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PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

IDA COUNTY

Unknown Pavement - Grade and New

W of W Jct US 59 to E of E Jct US 59

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.14 of the Specifications.



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REVISIONS

TOTAL	
43	
PROJECT IDENTIFICATION NUMBER	
24-47-020-010	
PROJECT NUMBER	
HSIPX-020-2(157)--3L-47	
R.O.W. PROJECT NUMBER	
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Schedule

D03 - 09/05/2025
D05 - 12/19/2025
DM5 - 08/03/2027
D08 - 09/06/2027

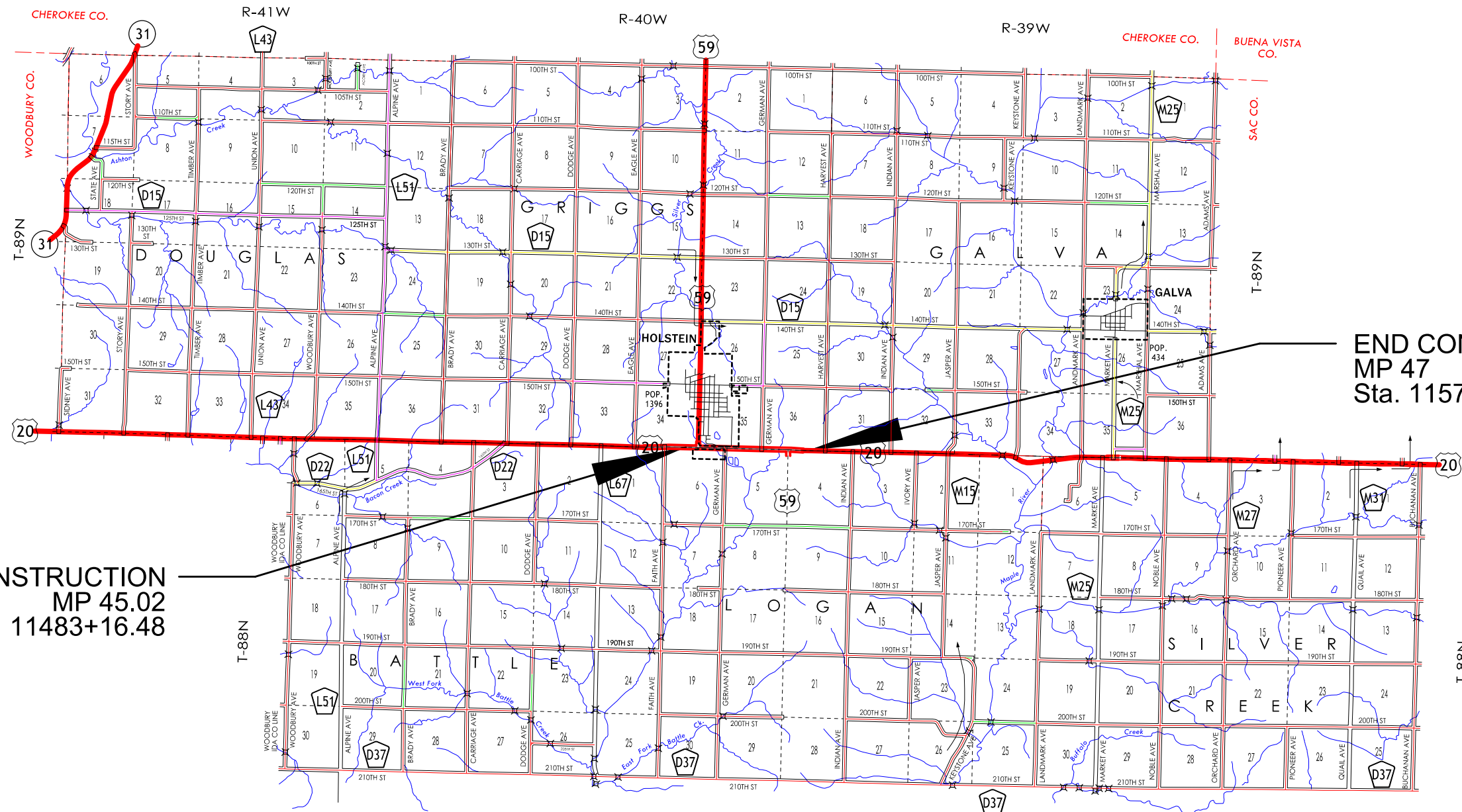
PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN - Date: 08/21/2025

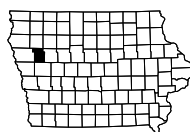
DESIGN DATA RURAL			
2027	AADT	3500	V.P.D.
2047	AADT	4700	V.P.D.
2047	DHV	480	V.P.H.
TRUCKS		27	%
Total			
Design ESALs		--	

INDEX OF SEALS			
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	X	Primary Signature Block	X
X	X	X	X



BEGIN CONSTRUCTION
MP 45.02
Sta. 11483+16.48

END CONSTRUCTION
MP 47
Sta. 11578+96.23



IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE:	District 3	DATE:	June 18, 2024
ATTENTION:	Jessica Felix	PROJECT:	Ida County HSIPX-020-2(157)--3L-47 PIN: 24-47-020-010
FROM:	John Bartholomew		
BUREAU:	Design		
SUBJECT:	2025 – HSIP-(District allocation) Project Concept - FINAL		

The Draft Project Concept Statement was sent out for review and comments with concerns to be resolved by **Wednesday, June 18, 2025. Comments received during the review period have been considered and resolved.**

DATE OF REVIEW: January 03, 2024;

PARTICIPANTS: District – Shane Tymkowicz, Darwin Bishop, Kelly Mulvihill, Todd Huju, Laura Sievers, Dylan Pryor; Materials – Chris Brakke, Danny Zeimen; Design -Kevin Patel, John, Bartholomew, Anthony Apland

The three alternatives considered were:

1. Reconstruct existing intersections at US20 and US 59 (west/east Junctions) into reduced conflict (RCUT) intersections. Estimated cost of **\$2,015,865**
2. Reconstruct the existing intersections at US 20 and US 59 (west/east Junctions) into roundabout intersections. Estimated cost of **\$6,107,760**
3. Add intersection traffic signals at both east and west junctions of US 20 and US 59. Estimate cost **\$507,500**. This alternative was dismissed

Alternative 1 is the preferred alternative due to improved safety, lower right of way impacts, corridor continuity, and lower cost. Estimated FY '28 construction cost **\$2,300,450**

PROJECT DATA:

ROUTE: US-20 From W of W Jct US 59 to E of E Jct US 59

LENGTH: 2 miles

PLANNING CLASSIFICATION: COMMERCIAL AND INDUSTRIAL NETWORK

MAINTENANCE SERVICE LEVEL: PRINCIPAL ARTERIAL

TRAFFIC: 2027 --- 3500 ADT with 27% trucks

2047 --- 4700 ADT with 27% trucks

Ida County
HSIPX-020-2(157)--3L-47
PIN: 24-47-020-010
Page 2

PRESENT PAVEMENT SURFACE: PCC
PRESENT PAVEMENT WIDTH: 24 ft.
PRESENT SHOULDER WIDTH: 4 ft. TYPE: COMBO PAVED AND GRAVEL

MP to MP	Dir.	Type	Avg. Str. No.	80% Str. No.	Jt. Str. No.	PCI	IRI	K Value
45.02 to 47	1	PCC	Null	Null	Null	92	53	Null

PAVEMENT HISTORY:

Original pavement: 18ft wide, 10in PCC, Varying width shoulders

Year constructed: Pre 1964

Coarse aggregate source: Ft. Dodge min / Class: Crushed Limestone

Year: 1964, Resurface with widening: 24ft wide, AAC (1.5in), 10ft Paved / Gravel shoulders

Coarse aggregate source: Cherokee / Class: Gravel

Year: 1991, Resurfaced: AAC (3in)

Coarse aggregate source: Cherokee / Class: Gravel

Year: 1999, Resurfaced: MSS

Coarse aggregate source: Dell Rapids / Class: Quartz

Year: 2012, Resurfaced: HMA resurface (1.5in), 2in scarification

Year: 2018, Grade and New, 10in PCC

Coarse aggregate Class: Modified Subbase

EXISTING CONDITIONS AND CAUSES OF DISTRESS:

Overall the existing pavement is good condition with no noticeable signs of deterioration along the longitudinal or transverse joints. This project is being pursued for improves intersection safety and performance.



Eastview 2023

Westview 2023

SAFETY CONSIDERATION:

During the five-year study period from January 1, 2020 through December 31, 2024, there were 32 crashes including, 1 fatal crashes, 2 serious injury crashes, 5 minor injury crashes, 2 unknown injury crashes, and 22 property damage crashes. The PCR rating is “3.452”, Considered High.

FEASIBLE ALTERNATES:

ALTERNATIVE 1: RECONSTRUCT INTO REDUCED CONFLICT (RCUT) INTERSECTIONS:

US 20 in the project area is a 4-lane divided highway with 6 ft. inside and 10 ft. outside combination shoulders, and a 50 ft wide median. Existing pavement was reconstructed in 2018 with 10 in. PCC pavement.

These intersections are located on US 20 at mileposts 45.42 (west junction) and 46.83 (east junction). These intersections have been flagged as ‘High’ for all crashes, and severe crashes.

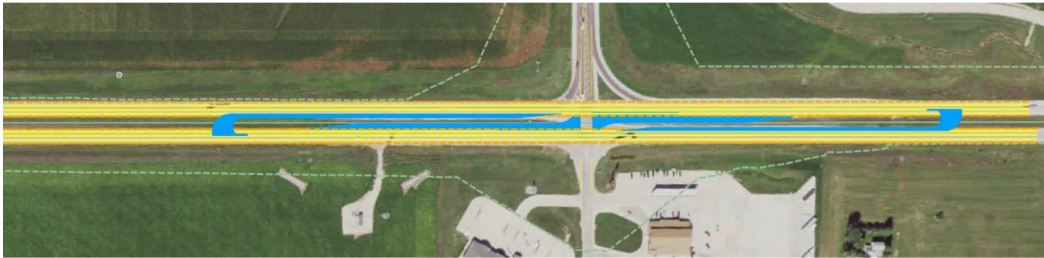
To improve safety at these intersections, both east and west junctions of US 20 and US 59 will be reconstructed with a reduced conflict (RCUT) design. This intersection design will close off US 59 through traffic from crossing 4-lanes of US 20, and also remove the US 29

to US 20 left turn movements by utilizing a raised median with a standard curb to prevent these movements. The proposed work will include reconstruction of US 20 to US 59 left turn lanes, and US 20 to US 59 right turn lanes. The project will also include paved turn arounds for the RCUT left turning movements. The existing median intersection, paved and granular shoulders at the intersections will be removed and replaced with 10 in. PCC pavement on top of 12 in. of modified subbase with 100 percent modified subdrain coverage.

Traffic on US 20 will remain open during construction, however, lane closures will be necessary during construction of the turn lanes. Traffic on US 59 may need to be detoured during the intersection and raised median construction.

STAGING:

Stage 1: Shift US 20 traffic to the outside lanes, reconstruct median turn lanes and RCUT turn-arounds. Remove US 59 to U 20 left turning movement at east junction:



(US 20/59 west junction)

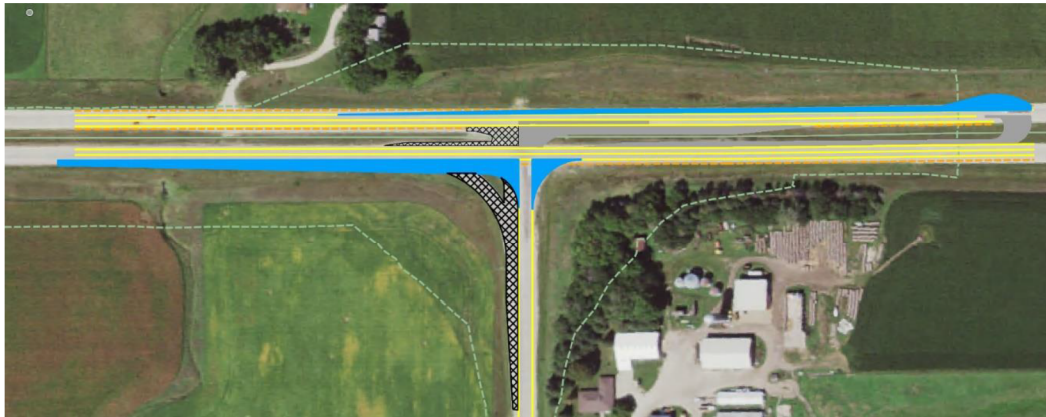


(US 20/59 east junction)

Stage 2: Shift US 20 traffic to the median lanes. Reconstruct outside turning lanes and intersection connections to US 59. Temporary detours may be needed for US 59 traffic at this stage:



(US 20/59 west junction)



(US 20/59 east junction)

Stage 3: Open to Traffic



(US 20/59 west junction)



(US 20/59 east junction)

Rumble strips will be milled into the inside and outside shoulders. No safety edge is required on the mainline paved shoulders.

Right of way is not required for this project.

ESTIMATED COST:

<u>Item</u>	<u>Estimated Cost</u>
PCC Pavement	\$574,875
Subgrade prep	38,325
Granular Subbase	91,980
Excavation, Class 10 borrow	90,600
Granular shoulder removal	50,000
Topsoil, strip salvage and spread	95,130
Longitudinal Subdrains (Includes Outlets)	96,000

Paved Median (PCC)	128,000
Granular shoulder	50,000
Pavement Markings	35,000
Signing	17,000
Erosion control	50,000
Surface restoration	27,000
Staging (10%)	134,391
Traffic Control (5%)	67,195
Mobilization (5%)	67,196
M & C (30%)	403,173
Total Alternative No. 1	\$2,015,865

ALTERNATIVE 2: RECONSTRUCT INTO ROUNDABOUT INTERSECTIONS

US 20 in the project area is a 4-lane divided highway with 6 ft. inside and 10 ft. outside combination shoulders, and a 50 ft wide median. Existing pavement was reconstructed in 2018 with 10 in. PCC pavement.

These intersections are located on US 20 at mileposts 45.42 (west junction) and 46.83 (east junction). These intersections have been flagged as ‘High’ for all crashes, and severe crashes.

To improve safety at these intersections, both east and west junctions of US 20 and US 59 will be reconstructed with roundabout intersections utilizing staged construction. The existing mainline pavement, paved and granular shoulders at the intersections will be removed and replaced with 10 in. PCC pavement on top of 12 in. of modified subbase with 100 percent modified subdrain coverage.

Lanes within the roundabout will be 12 ft. with a 3 ft. sloped curb on the inside and a 25 ft. wide truck apron. Surmountable truck aprons will be included on all quadrants of the roundabout.

Temporary pavement/shoulder strengthening may be needed for staged traffic shifts.

Since this alternative was not selected, detail staging notes were not developed for the concept document.

Right of way may be required for this alternative.

FINAL CONDITION:



(west junction US 20/US59)



(east junction US20/US59)

ESTIMATED COST:

<u>Item</u>	<u>Estimated Cost</u>
Excavation, Class 10	\$216,000
Granular subbase	246,540
Subbase prep	102,725
Modified subbase	66,150
Topsoil, strip salvage and spread	113,400
Longitudinal subdrain	91,200
Pavement removal	633,600
PCC Pavement, 10 in.	1,560,825
PCC pavement, 13.5 in	464,400
Median	210,000
Pavement markings	28,500
Signing (includes trusses)	260,000
Surface restoration	28,500
Erosion control	50,000
Traffic Control (5%)	203,592
Mobilization (5%)	203,592
Staging (10%)	407,184
M & C (30%)	<u>1,221,552</u>
Total Alternative No. 2	\$6,107,760

RECOMMENDATIONS:

The recommended method of rehabilitation for this project is reconstructing the intersections at US 20 and US 59 (east and west junctions) with reduced conflict (RCUT) intersections as shown in Alternative 1. Estimated FY '28 construction cost **\$2,300,450**

Right of way will not be required

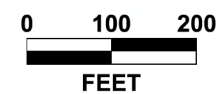
FUNDS PROGRAMMED:

This proposed HSIP project is not listed in the 2026-2030 program. It has been identified by the district 3 office for construction in FY 2028. A schedule of events for plan development will be determined following approval of the Project Concept. Note, if project exceeds district allocated HSIP funding, the remainder of the project will be funded through district 3R funds.

JEB:

cc:

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M. A. Swenson	D. E. Sprengeler	C. C. Poole
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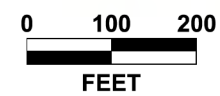
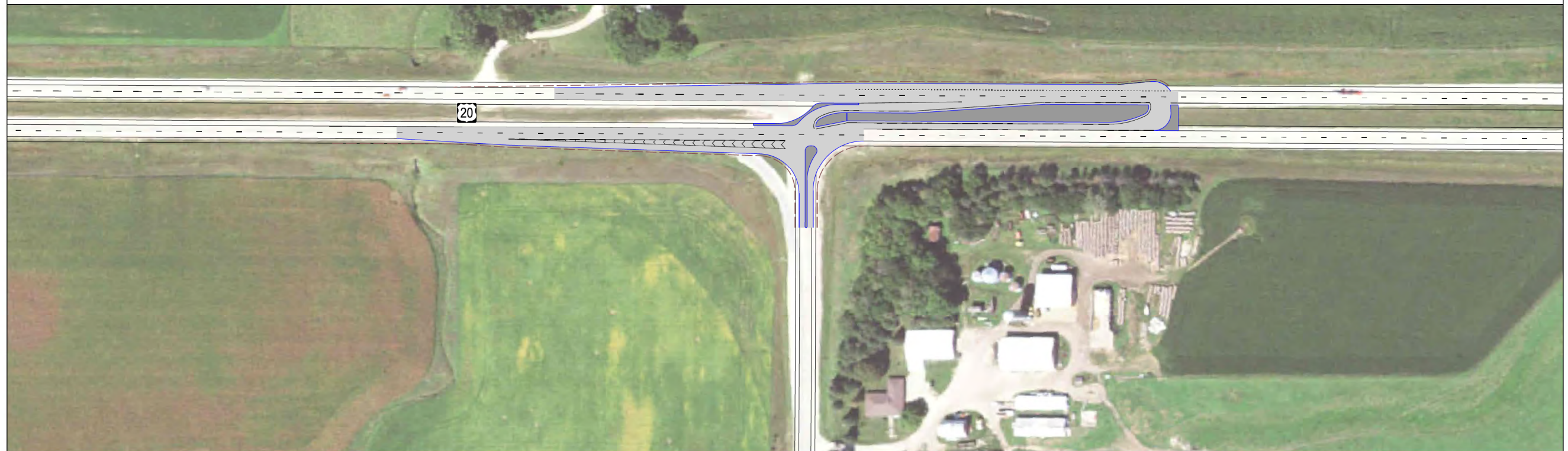


US 20 & US 59 Intersection Study

Single Lane- Pavement Marking Concept

Ida County, Iowa

4/4/2024

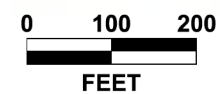


US 20 & US 59 Intersection Study

Reduced Conflict Intersection (RCI) Concept

Ida County, Iowa

3/27/2024



US 20 & US 59 Intersection Study

Ida County, Iowa

Roundabout Intersection Concept

3/27/2024

INTERSECTION EVALUATION TOOL (ICE) PROCESS TOOL STAGE 2																	
Project Name:		US 20 & US 59 E Jct							Review Mtg Date:								
Intersection:		US 20 at US 59							Review Meeting								
Location:		Holstein, IA							Attendees (List):								
Analyst:		TDC							Date: 2/14/2024								
7. CONTEXT & EQUITY SUMMARY																	
Study area travel modes present and/or likely:		Vehicles, Trucks, possibly oversize/overweight. No pedestrians/bicycles/transit							<div>Summary of Equity Studies (from Equity Worksheet):</div> <div>No key considerations were identified from the data.</div> <div>Racial demographics for the focus area compared to the comparison area.</div> <div>The focus area percentage of Hispanic and Latin was slightly higher in the focus area (4.3%) compared to 3.9% in the comparison area.</div> <div>The percent of population with a disability is less in the focus area, 14.0% compared to 16.3%.</div> <div>Population living in poverty was similar in the focus area and comparison area.</div> <div>The percentage of population under 10 years was high in the focus area but lower for the 75years and over grouping.</div> <div>The focus area has a much lower percentage of households with no vehicle than the comparison area.</div>								
Travel needs for transporation mode(s):		Access to US highways. No pedestrian or bicycle access is needed.															
History of neighborhood & road development:		Very little change over time. US 20 recently widened to 4-lane divided east of intersecti															
Surrounding land uses / roadside development:		Rural, one residence south of intersection and one west of intersection.															
8. SELECTION CRITERIA																	
Intersection Form	Meets Equity Goals?	Stakeholder Support	Average Vehicle Delay			Worst Vehicle Delay			20-Flag Results		Predictive Safety		Construction Cost	Life Cycle Costs		Environmental Feasibility	
			AM Peak	PM Peak	Mid Day	AM Peak	PM Peak	Mid Day	Ped	Bike	PDO	Fatal/Inj		Costs	B/C		
Multilane Roundabout	Yes	Unknown	5	5	-	5	5	-	-	-	0.15	0.03	\$2,764,810	\$2,808,581	-	No perceived impacts	
RCUT / J-Turn (stop control)	Yes	Unknown	8	9	-	34	34	-	-	-	0.25	0.08	\$660,585	\$675,175	-	No perceived impacts	
Traffic Signal	Yes	Unknown	10	10	-	10	10	-	-	-	1.28	0.26	\$217,500	\$330,319	-	No perceived impacts	
Minor Street Stop (TWSC)	Yes	Unknown	2	2	-	15	16	-	-	-	0.33	0.17	\$0	N/A	N/A	No perceived impacts	
9. REVIEW MEETING NOTES AND RECOMMENDATIONS																	
Recommended Intersection Concept:		<--Select Recommended Alternative-->															
Notes from review team meeting:																	

Existing Traffic Analysis Results			AM Peak			PM Peak		
Intersection	Control Type	Approach / Movement	Delay / Vehicle (s)	LOS	95th % Queue (ft)	Delay / Vehicle (s)	LOS	95th % Queue (ft)
US 20 & US 59 (West Jct)	Signal	Eastbound	10	B	64	10	A	41
		Westbound	10	A	40	8	A	35
		Northbound	9	A	37	7	A	23
		Southbound	7	A	31	6	A	47
		Overall	10	A	-	8	A	-
	RCUT	Eastbound Left	9	A	-	9	A	-
		Westbound Left	9	A	-	9	A	-
		Northbound Left	42	D	-	41	D	-
		Northbound Thru	42	D	-	41	D	-
		Northbound Right	10	A	-	10	A	-
		Southbound Left	41	D	-	42	D	-
		Southbound Thru	41	D	-	42	D	-
		Southbound Right	10	A	-	10	A	-
	RAB	Eastbound	5	A	22	5	A	16
		Westbound	6	A	22	5	A	19
		Northbound	6	A	15	5	A	6
		Southbound	5	A	12	6	A	26
		Overall	6	A	-	5	A	-
	RAB (WB RT Bypass Lane)	Eastbound	5	A	22	5	A	16
		Westbound	4	A	15	3	A	9
		Northbound	6	A	15	5	A	6
		Southbound	5	A	12	6	A	26
		Overall	5	A	-	5	A	-
US 20 & US 59 (East Jct)	Stop Control (NB)	Northbound	11	B	6	12	B	10
		Westbound Left	8	A	0	8	A	0
	Signal	Eastbound	4	A	20	4	A	24
		Westbound	17	B	42	16	B	40
		Northbound	12	B	38	12	B	42
		Overall	10	B	-	10	A	-
	RCUT	Westbound Left	8	A	-	9	A	-
		Northbound Left	34	C	-	34	C	-
		Northbound Right	10	A	-	10	A	-
	RAB	Eastbound	4	A	15	5	A	19
		Westbound	5	A	13	5	A	13
		Northbound	5	A	6	5	A	9
		Overall	5	A	-	5	A	-

Opening Year (2027) Analysis Results			AM Peak			PM Peak		
Intersection	Control Type	Approach / Movement	Delay / Vehicle (s)	LOS	95th % Queue (ft)	Delay / Vehicle (s)	LOS	95th % Queue (ft)
US 20 & US 59 (West Jct)	Signal	Eastbound	11	B	70	10	A	43
		Westbound	11	B	43	8	A	37
		Northbound	9	A	39	7	A	24
		Southbound	8	A	33	7	A	49
		Overall	10	B	-	8	A	-
	RCUT	Eastbound Left	9	A	-	9	A	-
		Westbound Left	9	A	-	9	A	-
		Northbound Left	42	D	-	41	D	-
		Northbound Thru	42	D	-	41	D	-
		Northbound Right	10	A	-	10	A	-
		Southbound Left	42	D	-	42	D	-
		Southbound Thru	42	D	-	42	D	-
		Southbound Right	10	A	-	11	B	-
	RAB	Eastbound	6	A	25	5	A	19
		Westbound	6	A	25	5	A	19
		Northbound	7	A	15	6	A	6
		Southbound	6	A	15	6	A	29
		Overall	6	A	-	6	A	-
	RAB (WB RT Bypass Lane)	Eastbound	6	A	25	5	A	19
		Westbound	4	A	15	3	A	12
		Northbound	7	A	15	6	A	6
		Southbound	6	A	15	6	A	29
		Overall	5	A	-	5	A	-
US 20 & US 59 (East Jct)	Stop Control (NB)	Northbound	12	B	8	13	B	10
		Westbound Left	8	A	0	8	A	0
	Signal	Eastbound	4	A	22	4	A	25
		Westbound	16	B	47	17	B	43
		Northbound	12	B	39	13	B	47
		Overall	10	B	-	10	A	-
	RCUT	Westbound Left	8	A	-	9	A	-
		Northbound Left	34	C	-	34	C	-
		Northbound Right	10	A	-	10	A	-
	RAB	Eastbound	5	A	15	5	A	19
		Westbound	5	A	16	5	A	13
		Northbound	5	A	9	5	A	9
		Overall	5	A	-	5	A	-

Design Year (2047) Analysis Results			AM Peak			PM Peak		
Intersection	Control Type	Approach / Movement	Delay / Vehicle (s)	LOS	95th % Queue (ft)	Delay / Vehicle (s)	LOS	95th % Queue (ft)
US 20 & US 59 (West Jct)	Signal	Eastbound	16	B	114	11	B	65
		Westbound	12	B	60	10	B	54
		Northbound	13	B	52	8	A	31
		Southbound	10	A	44	8	A	70
		Overall	14	B	-	10	A	-
	RCUT	Eastbound Left	10	A	-	9	A	-
		Westbound Left	9	A	-	9	A	-
		Northbound Left	43	D	-	42	D	-
		Northbound Thru	43	D	-	42	D	-
		Northbound Right	11	B	-	11	A	-
		Southbound Left	43	D	-	44	D	-
		Southbound Thru	43	D	-	44	D	-
		Southbound Right	11	B	-	12	B	-
	RAB	Eastbound	7	A	37	6	A	28
		Westbound	7	A	37	6	A	28
		Northbound	9	A	28	7	A	12
		Southbound	7	A	23	9	A	49
		Overall	7	A	-	7	A	-
	RAB (WB RT Bypass Lane)	Eastbound	7	A	37	6	A	28
		Westbound	5	A	25	3	A	15
		Northbound	9	A	28	7	A	12
		Southbound	7	A	23	9	A	49
		Overall	6	A	-	6	A	-
US 20 & US 59 (East Jct)	Stop Control (NB)	Northbound	14	B	12	16	C	20
		Westbound Left	8	A	0	9	A	0
	Signal	Eastbound	4	A	31	4	A	37
		Westbound	31	C	103	30	C	95
		Northbound	15	B	48	17	B	58
		Overall	17	B	-	15	B	-
	RCUT	Westbound Left	9	A	-	9	A	-
		Northbound Left	35	C	-	35	C	-
		Northbound Right	10	B	-	10	B	-
	RAB	Eastbound	5	A	22	5	A	28
		Westbound	5	A	22	5	A	19
		Northbound	5	A	12	6	A	14
		Overall	5	A	-	5	A	-

NCHRP 17-98 Equity Assessment Worksheet - Stage 2

Instructions

This worksheet is intended to record the results from the Stage 1 and Stage 2 Equity assessment, developed through project NCHRP 17-98: Guide for Intersection Control Evaluation. All fields are designed as either open-ended answer fields to document Stage 1 assessment questions or as tables to record the more detailed demographic assessment completed in Stage 2. For further details, the user is encouraged to consult the final project report and the example problem contained there. An agency is open to customize this worksheet to fit its specific equity assessment process.

Overview

Project Name	US 20 & US 59 E Jct	Organization	Iowa DOT / Snyder & Associates, Inc.
Major Roadway	US 20	Analyst	Tim Crouch
Minor Rowadway	US 59	Data Completed	2/20/2025
Analysis Year	2019-2023	Link to Location	

Stage 2 Equity Screening

Comparison Area	Ida County	Focus Area	Census Block Group - Holstein area
-----------------	------------	------------	------------------------------------

Racial Demographics

Category	Comparison Area		Focus Area	
Total Population for Whom Race Is Determined:	6,944		2,562	
White Alone	6,543	94.2%	2,365	92.3%
Black or African American	61	0.9%	48	1.9%
American Indian and Alaska Native	5	0.1%	0	0.0%
Asian	28	0.4%	20	0.8%
Native Hawaiian and Other Pacific Islander	0	0.0%	0	0.0%
Some Other Race	95	1.4%	33	1.3%
Two or More Races	212	3.1%	96	3.7%
TOTAL BIPOC	401	5.8%	197	7.7%

Comparison Chart

Observations	No significant differences between the focus and comparison areas.
--------------	--

Hispanic and Latin(o/a/x)

Category	Comparison Area		Focus Area	
Total Population for Whom Status Is Determined:	6,944		2,562	
Hispanic and Latin(o/a/x)	271	3.9%	111	4.3%

Hispanic and Latin(o/a/x)

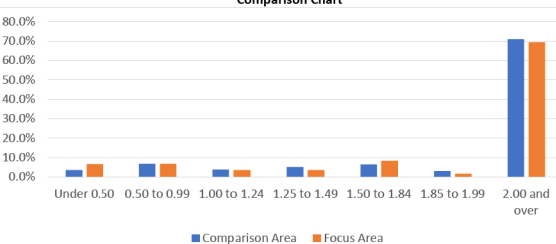
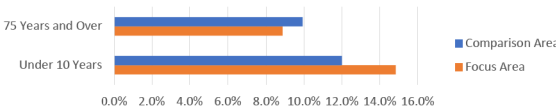
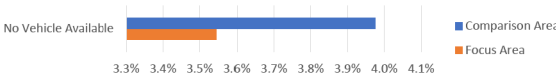
Observations	Percentage of Latino is similar between the focus area and the comparison area.
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Population with a Disability

Category	Comparison Area		Focus Area	
Total Civilian Population 18 Years and Over	5,085		1,853	
With a Disability	827	16.3%	259	14.0%

With a Disability

Observations	Focus area disability percentage is lower than the comparison area.
--------------	---

Population Living in Poverty						
Category	Comparison Area		Focus Area		<div>Comparison Chart</div> 	
Population for Whom Poverty Status is Determined	6,771		2,491			
Under 0.50	242	3.6%	165	6.6%		
0.50 to 0.99	459	6.8%	170	6.8%		
1.00 to 1.24	265	3.9%	88	3.5%		
1.25 to 1.49	349	5.2%	90	3.6%		
1.50 to 1.84	434	6.4%	209	8.4%		
1.85 to 1.99	214	3.2%	43	1.7%		
2.00 and over	4,808	71.0%	1,726	69.3%		
Observations	Focus area has a higher percentage in the under 0.50 poverty status than the comparison area.					
Age						
Category	Comparison Area		Focus Area		<div>Comparison Chart</div> 	
Total Population for Whom Age Is Determined	6,944		2,562			
Under 10 Years	833	12.0%	380	14.8%		
75 Years and Over	689	9.9%	227	8.9%		
Observations	The focus area has a higher percentage of the population that is under 10 years of age, but a lower percentage that is 75 or older.					
Zero Car Households						
Category	Comparison Area		Focus Area		<div>Comparison Chart</div> 	
Occupoed Housing Units	2,994		1,072			
No Vehicle Available	119	4.0%	38	3.5%		
Observations	The focus area has a much lower percentage of households with no vehicle than the comparison area.					
Stage 2 Conclusions						
Key Considerations for Selection	No key considerations were identified from the data.					

Safety Performance for Intersection Control Evaluation Tool					
Results					
Summary of crash prediction results for each alternative					
Project Information					
Project Name:	US 20 & US 59 Intersections Study		Intersection Type		At-Grade Intersections
Intersection:	US 20 & S Main St (US 59) - East Junction		Opening Year		2027
Agency:	Snyder & Associates		Design Year		2047
Project Reference:	S&A Project # - 123.1784.01B		Facility Type		On Rural Multilane Highway
City:	Holstein		Number of Legs		3-leg
State:	Iowa				
Date:	February 26th, 2025				
Analyst:	BMG				
Crash Prediction Summary					
Control Strategy	Crash Type	Opening Year	Design Year	Total Project Life Cycle	AADT Within Prediction Range?
1-lane Roundabout	Total	0.12	0.18	3.04	N/A
	Fatal & Injury	0.02	0.03	0.44	
2-lane Roundabout	Total	0.12	0.18	3.04	N/A
	Fatal & Injury	0.02	0.03	0.44	
Minor Road Stop	Total	0.33	0.50	8.69	Yes
	Fatal & Injury	0.11	0.17	2.95	
Traffic Signal	Total	No SPF	No SPF	No SPF	Yes
	Fatal & Injury	No SPF	No SPF	No SPF	
Unsignalized RCUT	Total	0.21	0.33	5.65	N/A
	Fatal & Injury	0.05	0.08	1.36	



ENGINEER'S PRELIMINARY OPINION OF PROBABLE PROJECT COST
UPDATED
03/20/25
US 20 & US 59 EAST JUNCTION - RCUT
HOLSTEIN, IOWA

		DESCRIPTION	E Jct RCUT QUANTITY	UNIT	UNIT PRICE	E Jct RCUT COST	COMMENTS
		EXCAVATION, CLASS 10 ROADWAY AND BORROW	2600	CY	\$ 12.00	\$ 31,200.00	
		GRANULAR SUBBASE	2100	SY	\$ 12.00	\$ 25,200.00	
		SUBGRADE PREP	2100	SY	\$ 5.00	\$ 10,500.00	
		TOPSOIL, STRIP SALVAGE AND SPREAD	2600	CY	\$ 12.60	\$ 32,760.00	
		SUBDRAIN	4000	LF	\$ 12.00	\$ 48,000.00	
		GRANULAR SHOULDER REMOVAL	700	SY	\$ 20.00	\$ 14,000.00	
		PAVEMENT, PCC	2000	SY	\$ 78.75	\$ 157,500.00	
		GRANULAR SHOULDER	700	SY	\$ 20.00	\$ 14,000.00	
		PAVED MEDIAN, PCC	500	SY	\$ 80.00	\$ 40,000.00	
		PAVEMENT MARKINGS	1	LS	\$ 15,000.00	\$ 15,000.00	
		SIGNAGE	1	LS	\$ 7,000.00	\$ 7,000.00	
		SURFACE RESTORATION	1	LS	\$ 12,000.00	\$ 12,000.00	
		EROSION CONTROL & SWPPP	1	LS	\$ 7,000.00	\$ 7,000.00	
		TRAFFIC CONTROL (5%)	1	LS	\$ 20,708.00	\$ 20,708.00	
		MOBILIZATION (5%)	1	LS	\$ 20,708.00	\$ 20,708.00	

Subtotal:	\$	455,576
Other Project Costs		
ENGINEERING (15%)	\$	68,336
CONTINGENCY (30%)	\$	136,673
TOTAL PROJECT COST:	\$	660,585



ENGINEER'S PRELIMINARY OPINION OF PROBABLE PROJECT COST
UPDATED
03/20/25
US 20 & US 59 EAST JUNCTION - ROUNDABOUT
HOLSTEIN, IOWA

		DESCRIPTION	E Jct RAB QUANTITY	UNIT	UNIT PRICE	E Jct RAB COST	COMMENTS
		EXCAVATION, CLASS 10 ROADWAY AND BORROW	8000	CY	\$ 12.00	\$ 96,000.00	
		GRANULAR SUBBASE	9100	SY	\$ 12.00	\$ 109,200.00	
		SUBGRADE PREP	9100	SY	\$ 5.00	\$ 45,500.00	
		SPECIAL BACKFILL	800	CY	\$ 36.75	\$ 29,400.00	
		TOPSOIL, STRIP SALVAGE AND SPREAD	4000	CY	\$ 12.60	\$ 50,400.00	
		SUBDRAIN	3600	LF	\$ 12.00	\$ 43,200.00	
		PAVEMENT REMOVAL	7040	SY	\$ 40.00	\$ 281,600.00	
		PAVEMENT, PCC	8920	SY	\$ 78.75	\$ 702,450.00	
		PAVED SHOULDER, HMA	3440	SY	\$ 60.00	\$ 206,400.00	
		PAVEMENT MARKINGS	1	LS	\$ 13,500.00	\$ 13,500.00	
		SIGNAGE	1	LS	\$ 130,000.00	\$ 130,000.00	Includes 2 trusses for US 20 approaches
		SURFACE RESTORATION	1	LS	\$ 13,500.00	\$ 13,500.00	
		EROSION CONTROL & SWPPP	1	LS	\$ 13,500.00	\$ 13,500.00	
		TRAFFIC CONTROL (5%)	1	LS	\$ 86,057.50	\$ 86,057.50	
		MOBILIZATION (5%)	1	LS	\$ 86,057.50	\$ 86,057.50	
Subtotal: \$ 1,906,765							
Other Project Costs							
ENGINEERING (15%) \$ 286,015							
CONTINGENCY (30%) \$ 572,030							
TOTAL PROJECT COST: \$ 2,764,810							

Life Cycle Cost Evaluation Tool

Outputs

This sheet compiles the data from summary tables in individual alternatives sheets. To populate the output sheet press the "Setup Worksheets" button in the Alternatives_Masterlist tab.

Agency:

Iowa Department of Transportation

Project Name:

US 55 & US 20 Intersections Study

Project Reference:

=IF(NOT(ISBLANK('Organization Information'!B7)), 'Organization Information'!B7, "")

Intersection:

US 55 & US 20 East Junction

City:

Holstein

State:

Iowa

Performing Department or Organization:

Snyder & Associates

Date:

3/18/2025

Analyst:

BMG

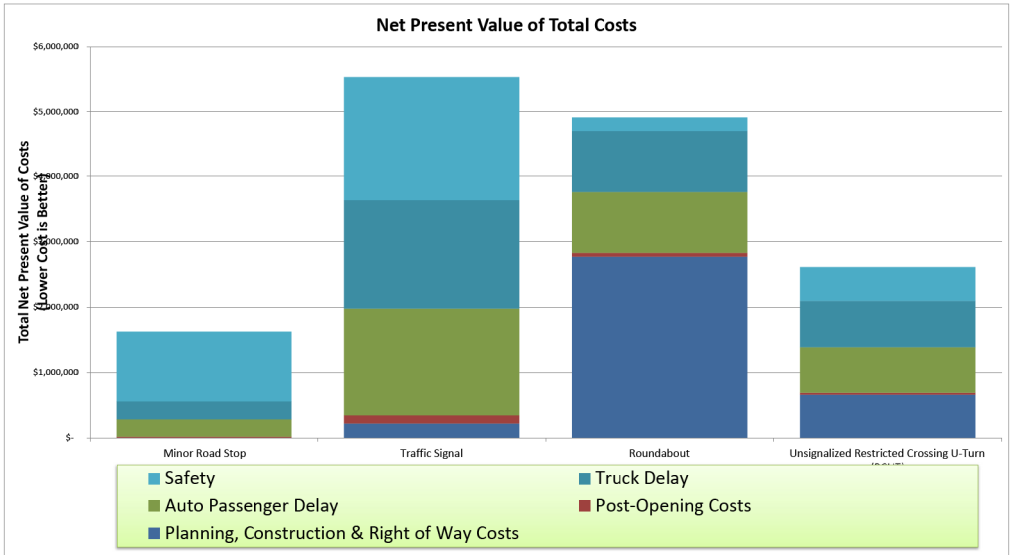
Analysis Type

At-Grade Intersection

Analysis Summary				
Cost Categories	Net Present Value of Costs			
	Minor Road Stop	Traffic Signal	Roundabout	Unsignalized Restricted Crossing U-Turn (RCUT)
Planning, Construction & Right of Way Costs	\$ -	\$ 217,500	\$ 2,764,810	\$ 660,585
Post-Opening Costs	\$ 14,590	\$ 127,409	\$ 58,361	\$ 29,181
Auto Passenger Delay	\$ 269,304	\$ 1,633,690	\$ 935,991	\$ 699,096
Truck Delay	\$ 272,792	\$ 1,654,849	\$ 948,113	\$ 708,150
Safety	\$ 1,071,279	\$ 1,901,593	\$ 207,962	\$ 509,309
Total cost	\$1,627,965	\$5,535,040	\$4,915,238	\$2,606,320

To exclude cost categories from the comparison clear all values in the row.

Select Base Case for Benefit-Cost Comparison: (Choose from list)	Minor Road Stop		Note: The "Benefit-Cost Ratio" is only applicable for improvements to an existing intersection.	
Benefit Categories	Net Present Value of Benefits Relative to Base Case			
	Minor Road Stop	Traffic Signal	Roundabout	Unsignalized Restricted Crossing U-Turn (RCUT)
	Auto Passenger Delay	\$ (1,364,386)	\$ (666,687)	\$ (429,792)
	Truck Delay	\$ (1,382,057)	\$ (675,322)	\$ (435,358)
	Safety	\$ (830,314)	\$ 863,317	\$ 561,971
	Net Present Value of Benefits	\$ (3,576,757)	\$ (478,692)	\$ (303,180)
	Net Present Value of Costs	\$ 330,319	\$ 2,808,581	\$ 675,175
	Benefit-Cost (B/C) Ratio	Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.	Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.	Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.
	Delay B/C	Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.	Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.	Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.
	Safety B/C	Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.	0.31	0.81



INTERSECTION EVALUATION TOOL (ICE) PROCESS TOOL STAGE 2

Project Name:US 20 & US 59 W Jct

Intersection:US 20 at US 59 / S Main St / Indorf Ave

Location:Holstein, IA

Analyst:TDCDate: 2/14/2024

Review Mtg Date:

Review Meeting Attendees (List):

7. CONTEXT & EQUITY SUMMARY

Study area travel modes present and/or likely:

Travel needs for transporation mode(s):

History of neighborhood & road development:

Surrounding land uses / roadside development:

Vehicles, Trucks, possibly oversize/overweight. No pedestrians/bicycles/transit

Access to Holstein to the north, access to the hotel and convenience store on the south

US 20 has been a 4-lane expressway near this intersection and recently extended to the north

Southwest - Hotel, Agriculture, Southeast - Commercial/Manufacturing, Northwest - Agriculture

Summary of Equity Studies (from Equity Worksheet):

No key considerations were identified from the data.

No significant differences between the focus and comparison areas.

Percentage of Latino is similar between the focus area and the comparison area.

Focus area disability percentage is lower than the comparison area.

Focus area has a higher percentage in the under 0.50 poverty status than the comparison area.

The focus area has a higher percentage of the population that is under 10 years of age, but a lower percentage that is 75 or older.

The focus area has a much lower percentage of households with no vehicle than the comparison area.

8. SELECTION CRITERIA

Intersection Form	Meets Equity Goals?	Stakeholder Support	Average Vehicle Delay			Worst Vehicle Delay			20-Flag Results		Predictive Safety		Construction Cost	Life Cycle Costs		Environmental Feasibility
			AM Peak	PM Peak	Mid Day	AM Peak	PM Peak	Mid Day	Ped	Bike	PDO	Fatal/Inj		Costs	B/C	
Multilane Roundabout	Yes	Strong	5	5	-	6	6	-	31%	30%	0.66	0.16	\$3,356,401	\$3,400,172	1.88	No perceived impacts
RCUT / J-Turn (stop control)	Yes	Negative	4	5	-	42	42	-	39%	36%	1.02	0.50	\$1,430,317	\$1,444,907	1.82	No perceived impacts
Traffic Signal	Yes	Unknown	10	8	-	10	10	-	41%	48%	5.14	3.88	\$290,000	\$402,819	0.00	No perceived impacts

9. REVIEW MEETING NOTES AND RECOMMENDATIONS

Recommended Intersection Concept:<--Select Recommended Alternative-->

Notes from review team meeting:

FILE NO. --

ENGLISH

DESIGN TEAM SCHROCK/TAMRAKAR

IDA COUNTY

PROJECT NUMBER HSIPX-020-2(157)--3L-47

SHEET NUMBER A.19

5:03:42 PM8/16/2025jacker1pw:\NTPwint1.dot.int.lan:PWMain\Documents\Projects\4702001024\Design\CADD_Files\Sheet_Files\SHT_47020157Z04_A01.dgn

Existing Traffic Analysis Results			AM Peak			PM Peak		
Intersection	Control Type	Approach / Movement	Delay / Vehicle (s)	LOS	95th % Queue (ft)	Delay / Vehicle (s)	LOS	95th % Queue (ft)
US 20 & US 59 (West Jct)	Signal	Eastbound	10	B	64	10	A	41
		Westbound	10	A	40	8	A	35
		Northbound	9	A	37	7	A	23
		Southbound	7	A	31	6	A	47
		Overall	10	A	-	8	A	-
	RCUT	Eastbound Left	9	A	-	9	A	-
		Westbound Left	9	A	-	9	A	-
		Northbound Left	42	D	-	41	D	-
		Northbound Thru	42	D	-	41	D	-
		Northbound Right	10	A	-	10	A	-
		Southbound Left	41	D	-	42	D	-
		Southbound Thru	41	D	-	42	D	-
		Southbound Right	10	A	-	10	A	-
	RAB	Eastbound	5	A	22	5	A	16
		Westbound	6	A	22	5	A	19
		Northbound	6	A	15	5	A	6
		Southbound	5	A	12	6	A	26
		Overall	6	A	-	5	A	-
	RAB (WB RT Bypass Lane)	Eastbound	5	A	22	5	A	16
		Westbound	4	A	15	3	A	9
		Northbound	6	A	15	5	A	6
		Southbound	5	A	12	6	A	26
		Overall	5	A	-	5	A	-
US 20 & US 59 (East Jct)	Stop Control (NB)	Northbound	11	B	6	12	B	10
		Westbound Left	8	A	0	8	A	0
	Signal	Eastbound	4	A	20	4	A	24
		Westbound	17	B	42	16	B	40
		Northbound	12	B	38	12	B	42
		Overall	10	B	-	10	A	-
	RCUT	Westbound Left	8	A	-	9	A	-
		Northbound Left	34	C	-	34	C	-
		Northbound Right	10	A	-	10	A	-
	RAB	Eastbound	4	A	15	5	A	19
		Westbound	5	A	13	5	A	13
		Northbound	5	A	6	5	A	9
		Overall	5	A	-	5	A	-

Opening Year (2027) Analysis Results			AM Peak			PM Peak		
Intersection	Control Type	Approach / Movement	Delay / Vehicle (s)	LOS	95th % Queue (ft)	Delay / Vehicle (s)	LOS	95th % Queue (ft)
US 20 & US 59 (West Jct)	Signal	Eastbound	11	B	70	10	A	43
		Westbound	11	B	43	8	A	37
		Northbound	9	A	39	7	A	24
		Southbound	8	A	33	7	A	49
		Overall	10	B	-	8	A	-
	RCUT	Eastbound Left	9	A	-	9	A	-
		Westbound Left	9	A	-	9	A	-
		Northbound Left	42	D	-	41	D	-
		Northbound Thru	42	D	-	41	D	-
		Northbound Right	10	A	-	10	A	-
		Southbound Left	42	D	-	42	D	-
		Southbound Thru	42	D	-	42	D	-
		Southbound Right	10	A	-	11	B	-
	RAB	Eastbound	6	A	25	5	A	19
		Westbound	6	A	25	5	A	19
		Northbound	7	A	15	6	A	6
		Southbound	6	A	15	6	A	29
		Overall	6	A	-	6	A	-
	RAB (WB RT Bypass Lane)	Eastbound	6	A	25	5	A	19
		Westbound	4	A	15	3	A	12
		Northbound	7	A	15	6	A	6
		Southbound	6	A	15	6	A	29
		Overall	5	A	-	5	A	-
US 20 & US 59 (East Jct)	Stop Control (NB)	Northbound	12	B	8	13	B	10
		Westbound Left	8	A	0	8	A	0
	Signal	Eastbound	4	A	22	4	A	25
		Westbound	16	B	47	17	B	43
		Northbound	12	B	39	13	B	47
		Overall	10	B	-	10	A	-
	RCUT	Westbound Left	8	A	-	9	A	-
		Northbound Left	34	C	-	34	C	-
		Northbound Right	10	A	-	10	A	-
	RAB	Eastbound	5	A	15	5	A	19
		Westbound	5	A	16	5	A	13
		Northbound	5	A	9	5	A	9
		Overall	5	A	-	5	A	-

Design Year (2047) Analysis Results			AM Peak			PM Peak		
Intersection	Control Type	Approach / Movement	Delay / Vehicle (s)	LOS	95th % Queue (ft)	Delay / Vehicle (s)	LOS	95th % Queue (ft)
US 20 & US 59 (West Jct)	Signal	Eastbound	16	B	114	11	B	65
		Westbound	12	B	60	10	B	54
		Northbound	13	B	52	8	A	31
		Southbound	10	A	44	8	A	70
		Overall	14	B	-	10	A	-
	RCUT	Eastbound Left	10	A	-	9	A	-
		Westbound Left	9	A	-	9	A	-
		Northbound Left	43	D	-	42	D	-
		Northbound Thru	43	D	-	42	D	-
		Northbound Right	11	B	-	11	A	-
		Southbound Left	43	D	-	44	D	-
		Southbound Thru	43	D	-	44	D	-
		Southbound Right	11	B	-	12	B	-
	RAB	Eastbound	7	A	37	6	A	28
		Westbound	7	A	37	6	A	28
		Northbound	9	A	28	7	A	12
		Southbound	7	A	23	9	A	49
		Overall	7	A	-	7	A	-
	RAB (WB RT Bypass Lane)	Eastbound	7	A	37	6	A	28
		Westbound	5	A	25	3	A	15
		Northbound	9	A	28	7	A	12
		Southbound	7	A	23	9	A	49
		Overall	6	A	-	6	A	-
US 20 & US 59 (East Jct)	Stop Control (NB)	Northbound	14	B	12	16	C	20
		Westbound Left	8	A	0	9	A	0
	Signal	Eastbound	4	A	31	4	A	37
		Westbound	31	C	103	30	C	95
		Northbound	15	B	48	17	B	58
		Overall	17	B	-	15	B	-
	RCUT	Westbound Left	9	A	-	9	A	-
		Northbound Left	35	C	-	35	C	-
		Northbound Right	10	B	-	10	B	-
	RAB	Eastbound	5	A	22	5	A	28
		Westbound	5	A	22	5	A	19
		Northbound	5	A	12	6	A	14
		Overall	5	A	-	5	A	-

NCHRP 17-98 Equity Assessment Worksheet - Stage 2

Instructions

This worksheet is intended to record the results from the Stage 1 and Stage 2 Equity assessment, developed through project NCHRP 17-98: Guide for Intersection Control Evaluation. All fields are designed as either open-ended answer fields to document Stage 1 assessment questions or as tables to record the more detailed demographic assessment completed in Stage 2. For further details, the user is encouraged to consult the final project report and the example problem contained there. An agency is open to customize this worksheet to fit its specific equity assessment process.

Overview

Project Name	US 20 & US 59 W Jct	Organization	Iowa DOT / Snyder & Associates, Inc.
Major Roadway	US 20	Analyst	Tim Crouch
Minor Rowadway	US 59 / Main St	Data Completed	2/20/2025
Analysis Year	2019-2023	Link to Location	

Stage 2 Equity Screening

Comparison Area	Ida County		Focus Area	Census Block Group - Holstein area
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Racial Demographics

Category	Comparison Area		Focus Area	
Total Population for Whom Race Is Determined:	6,944		2,562	
White Alone	6,543	94.2%	2,365	92.3%
Black or African American	61	0.9%	48	1.9%
American Indian and Alaska Native	5	0.1%	0	0.0%
Asian	28	0.4%	20	0.8%
Native Hawaiian and Other Pacific Islander	0	0.0%	0	0.0%
Some Other Race	95	1.4%	33	1.3%
Two or More Races	212	3.1%	96	3.7%
TOTAL BIPOC	401	5.8%	197	7.7%

Comparison Chart

Race	Comparison Area (%)	Focus Area (%)
White Alone	94.2%	92.3%
Black or African American	0.9%	1.9%
American Indian and Alaska Native	0.1%	0.0%
Asian	0.4%	0.8%
Native Hawaiian and Other Pacific Islander	0.0%	0.0%
Some Other Race	1.4%	1.3%
Two or More Races	3.1%	3.7%
TOTAL BIPOC	5.8%	7.7%

Observations	No significant differences between the focus and comparison areas.
--------------	--

Hispanic and Latin(o/a/x)

Category	Comparison Area		Focus Area	
Total Population for Whom Status Is Determined:	6,944		2,562	
Hispanic and Latin(o/a/x)	271	3.9%	111	4.3%

Hispanic and Latin(o/a/x)

Area	Percentage
Comparison Area	3.9%
Focus Area	4.3%

Observations	Percentage of Latino is similar between the focus area and the comparison area.
--------------	---

Population with a Disability

Category	Comparison Area		Focus Area	
Total Civilian Population 18 Years and Over	5,085		1,853	
With a Disability	827	16.3%	259	14.0%

With a Disability

Area	Percentage
Comparison Area	16.3%
Focus Area	14.0%

Observations	Focus area disability percentage is lower than the comparison area.
--------------	---

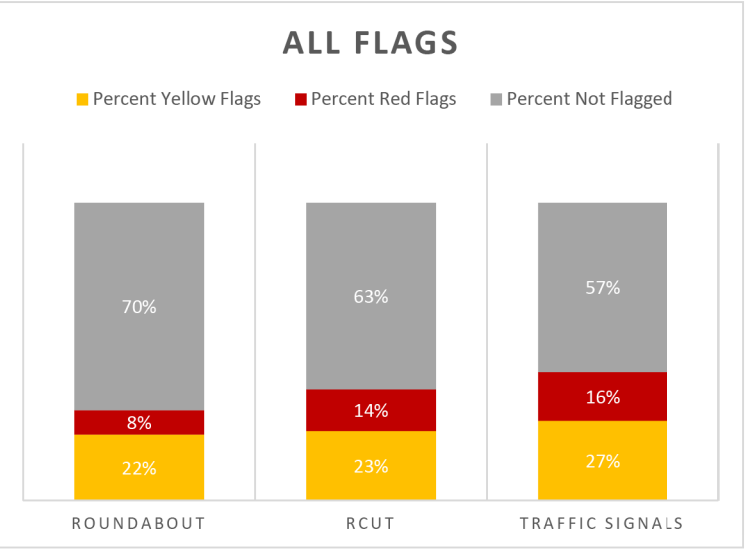
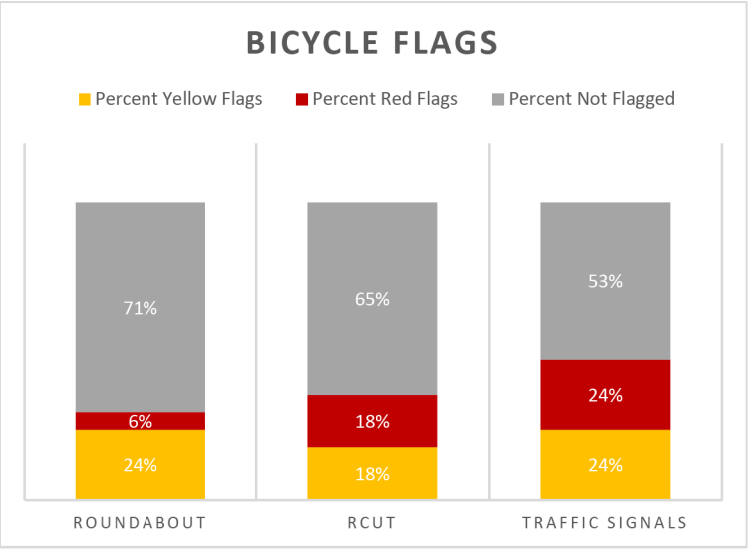
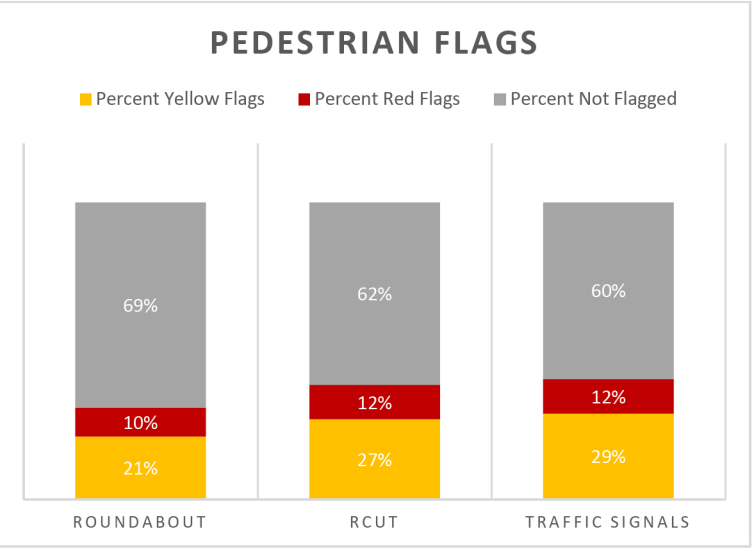
Population Living in Poverty						
Category	Comparison Area		Focus Area		<div>Comparison Chart</div>	
Population for Whom Poverty Status is Determined	6,771		2,491			
Under 0.50	242	3.6%	165	6.6%		
0.50 to 0.99	459	6.8%	170	6.8%		
1.00 to 1.24	265	3.9%	88	3.5%		
1.25 to 1.49	349	5.2%	90	3.6%		
1.50 to 1.84	434	6.4%	209	8.4%		
1.85 to 1.99	214	3.2%	43	1.7%		
2.00 and over	4,808	71.0%	1,726	69.3%		
Observations	Focus area has a higher percentage in the under 0.50 poverty status than the comparison area.					
Age						
Category	Comparison Area		Focus Area		<div></div>	
Total Population for Whom Age Is Determined:	6,944		2,562			
Under 10 Years	833	12.0%	380	14.8%		
75 Years and Over	689	9.9%	227	8.9%		
Observations	The focus area has a higher percentage of the population that is under 10 years of age, but a lower percentage that is 75 or older.					
Zero Car Households						
Category	Comparison Area		Focus Area		<div>No Vehicle Available</div>	
Occupoed Housing Units	2,994		1,072			
No Vehicle Available	119	4.0%	38	3.5%		
Observations	The focus area has a much lower percentage of households with no vehicle than the comparison area.					
Stage 2 Conclusions						
Key Considerations for Selection	No key considerations were identified from the data.					

Design Flag Assessment NCHRP 7-25 Method

Results Summary

Intersection: US 20 & US 59 West Junction

		Scenario 1	Scenario 2	Scenario 3
		Roundabout	RCUT	Traffic Signals
Pedestrian	Percent Yellow Flags	21%	27%	29%
	Percent Red Flags	10%	12%	12%
	Percent Not Flagged	69%	62%	60%
Bicycle	Percent Yellow Flags	24%	18%	24%
	Percent Red Flags	6%	18%	24%
	Percent Not Flagged	71%	65%	53%
All	Percent Yellow Flags	22%	23%	27%
	Percent Red Flags	8%	14%	16%
	Percent Not Flagged	70%	63%	57%



Safety Performance for Intersection Control Evaluation Tool					
Results					
Summary of crash prediction results for each alternative					
Project Information					
Project Name:	US 20 & US 59 Intersections Study			Intersection Type	At-Grade Intersections
Intersection:	US 20 & S Main St (US 59) - West Junction			Opening Year	2027
Agency:	Snyder & Associates			Design Year	2047
Project Reference:	S&A Project # - 123.1784.01B			Facility Type	On Rural Multilane Highway
City:	Holstein			Number of Legs	4-leg
State:	Iowa				
Date:	February 26th, 2025				
Analyst:	BMG				
Crash Prediction Summary					
Control Strategy	Crash Type	Opening Year	Design Year	Total Project Life Cycle	AADT Within Prediction Range?
1-lane Roundabout	Total	0.62	0.82	15.15	N/A
	Fatal & Injury	0.12	0.16	3.01	
2-lane Roundabout	Total	0.62	0.82	15.15	N/A
	Fatal & Injury	0.12	0.16	3.01	
Minor Road Stop	Total	1.78	2.34	43.28	Yes
	Fatal & Injury	0.82	1.10	20.08	
Traffic Signal	Total	7.18	9.02	170.17	Yes
	Fatal & Injury	3.19	3.88	74.34	
Unsignalized RCUT	Total	1.16	1.52	28.13	N/A
	Fatal & Injury	0.38	0.50	9.24	



ENGINEER'S PRELIMINARY OPINION OF PROBABLE PROJECT COST

UPDATED
03/20/25

US 20 & US 59 WEST JUNCTION - RCUT
HOLSTEIN, IOWA

		DESCRIPTION	W Jct RCUT QUANTITY	UNIT	UNIT PRICE	W Jct RCUT COST	COMMENTS
		EXCAVATION, CLASS 10 ROADWAY AND BORROW	4950	CY	\$ 12.00	\$ 59,400.00	
		GRANULAR SUBBASE	5565	SY	\$ 12.00	\$ 66,780.00	
		SUBGRADE PREP	5565	SY	\$ 5.00	\$ 27,825.00	
		TOPSOIL, STRIP SALVAGE AND SPREAD	4950	CY	\$ 12.60	\$ 62,370.00	
		SUBDRAIN	4000	LF	\$ 12.00	\$ 48,000.00	
		GRANULAR SHOULDER REMOVAL	1800	SY	\$ 20.00	\$ 36,000.00	
		PAVEMENT, PCC	5300	SY	\$ 78.75	\$ 417,375.00	
		GRANULAR SHOULDER	1800	SY	\$ 20.00	\$ 36,000.00	
		PAVED MEDIAN, PCC	1100	SY	\$ 80.00	\$ 88,000.00	
		PAVEMENT MARKINGS	1	LS	\$ 20,000.00	\$ 20,000.00	
		SIGNAGE	1	LS	\$ 10,000.00	\$ 10,000.00	
		SURFACE RESTORATION	1	LS	\$ 15,000.00	\$ 15,000.00	
		EROSION CONTROL & SWPPP	1	LS	\$ 10,000.00	\$ 10,000.00	
		TRAFFIC CONTROL (5%)	1	LS	\$ 44,837.50	\$ 44,837.50	
		MOBILIZATION (5%)	1	LS	\$ 44,837.50	\$ 44,837.50	
Subtotal: \$ 986,425							
Other Project Costs							
ENGINEERING (15%)					\$	147,964	
CONTINGENCY (30%)					\$	295,928	
TOTAL PROJECT COST:					\$	1,430,317	



ENGINEER'S PRELIMINARY OPINION OF PROBABLE PROJECT COST
UPDATED
03/20/25
US 20 & US 59 WEST JUNCTION - ROUNDABOUT
HOLSTEIN, IOWA

		DESCRIPTION	W Jct RAB QUANTITY	UNIT	UNIT PRICE	W Jct RAB COST	COMMENTS
		EXCAVATION, CLASS 10 ROADWAY AND BORROW	10000	CY	\$ 12.00	\$ 120,000.00	
		GRANULAR SUBBASE	11445	SY	\$ 12.00	\$ 137,340.00	
		SUBGRADE PREP	11445	SY	\$ 5.00	\$ 57,225.00	
		SPECIAL BACKFILL	1000	CY	\$ 36.75	\$ 36,750.00	
		TOPSOIL, STRIP SALVAGE AND SPREAD	5000	CY	\$ 12.60	\$ 63,000.00	
		SUBDRAIN	4000	LF	\$ 12.00	\$ 48,000.00	
		PAVEMENT REMOVAL	8800	SY	\$ 40.00	\$ 352,000.00	
		PAVEMENT, PCC	10900	SY	\$ 78.75	\$ 858,375.00	
		PAVED SHOULDER, HMA	4300	SY	\$ 60.00	\$ 258,000.00	
		PAVEMENT MARKINGS	1	LS	\$ 15,000.00	\$ 15,000.00	
		SIGNAGE	1	LS	\$ 130,000.00	\$ 130,000.00	Includes 2 trusses for US 20 approaches
		SURFACE RESTORATION	1	LS	\$ 15,000.00	\$ 15,000.00	
		EROSION CONTROL & SWPPP	1	LS	\$ 15,000.00	\$ 15,000.00	
		TRAFFIC CONTROL (5%)	1	LS	\$ 104,534.50	\$ 104,534.50	
		MOBILIZATION (5%)	1	LS	\$ 104,534.50	\$ 104,534.50	
Subtotal: \$ 2,314,759							
Other Project Costs							
ENGINEERING (15%) \$ 347,214							
CONTINGENCY (30%) \$ 694,428							
TOTAL PROJECT COST: \$ 3,356,401							

Life Cycle Cost Evaluation Tool

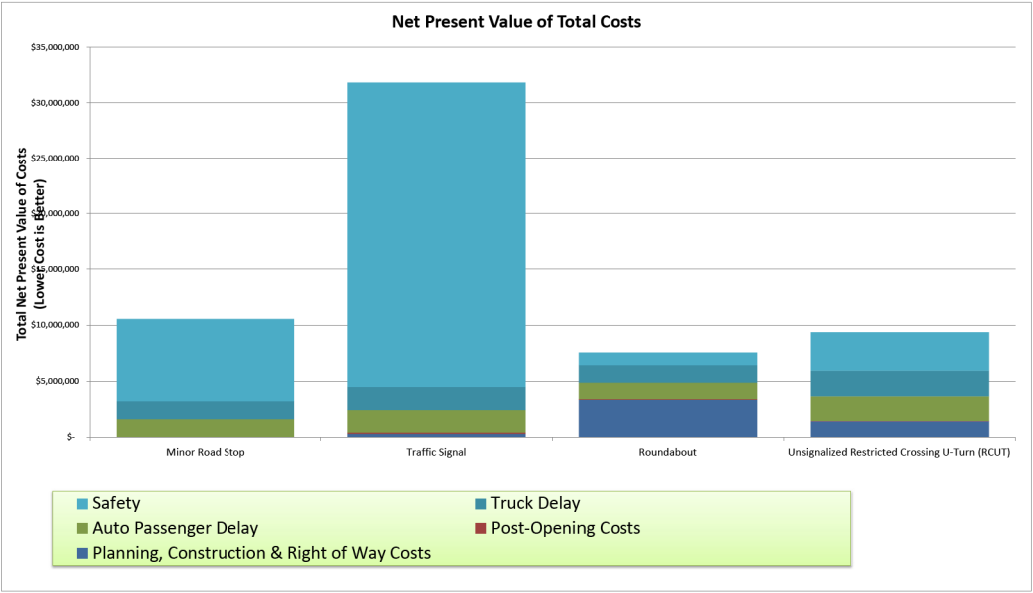
Outputs

This sheet compiles the data from summary tables in individual alternatives sheets. To populate the output sheet press the "Setup Worksheets" button in the Alternatives_MasterList tab.

Agency:	Iowa Department of Transportation
Project Name:	US 59 & US 20 Intersections Study
Project Reference:	=IF(NOT(ISBLANK('Organization Information'!B7)), 'Organization Information'!B7, "")
Intersection:	US 59 & US 20 West Junction
City:	Holstein
State:	Iowa
Performing Department or Organization:	Snyder & Associates
Date:	3/18/2025
Analyst:	BMG
Analysis Type	At-Grade Intersection

Analysis Summary				
Cost Categories	Net Present Value of Costs			
	Minor Road Stop	Traffic Signal	Roundabout	Unsignalized Restricted Crossing U-Turn (RCUT)
Planning, Construction & Right of Way Costs	\$ -	\$ 290,000	\$ 3,356,401	\$ 1,430,317
Post-Opening Costs	\$ 14,590	\$ 127,409	\$ 58,361	\$ 29,181
Auto Passenger Delay	\$ 1,594,891	\$ 2,032,877	\$ 1,478,606	\$ 2,212,158
Truck Delay	\$ 1,615,548	\$ 2,059,206	\$ 1,497,756	\$ 2,240,809
Safety	\$ 7,312,916	\$ 27,321,205	\$ 1,156,559	\$ 3,443,356
Total cost	\$10,537,945	\$31,830,696	\$7,547,683	\$9,355,821
Select Base Case for Benefit-Cost Comparison: (Choose from list)	Minor Road Stop		Note: The "Benefit-Cost Ratio" is only applicable for im	
Benefit Categories	Net Present Value of Benefits Relative to Base Case			
	Minor Road Stop	Traffic Signal	Roundabout	Unsignalized Restricted Crossing U-Turn (RCUT)
Auto Passenger Delay	\$	(437,985)	\$ 116,286	\$ (617,267)
Truck Delay	\$	(443,658)	\$ 117,792	\$ (625,261)
Safety	\$	(20,008,289)	\$ 6,156,356	\$ 3,869,559
Net Present Value of Benefits	\$	(20,889,932)	\$ 6,390,434	\$ 2,627,032
Net Present Value of Costs	\$	402,819	\$ 3,400,172	\$ 1,444,907
Benefit-Cost (B/C) Ratio		Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.	1.88	1.82
Delay B/C		Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.	0.07	Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.
Safety B/C		Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.	1.81	2.68

To exclude cost categories from the comparison clear all values in the row.



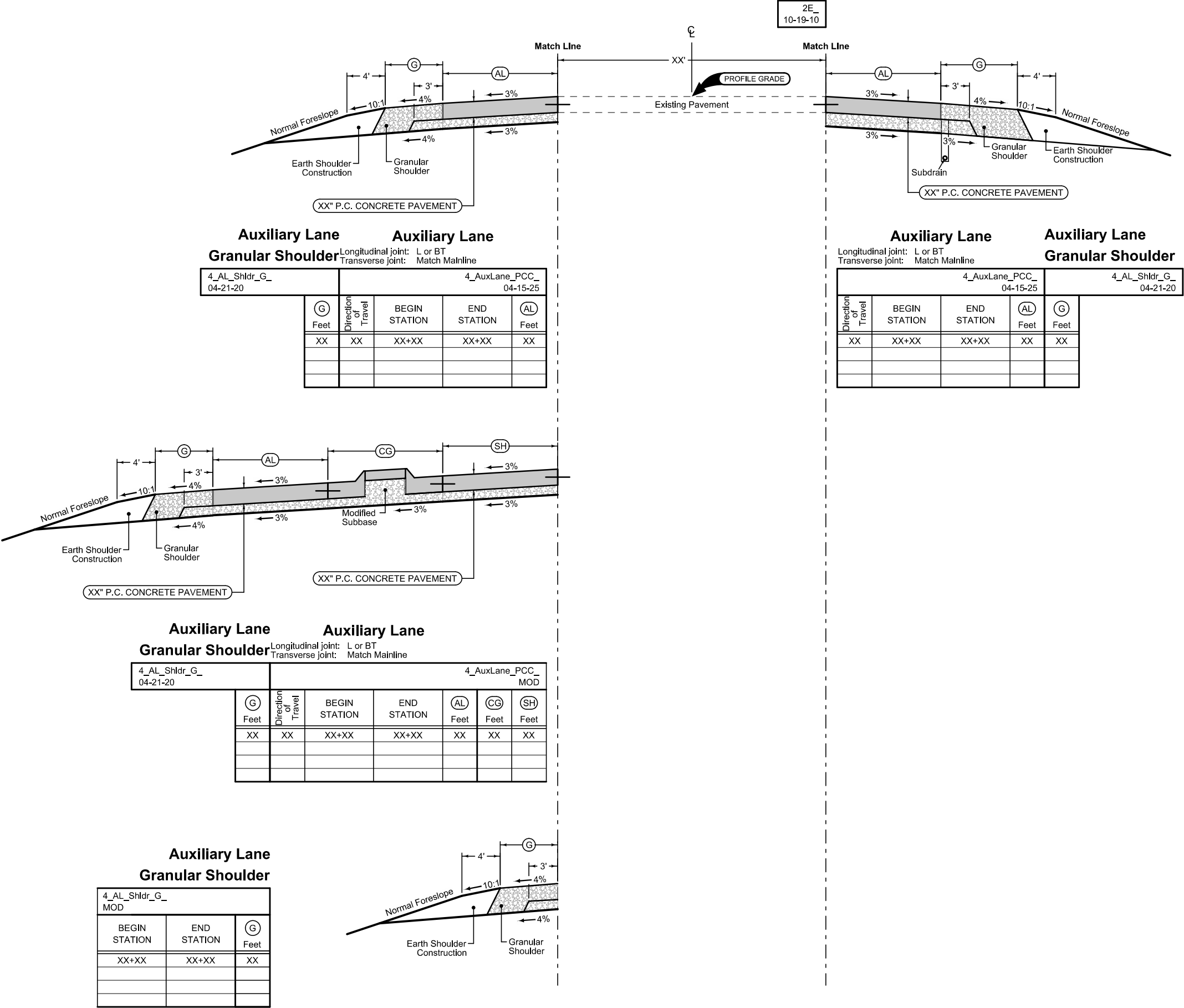
Questions:

What size of wind blades make these turns?

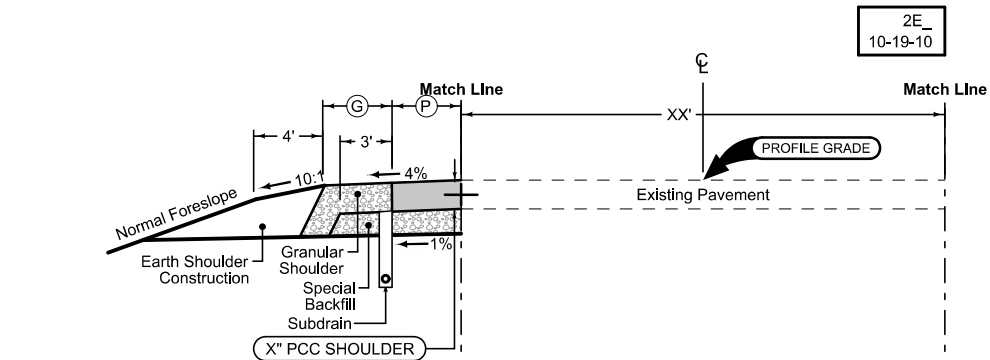
Do the wind blade turn paths need paved or is granular acceptable?

The current turn lanes have granular shoulders.
Should the new ones have granular or paved?

What is the preferred type of transition on
US 59 at the west junction to connect to the 4-lane?



US 20 - Eastbound

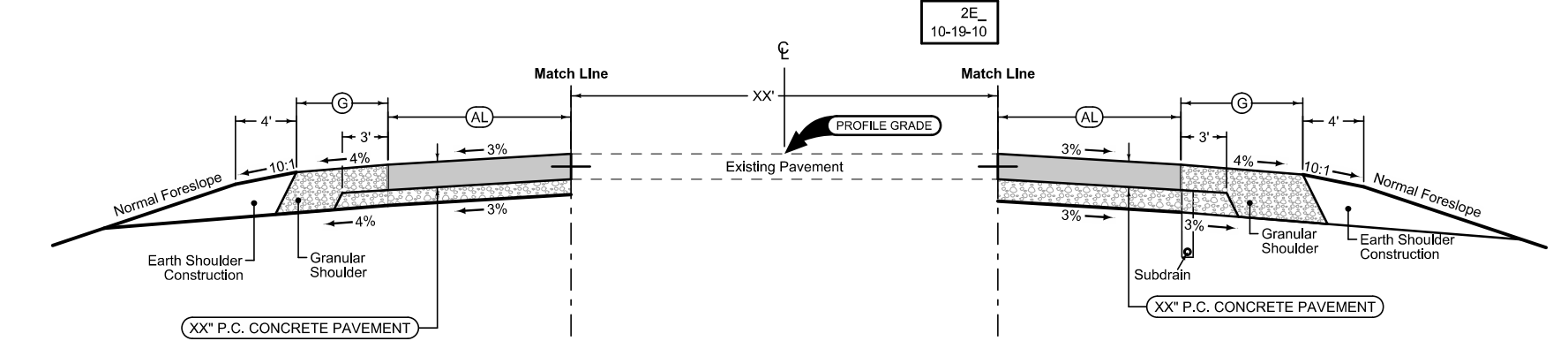


Combination Shoulder

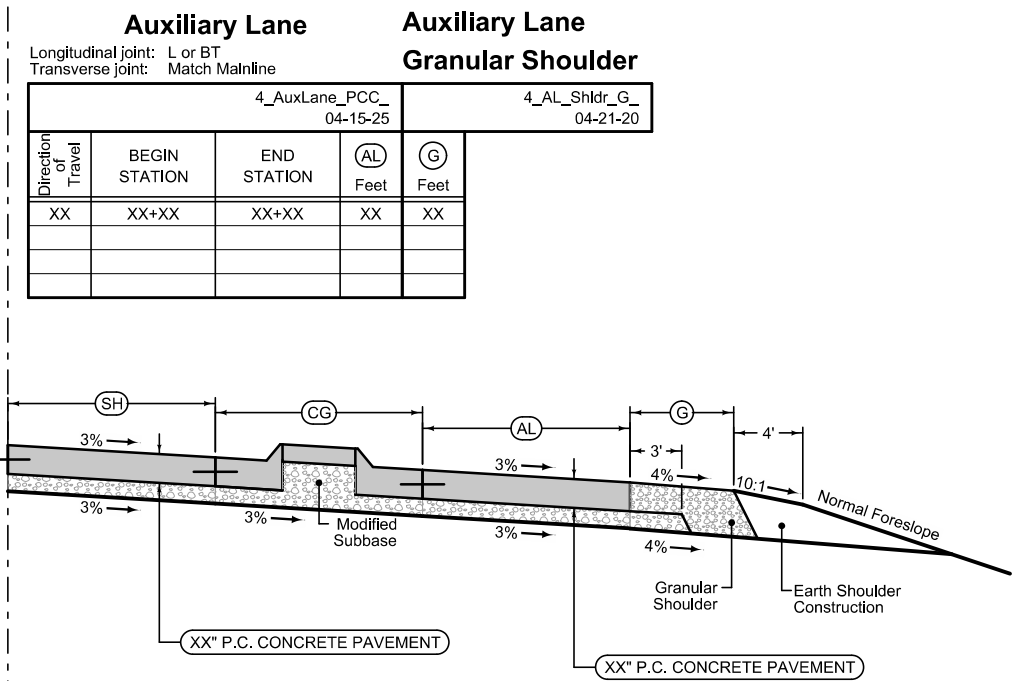
Shoulder Jointing:
Longitudinal joint: B

4_C 04-21-20				
Direction of Travel	BEGIN STATION	END STATION	(P) Feet	(G) Feet
XX	XX+XX	XX+XX	XX	XX

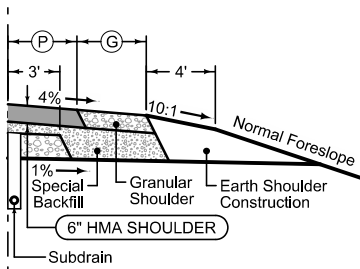
US 20 - Eastbound



Auxiliary Lane Granular Shoulder		Auxiliary Lane			
4_AL_Shldr_G_04-21-20		4_AuxLane_PCC_04-15-25			
		(G) Feet	Direction of Travel	BEGIN STATION	END STATION (AL) Feet
		XX	XX	XX+XX	XX+XX XX

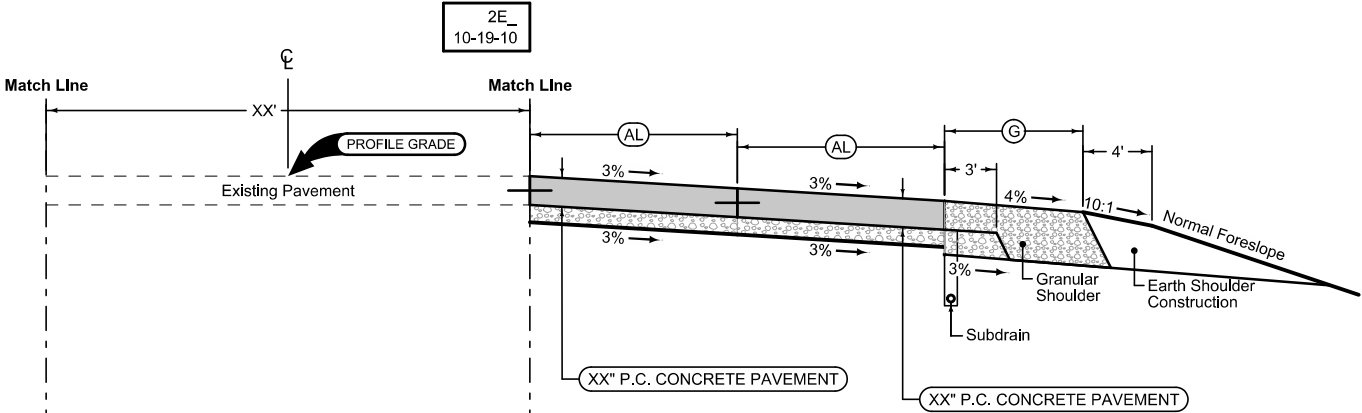


Auxiliary Lane Granular Shoulder						Auxiliary Lane Granular Shoulder	
4_AuxLane_PCC_MOD						4_AL_Shldr_G_04-21-20	
(SH) Feet	(CG) Feet	(AL) Feet	END STATION	BEGIN STATION	Direction of Travel	(G) Feet	
XX	XX	XX	XX+XX	XX+XX	XX	XX	



Combination Shoulder				
Shoulder Jointing: Longitudinal joint: B				
4_C_04-21-20				
Direction of Travel	BEGIN STATION	END STATION	(P) Feet	(G) Feet
XX	XX+XX	XX+XX	XX	XX

US 20 - Westbound



Auxiliary Lane

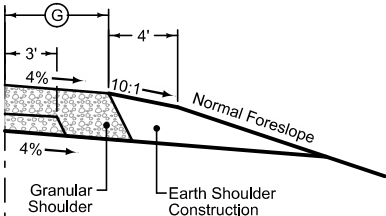
Auxiliary Lane

Longitudinal joint: L or BT

Transverse joint: Match Mainline

Granular Shoulder

4_AuxLane_PCC_ MOD					4_AL_Shldr_G_ 04-21-20	
(SH) Feet	(AL) Feet	END STATION	BEGIN STATION	Direction of Travel	(G) Feet	
XX	XX	XX+XX	XX+XX	XX	XX	

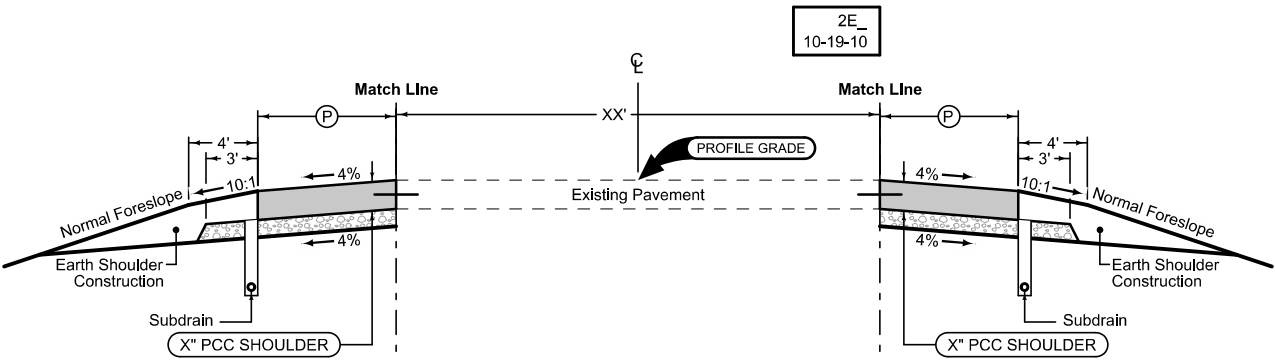


Auxiliary Lane

Granular Shoulder

4_AL_Shldr_G_ MOD		
(G) Feet	END STATION	BEGIN STATION
XX	XX+XX	XX+XX

US 20 - Westbound



Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, or L-2
Transverse joints: C at 17' spacing

2_P_FullPCC_ 04-15-25		
STATION TO STATION		(P) Feet
XX+XX	XX+XX	XX

Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, or L-2
Transverse joints: C at 17' spacing

2_P_FullPCC_ 04-15-25		
(P) Feet	STATION TO STATION	
XX	XX+XX	XX+XX

SURVEY SYMBOLS

	AST, Above Ground Storage Tank		PR, Electic Riser Pole
	BB, Billboard		PRO, Profile Shot
	BBB, Bottom of Bridge Beam		PT, Curve Point
	BCL, Bridge Centerline		REF, Reference Tie Point
	BD, Bridge Deck		RET, Retaining Walls
	BIN, Grain Bin		RIP, Rip-Rap
	BL, Topo Breakline		ROC, Rock Outcropping
	BLD, Building or Foundation		ROW, Right of Way Mark
	BLS, Bridge Low Steel		RR, Centerline of Railroad Tracks
	BM, Bench Mark		RRB, Railroad Signal Box
	BNK, Stream Bank		RRF, Railroad Frog
	BRG, Bridge		RRR, Railroad Rail
	C, Centerline BL of Road -ML or SR		RRS, Railroad Signal
	CAV, Cave		RRW, Railroad Switch
	CEL, Cell Phone Tower		RT, Radio Tower
	CIS, Cistern		S, Soil Sampling Site -Wetlands
	CON, Concrete or A/C Slab		SBR, Size of Bridge
	CP, Control Point		SC, Spiral Point
	CRP, Corporation Line		SCR, Section Corner
	CS, Curve Point		SEP, Septic Tank
	CU, Back of Curb		SF, Silt Fence -Wetlands
	CUL, Culvert		SG, Staff Gauge -Wetlands
	D, Centerline Draw or Stream -Down		SH, Paved Shoulder
	DAB, Drainage Area Boundary		SHR, Shrub
	DIK, Centerline of Dike or Dam		SI, Sign
	DTM, Photogrammetry Elv Control Check		SL, Speed Limit Sign
	DU, Centerline Draw or Stream -Up		SLN, Section Line
	EB, Electrical Box		SLO, Silo
	EG, Edge of Gravel Road		SNK, Sink Hole
	ENP, Edge Paved Entrance and Park Lot		SNP, Unpaved Shoulder
	ENT, Centerline BL of Entrance		SP, Stream Profile
	ENU, Edge Unpaved Entrance and Parking		STP, Stump
	EP, Edge of Paved Roads -ML or SR		SWK, Sidewalk
	EW, Edge of Water		SWP, Swamp or Marsh
	FCL, Chain Link and Security Fence		TA, Tower Anchor
	FENO, FENO Monument		TBO, Telephone Booth
	FHD, Fire Hydrants		TCB, Traffic Signal Box
	FLG, Flag Poles		TDC, Tree Deciduous
	FP, Filler Pipe		TDL, Traffic Detection Loop
	FW, Wire Fence		TER, Terrace
	FWD, Wood Fence		TEV, Evergeen Tree
	GDC, Guard Rail Cable		TFR, Tree Fruit
	GDL, Guard Rail Steel		TGP, Telegraph Pole
	GP, Guard Post -Less Than 4 Posts		TIL, Tile Line
	GPR, Guard Post -4 or More Posts		TLNL, Tree Line Left
	GR, Ground Shot		TLNR, Tree Line Right
	GRV, Grave		TOP, Top of Bridge Pier
	GU, Gutter In Front of Curb		TPA, Telephone Pole Co. 1
	GV, Gas Valve		TPB, Telephone Pole Co. 2
	HDG, Hedge Row		TPC, Telephone Pole Co. 3
	HS, Hydric Soil -Wetlands		TR, Telephone Riser Pole
	HT, Electrical Highline Tower		TRL, Trail
	IN, Storm Sewer Intake		TS, Spiral Point
	INB, Storm Sewer Beehive Intake		TSB, Telephone Switch Box
	LC, Lot Corner		TSG, Traffic Signal
	LIN, Miscellaneous Line		TSL, Traffic Signal and Luminaire
	LP, L.P. Tank		TV, Satellite TV Dish
	LUM, Luminaire		TVP, TV Pedestal
	MH, Utility Access -Manhole		TW, Top of Water
	MIS, Miscellaneous		UB, Utility Box
	MM, Mile Marker Post		UE, Utility Elevation
	OUT, Tile Outlet		UPH, Utility Pot Hole - Quality A
	PC, Curve Point		UST, Underground Tank
	PCP, Photo Control Point		UV, Underground Utility Vault
	PCT, Photo Control Target		VS, Channel Cross Section
	PI, Tangent Point		WC, Wild Card -Misc. Field Shot
	PIP, Pipe Culvert		WEL, Well
	PL, Location of Photo -Wetlands		WHD, Water Hydrant
	PLG, Location of General Photo		WHU, RV Water Hook Up
	POC, Curve Point		WM, Wind Mill
	POST, Spiral Point		WND, Wind Turbine
			WV, Water Valve

UTILITY LEGEND

Sub-Surface Utility Mapping Quality Level Is In accordance with CI/ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.

Remark Abbreviations

QLA Quality Level A Highest guideline quality level

QLD Quality Level D Lowest guideline quality level

North West Rural Electric Cooperative Electric Distribution
North West Rural Electric Cooperative Electric Transmission
Doug Alons, Operations Director
1505 Albany Place S.E. Box 435 Orange City, IA, 51041
ph: 7127074935
dalons@nwrec.coop

PPA, Northwest REC
EL1D, Northwest REC - Quality D

HOLSTEIN, City of Sanitary Sewer
HOLSTEIN, City of Water
Ken Neiemeier, Public Works Director
119 S Main Holstein, IA, 51025-0500
(712) 368 4898
holsteinpw@netllc.net

WL1D, City of Holstien - Quality D
SA1D, City of Holstien - Quality D

Long Lines Ltd. Fiber Distribution
Long Lines Ltd. Telephone
Tom Connors, Construction/Design Manager
PO Box 128 Jefferson, SD, 57038
ph: 7123331352 cell: 7123331352
tom.connors@longlines.biz

FO1D, Long Lines - Quality D

Frontier Communications Fiber Distribution
Frontier Communications Telephone
Charles Salen, OSP Engineer
334 1st Ave SW Le Mars, IA, 51031
ph: 712-541-1941 cell: 712-541-1941
charles.salen@ftr.com

FO2D, Frontier Comm - Quality D

Windstream Communications Fiber Distribution
Windstream Communications Telephone
Windstream Communications Fiber Transmission
Dan Hogan, Engineering Manager - IA
1614 230th St Manchester, IA, 52057
ph: 5639202428 cell: 5639202428
Dan.Hogan@windstream.com

FO3D, Windstream Comm - Quality D

Aureon Network Services Fiber Distribution
Aureon Network Services Fiber Transmission
Jeff Klocko, OSP Engineer
7760 Office Plaza Drive South West Des Moines, IA, 50266
ph: 5158300445
jeff.klocko@aureon.com

FO5D, Aureon - Quality D


















Lumen Centurylink Fiber Distribution
Lumen Centurylink Telephone
Steve Parker, Manager of Engineering & Construction
2103 E. University Ave. Des Moines, IA, 50317
ph: 5152650968 cell: 5073581978
Steven.Parker4@lumen.com

FO6D, Centurylink - Quality D

FO4D, Mcleod - Quality D
TL1D, Schaller Telephone COOP - Quality D
EL2D, Iowa DOT - Quality D
ST1D, Iowa DOT - Quality D
GL1D, Midamerican Energy - Quality D

Adesta Fiber Transmisssion
Cecil Kuhse, Program Manager
565 Willowbrook Centre Parkway Willowbrook , IL, 60527
ph: 630-739-0546 cell: 732-675-2268
cecil.kuhse@aus.com

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.			
Green	(2)		Existing Topographic Features and Labels	
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation	
Magenta	(5)		Existing Utilities	
SHADING	Design Color No.		Transparency	
Pink, Dark	(13)		Temporary Pavement Shading	50%
Yellow	(4)		Proposed Pavement Shading	50%
Orange	(6)		Proposed Granular Shading	50%
Orange	(70)		Proposed Shoulder Granular Shading	50%
Yellow	(68)		Proposed Shoulder Paved Full Depth Shading	50%
Yellow	(132)		Proposed Shoulder Paved Partial Depth Shading	50%
Brown, Light	(236)		Grading Shading	50%
Orange, Light	(134)		Proposed Granular Entrance Shading	50%
Yellow	(220)		Proposed Paved Entrance Shading	50%
Tan	(8)		Proposed Sidewalk Shading	50%
Blue, Light	(230)		Proposed Sidewalk Landing Shading	50%
Pink	(11)		Proposed Sidewalk Ramp Shading	50%
Red	(3)		Proposed Structure Shading	50%
Red	(3)		Delineates Restricted Areas	0%

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.		
Green	(10)		Existing Ground Line Profile
Blue	(1)		Proposed Profile and Annotation
Magenta	(5)		Existing Utilities
Blue, Light	(230)		Proposed Ditch Grades, Left
Black	(0)		Proposed Ditch Grades, Median
Rust	(14)		Proposed Ditch Grades, Right

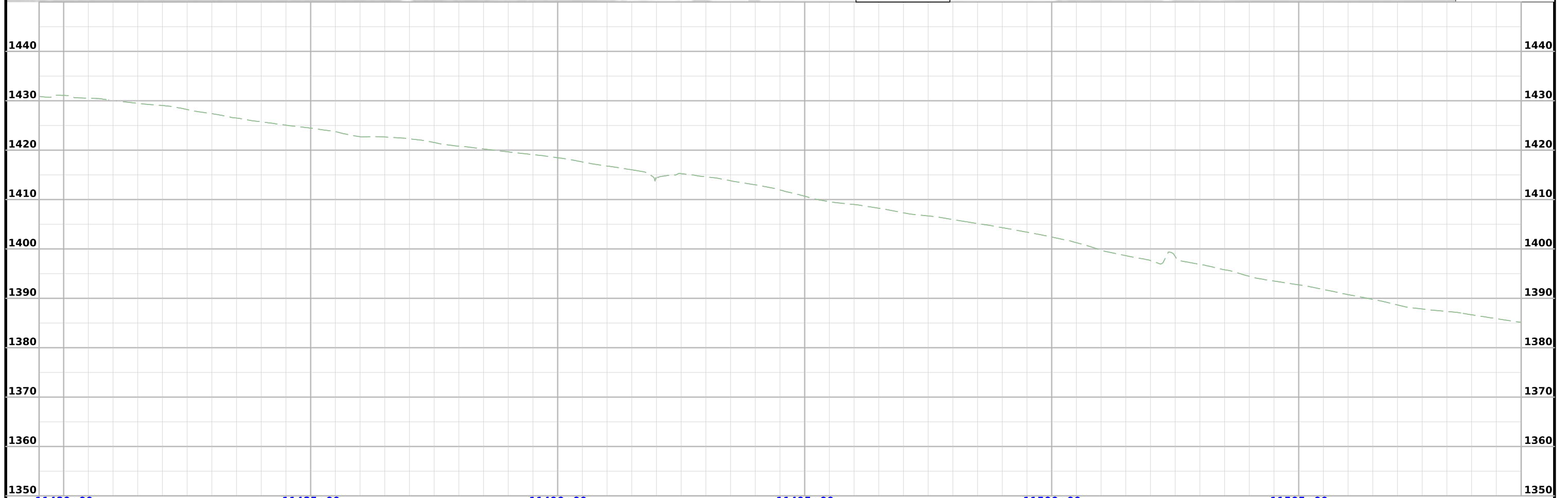
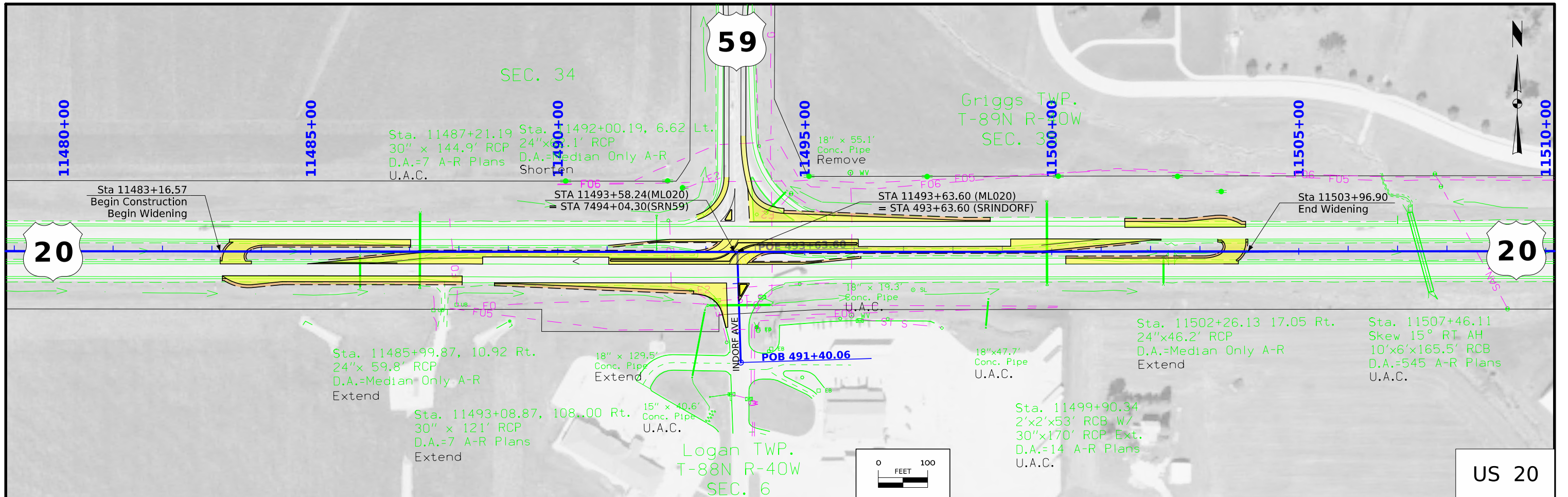
Reference Point	Survey Line
Station	
Section Corner	
Ground Line Intercept	
Saw Cut	
Guardrail	
Trench Drain	
HighTension Cable Guardrail	
Sheet Pile	
Pavement Removal	
Clearing & Grubbing Area	

RIGHT-OF-WAY LEGEND

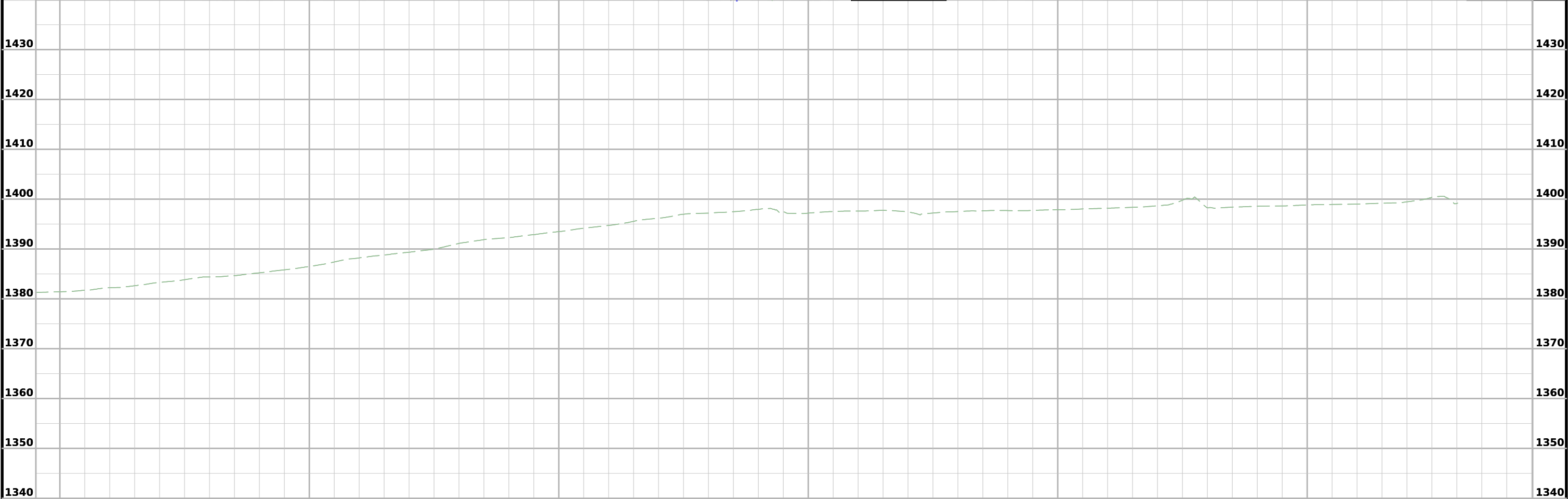
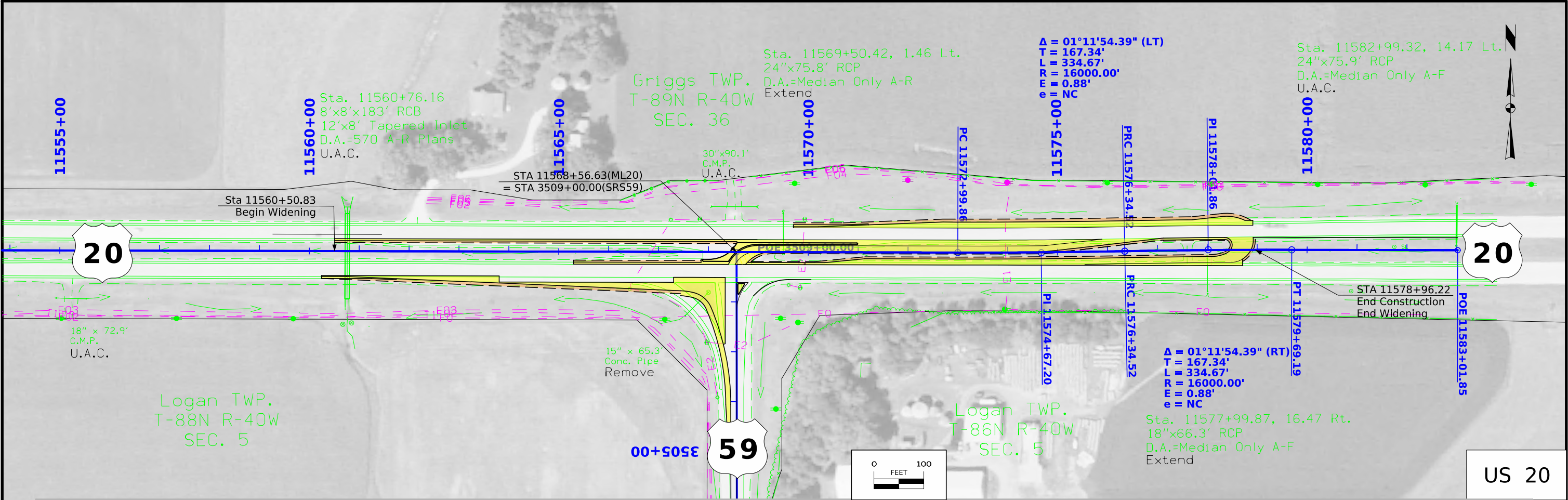
	Proposed Right-of-Way Symbol
	Proposed Right-of-Way Line
	Existing Right of Way
	Existing and Proposed Right-of-Way
	Easement and Existing Right-of-Way
	Easement (Temporary) Symbol
	Easement (Temporary) Line
	Easement
	C/A Access Control
	Property Line Symbol
	Property Line

PLAN AND PROFILE
LEGEND AND SYMBOL
INFORMATION SHEET

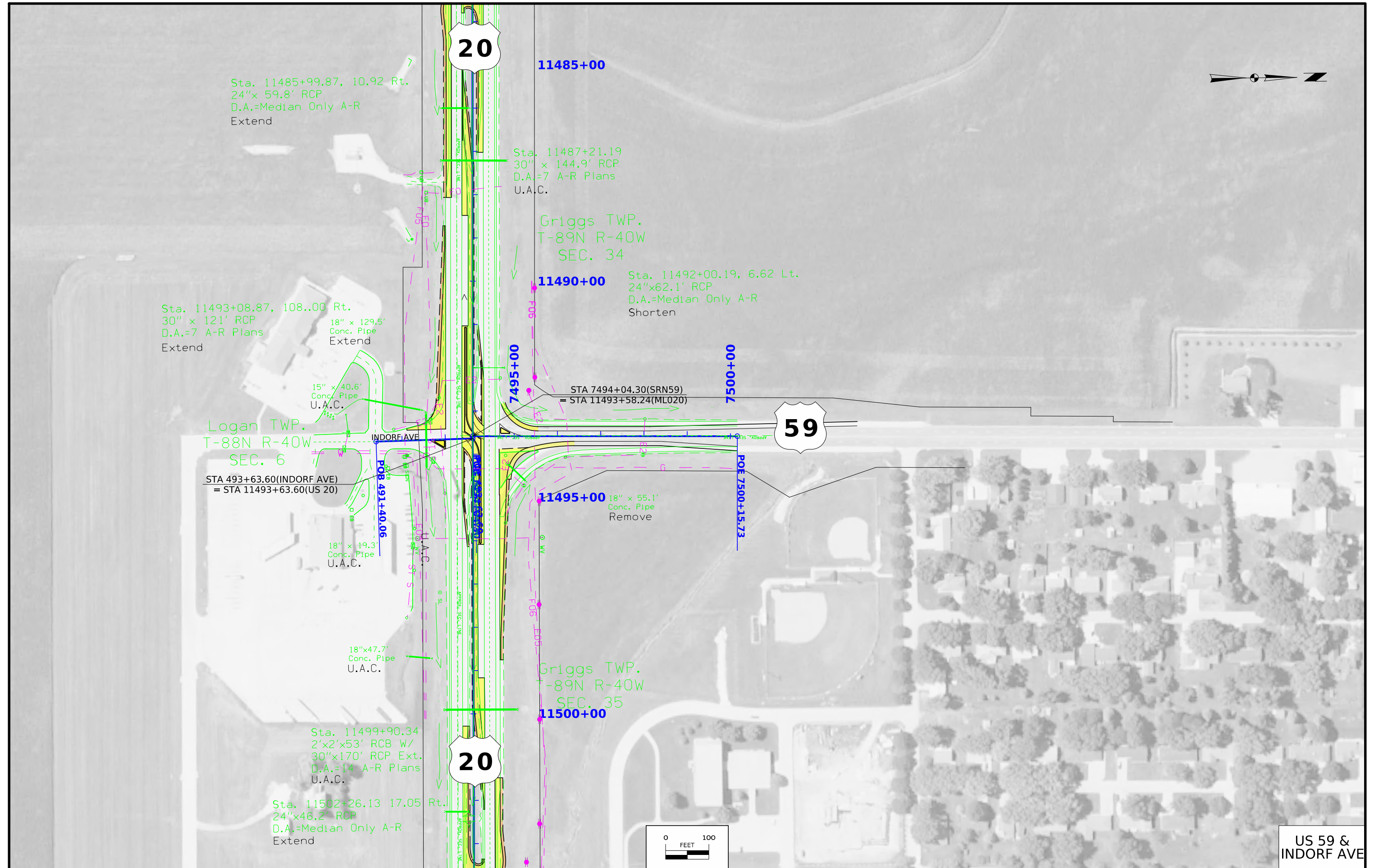
(COVERS SHEET SERIES D, E, F, & K)

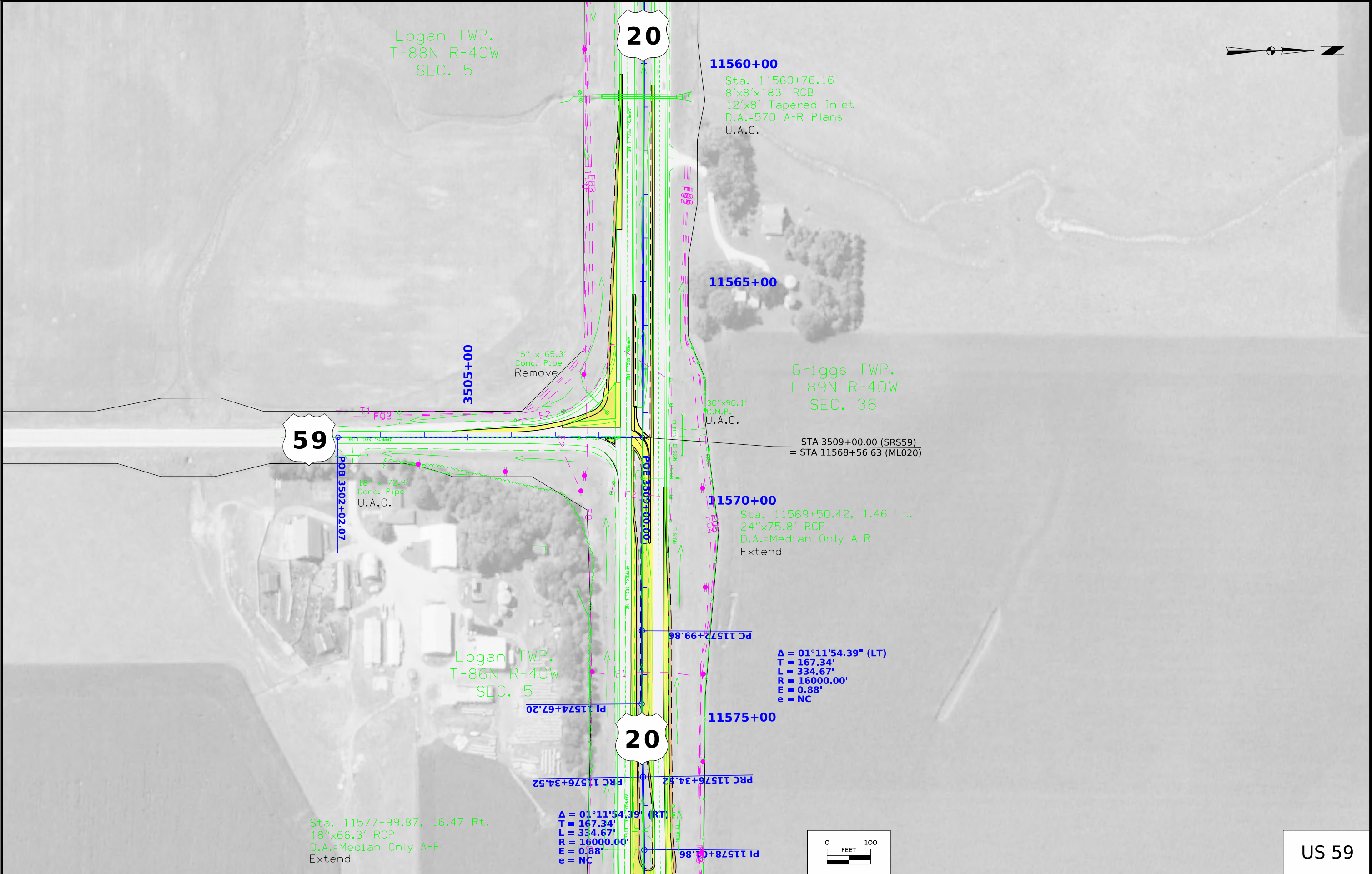


11480+00	11485+00	11490+00	11495+00	11500+00	11505+00
FILE NO. --	ENGLISH	DESIGN TEAM SCHROCK/TAMRAKAR	IDA COUNTY	PROJECT NUMBER HSIPX-020-2(157)--3L-47	SHEET NUMBER D.2



11555+00	11560+00	11565+00	11570+00	11575+00	11580+00
FILE NO. --	ENGLISH	DESIGN TEAM SCHROCK/TAMRAKAR	IDA COUNTY	PROJECT NUMBER HSIPX-020-2(157)--3L-47	SHEET NUMBER D.3





Survey Information

SURVEY INDEX

County: Ida
PIN: 24-47-020-010
Project Number: HSIPX-020-2(157)--3L-47
Location: W of W Jct US 59 to E of E Jct US 59
Type of Work: Undecided
Project Directory: 4702001024

Alignment Information

The horizontal alignment for U.S. Hwy 20 this survey was provided by the district 3 survey office.

Survey Personnel

Clayton Henningsen – Survey Party Chief
Jason Arn – Survey Party Chief

Date(s) of Survey

Begin Date 04/14/2024
End Date 08/03/2024

General Information

This survey is for US Hwy 20 west of the west junction US 59 to east of the east junction US 59. This survey request was for the US Hwy 20 corridor only. This project is a Full Field DTM survey.

Utility Information

For logging data and other utility details see Utility Survey and Ownership Report in the Utility folder of the PrelimSurvey project directory.

Project Control

Coordinates were determined for primary project control points by conducting concurrent six-hour static observations. Post processing is constrained to nearby Iowa Real Time Network reference stations. For additional details of the control survey, contact the Preliminary Survey department.

PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 ADJUSTMENT)
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 04
(U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u2

CONTROL POINT VICINITY MAP

This map is a guide to the vicinity of the primary project control points. Primary control is for use with RTK base stations and for RTN validation. Future surveys will use primary project control to establish temporary control as needed for construction or other surveying applications.



HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment) - Iowa RCS Zone 04 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u2

Coordinate listing from next sheet will be used with IaRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (laRTN 2019 Adjustment)
la. Regional Coordinate System Zone 04 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u2

<u>Point Name</u>	<u>Northing</u>	<u>Easting</u>	<u>Elevation</u>	<u>Feature Definition-Description</u>
47020046	8579594.33	14311126.32	1414.34	CP SET FENO MONUMENT ON TOP OF NORTH BAKSLOPE NEAR MILE MARHER 46 44 FT SOUTH OF CURB 73 FT NORTH OF CL WESTBOUND US 20
470200452	8579406.01	14306702.78	1435.57	CP FD X ON BALL OF ROW RAIL ON SOUTH SIDE OF US 20
470200468	8579310.30	14315295.88	1391.88	CP FD REBAR W/ CENTER PUNCH IN SW QUAD US 20/ US 59 INTERSECTION 95 FT SOUTH OF CL EASTBOUND US 20
470200475	8579302.26	14318827.02	1428.30	CP SET FENO MONUMENT ON TOP SOUTH BACKSLOPE 73 FT SOUTH OF EASTBOUND US 20 230 FT EAST CL HARVEST AVE

ALIGNMENT COORDINATES																				101_16 10/25/24
Line No.	Name	Location	Point on Tangent Station	Point on Tangent Y Northing	Point on Tangent X Easting	Begin Spiral Station	Begin Spiral Y Northing	Begin Spiral X Easting	Begin Curve Station	Begin Curve Y Northing	Begin Curve X Easting	Simple Curve PI or Master PI Station	Simple Curve PI or Master PI Y Northing	Simple Curve PI or Master PI X Easting	End Curve Station	End Curve Y Northing	End Curve X Easting	End Spiral Station	End Spiral Y Northing	End Spiral X Easting
1.0		ML020							11464+73.11	8579518.42	14305151.05	11468+26.35	8579536.15	14305503.84	11471+79.37	8579532.19	14305857.06			
3.0		ML020	11493+56.58	8579507.77	14308034.13															
4.0		ML020							11572+99.86	8579436.26	14315977.09	11574+67.20	8579434.76	14316144.42	11576+34.52	8579436.75	14316311.75			
5.0		ML020							11576+34.52	8579436.75	14316311.75	11578+01.86	8579438.74	14316479.08	11579+69.19	8579437.24	14316646.41			
6.0		ML020	11583+01.85	8579434.24	14316979.06															
7.0																				
8.0		SRS59	3502+02.07	8578742.33	14315529.9															
9.0		SRS59	3509+00.00	8579440.25	14315533.88															
10.0																				
11.0		SRN59	7494+04.30	8579507.76	14308035.79															
12.0		SRN59	7500+15.74	8580119.15	14308043.02															
13.0																				
14.0		SRINDORF	491+40.06	8579284.22	14308045.82															
15.0		SRINDORF	493+63.60	8579507.71	14308041.16															

101_17
1/17/24

SPIRAL OR CIRCULAR CURVE DATA																	
Line No.	Name	Location	SCS	S	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	C	T	L	R	E	Remarks
1.0	C1	ML020										3.52	353.24	706.26	11497	5.43	
2.0	C2	ML020										1.20	167.34	334.67	16000	0.88	
3.0	C3	ML020										1.20	167.34	334.67	16000	0.88	



