LETTING DATE
Dec 16 2025

Type
BRF-048-2(50)--38-69

MONTGOMERY COUNTY

IOWA DOT

REVISIONS

TOTAL
..
PROJECT IDENTIFICATION NUMBER
21-69-048-010
PROJECT NUMBER
BRF-048-2(50)--38-69
R.O.W. PROJECT NUMBER
12345
56478
98765

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
MONTGOMERY COUNTY
BRIDGE REPLACEMENT

IA 48 OVER RED OAK CREEK
IN RED OAK

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

INDEX OF SHEETS

* Color Plan Sheets

DESIGN DATA URBAN

20 --	AADT	4400	V.P.D.
20 --	AADT	5600	V.P.D.
20 --	DHV	580	V.P.H.
TRUCKS		8	%
Total Design ESALs		-	

INDEX OF SEALS

SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	Lukas Fatka	Primary Signature Block	X
X	X	X	X

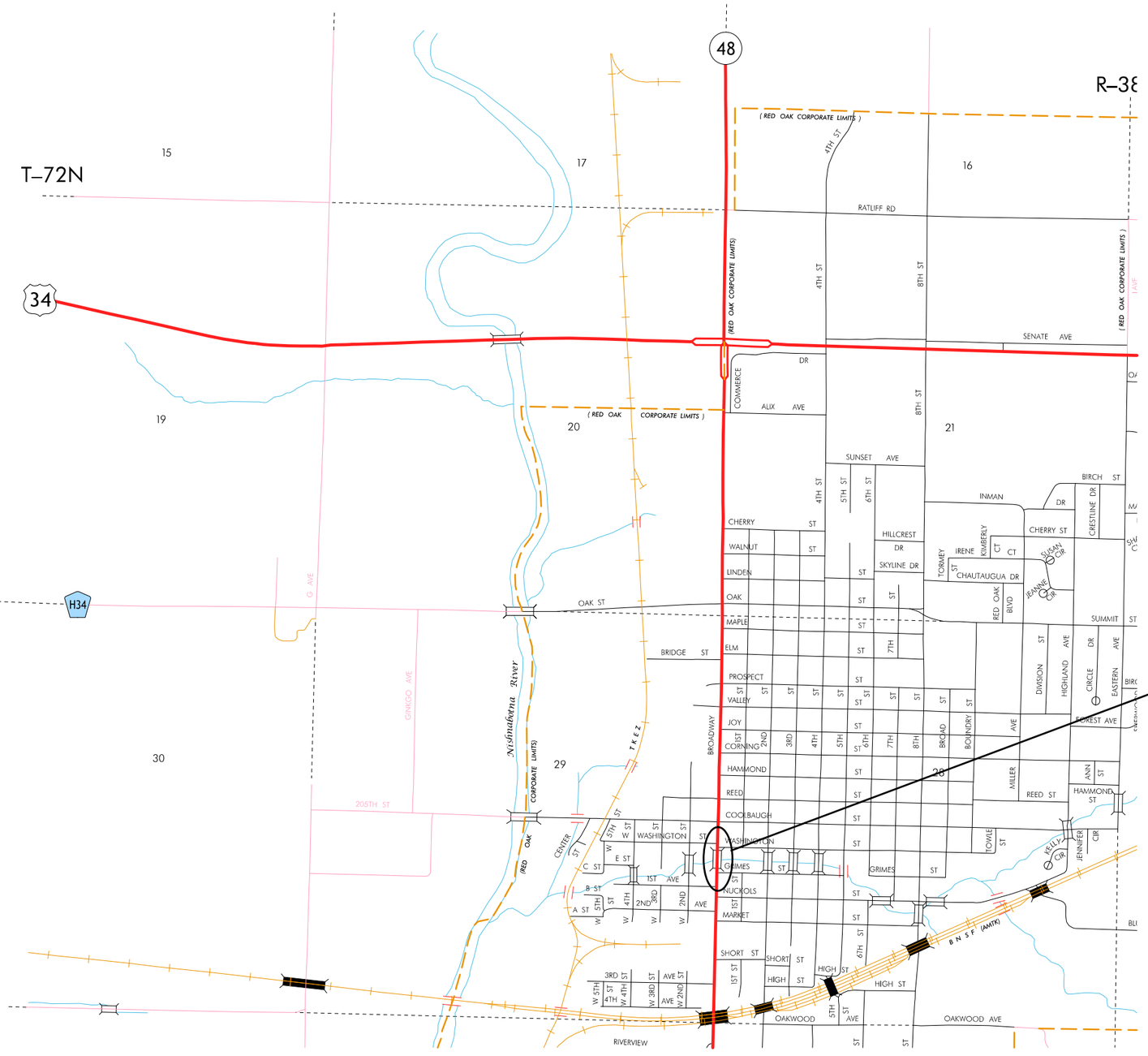
PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN - Date: 6-27-24

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	MONTGOMERY COUNTY	PROJECT NUMBER BRF-048-2(50)--38-69	SHEET NUMBER A.1

4:35:53 PM 6/20/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\6904801021_A1.dgn



A portion of the City of Red Oak

LOCATION MAP SCALE
0 1 2 3
Miles

FILE NO.	ENGLISH	DESIGN TEAM **WHKS & CO.**	**MONTGOMERY** COUNTY	PROJECT NUMBER **BRF-048-2(50)--38-69**	SHEET NUMBER **A.2**

3:40:51 PM 6/20/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\6904801021_A1.dgn

INDEX OF SHEETS

ROADWAY DESIGN

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

Signature Date

Lucas David Fatka
Printed or Typed Name

My license renewal date is December 31, 2025

Pages or sheets covered by this seal: A.3-A.17, B.1, C.1, D.1-D.2, G.1-G.3, J.1-J.23

FILE NO.	ENGLISH	DESIGN TEAM **WHKS & CO.**	**MONTGOMERY** COUNTY	PROJECT NUMBER **BRF-048-2(50)--38-69**	SHEET NUMBER **A.3**

1:31:46 PM 6/20/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\69048050_A3_New.dgn

A.02 [Sheet]

TO OFFICE: District 4

ATTENTION: Scott Schram, P.E., PhD

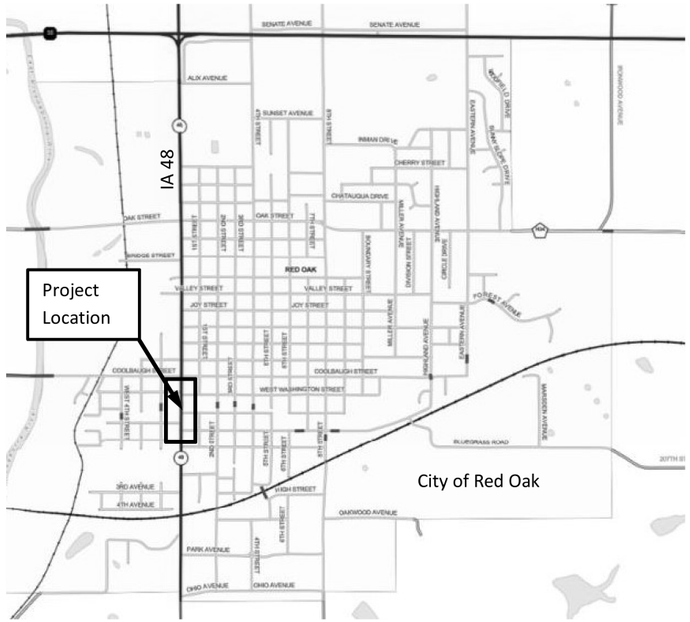
FROM: Jake Shaw, P.E., S.E., WHKS & Co.

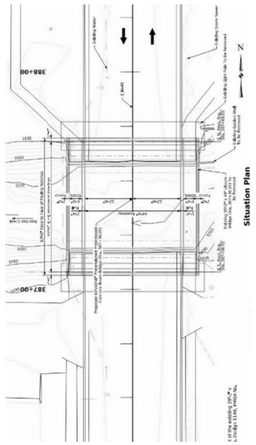
SUBJECT: D00, Concept Statement – Final

DATE: May 29, 2024

COUNTY: Montgomery
PROJ. NO.: BRF-048-2(50)--38-69
PIN: 21-69-048-010
FOLDER: 6904801021

PROJECT LOCATION:
IA 48 over Red Oak Creek, 1.3 mi S of US 34, in Red Oak.





PROJECT DATA:

ROUTE: IA 48
LENGTH: 0.06 miles
PLANNING CLASSIFICATION: 3 (Area Development)
MAINTENANCE SERVICE LEVEL: C
NHS ROUTE: Yes
TRAFFIC: YEAR 2026: 4,400 ADT with 8% Trucks
Design YEAR 2046: 5,600 ADT with 8% Trucks
BRIDGE MAIN. NO.: 6922.3S048
FHWA NO.: 037710

PURPOSE AND NEED:
This project provides for the replacement of the existing IA 48 bridge over Red Oak Creek. The existing structure is a 39’-3”x 59’-10” single span steel I-beam bridge. The bridge was previously overlayed in 1979 and an embankment repair project was completed in 2001.

FEASIBLE ALTERNATIVE(S):

Proposed Alternative:

Remove the existing 39’-3” x 59’-10” I-Beam bridge and replace with a 60’ x 60’-8” Pretensioned Prestressed Concrete Beam (PPCB) bridge, single span, 0° skew, with BTB beams, and tall semi-integral abutments. A profile grade change will not be required. See draft Type, Size, and Location (TS&L) drawing attached as an Exhibit.

Roadway reconstruction will include the construction of 70’ of bridge approach pavement on each end using a modified Standard Road Plan BR-231. Sidewalks will also be constructed on each side.

Alternatives considered, but not proposed:

- 60’ x 60’-8” Rolled Steel Beam (RSB) bridge
- Continuous Concrete Slab (CCS) bridge
- Triple 12’x12’ culvert

Analysis of these alternatives is described in the “Feasible Alternatives & Recommendation” section below.

RECOMMENDATIONS:
Proceed with the Proposed Alternative. Replace existing bridges with a 60’ x 60’-8” single span (PPCB) bridge. Total estimated project cost is $1,565,000 in current-year funds. Adjusted to FY 2026 funds, the cost estimate is $1,709,000.

FUNDS PROGRAMMED:
This project is currently listed in the 2024-2028 Iowa Transportation Improvement Program as a bridge replacement project scheduled for FY 2026 with an estimated cost of $1,355,000.

PROJECT IMPACTS:
Designed by: WHKS & Co. thru D5, Final Design Undetermined.

Design Impact	Assistance Requested (Y/N)	Remarks
ADA:	N	
Agreements/Notification Letters:	Y	City of Red Oak
Bridges and Structures:	Y	
Consultant:	Y	WHKS & Co. thru D5
Contracts:	N	
Design/Methods:	N	
Location and Environment:	Y	Wetland review / permitting
Maintenance: (Shop Location)	Y	Red Oak Maintenance Garage
Project Management:	N	
Railroad:	N	
RCE: (Office Name)	Y	Creston RCE
Right of Way:	Y	Fee title and temporary anticipated
Soils:	Y	Foundation Design
Survey/Photogrammetry:	N	Survey by WHKS & Co.
Systems Planning:	N	
Traffic and Safety:	N	
Utilities:	Y	Utility Coordination
Other:	N	

CC:
S. Anderson
B. Azeltine
J. Bartholomew
C. Brakke
K. Brink
M. Buttz
G. Cagle
M. Chambers
D. Claman
N. Cuva
M. Dell
B. Dolan
D. Dorsett
E. Engle
N. Epperson
R. Fink
W. Fox
E. Gansen
J. Garton
R Harris
J. Harris
J. Hart
C. Haynes
T. Hensley
M. Hobbs
B. Hofer
G. Karssen
M. Kennerly
J. Laaser-Webb
R. Larsen
O. Lechnowsky
D. Maifield
S. Majors
T. Malone
W. Mayberry
W. Musgrove
J. Nelson
D. Newell
K. Nicholson
T. Nicholson
S. Nielsen
M. Nop
K. Olson
M. Ortiz-Pagan
K. Patel
G. Pedersen
A. Poole
C. Poole
C. Purcell
D. Redmond
J. Sallach
M. Ross
M. Schmitt
S. Schram
M. Serio
W. Sorenson
D. Sprengeler
S. Suhr
M. Swenson
B. Thede
B. Walls
A. Welch
E. Wright
A. Yates

CONCEPT ANALYSIS & SUPPORTING DATA:

Necessary supporting data may be linked in the analysis to ProjectWise.

Date of Field Review:
A combined DO/D2 field review is proposed at the time of the D2 (Field Exam) event.

Participants:
No concept review held in the field.

PAVEMENT:

Existing Conditions:
IA 48 (N. Broadway Street) is 45-foot curb back-to-curb back street that runs north and south through Red Oak. The existing street consist of one lane in each direction with a two-way-left-turn-lane (TWLTL). Lanes consist of a 14-foot TWLTL and 13-foot through lanes with 2.5-foot curb and gutter section. IA 48 is classified as “Other Principal Arterial”. See Exhibit A.

Pavement History:
MP 22.08 to 23.01
Original Pavement: 1931, PCC, 7” PCC
Improvements: 1954, Reconstruct and widen to 45’ B-to-B
1975, 1.5” HMA Binder, 1.5” HMA Surface
2005, Mill 3”, HMA 1.5” Surface, 1.5” HMA Intermediate
2019, PCC Patching, HMA Crack filling

Pavement Design & dTIMS Recommendation:
This concept assumes a 10” PCC pavement for the new pavement, with subbase and subdrain.

Patching/Curb Repairs:
No patching or curb repairs anticipated, full reconstruction.

ADA/Sidewalk/Trails:
Sidewalk on both sides of the street is located along the corridor. The sidewalk is 4-foot wide and the offset from the back-of-curb varies along the corridor.

Sidewalk along the route to be replaced to meet current standards.

A sidewalk detour route is available but may not meet current standards.

SAFETY:

Roadway Design Criteria:
Proposed roadway design criteria is consistent with Section 1C-1 of the Design Manual for urban two lane roadway. See Exhibit C for specific criteria and project values.

Crash Analysis
The safety study period and limits for this evaluation was determined to be January 1, 2019 through December 31, 2023 (5 year period), extending from the intersection with W Grimes St. to E Washington Ave. There were 0 total crashes within the study period and limits.

Intersection Analysis:
The E. Washington Avenue is located approximately 150 feet north of the bridge. W Washington Ave is approximately 190 feet north of the bridge. W Grimes Street is approximately 140 feet south of the bridge and is eastbound only.

There is a business access left (auto parts store) and residential (garage only) access located 40 feet south of the bridge. There is also a business access (auto parts store) across from W Grimes Street.

Construction staging will require the east and west Washington Avenue, Grimes Street, and access locations to be closed at certain times.

Railroads:
Not applicable.

Additional Safety & Operation Considerations:
Major City Events include:

- Red Oak Junction Day – late June
- Montgomery County Fair – mid to late July

Utilities:

MidAmerican

- Electric distribution facilities in the vicinity. Clear for bridge location.
- Gas distribution facilities in the vicinity within right-of-way.
- Gas possible on bridge.

Farmers Mutual Telephone

- Clear of project.

Mediacom

- Crosses IA 48 north of the bridge. Clear of project.

Travis commented shifting the bridge a few feet north to miss garage. Also questioned availability of getting precast beams. have had issues in the past.

It was discussed that there is not much difference in cost/construction time between the two options

City of Red Oak

- Water main attached to bridge.
- Storm sewer on east side, empties to creek through the bridge abutments.
- Speed limit change

STRUCTURES and DRAINAGE:

Bridges:

Maint # 6922.3S048; FHWA #037710; 39’-3”x 59’-10” I-beam bridge. Built in 1919 and reconstructed in 1951; design No. 1148. Bridge Condition Index is 59.7.

The bridge is a single span I-beam bridge with a 0° skew. The substructure consists of full height concrete stub abutments, supported on treated wooden friction piling.

The deck is original PC concrete and was overlaid with dense low-slump concrete in 1978. The northeast bridge embankment was repaired with a gabion wall in 2002.

Among the distresses noted in the 2022 In-Depth Inspection report, are: few hairline cracks with light leaching in concrete bridge rails; both handrails have general light to severe rust; concrete deck has large PC patches and epoxy injected areas, 42% of the deck is delaminated, both sidewalks have a few delaminated areas and shallow spalls with partially exposed rebars, bottom of sidewalks also have hairline cracks with light leaching; steel beams have moderate to severe rust on top flanges and ends of all beams; light to severe rust on all bearings; abutment walls have vertical full height cracks with leaching and a few shallow spalled areas with partially exposed rebar; most wings have extensive cracking with some spalling and scaling with partially exposed rebar.

Hydraulics:
The structure will provide adequate hydraulic opening to meet or exceed the hydraulic design requirements. It has been determined that the structure is not located in a drainage district. The structure is in floodway zone AE (with mapped elevations).

As the bridge is in a detailed study area with mapped flood elevations, a no-rise analysis will be required with 1-D (HEC-RAS or equivalent) hydraulic modeling. The existing roadway appears to be overtopped, therefore, barrier rails or other encroachments to the floodway will need to be included in the modeling. Due to site constraints in an urban area, raising of the roadway profile is not anticipated in order to meet the 50-yr desirable freeboard below the low beam elevations. Therefore, it appears that the bridge will be designed to withstand the applicable effects of ice and horizontal stream loads and uplift forces associated with the Q100.

Culverts/Pipes:
Storm sewer is located along the east side of the project. Outlet of the storm sewer is currently through the bridge abutments. Storm sewer on the south is a 36-inch RCP and the north storm sewer is a 15-inch RCP. Strom sewer will be replaced as need and continue to outlet through the abutments.

Guardrail:
Guardrail is not currently located on the bridge.

The posted speed limit is 35 mph at the project location. Protection of the separation rail is required. Three options are available for end treatment of the separation rail and they are guardrail, permanent crash cushions or concrete barrier tapered end section (BA-108). Because of the urban setting, guardrail and permanent crash cushions are not feasible unless access locations on IA 48 can be acquired. BA-108 is only allowable in situations where the posted speed limit is 30 mph or less.

For this concept the recommendation would be to reduce the posted speed limit to 30 mph so that the BA-108 can be utilized to protect the bridge ends.

Drainage District:
None

PROJECT IMPACTS:

Impacts Map:
No impacts identified during concept development.

Environmental:
No impacts identified during concept development. Location and Environment to review environmental impacts during design process.

TSMO/Traffic Control:
Posted speed limit is 35 mph. 2026 AADT is approximately 4,400 vehicles per day with 8% trucks.

Traffic control for the project included reviewing non-staged construction, traffic detoured, versus staged construction, traffic maintained on the route.

Possible detours routes within between Red Oak and Shenandoah, the southern terminus of IA 48 was reviewed.

The following is the detour route (south to north):
Beginning at the intersection of IA 48 and US 59 in Shenandoah, then proceeding north on US 59 to US 34 an approximate distance of 18.5 miles, then easterly on US 34 to the intersection of IA 48 an approximate distance of 9 miles. This intersection is 1.3 miles north of the project location. The length along IA 48 that would be detoured is 23.6 miles. The out-of-distance length of the detour is approximately 4 miles. Detouring IA 48 is not recommended. The detour route will result in significant out-of-distance travel for thru IA 48traffic.

Possible detours routes within Red Oak were reviewed. There are seven (7) local street crossings of Red Oak Creek in Red Oak. None of these crossings is suitable to handle the detour traffic.

Montgomery County BRF-048-2(50)--38-69; D00 (Final) May 29, 2024

ROW:
Right-of-way width measured on Beacon is approximately 63'. Both temporary and fee title right-of-way is anticipated.

Agreements/Notification Letters:
Agreement with the City of Red Oak.

Project Coordination
No other known projects with which to coordinate.

Previous Projects List:
- 1931 – NA, 7" PCC
- 1954 – U-856(2), Reconstruct with var. depth PCC (8" to 10") and widen to 45' B-to-B
- 1975 – FN-48-2(18)—21-69, 3" HMA Overlay over middle 34'
- 2004 – STPN-48-2(41)--2J-69, 3" Mill, 1.5" HMA Intermediate, 1.5" HMA Surface, curb and gutter
- 2019 – MP-048-4(710)21--76-69, PCC Patching, HMA Crack Filling

FEASIBLE ALTERNATIVES & RECOMMENDATION:

Proposed Alternative:
Remove the existing 39'-3" x 59'-10" I-Beam bridge and replace with a 60' x 60'-8" Pretensioned Prestressed Concrete Beam (PPCB) bridge, single span, 0° skew, with BTB beams, and tall semi-integral abutments. A profile grade change will not be required. See draft Type, Size, and Location (TS&L) drawing attached as an Exhibit.

Roadway reconstruction limits would be limited to constructing a 70-foot bridge approach on each end in accordance with Standard Road Plan BR-231, Bridge Approach (Multi-Lane, Curbed Roadway).

The bridge will be constructed in stages. To accomplish this there are two options for maintaining traffic.

Option 1 is to maintain a single lane of traffic using temporary traffic signals. We do not recommend this option as the queuing may extend into adjacent intersections.

Option 2 is to maintain a single lane in each direction. To maintain a single lane in each direction and to minimize the future bridge width, it is assumed that the project will be completed in 4 stages. See Exhibit B.

Stage 1
Construction - Remove the sidewalk section on the east side of the bridge and construct temporary bridge deck widening and temporary pavement widening.
Traffic – Shift northbound traffic to the TWLTL. Southbound traffic to remain as is.

Stage 2
Construction – Construct southbound approaches and the west half of the bridge. Sidewalk section will not be constructed until Stage 4 so that traffic may be shifted during Stage 3.
Traffic – Northbound shifted to the east temporary street and bridge pavement. Southbound traffic shifted to the east. Temporary barrier rail along both bounds on the outside with a temporary lane separator will be utilized. Lane widths will be 12 foot wide with no shoulders. Narrow width signing is required.
Stage 3
Construction – Construct northbound approaches and the east half of the bridge.
Traffic – Northbound and southbound shifted to the new bridge and approaches. Temporary barrier rail along both bounds on the outside with a temporary lane separator will be utilized. Lane widths will be 12 foot wide with no shoulders. Narrow width signing is required.

Stage 4
Construction - Construct the sidewalk section and separation rail on the west side of the bridge.
Traffic – Shift southbound traffic to the TWLTL. Northbound traffic to remain as is.

Alternatives Considered, but Not Proposed.

- 60'x60'-8" Rolled Steel Beam (RSB) bridge was reviewed by not carried forward due to increased construction costs.

- Continuous Concrete Slab (CCS) bridge was also reviewed but not carried forward due to the proximity of adjacent structures and the shape of the existing channel.

- A culvert option was also reviewed but was not carried forward as the structure would not provide sufficient hydraulic opening.

Detour	Out of Distance Travel (mi)	ABC Rating Score
Off-Site	4	18
Stage Construction	0	6

Recommendation:
Proceed with the Proposed Alternative. Replace the existing bridge with a 60' x 60'-8" PPCB single span bridge.

Montgomery County BRF-048-2(50)--38-69; D00 (Final) May 29, 2024

Estimate:

Estimate Items Report
Version D00
Project PRJ-24700 PHASE-1

Item Number	Item Description	Units	Quantity	Cost Used	Line Total
Roadway Items					
2101-0850001	CLEARING AND GRUBBING	ACRE	0.200	$15,000.00	$3,000.00
2102-2712015	EXCAVATION, CLASS 12, BOULDERS	CY	30.000	$60.00	$1,800.00
2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	2,600.000	$15.00	$39,000.00
2301-0685550	BRIDGE APPROACH PAVEMENT, AS PER PLAN	SY	700.000	$300.00	$210,000.00
2304-0100000	DETOUR PAVEMENT	SY	130.000	$150.00	$19,500.00
2503-0110036	STORM SEWER GRAVITY MAIN, TRENCHED, 36 IN.	LF	70.000	$180.00	$12,600.00
2503-0114215	STORM SEWER GRAVITY MAIN, TRENCHED, 15 IN.	LF	70.000	$150.00	$10,500.00
2503-0200036	REMOVE STORM SEWER PIPE LESS <= TO 36 IN.	LF	140.000	$25.00	$3,500.00
2503-3775015	GATE, OUTLET CONTROL, FLAP, 15 IN.	EA	1.000	$5,500.00	$5,500.00
2503-3775036	GATE, OUTLET CONTROL, FLAP, 36 IN.	EA	1.000	$7,500.00	$7,500.00
2510-6745850	REMOVAL OF PAVEMENT	SY	800.000	$15.00	$12,000.00
2511-6745900	REMOVAL OF SIDEWALK	SY	120.000	$15.00	$1,800.00
2511-7526004	SIDEWALK, P.C. CONCRETE, 4 IN.	SY	120.000	$90.00	$10,800.00
2515-2475006	DRIVEWAY, P.C. CONCRETE, 6 IN.	SY	50.000	$110.00	$5,500.00
2515-6745600	REMOVAL OF PAVED DRIVEWAY	SY	50.000	$20.00	$1,000.00
2528-2518000	SAFETY CLOSURE	EA	6.000	$150.00	$900.00
2528-8400055	TEMPORARY BARRIER RAIL, CONCRETE	LF	2,400.000	$30.00	$72,000.00
2528-8445110	TRAFFIC CONTROL	LS	1.000	$20,000.00	$20,000.00
2528-9109020	TEMPORARY LANE SEPARATOR SYSTEM	LF	1,000.000	$15.00	$15,000.00
2533-4980005	MOBILIZATION	LS	1.000	$46,000.00	$46,000.00
2551-0000110	TEMP CRASH CUSHION	EACH	12.000	$1,500.00	$18,000.00
2599-9999010	EROSION CONTROL	LS	1.000	$5,000.00	$5,000.00
	UNQUANTIFIED ITEMS	LS	1.000	$53,000.00	$53,000.00
				Roadway Total:	**$573,900.00**
Bridge Items					
2401-6745625	RMVL OF EXISTING BRIDGE	LS	1.000	$45,000.00	$45,000.00
2401-6750001	REMOVALS, AS PER PLAN GABION WALL	LS	1.000	$5,000.00	$5,000.00
PARA-020-020	BRIDGES	Parametric	3,822.000	$155.00	$592,410.00
2507-6800061	REVETMENT, CLASS E	TON	500.000	$50.00	$25,000.00
2501-8400171	TEMPORARY SHEET PILE, RETAINING WALL	LS	1.000	$15,000.00	$15,000.00
2599-9999010	STAGING	LS	1.000	$68,241.00	$68,241.00
2533-4980005	MOBILIZATION	LS	1.000	$75,065.10	$75,065.10
BRG-15002	CONTINGENCY	LS	1.000	$165,143.22	$165,143.22
				Bridge Total:	**$990,859.32**
				Total:	**$1,564,759.32**

The estimate is calculated in 2024 dollars. Accounting for 4.5% annual inflation from 2024 to 2026, the estimated project cost is $1,709,000 for FY 2026.

Funds Programmed:

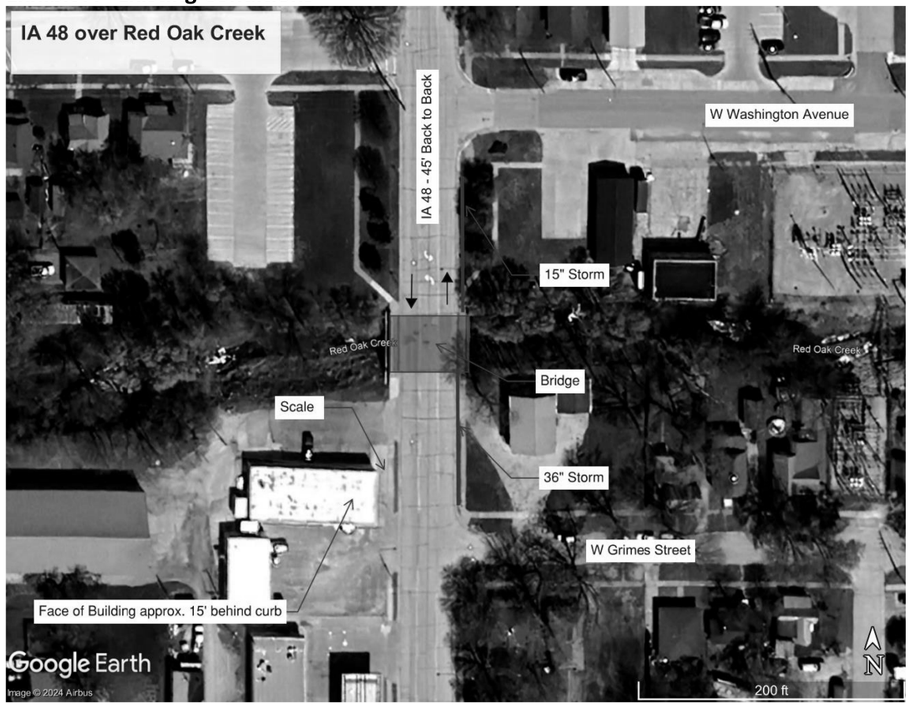
This project is currently listed in the 2024-2028 Iowa Transportation Improvement Program as a bridge replacement project scheduled for FY 2026 with an estimated cost of $1,355,000.

Development Schedule:

D00 Concept	05/31/2024
D01 Survey	05/31/2024
D02 Field Exam	06/24/2024
B01 Prel. Bridge	08/02/2024
D05 ROW Plans	08/30/2024
L05 Letting	12/16/2025

Montgomery County BRF-048-2(50)--38-69; D00 (Final) May 29, 2024

Exhibit A - Existing Conditions



FILE NO.	ENGLISH	DESIGN TEAM **WHKS & CO.**	**MONTGOMERY** COUNTY	PROJECT NUMBER **BRF-048-2(50)--38-69**	SHEET NUMBER **A.9**	

10:01:32 AM 6/14/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\69048050_A3_New.dgn

Exhibit B - Staging

Staging (continued)

Exhibit C - Design Criteria

Roadway				
PIN Number	21-69-048-010		**Submittal Date**	05/28/24
Project Number	BRF-048-2(50)--38-69			**Approval Date**
District	District 4	**Assistant District Engineer**	Wes Mayberry	
County	MONTGOMERY	**or**		
Route	IA 48	**Office Director**		
Location	In the City of Red Oak, IA 48 over Red Oak Creek, 1.3 miles south of US 34			
Work Type	Bridge Replacement			
Segment Manager				
Designer	WHKS & Co.			

Design Manual Section 1C-1
Last Updated: 04-29-19

Urban Two-Lane Roadways (Urban Arterials)

Design Element		Preferred	Acceptable Criteria	Project Values
Design speed (mph)		The anticipated posted speed limit	30	30
Maximum superelevation rate (Refer to Section 2A-2)		4%	6%	NA
Design lane width (ft)		12	11	12
Full depth paved width (ft)		Design lane width + curb and gutter unit or 14 feet for roadways with shoulders	Match design lane width	Match Existing- 45' Back to Back
Right turn lane (ft)		12	10	NA
Left turn lane (ft)	With raised or painted median	12 ft + median	10 ft + median	NA
	With depressed median	12	10	NA
Two-way left turn lane		14	11	14
Parking lane width (ft)		10	7	NA
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum	2
	Auxiliary and turn lanes	3%	3% maximum	1.5
	Crown break at centerline	4%	4% maximum	3
Shoulder cross-slope (on tangent sections)	Shoulders	4%	Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders	NA
	Curb and gutter units	Match pavement cross-slope	6% maximum	2
	Parking lanes	1% greater than pavement cross-slope	6% maximum	NA
Curb type (See Section 3C-2)	Design speed ≤ 45 mph	6-inch standard	any shape	6-inch std.
Foreslope (For fill areas greater than 40 ft, contact the Soils Design Section for assistance)	Adjacent to shoulder	10:1 for 4' then 6:1	3:1	NA
	Beyond standard ditch depth and design clear zone	3.5:1	3:1	NA
	Curbed roadways	2%	not steeper than 3:1	NA
Backslope (For cut areas greater than 25 feet, contac the Soils Design Section for assistance with backslope benches.)		3:1	2.5:1	NA
Traverse Slopes	w/ drainage structures	8:1	6:1	NA
	w/o drainage structures	10:1	6:1	NA
Ditches (See Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	--	NA
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths (curbed or uncurbed) or design lane width + 3 ft each side (curbed) which ever is greater	design lane widths + effective shoulder widths or curb-to-curb width in curb and gutter section**	43
	Bridge length > 200 ft	design lane widths + effective shoulder widths (curbed or uncurbed) or design lane width + 3 ft each side (curbed) which ever is greater	design lane widths + 4 ft offset each side for roadways with shoulders or curb-to-curb width in curb and gutter section**	
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft left and right	44
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16	NA
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	NA
	Over railroad	23.3	23.3	NA
	Sign trusses and pedestrian bridges	17.5	17	NA
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	NA
Level of Service		C	D	C

*FHWA notification via email is required if acceptable critera is not met on the NHS system (No formal design exeption is required)
** If travel lanes are less than 12 ft wide contact the Methods Section for assistance.

Montgomery County BRF-048-2(50)--38-69; D00 (Final) May 29, 2024

Design year ADT = 4,400

Design Manual Section 1C-1
Last Updated: 04-29-19

Effective Shoulder Width and Type for Two-Lane Highways

Preferred (values shown in feet)			Acceptable (values shown in feet)			Project Values
	Rural Roadways	Urban Roadways		Rural Roadways	Urban Roadways	
Turn lanes with shoulders	6	6	Turn lanes with shoulders	6	0	NA
Turn lanes with curbs	6	See Section 3C-2	Turn lanes with curbs	6	0	NA
	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	
Climbing Lanes	6	4	Climbing Lanes	4	0	NA
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				
On roadways with design year ADT > 5000	10	6	Design year ADT between 400 - 2000 vpd	6	0*	NA
On all other NHS	10	6				
On non-NHS routes with design year ADT > 3000	10	6	Design year ADT < 400 vpd	4	0*	
On non-NHS routes with design year ADT < 3000	8	0*				

*Requires safety edge-Refer to Section 3C-6
Curbs should be located beyond the outer edge of the effective shoulder width in rural areas
Refer to Section 3C-2 for curb offsets in urban areas

Notes:

Roadway Design Speed (mph) = 30

Design Manual Section 1C-1
Last Updated: 04-29-19

Design Criteria for Low Speed Roadways

Design Element			Preferred Criteria, Design Speed, mph					Acceptable Criteria, Design Speed, mph					Project Values
			25	30	35	40	45	25	30	35	40	45	
Stopping sight distance (ft) (Refer to Section 6D-1)			155	200	250	305	360	155	200	250	305	360	200
Minimum horizontal curve radius (ft) and superelevation rate (Refer to Sections 2A-2 and 2A-3)	Method 2 superelevation and side friction distribution	e = 4% max	See Table 10 in Section 2A-3					--					---
	Method 5 superelevation and side friction distribution	e_{max} = 6%	144	231	340	485	643	144	231	340	485	643	231
		e_{max} = 8%	--	--	--	--	--	134	214	314	444	587	---
Minimum vertical curve length (ft) (Refer to Section 2B-1)			75	90	105	120	135	75	90	105	120	135	90
Minimum rate of vertical curvature (K) (Refer to Section 2B-1)	crest vertical curves		12	19	29	44	61	12	19	29	44	61	19
	sag vertical curves	roadways without fixed source lighting	26	37	49	64	79	26	37	49	64	79	37
		roadways with fixed-source lighting	26	37	49	64	79	14	20	27	35	44	37
Minimum gradient (%)	(Refer to Section 2B-1)		0.5					0.3% with a curb, 0.0% without a curb					Match Existing
Maximum gradient (%)	(Refer to Section 2B-1)	Urban roadways	5					--	9	8	8	7	5
		Rural roadways						--	--	--	6	6	NA
Clear zone			See "Preferred Clear Zone" table in Section 8A-2					See "Acceptable Clear Zone" table in Section 8A-2					

Bridge Bureau Attachment for Concept Statement

Date: May 17, 2024
By: J. Shaw, WHKS & Co.
Location: IA 48 over Red Oak Creek, 1.3 Mi. S of Jct. US 34

County: Montgomery County
Phase No.: BRF-048-2(50)--38-69
Project Code: 21-69-048-010

1. Regulatory/Coordination
   a. Iowa DNR Flood Plain permit = Yes
   b. Iowa DNR Sovereign Lands permit = No
   c. Local Record of Coordination = Yes
   d. Flood Insurance Study = Yes, Zone AE/ Panel 0188D / May 2, 2016
   e. Drainage District = No
   f. Corps of Engineers Section 408 = No
   g. State Water Trail or Paddling Route = No
   h. Historic Structure = No
   i. Federally owned land in vicinity = No
   j. USGS or Iowa Flood Center (IFC) gage or sensor impacted? No

2. Hydrologic/Hydraulic Analysis/RIDB Dataset
   a. Design discharges determined = Yes, Utilize Flood Insurance Study (FIS) Flows due to Urban Hydrology and NFIP no-rise condition requirement. Preliminary checks appear to indicate the FIS flows are higher than the regression equation results as expected.
   b. Hydraulic analysis done = Partial
   c. If DA > 10 sq. mi. Riverine Infrastructure Database (RIDB) dataset is required with B1 submittal = No

3. Structure/Roadway Layout Considerations
   a. Roadway profile grade raise is not anticipated.

4. Special construction issues
   a. There is potential for foundation conflicts at both existing abutment footings.
   b. Private driveway access approximately 50’ south of existing bridge on both sides of IA 48.
   c. Gabion wall and guardrail located at northeast corner of bridge.
   d. 36” storm sewer outlet through existing south abutment wall.
   e. Utility attached to west side of bridge.

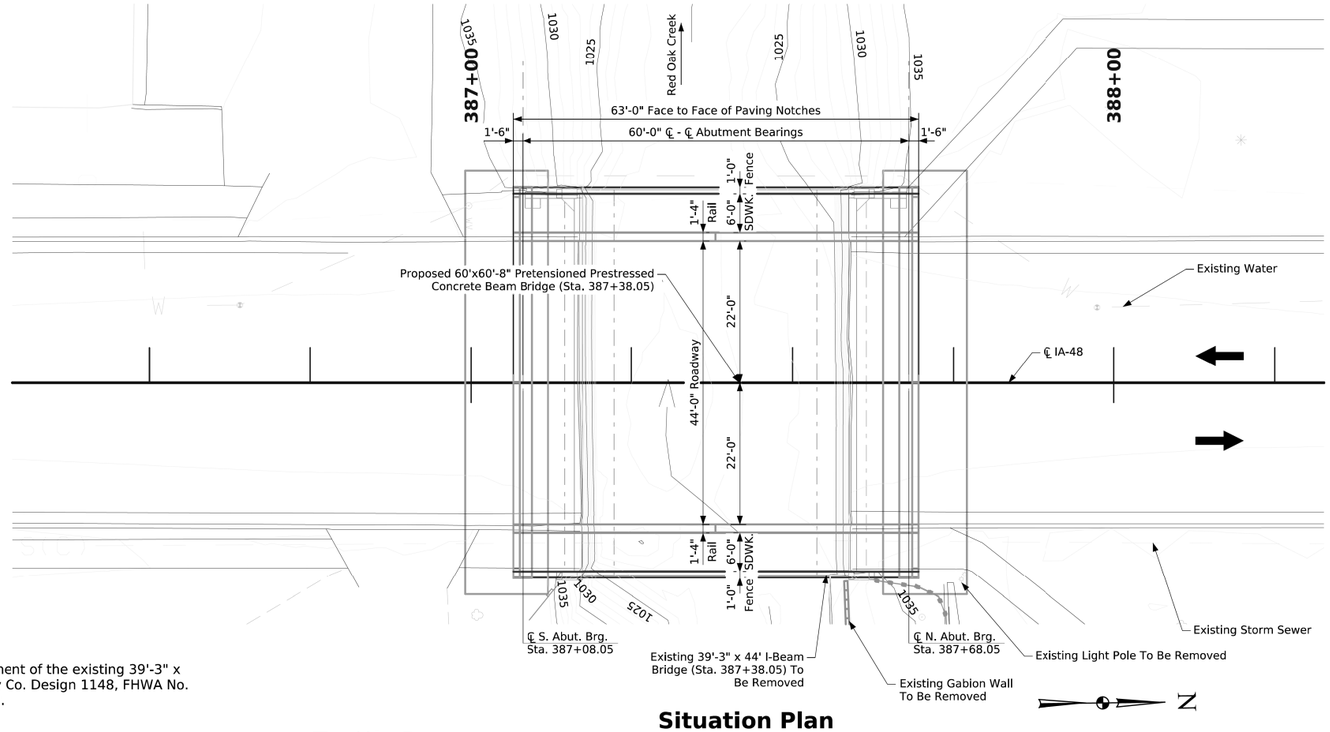
5. Special survey = No

6. Aesthetic enhancements = No

7. Other
   a. Maintenance of Traffic – Staged Construction.

Special Survey:

None.



Situation Plan

0 10
Scale In Feet

General Notes:

--This design is for the replacement of the existing 39'-3" x 44' I-Beam Bridge, Montgomery Co. Design 1148, FHWA No. 037710, Maint. No. 6922.3S048.

Design Notes:

--BMBR TL-2 Separation Barrier Proposed
--Tall Abutments Proposed

Plan Notes:

--Top of bridge deck at centerline roadway is 0.03' below the profile grade to account for deck cross slope and parabolic crown.

Traffic Data

2022 AADT	4460	V.P.D.
TRUCKS	8	%

Utilities Note:

Utilities shown on this sheet are for information only. See Road Design sheets for utility information.

General Utility Symbols:

S - Storm Sewer W - Water Line

Location

IA 48 over Red Oak Creek
T-72N R-38W
Section 28
Red Oak Township
Montgomery County
City of Road Oak
FHWA No. 037710 (Existing)
Bridge Maint. No. 6922.3S048
Latitude 41.007453°
Longitude -95.232746°

0.20% -0.30%

VPI Sta. = 387+38.05 VC = 50'
VPI Elev. = 1036.583

Proposed Profile Grade IA 48

Hydraulic Data

Preliminary

RIDB: "StreamID_Rivermile" or "Not Applicable"
Drainage Area = ??.? Sq. Mi.
Stream Slope (HGL) = ??.? ft./Mi.
Avg. Low Water Stage = ???.?

Operational Low Beam = ???.?
Channel Low Beam = ???.?

Q_{25} = ?,??? cfs
Stage = ???.?

Q_{50} = ?,??? cfs
Stage = ???.?
Operational Freeboard = ???.? ft.
Avg. Bridge Velocity = ?.? fps

Q_{100} = ?,??? cfs
Stage = ???.?
Operational Freeboard = ???.? ft.
Backwater = ?.? ft.
Avg. Bridge Velocity = ?.? fps

Q_{200} = ?,??? cfs
Stage = ???.?
Calculated Design Scour = ???.?

Q_{500} = ?,??? cfs
Stage = ???.?
Channel Freeboard = ?.? ft.
Avg. Bridge Velocity = ?.? fps
Calculated Check Scour = ???.?

Q Overtop= ?,??? cfs
Avg. Bridge Velocity = ?.? fps
Calculated Check Scour = ???.?

Q_{500} = ?,??? cfs
Channel Freeboard = ?.? ft.

Roadway Overtop ???.?
Sta. ???+??

Extreme HW Stage = ???.?
Date = ????

Site is located within
City or/County ??? F.I.S., Dated ???.
F.I.S. Datum ?.?? ft. Above/Below Project Datum.
F.I.S. Base Flood = ???? cfs used for no-rise information.

Preliminary

Design For
60'-0" x 60'-8" Pretensioned Prestressed Concrete Beam Bridge

60'-0" Single Span BTB Beams

STA. 387+38.05 (IA 48) Turn-in Date: May 2024

Montgomery County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. Design Sheet No. 1 of 1 FHWA No. 037710

FILE NO.	ENGLISH	DESIGN TEAM WHKS & Co.	Montgomery COUNTY	PROJECT NUMBER BRF-048-2(050)--38-69	SHEET NUMBER V.1

10:38:08 AM 5/17/2024 nlangel pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\SHT_69048050_WHKS_DSN#_037710_Z12.dgn

FILE NO.	ENGLISH	DESIGN TEAM **WHKS & CO.**	**MONTGOMERY** COUNTY	PROJECT NUMBER **BRF-048-2(50)--38-69**	SHEET NUMBER **A.13**

10:02:00 AM 6/14/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\69048050_A3_New.dgn

FIELD EXAM NOTES

Attendees:

Name	Org. / Office	E-Mail
Phil Mescher (Iowa DOT)		
Luka Arroyo (Iowa DOT)		
Nicole Cuva (Iowa DOT)		
Dave Dorsett (Iowa DOT)		
Jill Garton (Iowa DOT)		
Orest Lechnowsky (Iowa DOT)		
Travis Malone (Iowa DOT)		
Dan Redmond (Iowa DOT)		
Christine Schwake (Iowa DOT)		
Brian Smith (Iowa DOT)		
Jacob Woodcock (Iowa DOT)		
Austin Yates (Iowa DOT)		
Scott Sweet (WHKS)		
Brian Birkland (WHKS)		
Lucas Fatka (WHKS)		
Kirk Romsey (WHKS)		
Jake Shaw (WHKS)		

Contractor furnished borrow? (Yes) / (No)
Will there be subdrains? (Yes) / (No)
Salvage Guardrail and/or Post? (Yes) / (No) N/A
Pollution Prevention Plan (PPP) required? (Yes) / (No) Approx. Area of Disturbance: 0.5 Acres
Field Office? (Yes) / (No)
Field Lab? (Yes) / (No)
Construction Survey (Yes) / (No)
Survey by Office of Design (Yes) / (No)

Special Events/ Annual Events:

Confirm additional with the City at meeting. Wes to setup.

Drainage Issues:

None identified

Planned Construction Activities:

Confirm additional with the City at meeting. Wes to setup.

Topsoil: Special Considerations:

Salvage and spread

Special Coordination with:

Confirm additional with the City at meeting. Wes to setup.

Desired Pavement / Shoulder Improvements:

Standard Bridge Approaches

FIELD EXAM NOTES

FIELD EXAM NOTES

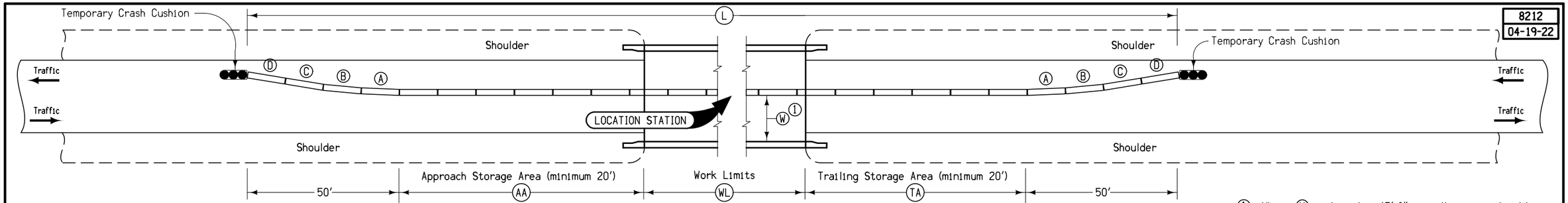
FILE NO.	ENGLISH	DESIGN TEAM **WHKS & CO.**	**MONTGOMERY** COUNTY	PROJECT NUMBER **BRF-048-2(50)--38-69**	SHEET NUMBER **A.16**

10:02:12 AM 6/14/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\69048050_A3_New.dgn

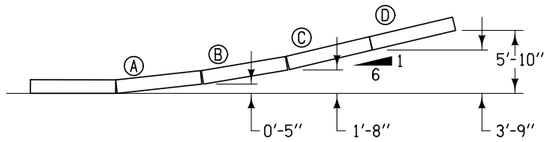
FIELD EXAM NOTES

FILE NO.	ENGLISH	DESIGN TEAM **WHKS & CO.**	**MONTGOMERY** COUNTY	PROJECT NUMBER **BRF-048-2(50)--38-69**	SHEET NUMBER **A.17**

8212
04-19-22



1 Where W is less than 15'-6", install restricted width signing as per Standard Road Plan TC-81.

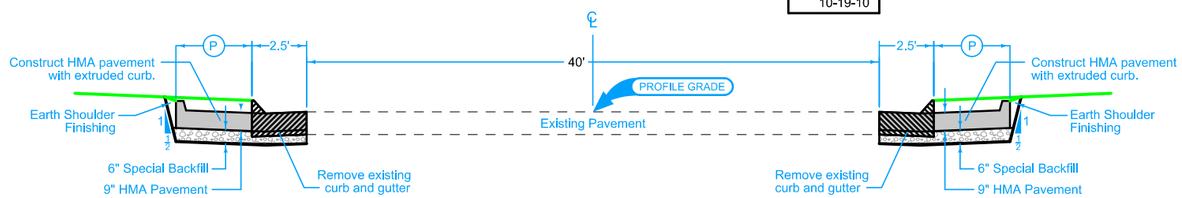


BARRIER OFFSETS FOR FLARE SECTIONS

Station	Side	AA	WL	TA	L	Anchored	W 1	Remarks
		Feet	Feet	Feet	Feet	X	Ft-Inches	

TEMPORARY CONCRETE BARRIER LAYOUT for Two-Way Traffic

2E_TWLTL_
10-19-10



HMA Pavement Widening

Shoulder Jointing:
Longitudinal joint: B

1R_P_HMA_
10-19-10

BEGIN STATION	END STATION	P Feet

HMA Pavement Widening

Shoulder Jointing:
Longitudinal joint: B

1R_P_HMA_
10-19-10

BEGIN STATION	END STATION	P Feet

100_01D
8/15/22

PROJECT DESCRIPTION

This project is for the replacement of the bridge on IA 48 over Red Oak Creek in Red Oak. It also includes bridge approach sections.

SURVEY SYMBOLS

- Interstate Highway Symbol
- U.S. Highway Symbol
- Iowa Highway Symbol
- County Road Highway Symbol
- Evergreen Tree
- Deciduous Tree
- Fruit Tree
- Shrub (Bushes)
- Timber
- Hedge
- Stump
- Swamp
- Rock Outcrop
- Broken Concrete
- Revetment (Rip Rap)
- Cemetery
- Grave
- Cave
- Sink Hole
- Board Fence
- Chain Link or Security Fence
- Wire Fence
- Terrace
- Earth Dam or Dike (Existing)
- Tile Outlet
- Edge of Water
- Existing Drainage
- Right of Way Rail or Lot Corner
- Concrete Monument
- Well
- Windmill
- Beehive Intake
- Existing Intake
- Existing Utility Access (Manhole)
- Fire Hydrant
- WH Water Hydrant (Rural)
- Septic Tank
- C Cistern
- LP L.P. Gas Tank (No Footing)
- UST Underground Storage Tank
- Latrine
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB Electric Box

UTILITY LEGEND

- PPA MidAmerican Electric
- E1 ELID, MidAmerican Electric
- G GLID, MidAmerican Gas
- SAN S(C) SAIC, City of Red Oak
- ST S(C) STIC, City of Red Oak
- W WLID, City of Red Oak

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.**	
Lavender	(9)	Temporary Pavement Shading
Yellow	(4)	Proposed Pavement Shading
Orange	(6)	Proposed Granular Shading
Orange	(70)	Proposed Shoulder Granular Shading
Yellow	(68)	Proposed Shoulder Paved Full Depth Shading
Yellow	(132)	Proposed Shoulder Paved Partial Depth Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Grading Shading
Orange, Light	(134)	Proposed Granular Entrance Shading
Yellow	(220)	Proposed Paved Entrance Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading
Green, Light	(225)	Existing Pavement Shading
Red	(3)	Proposed Structure Shading
Red	(3)	Delineates Restricted Areas

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

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO.	ENGLISH	DESIGN TEAM **WHKS & CO.**	**MONTGOMERY** COUNTY	PROJECT NUMBER **BRF-048-2(50)--38-69**	SHEET NUMBER **D.1**

9:06:49 AM 6/21/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\69048050_LGD.dgn

Still has access from alley

Same owner has both access's

Wes commented after the meeting that we cannot close permanently. District will meet with property owner.

Add proposed subdrain where replacing curb and gutter

Not permanent, only temporary for temp paving.

Comm. Building

Comm. Building

Comm. Building

Canopy

Building

Building

Garage

Garage

Comm. Building

1st Ave

Grimes St

E Washington Ave

W Washington Ave

385+00

386+00

387+00

389+00

390+00

1385+00

2389+00

2388+00

Relocate Fire Hydrant

Remove and Reinstall Sign

Sta. 387+38.05 ML =
Sta. 3387+38.05 BRIDGE

(Close)

Sta. 389+12.20 ML =
Sta. 2389+12.20 E Washington Ave

Approx. ROW

Broadway St 48

STA 386+36.55 (ML 48)
Begin Bridge Approach

STA 388+39.55 (ML 48)
End Bridge Approach

POE 3+00.00

POE 3+50.00

POB 0+00.00

POB 0+00.00

Broadway St 48

STA 384+72.20 (ML 48)
Begin Project

STA 390+05.66 (ML 48)
End Project

Remove and Reinstall Signs

Approx. ROW

Sta. 385+82.50 ML =
Sta. 1385+82.50 Grimes St.

36"x104'
Conc. Pipe

Place Steel Plate Over Manhole

(Close)

15"x132'
Conc. Pipe

Remove and Reinstall Guardrail for Construction of Abutment

Construct SW-511, Stage 1
Construct SW-507, Stage 3
(Tops Only)

Sta. 387+38.05
39.3'x44.0'
I-BEAM BRIDGE
W/ 2 - 6' SIDEWALKS
D.A.=??.? A-?

IA 48

0 FEET 20

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	MONTGOMERY	COUNTY	PROJECT NUMBER	BRF-048-2(50)--38-69	SHEET NUMBER	D.2

9:17:41 AM 6/21/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\Sheet_Files\SHT_69048050_D02.dgn

SURVEY INDEX

County: Montgomery
PIN: 21-69-048-010
Project Number: BRF-048-2(50)--38-69
Location: Red Oak Creek 1.3 mi S of US 34 in Red Oak
Type of Work: 3123-RCB Culvert Replacement - Triple Box
Project Directory: 6904801021

Survey Personnel

Jeremy Leemon – Survey Party Chief
Jacob Powers – Survey Crew
CJ Beckman – Survey Crew

Date(s) of Survey

Begin Date	05/06/2024
End Date	05/14/2024

General Information

This survey is for the replacement of a bridge on IA-48 over Red Oak Creek in Montgomery County at a location 0.8 mi E of Co Rd F58. 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

A site calibration was done utilizing nearby NGS monuments. Nearby Iowa Real Time Network reference stations were utilized to obtain and check 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 a weighted 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 (IaRTN 2019 ADJUSTMENT)
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 12 (U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u2

Alignment Information

The horizontal alignment for U.S. Hwy 48 this survey is a retrace of As-built Plans No. FN-48-2(18)—21-69. Survey stationing was equated to the center of bridge plan POT at Sta. 387+38.05 and carried back and ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

POT Sta. 385+82.6 As-built Plans No. FN-48-2(18)—21-69.
Survey POT Sta. 385+82.60, projected centerline of Grimes Street.

POT Sta. 389+12.2 As-built Plans No. FN-48-2(18)—21-69.
Survey POT Sta. 389+12.20, projected centerline of Washington Street.

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 12 (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 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 12 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u2

Point Name	Northing	Easting	Elevation	Code-Description
97	6236086.65	22090792.80	1035.35	CP FD. FENO MON. 39' E OF US 48 CL, 20' S OF NUCKOLS ST
98	6236638.61	22090669.41	1035.89	CP FD. FENO MON. 6' E OF SE CORNER OF PARKING LOT
99	6236783.02	22090806.12	1036.66	CP FD. FENO MON. 38' E OF US 48 CL, 32' N OF WASHINGTON ST

108_23A
8/15/22

TRAFFIC CONTROL PLAN

IA 48 shall remain open to traffic at all times.

Traffic control shall be according to Standard Road plans listed on Tab. 105-4 and as shown on the J Sheets.

108_26A
8/15/22

STAGING NOTES

Stage 1:

Traffic: Shift northbound traffic to the TWLTL. Southbound traffic to remain as is.

Construction: Remove the sidewalk section on the east side of the bridge and construct temporary bridge deck widening and temporary pavement widening.

Stage 2:

Traffic: Northbound shifted to the east temporary street and bridge pavement. Southbound traffic shifted to the east. Temporary barrier rail along both bounds on the outside and a temporary lane separator will be utilized. Lane widths will be 12 foot with no shoulders. Narrow width signing is required.

Construction: Construct southbound approaches and the west half of the bridge and temporary pavement widening. Sidewalk section will not be constructed until Stage 4 so that traffic may be shifted during Stage 3.

Stage 3:

Traffic: Northbound and Southbound shifted to the new bridge and approach pavement and temporary pavement widening. Temporary barrier rail along both bounds on the outside and a temporary lane separator will be utilized. Lane widths will be 12 foot with no shoulders. Narrow width signing is required.

Construction: Construct northbound approaches and the east half of the bridge.

Stage 4:

Traffic: Shift southbound traffic to the TWLTL. Northbound traffic to remain as is.

Construction: Construct the sidewalk section and separation rail on the west side 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 provided at this time.	

PEDESTRIAN PATH CLOSURES

Refer to TC-601.

*Assumes 6 foot wide barricade.
Closures may need to be removed and re-established.

Location	Side	Width of Closure (FT)	Type III Barricades* (No.)	Remarks
IA 48	Right	6.0	1	W Grimes St. to Washington Ave. during Stages 1-3.
IA 48	Left	6.0	1	Caseys to W Washington Ave. during Stages 2-4.

CROSS SECTION VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Med	(237)	Future Proposed Pavement Shading

CROSS SECTION VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

	Pavement Removal		Proposed Granular Shoulder
	Proposed Granular Subbase		Temporary Shoulder
	Proposed Special Backfill		Existing Shoulder Strengthening
	Temporary Barrier Rail		Permanent Barrier Rail
			Channelizing Device

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Magenta	(5)	Pavement Marking Call Outs
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)	Pavement Markings, Yellow
Off White	(254)	Pavement Markings, White
Violet	(15)	Temporary barrier rail, Unpinned
Flush Orange	(228)	Temporary barrier rail, Pinned
SHADING	**Design Color No.**	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Proposed Granular Surface Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Light	(236)	Proposed Grading Limits Shading
Pink, Dark	(13)	Proposed MSE or CIP Wall Shading
Red	(3)	Proposed Bridge Shading and Sign Trusses
Black w/Gray, Light Fill	(0,48)	Previously Constructed Structure

PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

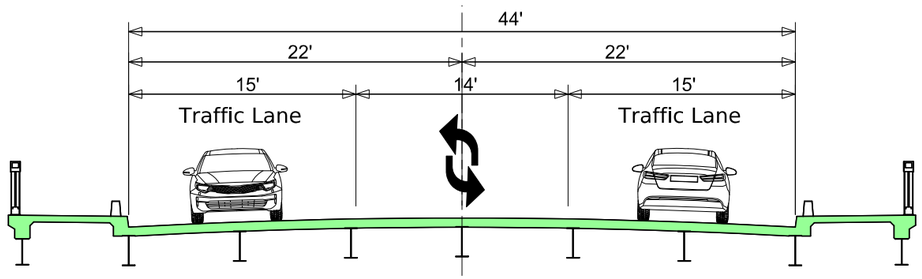
●	Channelizing Device		Crash Cushion (Temp or Perm)
✕	Drum		Traffic Signal
◘	Temporary Lane Separator		Flagger
◆	Tubular Marker		Temporary Floodlighting
♦	Channelizer Marker		Traffic Sign
△	Concrete Barrier Marker		Type III Barricade
⊰	Delineator		Type A Warning Light
	Temporary Barrier Rail		Direction of Traffic
	Pavement Removal		Safety Closure
	Sand Barrel Layout	1	Lane Identification

NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

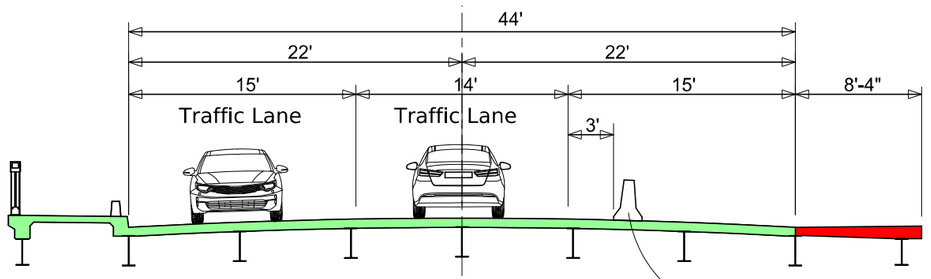
(COVERS SHEET SERIES J)

℄ IA 48



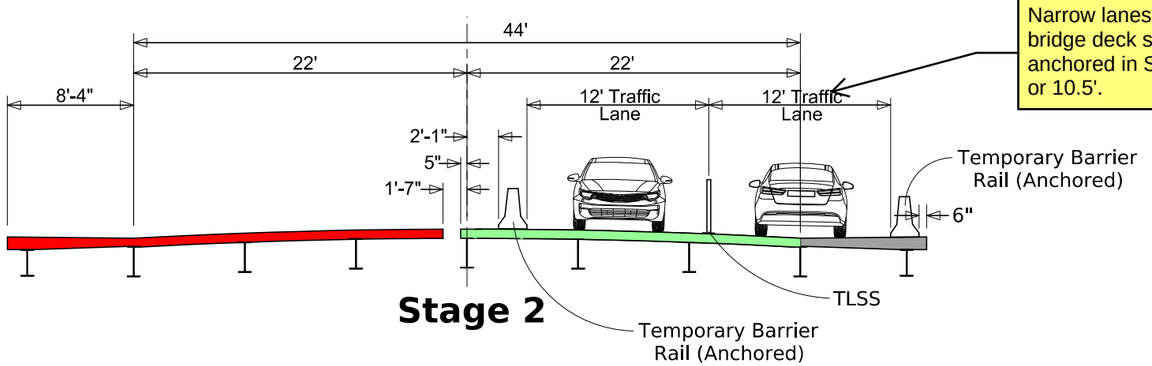
Existing

℄ IA 48



Stage 1

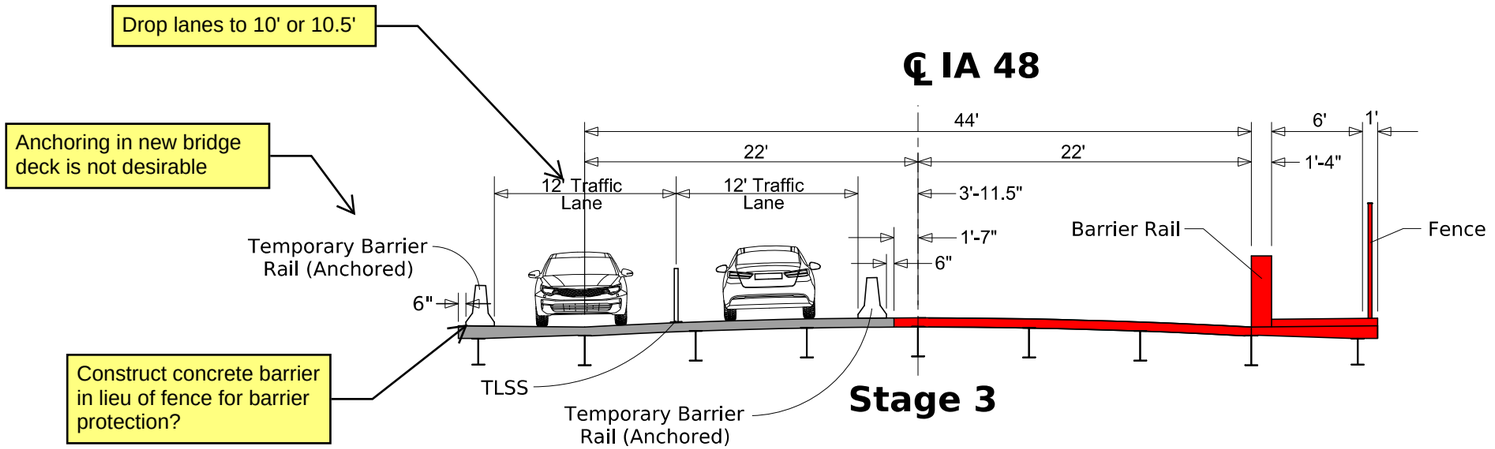
℄ IA 48

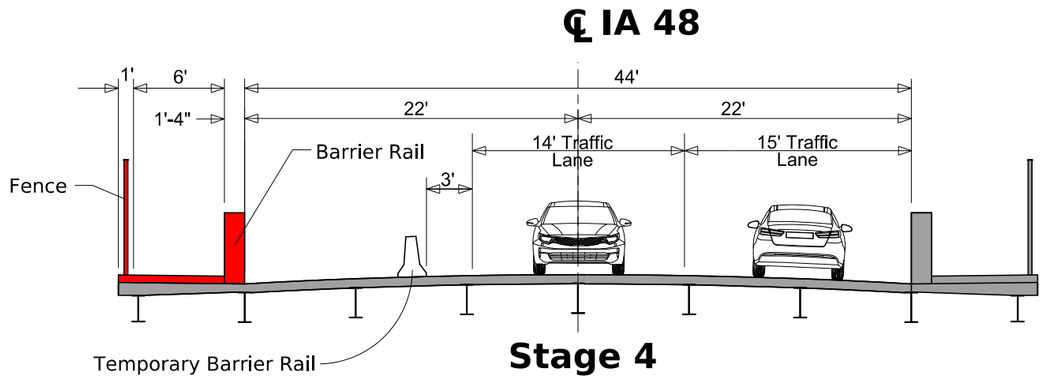


Stage 2

Narrow lanes to build more permanent bridge deck so TBR doesn't have to be anchored in Stage 3. Drop lanes to 10' or 10.5'.

Stages 3 and 4 on next sheet


Drop lanes to 10' or 10.5'
Anchoring in new bridge deck is not desirable
Construct concrete barrier in lieu of fence for barrier protection?
℄ IA 48
44'
22'
22'
6'
1'
1'-4"
12' Traffic Lane
12' Traffic Lane
3'-11.5"
1'-7"
6"
Temporary Barrier Rail (Anchored)
6"
Barrier Rail
Fence
TLSS
Temporary Barrier Rail (Anchored)
Stage 3


℄ IA 48
1'
6'
1'-4"
44'
22'
22'
Barrier Rail
14' Traffic Lane
15' Traffic Lane
3'
Fence
Temporary Barrier Rail
Stage 4

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	MONTGOMERY COUNTY	PROJECT NUMBER BRF-048-2(50)--38-69	SHEET NUMBER J.8

11:48:39 AM 6/20/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\Staging\ORD_69048050_WHKS_Staging.dgn

Red Oak TWP.
T72N R-38W
SEC. 29

383+00
384+00
385+00
386+00
387+00
388+00
389+00

1st Ave.

Comm. Building
Comm. Building
Comm. Building
Canopy

IA 48

W Grimes St.

Washington Ave.

Cover Manhole with steel plate

Cover Manhole with steel plate

Comm. Building
Garage

Sta. 387+38.05
39.3'X44.
I-BEAM BRIDGE
W/ 2 - 6' SIDEWALK
D.A. = 14.4 Sq

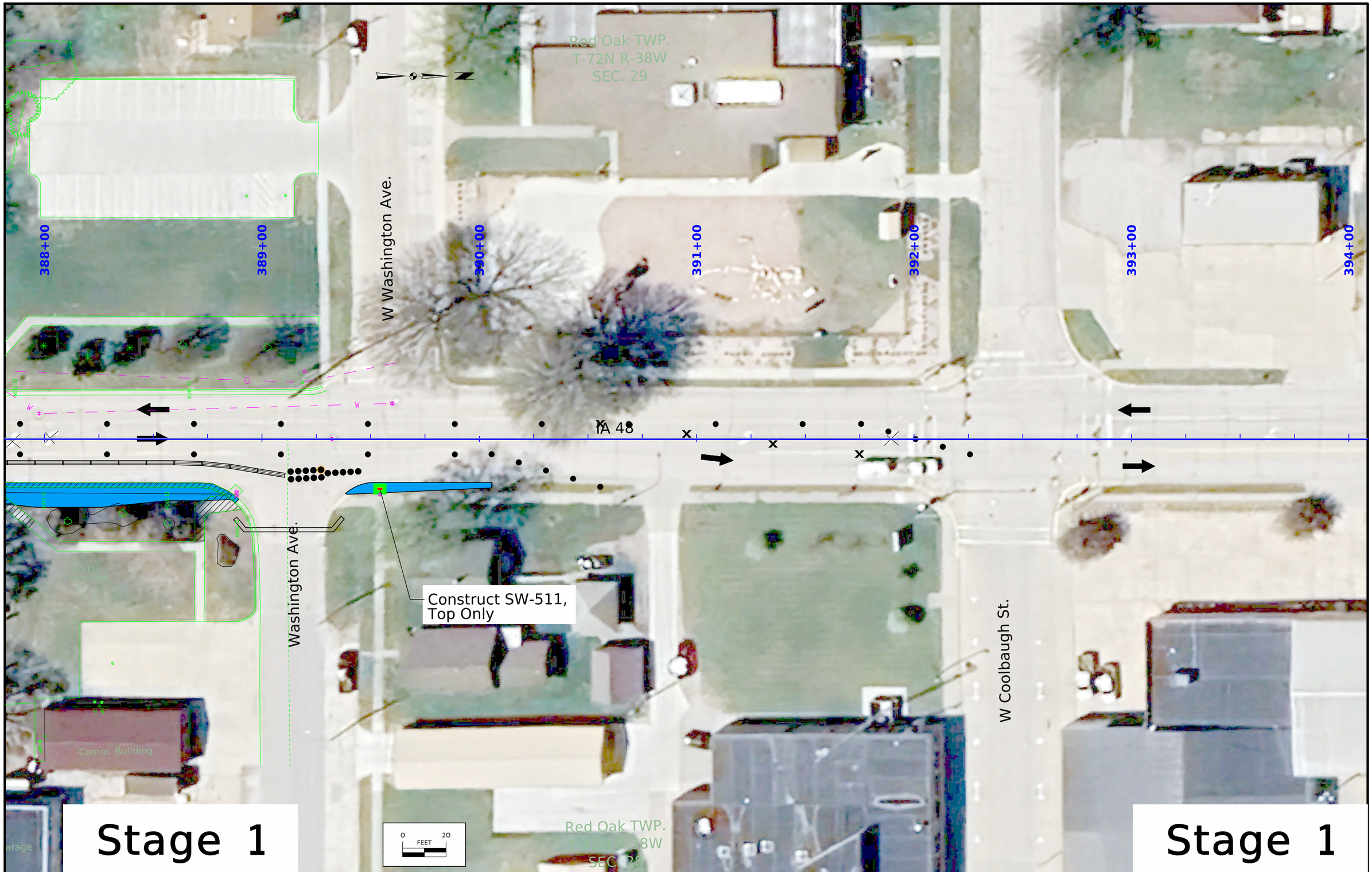
0 FEET 20

Stage 1

Stage 1

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	MONTGOMERY COUNTY	PROJECT NUMBER BRF-048-2(50)--38-69	SHEET NUMBER J.9

11:48:41 AM 6/20/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\Staging\ORD_69048050_WHKS_Staging.dgn



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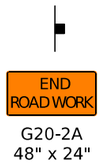
Stage 1

W20-1
48" x 48"



G20-2A
48" x 24"

Stage 1

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	MONTGOMERY COUNTY	PROJECT NUMBER BRF-048-2(50)--38-69	SHEET NUMBER J.11

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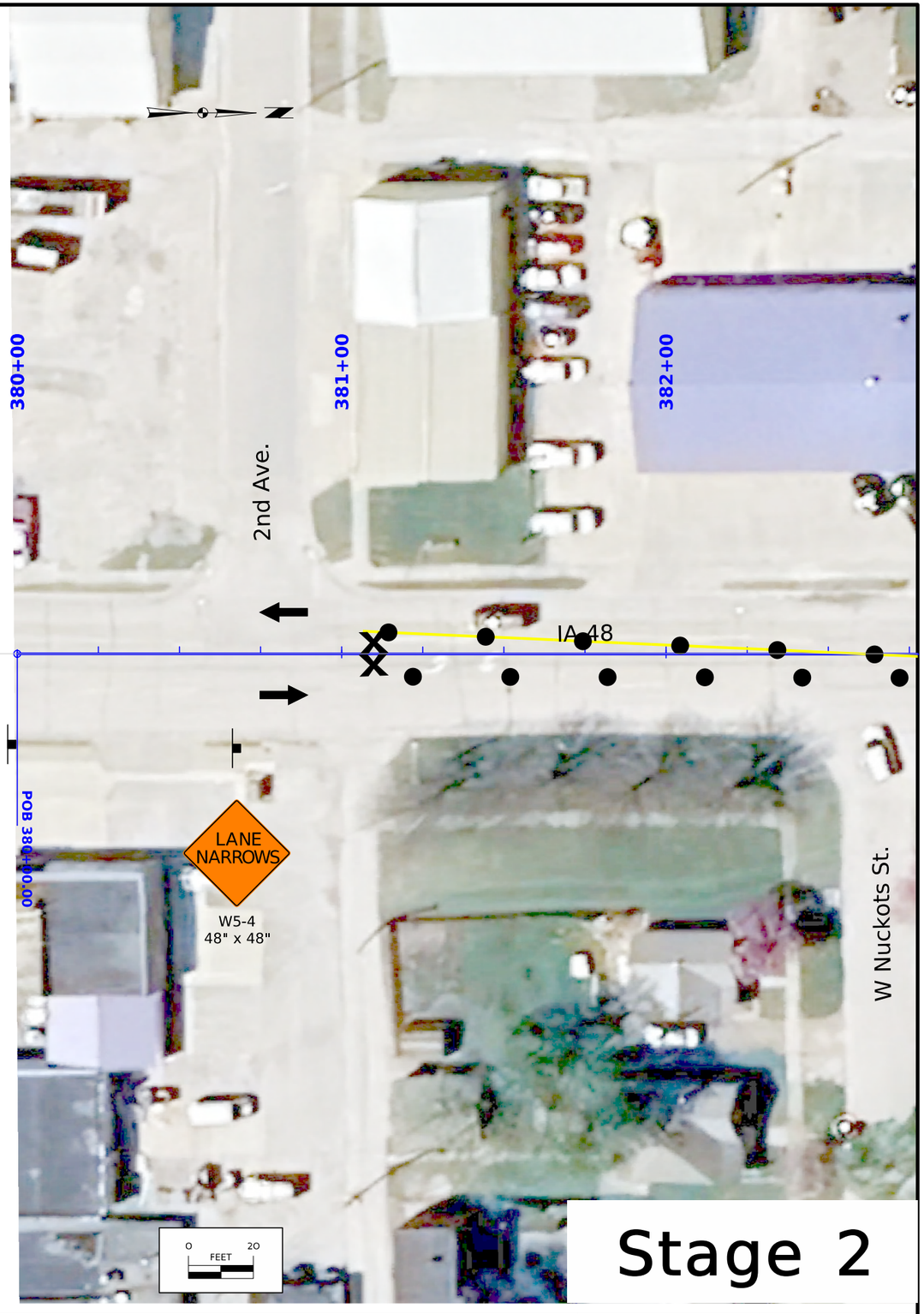
END
ROAD WORK

G20-2A
48" x 24"

ROAD
WORK
AHEAD

W20-1
48" x 48"

W24-1A
48" x 48"



Stage 2

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	MONTGOMERY COUNTY	PROJECT NUMBER BRF-048-2(50)--38-69	SHEET NUMBER J.12

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Red Oak TWP.
T-72N R-38W
SEC. 29

382+00
383+00
384+00
385+00
386+00
387+00

1st Ave.

Comm. Building
Comm. Building
Comm. Building
Canopy

IA 48
IA 48

W Nuckots St.
W Grimes St.

Garage
Garage

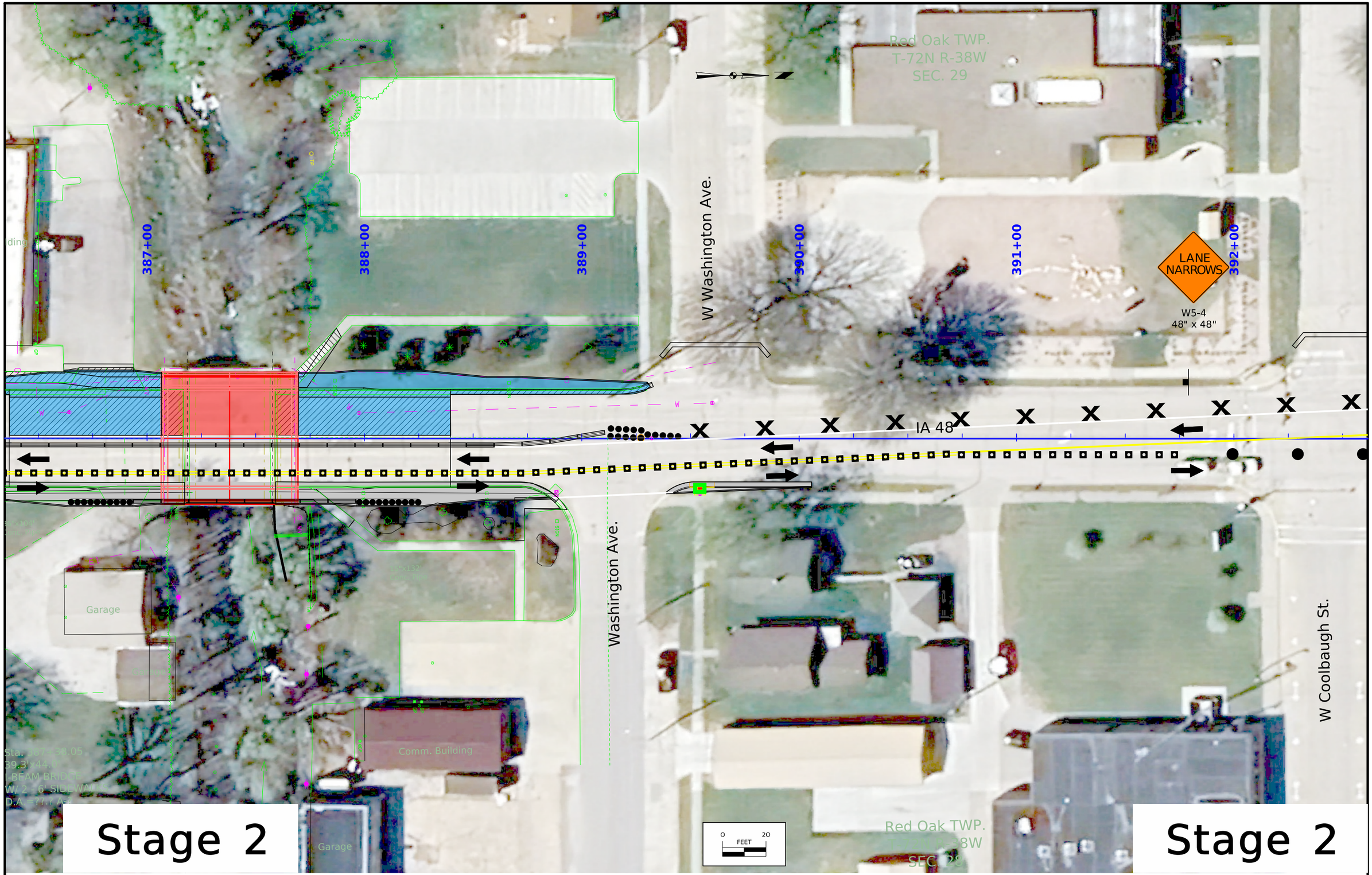
Red Oak TWP
T-72N R-38W

0 20 FEET

Stage 2
Stage 2

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	MONTGOMERY COUNTY	PROJECT NUMBER BRF-048-2(50)--38-69	SHEET NUMBER J.13

11:48:47 AM 6/20/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\Staging\ORD_69048050_WHKS_Staging.dgn



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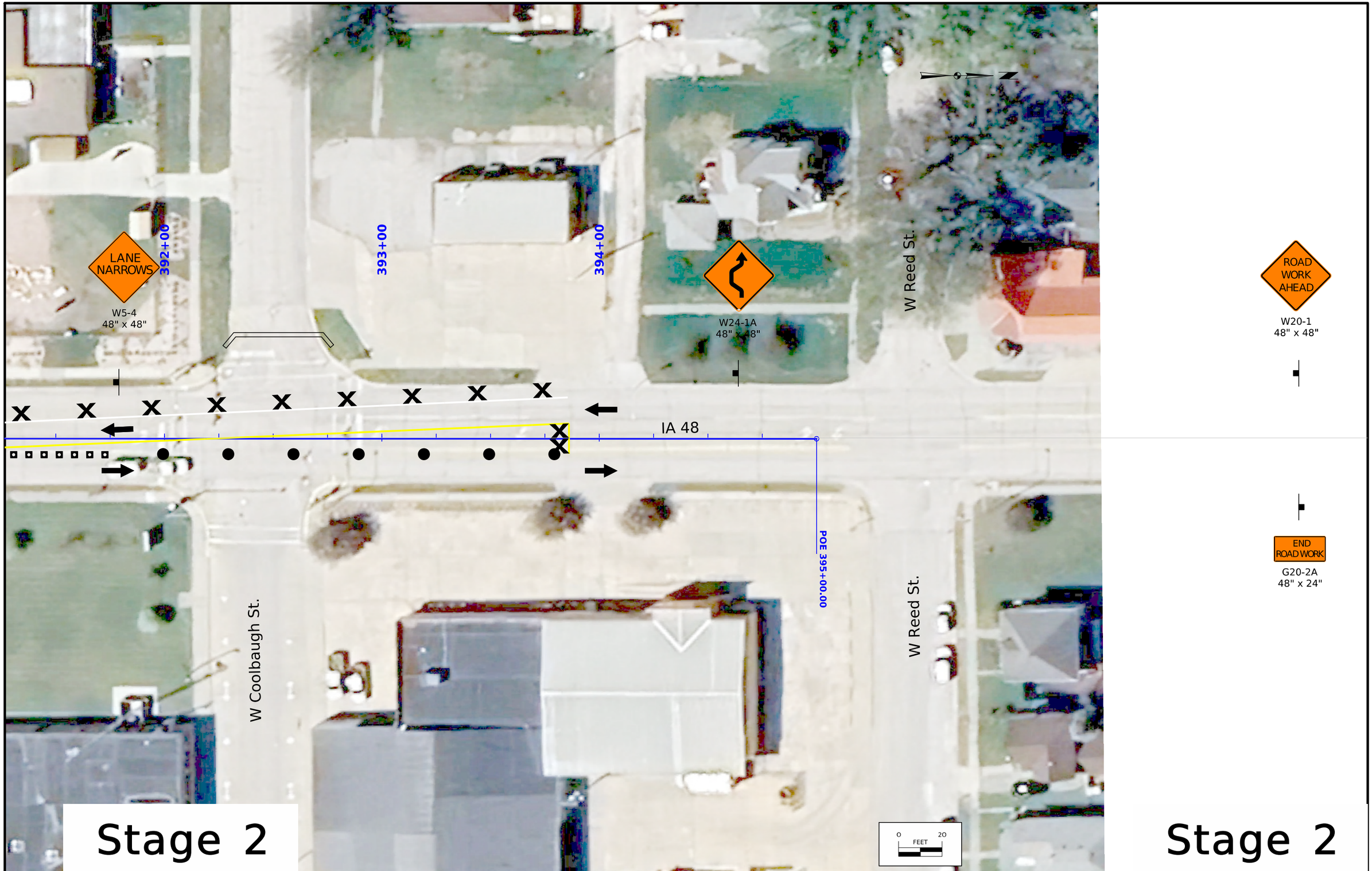

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END
ROAD WORK

G20-2A
48" x 24"

ROAD
WORK
AHEAD

W20-1
48" x 48"

W24-1A
48" x 48"

Stage 3

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	MONTGOMERY COUNTY	PROJECT NUMBER BRF-048-2(50)--38-69	SHEET NUMBER J.16

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Red Oak TWP.
T-72N R-38W
SEC. 29

382+00
383+00
384+00
385+00
386+00
387+00

1st Ave.

Comm. Building
Comm. Building
Comm. Building
Canopy

IA 48
IA 48

W Nuckots St.
W Grimes St.

Construct Manhole,
Top Only

Construct Manhole,
Top Only

(Close)

Stage 3

Stage 3

0 20
FEET

Red Oak TWP
T-72N R-38W

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	MONTGOMERY COUNTY	PROJECT NUMBER BRF-048-2(50)--38-69	SHEET NUMBER J.17

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Red Oak TWP.
T-72N R-38W
SEC. 29

W Washington Ave.

387+00
388+00
389+00
390+00
391+00
392+00

Comm. Building

LANE NARROWS
W5-4
48" x 48"

IA 48
IA 48

(Close)

Construct Manhole,
Top Only

Construct SW-507,
Top Only

Washington Ave.

Comm. Building

Garage

0 20
FEET

Red Oak TWP.
T-72N R-38W
SEC. 28

Stage 3

Stage 3

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	MONTGOMERY COUNTY	PROJECT NUMBER BRF-048-2(50)--38-69	SHEET NUMBER J.18

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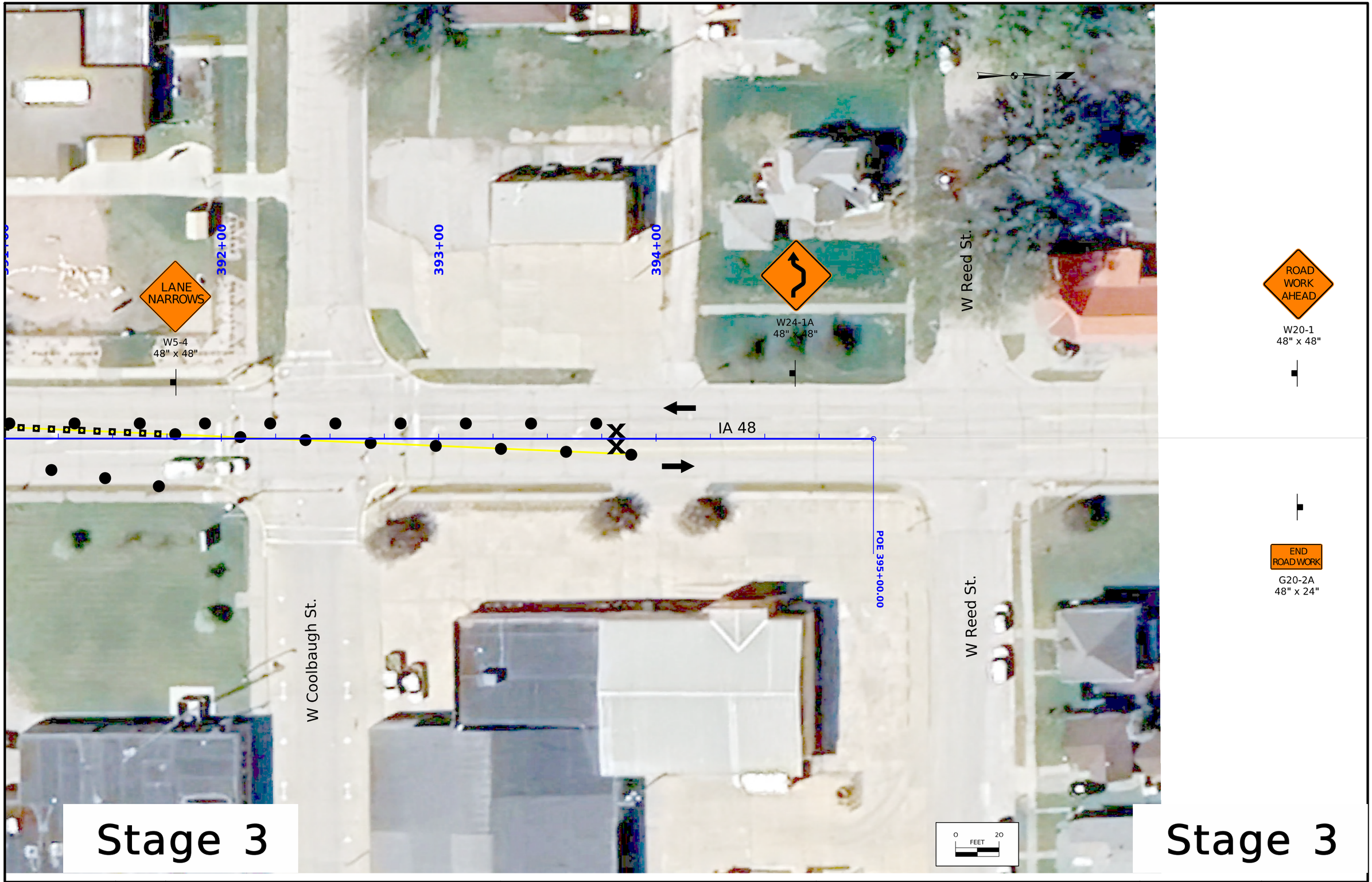

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END
ROAD WORK

G20-2A
48" x 24"

ROAD
WORK
AHEAD

W20-1
48" x 48"

Stage 4

FILE NO.	ENGLISH	DESIGN TEAM	COUNTY	PROJECT NUMBER	SHEET NUMBER J.20

11:48:58 AM 6/20/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\Staging\ORD_69048050_WHKS_Staging.dgn

Red Oak TWP.
T-72N R-38W
SEC. 29

382+00
383+00
384+00
385+00
386+00
387+00

1st Ave.

Comm. Building
Comm. Building
Comm. Building
Canopy

(Close)

IA 48
IA 48

W Nuckots St.

W Grimes St.

Garage

Red Oak TWP.
T-72N R-38W

0 20
FEET

Stage 4

Stage 4

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	MONTGOMERY COUNTY	PROJECT NUMBER BRF-048-2(50)--38-69	SHEET NUMBER J.21

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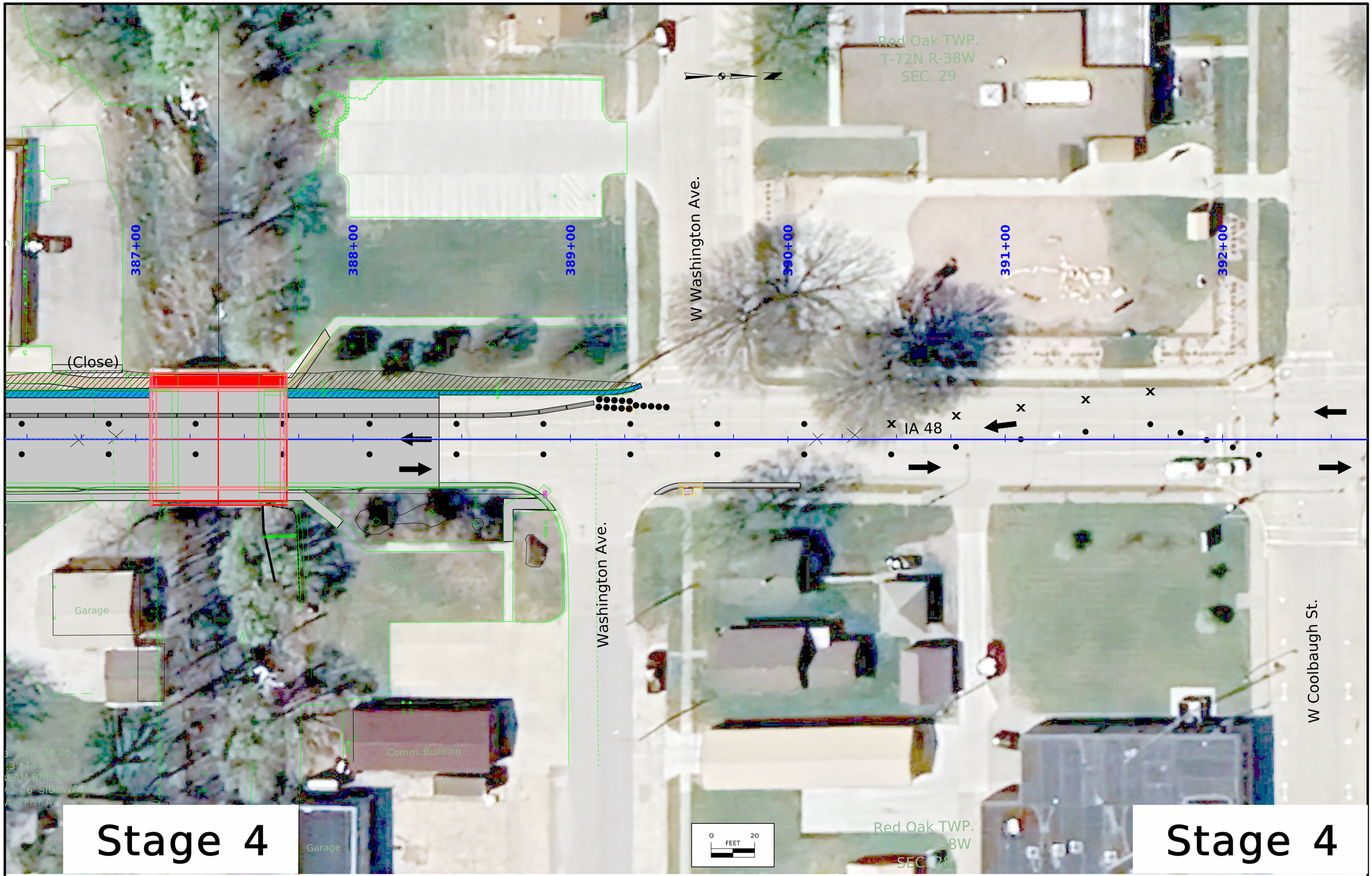
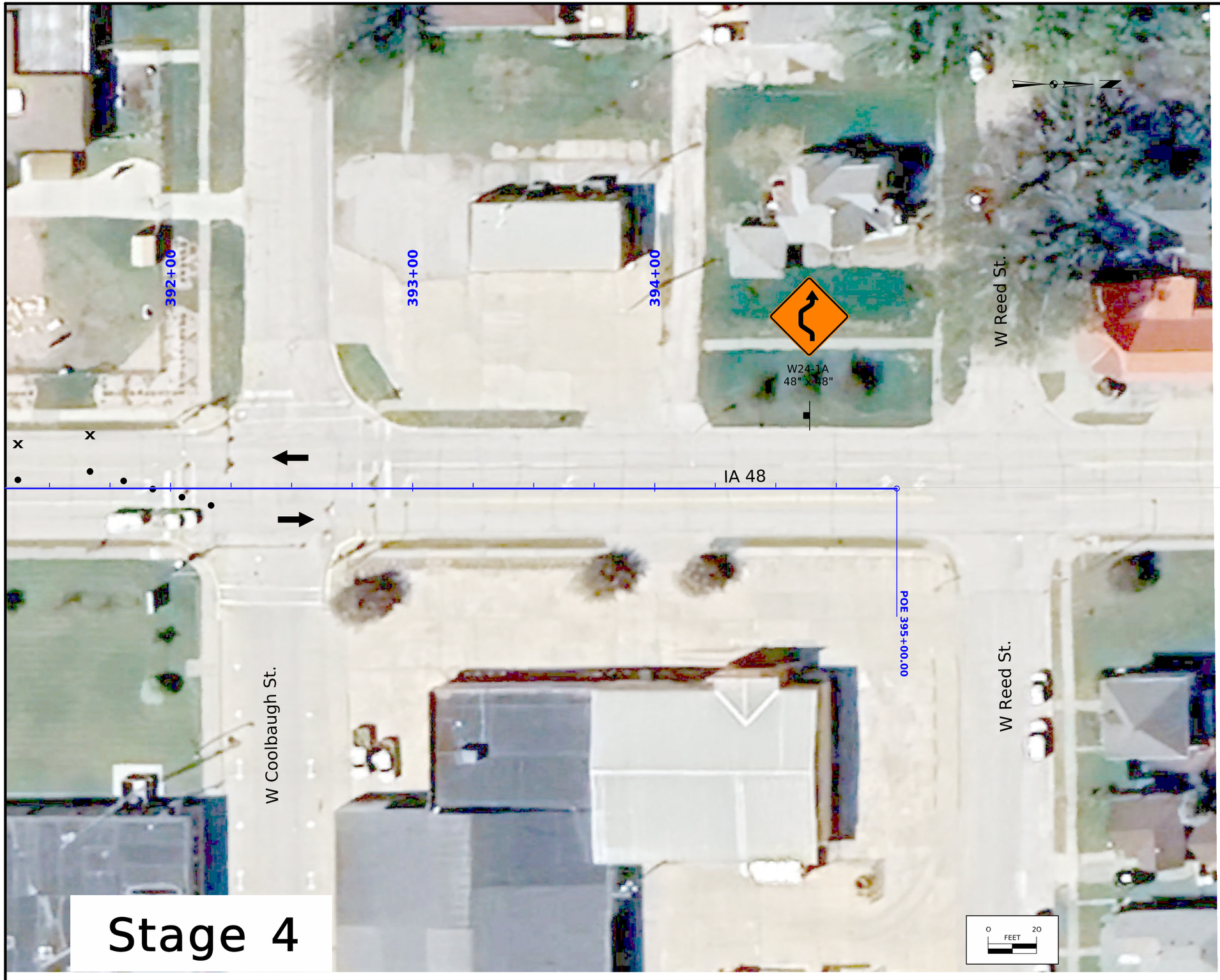


Stage 4

Stage 4

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	MONTGOMERY COUNTY	PROJECT NUMBER BRF-048-2(50)--38-69	SHEET NUMBER J.22	

11:49:01 AM 6/20/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\Staging\ORD_69048050_WHKS_Staging.dgn



ROAD WORK AHEAD

W20-1
48" x 48"

END ROAD WORK

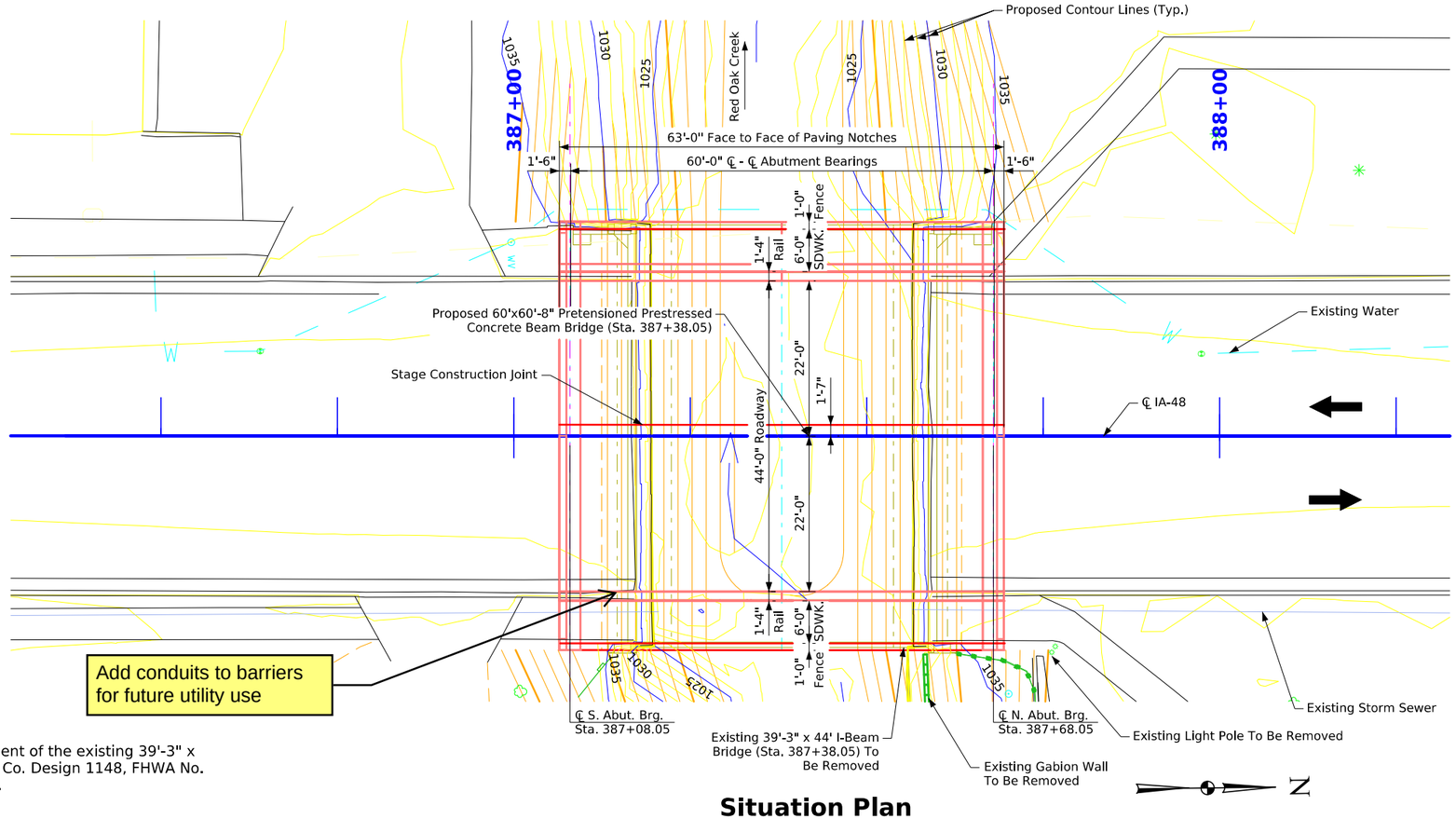
G20-2A
48" x 24"

Stage 4

Stage 4

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	MONTGOMERY COUNTY	PROJECT NUMBER BRF-048-2(50)--38-69	SHEET NUMBER J.23

11:49:02 AM 6/20/2024 kromsey pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\Roadway\CADD_Files\Staging\ORD_69048050_WHKS_Staging.dgn



Situation Plan

0 10
Scale In Feet

0.10% -0.20%

VPI Sta. = 387+38.05 VC = 60'
VPI Elev. = 1036.500

Proposed Profile
Grade IA 48

Hydraulic Data

Preliminary

RIDB: "StreamID_Rivermile" or "Not Applicable"
Drainage Area = ??.? Sq. Mi.
Stream Slope (HGL) = ??.? ft./Mi.
Avg. Low Water Stage = ???.?

Operational Low Beam = ???.?
Channel Low Beam = ???.?

Q_{25} = ?,??? cfs
Stage = ???.?

Q_{50} = ?,??? cfs
Stage = ???.?
Operational Freeboard = ???.? ft.
Avg. Bridge Velocity = ?.? fps

Q_{100} = ?,??? cfs
Stage = ???.?
Operational Freeboard = ???.? ft.
Backwater = ?.? ft.
Avg. Bridge Velocity = ?.? fps

Q_{200} = ?,??? cfs
Stage = ???.?
Calculated Design Scour = ???.?

Q_{500} = ?,??? cfs
Stage = ???.?
Channel Freeboard = ?.? ft.
Avg. Bridge Velocity = ?.? fps
Calculated Check Scour = ???.?

Q Overtop= ?,??? cfs
Avg. Bridge Velocity = ?.? fps
Calculated Check Scour = ???.?

Q_{500} = ?,??? cfs
Channel Freeboard = ?.? ft.

Roadway Overtop ???.?
Sta. ???+??

Extreme HW Stage = ???.?
Date = ????

Site is located within
City or/County ??? F.I.S., Dated ???.
F.I.S. Datum ?.?? ft. Above/Below Project Datum.
F.I.S. Base Flood = ???? cfs used for no-rise information.

General Notes:

--This design is for the replacement of the existing 39'-3" x 44' I-Beam Bridge, Montgomery Co. Design 1148, FHWA No. 037710, Maint. No. 6922.3S048.

Design Notes:

--BMBR TL-2 Separation Barrier Proposed

Plan Notes:

--Top of bridge deck at centerline roadway is 0.03' below the profile grade to account for deck cross slope and parabolic crown.

Traffic Data

2022 AADT 4460 V.P.D.
TRUCKS 8 %

Utilities Note:

Utilities shown on this sheet are for information only. See Road Design sheets for utility information.

General Utility Symbols:

S - Storm Sewer W - Water Line

Location

IA 48 over Red Oak Creek
T-72N R-38W
Section 28
Red Oak Township
Montgomery County
City of Road Oak
FHWA No. 037710 (Existing)
Bridge Maint. No. 6922.3S048
Latitude 41.007453°
Longitude -95.232746°

Preliminary

Design For
60'-0" x 60'-8" Pretensioned
Prestressed Concrete Beam Bridge
60'-0" Single Span BTB Beams

STA. 387+38.05 (IA 48)
Turn-in Date: June 2024

Montgomery County
IOWA DEPARTMENT OF TRANSPORTATION

Design No. Design Sheet No. 1 of 1 FHWA No. 037710

FILE NO.	ENGLISH	DESIGN TEAM WHKS & Co.	Montgomery COUNTY	PROJECT NUMBER BRF-048-2(050)--38-69	SHEET NUMBER V.1

9:09:22 AM 6/21/2024 bhackman pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6904801021\Bridge\(50)_Bridge-Unspecified\SHT_69048050_WHKS_DSN#_037710_Z12.dgn