IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District 6

ATTENTION: Jim Schnoebelen

FROM: Nathan Carhoff

OFFICE: Snyder & Associates, Inc.

DATE: December 3, 2015

REF.: Linn
NHSX-151-3(158)--3H-57
BRF-151-3(141)--38-57
BRF-151-3(142)--38-57
BRF-151-3(152)--38-57
NHSX-151-3(134)--3H-57
PIN: 08-57-151-020

SUBJECT: Field Exam Review (D02)

A field exam was held at the District 6 office on November 20, 2015 for the above-referenced project(s). The following people attended:

Name	Office	Phone	email
Ken Yanna	Iowa DOT District 6	(319) 364-0235	Kenneth.Yanna@dot.iowa.gov
Tom Storey	Iowa DOT District 6	(319) 730-1511	Thomas.Storey@dot.iowa.gov
Roger Boulet	Iowa DOT District 6	(319) 386-0446	Roger.Boulet@dot.iowa.gov
Steve Flockhart	Iowa DOT District 6	(319) 286-4920	Steven.Flockhart@dot.iowa.gov
John Vu	Iowa DOT District 6 RCE	(319) 730-1505	John.Vu@dot.iowa.gov
Doug McDonald	Iowa DOT District 6 RCE	(319) 364-0235	Douglas.Mcdonald@dot.iowa.gov
Jeff Tjaden	Iowa DOT District 6 Maint.	(319) 364-0235	Jeffrey.Tjaden@dot.iowa.gov
Johnny Shanahan	Iowa DOT District 6 Maint.	(319) 364-8189	Johnny.Shanahan@dot.iowa.gov
John Clute	Iowa DOT OBS	(515) 233-7894	John.Clute@dot.iowa.gov
Bernie Frieden	City of Fairfax	(319) 846-2204	gtr64ceo@southslope.net
Cynthia Stimson	City of Fairfax	(319) 846-2204	fairfax@southslope.net
Shane Wicks	Hall & Hall Engineers	(319) 362-9548	shane@halleng.com
Anna Smith	Terracon	(515) 557-3831	Anna.smith@terracon.com
Jerome Hatlewick	Shuck-Britson	(515) 243-4477	jhatlewick@shuck-britson.com
Richard Voelker	Snyder & Associates	(515) 964-2020	rmvoelker@snyder-associates.com
Nathan Carhoff	Snyder & Associates	(515) 964-2020	ncarhoff@snyder-associates.com

This project includes reconstruction of four structures and associated roadway improvements along U.S. Highway 151 in Linn County. The structure replacements include: U.S. Highway 151 Bridge over Union Pacific Railway (Maint. No. 5721.8S151), U.S. Highway 151 Bridge over Prairie Creek (Maint. No. 5722.0S151), U.S. Highway 151 Bridge over Drainage Ditch #1 (Maint. No. 5722.3S151) and U.S. Highway 151 Bridge over Drainage Ditch #2 (Maint. No. 5724.3S151).

Highway 151 is a service level “B” roadway. Through the City of Fairfax, the 2013 ADT is estimated to be 8,100 vpd with 6% trucks, the 2040 ADT is estimated to be 12,010 vpd with 6% trucks. Outside the City of Fairfax, the 2013 ADT is estimated to be 13,500 vpd with 6% trucks, the 2040 ADT is estimated to be 19,800 vpd with 6% trucks.

In general the proposed project will involve a three-lane concrete roadway consisting of two 12’-0” through lanes, a 14’-0” two way left turn lane and 3’-0” curb and gutter. Right and left turn lanes are included at intersections. At drainage ditch #2 the roadway will consist of two 12’-0” through lanes, a 16’-0” painted median and 10’-0” shoulders (4’-0”

paved, 6’-0” granular). Foreslopes are proposed to be 4:1 varying to 3:1 at structures as needed.

U.S. Highway 151 Bridge over UPRR is proposed to be a 204’-0” x 40’-0” Pretensioned Prestressed Concrete Beam Bride with 14’-0” trail and 5’-0” sidewalk, BTB beams.

U.S. Highway 151 Bridge over Prairie Creek is proposed to be a 209’-0” x 46’-0” Pretensioned Prestressed Concrete Beam Bridge with 14’-0” trail and 5’-0” sidewalk, BTB beams.

U.S. Highway 151 Bridge over Drainage Ditch #1 is proposed to be a 110’-0” x 46’-0” Continuous Concrete Slab Bridge with 14’-0” trail and 5’-0” sidewalk.

U.S. Highway 151 Structure over Drainage Ditch #2 is proposed to be a 53’-0” x 14’-0” x 156’-0” Precast Concrete Arch.

Side road impacts include reconstruction of portions of Church Street (31’-0” PCC), Prairie Avenue (25’-0” PCC), Losey Avenue (23’-0” PCC), Stallman Drive (25’ PCC) and Cemetery Road (25’ PCC).

Proposed project also includes installation of a 42” diameter reinforced concrete pipe culvert under Beverly Road to alleviate drainage concerns near the intersection of U.S. Highway 151.

Through traffic will be detoured during construction. Local traffic will be maintained with staged construction. Following completion of the UPRR Bridge, through traffic can be restored through the corridor. Detour route will follow Wright Brothers Blvd. to I-380 to U.S. Highway 30.

Right-of-way is anticipated to be required. The anticipated D5 date is April 29, 2016. The D3 date is proposed to be February 3, 2016 and the anticipated B1 date is March 30, 2016.

Access control: From the beginning to of the project through Station 900+00, U.S. Highway 151 is priority 6 with no access control. At Drainage Ditch #2 U.S. Highway 151 is priority 4 with access spacing approximately 1,000 feet in the vicinity of the structure.

An agreement with the City of Fairfax will be needed for construction. Also, permitting with the Union Pacific Railroad will be needed.

New highway signing is needed, traffic signals are not

Contractor furnished borrow is needed, quantity is approximately 8,720 cubic yards.

ADA accommodations are required at proposed sidewalk locations.

Is a cultural review of the need lines needed? Yes, P03 date is not known.

No plan sheets are included in this submittal; however, plan sheets may be viewed on the network at:
pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\Design Events\D2\57151158_D2_Plans.pdf

This project is currently scheduled for a November 20, 2018 letting. The estimated cost of construction shown in the final concept was $15,189,000. The current cost estimate is $15,352,598.

Machine Guidance Electronic Files Checklist

Add information to address any incomplete items below:

Yes	N/A	No	
☐	☐	☐	Horizontal and Vertical Alignments Complete
☐	☐	☐	Typical Templates showing proposed Pavement, Shoulder, Foreslope design
☐	☐	☐	Correct Feature Naming for Roadway Breaklines and Components

cc:

M. J. Sankey	S. J. Gent	M. J. Kennerly
D. A. Widick	W.A. Sorenson	D. L. Maifield
E. C. Wright	B. R. Smith	
K. K. Patel	K. D. Nicholson	
K. Brink	J. E. Laaser-Webb	T. Crouch
V. A. Brewer	D. R. Tebben	M. D. Masteller
Donna Matulac	M. A. Swenson	C. B. Brakke
D. E. Sprengeler	N. L. McDonald	D. A. Popp
B. Bradley	G. A. Novey	D. R. Claman
J. McCollough	S. P. Anderson	B. Hofer
M. Hobbs (RR)	K. A. Yanna	D. J. McDonald
E. Engle (RR)	M. F. Brandl	S. W Flockhart
P. C. Keen	J. R. Schoenrock	J. Jurasic (FHWA)
W. N. Cameron	J. Garton	N. L. Cuva

John Clute, Iowa DOT Office of Bridges and Structures
Tom Storey, Iowa DOT District 6 Staff Engineer
Roger Boulet, Iowa DOT District 6 Materials Engineer
John Vu, Iowa DOT District 6 RCE Transportation Engineer
Jeff Tjaden, Iowa DOT District 6 Maintenance Manager
Johnny Shanahan, Iowa DOT District 6 Cedar Rapids Maintenance
Bernie Frieden, City of Fairfax
Cynthia Stimson, City of Fairfax
Shane Wicks, Hall & Hall Engineers, representing City of Fairfax
Anna Smith, Terracon
Jerome Hatlewick, Shuck-Britson
Richard Voelker, Snyder & Associates

When Machine Guidance Electronic Files are required:

CC: Hamski, Thomas [DOT]; Clute, Khyle [DOT]; Richardson, Curtis [DOT]; Bowman, Tommy [DOT]; Kimble, Brandon [DOT];

LETTING DATE
November 20, 2018

LINN Co.

UNKNOWN PAVEMENT - GRADE AND REPLACE
NHSX-151-3(158)--3H-57

INDEX OF SHEETS

* Color Plan Sheets

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

LINN COUNTY

UNKNOWN PAVEMENT - GRADE AND REPLACE

FROM SOUTH OF CHURCH STREET
IN FAIRFAX TO SOUTH OF DEAN ROAD

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

IOWA ONE CALL
1-800-292-8989 811
www.iowaonecall.com

City of Fairfax will be responsible for a portion of storm sewer related construction costs, City staff requested an estimated cost be provided to them.

City of Fairfax will be responsible for maintenance of the storm sewer following project completion.

Field review did not take place due to weather, Snyder & Associates will further refine these plans and re-schedule a field review.

Iowa DOT staff recommended thorough documentation of current drainage patterns and any changes thereto.

Storm sewer design utilizes updated rainfall data.

Snyder & Associates requests D3 date be revised to February 3, 2016. Remaining schedule unchanged.

Anticipated Project Development Schedule:

D2 - Design Field Exam
November 20, 2015

D3 - Plans for Preliminary Bridge
December 30, 2015

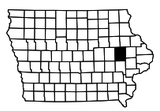
B1 - Bridges and Structures Layout
March 30, 2016

S2 - Identification of Soils Related ROW Issues
March 30, 2016

D5 - Plans to Right of Way
April 29, 2016

Preliminary Earthwork: 19,330 CY Cut (Total)
28,050 CY Fill (Total)
8,720 CY Borrow

For Project Location Map
Refer to Sheet A.2



DESIGN DATA URBAN			
2013	AADT	8,100	V.P.D.
2040	AADT	12,010	V.P.D.
2040	DHV	1,255	V.P.H.
TRUCKS		6	%
Total Design ESALs		--	

DESIGN DATA RURAL			
2013	AADT	13,500	V.P.D.
2040	AADT	19,800	V.P.D.
2040	DHV	1,830	V.P.H.
TRUCKS		6	%
Total Design ESALs		--	

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Nathan E. Carhoff	Primary Signature Block
V.1	Jerome Hattlewick	Structural Design
V.1	Adam R. Bullerman	Hydraulic Design

FIELD EXAM PLANS

Subject to change by final design.

D2 PLAN – Date: November 20, 2015

REVISIONS

	TOTAL 90
PROJECT IDENTIFICATION NUMBER	
08-57-151-020	
PROJECT NUMBER	
NHSX-151-3(158)--3H-57	
R.O.W. PROJECT NUMBER	

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	A.1

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

T-82N

R-8W

ANGLE RD

MORGAN BRIDGE

80TH ST SW

33RD AVE SW

BEVERLY RD

SELZER RD

NURSERY RD

VALLEY VIEW DR

EAST CEMETERY RD

OLD BRIDGE RD

UP

Prairie Creek

FAIRFAX

POP. 2123

151

STA. 974+18.00
RESUME PROJECT

STA. 985+76.00
END PROJECT

Drainage Ditch 2
Design No. ____

Beverly Road
Culvert

STA. 900+00.00
STOP PROJECT

Prairie Creek
Design No. ____

Drainage Ditch 1
Design No. ____

Design numbers for each structure will be provided following D3 plans

UPRR Bridge
Design No. ____

STA. 841+00.00
BEGIN PROJECT

3 4 9 2 11

LOCATION MAP SCALE
0 0.25 0.5
Miles

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	A.2

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

Roadway	U.S. Highway 151			
PIN Number	14-57-151-010 and 08-57-151-020		**Submittal Date**	
Project Number	NHSX-151-3(158)--3H-57			**Approval Date**
District	District 6	**Assistant District Engineer**	Kenneth Yanna	
County	Linn (57)		or	
Route	U.S. 151	**Office Director**	Jim Schnoebelen	
Location	U.S. Highway 151 From South of Fairfax to U.S. Highway 30			
Work Type	Grade and Pave			
Segment Manager	Tom Storey			
Designer	Snyder & Associates, Inc.			

Design Manual Section 1C-1
last update: 05-06-14

Urban Multilane Roadways (Urban Arterials)

Design Element		Preferred	Acceptable Criteria	Project Values
Design speed (mph)		The anticipated posted speed limit	30	45
Maximum superelevation rate (Refer to Section 2A-2)		4%	8%	4%
Design lane width (ft)		12	11	12
Full depth paved width (ft)	Outside lane	Design lane width + curb and gutter unit or 14 feet for roadways with shoulders, 12' if using full depth shoulders	Match design lane width	15
	Inside lane(s)	Design lane width + curb and gutter unit. 12' for roadways without a curb and gutter unit	Match design lane width	14
Right turn lane or an auxiliary lane (ft)		12	10	12
Left turn lane (ft)	With raised or painted median	12 ft + median	10 ft + median	12
	With depressed median	12	10	N/A
Two-way left turn lane (ft)		14	11	14
Parking lane width (ft)		10	7	N/A
Pavement cross-slope (on tangent sections)	Through lanes	2%, However, when adjacent lanes slope in the same direction, increase slope by 0.5% per lane up to 3%	1.5% minimum, 3% maximum	2%
	Auxiliary and turn lanes	3%	3% maximum	2%
	Crown break at centerline	4%	4% maximum	4%
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	4%
	Curb and gutter units	Match pavement cross-slope	6% maximum	2%
	Parking lanes	1% greater than pavement cross-slope	6% maximum	N/A
Curb type (Refer to Section 3C-2)	Design speed ≤ 45 mph	6-inch standard	any shape	6" Sloped
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	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	3:1
Transverse Slopes	w/ drainage structures	8:1	6:1	8:1
	w/o drainage structures	10:1	6:1	10:1
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	--	
Median width (ft) (Refer to Section 3E-1)		See Section 3E-1	0	14
Bridge width—new	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths or curb-to-curb width	design lane widths + effective shoulder widths or curb-to-curb width	64
	Bridge length > 200 ft	design lane widths + effective shoulder widths or curb-to-curb width	Curb-to-curb width or design lane widths + 4 ft offset each side for roadways with shoulders	70
Bridge width—existing		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft left and right of the design widths	
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16	16.5
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	16.5
	Over railroad	23.3	23.3	23.33
	Sign truss and pedestrian crossings	17.5	17	17.5
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	
Level of Service		C	D	C

Roadway Design Speed (mph) =	45

Design Manual Section 1C-1
last update: 05-06-14

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	360
Minimum horizontal curve radius (ft) and superelevation rate (Refer to Sections 2A-2 and 2A-3)	Method 2 superelevation and side friction distribution	e_{max} = 4% max	See Table 10 in Section 2A-3					--					1039
	Method 5 superelevation and side friction distribution	e_{max} = 6%	144	231	340	485	643	144	231	340	485	643	
		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	135
Minimum rate of vertical curvature (K) (Refer to Section 2B-1)	crest vertical curves		12	19	29	44	61	12	19	29	44	61	61
	sag vertical curves	roadways without fixed-source lighting	26	37	49	64	79	26	37	49	64	79	79
		roadways with fixed-source lighting	26	37	49	64	79	14	20	27	35	44	79
Minimum gradient (%)	(Refer to Section 2B-1)		0.5					0.3% with a curb, 0.0% without a curb					0.5
Maximum gradient (%)	(Refer to Section 2B-1)	Urban roadways	5					--	9	8	8	7	5
		Rural roadways						--	--	--	6	6	5
Clear zone			See "Preferred Clear Zone" table in Section 8A-2					See "Acceptable Clear Zone" table in Section 8A-2					29

Design year ADT =	12,010

Design Manual Section 1C-1
last update: 05-06-14

Effective Shoulder Width and Type for Multilane Arterials

Preferred (Values shown in feet)					Acceptable (Values shown in feet)					Project Values
	Rural Roadways		Urban Roadways			Rural Roadways		Urban Roadways		
Auxiliary lanes or turn lanes with shoulders	6		6		Auxiliary lanes or turn lanes with shoulders	6		0		0
Turn lanes with curbs	6		See Section 3C-2		Turn lanes with curbs	6		0		0
Expressways	Outside		Median Side		Expressways	Outside		Median Side		
	Effective Shoulder Width	Paved Width	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	Effective Shoulder Width	Paved Width	
Routes where bicycles are to be accommodated	10	10	6	6	Routes where bicycles are to be accommodated	8	4	4	4	
On roadways approaching urban areas (due to increased bike traffic)	10	10	6	6						
On all curves with a superelevation rate of 7.0% or greater	10	10	6	6	On all other Expressways (Multilane Arterials)	8	2"	4	4	
On roadways with design year ADT > 6500 vpd	10	6	6	6						
On all other Expressways (Multilane Arterials)	10	4	6	4						

*Requires safety edge-See 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

6% Maximum Grade

DESIGN CRITERIA – URBAN
Sta 841+00 to 900+00

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

FILE NO. | ENGLISH | DESIGN TEAM SNYDER & ASSOCIATES, INC. | LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER A.4

Roadway	U.S. Highway 151			
PIN Number	14-57-151-010 and 08-57-151-020		**Submittal Date**	
Project Number	NHSX-151-3(158)--3H-57			**Approval Date**
District	District 6	**Assistant District Engineer**	Kenneth Yanna	
County	Linn (57)	**or**		
Route	U.S. 151	**Office Director**	Jim Schnoebelen	
Location	U.S. Highway 151 From South of Fairfax to U.S. Highway 30			
Work Type	Unknown Pavement - Grade and Replace			
Segment Manager	Tom Storey			
Designer	Snyder & Associates, Inc.			

Design Manual Section 1C-1
last update: 05-06-14

Rural Two-Lane Highways (Rural Arterials)

Design Element		Preferred	Acceptable	Project Values
Design speed (mph)		60	50	60
Maximum superelevation rate (Refer to Section 2A-2)		6%	8%	6%
Design lane width (ft)		12	12	12
Full depth paved width (ft)		14	12	12
Right turn lane (ft)		12	10	12
Climbing Lane (ft)		12	12	12
Left turn lane (ft)		12	10	12
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum	2%
	Auxiliary and turn lanes	3%	3% maximum	3%
	Crown break at centerline	4%	4% maximum	4%
Shoulder cross-slope (on tangent sections)		4%	Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders	4%
Curb type (Refer to Section 3C-2)	Design speed = 50 or 55 mph	6-inch sloped	6-inch standard	
	Design speed ≥ 60 mph	4-inch sloped	6-inch sloped	No Curb
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	10:1 for 4', Then 6:1
	Beyond standard ditch depth and design clear zone	3.5:1	3:1	3.5:1
	Curbed roadways	2%	not steeper than 3:1	N/A
Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.)		3:1	2.5:1	3:1
Transverse Slopes	w/ drainage structures	9:1	6:1	8:1
	w/o drainage structures	10:1	6:1	10:1
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	--	5 x 10
Bridge width—new	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	design lane widths + effective shoulder widths	56
	Bridge length > 200 ft	design lane widths + effective shoulder widths	design lane width + 4' right and left of the design lane widths	N/A
Bridge width—existing		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft. offset left and right	
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16	16.5
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	16.5
	Over railroad	23.3	23.3	23.3
	Sign trusses and pedestrian bridges	17.5	17	17.5
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	
Level of Service		B	B	B

Roadway Design Speed (mph) = 60

Design Manual Section 1C-1
last update: 05-06-14

Design Criteria for High Speed Roadways

Design Element			Preferred Criteria, Design Speed, mph						Acceptable Criteria, Design Speed, mph						Project Values
			50	55	60	65	70	75	50	55	60	65	70	75	
Stopping sight distance (ft) (Refer to Section 6D-1)			425	495	570	645	730	820	425	495	570	645	730	820	570
Minimum horizontal curve radius (ft) (Refer to Sections 2A-2 and 2A-3)	Method 5 superelevation and side friction distribution	e_{max} = 6%	833	1060	1330	1660	2040	2500	833	1060	1330	1660	2040	2500	1330
		e_{max} = 8%	--	--	--	--	--	--	758	960	1200	1480	1810	2210	
Minimum vertical curve length (ft) (Refer to Section 2B-1)			150	165	180	195	210	225	150	165	180	195	210	225	180
Minimum rate of vertical curvature (K) (Refer to Section 2B-1)	crest vertical curves		84	114	151	193	247	312	84	114	151	193	247	312	151
	sag vertical curves	roadways without fixed source lighting	96	115	136	157	181	206	96	115	136	157	181	206	136
		roadways with fixed-source lighting	96	115	136	157	181	206	54	66	78	91	106	121	136
Minimum gradient (%)	(Refer to Section 2B-1)		0.5						0.3% with a curb, 0.0% without a curb						0.5
Maximum gradient (%) (Refer to Section 2B-1)		Urban roadways	4		3				7	6	6	--	--	--	3
		Rural roadways							5	5	4	4	4	4	3
		Interstates							5	5	4	4	4	4	3
Clear zone			See "Preferred Clear Zone" table in Section 8A-2						See "Acceptable Clear Zone" table in Section 8A-2						32

Design year ADT = 19,800

Design Manual Section 1C-1
last update: 05-06-14

Effective Shoulder Width and Type for Two-Lane Highways

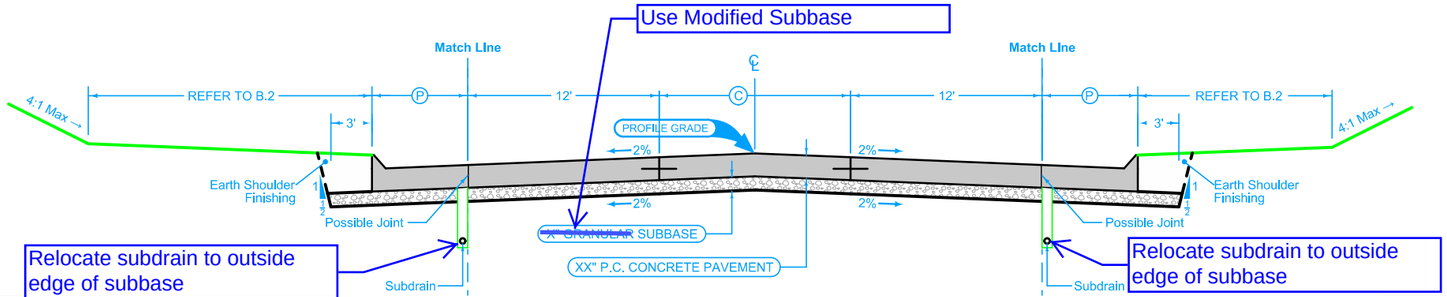
Preferred (values shown in feet)			Acceptable (values shown in feet)			Project Values
	Rural Roadways	Urban Roadways		Rural Roadways	Urban Roadways	
Turn lanes with shoulders	6	6	Turn lanes with shoulders	6	0	6
Turn lanes with curbs	6	See Section 3C-2	Turn lanes with curbs	6	0	N/A
	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	
Climbing Lanes	6	4	Climbing Lanes	4	0	N/A
Two-Lane Highways	Effective Shoulder Width	Paved Width	Two-Lane Highways	Effective Shoulder Width	Paved Width	
Routes where bicycles are to be accommodated	10	10	Design year ADT > 2000 vpd	8	2*	10 Effective Shoulder Width. 4' Paved 6' Granular
On roadways approaching urban areas (due to increased bike traffic)	10	10				
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	2*	
On all other NHS	10	4				
On non-NHS routes with design year ADT > 3000	10	4	Design year ADT < 400 vpd	4	2*	
On non-NHS routes with design year ADT < 3000	8	2*				

*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

DESIGN CRITERIA – RURAL
Sta 974+18 to 985+76



Curbed Shoulder

BEGIN STATION	END STATION	P Feet	1R_Curb 04-19-11 Curb Type See PV-102
841+00.00	848+93.41	3'	6" Sloped
854+64.53	855+08.40	3'	6" Sloped
855+08.40	855+72.60	3'-9.42'	6" Sloped
855+72.60	856+04.10	9.42'	6" Sloped
858+59.61	858+89.61	9.42'	6" Sloped
858+89.61	859+53.81	9.42'-3'	6" Sloped
859+53.81	863+54.98	3'	6" Sloped
864+54.40	865+67.16	3'	6" Sloped
865+67.16	865+91.36	3'-5.42'	6" Sloped
865+91.36	866+21.36	5.42'	6" Sloped
868+33.83	868+63.83	5.42'	6" Sloped
868+63.83	868+88.03	5.42'-3'	6" Sloped
868+88.03	875+51.89	3'	6" Sloped
876+75.74	879+77.29	3'	6" Sloped
879+77.29	880+07.59	3'-6.03'	6" Sloped
880+07.59	880+37.20	6.03'	6" Sloped
881+46.63	881+76.24	6.42'	6" Sloped
881+76.24	882+10.44	6.42'-3'	6" Sloped
882+10.44	883+12.30	3'	6" Sloped
890+00.00	900+00.00	3'	6" Sloped

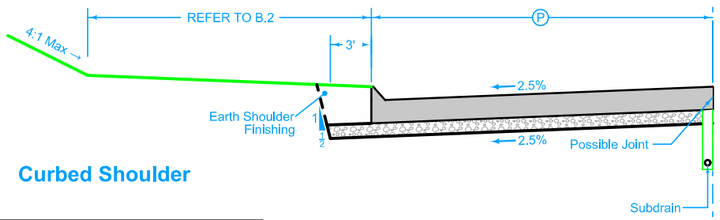
Discussed rural vs urban section. Urban section with storm sewer is proposed per concept. City of Fairfax is concerned with costs associated with storm sewer installation. Rural section may be considered north of Prairie Creek Bridge.

Mainline Jointing:
Transverse joints: CD at 20' spacing
Longitudinal joint: L-2

STATION TO STATION		C Feet 2P_TWLTL_ 10-19-10
841+00.00	842+80.00	0'-14'
842+80.00	848+93.41	14'
848+93.41	849+84.53	14'-12'
849+84.53	852+84.53	12'
852+84.53	854+64.83	12'-0'
854+64.83	856+04.10	0'
858+61.10	860+00.57	0'
860+00.57	861+80.48	0'-12'
861+80.48	863+66.06	12'
864+35.23	866+35.46	14'
868+47.92	880+29.81	14'
881+40.69	897+00.00	14'
897+00.00	900+00.00	14'-7.6'

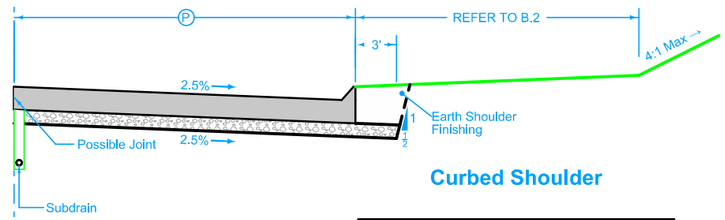
Curbed Shoulder

BEGIN STATION	END STATION	P Feet	1R_Curb 04-19-11 Curb Type See PV-102
841+00.00	848+92.77	3'	6" Sloped
849+83.07	855+39.93	3'	6" Sloped
855+11.39	855+75.59	3'-9.42'	6" Sloped
855+75.59	856+05.59	9.42'	6" Sloped
858+62.60	858+92.60	9.42'	6" Sloped
858+92.60	859+56.80	9.42'-3'	6" Sloped
859+56.80	860+00.57	3'	6" Sloped
864+75.90	865+95.35	3'	6" Sloped
865+95.35	866+19.55	3'-5.42'	6" Sloped
866+19.55	866+49.55	5.42'	6" Sloped
868+62.02	868+92.02	5.42'	6" Sloped
868+92.02	869+16.22	5.42'-3'	6" Sloped
869+16.22	879+68.02	3'	6" Sloped
879+68.02	879+92.02	3'-5.40'	6" Sloped
879+92.02	880+22.41	5.40'	6" Sloped
885+26.85	900+00.00	3'	6" Sloped



Curbed Shoulder

BEGIN STATION	END STATION	P Feet	1R_Curb 04-19-11 Curb Type See PV-102
849+84.53	852+84.68	15'	6" Sloped
852+84.68	854+64.68	15'-3'	6" Sloped
884+26.71	888+00.00	15'	6" Sloped
888+00.00	890+00.00	15'-3'	6" Sloped



Curbed Shoulder

BEGIN STATION	END STATION	P Feet	1R_Curb 04-19-11 Curb Type See PV-102
860+00.57	861+80.48	3'-15'	6" Sloped
861+80.48	863+65.74	15'	6" Sloped
881+34.73	882+26.93	3'-15'	6" Sloped
882+26.93	883+95.59	15'	6" Sloped

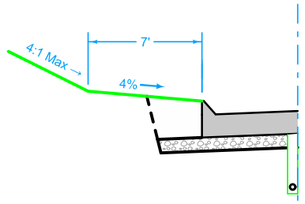
See Tab 100-24 or 100-25 for pavement quantities.

See Tab 112-9 for shoulder quantities.

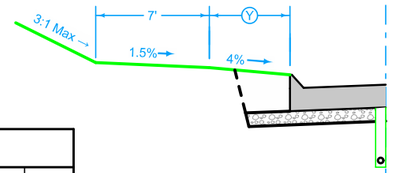
US HIGHWAY 151

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	B.1

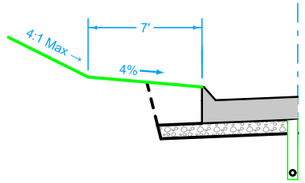
SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC



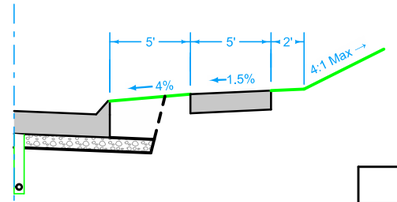
BEGIN STATION	END STATION
841+00.00	849+15.14



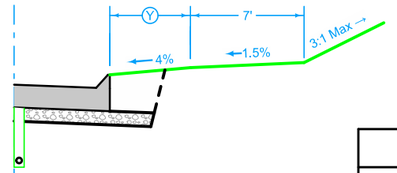
BEGIN STATION	END STATION	(X) Feet
849+84.53	868+92.02	2'-8.5'
879+92.02	881+76.24	2'-8.5'



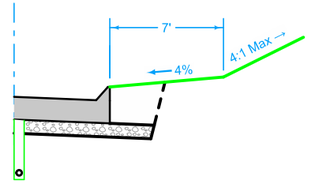
BEGIN STATION	END STATION
868+92.02	879+92.02
881+76.24	900+00.00



BEGIN STATION	END STATION
841+00.00	849+15.14



BEGIN STATION	END STATION	(Y) Feet
849+84.53	868+92.02	0'-6.5'
879+92.02	881+76.24	0'-6.5'



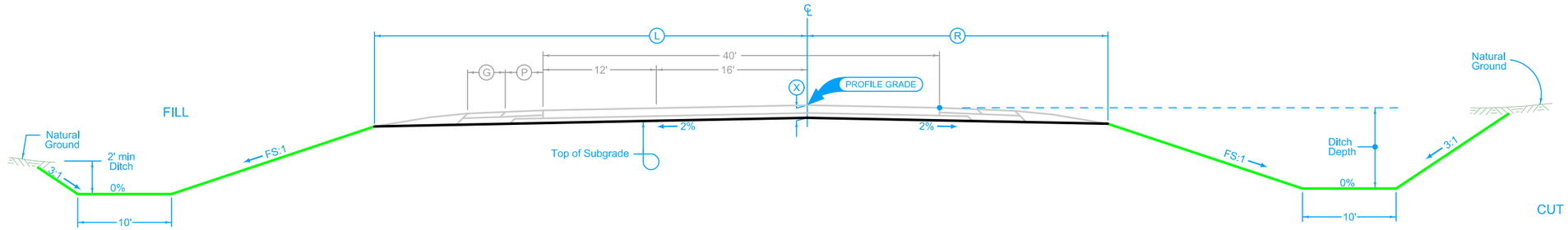
BEGIN STATION	END STATION
868+92.02	879+92.02
881+76.24	900+00.00

See Tab 100-24 or 100-25 for pavement quantities.

See Tab 112-9 for shoulder quantities.

US HIGHWAY 151

G_2_Grade
MODIFIED



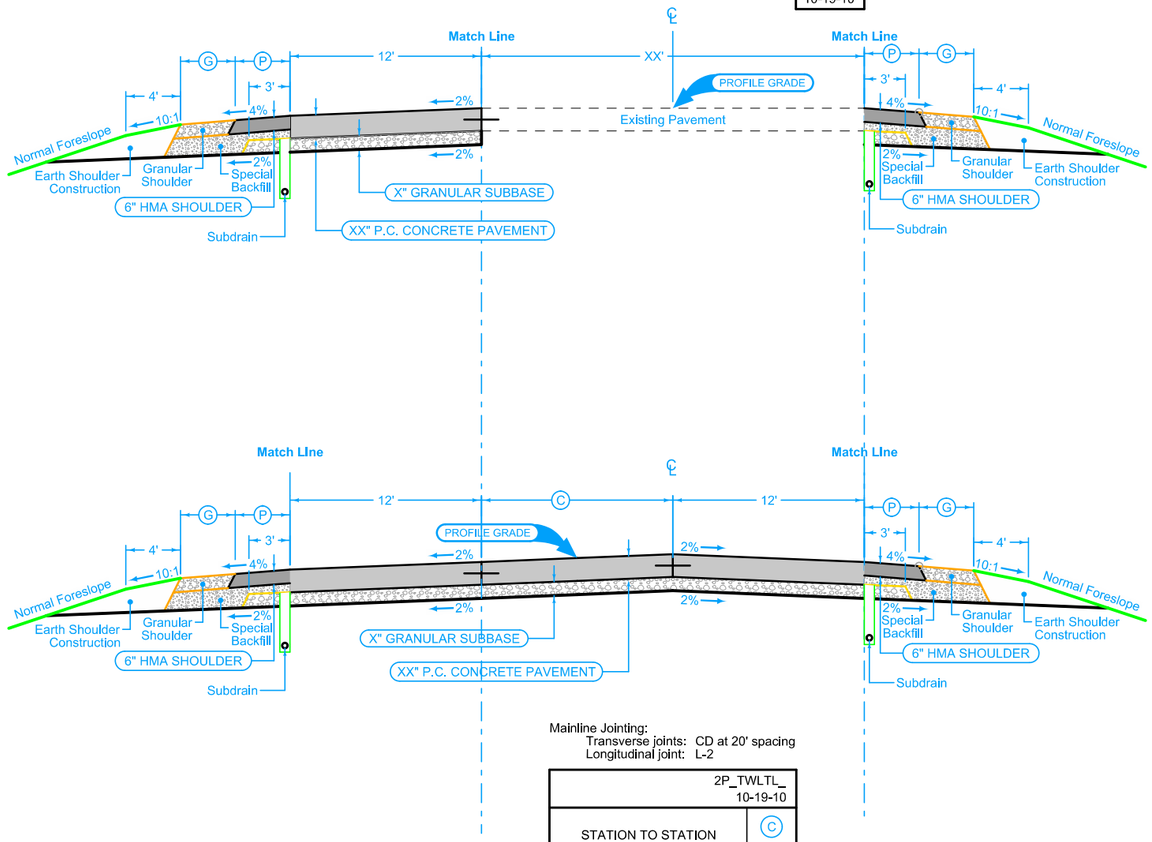
LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	FS
US HIGHWAY 151	979+35.00	981+05.00	x	x	x	4

Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

See plan & profile sheets and cross sections for additional details of ditches and backslopes.

2 LANE GRADING

2E_
10-19-10



Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

		2_C_ 10-15-13	
STATION TO STATION		(P) Feet	(G) Feet
974+69.95	979+35.00	4'	6'
981+05.00	984+83.16	4'	6'

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

		2_C_ 10-15-13	
STATION TO STATION		(P) Feet	(G) Feet
977+27.69	979+35.00	4'	6'
981+05.00	983+46.28	4'	6'

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

		2_C_ 10-15-13	
STATION TO STATION		(P) Feet	(G) Feet
979+35.00	981+05.00	4'	6'

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

		2_C_ 10-15-13	
STATION TO STATION		(P) Feet	(G) Feet
979+35.00	981+05.00	4'	6'

Mainline Jointing:
Transverse joints: CD at 20' spacing
Longitudinal joint: L-2

		2P_TWLTL_ 10-19-10
STATION TO STATION		(C) Feet
979+35.00	981+05.00	16'

See Tab 100-24 or 100-25 for pavement quantities.

See Tab 112-9 for shoulder quantities.

US HIGHWAY 151

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	B.3

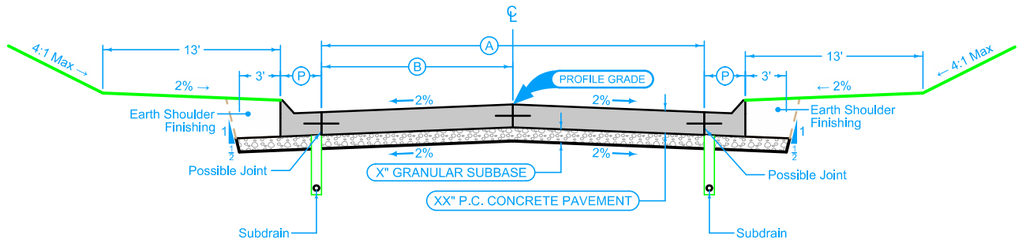
SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

Curbed Shoulder

Shoulder Jointing:
Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

Single pour: L-2
Staged : KT-2
Transverse:C at 20' spacing

			2_Curb_ 04-19-11
STATION TO STATION		(P) Feet	Curb Type See PV-102
1849+85.40	1851+00.00	3'	6" Std.
2863+00.00	2863+45.60	3'	6" Std.
2864+92.61	2866+75.00	3'	6" Std.
3862+86.45	3864+57.78	3'	6" Std.
5884+66.16	5886+80.69	3'	6" Std.



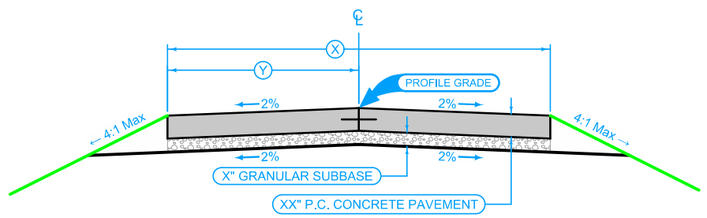
LOCATION			DIMENSIONS		
ROAD IDENTIFICATION	STATION TO STATION		(A) Feet	(B) Feet	FS
CHURCH STREET	1849+85.40	1851+00.00	25	12.5	4
PRAIRIE AVENUE	2863+00.00	2863+45.60	19	9.5	4
PRAIRIE AVENUE	2864+92.61	2866+75.00	19	9.5	4
LOSEY AVENUE	3862+86.45	3864+57.78	17	8.5	4
CEMETERY ROAD	5884+66.16	5886+80.69	19	9.5	4

Curbed Shoulder

Shoulder Jointing:
Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

Single pour: L-2
Staged : KT-2
Transverse:C at 20' spacing

			2_Curb_ 04-19-11
STATION TO STATION		(P) Feet	Curb Type See PV-102
1849+85.40	1851+00.00	3'	6" Std.
2863+00.00	2863+45.60	3'	6" Std.
2864+92.61	2866+75.00	3'	6" Std.
3862+86.45	3864+57.78	3'	6" Std.
5884+66.16	5886+80.69	3'	6" Std.



LOCATION			DIMENSIONS		
ROAD IDENTIFICATION	STATION TO STATION		(X) Feet	(Y) Feet	FS
STALLMAN DRIVE	4874+79.34	4874+25.00	25	12.5	4
CEMETERY ROAD	5883+00.69	5883+57.95	28	14	4

SURVEY SYMBOLS

UTILITY LEGEND

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.**	
Yellow	(4)	Highlight for Critical Notes or Features
Red	(3)	Delineates Restricted Areas
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
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	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.1

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

FAIRFAX TWP.
T-82N R-8W
SEC. 16

835

840+20.65

840

PT Sta 840+20.65

Added intake prior to beginning of project to reduce spread at first intake

City of Fairfax prefers installation of additional intake. NEPA boundary will need to be checked.

City of Fairfax responsible for relocation of Veterans monument

STA 849+34.97 (HWY 151) =
STA 1849+34.97 (CHURCH STREET)

Show property line(s)

A drive-thru is proposed at Dairy Queen Restaurant

City of Fairfax prefers to extend street to property line and build a normal driveway. Costs for additional street pavement will be City responsibility. Send estimated costs to City.

Sidewalk continues south, rarely used. Used to connect to Rail Road station

Δ = 66° 14′ 42.26″ (LT)
T = 623.05
L = 1,104.08
R = 954.93
E = 185.28

STA 841+00.00
BEGIN PROJECT

32'

45:1 Taper

44'

+28.00 Prop. Type "C" Ent.

U.S. Hwy. 151

Consider profile revision to relocate intakes out of driveway

No existing sidewalk, existing sidewalk ends as station 847+10. Right-of-way needed for proposed sidewalk. Investigate need to purchase access rights. Investigate reconfiguration of entrance.

+59.00 Prop. Type "B" Ent.

Existing 12" culvert

Church Street

850

The need for maintaining a limited sidewalk will be investigated. It is possible to remove sidewalks that are of limited use. It is presumed that all sidewalk will be maintained during construction. Costs associated with any newly constructed sidewalk will be the responsibility of the City of Fairfax

Driveway profile does not account for future trail

City does not take issue with driveway profile design

846+95.00

Construct receiving ramp and sidewalk along Church Street. Send estimated costs to City.

STA 841+00.00
ELEV = 777.78
MATCH EXISTING

777.78

Existing Ground

Profile Grade

842+27.00
Prop. Type "C"
Ent. Rt.

-2.000%
+4.000%
+1.500%

845+34.00
Prop. Type "C"
Ent. Lt.

-2.000%
+10.000%

846+44.00
Prop. Type "C"
Ent. Rt.

Poor drainage in this area. Existing culvert is undersized and silts in. City requested drainage improvements either improve culvert across Church Street or connect to proposed storm sewer

842+28.00
Prop. Type "C"
Ent. Lt.

843+29.00
Prop. Type "C"
Ent. Rt.

844+89.00
Prop. Type "C"
Ent. Rt.

846+01.00
Prop. Type "B"
Ent. Rt.

847+59.00
Prop. Type "B"
Ent. Rt.

-3.298%

+6.000%

VPI +50.000
Elv 753.04
ex = 8.72'
K = 81
Len 750.00 ft
DS = 45 mph

Lt

Rt

838	839	840	841	842	843	844	845	846	847	848	849	850
788.09 787.25	786.39 785.50	784.61 783.74	782.90 782.09	781.24 780.34	779.47 778.60	777.78 777.78	776.96 777.02	776.13 776.29	775.31 775.58	774.48 774.87	773.66 774.17	772.83 773.48
772.01 772.79	771.18 772.12	770.36 771.45	769.53 770.75	768.71 770.05	767.89 769.37	767.06 768.69	766.24 768.01	765.41 767.32	764.63 766.64	763.92 765.95	763.29 765.26	762.73 764.56
762.26 763.84	761.86 763.11	761.54 762.39	761.30 761.86	761.13 761.32	761.04 760.95	761.03 760.70	761.10 760.49	761.24 760.51	761.46 760.53	761.76 760.79	762.14 761.11	762.59 761.52
763.12 762.05	763.73 762.81	764.42 763.61	765.18 764.56									

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.2

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

54" Storm sewer needed, outlet 4.22' below existing grade. May be more practical to purchase ROW and build ditch.

Per City of Fairfax, there are not any problems with the existing ditch.

Iowa DOT staff suggested using a concrete channel in lieu of standard ditch or pipe to convey storm water. This could eliminate need for right-of-way and/or retaining wall.

May install culvert through bridge berm to accommodate drainage

Iowa DOT requested retaining walls be placed closer to Highway 151 to allow room for maintenance. Barrier rail and fencing should be included as necessary. Barrier rail to be similar to the IA Hwy 100 project, Iowa DOT staff to provide details.

Wrap walls as needed at bridge abutment

Investigate need for protection at retaining wall, wall is technically outside clear zone, however penalty for going over the wall is great.

City noted that there is not a lot of drainage coming from the RR into the ditch along Highway 151

FAIRFAX TWP. T-82N R-8W SEC. 16

FAIRFAX TWP. T-82N R-8W SEC. 9

Sta 857+23.00
144'-10"x30'-0" I-Beam Span Bridge with 0° skew
(Remove)

Sta 857+32.60
Construct 254'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge with 4° Skew (R.A.)

Union Pacific Railroad

U.S. Hwy. 151

Losey Avenue

Proposed Wall

STA 2864+19.80 (HWY 151) = STA 2864+19.80 (PRARIE AVENUE)

15:1 Taper · 10:1 Taper · 45:1 Taper · 54' · 40'

0 FEET 50

VPI +32.600
Elv 806.00
ex = -11.25'
K = 63
Len 750.00 ft
SSD = 288'
DS = 45 mph

+6.000% · -6.000%

Profile Grade

Existing Ground

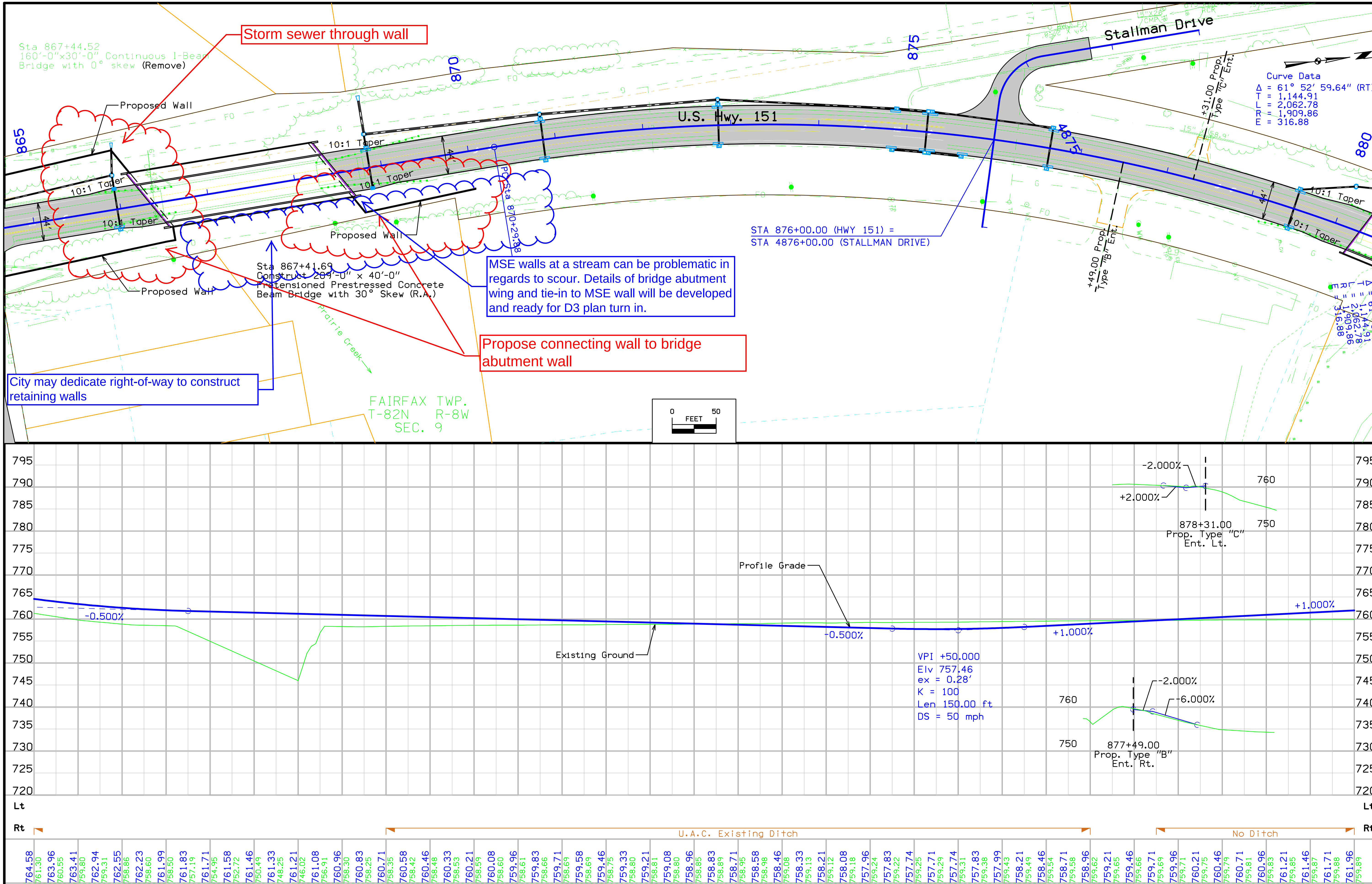
VPI +50.000
Elv 762.96
ex = 3.09'
K = 82
Len 450.00 ft
DS = 45 mph

No Ditch · U.A.C. Existing Ditch · U.A.C. Ex. Ditch · No Ditch

850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865
765.18 / 764.56	766.02 / 765.55	766.94 / 766.64	767.94 / 767.90	769.01 / 769.21	770.16 / 770.62	771.39 / 772.02	772.70 / 773.47	774.08 / 774.92	775.54 / 776.32	777.04 / 777.70	778.54 / 779.09	780.04 / 780.47	781.54 / 781.85	783.04 / 783.10	784.52 / 784.35	785.90 / 785.41	787.18 / 786.42	788.36 / 787.28	789.44 / 788.11	790.42 / 788.86	791.30 / 789.55	792.08 / 790.19	792.76 / 790.65	793.34 / 791.10	793.82 / 791.36	794.20 / 791.31	794.48 / 791.62	794.66 / 788.30	794.75 / 785.72	794.73 / 772.02	794.61 / 781.31	794.39 / 790.78	794.07 / 790.21	793.65 / 789.64	793.13 / 788.95	792.51 / 788.09	791.79 / 787.23	790.97 / 786.29	790.05 / 785.34	789.03 / 784.27	787.91 / 783.19	786.69 / 782.06	785.37 / 780.90	783.95 / 779.75	782.46 / 778.61	780.96 / 777.39	779.46 / 776.18	777.96 / 775.01	776.46 / 773.85	774.99 / 772.69	773.61 / 771.54	772.30 / 770.37	771.07 / 769.19	769.91 / 768.01	768.83 / 766.83	767.83 / 765.64	766.90 / 764.44	766.05 / 763.31	765.28 / 762.28	764.58 / 761.30

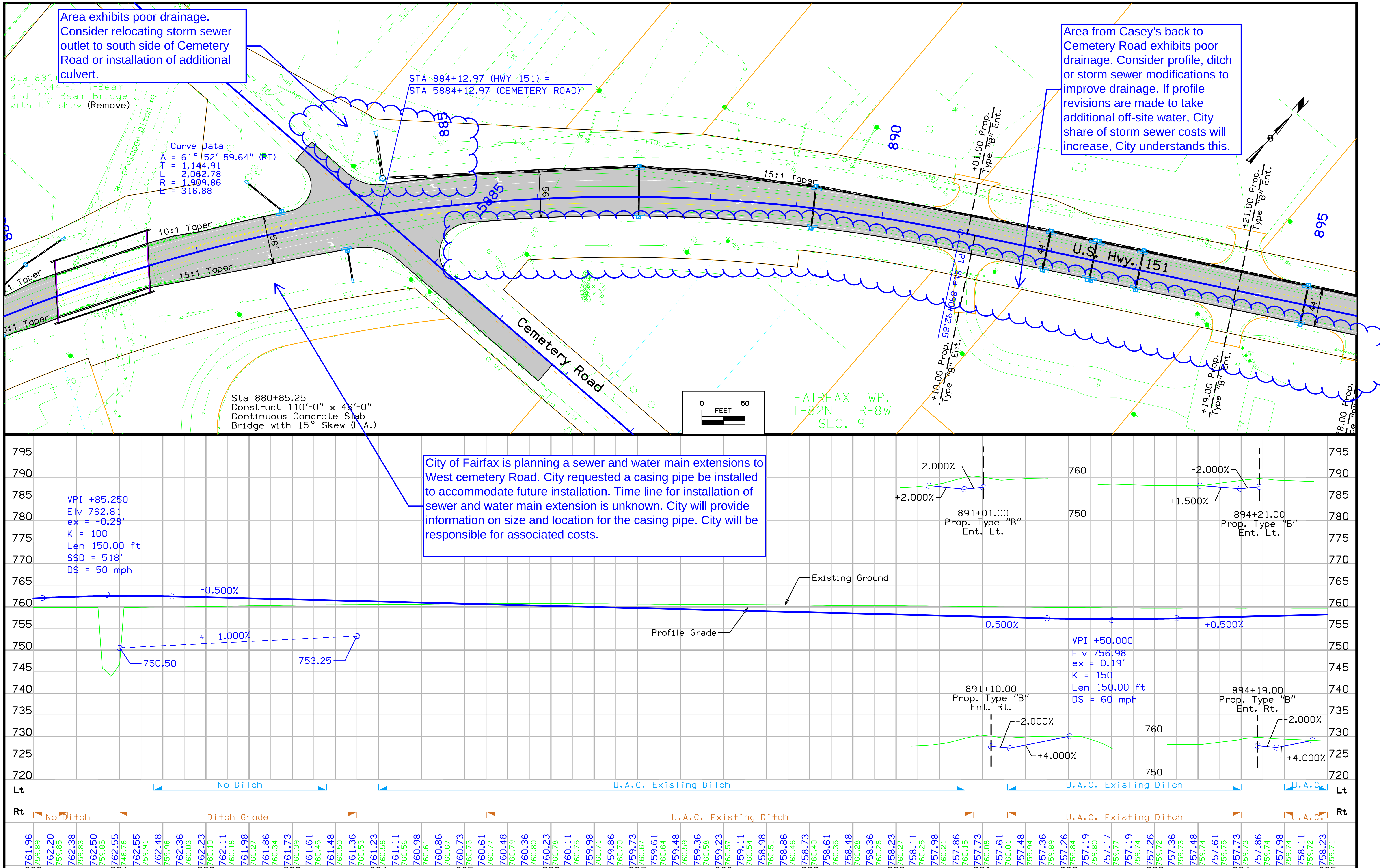
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.3

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC



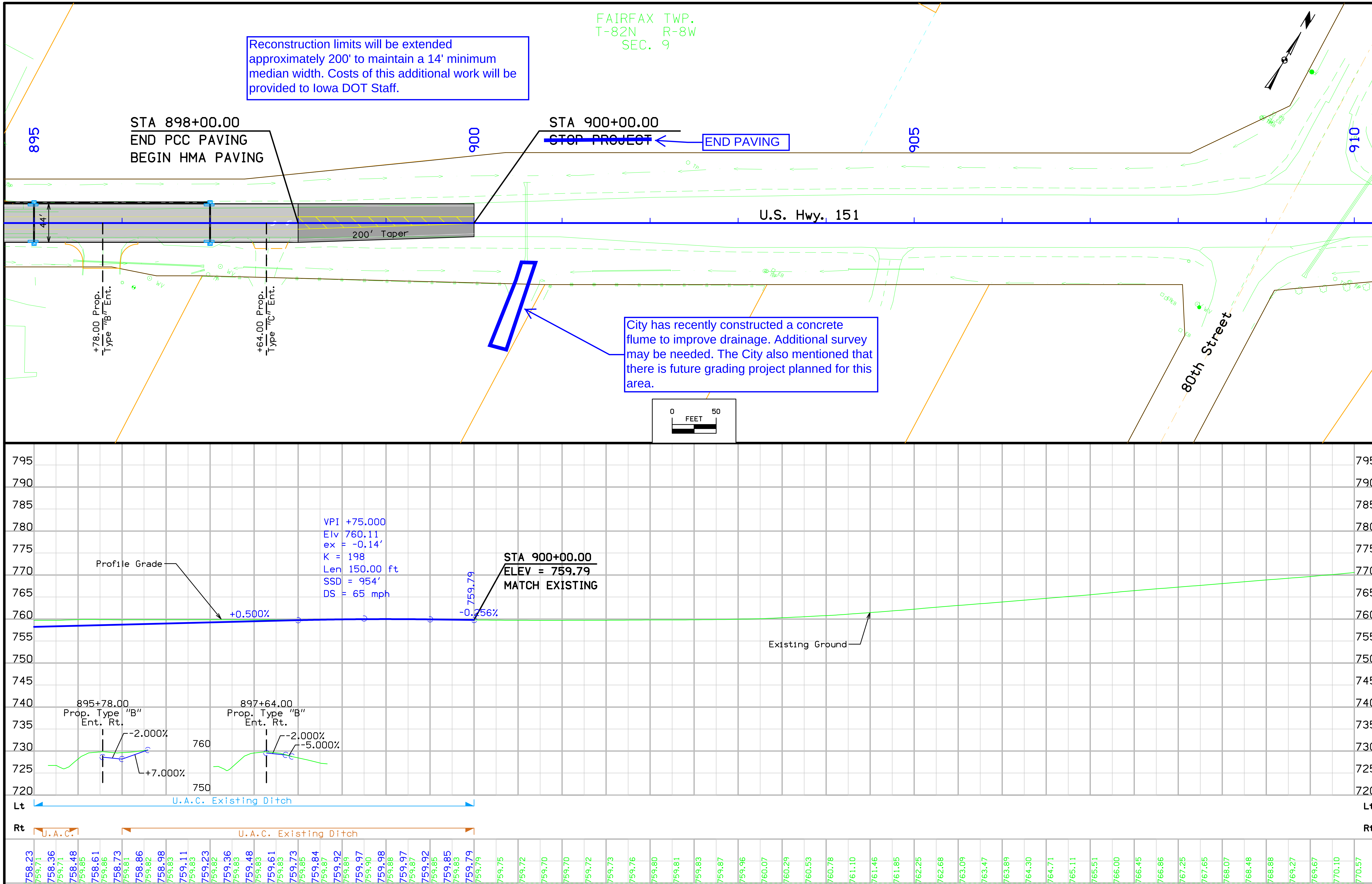
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.4

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC



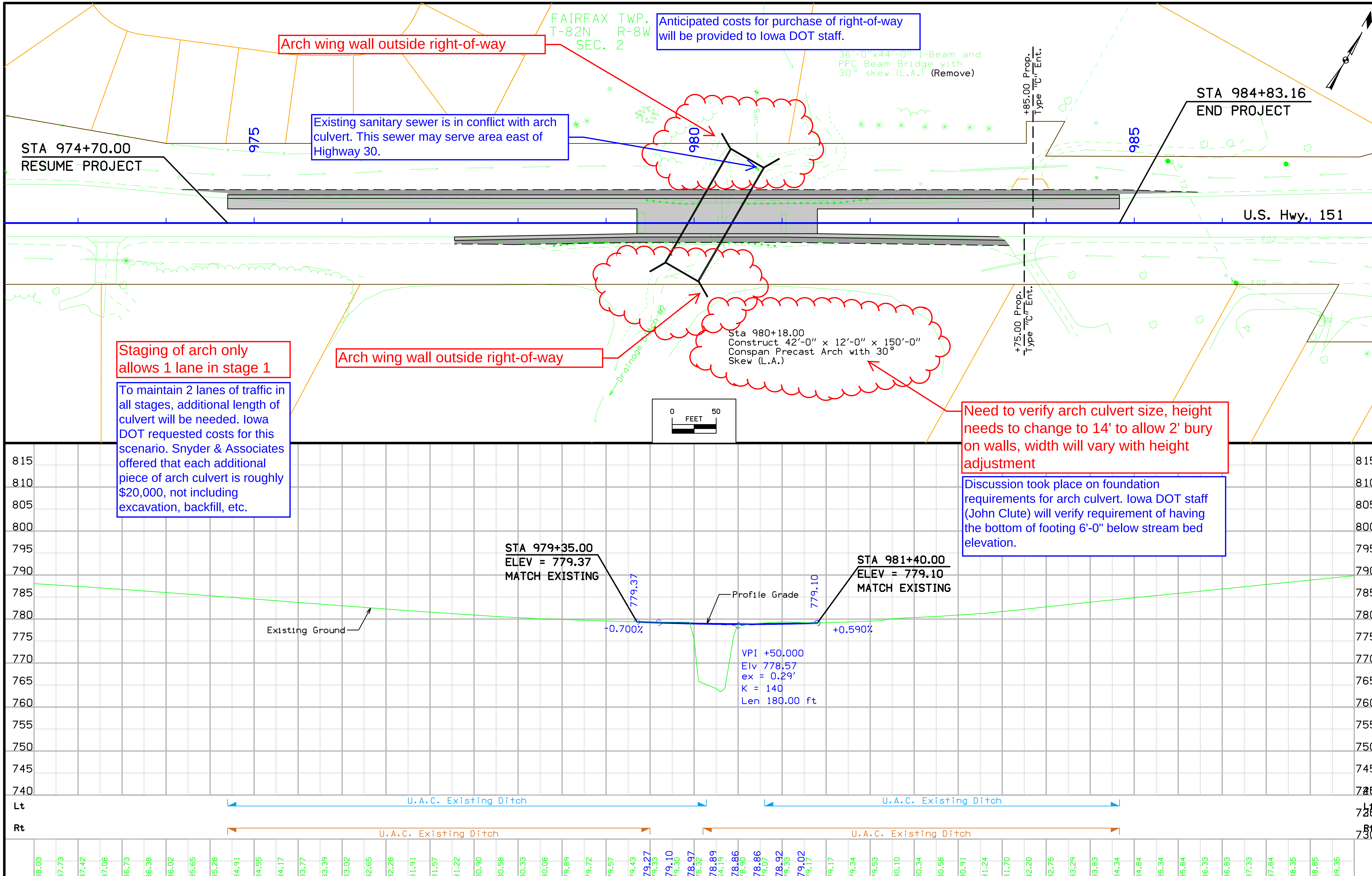
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.5

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC



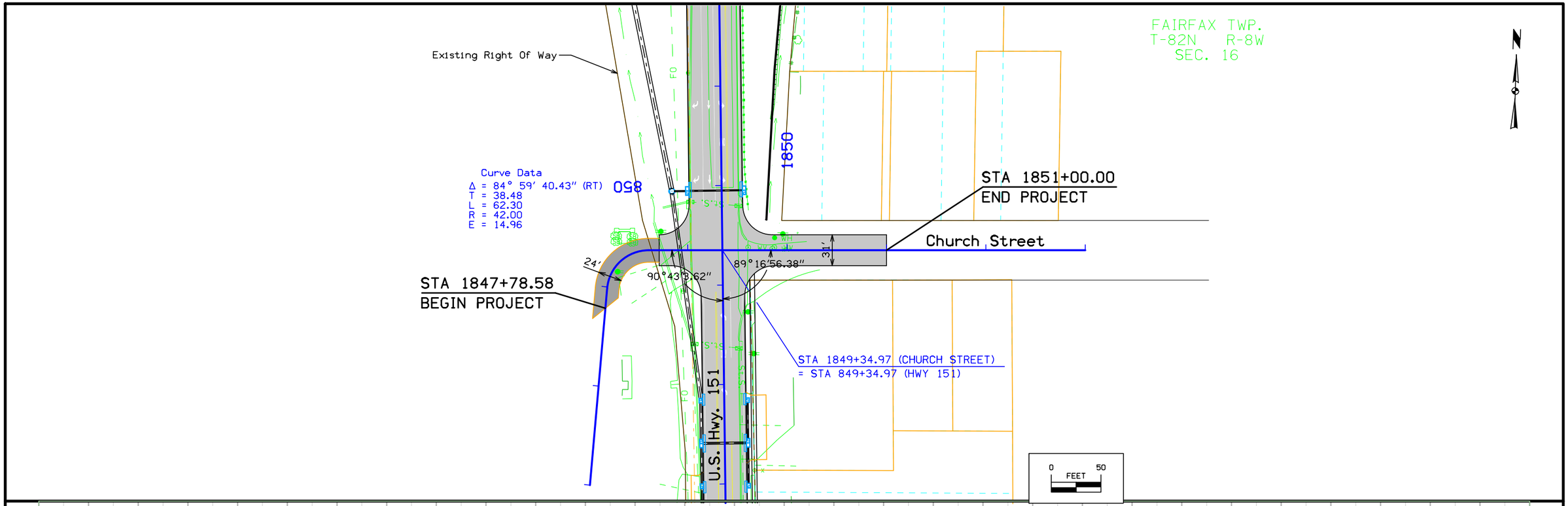
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER D.6

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC



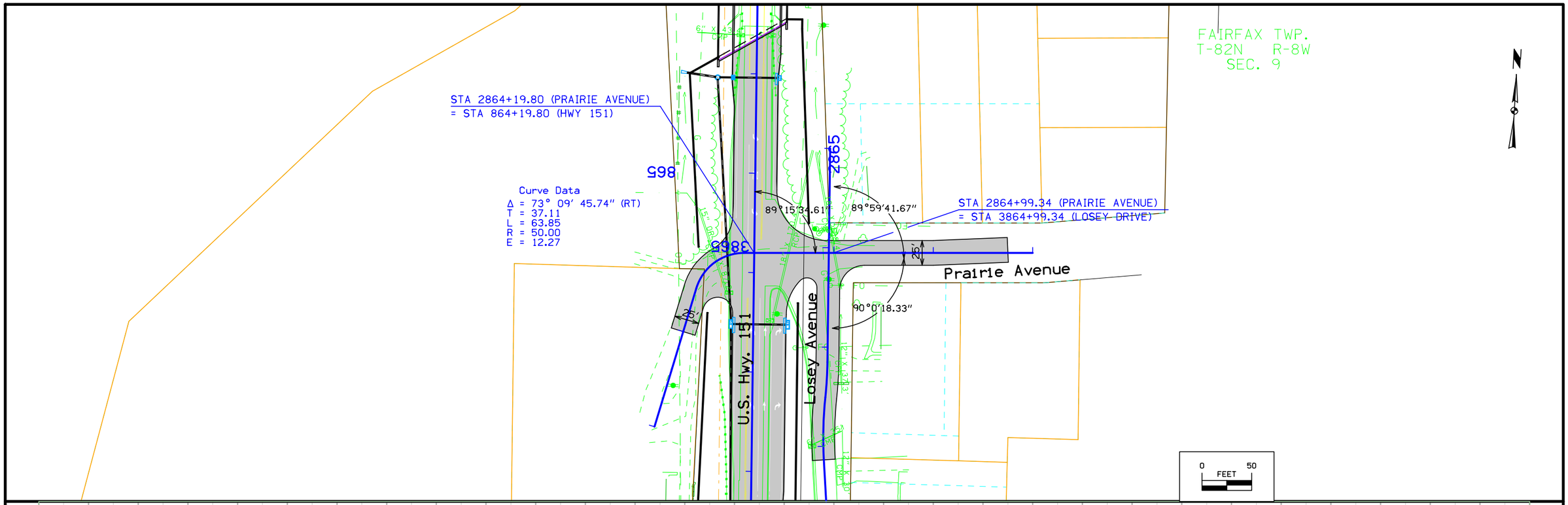
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.		LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.7

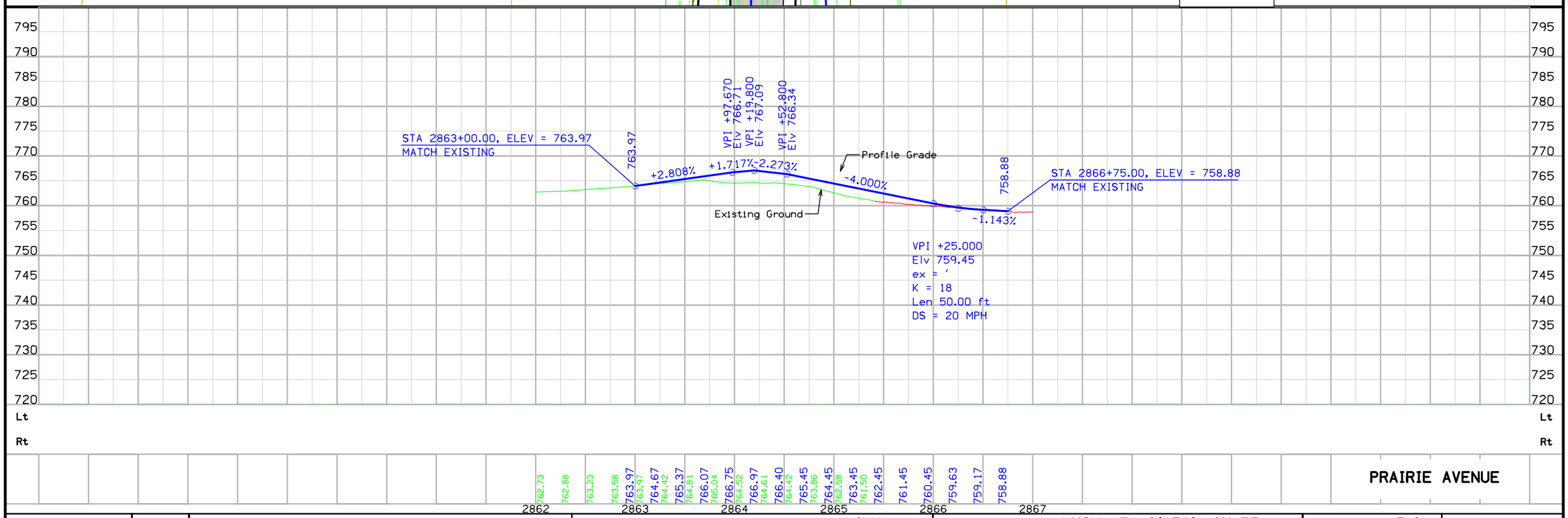
SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.1

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

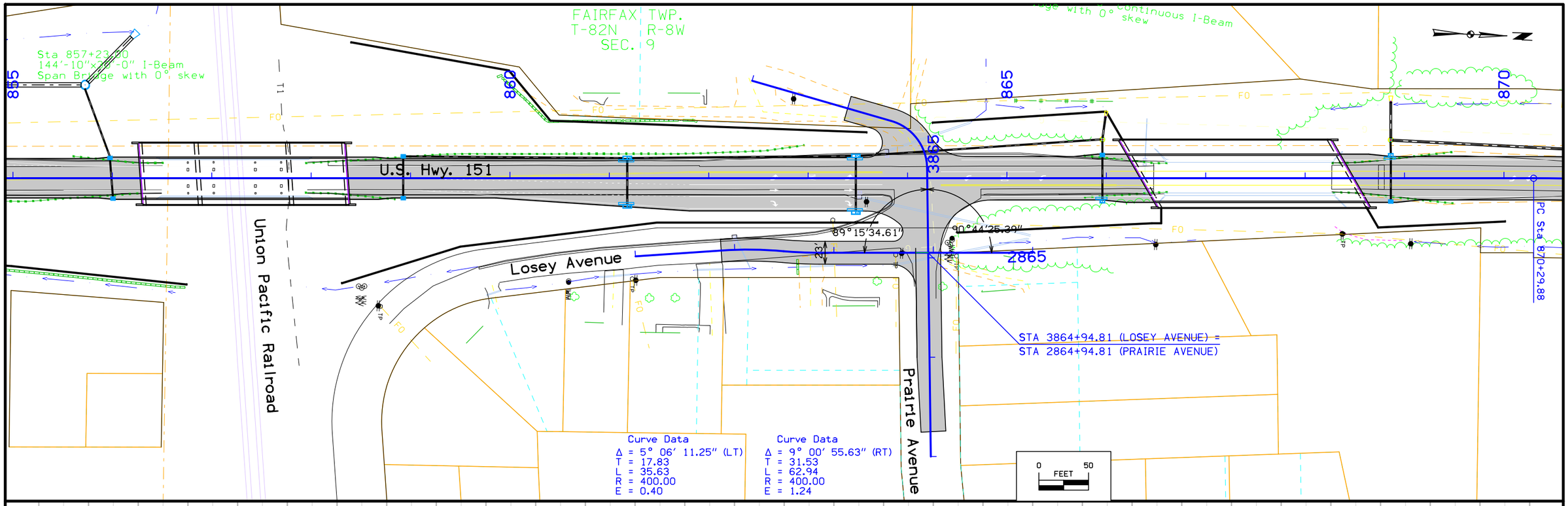




PRAIRIE AVENUE

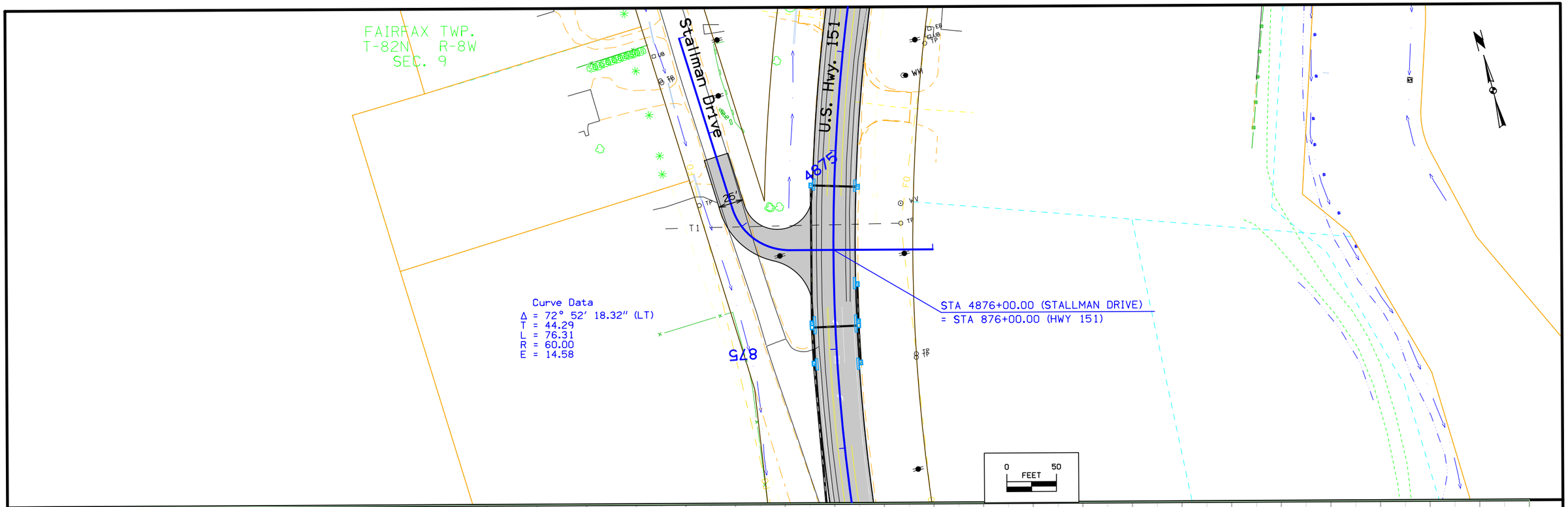
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.2

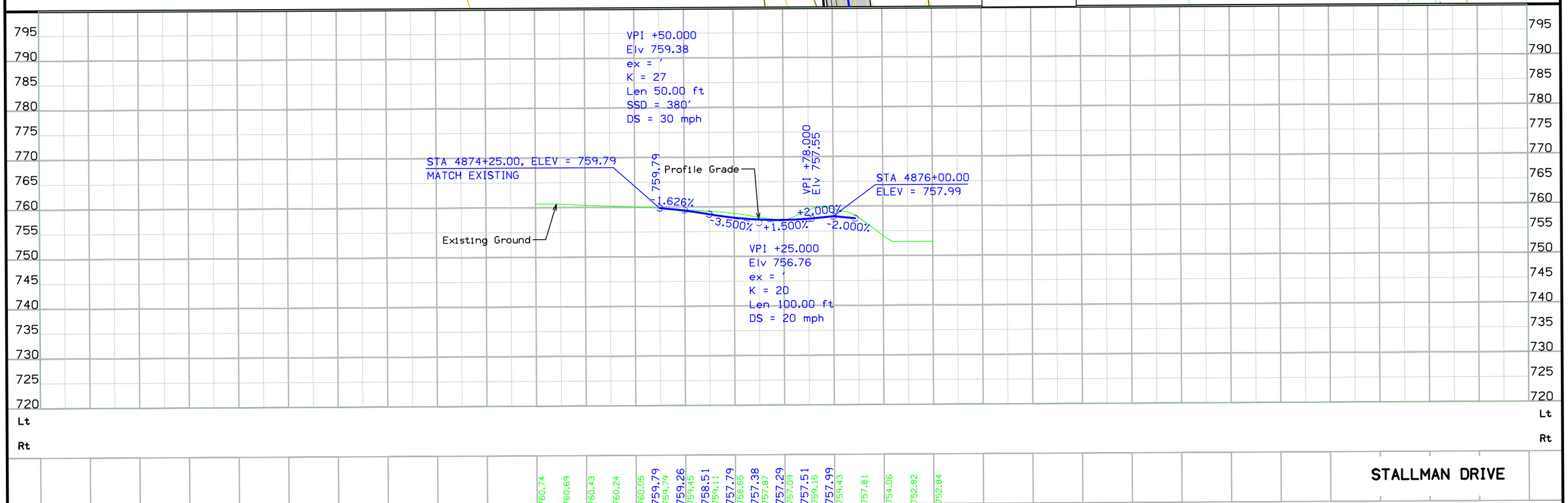
SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.3

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC





STALLMAN DRIVE

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.4

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

FAIRFAX TWP.
T-82N R-8W
SEC. 9

5880

5890

Existing Right Of Way

U.S. Hwy. 151

Cemetery Road

28'

25'

Maintain pedestrian accommodation throughout construction.

New driveway for home here.

New home being constructed. Temporary construction easements are anticipated.

Sta 880+89.90
24'-0" x 44'-0" I-Beam and PPC Beam Bridge with 0° skew

STA 5884+12.97 (CEMETERY ROAD)
= STA 884+12.97 (HWY 151)

0 FEET 50

STA 5883+00.00, ELEV = 759.25
MATCH EXISTING

759.25

VPI +86.040
Elv 760.81

VPI +14.950
Elv 761.16

VPI +44.110
Elv 760.62

+0.887%

+2.200%

+1.211%

-1.852%

-2.750%

+0.648%

755.83

STA 5886+80.00, ELEV = 755.83
MATCH EXISTING

VPI +25.000
Elv 759.47
ex =
K = 28
Len 50.00 ft
DS = 30 mph

VPI +30.000
Elv 755.51
ex =
K = 24
Len 80.00 ft
DS = 20 mph

795 790 785 780 775 770 765 760 755 750 745 740 735 730 725 720

Lt

Rt

759.12 758.69 758.33 758.00 757.04 757.76 757.70 758.01 758.27 758.56 758.78 758.96 759.25 759.55 759.65 760.02 760.13 760.57 760.58 760.98 761.04 760.97 760.25 760.46 759.61 759.77 758.59 759.08 757.86 758.40 757.26 757.71 756.75 757.02 756.36 756.35 756.05 755.91 755.89 755.72 755.79 755.80 755.83 756.16 755.95 756.01 756.09

5880 5881 5882 5883 5884 5885 5886 5887 5888 5889

CEMETERY ROAD

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.5

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

FAIRFAX TWP.
T-82N R-8W
SEC. 3

Sta. 6957+40.00 Beverly Rd.
Install 42"x49' 2000D RCP
F.L. = Lt. 769.00
Rt. 773.50

Existing Right Of Way

PI Sta 6956+71.71

6955

Beverly Road

096

U.S. Hwy. 151

STA 6958+89.23 (BEVERLY ROAD)
= STA 958+89.23 (HWY 151)

100°0'0.01"

20'

24.1'

79°59'59.99"

PT Sta 6958+65.65

PC Sta 6954+49.20

Prairie View Drive

St.S.

0 FEET 50

Existing Ground

Lt

Rt

BEVERLY ROAD

6951 6952 6953 6954 6955 6956 6957 6958 6959

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.6

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

Survey Information

General Information

Measurement units for this survey are US survey feet. This survey was performed for multiple projects as listed above for improvements along the Iowa 151 corridor near Fairfax in Linn County. Project datum and control information matches the coordinate system and vertical datum used for BRFN-151-3(134)--39-57 (SAP 0623). This project is a complete field survey for the digital terrain model.

Vertical Control

Vertical datum for this survey is relative to NAVD88.

A Digital level loop was run from BM #589 (established from SAP 0623) through the project benchmarks and returned to BM # 589. The loop error was allowable and the error was distributed proportionately among the project marks.

Vertical equations are as follows:

Datum Benchmark
BM #589 (SAP 0623) Elevation = 791.713
= BM #589 (This Survey) Elevation = 791.713

Horizontal Control

The horizontal control matches the coordinate system used for SAP 0623.

Even though Linn County is in Iowa North Zone the major portion of this project control network is in the Iowa South Zone. As a result this bridge project is also in the Iowa South Zone modified to Ground using the parameters below.

STATE PLANE COORDINATE ZONE 1402 (IOWA SOUTH LAMBERT)

STATE PLANE COORDINATES HELD AT POINT g030

G030 N= 686745.854 E= 2084369.752 (U.S. Ft.)

AVERAGE PROJECT LATITUDE = 41 51 40.20597

RESULTING RADIUS = 6363875.949

MEAN PROJECT ELEVATION = 235.000 meters

SEA LEVEL FACTOR = 0.999963074

AVERAGE PROJECT SCALE FACTOR = 1.000015404

COMBINED FACTOR (GRID) = 0.999978478

1 / GRID = 1.000021523

HORIZONTAL DATUM = NAD 83(HARN)

Alignment Information

The horizontal alignment for this survey was created for SAP 0623 (originally from SAP 159), Project BRFN-151-3(134)--39-57.

ML1
(from SAP 159)
THE ALIGNMENT FOR THIS SURVEY IS A RETRACE OF THE EXISTING ALIGNMENT ON US # 151 FROM HOMESTEAD NORTH EAST TO NEW US # 30/218.

PI STA 101+08.45 THIS SURVEY=
PI STA 1267+96.48 PLANS PROJECT # FR-6-6(23)

PI STA 165+48.10 THIS SURVEY (DATUM STATIONING) =
PI STA 65+48.10 PLANS PROJECT # FN-149-2(13)

PI STA 242+02.93 THIS SURVEY=
PI STA 138+19.1 PLANS PROJECT # FN-194

POT STA 276+83.37 THIS SURVEY=
POT STA 120+78.52 PLANS PROJECT # FN-151-1(5)

PI STA 580+67.72 THIS SURVEY=
PI STA 426+85.76 PLANS PROJECT # NHS-151-2(3)

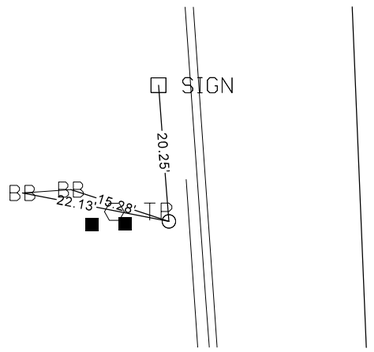
VERTICAL CONTROL

Point	North	East	Elevation	Station	Offset	Feature	Description
BM100	702680.804	2107578.854	780.530	841+08.15	23.119	BM	ARROW ON HYDRANT, EAST SIDE OF HWY 151, SOUTH END
BM1	703233.002	2107556.082	763.600	846+60.81	23.069	BM	GIN SPIKE IN POWER POLE, EAST SIDE HWY 151, ACROSS FROM "PIT STOP"
BM2	705704.166	2107504.303	750.420	871+35.96	70.098	BM	RR SPIKE IN POWER POLE, EAST SIDE HWY 151, 200' +/- NORTH OF NORTH END OF RIVER BRIDGE AT BEGINNING OF CLEARING
BM3	706904.792	2107804.979	760.370	883+94.08	-58.416	BM	RR SPIKE IN POWER POLE, NW QUADRANT OF CEMETARY ROAD AND HWY 151
BM4	708415.446	2109892.014	767.940	909+53.51	-171.787	BM	RR SPIKE IN POWER POLE, SOUTH SIDE OF 80TH ST SW, 70' +/- WEST OF STOP SIGN ON HWY 151
BM5	710868.765	2114183.819	781.810	958+96.64	-109.701	BM	GIN SPIKE IN LIGHT POLE, NW QUADRANT OF BEVERLY DRIVE WEST AND HWY 151
BM587	711354.287	2115052.646	791.920	968+91.68	-87.544	BM	RR SPIKE IN POWER POLE, NW QUADRANT HWY 151 AND STUNEY POINT, 80' +/- NW OF TRAFFIC LIGHT
BM588	711811.381	2116047.826	781.700	979+81.20	23.191	BM	CUT TRIANGLE ON BASE WALL OF REINFORCED CONCRETE BOX CULVERT
BM589	712237.496	2116803.443	791.710	988+48.54	39.136	BM	IDOT DISK IN HIGHWAY, EAST SIDE HWY 151, 50' +/- SOUTH OF TURNOUT FOR DEAN ROAD

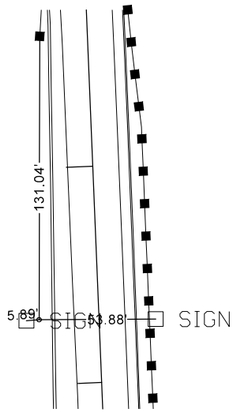
CP STA 837+45.84, 38.77 FT RT
CP 118, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=702310.552, E=2107568.859, ELEV. 790.030

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

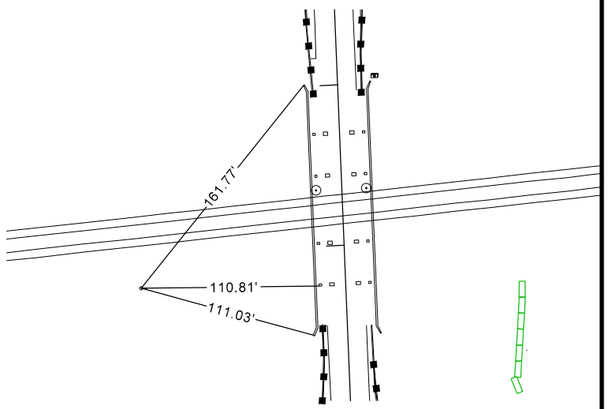
CP STA 846+36.12, 28.47 FT LT
CP 100, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=703206.207, E=2107505.596, ELEV. 763.43



CP STA 854+30.14, 27.69 FT LT
CP 101, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=703999.594, E=2107473.736, ELEV. 786.630



CP STA 856+78.46, 127.36 FT LT
CP 201, SET XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
N=704243.606, E=2107363.943, ELEV. 758.070



CP STA 857+71.20, 166.58 FT RT
CP 200, SET XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
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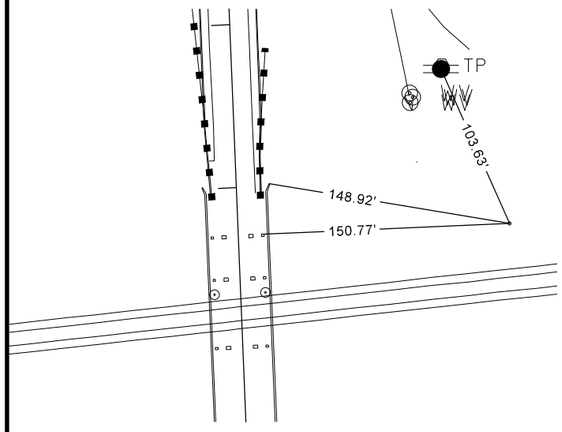
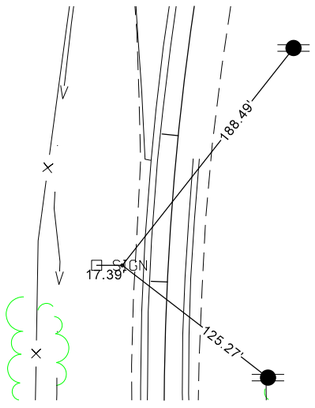
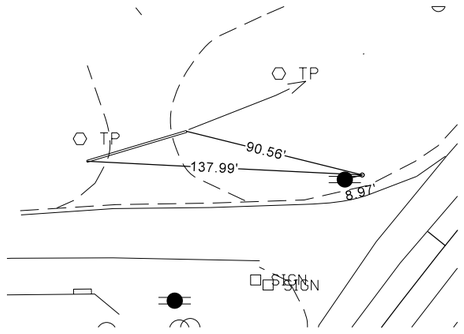


CP STA 872+09.67, 31.26 FT LT
CP 102, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=705780.492, E=2107405.482, ELEV. 757.250



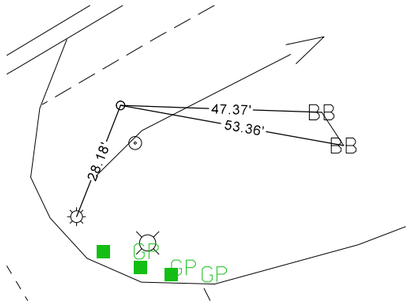
CP STA 884+01.50, 54.56 FT LT
CP 104, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=706908.345, E=2107812.761, ELEV. 759.410



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	G.2

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

CP STA 894+61.29, 36.19 FT RT
CP 105, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=707479.442, E=2108711.388, ELEV. 757.700



CP STA 901+36.51, 40.43 FT RT
CP 106, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=707817.955, E=2109295.639, ELEV. 757.510

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

CP STA 908+95.75, 56.20 FT LT
CP 107, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=708286.528, E=2109900.851, ELEV. 767.350

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

CP STA 917+25.17, 29.59 FT RT
CP 108, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=708633.222, E=2110659.204, ELEV. 789.030

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

CP STA 926+88.32, 36.90 FT RT
CP 109, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=709115.364, E=2111493.021, ELEV. 808.330

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

CP STA 937+41.40, 38.08 FT RT
CP 110, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=709648.405, E=2112401.235, ELEV. 828.150

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

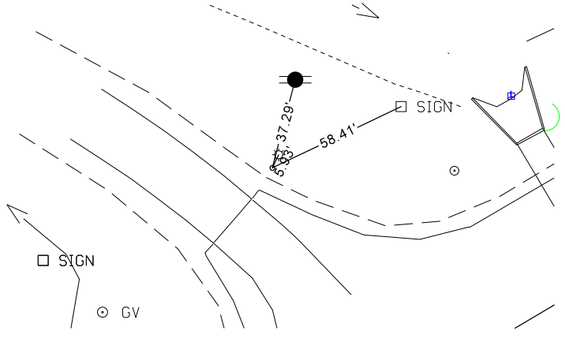
CP STA 948+82.87, 40.35 FT RT
CP 111, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=710225.327, E=2113386.176, ELEV. 800.680

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

CP STA 953+99.85, 42.76 FT RT
CP 112, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=710485.430, E=2113832.974, ELEV. 783.030

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

CP STA 958+91.52, 106.92 FT LT
CP 113, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=710863.774, E=2114180.813, ELEV. 781.940



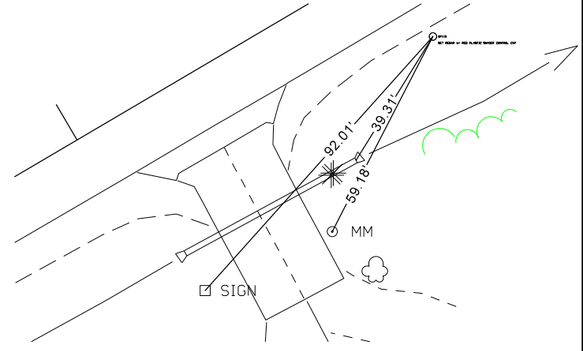
CP STA 967+93.19, 34.43 FT RT
CP 1, SET XXXXXXXXXXXXXXXX
N=711199.213, E=2115029.623, ELEV. 0

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

CP STA 968+92.74, 78.50 FT LT
CP 114, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=711347.028, E=2115058.146, ELEV. 790.110

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

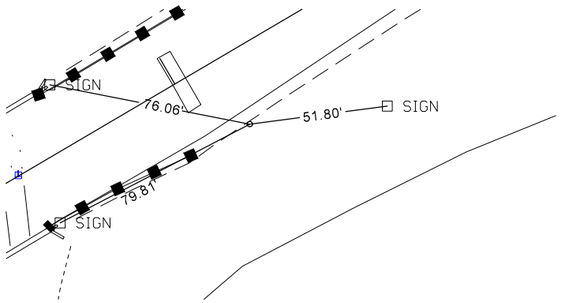
CP STA 973+96.87, 24.64 FT RT
CP 115, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=711513.799, E=2115544.949, ELEV. 785.140



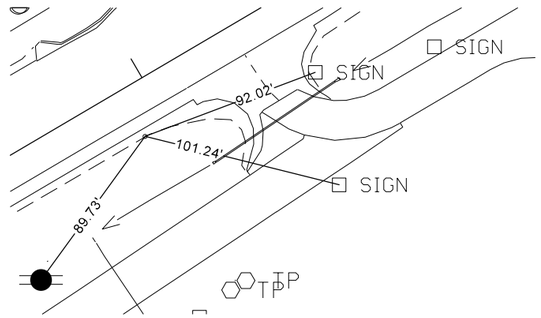
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER G.3

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

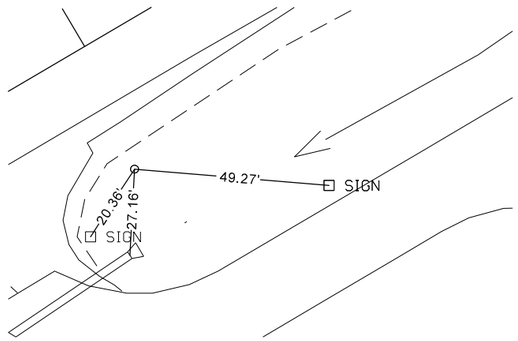
CP STA 981+16.48, 27.08 FT RT
CP 116, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=711876.636, E=2116166.395, ELEV. 778.680



CP STA 991+86.29, 26.37 FT RT
CP 373, SET HINGE NAIL IN ACC
N=712419.779, E=2117088.065, ELEV. 799.640



CP STA 992+95.16, 33.05 FT RT
CP 117, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=712469.239, E=2117185.291, ELEV. 801.310



CP STA 1006+52.31, 22.63 FT LT
CP 51, SET XXXXXXXXXXXXXXXXX
N=713205.491, E=2118326.728, ELEV. 799.640

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

US HIGHWAY 151

Point 1 N 687,471.81 E 2,084,954.51 Sta 550+54.72

Course from 1 to 2 N 83^ 13' 17.03" E Dist 2,968.75

Point 2 N 687,822.22 E 2,087,902.50 Sta 580+23.47

Course from 2 to PC CUR1 N 89^ 05' 00.94" E Dist 1,078.93

Curve Data

Curve CUR1
P.I. Station 596+55.40 N 687,848.32 E 2,089,534.22
Delta = 1^ 06' 21.45" (LT)
Degree = 0^ 06' 00.00"
Tangent = 553.00
Length = 1,105.96
Radius = 57,295.78
External = 2.67
Long Chord = 1,105.94
Mid. Ord. = 2.67
P.C. Station 591+02.40 N 687,839.48 E 2,088,981.30
P.T. Station 602+08.36 N 687,867.84 E 2,090,086.87
C.C. N 745,127.93 E 2,088,064.89
Back = N 89^ 05' 00.80" E
Ahead = N 87^ 58' 39.35" E
Chord Bear = N 88^ 31' 50.08" E

Course from PT CUR1 to PC CUR2 N 87^ 58' 39.41" E Dist 2,643.13

Curve Data

Curve CUR2
P.I. Station 632+35.31 N 687,974.66 E 2,093,111.94
Delta = 30^ 00' 04.08" (LT)
Degree = 3^ 59' 59.94"
Tangent = 383.83
Length = 750.03
Radius = 1,432.40
External = 50.53
Long Chord = 741.49
Mid. Ord. = 48.81
P.C. Station 628+51.49 N 687,961.11 E 2,092,728.36
P.T. Station 636+01.52 N 688,178.19 E 2,093,437.36
C.C. N 689,392.62 E 2,092,677.80
Back = N 87^ 58' 39.30" E
Ahead = N 57^ 58' 35.22" E
Chord Bear = N 72^ 58' 37.26" E

Course from PT CUR2 to PC CUR3 N 57^ 58' 34.93" E Dist 456.06

Curve Data

Curve CUR3
P.I. Station 645+17.23 N 688,663.76 E 2,094,213.73
Delta = 13^ 43' 25.46" (LT)
Degree = 1^ 30' 00.00"
Tangent = 459.66
Length = 914.92
Radius = 3,819.72
External = 27.56
Long Chord = 912.73
Mid. Ord. = 27.36
P.C. Station 640+57.57 N 688,420.02 E 2,093,824.02
P.T. Station 649+72.49 N 688,993.00 E 2,094,534.49
C.C. N 691,658.50 E 2,091,798.55
Back = N 57^ 58' 35.60" E
Ahead = N 44^ 15' 10.14" E
Chord Bear = N 51^ 06' 52.87" E

Course from PT CUR3 to PC CUR4 N 44^ 15' 09.36" E Dist 440.29

Curve Data

Curve CUR4
P.I. Station 656+91.27 N 689,507.84 E 2,095,036.07
Delta = 1^ 17' 58.31" (RT)
Degree = 0^ 14' 00.00"
Tangent = 278.48
Length = 556.94
Radius = 24,555.33
External = 1.58
Long Chord = 556.93
Mid. Ord. = 1.58
P.C. Station 654+12.78 N 689,308.37 E 2,094,841.74
P.T. Station 659+69.72 N 689,702.85 E 2,095,234.88
C.C. N 672,173.05 E 2,112,429.95
Back = N 44^ 15' 09.90" E
Ahead = N 45^ 33' 08.21" E
Chord Bear = N 44^ 54' 09.05" E

Course from PT CUR4 to PC CUR5 N 45^ 33' 08.19" E Dist 1,496.18

Curve Data

Curve CUR5
P.I. Station 677+66.26 N 690,960.89 E 2,096,517.41
Delta = 2^ 48' 09.95" (LT)
Degree = 0^ 28' 00.00"
Tangent = 300.36
Length = 600.59
Radius = 12,277.67
External = 3.67
Long Chord = 600.53
Mid. Ord. = 3.67
P.C. Station 674+65.91 N 690,750.56 E 2,096,302.98
P.T. Station 680+66.50 N 691,181.45 E 2,096,721.29
C.C. N 699,515.46 E 2,087,705.44
Back = N 45^ 33' 08.10" E
Ahead = N 42^ 44' 58.15" E
Chord Bear = N 44^ 09' 03.12" E

Course from PT CUR5 to PC CUR6 N 42^ 44' 58.22" E Dist 4,614.96

US HIGHWAY 151 (Cont.)

Curve Data

Curve CUR6
P.I. Station 729+84.38 N 694,792.79 E 2,100,059.52
Delta = 3^ 01' 42.98" (RT)
Degree = 0^ 30' 00.02"
Tangent = 302.93
Length = 605.71
Radius = 11,459.00
External = 4.00
Long Chord = 605.64
Mid. Ord. = 4.00
P.C. Station 726+81.46 N 694,570.34 E 2,099,853.89
P.T. Station 732+87.17 N 695,004.06 E 2,100,276.61
C.C. N 686,792.04 E 2,108,268.56
Back = N 42^ 44' 58.20" E
Ahead = N 45^ 46' 41.18" E
Chord Bear = N 44^ 15' 49.69" E

Course from PT CUR6 to PC CUR7 N 45^ 46' 41.21" E Dist 3,685.12

Curve Data

Curve CUR7
P.I. Station 775+07.55 N 697,947.52 E 2,103,301.12
Delta = 10^ 40' 27.65" (LT)
Degree = 1^ 00' 00.00"
Tangent = 535.27
Length = 1,067.44
Radius = 5,729.58
External = 24.95
Long Chord = 1,065.89
Mid. Ord. = 24.84
P.C. Station 769+72.29 N 697,574.21 E 2,102,917.53
P.T. Station 780+39.72 N 698,385.43 E 2,103,608.93
C.C. N 701,680.28 E 2,098,921.49
Back = N 45^ 46' 41.10" E
Ahead = N 35^ 06' 13.45" E
Chord Bear = N 40^ 26' 27.27" E

Course from PT CUR7 to PC CUR8 N 35^ 06' 13.54" E Dist 2,462.06

Curve Data

Curve CUR8
P.I. Station 810+89.91 N 700,880.82 E 2,105,362.97
Delta = 28^ 47' 05.99" (RT)
Degree = 2^ 30' 00.00"
Tangent = 588.12
Length = 1,151.40
Radius = 2,291.83
External = 74.26
Long Chord = 1,139.33
Mid. Ord. = 71.93
P.C. Station 805+01.79 N 700,399.68 E 2,105,024.76
P.T. Station 816+53.18 N 701,139.67 E 2,105,891.07
C.C. N 699,081.74 E 2,106,899.74
Back = N 35^ 06' 13.40" E
Ahead = N 63^ 53' 19.39" E
Chord Bear = N 49^ 29' 46.39" E

Course from PT CUR8 to PC CUR9 N 63^ 53' 19.54" E Dist 1,263.38

Curve Data

Curve CUR9
P.I. Station 835+39.61 N 701,969.91 E 2,107,584.97
Delta = 66^ 14' 42.26" (LT)
Degree = 5^ 59' 59.99"
Tangent = 623.05
Length = 1,104.08
Radius = 954.93
External = 185.28
Long Chord = 1,043.61
Mid. Ord. = 155.17
P.C. Station 829+16.57 N 701,695.70 E 2,107,025.51
P.T. Station 840+20.65 N 702,592.43 E 2,107,559.35
C.C. N 702,553.17 E 2,106,605.23
Back = N 63^ 53' 19.50" E
Ahead = N 2^ 21' 22.76" W
Chord Bear = N 30^ 45' 58.37" E

Course from PT CUR9 to PC CUR10 N 2^ 21' 22.88" W Dist 3,009.23

Curve Data

Curve CUR10
P.I. Station 881+74.79 N 706,743.06 E 2,107,388.56
Delta = 61^ 52' 59.64" (RT)
Degree = 3^ 00' 00.00"
Tangent = 1,144.91
Length = 2,062.78
Radius = 1,909.86
External = 316.88
Long Chord = 1,963.96
Mid. Ord. = 271.79
P.C. Station 870+29.88 N 705,599.11 E 2,107,435.63
P.T. Station 890+92.65 N 707,323.68 E 2,108,375.32
C.C. N 705,677.64 E 2,109,343.87
Back = N 2^ 21' 22.90" W
Ahead = N 59^ 31' 36.74" E
Chord Bear = N 28^ 35' 06.92" E

Course from PT CUR10 to 33 N 59^ 31' 36.72" E Dist 12,137.87

Point 33 N 713,479.21 E 2,118,836.55 Sta 1012+30.52

CHURCH STREET

Point 1846 N 703,266.14 E 2,107,395.29 Sta 1846+00.00

Course from 1846 to PC SRCHURCH-1 N 3^ 22' 00.31" E Dist 198.55

Curve Data

Curve SRCHURCH-1
P.I. Station 1848+37.04 N 703,502.76 E 2,107,409.21
Delta = 84^ 59' 40.43" (RT)
Degree = 136^ 25' 06.68"
Tangent = 38.48
Length = 62.30
Radius = 42.00
External = 14.96
Long Chord = 56.75
Mid. Ord. = 11.03
P.C. Station 1847+98.55 N 703,464.35 E 2,107,406.95
P.T. Station 1848+60.86 N 703,503.86 E 2,107,447.68
C.C. N 703,461.88 E 2,107,448.88
Back = N 3^ 22' 00.31" E
Ahead = N 88^ 21' 40.74" E
Chord Bear = N 45^ 51' 50.52" E

Course from PT SRCHURCH-1 to 1847 N 88^ 21' 40.74" E Dist 439.14

Point 1847 N 703,516.42 E 2,107,886.64 Sta 1853+00.00

PRAIRIE AVENUE

Point 2862 N 704,809.51 E 2,107,369.92 Sta 2862+00.00

Course from 2862 to PC SRPRAIRIE-1 N 13^ 44' 25.99" E Dist 145.60

Curve Data

Curve SRPRAIRIE-1
P.I. Station 2863+82.70 N 704,986.98 E 2,107,413.32
Delta = 73^ 09' 45.74" (RT)
Degree = 114^ 35' 29.61"
Tangent = 37.11
Length = 63.85
Radius = 50.00
External = 12.27
Long Chord = 59.60
Mid. Ord. = 9.85
P.C. Station 2863+45.60 N 704,950.94 E 2,107,404.50
P.T. Station 2864+09.44 N 704,988.99 E 2,107,450.37
C.C. N 704,939.06 E 2,107,453.07
Back = N 13^ 44' 25.99" E
Ahead = N 86^ 54' 11.73" E
Chord Bear = N 50^ 19' 18.86" E

Course from PT SRPRAIRIE-1 to 2863 N 86^ 54' 11.73" E Dist 290.56

Point 2863 N 705,004.69 E 2,107,740.50 Sta 2867+00.00

LOSEY AVENUE

Point 3862 N 704,699.51 E 2,107,551.37 Sta 3862+00.00

Course from 3862 to PC SRLOSEY-1 N 6^ 16' 07.27" W Dist 86.45

Curve Data

Curve SRLOSEY-1
P.I. Station 3863+17.99 N 704,816.79 E 2,107,538.49
Delta = 9^ 00' 55.63" (RT)
Degree = 14^ 19' 26.20"
Tangent = 31.53
Length = 62.94
Radius = 400.00
External = 1.24
Long Chord = 62.87
Mid. Ord. = 1.24
P.C. Station 3862+86.45 N 704,785.44 E 2,107,541.93
P.T. Station 3863+49.39 N 704,848.29 E 2,107,540.00
C.C. N 704,829.12 E 2,107,939.54
Back = N 6^ 16' 07.27" W
Ahead = N 2^ 44' 48.36" E
Chord Bear = N 1^ 45' 39.45" W

Curve Data

Curve SRLOSEY-2
P.I. Station 3863+67.22 N 704,866.09 E 2,107,540.86
Delta = 5^ 06' 11.25" (LT)
Degree = 14^ 19' 26.20"
Tangent = 17.83
Length = 35.63
Radius = 400.00
External = 0.40
Long Chord = 35.61
Mid. Ord. = 0.40
P.C. Station 3863+49.39 N 704,848.29 E 2,107,540.00
P.T. Station 3863+85.02 N 704,883.90 E 2,107,540.12
C.C. N 704,867.46 E 2,107,140.46
Back = N 2^ 44' 48.36" E
Ahead = N 2^ 21' 22.88" W
Chord Bear = N 0^ 11' 42.74" E

Course from PT SRLOSEY-2 to 3863 N 2^ 21' 22.88" W Dist 214.98

Point 3863 N 705,098.70 E 2,107,531.28 Sta 3866+00.00

STALLMAN DRIVE

Point 4873 N 706,409.81 E 2,107,401.91 Sta 4873+00.00

Course from 4873 to PC SRSTALLMAN-1 S 2^ 22' 51.16" E Dist 179.34

Curve Data

Curve SRSTALLMAN-1
P.I. Station 4875+23.63 N 706,186.37 E 2,107,411.20
Delta = 72^ 52' 18.32" (LT)
Degree = 95^ 29' 34.68"
Tangent = 44.29
Length = 76.31
Radius = 60.00
External = 14.58
Long Chord = 71.27
Mid. Ord. = 11.73
P.C. Station 4874+79.34 N 706,230.63 E 2,107,409.36
P.T. Station 4875+55.65 N 706,175.10 E 2,107,454.04
C.C. N 706,233.12 E 2,107,469.31
Back = S 2^ 22' 51.16" E
Ahead = S 75^ 15' 09.49" E
Chord Bear = S 38^ 49' 00.32" E

Course from PT SRSTALLMAN-1 to 4874 S 75^ 15' 09.49" E Dist 144.35

Point 4874 N 706,138.35 E 2,107,593.64 Sta 4877+00.00

CEMETERY ROAD

Point 5880 N 706,873.54 E 2,107,448.95 Sta 5880+00.00

Course from 5880 to 5881 N 88^ 28' 15.30" E Dist 1,000.00

Point 5881 N 706,900.23 E 2,108,448.59 Sta 5890+00.00

Point 6952 N 710,953.98 E 2,113,601.63 Sta 6952+00.00

Course from 6952 to PC SRBEVERLY-1 N 89^ 33' 06.71" E Dist 249.20

Curve Data

Curve SRBEVERLY-1
P.I. Station 6956+71.71 N 710,957.67 E 2,114,073.33
Delta = 49^ 58' 30.00" (RT)
Degree = 12^ 00' 00.44"
Tangent = 222.52
Length = 416.45
Radius = 477.46
External = 49.31
Long Chord = 403.38
Mid. Ord. = 44.69
P.C. Station 6954+49.20 N 710,955.93 E 2,113,850.82
P.T. Station 6958+65.65 N 710,788.40 E 2,114,217.76
C.C. N 710,478.48 E 2,113,854.55
Back = N 89^ 33' 06.71" E
Ahead = S 40^ 28' 23.29" E
Chord Bear = S 65^ 27' 38.29" E

Course from PT SRBEVERLY-1 to 6953 S 40^ 28' 23.29" E Dist 23.58

Point 6953 N 710,770.46 E 2,114,233.07 Sta 6958+89.23

108-23A
08-01-08

TRAFFIC CONTROL PLAN

1. U.S. 151 will be closed to through traffic throughout the project area. Through traffic will use the detour route indicated on Sheet J.3. The road will remain open to local traffic throughout construction, with the exception of the UPRR Bridge, which will be closed. Refer to Staging Notes for additional information.
2. Access to Church Street and Prairie Avenue from U.S. 151 shall be maintained at all times.
3. Stallman Drive will be closed at U.S. 151 during intersection reconstruction.
4. At least one lane of Cemetery Road shall remain open in each direction throughout construction.
5. Beverly Road will be closed at U.S. 151 during culvert installation.
6. Access to properties within the project area shall be maintained at all times.

108-26A
08-01-08

STAGING NOTES

U.S. 151 south of Church Street
Stage 1: Traffic utilizes existing roadway. Move hydrants, clear and remove obstructions west of the existing roadway. Construct 12 foot wide temporary pavement.

Stage 2: Transition traffic to use west existing pavement and temporary pavement. Construct 19 feet of U.S. 151 improvements on east side and 7 foot wide temporary pavement. Stage construct paving at property entrances to maintain access.

Stage 3: Shift traffic to new roadway pavement and temporary pavement on east side. Remove temporary pavement on west side and construct U.S. 151 improvemetns.

Stage 4: Close a portion of northbound traffic lane, use portion of two way left turn lane pavement as through lane. Remove temporary pavemen on east side, construct curb and gutter and sidewalk.

U.S. 151, Prairie Avenue to near 80th Street
Stage 1: Traffic utilizes existing roadway. Grade and construct pavement widening between Prairie Creek and Drainage Ditch 1.

Stage 2: Refer to special details for temporary signal layout at Prairie Avenue and Cemetary Road. Temporary signals north of the Prairie Creek bridge and south of the Drainage Ditch #1 Bridge will be per TC-216. Traffic will utilize a single lane across the existing Prairie Creek and Drainage Ditch #1 bridges. Between bridges, two lanes of traffic will utilize existing pavement and widening. Construct proposed improvements west of centerline. Omit barrier on bridges between sidewalk and traffic lane.

Stage 3: Shift traffic to pavement constructed during Stage 2. Construct improvements east of centerline.

Stage 4: Traffic utilizes center of roadway. Add barrier rails between sidewalk and roadway on the west side of bridges.

Drainage Ditch #2
Stage 1: Traffic utilizes existing roadway. Traffic will utilize a single lane across the existing Drainage Ditch #2 bridge. Temporary signals east and west of Drainage Ditch #2 will be peer TC216. Construct portion of Conspan Arch and U.S. 151 improvemetns left of centerline and temporary pavement to accomodate two way traffic in stage 2.

Stage 2: Remove temporary signals, shift traffic onto pavement built in stage 1. Construct remaining portion of Conspan Arch and U.S. 151 improvements right of centerline.

Sthate3: Shift traffic, remove temporary pavement, construct shoulder and grade foreslope left of centerline.

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

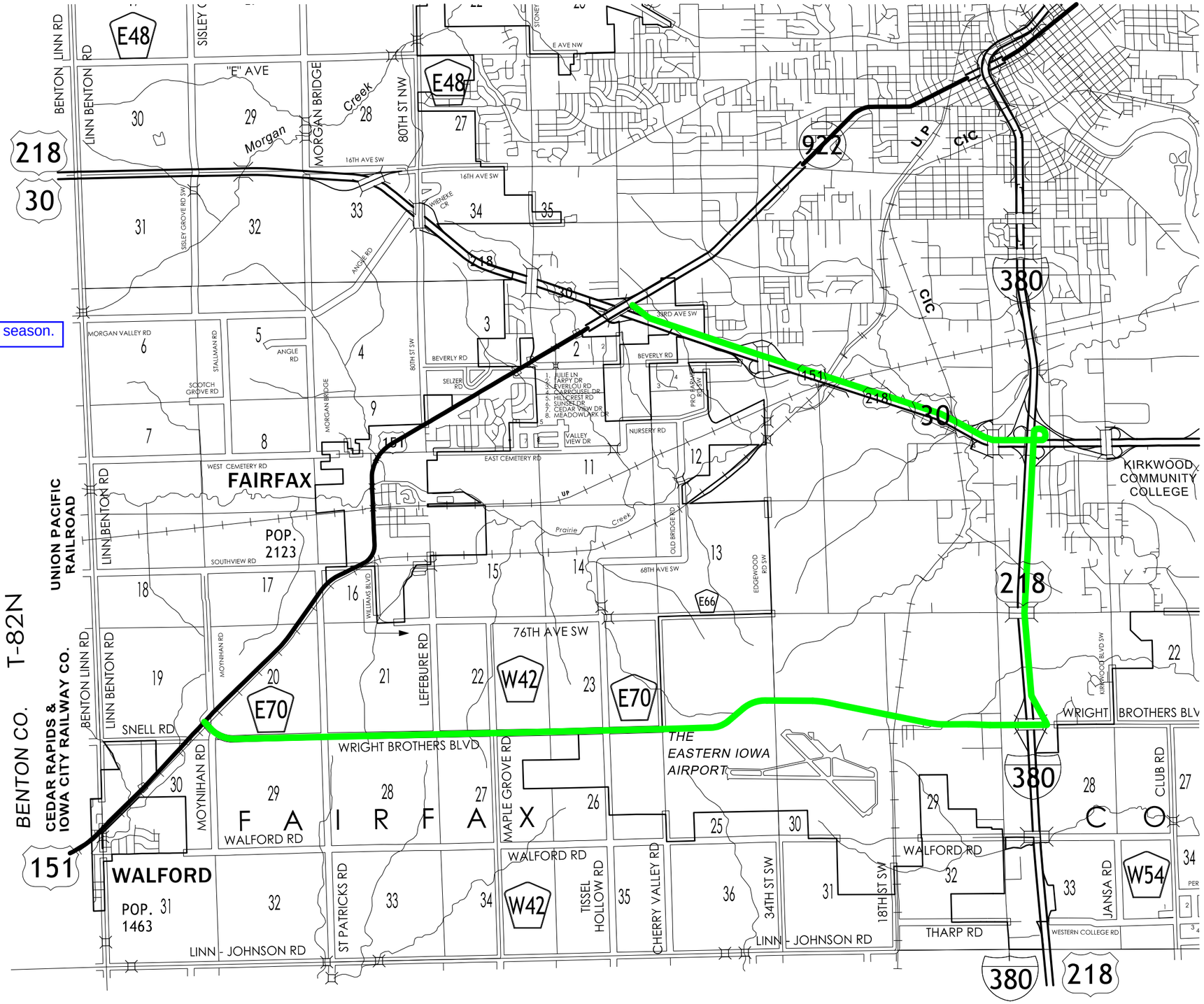
●	Channelizing Device		Crash Cushion (Temp or Perm)
✕	Drum		Traffic Signal
◘	Temporary Lane Separator		Flagger
◆	Tubular Marker		Temporary Floodlighting
♦	Channelizer Marker		Traffic Sign
△	Concrete Barrier Marker		Type III Barricade
ς	Delineator		Type A Warning Light
	Temporary Barrier Rail		Direction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

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

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

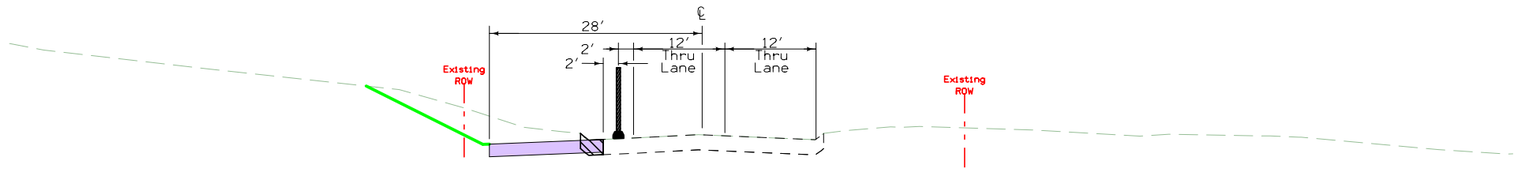
(COVERS SHEET SERIES J)

Detour is anticipated to last one construction season.

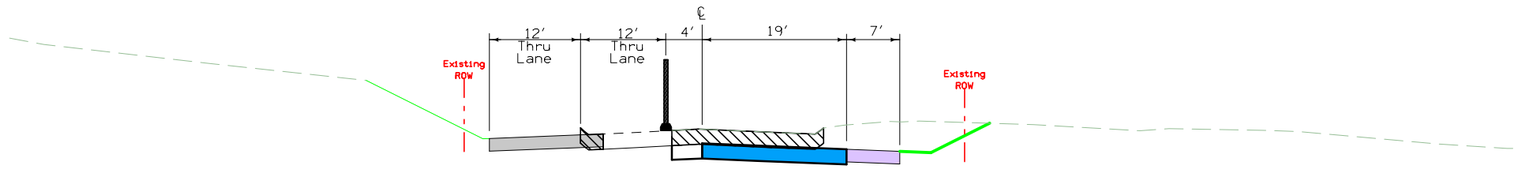


FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.3

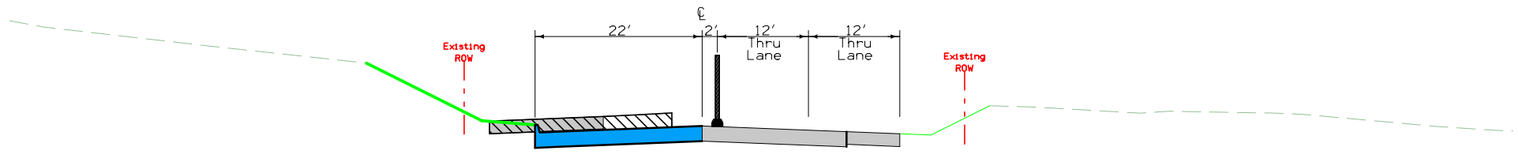
SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC



STAGE 1
STA. 841+00.00 to 849+38.40



STAGE 2
STA. 841+00.00 to 849+38.40



STAGE 3
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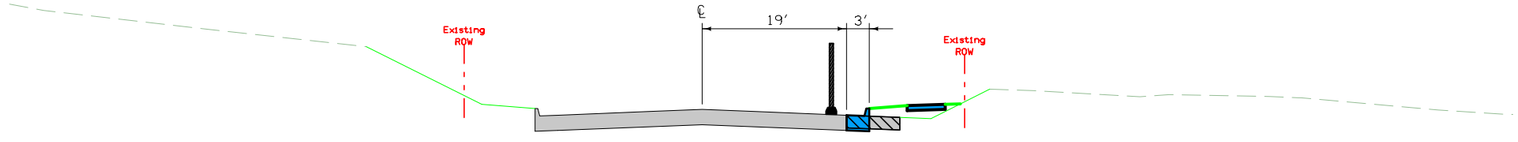
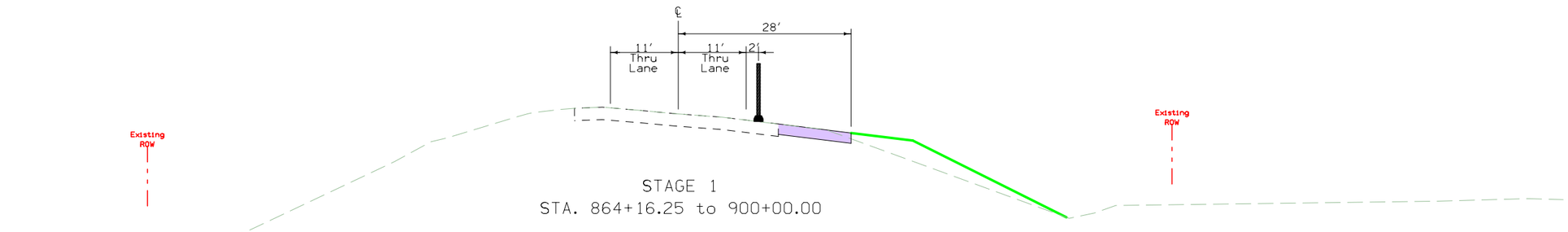
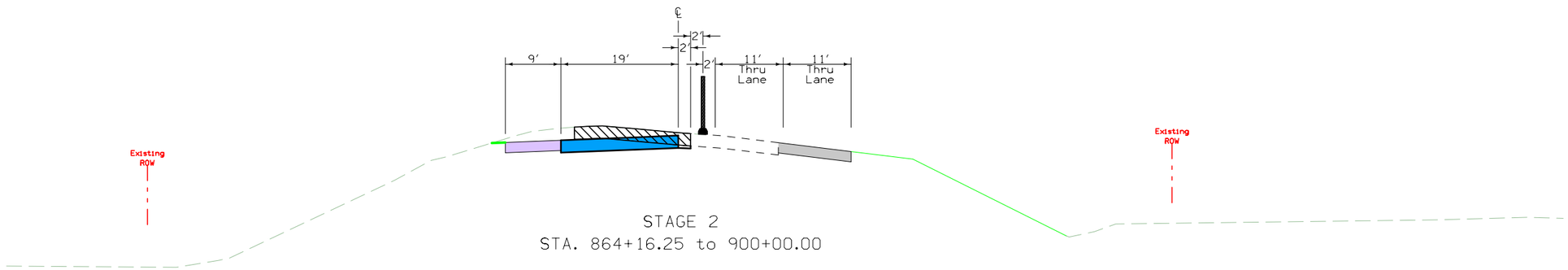


STAGE 4
STA. 841+00.00 to 849+38.40



STAGE 1
STA. 864+16.25 to 900+00.00



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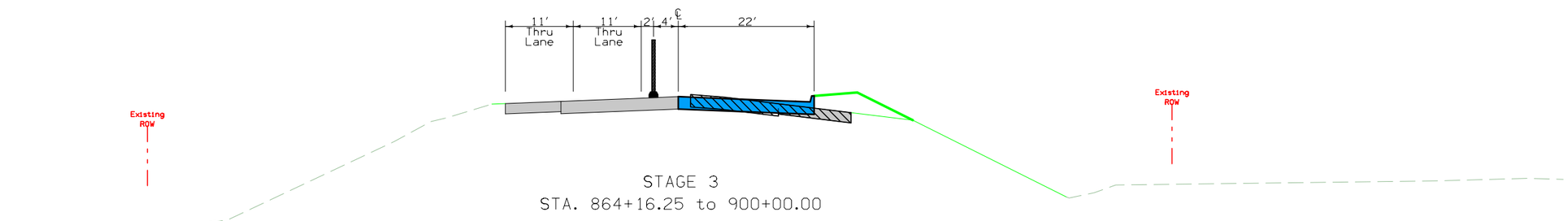
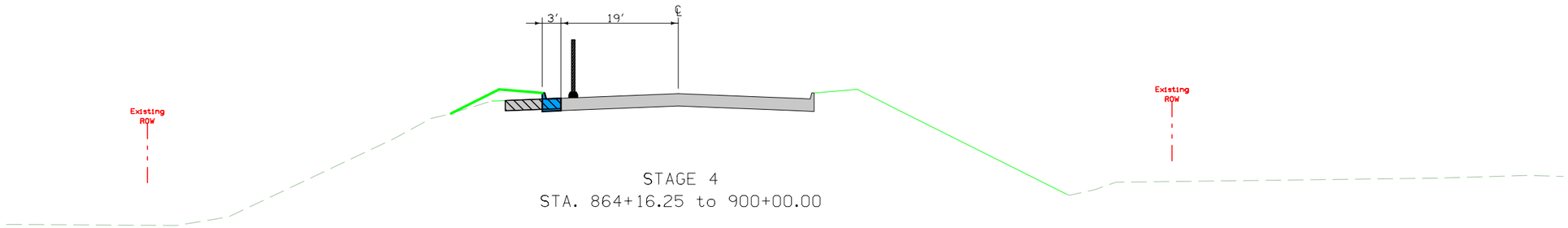


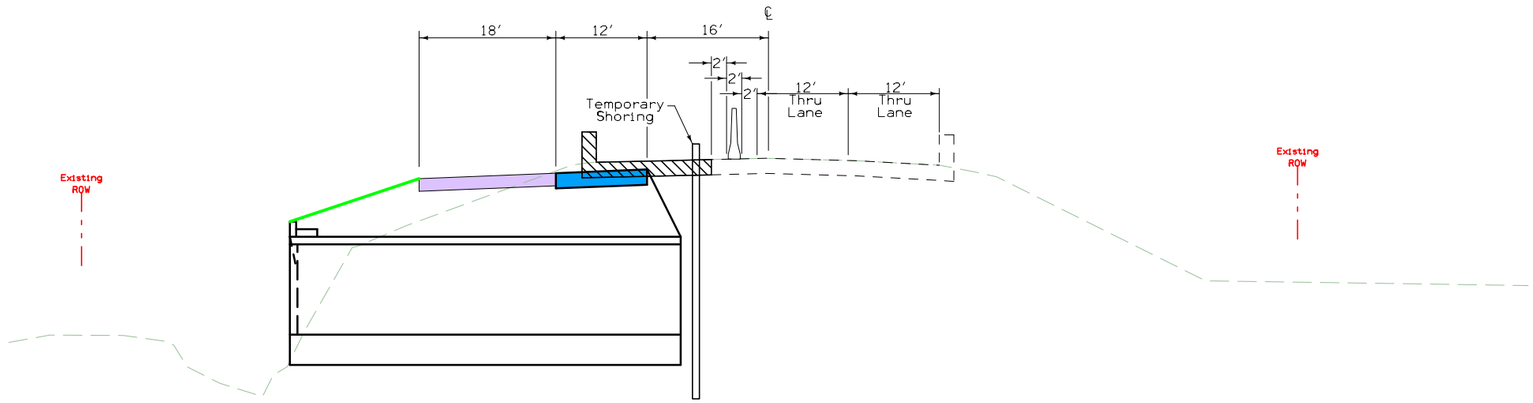
STAGE 3
STA. 864+16.25 to 900+00.00



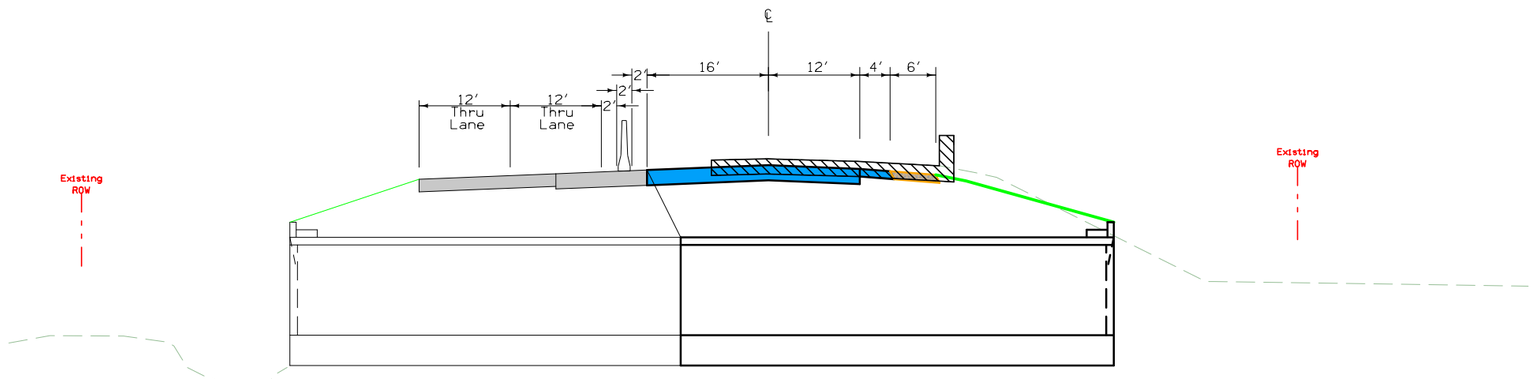
STAGE 4
STA. 864+16.25 to 900+00.00

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.5

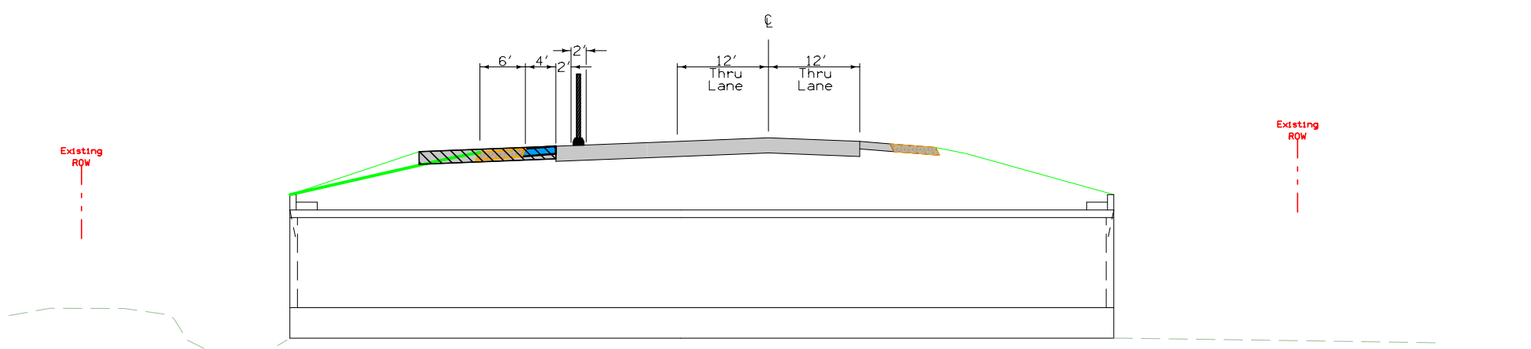
SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC



STAGE 1
STA. 974+69.95 to 984+83.16



STAGE 2
STA. 974+69.95 to 984+83.16

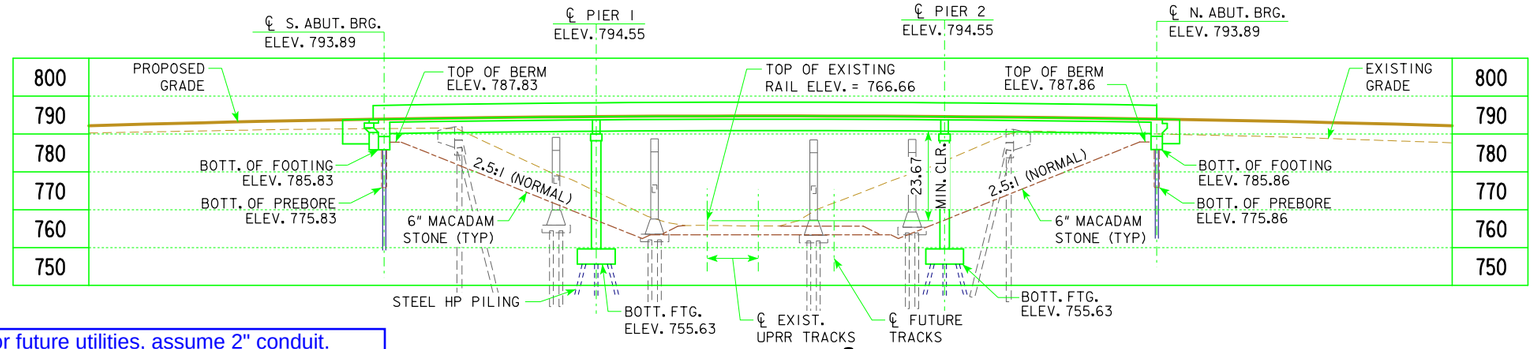


STAGE 3
STA. 974+69.95 to 984+83.16

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.6

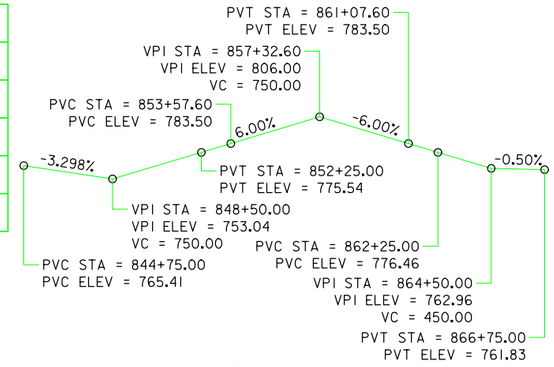
SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

BENCH MARK NO. BM1 STA. 846+60.81, 23.069 RT, GIN SPIKE IN POWER POLE,
EAST SIDE HWY 151, ACROSS FROM "PIT STOP"
ELEV. 763.600, N = 703233.002 E = 2107556.082



LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

TOP OF BRIDGE DECK CROWN 0.03' BELOW PROFILE GRADE



PROPOSED PROFILE GRADE

Include conduit through rail for future utilities, assume 2" conduit.

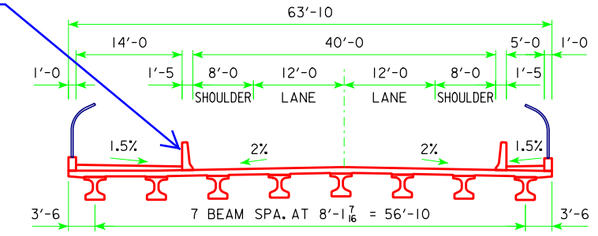
Limits of curved pedestrian fence is 25' from centerline of track, not full width.

Office of Bridges and Structures standard sheet 1067 (BNSF Railway Co. and Union Pacific Railroad General Notes and Shoring) needs to be completed for this bridge.

Change to 10" separation rail with a handrail on the backside. 1'-3" total width.

OVERHEAD STATION = 857+74.27, OFFSET 23.92 RT
OVERHEAD ELEVATION = 794.16
DEPTH OF SUPERSTRUCTURE = 3.83
UNDERPASS STATION = ?, OFFSET ??
UNDERPASS ELEVATION = 766.66
MINIMUM VERTICAL CLEARANCE = 23.67

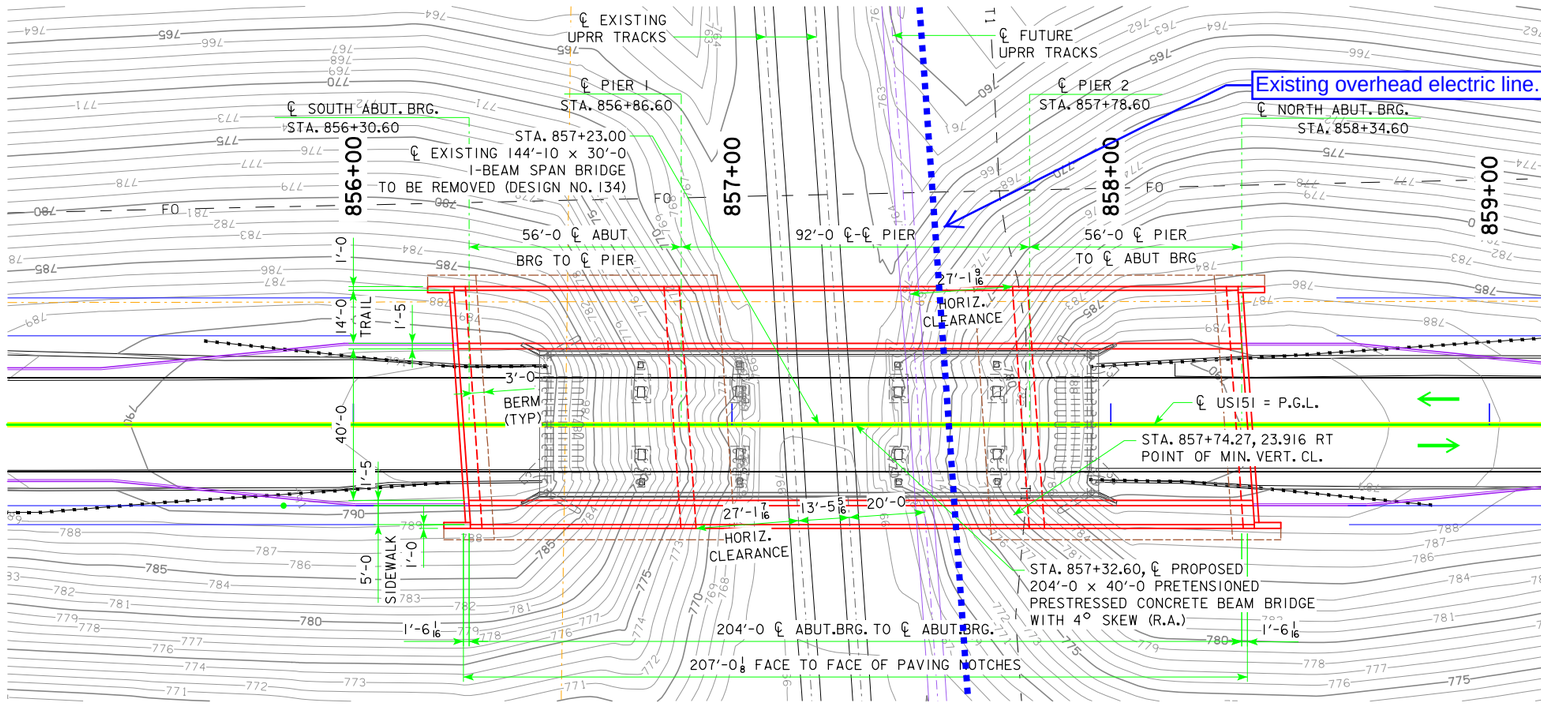
Use of tapered end section (BA-108) is not allowed for posted speeds above 40 mph.

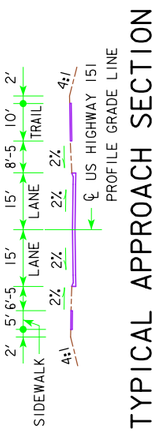


BRIDGE CROSS SECTION

BTB BEAMS

Existing overhead electric line.





TYPICAL APPROACH SECTION

N

0 ENGLISH 40
SCALE IN FEET

SITUATION PLAN

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

UTILITIES LEGEND:

FO - FIBER OPITIC - ??
TI - TELEPHONE - ??

NOTES:
PIERS ARE FRAME PIERS ON PILE CAP FOOTINGS.
BEAM TYPE BTB, DEPTH = 3'-0.
TL-5 BARRIER RAILING IS PROPOSED.

LOCATION

US HIGHWAY 151 OVER
UNION PACIFIC RAILROAD
T-82N R-8W
SECTIONS 9 & 16
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33770
BRIDGE MAINT. NO. 5721.8S151
LATITUDE 41.920383°
LONGITUDE -91.783747°

TRAFFIC ESTIMATE

2013 AADT	8100	V.P.D.
2040 AADT	12,010	V.P.D.
2040 DHV	-	V.P.H.
TRUCKS	6	%
TOTAL DESIGN ESALs	-	

PRELIMINARY

DESIGN FOR 4° SKEW (R.A.)

204'-0 x 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE WITH 14'-0 TRAIL AND 5'-0 SIDEWALK (BTB BEAMS)

SPANS (81'-0, 92'-0, 81'-0)

SITUATION PLAN

STATION 857+32.60 LINN COUNTY NOVEMBER 2015

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM		S.B.I. NO.			PROJECT NUMBER	SHEET NUMBER
SHUCK-BRITSON INC.	400 EAST COURT AVE. SUITE 140 DES MOINES, IOWA 50309 515-243-4477	112.0807.01	LINN COUNTY		BRF-151-3(141)--38-57	V.1

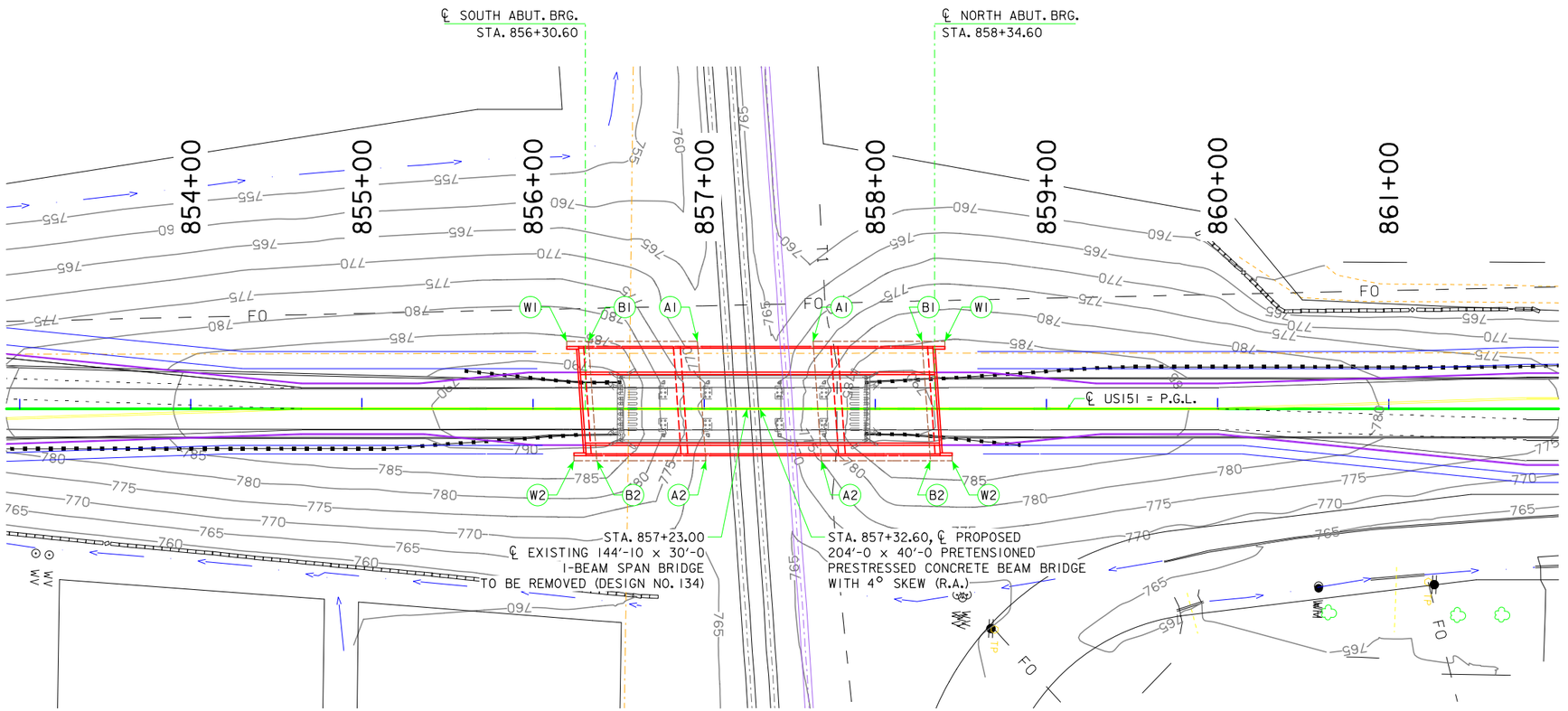
11/5/2015 11:37:35 AM V8i_IDOTBridge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\US151 @ UPRR\57151141.str TSL_57_DDDD_S01 11x17_pdf.pltcfg

BENCH MARK NO. BM1 STA. 846+60.81, 23.069 RT, GIN SPIKE IN POWER POLE,
EAST SIDE HWY 151, ACROSS FROM "PIT STOP"
ELEV. 763.600, N = 703233.002 E = 2107556.082

BERM SLOPE LOCATION TABLE

	SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV
A1	856+96.03	39.42	762.36	857+63.65	39.42	762.38
A2	857+00.91	30.42	762.36	857+68.54	30.42	762.38
B1	856+32.36	39.42	787.83	858+27.33	39.42	787.86
B2	856+37.24	30.42	787.83	858+32.22	30.42	787.86
W1	856+19.66	39.42	792.98	858+40.67	39.42	793.07
W2	856+23.90	30.42	793.19	858+44.91	30.42	793.13

BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE



SITE PLAN

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

N

0 ENGLISH 80
SCALE IN FEET

NOTE:
FOR MACADAM STONE SLOPE PROTECTION SECTIONS AND ESTIMATED QUANTITIES SEE DESIGN SHEET 38.

UTILITIES LEGEND:

FO - FIBER OPITIC - ??
TI - TELEPHONE - ??

PRELIMINARY

DESIGN FOR 4° SKEW (R.A.)

204'-0 x 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE WITH 14'-0 TRAIL AND 5'-0 SIDEWALK (BTB BEAMS)

SPANS (81'-0, 92'-0, 81'-0)

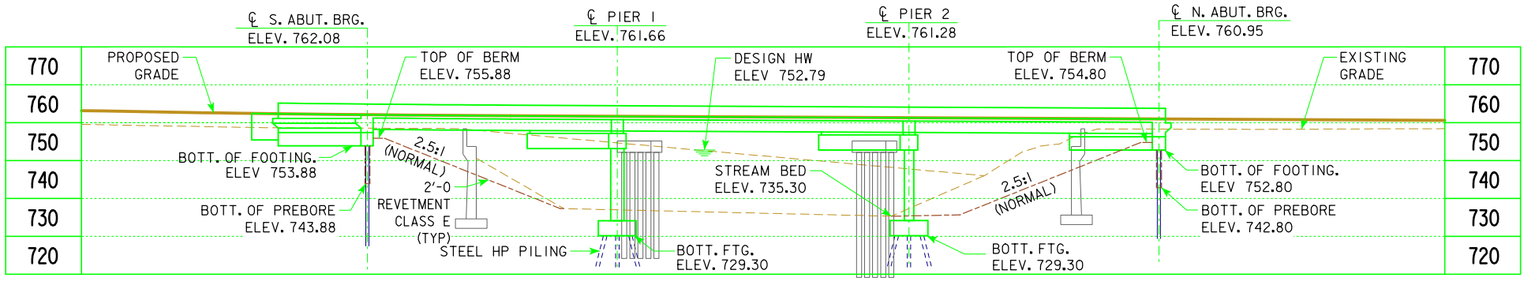
SITE PLAN

STATION 857+32.60 LINN COUNTY NOVEMBER 2015

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

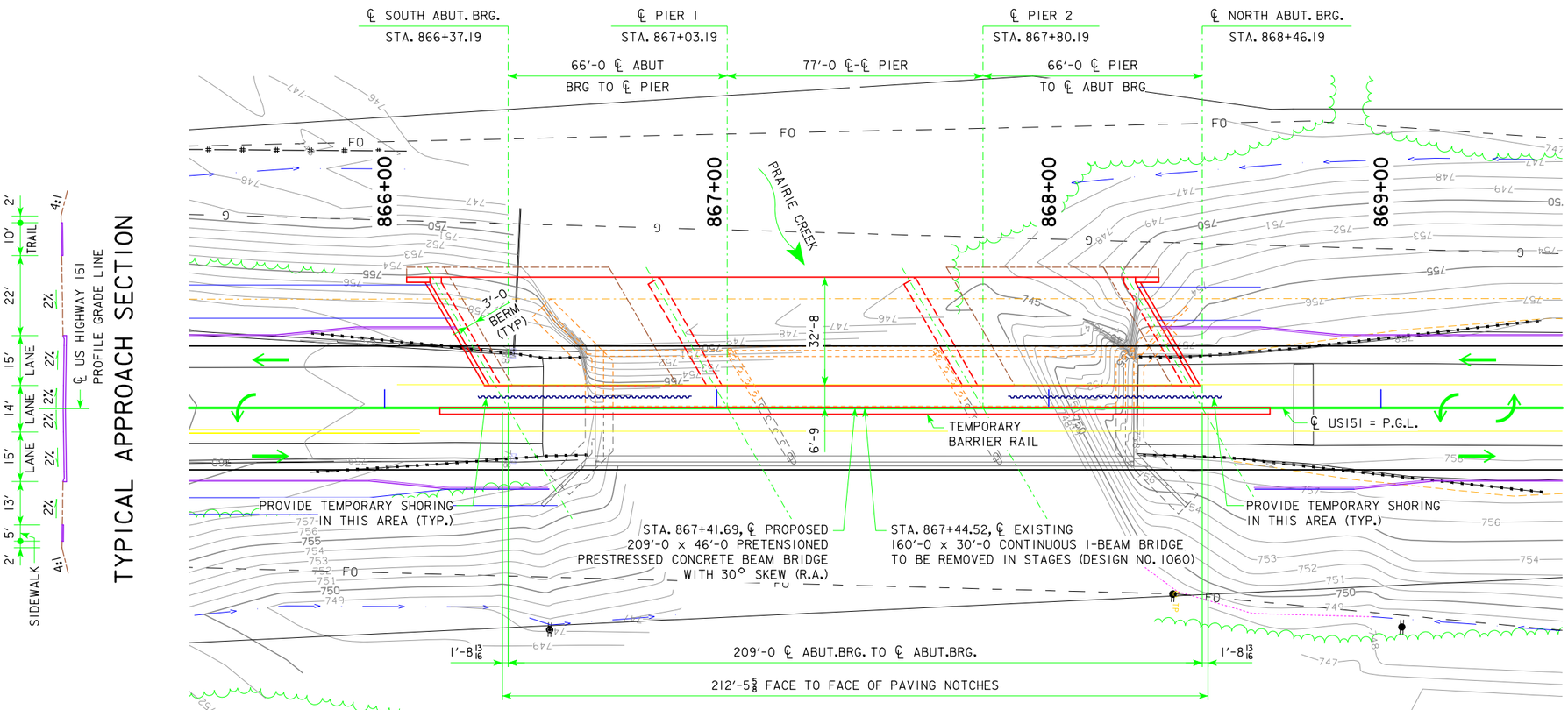
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

BENCH MARK NO. BM2 STA. 871+35.96, 70.098 RT, RR SPIKE IN POWER POLE, EAST SIDE HWY 151, 200' ± NORTH OF NORTH END OF RIVER BRIDGE AT BEGGINNING OF CLEARING.
ELEV. 750.420, N = 705704.166 E = 2107504.303

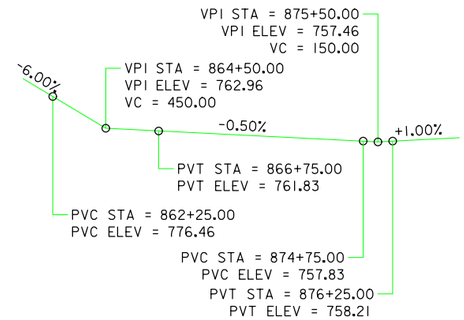


LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

TOP OF BRIDGE DECK CROWN 0.03' BELOW PROFILE GRADE



TYPICAL APPROACH SECTION



PROPOSED PROFILE GRADE

HYDRAULIC DATA

DRAINAGE AREA = 178.0 SQ. MI.
STREAM SLOPE = ??.? FT./MI.
AVG. LOW WATER STAGE = ???.?

Q_{50} = 13,480 CFS
STAGE = 752.79
BACKWATER = 0.31 FT.

Q_{100} = 16,060 CFS
STAGE = 753.6
BACKWATER = 0.44 FT.
AVG. BRIDGE VELOCITY = 7.09 FPS

Q_{500} = 22,750 CFS
STAGE = 755.09
CALCULATED CHECK SCOUR = ???.?

ALL ELEVATIONS NAVD88
50, 100 & 500 YR. STAGES AND DISCHARGES FROM LINN COUNTY F.I.S., APRIL 5, 2010

UTILITIES LEGEND:

FO - FIBER OPTIC - ??
G - GAS - ??

LOCATION

US HIGHWAY 151
OVER PRAIRIE CREEK
T-82N R-8W
SECTION 9
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33780
BRIDGE MAINT. NO. 5722.0S151
LATITUDE 41.923186°
LONGITUDE -91.783847°

TRAFFIC ESTIMATE

2013 AADT	8100	V.P.D.
2040 AADT	12,010	V.P.D.
2040 DHV	-	V.P.H.
TRUCKS	6	%
TOTAL DESIGN ESALs	-	

PRELIMINARY

NOTE:
PIERS ARE WALL PIERS (SOLID STEM) ON PILE CAP FOOTINGS.
BEAM TYPE BTB, DEPTH = 3'-0.
TL-4 BRIDGE RAILING IS PROPOSED.

SITUATION PLAN STAGE 1

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

N

0 ENGLISH 40
SCALE IN FEET

HYDRAULIC DESIGN

LICENSED PROFESSIONAL ENGINEER
Adam R. Bullerman
17362
IOWA

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.

---/---/2015
Signature Date
Adam R. Bullerman
Printed or Typed Name

My license renewal date is December 31, 2016

Pages or sheets covered by this seal: SHEET --- - HYDRAULIC DATA

DESIGN FOR 30° SKEW (R.A.)

209'-0 x 46'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE WITH 14'-0 TRAIL AND 5'-0 SIDEWALK (BTB BEAMS)

SPANS (66'-0, 77'-0, 66'-0)

SITUATION PLAN - STAGE 1

STATION 867+41.69 LINN COUNTY NOVEMBER 2015

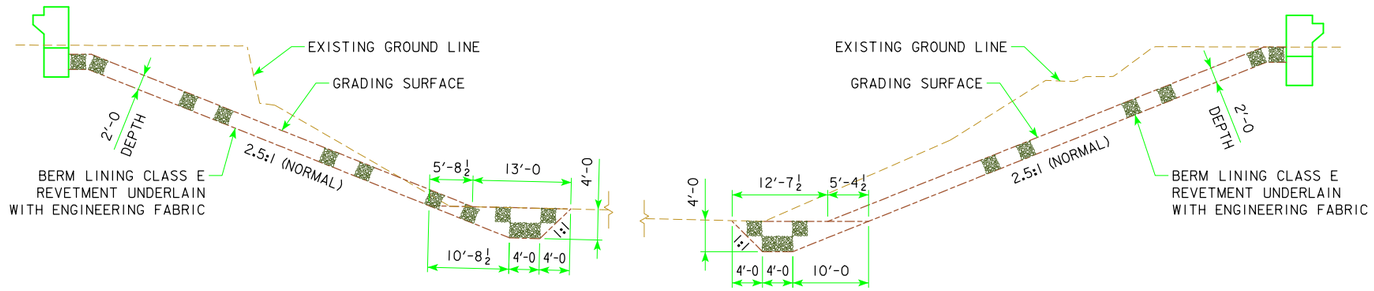
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM SHUCK-BRITSON 400 EAST COURT AVE. SUITE 140 DES MOINES, IOWA 50309 515-243-4477 | S.B.I. NO. 112.0807.01 | LINN COUNTY | PROJECT NUMBER BRF-151-3(142)--38-57 | SHEET NUMBER V.3

11/5/2015 11:57:37 AM V8i_IDOTBridge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\US151 @ Prairie Creek\57151142.str TSL_57_DDDD_S03 11x17_pdf.pltcfg

BENCH MARK NO. BM2 STA. 871+35.96, 70.098 RT, RR SPIKE IN POWER POLE, EAST SIDE HWY 151, 200' ± NORTH OF NORTH END OF RIVER BRIDGE AT BEGGINNING OF CLEARING.
ELEV. 750.420, N = 705704.166 E = 2107504.303



SECTION THRU EMBEDDED REVETMENT BERM

BERM SLOPE LOCATION TABLE

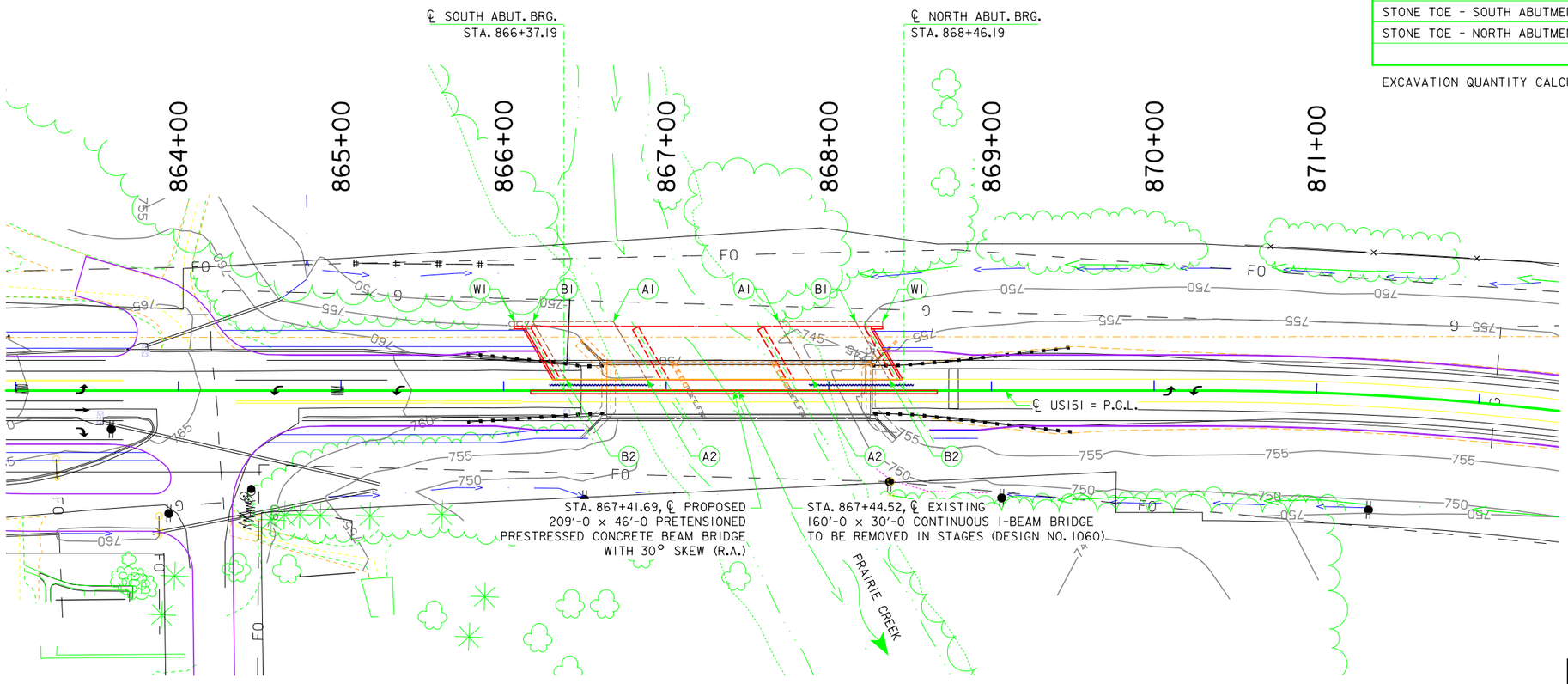
	SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV
A1	866+67.52	42.42 LT	-	867+69.13	42.42 LT	-
A2	866+88.11	6.75 LT	-	867+89.72	6.75 LT	-
B1	866+17.90	42.42 LT	-	868+16.50	42.42 LT	-
B2	866+38.49	6.75 LT	-	868+37.10	6.75 LT	-
W1	866+06.61	42.42 LT	-	868+33.08	42.42 LT	-

BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE

ESTIMATED BERM ARMORING QUANTITIES

LOCATION	REVETMENT CL. E (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	CLASS 10 CHANNEL EXCAVATION (CY)
BERM LINING - SOUTH ABUTMENT	XX	-	XX	XX
BERM LINING - NORTH ABUTMENT	XX	-	XX	XX
STONE TOE - SOUTH ABUTMENT	XX	-	XX	XX
STONE TOE - NORTH ABUTMENT	XX	-	XX	XX
TOTALS	XX	-	XX	XX

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.



SITE PLAN
STAGE 1

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

UTILITIES LEGEND:

FO - FIBER OPTIC - ??
G - GAS - ??

PRELIMINARY

DESIGN FOR 30° SKEW (R.A.)

209'-0 x 46'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE WITH 14'-0 TRAIL AND 5'-0 SIDEWALK (BTB BEAMS)

SPANS (66'-0, 77'-0, 66'-0)

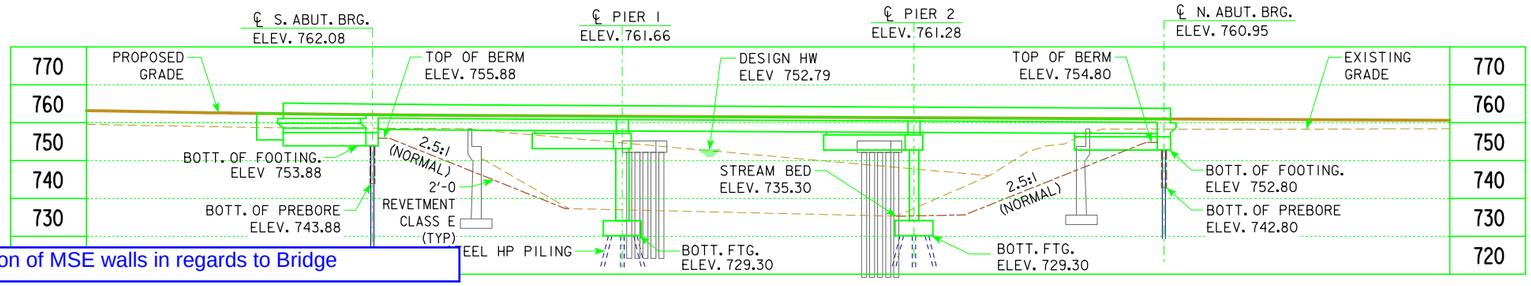
SITE PLAN - STAGE 1

STATION 867+41.69 LINN COUNTY NOVEMBER 2015

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

BENCH MARK NO. BM2 STA. 871+35.96, 70.098 RT, RR SPIKE IN POWER POLE, EAST SIDE HWY 151, 200' ± NORTH OF NORTH END OF RIVER BRIDGE AT BEGGINNING OF CLEARING. ELEV. 750.420, N = 705704.166 E = 2107504.303



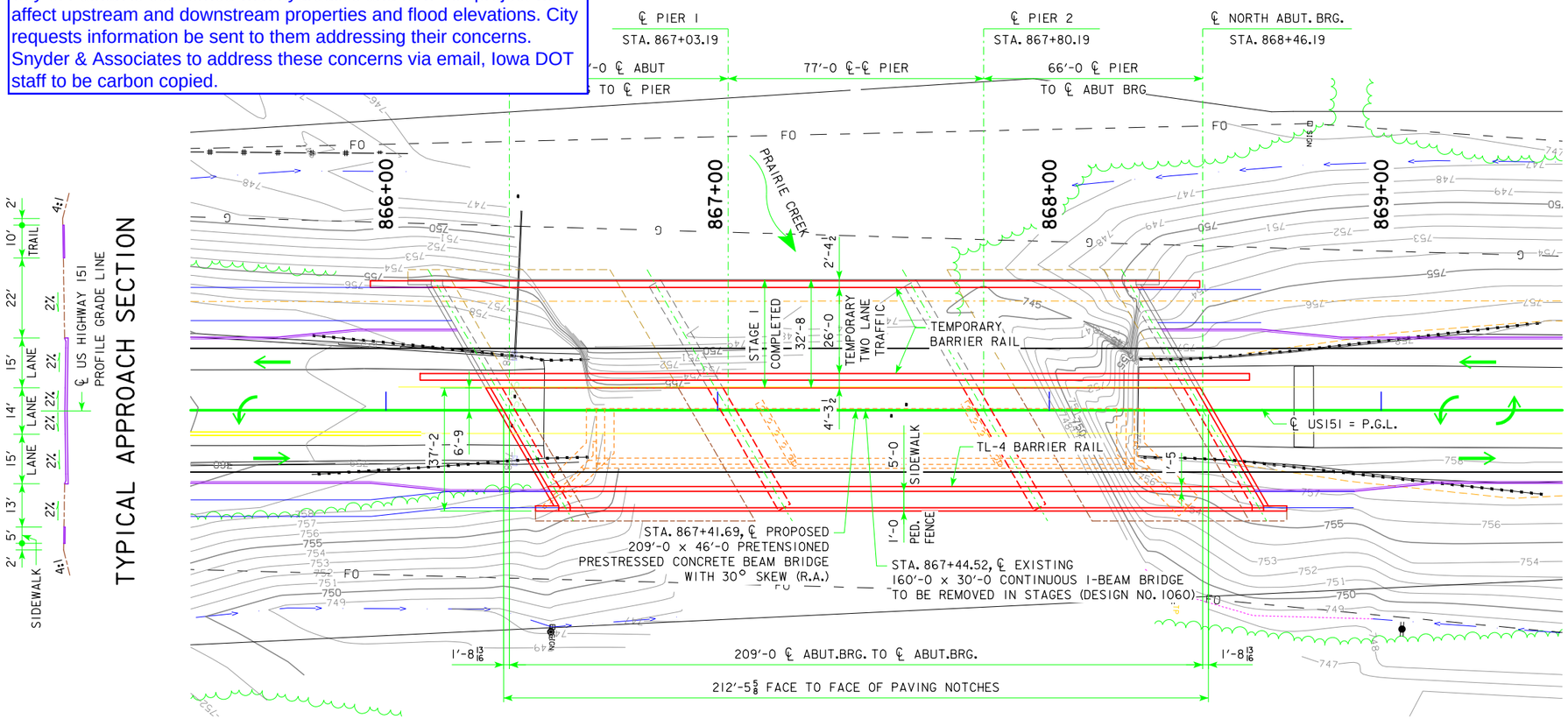
Need to review location of MSE walls in regards to Bridge

Water against MSE wall will be problematic.

City of Fairfax is concerned with hydraulics and how this project will affect upstream and downstream properties and flood elevations. City requests information be sent to them addressing their concerns. Snyder & Associates to address these concerns via email, Iowa DOT staff to be carbon copied.

LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

TOP OF BRIDGE DECK CROWN 0.03' BELOW PROFILE GRADE



TYPICAL APPROACH SECTION

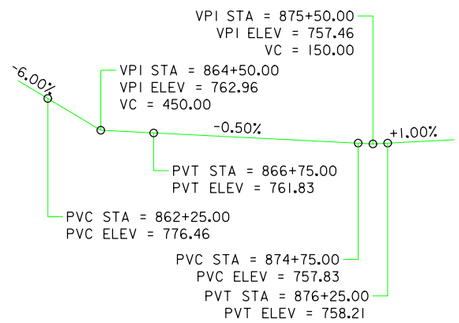
NOTE:
PIERS ARE WALL PIERS (SOLID STEM) ON PILE CAP FOOTINGS.
BEAM TYPE BTB, DEPTH = 3'-0.
TL-4 BARRIER RAIL IS PROPOSED.

SITUATION PLAN STAGE 2

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

N

0 ENGLISH 40
SCALE IN FEET



PROPOSED PROFILE GRADE

HYDRAULIC DATA

DRAINAGE AREA = 178.0 SQ. MI.
STREAM SLOPE = ??.? FT./MI.
AVG. LOW WATER STAGE = ???.?

Q_{50} = 13,480 CFS
STAGE = 752.79
BACKWATER = 0.31 FT.

Q_{100} = 16,060 CFS
STAGE = 753.6
BACKWATER = 0.44 FT.
AVG. BRIDGE VELOCITY = 7.09 FPS

Q_{500} = 22,750 CFS
STAGE = 755.09
CALCULATED CHECK SCOUR = ???.?

ALL ELEVATIONS NAVD88
50, 100 & 500 YR. STAGES AND DISCHARGES FROM LINN COUNTY F.I.S., APRIL 5, 2010

UTILITIES LEGEND:

FO - FIBER OPTIC - ??
G - GAS - ??

LOCATION

US HIGHWAY 151
OVER PRAIRIE CREEK
T-82N R-8W
SECTION 9
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33780
BRIDGE MAINT. NO. 5722.0S151
LATITUDE 41.923186°
LONGITUDE -91.783847°

TRAFFIC ESTIMATE

2013 AADT	8100	V.P.D.
2040 AADT	12,010	V.P.D.
2040 DHV	-	V.P.H.
TRUCKS	6	%
TOTAL DESIGN ESALs	-	

PRELIMINARY

DESIGN FOR 30° SKEW (R.A.)

209'-0 x 46'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE WITH 14'-0 TRAIL AND 5'-0 SIDEWALK (BTB BEAMS)

SPANS (66'-0, 77'-0, 66'-0)

SITUATION PLAN - STAGE 2

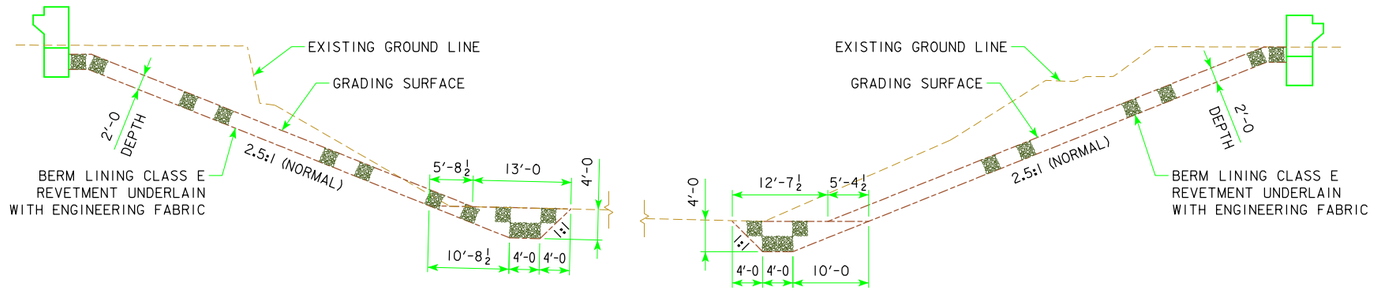
STATION 867+41.69 LINN COUNTY NOVEMBER 2015

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM SHUCK-BRITSON 400 EAST COURT AVE. SUITE 140 DES MOINES, IOWA 50309 515-243-4477 | S.B.I. NO. 112.0807.01 | LINN COUNTY | PROJECT NUMBER BRF-151-3(142)--38-57 | SHEET NUMBER V.5

11/5/2015 11:57:44 AM V8i_IDOTBridge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\US151 @ Prairie Creek\57151142.str TSL_57_DDDD_S05 11x17_pdf.pltcfg



SECTION THRU EMBEDDED REVETMENT BERM

BENCH MARK NO. BM2 STA. 871+35.96, 70.098 RT, RR SPIKE IN POWER POLE, EAST SIDE HWY 151, 200' ± NORTH OF NORTH END OF RIVER BRIDGE AT BEGGINNING OF CLEARING. ELEV. 750.420, N = 705704.166 E = 2107504.303

BERM SLOPE LOCATION TABLE

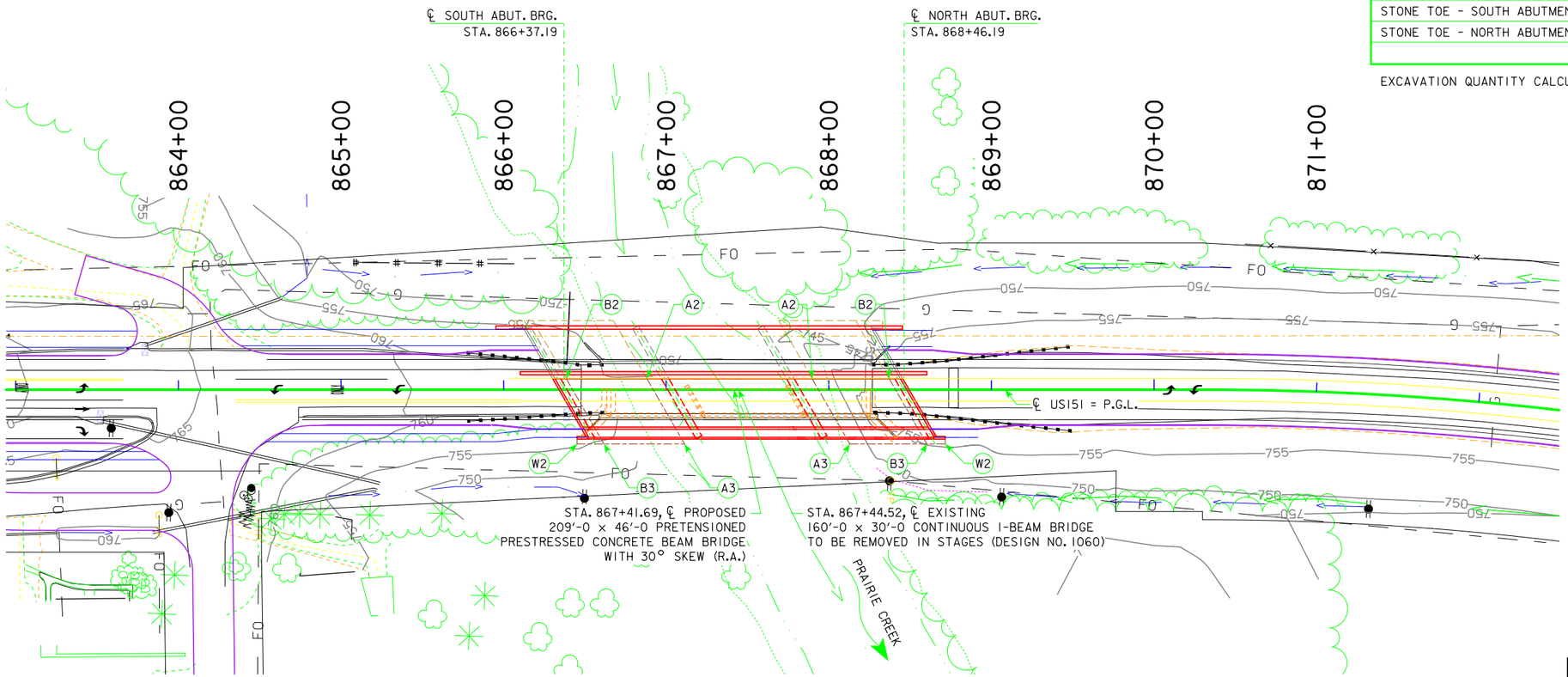
	SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV
A2	866+88.11	6.75 LT	-	867+89.72	6.75 LT	-
A3	867+11.30	33.42 RT	-	868+12.91	33.42 RT	-
B2	866+38.49	6.75 LT	-	868+37.10	6.75 LT	-
B3	866+61.68	33.42 RT	-	868+60.29	33.42 RT	-
W2	866+45.10	33.42 RT	-	868+71.57	33.42 RT	-

BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE

ESTIMATED BERM ARMORING QUANTITIES

LOCATION	REVETMENT CL. E (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	CLASS 10 CHANNEL EXCAVATION (CY)
BERM LINING - SOUTH ABUTMENT	XX	-	XX	XX
BERM LINING - NORTH ABUTMENT	XX	-	XX	XX
STONE TOE - SOUTH ABUTMENT	XX	-	XX	XX
STONE TOE - NORTH ABUTMENT	XX	-	XX	XX
TOTALS	XX	-	XX	XX

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.



SITE PLAN
STAGE 2

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

UTILITIES LEGEND:

FO - FIBER OPTIC - ??
G - GAS - ??

PRELIMINARY

DESIGN FOR 30° SKEW (R.A.)

209'-0 x 46'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE WITH 14'-0 TRAIL AND 5'-0 SIDEWALK (BTB BEAMS)

SPANS (66'-0, 77'-0, 66'-0)

SITE PLAN - STAGE 2

STATION 867+41.69 LINN COUNTY NOVEMBER 2015

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM SHUCK-BRITSON 400 EAST COURT AVE. SUITE 140 DES MOINES, IOWA 50309 515-243-4477

S.B.I. NO. 112.0807.01 | LINN COUNTY | PROJECT NUMBER BRF-151-3(142)--38-57 | SHEET NUMBER V.6

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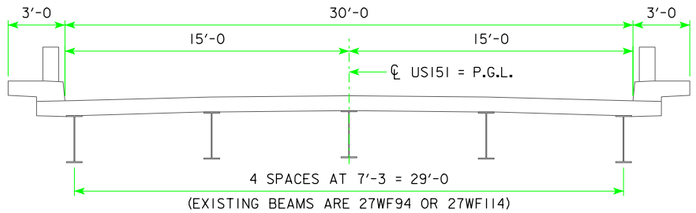
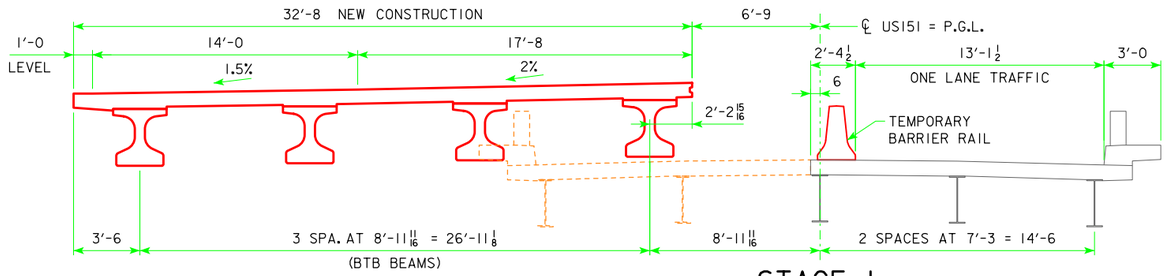


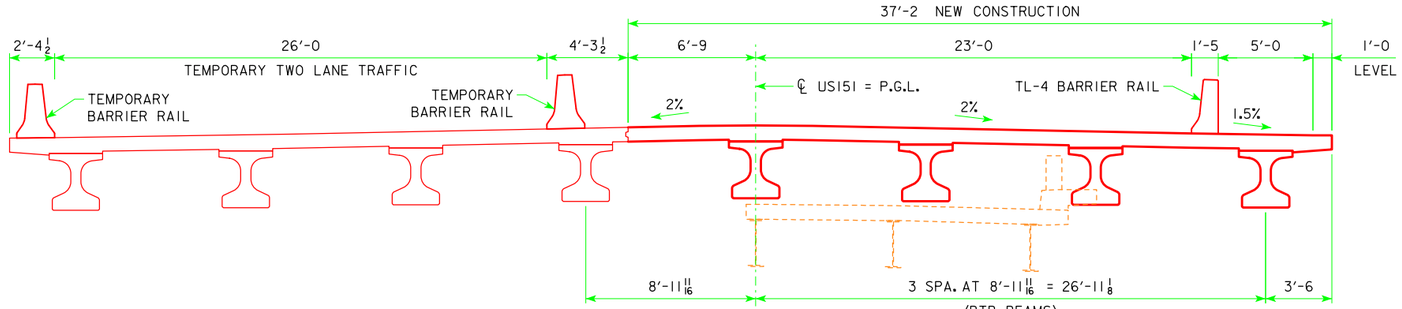
EXISTING

(LOOKING UP STATION - NORTH)



STAGE I

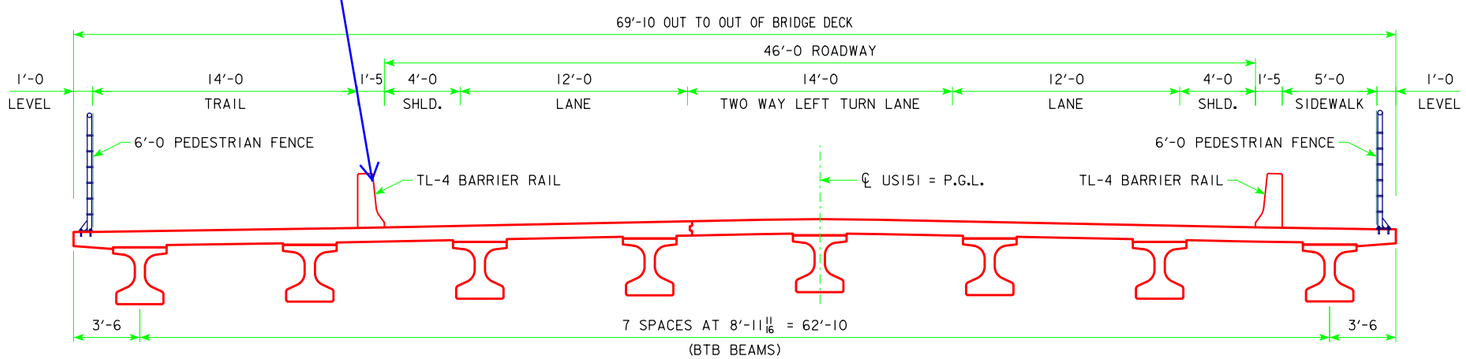
STAGE I
SHIFT TRAFFIC TO ONE LANE TRAFFIC ON THE EAST SIDE OF EXISTING BRIDGE.
REMOVE WEST HALF OF EXISTING BRIDGE AND CONSTRUCT WEST PORTION OF BRIDGE.



STAGE 2

STAGE 2
SHIFT TRAFFIC TO TWO LANE TRAFFIC ON THE NEWLY CONSTRUCTED WEST PORTION OF BRIDGE.
REMOVE REMAINING HALF OF EXISTING BRIDGE AND CONSTRUCT EAST PORTION OF BRIDGE.

Change to 10" separation rail with a handrail on the backside. 1'-3" total width.



FINAL STAGE

FINAL STAGE
SHIFT TRAFFIC TO EAST PORTION OF BRIDGE.
PLACE PERMANENT BARRIER RAIL AND PEDESTRIAN FENCE.
REMOVE TEMPORARY BARRIER RAIL.

Stage 1 anticipated time frame is 8 months.

Local traffic and emergency vehicles need to be accommodated.

Entire bridge will be bid in one letting with staged construction.

NOTE:
CLOSURE POUR NOT REQUIRED PER BDM 5.2.4.1.2.

PRELIMINARY

DESIGN FOR 30° SKEW (R.A.)

209'-0 x 46'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE WITH 14'-0 TRAIL AND 5'-0 SIDEWALK (BTB BEAMS)

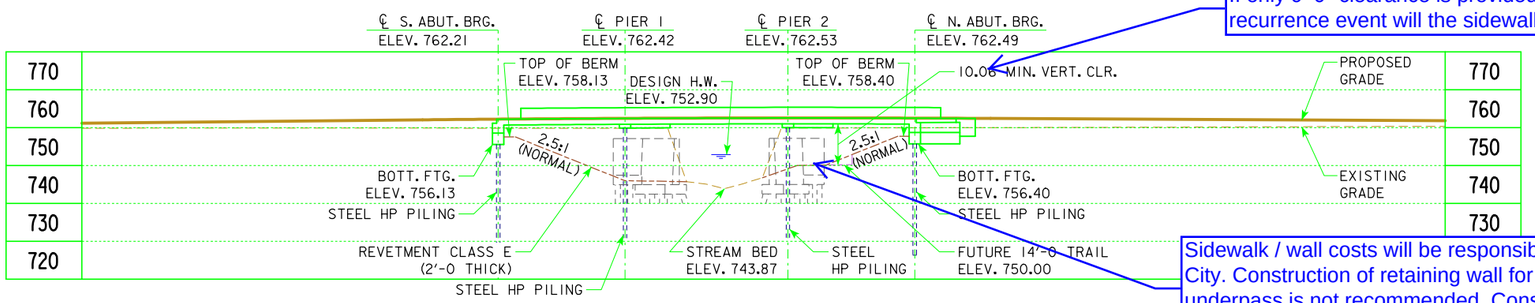
SPANS (66'-0, 77'-0, 66'-0)

STAGING

STATION 867+41.69 LINN COUNTY NOVEMBER 2015

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____



If only 9'-0" clearance is provided, what flood recurrence event will the sidewalk be above.

Sidewalk / wall costs will be responsibility of City. Construction of retaining wall for future trail underpass is not recommended. Consider lengthening bridge to eliminate need for wall.

LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

CURVE DATA

PI STA. 881+74.79
Δ = 61°52'59.64" (RT)
T = 1,144.91'
L = 2,062.78'
E = 316.88'
R = 1,909.86'
PC STA. 870+29.88
PT STA. 890+92.65

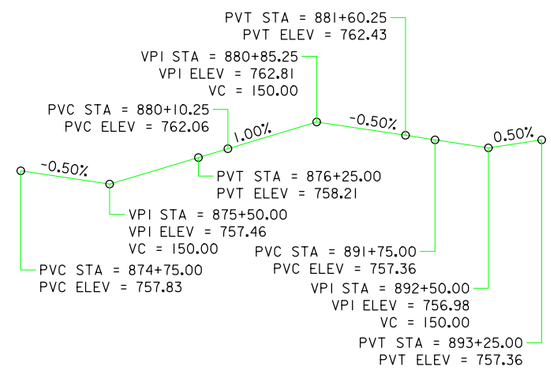
Utilities need to be shown in situation plan.

Elevation certificates are being performed on upstream properties. City was advised to contact those property owners that the bridge will be reconstructed which will affect the Q100 elevation.

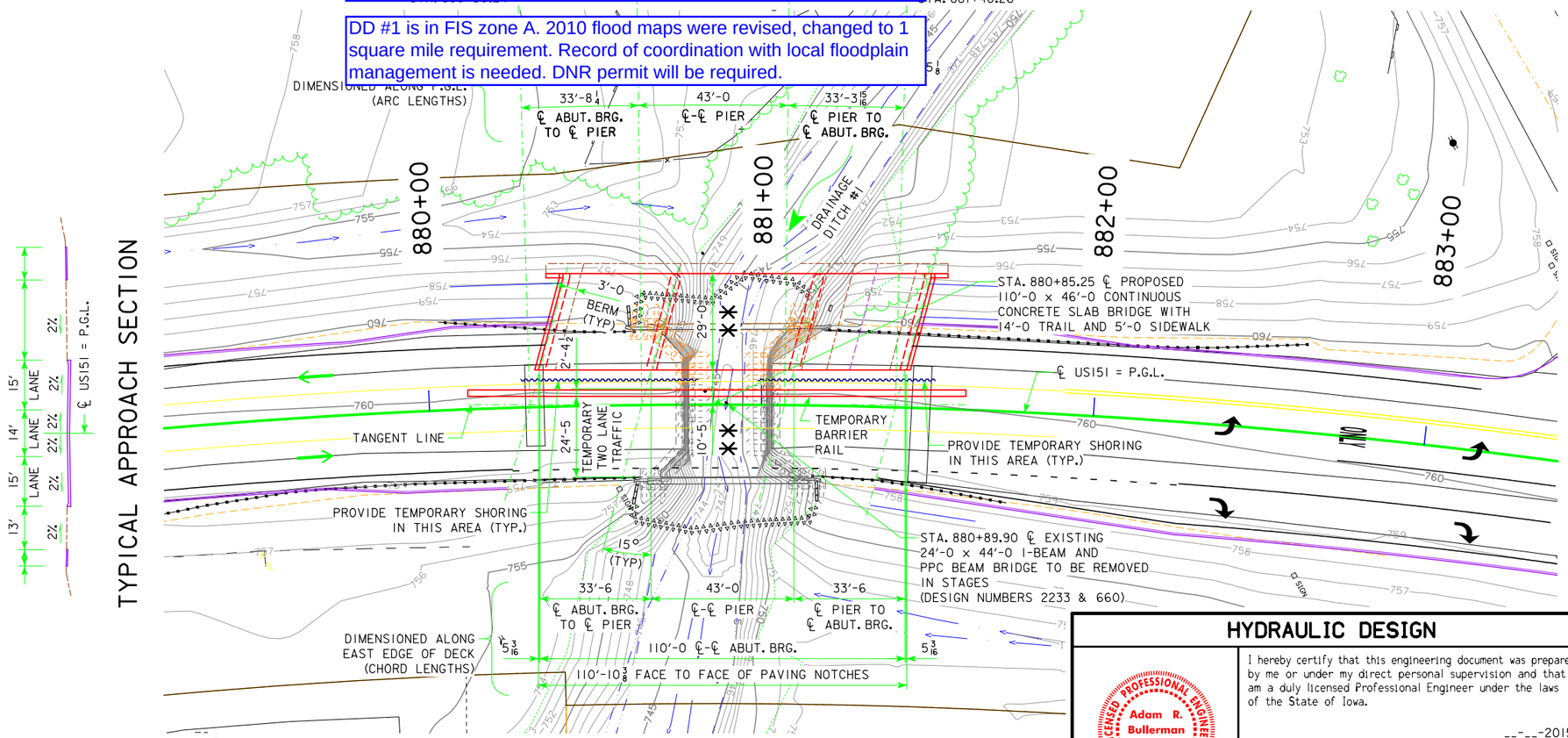
Bridge is within City Limits. In the near term the City will be developing area into urban - currently rural.

DD #1 is in FIS zone A. 2010 flood maps were revised, changed to 1 square mile requirement. Record of coordination with local floodplain management is needed. DNR permit will be required.

NOTES:
PIER TYPE - PIOL WITH MONOLITHIC PIER CAP & INDIVIDUALLY ENCASED PILE.
H = 19.56 FT.
TL-4 BARRIER RAILING PROPOSED.



PROPOSED PROFILE GRADE



✱ MEASURED RADIALLY.
✱✱ MEASURED PERPENDICULAR TO THE CHORD.

0 ENGLISH 40
SCALE IN FEET

SITUATION PLAN
STAGE I

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

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.

LICENSED PROFESSIONAL ENGINEER
Adam R. Bullerman
17362
IOWA

__-___-2015
Signature Date
Adam R. Bullerman
Printed or Typed Name

My license renewal date is December 31, 2016

Pages or sheets covered by this seal: SHEET ___ - HYDRAULIC DATA

BENCH MARK NO. BM3 STA. 883+94.08, 58.416 LT, RR SPIKE IN POWER POLE, NW QUADRANT OF CEMETARY ROAD AND HWY 151
ELEV. 760.370, N = 706904.792 E = 2107804.979

HYDRAULIC DATA

DRAINAGE AREA = 3.0 SQ. MI.
STREAM SLOPE = 20.2 FT./MI.
AVG. LOW WATER STAGE = 743.96

Q_{50} = 2120 CFS
STAGE = 752.90
BACKWATER = 0.48 FT.
AVE. BRIDGE VELOCITY = 5.6 FPS

Q_{100} = 2530 CFS
STAGE = 753.31
BACKWATER = 0.61 FT.

Q_{200} = 3310 CFS
STAGE = 754.17
CALCULATED DESIGN SCOUR = ???.?

Q_{500} = 3680 CFS
STAGE = 754.16
AVG. BRIDGE VELOCITY = 7.9 FPS
CALCULATED CHECK SCOUR = ???.?

ROADWAY OVERTOP ???.?
STA. ???+??

ALL ELEVATIONS NAVD88

UTILITIES LEGEND:

TV - CABLE TELEVISION - ??
FO - FIBER OPTIC - ??
T2 - TELEPHONE - ??

LOCATION

US HIGHWAY 151
OVER DRAINAGE DITCH #1
T-82N R-8W
SECTION 9
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33790
BRIDGE MAINT. NO. 5722.3S151
LATITUDE 41.926747°
LONGITUDE -91.782900°

TRAFFIC ESTIMATE

2013 AADT	8100	V.P.D.
2040 AADT	12,010	V.P.D.
2040 DHV	-	V.P.H.
TRUCKS	6	%
TOTAL DESIGN ESALs	-	

PRELIMINARY

DESIGN FOR 15° SKEW (L.A.)

110'-0 x 46'-0 CONTINUOUS CONCRETE SLAB BRIDGE WITH 14'-0 TRAIL AND 5'-0 SIDEWALK

SPANS (33'-6, 43'-0, 33'-6)

SITUATION PLAN - STAGE I

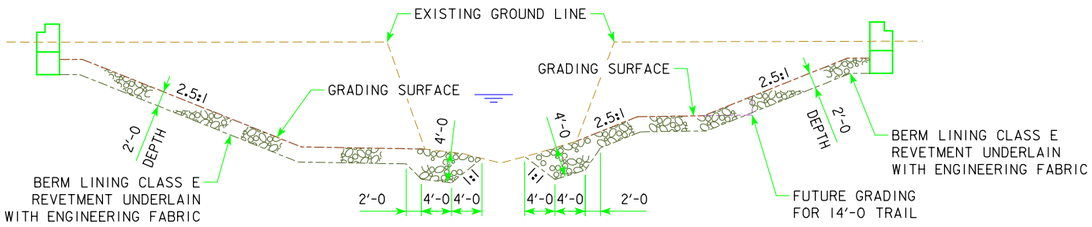
STATION 880+85.25 LINN COUNTY NOVEMBER 2015

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	SHUCK-BRITSON INC. 400 EAST COURT AVE. SUITE 140 DES MOINES, IOWA 50309 515-243-4477	S.B.I. NO. 112.0807.01	LINN COUNTY	PROJECT NUMBER BRF-151-3(152)--38-57	SHEET NUMBER V.8

BENCH MARK NO. BM3 STA. 883+94.08, 58.416 LT, RR SPIKE IN POWER POLE, NW QUADRANT OF CEMETARY ROAD AND HWY 151
ELEV. 760.370, N = 706904.792 E = 2107804.979



SECTION THRU EMBEDDED REVETMENT BERM

BERM SLOPE LOCATION TABLE

	SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV
A1	880+75.95	42.44 LT	745.60	881+27.21	42.89 LT	750.11
A2	880+67.27	10.50 LT	745.60	881+19.38	10.72 LT	750.11
B1	880+47.33	42.80 LT	758.13	881+45.80	43.40 LT	758.40
B2	880+38.18	11.00 LT	758.13	881+38.29	11.16 LT	758.40
W1	880+36.15	43.06 LT	761.48	881+54.58	43.70 LT	761.65

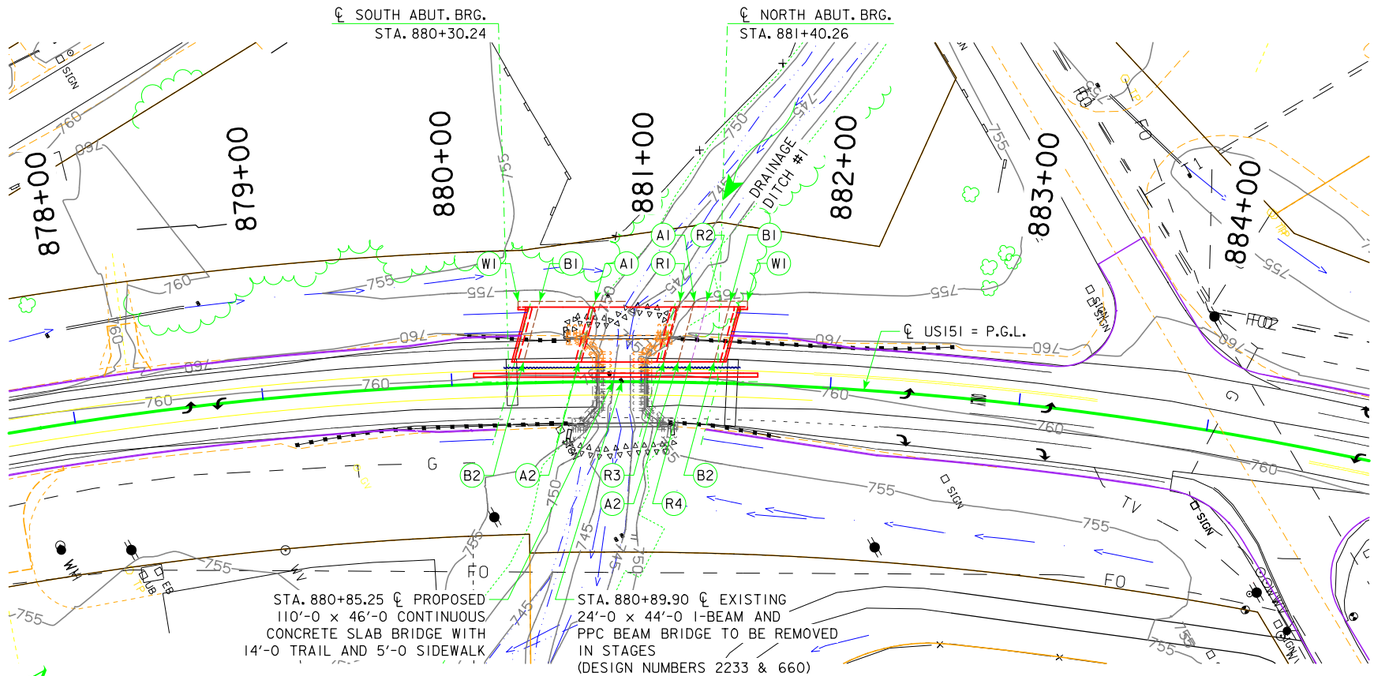
BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE

ESTIMATED BERM ARMORING QUANTITIES

LOCATION	REVETMENT CL. E (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	CLASS 10 CHANNEL EXCAVATION (CY)
BERM LINING - SOUTH ABUTMENT	XX	-	XX	XX
BERM LINING - NORTH ABUTMENT	XX	-	XX	XX
STONE TOE - SOUTH ABUTMENT	XX	-	XX	XX
STONE TOE - NORTH ABUTMENT	XX	-	XX	XX
TOTALS	XX	-	XX	XX

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

REVETMENT LAYOUT:
- (R1) 881+19.80, 42.74 LT, BERM LINING BELOW FUTURE PATH
- (R2) 881+33.49, 43.04 LT, FUTURE PATH RETAINING WALL
- (R3) 881+11.85, 10.60 LT, BERM LINING BELOW FUTURE PATH
- (R4) 881+25.77, 10.85 LT, FUTURE PATH RETAINING WALL



SITE PLAN
STAGE 1
ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

0 ENGLISH 80
SCALE IN FEET

UTILITIES LEGEND:

TV - CABLE TELEVISION - ??
FO - FIBER OPTIC - ??
T2 - TELEPHONE - ??

PRELIMINARY

DESIGN FOR 15° SKEW (L.A.)

110'-0 x 46'-0 CONTINUOUS CONCRETE SLAB BRIDGE WITH 14'-0 TRAIL AND 5'-0 SIDEWALK

SPANS (33'-6, 43'-0, 33'-6)

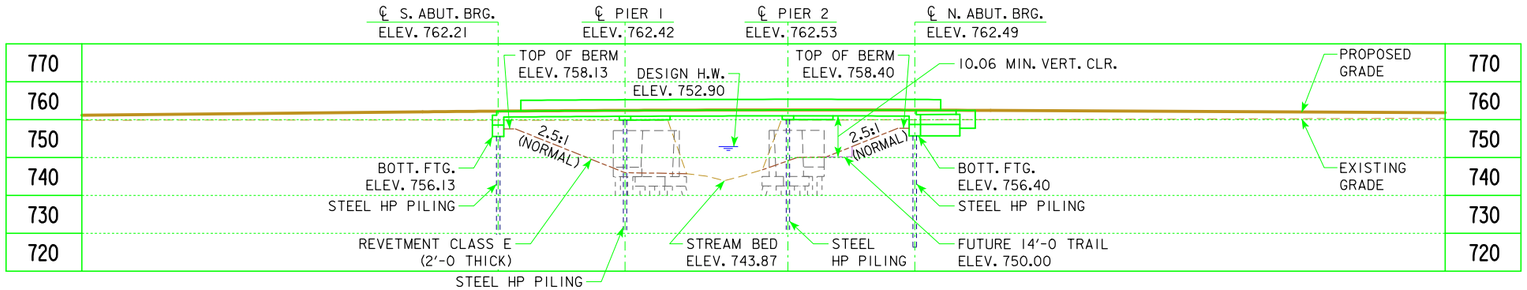
SITE PLAN - STAGE 1

STATION 880+85.25 LINN COUNTY NOVEMBER 2015

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

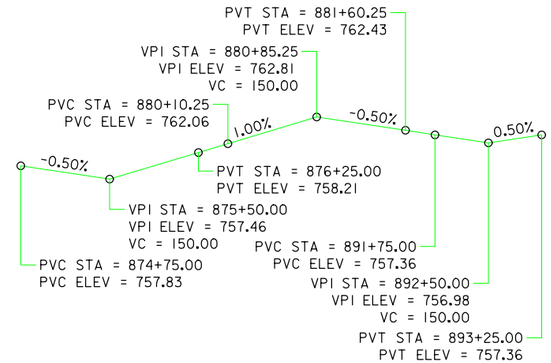
DESIGN TEAM	SHUCK-BRITSON	400 EAST COURT AVE. SUITE 140 DES MOINES, IOWA 50309 515-243-4477	S.B.I. NO. 112.0807.01	LINN COUNTY	PROJECT NUMBER BRF-151-3(152)--38-57	SHEET NUMBER V.9



LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

TOP OF BRIDGE DECK CROWN 0.03' BELOW PROFILE GRADE

BENCH MARK NO. BM3 STA. 883+94.08, 58.416 LT, RR SPIKE IN POWER POLE, NW QUADRANT OF CEMETARY ROAD AND HWY 151
ELEV. 760.370, N = 706904.792 E = 2107804.979

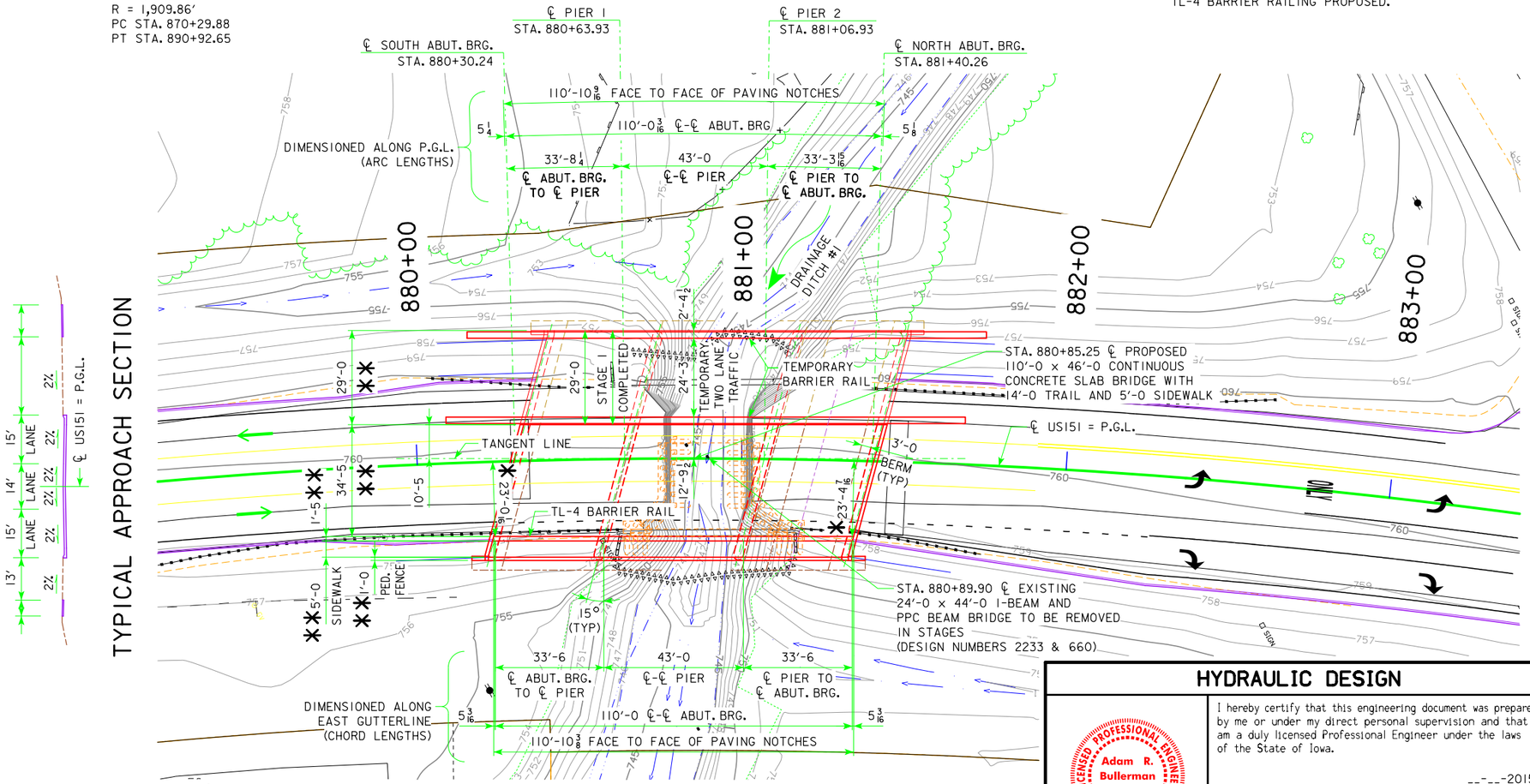


PROPOSED PROFILE GRADE

CURVE DATA

PI STA. 881+74.79
Δ = 61°52'59.64" (RT)
T = 1,144.91'
L = 2,062.78'
E = 316.88'
R = 1,909.86'
PC STA. 870+28.88
PT STA. 890+92.65

NOTES:
PIER TYPE - PIOL WITH MONOLITHIC PIER CAP & INDIVIDUALLY ENCASED PILE.
H = 19.56 FT.
TL-4 BARRIER RAILING PROPOSED.



SITUATION PLAN
STAGE 2

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

HYDRAULIC DATA

DRAINAGE AREA = 3.0 SQ. MI.
STREAM SLOPE = 20.2 FT./MI.
AVG. LOW WATER STAGE = 743.96

Q_{50} = 2120 CFS
STAGE = 752.90
BACKWATER = 0.48 FT.
AVE. BRIDGE VELOCITY = 5.6 FT.

Q_{100} = 2530 CFS
STAGE = 753.31
BACKWATER = 0.61 FT.

Q_{200} = 3310 CFS
STAGE = 754.17
CALCULATED DESIGN SCOUR = ???.?

Q_{500} = 3680 CFS
STAGE = 754.16
AVG. BRIDGE VELOCITY = 7.9 FPS
CALCULATED CHECK SCOUR = ???.?

ROADWAY OVERTOP ???.?
STA. ???+??

ALL ELEVATIONS NAVD88

UTILITIES LEGEND:

TV - CABLE TELEVISION - ??
FO - FIBER OPTIC - ??
T2 - TELEPHONE - ??

LOCATION

US HIGHWAY 151
OVER DRAINAGE DITCH #1
T-82N R-8W
SECTION 9
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33790
BRIDGE MAINT. NO. 5722.3S151
LATITUDE 41.926747°
LONGITUDE -91.782900°

TRAFFIC ESTIMATE

2013 AADT	8100	V.P.D.
2040 AADT	12,010	V.P.D.
2040 DHV	-	V.P.H.
TRUCKS	6	%
TOTAL DESIGN ESALs	-	

PRELIMINARY

HYDRAULIC DESIGN

LICENSED PROFESSIONAL ENGINEER
Adam R. Bullerman
17362
IOWA

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.

__-__-2015
Signature Date
Adam R. Bullerman
Printed or Typed Name

My license renewal date is December 31, 2016

Pages or sheets covered by this seal: SHEET ___ - HYDRAULIC DATA

DESIGN FOR 15° SKEW (L.A.)

110'-0 x 46'-0 CONTINUOUS CONCRETE SLAB BRIDGE WITH 14'-0 TRAIL AND 5'-0 SIDEWALK

SPANS (33'-6, 43'-0, 33'-6)

SITUATION PLAN - STAGE 2

STATION 880+85.25 LINN COUNTY NOVEMBER 2015

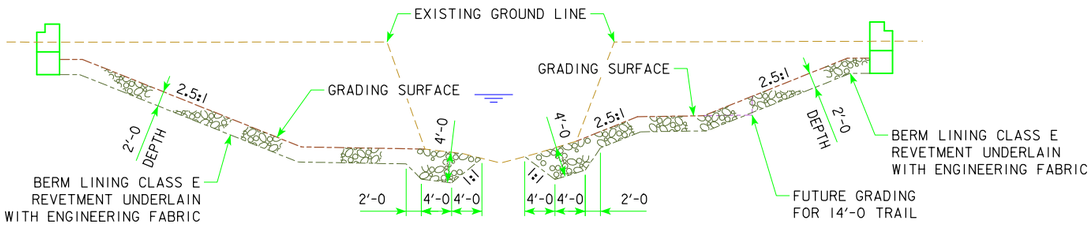
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM | SHUCK-BRITSON INC. 400 EAST COURT AVE. SUITE 140 DES MOINES, IOWA 50309 515-243-4477 | S.B.I. NO. 112.0807.01 | LINN COUNTY | PROJECT NUMBER BRF-151-3(152)--38-57 | SHEET NUMBER V.10

11/11/2015 4:11:16 PM V8i_IDOTBridge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\US151 @ DD1\57151152.str.dgn TSL_57_DDDD_12 11x17_pdf.pltcfg

BENCH MARK NO. BM3 STA. 883+94.08, 58.416 LT, RR SPIKE IN POWER POLE, NW QUADRANT OF CEMETARY ROAD AND HWY 151
ELEV. 760.370, N = 706904.792 E = 2107804.979



SECTION THRU EMBEDDED REVETMENT BERM

BERM SLOPE LOCATION TABLE

	SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV
A2	880+67.27	10.50 LT	745.60	881+19.38	10.72 LT	750.11
A3	880+54.61	34.18 RT	745.60	881+07.97	34.28 RT	750.11
B2	880+38.18	11.00 LT	758.13	881+38.29	11.16 LT	758.40
B3	880+24.83	33.48 RT	758.13	881+27.33	33.96 RT	758.40
W2	880+15.69	33.17 RT	761.42	881+38.97	33.67 RT	761.82

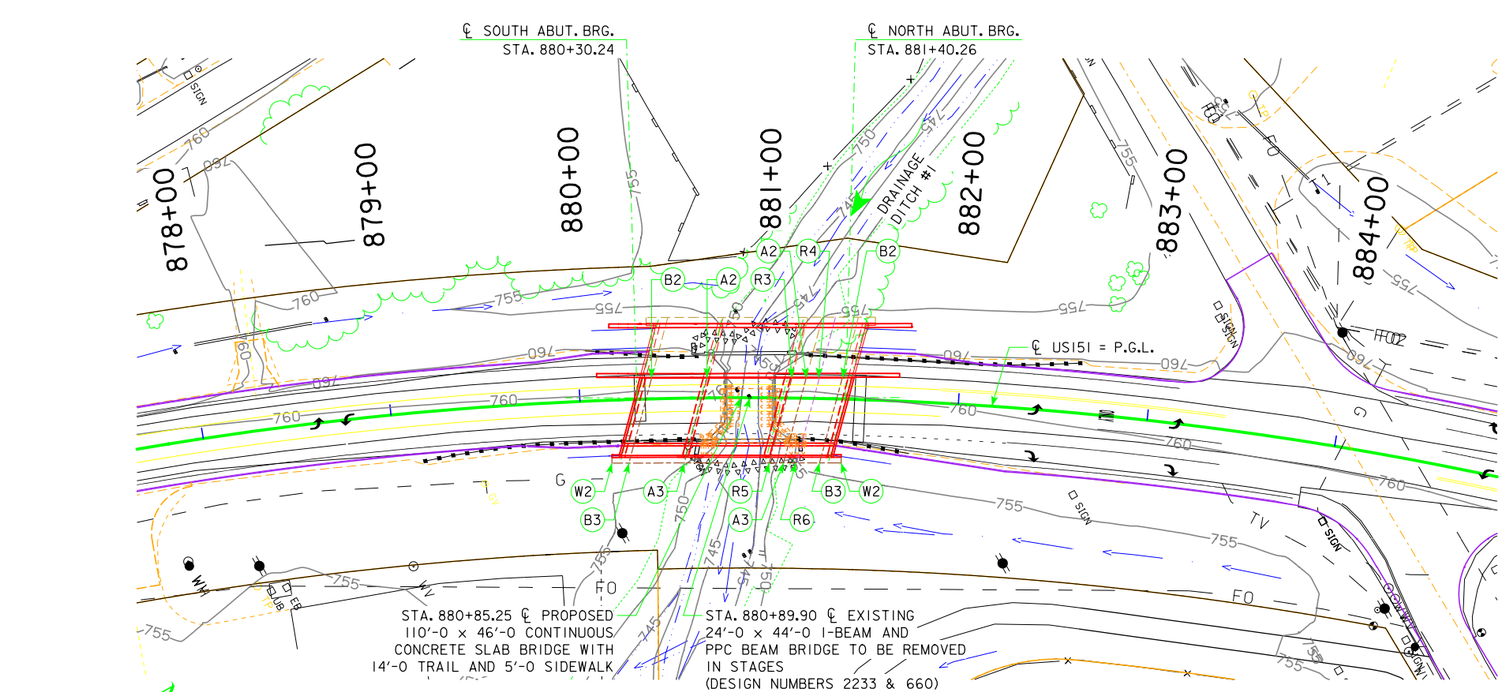
BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE

ESTIMATED BERM ARMORING QUANTITIES

LOCATION	REVETMENT CL. E (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	CLASS 10 CHANNEL EXCAVATION (CY)
BERM LINING - SOUTH ABUTMENT	XX	-	XX	XX
BERM LINING - NORTH ABUTMENT	XX	-	XX	XX
STONE TOE - SOUTH ABUTMENT	XX	-	XX	XX
STONE TOE - NORTH ABUTMENT	XX	-	XX	XX
TOTALS	XX	-	XX	XX

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

REVETMENT LAYOUT:
- (R3) 881+11.85, 10.60 LT, BERM LINING BELOW FUTURE PATH
- (R4) 881+25.77, 10.85 LT, FUTURE PATH RETAINING WALL
- (R5) 881+00.26, 34.36 RT, BERM LINING BELOW FUTURE PATH
- (R6) 881+14.51, 34.20 RT, FUTURE PATH RETAINING WALL



SITE PLAN
STAGE 2

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

UTILITIES LEGEND:

TV - CABLE TELEVISION - ??
FO - FIBER OPTIC - ??
T2 - TELEPHONE - ??

PRELIMINARY

DESIGN FOR 15° SKEW (L.A.)

110'-0 x 46'-0 CONTINUOUS CONCRETE SLAB BRIDGE WITH 14'-0 TRAIL AND 5'-0 SIDEWALK

SPANS (33'-6, 43'-0, 33'-6)

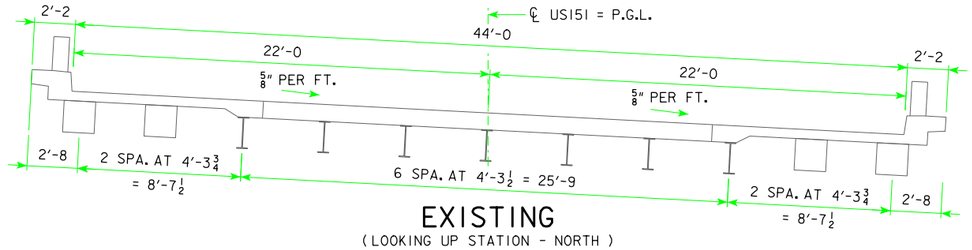
SITE PLAN - STAGE 2

STATION 880+85.25 LINN COUNTY NOVEMBER 2015

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

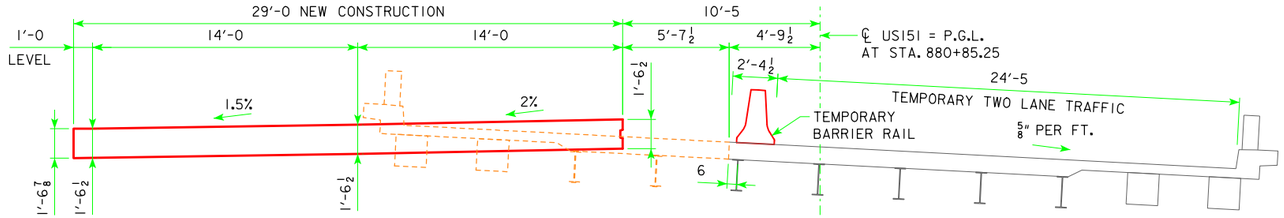
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	SHUCK-BRITSON	400 EAST COURT AVE. SUITE 140 DES MOINES, IOWA 50309 515-243-4477	S.B.I. NO. 112.0807.01	LINN COUNTY	PROJECT NUMBER BRF-151-3(152)--38-57	SHEET NUMBER V.11



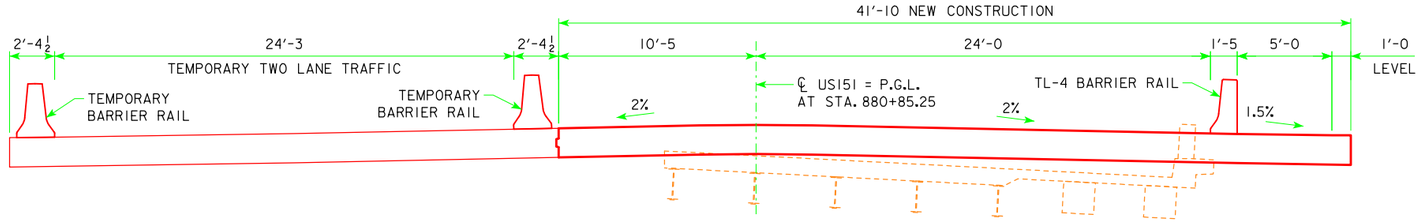
EXISTING

(LOOKING UP STATION - NORTH)



STAGE I

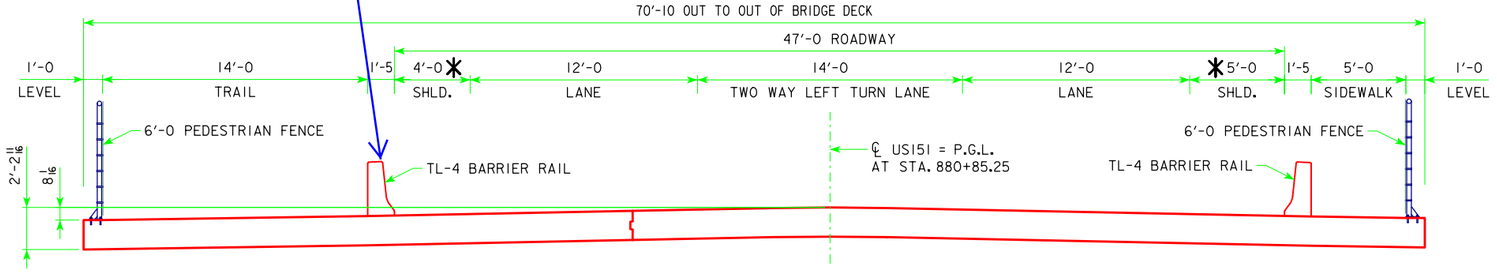
STAGE I
SHIFT TRAFFIC TO TWO LANE TRAFFIC ON THE EAST SIDE OF EXISTING BRIDGE.
REMOVE WEST HALF OF EXISTING BRIDGE AND CONSTRUCT WEST PORTION OF BRIDGE.



STAGE 2

STAGE 2
SHIFT TRAFFIC TO TWO LANE TRAFFIC ON THE NEWLY CONSTRUCTED WEST PORTION OF BRIDGE.
REMOVE REMAINING HALF OF EXISTING BRIDGE AND CONSTRUCT EAST PORTION OF BRIDGE.

Change to 10" separation rail with a handrail on the backside. 1'-3" total width.



FINAL STAGE

FINAL STAGE
SHIFT TRAFFIC TO EAST PORTION OF BRIDGE.
PLACE PERMANENT BARRIER RAIL AND PEDESTRIAN FENCE.
REMOVE TEMPORARY BARRIER RAIL.

* CROSS SECTION SHOWN AT STA. 880+85.25.
SHOULDERS VARY FROM 4'-0 MIN TO 5'-0 MAX.

NOTE: BRIDGE IS BUILT ON A CHORD.
THE P.G.L. (℄ ROADWAY) IS IN A HORIZONTAL CURVE.

More than one construction season.

One letting with staged construction.

It is anticipated that the final design consultant will be responsible for falsework review.

NOTE:

CLOSURE POUR NOT REQUIRED PER BDM 5.2.4.1.2.

PRELIMINARY

DESIGN FOR 15° SKEW (L.A.)

110'-0 x 46'-0 CONTINUOUS CONCRETE SLAB BRIDGE WITH 14'-0 TRAIL AND 5'-0 SIDEWALK

SPANS (33'-6, 43'-0, 33'-6)

STAGING

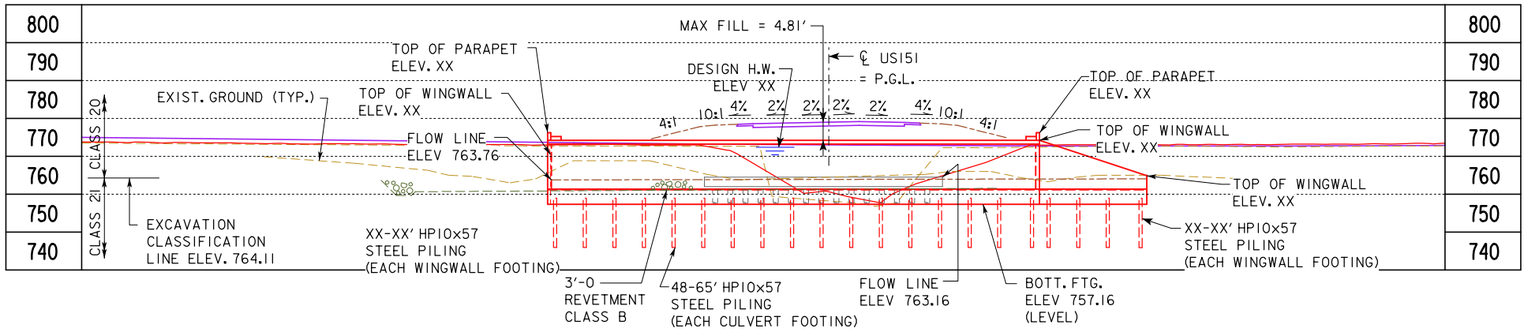
STATION 880+85.25 — LINN COUNTY — NOVEMBER 2015

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

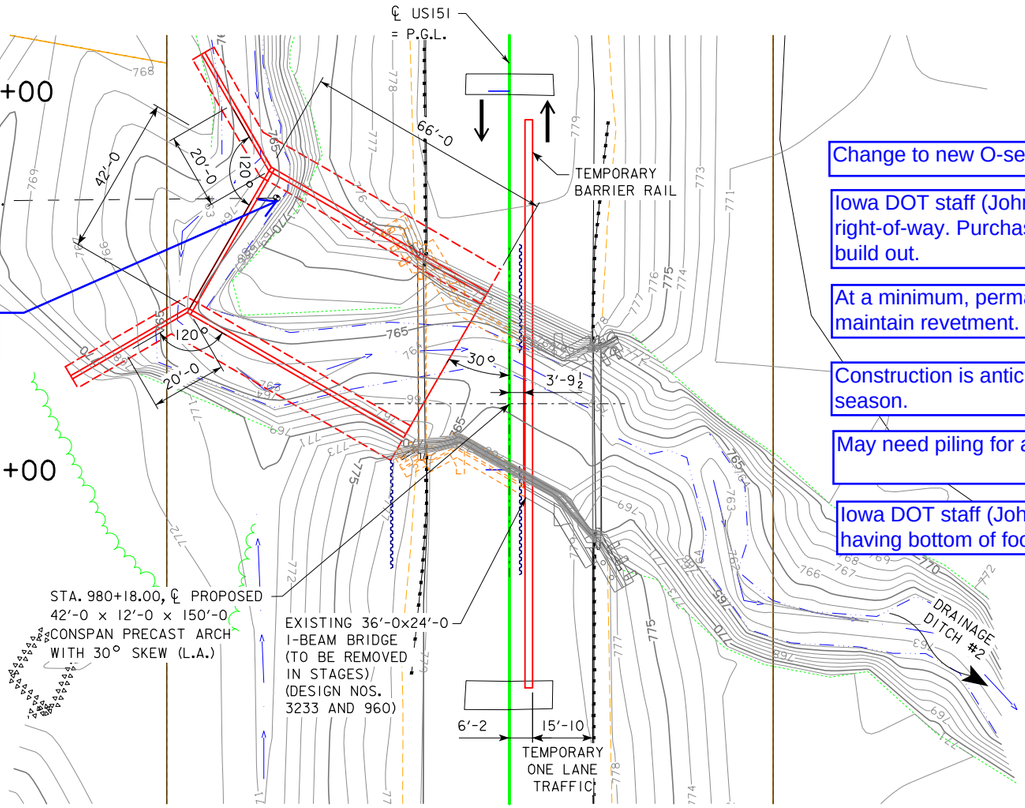
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	SHUCK-BRITSON	400 EAST COURT AVE. SUITE 140 DES MOINES, IOWA 50309 515-243-4477	S.B.I. NO. 112.0807.01	LINN COUNTY	PROJECT NUMBER BRF-151-3(152)--38-57	SHEET NUMBER V.12

BENCH MARK: #588, CUT TRIANGLE ON BASE WALL OF REINFORCED CONCRETE BOX CULVERT STA. 979+81.20, 23.19I OFFSET, ELEV. = 781.700



LONGITUDINAL SECTION ALONG ℄ CULVERT



Existing sanitary sewer is in conflict with arch culvert. This sewer may serve area east of Highway 30.

Change to new O-series arch shape.

Iowa DOT staff (John Clute) recommends purchasing right-of-way. Purchase right-of-way needed for future full-build out.

At a minimum, permanent easement will be needed to maintain revetment.

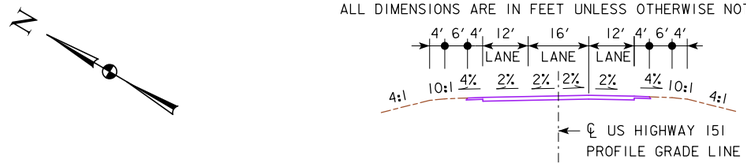
Construction is anticipated to take only one construction season.

May need piling for arch culvert footing.

Iowa DOT staff (John Clute) will verify requirement of having bottom of footing 6'-0" below stream bed elevation.

SITUATION PLAN
STAGE 1

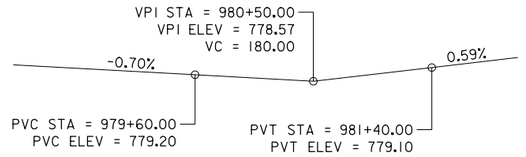
ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED



TYPICAL APPROACH SECTION

N

0 ENGLISH 40
SCALE IN FEET



PROPOSED PROFILE GRADE

HYDRAULIC DATA

DRAINAGE AREA = 1.98 SQ. MI.
STREAM SLOPE = 21.4 FT./MI.
AVG. LOW WATER STAGE = 764.20

Q_{50} = 1,171 CFS
STAGE = 771.01
BACKWATER = 0.0 FT.
AVG. BRIDGE VELOCITY = 3.7 FPS

Q_{100} = 1,436 CFS
STAGE = 771.34
BACKWATER = 0.01 FT.
AVG. BRIDGE VELOCITY = ?.? FPS

Q_{200} = ?,??? CFS
STAGE = ???.?
CALCULATED DESIGN SCOUR = ???.?

Q_{500} = 1,904 CFS
STAGE = 771.84
AVG. BRIDGE VELOCITY = 5.3 FPS
CALCULATED CHECK SCOUR = ???.?

ROADWAY OVERTOP ???.?
STA. ???+??

UTILITIES LEGEND:

San. - SANITARY SEWER

LOCATION

US HIGHWAY 151
OVER DRAINAGE DITCH #2
T-82N R-8W
SECTION 2
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33800
BRIDGE MAINT. NO. 5724.3S151
LATITUDE 41.940647°
LONGITUDE -91.751689°

TRAFFIC ESTIMATE

2013 AADT	10,800	V.P.D.
2040 AADT	19,800	V.P.D.
2040 DHV	-	V.P.H.
TRUCKS	6	%
TOTAL DESIGN ESALs	-	

HYDRAULIC DESIGN

LICENSED PROFESSIONAL ENGINEER
Adam R. Bullerman
17362
IOWA

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.

___-___-2015
Signature Date
Adam R. Bullerman
Printed or Typed Name

My license renewal date is December 31, 2016

Pages or sheets covered by this seal: SHEET ___ - HYDRAULIC DATA

DESIGN FOR 30° SKEW (L.A.)

42'-0 x 12'-0 x 150'-0 PRECAST CONCRETE ARCH

SITUATION PLAN - STAGE 1

STATION 980+18.00 NOVEMBER 2015

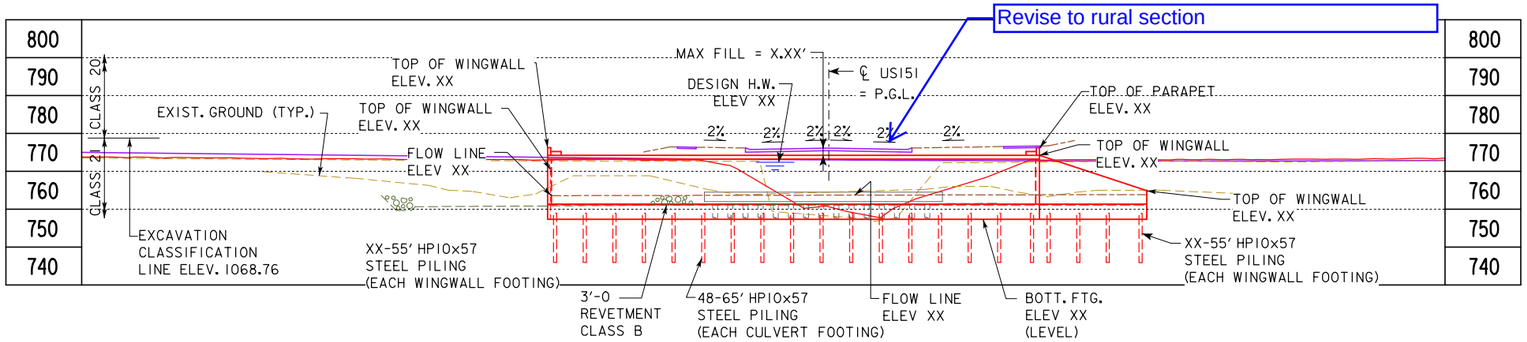
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

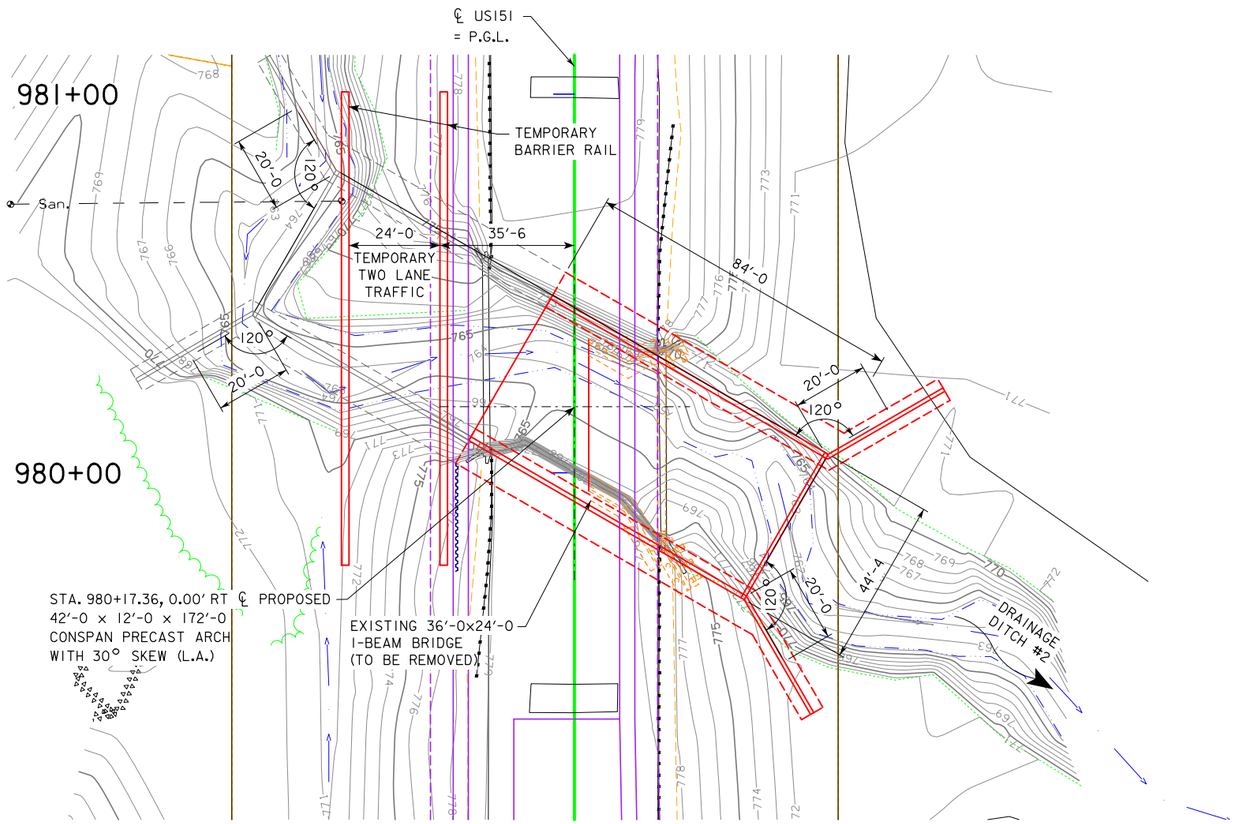
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM SHUCK-BRITSON 2409 GRAND AVENUE DES MOINES, IOWA 50312 515-245-4477 | S.B.I. NO. 112.0807.01 | LINN COUNTY | PROJECT NUMBER NHSX-151-3(134)--3H-57 | SHEET NUMBER V.13

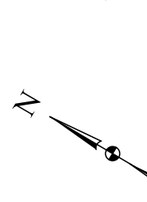
BENCH MARK: #588, CUT TRIANGLE ON BASE WALL OF REINFORCED CONCRETE BOX CULVERT STA. 979+81.20, 23.19I OFFSET, ELEV. = 781.700

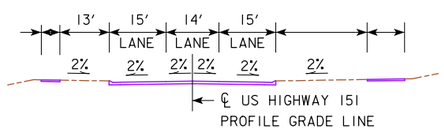


LONGITUDINAL SECTION ALONG ℄ CULVERT

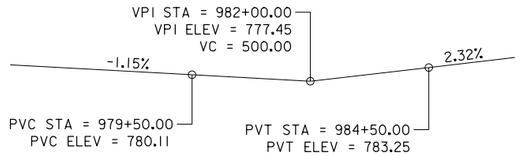


SITUATION PLAN
STAGE 2





TYPICAL APPROACH SECTION



PROPOSED PROFILE GRADE

HYDRAULIC DATA

DRAINAGE AREA = 1.98 SQ. MI.
STREAM SLOPE = 21.4 FT./MI.
AVG. LOW WATER STAGE = 764.20

Q_{50} = 1,171 CFS
STAGE = 771.01
BACKWATER = 0.0 FT.
AVG. BRIDGE VELOCITY = 3.7 FPS

Q_{100} = 1,436 CFS
STAGE = 771.34
BACKWATER = 0.01 FT.
AVG. BRIDGE VELOCITY = ?.? FPS

Q_{200} = ?,??? CFS
STAGE = ???.?
CALCULATED DESIGN SCOUR = ???.?

Q_{500} = 1,904 CFS
STAGE = 771.84
AVG. BRIDGE VELOCITY = 5.3 FPS
CALCULATED CHECK SCOUR = ???.?

ROADWAY OVERTOP ???.?
STA. ???+??

UTILITIES LEGEND:

San. - SANITARY SEWER

LOCATION

US HIGHWAY 151
OVER DRAINAGE DITCH #2
T-82N R-8W
SECTION 2
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33800
BRIDGE MAINT. NO. 5724.3S151
LATITUDE 41.940647°
LONGITUDE -91.751689°

TRAFFIC ESTIMATE

2013 AADT	10,800	V.P.D.
2040 AADT	19,800	V.P.D.
2040 DHV	-	V.P.H.
TRUCKS	6	%
TOTAL DESIGN ESALs	-	

DESIGN FOR 30° SKEW (L.A.)

42'-0 x 12'-0 x 150'-0 PRECAST CONCRETE ARCH

SITUATION PLAN - STAGE 2

STATION 980+18.00

LINN COUNTY

NOVEMBER 2015

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

0 ENGLISH 40
SCALE IN FEET

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

DESIGN TEAM SHUCK-BRITSON 2409 GRAND AVENUE DES MOINES, IOWA 50312 515-245-4477

S.B.I. NO. 112.0807.01 | LINN COUNTY | PROJECT NUMBER NHSX-151-3(134)--3H-57 | SHEET NUMBER V.14

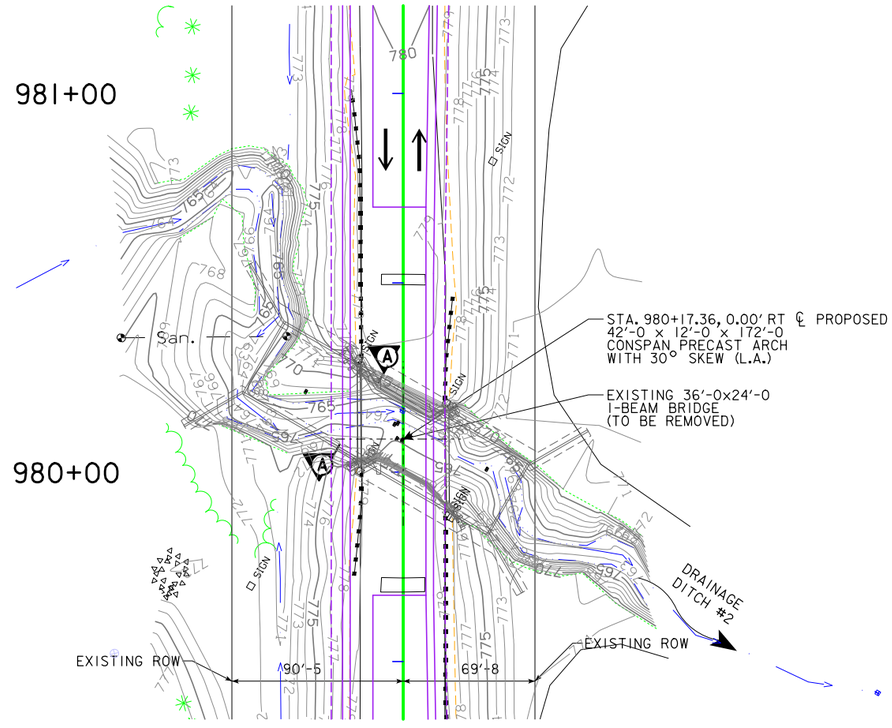
ESTIMATED CHANNEL ARMORING QUANTITIES

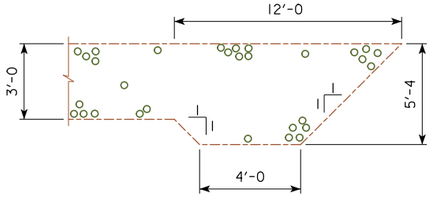
LOCATION	REVETMENT CL. B (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
CHANNEL LINING - SOUTH APRON	XX	--	XX	XX
CHANNEL LINING - NORTH APRON	XX	--	XX	XX
CHANNEL LINING - ARCH	XX	--	XX	XX
STONE TOE - SOUTH APRON	XX	--	XX	XX
STONE TOE - NORTH APRON	XX	--	XX	XX
TOTALS	XX	--	XX	XX

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

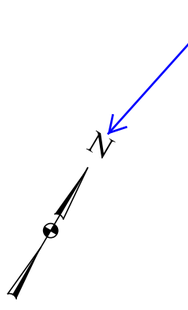
REVETMENT LAYOUT:

R1 XX+XX.XX, XX.XX' LT., END STONE TOE
R2 XX+XX.XX, XX.XX' LT., END CHANNEL LINING
R3
R4
R5
R6
R7
R8
R10
R11
R12
R13
R14
R15
R16
R17





Revise north arrow.



0 ENGLISH 80
SCALE IN FEET

SITE PLAN

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

DESIGN FOR 30° SKEW (L.A.)

42'-0 x 12'-0 x 150'-0 PRECAST CONCRETE ARCH

SITE PLAN

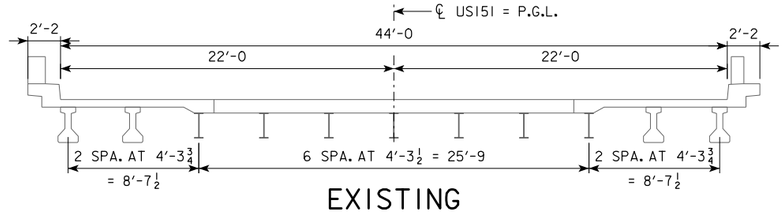
STATION 980+18.00

LINN COUNTY

NOVEMBER 2015

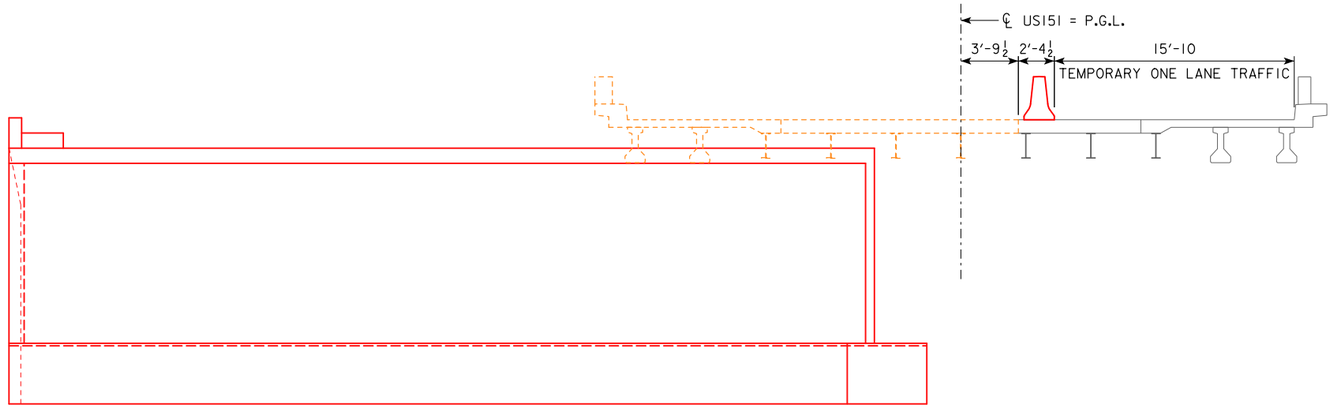
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____



EXISTING

(LOOKING UP STATION - NORTH)



STAGE I

DESIGN FOR 30° SKEW (L.A.)

42'-0 x 12'-0 x 150'-0 PRECAST CONCRETE ARCH

STAGING

STATION 980+18.00

LINN COUNTY

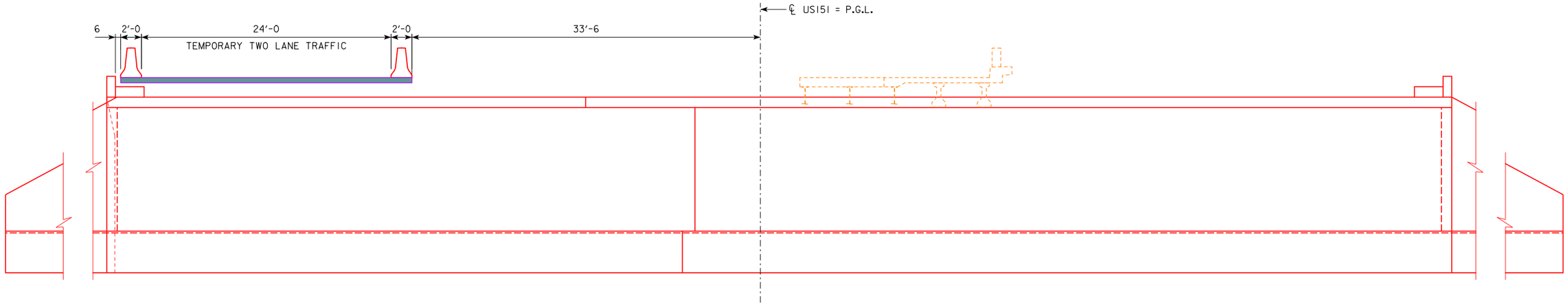
NOVEMBER 2015

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

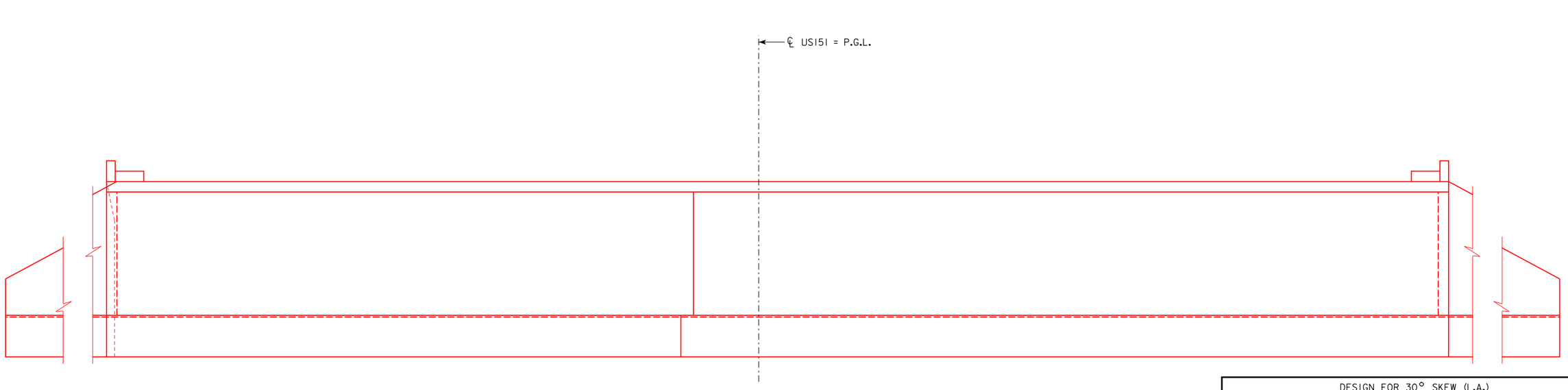
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM SHUCK-BRITSON 2409 GRAND AVENUE DES MOINES, IOWA 50312 515-243-4477

S.B.I. NO. 112.0807.01 | LINN COUNTY | PROJECT NUMBER NHSX-151-3(134)--3H-57 | SHEET NUMBER V.16



STAGE 2



FINAL

DESIGN FOR 30° SKEW (L.A.)

42'-0 x 12'-0 x 150'-0 PRECAST CONCRETE ARCH

STAGING

STATION 980+18.00

NOVEMBER 2015

LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM SHUCK-BRITSON 2409 GRAND AVENUE DES MOINES, IOWA 50312 515-243-4477 | S.B.I. NO. 112.0807.01 | LINN COUNTY | PROJECT NUMBER NHSX-151-3(134)--3H-57 | SHEET NUMBER V.17

11/19/2015 4:24:06 PM V8i_IDOTBridge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\US151 @ DD2\57151134.str TSL_57_DDDD_17 11x17_pdf.pltcfg

LINE STYLE LEGEND OF CROSS SECTION SHEETS (ROAD)

- Existing Ground Line
- Proposed Template
- Proposed Topsoil Placement
- Additional Topsoil Removal
- Subgrade Treatment
- Granular Shoulder
- Pavement
- Existing Pipe\RCB
- Proposed Pipe\RCB
- Proposed Dike
- All Elements Associated with Proposed Entrances

LINE STYLE LEGEND OF CROSS SECTION SHEETS (SOILS)

- TS — Topsoil (Class 10)
- SLOPE DRESSING — Slope Dressing Only
- CL 10 — Class 10 Materials
- SEL LO — Select Loams And Clay-Loams
- SEL SA — Select Sand
- UNS A — Unsuitable Type A Disposal
- UNS B — Unsuitable Type B Disposal
- UNS C — Unsuitable Type C Disposal
- SHALE — Shale
- WASTE — Waste
- B&W LS — Broken and Weathered Rock
- ROCK — Solid Rock
- BLDRS — Boulders

Note: All layer lines and descriptions identify layers above the line.

Note: Vertical or near vertical lines connecting soil layers at edges of cross sections are only for the purpose of calculating template quantities and do not depict soil stratification.

SYMBOL LEGEND OF CROSS SECTION SHEETS

Existing ROW — Existing Right-of-Way Limit

Proposed ROW — Proposed Right-of-Way Limit

Temporary ROW — Temporary Right-of-Way Limit

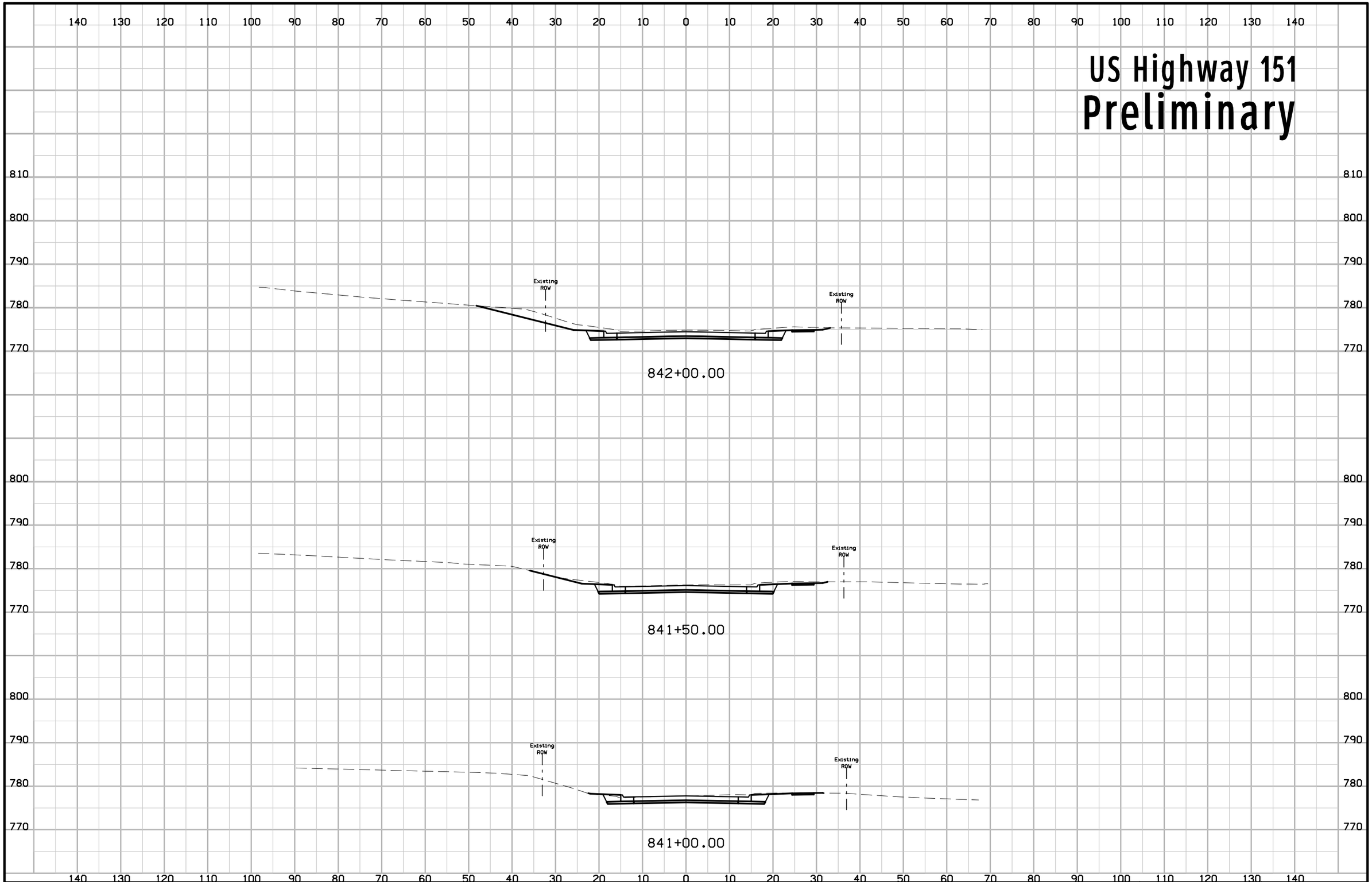
CROSS SECTION LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.1

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

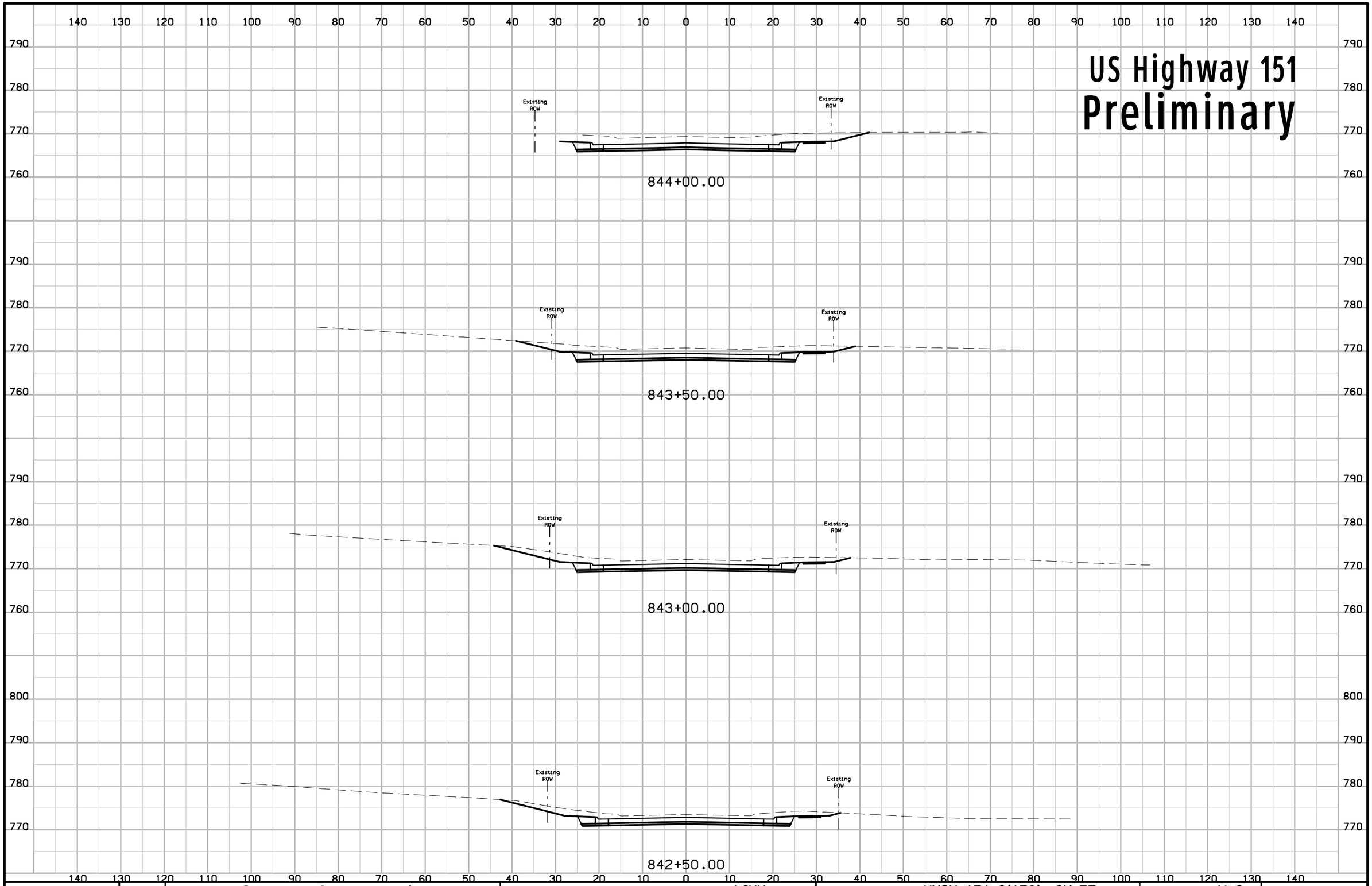
US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.2

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

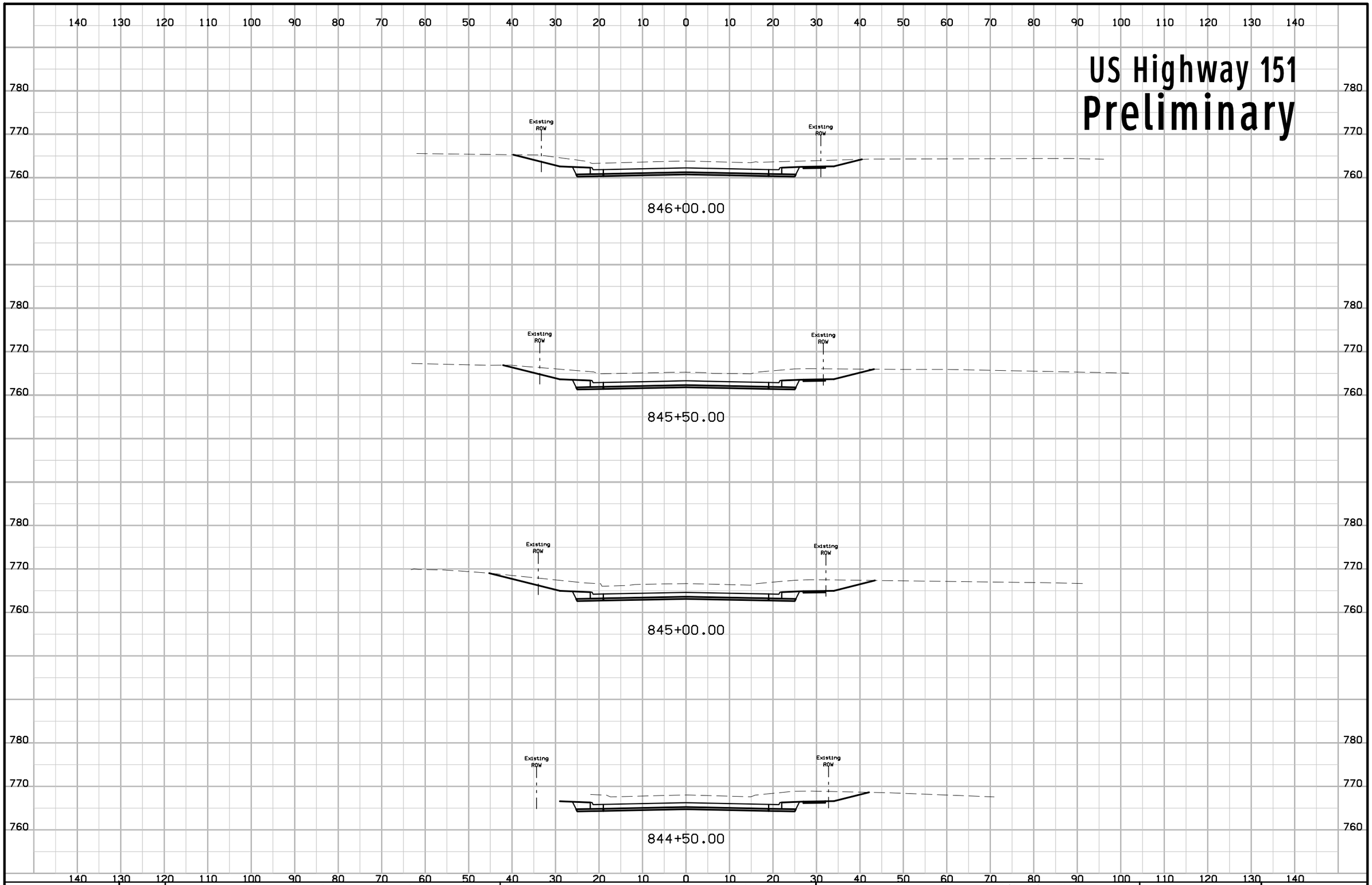
US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER W.3

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

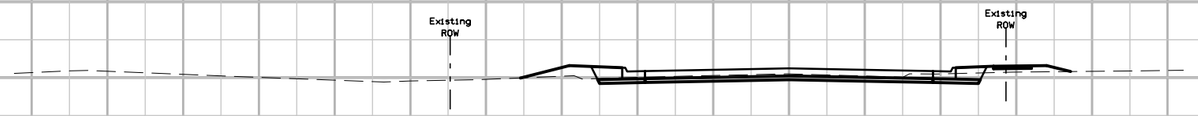
US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.4

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

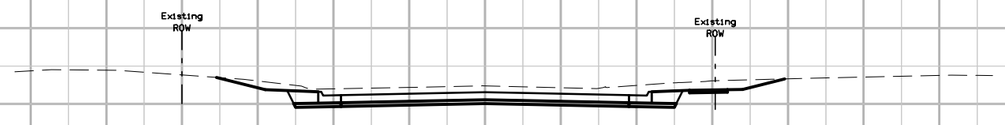
US Highway 151
Preliminary



848+00.00

847+50.00

847+00.00

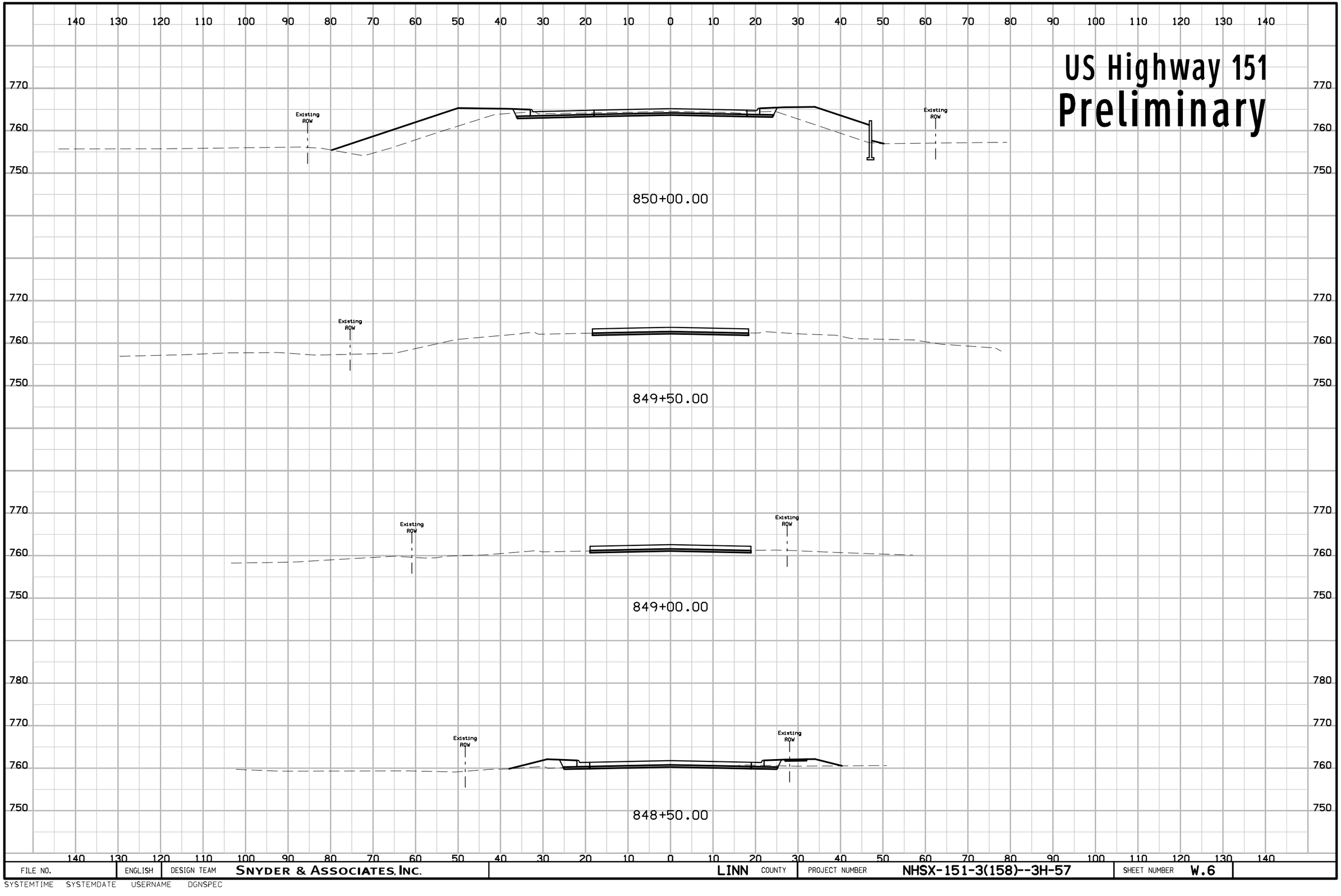


846+50.00

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.5

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

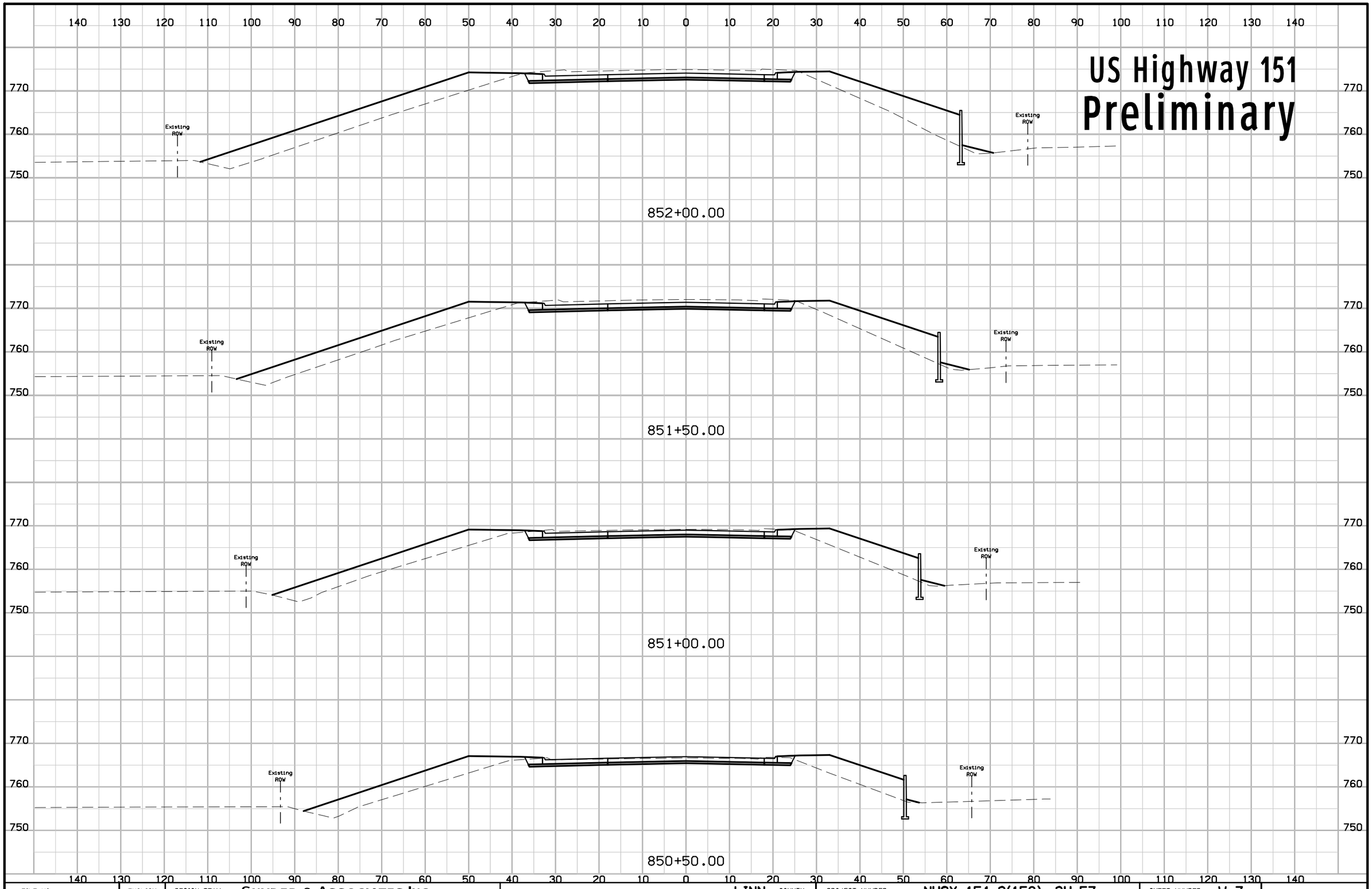
US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.6

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER W.7

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

780
770
760
750

Existing ROW

Existing ROW

853+50.00

780
770
760
750
740

Existing ROW

Existing ROW

853+00.00

770
760
750

Existing ROW

Existing ROW

852+50.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.8

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

790 780 770 760 750 740

Existing ROW

855+00.00

780 770 760 750 740

Existing ROW

854+50.00

780 770 760 750 740

isting ROW

Existing ROW

854+00.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.9

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

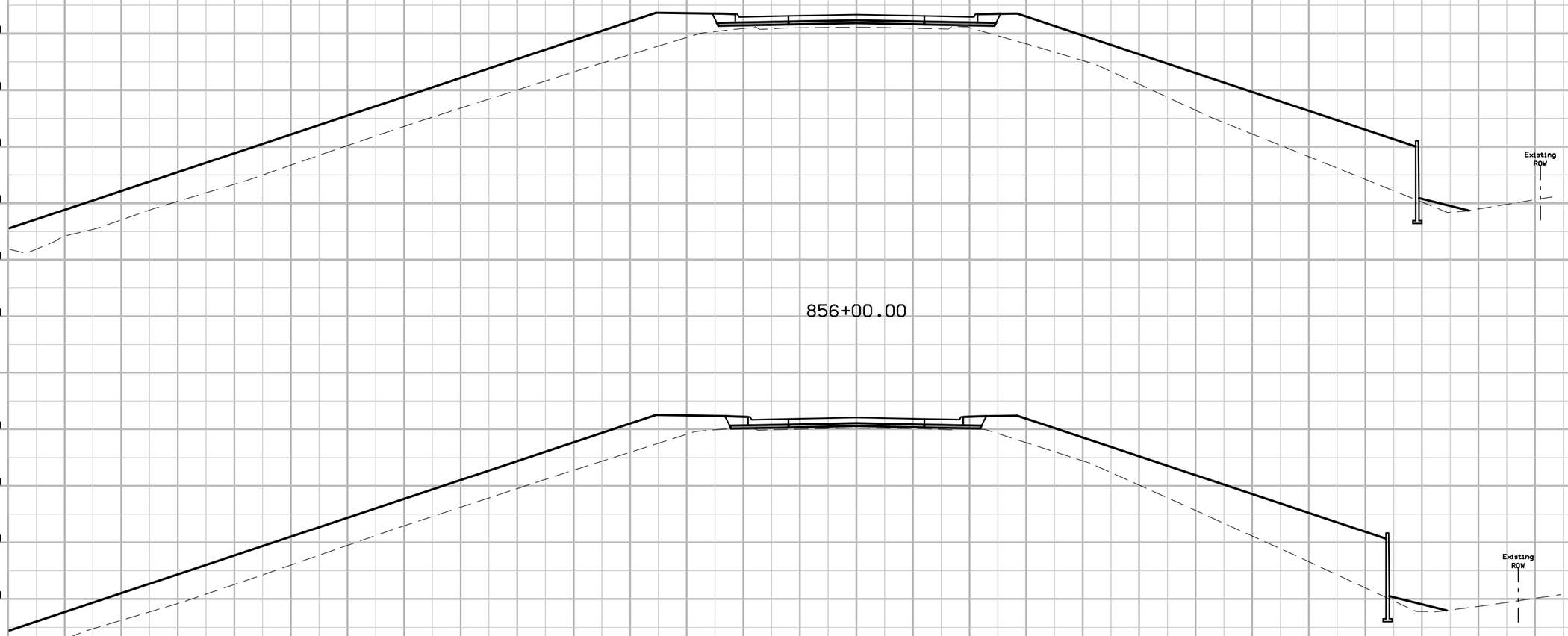
US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

790
780
770
760
750
740

Existing ROW

856+00.00



855+50.00

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.10

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

770
760
750
780
770
760
750
740

857+50.00

857+00.00

856+50.00

790
780
770
760
750
740

Existing ROW

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.11

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

790 780 770 760 750

Existing ROW

Existing ROW

859+00.00

790 780 770 760 750

Existing ROW

Existi ROW

858+50.00

790 780 770 760 750

ting OW

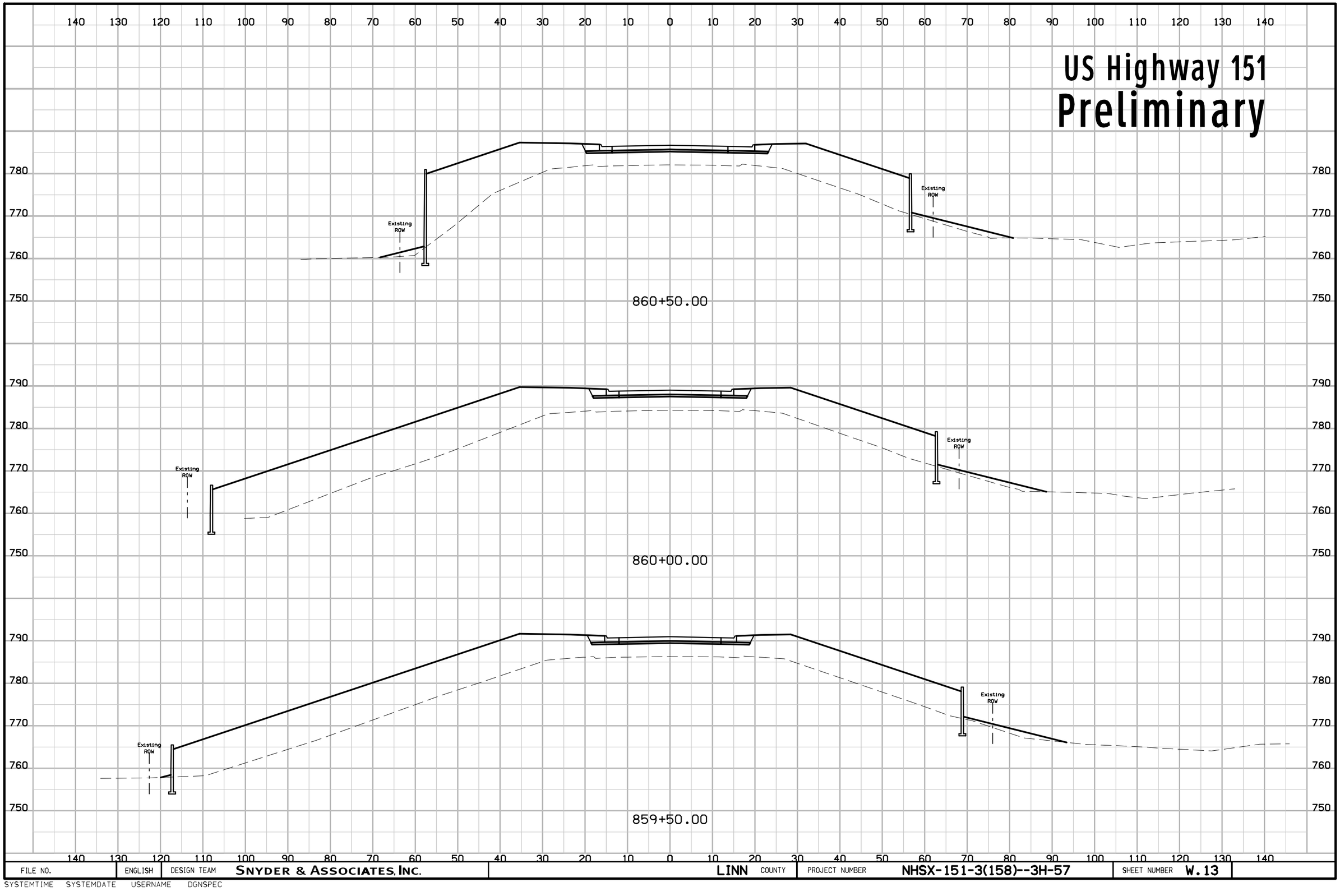
858+00.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.12

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

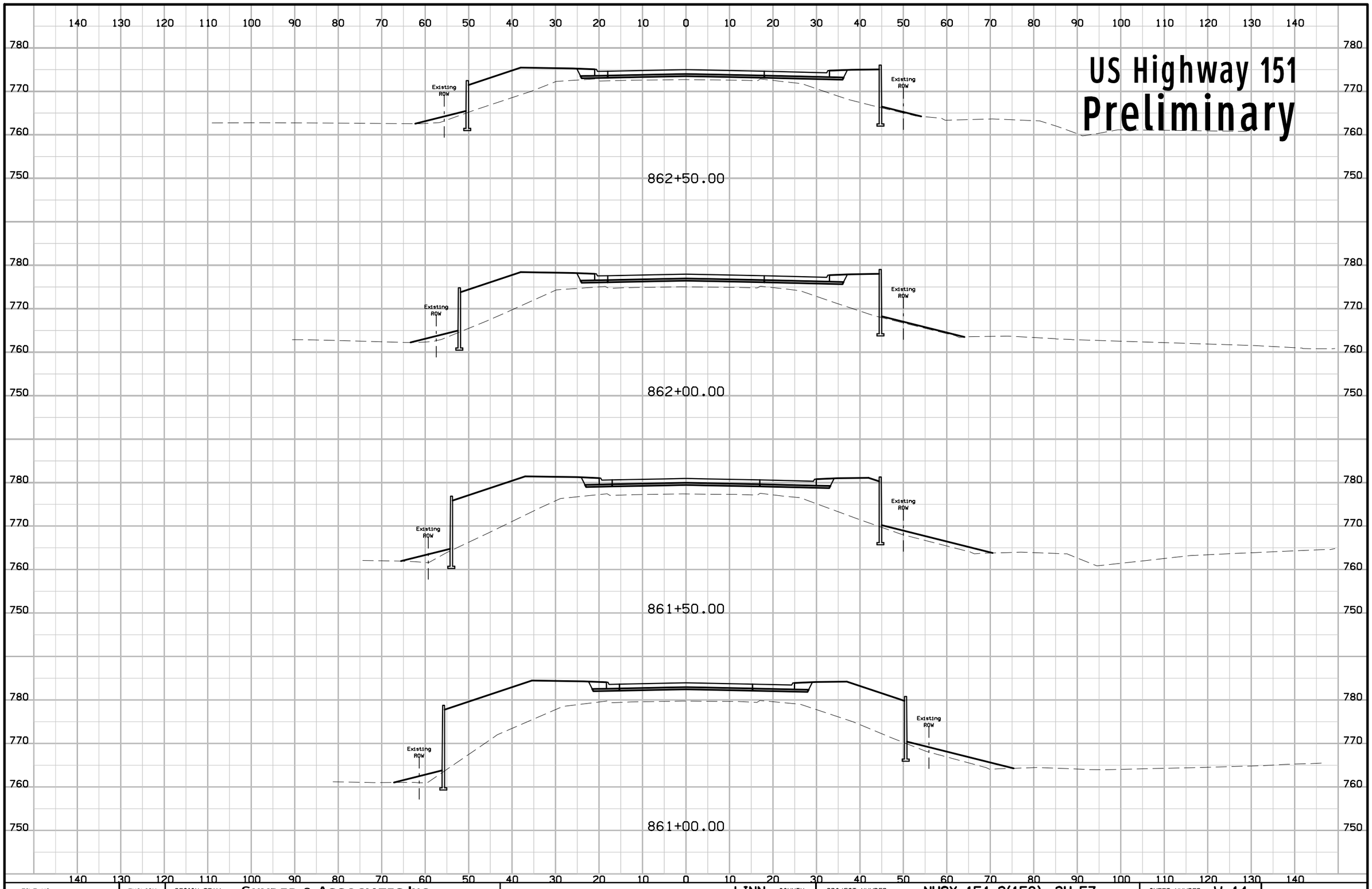
US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.13

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER W.14

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

770
760
750
740

Existing ROW

Existing ROW

864+50.00

770
760
750

Existing ROW

Existing ROW

864+00.00

770
760
750

Existing ROW

Existing ROW

863+50.00

780
770
760

Existing ROW

Existing ROW

863+00.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

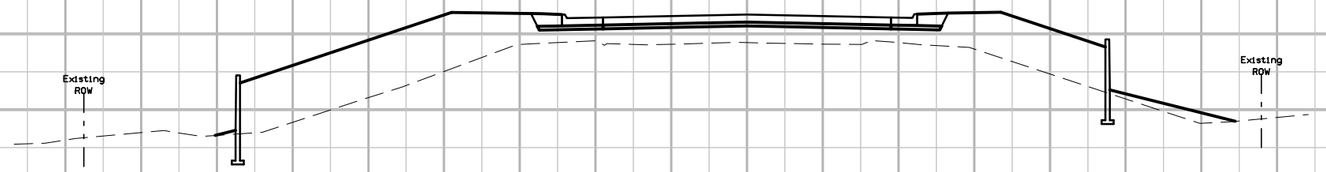
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER W.15

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

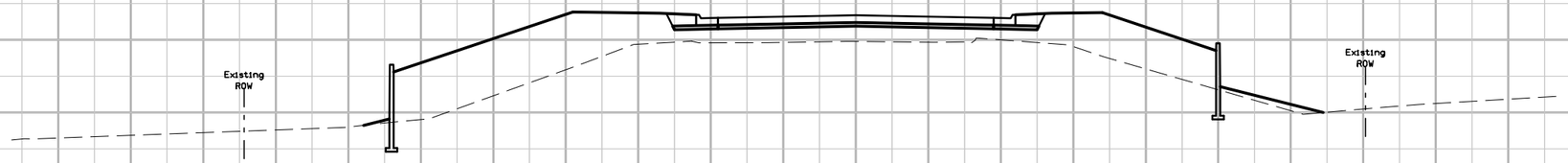
US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

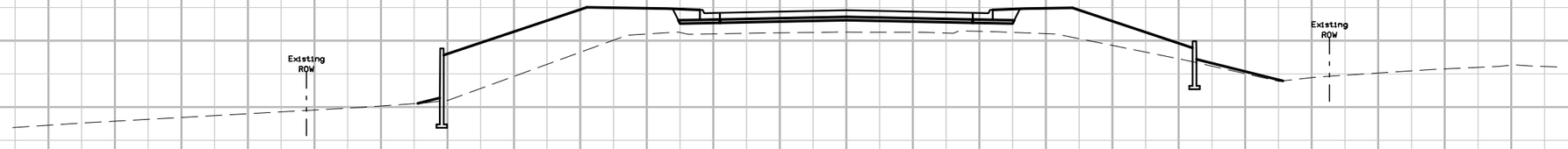
760
750
740



866+00.00



865+50.00



865+00.00

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.16

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

760
750
740

Existing ROW

867+50.00

Existing ROW

760
750
740

Existing ROW

867+00.00

Existing ROW

780
770
760
750
740

Existing ROW

866+50.00

Existing ROW

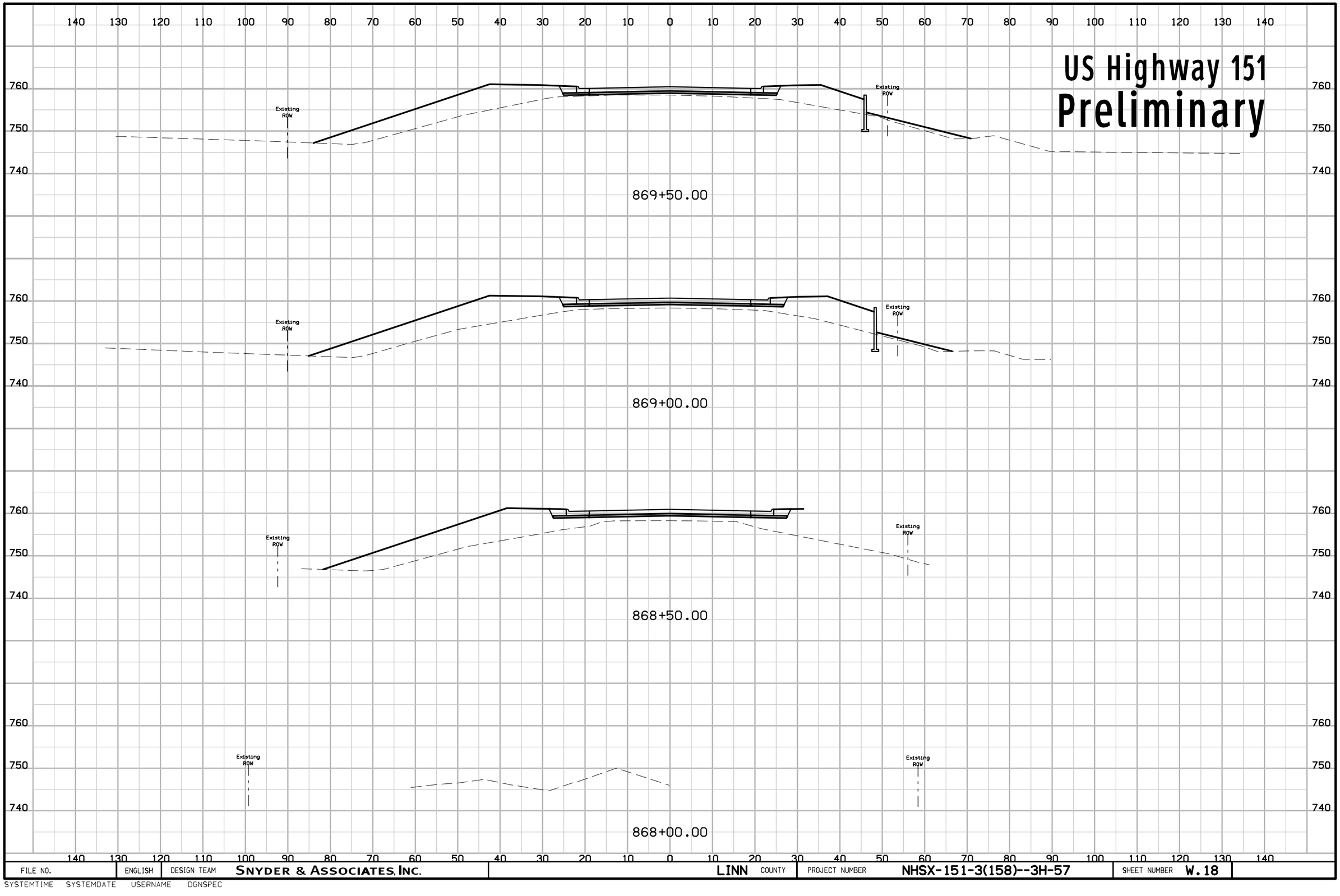
760
750
740

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.17

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

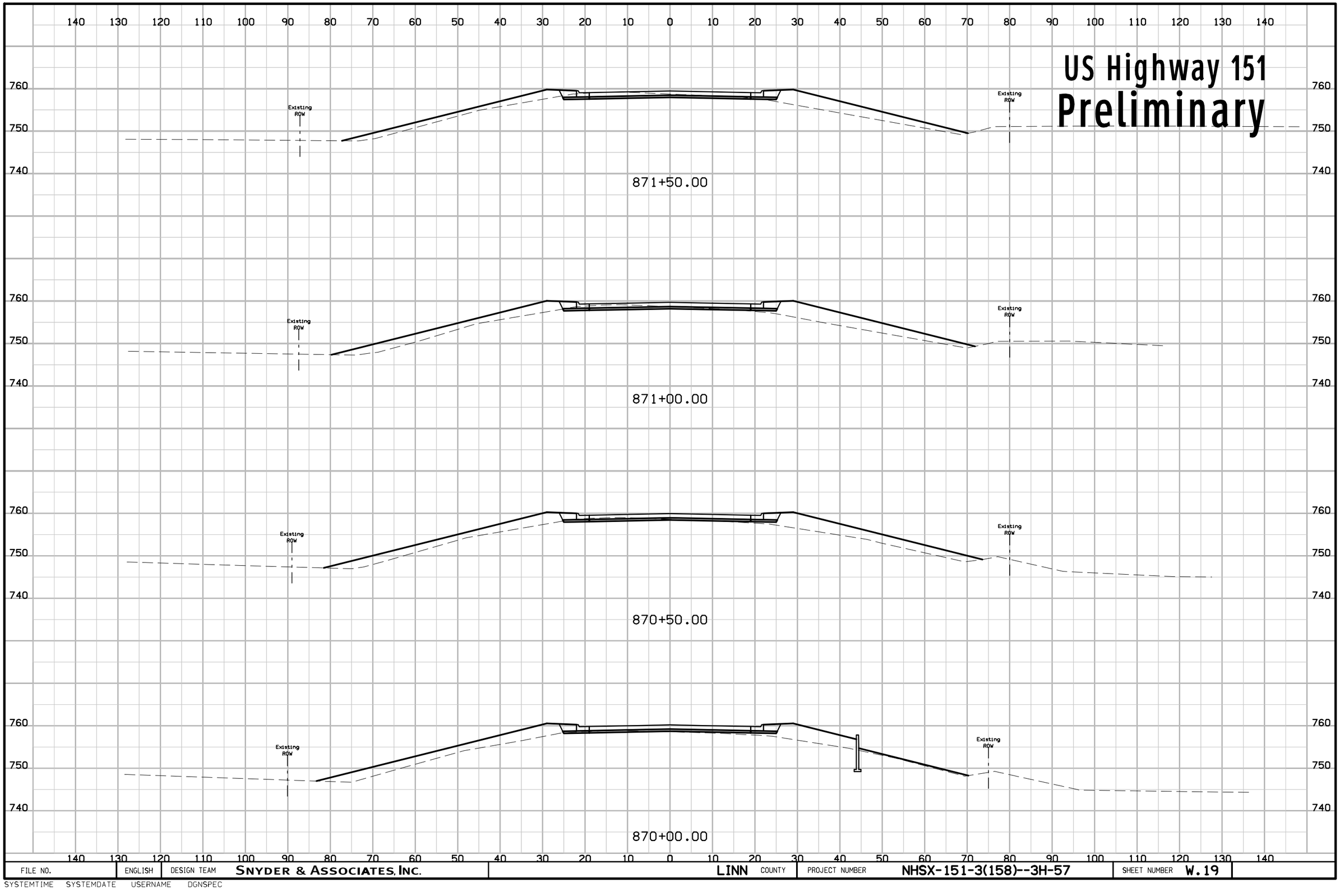
US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER W.18

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

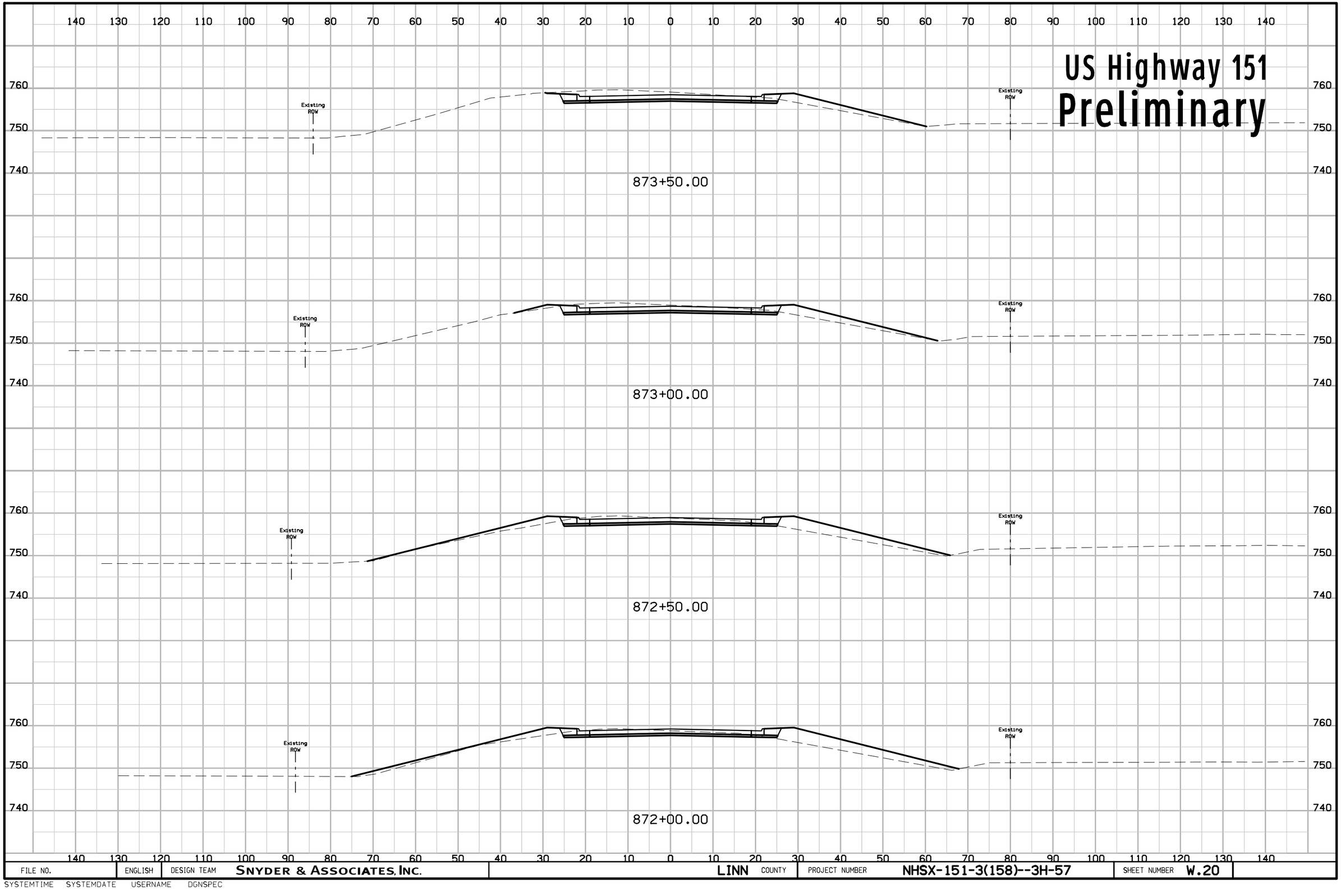
US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.19

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

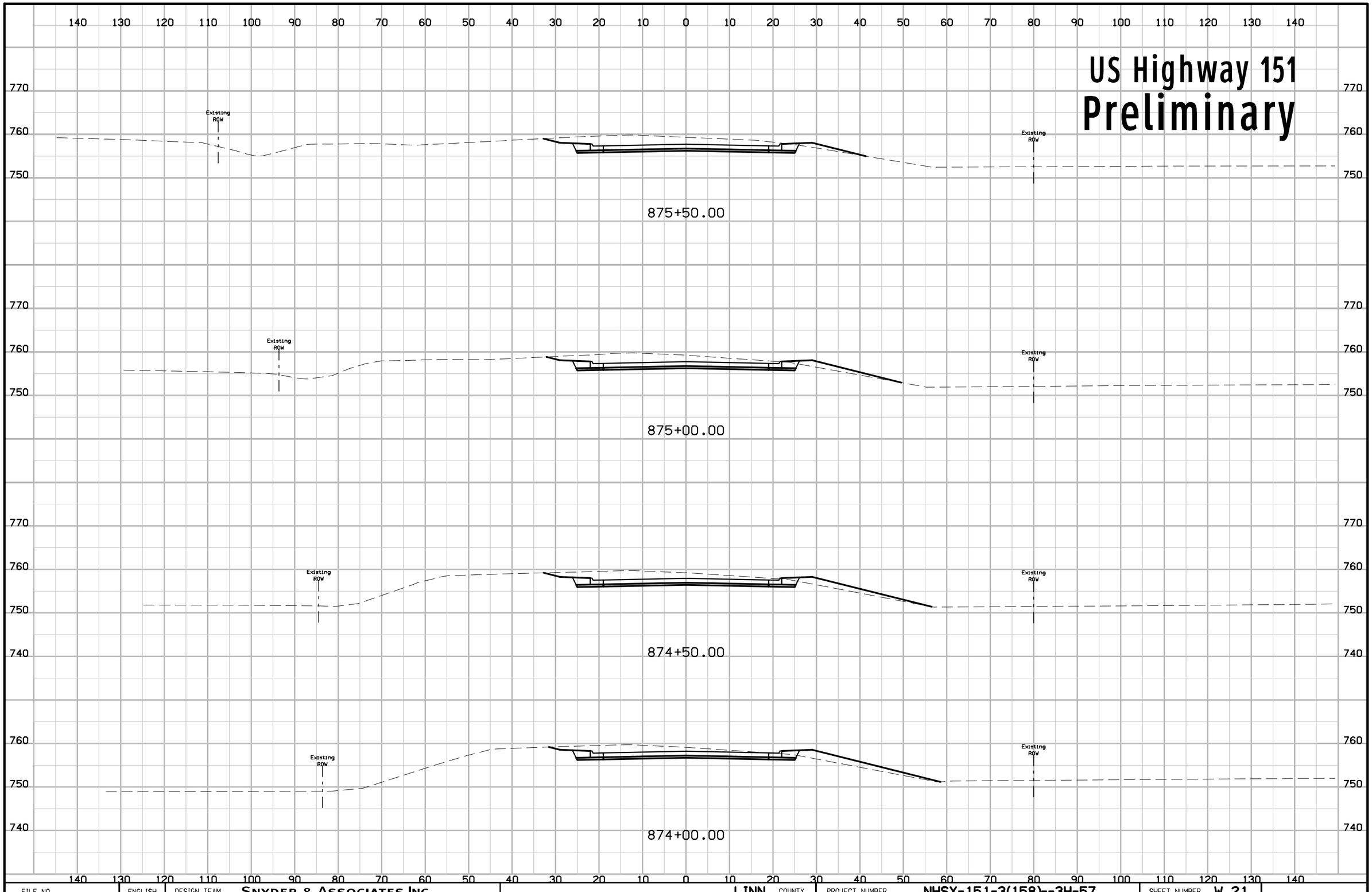
US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER W.20

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.21

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

780
770
760
750

Existing ROW

877+00.00

Existing ROW

876+50.00

Existing ROW

Existing ROW

876+00.00

Existing ROW

Existing ROW

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER W.22

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

780
770
760
750

Existing ROW

Existing ROW

878+50.00

878+00.00

877+50.00

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER W.23

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

780
770
760
750
740

Existing ROW

Existing ROW

880+00.00

770
760
750

Existing ROW

Existing ROW

879+50.00

780
770
760
750

Existing ROW

Existing ROW

879+00.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.24

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

780
770
760
750
740

Existing ROW

881+00.00

Existing ROW

790
780
770
760
750
740

Existing ROW

880+50.00

Existing ROW

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.25

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

790
780
770
760
750
740

Existing ROW

Existing ROW

882+00.00

780
770
760
750
740

Existing ROW

Existing ROW

881+50.00

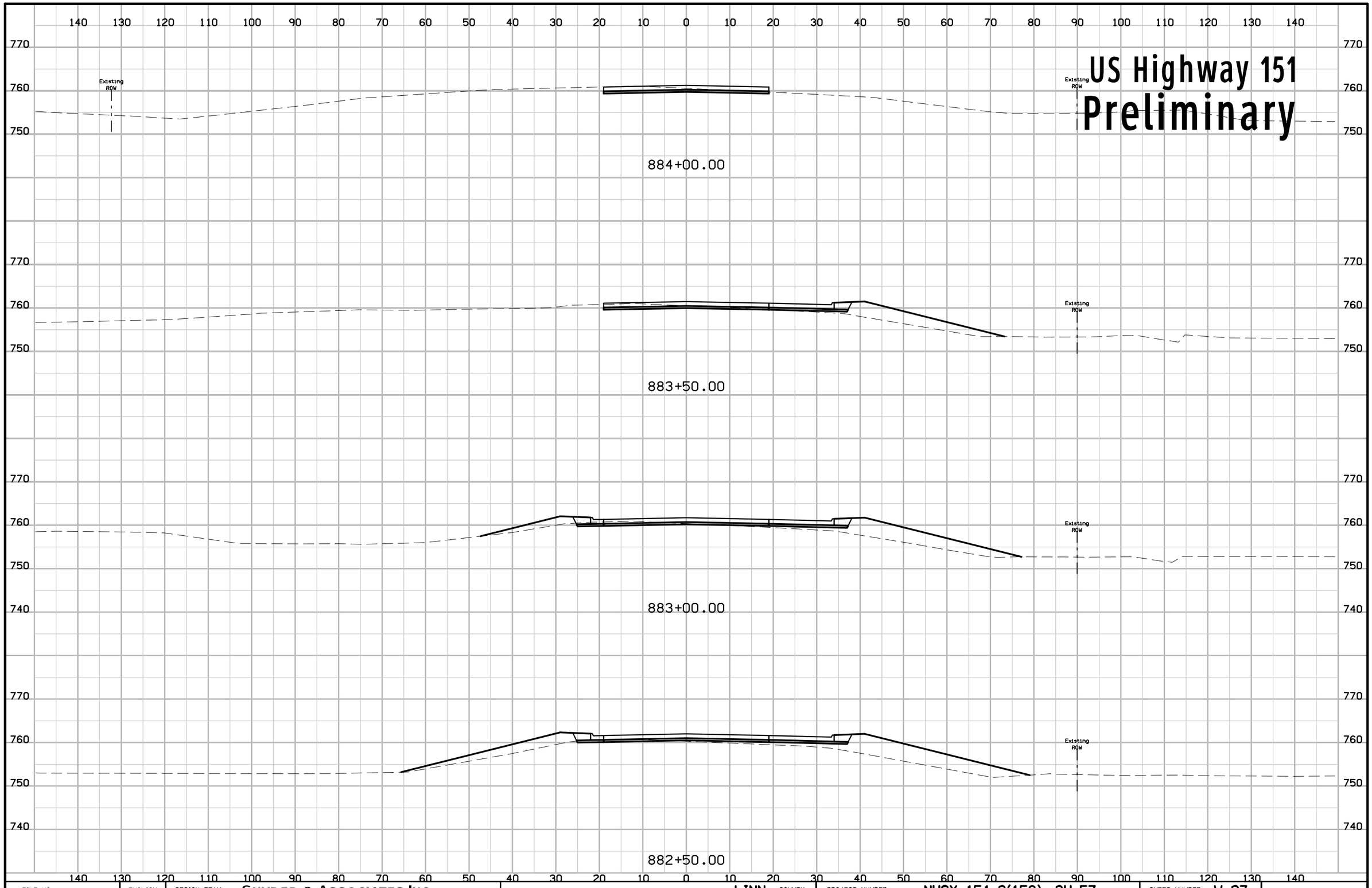
140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.26

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151

Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER W.27

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

770
760
750

Existing ROW

886+00.00

885+50.00

885+00.00

884+50.00

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER W.28

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

770
760
750

Existing ROW

888+00.00

887+50.00

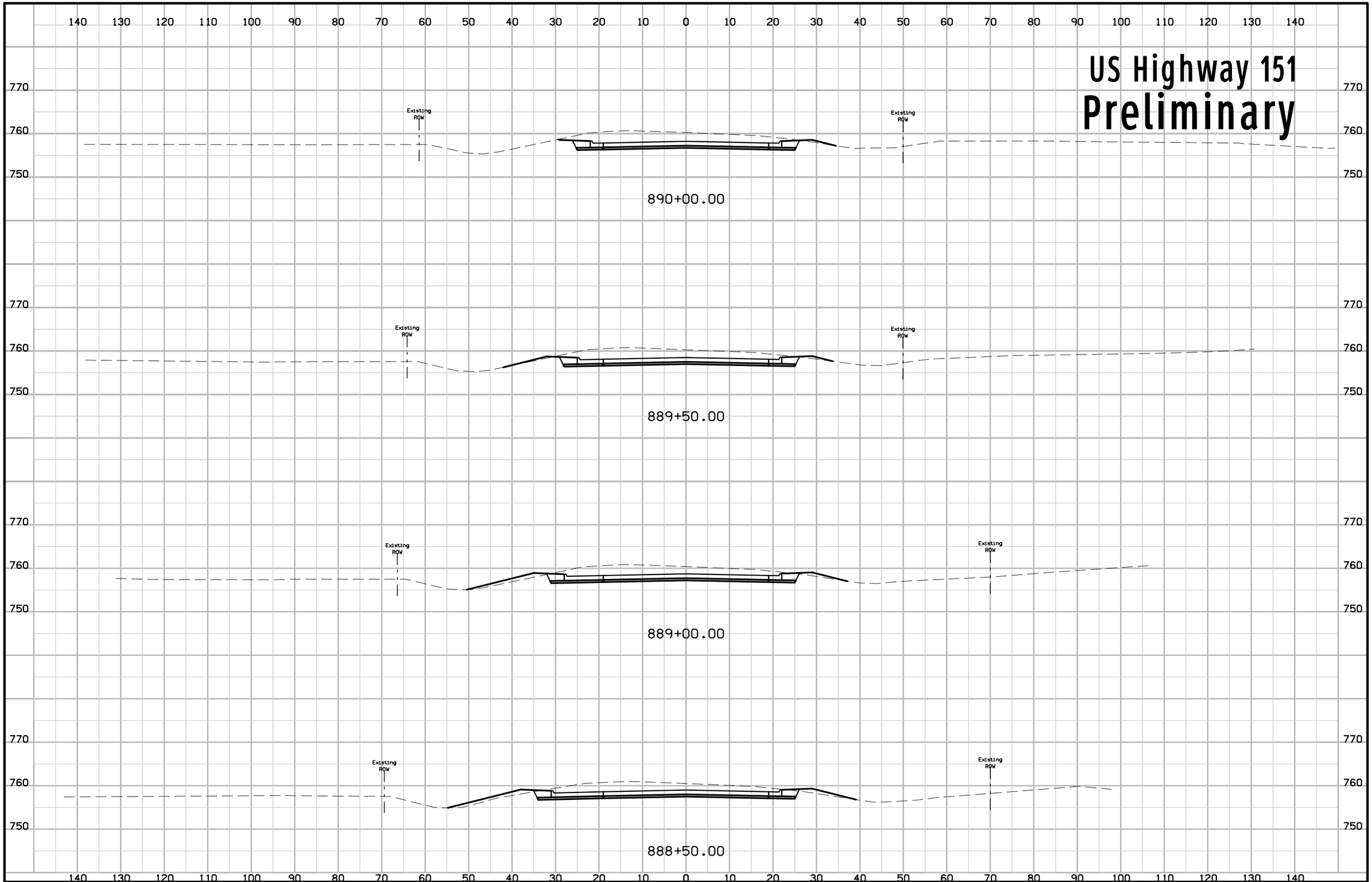
887+00.00

886+50.00

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.29

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER W.30

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

770
760
750

Existing ROW

Existing ROW

892+00.00

770
760
750

Existing ROW

Existing ROW

891+50.00

770
760
750

Existing ROW

Existing ROW

891+00.00

770
760
750

Existing ROW

Existing ROW

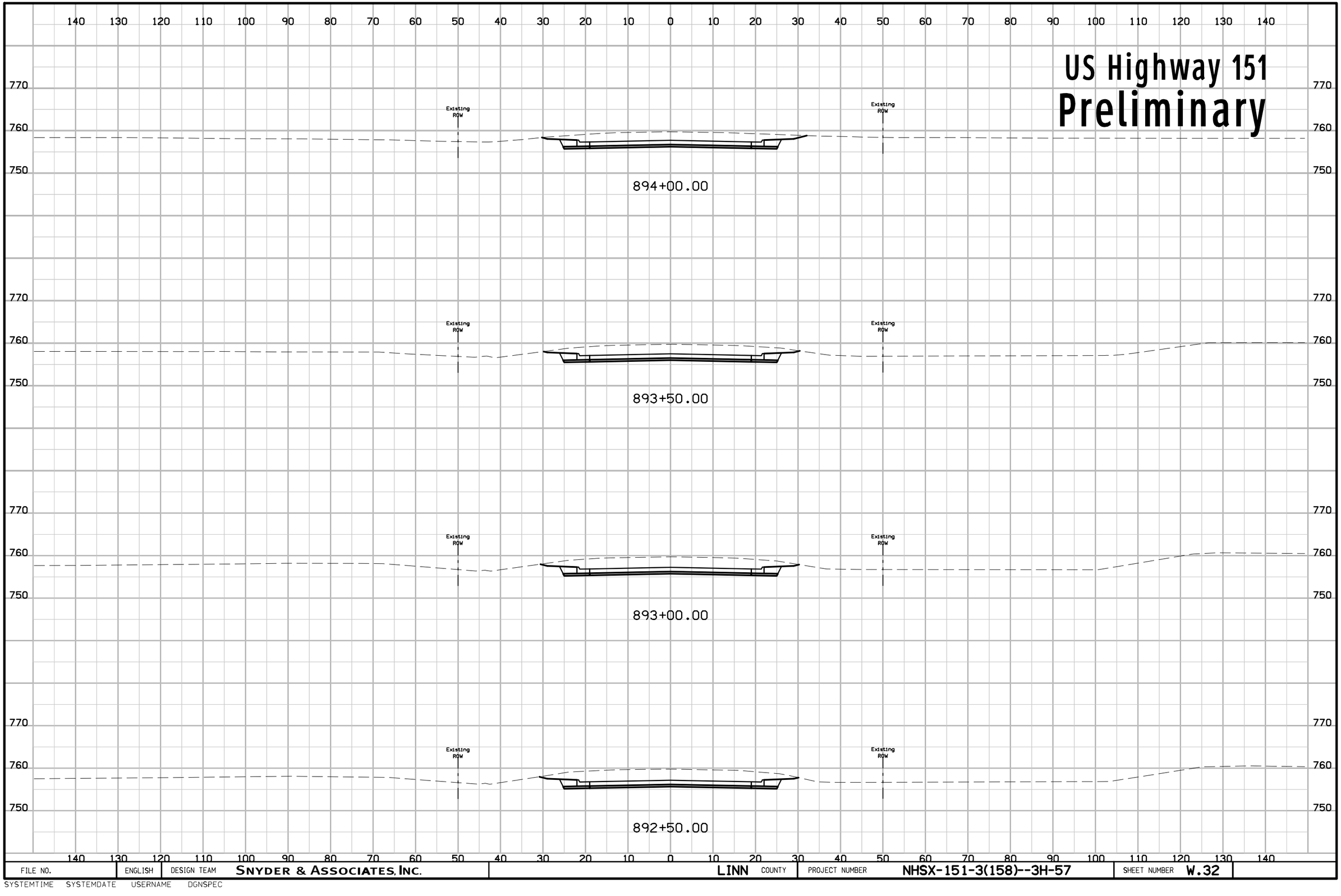
890+50.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER W.31

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

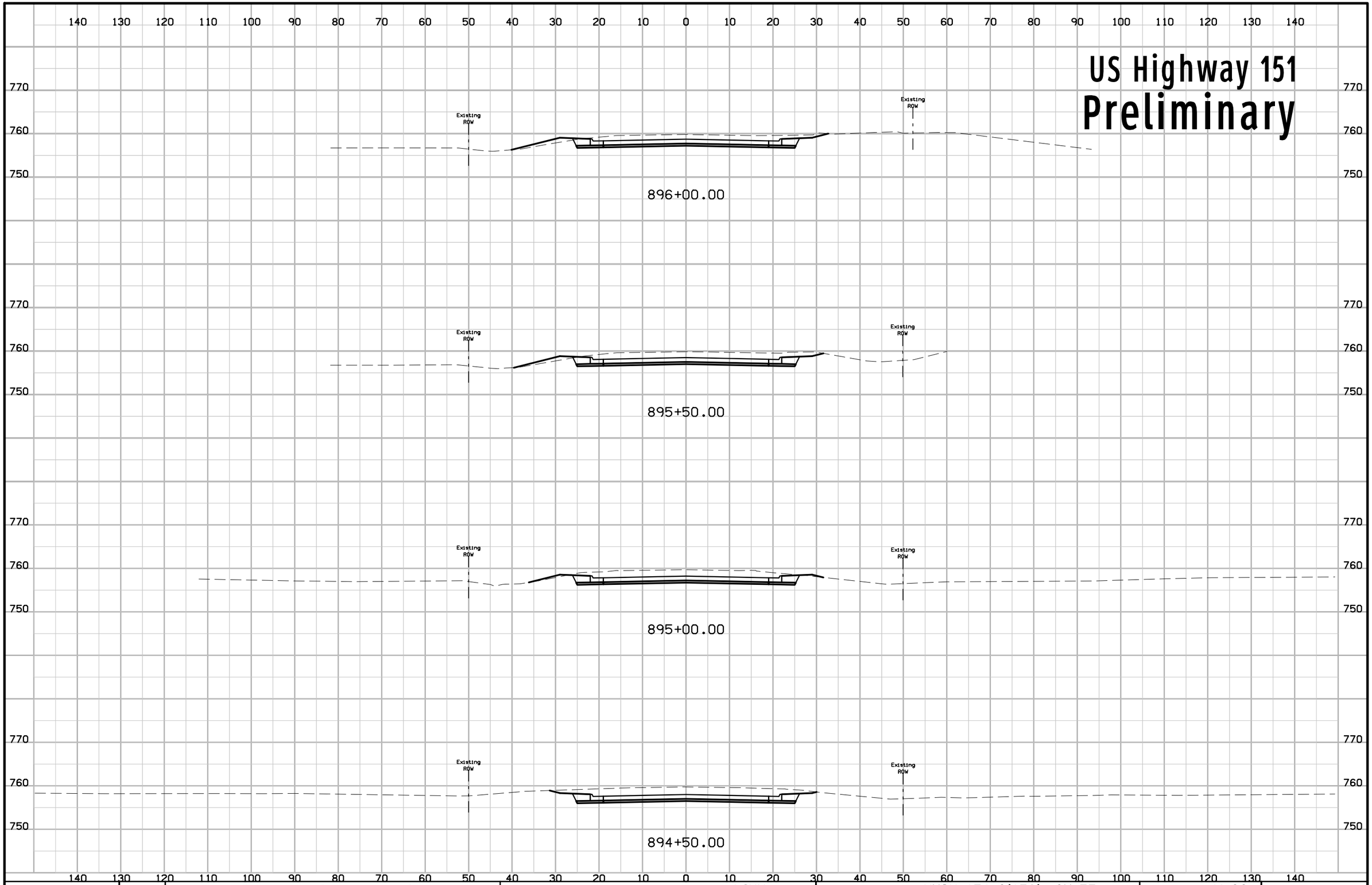
US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.32

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

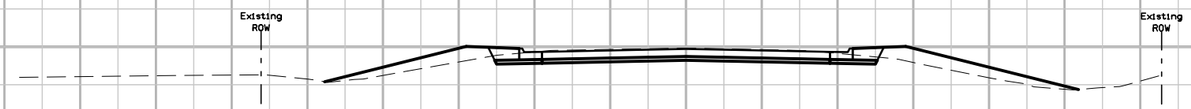
US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.33

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

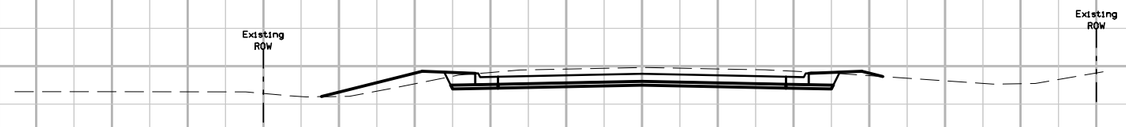
US Highway 151
Preliminary



898+00.00

897+50.00

897+00.00

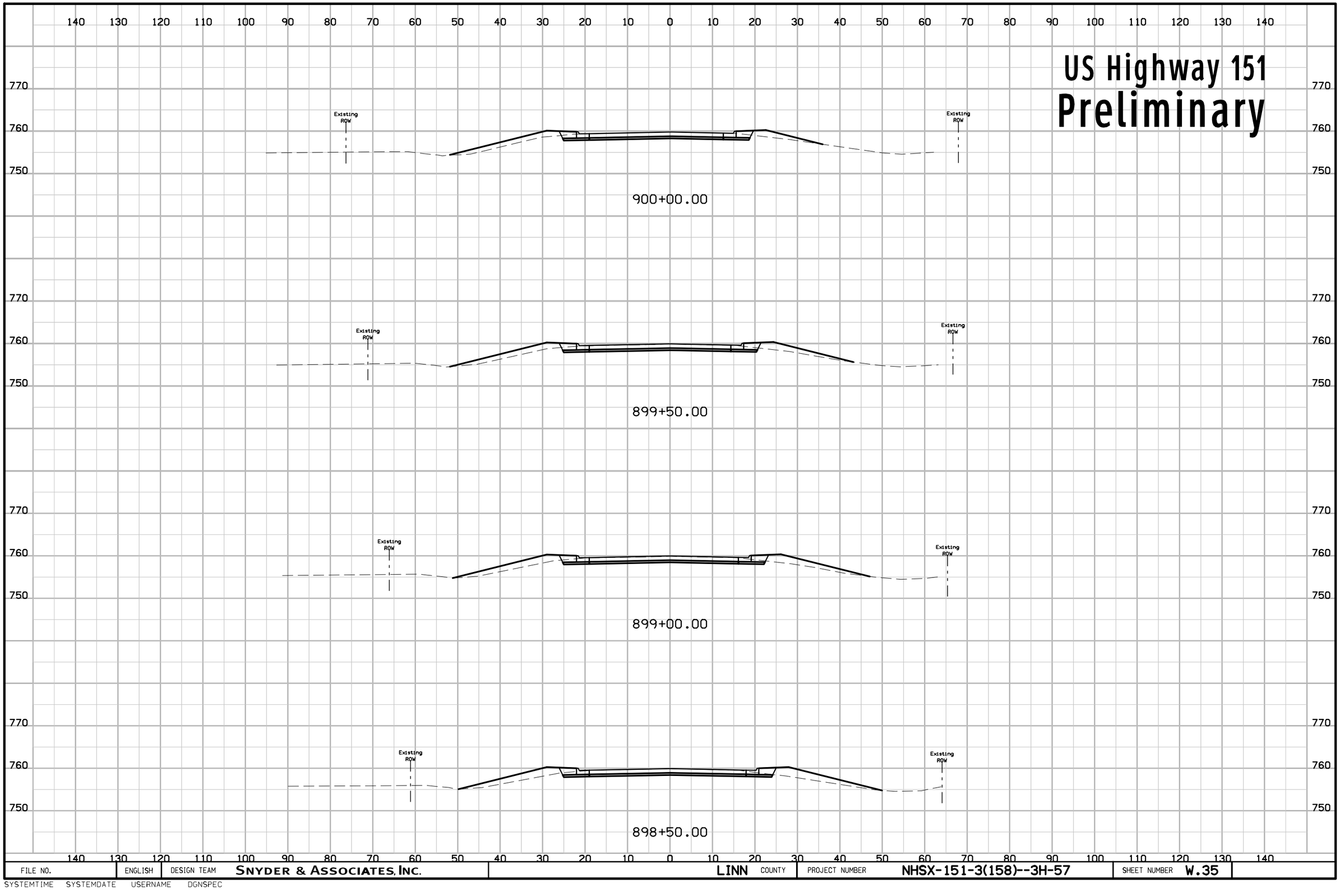


896+50.00

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.34

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

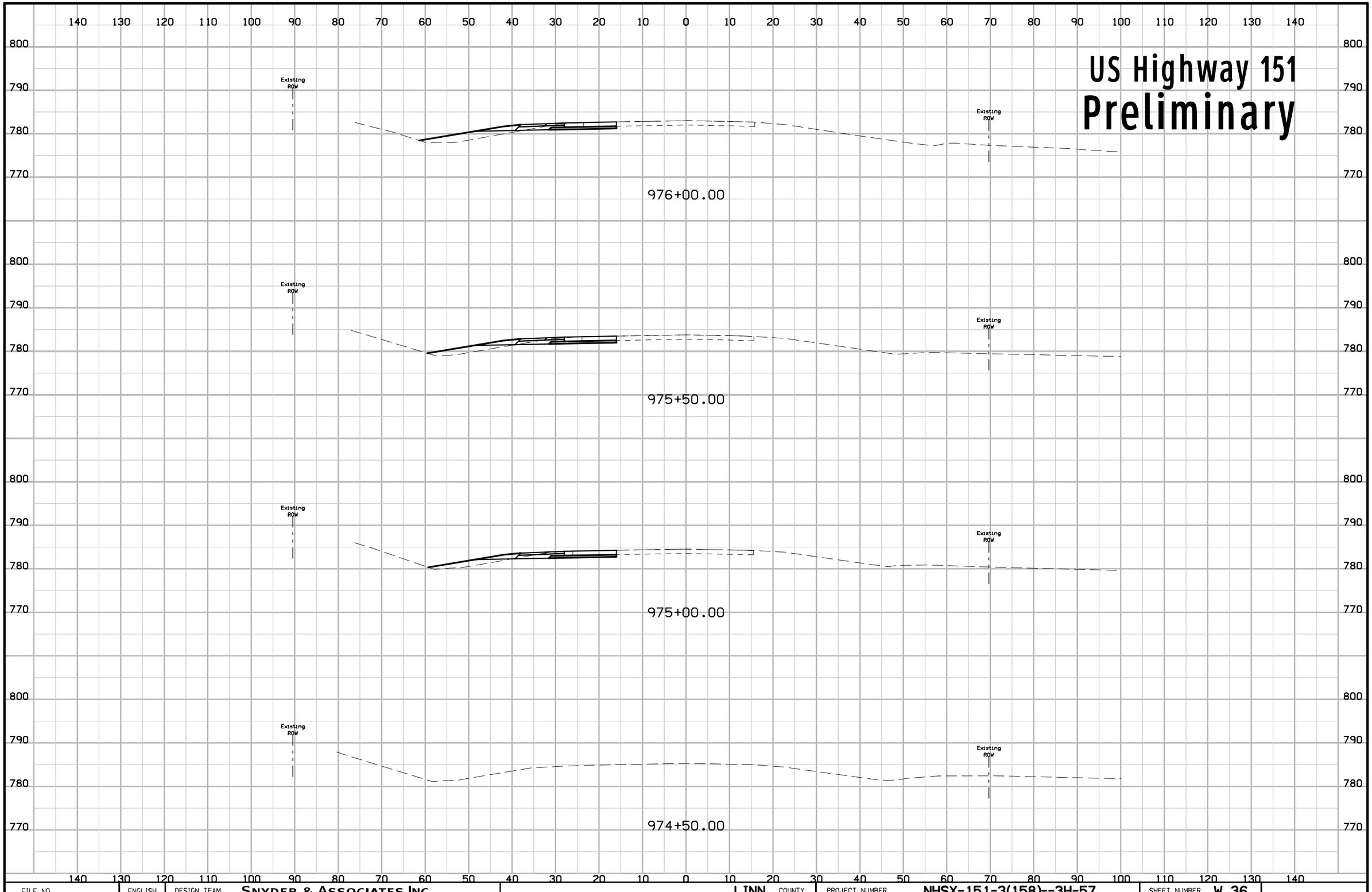
US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER W.35

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.36

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

790
780
770
760

Existing ROW

Existing ROW

977+50.00

790
780
770
760

Existing ROW

Existing ROW

977+00.00

800
790
780
770

Existing ROW

Existing ROW

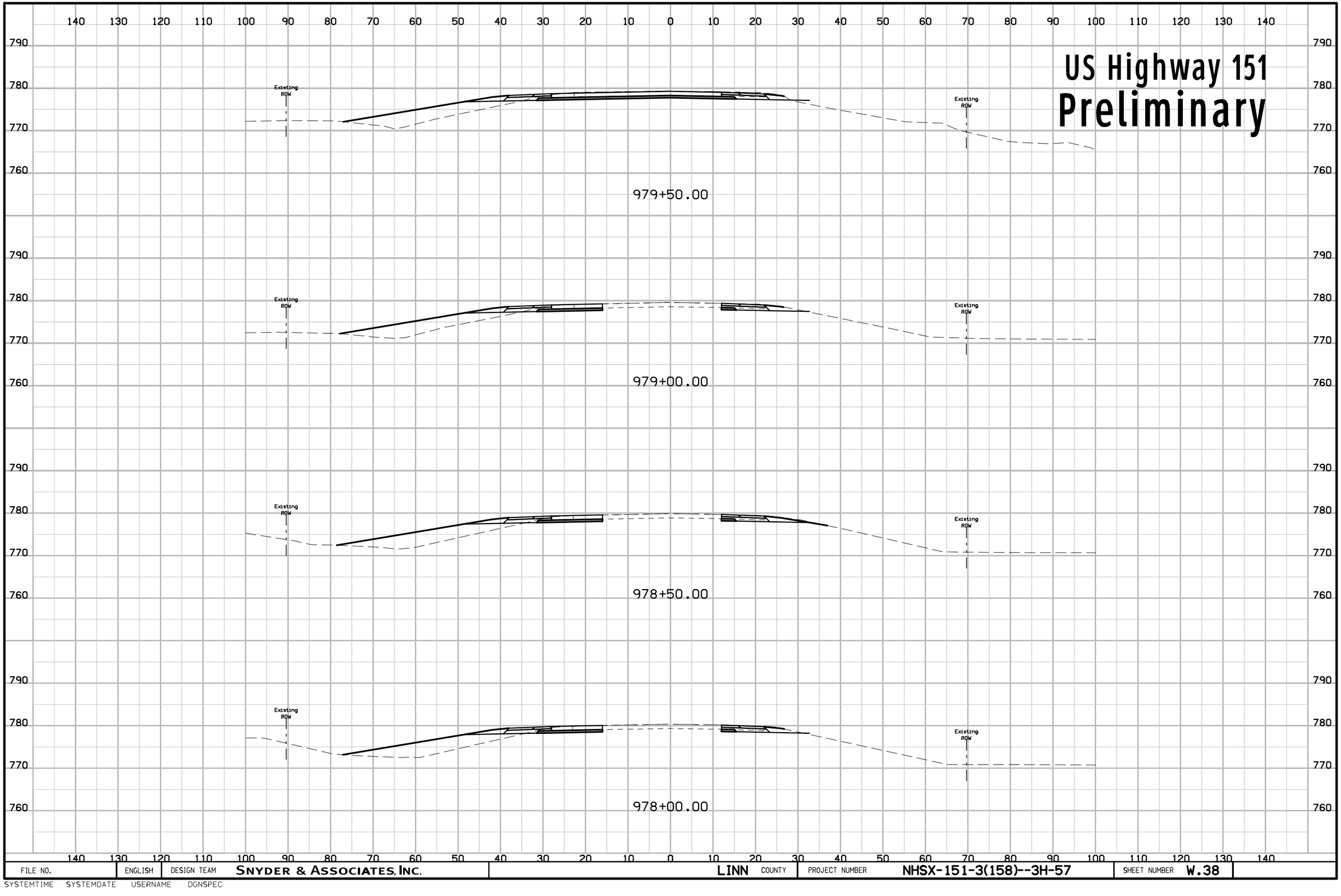
976+50.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.37

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary



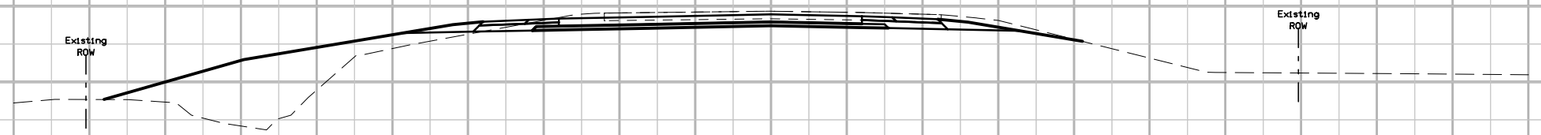
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER W.38

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

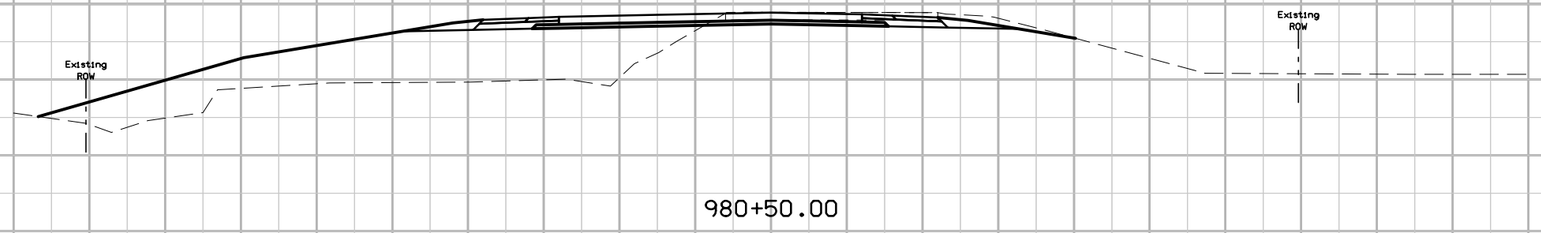
US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

780
770
760

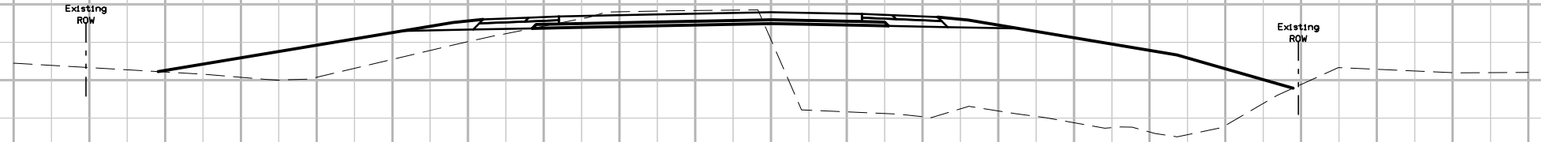


981+00.00



980+50.00

790
780
770
760



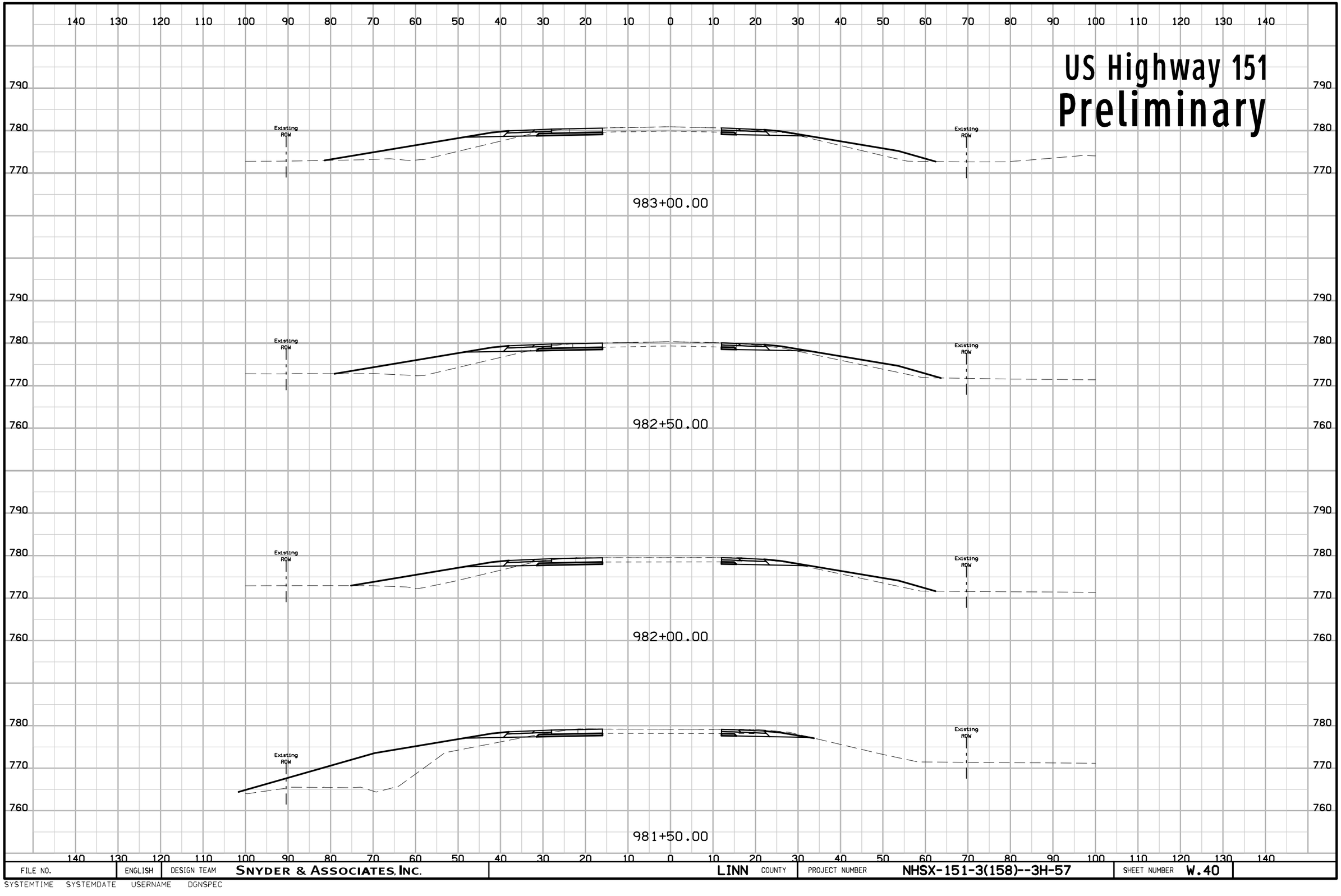
980+00.00

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.39

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.40

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

US Highway 151
Preliminary

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

790
780
770

Existing ROW

985+00.00

984+50.00

984+00.00

983+50.00

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.41

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC