ETTING.

A Sheets

A.1

A.2

A.3-A.5

A.6 A.7-A.19

> A.20 A.21

**B** Sheets

B.1

D Sheets

D.2-D.3

G Sheets

G.1-G.3 G.4-G.5

J Sheets

J.1 J.2

V Sheets

V 1-V 3 W Sheets

W.1-W.3

Title Sheets

Title Sheet

Legend

Project Location

Concept REport

IA 57 Design Criteria

Field Exam Cost Estimate

Typical Sections and Details

Typical Sections and Details

Traffic Control and Staging Sheets

Traffic Control Tabulations

Cross Section Sheets - IA 57

Field Exam Questions

Plan and Profile Sheets

IA 57 Plan and Profile

Survey Sheets

Detour Plan

**Bridge Plans** 

Cross Sections

Clear Zone Criteria

F-057-1(045)--38-12 BRIDGE REPLACEMENT BRI

TLER COUNTY

105-3 INDEX OF SHEETS 10-18-0

Description

Bench Mark and Reference Information Sheets

)5		

VVA	DOT	

PROJECT IDENTIFICATION NUMBER 24-12-057-020 PROJECT NUMBER BRF-057-1(045)--38-12 R.O.W. PROJECT NUMBER

PLANS OF PROPOSED IMPROVEMENT ON THE

# PRIMARY ROAD SYSTEM

**BRIDGE REPLACEMENT** 

IA 57 OVER BEAVER CREEK, 1.3 MI. E. OF JCT. SR T53

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications,

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



NOTE: THIS PROJECT IS ANTICIPATED TO PRODUCE A SURPLUS OF 1,410 CUBIC YARDS OF EARTH.

REVISIONS

**DESIGN DATA RURAL** 20 23 AADT \_\_\_\_\_\_2,260 V.P.D. 2029 AADT \_\_\_\_\_2,545 V.P.D. 20 29 DHV \_\_\_\_\_ V.P.H. 7.0 % TRUCKS Design ESALs 600,000

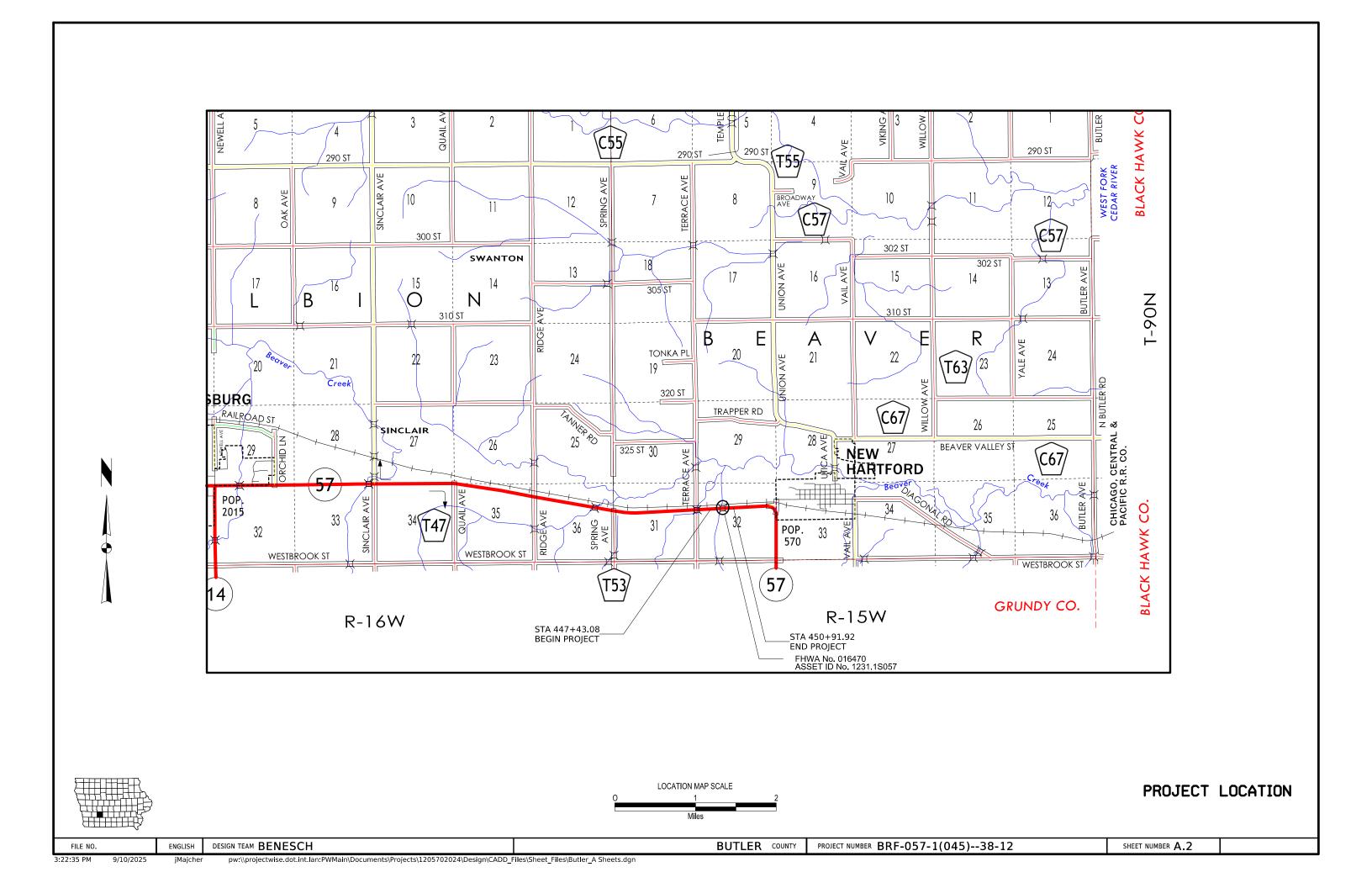
	INDEX OF SEALS							
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS					

PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN - Date: 09-10-2025

BUTLER COUNTY PROJECT NUMBER BRF-057-1(045)--38-12 DESIGN TEAM BENESCH SHEET NUMBER A.1 **ENGLISH** 



Roadway	IA 57			
PIN Number	24-12-057-020		Submittal Date	
Project Number	BRF-057-1(045)38-12			Approval Date
District	District 2	Assistant District Engineer		
County	BUTLER		or	
Route	IA 57	Office Director		
Location	Over Beaver Creek, 1.3 mi. E. of Jc	t. SR T53		
Work Type	Bridge Replacement			
Segment Manager				
Designer	BENESCH			
Design Manual Section 1C-1 Last Updated: 04-29-19		Rural Two-Lane Highwa	ys (Rural Arterials)	
	sign Element	Preferred	Acceptable	Project Values
Design speed (mph)		60	50	60
Maximum superelevation rate (Ref	er to Section <u>2A-2</u> )	6%	8%	N/A
Design lane width (ft)		12	12	12
Full depth paved width (ft)		12	12	12
Right turn lane (ft)		12	10	N/A
Climbing Lane (ft)		12	12	N/A
Left turn lane (ft)		12	10	N/A
	Through lanes	2%	1.5% minimum, 2% maximum	2%
Pavement cross-slope	Auxiliary and turn lanes	3% 3% maximum		N/A
on tangent sections)  Crown break at centerline		4%	4% maximum	4%
Shoulder cross-slope (on tangent	sections)	4%	Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders	4%
Curb type	Design speed = 50 or 55 mph	6-inch sloped	6-inch standard	N/A
(Refer to Section <u>3C-2</u> )	Design speed ≥ 60 mph	4-inch sloped	6-inch sloped	N/A
Foreslope	Adjacent to shoulder	10:1 for 4' then 6:1	3:1	10:1 for 4' then 6:1
(For fill areas greater than 40 ft, contact the Soils Design Section	Beyond standard ditch depth and design clear zone	3.5:1	3:1	3:1
for assistance)	Curbed roadways	2%	not steeper than 3:1	N/A
Backslope (For cut areas greater t Section for assistance with backslo	han 25 feet, contact the Soils Design	3:1	2.5:1	N/A
T. 01	w/ drainage structures	8:1	6:1	N/A
Transverse Slopes	w/o drainage structures	10:1	6:1	10:1
Ditches (Refer to Section <u>3G-1</u> )	Outside ditch (depth x width) (ft)	5 x 10		N/A
Pridge width pour*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	design lane widths + effective shoulder widths	44'
Bridge width—new*	Bridge length > 200 ft	design lane widths + effective shoulder widths	design lane width + 4' right and left of the design lane widths	N/A
Bridge width—existing*	-	design lane widths + no less than 2 ft left and right	design lane widths + 2 ft. offset left and right	N/A
Vertical clearance (ft)	Over primary	16.5	16	N/A
(above lanes, shoulders and 25	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	N/A
feet left and right of the center of	Over railroad	23.3	23.3	N/A
railroad tracks)	Sign trusses and pedestrian bridges	17.5	17	N/A
Structural Capacity	-	Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	
Level of Service		В	В	_
*FHWA notification via email is rec	uired if acceptable critera is not met on the N	NHS system (No formal design exeption is required)		

# IA 57 DESIGN CRITERIA

FILE NO.	ENGLISH	DESIGN TEAM BENESCH	BUTLER COUNTY	PROJECT NUMBER BRF-057-1(045)38-12	SHEET NUMBER A.3	

Design year ADT =	2,	545				
Design Manual Section 1C-1 Last Updated: 04-29-19		Effective S	Shoulder Width and Type fo	r Two-Lane	Highways	
Preferred (values shown in feet			Acceptable (values s	shown in feet)		Project Values
	Rural Roadways	Urban Roadways		Rural Roadways	Urban Roadways	Project values
Turn lanes with shoulders	6	6	Turn lanes with shoulders	6	0	N/A
Turn lanes with curbs	6	See Section 3C-2	Turn lanes with curbs	6	0	N/A
	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	
Climbing Lanes	6	4	Climbing Lanes	4	0	N/A
Two-Lane Highways	Effective Shoulder Width	Paved Width	Two-Lane Highways	Effective Shoulder Width	Paved Width	
Routes where bicycles are to be accommodated	10	10				
On roadways approaching urban areas (due to increased bike traffic)	10	10	Design year ADT > 2000 vpd	8	0*	
On all curves with a superelevation rate of 7.0% or greater	10	10	1			10' paved
On roadways with design year ADT > 5000	10	6	Design year ADT between 400 - 2000 vpd	6	0* 0*	
On all other NHS	10	6	Design year AD1 between 400 - 2000 vpd	O		
On non-NHS routes with design year ADT > 3000	10	6	Design year ADT < 400 vpd	4		
On non-NHS routes with design year ADT < 3000	8	0*	Design year ADT < 400 Vpd	7	U	
*Requires safety edge-Refer to Section <u>3C-6</u>						
Curbs should be located beyond the outer edge of the effective should	er width in rural are	eas				
Refer to Section <u>3C-2</u> for curb offsets in urban areas						
Notes:						
Notes.						

IA 57 DESIGN CRITERIA

Roadwa	y Design S	peed (mph) =	6	60											
Design Manual Section 1C-1 Last Updated: 04-29-19							Design (	Criteria f	or High S	Speed Ro	adways				
					Preferre	d Criteria					Acceptak	ole Criteria			Project
D	esign Element				Design S	peed, mph					Design S	peed, mph			Values
			50	55	60	65	70	75	50	55	60	65	70	75	Values
Stopping sight distance (ft) (R	tefer to Section 6D	<u>-1</u> )	425	495	570	645	730	820	425	495	570	645	730	820	570'
Minimum horizontal curve radius (ft)	Method 5 superelevation	e <sub>max</sub> = 6%	833	1060	1330	1660	2040	2500	833	1060	1330	1660	2040	2500	N/A
(Refer to Sections <u>2A-2</u> and <u>2A-3</u> )	and side friction distribution	e <sub>max</sub> = 8%							758	960	1200	1480	1810	2210	N/A
Minimum vertical curve length	(ft) (Refer to Sec	tion <u>2B-1</u> )	150	165	180	195	210	225	150	165	180	195	210	225	180'
	crest vertical cur	/es	84	114	151	193	247	312	84	114	151	193	247	312	867
Minimum rate of vertical curvature (K)	sag vertical	roadways without fixed-source lighting	96	115	136	157	181	206	96	115	136	157	181	206	N/A
(Refer to Section <u>2B-1</u> )	curves	roadways with fixed- source lighting	96	115	136	157	181	206	54	66	78	91	106	121	N/A
Minimum gradient (%)	(Refer to Section	<u>2B-1</u> )			C	.5		-		0.39	% with a curb,	0.0% without a	curb		0.07%
	(5.1.0.1)	Urban roadways							7	6	6	_	-	_	
Maximum gradient (%)	(Refer to Section	Rural roadways		4			3		5	5	4	4	4	4	0.14%
	<u>2B-1</u> )	Interstates							5	5	4	4	4	4	
Clear zone				See "Pref	erred Clear Zo	ne" table in Se	ection <u>8A-2</u>			See "Acce	ptable Clear Z	one" table in S	ection <u>8A-2</u>		30'

IA 57 DESIGN CRITERIA

# **Acceptable Clear Zone Distances (feet)** (Based on AASHTO Roadside Design Guide, 4th edition)

		FORESLOPES				BACKSLOPES			
design speed	design ADT	6:1 or flatter	Steeper than 6:1, up to and including 4:1	Steeper than 4:1	Steeper than 4:1*	4:1 or flatter, up to 6:1	6:1 or flatter		
	ADT < 750	7	7	**	7	7	7		
40 mph or less	750 ≤ ADT < 1500	10	12	**	10	10	10		
40 mpn or less	1500 ≤ ADT < 6000	12	14	**	12	12	12		
	ADT ≥ 6000	14	16	**	14	14	14		
	ADT < 750	10	12	**	8	8	10		
45 – 50 mph	750 ≤ ADT < 1500	14	16	**	10	12	14		
45 – 50 mpn	1500 ≤ ADT < 6000	16	20	**	12	14	16		
	ADT ≥ 6000	20	24	**	14	18	20		
	ADT < 750	12	14	**	8	10	10		
55 mph	750 ≤ ADT < 1500	16	20	**	10	14	16		
33 mpn	1500 ≤ ADT < 6000	20	24	**	14	16	20		
	ADT ≥ 6000	22	26	**	16	20	22		
	ADT < 750	16	20	**	10	12	14		
60 mmh	750 ≤ ADT < 1500	20	26	**	12	16	20		
60 mph	1500 ≤ ADT < 6000	26	30	**	14	18	24		
	ADT ≥ 6000	30	30	**	20	24	26		
	ADT < 750	18	20	**	10	14	14		
65 – 70 mph	750 ≤ ADT < 1500	24	28	**	12	18	20		
65 – 70 mpn	1500 ≤ ADT < 6000	28	30	**	16	22	26		
	ADT ≥ 6000	30	30	**	22	26	28		

<sup>\*</sup> Backslopes as steep as 2.5:1 can be considered as part of the clear zone, as long as they are relatively smooth and do not contain any fixed objects. Refer to Section 8A-4 of the Design Manual for information regarding backslopes steeper than 2.5:1.

# **Preferred Clear Zone Distances (feet)** (Based on AASHTO Roadside Design Guide, 4th Edition)

		FORESLOPES B.			BACKSLOPES	BACKSLOPES		
design speed	design ADT	6:1 or flatter	Steeper than 6:1, up to and including 4:1	Steeper than 4:1	Steeper than 4:1*	4:1 or flatter, up to 6:1	6:1 or flatter	
	ADT < 750	10	10	**	10	10	10	
10 mmh ar laga	750 ≤ ADT < 1500	12	14	**	12	12	12	
40 mph or less	1500 ≤ ADT < 6000	14	16	**	14	14	14	
	ADT ≥ 6000	16	18	**	16	16	16	
	ADT < 750	12	14	**	10	10	12	
45	750 ≤ ADT < 1500	16	20	**	12	14	16	
45 – 50 mph	1500 ≤ ADT < 6000	18	26	**	14	16	18	
	ADT ≥ 6000	22	28	**	16	20	22	
	ADT < 750	14	18	**	10	12	12	
55 mph	750 ≤ ADT < 1500	18	24	**	12	16	18	
55 mpn	1500 ≤ ADT < 6000	22	30	**	16	18	22	
	ADT ≥ 6000	24	32	**	18	22	24	
	ADT < 750	18	24	**	12	14	16	
60 mph	750 ≤ ADT < 1500	24	32	**	14	18	22	
oo mpn	1500 ≤ ADT < 6000	(30)	40	**	18	22	26	
	ADT ≥ 6000	32	44	**	22	26	28	
	ADT < 750	20	26	**	12	16	16	
				i				
CE 70	750 ≤ ADT < 1500	26	36	**	16	20	22	
65 – 70 mph	750 ≤ ADT < 1500 1500 ≤ ADT < 6000	26 32	36 42	**	16 20	20 24	22	

<sup>\*</sup> Backslopes as steep as 2.5:1 can be considered as part of the clear zone, as long as they are relatively smooth and do not contain any fixed objects. Refer to Section 8A-4 of the Design Manual for information regarding backslopes steeper than 2.5:1.

CLEAR ZONE CRITERIA

<sup>\*\*</sup> Since a vehicle traveling on a slope steeper than 4:1 is likely to be diverted to the bottom of the slope, the width of any slope steeper than 4:1 cannot be counted in the clear zone determination. Refer to Section 8A-2 of the Design Manual for information on providing clear recovery areas at the base of steep slopes.

<sup>\*\*</sup> Since a vehicle traveling on a slope steeper than 4:1 is likely to be diverted to the bottom of the slope, the width of any slope steeper than 4:1 cannot be counted in the clear zone determination. Refer to Section 8A-2 of the Design Manual for information on providing clear recovery areas at the base of steep slopes.

### IOWA DEPARTMENT OF TRANSPORTATION

**TO OFFICE:** District 2 **DATE:** February 5, 2025

**ATTENTION:** Nick Humpal, PE **PROJECT: Butler County** 

BRF-057-1(045)--38-12

Kevin Placzek (Benesch) FROM: PIN: 24-12-057-020

**BUREAU:** Design

**SUBJECT:** Project Concept Statement; (Final Approval, D0)

> This project involves the replacement of the IA 57 bridge (Maint. No. 1231.1S057) over Beaver Creek, 1.3 MI. E. OF Jct. SR T53.

A concept review was held on December 11, 2024. Those present included Luka Arrovo, Jimmy Ellis, Tom Lovan, Kevin Patel, John Bartholomew, Jeremy Harris, Nicole Cuva, Mohamad Dokmak, Christian Kennel, Jeff Bacon, Brock Struecker, Brandon Walls, Ashton Johnson, Blake Walter, Ron Loecher David Phillips, Amanda Woods from the Iowa DOT and Kevin Placzek, John Gislason, Jeff Tardy, Jack Majcher and Eric Dean from Benesch.

The two alternatives considered were:

- 1. A continuous concrete slab (CCS) bridge Estimated cost: \$1,724,103
- 2. A reinforced concrete box (RCB) culvert. Estimated cost: \$1.171.347
- 3. A pretensioned prestressed concrete beam (PPCB) bridge. Estimated cost: \$1,236,817

Alternative 2 is the preferred alternative based on estimated cost. Traffic will be maintained by an off-site detour. The estimated cost of Alternative 2 is \$1,171,347.

Attach.

B. Hofer M. J. Kennerly W. A. Sorenson E. C. Wright K. D. Nicholson B. Bradley J. Bacon K. Brink J. E. Laaser-Webb C. Poole N. Pohlen N. L. Cuva M. A. Swenson C. B. Brakke D. E. Sprengeler J. S. Nelson M. V. Dyke M. Nop S. P. Anderson D. Stokes B. Smith M. Dell R. Harris D. Heeren D. T. Ta J. E. Bartholomew G. Cagle D. Blue S. Cook B. Hucker S. Majors J. Ellis B. Worrel R. Meyer A. Woods (RR) D. Rolando N. Humpal D. Phillips M. Kelly D. Erickson R. Gelhaus B. Strueker M. Domak W. Blake V. Brewer

C. Kennel Chris Cromwell -Local FHWA R. Loecher A. Johnston

CONCEPT REPORT

SHEET NUMBER A.7

-1-

### FINAL PROJECT CONCEPT STATEMENT

IA 57 over Beaver Creek, 1.3 MI. E. OF Jct. SR T53

**Butler County** BRF-057-1(045)--38-12 PIN: 24-12-057-020 Maint. No. 1231.1S057 FHWA No. 016470

> **Highway Division** Design Bureau

Benesch Kevin Placzek, PE, SE 312-565-0450

February 5, 2025

### STUDY AREA

## A. Project Description

This project involves the replacement of the bridge (Maint. No. 1829.1S031) on IA 57 over Beaver Creek. 1.3 MI. E. OF Jct. SR T53.

Three alternatives were considered:

Alternative 1 – A continuous concrete slab (CCS) bridge

Estimated cost: \$1,724,103

Alternative 2 – A twin reinforced concrete box (RCB) culvert

Estimated cost: \$1,171,347

Alternative 3 – A pretensioned prestressed concrete beam (PPCB) bridge

Estimated cost: \$1,236,817

Alternative 2 is the preferred alternative due to the lowest estimated cost. To minimize impacts to the railroad bridge and railroad right-of-way, the headwalls will be oriented parallel to the roadway on the north side of the north side of the culvert. Standard headwalls will be used on the southside of the culvert.

### B. Need for Project

The existing structure is a 44' x 20' single span concrete slab (CCS) bridge was built in 1928 and reconstructed in 1969. The bridge is near the end of its useful life. The existing bridge was designed for HS-20-44 loading.

The overlay has reached the end of its service life. The deck has cracks and spalls with exposed rebar. The substructure has leaching cracks and spalls. The bridge was

designed for live loads below current standards. Due to the overall condition of the bridge, a replacement is recommended.

# C. Present Facility

IA 57 is a two-way, two-lane HMA roadway with HMA and granular shoulders. The posted speed limit is 55 mph. Existing roadway plans are not available for this segment of IA 57.

The existing structure is a 44' x 20' single span concrete slab (CCS) bridge reconstructed in 1969.





Against Route

With Route



Right Profile. Near to Far

# D. Traffic Estimates

The 2023 average daily traffic is 2,260 ADT with 7% trucks. Assuming a 2% annual growth rate, the 2029 construction year average daily traffic estimate is 2,545 ADT

CONCEPT REPORT

BUTLER COUNTY

PROJECT NUMBER BRF-057-1(045)--38-12

SHEET NUMBER A.8

FILE NO.

with 7% trucks and the 2049 construction year average daily traffic estimate is 3,780 ADT with 7% trucks.

# E. Sufficiency Ratings

IA 57 is not an NHS route and is a State Highway. The federal bridge sufficiency rating is 87.6.

The Bridge Condition Index is 71.5 and the Bridge Condition Rating is "Fair".

# F. Access Control

Access rights will not be acquired for this project.

# G. Crash History

During the five-year study period from 2019-2024, there was one crash reported near the bridge, which resulted in property damage only. For this segment of IA 57, the potential for crash reduction (PCR) level is negligible. The PCR value for all crashes is -0.27 crash/mile/year and the PCR value for severe crashes is 0.02 crash/mile/year.

# II. PROJECT CONCEPT

### A. Feasible Alternatives

### Alternative #1

Replace existing bridge with three span 90 ft x 44 ft continuous concrete slab (CCS) bridge.

The typical cross section adjacent to the bridge will consist of a 24 ft. PCC roadway with 10 ft. PCC shoulders to the new guardrail posts and 3:1 fore slopes.

The nearest bridge to the west, IA 57 over drainage ditch, 0.2 miles W of Spring Ave, is 44 ft. wide (24 ft. roadway with 10 ft. shoulders.)

This bridge will be constructed on the existing horizontal and a revised vertical alignment. New bridge approaches will be constructed. The existing guardrail will be replaced with new guardrail and new pavement and shoulders will be paved 20 ft. beyond the ends of the guardrail. Class 10 will be necessary to flatten the existing fore slopes and to construct the new guardrail blisters. Class E revetment will be placed under the bridge for slope protection. New bridge end drains will be constructed on both ends of the bridge.

Apply erosion control and rural seeding and fertilizing to all disturbed areas.

Traffic will be maintained by an off-site detour.

Quantity	Unit	Rate	Amount
4320	SF	\$145	\$626,400
1140	SF	\$20	\$22,800
600	TON	\$50	\$30,000
1	LS	10.00%	\$67,920
Base Cost:			\$747,120
Contingen	cy:	20%	\$149,424
4 Years In	flation:	4.5%	\$172,601
BRIDGE TO	OTAL:		\$1,069,145
	4320 1140 600 1 Base Cost: Contingen 4 Years Inf	4320 SF 1140 SF 600 TON	4320       SF       \$145         1140       SF       \$20         600       TON       \$50         1       LS       10.00%         Base Cost:       Contingency:       20%         4 Years Inflation:       4.5%

### **ROADWAY ESTIMATE:**

Item	Quantity	Unit	Rate	Amount
Embankment-in-Place, Contractor Furnished	158	CY	\$40	\$6,338
Excavation, Class 13, Waste	201	CY	\$38	\$7 <i>,</i> 655
Topsoil, Furnish and Spread	53	CY	\$75	\$3,961
Modified Subbase	134	CY	\$60	\$8,058
Paved Shoulder, PCC, 8"	300	SY	\$110	\$32,949
Shoulder Construction, Earth	7.37	STA	\$615	\$4,530
PCC Pavement	305	SY	\$160	\$48,771
Longitudinal Grooving in Concrete, Bridge Deck	440	SY	\$16	\$7,040
Removal of Steel Beam Guardrail	275	LF	\$13	\$3,438
Steel Beam Guardrail	50	LF	\$40	\$2,000
Steel Beam Guardrail Barrier Transition Section, BA-201	4	EACH	\$3,100	\$12,400
Steel Beam Guardrail End Anchor, Bolted	4	EACH	\$320	\$1,280
Steel Beam Guardrail Tangent End Terminal BA-205	4	EACH	\$3,250	\$13,000
Removal of Pavement	1009	SY	\$21	\$21,188
Bridge Approach Pavement	684	SY	\$290	\$198,489
Longitudinal Grooving in Concrete, Pavement	989	SY	\$15	\$14,839
Additional Roadway Items	1	LS	\$10,000	\$10,000
Erosion Control	1	LS	1.00%	\$3,859
Detour	1	LS	5.00%	\$19,297
Mobilization	1	LS	10.00%	\$38,594
	Base Cost:			\$457,685
	Contingen	cy:	20%	\$91,537
	4 Years Inf	lation:	4.5%	\$105,735
	ROADWA	Y TOTAL:	•	\$654,957
	PROJECT 1	OTAL:		\$1,724,103

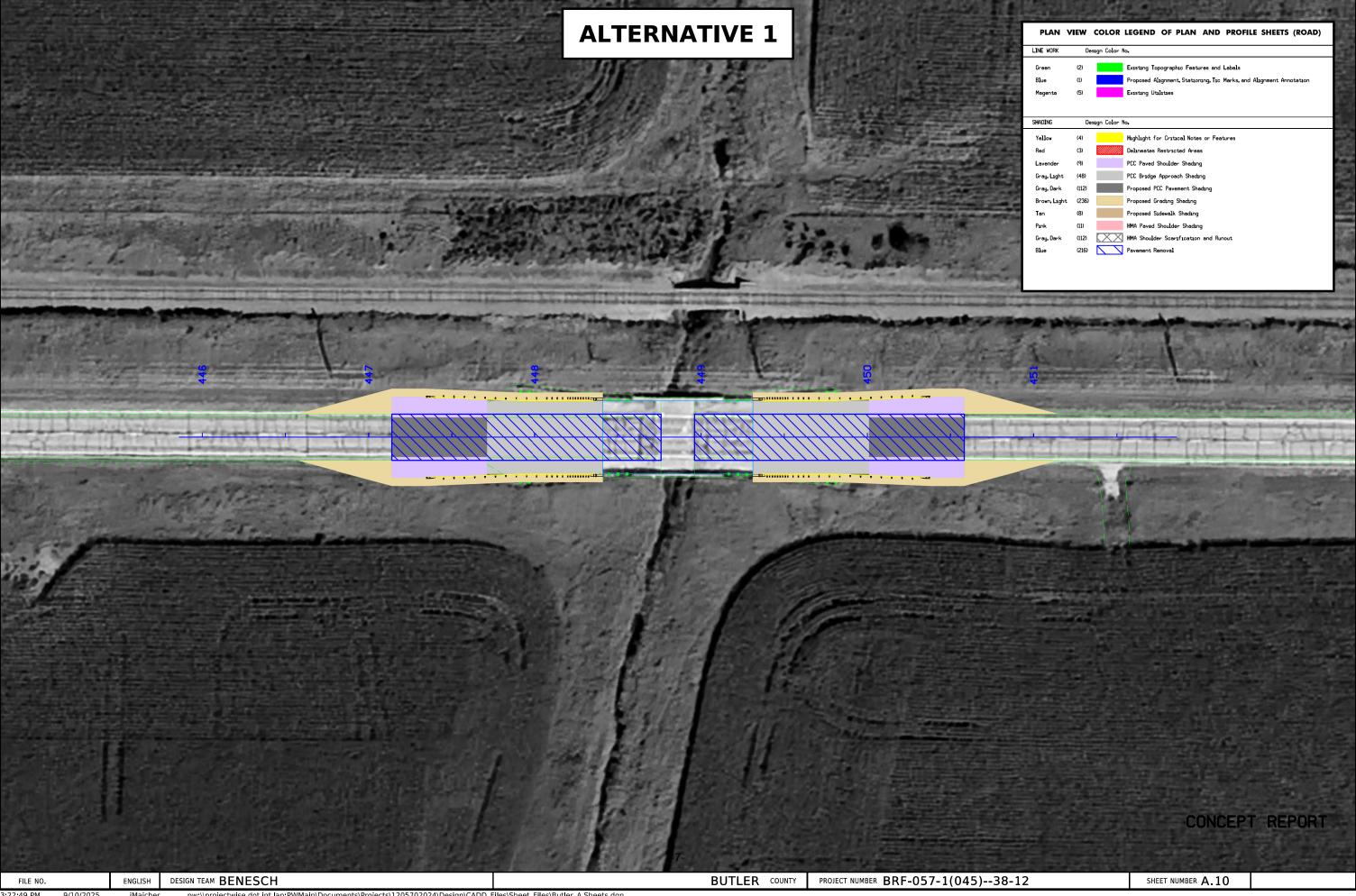
CONCEPT REPORT

-5-

BUTLER COUNTY

PROJECT NUMBER BRF-057-1(045)--38-12

SHEET NUMBER A.9



# Alternative #2

Replace existing bridge with a single, twin 12' x 6' x 70' reinforced concrete box (RCB) culvert. To minimize impacts to the railroad bridge and railroad right-of-way, the headwalls will be oriented parallel to the roadway on the north side of the north side of the culvert. Standard headwalls will be used on the southside of the culvert.

The typical cross section adjacent to the bridge will consist of a 24 ft. PCC roadway with 10 ft. PCC shoulders and 6:1 fore slopes (southside only).

The nearest bridge to the west, IA 57 over drainage ditch, 0.2 miles W of Spring Ave, is 44 ft. wide (24 ft. roadway with 10 ft. shoulders.)

The roadway will be reconstructed on the existing horizontal and a revised vertical alignment. The existing guardrail will be removed and new guardrail will be installed to protect the headwall on the north side of the road. New pavement and shoulders will be paved 20 ft. beyond the ends of the guardrail. The flow line of the box will be buried 1 ft. below the existing flow line in the channel. This will allow the bottom of the box to silt in and provide a natural bottom for fish passage. The existing ditches will need to be relocated to meet the inlet and outlet flowlines of the new RCB. Class E revetment will be placed at the ends of the RCB.

Apply erosion control and rural seeding and fertilizing to all disturbed areas.

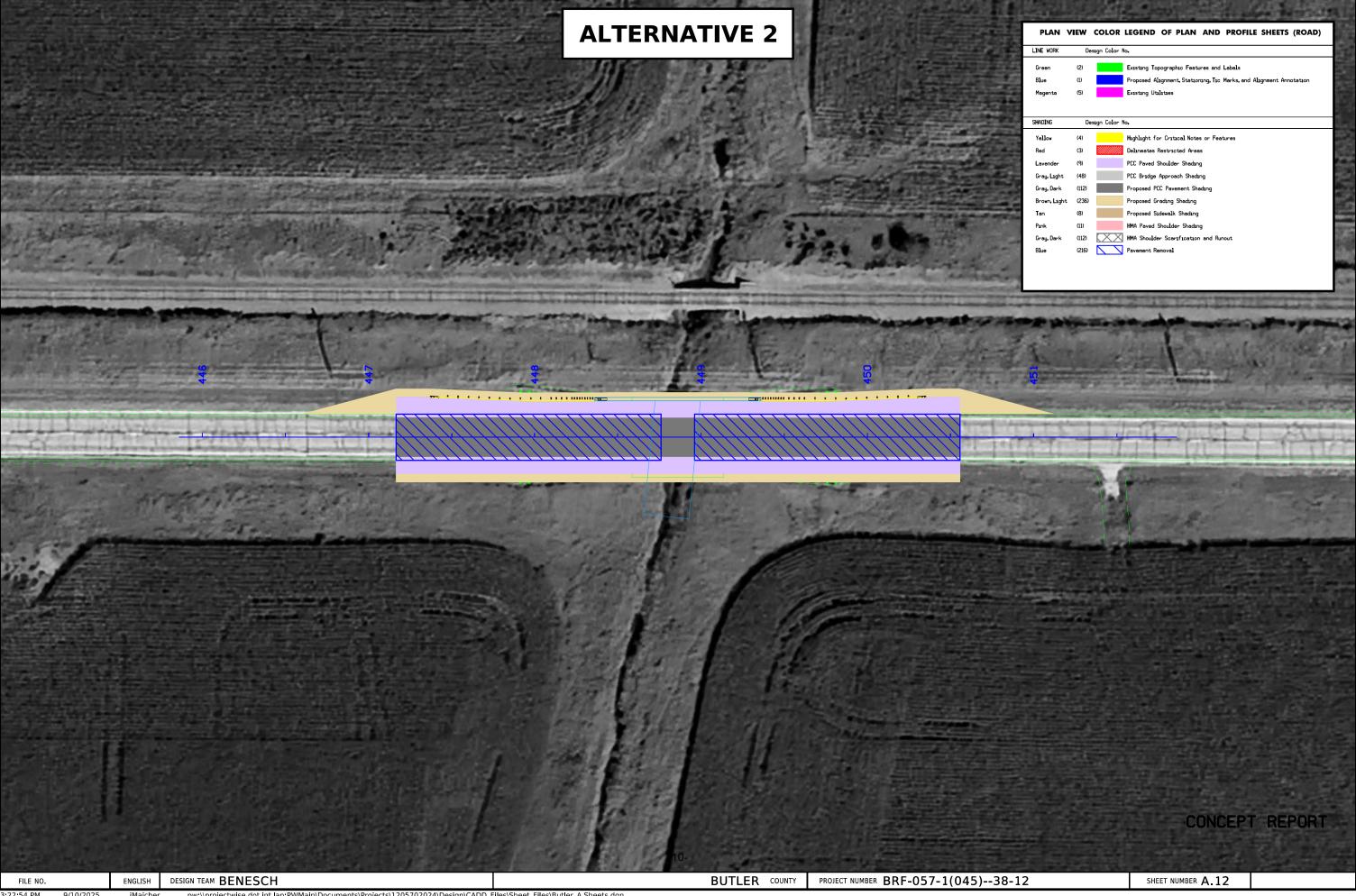
Traffic will be maintained by an off-site detour.

BRIDGE ESTIMATE:				
Item	Quantity	Unit	Rate	Amount
Twin Box Culvert - 12' x 6' x 70'	315	CY	\$900	\$283,347
Remove Existing Bridge	1140	SF	\$20	\$22,800
Revetment, Class E	300	TON	\$50	\$15,000
Stream Mitigation	1	LS	\$100,000	\$100,000
Mobilization	1	LS	10.00%	\$42,115
	Base Cost:			\$463,262
	Contingency:		20%	\$92,652
	4 Years Infl	ation:	4.5%	\$107,024
	BRIDGE TO	TAL:		\$662,938

# **ROADWAY ESTIMATE:**

Item	Quantity	Unit	Rate	Amount
Embankment-in-Place, Contractor Furnished	158	CY	\$40	\$6,312
Excavation, Class 13, Waste	517	CY	\$35	\$18,091
Topsoil, Furnish and Spread	53	CY	\$75	\$3,945
Modified Subbase	345	CY	\$60	\$20,676
Paved Shoulder, PCC, 8"	779	SY	\$90	\$70,066
Shoulder Construction, Earth	6.83	STA	\$615	\$4,200
PCC Pavement	905	SY	\$150	\$135,723
Removal of Steel Beam Guardrail	275	LF	\$13	\$3,438
Steel Beam Guardrail	25	LF	\$40	\$1,000
Steel Beam Guardrail Barrier Transition Section, BA-201	2	EACH	\$3,100	\$6,200
Steel Beam Guardrail End Anchor, Bolted	2	EACH	\$320	\$640
Steel Beam Guardrail Tangent End Terminal BA-205	2	EACH	\$3,250	\$6,500
Removal of Pavement	993	SY	\$21	\$20,861
Additional Roadway Items	1	LS	\$10,000	\$10,000
Erosion Control	1	LS	1.00%	\$2,977
Detour	1	LS	5.00%	\$14,883
Mobilization	1	LS	10.00%	\$29,765
	Base Cost:			\$355,276
	Contingen	cy:	20%	\$71,055
	4 Years Inf	lation:	4.5%	\$82,077
	ROADWAY	TOTAL:		\$508,408
	PROJECT T	OTAL:		\$1,171,347

CONCEPT REPORT



# Alternative #3

Replace existing bridge with three span 46 ft - 8 in x 44 ft PPC Type A beam bridge.

The typical cross section adjacent to the bridge will consist of a 24 ft. PCC roadway with 10 ft. PCC shoulders to the new guardrail posts and 3:1 fore slopes.

The nearest bridge to the west, IA 57 over drainage ditch, 0.2 miles W of Spring Ave, is 44 ft. wide (24 ft. roadway with 10 ft. shoulders.)

This bridge will be constructed on the existing horizontal and a revised vertical alignment. New bridge approaches will be constructed. The existing guardrail will be replaced with new guardrail and new pavement and shoulders will be paved 20 ft. beyond the ends of the guardrail. Class 10 will be necessary to flatten the existing fore slopes and to construct the new guardrail blisters. Class E revetment will be placed under the bridge for slope protection. New bridge end drains will be constructed on both ends of the bridge.

Apply erosion control and rural seeding and fertilizing to all disturbed areas.

Traffic will be maintained by an off-site detour.

BRIDGE ESTIMATE:				
ltem	Quantity	Unit	Rate	Amount
Bridge - PPCB bridge	2256	SF	\$150	\$338,400
Remove Existing Bridge	1140	SF	\$20	\$22,800
Revetment, Class E	300	TON	\$50	\$15,000
Mobilization	1	LS	10.00%	\$37,620
	Base Cost:			\$413,820
	Contingen	cy:	20%	\$82,764
	4 Years Inf	lation:	4.5%	\$95,602
	BRIDGE TO	DTAL:		\$592,186

# **ROADWAY ESTIMATE:**

ltem	Quantity	Unit	Rate	Amount
Embankment-in-Place, Contractor Furnished	158	CY	\$40	\$6,338
Excavation, Class 13, Waste	201	CY	\$38	\$7,655
Topsoil, Furnish and Spread	53	CY	\$75	\$3,961
Modified Subbase	134	CY	\$60	\$8,058
Paved Shoulder, PCC, 8"	300	SY	\$110	\$32,949
Shoulder Construction, Earth	7.37	STA	\$615	\$4,530
PCC Pavement	305	SY	\$160	\$48,771
Longitudinal Grooving in Concrete, Bridge Deck	228	SY	\$16	\$3,650
Removal of Steel Beam Guardrail	275	LF	\$13	\$3,438
Steel Beam Guardrail	50	LF	\$40	\$2,000
Steel Beam Guardrail Barrier Transition Section, BA-201	4	EACH	\$3,100	\$12,400
Steel Beam Guardrail End Anchor, Bolted	4	EACH	\$320	\$1,280
Steel Beam Guardrail Tangent End Terminal BA-205	4	EACH	\$3,250	\$13,000
Removal of Pavement	874	SY	\$21	\$18,357
Bridge Approach Pavement	684	SY	\$290	\$198,489
Longitudinal Grooving in Concrete, Pavement	989	SY	\$15	\$14,839
Additional Roadway Items	1	LS	\$10,000	\$10,000
Erosion Control	1	LS	1.00%	\$3,797
Detour	1	LS	5.00%	\$18,986
Mobilization	1	LS	10.00%	\$37,971
	Base Cost:			\$450,469
	Contingen	cy:	20%	\$90,094
	4 Years In	flation:	4.5%	\$104,068
	ROADWA	Y TOTAL:		\$644,631
	PROJECT 1	TOTAL:		\$1,236,817

PROJECT NUMBER BRF-057-1(045)--38-12

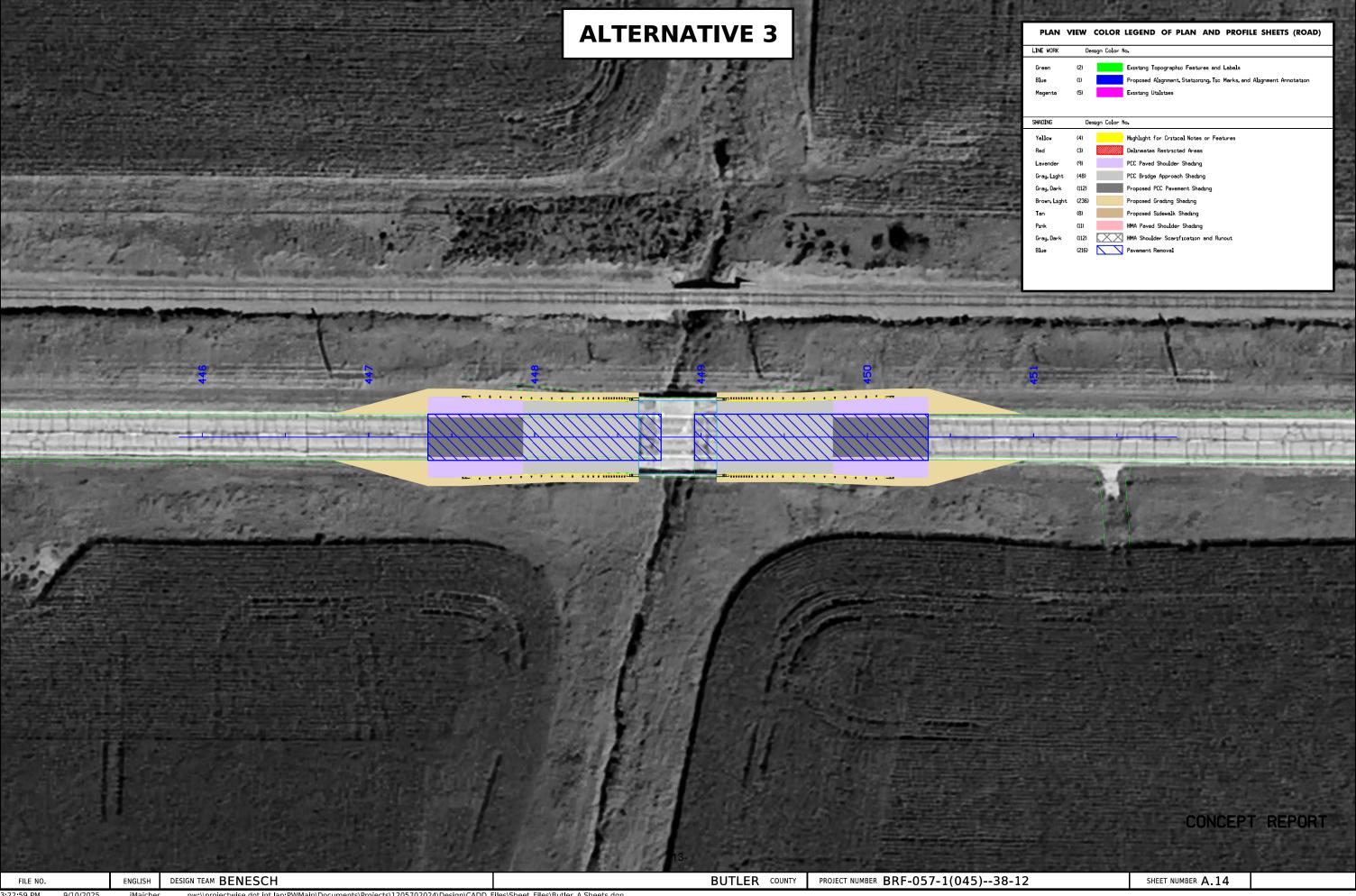
CONCEPT REPORT

SHEET NUMBER A.13

-12-

BUTLER COUNTY

-11-



# B. <u>Detour Analysis</u>

For the duration of construction, IA 57 will be closed, and an offsite detour will be utilized. Two hard surface detour routes were analyzed and are summarized below. A map of the two options is attached to the end of this document.

- Option 1
  - o Route: IA 57 (U Avenue) to County Road D17 (120<sup>th</sup> Street) to IA 14 (N Avenue)
  - o Length: 12.5 miles
  - Advantages
    - No difficult turning movements for trucks.
    - This is the shorter of the two options.
  - Disadvantages
    - This route passes through the small residential area of the City of Stout.
- Option 2
  - Route: Sinclair Avenue to County Road C55 (290<sup>th</sup> Street) to County Road T55 (U Avenue) to Main Street
  - o Length: 14.7 miles
  - Advantages
    - No difficult turning movements for trucks.
  - Disadvantages
    - This route passes through the residential area of the City of New Hartford.

# C. Recommendations

It is recommended that the present structure be replaced, as described in Alternative No. 2.

# D. Construction Sequence

It is anticipated that all work on this project will be awarded to one prime contractor, and that work will be completed in a single stage during a detour of traffic.

# E. ADA Accommodations

There are no bike paths or sidewalks adjacent to IA 57. Therefore, no ADA accommodations are planned in conjunction with this project.

-14-

# F. Special Considerations

This will not be a traffic critical project.

The ABC Rating Score of 42 is less than the first stage filter threshold of 50, therefore this bridge will be constructed using traditional methods.

A railroad bridge is located parallel to the bridge, approximately 80 feet to the north.

No bike path or sidewalk will be required as part of this project.

The waterway is not on a state water trail or paddling route.

It appears that Right of Way may be required for this project. \$10,000 of Right of Way has been programmed for this project.

# G. Program Status

This project is listed in the 2025-2029 Iowa Transportation Improvement Program with \$1,310,000 for replacement in FY 2029.

CONCEPT REPORT

-15-

# <u>Utilities</u>

(AT6) MEDIACOM

Company name : MEDIACOM
Design contact: SCOTT LAGOW

Phone: 8455449655

Email: <u>clagow@mediacomcc.com</u>

(CIW3) IOWA REGIONAL UTILITY ASSOC

Company name: IOWA REGIONAL UTILITY ASSOC Design contact: Sandy Spangenburg

Phone: 3198245920 Email: <u>ciwagc@gcmuni.net</u>

(M19E) MIDAMER-ELEC

Company name : MIDAMER-ELEC Design contact: Jordyn Weber

Phone: 3192914728

Email: jlweber@midamerican.com

(M19G) MIDAMER-GAS

Company name : MIDAMER-GAS Design contact: Jordyn Weber

Phone: 3192914728

Email: jlweber@midamerican.com

(MC1) VERIZON

Company name : VERIZON
Design contact: INVESTIGATIONS

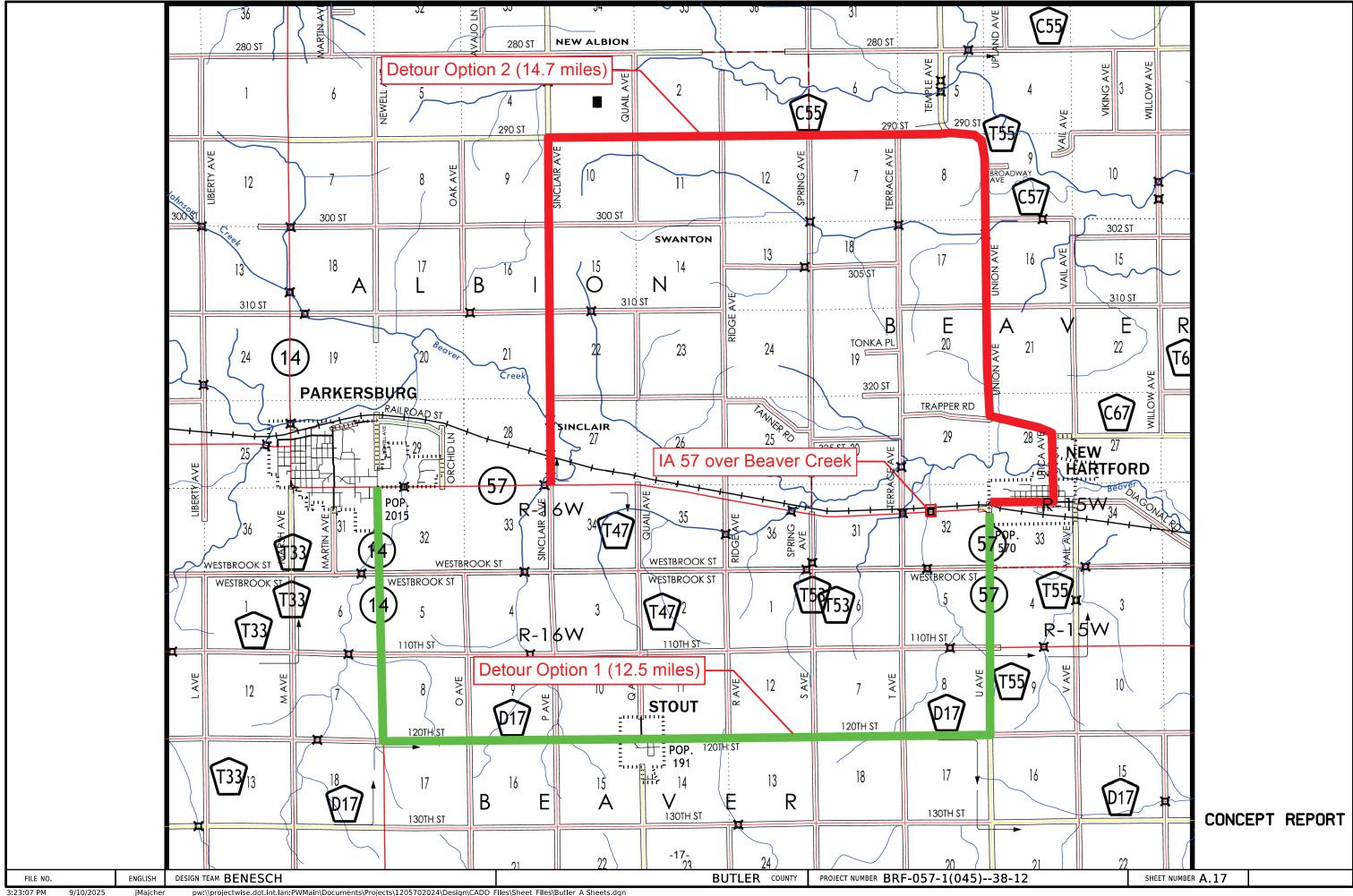
Phone: 4698864090

Email: <a href="mailto:linker:1005@verizon.com">linker:1005@verizon.com</a>

CONCEPT REPORT

SHEET NUMBER A.16

-16-



### Bridge Cost Estimate and Analysis for Concept Statement

### Location:

County: Butler County Phase No.: BRF-057-1(045)--38-12

Des. No.: Not Assigned Project Code: 24-12-057-020

Maint. No.: 1231.1S057 FHWA No.: 016470 Sta.: 448+86.10 On IA 57 over Beaver Creek

Section 32: T-90N: R-15W

Functional Class: 06 ADT: 2260 (2023) Date: 1-30-2025 By: Kevin M. Placzek (Benesch)

### Existing Bridge:

Type: Concrete Slab Bridge Length x Width: 20'x 44' Pier Type: None Abut. Type: Ex. Cantilevered Spans: 1 @ 20' Approach Pavement Width: 24'

Skew: 0 deg

Drainage Area: 4.17 sq. mi.

New/Reconstructed Roadway Width:

### General Comments:

- A Twin 12'x6' RCB Culvert was proposed for the replacement of the existing structure based on estimated costs. All three alternatives provide adequate hydraulic capacity.
- Railroad bridge located parallel to the bridge, approximately 80 feet to the north and is the constraining point. Backwater from the railroad bridge could cause freeboard issues to the roadway bridge. This will be modeled further in the phase.
- Preliminary hydraulic analysis has been completed for this project. Based on the preliminary hydraulic analysis a twin  $12' \times 6'$  RCB will meet hydraulic criteria.
- A Flood Hazard Boundary Map has been created for this area. The project is within a Zone A flood hazard area. Flood elevations have not been determined for this area.
- The drainage area at this site is 4.17 square miles. Since this is an unincorporated area with a drainage area less than 100 square miles a DNR permit is not required.

### Option A - Replacement Bridge, Off-Site Detour

Stage Traffic: No, Off-site detour

Length x Width: 90'-0 x 44'-0 Type: Continuous concrete slab Abutment Type: Integral Pier Type: Pile Bent

Spans: 27'-6, 35'-0, 27'-6" Skew: 0 degrees

Bridge - 4320 sf @ \$145/sf 626,400 Remove Exist. Bridge 1140 sf @ \$20.00/sf 22,800 Revetment 30,000

Page 1 of 2

Bridge Concept Statement

Butler County

Project Number BRF-057-1 (045) --38-12

Mobilization (10%) 62,920 Contingency and Misc. (20%) = \$ 149,424 \_\_\_\_\_ Total Option A (including 4 years inflation @ 4.5%) \$ 1,069,145

### Option B - Replace with Twin 12' x 6' RCB, Off-Site Detour

Type: Twin Box Culvert Length x Width:  $70'-0 \times 24'-0$ 

Pier Type: N/A Abutment Type: N/A Skew: 5 degrees Spans: 2 @ 12'-0

Stage Traffic: No, Off-site detour

Costs:

Twin Box - 12' x 6' - 315 cy @ \$900/cy 283,347 Remove Exist. Bridge 1140 sf @ \$20.00/sf 22,800 Revetment 15,000 Stream Mitigation 100,000 42,115 Mobilization (10%) = \$ Contingency and Misc. (20%) 92,652 ======= \$ 662,938 Total Option B (including 4 years inflation @ 4.5%)

### Option C - Replacement Bridge, Off-Site Detour

Length x Width: 46'-8 x 44'-0 Type: Prestressed Beam Bridge Pier Type: None Abutment Type: Integral

Spans: 1 @ 46'-8 Skew: 0 degrees

Stage Traffic: No, Off-site detour

BUTLER COUNTY

Bridge - 2256 sf @ \$150/sf 338,400 Remove Exist. Bridge 1140 sf @ \$20.00/sf 22,800 Revetment 15,000 Mobilization (10%) 37,620 Contingency and Misc. (20%) 82,764 \_\_\_\_\_ Total Option C (including 4 years inflation @ 4.5%) \$ 592,186

### Accelerated Bridge Construction (ABC):

The calculated ABC Rating Score based on Iowa DOT BDM Chapter 8 criteria and 12.5 miles out of distance travel is 42.

The ABC Rating score of 42 is less than the first stage filter threshold of 50.

Page 2 of 2

CONCEPT REPORT

DESIGN TEAM BENESCH pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\1205702024\Design\CADD Files\Sheet Files\Butler A Sheets.dgn

-18-

PROJECT NUMBER BRF-057-1(045)--38-12

SHEET NUMBER A.18

Concept Statement - Bridge Bureau Attachment

### Bridge Bureau Attachment for Concept Statement

Date: February 5, 2025

By: Kevin Placzek (Benesch)

Location: IA 57 over Beaver Creek, 1.3 MI. E. OF Jct. SR T53

County: Butler County

Phase No.: BRF-057-1(045)--38-12 Project Code: 24-12-057-020

- 1. Regulatory/Coordination
  - a. Iowa DNR Flood Plain permit = No
  - b. Iowa DNR Sovereign Lands permit = No
  - c. Local Record of Coordination = Yes
  - d. Flood Insurance Study = No, Zone A- No Base Flood Elevation (BFE)Flood map panel 19023C0459E effective 12/17/2020.
  - e. Drainage District = No
  - f. Corps of Engineers Section 408 = No
  - g. State Water Trail or Paddling Route =No
  - n. Historic Structure = No
  - i. Federally owned land in vicinity = No
  - j. USGS or Iowa Flood Center (IFC) gage or sensor impacted? No
  - k. Obstruction Evaluation/Airport Airspace Analysis per FAA website = No
- 2. Hydrologic/Hydraulic Analysis/RIDB Dataset
  - a. Design discharges determined = Q50 = 2318 cfs Q100 = 2758 cfs,
  - b. Hydraulic analysis done = Partial, SMS 2D and HEC-RAS
  - c. If DA > 10 sq. mi. Riverine Infrastructure Database (RIDB) dataset is required with B1 submittal =No
  - d. Project development hydraulic analysis will comply with the RIDB Guidelines at a minimum= No, the drainage area is less than 10 sq. mi. which is the threshold for including structure in RIDB database.
- 3. Structure/Roadway Layout Considerations
  - a. Roadway profile grade raise is not anticipated
  - b. No Shallow rock indicated by existing borings
  - c. Channel shift recommended = No
- 4. Special construction issues
  - a. No shallow bedrock is present

DESIGN TEAM BENESCH

- b. It is desirable for new structure foundations to avoid existing foundations when possible
- 5. Special survey = No
- 6. Aesthetic enhancements = No
- 7. Other
  - a. Maintenance of Traffic Off site detour potential. Approximately  $12.5\ \mathrm{miles}$ .

b. Railroad bridge located parallel to the bridge, approximately 80 feet to the north.

Special Survey: None

~ 2 ~

CONCEPT REPORT

-20-

~ 1 ~

BUTLER COUNTY

PROJECT NUMBER BRF-057-1(045)--38-12

SHEET NUMBER A.19

BRIDGE ESTIMATE:				
ltem	Quantity	Unit	Rate	Amount
Twin Box Culvert - 12' x 6' x 70'	315	CY	\$900	\$283,347
Remove Existing Bridge	1140	SF	\$20	\$22,800
Revetment, Class E	300	TON	\$50	\$15,000
Stream Mitigation	1	LS	\$100,000	\$100,000
Mobilization	1	LS	10%	\$42,115
	Base Cost:			\$463,262
	Contingend	:y:	20%	\$92,652
	4 Years Infl	ation:	4.5%	\$107,024
	<b>BRIDGE TO</b>	TAL:		\$662,938
ROADWAY ESTIMATE:				
Item	Quantity	Unit	Rate	Amount
Excavation, Class 13, Waste	2104	CY	\$35	\$73,640
Topsoil, Furnish and Spread	250	CY	\$75	\$18,753
Modified Subbase	386	CY	\$60	\$23,141
Paved Shoulder, PCC, 8"	805	SY	\$90	\$72,477
Shoulder Construction, Earth	13.64	STA	\$615	\$8,389
PCC Pavement	930	SY	\$150	\$139,537
Removal of Steel Beam Guardrail	275	LF	\$13	\$3,438
Steel Beam Guardrail	25	LF	\$40	\$1,000
Steel Beam Guardrail Barrier Transition Section	2	EACH	\$3,100	\$6,200
Steel Beam Guardrail End Anchor, Bolted	2	EACH	\$320	\$640
Steel Beam Guardrail Tangent End Terminal B	2	EACH	\$3,250	\$6,500
Removal of Pavement	1006	SY	\$21	\$21,120
Additional Roadway Items	1	LS	\$10,000	\$10,000
Erosion Control	1	LS	1%	\$3,748
Detour	1	LS	5%	\$18,742
Mobilization	1	LS	10%	\$37,483
	Base Cost:			\$444,807
	Contingend	:y:	20%	\$88,961
	4 Years Infl	ation:	4.5%	\$102,760
	ROADWAY	TOTAL:	,	\$636,528
	PROJECT TO	OTAL:		\$1,299,467

# FIELD EXAM COST ESTIMATE

# Structures:

There are overhead utility poles located to the north of the culvert, Can the lines be relocated or de-energized during installation of the piles for the culvert headwalls?

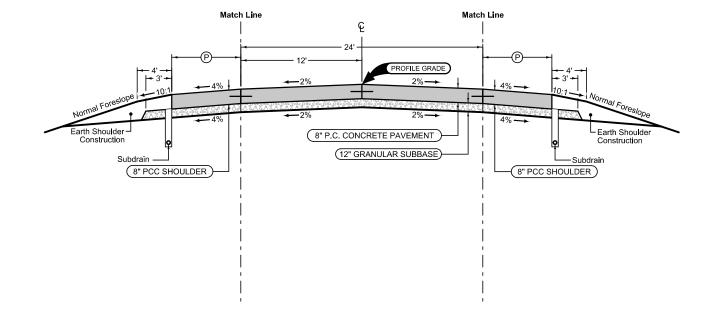
# Plan and Profile:

The speed limit on IA 57 is 55 mph and we are using a 60 mph Design Speed. If we can get an exception to reduce the design speed to 55 or 50 mph, this would reduce the earthwork as well as construction limits.

We are not proposing a ditch on the north side due to the proximity of the railroad. If a standard ditch is used, the limit of construction would encroach on the railroad. If a ditch is needed, can we decrease the ditch width from the 10' standard width or use slopes steeper than 1:3 behind the guardrail to avoid impacting the railroad?

The limit of construction on the south side of IA 57 goes beyond the existing ROW line. Do we need to revise the grading to avoid ROW impact? Or is the grading beyond the ROW ok since it is near the creek?

FIELD EXAM QUESTIONS



Malnline Jointing: Transverse joints: CD at 17' spacing Longitudinal joint: L-2

	_ongnaa	,
		2P <u> </u>
	STATION T	O STATION
	447+43.08	450+91.92
ı		

# Full Depth PCC Shoulder

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

Transverse jointer o at 17 opasing						
	2_P_Fu 04	IIPCC_ I-15-25				
STATION T	O STATION	P Feet				
447+43.08 LT	447+63.08 LT	12.3				
447+63.08 LT	448+20.03 LT	10-12.3				
448+20.03 LT	450+14.99 LT	10.0				
450+14.99 LT	450+71.92 LT	10-12.3				
450+71.92 LT	450+91.92 LT	12.3				
447.43.08 RT	450+91.92 RT	10.0				

TYPICAL SECTION IA 57

FILE NO. ENGLISH DESIGN TEAM BENESCH

BUTLER COUNTY PROJECT NUMBER BRF-057-1(045)--38-12 SHEET NUMBER B.1

#### **UTILITY LEGEND** PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS SURVEY SYMBOLS LINEWORK Design Color No. Septic Tank Interstate Highway Symbol (2) Existing Topographic Features and Labels Green Existing Fiber Optics U.S. Highway Symbol Cistern Blue Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation Existing Water Line Magenta (5) Existing Utilities (LP) Iowa Highway Symbol L.P. Gas Tank (No Footing) SHADING Design Color No. County Road Highway Symbol Underground Storage Tank Pink. Dark (13)Temporary Pavement Shading **Proposed Pavement Shading** Yellow (4) Evergreen Tree Latrine (6) Proposed Granular Shading Orange Deciduous Tree Satellite TV Dish (70)Proposed Shoulder Granular Shading Orange Yellow (68)Proposed Shoulder Paved Full Depth Shading Fruit Tree Water Hook Up Yellow (132)Proposed Shoulder Paved Partial Depth Shading Shrub (Bushes) □ RT Radio Tower Brown, Light (236)**Grading Shading** (134)Proposed Granular Entrance Shading Orange, Light Timber Tower Anchor (220)Proposed Paved Entrance Shading Yellow Hedge Guardrail (Beam or Cable) (8) Proposed Sidewalk Shading Tan Blue, Light (230) Proposed Sidewalk Landing Shading 2 Stump Guard Post (one or two) Pink (11)Proposed Sidewalk Ramp Shading Guard Post (over two) (3) Proposed Structure Shading Red Red (3) Delineates Restricted Areas Ш≣ Rock Outcrop Filler Pipe 0000 **Broken Concrete** Gas Valve PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS Revetment (Rip Rap) Design Color No. Water Valve (10) Existing Ground Line Profile Green † Cemetery Speed Limit Sign ⊙ SI Blue (1) Proposed Profile and Annotation Grave MM Mile Marker Post Magenta Existing Utilities (5) (ĆV) Blue, Light (230) Proposed Ditch Grades, Left Cave ☐ SIGN Sign Black (0) Proposed Ditch Grades, Median (SH) Sink Hole □ TCB Traffic Signal Control Box (14) Proposed Ditch Grades, Right Rust Board Fence □ RRB Rail Road Signal Control Box **RIGHT-OF-WAY LEGEND** Reference Point Survey Line ----- # Chain Link or Security Fence □ TSB Telephone Switch Box Station Proposed Right-of-Way Symbol Wire Fence —— — Section Corner □ EB Electric Box Proposed Right-of-Way Line Terrace — - - — - - — Ground Line Intercept Existing Right of Way Earth Dam or Dike (Existing) Saw Cut Existing and Proposed Right-of-Way Tile Outlet Guardrail Easement and Existing Right-of-Way Edge of Water Easement (Temporary) Symbol Trench Drain **Existing Drainage HighTension Cable** Easement (Temporary) Line Right of Way Rail or Lot Corner Easement Sheet Pile Concrete Monument C/A Access Control Pavement Removal Clearing & Grubbing Area X Well → Property Line Symbol Windmill Property Line Beehive Intake Existing Intake Existing Utility Access (Manhole) Fire Hydrant WH Water Hydrant (Rural) PLAN AND PROFILE LEGEND AND SYMBOL **INFORMATION SHEET** (COVERS SHEET SERIES D, E, F, & K)

DESIGN TEAM BENESCH **ENGLISH** 

BUTLER COUNTY

PROJECT NUMBER BRF-057-1(045)--38-12

SHEET NUMBER D.1

Transparency

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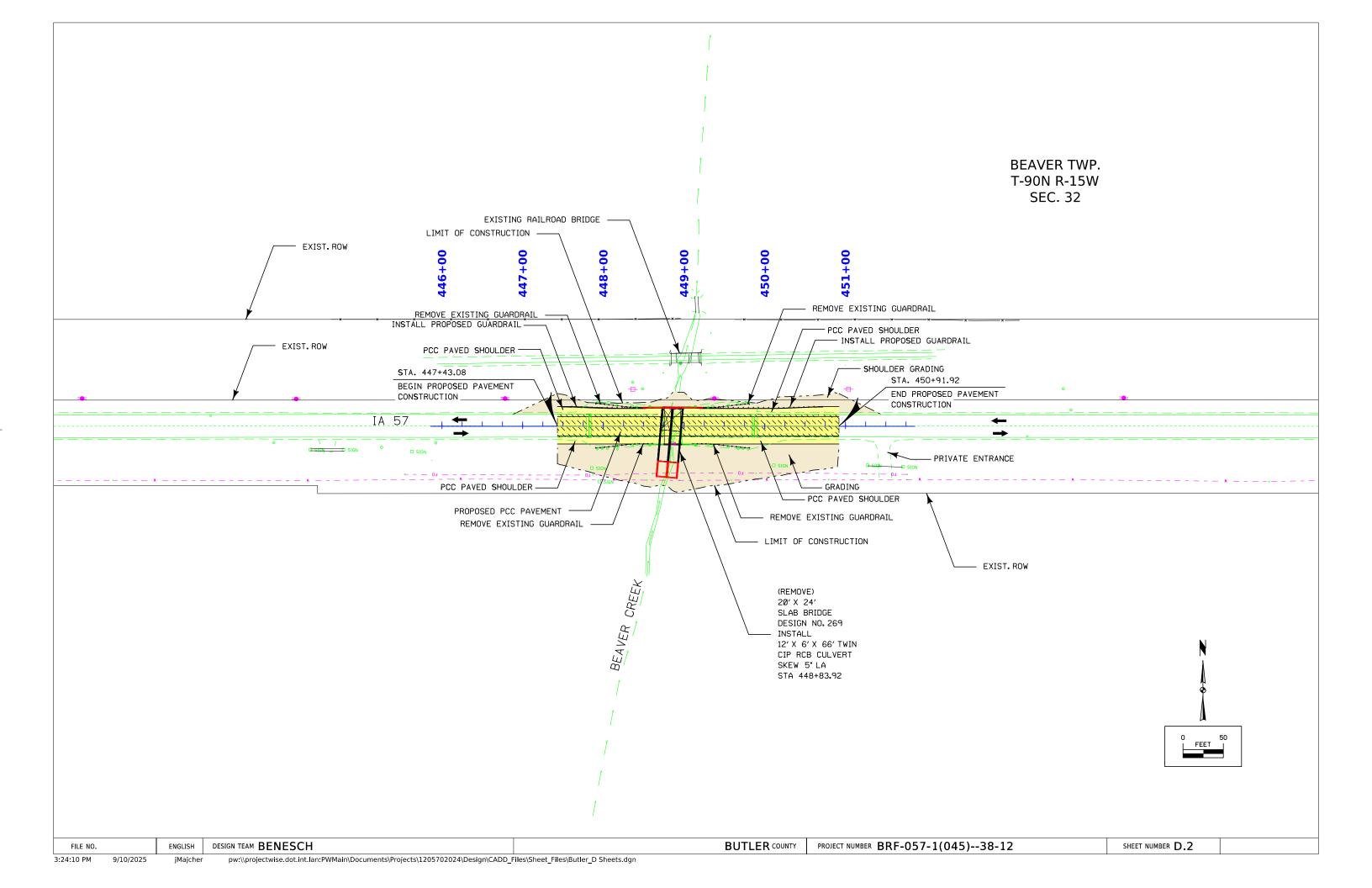
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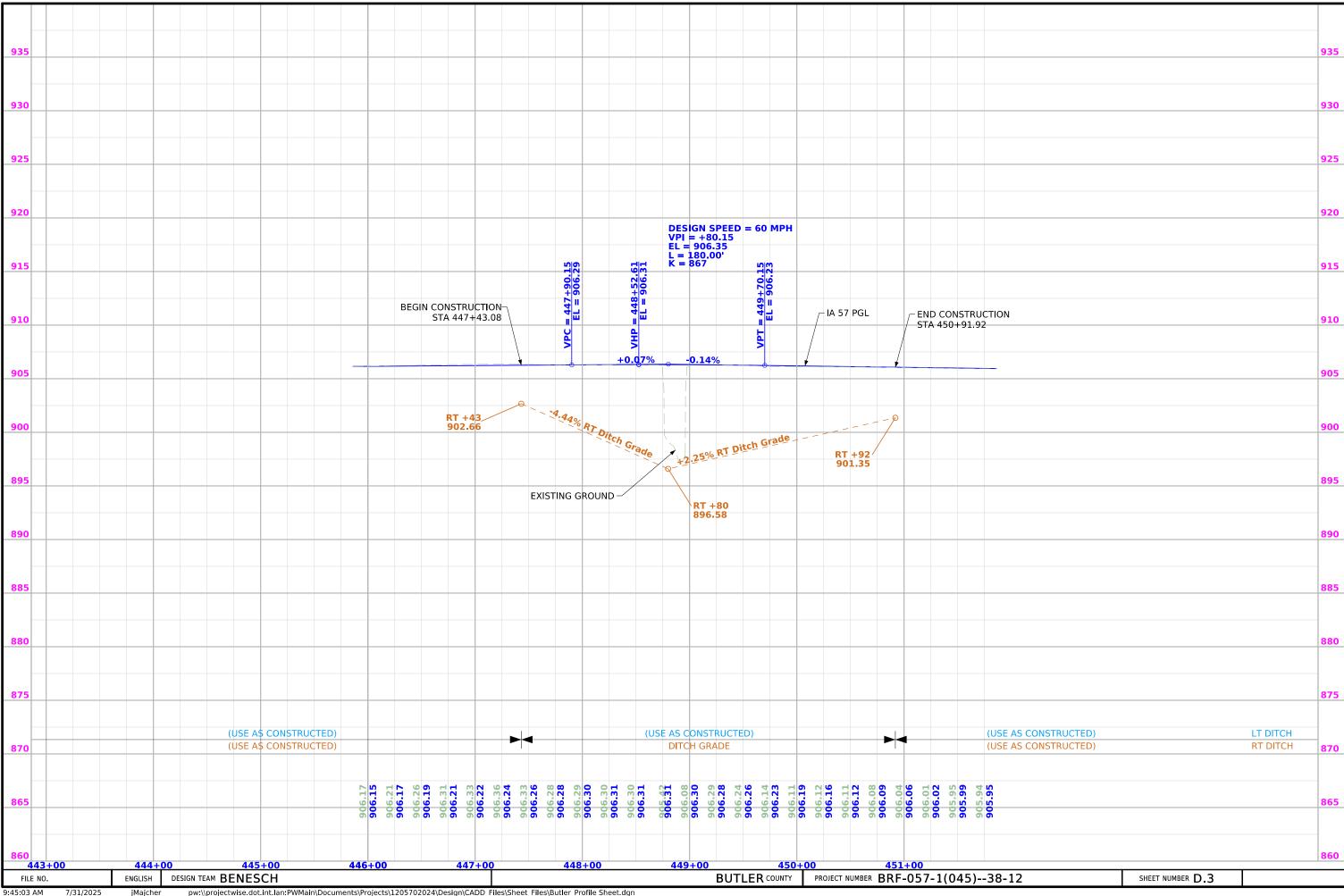
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# **Survey Information**

# **SURVEY INDEX**

**County: Butler** PIN: 24-12-057-020

Project Number: BRF-057-1(045)--38-12

Location: IA 57 over Beaver Creek, 1.3 MI. E. OF Co Rd T53

Type of Work: Bridge Replacement **Project Directory: 1205702024** 

# **Survey Personnel**

Tom Pajula - Survey Party Chief Eric Wesel - Assistant Survey Party Chief

# Date(s) of Survey

Begin Date 12/11/2024 End Date 01/31/2025

# **General Information**

This survey is for IA 57 bridge replacement at location 1.3 mi E of Co Rd T53. 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**

Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical control on primary project control points. Three five-minute observations were taken with a minimum two-hour time span between and used in an average to obtain final coordinate values. For additional details of the control survey, contact the Preliminary Survey department.

PROJECT DATUM: NAD83(2011) for EPOCH 2010.00

COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 05

(U.S. SURVEY FOOT)

**VERTICAL DATUM: NAVD88 GEOID MODEL: 2018u3** 

# **Alignment Information**

The horizontal alignment for Iowa 57 this survey is a retrace of Plans for Project No. FN-20-5(4)—21-12. Survey stationing was equated to the plan face of west abutment at Sta. 448+76.1, split the pavement to the west and east, and carried back and ahead without equation throughout the survey. Stationing increases to the east in both the plan and the survey.

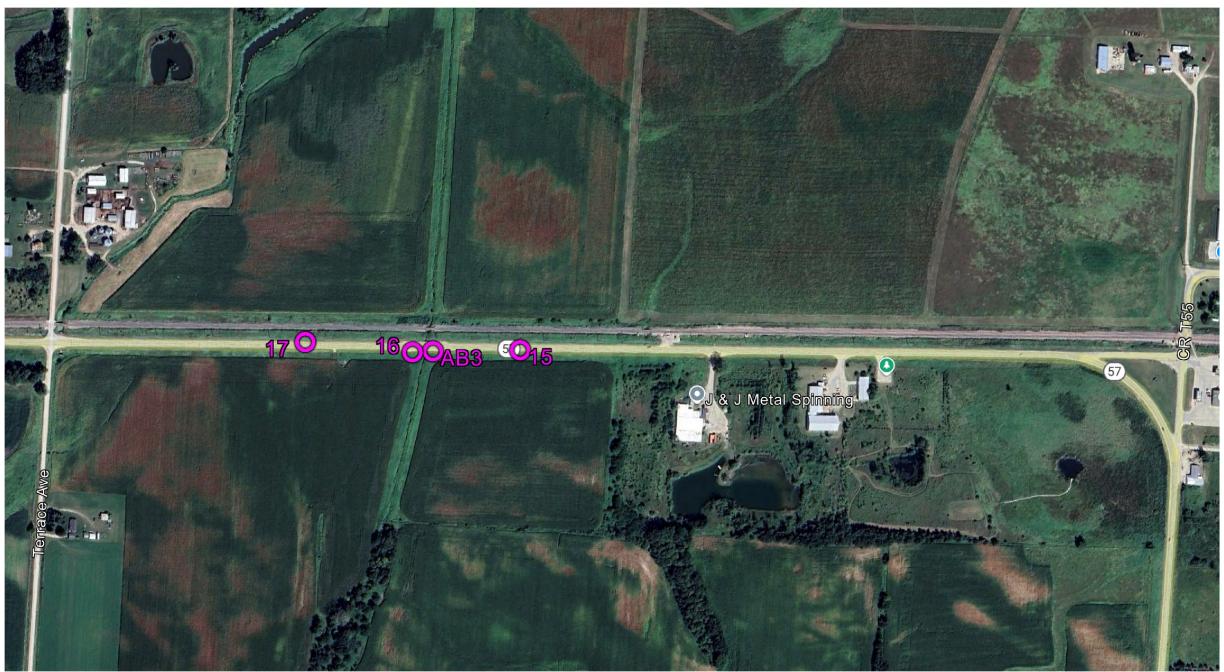
Survey stationing relates to as built plan stationing as follows:

POT Sta. 488+76.1 As-built Plans Project No. FN-20-5(4)—21-12 Survey POT Sta. 488+76.1

SHEET NUMBER G.1

# 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 (laRTN 2019 Adjustment) - Iowa RCS Zone 05 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u3

SHEET NUMBER 6.2

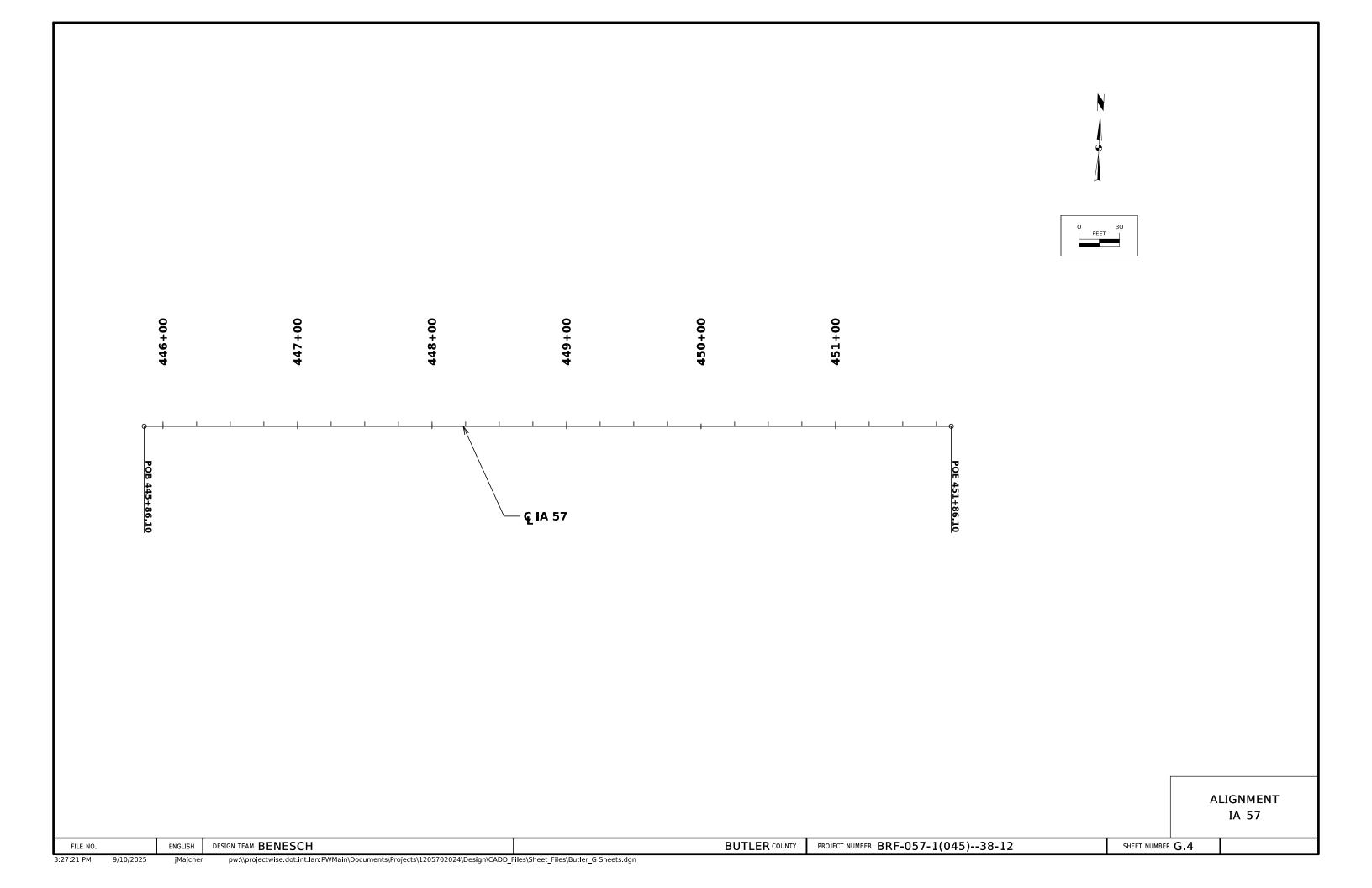
Coordinate listing from next sheet will be used with IaRTN for monument recovery. No other reference ties are given.

# HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment) la. Regional Coordinate System Zone 05 (U.S. Survey Foot)

VERT. DATUM: NAVD88 Geoid Model: 2018u3

Point Name	Northing	Easting	Elevation	Code Description
15	8869398.43	15393726.48	905.41	CP SET MAG NAIL SOUTH EDGE OF IA 57 +/-107FT SOUTHWEST OF THE SECOND POWERPOLE WEST OF BEAVER CREEK +/-1.5FT NORTH OF THE EDGE OF BIT PAVEMENT
16	8869362.23	15393219.80	905.29	CP REBAR WITH CAP +/-68FT WEST OF BEAVER CREEK +/-2.6FT SOUTH OF THE 6TH GUARDRAIL POST FROM THE WEST +/-15.3FT SOUTH OF THE SOUTH EDGE OF BIT PAVEMENT
17	8869383.57	15392714.47	905.29	CP SET MAG NAIL NORTH EDGE OF IA 57 +/-438FT EAST OF THE CENTER OF THE BRIDGE OVER BEAVER CREEK +/-1.5FT SOUTH OF THE EDGE OF BIT PAVEMENT
AB3	8869371.4	15393315.4	908.94	BM SQUARE CUT SOUTHEAST CORNER OF TOP OF WINGWALL IN THE SOUTHEAST QUADRANT OF BRIDGE OVER BEAVER CREEK



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 PI X Easting	End Curve Station	End Curve Y Northing	End Curve X Easting	End Spiral Station	End Spiral Y Northing	End Spiral Easting
PR CL IA 57	Mainline	445+86.10	8869381.51	15392987.44														
PR CL IA 57	Mainline	451+86.10	8869405.38	15393586.96														

FILE NO.

BUTLER COUNTY PROJECT NUMBER BRF-057-1(045)--38-12

108\_23A 8/15/22

# TRAFFIC CONTROL PLAN

IA 57 will be closed to traffic during construction using Standard Road Plan TC-252. Traffic will be detoured via IA 57 (U Avenue), County Road D17 (120th Street) and IA 14 (N Avenue). All detour signs are to be provided, placed, maintained and removed by the Contractor as part of the Traffic Control bid item.

Route Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No. or Structure ID or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	 Remarks
		NONE ANTICIPATED				None				

108\_26A 8/15/22

# STAGING NOTES

Construction will be performed in a single stage during a full closure of the bridge.

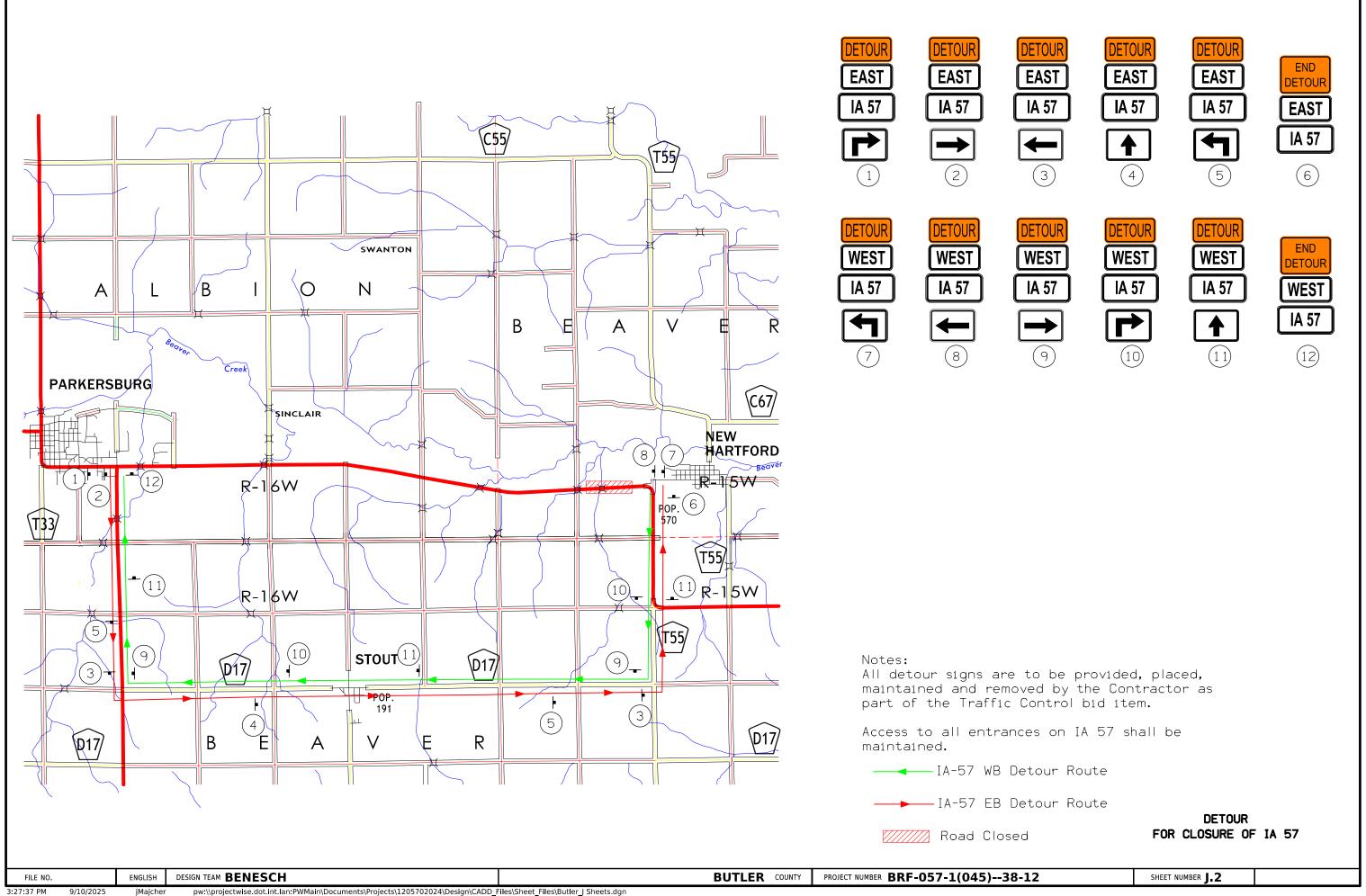
# COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

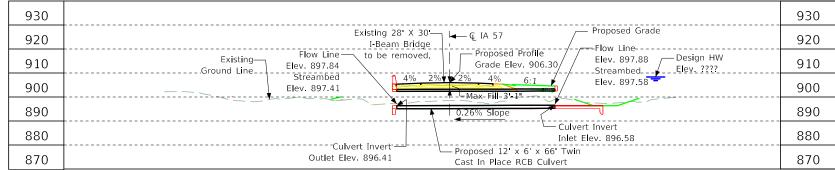
Project	Type of Work
NONE ANTICIPATED	

FILE NO. ENGLISH DESIGN TEAM BENESCH

BUTLER COUNTY PROJECT NUMBER BRF-057-1(045)--38-12 SHEET NUMBER J.1



Control Point: Rebar with cap ±68 ft. west of Beaver Creek ± 2.6 ft. south of the 6th guardrail post from the west  $\pm$  15.3 ft. south of the south edge of bit pavement, N:8869362.23, E:153932 $\overline{19}$ .80, EI. 905.29



# Longitudinal Section Along © Culvert

Hydraulic Design hereby certify that this engineering tocoment was prepared by me or under my direct personal supervision and that I am a duly licensed Profess onal Engineer under the laws of the State of Towa Eric J. ?-??-2025 Eric J. Dean My license renewal date is December 31. 2026 Pages or sheets covered by this seal:

### Plan Notes:

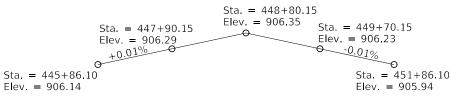
- 1. Drainage through existing channel must be maintained throughout construction.
- 2. Culvert invert has been set 1' below streambed.

### General Notes:

This design is for the replacement of the existing 20' x 24' I-Beam Bridge, Butler County, Design No. 369 FHWA No. 016470 Maint. No. 1231.1S057

### Design Notes:

- 1. IA 57 will be closed during construction.
- 2. Additional ROW will be required.
- 3. Cast-in-place culvert is nonstandard.
- 4. Revetment is required at the ?????ds/us? end.



# Proposed Profile Grade IA 57

# Hydraulic Data

RIDB: "MunqC\_Grun, River Mile 0.89" Drainage Area = 7.4 sq. mi.  $Q_{50} = 2,942 \text{ cfs}$  $Q_{100} = 3,482 \text{ cfs}$ HW Elev = 955.19 (50 year) Exit Velocity = 7.95 fps (50 year)

# **Utilities Legend**

Stream Slope = 5.2 Ft./Mi.

F0 - Fiber Optic W - Water

Utilities shown on this sheet are for information only, see Road Design sheets for final utility information.

# Location

IA 57 over Beaver Creek T-90N R-15W Section 32 Beaver Township Butler County FHWA No. 016470 Asset ID No. 1231.1S057 Latitude 42.565338° Longitude -92.646134°

# Traffic Estimate

2024 AADT 2270 V.P.D. TRUCKS Total 600,000 Design ESALs

Design For 5 Degree LA Twin 12'x6'x66' Cast In Place Reinforced Concrete Box Culvert

> Situation Plan - CIP Turn-in Date: Jan 2025

Butler County

SHEET NUMBER

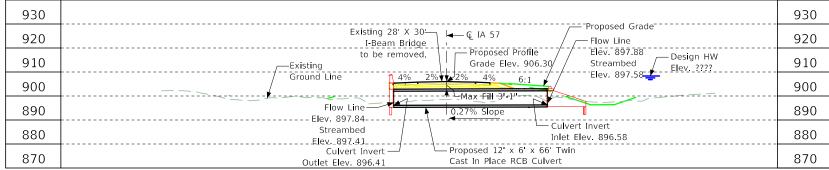
STA. 448+83.92 (IA 57)

IOWA DEPARTMENT OF TRANSPORTATION

FHWA/Asset 016470 Design No. ???? Design Sheet No. 1 of 1



Control Point: Rebar with cap ±68 ft. west of Beaver Creek ± 2.6 ft. south of the 6th guardrail post from the west  $\pm$  15.3 ft. south of the south edge of bit pavement, N:8869362.23, E:153932 $\overline{19}$ .80, EI. 905.29



# Longitudinal Section Along © Culvert

Hydraulic Design hereby certify that this engineering too ment was prepared by me or under my direct personal supervision and that I am a duly licensed Profess onal Engineer under the laws of the State of Towa Eric J. ?-??-2025 Eric J. Dean My license renewal date is December 31. 2026 Pages or sheets covered by this seal:

### Plan Notes:

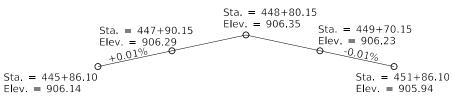
- 1. Drainage through existing channel must be maintained throughout construction.
- 2. Culvert Invert has been set 1' below streambed.

### General Notes:

This design is for the replacement of the existing 20' x 24' I-Beam Bridge, Butler County, Design No. 369 FHWA No. 016470 Maint. No. 1231.1S057

### Design Notes:

- 1. IA 57 will be closed during construction.
- 2. Additional ROW will be required.
- 3. Cast-in-place culvert is nonstandard.
- 4. Revetment is required at the ?????ds/us? end.



# Proposed Profile Grade IA 57

# Hydraulic Data

RIDB: "MunqC\_Grun, River Mile 0.89" Drainage Area = 7.4 sq. mi.  $Q_{50} = 2,942 \text{ cfs}$  $Q_{100} = 3,482 \text{ cfs}$ HW Elev = 955.19 (50 year) Exit Velocity = 7.95 fps (50 year)

# **Utilities Legend**

Stream Slope = 5.2 Ft./Mi.

F0 - Fiber Optic W - Water

Utilities shown on this sheet are for information only, see Road Design sheets for final utility information.

# Location

IA 57 over Beaver Creek T-90N R-15W Section 32 Beaver Township Butler County FHWA No. 016470 Asset ID No. 1231.1S057 Latitude 42.565338° Longitude -92.646134°

# Traffic Estimate

2024 AADT 2270 V.P.D. TRUCKS Total 600,000 Design ESALs

Twin 12'x6'x64'-7<sup>15</sup>/<sub>16</sub>" Precast Reinforced Concrete Box Culvert

Situation Plan - PC Turn-in Date: Jan. 2015 STA. 448+83.92 (IA 57)

Butler County

IOWA DEPARTMENT OF TRANSPORTATION FHWA/Asset 016470 Design No. ???? Design Sheet No. 1 of 1

Existing Bridge 20' x 24' I-Beam Bridge Design No. 369 to be removed  $\mathbb{Q}$  Proposed 12' x 6' x 64 7<sup>15</sup>/<sub>16</sub>" Twin Precast RCB Culvert Skew 5° LA at Sta. 448+83.92 Exist. ROW ---- Exist. ROW Exist ROW Twin 12' x 6' headwall inle

FILE NO. ????

ksnider

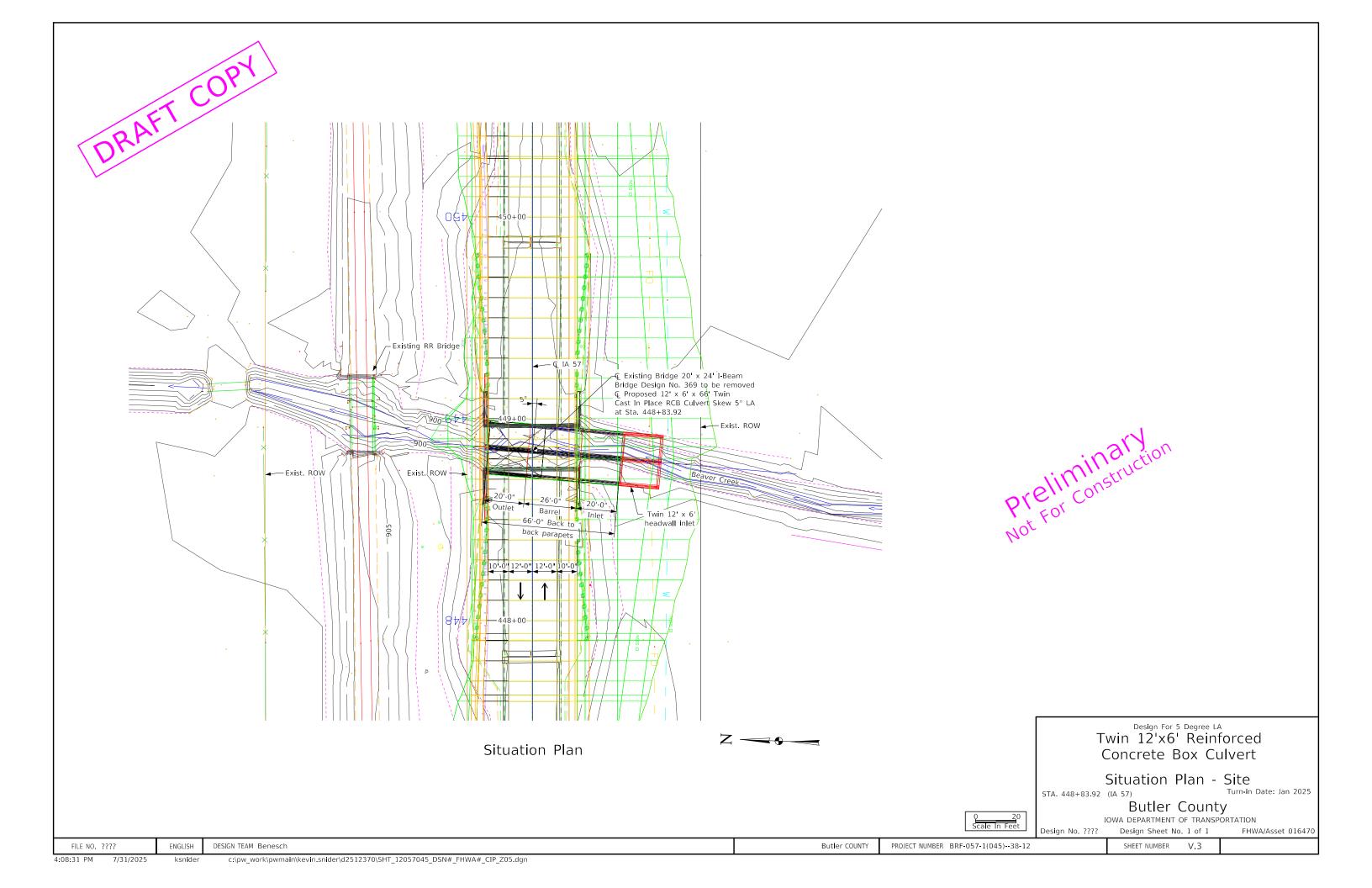
c:\pw work\pwmain\kevin.snider\d2512370\SHT 12057045 DSN# FHWA# PC Z05.dgn

Situation Plan

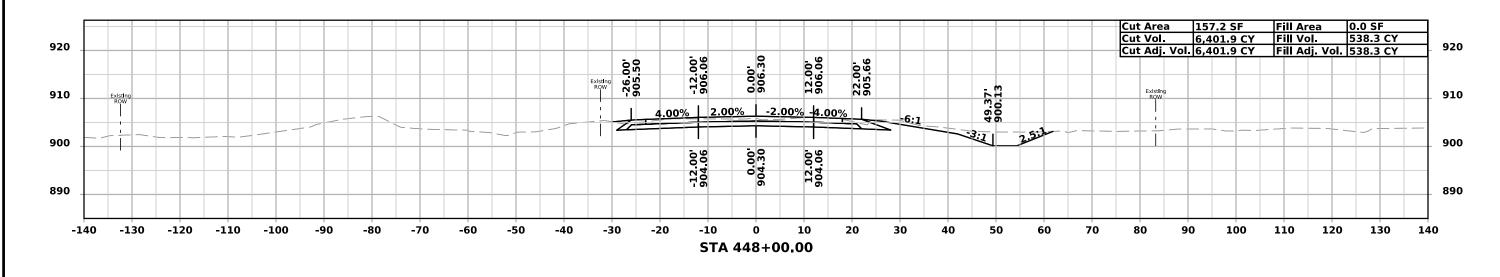
Butler COUNTY

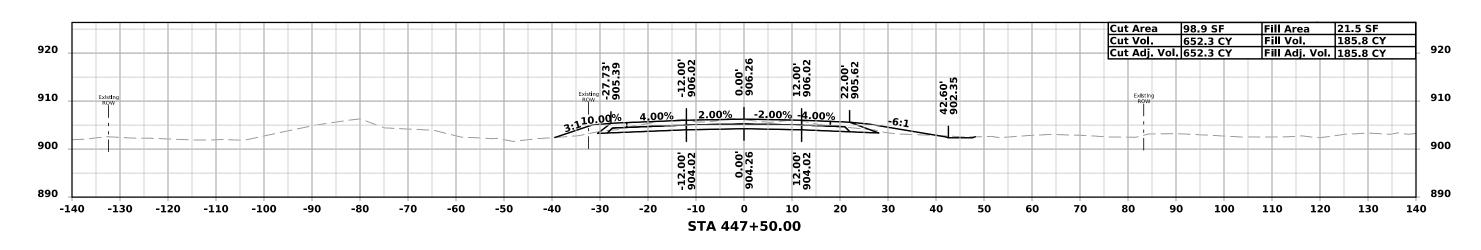
PROJECT NUMBER BRF-057-1(045)--38-12

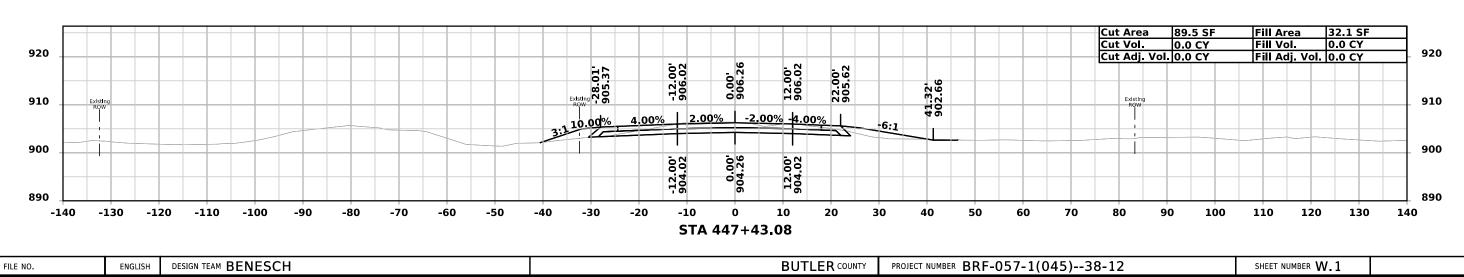
SHEET NUMBER



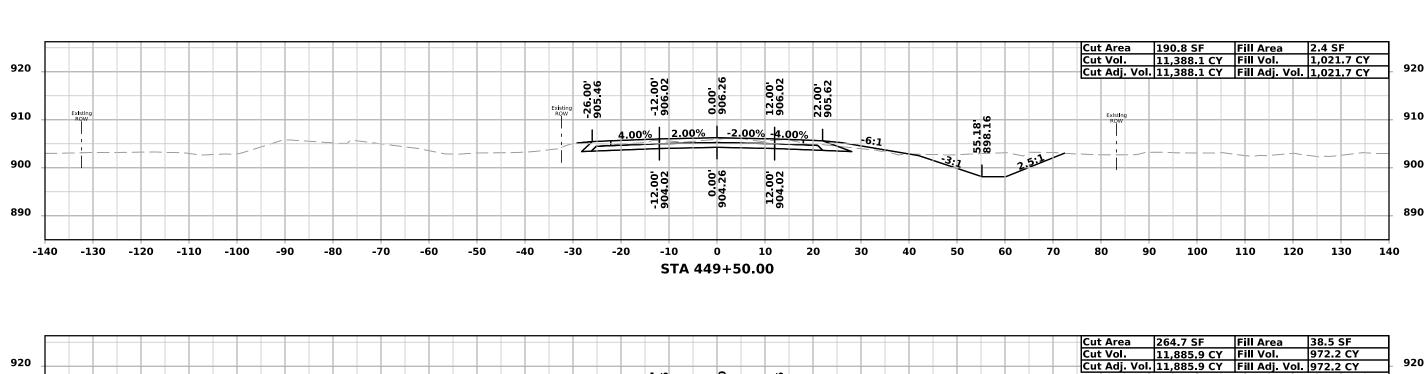
# ML - IA 57

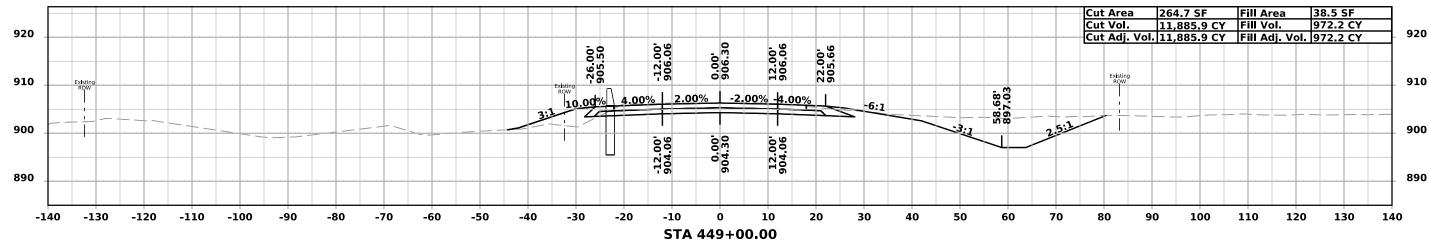


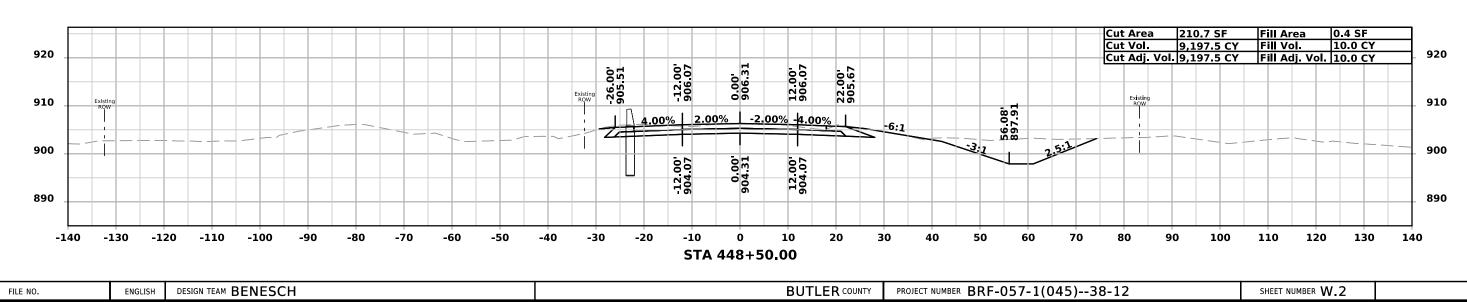




# ML - IA 57







# ML - IA 57

