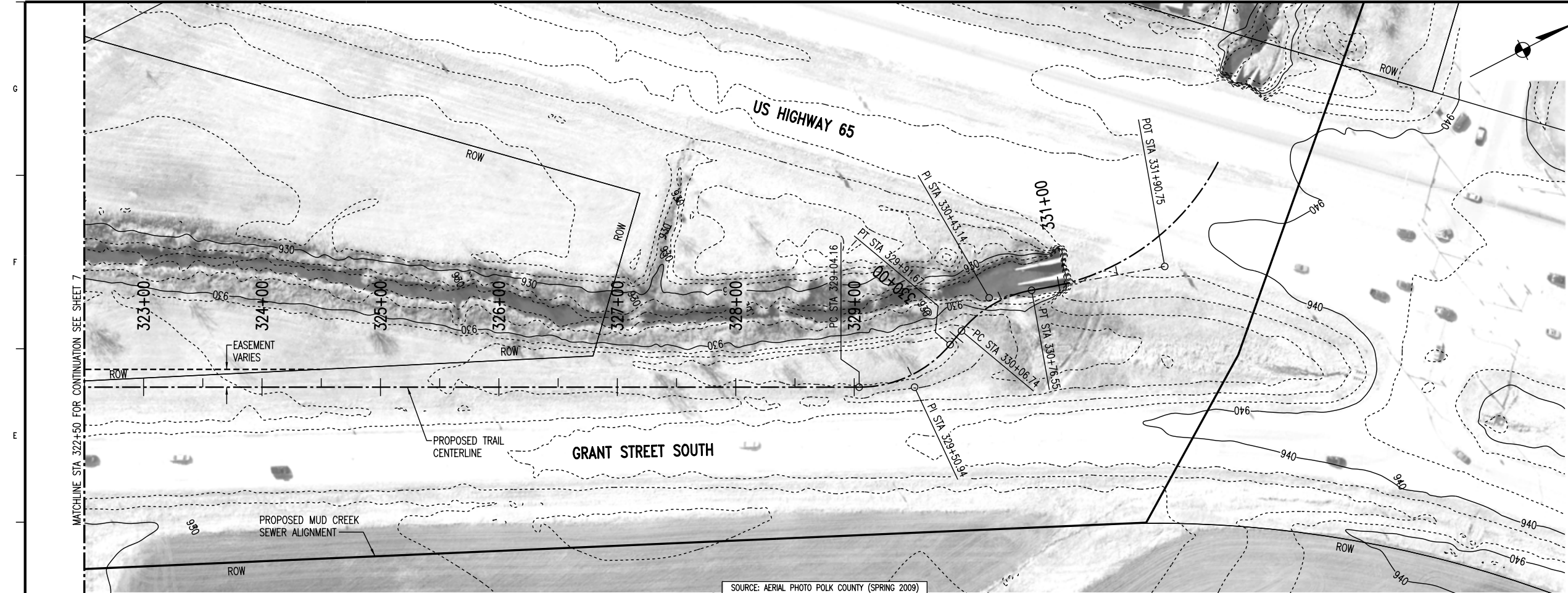
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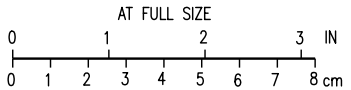
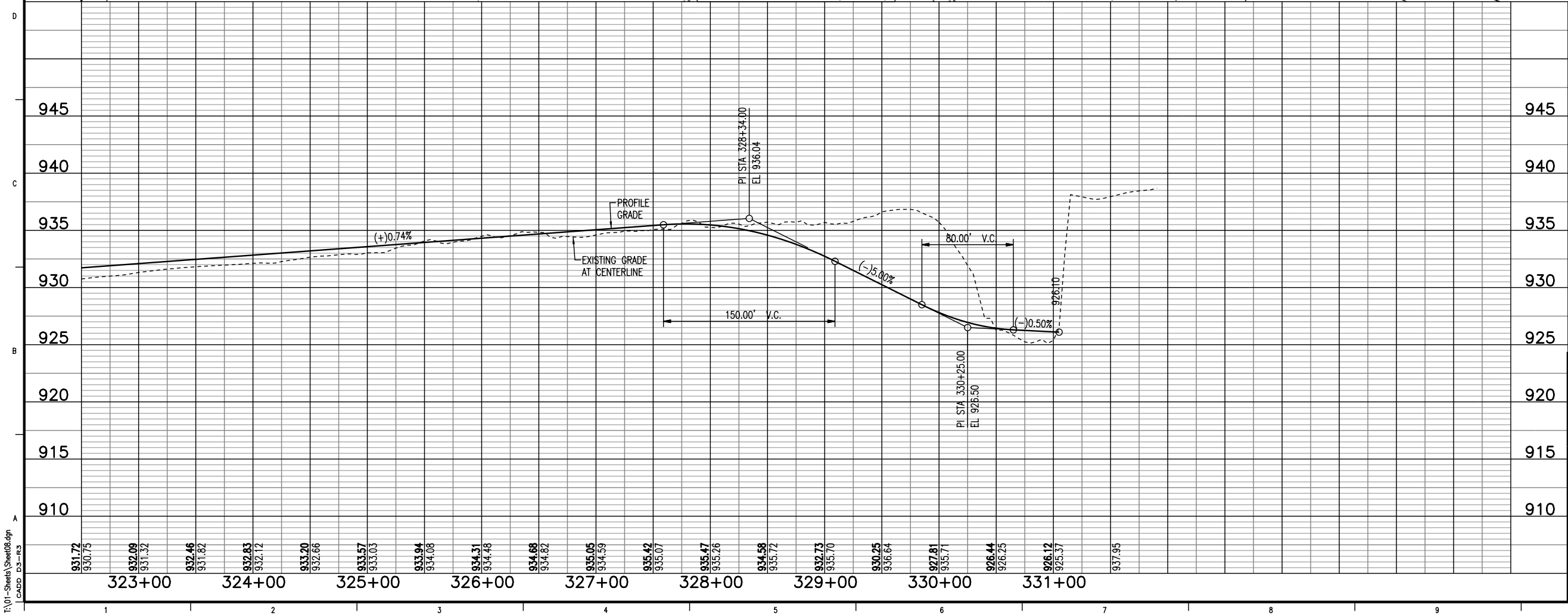
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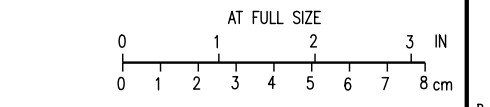
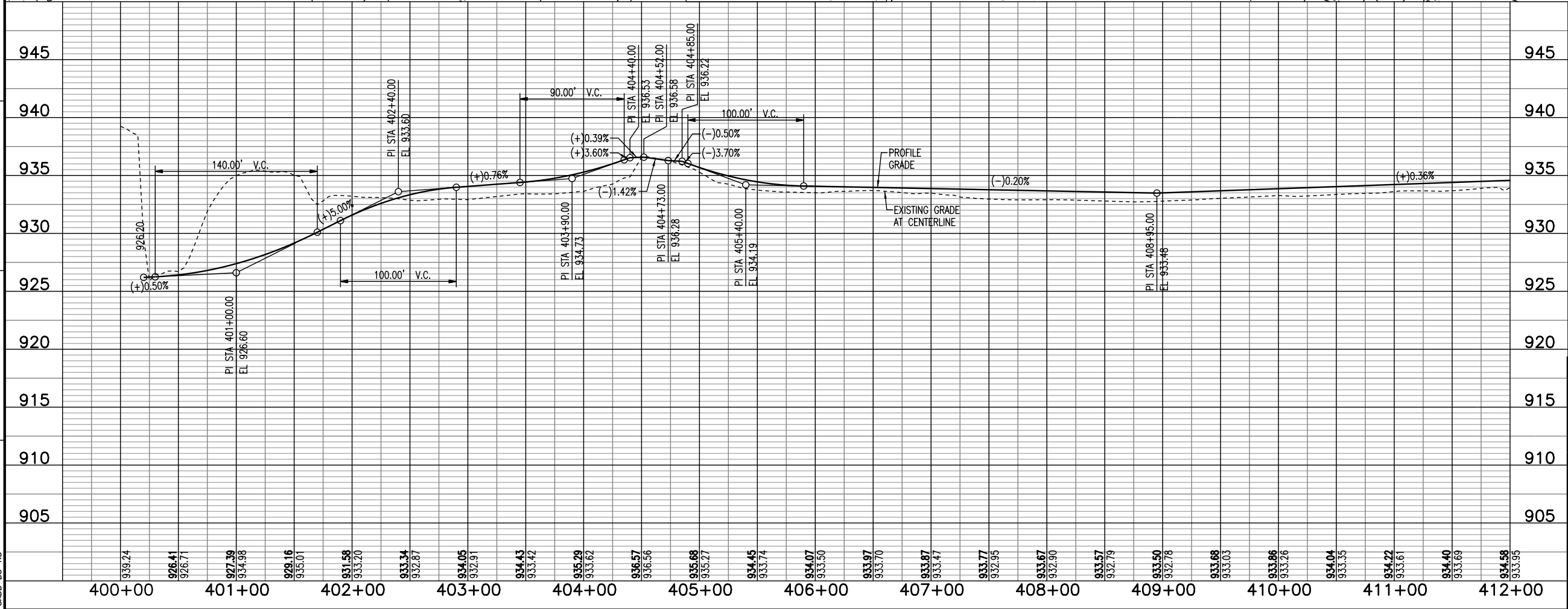
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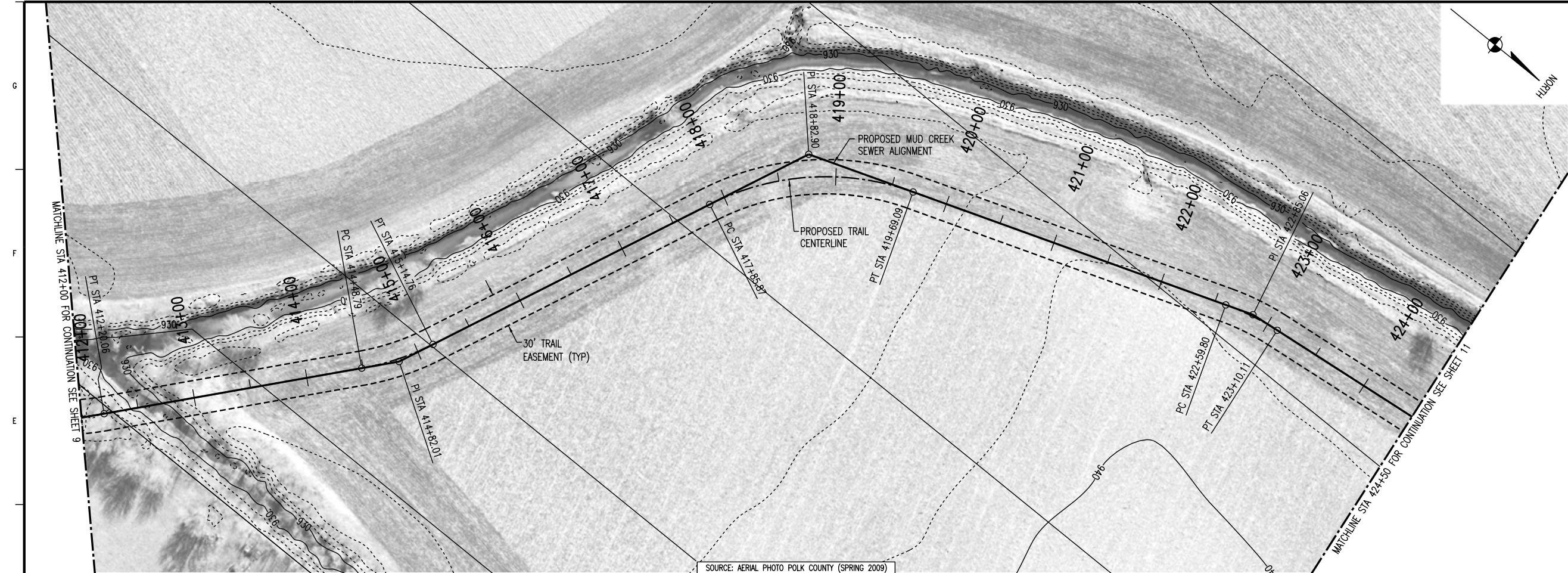
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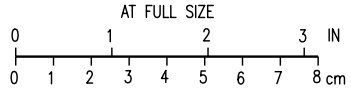
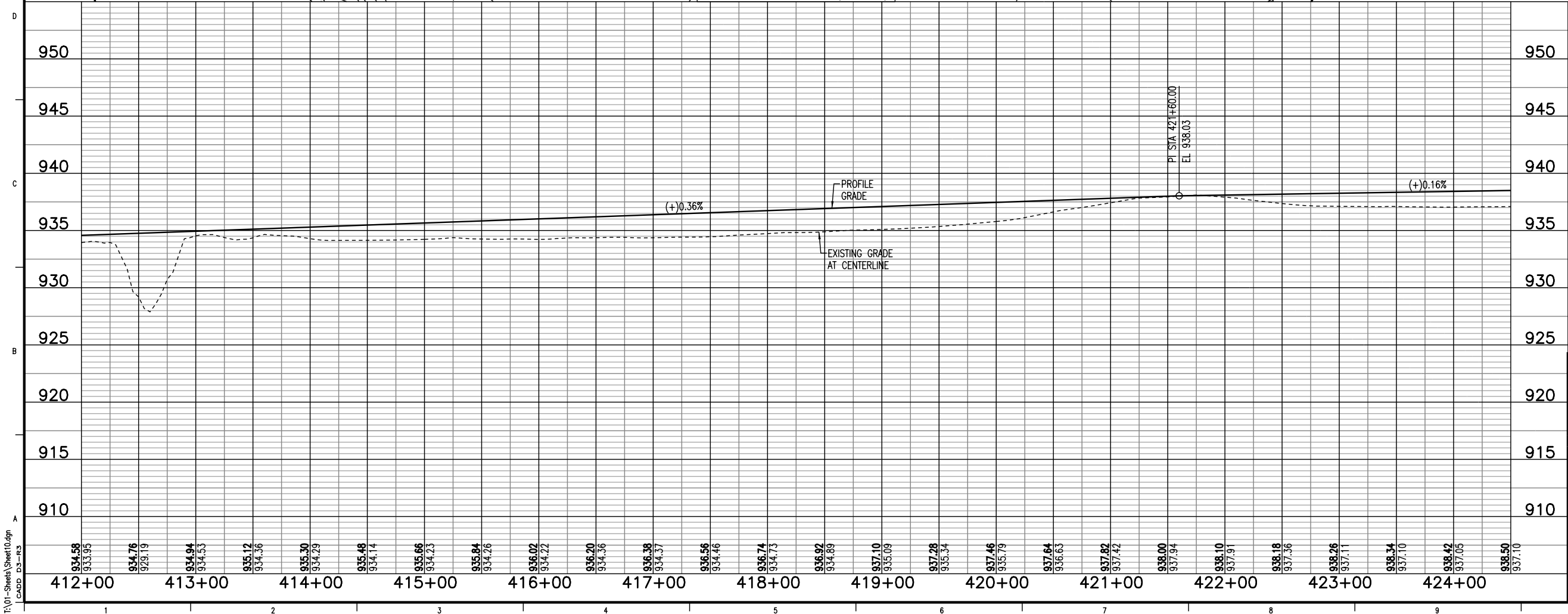
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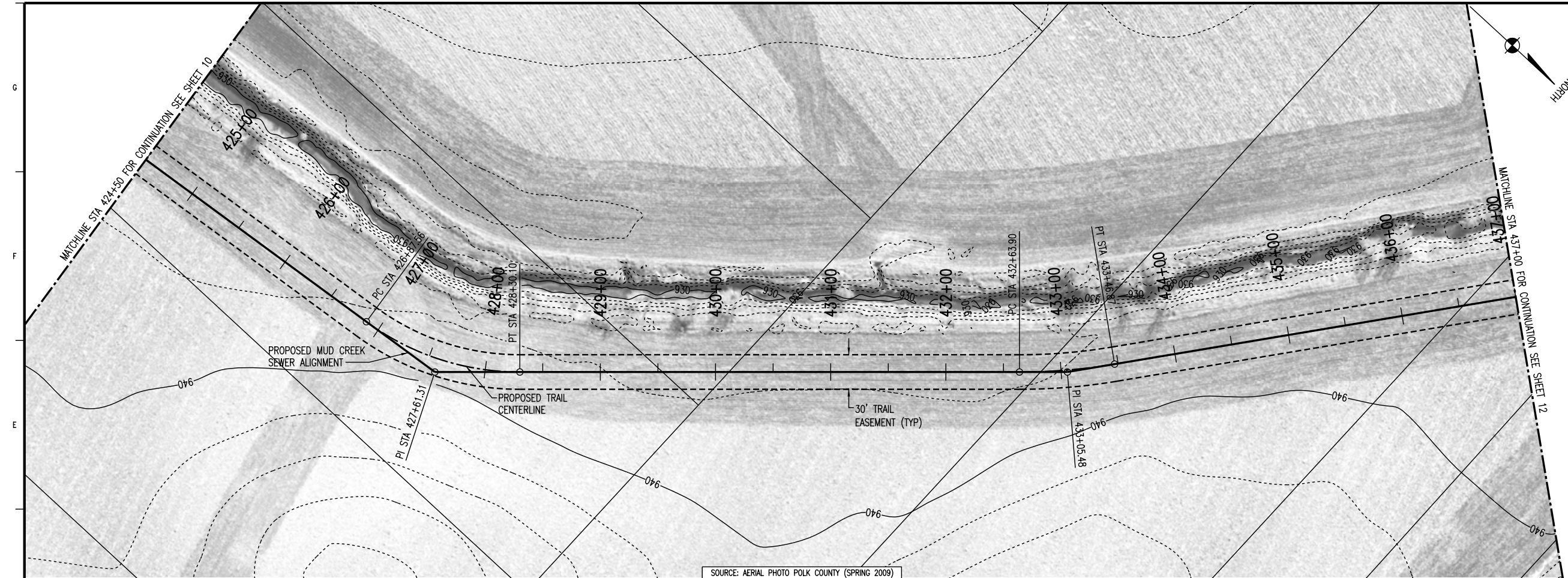



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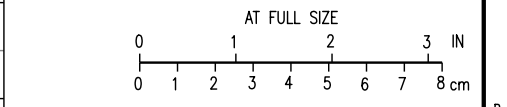
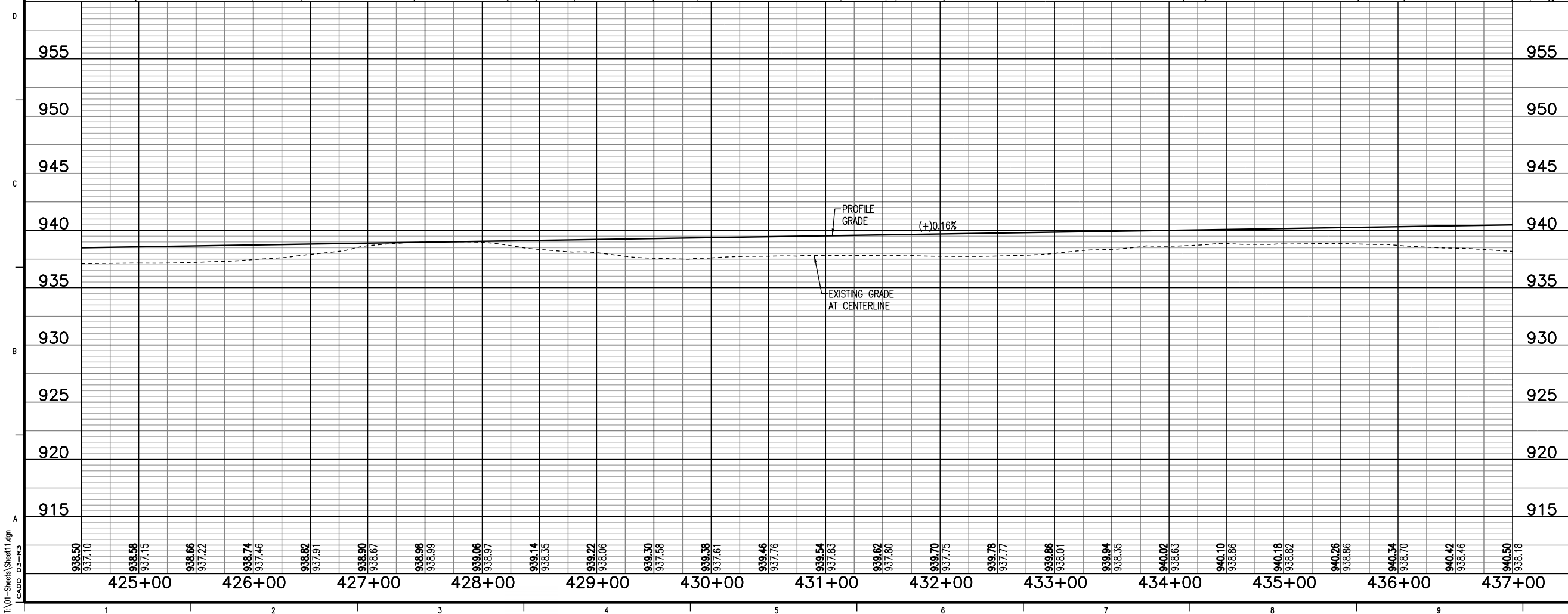
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**MUD CREEK TRAIL
PLAN AND PROFILE
SEGMENT 4**

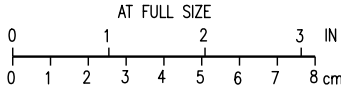
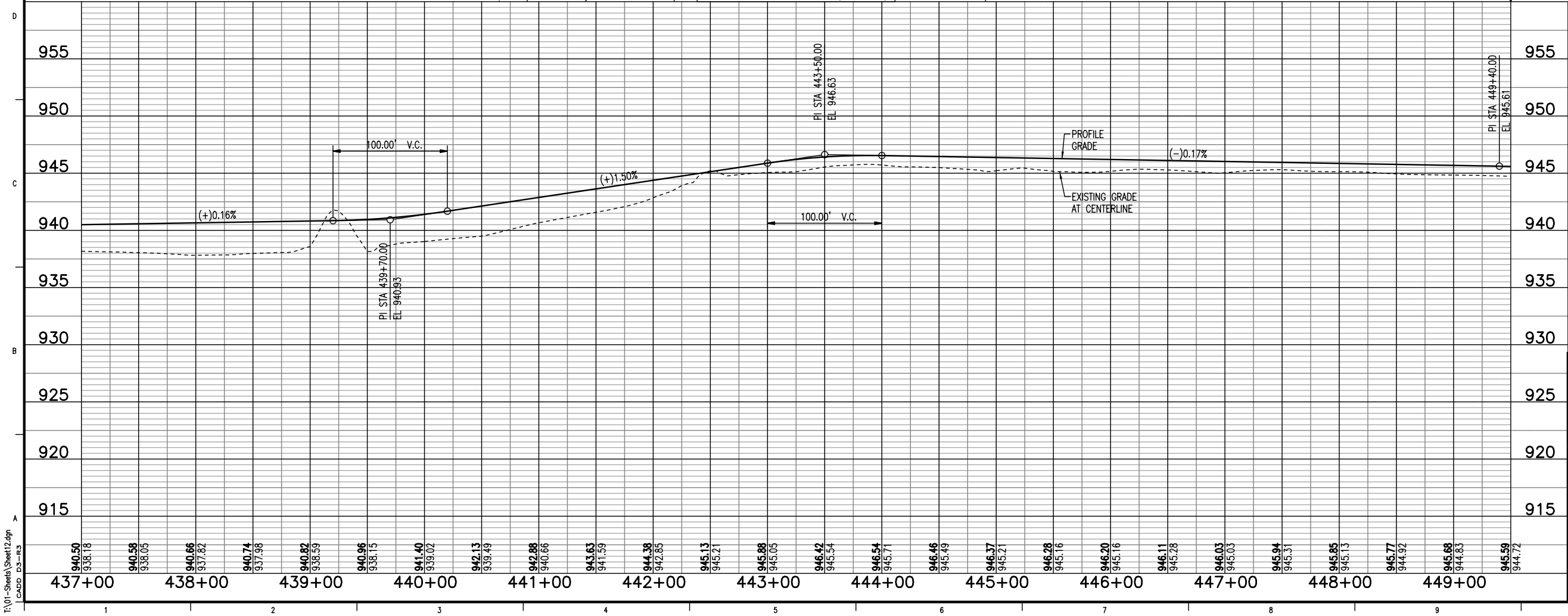
SCALE: HORIZ: 1"=50'
VERT: 1"=5'

SHEET 11

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LOAD D3-R3



- NOTES:**
1. CONTOURS AND EXISTING PROFILE ELEVATIONS WERE GENERATED USING LIDAR DATA FROM THE IOWA DEPARTMENT OF NATURAL RESOURCES (IDNR).
 2. PROPOSED MUD CREEK SEWER ALIGNMENT PROVIDED BY VEENSTRA & KIMM, INC.

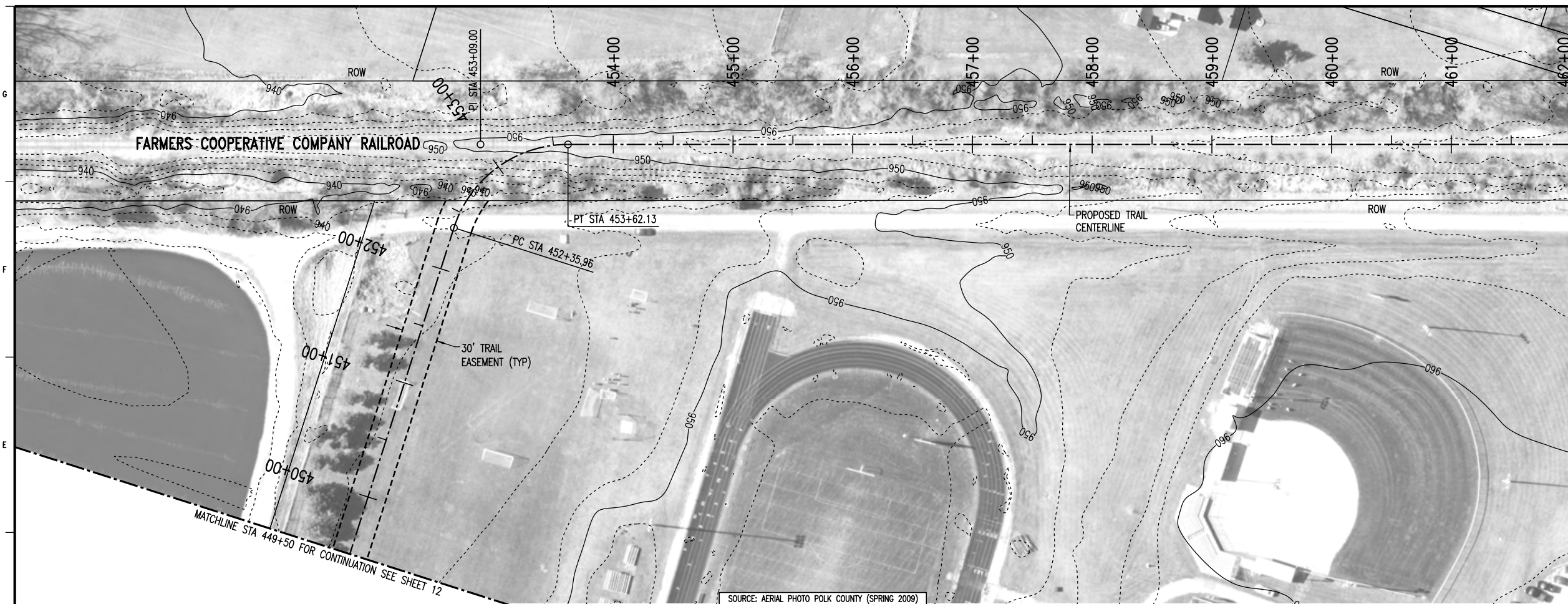



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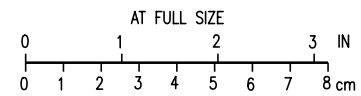
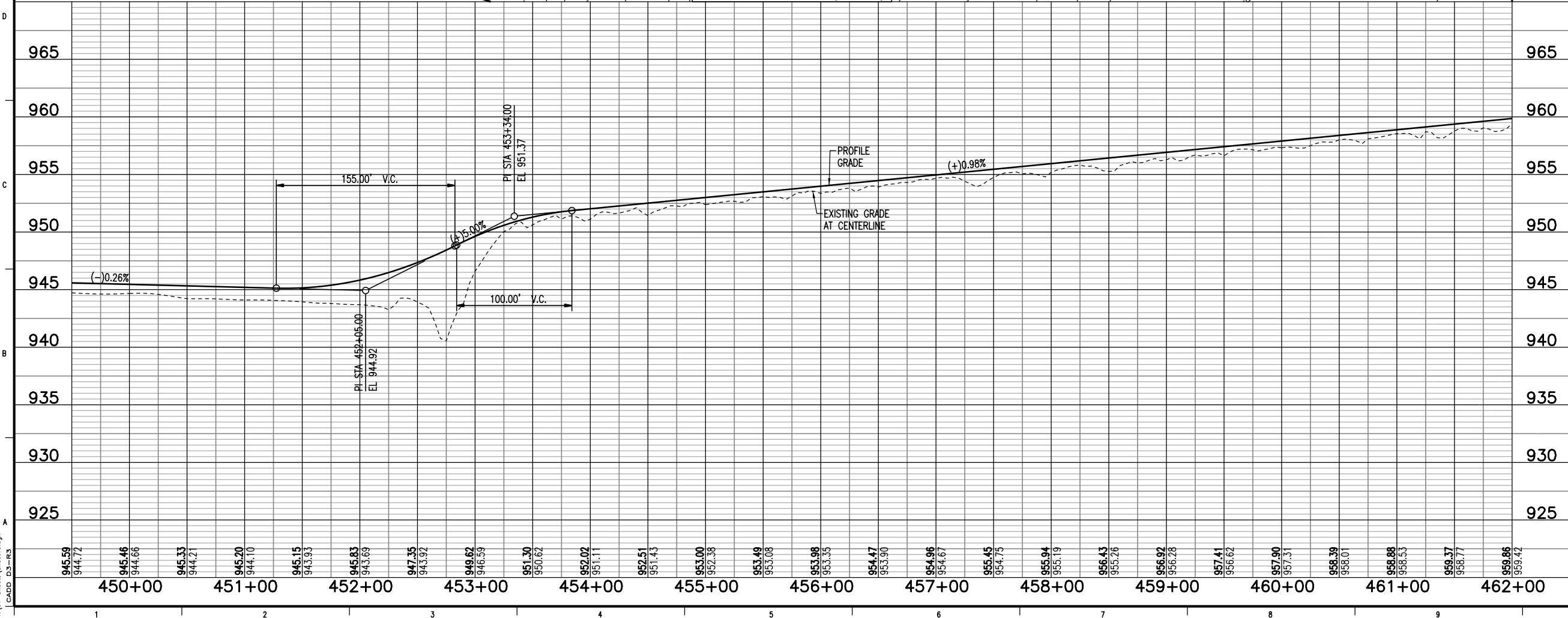
CITY OF BONDURANT
BONDURANT MULTI USE TRAIL ROUTING STUDY WRA SEWER ALIGNMENT
BONDURANT, IOWA

**MUD CREEK TRAIL
PLAN AND PROFILE
SEGMENT 4**

SCALE: HORIZ: 1"=50'
VERT: 1"=5'



NOTES:
1. CONTOURS AND EXISTING PROFILE ELEVATIONS WERE GENERATED USING LIDAR DATA FROM THE IOWA DEPARTMENT OF NATURAL RESOURCES (IDNR).



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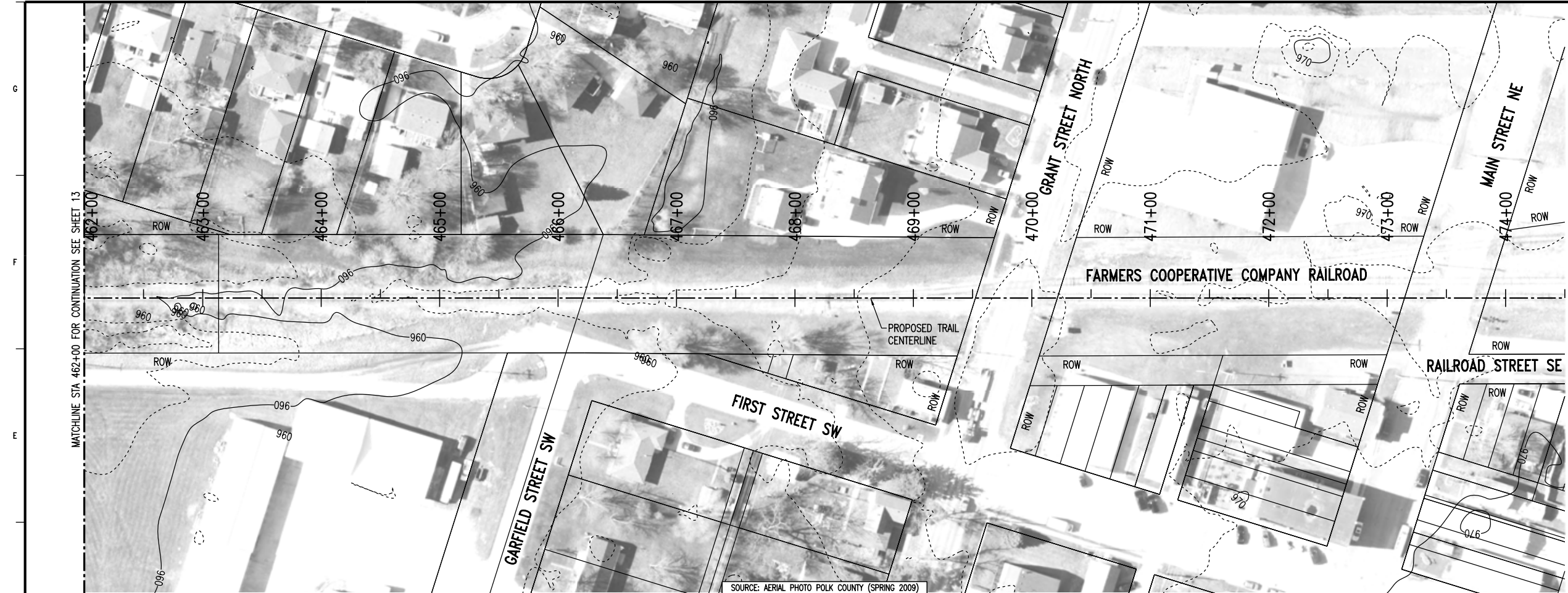
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BONDURANT MULTI USE TRAIL ROUTING STUDY WRA SEWER ALIGNMENT
BONDURANT, IOWA

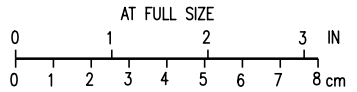
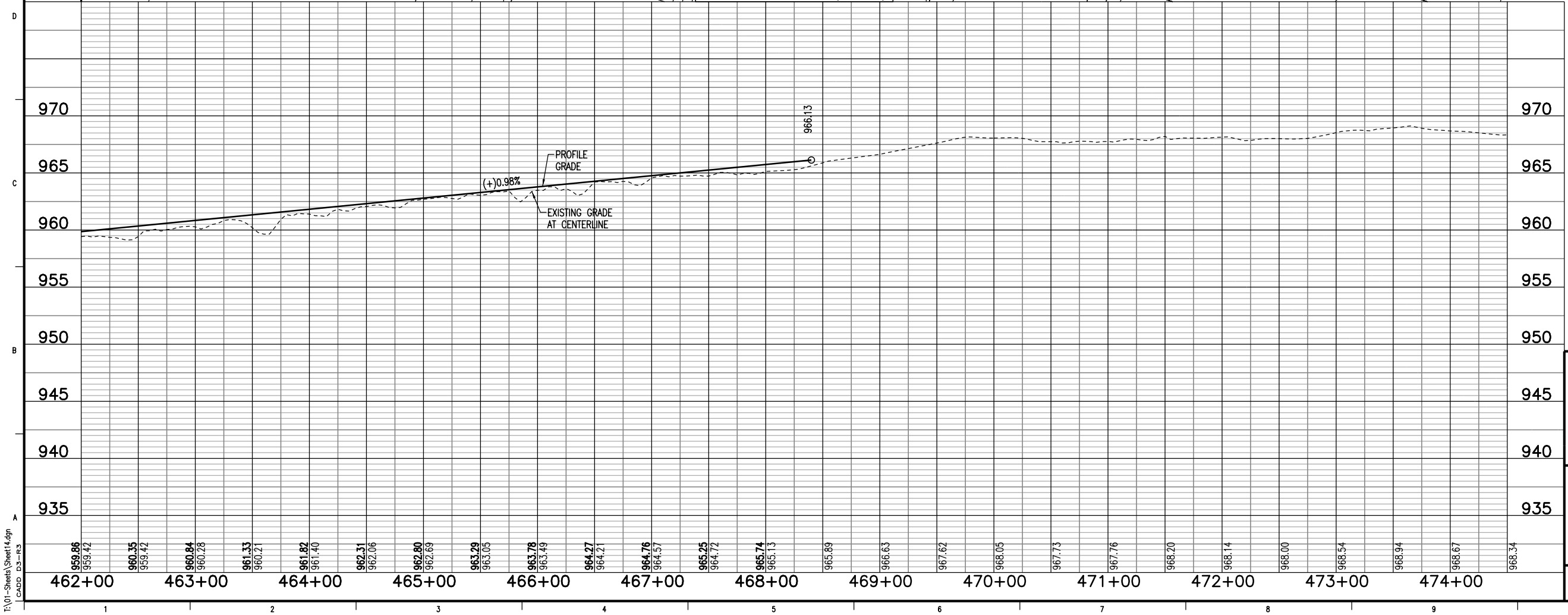
**MUD CREEK TRAIL
PLAN AND PROFILE
SEGMENT 4**

SCALE: HORIZ: 1"=50'
VERT: 1"=5'

SHEET 13



NOTES:
1. CONTOURS AND EXISTING PROFILE ELEVATIONS WERE GENERATED USING LIDAR DATA FROM THE IOWA DEPARTMENT OF NATURAL RESOURCES (IDNR).



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CITY OF BONDURANT
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BONDURANT, IOWA

**MUD CREEK TRAIL
PLAN AND PROFILE
SEGMENT 4**

SCALE: HORIZ: 1"=50'
VERT: 1"=5'

SHEET 14

Appendix B

Existing Site Photos



Segment 1 - Existing RCB under I-80, Looking South



Segment 1&2 – 32nd Street SE Crossing, Looking West



Segment 1 - East of Mud Creek, Looking North



Segment 2 – East of Mud Creek, Looking North



Segment 1 – East of Mud Creek, Looking South



Segment 2 – Mud Creek at Grant Street South,
Looking East



Segment 2&3 – Grant Street South Crossing,
Looking South



Segment 3&4 – Existing RCB under US 65,
Looking Northwest



Segment 3 – West Side of Grant Street South,
Looking North



Segment 3&4 – Existing RCB under US 65,
Looking Southeast



Segment 3 – West Side of Grant Street South,
Looking South



Segment 3&4 – Existing Signals at US 65 Crossing,
Looking Northwest



Segment 3&4 – Existing Signals at US 65 Crossing,
Looking Southeast



Segment 4 – Bondurant-Farrar Community School
District Property, Looking South



Segment 4 – 15th Street SW Crossing, Looking West



Segment 4 – Farmers Cooperative Co. Railroad Bed,
Looking East



Segment 4 – East of Mud Creek at 15th Street SW,
Looking North



Segment 4 – Farmers Cooperative Co. Railroad Bed
At Grant Street South, Looking East



Segment 4 – Grant Street South Crossing,
Looking North



Segment 4 – Main Street South Crossing,
Looking North



Segment 4 – Farmers Cooperative Co. Railroad Bed
At Main Street South, Looking West



Meadow Brook North Drainage Ditch – 2nd Street SE,
Looking South



Meadow Brook North Drainage Ditch –
Lincoln Street SE, Looking Southwest



Meadow Brook North Drainage Ditch – 3rd Street SE,
Looking South



Meadow Brook North Drainage Ditch –
Grant Street South, Looking Northeast



Meadow Brook North Drainage Ditch –
Lincoln Street SE, Looking Northeast



Meadow Brook North Drainage Ditch –
Grant Street South, Looking Southwest



Example Multi-Use Trail Roadway Crossing



Example Multi-Use Trail Roadway Crossing



Example Multi-Use Trail Roadway Crossing



Example Multi-Use Trail Roadway Crossing

Appendix C

Conceptual Cost Estimates



Stanley Consultants INC.

Computed by D. Bovee Date 1-Nov-10
 Checked by J. Hillegonds Date 3-Nov-10
 Approved by _____ Date _____

Job No. 22914.01 Page No. _____

Subject Multi-Use Trail Routing Study Along WRA Sewer

Alignment - Mud Creek Trail

Estimated Quantities

Sheet No. 1 of 1

Description: Quantities estimates for constructing bicycle paths

Segment 1 - Interstate 80 to 32nd Street SE

	Description	Takeoff Quantity	Takeoff Units	Quantity Subtotal	Quantity Total	Units	Cost per Unit	Subtotal Cost
1	Clearing and Grubbing	1400	LF	0.8	0.8	Acres	\$5,500.00	\$4,400
2	Earthwork	1400	LF		840	CY	\$15.00	\$12,600
3	Topsoil, Strip, Salvage, and Spread Pipe Culverts	1400	LF	778	780	CY	\$4.50	\$3,510
4	24" CMP	140	LF	140	140	LF	\$36.00	\$5,040
5	Aprons, 24" Metal	6	Each	6	6	Each	\$350.00	\$2,100
6	Recreational Trail, HMA, 6" Depth	1400	LF	1867	1900	SY	\$35.00	\$66,500
7	Detectable Warnings	1	EA	24	24	SF	\$36.00	\$864
8	Special Compaction of Subgrade for Recreational Trail	1400	LF	14.0	14.0	STA	\$150.00	\$2,100
9	Granular Subbase, 6" Depth	1400	LF	2178	2180	SY	\$8.00	\$17,440
10	Seeding and Fertilizing, Rural	1400	LF	1.3	1.3	Acres	\$2,500.00	\$3,250
11	Silt Fence	1400	LF	2800	2800	LF	\$2.50	\$7,000
12	Removal of Silt Fence	1400	LF	2800	2800	LF	\$0.50	\$1,400
13	Signing	1	LS	1	1	LS	\$3,500.00	\$3,500
14	Roadway Crossing Warning Signal	1	LS	1	1	LS	\$30,500.00	\$30,500
15	Pavement Marking	1	Each	48	48	LF	\$10.00	\$480
16	Mobilization	1	LS	1	1	LS	\$16,068.40	\$16,068

Subtotal \$176,752
 Undeveloped Design Details (20%) \$35,350
 Engineering, Admin, Contingency(20%) \$42,421
 Total Cost \$254,523

Probable Cost Use \$255,000

Not included:

Interstate-80 Crossing
 ROW Acquisition
 New or Relocated Utilities
 Traffic Control

Assumptions:

- (1) Unit prices based on Iowa DOT Awarded Contract Prices, November 2009 thru October 2010
- (2) Trail to follow WRA Sewer Easements
- (3) Bike path pavement thickness: 6" asphalt (due to the possibility that roadway maintenance vehicles may be traveling on the bicycle path)
- (4) City of Altoona to design/construct I-80 crossing
- (5) Drainage structures are approximate. A detailed Drainage Study is needed for actual pipe sizes and lengths.



Stanley Consultants Inc.

Computed by D. Bovee Date 1-Nov-10
 Checked by J. Hillegonds Date 3-Nov-10
 Approved by _____ Date _____

Job No. 22914.01 Page No. _____

Subject Multi-Use Trail Routing Study Along WRA Sewer

Alignment - Mud Creek Trail

Estimated Quantities

Sheet No. 1 of 1

Description: Quantities estimates for constructing bicycle paths

Segment 2 - 32nd Street SE to Grant Street South

	Description	Takeoff Quantity	Takeoff Units	Quantity Subtotal	Quantity Total	Units	Cost per Unit	Subtotal Cost
1	Clearing and Grubbing	4300	LF	2.5	2.5	Acres	\$5,500.00	\$13,750
2	Earthwork	4300	LF		2300	CY	\$15.00	\$34,500
3	Topsoil, Strip, Salvage, and Spread Pipe Culverts	4300	LF	2389	2390	CY	\$4.50	\$10,755
4	24" CMP	120	LF	120	120	LF	\$36.00	\$4,320
5	36" CMP	50	LF	50	50	LF	\$50.00	\$2,500
6	48" CMP	50	LF	50	50	LF	\$55.00	\$2,750
7	Aprons, 24" Metal	4	Each	4	4	Each	\$350.00	\$1,400
8	Aprons, 36" Metal	2	Each	2	2	Each	\$500.00	\$1,000
9	Aprons, 48" Metal	2	Each	2	2	Each	\$1,000.00	\$2,000
10	Recreational Trail, HMA, 6" Depth	4300	LF	5733	5700	SY	\$35.00	\$199,500
11	Detectable Warnings	2	EA	48	48	SF	\$36.00	\$1,728
12	Special Compaction of Subgrade for Recreational Trail	4300	LF	43.0	43.0	STA	\$150.00	\$6,450
13	Granular Subbase, 6" Depth	4300	LF	6689	6690	SY	\$8.00	\$53,520
14	Seeding and Fertilizing, Rural	4300	LF	3.9	3.9	Acres	\$2,500.00	\$9,750
15	Silt Fence	4300	LF	8600	8600	LF	\$2.50	\$21,500
16	Removal of Silt Fence	4300	LF	8600	8600	LF	\$0.50	\$4,300
17	Signing	1	LS	1	1	LS	\$5,000.00	\$5,000
18	Roadway Crossing Warning Signal	1	LS	1	1	LS	\$30,500.00	\$30,500
19	Pavement Marking	1	Each	50	50	LF	\$10.00	\$500
20	Mobilization	1	LS	1	1	LS	\$40,572.30	\$40,572

Subtotal \$446,295
 Undeveloped Design Details (20%) \$89,259
 Engineering, Admin, Contingency(20%) \$107,111
 Total Cost \$642,665

Probable Cost Use \$643,000

Not included:

ROW Acquisition
 New or Relocated Utilities
 Traffic Control

Assumptions:

- (1) Unit prices based on Iowa DOT Awarded Contract Prices, November 2009 thru October 2010
- (2) Trail to follow WRA Sewer Easements
- (3) Bike path pavement thickness: 6" asphalt (due to the possibility that roadway maintenance vehicles may be traveling on the bicycle path)
- (4) Drainage structures are approximate. A detailed Drainage Study is needed for actual pipe sizes and lengths



Stanley Consultants INC.

Computed by D. Bovee Date 2-Nov-10
 Checked by J. Hillegonds Date 3-Nov-10
 Approved by _____ Date _____

Job No. 22914.01 Page No. _____

Subject Multi-Use Trail Routing Study Along WRA Sewer

Alignment - Mud Creek Trail

Estimated Quantities

Sheet No. 1 of 1

Description: Quantities estimates for constructing bicycle paths

Segment 3 - Grant Street South to US Highway 65

	Description	Takeoff Quantity	Takeoff Units	Quantity Subtotal	Quantity Total	Units	Cost per Unit	Subtotal Cost
1	Clearing and Grubbing	3000	LF	1.7	1.7	Acres	\$5,500.00	\$9,350
2	Earthwork	3000	LF		9400	CY	\$15.00	\$141,000
3	Topsoil, Strip, Salvage, and Spread	3000	LF	1667	1670	CY	\$4.50	\$7,515
	Pipe Culverts							
4	24" CMP	50	LF	50	50	LF	\$36.00	\$1,800
5	36" CMP	50	LF	50	50	LF	\$50.00	\$2,500
6	48" CMP	100	LF	100	100	LF	\$55.00	\$5,500
7	Aprons, 24" Metal	2	Each	2	2	Each	\$350.00	\$700
8	Aprons, 36" Metal	2	Each	2	2	Each	\$500.00	\$1,000
9	Aprons, 48" Metal	4	Each	4	4	Each	\$1,000.00	\$4,000
	RCB Culvert Extensions							
10	6'x4' Precast Concrete Box Culvert	40	LF	40	40	LF	\$300.00	\$12,000
11	6'x4' Precast Concrete End Section	1	Each	1	1	Each	\$4,000.00	\$4,000
12	Recreational Trail, HMA, 6" Depth	3000	LF	4000	4000	SY	\$35.00	\$140,000
13	Detectable Warnings	1	Each	24	24	SF	\$36.00	\$864
14	Special Compaction of Subgrade for Recreational Trail	3000	LF	30.0	30.0	STA	\$150.00	\$4,500
15	Granular Subbase, 6" Depth	3000	LF	4667	4670	SY	\$8.00	\$37,360
16	Seeding and Fertilizing, Rural	3000	LF	2.8	2.8	Acres	\$2,500.00	\$7,000
17	Silt Fence	3000	LF	6000	6000	LF	\$2.50	\$15,000
18	Removal of Silt Fence	3000	LF	6000	6000	LF	\$0.50	\$3,000
19	Signing	1	LS	1	1	LS	\$5,000.00	\$5,000
20	Roadway Crossing Warning Signal		LS	0	0	LS	\$30,500.00	\$0
21	Pavement Marking	1	Each	50	50	LF	\$10.00	\$500
22	Mobilization	1	LS	1	1	LS	\$40,258.90	\$40,259

Subtotal \$442,848
 Undeveloped Design Details (20%) \$88,570
 Engineering, Admin, Contingency(20%) \$106,283
 Total Cost \$637,701

Probable Cost Use \$638,000

Not included:

ROW Acquisition
 New or Relocated Utilities
 Traffic Control

Assumptions:

- (1) Unit prices based on Iowa DOT Awarded Contract Prices, November 2009 thru October 2010
- (2) Trail to follow WRA Sewer Easements
- (3) Bike path pavement thickness: 6" asphalt (due to the possibility that roadway maintenance vehicles may be traveling on the bicycle path)
- (4) Drainage structures are approximate. A detailed Drainage Study is needed for actual pipe sizes and lengths



Stanley Consultants INC.

Computed by D. Bovee Date 2-Nov-10
 Checked by J. Hillegonds Date 3-Nov-10
 Approved by _____ Date _____

Job No. 22914.01 Page No. _____

Subject Multi-Use Trail Routing Study Along WRA Sewer

Alignment - Mud Creek Trail

Estimated Quantities

Sheet No. 1 of 1

Description: Quantities estimates for constructing bicycle paths

Segment 4 - US Highway 65 to Main Street in Downtown Bondurant

	Description	Takeoff Quantity	Takeoff Units	Quantity Subtotal	Quantity Total	Units	Cost per Unit	Subtotal Cost
1	Clearing and Grubbing	7600	LF	4.4	4.4	Acres	\$5,500.00	\$24,200
2	Earthwork	7600	LF		7764	CY	\$15.00	\$116,454
3	Topsoil, Strip, Salvage, and Spread	5300	LF	2944	2940	CY	\$4.50	\$13,230
	Pipe Culverts							
4	24" CMP	160	LF	160	160	LF	\$36.00	\$5,760
5	36" CMP	40	LF	40	40	LF	\$50.00	\$2,000
6	48" CMP	50	LF	50	50	LF	\$55.00	\$2,750
7	Aprons, 24" Metal	8	Each	8	8	Each	\$350.00	\$2,800
8	Aprons, 36" Metal	2	Each	2	2	Each	\$500.00	\$1,000
9	Aprons, 48" Metal	2	Each	2	2	Each	\$1,000.00	\$2,000
	RCB Culvert							
10	12'x6' Precast Concrete Box Culvert	50	LF	50	50	LF	\$500.00	\$25,000
11	12'x6' Precast Concrete End Section	2	Each	2	2	Each	\$10,000.00	\$20,000
12	Recreational Trail, HMA, 6" Depth	7600	LF	10133	10100	SY	\$35.00	\$353,500
13	Detectable Warnings	6	Each	144	144	SF	\$36.00	\$5,184
14	Special Compaction of Sub grade for Recreational Trail	7600	LF	76.0	76.0	STA	\$150.00	\$11,400
15	Granular Sub base, 6" Depth	5300	LF	8244	8240	SY	\$8.00	\$65,920
16	Seeding and Fertilizing, Rural	7600	LF	7.0	7.0	Acres	\$2,500.00	\$17,500
17	Silt Fence	7600	LF	15200	15200	LF	\$2.50	\$38,000
18	Removal of Silt Fence	7600	LF	15200	15200	LF	\$0.50	\$7,600
19	Signing	1	LS	1	1	LS	\$7,500.00	\$7,500
20	Roadway Crossing Warning Signal	2	LS	2	2	LS	\$30,500.00	\$61,000
21	Pavement Marking	3	Each	150	150	LF	\$10.00	\$1,500
22	Mobilization	1	LS	1	1	LS	\$78,429.80	\$78,430

Subtotal \$862,728
 Undeveloped Design Details (20%) \$172,546
 Engineering, Admin, Contingency(20%) \$207,055
 Total Cost \$1,242,328

Probable Cost Use \$1,242,000

Not included:

ROW Acquisition
 New or Relocated Utilities
 Traffic Control

Assumptions:

- (1) Unit prices based on Iowa DOT Awarded Contract Prices, November 2009 thru October 2010
- (2) Trail to follow WRA Sewer Easements
- (3) Bike path pavement thickness: 6" asphalt (due to the possibility that roadway maintenance vehicles may be traveling on the bicycle path)
- (4) Drainage structures are approximate. A detailed Drainage Study is needed for actual pipe sizes and lengths



Stanley Consultants INC.

Computed by D. Bovee Date 2-Nov-10
 Checked by J. Hillegonds Date 3-Nov-10
 Approved by _____ Date _____

Job No. 22914.01 Page No. _____

Subject Multi-Use Trail Routing Study Along WRA Sewer

Alignment - Mud Creek Trail

Estimated Quantities

Sheet No. 1 of 1

Description: Quantities estimates for constructing bicycle paths

Neighborhood Connection - Meadow Brook North Connection

	Description	Takeoff Quantity	Takeoff Units	Quantity Subtotal	Quantity Total	Units	Cost per Unit	Subtotal Cost
1	Clearing and Grubbing	3900	LF	1.3	1.3	Acres	\$2,500.00	\$3,250
2	Earthwork	3900	LF		1000	CY	\$15.00	\$15,000
3	Topsoil, Strip, Salvage, and Spread Pipe Culverts	3900	LF	2167	2170	CY	\$4.50	\$9,765
4	24" CMP	110	LF	110	110	LF	\$36.00	\$3,960
5	36" CMP	0	LF	0	0	LF	\$50.00	\$0
6	48" CMP	0	LF	0	0	LF	\$55.00	\$0
7	Aprons, 24" Metal	6	Each	6	6	Each	\$350.00	\$2,100
8	Aprons, 36" Metal	0	Each	0	0	Each	\$500.00	\$0
9	Aprons, 48" Metal	0	Each	0	0	Each	\$1,000.00	\$0
10	Recreational Trail, HMA, 6" Depth	3900	LF	4333	4300	SY	\$35.00	\$150,500
11	Detectable Warnings	6	Each	120	120	SF	\$36.00	\$4,320
12	Special Compaction of Sub grade for Recreational Trail	3900	LF	39.0	39.0	STA	\$150.00	\$5,850
13	Granular Sub base, 6" Depth		LF	0	0	SY	\$8.00	\$0
14	Seeding and Fertilizing, Rural	3900	LF	1.8	1.8	Acres	\$2,500.00	\$4,500
15	Silt Fence	3900	LF	3900	3900	LF	\$2.50	\$9,750
16	Removal of Silt Fence	3900	LF	3900	3900	LF	\$0.50	\$1,950
17	Signing	1	LS	1	1	LS	\$1,000.00	\$1,000
18	Roadway Crossing Warning Signal	1	LS	1	1	LS	\$30,500.00	\$30,500
19	Pavement Marking	3	Each	150	150	LF	\$10.00	\$1,500
20	Mobilization	1	LS	1	1	LS	\$24,394.50	\$24,395

Subtotal \$268,340
 Undeveloped Design Details (20%) \$53,668
 Engineering, Admin, Contingency(20%) \$64,401
 Total Cost \$386,409


Probable Cost Use \$386,000

Not included:

ROW Acquisition
 New or Relocated Utilities
 Traffic Control

Assumptions:

- (1) Unit prices based on Iowa DOT Awarded Contract Prices, November 2009 thru October 2010
- (2) Trail to follow WRA Sewer Easements
- (3) Bike path pavement thickness: 6" asphalt (due to the possibility that roadway maintenance vehicles may be traveling on the bicycle path)
- (4) Drainage structures are approximate. A detailed Drainage Study is needed for actual pipe sizes and lengths

			Job No. <u>22914.01</u>	Page No. _____
Computed by <u>D. Bovee</u> Date <u>3-Nov-10</u> Checked by <u>J. Hillegonds</u> Date <u>3-Nov-10</u> Approved by _____ Date _____			Subject <u>Multi-Use Trail Routing Study Along WRA Sewer Alignment - Mud Creek Trail</u> Estimated Quantities Sheet No. <u>1</u> of <u>1</u>	
Description: Quantities estimates for constructing bicycle paths				

US Hwy 65 Crossing Alternatives									
	Description	Takeoff Quantity	Takeoff Units	Quantity Subtotal	Quantity Total	Units	Cost per Unit	Subtotal Cost	

Existing RCB Culvert

1	Clearing and Grubbing	440	LF	0.2	0.2	Acres	\$2,500.00	\$500	
2	Earthwork	440	LF		500	CY	\$15.00	\$7,500	
3	Revetment, Class E	440	LF	726	730	Tons	\$35.00	\$25,550	
Pipe Culverts									
4	24" CMP	110	LF	110	110	LF	\$36.00	\$3,960	
5	Aprons, 24" Metal	2	Each	2	2	Each	\$350.00	\$700	
6	Subdrain, 4" PVC	250	LF	250	250	LF	\$5.50	\$1,375	
7	Recreational Trail, PCC, 6" Depth	440	LF	489	490	SY	\$25.00	\$12,250	
8	Concrete Retaining Wall	225	LF	38	38	CY	\$780.00	\$29,250	
9	Metal Hand Railing	225	LF	225	225	LF	\$60.00	\$13,500	
10	Electrical	1	LS	1	1	LS	\$25,000.00	\$25,000	
11	Signing	1	LS	1	1	LS	\$1,000.00	\$1,000	
12	Seeding and Fertilizing, Rural	440	LF	0.2	0.2	Acres	\$2,500.00	\$500	
13	Silt Fence	440	LF	440	440	LF	\$2.50	\$1,100	
14	Removal of Silt Fence	440	LF	440	440	LF	\$0.50	\$220	
15	Mobilization	1	LS	1	1	LS	\$12,240.50	\$12,241	

Subtotal	\$134,646
Undeveloped Design Details (20%)	\$26,929
Engineering, Admin, Contingency(20%)	\$32,315
Total Cost	\$193,890

Probable Cost Use \$194,000

At-Grade Crossing

1	Modify Existing Signals	1	Each	1	1	LS	\$25,000.00	\$25,000	
2	Detectable Warnings	2	Each	48	48	SF	\$36.00	\$1,728	
3	Signing	1	LS	1	1	LS	\$1,000.00	\$1,000	
4	Pavement Marking	1	Each	370	370	LF	\$10.00	\$3,700	
5	Mobilization	1	LS	1	1	LS	\$3,142.80	\$3,143	

Subtotal	\$34,571
Undeveloped Design Details (20%)	\$6,914
Engineering, Admin, Contingency(20%)	\$8,297
Total Cost	\$49,782

Probable Cost Use \$50,000

Overhead Grade Separation

1	Prefabricated Continental Truss Bridge	1	Each	1	1	Each	\$477,500.00	\$477,500	
2	Contractor Installation	1	LS	1	1	LS	\$40,000.00	\$40,000	
3	Abutment and Footings	2	Each	2	2	Each	\$50,000.00	\$100,000	
4	Ramp Connection	2	Each	2	2	Each	\$150,000.00	\$300,000	
5	Signing	1	LS	1	1	LS	\$500.00	\$500	
6	Mobilization	1	LS	1	1	LS	\$91,800.00	\$91,800	

Subtotal	\$1,009,800
Undeveloped Design Details (20%)	\$201,960
Engineering, Admin, Contingency(20%)	\$242,352
Total Cost	\$1,454,112

Probable Cost Use \$1,454,000

Assumptions:

- (1) Unit prices based on Iowa DOT Awarded Contract Prices, November 2009 thru October 2010
- (2) Unit price for Prefabricated Continental Truss Bridge provided by Contech Construction Products Inc.
- (3) 250' prefabricated bridge used to eliminate need for center pier
- (4) 6" concrete decking option used for prefabricated bridge

7/30/2010

Name David Bovee
Company Stanley Consultants
Address
Address
City, State Zip
Phone Number

Subject: Bondurant Trail Bridges over US65, Bondurant, IA , 422939-001A

The following is a Continental Pedestrian Bridge System ENGINEER'S COST ESTIMATE for the subject project. This ESTIMATE is intended for preliminary estimating purposes only and should **not** be interpreted as a final QUOTATION. The information presented is based on the most current data made available to CONTECH.

CONTECH will fabricate and deliver the following described Continental Pedestrian Bridge components and appurtenances:

DESCRIPTION OF SUPPLIED MATERIALS:

- 1 - 250 x 10 Continental Connector Bridge
- WX Steel Finish
- 3" x 12" (nominal) Douglas Fir Deck
- Design stresses in accordance with AASHTO Ped Guide Spec
- Horizontal Safety Rails at 4" max to height of 42 inches
- Galvanized Pipe rail provided
- Uniform Live Load of 85 psf Reduced psf
- Vehicular Live Load of None lbs
- Delivered in 5 sections

ESTIMATE: \$413,800 Delivered (F.O.B.)

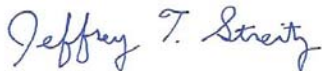
Estimated Heaviest Crane Pick: 181,200 lbs

These costs do not include the foundation, or installation costs. As part of the construction process, the contractor is to perform the items listed below in accordance with the installation drawings:

- Excavate and/or construction for the structure & foundations
- Provide and install anchor bolts
- Unload and set structure utilizing crane
- Touch-Up paint work
- Third-party testing

Please contact me should you have any questions or need additional information. Thank you for your interest in the Continental Pedestrian Bridge System.

Respectfully,



Jeff Streitz
(319) 471-5250

7/30/2010

Name David Bovee
Company Stanley Consultants
Address
Address
City, State Zip
Phone Number

Subject: Bondurant Trail Bridges over US65, Bondurant, IA , 422939-001B

The following is a Continental Pedestrian Bridge System ENGINEER'S COST ESTIMATE for the subject project. This ESTIMATE is intended for preliminary estimating purposes only and should not be interpreted as a final QUOTATION. The information presented is based on the most current data made available to CONTECH.

CONTECH will fabricate and deliver the following described Continental Pedestrian Bridge components and appurtenances:

DESCRIPTION OF SUPPLIED MATERIALS:

- 1 - 250 x 10 Continental Connector Bridge
- WX Steel Finish
- 4" x 12" (nominal) Douglas Fir Deck
- Design stresses in accordance with AASHTO Ped Guide Spec
- Horizontal Safety Rails at 4" max to height of 42 inches
- Galvanized Pipe rail provided
- Uniform Live Load of 85 psf psf
- Vehicular Live Load of 20000 lbs
- Delivered in 5 sections

ESTIMATE: \$453,200 Delivered (F.O.B.)

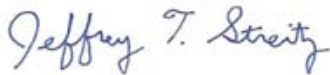
Estimated Heaviest Crane Pick: 225,200 lbs

These costs do not include the foundation, or installation costs. As part of the construction process, the contractor is to perform the items listed below in accordance with the installation drawings:

- Excavate and/or construction for the structure & foundations
- Provide and install anchor bolts
- Unload and set structure utilizing crane
- Touch-Up paint work
- Third-party testing

Please contact me should you have any questions or need additional information. Thank you for your interest in the Continental Pedestrian Bridge System.

Respectfully,



Jeff Streitz
(319) 471-5250

7/30/2010

Name David Bovee
Company Stanley Consultants
Address
Address
City, State Zip
Phone Number

Subject: Bondurant Trail Bridges over US65, Bondurant, IA , 422939-001C

The following is a Continental Pedestrian Bridge System ENGINEER'S COST ESTIMATE for the subject project. This ESTIMATE is intended for preliminary estimating purposes only and should not be interpreted as a final QUOTATION. The information presented is based on the most current data made available to CONTECH.

CONTECH will fabricate and deliver the following described Continental Pedestrian Bridge components and appurtenances:

DESCRIPTION OF SUPPLIED MATERIALS:

- 1 - 250 x 10 Continental Connector Bridge
 - WX Steel Finish
 - 6" Concrete Deck (Galv. Form Deck)
 - Design stresses in accordance with AASHTO Ped Guide Spec
 - Horizontal Safety Rails at 4" max to height of 42 inches
 - Galvanized Pipe rail provided
 - Uniform Live Load of 85 psf Reduced psf
 - Vehicular Live Load of None lbs
 - Delivered in 5 sections

ESTIMATE: \$477,500 Delivered (F.O.B.)

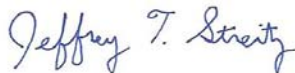
Estimated Heaviest Crane Pick: 193,600 lbs

These costs do not include the foundation, or installation costs. As part of the construction process, the contractor is to perform the items listed below in accordance with the installation drawings:

- Excavate and/or construction for the structure & foundations
- Provide and install anchor bolts
- Unload and set structure utilizing crane
- Touch-Up paint work
- Third-party testing
- Materials and work for reinforced concrete deck slab

Please contact me should you have any questions or need additional information. Thank you for your interest in the Continental Pedestrian Bridge System.

Respectfully,



Jeff Streitz
(319) 471-5250