

MONTGOMERY COUNTY

BRIDGE REPLACEMENT
BRF-048-2(50)--38-69

LETTING DATE
Dec 16 2025



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.



H Sheets

REVISIONS

TOTAL

53

PROJECT IDENTIFICATION NUMBER

21-69-048-010

PROJECT NUMBER

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

R.O.W. PROJECT NUMBER

STPN-048-2(51)--2J-69

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
A.2	Location Map Sheet
A.3	Roadway Title Sheet
B Sheets	Typical Cross Sections and Details
B.1	Typical Cross Sections and Details
C Sheets	Quantities and General Information
C.1	Project Description
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	IA 48
G Sheets	Survey Sheets
G.1	Reference Ties and Bench Marks
G.2	Horizontal Control Tab. & Super for all Alignments
J Sheets	Traffic Control and Staging Sheets
* J.1	Traffic Control Plan
* J.2	Staging Notes Stage
* J.3	Tabulation of Special Events
* J.4	Traffic Control & Staging Legend & Symbol Info. Sheet
* J.5 - 23	Staging and Traffic Control Sheets
U Sheets	500 Series, Mod.Stds. and Detail Sheets
U.1	Modified BA-108
V Sheets	Bridge and Culvert Situation Plans
* V.1	Bridge Situation Plans
W Sheets	Mainline Cross Sections
* W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 5	Final Mainline Cross Sections
W.6 - 19	Staging Mainline Cross Sections
	* Color Plan Sheets

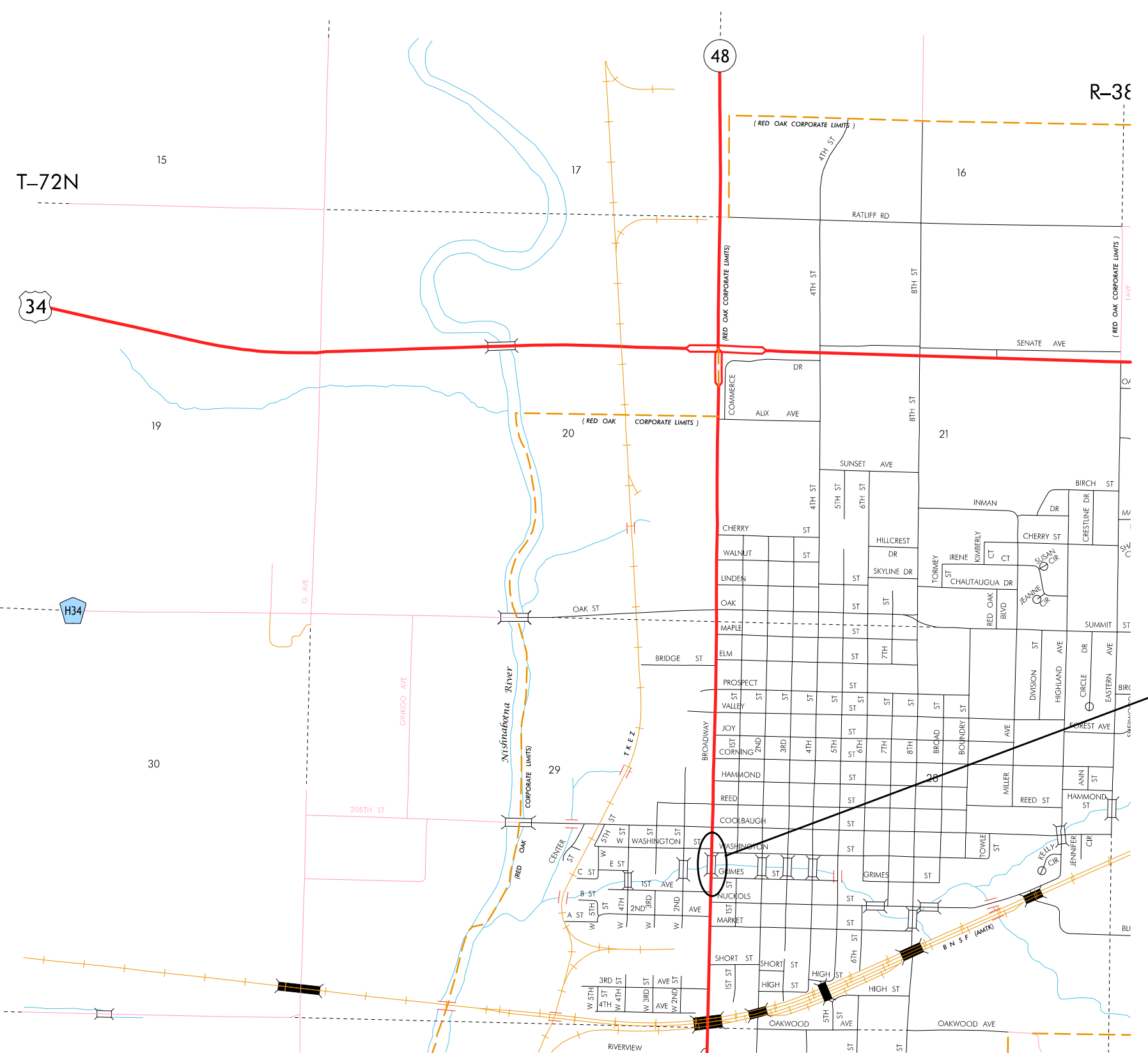
DESIGN DATA URBAN			
20 --	AADT	4400	V.P.D.
20 --	AADT	5600	V.P.D.
20 --	DHV	580	V.P.H.
	TRUCKS	8	%
	Total Design ESALs	--	

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

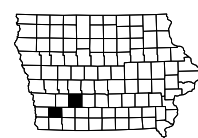
PRELIMINARY PLANS

Subject to change by final design.

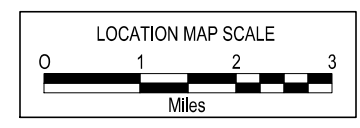
D5 PLAN - Date: 8-30-24




PROJECT LOCATION

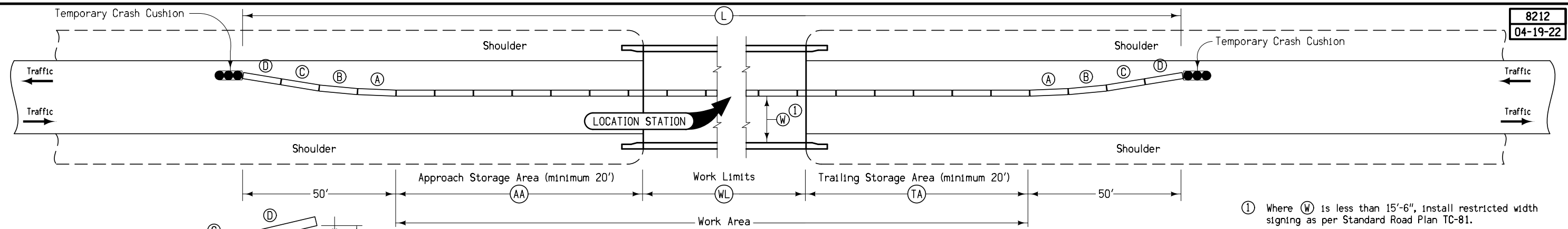


A portion of the City of Red Oak

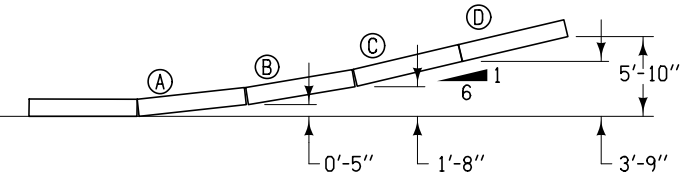


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W.6 - 19	Detour Cross Sections
	* Color Plan Sheets

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: <u>Lucas David Fatka</u> Date: _____
	Printed or Typed Name: <u>Lucas David Fatka</u>
	My license renewal date is December 31, 2025
	Pages or sheets covered by this seal: <u>A.1-A.3, B.1, C.1, D.1-D.2, G.1-G.3, J.1-J.23, V.1, W.1-W.19</u>



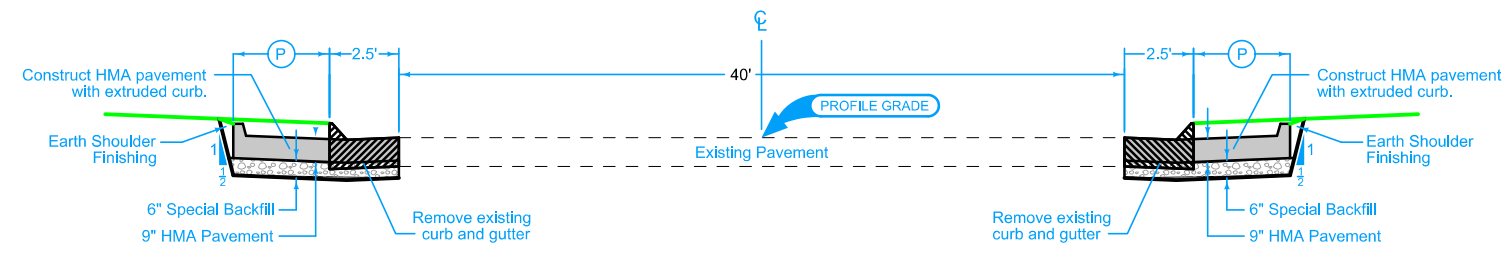
① Where (W) is less than 15'-6", install restricted width signing as per Standard Road Plan TC-81.



BARRIER OFFSETS FOR FLARE SECTIONS

Station	Side	AA	WL	TA	L	Anchored	W	Remarks
		Feet	Feet	Feet	Feet	X	Ft-Inches	
387+38.05	Rt.	86.0	70.9	86.1	344.9		32-0	Stage 1 (27 12.5' Sections)
387+38.05	far Rt.	20.4	214.9	20.3	357.7	X	10-4	Stage 2 (28 12.5' Sections)
387+38.05	far Lt.	4.9	70.9	13.5	89.3	X	11-6	Stage 3 (7 12.5' Section)
387+38.05	Lt.	20.4	214.9	2.-4	357.7		11-6	Stage 3 (28 12.5' Sections)
387+38.05	Lt.	85.8	70.9	86.2	344.9		32-0	Stage 4 (27 12.5' Sections)

TEMPORARY CONCRETE BARRIER LAYOUT for Two-Way Traffic



HMA Pavement Widening (Lt.)

Shoulder Jointing:
Longitudinal joint: B

1R_P_HMA_10-19-10			
BEGIN STATION	END STATION	(P) Feet	REMARKS
384+71.50	385+97.48	2.50-8.46	Stage 2
385+97.48	386+49.33	8.46	Stage 2
386+49.33	386+67.46	8.46-11.46	Stage 2
386+67.46	386+98.13	11.46	Stage 2
386+98.13	387+02.71	10.33	Stage 2
387+73.54	387+78.63	10.33	Stage 2
387+78.63	387+87.23	10.33-11.46	Stage 2
387+87.23	388+18.01	11.46	Stage 2
388+18.01	388+36.14	11.46-8.46	Stage 2
388+36.14	388+79.12	8.46	Stage 2
388+79.12	389+20.34	8.46-6.61	Stage 2
389+20.34	389+20.34	6.61-2.50	Stage 2 (in return)

HMA Pavement Widening (Rt.)

Shoulder Jointing:
Longitudinal joint: B

1R_P_HMA_10-19-10			
BEGIN STATION	END STATION	(P) Feet	REMARKS
384+85.32	386+03.88	2.50-8.46	Stage 1 (Omit side road)
386+03.88	386+45.41	8.46	Stage 1
386+45.41	386+63.56	8.46-11.46	Stage 1
386+63.56	386+93.61	11.46	Stage 1
386+93.61	387+04.52	11.46-10.36	Stage 1
387+04.52	387+17.40	10.36	Stage 1
387+59.41	387+85.19	10.36	Stage 1
387+85.19	387+96.29	10.36-11.46	Stage 1
387+96.29	388+26.34	11.46	Stage 1
388+26.34	388+44.49	11.46-8.46	Stage 1
388+44.49	388+79.12	8.46	Stage 1
388+79.12	389+91.26	8.46-2.50	Stage 1 (Omit side road)

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
- Water Hydrant (Rural)
- Septic Tank
- Cistern
- L.P. Gas Tank (No Footing)
- Underground Storage Tank
- Latrine
- Satellite TV Dish
- Water Hook Up
- Radio Tower
- Tower Anchor
- Guardrail (Beam or Cable)
- Guard Post (one or two)
- Guard Post (over two)
- Filler Pipe
- Gas Valve
- Water Valve
- Speed Limit Sign
- Mile Marker Post
- Sign
- Traffic Signal Control Box
- Rail Road Signal Control Box
- Telephone Switch Box
- 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

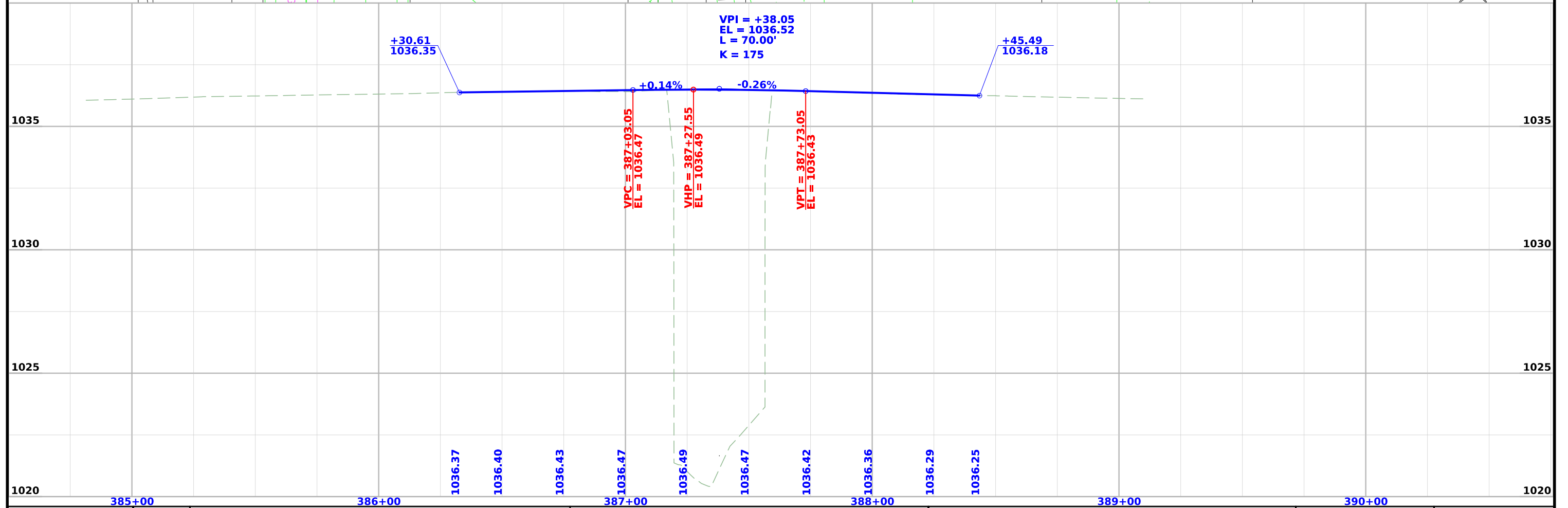
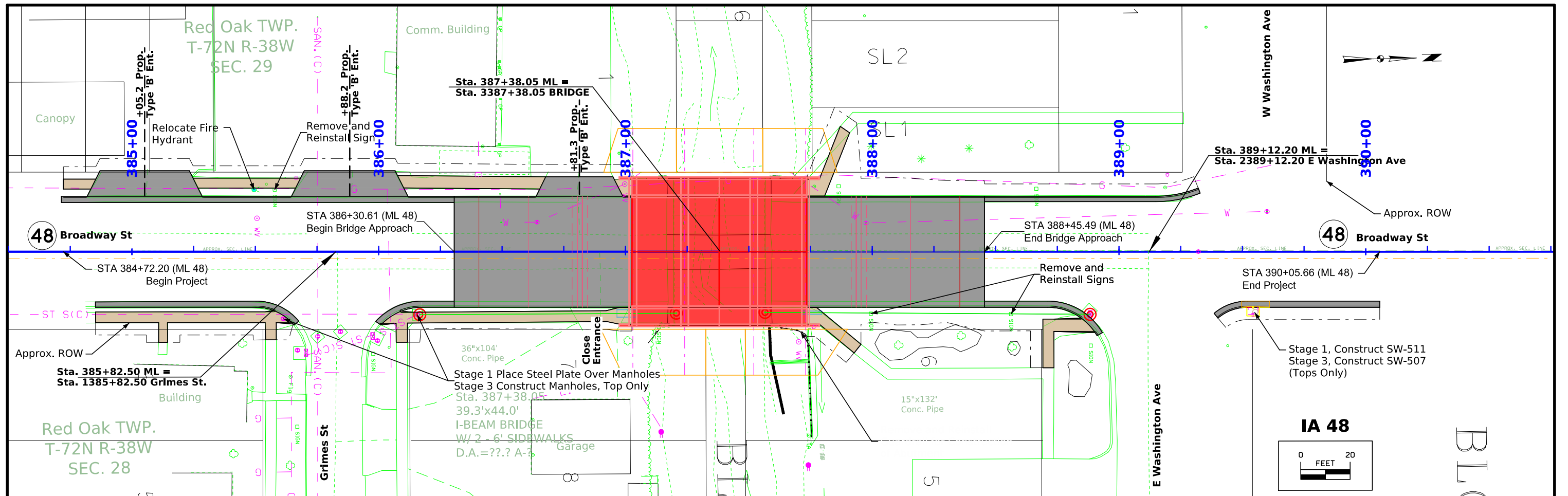
- Reference Point
- Station
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

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
- Access Control
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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



Survey Information

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.



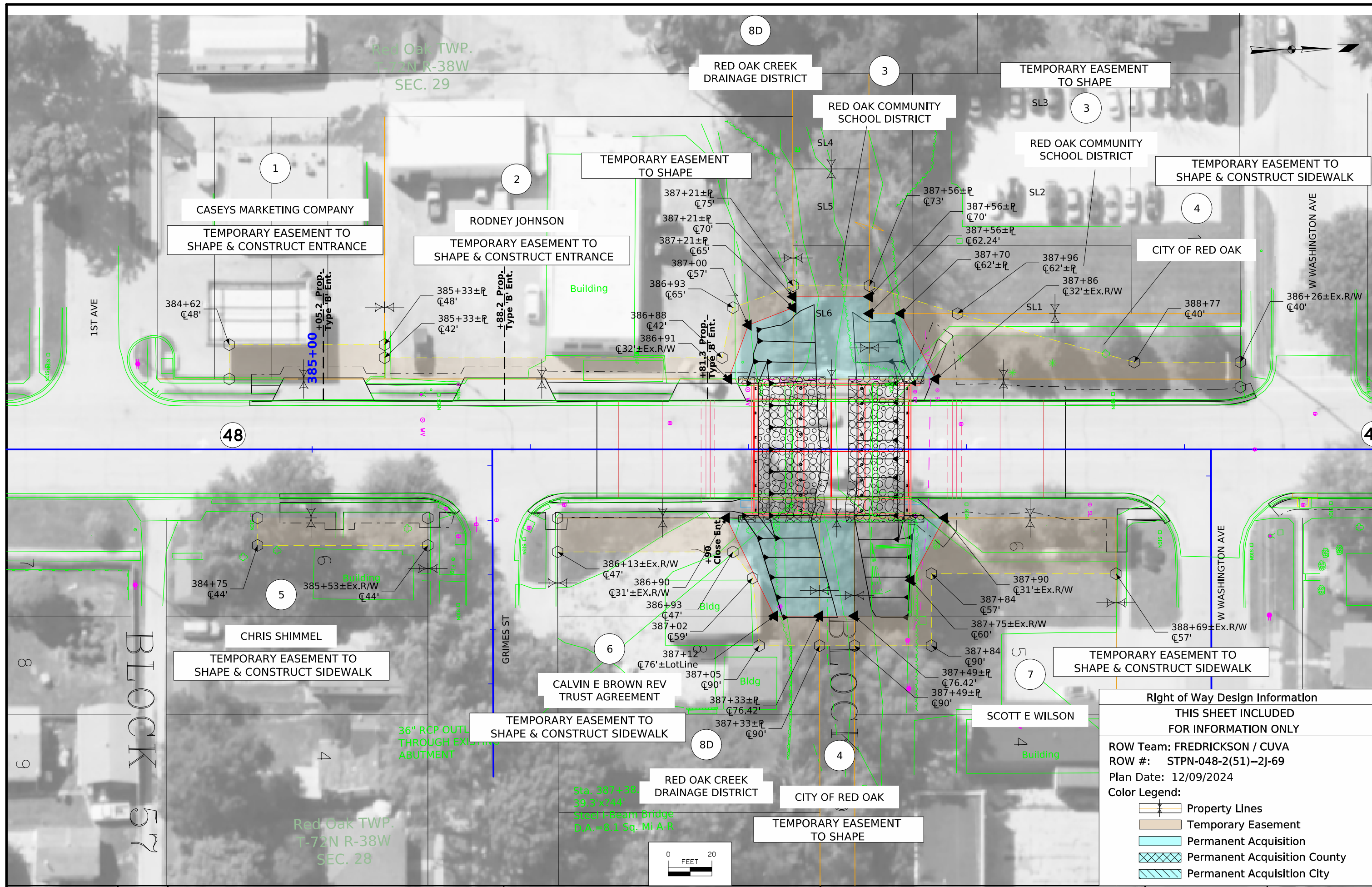
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment) - Iowa RCS Zone 12 (U.S. Survey Foot)

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



Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: FREDRICKSON / CUVA	
ROW #: STPN-048-2(51)--2J-69	
Plan Date: 12/09/2024	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition
	Permanent Acquisition County
	Permanent Acquisition City

TRAFFIC CONTROL PLAN

108_23A
8/15/22

STAGING NOTES

108_26A
8/15/22

111_01
10/14/22

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

PEDESTRIAN PATH CLOSURES

Refer to TC-601.

113_02
8/15/22

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

Line No.	Location	Side	Width of Closure (FT)	Type III Barricades* (No.)	Remarks

**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

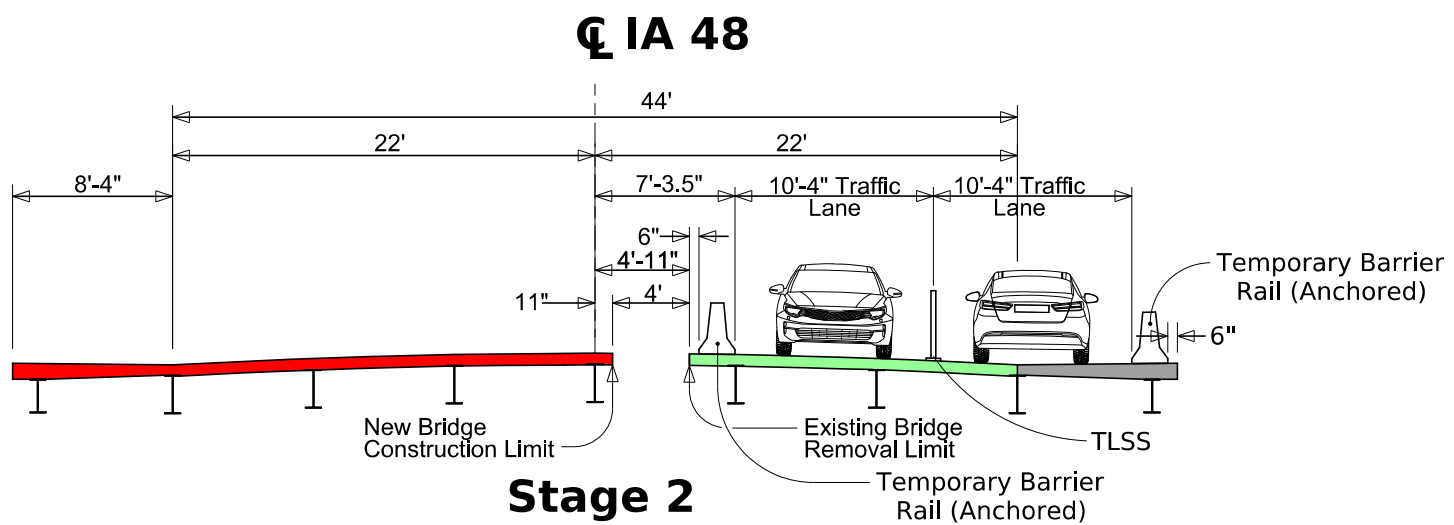
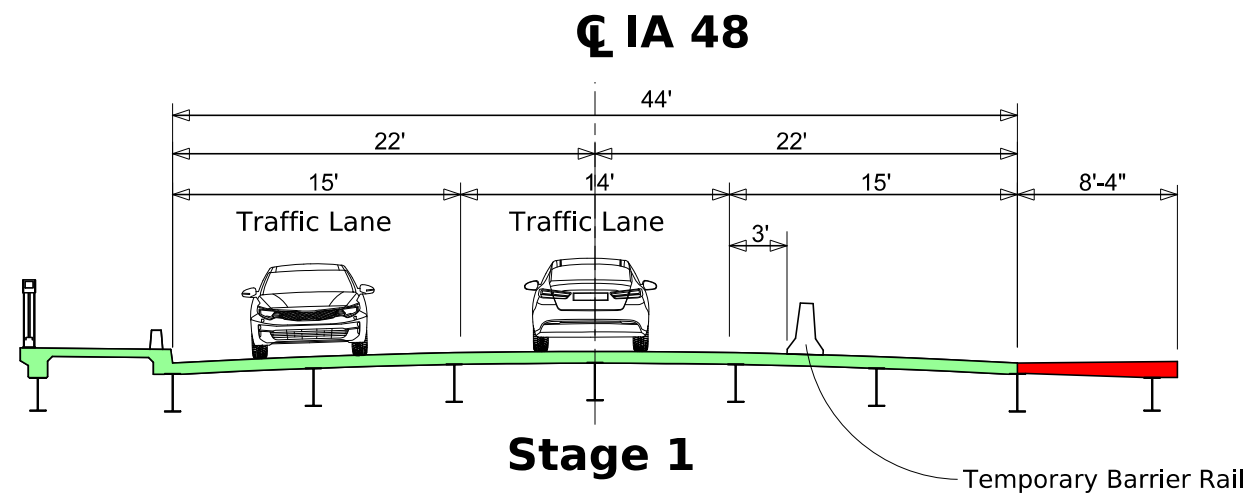
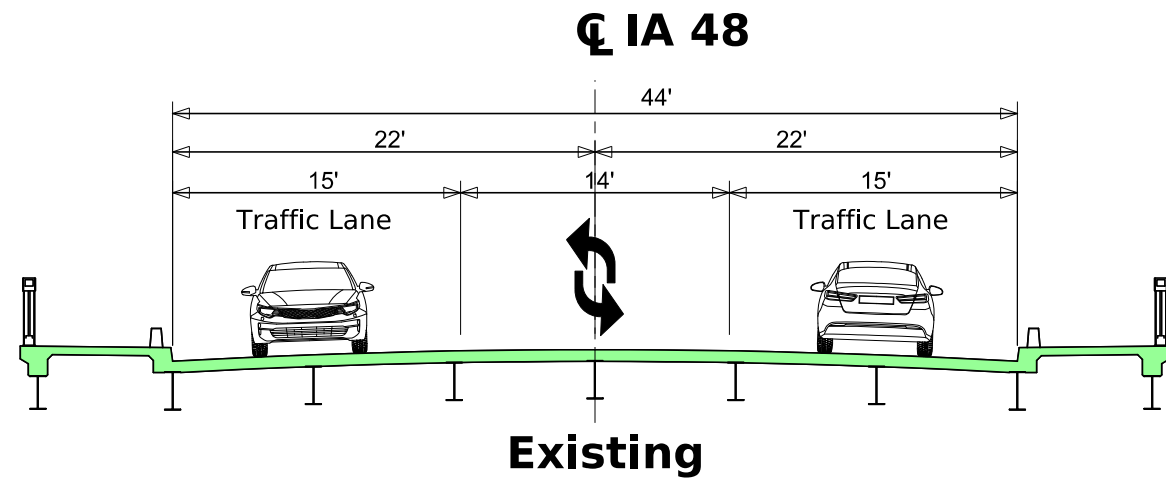
**PLAN VIEW PATTERN AND SYMBOL LEGEND
OF TRAFFIC CONTROL AND STAGING SHEETS**

	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		Lane Identification

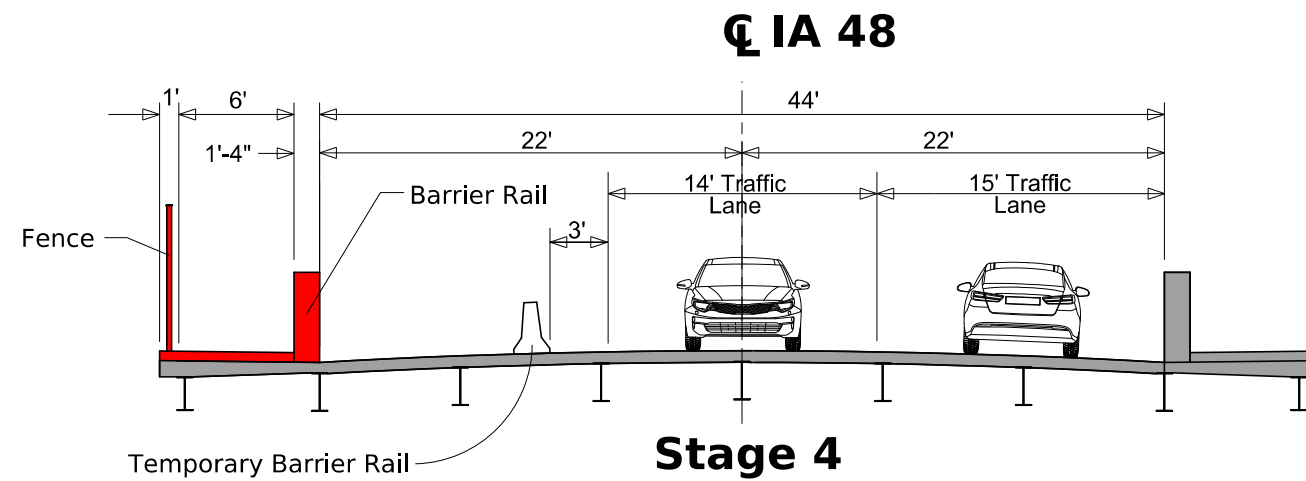
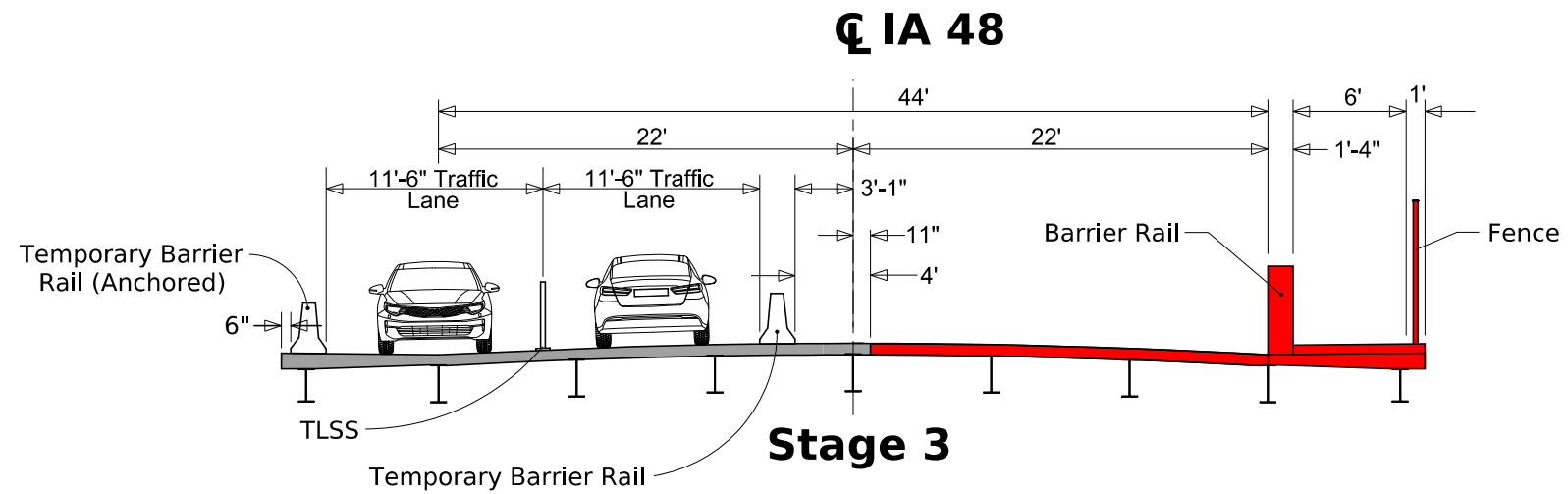
NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

**TRAFFIC CONTROL
AND
STAGING
LEGEND AND SYMBOL
INFORMATION SHEET**

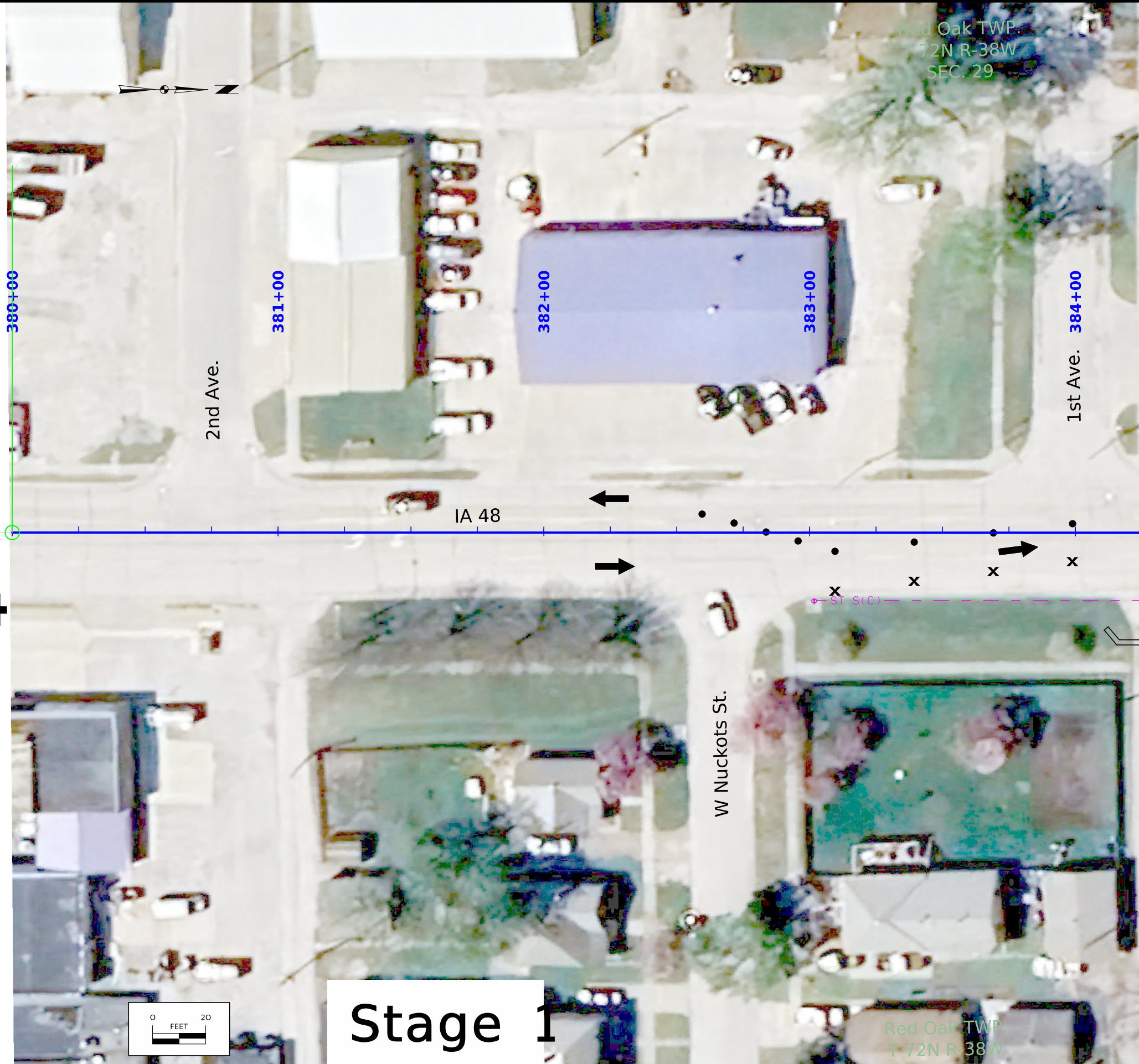
(COVERS SHEET SERIES J)



Stages 3 and 4
on next sheet



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



END
ROAD WORK

G20-2A
48" x 24"



ROAD
WORK
AHEAD

W20-1
48" x 48"



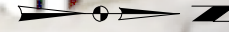
W24-1A
48" x 48"



Stage 1

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

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



Comm. Building

Comm. Building

Canopy

Comm. Building

383+00

1st Ave. 384+00

385+00

386+00

387+00

388+00

389+00

IA 48

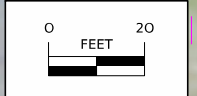
Cover Manhole with steel plate

Cover Manhole with steel plate

W Grimes St.

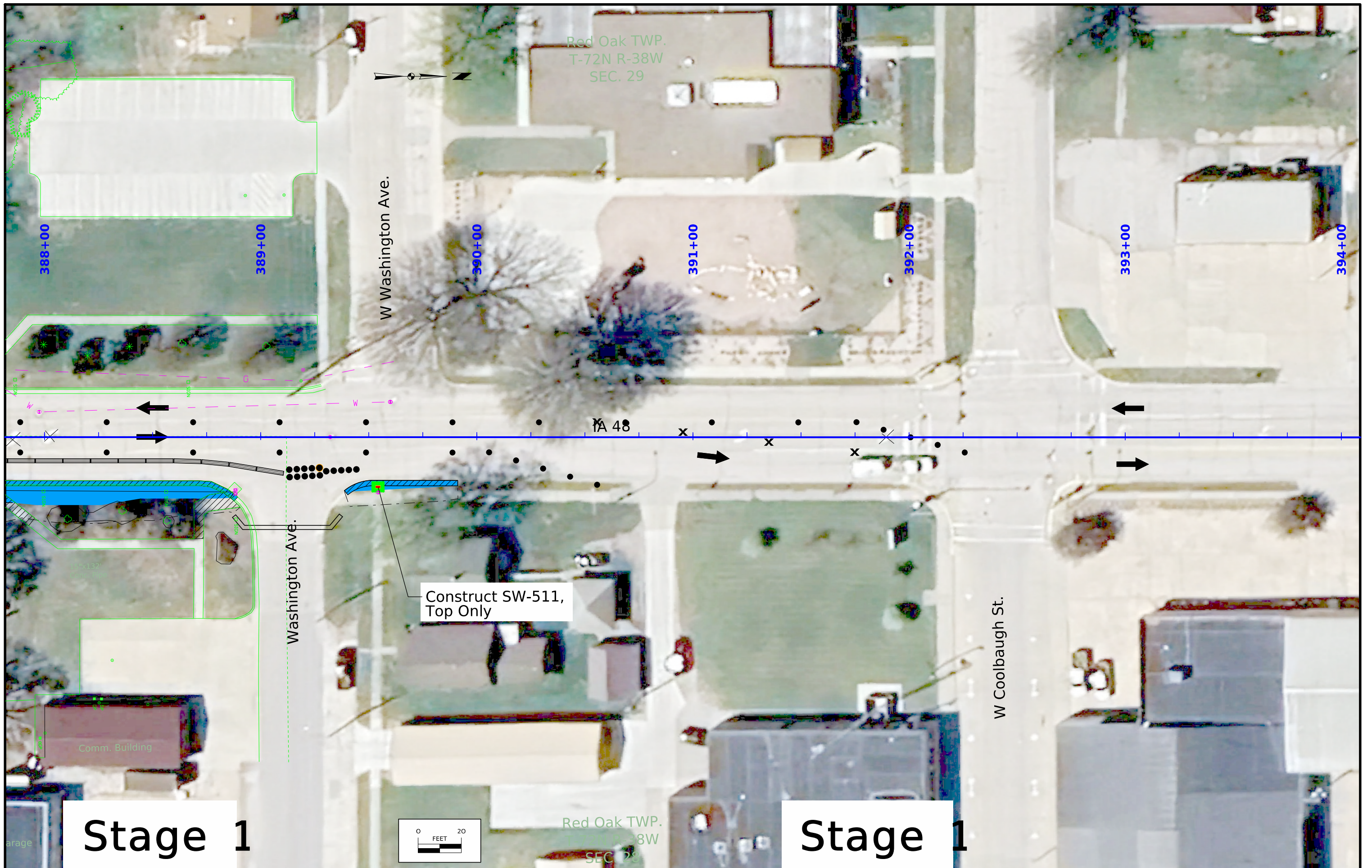
Washington Ave.

Sta. 387+36.05
39.3' x 44.3'
I-BEAM BRIDGE
W/ 2 - 6' SIDE WALK
D.A. = 1.1% A-4



Stage 1

Red Oak TWP
T-72N R-38W



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

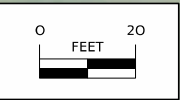
W Washington Ave.

W Coolbaugh St.

Construct SW-511,
Top Only

Stage 1

Stage 1



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



W20-1
48" x 48"



G20-2A
48" x 24"



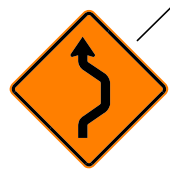
Stage 1

END
ROAD WORK

G20-2A
48" x 24"



W20-1
48" x 48"

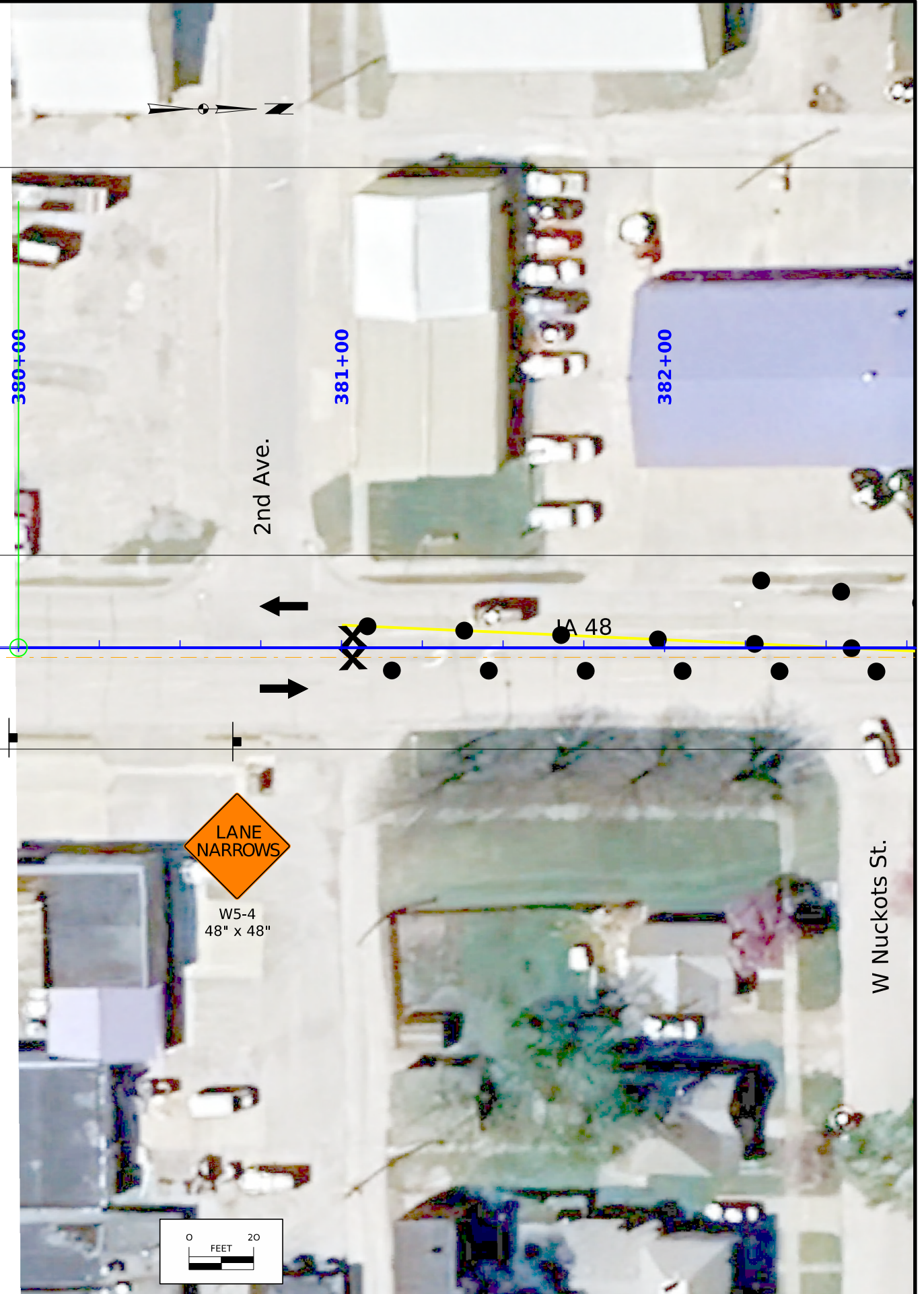


W24-1A
48" x 48"

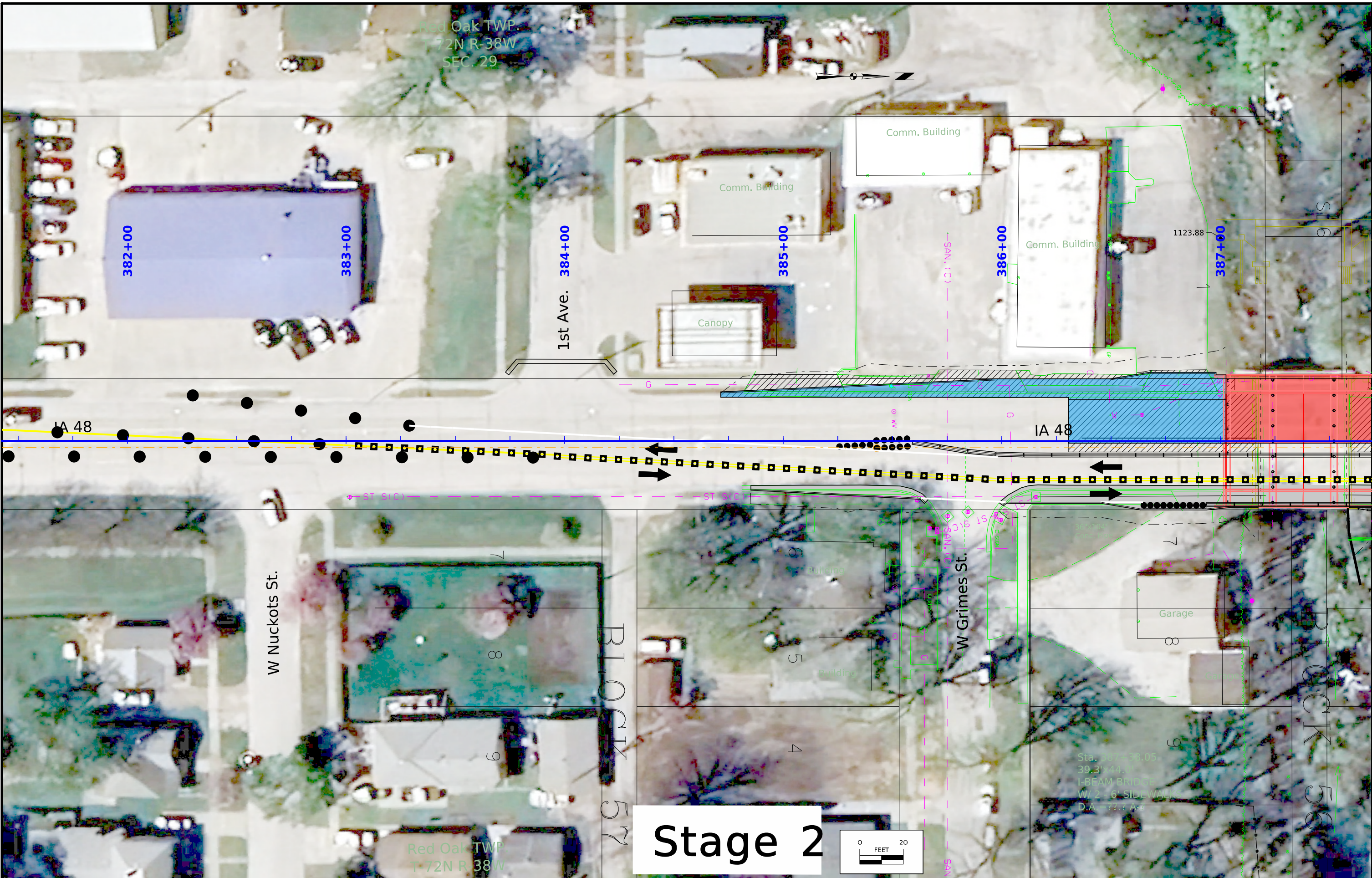
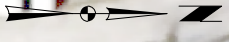


W5-4
48" x 48"

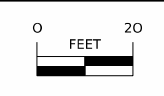
Stage 2



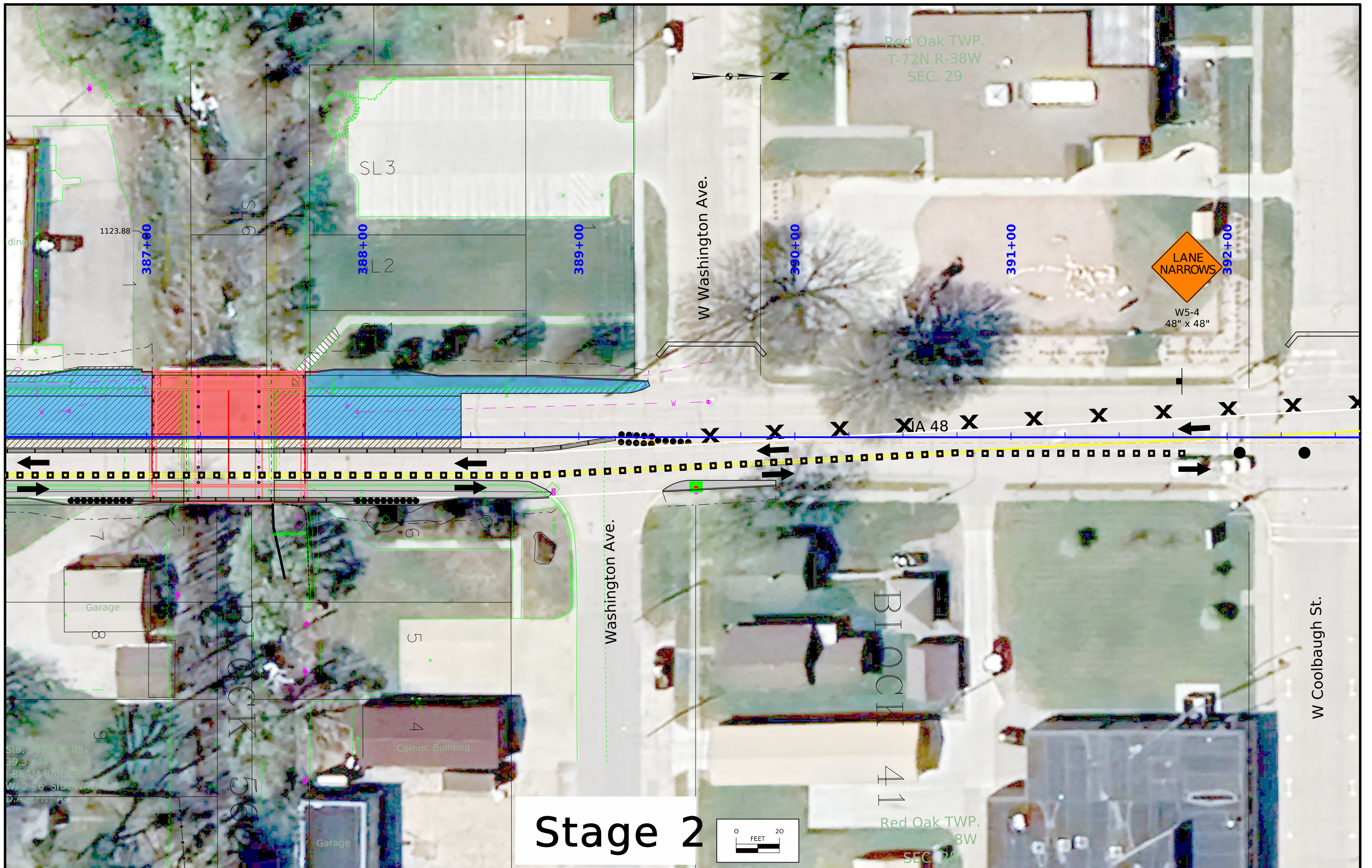
Red Oak TWP.
T-72N R-38W
SEC. 29



Stage 2

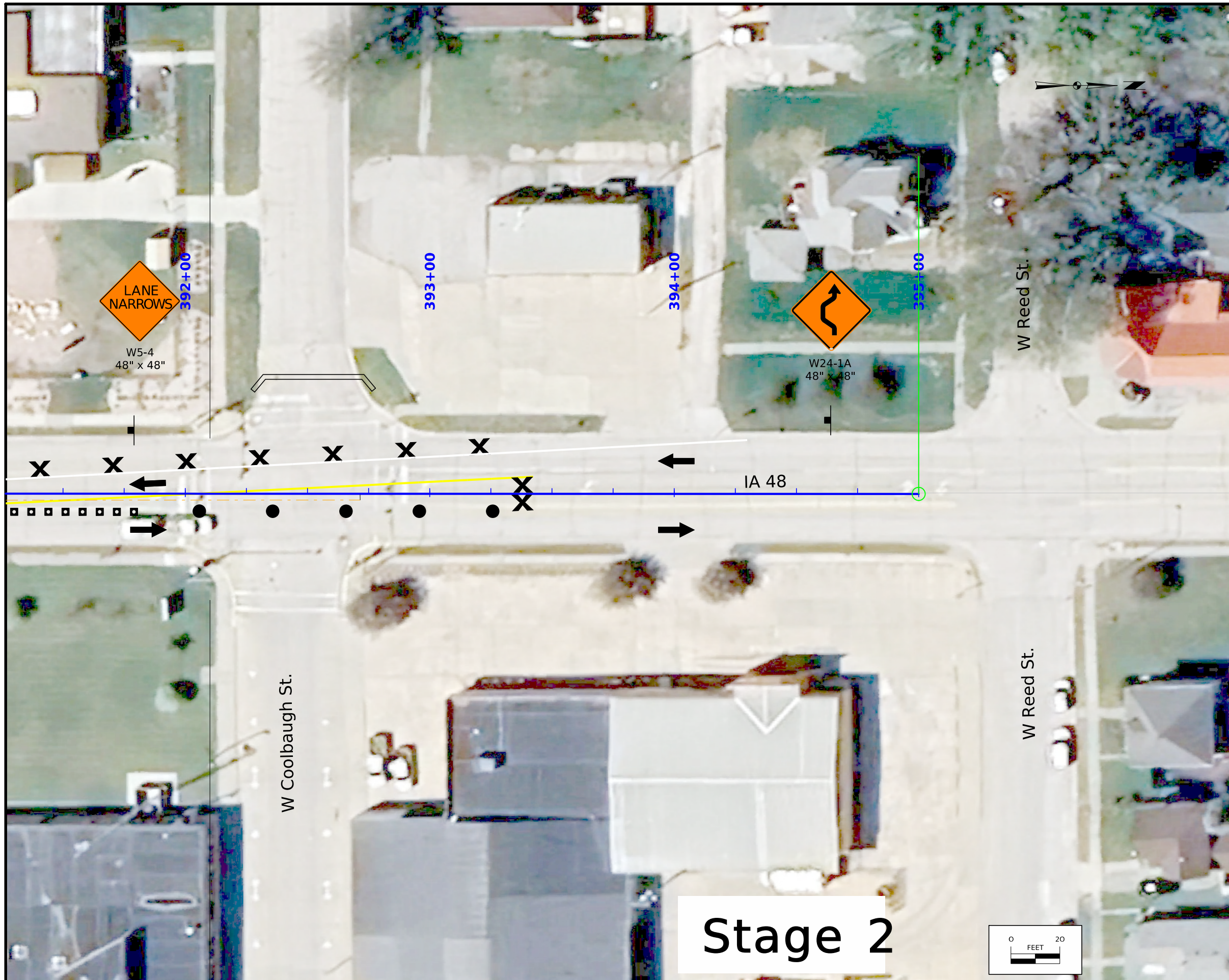


Sta. 387+36.05
39.3' x 44.3'
I-BEAM BRIDGE
W/ 2'-6" SIDE WALK
D.A. 1123.88



FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	MONTGOMERY COUNTY	PROJECT NUMBER BRF-048-2(50)--38-69	SHEET NUMBER J.14
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9:28:08 AM 8/15/2024 kromsey pw:\projectwise.dot.int.lan:PWMMain\Documents\Projects\6904801021\Bridge(50)_Bridge-Unspecified\Roadway\CADD_Files\Staging\ORD_69048050_WHKS_Staging.dgn



W5-4
48" x 48"

392+00

393+00

394+00

395+00



W24-1A
48" x 48"

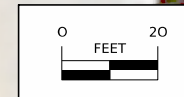
W Reed St.

IA 48

W Coolbaugh St.

W Reed St.

Stage 2



W20-1
48" x 48"



G20-2A
48" x 24"

END
ROAD WORK

G20-2A
48" x 24"



W20-1
48" x 48"



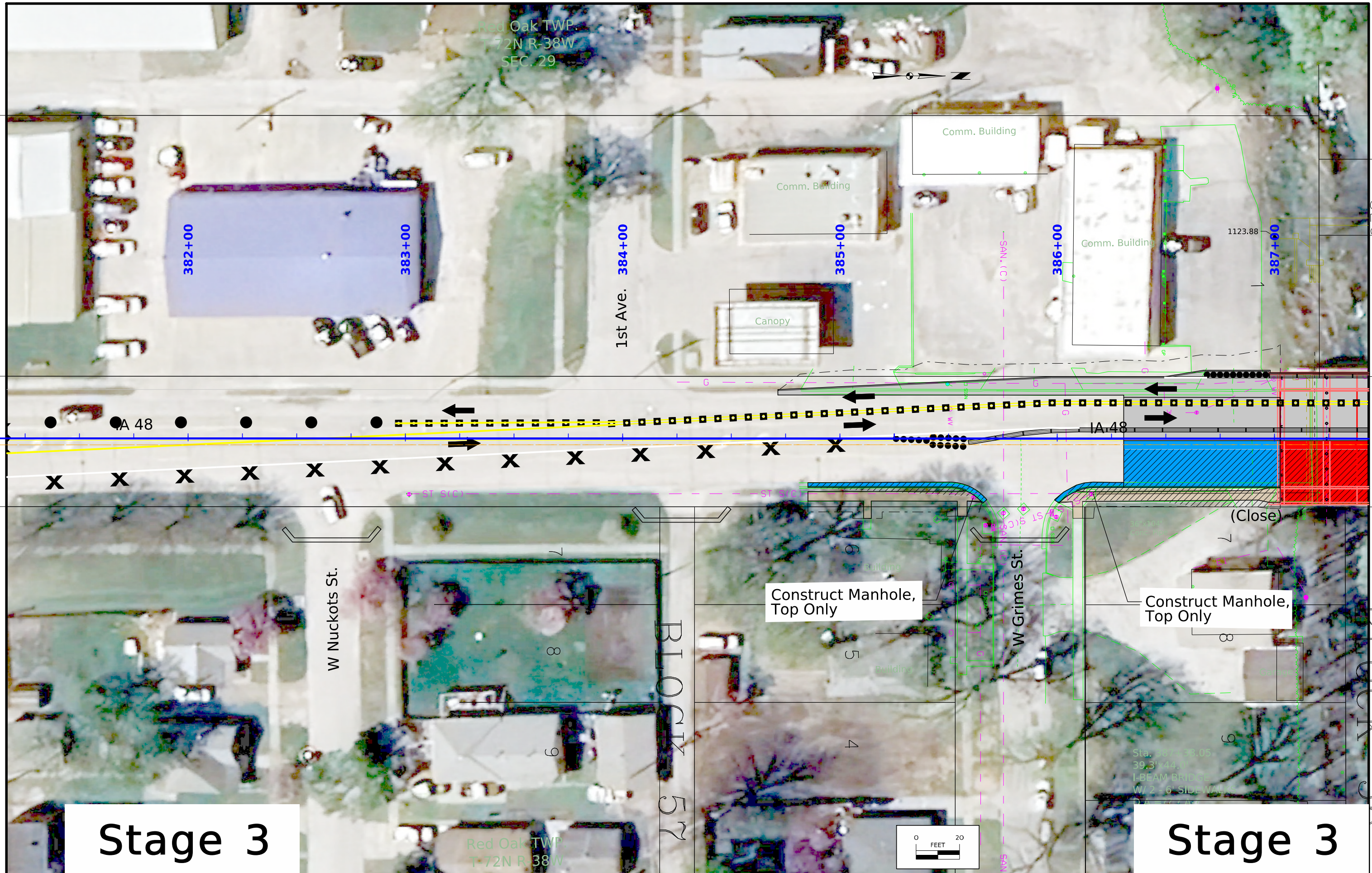
W24-1A
48" x 48"



W5-4
48" x 48"



Stage 3



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

Comm. Building

Comm. Building

Comm. Building

Canopy

1st Ave. 384+00

382+00

383+00

385+00

386+00

387+00

1123.88

A 48

IA 48

W Nuckots St.

BLOOMING 57

W Grimes St.

Construct Manhole,
Top Only

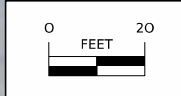
Construct Manhole,
Top Only

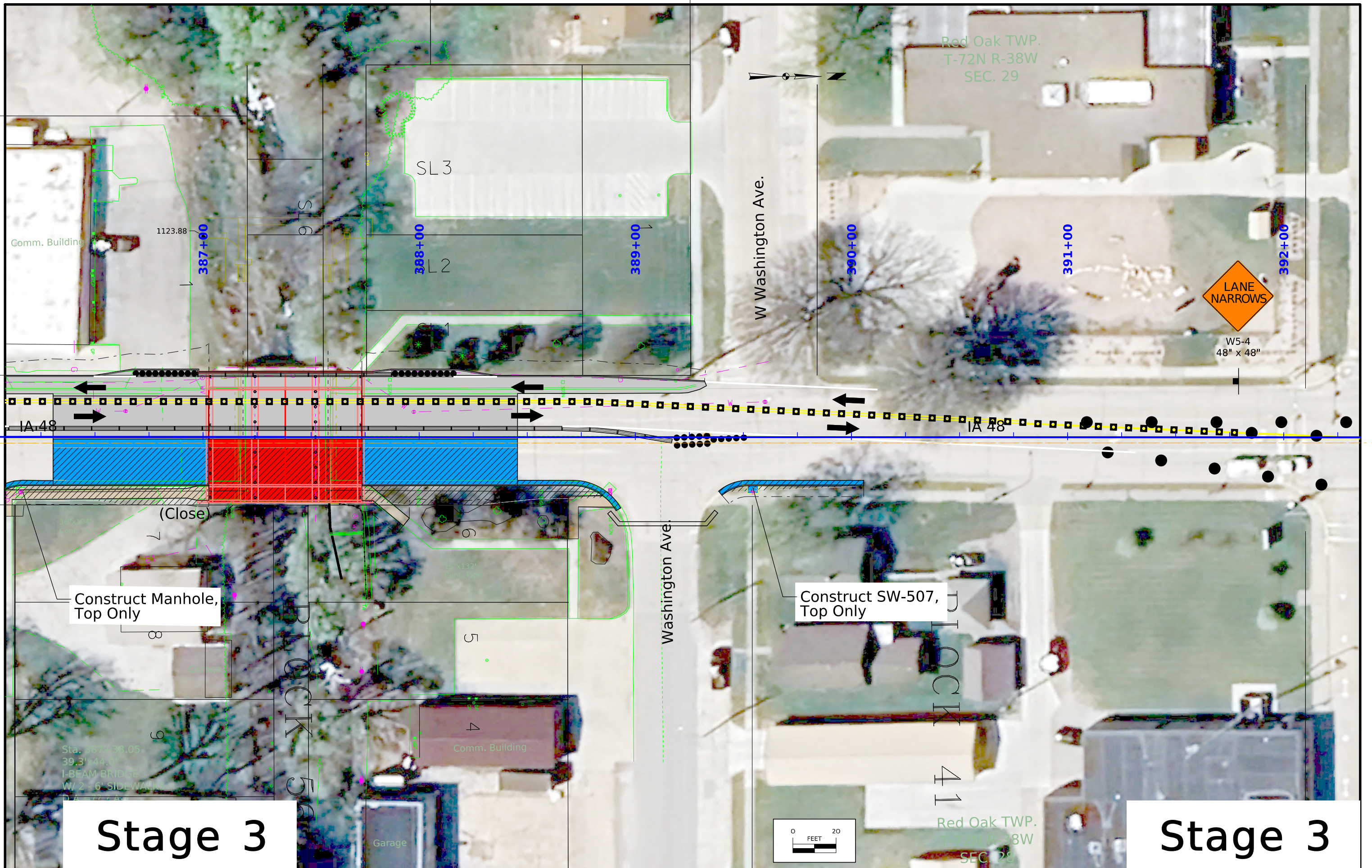
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Sta. 387+30.05
39.3' x 44.5'
I-BEAM BRIDGE
W/ 2' 6" SIDEWALKS

Stage 3

Stage 3



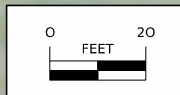


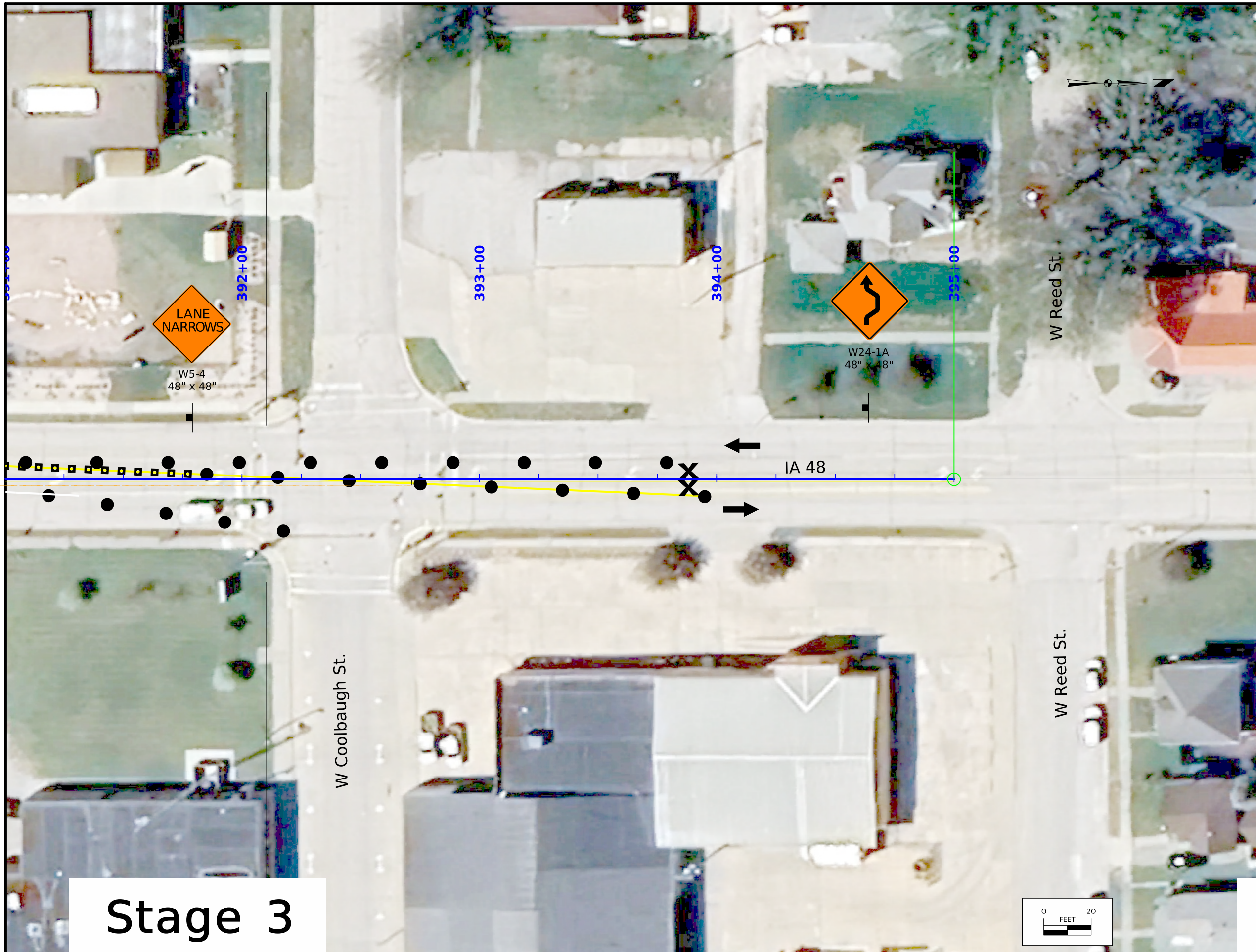
Construct Manhole,
Top Only

Construct SW-507,
Top Only

Stage 3

Stage 3





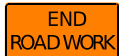
W5-4
48" x 48"



W24-1A
48" x 48"



W20-1
48" x 48"



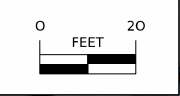
G20-2A
48" x 24"

Stage 3

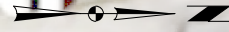
Stage 3



Stage 4



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



382+00

383+00

1st Ave. 384+00

385+00

386+00

387+00

Comm. Building

Comm. Building

Canopy

Comm. Building

1123.88

(Close)

IA 48

IA 48

W Nuckots St.

BLOCK 57

W Grimes St.

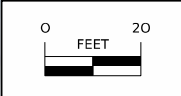
BLOCK 5

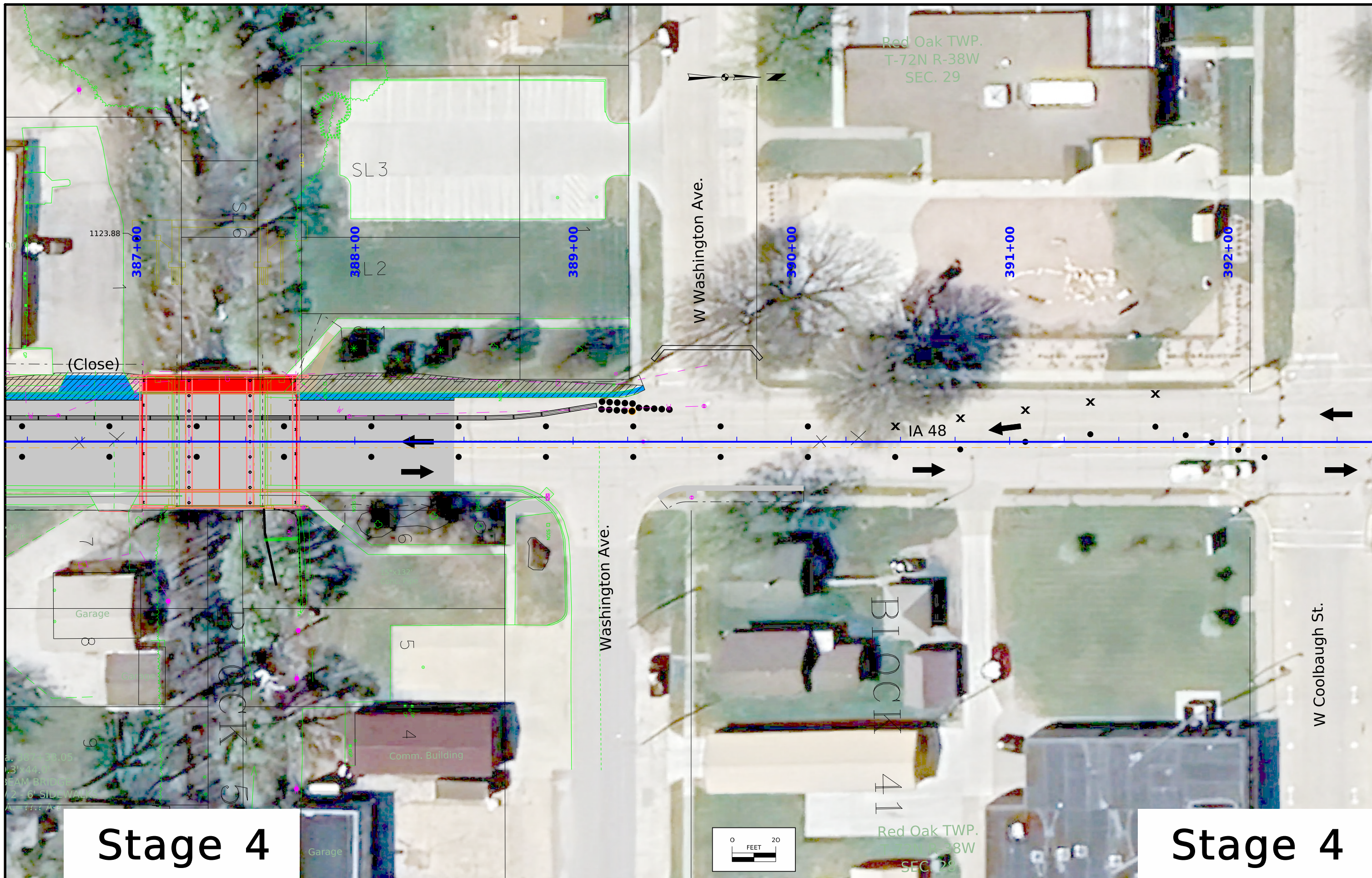
Sta. 387+30.05
39.3' x 44.0'
I-BEAM BRIDGE
W/ 2 - 6' SIDEWALKS
D.A. 1.11%

Stage 4

Stage 4

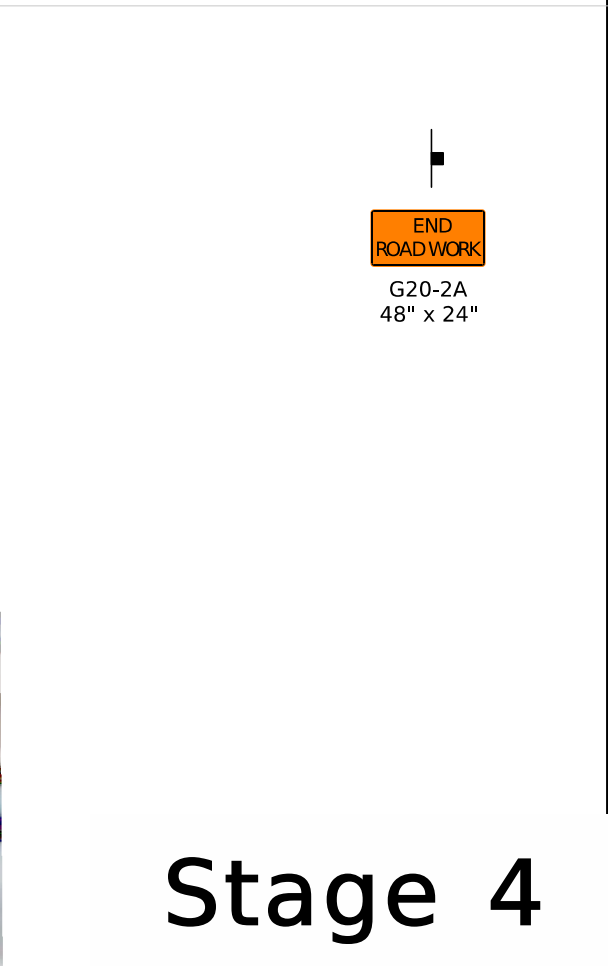
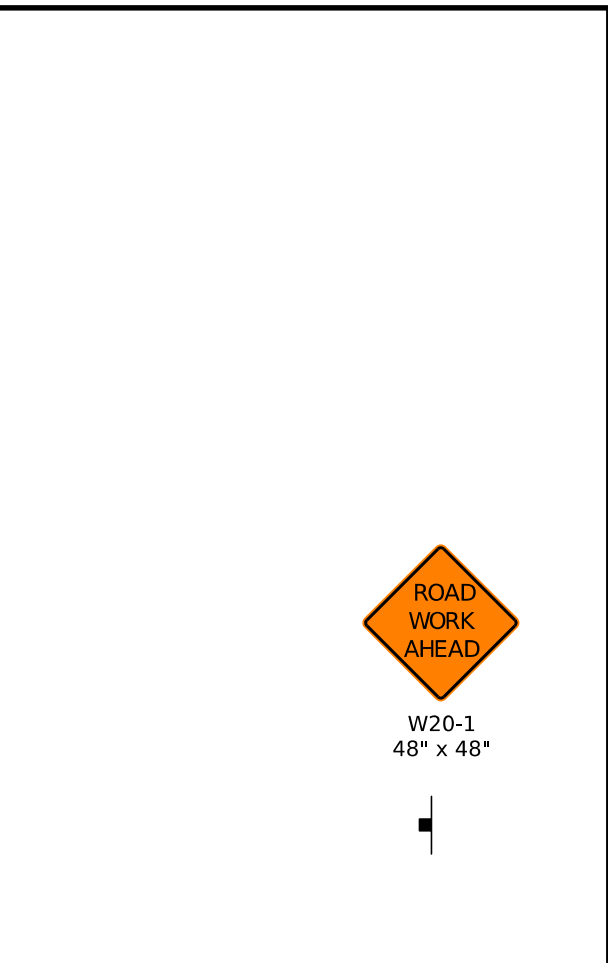
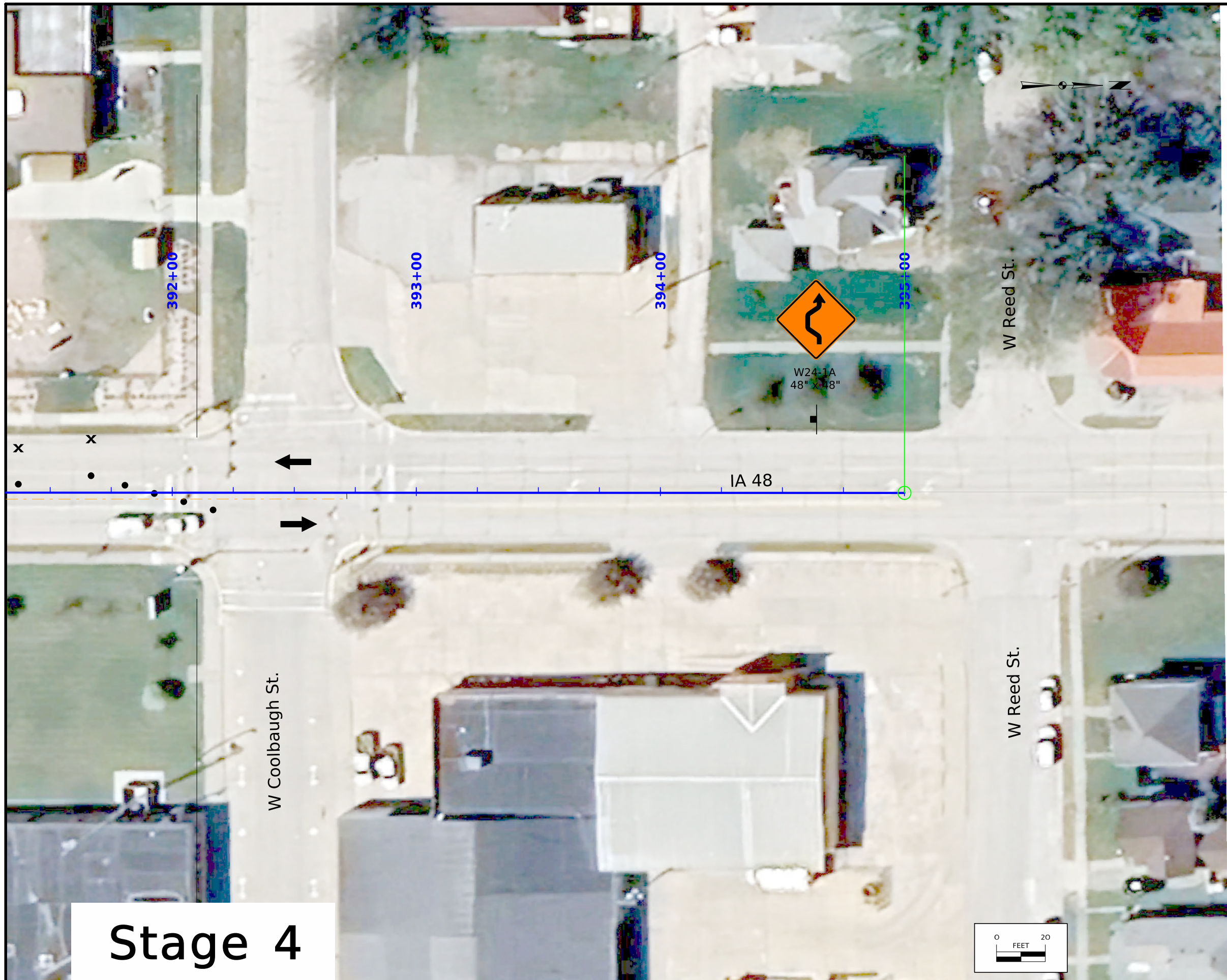
Red Oak TWP.
T-72N R-38W





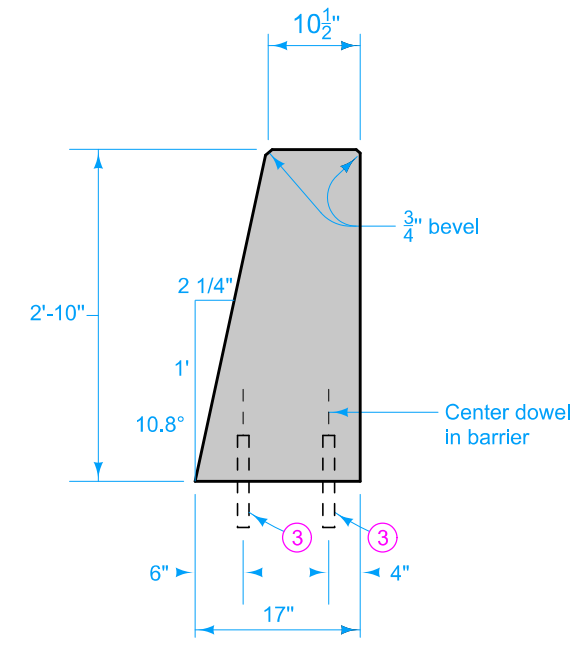
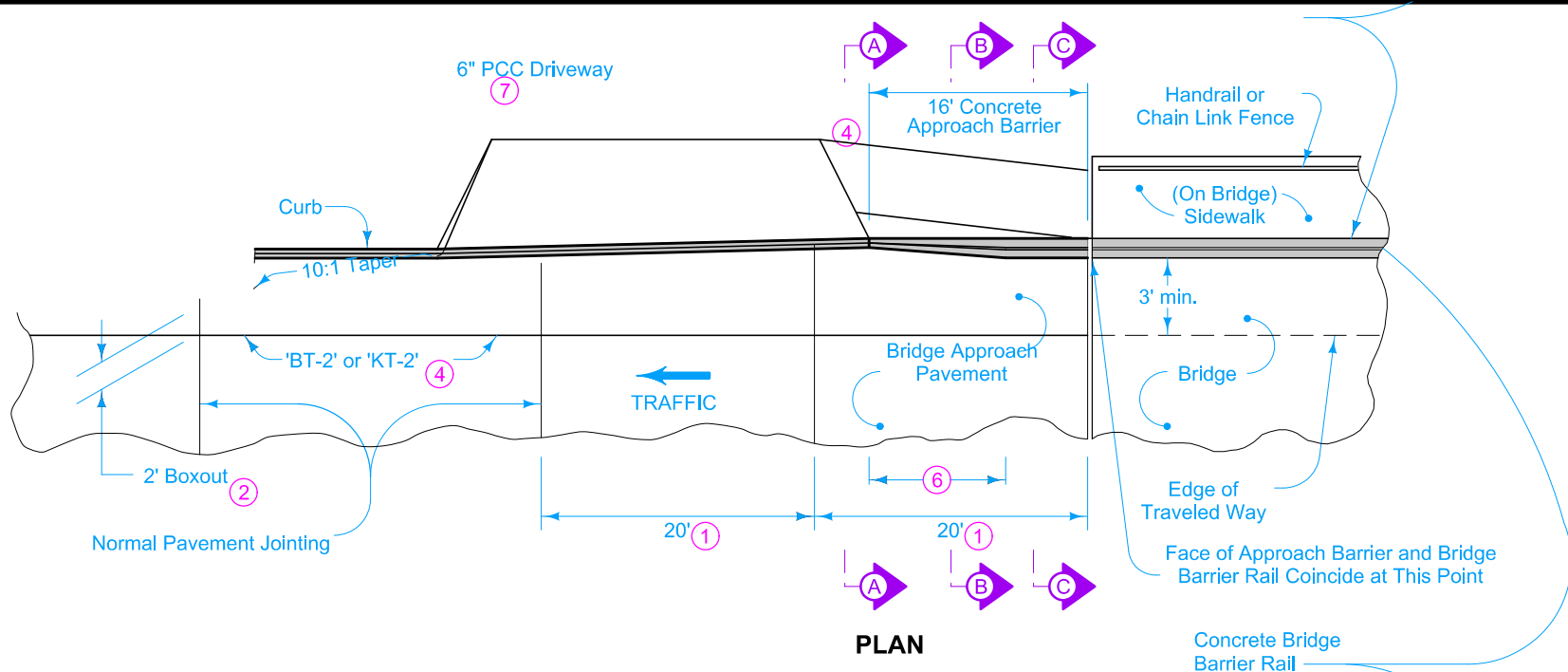
Stage 4

Stage 4



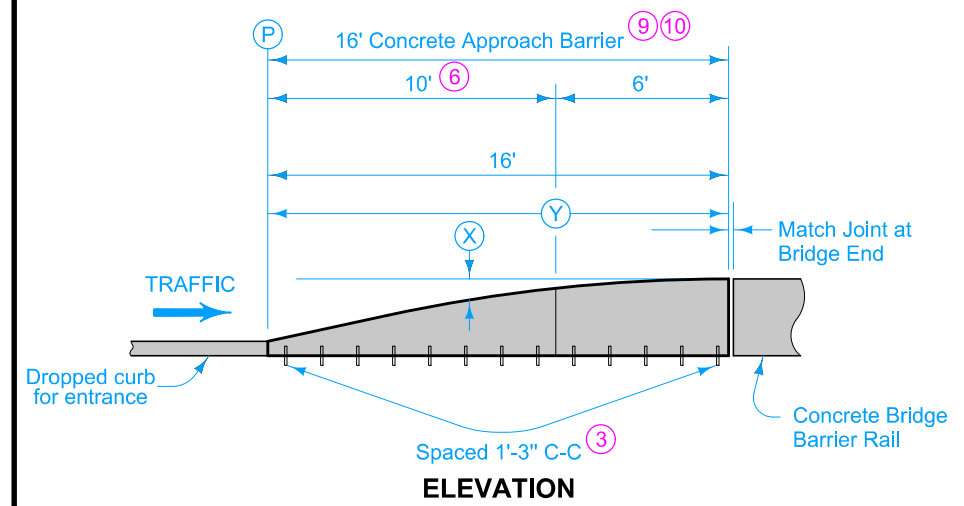
Stage 4

Stage 4

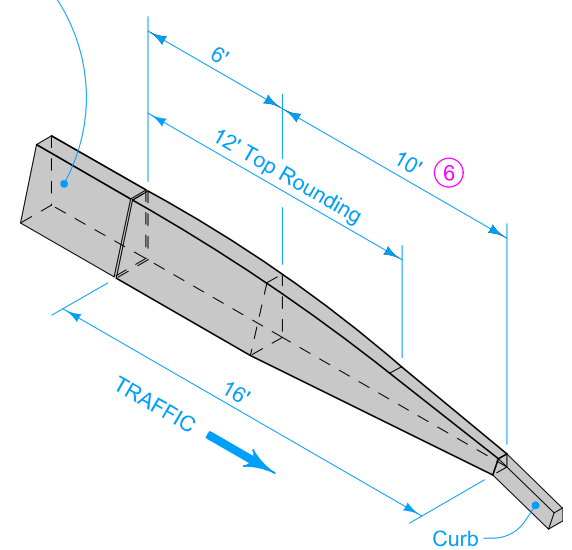


FULL BARRIER RAIL SECTION

- Install a 'C' joint in concrete approach barrier to match the location of each joint in both roadway and bridge approach pavement.
- 1 Typical joint spacing and location. Follow specific project requirements as directed by the Engineer.
 - 2 Match boxout width to existing curb and gutter joint. Use 2 foot wide boxout where curb and gutter are not constructed.
 - 3 #8 x 8 inch deformed bars or 1 inch diameter smooth.
 - 4 For joint detail, see PV-101.
 - 5 Bottom width of barrier is maintained at 17 inches.
 - 6 Bottom width of barrier transitions from 8 to 17 inches.
 - 7 Required sidewalk will be measured and paid for separately.
 - 8 Additional concrete quantity required for extended roadway pavement will be included in roadway paving quantity.
 - 9 Place no delineator or object marker in front of, or on, the barrier.
 - 10 Approximately 3 cubic yards of concrete are required to construct barrier as shown. Amount may vary depending on individual site requirements.

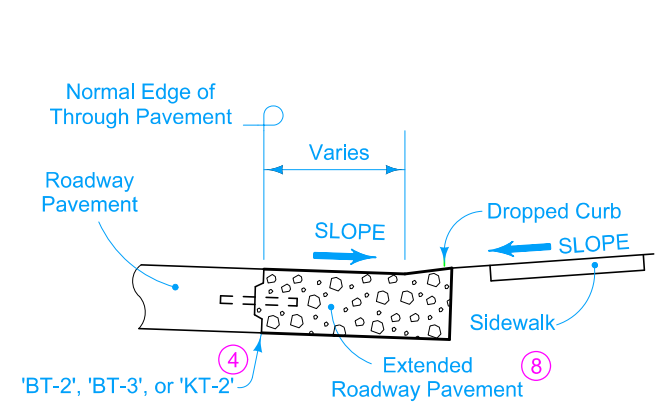


ELEVATION

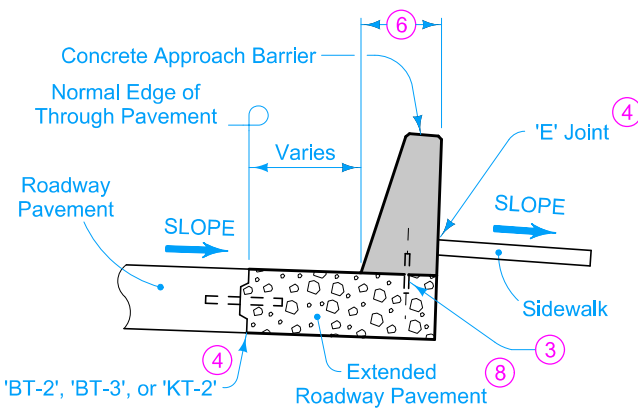


ISOMETRIC VIEW

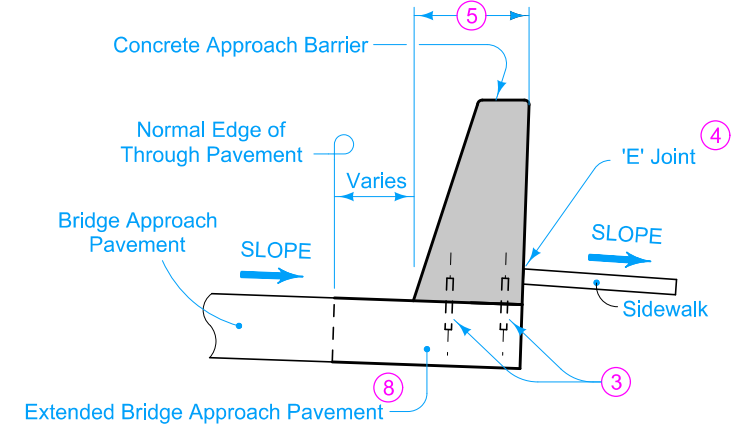
OFFSETS FOR ROUNDED BARRIER TOP																	
Y = Distance from (P)	ft.	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0
X = Offset to Rounded Top	ft.	2.13	1.91	1.70	1.48	1.26	1.06	0.87	0.70	0.54	0.42	0.30	0.20	0.12	0.06	0.02	0.00



SECTION A-A



SECTION B-B



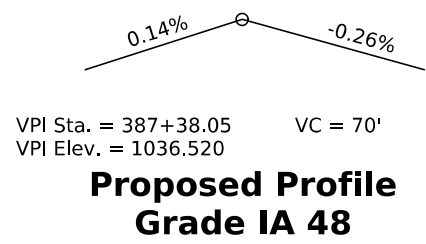
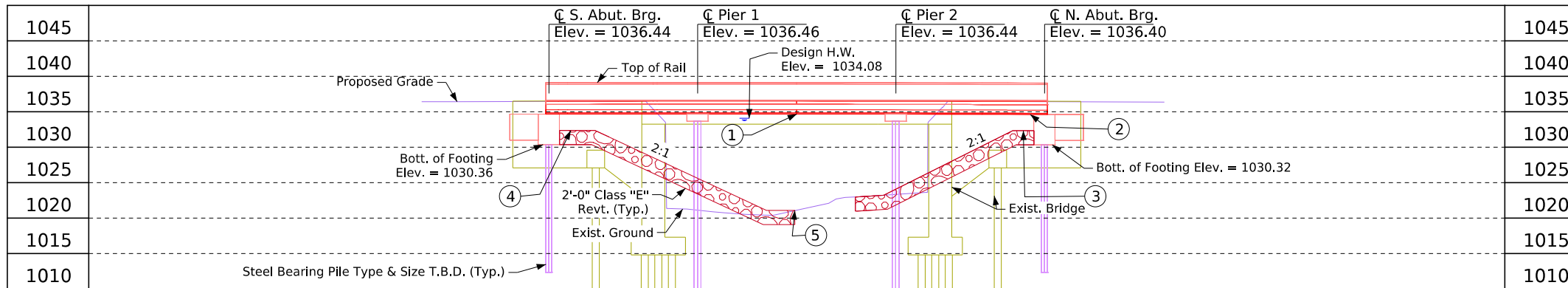
SECTION C-C

Possible Contract Item:
Concrete Barrier, Tapered End, BA-108

Possible Tabulation:
108-18B

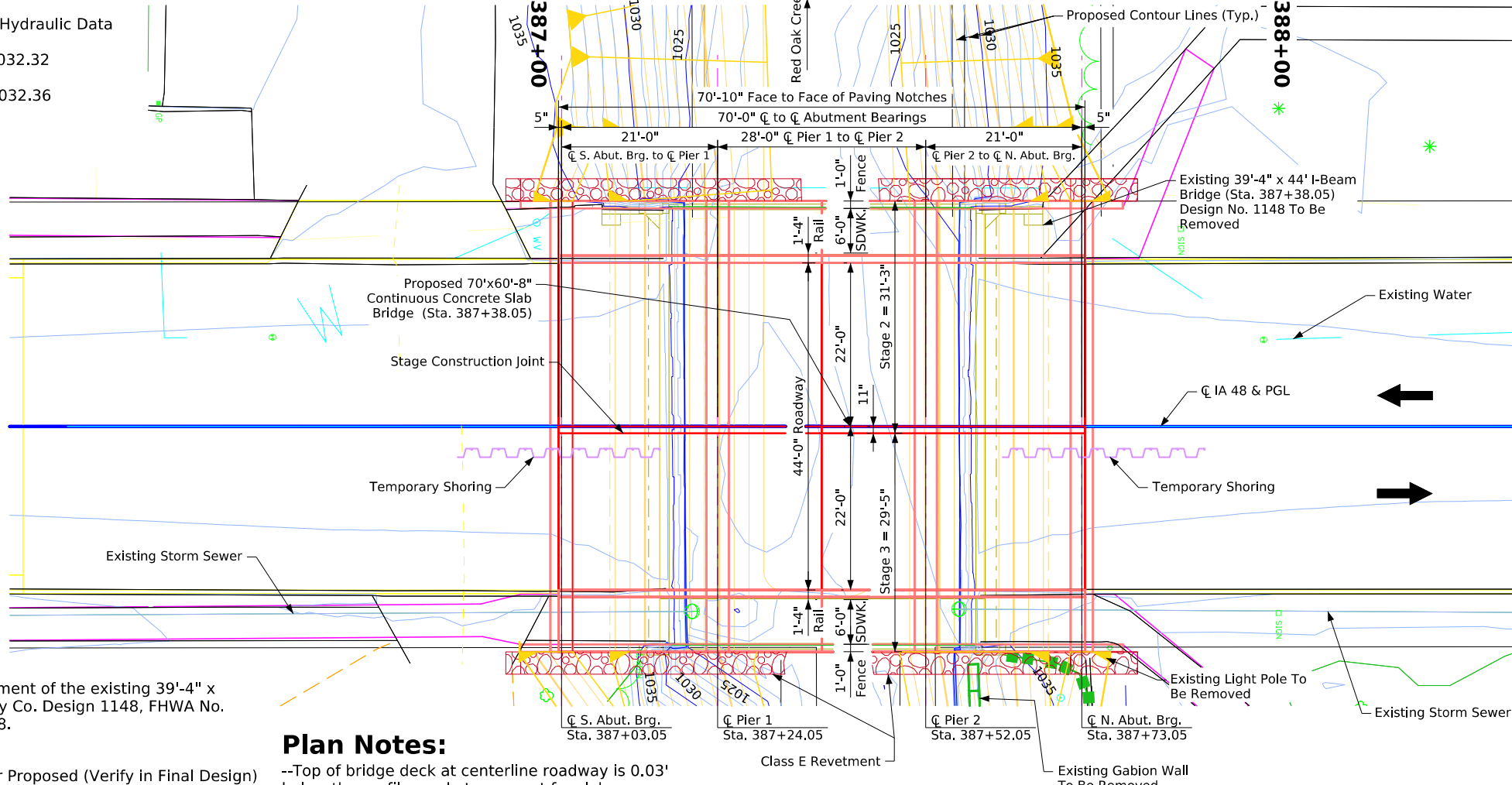
<h1>MODIFIED</h1>
MODIFICATIONS: Shortened length.
CONCRETE BARRIER TAPERED END SECTION
BA-108 SHEET 1 of 1

Control Point: 98 CP FD. FENO MON. 6' E OF SE CORNER OF PARKING LOT, N=6236638.61, E=22090669.41, EL.=1035.89
 99 CP FD. FENO MON. 38' E OF US 48 CL, 32' N OF WASHINGTON ST, N=6236783.02, E=22090806.12, EL.=1036.66



- ① Channel Low Slab = See Hydraulic Data
- ② Operational Low Slab = See Hydraulic Data
- ③ Top of North Berm Elev. = 1032.32
- ④ Top of South Berm Elev. = 1032.36
- ⑤ Streambed Elev. = 1021.2 ±

Longitudinal Section Along Centerline Approach Roadway



Hydraulic Data
 RIDB: RedOakC_Mont_0.65
 Drainage Area = 8.1 Sq. Mi.
 Site Stream Slope (HGL) = 0.48%
 Avg. Low Water Stage = 1022.1
 Operational Low Slab = 1034.62
 Channel Low Slab = 1034.68

Site is located within the City of Red Oak within Montgomery County Flood Insurance Study (FIS) Dated May 2, 2016. FIS Datum NAVD 88. Flows are based on the FIS flows.

Q₁₀ (Design) = 3,740 cfs
 Stage = 1034.08
 Avg. Bridge Velocity = 7.5 fps
 Operational Freeboard = 0.39 ft.
 Calculated Check Scour = 1014.6

Q₅₀ = 6,320 cfs
 Stage = 1037.41
 Avg. Bridge Velocity = 3.0 fps

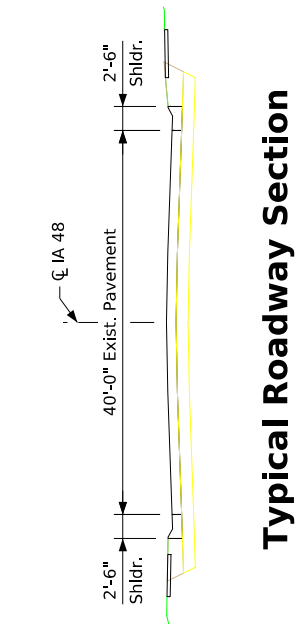
Q₁₀₀ (FIS Base Flood) = 7,520 cfs
 Stage = 1038.01
 Backwater = 0.31 ft.
 Avg. Bridge Velocity = 2.8 fps

Q₂₀₀ = 8,940 cfs
 Stage = 1038.50
 Calculated Design Scour = 1015.3

Q₅₀₀ = 10,740 cfs
 Stage = 1039.14

Roadway Overtop El. 1034.9
 Sta. 380+80 and 392+30

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



Typical Roadway Section

General Notes:

--This design is for the replacement of the existing 39'-4" x 44' I-Beam Bridge, Montgomery Co. Design 1148, FHWA No. 037710, Maint. No. 6922.35048.

Design Notes:

- BMBR TL-2 Separation Barrier Proposed (Verify in Final Design)
- Pier Type - Pile Bent (Encasement to be Determined in Final Design)
- Bridge Aesthetics to be Incorporated During Final Design
- An Iowa DNR Flood Plain Permit is required. Preliminary Design will submit the application and place the permit in the PW Regulatory_Permits subdirectory folder upon receipt.
- The bridge does not meet Iowa DOT's desired freeboard per BDM 3.2.2.4 (Raising the grade will result in excessive costs and damages). Final design aspects in the BDM related to inundation required.
- Final Design shall consider the need for temporary shoring to accommodate staging of bridge construction and include in the final plans as necessary.
- Capacity of existing bridge exterior beams shall be verified for detour traffic live loading. Strengthening of existing exterior beams shall be evaluated and included in final plans if necessary.

Plan Notes:

- Top of bridge deck at centerline roadway is 0.03' below the profile grade to account for slab cross slope and parabolic crown.
- The bridge will be designed to withstand the applicable effects of ice and the horizontal stream loads and uplift forces associated with the Q₁₀₀ [BDM 3.2.2.4]
- Top of bridge slab at centerline roadway is 0.03' below the profile grade to account for slab cross slope and parabolic crown.
- Class E revetment stone is embedded.

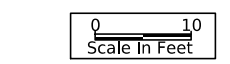
Utilities Note:

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

Situation Plan



Location

IA 48 over Red Oak Creek
 T-72N R-38W
 Section 28
 Red Oak Township
 Montgomery County
 City of Road Oak
 Bridge Maint. No. 6922.35048
 FHWA No. 037710 (Existing)
 FHWA No. 037711 (Proposed)
 Latitude 41.007453°
 Longitude -95.232746°

Hydraulic Design

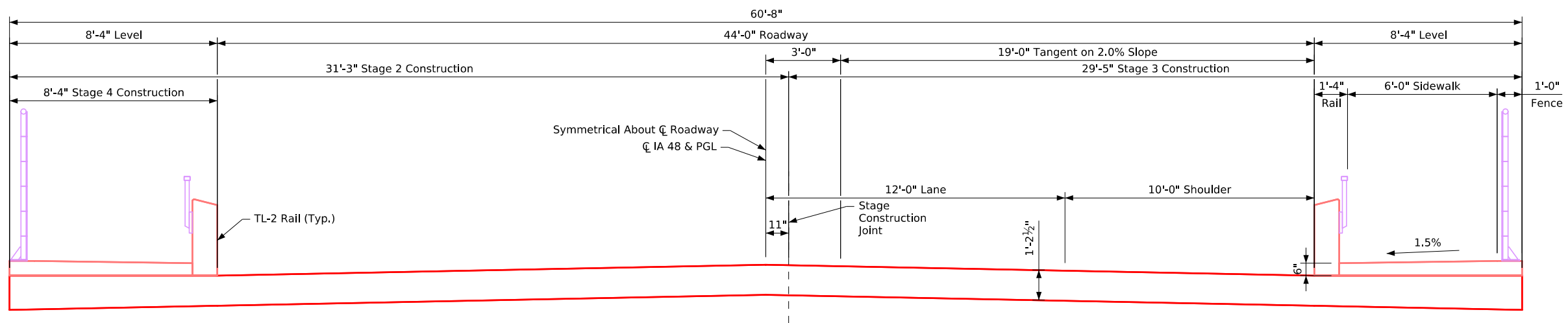
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature Brian J. Birkland Date _____
 Printed or Typed Name
 My license renewal date is December 31, 2024

Pages or sheets covered by this seal: V.1-V.3



Preliminary
 Design For 0° Skew
70'-0" x 44'-0" Continuous Concrete Slab Bridge
 21'-0" End Spans 28'-0" Interior Span
Situation Plan
 STA. 387+38.05 (IA 48) Turn-in Date: August 2024
Montgomery County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. TBD Design Sheet No. 1 of 3 FHWA No. 037711



Transverse Section
(Looking North)

Preliminary
Design For 0° Skew

**70'-0" x 44'-0" Continuous
Concrete Slab Bridge**

21'-0" End Spans 28'-0" Interior Span

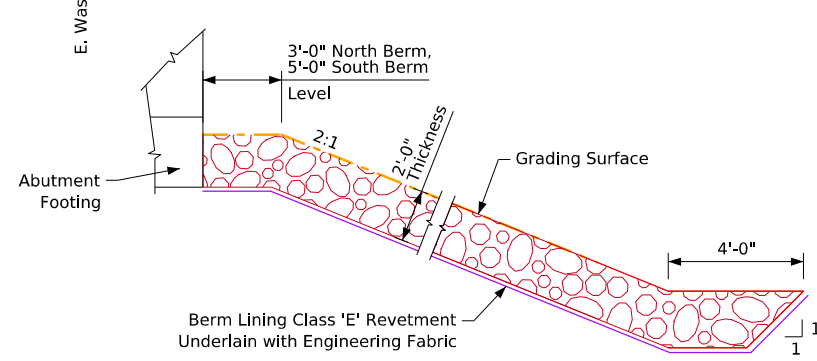
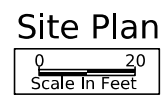
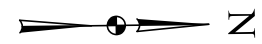
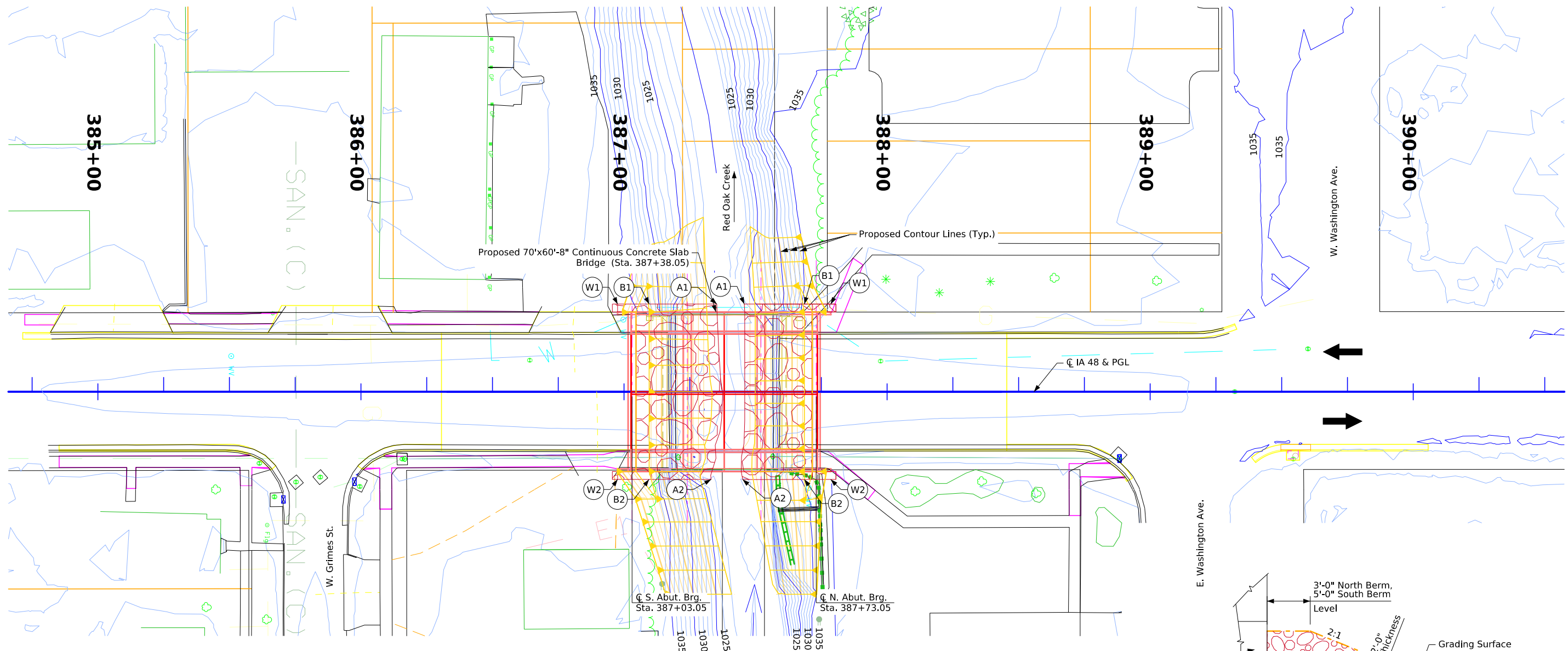
Situation Plan - Misc.

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

Montgomery County
IOWA DEPARTMENT OF TRANSPORTATION

Design No. TBD Design Sheet No. 2 of 3 FHWA No. 037711

Control Point: 98 CP FD. FENO MON. 6' E OF SE CORNER OF PARKING LOT, N=6236638.61, E=22090669.41, EL.=1035.89
 99 CP FD. FENO MON. 38' E OF US 48 CL, 32' N OF WASHINGTON ST, N=6236783.02, E=22090806.12, EL.=1036.66



Berm Slope Location Table						
Points	South Abutment			North Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	387+35.25	33.33' Lt.	1021.51	387+45.69	33.33' Lt.	1023.00
A2	387+33.11	33.33' Rt.	1023.00	387+45.07	33.33' Rt.	1022.16
B1	387+09.55	33.33' Lt.	1032.36	387+68.55	33.33' Lt.	1032.32
B2	387+09.55	33.33' Rt.	1032.36	387+68.55	33.33' Rt.	1032.32
W1	386+97.55	33.33' Lt.	1036.50	387+78.55	33.33' Lt.	1035.45
W2	386+97.55	33.33' Rt.	1036.50	387+78.55	33.33' Rt.	1036.45

Berm slope elevations reflect the grading surface.

Estimated Berm Armoring Quantities			
Location	Revetment CL, E (Ton)	Engineering Fabric (SY)	CL, 10 Channel Excavation (CY)
South Abutment Berm	275.6	309.3	172.2
North Abutment Berm	229.6	267.2	143.5
Totals	505.2	576.5	315.7

Excavation quantity calculated from grading surface. Excavation quantity is for embedded revetment core out only, and does not include excavation to the grading surface. Excavation quantity to the grading surface is determined by Road Design and included in the Road Plans.

Section Thru Embedded Berm Lining

Normal to Berm Slope

Preliminary

Design For 0° Skew

70'-0" x 44'-0" Continuous Concrete Slab Bridge

21'-0" End Spans 28'-0" Interior Span

Situation Plan - Site

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

Montgomery County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. TBD Design Sheet No. 3 of 3 FHWA No. 037711

CROSS SECTION VIEW COLOR LEGEND

Design Color No.	Feature	Design Color No.	Feature
Aggregate			
(64)	Choke Stone	(112)	Noise Wall
(42)	Engineering Fabric	(112)	Noise Wall Footing
(8)	Flooded Backfill	(112)	Retaining Wall Back
(92)	Macadam Stone	(112)	Retaining Wall Back Excavate
(20)	Modified	(112)	Retaining Wall Face
(12)	Plowing Shaping	(112)	Retaining Wall Front Excavate
(14)	Porous Backfill	(112)	Retaining Wall Front Footing
(8)	Revetment Class A	(112)	Retaining Wall MSE Gutter
(6)	Revetment Class B	(112)	Retaining Wall Reinforced Earth
(62)	Revetment Class C	Grading	
(188)	Revetment Class D	(8)	Behind Curb Cut
(28)	Revetment Class E	(6)	Granular
(12)	Shoulder Special Backfill	(13)	Granular Back Fill
(12)	Special Backfill	(48)	Rock Undercut
(20)	Subbase	(8)	Shoulder Earth Fill
(20)	Subbase Lower	(2)	Side Slopes
(20)	Subbase Upper	(226)	Side Slopes Dressing
(118)	Subgrade Treatment	Substrata	
Asphalt			
(207)	HMA Base Course	(128)	Boulder Substrata
(207)	HMA Interim Course	(48)	Broken Weathered Substrata
(207)	HMA Surface Course	(3)	Core Out Substrata
Concrete			
(0)	Barrier Concrete	(203)	Existing Pavement Substrata
(0)	Barrier Concrete Footing	(6)	Loam Substrata
(0)	Curb Gutter	(80)	Rock Substrata
(48)	Flowable Mortar	(4)	Select Sand Substrata
(0)	Median Concrete	(3)	Shale Substrata
(0)	PCC Pavement	(10)	Topsoil Substrata
(0)	Sidewalk	Unsuitable / Waste	
Shoulder			
(209)	Shoulder HMA	(3)	Unsuitable Type A
(0)	Shoulder PCC	(13)	Unsuitable Type B
(6)	Shoulder Granular	(11)	Unsuitable Type C
Existing			
(0)	Existing Pavement	(3)	Waste

NOTES:

Text

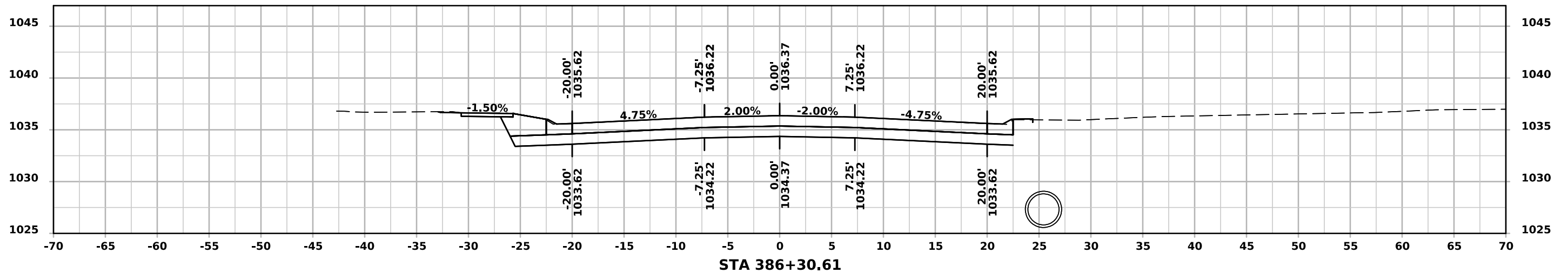
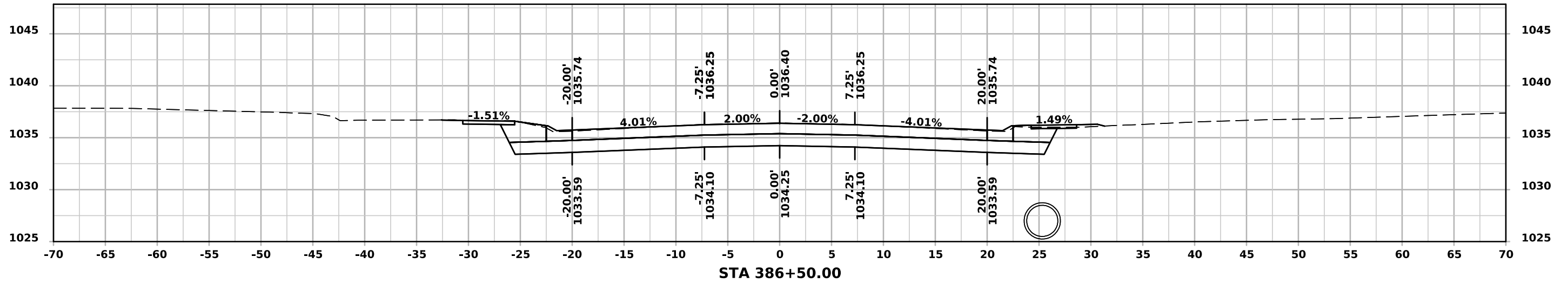
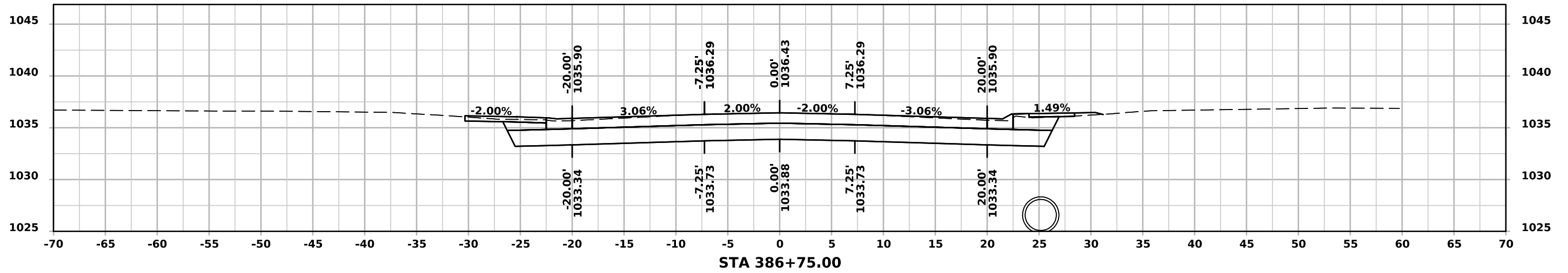
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Text

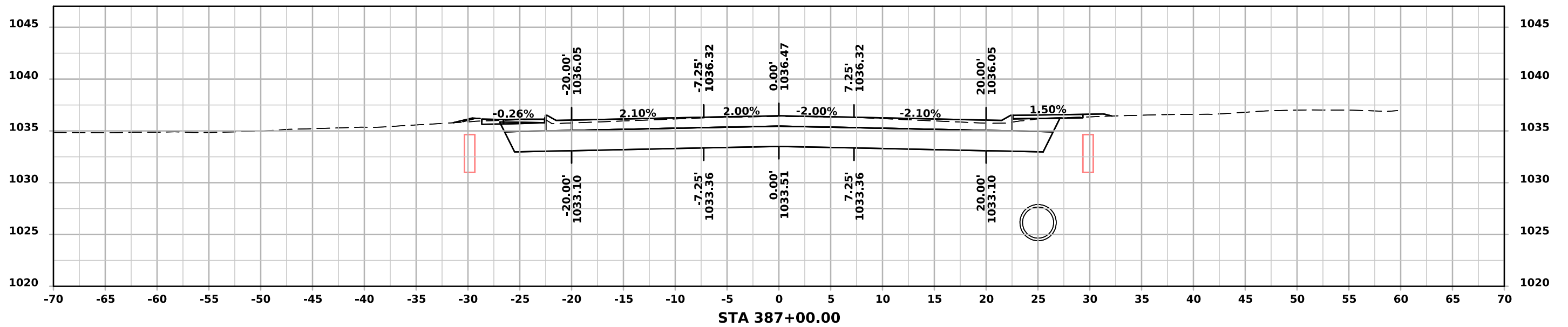
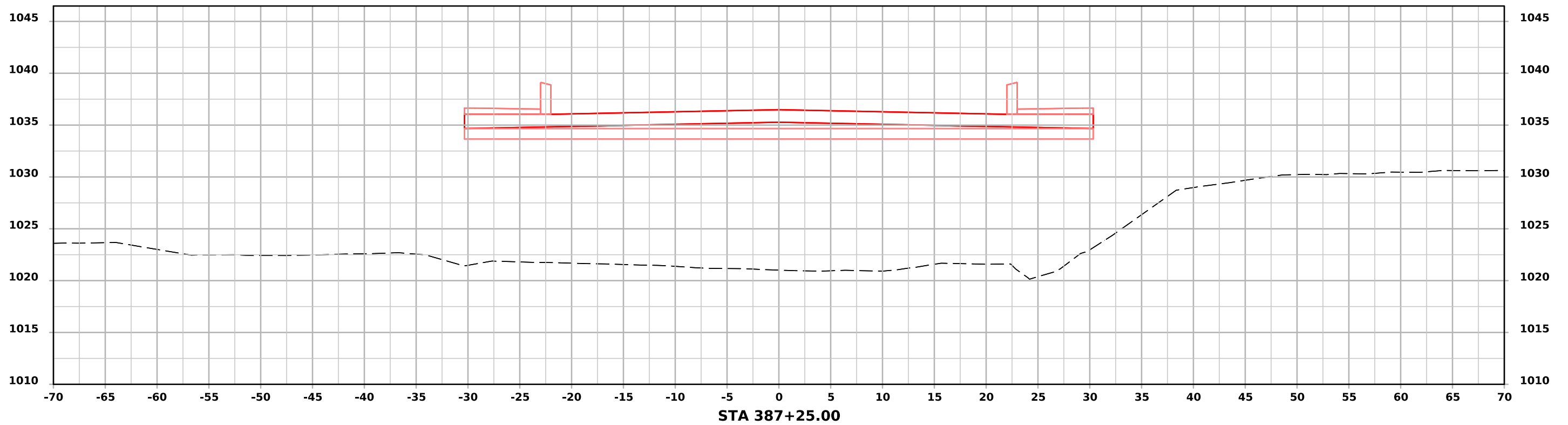
CROSS SECTIONS LEGEND AND INFORMATION SHEET

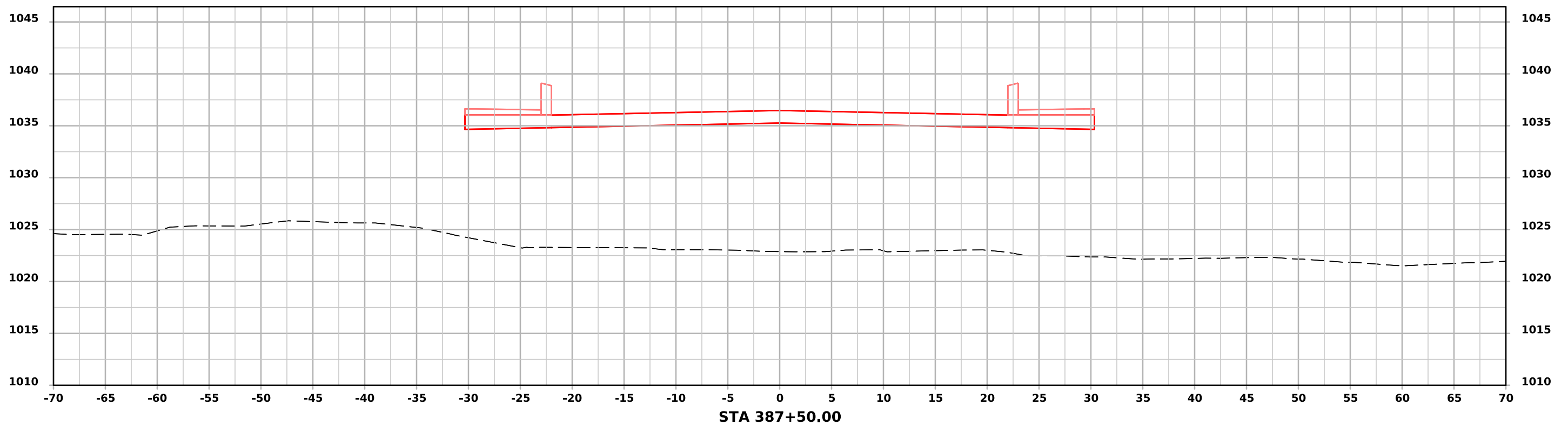
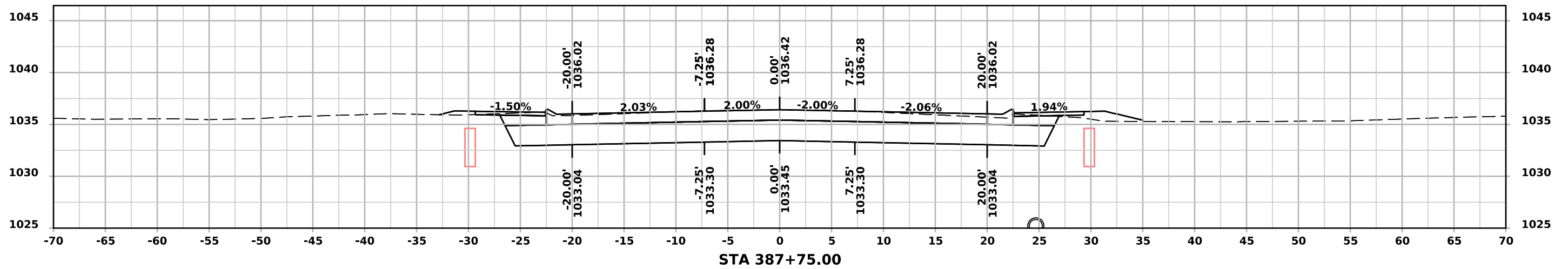
(COVERS SHEET SERIES W, X, Y, & Z)

Final - IA 48

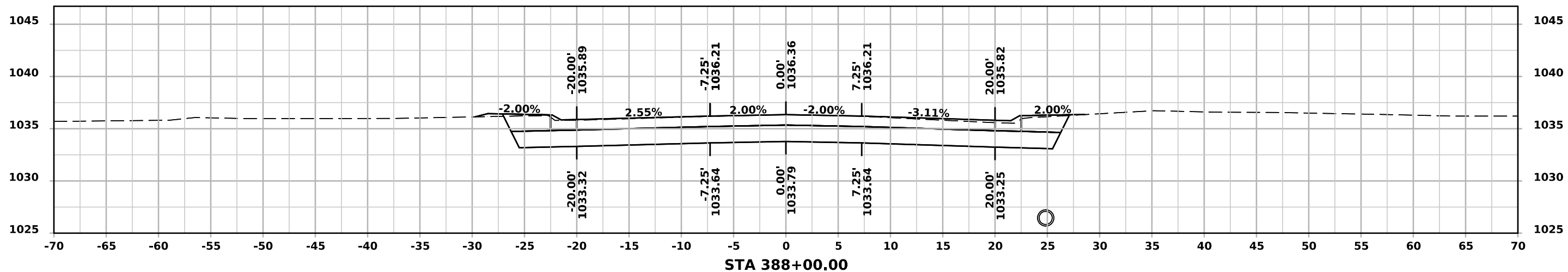
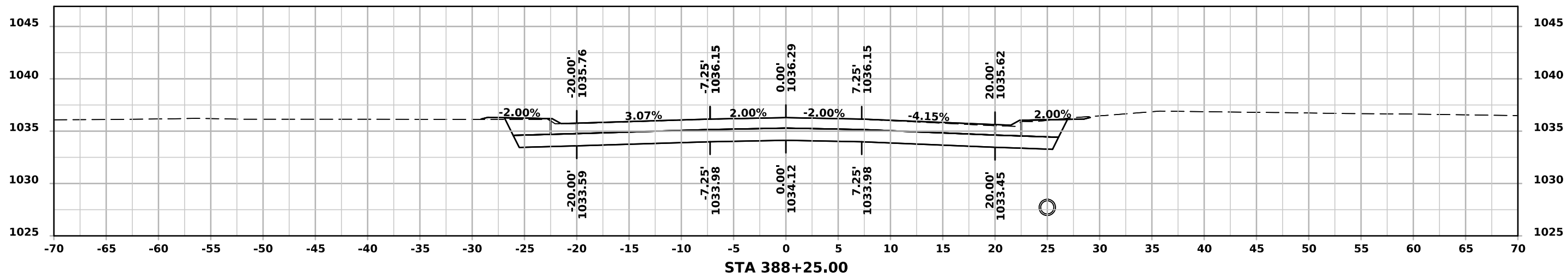
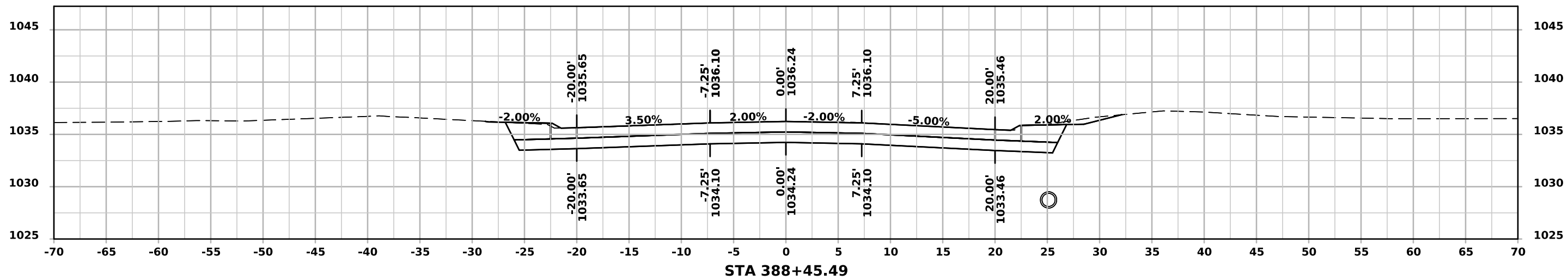


Final - IA 48

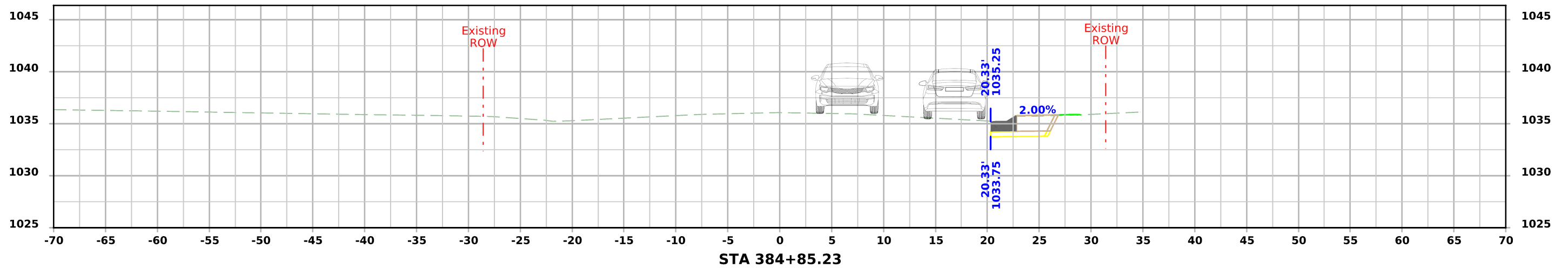
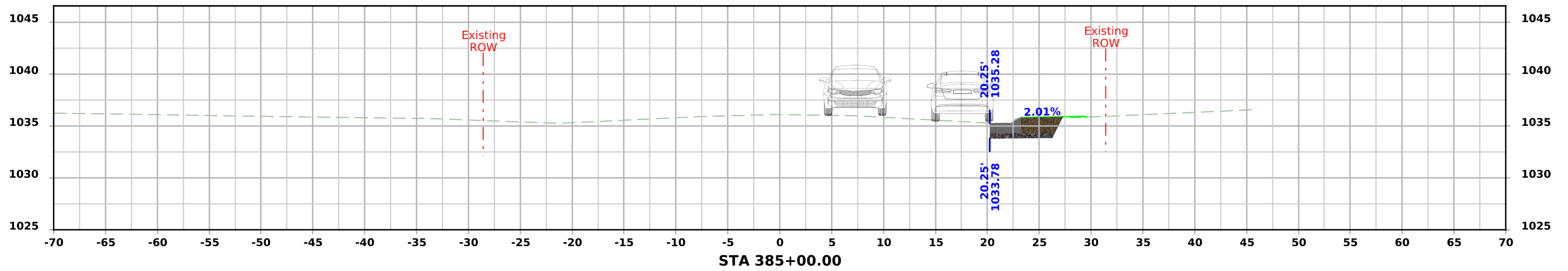
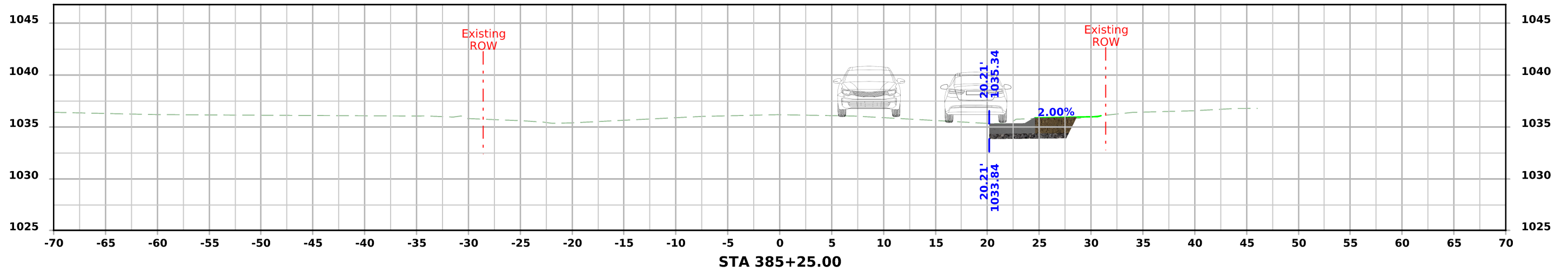




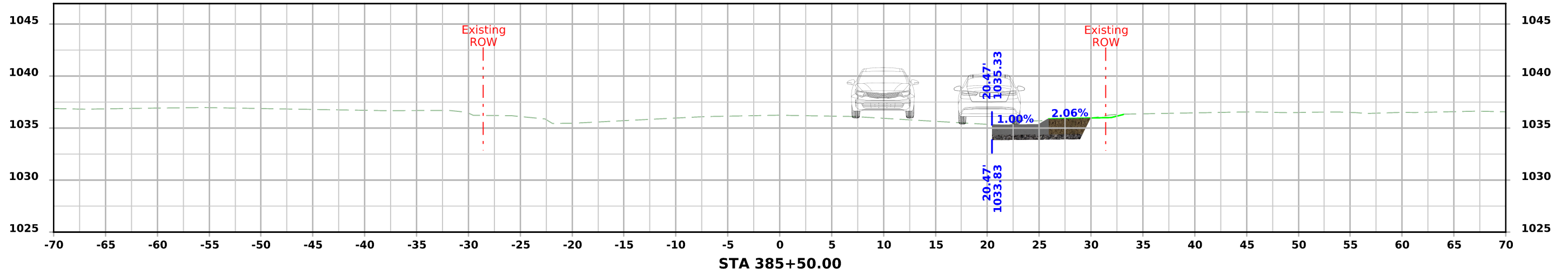
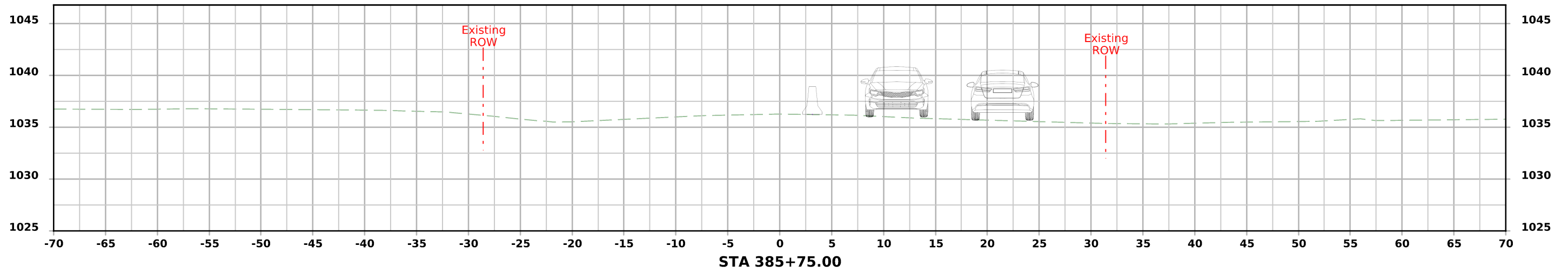
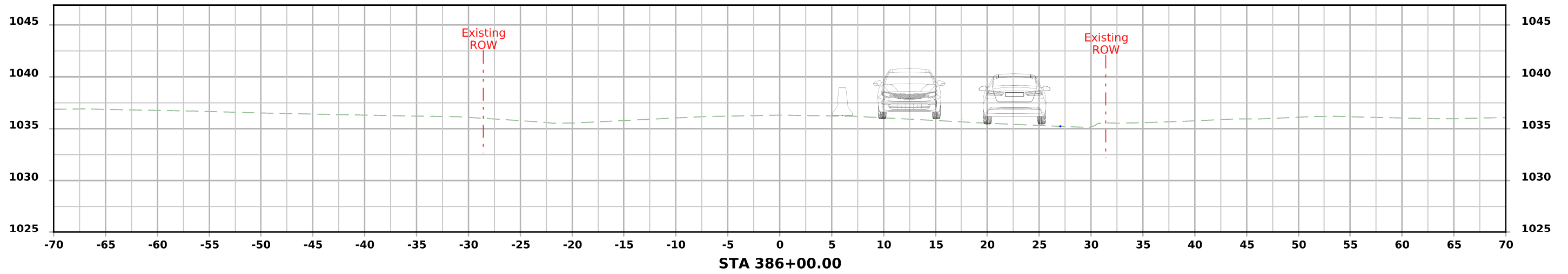
Final - IA 48



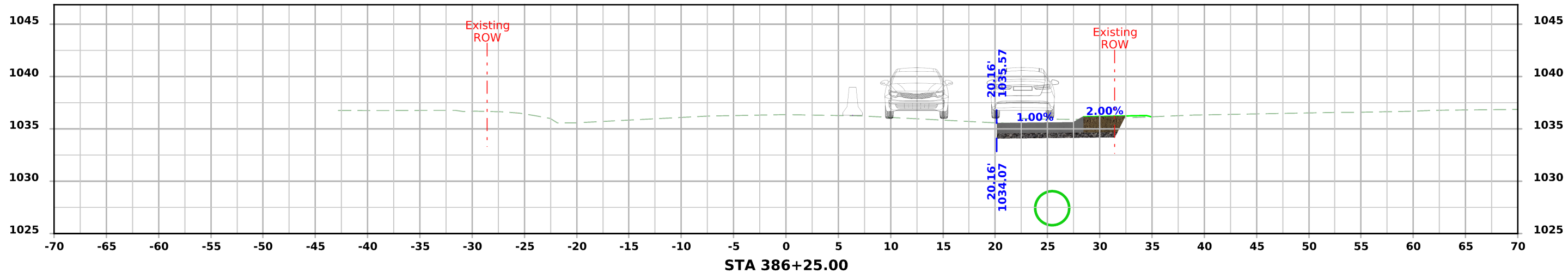
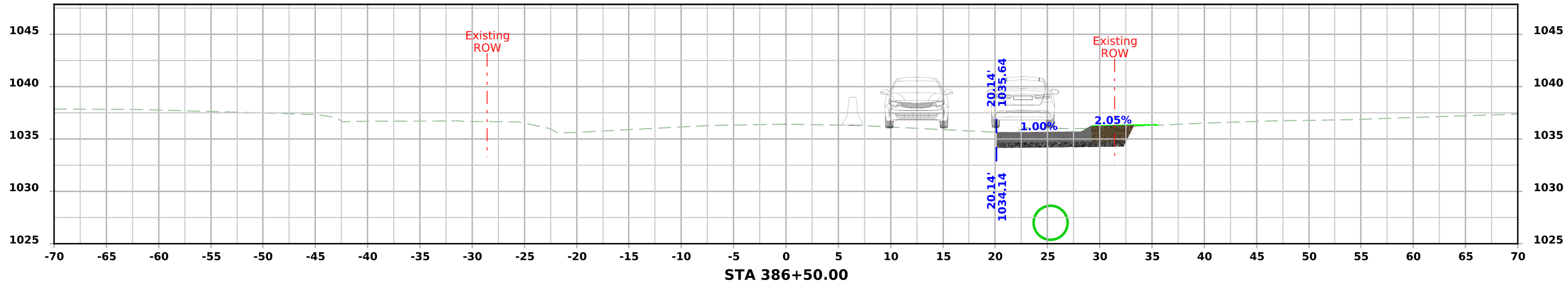
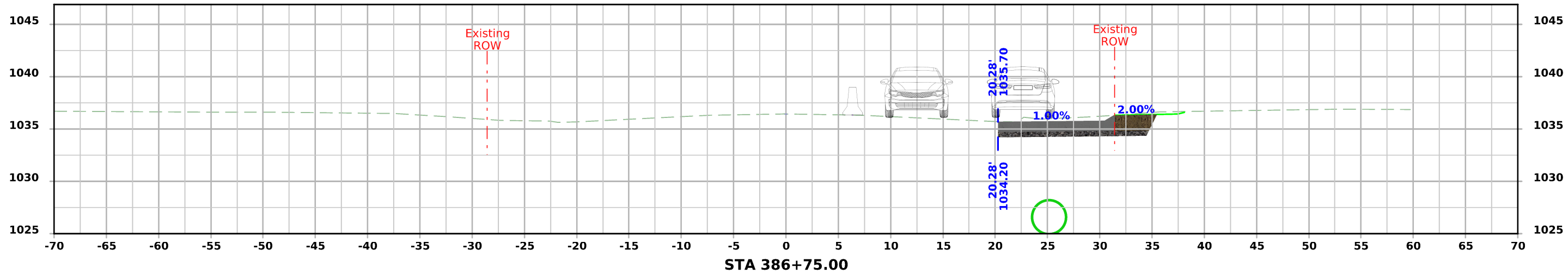
Stage 2 - IA 48



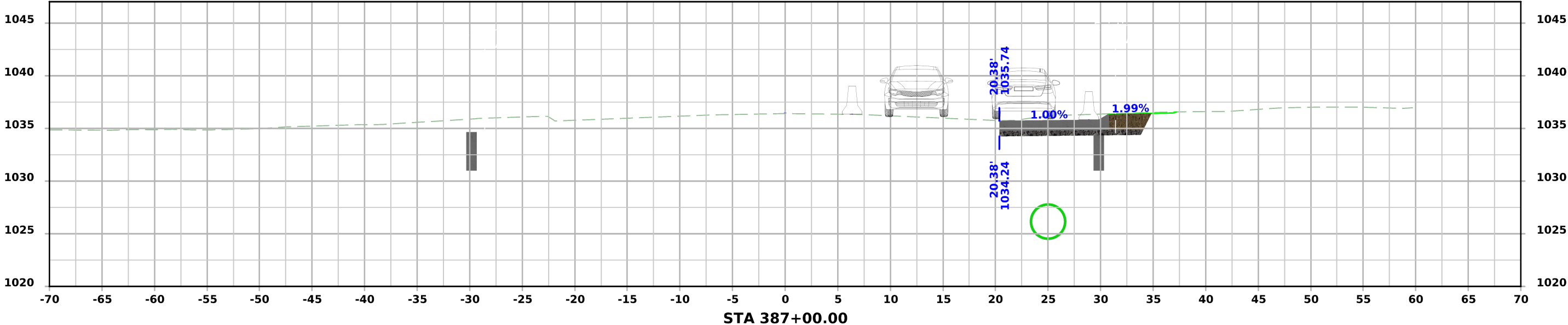
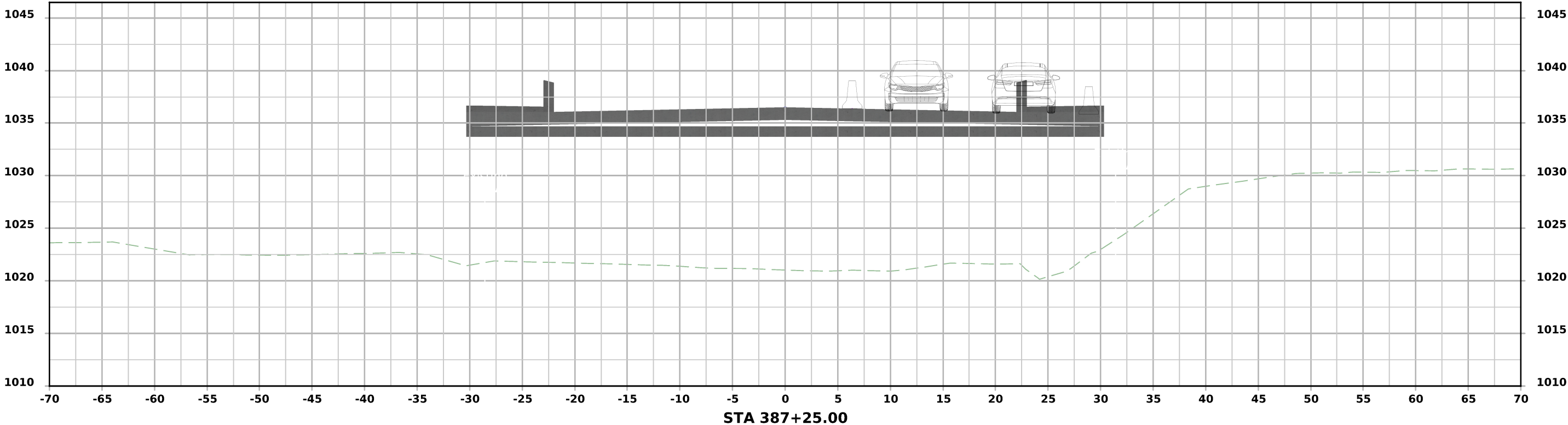
Stage 2 - IA 48



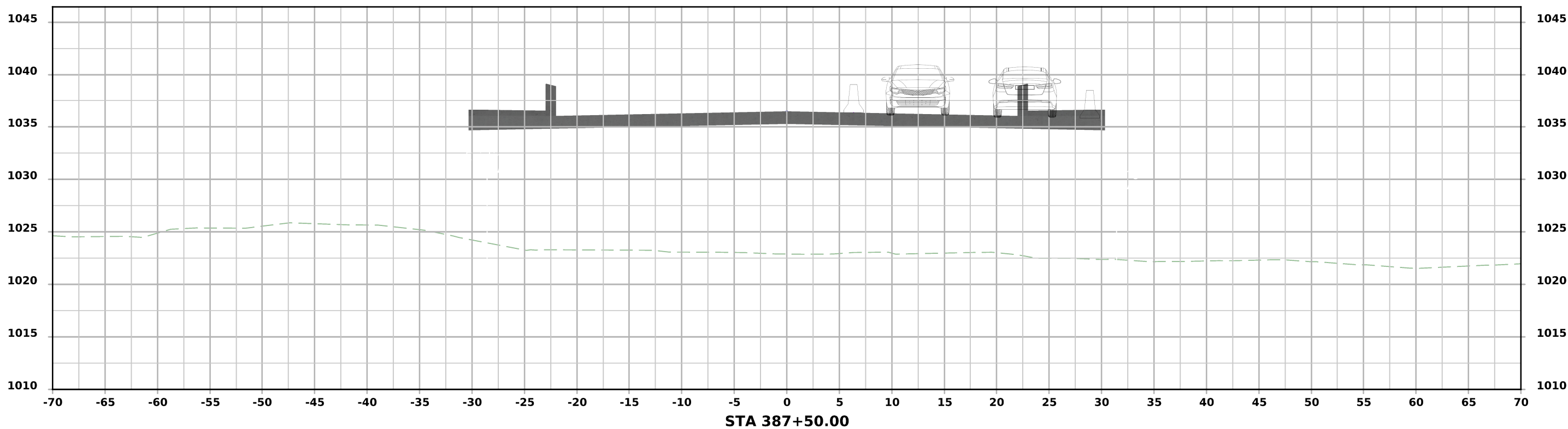
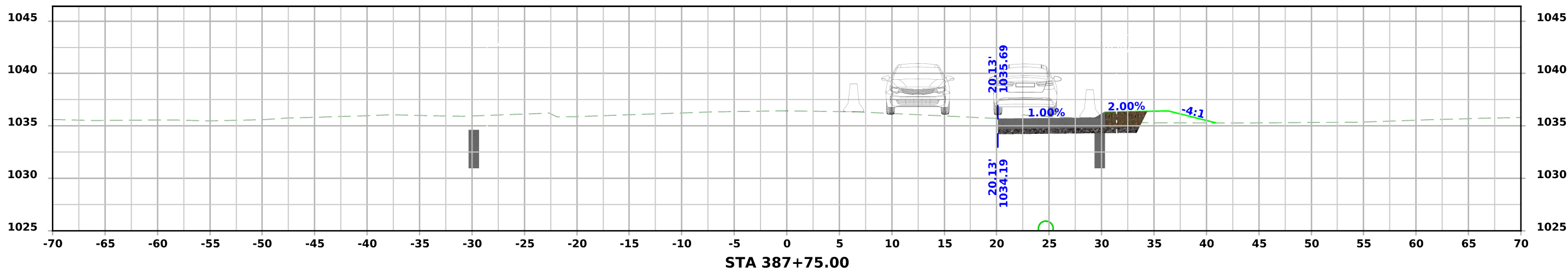
Stage 2 - IA 48



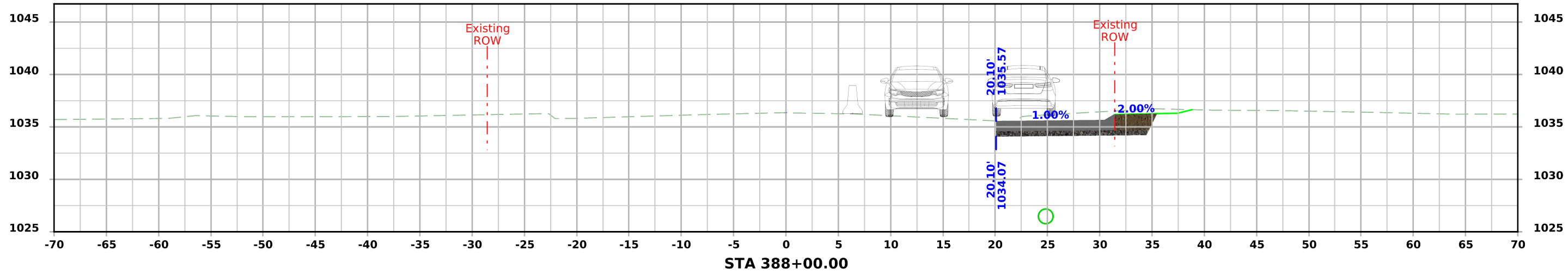
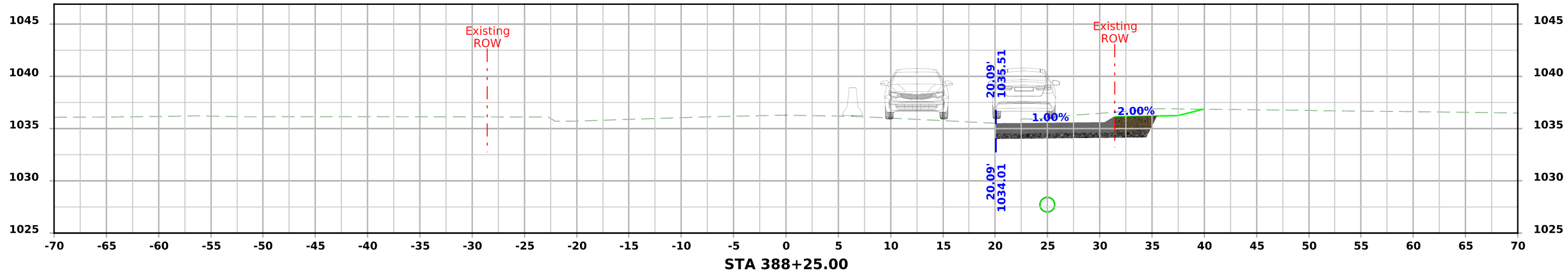
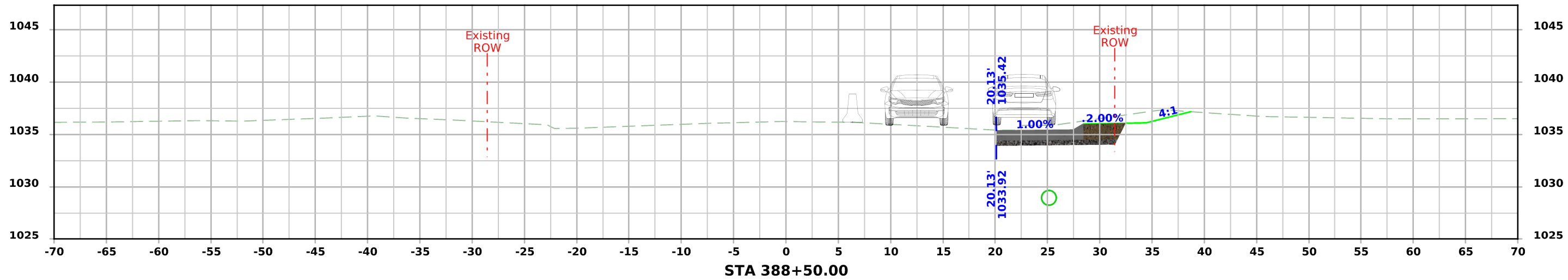
Stage 2 - IA 48



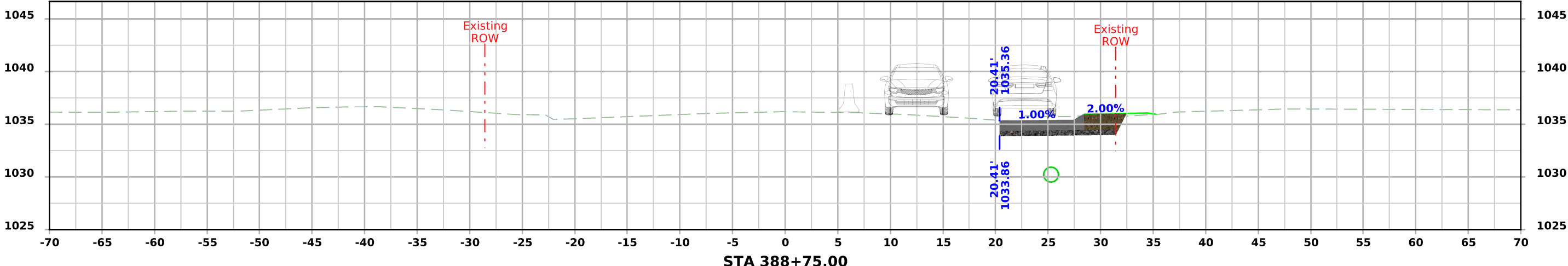
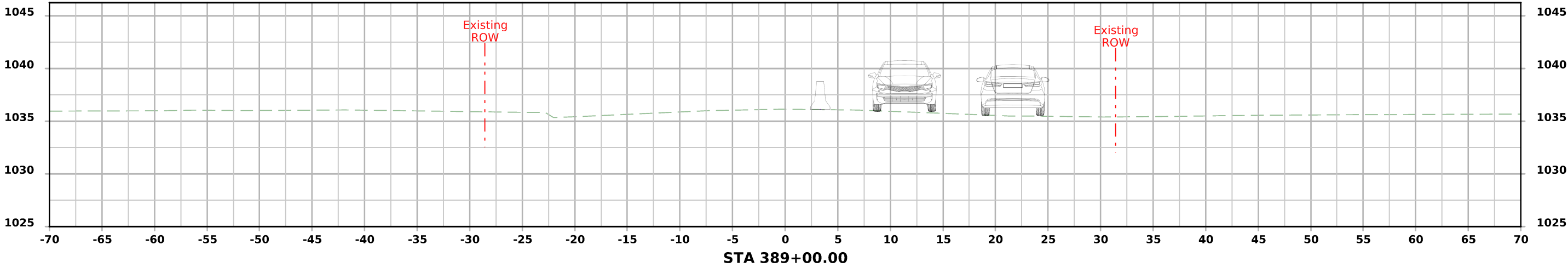
Stage 2 - IA 48



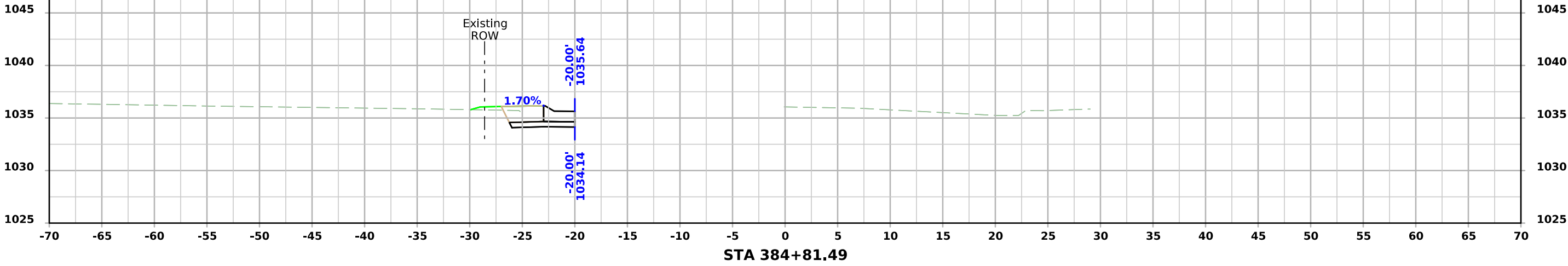
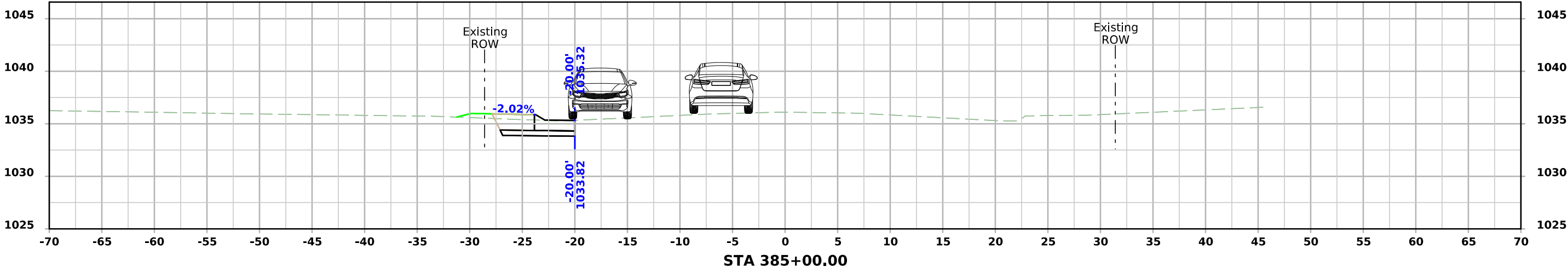
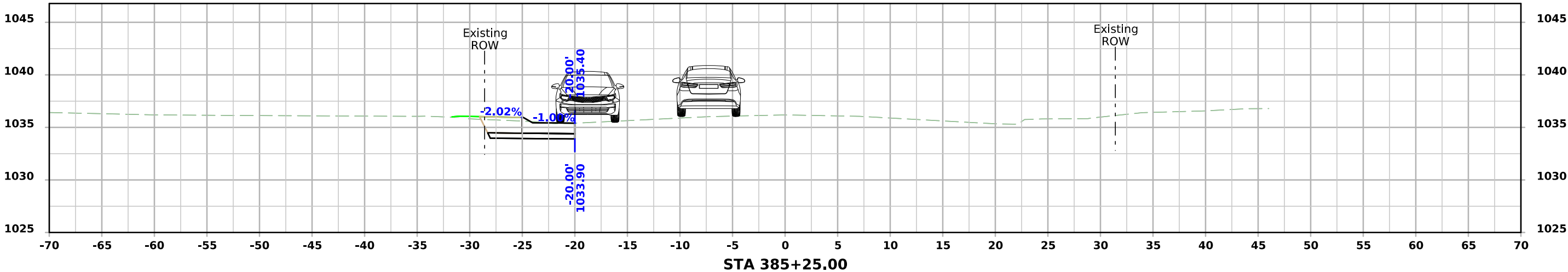
Stage 2 - IA 48



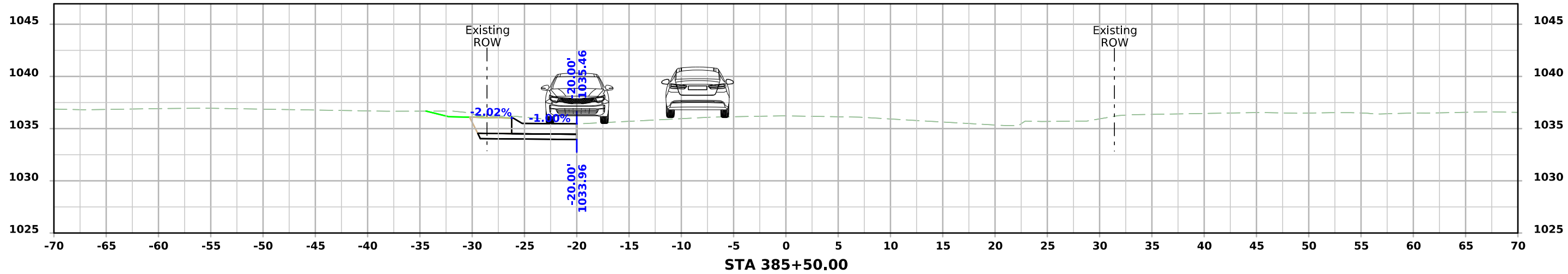
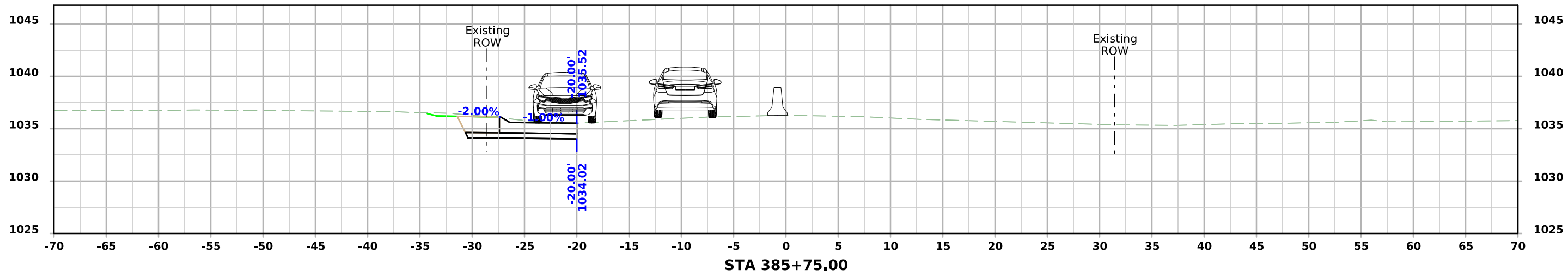
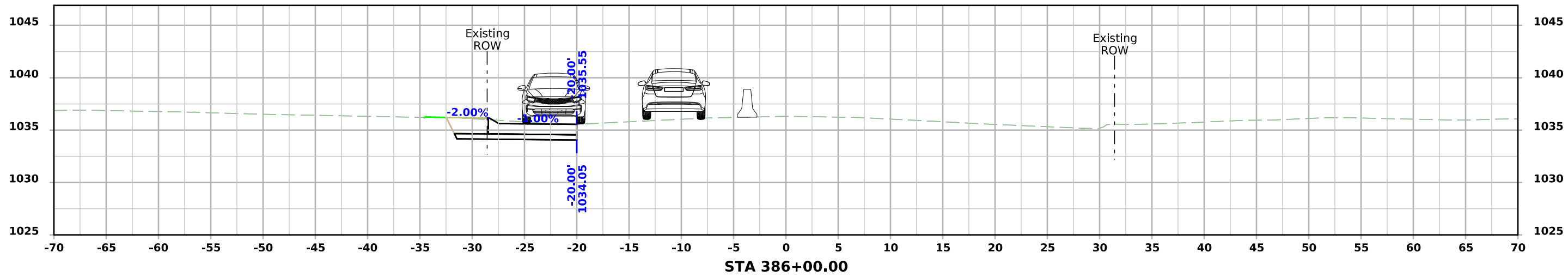
Stage 2 - IA 48



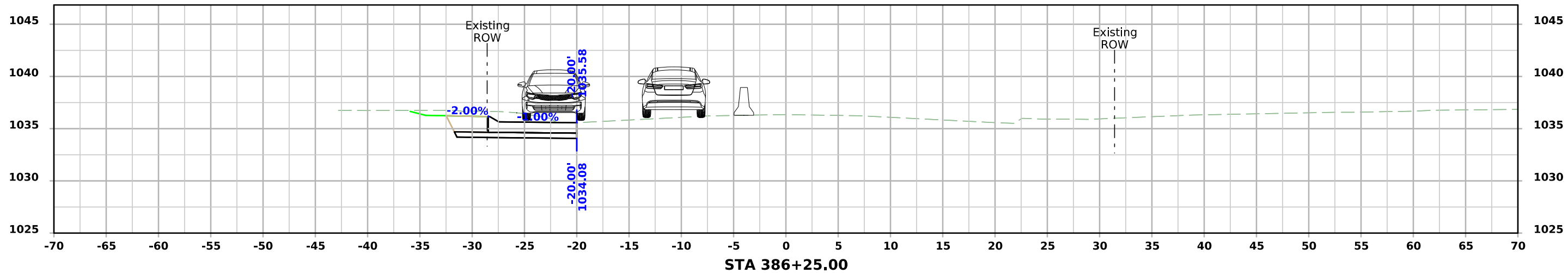
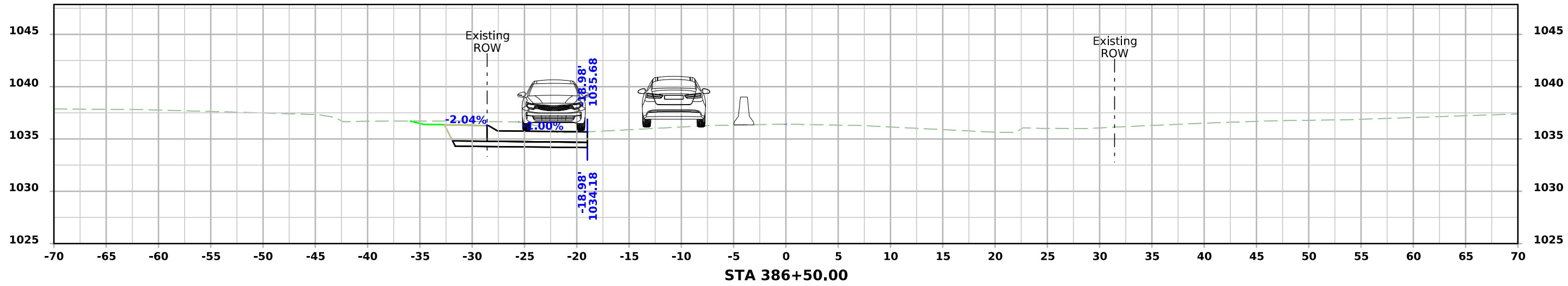
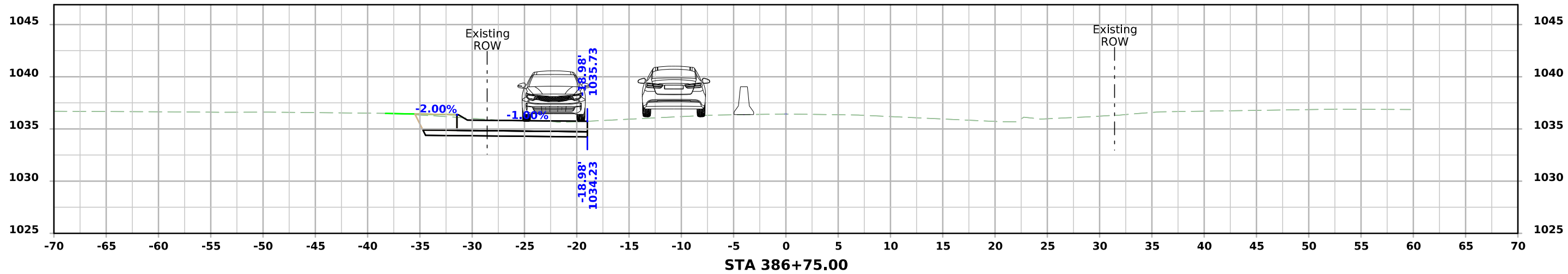
Stage 3 - IA 48



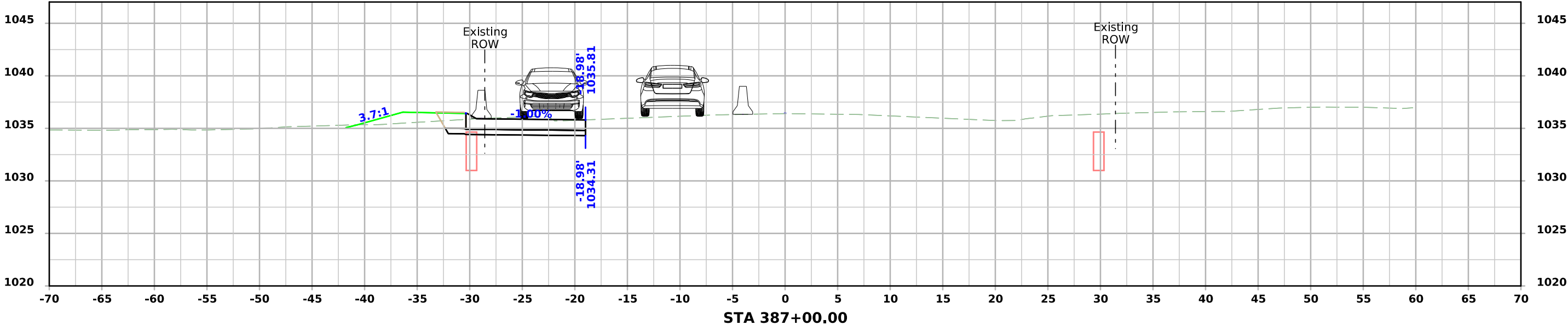
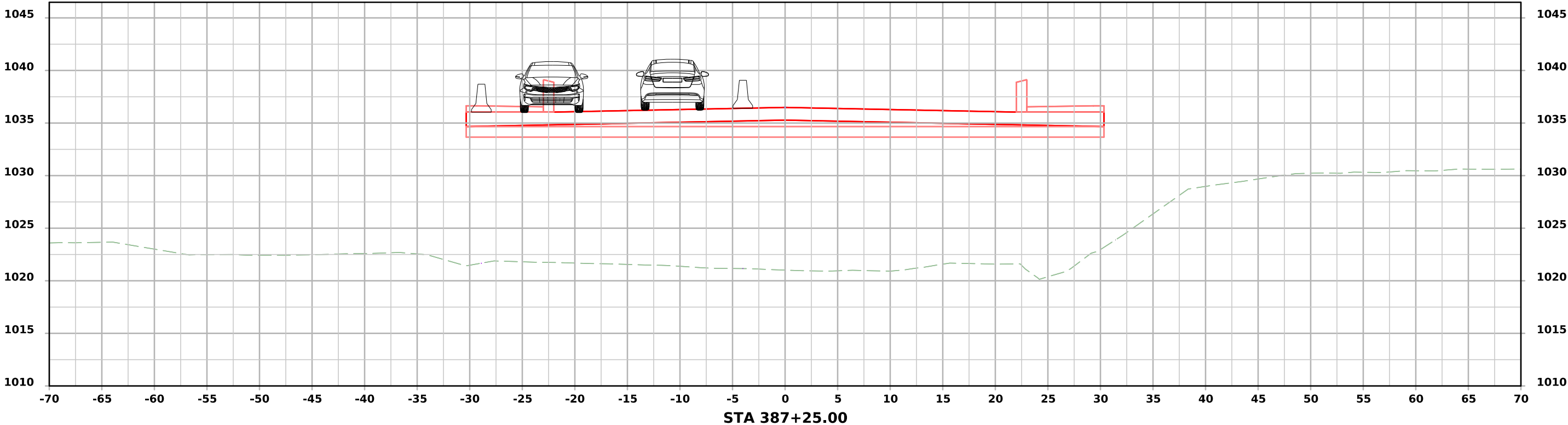
Stage 3 - IA 48



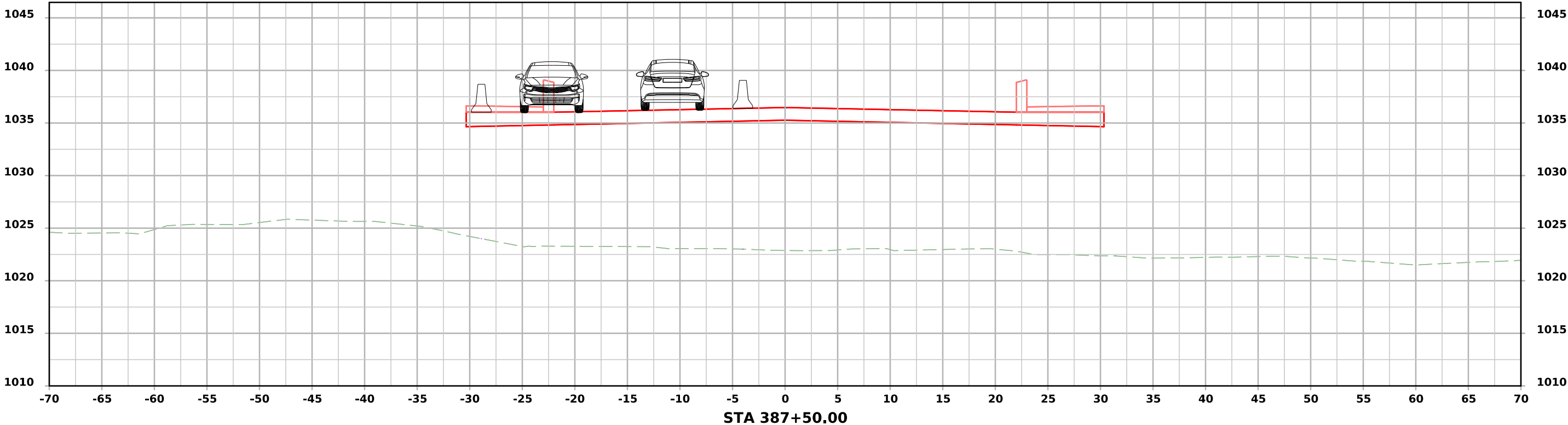
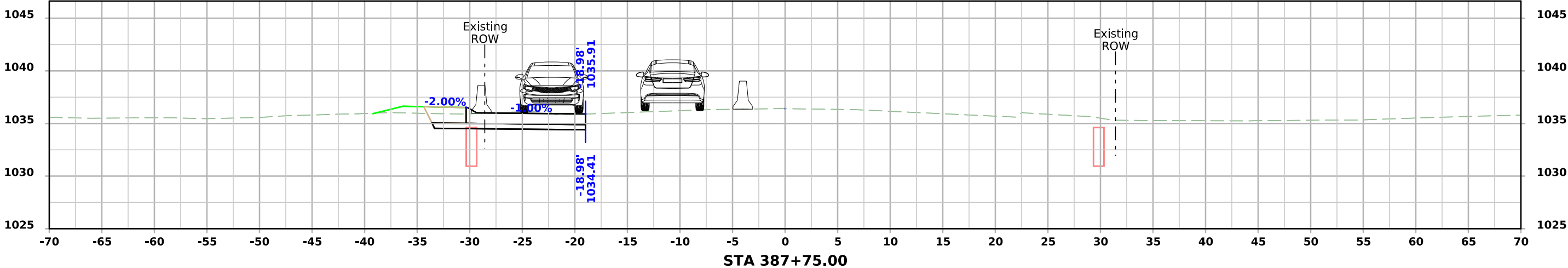
Stage 3 - IA 48



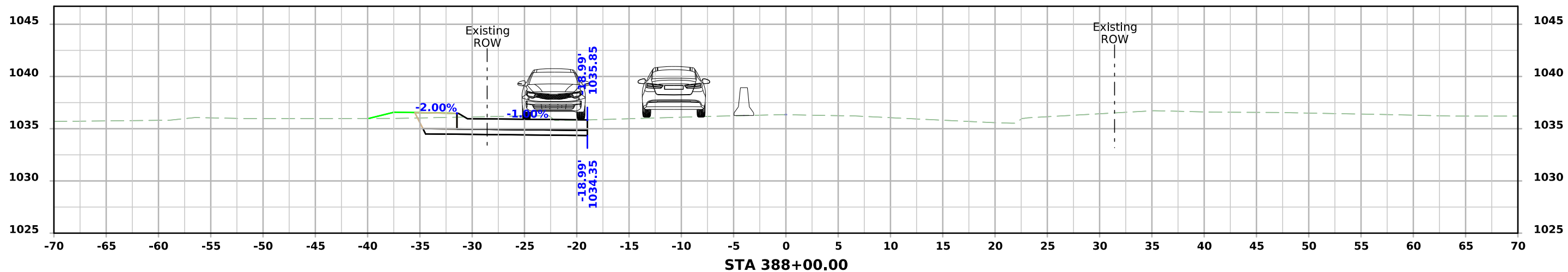
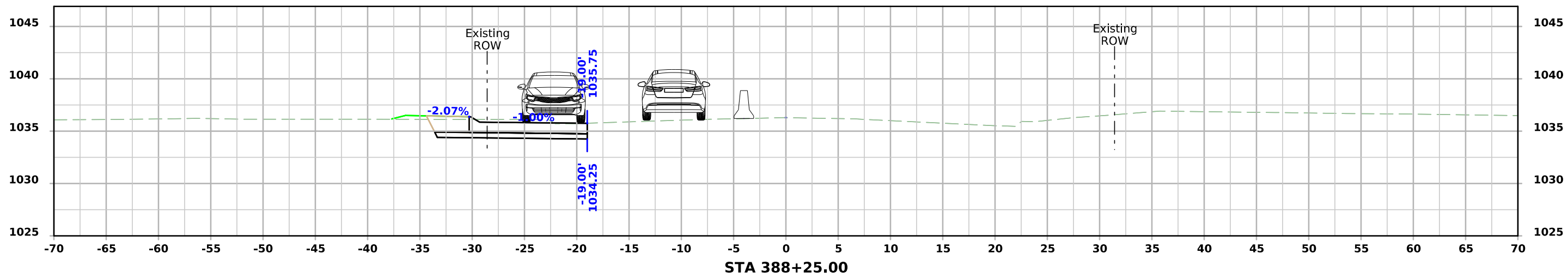
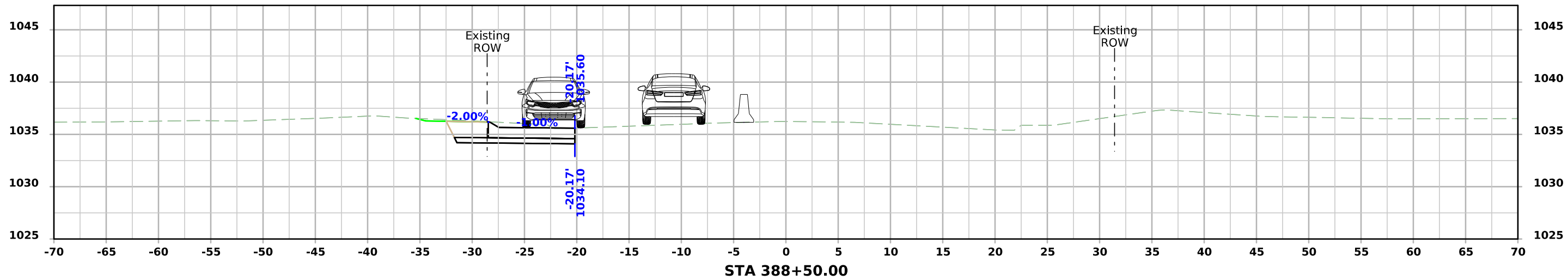
Stage 3 - IA 48



Stage 3 - IA 48



Stage 3 - IA 48



Stage 3 - IA 48

