

LETTING DATE  
12/20/2022

Bridge Replacement-PPCB  
BRF-061-8(159)--38-31

DUBUQUE COUNTY

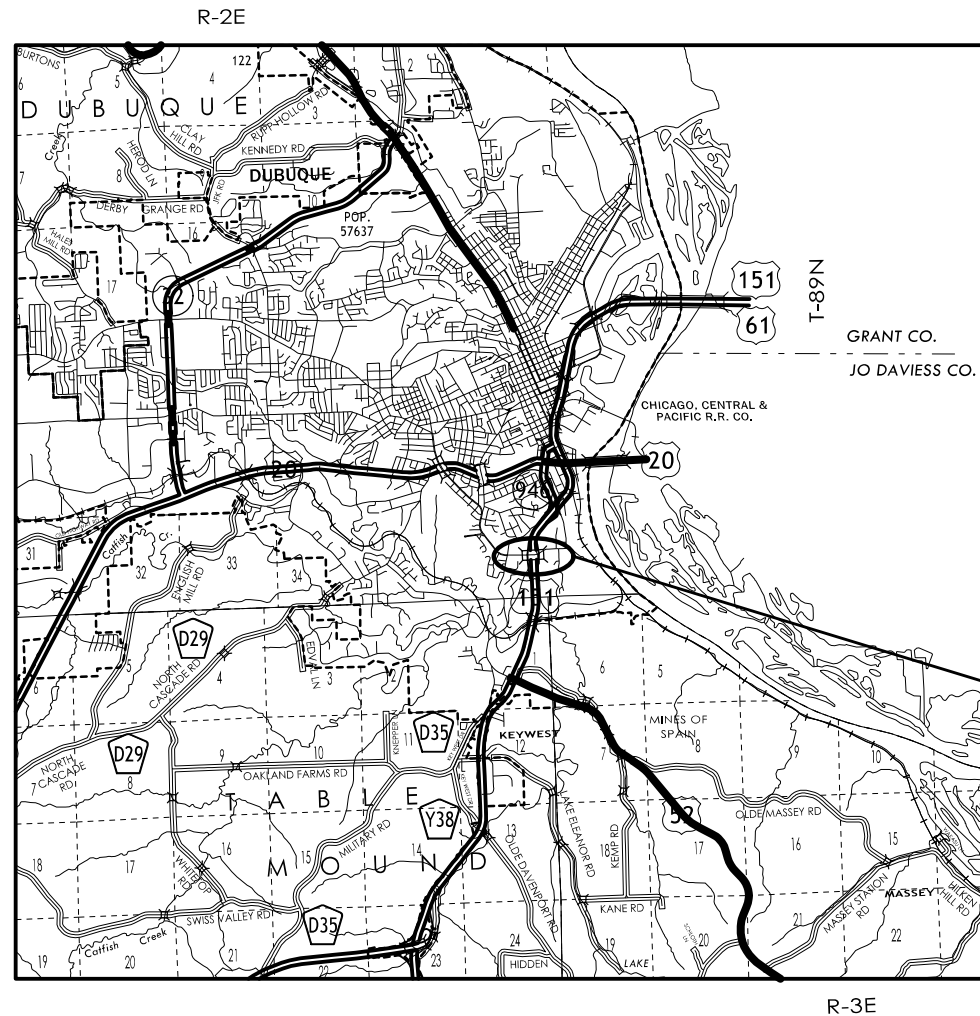


# Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

## PRIMARY ROAD SYSTEM DUBUQUE COUNTY

Bridge Replacement-PPCB  
Grandview Ave 1.2 mi S of US 20 in Dubuque



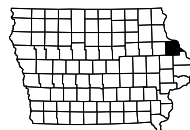
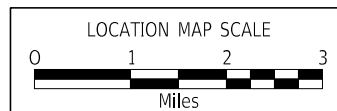
SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



PROJECT LOCATION  
STA 2+52.71



DESIGN DATA RURAL		
2017 AADT	6000	V.P.D.
20 -- AADT	--	V.P.D.
20 -- DHV	--	V.P.H.
TRUCKS	--	%
Total		
Design ESALs	--	

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



**DISTRICT 6:**  
Jesse Tibodeau  
Roger Walton  
Newman Abuissa

**BRIDGE:**  
David Mulholland  
Abraham Kuol

**DESIGN:**  
Jason Holst  
Devendra Tamrakar  
Kyle Schrock

REVISIONS

TOTAL

20

PROJECT IDENTIFICATION NUMBER

20-31-061-040

PROJECT NUMBER

BRF-061-8(159)--38-31

R.O.W. PROJECT NUMBER

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### INDEX OF SHEETS

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A.2 - 4	Design Criteria
A.5	Field Exam Questions
<b>B Sheets</b>	<b>Typical Cross Sections and Details</b>
B.1 - 2	Typical Cross Sections and Details
<b>D Sheets</b>	<b>Mainline Plan and Profile Sheets</b>
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	"GrandView Avenue"
<b>E Sheets</b>	<b>Side Road Plan and Profile Sheets</b>
* E.1	"US 61"
<b>G Sheets</b>	<b>Survey Sheets</b>
G.1 - 3	Reference Ties and Bench Marks
G.4	Horizontal Control Tab. & Super for all Alignments
<b>J Sheets</b>	<b>Traffic Control and Staging Sheets</b>
J.1	Traffic Control Plan and 511 Travel Restrictions Note
* J.2	Off site Detour Plan
<b>V Sheets</b>	<b>Bridge and Culvert Situation Plans</b>
V.1	Bridge and Culvert Situation Plans
<b>W Sheets</b>	<b>Mainline Cross Sections</b>
W.1 - 3	GrandView Ave Cross Sections * Color Plan Sheets

Schedule :

D3 - 05 /04 /2021  
D4 - 08 /23 /2021  
D5 - 08 /27 /2021

# PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN - 04 / 27 / 2021

<b>Roadway</b>			
<b>PIN Number</b>	20-31-061-040		<b>Submittal Date</b>
<b>Project Number</b>	BRF-061-8(159)--38-31		<b>Approval Date</b>
<b>District</b>	District 6	<b>Assistant District Engineer</b>	
<b>County</b>	DUBUQUE	or	
<b>Route</b>		<b>Office Director</b>	
<b>Location</b>	Grandview Ave 1.2 mi S of US 20 in Dubuque		
<b>Work Type</b>	Bridge Replacement-PPCB		
<b>Segment Manager</b>			
<b>Designer</b>			

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%	N/A
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	22
Right turn lane (ft)	12	10	N/A
Left turn lane (ft)	With raised or painted median	12 ft + median	10 ft + median
	With depressed median	12	10
Two-way left turn lane	14	11	N/A
Parking lane width (ft)	10	7	N/A
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum
	Auxiliary and turn lanes	3%	3% maximum
	Crown break at centerline	4%	4% maximum
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
	Curb and gutter units	Match pavement cross-slope	6% maximum
	Parking lanes	1% greater than pavement cross-slope	6% maximum
Curb type (See Section 3C-2)	Design speed ≤ 45 mph	6-inch standard	any shape
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
	Beyond standard ditch depth and design clear zone	3.5:1	3:1
	Curbed roadways	2%	not steeper than 3:1
Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.)	3:1	2.5:1	N/A
Traverse Slopes	w/ drainage structures	8:1	6:1
	w/o drainage structures	10:1	6:1
Ditches (See Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	-
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**
	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	N/A
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14
	Over railroad	23.3	23.3
	Sign trusses and pedestrian bridges	17.5	17
Structural Capacity	Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	N/A
Level of Service	C	D	N/A

\*FHWA notification via email is required if acceptable criteria is not met on the NHS system (No formal design exception is required)

\*\* If travel lanes are less than 12 ft wide contact the Methods Section for assistance.

Grandview Ave - posted speed is 25mph  
US 61- posted speed is 55mph



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					Acceptable Criteria					Project Values						
	Design Speed, mph					Design Speed, mph											
	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					433.54					
	Method 5 superelevation and side friction distribution	e <sub>max</sub> = 6%					144	231	340	485	643	144	231	340	485	643	N/A
		e <sub>max</sub> = 8%					--	--	--	--	--	134	214	314	444	587	N/A
Minimum vertical curve length (ft) (Refer to Section 2B-1)		75	90	105	120	135	75	90	105	120	135	30					
Minimum rate of vertical curvature (K) (Refer to Section 2B-1)	crest vertical curves		12	19	29	44	61	12	19	29	44	61	26				
	sag vertical curves	roadways without fixed-source lighting	26	37	49	64	79	26	37	49	64	79	N/A				
		roadways with fixed-source lighting	26	37	49	64	79	14	20	27	35	44	25				
Minimum gradient (%)	(Refer to Section 2B-1)		0.5					0.3% with a curb, 0.0% without a curb					0.35%				
Maximum gradient (%)	(Refer to Section 2B-1)		5					--	9	8	8	7	2.3%				
	Urban roadways		5					--	9	8	8	7	2.3%				
Rural roadways		5					--	--	--	6	6	N/A					
Clear zone		See "Preferred Clear Zone" table in Section 8A-2					See "Acceptable Clear Zone" table in Section 8A-2					N/A					



Field Exam Questions:

Utilities:

- Will lines over Grandview be relocated?

Power line over Grandview Ave will need to be reviewed due to proximity of cranes

- Can light poles be UAC? Review location of existing footings.

Probably owned by the City ; At least one footing may be in the way of construction of the bridge wing walls; The light poles will need to be removed temporarily during construction for cranes to maneuver  
Plan on having them relocated

Construction:

- Was there any issues to be discussed from previous project on bridge?

Nothing that District know about any issues.

- Is there sufficient room for Contractor to work and stockpile equipment?

Partial ramp closure should be used for delivery of materials and equipment

- How much clearing and grubbing is needed for bridge construction?

Just around the bridge

- How we handle bridge barrier end section?

Need to discuss with Methods. Need to propose shorter rail design

- What would be PCC pavement and subbase thickness ?

Bridge Approach thickness would be 12 "

Traffic:

- Discuss closure of Grandview and possible detours

Use of detour is less likely , will be reviewed with the City. If staging is proposed then coordinate with Dan Sprengeler.

- Do ramps and side roads need closed for working room?

Partial Closure on Ramps

- Do ramps and side roads need temporary closures for delivery and removal of materials.

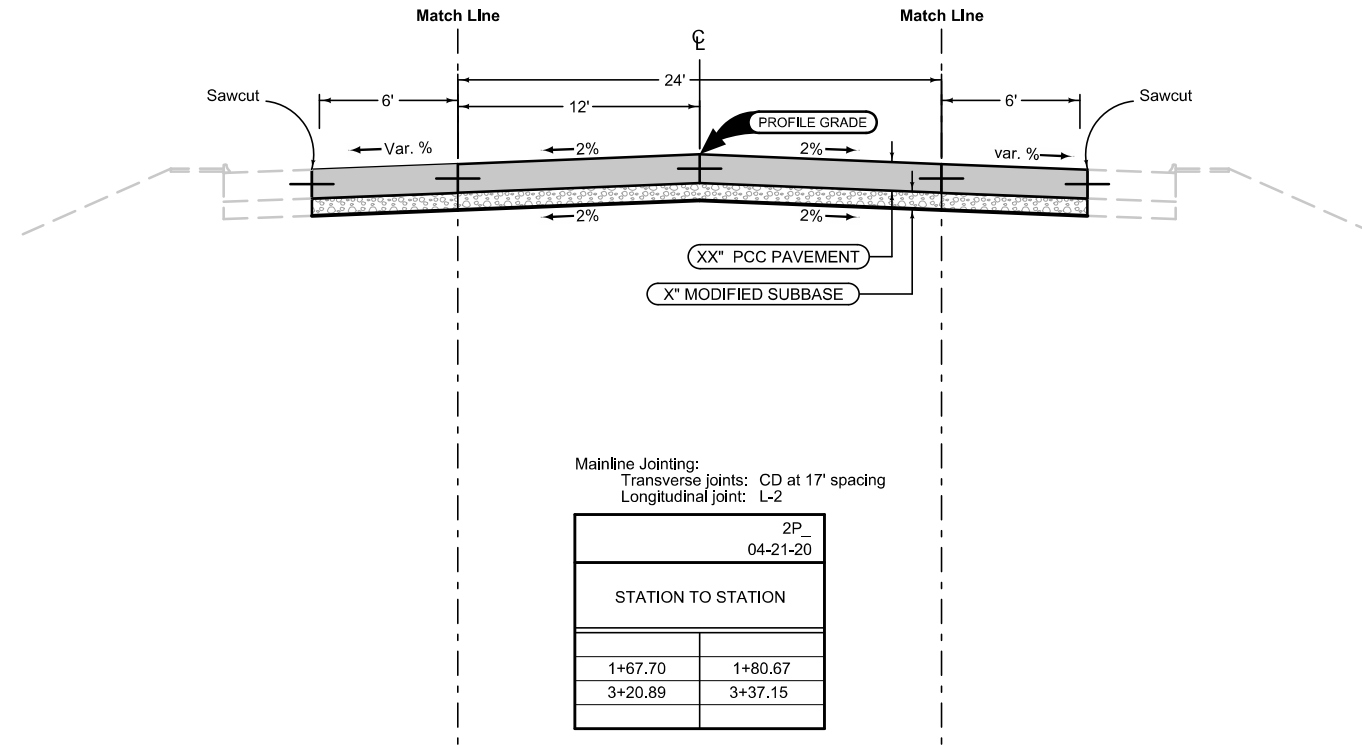
Partial Closure

Bridge:

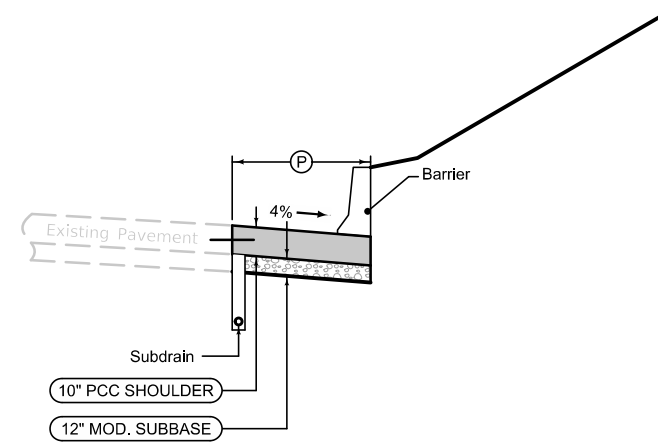
- Will Bridge Design include fence on bridge and wing walls?

Yes, bridge will take care of fencing.





**GRANDVIEW AVENUE  
PAVING**

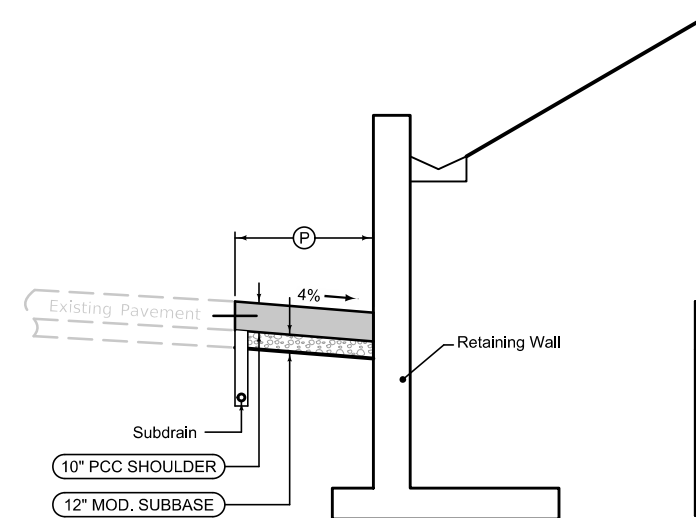


**Full Depth PCC Shoulder**

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

2_P_FullPCC_04-21-20				
Route	Direction	STATION TO STATION		(P) Feet
US 61	NB	127+46.5	127+57.70	3.38-3.55
US 61	NB	128+14.09	128+24.09	4.46-5.31
US 61	SB	127+49.5	127+59.5	4.02-3.62
US 61	SB	128+14.09	128+24.09	4.43-4.54

**US 61  
SHOULDER PAVING**



**Full Depth PCC Shoulder**

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

2_P_FullPCC_04-21-20				
Route	Direction	STATION TO STATION		(P) Feet
US 61	NB	127+57.70	128+14.09	3.56 - 6.30
US 61	SB	127+59.50	128+16.2	3.62 - 4.43

**US 61  
SHOULDER PAVING**

### SURVEY SYMBOLS

- SH Paved Shoulder
- EP Edge of Paved Roads (ML or SR)
- C Centerline BL of Road (ML or SR)
- CON Concrete or A/C Slab
- BCL Bridge Centerline
- BRG Bridge
- BD Bridge Deck
- BLS Bridge Low Steel
- GU Gutter In Front of Curb
- CU Back of Curb
- LIN Miscellaneous Line
- SWK Sidewalk
- GR Ground Shot
- BL Topo Breakline
- SIGN St Sign
- TDC Tree Deciduous
- SHR Shrub
- SBR Size of Bridge
- FENO FENO Monument
- CP Control Point
- WC Wild Card (Misc. Field Shot)
- UB UB Utility Box
- LUM Luminaire
- FHD Fire Hydrants
- PPA Power Pole Co. 1
- MIS Miscellaneous
- LIN Miscellaneous Line
- MH Utility Access (Manhole)
- ⊗ IN Storm Sewer Intake
- G — GL1D Gas Line Co. 1 - Quality D
- E1 — EL1D Electric Line Co. 1 - Quality D
- W — WL1D Water Line Co. 1 - Quality D
- F02 — FO2D Fiber Optic Co. 2 - Quality D
- F0 — FO1D Fiber Optic Co. 1 - Quality D
- ⊗ INB Storm Sewer Beehive Intake
- GV GV Gas Valve
- PIP Pipe Culvert
- UE Utility Elevation
- WV Water Valve
- PLG Location of General Photo
- PRO Profile Shot
- TIL Tile Line

### UTILITY LEGEND

- G — GL1D Gas Line Black Hills Energy - Quality D
- E1 — EL1D Electric Line City of Dubuque - Quality D
- W — WL1D Water Line City of Dubuque - Quality D
- F02 — FO2D Fiber Optic Centurylink - Quality D
- F0 — FO1D Fiber Optic City of Dubuque - Quality D
- PPA Power Pole Alliant Energy

### 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	
Gray, Light	(48)	Proposed Pavement Shading	
Gray, Med	(80)	Proposed Granular Shading	
Gray, Dark	(112)	Proposed Grade and Pave Shading "In conjunction with a paving project"	
Brown, Light	(236)	Grading Shading	
Tan	(8)	Proposed Sidewalk Shading	
Blue, Light	(230)	Proposed Sidewalk Landing Shading	
Pink	(11)	Proposed Sidewalk Ramp Shading	

### PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK		Design Color No.	
Green	(2)	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	

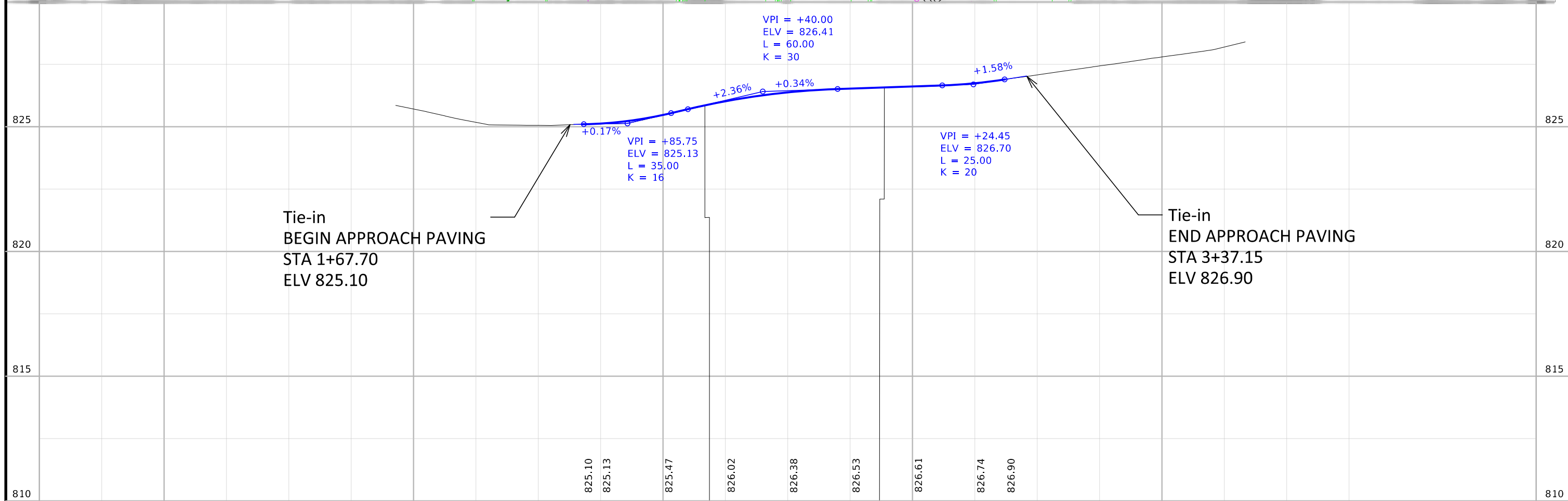
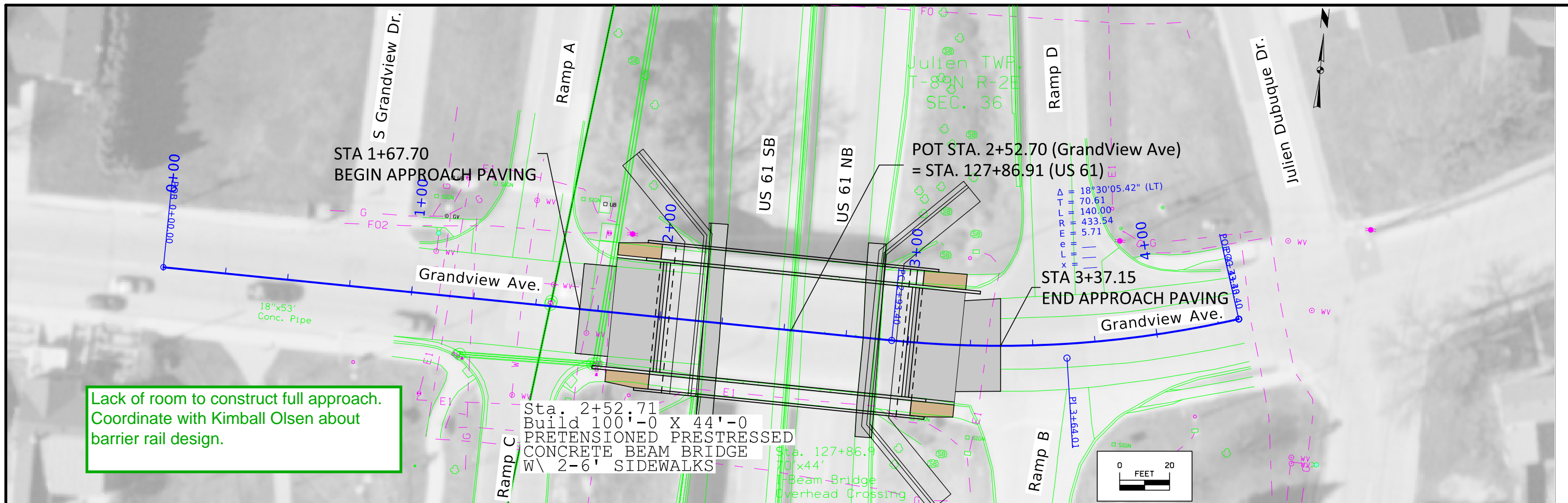
- Reference Point
- Station
- ▲ Section Corner
- Ground Line Intercept
- //// Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- ▨ Pavement Removal
- ▩ Clearing & Grubbing Area

### RIGHT-OF-WAY LEGEND

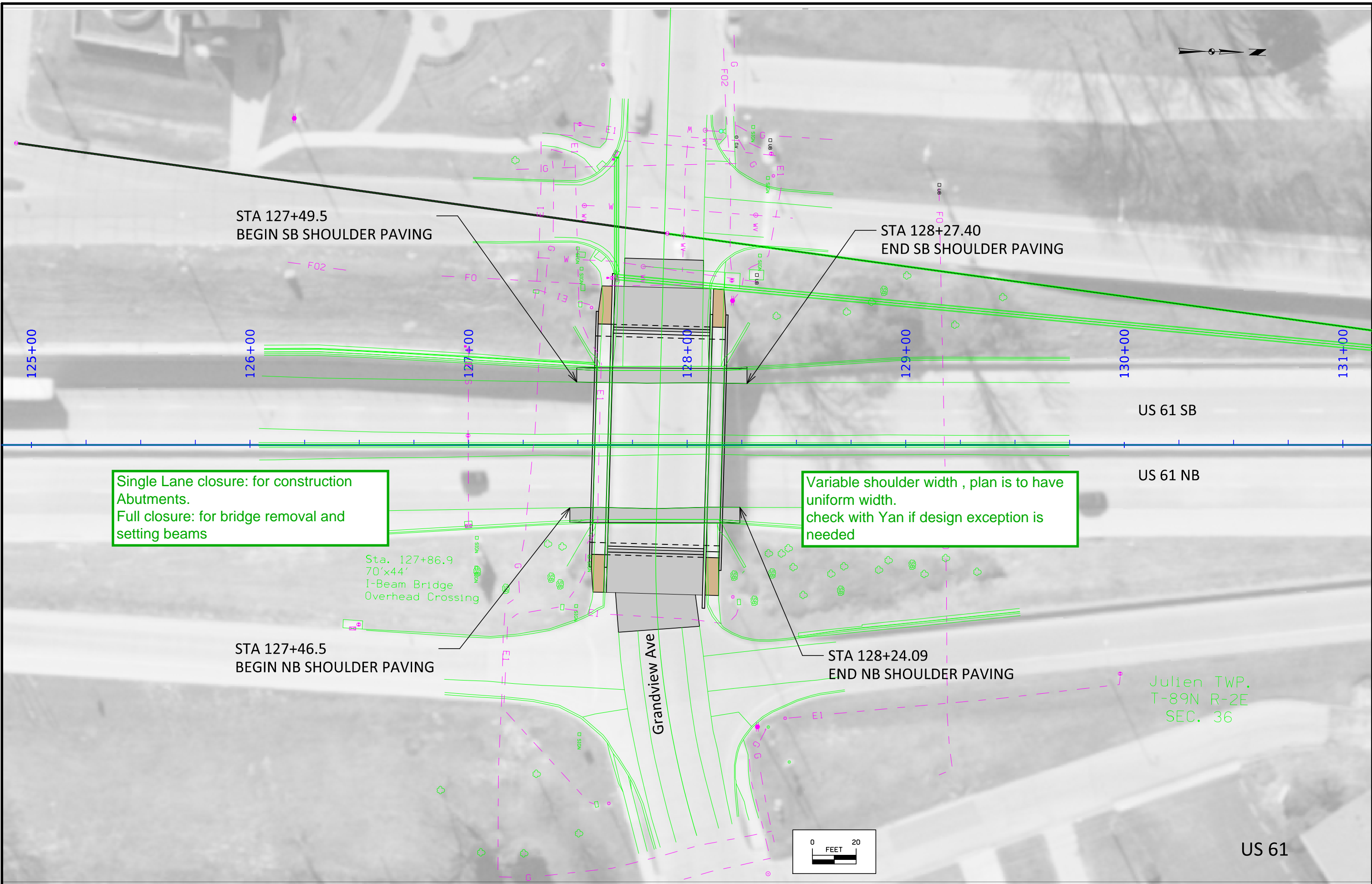
- ▲ Proposed Right-of-Way
- △ Existing Right of Way
- ▲△ Existing and Proposed Right-of-Way
- △△ Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- C/A Access Control
- ↔ Property Line

## PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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



FILE NO. 23950	ENGLISH	DESIGN TEAM HOLST/TAMRAKAR	DUBUQUE COUNTY	PROJECT NUMBER BRF-061-8(159)--38-31	SHEET NUMBER D.2
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STA 127+49.5  
BEGIN SB SHOULDER PAVING

STA 128+27.40  
END SB SHOULDER PAVING

Single Lane closure: for construction  
Abutments.  
Full closure: for bridge removal and  
setting beams

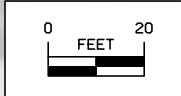
Variable shoulder width, plan is to have  
uniform width.  
check with Yan if design exception is  
needed

Sta. 127+86.9  
70'x44'  
I-Beam Bridge  
Overhead Crossing

STA 127+46.5  
BEGIN NB SHOULDER PAVING

STA 128+24.09  
END NB SHOULDER PAVING

Julien TWP.  
T-89N R-2E  
SEC. 36



US 61



## Survey Information

Dubuque County  
BRF-061-8(159)—38-31  
Grandview Ave 1.2 mi S of US 20 in Dubuque  
Bridge Replacement-PPCB  
PIN 20-31-061-040  
Sap-199.3

### General Information

Measurement units for this survey are US survey feet. This survey is for proposed replacement of the Grandview Ave bridge over US Hwy 61/52/151. Project datum and control information is provided by Design Survey Office. This project is a Full DTM. This survey request was for the US Hwy 61 and Grandview Ave corridors.

### Vertical Control

Vertical datum for this survey is NAVD88 (Computed using Geoid12b). GRS80 Ellipsoidal Height was computed at project Pts. 524515, 524525, and CP1 by conducting one concurrent five-hour static observation. Additional benchmarks were placed throughout the project using a GNSS Base-Rover setup relative to Pts. 524515 and CP1.

No As-Built Plan benchmarks could be located, however survey elevations obtained on the bridge seats have an average vertical difference relationship with the plan bridge seat elevations as follows:

As-built Plan U-UG-17(6) Bridge Design No. 255  
West abutment low step bridge seat plan elev. = 819.23  
Survey average low step bridge seat elev. = 821.36

East abutment low step bridge seat plan elev. = 819.99  
Survey average low step bridge seat elev. = 822.10

The average vertical difference is +2.12 to be applied to as built elevations.

### Horizontal Control

The project coordinate system for this survey is Iowa RCS Zone 11 (U.S. Survey Feet). This survey control is relative to laRTN reference stations. laRTN Reference Station coordinates are relative to the National Reference Station network datum: NAD83 (2011) for Epoch 2010.00. Coordinates were determined by conducting one concurrent five-hour static observation at project control Pts. 524515, 524525, and CP1. Additional control points were placed throughout the project using a GNSS Base-Rover setup relative to Pts. 524515 and CP1.

### Alignment Information

The horizontal alignment for U.S. Hwy 61/52/151 this survey is a retrace of As-built Plan No. NHSX-052-2(83)—3H-31. Survey stationing was equated to the plan TS at Sta. 132+11.96 and run back without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

TS Sta. 132+11.96 As-built Plans Project No. NHSX-052-2(83)—3H-31  
Survey TS Sta. 132+11.96

POT Sta. 127+86.95 As-built Plans Project No. NHSX-052-2(83)—3H-31  
Survey POT Sta. 127+86.91

PT Sta. 102+51.93 As-built Plans Project No. NHSX-052-2(83)—3H-31  
Survey PT Sta. 102+51.97

## 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) EPOCH 2010.00

VERT. DATUM: NAVD88

1a. Regional Coordinate System Zone 11

Coordinate listing from next sheet will be used with 1aRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 11

Project Control Marks are Bench Marks

Point Name	Northing	Easting	Elevation	Code	Note
524515	8411480.474	21463797.161	821.250	FENO	SET FENO MON TOP OF BACK SLOPE N BOUND US HWY 61 AND S GRANDVIEW AVE OFF RAMP 90 FEET WEST OF JULIEN DUBUQUE DR AND 43 FEET EAST OF MANHOLE
524525	8412632.278	21463592.276	782.582	FENO	SET FENO MON 18 FEET WLY OF S BOUND US 61 AND S GRANDVIEW AVE OFF RAMP 65 FEET SSW OF TRANSMISSION LINE POLE 4.5 FEET EAST OF UTILITY MANHOLE
CP1	8411799.542	21463507.284	827.057	CP	SET 5/8X40 RBR W DIMPLE IN SW QUAD S GRANDVIEW AVE AND ROCKDALE RD 41 FEET WEST OF ROCKDALE RD AND 69 FEET SOUTH OF S GRANDVIEW AVE



108-23A  
08-01-08

### TRAFFIC CONTROL PLAN

Grandview Avenue over US 61 will be closed to traffic during construction.  
Traffic will b maintained using offsite detour.

On US 61, maintain 2 lanes of traffic in both directions at all times, except as follows:  
- Utilize TC-454 for the removal of the existing bridge beams and placement of new beams over US 61.  
- Utilize TC-421 for construction of abutment, retaining walls, and shoulder construction.

All ramps and side roads shall remain open at all times.

Sidewalks shall be closed during construction.

- Use of detour is less likely , will be reviewed with the City.
- If staging is proposed then coordinate with Dan Sprengeler
- maintain one sidewalk open at all times if bridge is staged
- Contact RCE if there have been any issue with staging/traffic

108-25  
10-21-14

### 511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
Grandview Ave	EB/WB	DUBUQUE	IN DUBUQUE 1 MI S OF US 20	US 61	Bridge	23950-FHWA Number	Vertical	16.25'				

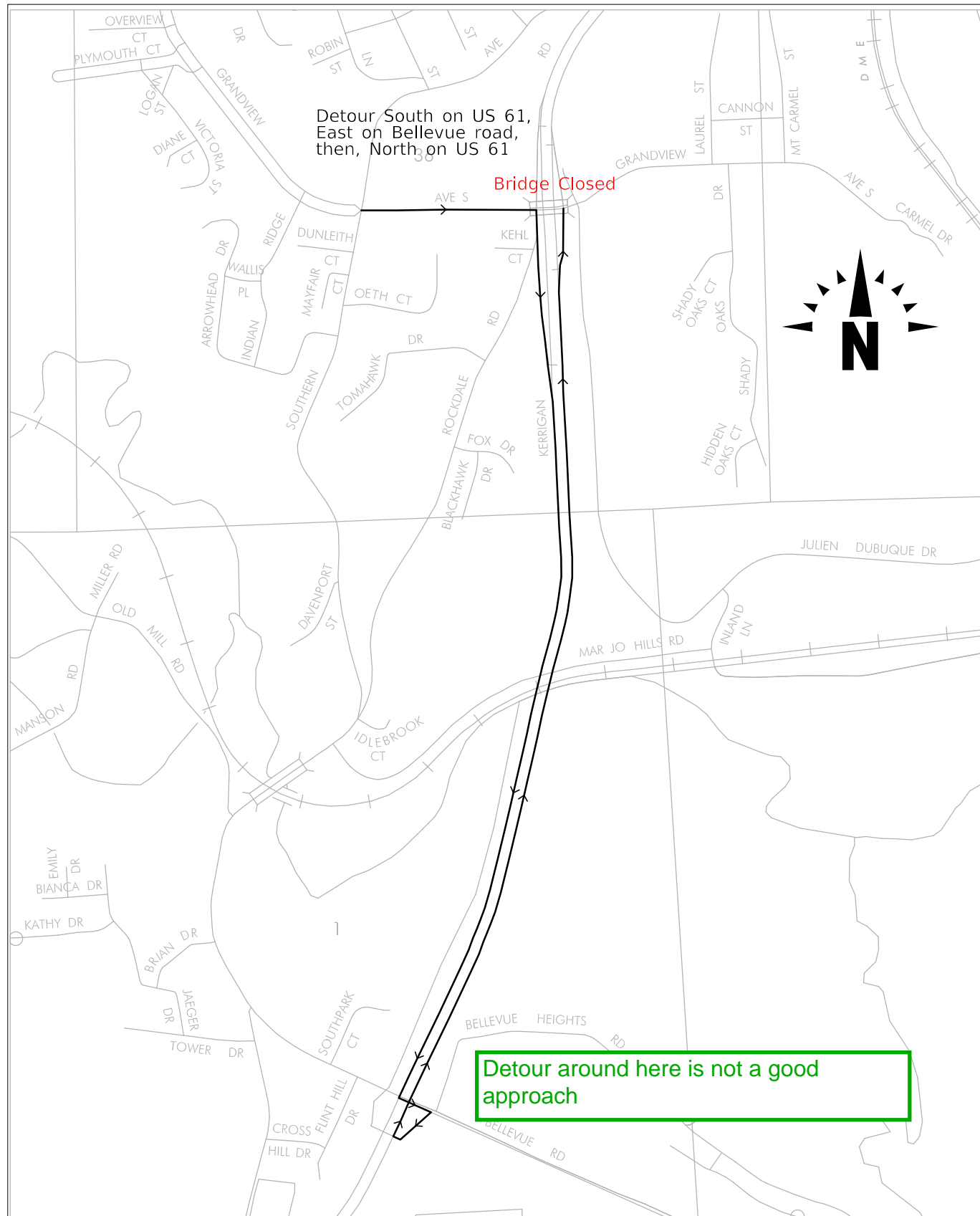
113-2  
04-16-13

### PEDESTRIAN PATH CLOSURES

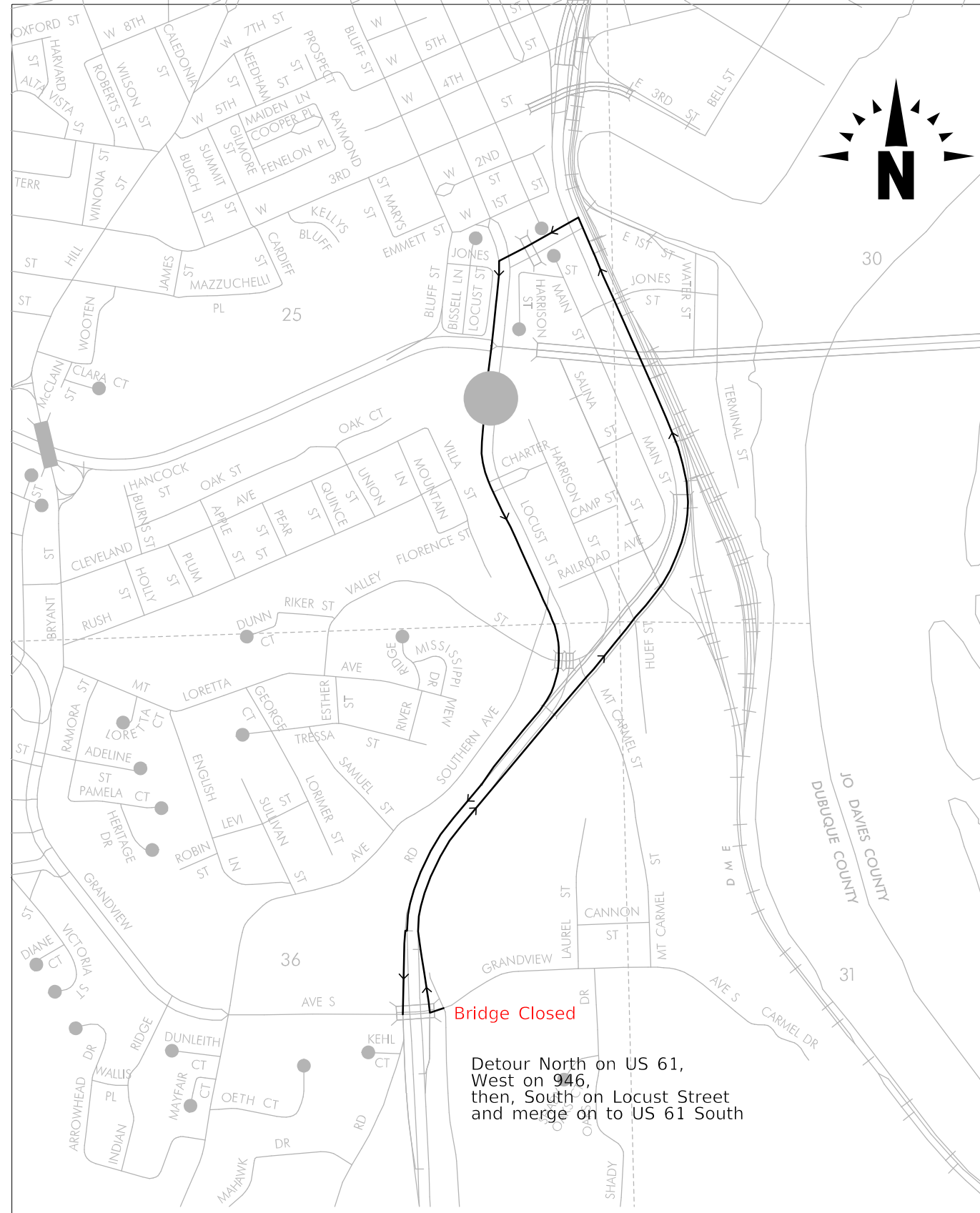
Refer to TC-601.

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

Location	Side	Type III Barricades*	Remarks
		No.	
Sidewalk at Grandview Ave over US 61 Bridge	LT	1	SW Quadrant
Sidewalk at Grandview Ave over US 61 Bridge	RT	1	SE Quadrant
Sidewalk at Grandview Ave over US 61 Bridge	LT	1	NW Quadrant
Sidewalk at Grandview Ave over US 61 Bridge	RT	1	NE Quadrant

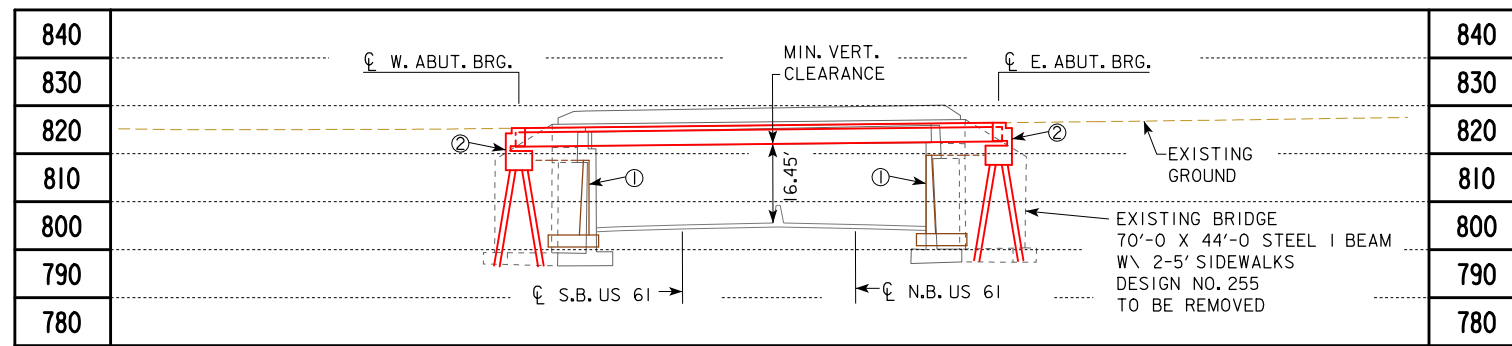


Proposed EB Detour  
(Grandview Ave. over US 61)



Proposed WB Detour  
(Grandview Ave. over US 61)

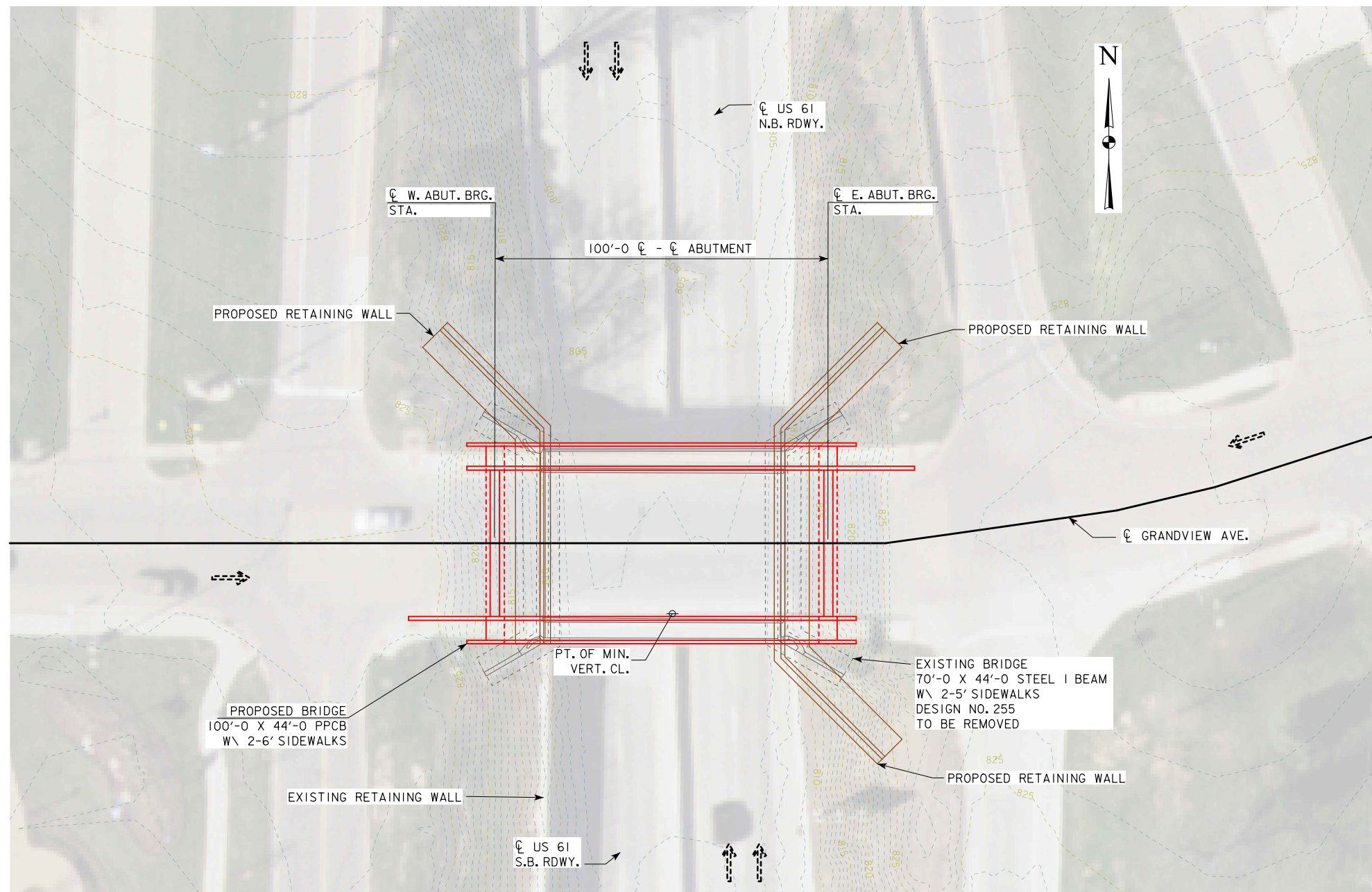




LONGITUDINAL SECTION ALONG CL ROADWAY

- ① PROPOSED CONCRETE RETAINING WALL
- ② SEMI INTEGRAL ABUTMENT

- Sidewalk is 6' wide.
- Plan is to extend retaining wall under bridge.
- The walls will likely have an aesthetic treatment similar to the existing west wall.
- Will have fencing



SITUATION PLAN

LOCATION

GRANDVIEW AVE. OVER US 61  
 T-89N R-2E  
 SECTION 36  
 DUBUQUE TOWNSHIP  
 DUBUQUE COUNTY  
 BRIDGE MAINT. NO. 3145.10052  
 LATITUDE °  
 LONGITUDE °



CONCEPT  
 DESIGN FOR 0° SKEW  
**100'-0 X 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE W\ 2-6' SIDEWALKS**  
 100'-0 SPAN  
**SITUATION PLAN**  
 STATION \_\_\_\_\_ BTB BEAM  
**DUBUQUE COUNTY**  
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
 DESIGN SHEET NO. \_\_\_\_ OF ? FILE NO. 31930 DESIGN NO. ?

