



HANCOCK COUNTY SECONDARY ROADS

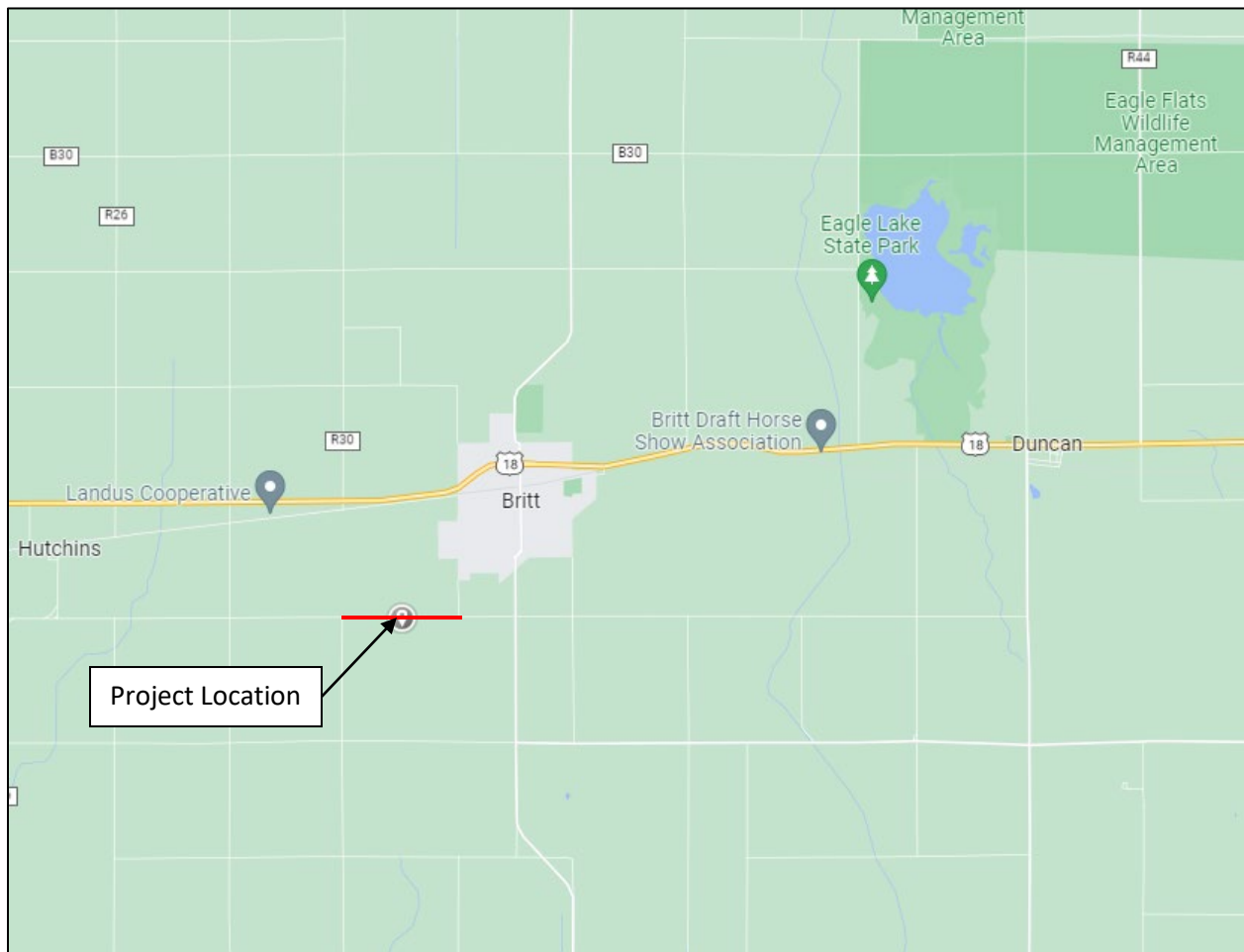
855 STATE STREET
GARNER, IA 50438

220th Street from Hill Ave to Iowa Ave

Hancock County, Iowa

Engineer's Report

DATE: January 30, 2023



Property owners abutting 220th Street between Hill Ave and Iowa Ave, Hancock County, Iowa have petitioned the Hancock County Board of Supervisors, under Sec. 311.7 Code of Iowa, to improve the respective road. Exhibit A shows the petition.

This section of 220th Street was last graded and had culverts replaced in 1978. As per the petition for assessment, the property owners are proposing a new eight-inch concrete road from the east return of Hill Ave to the current asphalt near Iowa Ave. An estimated cost for the improvement is shown in Exhibit B for equivalent designs of an 8" PCC road or 9" HMA road. Exhibit C shows the assessment district listing and highlights the 9 properties that form the assessment district with various cost splits.

Current Conditions

A site review of 220th street was conducted on October 20, 2022 by County Engineer Jeremy Purvis, P.E. and Assistant to the Engineer Shaun Hackman. Several additional site visits were completed to collect more information.

Roadway : The existing roadway is a Class A rock road that has regular maintenance. Roadway top was measured to vary between 28' and 30' wide plus a 1-2 foot grass shoulder. Cross-slope was measured between 4-6% from Hill Ave intersection to the east side of the Studer property (2,700 LF), and between 2-4% from the Studer property to Iowa Ave (2,500 LF). The 2015 traffic count on 220th is 140 vehicles per day. Right-of-Way along this stretch is 90 feet wide.



Drainage : Ditches are graded at a 2H:1V (H=horizontal, V=vertical) foreslope with a ditch bottom depth of about 48"-54". There are 3 culverts that cross the roadway north and south.

The first culvert is located approximately 1,867 feet east of Hill Ave. This is a 42" RCP x 48' long installed in 1978. Pipe was in good shape with minimal sediment. Cover over the pipe was approximately 12-14" at the shoulder. The last two pipe on either end were tied together.

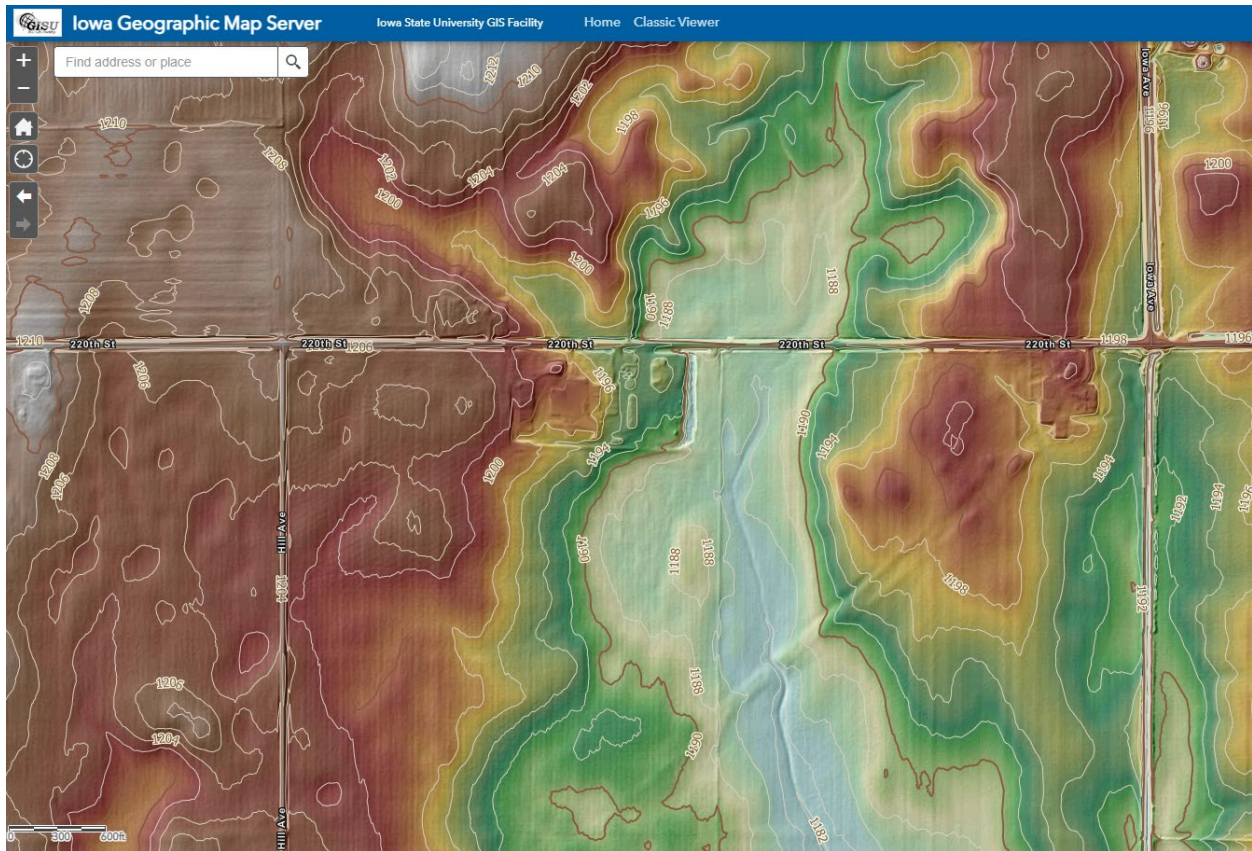


The second culvert is located approximately 3,124 feet east of Hill Ave. This is a twin 48" RCP x 48' long installed in 1978. Pipe was in good shape with minimal sediment. Cover over the pipe was approximately 6-8" at the shoulder. The last two pipe on either end were tied together.



The third culvert is located approximately 143 feet west of Iowa Ave and just under where the end of the asphalt section of the road. This is a 60" CMP x 50' long installed in 1978. The pipe had a slight "egg" shape to it with a slight amount of sediment on the bottom. It was also observed a bore machine had punctured the southeast side of the culvert in 2 different spots. Cover over the pipe was greater than 48" at the shoulder.

Water generally drains in the road ditches to the ½ mile point of the section and then drains south as shown by the LiDAR color shade map below.



Driveways : All driveways along the proposed project are either gravel or a grass driveway. Slopes appear to be at 3H:1V.

Signage : E-911 plaques were observed at 3 parcels. 1 parcel does not have a structure on the property.

Obstructions : As per Iowa Code Chapter 318, Section 3, all obstructions within the county right-of-way shall be removed. At the time of this review, no obstruction in the right-of-way were observed.

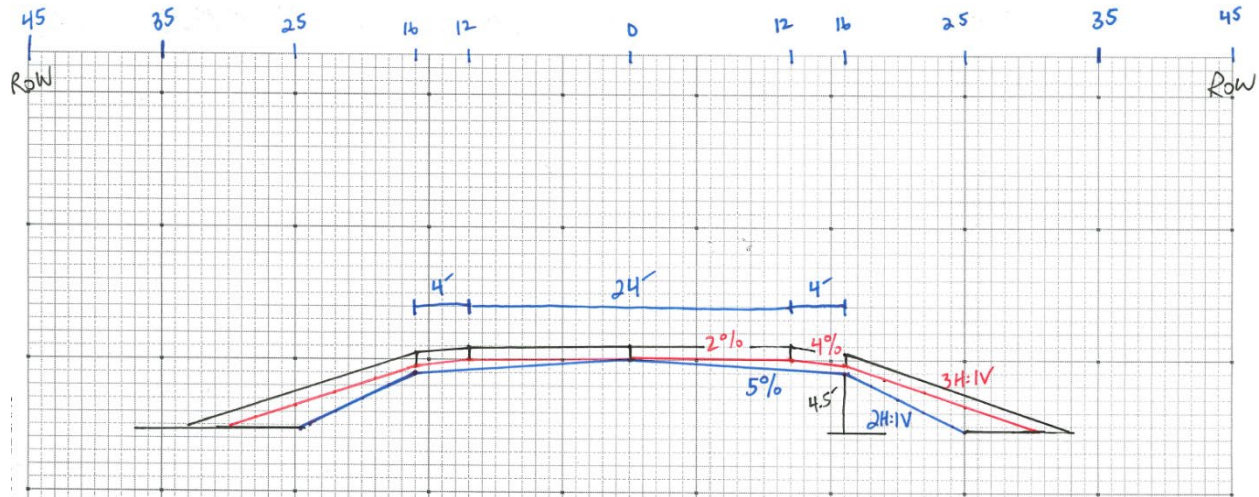
Utilities : There are existing Alliant Energy overhead power running along the south side of the right of way. A design locate One Call was completed. Windstream, CenturyLink, Comm1, and Alliant Energy all have buried cable along the road.

Proposed Construction

Construction Estimate : The construction cost estimate for the project is \$2,045,630 for construction of an 8" PCC roadway in 2024. This includes importing suitable fill to correct roadway cross-slopes and the ditch foreslope, scarifying and recompacting the current subgrade, adding geogrid and 6" modified subbase, installing subdrains on both sides of the road, and providing erosion control. 8" PCC and 9"

HMA are equivalent pavement design thicknesses based on future traffic levels and an estimated design life of 50 years.

Roadway : The proposed pavement typical is 24 feet wide with 4-foot granular shoulders on either side of the roadway. Typical roadway cross-slope is at 2% and shoulder cross-slope at 4%. The 24-foot roadway with 4-foot granular shoulders meet the minimum design requirements for rural local roads under 400 ADT with level terrain as shown in the Iowa Department of Transportation (Iowa DOT) Instructional Memorandum 3.210. Cross-slope will be corrected by adding fill material due to minimum clearance above exiting culverts.



Drainage : Ditches will be regraded to provide 3H:1V (H = horizontal, V = vertical) foreslopes per design requirements in I.M. 3.210. The first and second roadway culverts will be used as constructed (UAC) and extended 8 feet both north and south. The third roadway culvert by Iowa Ave is recommended to be removed and filled in as it is an overflow pipe.

Driveways : Driveway culverts will need to be extended and slopes flattened to 6H:1V per requirements of paved roads.

Signage : 'PAVEMENT ENDS' sign east of Iowa is recommended to be relocated 1 mile west near Hill Ave.

Obstructions : No obstruction in the right-of-way to move at this time.

Utilities : The Secondary Road Department will complete an Iowa One Call to locate all utilities during project design. If any underground facilities are in conflict, they will be notified and required to move provided the project moved forward. No above ground facilities appear to be in conflict.

Jeremy Purvis, P.E.
Hancock County Engineer

Date

220TH STREET FROM HILL AVE TO IOWA AVE

Parcel ID	Owner	Side of Road	Signed (Y/N)
632351000	Doug Studer	North Side	Y
632376000	Deanna Kimmel & Jenness Kennedy	North Side	N
632451000	Deanna Kimmel & Jenness Kennedy	North Side	N
632476000	Deanna Kimmel & Jenness Kennedy	North Side	N
1105226000	Doug Studer	South Side	Y
1105201000	Doug Studer	South Side	Y
1105126000	Don Verbrugge	South Side	Y
1105101000	Don Verbrugge	South Side	Y
1105102000	Doug Verbrugge	South Side	Y



EXHIBIT B

OPINION OF PROBABLE PROJECT COSTS									
220th Street from Iowa Ave to Hill Ave, 5,200 LF ROAD									
12.08.22									
ITEM #	ITEM CODE	DESCRIPTION	UNIT	UNIT PRICE	8.0" PCC		9.0" HMA		
					QUANTITY	EXTENDED PRICE	QUANTITY	EXTENDED PRICE	
1	2102-2710070	Excavation, Class 10, Roadway and Borrow	CY	\$ 10	12,825	\$ 128,250	12,825	\$ 128,250	
2	2105-8425005	TOPSOIL FURNISH & SPREAD	(2) CY	\$ 20	3,225	\$ 64,500	3,225	\$ 64,500	
3	2109-8225100	SUBGRADE SPECIAL COMPACTION OF	(3) STA	\$ 600	52	\$ 31,200	52	\$ 31,200	
4	2113-0001100	SUBGRADE STABILIZATION MATL, POLYMER GRID	SY	\$ 3.00	17,333	\$ 51,999	17,333	\$ 51,999	
5	2115-0100000	Modified Subbase	(4) CY	\$ 50	2,889	\$ 144,450	2,889	\$ 144,450	
6	2121-7425020	Granular Shoulders, Type B	(5) TON	\$ 30	1,872	\$ 56,160	2,106	\$ 63,180	
7	2123-7450000	Shoulder Construction, Earth	STA	\$ 500	104	\$ 52,000	104	\$ 52,000	
8	2301-1033080	Std. / Slip PCC Cl. C Cl. 3 - 8 in.	(6) SY	\$ 60	14,283	\$ 856,980	-	\$ -	
9	2301-6911722	PCC PAVT SAMPLES	LS	\$ 5,000	1	\$ 5,000	-	\$ -	
10	2303-1031750	HMA ST BASE, 3/4"	(6) TON	\$ 55	-	\$ -	3,959	\$ 217,745	
11	2303-1032500	HMA ST INTERMEDIATE, 1/2"	(6) TON	\$ 55	-	\$ -	1,605	\$ 88,275	
12	2303-1033500	HMA ST SURF, 1/2", NO FRIC	(6) TON	\$ 55	-	\$ -	1,605	\$ 88,275	
13	2303-1258283	ASPH BINDER, PG 58-28S	TON	\$ 800	-	\$ -	430	\$ 344,000	
14	2303-6911000	HMA PAVT SAMPLE	LS	\$ 5,000	-	\$ -	1	\$ 5,000	
15	2502-8212034	SUBDRAIN LONGITUDINAL (SHLD) 4 IN	LF	\$ 10	10,400	\$ 104,000	10,400	\$ 104,000	
16	2502-8221303	SUBDRAIN OUTLET, DR-303	EACH	\$ 450	36	\$ 16,200	36	\$ 16,200	
17	2503-0114242	STORM SEWER GRAVITY MAIN, TRENCHED, RCP, 2000D (CLASS III), 42 IN	LF	\$ 250	16	\$ 4,000	16	\$ 4,000	
18	2503-0114248	STORM SEWER GRAVITY MAIN, TRENCHED, RCP, 2000D (CLASS III), 48 IN	LF	\$ 275	32	\$ 8,800	32	\$ 8,800	
19	2518-6910000	Safety Closure	EACH	\$ 250	2	\$ 500	2	\$ 500	
20	2526-8285000	Construction Survey	LS	\$ 20,000	1	\$ 20,000	1	\$ 20,000	
21	2527-9263109	Painted Pavement Marking, Waterborne or Solvent-Based	STA	\$ 15	148	\$ 2,220	148	\$ 2,220	
22	2527-9270111	Groove Cut for Pavement Markings	STA	\$ 30	148	\$ 4,440	148	\$ 4,440	
23	2528-8445110	Traffic Control	LS	\$ 2,500	1	\$ 2,500	1	\$ 2,500	
24	2533-4980005	Mobilization	LS	\$ 100,000	1	\$ 100,000	1	\$ 100,000	
25	2601-2634105	MULCHING, BONDED FIBER MATRIX	(7) ACRE	\$ 3,000	8.6	\$ 25,800	8.6	\$ 25,800	
26	2601-2636043	SEEDING & FERTILIZING (RURAL)	(7) ACRE	\$ 1,200	8.6	\$ 10,320	8.6	\$ 10,320	
27	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	\$ 3	1,600	\$ 4,800	1,600	\$ 4,800	
28	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE	LF	\$ 1	1,600	\$ 1,600	1,600	\$ 1,600	
29	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	\$ 500.00	5	\$ 2,500	5	\$ 2,500	
				Subtotal:		\$ 1,698,219		\$ 1,586,554	
	5,200			Contingency (15%):		\$ 250,000		\$ 250,000	
	0.98			Consultant Design (0%):					
				PROJECT TOTAL:	2023	\$ 1,948,219		\$ 1,836,554	
					2024	\$ 2,045,630		\$ 1,928,382	
					2025	\$ 2,147,912		\$ 2,024,801	
					2026	\$ 2,255,308		\$ 2,126,041	
Notes									
				(1) Assume 5200 LF long project, Iowa to Hill					
				(2) 4" Topsoil Depth					
				(3) 12" Depth					
				(4) 6" Modified Subbase					
				(5) 4' minimum granular shoulders					
				(6) 24' minimum pavement top					
				(7) Quantity doubled					
				(8) No ROW acquisition					
				(9) 5% Inflation per year					

EXHIBIT C

220TH STREET FROM HILL AVE TO IOWA AVE												
Parcel ID	Owner	Side of Road	Signed (Y/N)	Tax Value	% of Total Value	50/50 Split	75/25 Split	100/0 Split				
632351000	Doug Studer	North Side	Y	\$ 55,480.00	2.7%	1.3%	2.0%	2.7%				
632376000	Deanna Kimmel & Jenness Kennedy	North Side	N	\$ 54,120.00	2.6%	1.3%	1.9%	2.6%				
632451000	Deanna Kimmel & Jenness Kennedy	North Side	N	\$ 50,450.00	2.4%	1.2%	1.8%	2.4%				
632476000	Deanna Kimmel & Jenness Kennedy	North Side	N	\$ 50,790.00	2.4%	1.2%	1.8%	2.4%				
1105226000	Doug Studer	South Side	Y	\$ 69,470.00	3.3%	1.7%	2.5%	3.3%				
1105201000	Doug Studer	South Side	Y	\$ 1,392,770.00	66.6%	33.3%	50.0%	66.6%				
1105126000	Don Verbrugge	South Side	Y	\$ 70,260.00	3.4%	1.7%	2.5%	3.4%				
1105101000	Don Verbrugge	South Side	Y	\$ 70,640.00	3.4%	1.7%	2.5%	3.4%				
1105102000	Doug Verbrugge	South Side	Y	\$ 275,860.00	13.2%	6.6%	9.9%	13.2%				
				\$ 2,089,840.00	Total Value		50.0%	75.0%				
	Doug S. Added Improvement Value	\$ 560,000.00										
						Estimated Cost	\$ 2,050,000.00	\$ 2,050,000.00	\$ 2,050,000.00			
						Secondary Roads	50%	\$ 1,025,000.00	25%	\$ 512,500.00	0%	\$ -
						D. Studer	36.3%	\$ 744,393.35	54.5%	\$ 1,116,590.03	72.6%	\$ 1,488,786.70
						Doug V	6.6%	\$ 135,300.55	9.9%	\$ 202,950.82	13.2%	\$ 270,601.10
						Don V	3.4%	\$ 69,106.97	5.1%	\$ 103,660.45	6.7%	\$ 138,213.93
						K&K	3.7%	\$ 76,199.13	5.6%	\$ 114,298.70	7.4%	\$ 152,398.27
								\$ 2,050,000.00	\$ 2,050,000.00	\$ 2,050,000.00		\$ 2,050,000.00