LETTING DATE
November 20, 2018

LINN Co.

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

INDEX OF SHEETS

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* 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
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REVISIONS

TOTAL
161
PROJECT IDENTIFICATION NUMBER
08-57-151-020
PROJECT NUMBER
NHSX-151-3(158)--3H-57
R.O.W. PROJECT NUMBER

Anticipated Project Development Schedule:

D2 - Design Field Exam
November 20, 2015

D3 - Plans for Preliminary Bridge
June 24, 2016

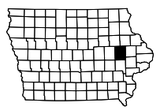
B1 - Bridges and Structures Layout
July 22, 2016

S2 - Identification of Soils Related ROW Issues
April 13, 2016

D5 - Plans to Right of Way
August 05, 2016

Preliminary Earthwork: 15,870 CY Cut (Total)
76,210 CY Fill (Total)
60,340 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		--	

D5 PLANS

Subject to change by final design.

D5 PLAN – Date: August 5, 2016

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

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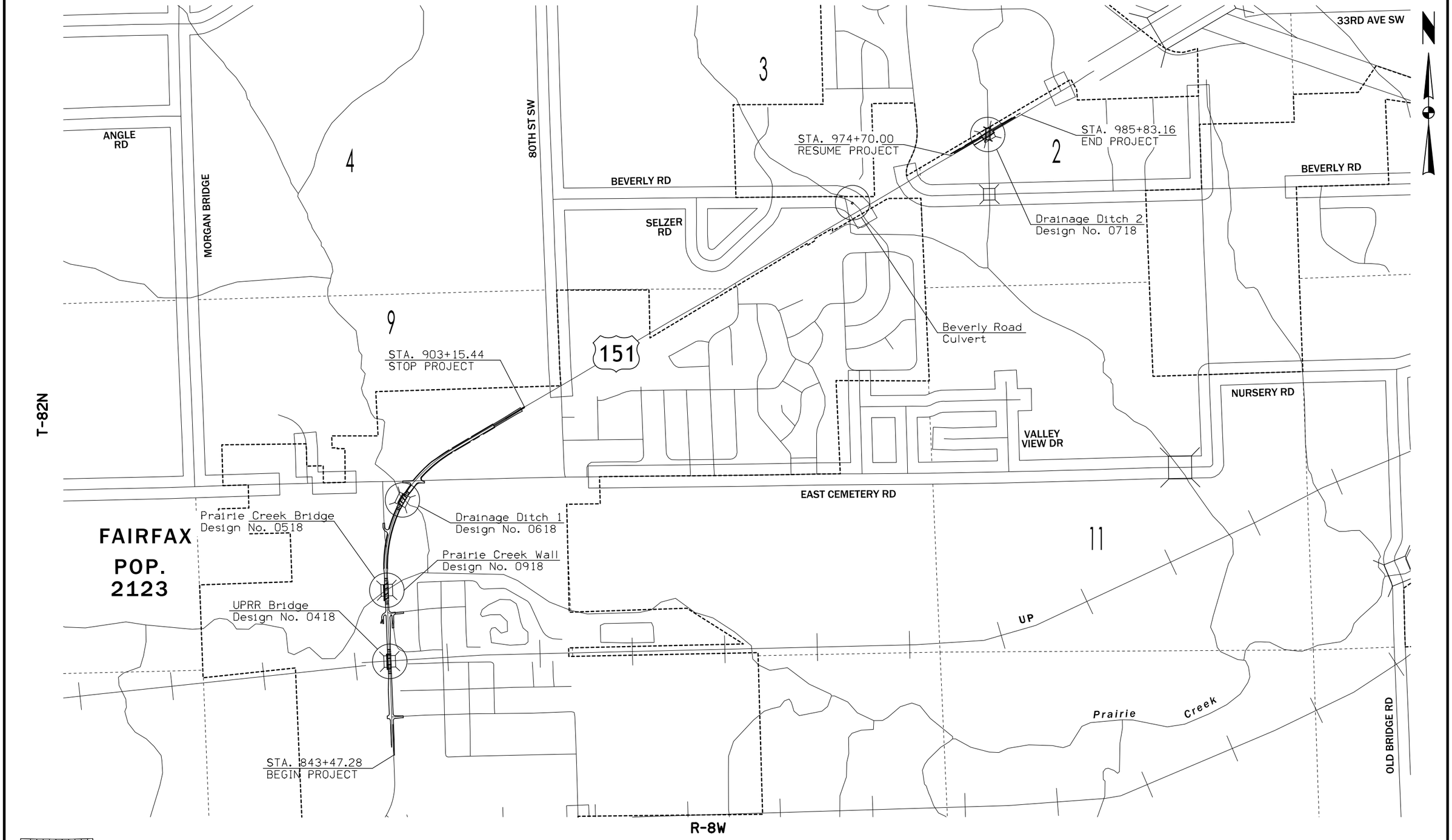

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	A.2

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Roadway	U.S. Highway 151			
PIN Number	08-57-151-020		**Submittal Date**	06/17/16
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. Highway 151	**Office Director**	Jim Schnoebelen	
Location	From Beginning of Project to Prairie Creek			
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

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	6
		Rural roadways						--	--	--	6	6	
Clear zone			See "Preferred Clear Zone" table in Section 8A-2					See "Acceptable Clear Zone" table in Section 8A-2					28

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		
Turn lanes with curbs	6		See Section 3C-2		Turn lanes with curbs	6		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

Notes:

DESIGN CRITERIA – URBAN
Sta 843+47 to 870+70

Roadway	U.S. Highway 151		
PIN Number	08-57-151-020	**Submittal Date**	06/17/16
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. Highway 151	**Office Director**	Jim Schnoebelen
Location	North of Prairie Creek Bridge to South of 80th Street		
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	45
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	N/A
Left turn lane (ft)		12	10	14 TWLTL
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum	2%
	Auxiliary and turn lanes	3%	3% maximum	2.5%
	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	No Curb
	Design speed ≥ 60 mph	4-inch sloped	6-inch 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	10:1 for 4' the 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	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	–	Var.
Bridge width—new	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	design lane widths + effective shoulder widths	58
	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 lanes + 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) = 45

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	360
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	1039
		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	135
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	61
	sag vertical curves	roadways without fixed-source lighting	96	115	136	157	181	206	96	115	136	157	181	206	79
		roadways with fixed-source lighting	96	115	136	157	181	206	54	66	78	91	106	121	79
Minimum gradient (%)	(Refer to Section 2B-1)		0.5						0.3% with a curb, 0.0% without a curb						0
Maximum gradient (%) (Refer to Section 2B-1)		Urban roadways	4			3			7	6	6	–	–	–	
		Rural roadways							5	5	4	4	4	4	5
		Interstates							5	5	4	4	4	4	
Clear zone			See "Preferred Clear Zone" table in Section 8A-2						See "Acceptable Clear Zone" table in Section 8A-2						28

Design year ADT = 12,010

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' Paved
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

Notes:

DESIGN CRITERIA – RURAL
Sta 870+70 to 904+06

Roadway	U.S. Highway 151		
PIN Number	08-57-151-020	**Submittal Date**	06/17/16
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. Highway 151	**Office Director**	Jim Schnoebelen
Location	Improvements at Drainage Ditch #2 South of U.S. Highway 30 Interchange		
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	N/A
Left turn lane (ft)		12	10	16 TWLTL
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	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	--	5 x 10
Bridge width—new	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	design lane widths + effective shoulder widths	60
	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 lanes + 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	--	--	--	
		Rural roadways							5	5	4	4	4	4	3
		Interstates							5	5	4	4	4	4	
Clear zone			See "Preferred Clear Zone" table in Section 9A-2						See "Acceptable Clear Zone" table in Section 9A-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
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*	4' Paved (min) 6' Granular
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

Notes:

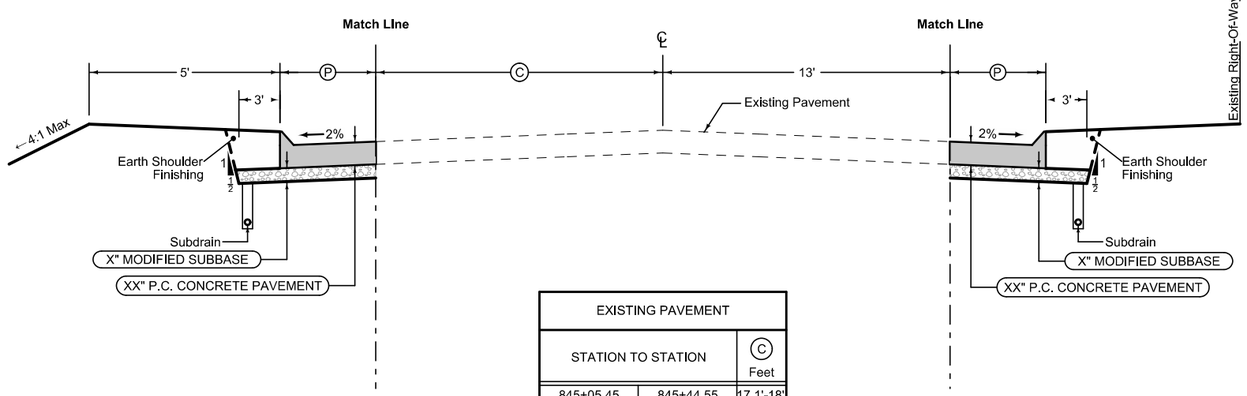
DESIGN CRITERIA – RURAL
Sta 974+18 to 985+76

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

			1R_Curb 04-19-11
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
845+05.45	848+30.33	3'	6" Sloped



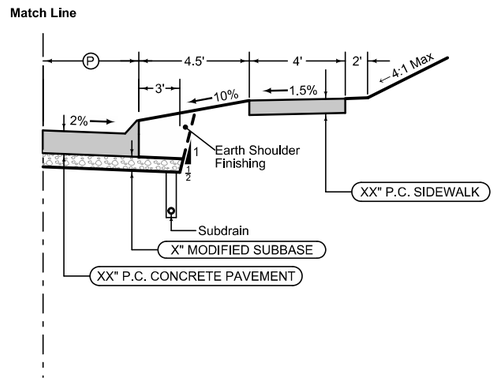
EXISTING PAVEMENT		
STATION TO STATION		(C) Feet
845+05.45	845+44.55	17.1'-18'
845+44.55	848+30.33	18'

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

			1R_Curb 04-19-11
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
847+24.00	848+30.33	8'	6" Sloped

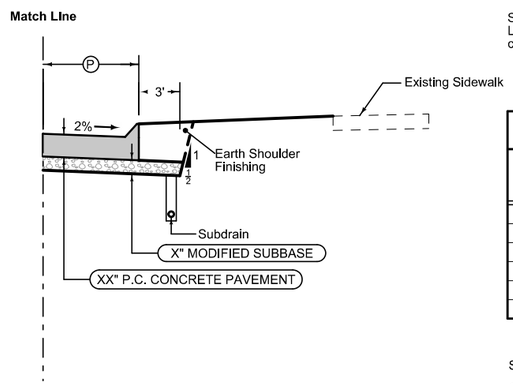


Curbed Shoulder

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

			1R_Curb 04-19-11
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
845+60.00	846+17.11	6.7'-8'	6" Sloped
846+17.11	847+24.00	8'	6" Sloped



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

			1R_Curb 04-19-11
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
843+88.58	845+60.00	3'-6.7'	6" Sloped

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

See Tab 112-9 for shoulder quantities.

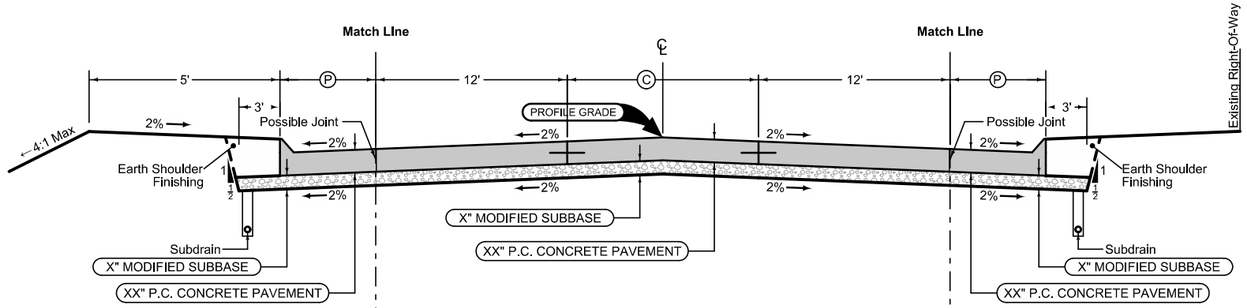
US HIGHWAY 151

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

			1R_Curb 04-19-11
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
848+30.33	848+87.11	3'	6" Sloped



Curbed Shoulder

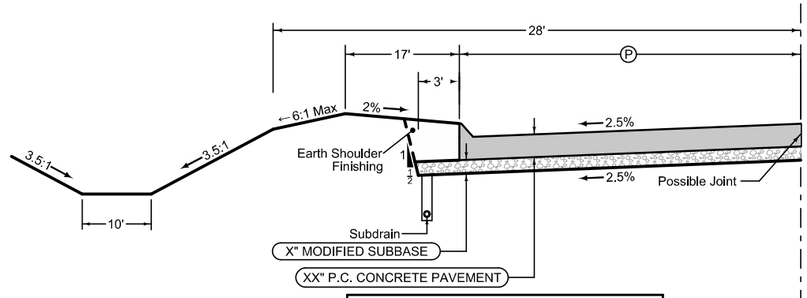
Shoulder Jointing:
Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

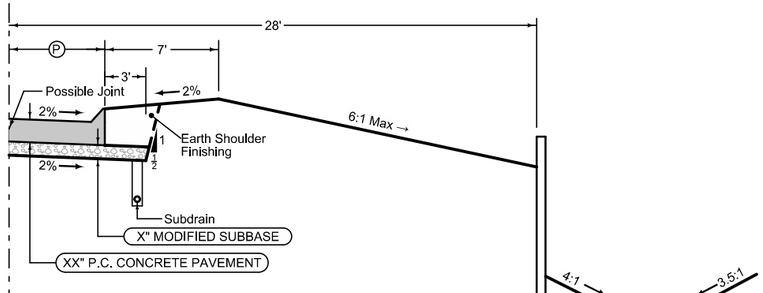
Single pour: L-2
Staged : KT-2
Transverse:C at 20' spacing

			1R_Curb 04-19-11
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
848+30.33	848+85.83	3'	6" Sloped

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

		2P_TWLTL_ 10-19-10
STATION TO STATION		(C) Feet
848+30.33	853+34.27	12'
853+34.27	855+59.10	12'-2.1'
859+06.10	861+73.36	0'-12'
861+73.36	863+59.72	12'
863+59.72	864+57.82	12'-14'
864+57.82	865+56.60	14'
869+26.20	879+37.99	14'
882+29.22	898+00.00	14'



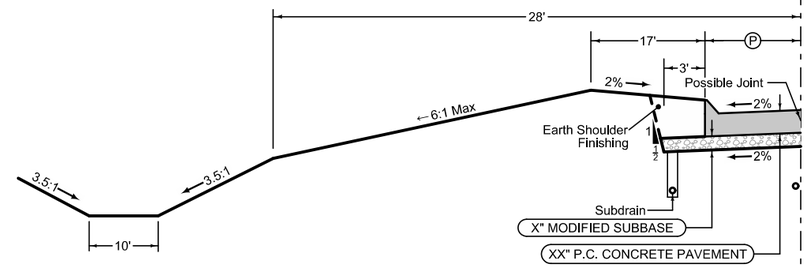


Curbed Shoulder

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

			1R_Curb 04-19-11
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
849+84.27	853+34.27	15'	6" Sloped
853+34.27	855+14.27	15'-3'	6" Sloped
855+19.27	855+59..13	Var.	6' Sloped



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

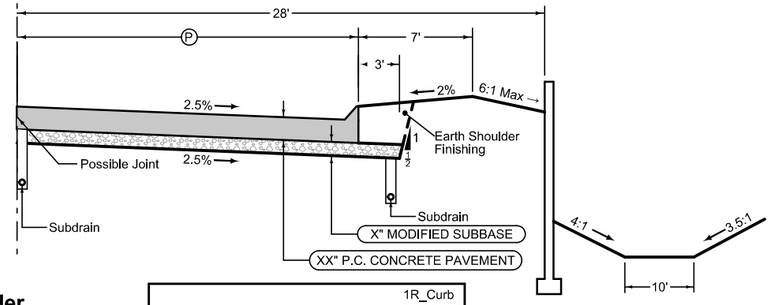
			1R_Curb 04-19-11
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
864+57.82	865+56.60	3'	6" Sloped
869+26.20	870+00.00	3'	6" Sloped
870+00.00	870+70.00	3'-10'	6" Sloped

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

			1R_Curb 04-19-11
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
849+82.84	853+34.27	3'	6" Sloped
853+34.27	855+59.10	3'-8'	6" Sloped
859+06.10	859+93.36	9.0'-3'	6" Sloped
864+74.60	865+56.60	3'	6" Sloped



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

			1R_Curb 04-19-11
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
859+93.36	861+73.36	3'-15'	6" Sloped
861+73.36	863+58.36	15'	6" Sloped

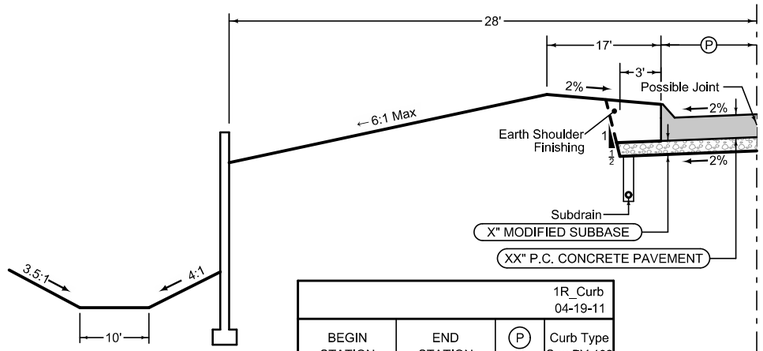
See Tab 100-24 or 100-25 for pavement quantities.

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.2

Match LIne

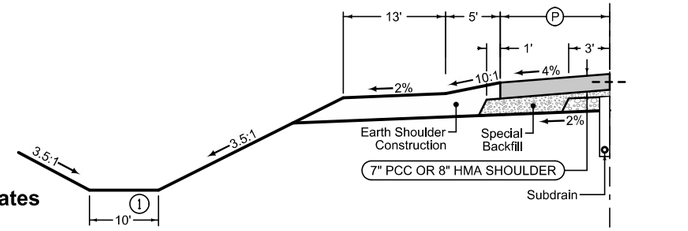


Curbed Shoulder

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

			1R_Curb 04-19-11
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
859+06.10	861+73.23	3'	6" Sloped
861+73.23	863+59.72	3'	6" Sloped



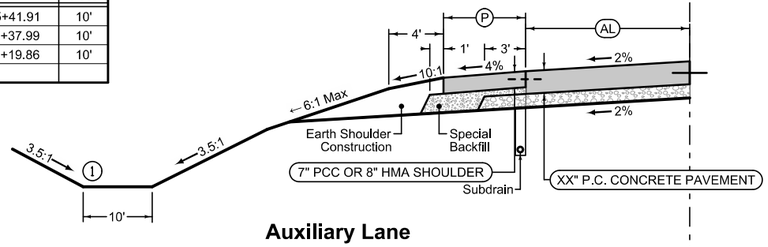
Paved Shoulder Alternates

PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at 20' spacing
HMA Shoulder Jointing:
Longitudinal joint: B

		2_P_ALT_ 10-21-14
STATION TO STATION		(P) Feet
870+70.00	875+41.91	10'
876+49.90	879+37.99	10'
882+29.22	883+19.86	10'

NOTES:

(1) Ditch width varies, see cross sections



NOTES:

(1) Ditch width and backslope varies, see cross sections

Auxiliary Lane

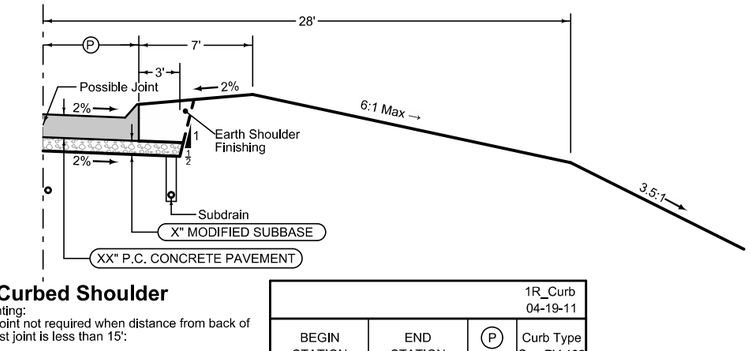
Longitudinal joint: L or KT
Transverse joint: Match Mainline

Auxiliary Lane
Paved Shoulder Alternates

PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at 20' spacing
HMA Shoulder Jointing:
Longitudinal joint: B

		2_AuxLane_PCC_ 10-18-16		2_AL_Shldr_ALT_ 10-21-14
STATION TO STATION		(AL) Feet	(P) Feet	
884+25.93	887+75.30	12'	6'	
887+75.30	889+55.30	12'-0'	6'	
889+55.30	898+00.00	10'	6'	

Match LIne

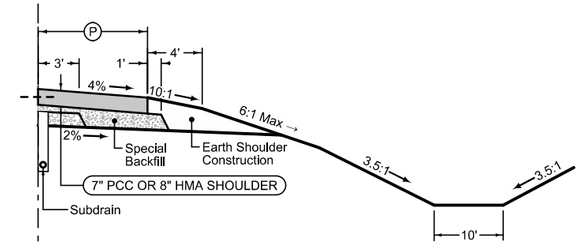


Curbed Shoulder

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

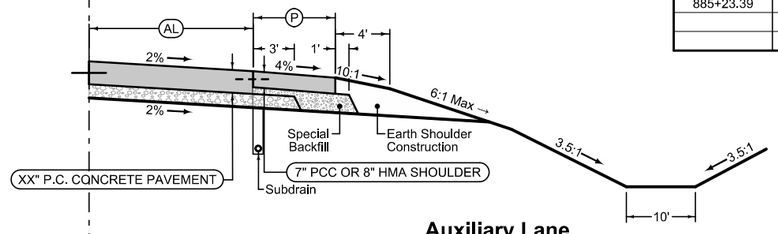
			1R_Curb 04-19-11
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
868+96.20	870+00.00	3'	6" Sloped
870+00.00	870+70.00	3'-10'	6" Sloped



Paved Shoulder Alternates

PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at 20' spacing
HMA Shoulder Jointing:
Longitudinal joint: B

		2_P_ALT_ 10-21-14
STATION TO STATION		(P) Feet
870+70.00	879+37.99	10'
885+23.39	898+00.00	10'



Auxiliary Lane
Paved Shoulder Alternates

PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at 20' spacing
HMA Shoulder Jointing:
Longitudinal joint: B

Auxiliary Lane

Longitudinal joint: L or KT
Transverse joint: Match Mainline

		2_AuxLane_PCC_ 10-18-16		2_AL_Shldr_ALT_ 10-21-14
STATION TO STATION		(AL) Feet	(P) Feet	
882+29.22	882+78.25	8.4'-12'	6'	
882+78.25	883+95.73	12'	6'	

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

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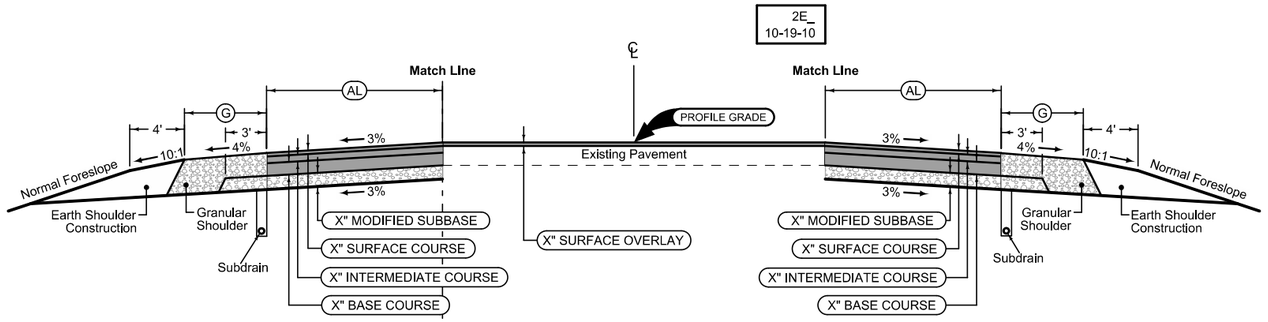
Auxiliary Lane

Longitudinal joint: B

Auxiliary Lane Granular Shoulder

2_AuxLane_HMA_ 10-18-16		2_AL_Shldr_G_ 10-19-10	
STATION TO STATION		(AL) Feet	(G) Feet
898+00.00	899+00.00	5'±-0'	6'
899+00.00	900+00.00	5'-0'	6'
900+00.00	902+58.42	0'	6'

2E_ 10-19-10



Auxiliary Lane

Longitudinal joint: B

Auxiliary Lane Granular Shoulder

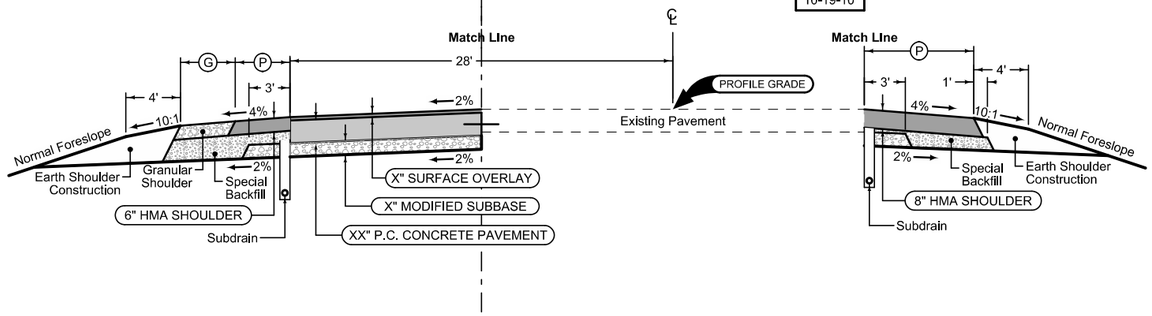
2_AuxLane_HMA_ 10-18-16		2_AL_Shldr_G_ 10-19-10	
STATION TO STATION		(AL) Feet	(G) Feet
898+00.00	901+14.21	8'	6'
901+14.21	902+58.42	8'-4'	6'

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

2_C_ 10-15-13			
STATION TO STATION		(P) Feet	(G) Feet
974+69.95	979+30.00	4'	6'
981+15.00	982+06.32	13.3'	0'
982+06.32	982+49.62	13.3'-15	0'
982+49.62	982+76.24	15'	0'
982+76.24	984+83.16	4'	6'

2E_ 10-19-10



HMA Shoulder

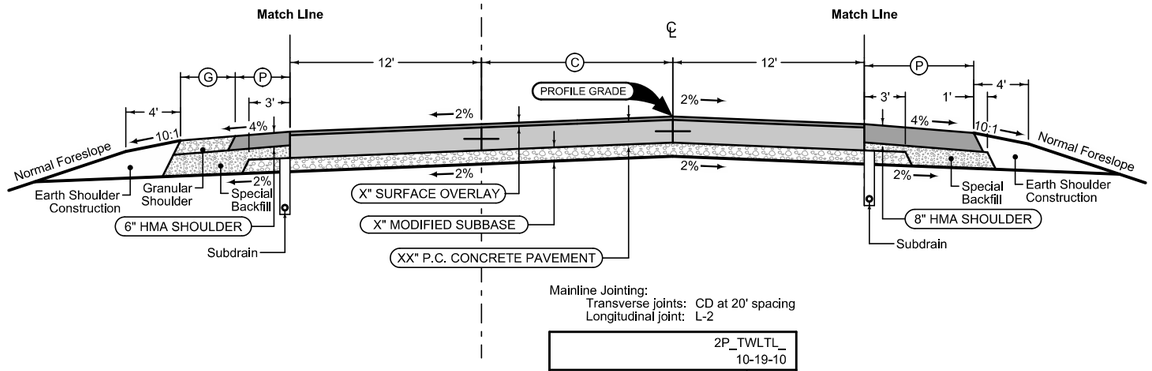
Shoulder Jointing:
Longitudinal joint: B

2_P_HMA_ 10-19-10		
STATION TO STATION		(P) Feet
977+81.50	978+01.97	6.9'-5.3'
978+01.97	978+51.41	5.3'-3.2'
978+51.41	979+30.00	3.2'

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

2_C_ 10-15-13			
STATION TO STATION		(P) Feet	(G) Feet
979+30.00	979+80.00	4'	6'
979+80.00	981+15.00	13.3'	0'



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

2P_TWLTL_ 10-19-10		
STATION TO STATION		(C) Feet
979+30.00	981+15.00	16'

HMA Shoulder

Shoulder Jointing:
Longitudinal joint: B

2_P_HMA_ 10-19-10		
STATION TO STATION		(P) Feet
979+30.00	980+65.15	13.3'
980+65.15	981+15.00	10'

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

See Tab 112-9 for shoulder quantities.

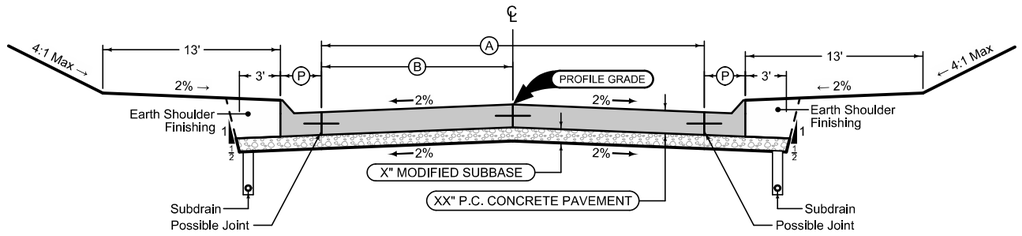
US HIGHWAY 151

Curbed Shoulder

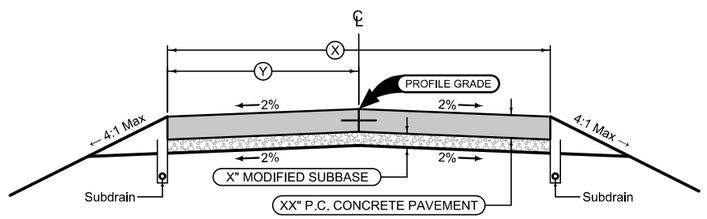
Shoulder Jointing:
Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

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+85.37	1849+96.58	3'	6" Std.
2864+82.50	2865+30.81	3'	6" Std.
3862+86.45	3864+59.42	3'	6" Std.



LOCATION			DIMENSIONS	
ROAD IDENTIFICATION	STATION TO STATION		(A) Feet	(B) Feet
CHURCH STREET	1849+85.37	1849+96.58	31'	15.5'
PRAIRIE AVENUE	2864+82.50	2865+30.81	23'	11.5'
LOSEY AVENUE	3862+86.45	3864+56.28	17'	8.5'



LOCATION			DIMENSIONS	
ROAD IDENTIFICATION	STATION TO STATION		(X) Feet	(Y) Feet
CHURCH STREET	1847+83.00	1848+71.36	24'-37'	12'-15.5'
CHURCH STREET	1849+96.58	1850+86.58	37'-25'	18.5'-12.5'
CHURCH STREET	1850+86.58	1851+00.00	25'	12.5'
PRAIRIE AVENUE	2865+30.81	2866+50.00	23'	11.5
STALLMAN DRIVE	4874+25.00	4875+43.95	25'	12.5'
CEMETERY ROAD	5882+30.00	5883+14.67	25'	12.5'

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+86.58	1849+96.58	3'	6" Std.
2864+82.50	2865+30.81	3'	6" Std.
3862+85.37	3864+56.28	3'	6" Std.

SURVEY SYMBOLS

- PPA Power Pole Co. 1
- PLG Location of General Photo
- STA Storm Sewer Line Co. 1
- IN Storm Sewer Intake
- UE Utility Elevation
- TPD Telephone Pedestal
- SI Sign
- LC Lot Corner
- BB Billboard
- GPR Guard Post (4 or More Posts)
- WV Water Valve
- WHD Water Hydrant
- BLD Building or Foundation
- FCL Chain Link and Security Fence
- TDC Tree Deciduous
- TEV Evergeen Tree
- SHR Shrub
- RET Retaining Walls
- PR Electic Riser Pole
- SL Speed Limit Sign
- GDL Guard Rail Steel
- MH Utility Access (Manhole)
- PIP Pipe Culvert
- BRG Bridge
- MIS Miscellaneous
- MM Mile Marker Post
- UV Underground Utility Vault
- TLNR Tree Line Right
- BD Bridge Deck
- CUL Culvert
- TLNL Tree Line Left
- FWD Wood Fence
- WEL Well
- LIN Miscellaneous Line
- LUM Luminaire
- GP Guard Post (Less Than 4 Posts)
- GV Gas Valve
- FW Wire Fence
- EB Electrical Box
- UB Utility Box
- FHD Fire Hydrants
- FLG Flag Poles
- STP Stump
- PRO Profile Shot
- OUT Tile Outlet
- INB Storm Sewer Beehive Intake
- S Soil Sampling Site (Wetlands)
- TVP TV Pedestal
- SAA Sanitary Sewer Line Co. 1
- CON Concrete or A/C Slab
- CU Back of Curb
- GU Gutter In Front of Curb
- D Centerline Draw or Stream (Down)
- ENU Edge Unpaved Entrance & Parking
- ENP Edge Paved Entrance & Park Lot
- ENT Centerline BL of Entrance
- EP Edge of Paved Roads (ML or SR)
- SNP Unpaved Shoulder
- DU Centerline Draw or Stream (Up)
- SH Paved Shoulder
- BNK Stream Bank
- EG Edge of Gravel Road
- EW Edge of Water
- SP Stream Profile
- RIP Rip-Rap
- SWK Sidewalk
- TRL Trail
- GLA Underground Gas Line Co. 1
- ELA Underground Electric Line Co. 1
- FOA Underground Fiber Optic Co. 1
- TLA Underground Telephone Line Co. 1
- TVA Underground TV Cable Co. 1
- GLB Underground Gas Line Co. 2
- BCL Bridge Centerline
- BLS Bridge Low Steel
- TW Top of Water
- SOP Size of Pipe or Culvert
- RRR Railroad Rail
- BL Topo Breakline

UTILITY LEGEND

- PPA Alliant Energy
- TPD Telephone Pedestal
- WV Water Valve
- WHD Water Hydrant
- PR Electic Riser Pole
- GV Gas Valve
- EB Electrical Box
- UB Utility Box
- FHD Fire Hydrants
- TVP TV Pedestal
- GLA MidAmerican Energy
- ELB Linn County Rural Electric Cooperative
- FOA South Slope Phone Internet Television
- TLA South Slope Phone Internet Television
- TLB Centurylink
- TVA Underground TV Cable Co. 1

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

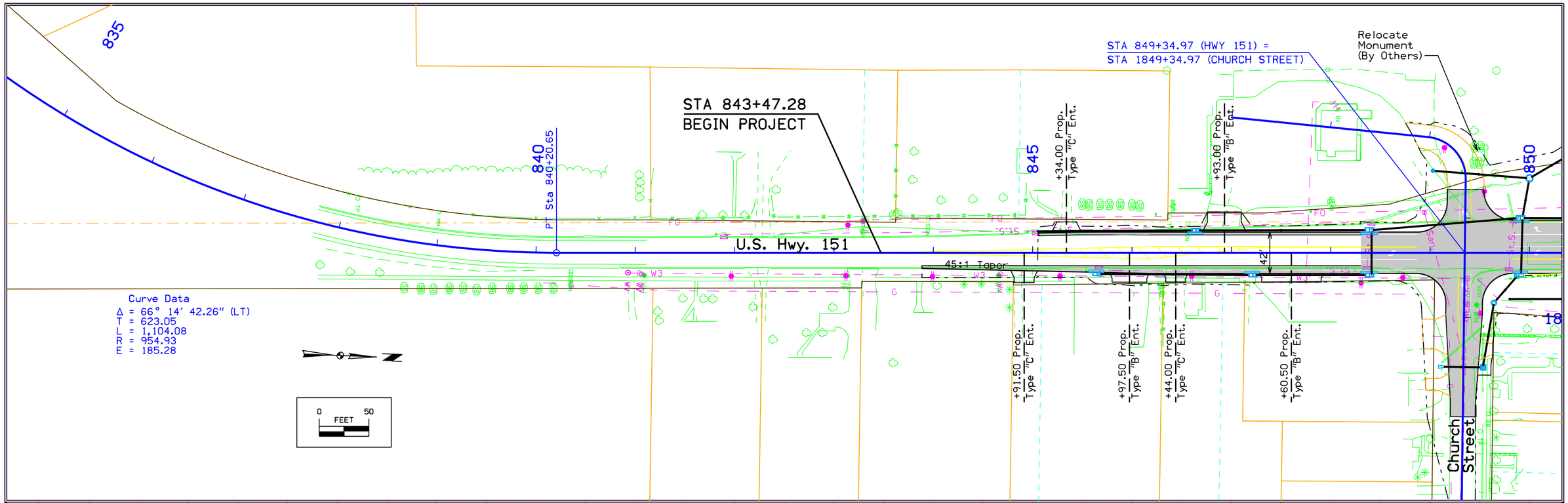
- Proposed Right-of-Way
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- C/A Access Control
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

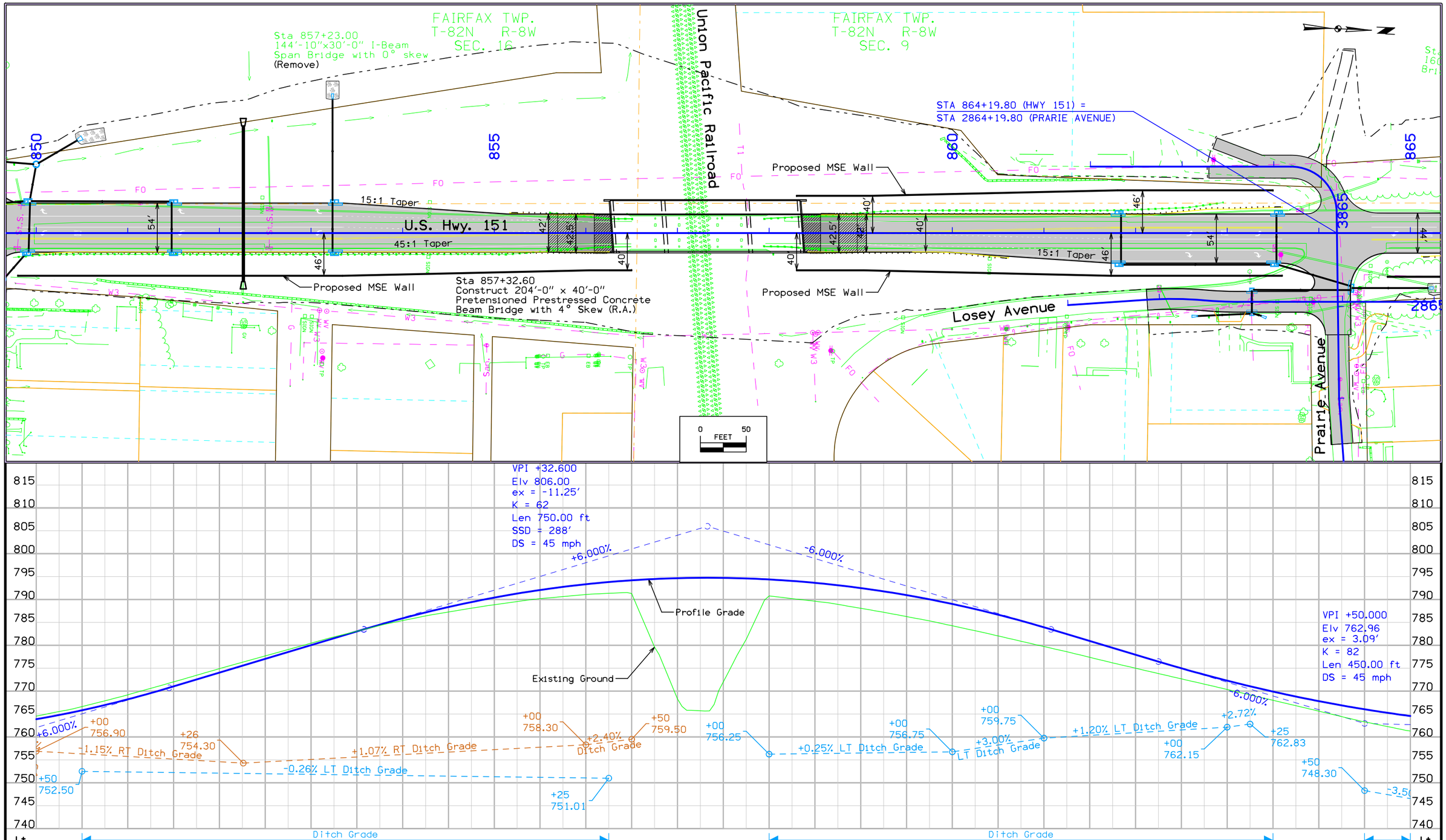
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.1

1:27:20 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158LGD.sht



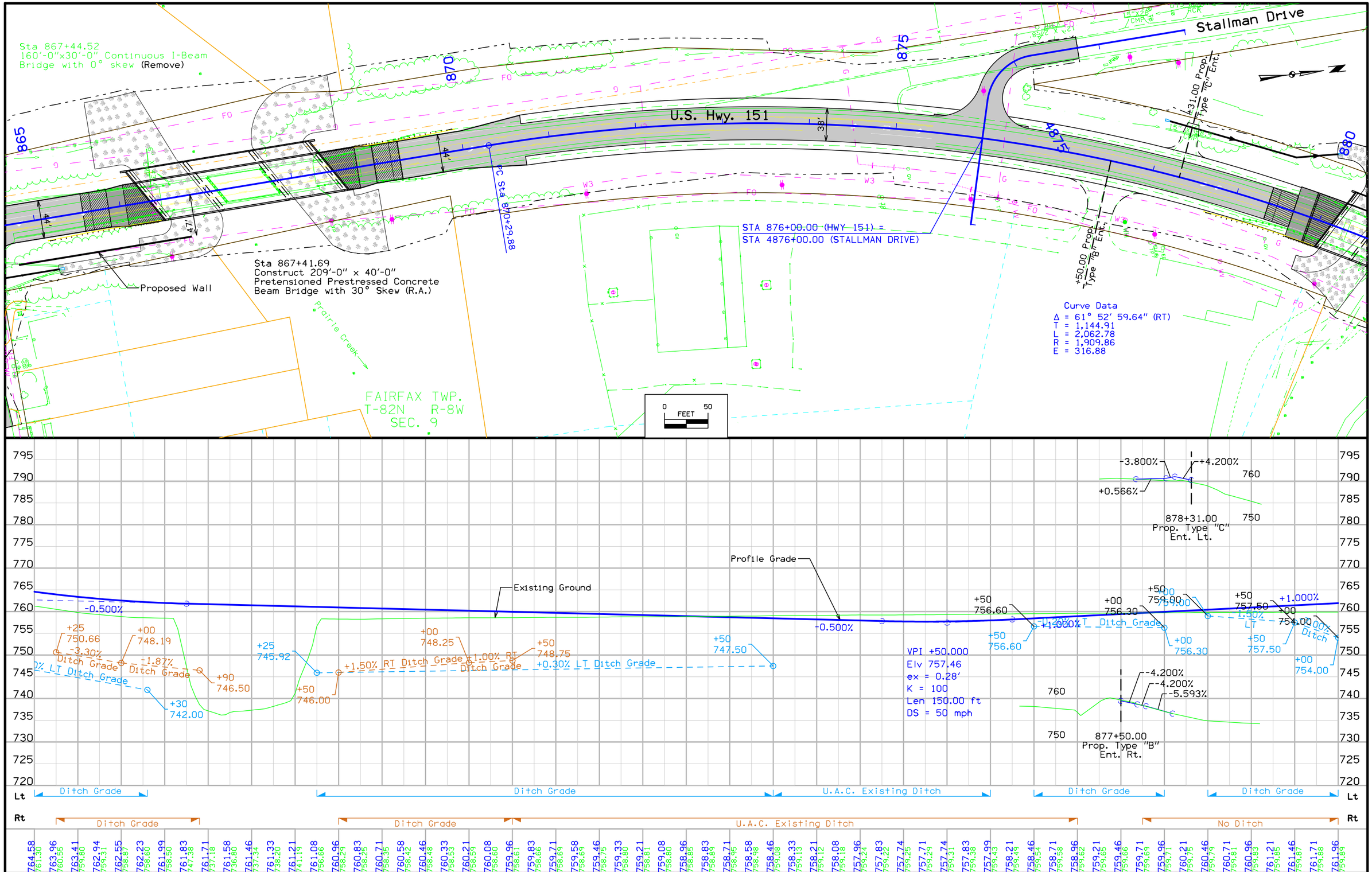
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.2

1:28:02 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158D02.sht



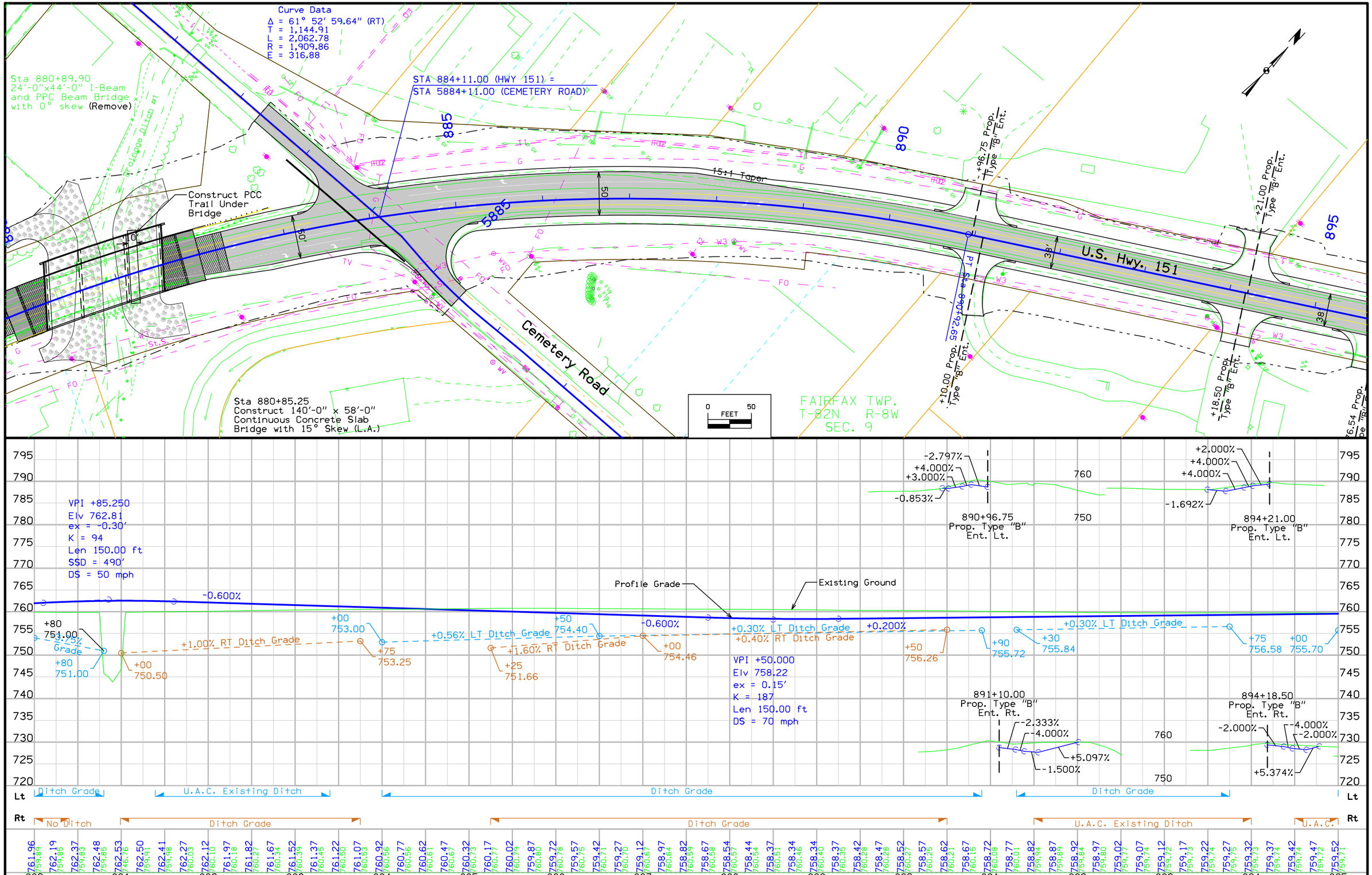
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.3

1:28:03 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158D02.sht



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

1:28:05 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158D02.sht



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

1:28:07 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158D02.sht

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

STA 898+00.00
END PCC PAVING
BEGIN HMA PAVING

STA 903+15.44
STOP PROJECT

U.S. Hwy. 151

80th Street

38'

+76.54 Prop. Type "B" Ent.

+64.90 Prop. Type "C" Ent.

0 FEET 50

VPI +75.000
Elv 760.27
ex = -0.11'
K = 257
Len 150.00 ft
SSD = 1213'
DS = 70 mph

Profile Grade

+0.200%

-0.30% LT Ditch Grade

759.79

STA 900+00.00
ELEV = 759.79
MATCH EXISTING

-0.384%

+00
754.20

Existing Ground

895+76.54
Prop. Type "B"
Ent. Rt.

-2.000%
-4.000%
+6.983%
-2.000%

897+64.90
Prop. Type "C"
Ent. Rt.

-2.000%
-4.000%
-7.321%

Ditch Grade

Lt

Rt

U.A.C.

U.A.C. Existing Ditch

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

1:28:09 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158D02.sht

FAIRFAX TWP.
T-82N R-8W
SEC. 2

Sta ---+---
36'-0"x44'-0" I-Beam and
PPC Beam Bridge with
30° skew (L.A.) (Remove)

+85.00 Prop. Type "C" Ent.

STA 984+83.16
END PROJECT

STA 974+70.00
RESUME PROJECT

975 980 985

San.2

U.S. Hwy. 151

F02

+75.00 Prop. Type "C" Ent.

Sta 980+18.00
Construct 55'-0" x 13'-9 1/4" x 168'-0"
Conspan Precast Arch with 30°
Skew (L.A.)

Drainage Ditch

0 FEET 50

STA 979+35.00
ELEV = 779.37
MATCH EXISTING

VPI +50.000
Elv 778.57
ex = 0.29'
K = 140
Len 180.00 ft

STA 981+40.00
ELEV = 779.10
MATCH EXISTING

779.37 779.10

Profile Grade

Existing Ground

+50 781.10
-1.10% LT Ditch Grade
+50 780.00
-2.00% LT Ditch Grade
+50 778.00
-5.00% LT Ditch Grade
-3.00% LT Ditch Grade
+00 775.50
-2.00% LT Ditch Grade
+50 774.00
-1.00% LT Ditch Grade
+50 772.00
+0.700%
-1.63% LT Ditch Grade
+00 770.50
+06 766.95
-6.87% RT Ditch Grade
+50 770.00
+31 770.00
+2.36% RT Ditch Grade
+92 771.00
+0.590%
+0.67% LT Ditch Grade
+23 771.22
+00 772.40

Ditch Grade
Ditch Grade

Lt
Rt

U.A.C. Existing Ditch
U.A.C. Existing Ditch

788.03 787.73 787.42 787.08 786.73 786.38 786.02 785.65 785.28 784.91 784.55 784.17 783.77 783.39 783.02 782.65 782.28 781.91 781.57 781.22 780.90 780.58 780.33 780.08 779.89 779.72 779.57 779.43 779.27 779.33 779.10 779.30 778.97 775.32 778.89 764.19 778.86 778.90 778.86 779.07 778.92 779.33 779.02 779.17 779.17 779.34 779.53 780.10 780.34 780.58 780.91 781.24 781.70 782.20 782.75 783.29 783.83 784.34 784.84 785.34 785.84 786.33 786.83 787.33 787.84 788.35 788.85 789.35

973 974 975 976 977 978 979 980 981 982 983 984 985 986 987

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

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

Existing Right Of Way

U.S. Hwy. 151

1850

+31.75 Prop. Type "C" Ent.

Curve Data
Δ = 84° 59' 40.43" (RT)
T = 38.48
L = 62.30
R = 42.00
E = 14.96

STA 1851+00.00
END CONSTRUCTION

Church Street

STA 1847+83.00
BEGIN CONSTRUCTION

90°43'3.62"-89°16'56.38"

+17.23 Prop. Type "B" Ent.

+68.00 Prop. Type "C" Ent.

+11.39 Exist. Ent. (U.A.C)

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

0 FEET 50

-1.000%
+0.886%
760
-2.000%
750

1850+17.23
Prop. Type "C"
Ent. Rt.

STA 1847+83.00, ELEV = 758.29
MATCH EXISTING

Profile Grade

758.29

VPI +71.360
Elv 760.50

VPI +16.970
Elv 761.64

VPI +34.970
Elv 762.00

VPI +55.970
Elv 761.58

760.08

STA 1851+00.00, ELEV = 760.08
MATCH EXISTING

-1.297%
+3.400%
+2.500%
+2.000%
-2.000%
-2.500%
+0.498%

Existing Ground

VPI +00.000
Elv 758.07
ex = 0.18'
K = 6
Len 30.00 ft
DS = 15 MPH

VPI +30.000
Elv 759.73
ex = 0.22'
K = 20
Len 60.00 ft
DS = 20 MPH

+2.000%
+1.025%
-1.000%

1850+31.75
Prop. Type "C"
Ent. Lt.

-1.000%
+1.043%
760
-2.000%
750

1850+68.00
Prop. Type "C"
Ent. Rt.

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

Lt

Rt

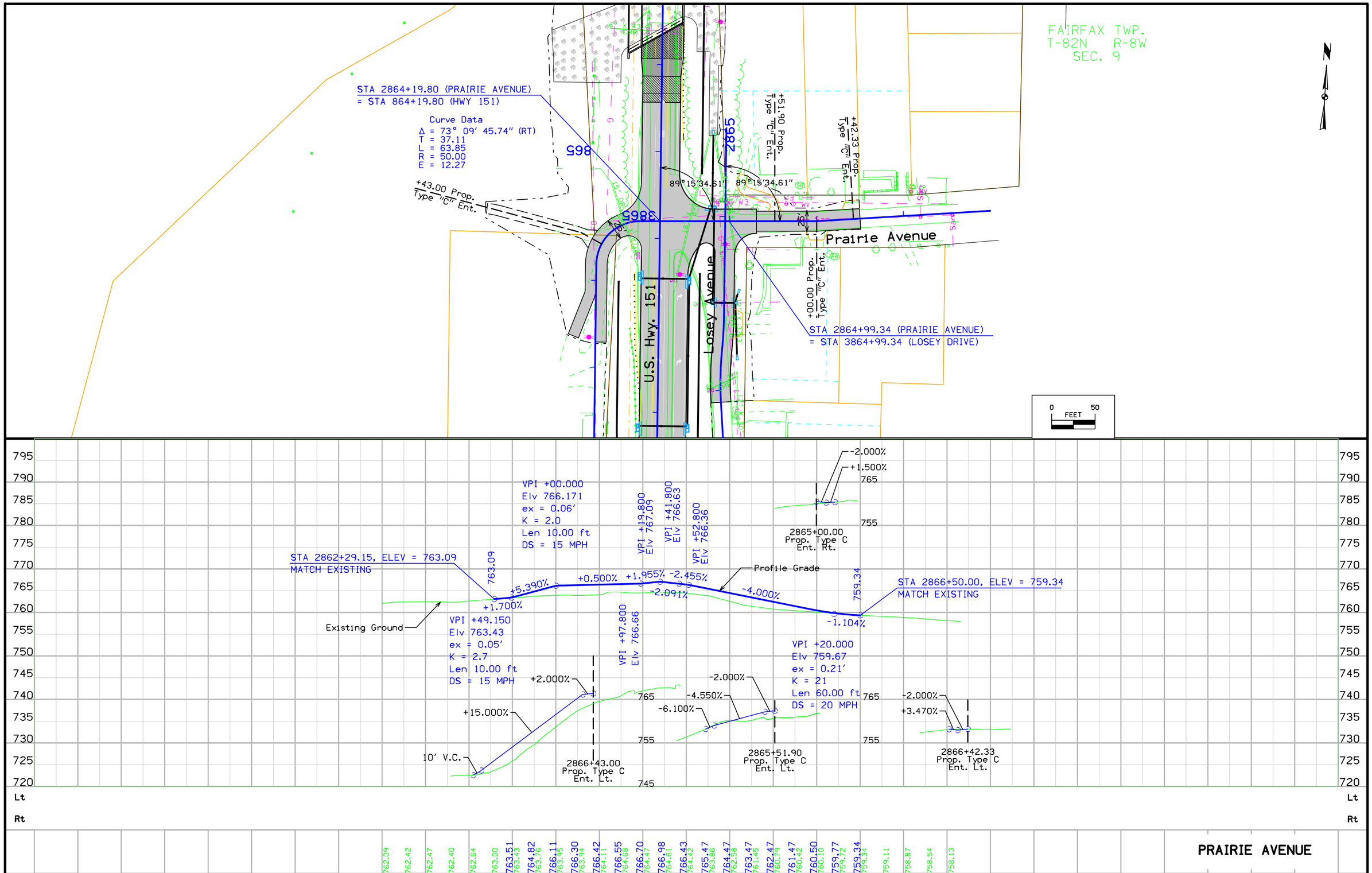
760.78 760.33 759.08 758.47 758.25 758.07 758.92 757.35 759.77 758.14 760.59 759.48 761.22 761.72 761.80 762.12 761.70 762.02 761.10 761.65 760.48 760.90 760.01 760.25 759.85 760.25 759.95 760.14 760.08 760.08 760.13 760.61 761.22 761.90

1846 1847 1848 1849 1850 1851 1852 1853

CHURCH STREET

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

1:28:55 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158E01.sht



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

1:28:57 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158E01.sht

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

855 860 865 870

U.S. Hwy. 151

Union Pacific Railroad

Losey Avenue

Prairie Avenue

3865

2865

89°15'34.61"

90°44'25.39"

231'

+77.60 Prop. Type "C" Ent.

PC Sta 870+29.88

STA 3864+94.81 (LOSEY AVENUE) =
STA 2864+94.81 (PRAIRIE AVENUE)

Curve Data
Δ = 5° 06' 11.25" (LT)
T = 17.83
L = 35.63
R = 400.00
E = 0.40

Curve Data
Δ = 9° 00' 55.63" (RT)
T = 31.53
L = 62.94
R = 400.00
E = 1.24

0 50 FEET

3863+77.60
Prop. Type C
Ent. Lt.

+2.230%

-2.000%

2" Drop Curb

STA 3862.86.45, ELEV = 763.66
MATCH EXISTING

763.66

STA 3864+80.81
ELEV = 764.41

VPI +94.810
Elv 764.69

Profile Grade

+2.500%

-0.466%

+2.000%

-2.000%

Existing Ground

VPI +25.000
Elv 763.01
ex = 0.26'
K = 24
Len 70.00 ft
DS = 20 MPH

VPI +08.810
Elv 764.41

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

Lt

Rt

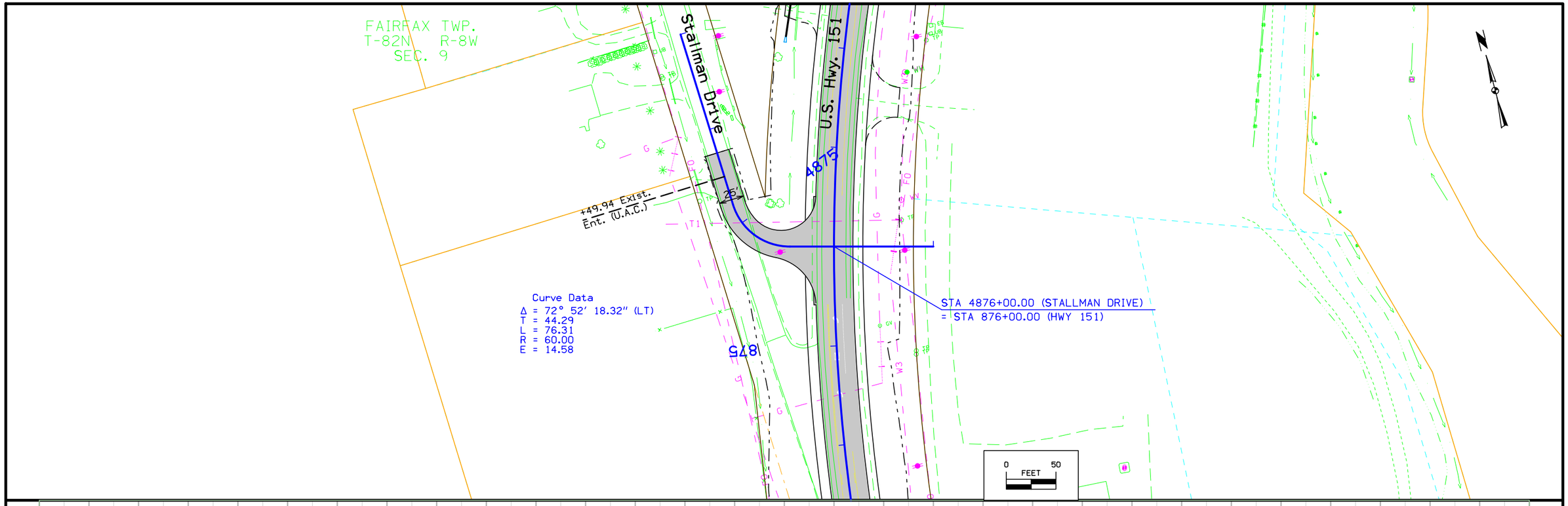
764.21 764.00 763.82 763.68 763.60 763.65 763.48 763.58 763.36 763.53 763.25 763.46 763.15 763.45 763.27 763.48 763.66 763.58 764.26 763.49 764.59 762.55 761.45 757.30 754.73 752.31

3862 3863 3864 3865 3866

LOSEY AVENUE

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

1:28:58 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158E01.sht



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

1:29:00 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158E01.sht

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

Casing Pipe for Future Water Main Extension, Refer to M Sheets

Existing Right Of Way

+52.72 Exist. Ent. (U.A.C.)

5880

5885

5890

U.S. Hwy. 151

Curve Data
Δ = 9° 36' 05.14" (LT)
T = 50.39
L = 100.55
R = 600.00
E = 2.11

Cemetery Road

25'

20'

Sta 880+89.90
24'-0"x44'-0" I-Beam and PPC Beam Bridge with 0° skew

STA 5884+11.00 (CEMETERY ROAD)
= STA 884+11.00 (HWY 151)

0 FEET 50

STA 5882+30.00, ELEV = 758.62
MATCH EXISTING

758.62

VPI +80.000
Elv 759.17
ex = 0.27'
K = 38
Len 90.00 ft
DS = 30 mph

+3.500% +1.000% -3.609% -2.862% -2.761%

+1.149% -4.261%

VPI +70.400
Elv 761.75

VPI +40.000
Elv 761.27
ex = 0.09'
K = 12
Len 30.00 ft
DS = 25 mph

VPI +11.000
Elv 760.85

VPI +51.340
Elv 759.40

756.90

STA 5885+42.00, ELEV = 756.90
MATCH EXISTING

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

Lt

Rt

759.12 758.69 758.33 758.00 757.04 757.76 757.70 758.01 758.27 758.56 758.87 758.78 759.32 758.96 759.95 759.25 760.74 759.65 761.36 760.13 761.62 760.58 761.25 761.04 760.25 760.25 759.44 759.61 758.75 758.59 758.06 757.86 757.37 757.26 756.75 756.36 756.05 755.89 755.79 755.83 756.16 755.95 756.01 756.09

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

1:29:01 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158E01.sht

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

6955

Beverly Road

PI Sta 6956+71.71

096

U.S. Hwy. 151

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

100°0'0.01"

20"

24"

79°59'59.99"

PT Sta 6958+65.65

PC Sta 6954+49.20

St.S.

Prairie View Drive

0 FEET 50

Existing Ground

815 810 805 800 795 790 785 780 775 770 765 760 755 750 745 740

Lt

Rt

6951 6952 6953 6954 6955 6956 6957 6958 6959

BEVERLY ROAD

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

1:29:03 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158E01.sht

FAIRFAX TWP.
T-82N R-8W
SEC. 2

Existing Right Of Way

Curve Data
Δ = 101° 12′ 47.17″ (LT)
T = 79.15
L = 114.82
R = 65.00
E = 37.42

STA 8980+18.00 (DRAINAGE DITCH #2)
= STA 980+18.00 (HWY 151)

STA 8981+66.50
END STREAM
REALIGNMENT

STA 8977+75.00
BEGIN STREAM
REALIGNMENT

Drainage Ditch #2

8980

8975

980

120°0′8″

U.S. Hwy. 151

Curve Data
Δ = 67° 47′ 47.16″ (RT)
T = 43.68
L = 76.91
R = 65.00
E = 13.31

Sta 980+18.00
Construct 55′-0″ x 13′-9 1/4″ x 168′-0″
Conspan Precast Arch with 30°Skew (L.A.)

0 50
FEET

STA 8977+75.00, ELEV = 764.42
MATCH EXISTING

764.42

-0.758%

VPI +21.460
Elv 763.31

Existing Ground

VPI +87.460
Elv 762.63

-0.410%

-0.481%

762.25

STA 8981+66.50, ELEV = 762.25
MATCH EXISTING

Profile Grade

815 810 805 800 795 790 785 780 775 770 765 760 755 750 745 740

Lt

Rt

764.75
764.42 764.42
764.23 764.07
764.04 765.88
763.85 766.85
763.66 769.01
763.47 765.40
763.30 763.33
763.19 769.61
763.09 765.65
762.99 764.49
762.89 764.75
762.78 765.70
762.68 764.16
762.57 765.12
762.45 764.47
762.33 763.06

8977 8978 8979 8980 8981 8982 8983

DRAINAGE DITCH #2

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

1:29:05 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158E01.sht

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)

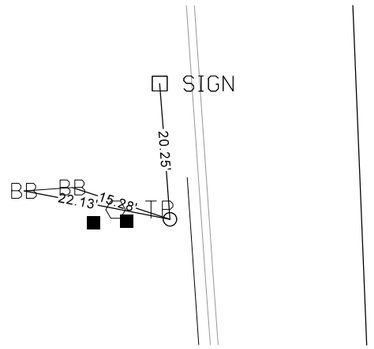
VERTICAL CONTROL

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 TURNOOUT FOR DEAN ROAD

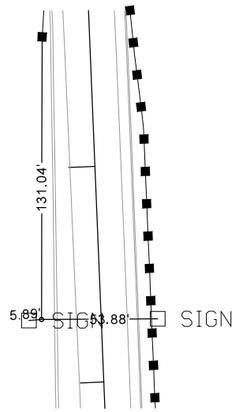
CP STA 837+45.84, 38.77 FT RT
CP 118, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=702310.552, E=2107568.859, ELEV. 790.030

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

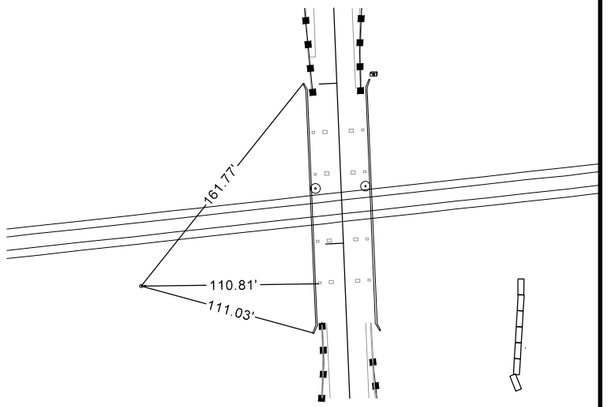
CP STA 846+36.12, 28.47 FT LT
CP 100, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=703206.207, E=2107505.596, ELEV. 763.43



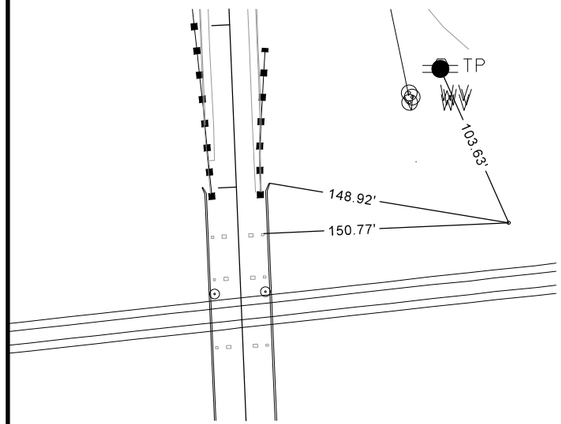
CP STA 854+30.14, 27.69 FT LT
CP 101, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=703999.594, E=2107473.736, ELEV. 786.630



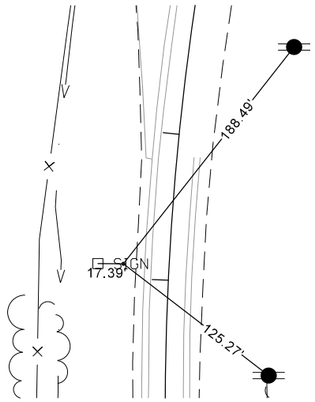
CP STA 856+78.46, 127.36 FT LT
CP 201, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=704243.606, E=2107363.943, ELEV. 758.070



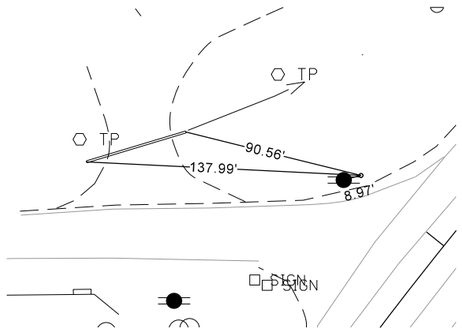
CP STA 857+71.20, 166.58 FT RT
CP 200, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=704348.351, E=2107653.822, ELEV. 763.240



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

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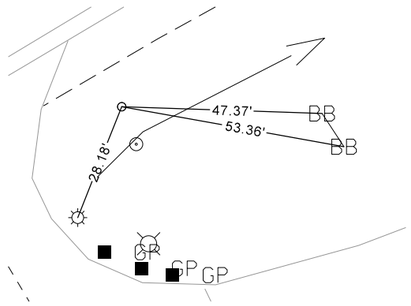
CP STA 894+61.29, 36.19 FT RT
CP 105, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=707479.442, E=2108711.388, ELEV. 757.700



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

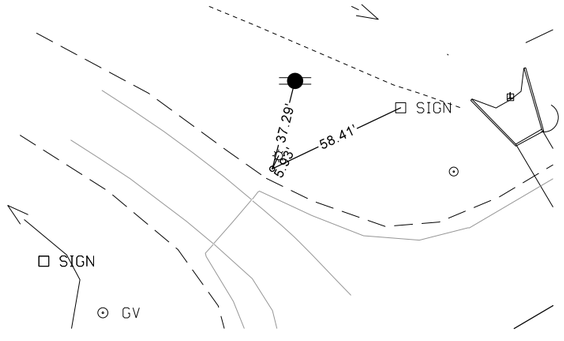
CP STA 948+82.87, 40.35 FT RT
CP 111, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=710225.327, E=2113386.176, ELEV. 800.680

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

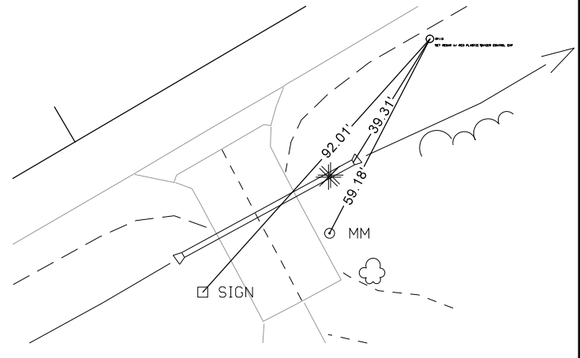
CP STA 958+91.52, 106.92 FT LT
CP 113, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=710863.774, E=2114180.813, ELEV. 781.940



CP STA 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

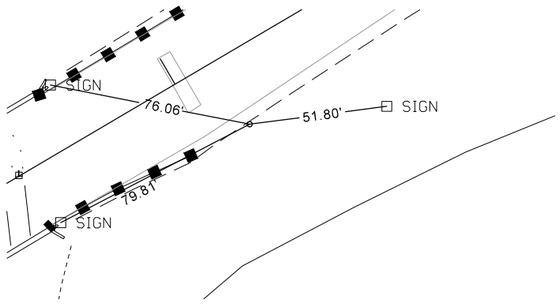
MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

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

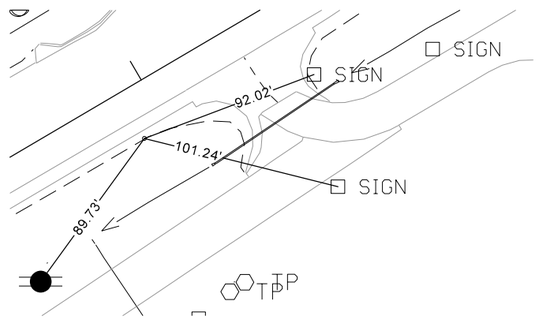


FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	G.3

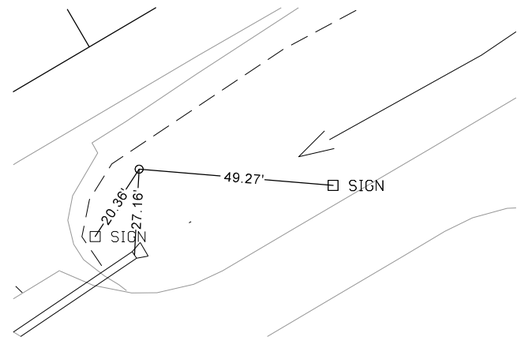
CP STA 981+16.48, 27.08 FT RT
CP 116, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=711876.636, E=2116166.395, ELEV. 778.680



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



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

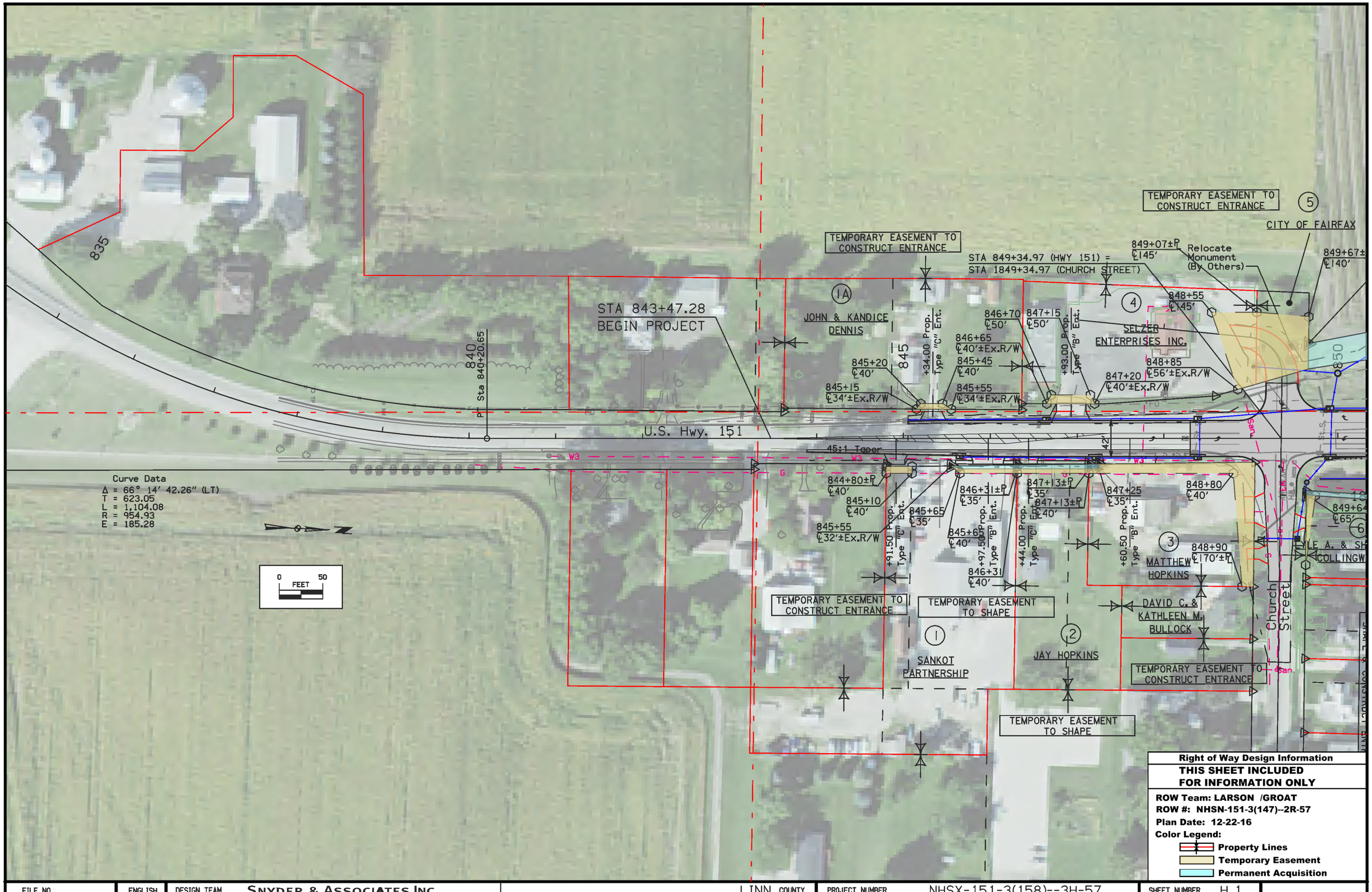
SUPERELEVATION DATA

See PV-300 Series

Road Identification	Circular Curve or Spiral Curve Name	Radius	Superelevation Data			Standard Road Plan	Section A-A	Section B-B	Section C-C	Section D-D	Section E-E	Section F-F	Case A	Case B	Case C	Case S	Case T	Case U	Remarks
			e	L	x														
		FT	%	FT	FT														
U.S. Hwy. 151	CUR10	1910	4.2	120	57	PV-301	868+88.88	869+45.88	870+02.88	870+65.88			870+29.88			870+60.17	870+60.17		
							892+33.65	891+76.65	891+19.65	890+56.65			890+92.65			890+62.36	890+62.36		
U.S. Hwy. 151	CUR10	1910	4.2	120	57														
							885+98.30	886+55.30	887+12.30	887+75.30									SB Rt. Turn Lane Transition

Linn ROW: NHSN-151-3(147)--2R-57 PIN 08-57-151-020
SCL of Fairfax to just N of W Jct US 30

		STATE		COUNTY		CITY			BORROW							
PARCEL NO.	OWNER NAME	FEE	EASE	FEE	EASE	FEE	EASE	EXCESS	FEE	T.E.	MITIGATION	OTHER	HOUSE	BUILDING(S)	A/C ONLY	TOTAL ACQ.
1	Sankot Partnership - Fee	280 SF														
1A	John Dennis - Fee															
2	Jay Hopkins - Fee	401 SF														
3	Matthew Hopkins - Fee	63 SF														
4	Selzer Enterprises - Fee															
5	City of Fairfax - Fee	.32 AC														
6	Lyle A. Collingwood - Fee	750 SF														
7	Christopher N. Sankot - Fee	115 SF														
7A	Bellon-Africa Family Farms, LC. - Fee	.56 AC														
8R	Union Pacific Railroad Company - Fee		1.06 AC													
9	Kathleen M. McNamara - Fee		1122 SF													
10	David T. McNamara - Fee		5452 SF													
12	Amy Jo Jordan - Fee															
13	Julie L. McMullen - Fee	3549 SF														
14	Kathleen M. McNamara - Fee	.39 AC														
	David T. McNamara - Fee															
15	David Olson - Fee	2933 SF														
16	Sobaski Real Estate, LLC. - Fee	2269 SF														
17	Thomas P. Wainwright - Fee	.35 AC														
18	John Helm - Fee	.31 AC														
19	Fairfax State Savings Bank - Fee	.26 AC														
20	Ronald C. Hilton - Fee															
20A	Matthew St. Germain Investment, LLC. - Fee	6508 SF														
21	Larry Schulte - Fee															
22	Carol A. Lacy - Fee															
23	Randall D. Rohrer - Fee															
24	Deanna R. Heintz - Fee															
24A	Casey's Marketing Company - Fee	9434 SF														
25	Verna Boland - Fee	.34 AC														
26	Jeffrey L. Vance - Fee	147 SF														
29 Parcels	"TOTALS	2.53 AC	1.06 AC	0 AC	0 AC	0 AC	0 AC		0 AC	0 AC	0 AC					0 AC
		26449 SF	6574 SF	0 SF	0 SF	0 SF	0 SF		0 SF							



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

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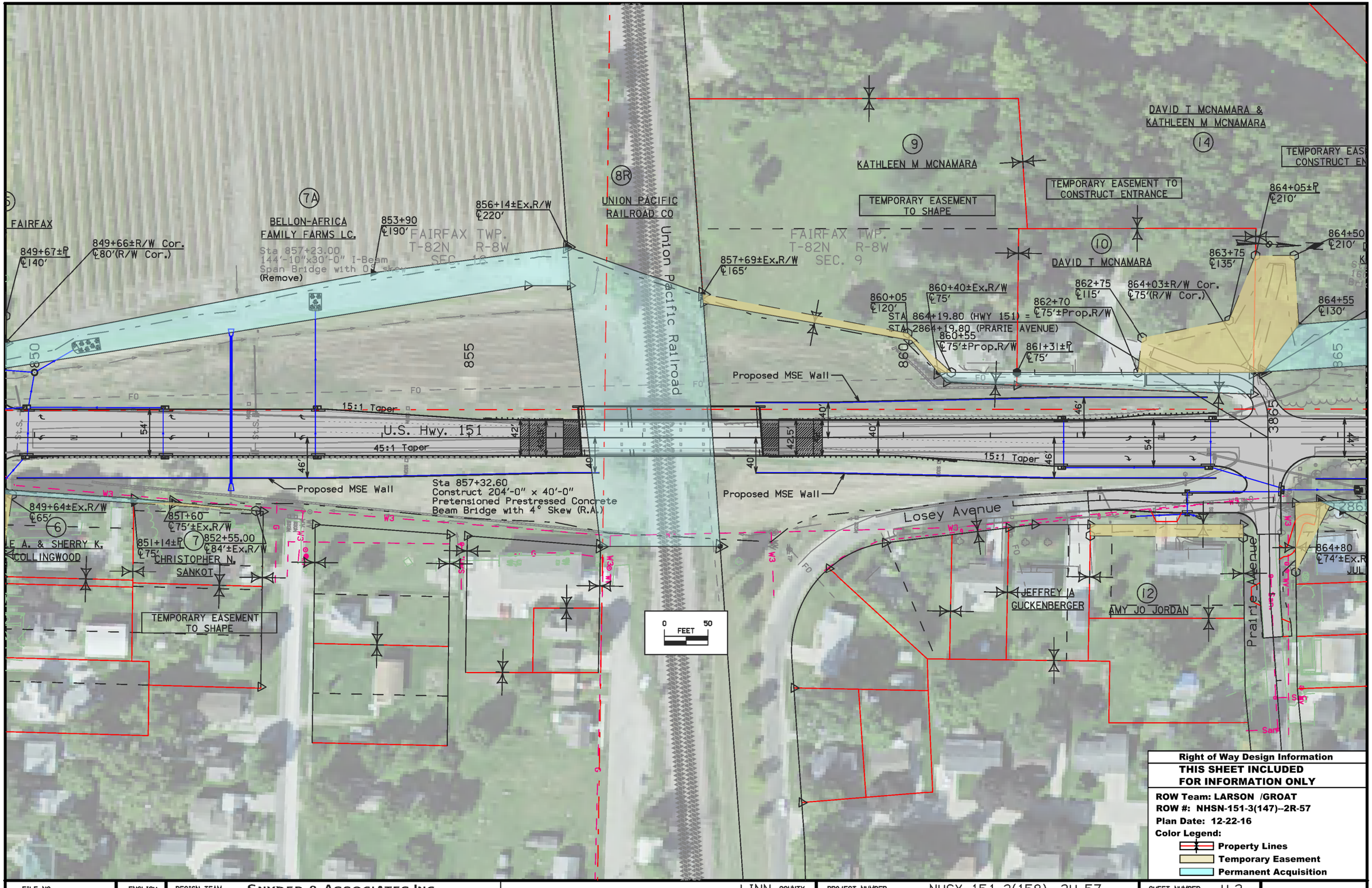

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	H.2

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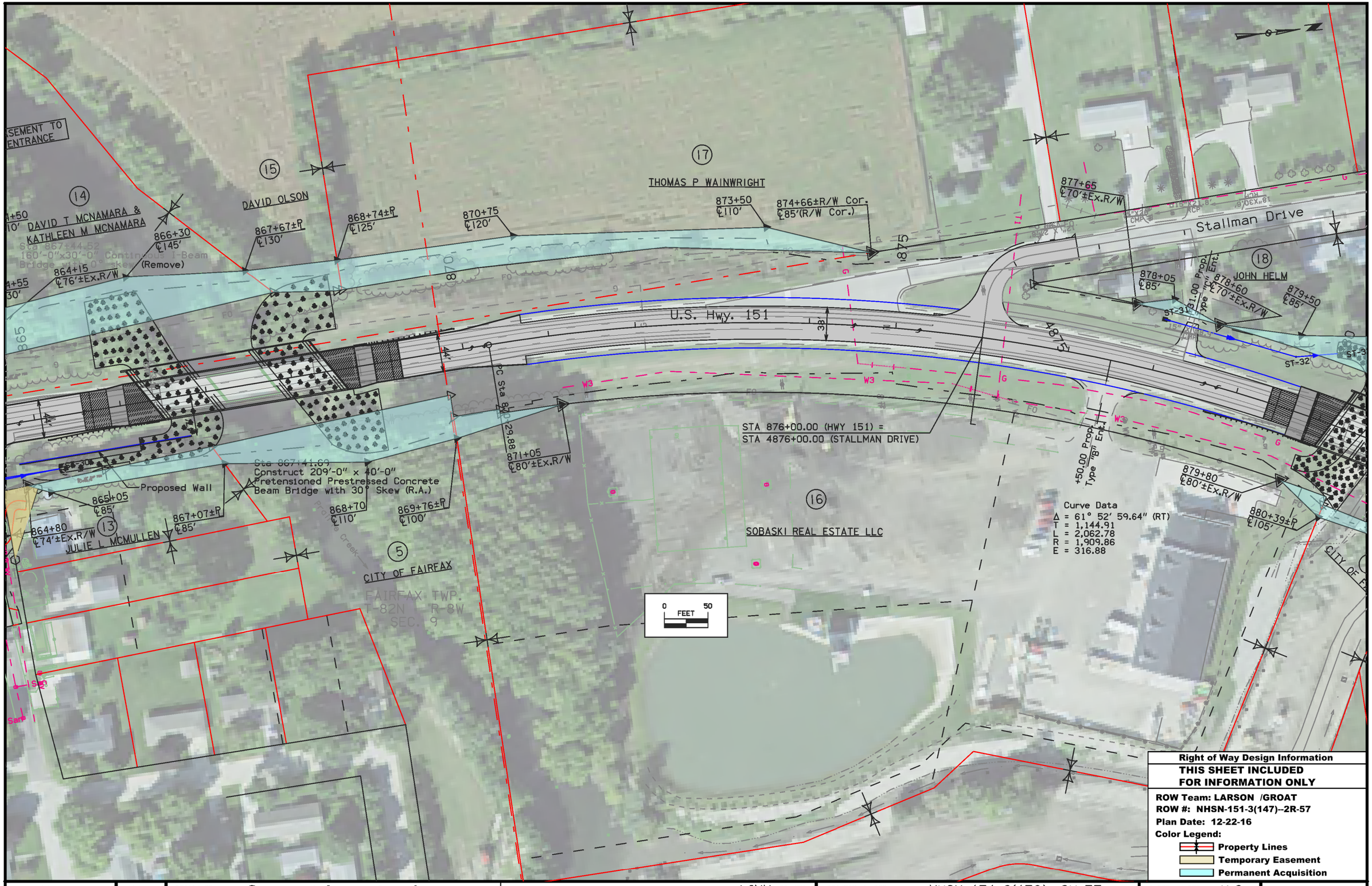

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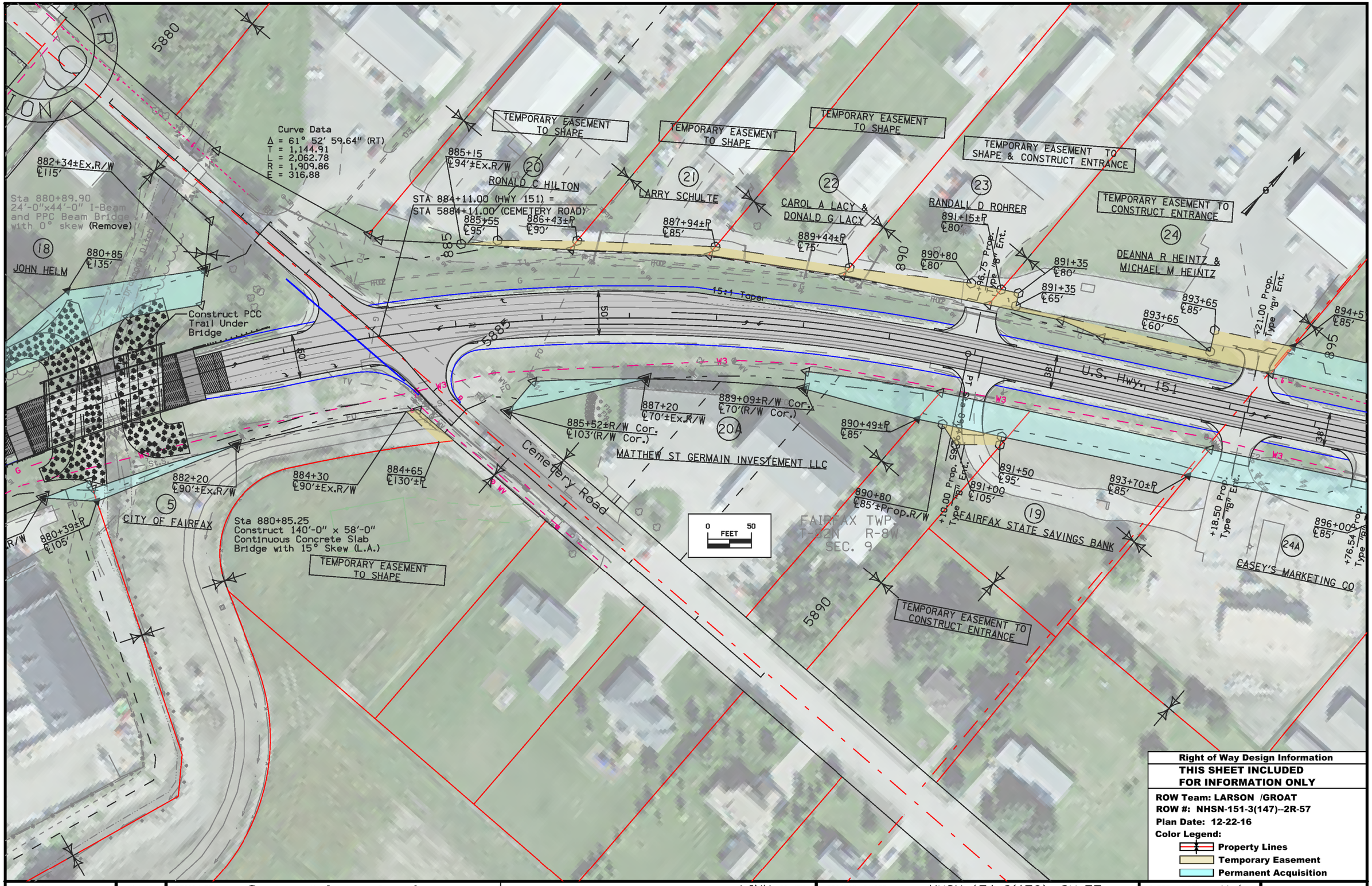

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	H.4

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

25

VERNA BOLAND &
WILLIAM E BOLAND JR

894+57±R
℄85'

STA 898+00.00
END PCC PAVING
BEGIN HMA PAVING

900+36±R/W Cor.
℄80'(R/W Cor.)

STA 903+15.44
STOP PROJECT

895
900
905
910

38'

U.S. Hwy. 151

W3

896+00 Prop. Type "B" Ent.
℄85'
+76.54

897+20
℄61'±Ex.R/W

896+86±P
℄70'

+64.90 Prop. Type "B" Ent.

898+10
℄75'

26

JEFFREY L VANCE &
MELODY R VANCE

24A

EY'S MARKETING CO

TEMPORARY EASEMENT TO
SHAPE & CONSTRUCT ENTRANCE

0 50
FEET

80th Street

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)--2R-57
Plan Date: 12-13-16
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

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

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Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)-- 2R-57
Plan Date: 12-23-16
Color Legend:
- Property Lines
- Temporary Easement
- Permanent Acquisition

Sta 857+23.00
144'-10"x30'-0" I-Beam
Span Bridge with 0° Skew

Existing Right Of Way

U.S. Hwy. 151

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

TEMPORARY EASEMENT TO SHAPE & CONSTRUCT ENTRANCE

6
LYLE A. & SHERRY K. COLLINGWOOD

1850

1850+00
℄40'±Prop. R/W

1850+00
℄40'±Ex.R/W

STA 1851+00.00
END CONSTRUCTION

Church Street

Curve Data
Δ = 84° 59' 40.43" (RT)
T = 38.48
L = 62.30
R = 42.00
E = 14.96

STA 1847+83.00
BEGIN CONSTRUCTION

90°43'02" 89° 56.38

+17.23 Prop. Type "B" Ent.

+68.00 Prop. Type "C" Ent.

+11.39 Exist. Ent. (W.A.C)

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

0 FEET 50

845

CHURCH STREET

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

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Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)--2R-57
Plan Date: 12-23-16
Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition

STA 2864+19.80 (PRAIRIE AVENUE)
= STA 864+19.80 (HWY 151)

Curve Data
Δ = 73° 09' 45.74" (RT)
T = 37.11
L = 63.85
R = 50.00
E = 12.27

+43.00 Prop. Type "C" Ent.

JULIE L. MCMULLEN

Protect Existing Well

TEMPORARY EASEMENT TO SHAPE & CONSTRUCT ENTRANCE

+51.90 Prop. Type "C" Ent.

2865+00±Prop.R/W
℄70'

+42.33 Prop. Type "C" Ent.

2865+35±Prop.R/W
℄30'

89°15'34.61"

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

Prairie Avenue

3864+65±Prop.R/W
℄40'

+00.00 Prop. Type "C" Ent.

TEMPORARY EASEMENT TO SHAPE & CONSTRUCT ENTRANCE

STA 2864+99.34 (PRAIRIE AVENUE)
= STA 3864+99.34 (LOSEY DRIVE)

AMY JO JORDAN

3862+86±P
℄40'

U.S. Hwy. 151

Losey Avenue

0 50 FEET

PRAIRIE AVENUE

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

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Linn ROW: NHSN-151-3(135)--2R-57 PIN 08-57-151-020
SCL of Fairfax to just N of W Jct US 30

		STATE		COUNTY		CITY			BORROW						
PARCEL NO.	OWNER NAME	FEE	EASE	FEE	EASE	FEE	EASE	EXCESS	FEE	T.E.	MITIGATION	OTHER	HOUSE	BUILDING(S)	A/C ONLY	TOTAL ACQ.
28	Hawks Ridge Homeowners Association - Fee	7285 SF														
29	Marcella Martinson Revocable Trust - Fee	.26 AC														
	Irvin I. Martinson Residuary Trust - Fee															
30	Sharon A. Wacha - Fee	2655 SF														
31	Richard Reid - Fee															
4 Parcels	"TOTALS	0.26 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC					
		9940 SF	0 SF	0 SF	0 SF	0 SF	0 SF	0 SF								

TEMPORARY EASEMENT TO SHAPE

TEMPORARY EASEMENT TO SHAPE

980+95 ℄245′

981+26±R ℄195′

980+40 ℄215′

FAIRFAX TWP.
T-82N R-8W
SEC. 2

Sta ---+---.--
36′-0″x44′-0″ I-Beam and PPC Beam Bridge with 30° skew (L.A.) (Remove)

28
HAWKS RIDGE HOMEOWNERS ASSOC.

980+25 ℄160′

981+14±R ℄125′

979+45 ℄90′±Ex.R/W

981+90 ℄90′±Ex.R/W

+85.00 Prop. Type "C" Ent.

30
SHARON A WACHA & STANLEY R WACHA

984+07±Ex.R/W ℄90′

984+90 ℄90′

STA 984+83.16
END PROJECT

975

980

985

STA 974+70.00
RESUME PROJECT

U.S. Hwy. 151

977+75 ℄80′

978+90 ℄80′

978+95 ℄100′

981+55 ℄70′±Ex.R/W

Sta 980+18.00
Construct 55′-0″ x 13′-9 1/4″ x 168′-0″ Conspan Precast Arch with 30° Skew (L.A.)

+75.00 Prop. Type "C" Ent.

29
IRVIN I MARTINSON RESIDUARY TRUST & MARCELLA MARTINSON REVOCABLE TRUST

979+60 ℄170′

980+20 ℄150′

980+40 ℄170′

31
RICHARD & ROBERTA REID

0 FEET 50

TEMPORARY EASEMENT TO SHAPE

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(135)--2R-57
Plan Date: 12-23-16
Color Legend:
- Property Lines
- Temporary Easement
- Permanent Acquisition

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

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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.
7. Provide access to emergency vehicles at all times during construciton.

108-26A
08-01-08

STAGING NOTES

U.S. Highay 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. Highway 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

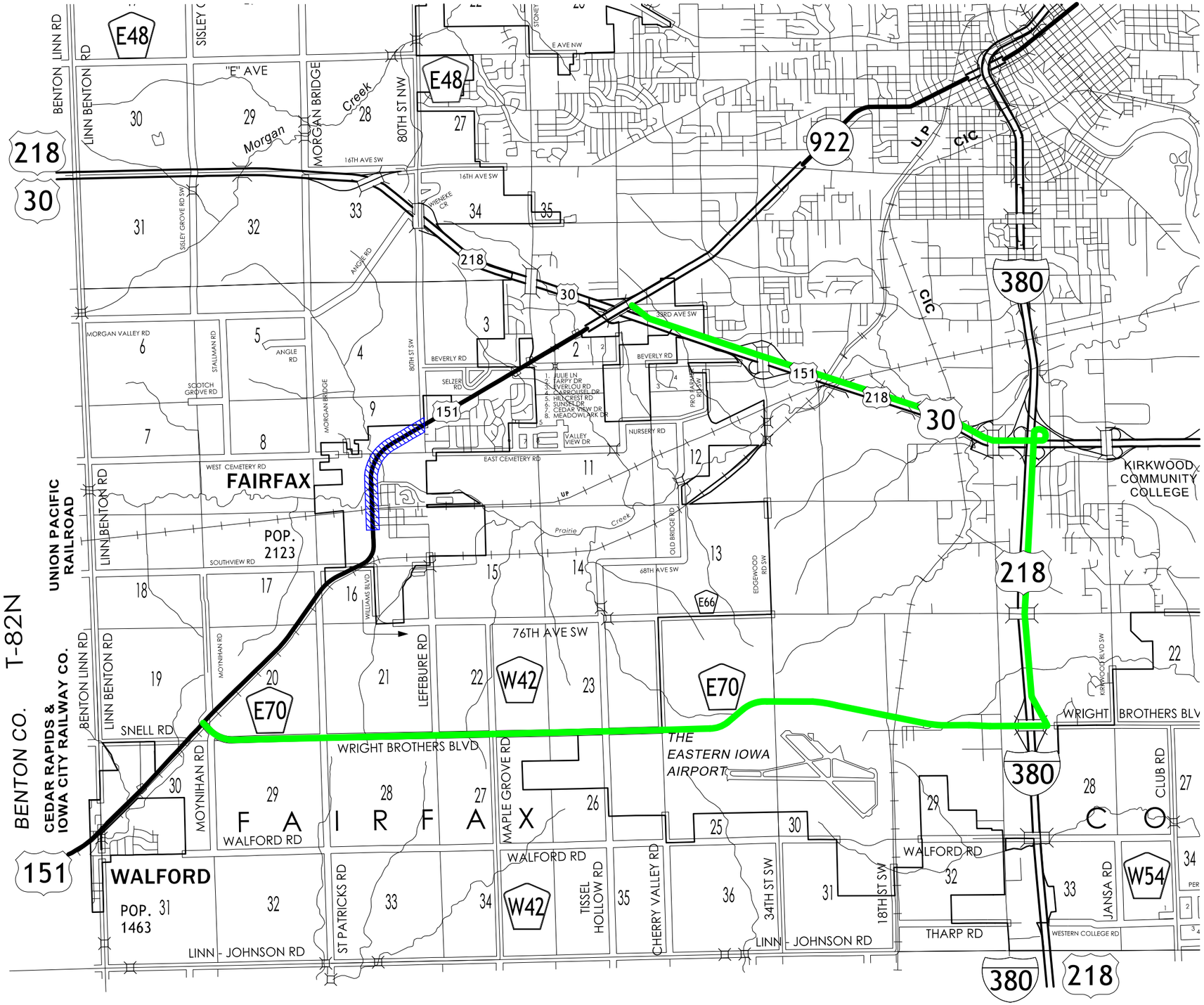
PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

●	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	1	Lane Identification

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

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES J)



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

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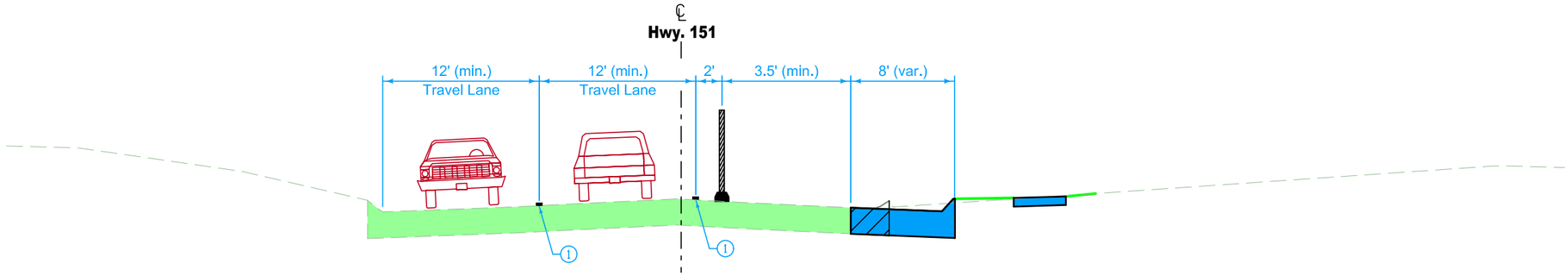
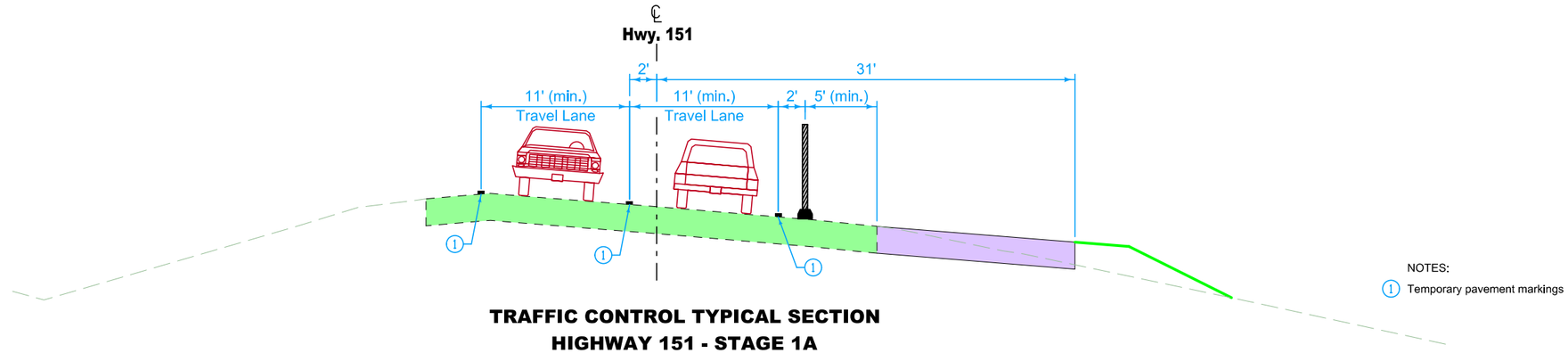
TYPICAL 1
HWY 151



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 1A
Sta. 843+88 to 848+31
Shown in Direction of Traffic

NOTES:
(1) Temporary pavement markings

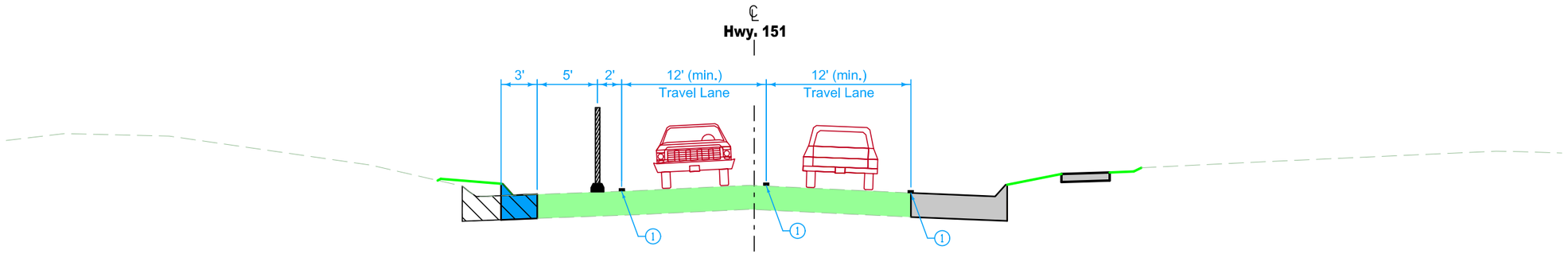
TYPICAL 2
HWY 151



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 1A
Sta. 868+70 to 900+50
Shown in Direction of Traffic

NOTES:
(1) Temporary pavement markings

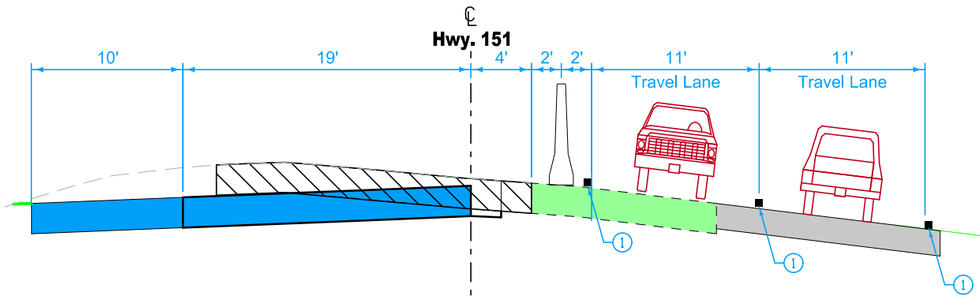
TYPICAL 3
HWY 151



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 1B
Sta. 845+05 to 848+30
Shown in Direction of Traffic

NOTES:
(1) Temporary pavement markings

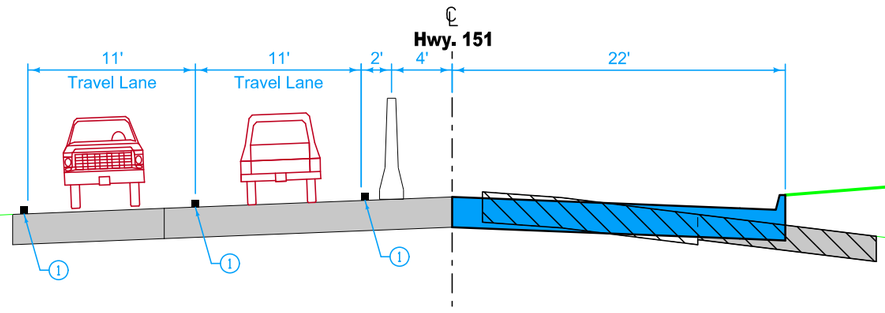
TYPICAL 4
HWY 151



NOTES:
1. Temporary pavement markings

TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2
Sta. 868+68 to 898+00
Shown in Direction of Traffic

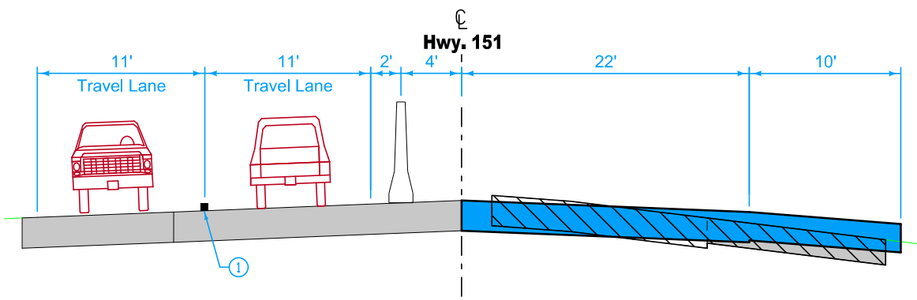
TYPICAL 5
HWY 151



NOTES:
1. Temporary pavement markings

TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3
Sta. 847+03 to 849+16
863+92 to 898+00
Shown in Direction of Traffic

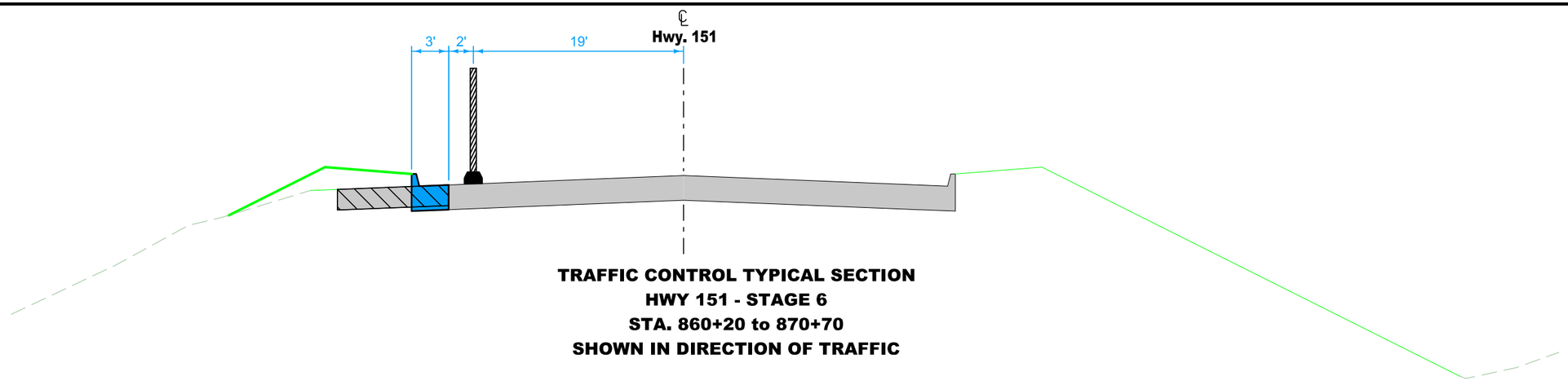
TYPICAL 6
HWY 151



NOTES:
1. Temporary pavement markings

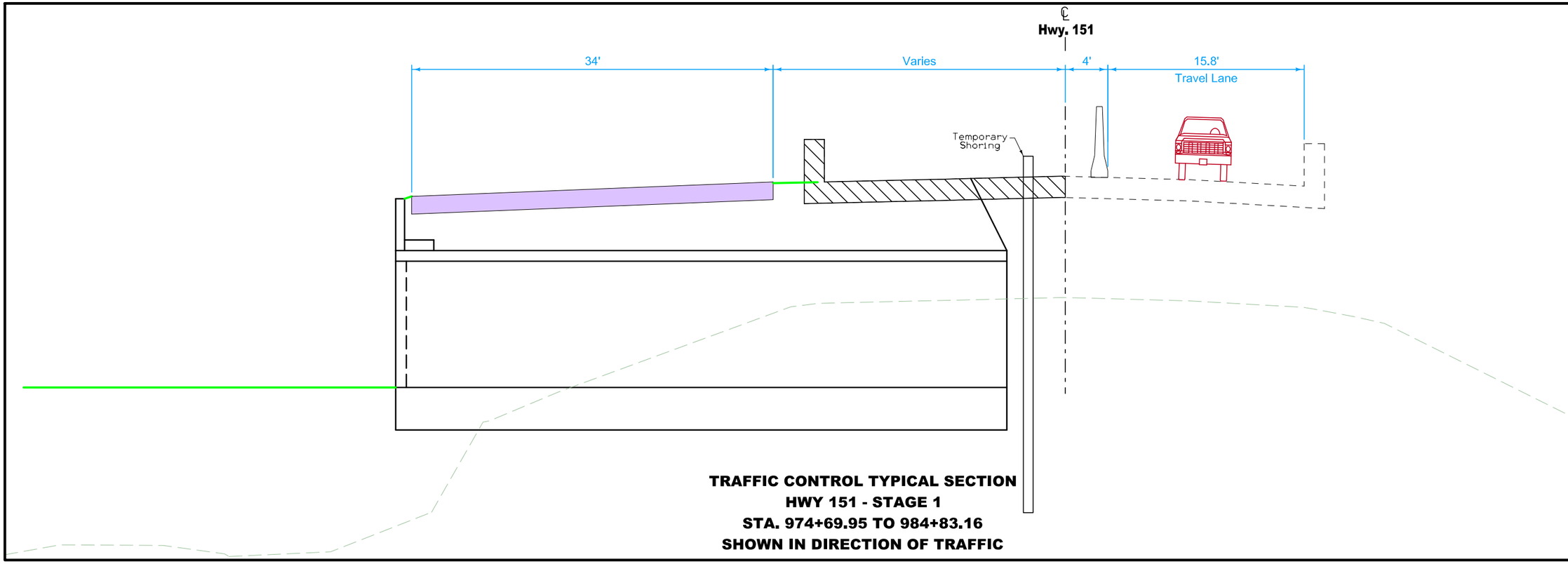
TRAFFIC CONTROL TYPICAL SECTION
HWY 151 - STAGE 4
STA. 898+00 to 902+58
SHOWN IN DIRECTION OF TRAFFIC

TYPICAL 7
HWY 151



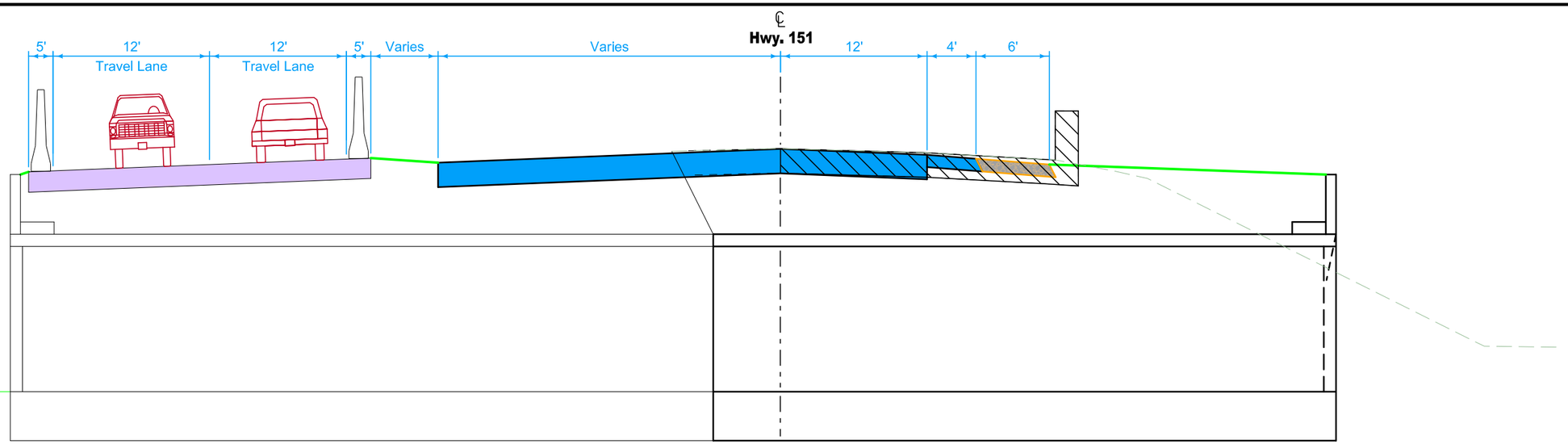
TRAFFIC CONTROL TYPICAL SECTION
HWY 151 - STAGE 6
STA. 860+20 to 870+70
SHOWN IN DIRECTION OF TRAFFIC

TYPICAL 9
HWY 151



TRAFFIC CONTROL TYPICAL SECTION
HWY 151 - STAGE 1
STA. 974+69.95 TO 984+83.16
SHOWN IN DIRECTION OF TRAFFIC

TYPICAL 10
HWY 151



TRAFFIC CONTROL TYPICAL SECTION
HWY 151 - STAGE 2
STA. 974+69.95 TO 984+83.16
SHOWN IN DIRECTION OF TRAFFIC

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

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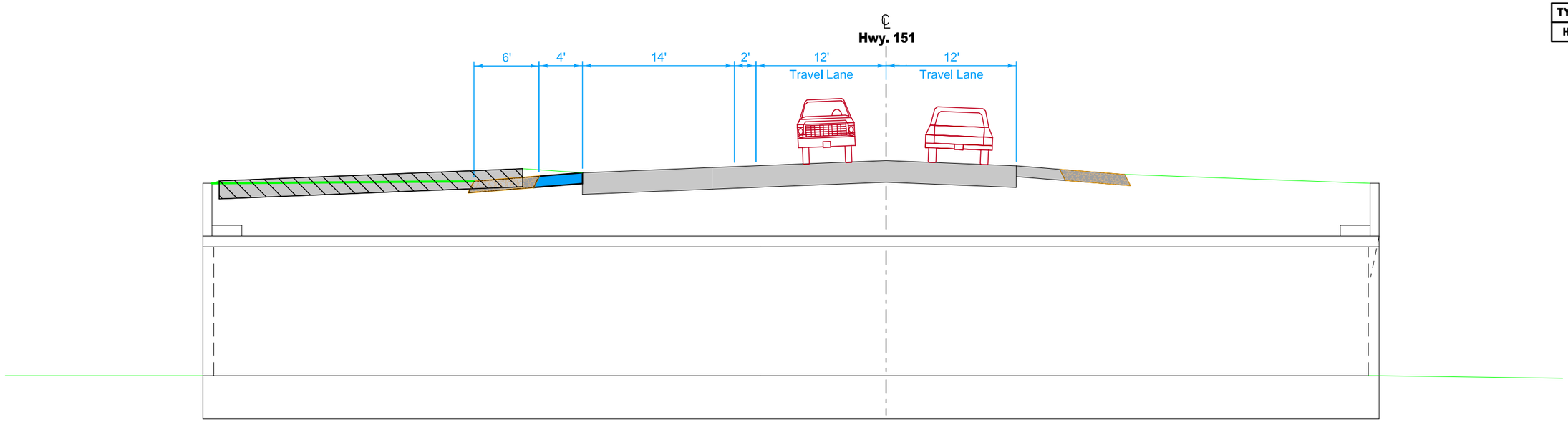
TYPICAL11
HWY 151



TRAFFIC CONTROL TYPICAL SECTION
HWY 151 - STAGE 3
STA. 974+69.95 TO 984+83.16
SHOWN IN DIRECTION OF TRAFFIC

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

Existing Right of Way

845

850

855

Edge Line (White)

Double Yellow Centerline

US HWY 151

Safety Closure

50'

CHURCH STREET

UNION PACIFIC RAILROAD

0 FEET 50

STAGE 1A

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

Existing Right of Way

860

865

870

Double Yellow Centerline

U.S. HWY. 151

Safety Closure

LOSEY AVENUE

PRAIRIE AVENUE

Edge Line (White)

STA 868+67.94
BEGIN TEMPORARY PAVEMENT

Prairie Creek

0 FEET 50

STAGE 1A

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

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

STALLMAN DRIVE

U.S. HWY. 151

875

880

885

Double Yellow Centerline

Edge Line (White)

Existing Right of Way

CEMETERY ROAD

0 FEET 50

STAGE 1A

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

890

895

900

Existing Right of Way

Double Yellow Centerline

Edge Line (White)

U.S. HWY. 151

STA 900+50.09
END TEMPORARY PAVEMENT

0 FEET 50

STAGE 1A

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

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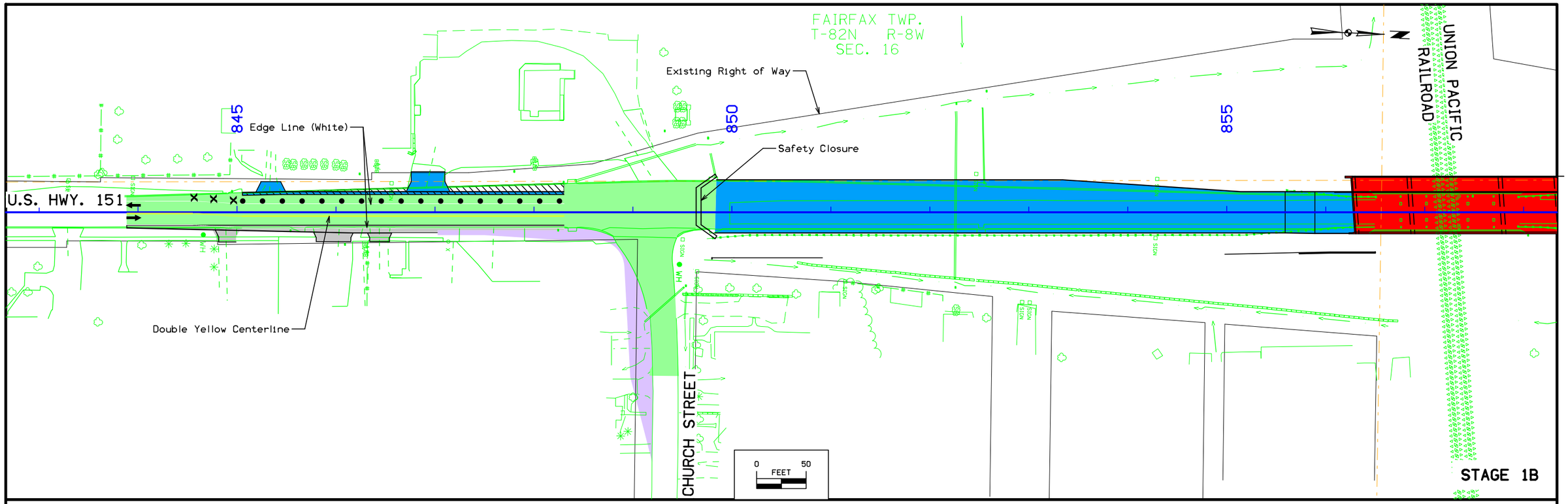

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.11

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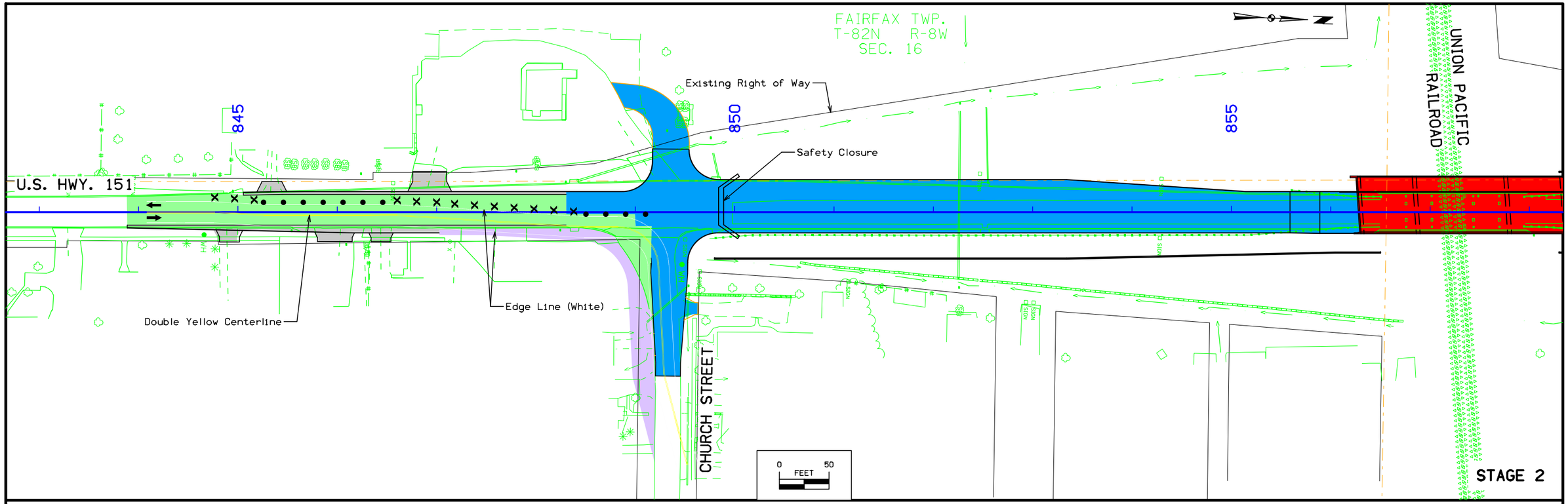

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.12

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

STALLMAN DRIVE

Existing Right of Way

880

U.S. HWY. 151

885

875

130' TAPER

130' TAPER

Double Yellow Centerline

Edge Line (White)

CEMETERY ROAD

0 FEET 50

STAGE 2

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

890

895

900

Existing Right of Way

U.S. HWY. 151

Edge Line (White)

Double Yellow Centerline

0 FEET 50

STAGE 2

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

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

Existing Right of Way

Double Yellow Centerline

Edge Line (White)

845

850

855

U.S. HWY. 151

UNION PACIFIC RAILROAD

CHURCH STREET

0 FEET 50

STAGE 3

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

339.71'

253.51'

Existing Right of Way

Double Yellow Centerline

Edge Line (White)

860

865

870

131.76'

109.87'

U.S. HWY. 151

LOSEY AVENUE

PRAIRIE AVENUE

Prairie Creek

0 FEET 50

STAGE 3

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

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

STALLMAN DRIVE

U.S. HWY. 151

875

880

885

224.43'

224.28'

Edge Line (White)

Double Yellow Centerline

Existing Right of Way

CEMETERY ROAD

0 FEET 50

STAGE 3

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

890

895

900

Existing Right of Way

Edge Line (White)

Double Yellow Centerline

U.S. HWY. 151

0 FEET 50

STAGE 3

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

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

U.A.C Pavement Markings

Existing Right of Way

845

850

855

U.S. HWY. 151

UNION PACIFIC RAILROAD

CHURCH STREET

0 FEET 50

STAGE 4

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

Existing Right of Way

U.A.C Pavement Markings

860

865

870

U.S. HWY. 151

LOSEY AVENUE

PRAIRIE AVENUE

Prairie Creek

0 FEET 50

STAGE 4

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

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

STALLMAN DRIVE

Existing Right of Way

U.S. HWY. 151

875

880

885

U.A.C Pavement Markings

CEMETERY ROAD

0 FEET 50

STAGE 4

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

890

895

900

Existing Right of Way

U.S. HWY. 151

U.A.C Pavement Markings

0 FEET 50

STAGE 4

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

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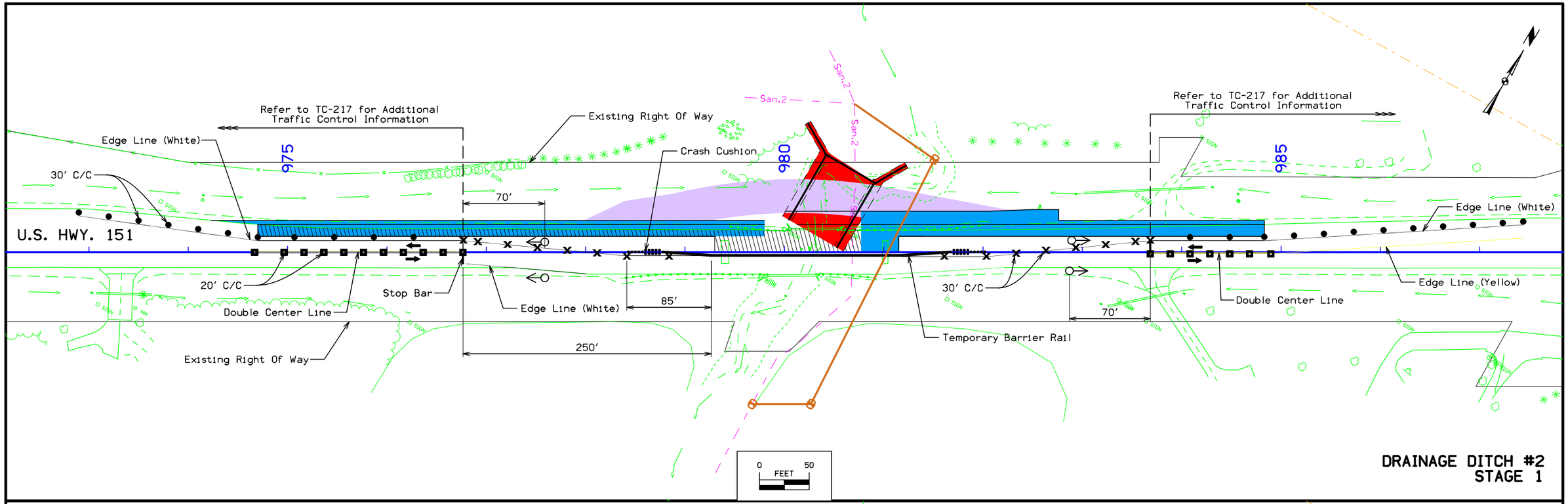
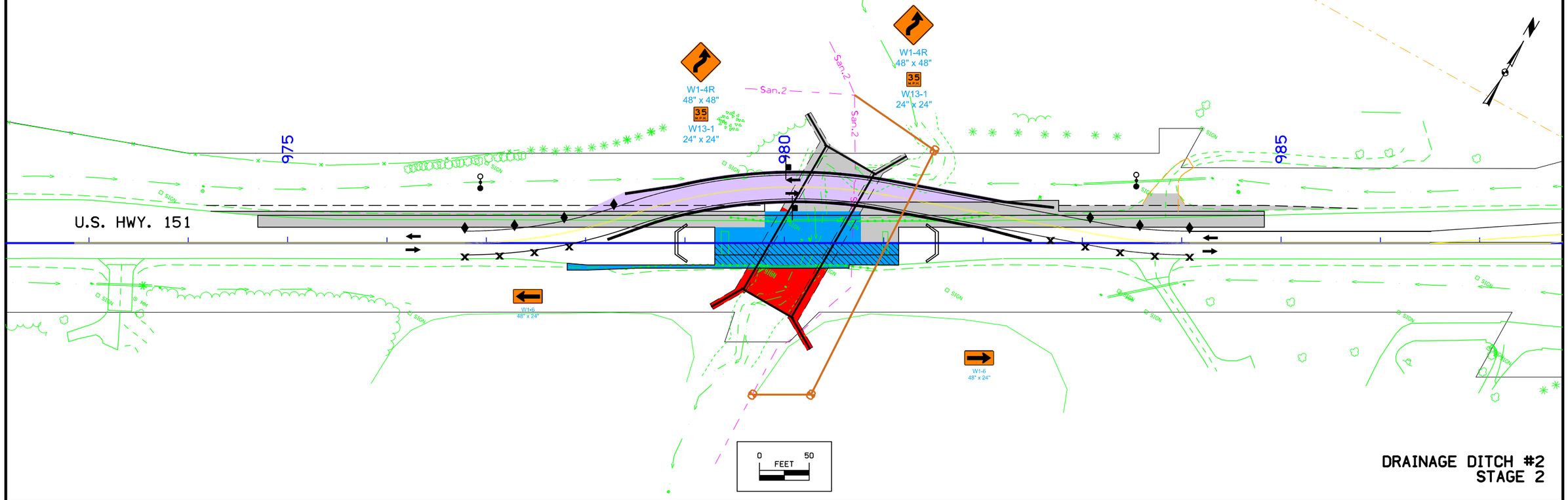


DRAINAGE DITCH #2
STAGE 1



DRAINAGE DITCH #2
STAGE 2

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

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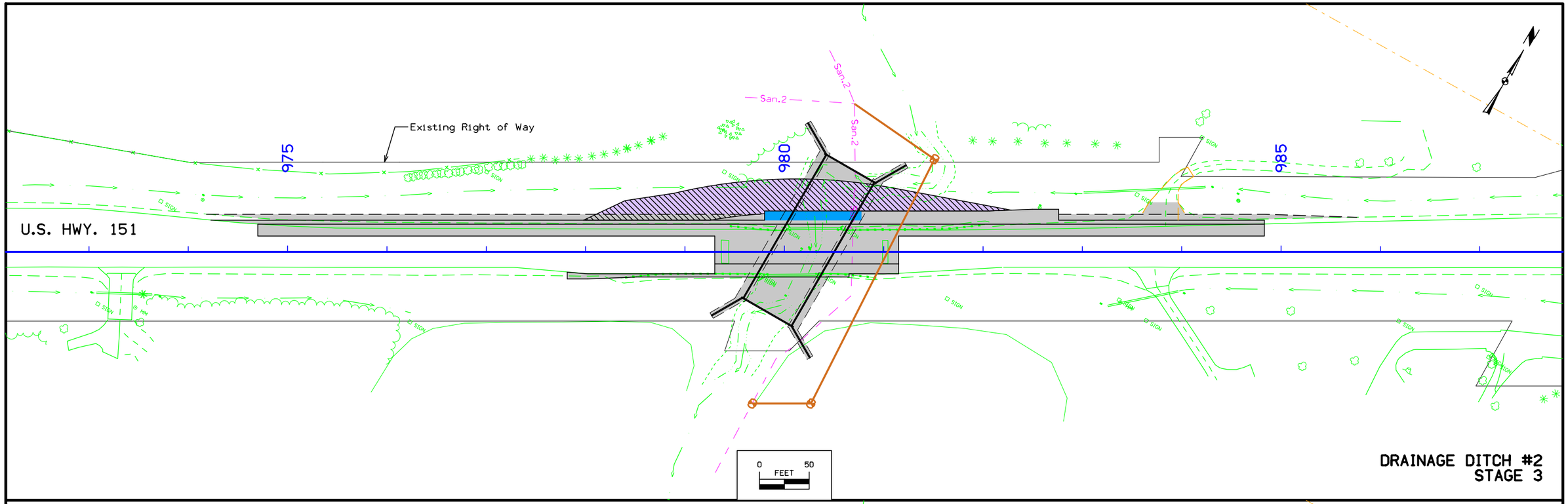
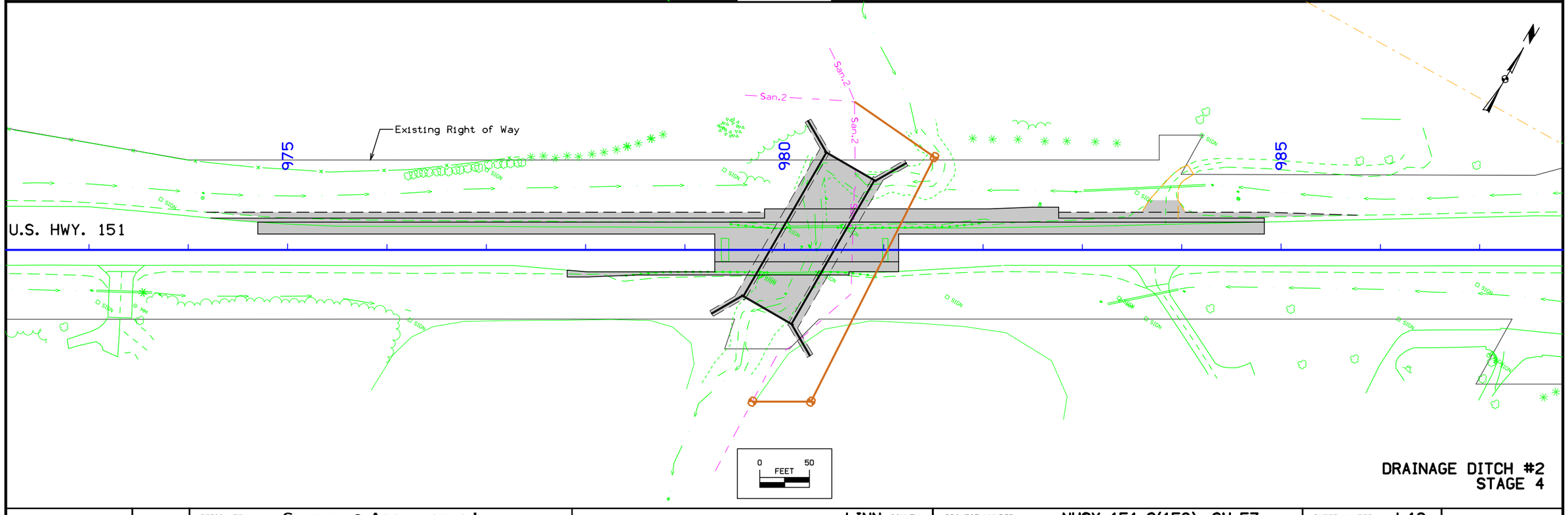


DRAINAGE DITCH #2
STAGE 3



DRAINAGE DITCH #2
STAGE 4

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

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STORM SEWER

(1) Diameter or equivalent diameter
* Bid Item
** For SW-545

INTAKES AND UTILITY ACCESSES

No.	Location Station and Offset	*Type or Standard Road Plan	Form Grade Elev.	Bottom Well Elev.	Extension Length** FT	Notes
ST-01	841+87.00, 16.00 LT					Existing Intake
ST-02	845+01.00, 20.00 LT					Existing Intake
ST-03	845+65.00, 19.84 RT	SW-509	764.25	760.00		
ST-04	846+64.33, 21.00 LT	SW-509	761.61	758.40		
ST-05	847+21.58, 21.00 RT	SW-509	760.54	755.14		
ST-06	848+39.00, 21.00 RT	SW-509	759.85	754.60		
ST-07	848+39.00, 21.00 LT	SW-510	760.12	754.30		
ST-08	1850+50.00, 25.00 RT	DR-201 (18" Apron)	758.51	755.82		
ST-09	1850+50.00, 20.00 LT	SW-513	758.17	754.80		
ST-10	1849+85.00, 30.00 LT	SW-401 (48")	757.82	745.24		
ST-11	849+89.51, 21.00 LT	SW-509	763.11	753.92		
ST-12	851+50.00, 21.00 RT	SW-509	770.62	766.10		
ST-13	851+50.00, 33.00 LT	SW-509	770.31	764.69		
ST-14	849+90.94, 33.00 LT	SW-510	762.84	753.50		
ST-15	1848+30.00, 30.00 RT	SW-512 (30"	758.25	754.26		
ST-16	850+00.00, 75.00 LT	SW-401 (72")	758.25	752.49		
ST-17	850+50.00, 104.06 RT	DR-201 (30")	752.50			
ST-18	853+25.60, 21.00 RT	SW-509	781.16	776.95		
ST-19	853+25.60, 33.00 LT	SW-509	780.85	762.84		
ST-20	853+23.50, 152 LT	DR-201 (15")	751.79	751.85		
ST-21	861+82.03, 21.00 LT	SW-509	778.61	773.61		
ST-22	861+82.03, 33.00 RT	SW-509	778.30	772.70		
ST-23	863+56.02, 21.00 LT	SW-509	769.22	764.35		
ST-24	863+51.70, 33.00 RT	SW-509	769.10	758.60		
ST-25	3863+35.00, 18.50 RT	DR-201 (15")	759.65	759.65		
ST-26	3864+18.00, 17.50 RT	DR-201 (15")	759.84	759.84		
ST-27	3864+01.00, 11.50 RT	SW-509	762.92	758.00		
ST-28	3864+01.00, 11.50 LT	SW-509	762.92	757.67		
ST-29	2864+80.00, 14.00 LT	SW-509	750.66			
ST-30	865+25.00, 60.00 LT	DR-201 (18")	751.20	750.66		
ST-31	878+00.00, 60.00 LT	DR-201 (15")	756.3	756.3		
ST-32	879+52.00, 60.00 LT	DR-141	754.58	754.58		
ST-33	879+99.50, 81.36 LT	DR-201 (15")	754.04	754.04		

PIPES

Design Length, Slope, and Flowlines are calculated from inside wall to inside wall along CL of pipe. An additional 2 ft length is added to each side of the Design Length to account for estimated length to center of structures.

Line Number	Intake/ Utility Access No. From	To	Class 'D'	Pipe Size (1) IN	Bid* Length FT	Design Length FT	Slope %	Connected Pipe Joint (DR-121) Type	Flow Lines: Inlet Elevation	Outlet Elevation	Other Elevation	Pipe Profile Sheet No.	Notes
P-01	ST-01	ST-02	2000	15					771.69	762.18			Existing Pipe
P-02	ST-02	ST-04	2000	15	159	155.4	1.9		761.98	759.03		M.3	
P-03	ST-03	ST-05	2000	15	158	148.6	2.25		760.50	757.16		M.3	
P-04	ST-04	ST-07	2000	15	175	166.7	2.40		758.90	754.90		M.3	
P-05	ST-05	ST-06	2000	30	118	109.4	0.40		755.64	755.20		M.3	
P-06	ST-06	ST-07	2000	30	46	42.0	0.50		755.10	754.89		M.3	
P-07	ST-07	ST-14	2000	30	152	144.4	0.48		754.80	754.10		M.3	
P-08	ST-08	ST-09	2000	18	46	42.0	1.00		755.72	755.30	755.78	M.5	Apron Inlet
P-09	ST-09	ST-10	2000	24	67	62.8	0.48		755.20	754.90		M.5	
P-10	ST-10	ST-11	2000	24	37	33.0	0.91		754.80	754.50		M.5	
P-11	ST-11	ST-14	2000	24	58	54.0	0.74		754.40	754.00		M.5	
P-12	ST-12	ST-13	2000	15	57	54.0	1.50		766.10	765.29		M.4	
P-13	ST-13	ST-14	2000	15	159	151.1	6.51		765.19	755.35		M.4	
P-14	ST-14	ST-16	3000	30	41	35.6	0.98		753.50	753.15		M.5	
P-15	ST-15	ST-16	2000	15	98	93.1	1.20		754.76	753.64		M.4	
P-16	ST-16	ST-17	3000	30	52	48.7	1.00		753.05	752.56	752.50	M.5	Apron Outlet
P-18	ST-18	ST-19	2000	15	57	54.0	1.50		776.95	776.14		M.4	
P-19	ST-19	ST-20	2000	15	114	109.9	Var.		762.84	751.85	751.79	M.4	Let Down Pipe
P-21	ST-21	ST-22	2000	15	57	54.0	1.50		774.11	773.30		M.6	
P-22	ST-22	ST-24	2000	15	170	161.7	5.66		773.20	764.05		M.6	
P-23	ST-23	ST-24	2000	15	57	54.0	1.50		764.85	764.04		M.6	
P-24	ST-24	ST-29	2000	15	88	82.2	4.38		759.60	756.00		M.6	
P-25	ST-25	ST-27	2000	15	66	61.5	1.71		759.65	758.60	759.75	M.6	Apron Inlet
P-26	ST-26	ST-27	2000	15	17	12.4	10.00		759.83	758.60	760.44	M.6	Apron Inlet
P-27	ST-27	ST-28	2000	15	26	23.0	1.00		758.50	758.27		M.6	
P-28	ST-28	ST-29	2000	15	109	103.6	2.09		758.17	756.00		M.6	
P-29	ST-29	ST-30	2000	18	86	81.4	2.00		752.29	750.66		M.6	
P-30	ST-31	ST-32	2000	15	150.7	150.7	0.68		756.3	754.58		M.7	
P-31	ST-32	ST-33	2000	15	47.6	47.6	6.98		754.58	754.07		M.7	

SURVEY SYMBOLS

- BM Bench Mark
- PPA Power Pole Co. 1
- PLG Location of General Photo
- IN Storm Sewer Intake
- SI Sign
- LC Lot Corner
- BB Billboard
- WV Water Valve
- WHD Water Hydrant
- TPD Telephone Pedestal
- TDC Tree Deciduous
- TEV Evergeen Tree
- SHR Shrub
- PR Electic Riser Pole
- SL Speed Limit Sign
- MH Utility Access (Manhole)
- MIS Miscellaneous
- MM Mile Marker Post
- WEL Well
- LUM Luminaire
- GP Guard Post (Less Than 4 Posts)
- GV Gas Valve
- EB Electrical Box
- UB Utility Box
- FLG Flag Poles
- FHD Fire Hydrants
- STP Stump
- OUT Tile Outlet
- INB Storm Sewer Beehive Intake
- S Soil Sampling Site (Wetlands)
- TVP TV Pedestal
- SP Stream Profile
- TW Top of Water
- BLD Building or Foundation
- LIN Miscellaneous Line
- ST Spiral Point
- RET Retaining Walls
- BRG Bridge
- TLNR Tree Line Right
- TLNL Tree Line Left
- CON Concrete or A/C Slab
- CUL Culvert
- FCL Chain Link and Security Fence
- GDL Guard Rail Steel
- BL Topo Breakline
- FWD Wood Fence
- D Centerline Draw or Stream (Down)
- DU Centerline Draw or Stream (Up)
- FW Wire Fence
- PIP Pipe Culvert
- RRR Railroad Rail
- CU Back of Curb
- ENU Edge Unpaved Entrance & Parking
- ENP Edge Paved Entrance & Park Lot
- EP Edge of Paved Roads (ML or SR)
- GU Gutter In Front of Curb
- SNP Unpaved Shoulder
- BNK Stream Bank
- EG Edge of Gravel Road
- EW Edge of Water
- ENT Centerline BL of Entrance
- SH Paved Shoulder
- RIP Rip-Rap
- TRL Trail
- SWK Sidewalk
- TV Satelite TV Dish
- TR Telephone Riser Pole
- TSB Telephone Switch Box
- UV Underground Utility Vault
- VS Channel Cross Section
- BLS Bridge Low Steel
- G(C) - GL1C Gas Line Co. 1 - Quality C
- G - GL1D Gas Line Co. 1 - Quality D
- Default_Chain Default Chain Feature
- W3 - WL3D Water Line Co. 3 - Quality D
- San. - SA1D Sanitary Sewer Co. 1- Quality D
- T(C) - TL1C Telephone Line Co. 1 - Quality C
- St.S.(C) - ST1C Storm Sewer Co. 1 - Quality C
- ST Spiral Point
- San.(C) - SA1C Sanitary Sewer Co. 1- Quality C
- San.2 - SA2D Sanitary Sewer Co. 2 - Quality D

UTILITY LEGEND

- PPA Alliant Energy
- TPD Telephone Pedestal
- WV Water Valve
- WH WHD Water Hydrant
- PR Electic Riser Pole
- GV Gas Valve
- EB Electrical Box
- UB Utility Box
- FHD Fire Hydrants
- TVP TV Pedestal
- G - GLA MidAmerican Energy
- E2 - ELB Linn County Rural Electric Cooperative
- FO - FOA South Slope Phone Internet Television
- San.(C) SA1C City of Fairfax
- San. - SA1D City of Fairfax
- San.2 - SA2D City of Cedar Rapids
- T1 - TLA South Slope Phone Internet Television
- T2 - TLB Centurylink
- TV - TVA Underground TV Cable Co. 1
- W - Water Line City of Cedar
- W2 - Water Line City of Cedar Rapids
- W3 - Water Line City of Fairfax

PLAN VIEW COLOR LEGEND OF STORM SEWER SHEETS

LINEWORK	Design Color No.	
Gray, Dark	(112)	Existing Topographic Features, Utilities, and Labels
Black	(17)	Proposed Storm Sewer Details, Alignment, Stationing, Tic Marks, and Alignment Annotation
SHADING	Design Color No.	
Gray, Light	(48)	Proposed Pavement Shading

PROFILE VIEW COLOR LEGEND OF STORM SEWER SHEETS

LINEWORK	Design Color No.	
Gray, Dark	(112)	Existing Ground Line Profile and Existing Utilities Information
Black	(17)	Proposed Pipes and Intakes

PLAN VIEW LINE STYLE LEGEND OF STORM SEWER SHEETS

- Plug and Abandon Existing Pipe or Structure
- Removal of Existing Pipe or Structure
- Previously Constructed Pipe or Structure
- Direction of Pipe Flow

PROFILE VIEW LINE STYLE LEGEND OF STORM SEWER SHEETS

- Existing Ground
- Proposed Ground
- Previously Constructed Pipe or Structure
- Proposed Pipe or Structure

- Reference Point
- Survey Line
- Station
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Clearing & Grubbing Area
- Pavement Removal

RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Borrow
- Easement (Temporary)
- Easement
- Excess
- A/C Access Control

STORM SEWER LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES M)

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

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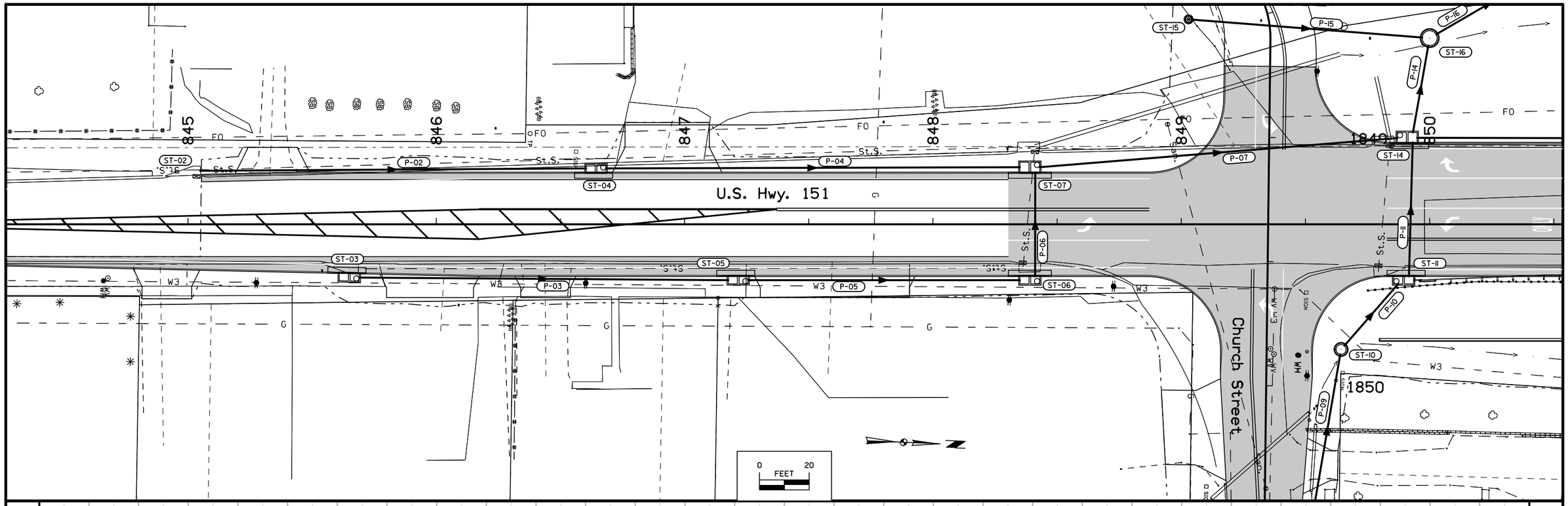

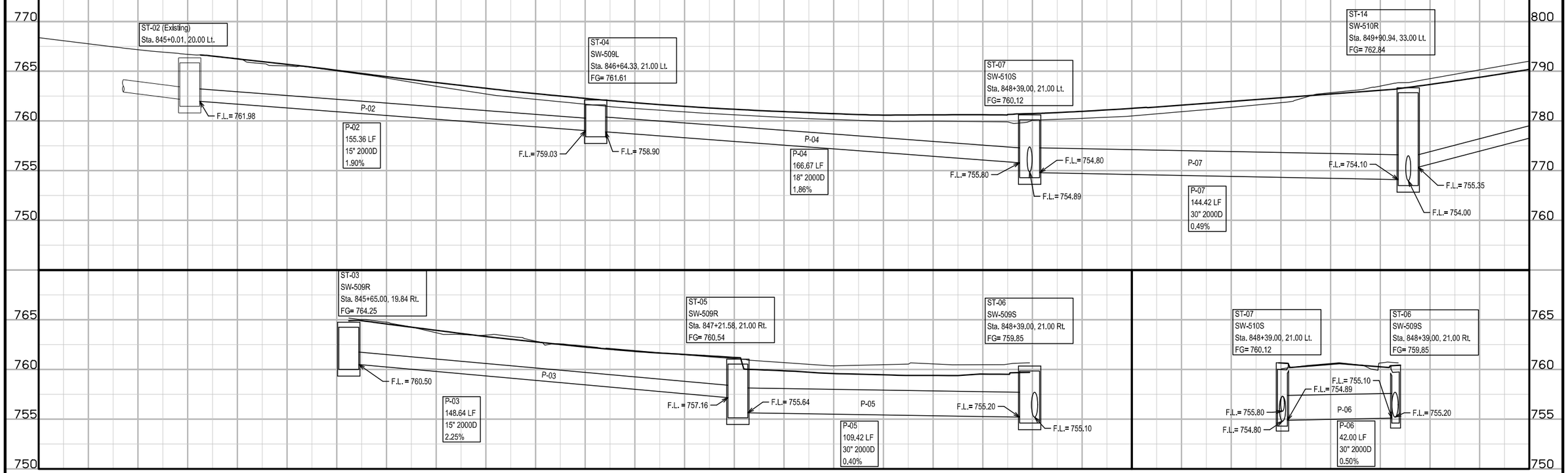

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	M.3

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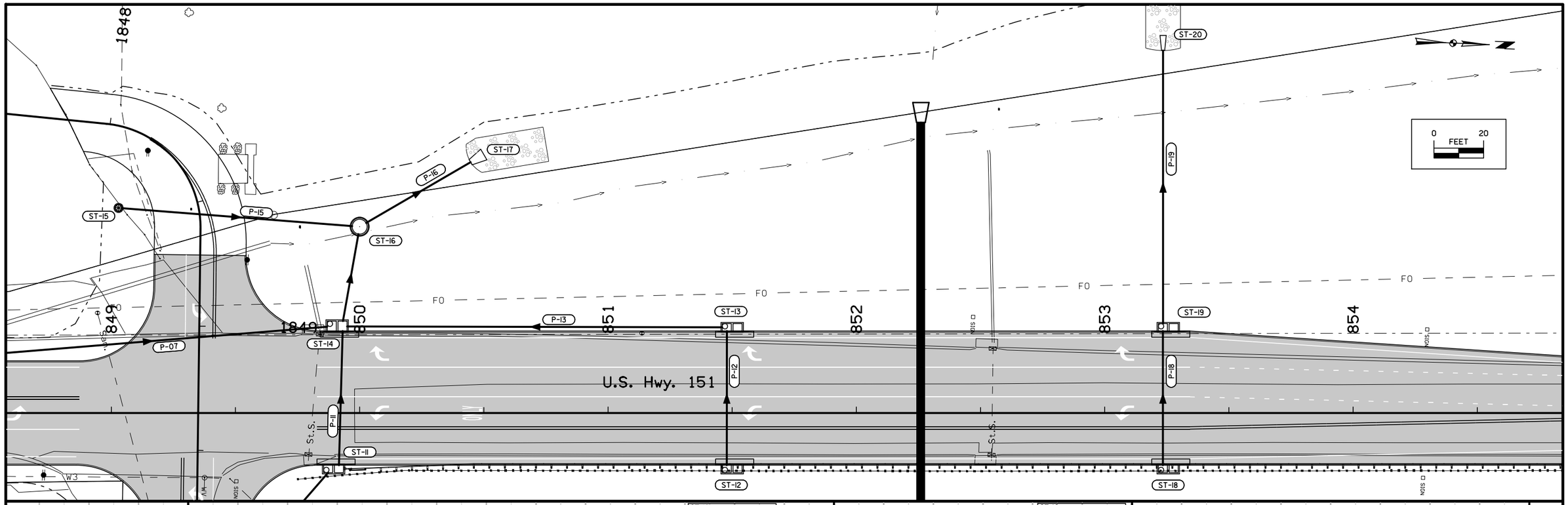

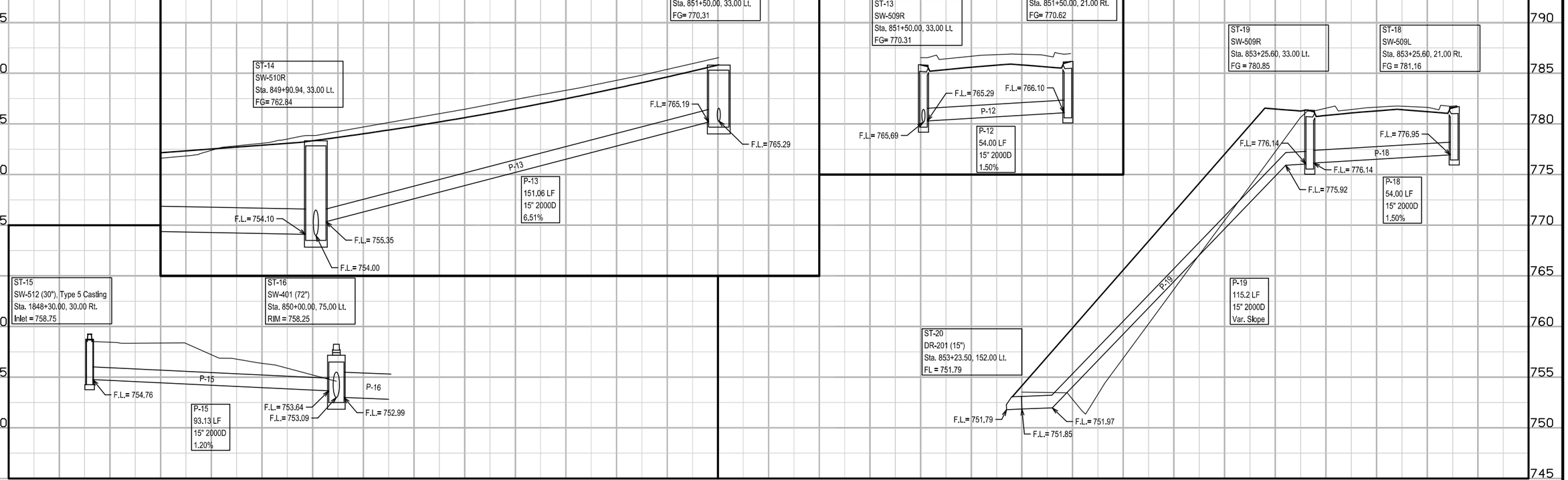

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	M.4

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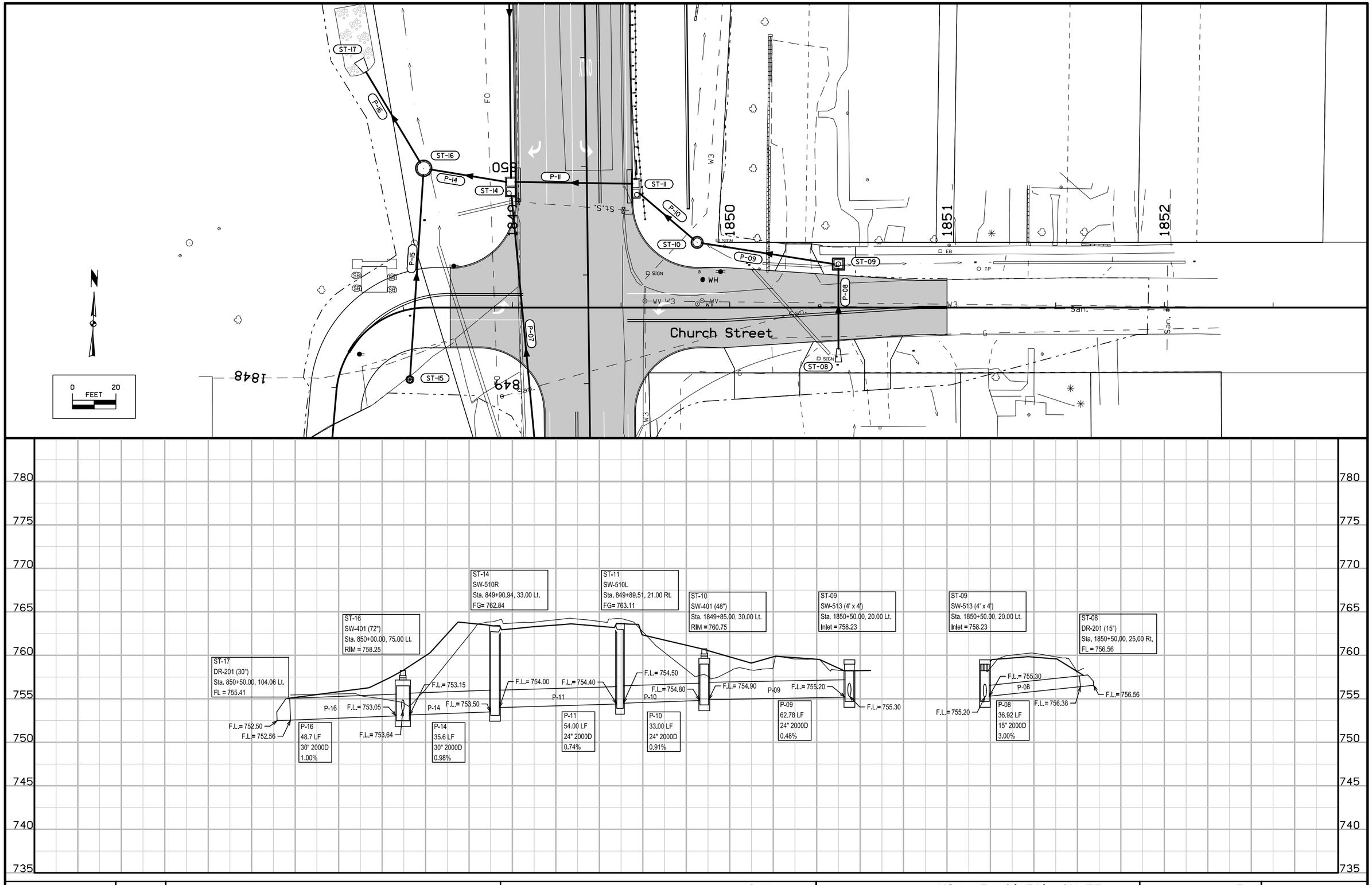

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	M.5

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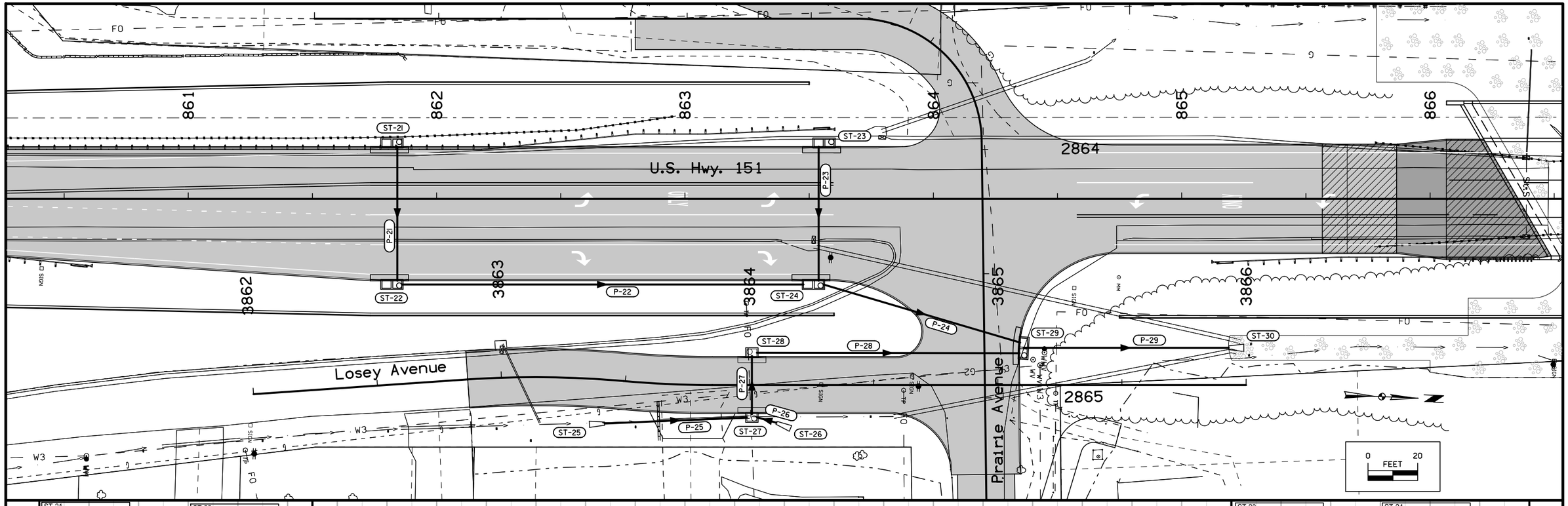
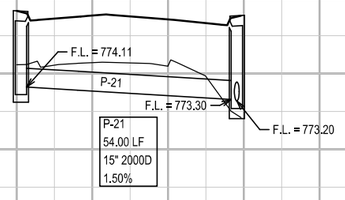


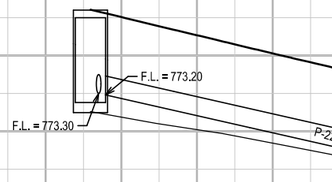
ST-21
SW-509L
Sta. 861+82.03, 21.00 Lt.
FG= 778.61

ST-22
SW-509R
Sta. 861+82.03, 33.00 Rt.
FG= 778.30



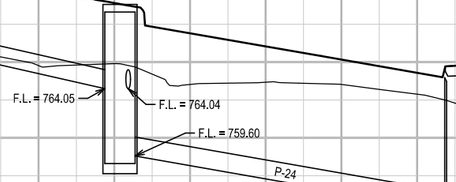
P-21
54.00 LF
15" 2000D
1.50%

ST-22
SW-509R
Sta. 861+82.03, 33.00 Rt.
FG= 778.30



P-22
161.67 LF
15" 2000D
5.66%

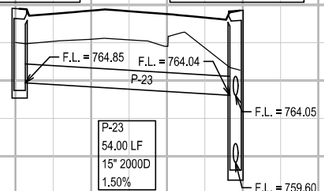
ST-24
SW-509R
Sta. 863+51.70, 33.00 Rt.
FG= 769.10



P-24
82.23 LF
15" 2000D
4.38%

ST-23
SW-509L
Sta. 863+53.05, 21.00 Lt.
FG= 769.22

ST-24
SW-509R
Sta. 863+51.70, 33.00 Rt.
FG= 769.10



P-23
54.00 LF
15" 2000D
1.50%

ST-29
SW-509L
Sta. 2864+80.00, 14.00 Lt.
FG= 765.02



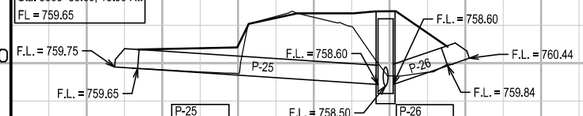
P-29
81.35.00 LF
18" 2000D
2.00%

ST-30
DR-201 (18")
Sta. 865+25.00, 60.00 Rt.
FL = 750.66

ST-25
DR-201 (15")
Sta. 3863+35.00, 18.50 Rt.
FL = 759.65

ST-27
SW-507S
Sta. 3864+01.00, 11.50 Rt.
FG= 762.92

ST-26
DR-201 (15")
Sta. 3864+18.00, 17.50 Rt.
FL = 759.84

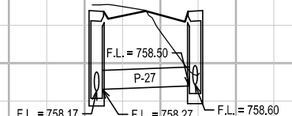


P-25
61.46 LF
15" 2000D
1.71%

P-26
12.35 LF
15" 2000D
10.00%

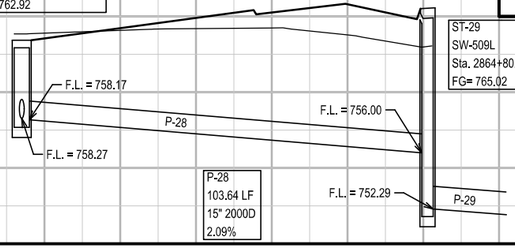
ST-28
SW-507S
Sta. 3864+01.00, 11.50 Lt.
FG= 762.92

ST-27
SW-507S
Sta. 3864+01.00, 11.50 Rt.
FG= 762.92



P-27
23.00 LF
15" 2000D
1.00%

ST-28
SW-507S
Sta. 3864+01.00, 11.50 Lt.
FG= 762.92



P-28
103.64 LF
15" 2000D
2.09%

ST-29
SW-509L
Sta. 2864+80.00, 14.00 Lt.
FG= 765.02

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

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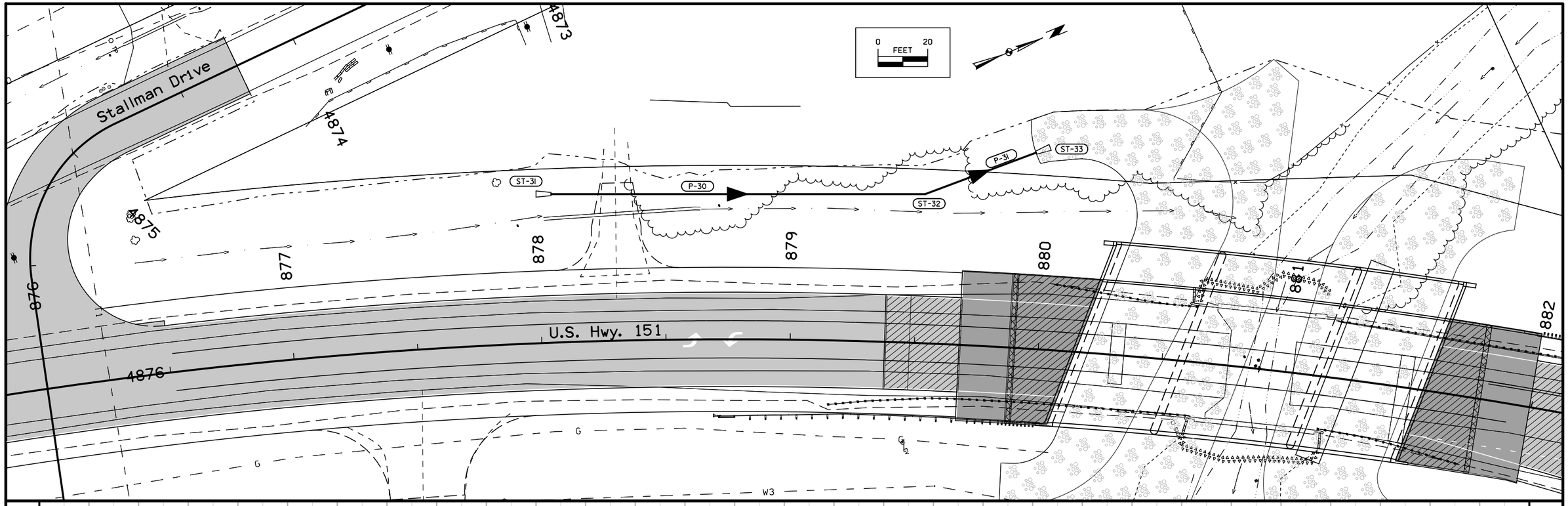
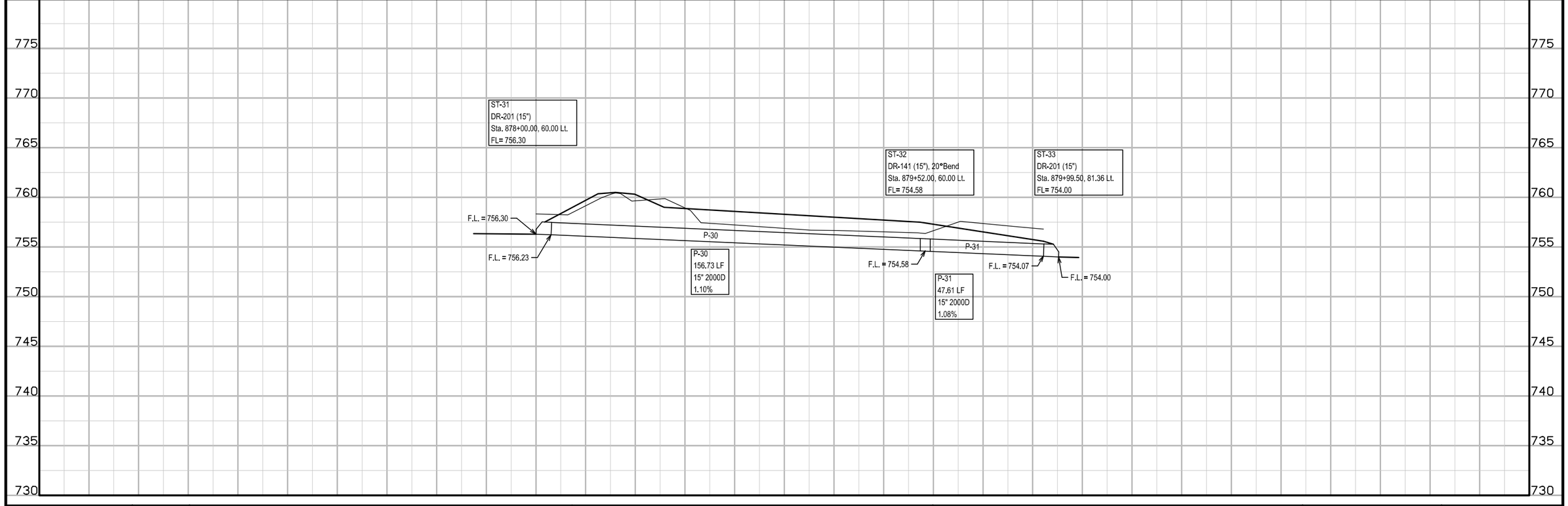




ST-31
DR-201 (15")
Sta. 878+00.00, 60.00 Lt.
FL= 756.30

ST-32
DR-141 (15"), 20°Bend
Sta. 879+52.00, 60.00 Lt.
FL= 754.58

ST-33
DR-201 (15")
Sta. 879+99.50, 81.36 Lt.
FL= 754.00

F.L. = 756.30

F.L. = 756.23

P-30
156.73 LF
15" 2000D
1.10%

P-30

F.L. = 754.58

P-31
47.61 LF
15" 2000D
1.08%

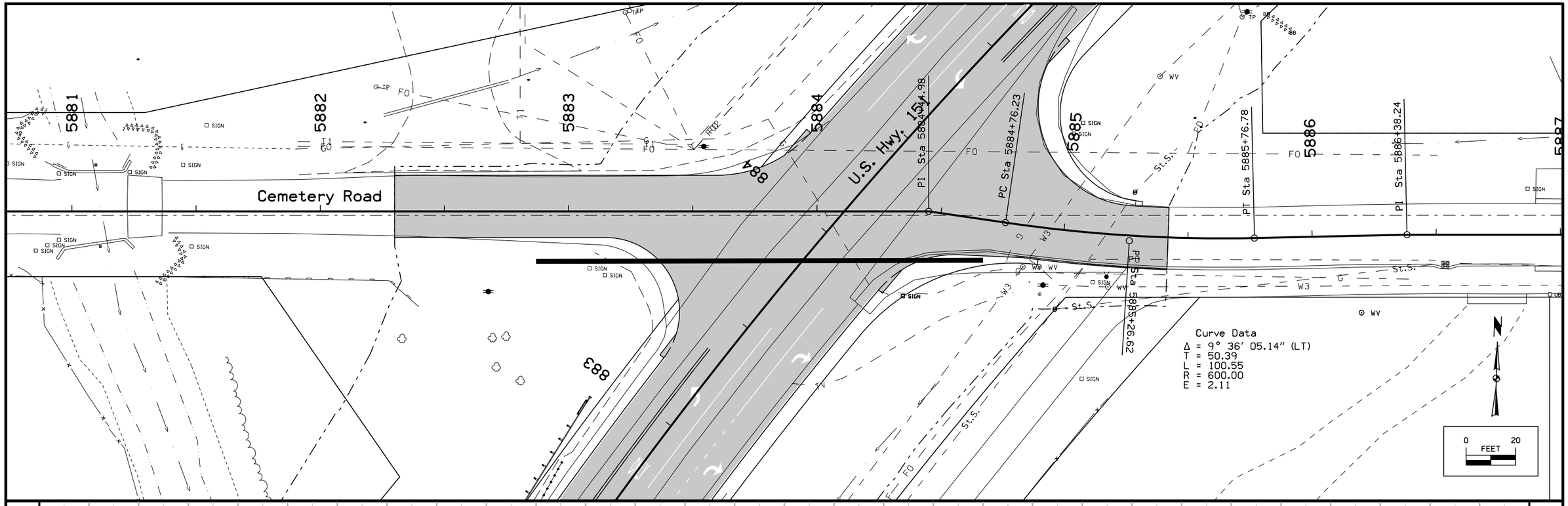
P-31

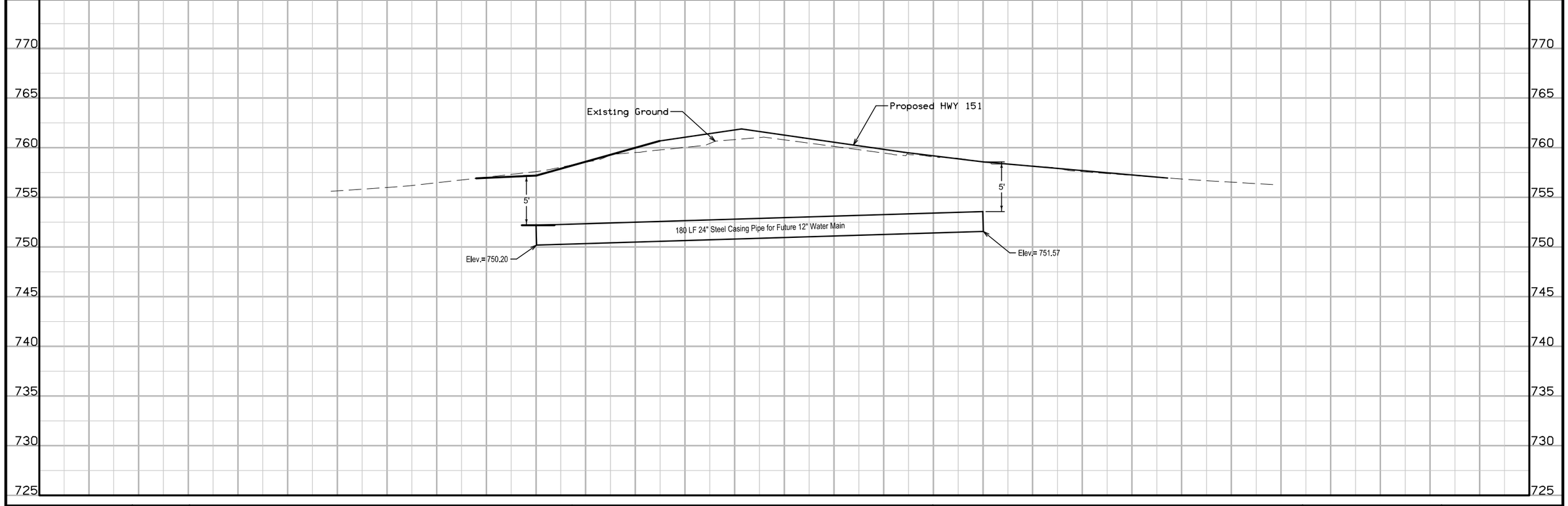
F.L. = 754.07

F.L. = 754.00

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

1:32:05 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158M03.sht





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

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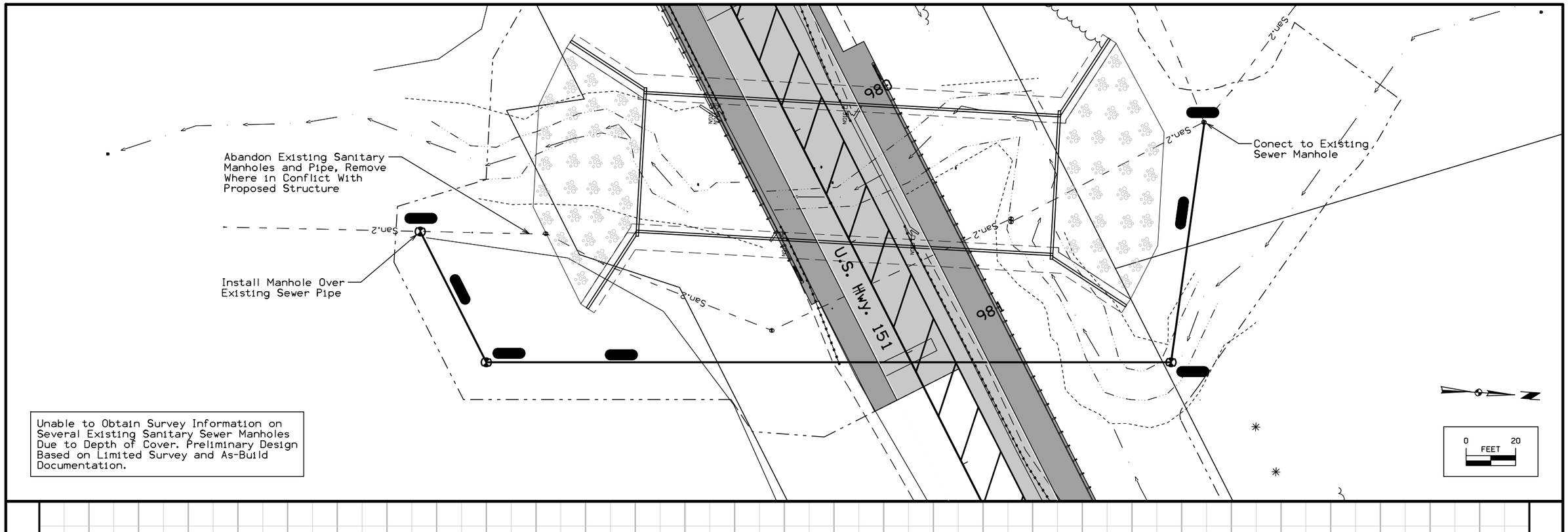

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	M.9

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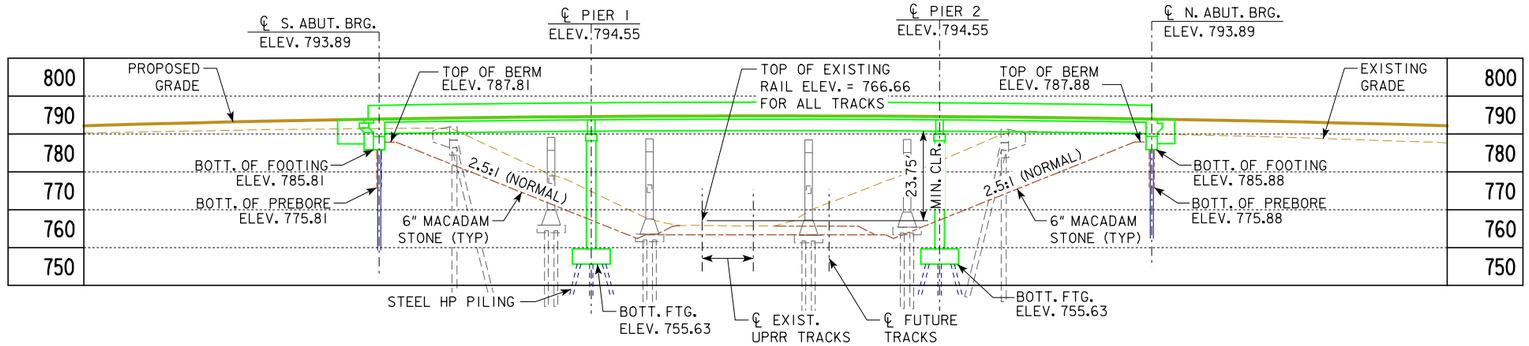
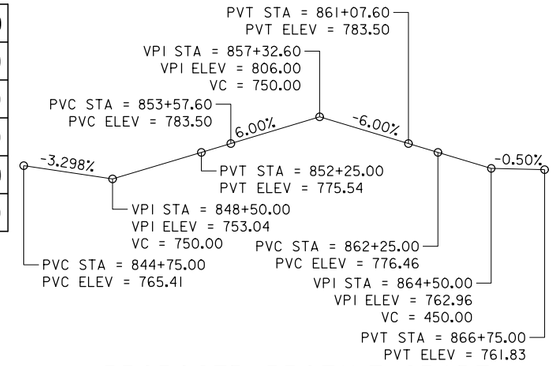
BENCH MARK NO. BM1 STA. 846+60.81, 23.069 RT, GIN SPIKE IN POWER POLE,
EAST SIDE HWY 151, ACROSS FROM "PIT STOP"
ELEV. 763.600, N = 703233.002 E = 2107556.082



LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

TOP OF BRIDGE DECK CROWN 0.03' BELOW PROFILE GRADE



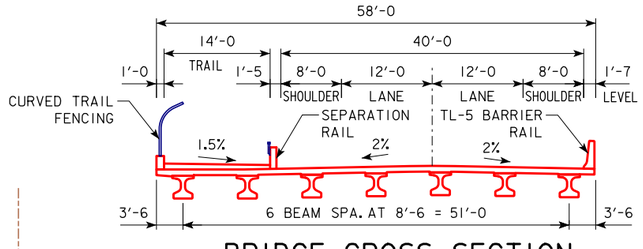
PROPOSED PROFILE GRADE

MINIMUM VERTICAL CLEARANCE

OVERHEAD STATION = 857+75.65, OFFSET 18.08' RT
OVERHEAD ELEVATION = 794.24
DEPTH OF SUPERSTRUCTURE = 3.83'
UNDERPASS STATION = 7857+44.09, OFFSET 51.86' LT
UNDERPASS ELEVATION = 766.66
MINIMUM VERTICAL CLEARANCE = 23.75'

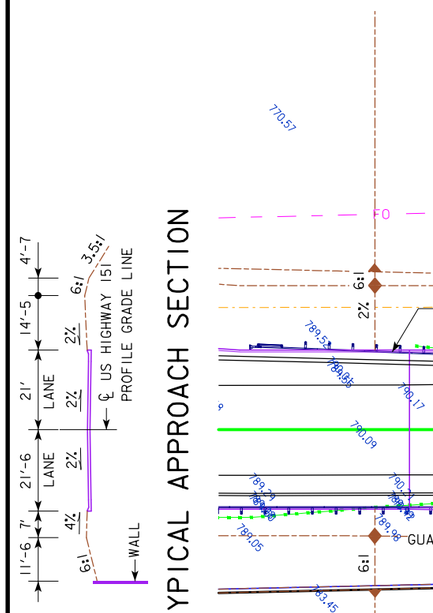
RAILROAD MILEPOST DATA

DOT CROSSING INVENTORY NUMBER: 190539X
UNION PACIFIC RAILROAD COMPANY MILEPOST: 0090.130
MILEPOST INCREASING TOWARD WEST



BRIDGE CROSS SECTION

BTB BEAMS



SITUATION PLAN

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

N

0 ENGLISH 40
SCALE IN FEET

UTILITIES LEGEND:

FO - FIBER OPTIC - SOUTH SLOPE
G - GAS - MIDAMERICAN ENERGY
TI - TELEPHONE - SOUTH SLOPE
W3 - WATER - FAIRFAX

NOTES:
PIERS ARE FRAME PIERS ON PILE CAP FOOTINGS.
BEAM TYPE BTB, DEPTH = 3'-0.
TL-4 SEPARATION RAILING IS PROPOSED ON THE LEFT SIDE OF BRIDGE.
TL-5 BARRIER RAILING IS PROPOSED ON RIGHT SIDE OF BRIDGE.
CURVED TRAIL FENCING IS PROPOSED.
BRIDGE AESTHETICS TO BE INCORPORATED DURING FINAL DESIGN.

LOCATION

US HIGHWAY 151 OVER
UNION PACIFIC RAILROAD
FRA 190539X
T-82N R-8W
SECTIONS 9 & 16
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33771
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 (BTB BEAMS)

SPANS (56'-0, 92'-0, 56'-0)

SITUATION PLAN

STATION 857+32.60 LINN COUNTY AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 418

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(141)--38-57 | SHEET NUMBER V.1

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	762.88
A2	857+00.50	24.58	762.36	857+68.13	24.58	762.88
B1	856+32.36	39.42	787.81	858+27.33	39.42	787.88
B2	856+36.83	24.58	787.81	858+31.81	24.58	787.88
W1	856+19.66	39.42	793.09	858+40.67	39.42	793.18
W2	856+23.50	24.58	793.28	858+44.50	24.58	793.24

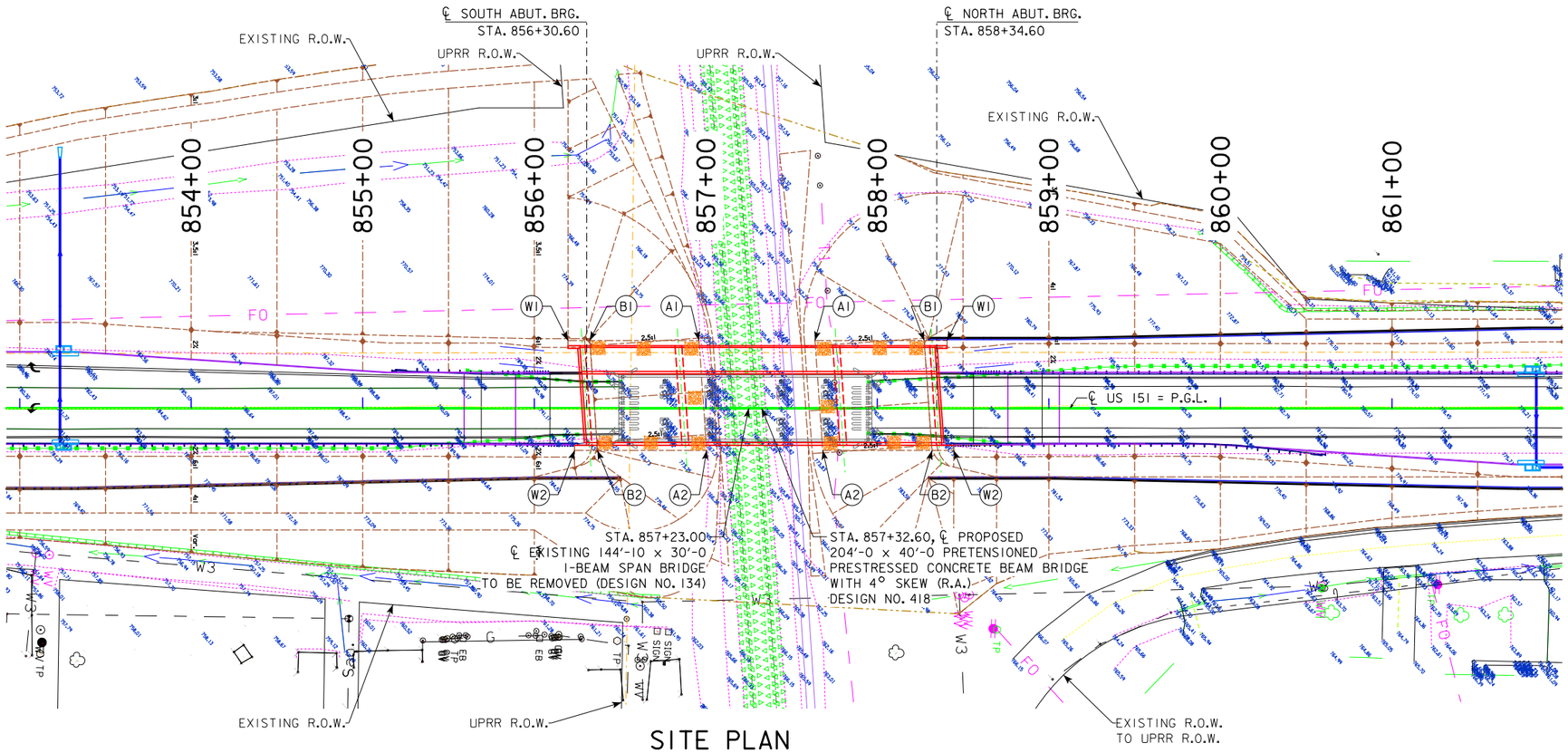
BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE

ESTIMATED QUANTITIES

DESCRIPTION	LOCATION	QUANTITY
MACADAM STONE SLOPE PROTECTION	SOUTH ABUT.	488 SQ. YDS.
MACADAM STONE SLOPE PROTECTION	NORTH ABUT.	488 SQ. YDS.
	TOTAL	976 SQ. YDS.

FOR DETAILS, SEE STANDARD SHEET 1006E.

ITEMS TO BE INCLUDED IN "MACADAM STONE SLOPE PROTECTION":
- EXCAVATING, SHAPING AND COMPACTING
- ENGINEERING FABRIC
- MACADAM STONE
- 4" x 6" TREATED TIMBER EDGING
- ½"Φ STEEL PINS (OR REBARS)
- POROUS BACKFILL OR GRANULAR SUBBASE BACKFILL AT FRONT FACE ABUTMENT FOOTING



SITE PLAN

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

N

0 ENGLISH 80
SCALE IN FEET

UTILITIES LEGEND:

FO - FIBER OPTIC - SOUTH SLOPE
G - GAS - MIDAMERICAN ENERGY
TI-TELEPHONE - SOUTH SLOPE
W3 - WATER - FAIRFAX

PRELIMINARY

DESIGN FOR 4° SKEW (R.A.)

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

SPANS (56'-0, 92'-0, 56'-0)

SITE PLAN

STATION 857+32.60 LINN COUNTY AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 418

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(141)--38-57 | SHEET NUMBER V.2

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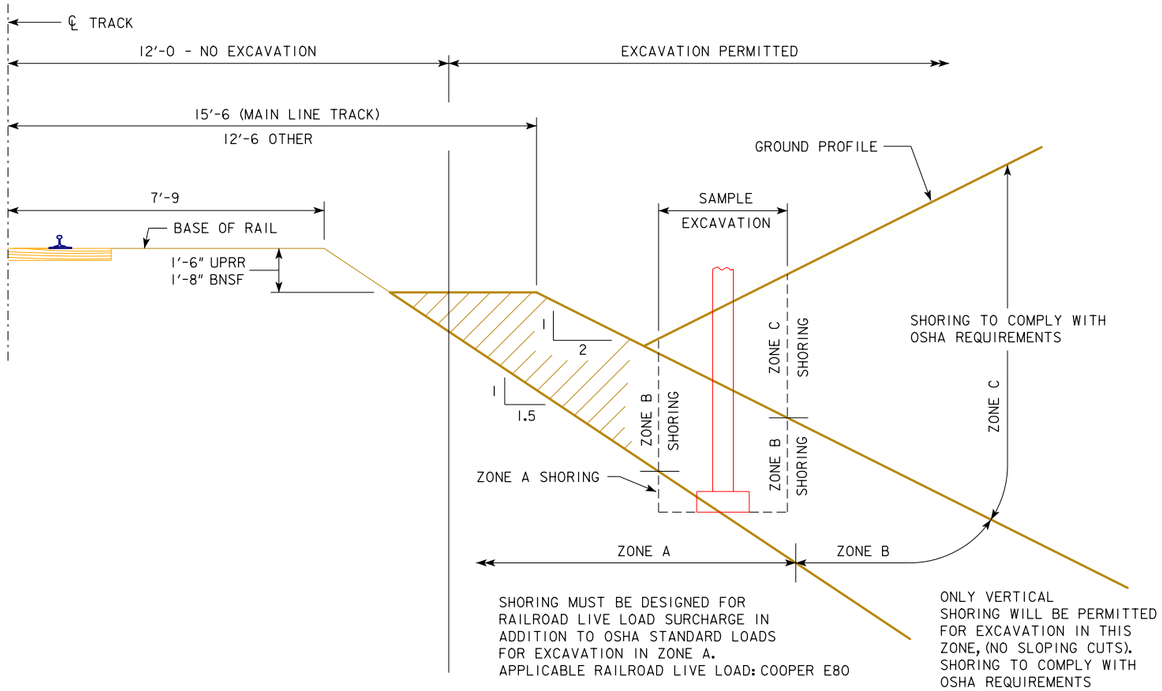


GENERAL EXCAVATION ZONES

RAILROAD GENERAL NOTES:

1. RAILROAD REVIEW AND APPROVAL OF SHORING, ERECTION, DEMOLITION, AND FALSEWORK IS REQUIRED. ALLOW A MINIMUM OF FOUR WEEKS FOR THE REVIEW AND APPROVAL OF EACH SUBMITTAL.
2. THE PROPOSED GRADE SEPARATION PROJECT SHALL NOT INCREASE THE QUANTITY AND/OR CHARACTERISTICS OF THE FLOW IN THE RAILROAD'S DITCHES AND/OR DRAINAGE STRUCTURES.
3. THE ELEVATION OF THE EXISTING TOP-OF-RAIL PROFILE SHALL BE VERIFIED BEFORE BEGINNING CONSTRUCTION. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE RAILROAD PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR MUST SUBMIT A PROPOSED METHOD OF EROSION AND SEDIMENT CONTROL AND HAVE THE METHOD APPROVED BY THE RAILROAD.
5. ALL SHORING SYSTEMS THAT IMPACT THE RAILROAD'S OPERATIONS AND/OR SUPPORTS THE RAILROAD'S EMBANKMENT SHALL BE DESIGNED AND CONSTRUCTED PER CURRENT RAILROAD GUIDELINES FOR TEMPORARY SHORING.
6. ALL DEMOLITIONS WITHIN THE RAILROAD'S RIGHT-OF-WAY AND/OR DEMOLITION THAT MAY IMPACT THE RAILROAD'S TRACKS OR OPERATIONS SHALL BE IN COMPLIANCE WITH THE RAILROAD'S DEMOLITION GUIDELINES.
7. ERECTION OVER THE RAILROAD'S RIGHT-OF-WAY SHALL BE DESIGNED TO CAUSE NO INTERRUPTION TO THE RAILROAD'S OPERATION, ENABLING THE TRACK(S) TO REMAIN OPEN TO TRAFFIC PER THE RAILROAD'S REQUIREMENTS.
8. ALL CONSTRUCTION PHASING THAT MAY IMPACT THE RAILROAD OPERATIONS SHALL BE DESIGNED TO CAUSE NO INTERRUPTION TO THE RAILROAD'S OPERATION, ENABLING THE TRACK(S) TO REMAIN OPEN TO TRAFFIC PER THE RAILROAD'S REQUIREMENTS.
9. FALSE-WORK CLEARANCES SHALL COMPLY WITH MINIMUM CONSTRUCTION CLEARANCES.
10. ALL PERMANENT CLEARANCES SHALL BE VERIFIED BEFORE PROJECT CLOSING.
11. FOR RAILROAD COORDINATION PLEASE REFER TO THE RAILROAD COORDINATION REQUIREMENTS AS PART OF SPECIAL PROVISIONS.

GENERAL SHORING NOTES:

1. ALL DIMENSIONS ARE MEASURED PERPENDICULAR TO TRACK.
2. PRIOR TO COMMENCING ANY WORK, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL BY THE RAILROAD DETAILED PLANS INDICATING THE NATURE AND EXTENT OF THE TRACK PROTECTION SHORING PROPOSED. THE CONTRACTOR SHALL INSTALL THE TEMPORARY SHORING SYSTEM PER THE APPROVED PLANS. DESIGN OF THE TEMPORARY SHORING SYSTEM TO COMPLY WITH GUIDELINES FOR TEMPORARY SHORING.
3. FOR EXCAVATIONS WHICH ENCROACH INTO ZONE A OR B, SHORING PLANS SHALL BE ACCOMPANIED BY DESIGN CALCULATIONS. PLANS AND CALCULATIONS MUST BE SIGNED AND STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF IOWA.

NOTE:
BNSF = BURLINGTON NORTHERN SANTA FE RAILROAD
UPRR = UNION PACIFIC RAILROAD

TOP OF RAIL ELEVATIONS

(STATIONS INCREASE FROM WEST TO EAST)

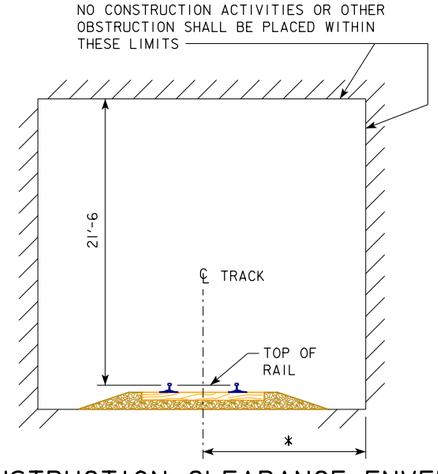
NORTH TRACK			
ALIGNMENT: NORTH RAIL		ALIGNMENT: SOUTH RAIL	
STATION	ELEVATION	STATION	ELEVATION
(2) 7847+00	764.16	(2) 7847+00	764.15
7848+00	764.29	7848+00	764.28
7849+00	764.49	7849+00	764.46
7850+00	764.71	7850+00	764.67
7851+00	764.92	7851+00	764.88
7852+00	765.08	7852+00	765.03
7853+00	765.16	7853+00	765.14
7854+00	765.33	7854+00	765.33
7855+00	765.64	7855+00	765.62
7856+00	766.00	7856+00	765.97
(1) 7857+22.42	766.40	(1) 7857+22.42	766.36
7858+00	766.68	7858+00	766.65
7859+00	767.00	7859+00	767.00
7860+00	767.45	7860+00	767.43
7861+00	767.84	7861+00	767.80
7862+00	768.17	7862+00	768.06
7863+00	768.42	7863+00	768.21
7864+00	768.59	7864+00	768.32
7865+00	768.63	7865+00	768.37
7866+00	768.54	7866+00	768.29
(3) 7867+00	768.28	7867+00	768.05

SOUTH TRACK			
ALIGNMENT: NORTH RAIL		ALIGNMENT: SOUTH RAIL	
STATION	ELEVATION	STATION	ELEVATION
(2) 7847+00	764.48	(2) 7847+00	764.49
7848+00	764.62	7848+00	764.65
7849+00	764.77	7849+00	764.77
7850+00	764.93	7850+00	764.95
7851+00	765.10	7851+00	765.11
7852+00	765.33	7852+00	765.34
7853+00	765.56	7853+00	765.57
7854+00	765.70	7854+00	765.72
7855+00	765.88	7855+00	765.91
7856+00	766.19	7856+00	766.23
(1) 7857+22.42	766.59	(1) 7857+22.42	766.59
7858+00	766.87	7858+00	766.88
7859+00	767.10	7859+00	767.11
7860+00	767.39	7860+00	767.41
7861+00	767.72	7861+00	767.72
7862+00	768.05	7862+00	767.96
7863+00	768.30	7863+00	768.13
7864+00	768.38	7864+00	768.21
7865+00	768.34	7865+00	768.18
7866+00	768.04	7866+00	767.89
(3) 7867+00	767.75	(3) 7867+00	767.58

(1) ℄ OF ROADWAY ALONG TRACK STATIONING IS 857+22.42
℄ OF TRACKS ALONG ROADWAY STATIONING IS 7857+22.42

(2) 1,022.42 FEET WEST OF ROADWAY ℄ ALONG TRACKS

(3) 977.58 FEET EAST OF ROADWAY ℄ ALONG TRACKS



MINIMUM CONSTRUCTION CLEARANCE ENVELOPE

(NORMAL TO RAILROAD)
* 15'-0" FOR BNSF AND 12'-0" FOR UPRR

PRELIMINARY

DESIGN FOR 4° SKEW (R.A.)

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

SPANS (56'-0, 92'-0, 56'-0)

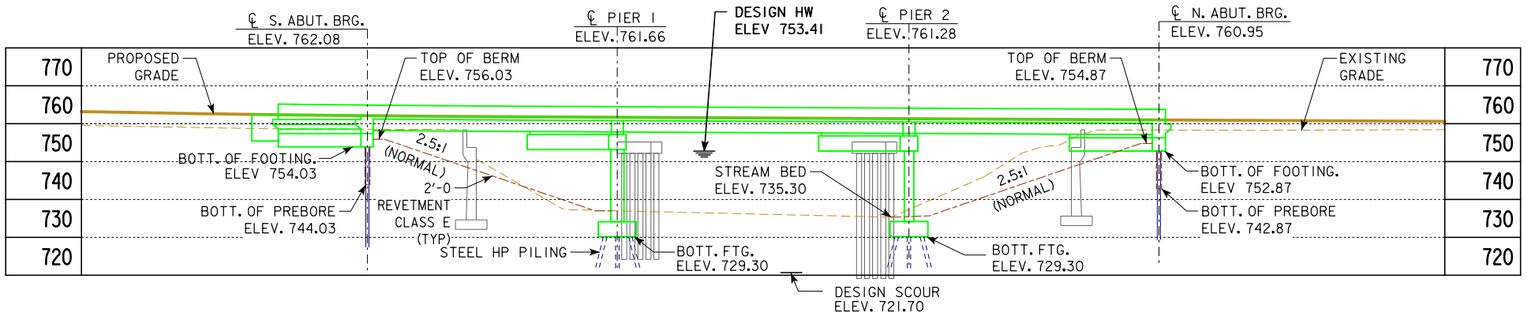
STANDARD RAILROAD INFORMATION

STATION 857+32.60 LINN COUNTY AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

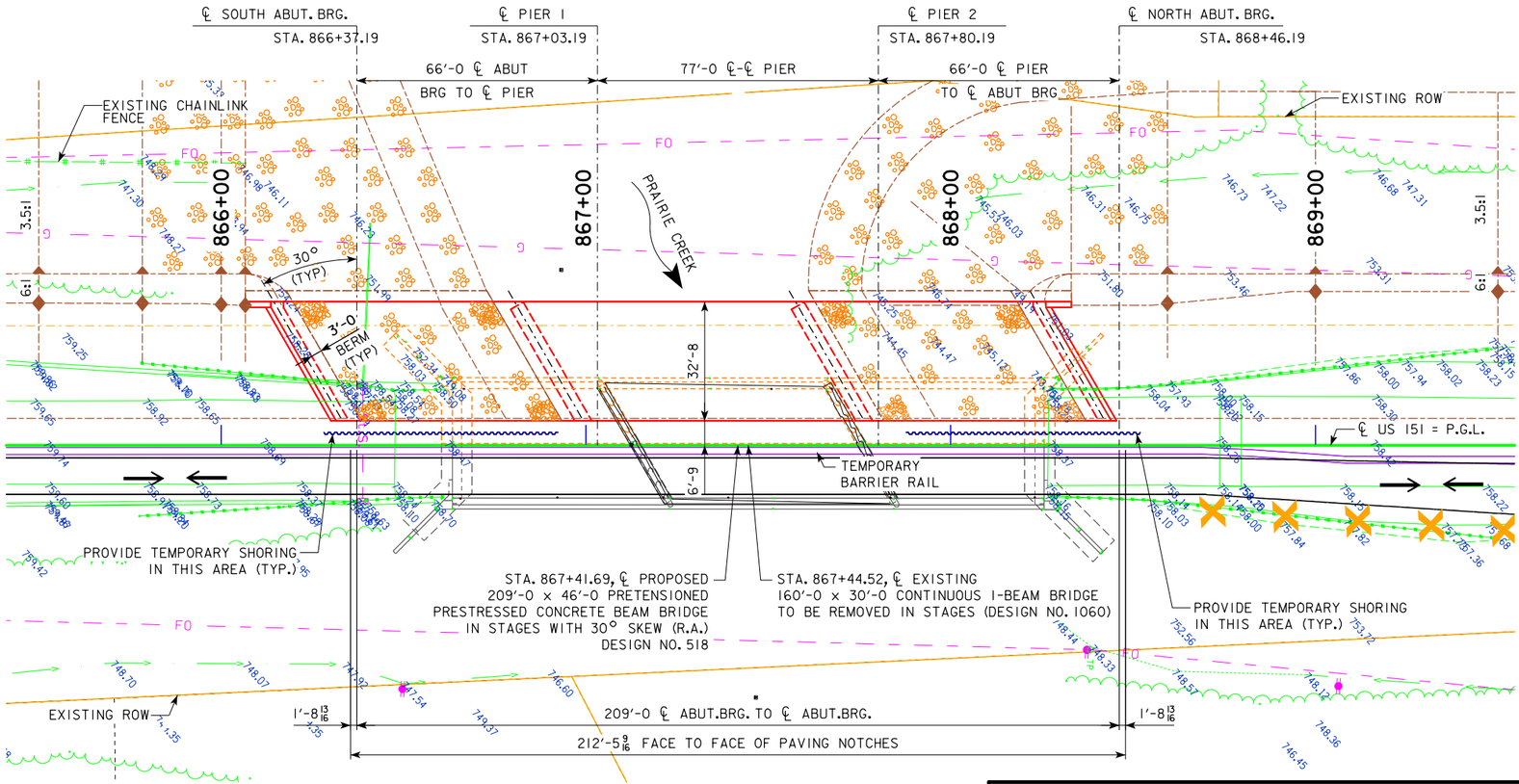
DESIGN SHEET NO. ___ OF ___ FILE NO. 31286 DESIGN NO. 418

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



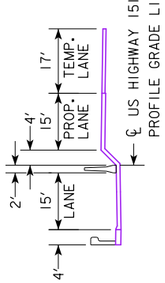
LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

TOP OF BRIDGE DECK CROWN 0.03' BELOW PROFILE GRADE



TYPICAL APPROACH SECTION

PROFILE GRADE LINE ℄ US HIGHWAY 151



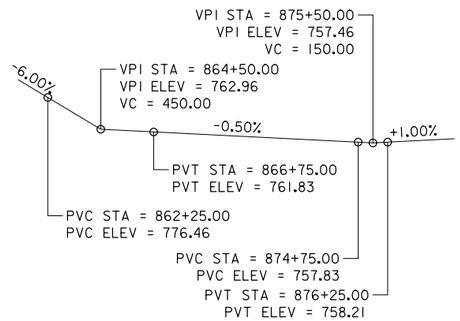
NOTE:
PIERS ARE WALL PIERS (SOLID STEM) ON PILE CAP FOOTINGS.
BEAM TYPE BTB, DEPTH = 3'-0.
TL-4 SEPARATION RAILING AND BARRIER RAIL IS PROPOSED.
BRIDGE AESTHETICS TO BE INCORPORATED DURING FINAL DESIGN.

SITUATION PLAN STAGE I

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 = 6.11 FT./MI.
AVG. LOW WATER STAGE = 736.6

Q_{50} = 13,480 CFS
STAGE = 752.66
BACKWATER = 0.41 FT.

Q_{100} = 16,060 CFS
STAGE = 753.41
BACKWATER = 0.48 FT.
AVG. BRIDGE VELOCITY = 6.19 FPS

Q_{200} = 18,991 CFS
STAGE = 753.99
CALCULATED DESIGN SCOUR = 721.7

Q_{500} = 22,750 CFS
STAGE = 754.91
CALCULATED CHECK SCOUR = 717.56

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

UTILITIES LEGEND:

FO - FIBER OPTIC - SOUTH SLOPE
G - GAS - MIDAMERICAN ENERGY

LOCATION

US HIGHWAY 151
OVER PRAIRIE CREEK
T-82N R-8W
SECTION 9
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33781
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

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.

__-__-2016
Signature Date
Adam R. Bullerman
Printed or Typed Name

My license renewal date is December 31, 2016

Pages or sheets covered by this seal: SHEETS V.4,V.6&V.8 - HYDRAULIC DATA

DESIGN FOR 30° SKEW (R.A.)

209'-0 x 32'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE (BTB BEAMS)

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

SITUATION PLAN - STAGE I

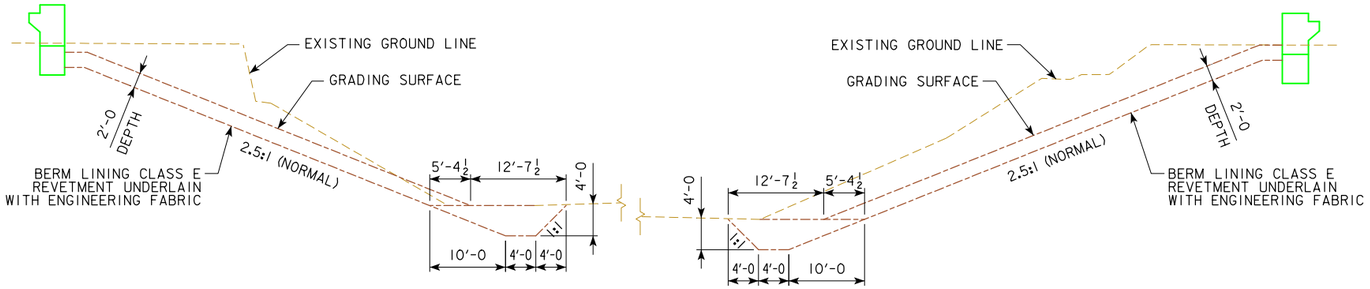
STATION 867+41.69 LINN COUNTY AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 518

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.4

8/5/2016 3:40:11 PM DCH pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\US151 @ Prairie Creek\57151142_Shuck-Britson.str TSL_57_0518_S04 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

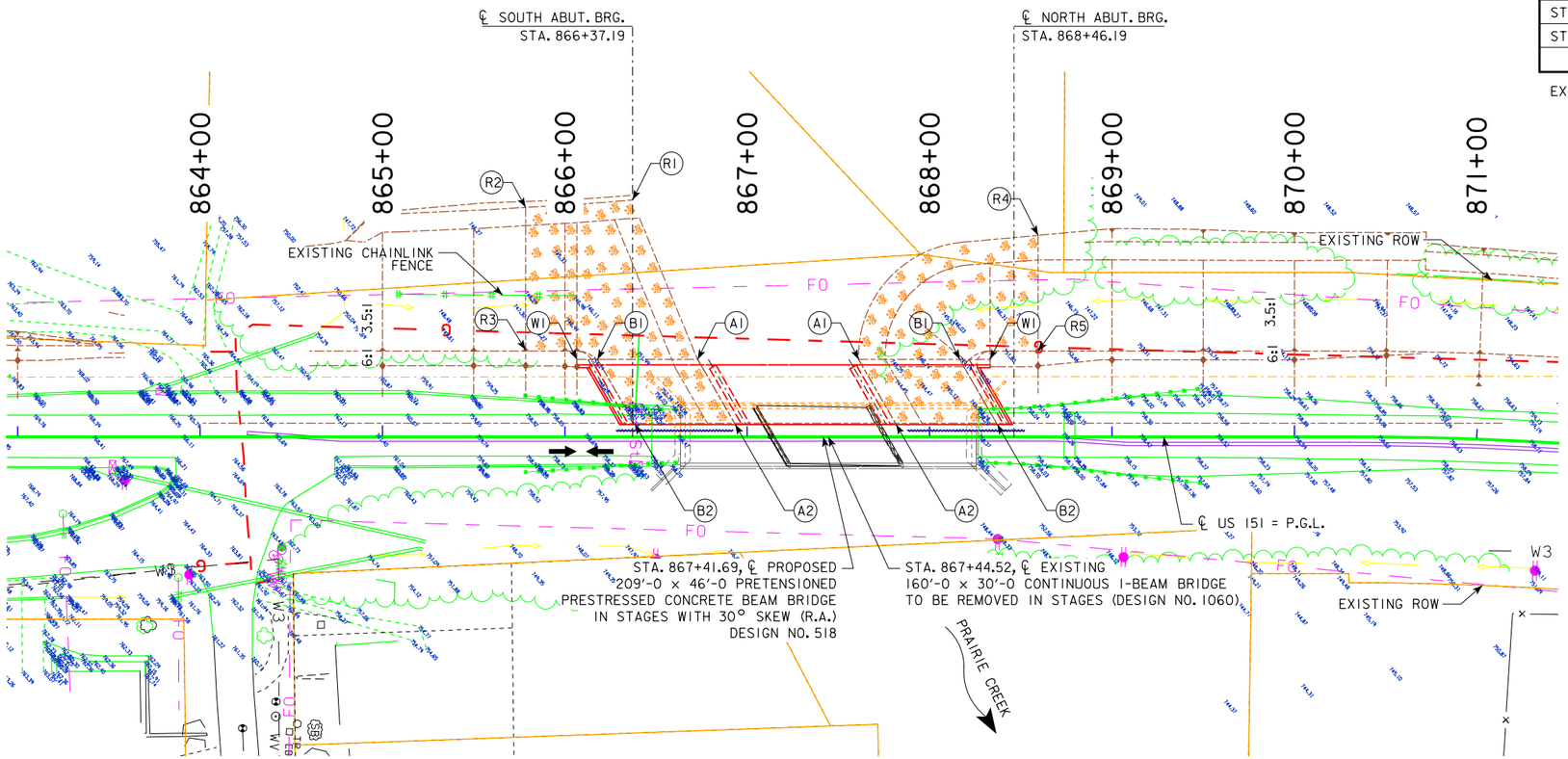
	SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV
A1	866+72.83	42.42 LT	737.00	867+61.05	42.42 LT	735.66
A2	866+93.42	6.75 LT	737.00	867+81.64	6.75 LT	735.66
B1	866+17.90	42.42 LT	756.03	868+16.50	42.42 LT	754.87
B2	866+38.49	6.75 LT	756.03	868+37.10	6.75 LT	754.87
W1	866+06.61	42.42 LT	761.64	868+33.08	42.42 LT	760.23

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	1120	-	1050	700
BERM LINING - NORTH ABUTMENT	930	-	880	580
STONE TOE - SOUTH ABUTMENT	360	-	350	220
STONE TOE - NORTH ABUTMENT	460	-	450	280
TOTALS	2870	-	2730	1780

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.



SITE PLAN
STAGE 1

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

REVETMENT LAYOUT:
- (R1) 866+36.85, 129.82 LT, END STONE TOE
- (R2) 865+78.43, 125.73 LT, END BERM LINING
- (R3) 865+78.43, 47.00 LT, END BERM LINING
- (R4) 868+59.43, 110.43 LT, END STONE TOE
- (R5) 868+59.43, 47.00 LT, END BERM LINING

UTILITIES LEGEND:

FO - FIBER OPTIC - SOUTH SLOPE
G - GAS - MIDAMERICAN ENERGY

PRELIMINARY

DESIGN FOR 30° SKEW (R.A.)

209'-0 x 32'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE (BTB BEAMS)

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

SITE PLAN - STAGE 1

STATION 867+41.69 LINN COUNTY AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 518

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

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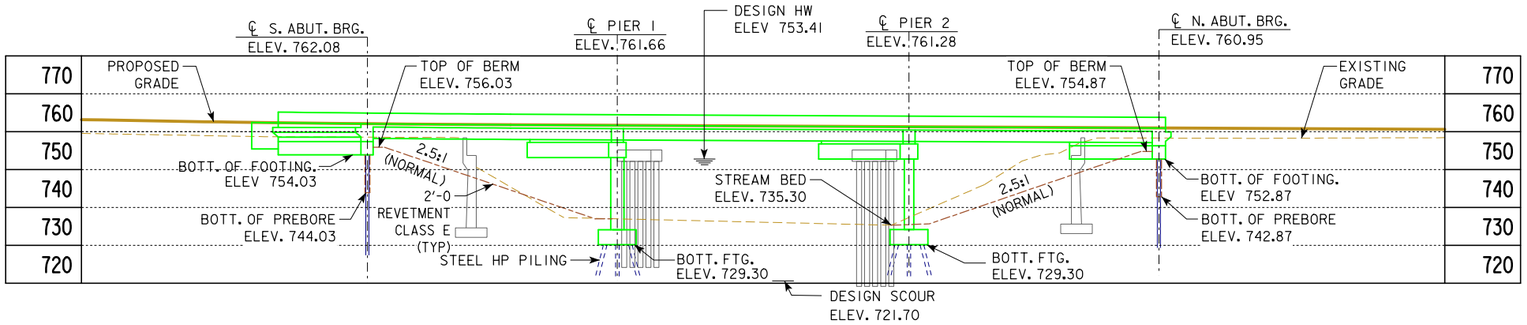
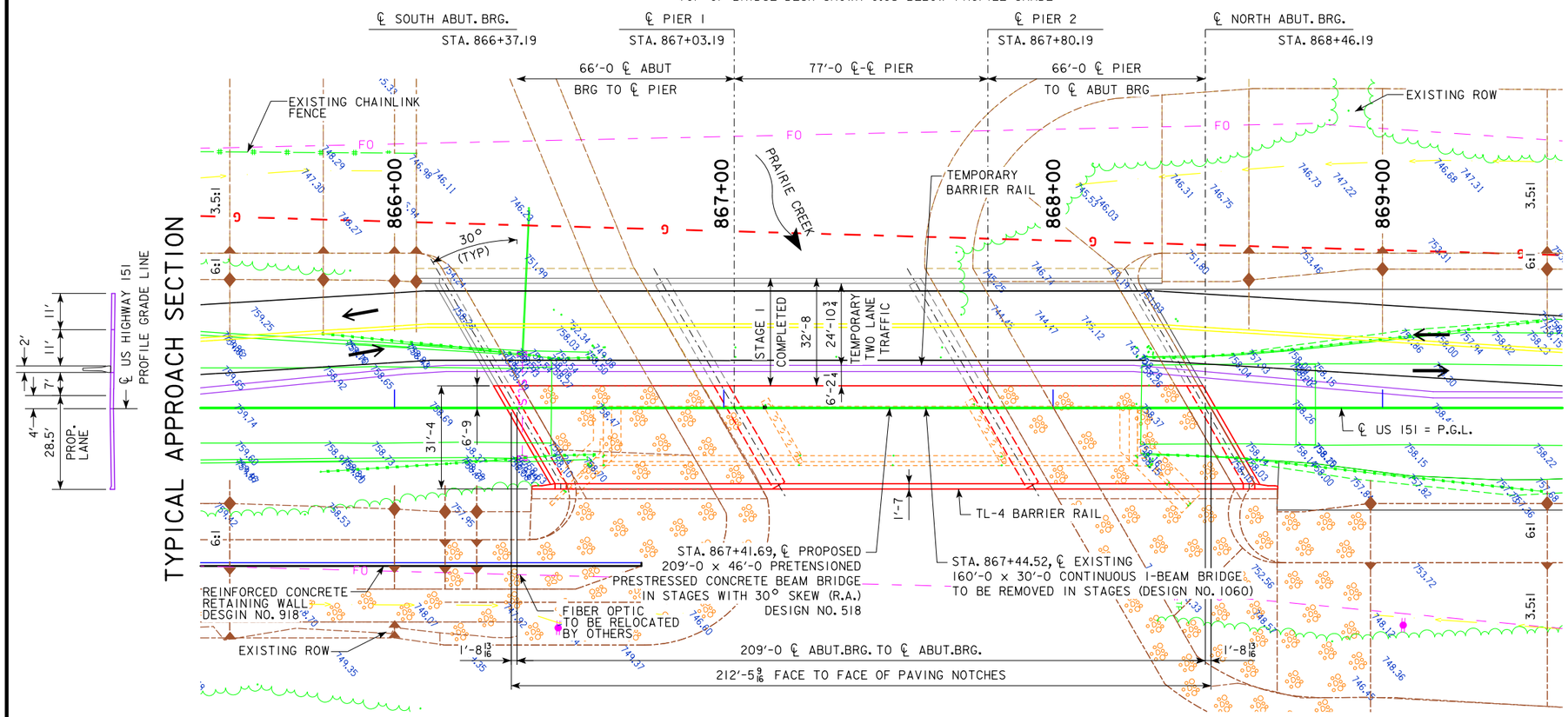
BENCH MARK NO. BM2 STA. 871+35.96, 70.098 RT, RR SPIKE IN POWER POLE, EAST SIDE HWY 151, 200' ± NORTH OF NORTH END OF RIVER BRIDGE AT BEGGINNING OF CLEARING. ELEV. 750.420, N = 705704.166 E = 2107504.303



LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

TOP OF BRIDGE DECK CROWN 0.03' BELOW PROFILE GRADE



TYPICAL APPROACH SECTION

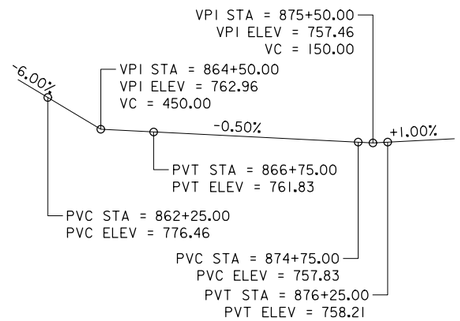
NOTE:
PIERS ARE WALL PIERS (SOLID STEM) ON PILE CAP FOOTINGS.
BEAM TYPE BTB, DEPTH = 3'-0.
TL-4 SEPARATION RAILING AND BARRIER RAIL IS PROPOSED.
BRIDGE AESTHETICS TO BE INCORPORATED DURING FINAL DESIGN.

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 = 6.11 FT./MI.
AVG. LOW WATER STAGE = 736.6

Q_{50} = 13,480 CFS
STAGE = 752.66
BACKWATER = 0.41 FT.

Q_{100} = 16,060 CFS
STAGE = 753.41
BACKWATER = 0.48 FT.
AVG. BRIDGE VELOCITY = 6.19 FPS

Q_{200} = 18,991 CFS
STAGE = 753.99
CALCULATED DESIGN SCOUR = 721.7

Q_{500} = 22,750 CFS
STAGE = 754.91
CALCULATED CHECK SCOUR = 717.56

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

UTILITIES LEGEND:

FO - FIBER OPTIC - SOUTH SLOPE
G - GAS - MIDAMERICAN ENERGY

LOCATION

US HIGHWAY 151
OVER PRAIRIE CREEK
T-82N R-8W
SECTION 9
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33781
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 32'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE WIDEN TO 64'-0 (BTB BEAMS)

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

SITUATION PLAN - STAGE 2

STATION 867+41.69 LINN COUNTY AUGUST 2016

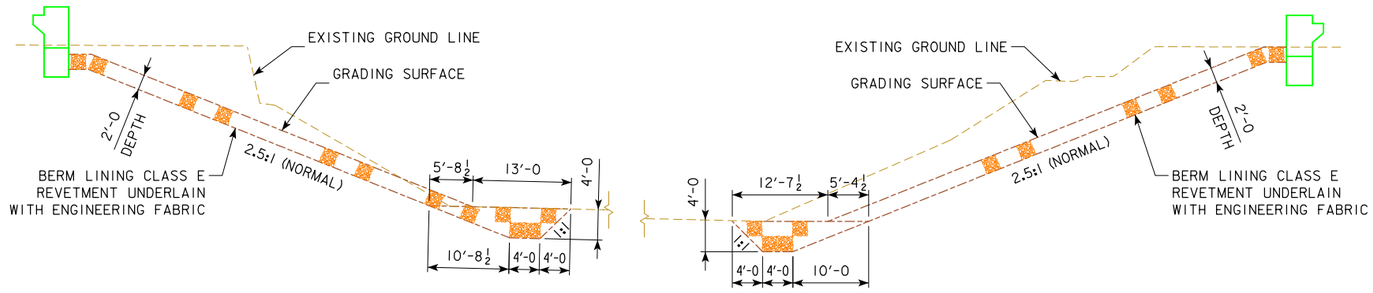
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 518

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

8/5/2016 3:40:16 PM DCH pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\US151 @ Prairie Creek\57151142_Shuck-Britson.str TSL_57_0518_S06 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

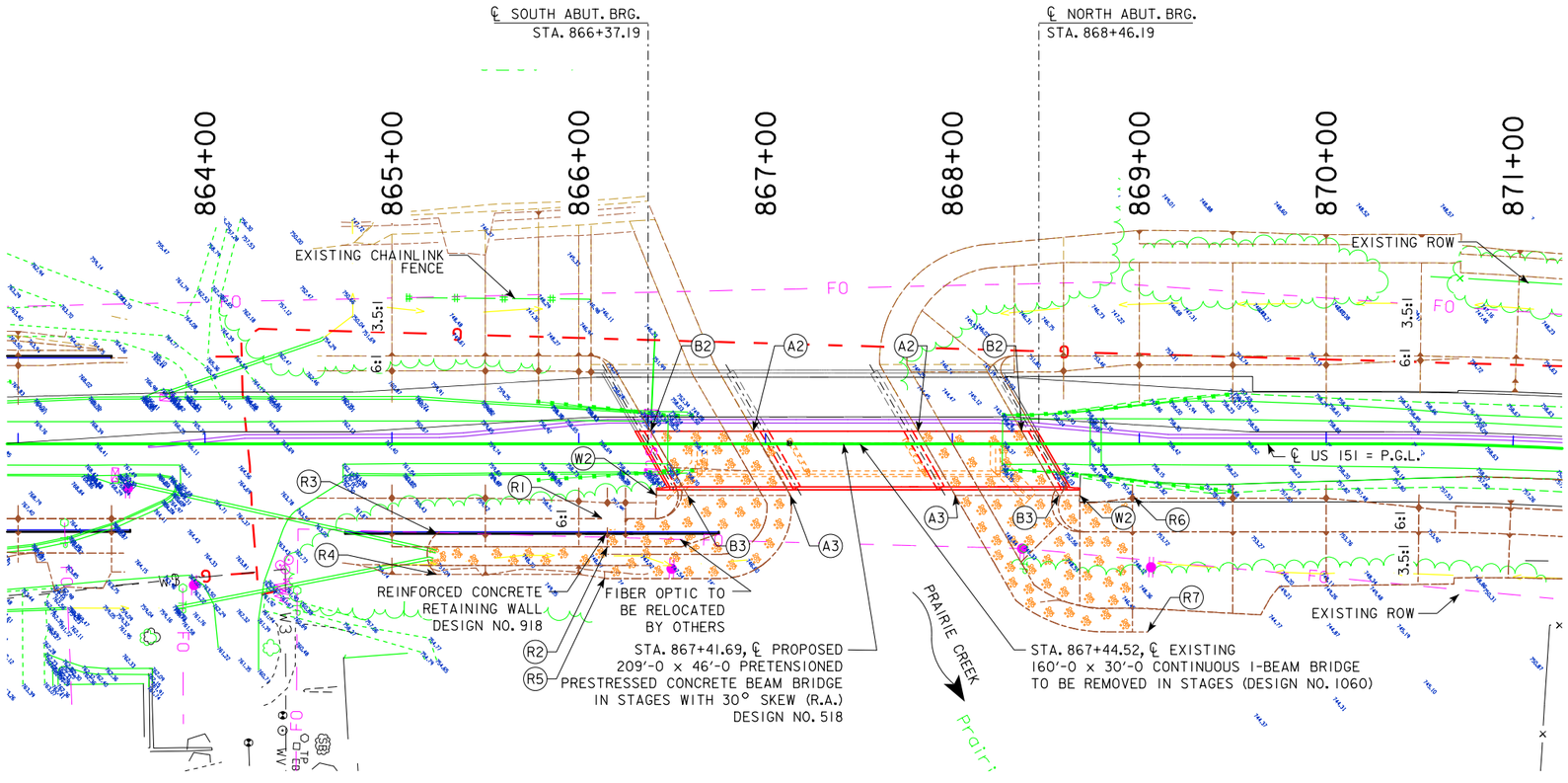
	SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV
A2	866+93.42	6.75 LT	737.00	867+81.64	6.75 LT	735.66
A3	867+13.25	27.58 RT	737.00	868+01.46	27.58 RT	735.66
B2	866+38.49	6.75 LT	756.03	868+37.10	6.75 LT	754.87
B3	866+58.31	27.58 RT	756.03	868+56.92	27.58 RT	754.87
W2	866+41.74	27.58 RT	761.49	868+68.20	27.58 RT	760.29

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	1100	-	1030	690
BERM LINING - NORTH ABUTMENT	940	-	880	590
STONE TOE - SOUTH ABUTMENT	330	-	320	200
STONE TOE - NORTH ABUTMENT	460	-	450	290
TOTALS	2820	-	2680	1770

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.



SITE PLAN
STAGE 2

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

REVETMENT LAYOUT:

- (R1) 866+15.38, 40.00 RT, END BERM LINING
- (R2) 866+15.38, 55.00 RT, END BERM LINING
- (R3) 865+19.46, 55.00 RT, END BERM LINING
- (R4) 865+20.22, 65.00 RT, END BERM LINING
- (R5) 866+15.38, 72.01 RT, END STONE TOE
- (R6) 868+96.20, 29.00 RT, END BERM LINING
- (R7) 868+96.38, 100.57 RT, END STONE TOE

UTILITIES LEGEND:

FO - FIBER OPTIC - SOUTH SLOPE
G - GAS - MIDAMERICAN ENERGY

PRELIMINARY

DESIGN FOR 30° SKEW (R.A.)

209'-0 x 32'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
WIDEN TO 64'-0 (BTB BEAMS)

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

SITE PLAN - STAGE 2

STATION 867+41.69 **LINN COUNTY** AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 518

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.7

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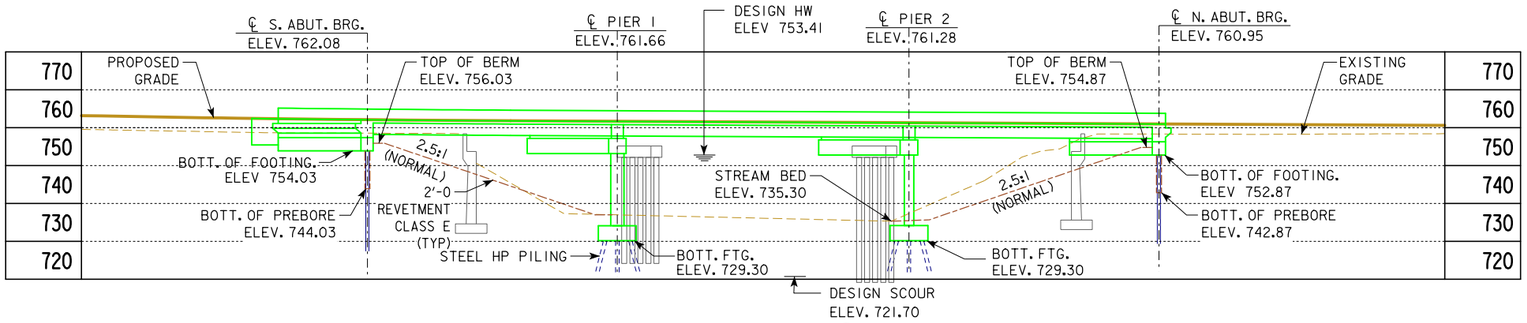
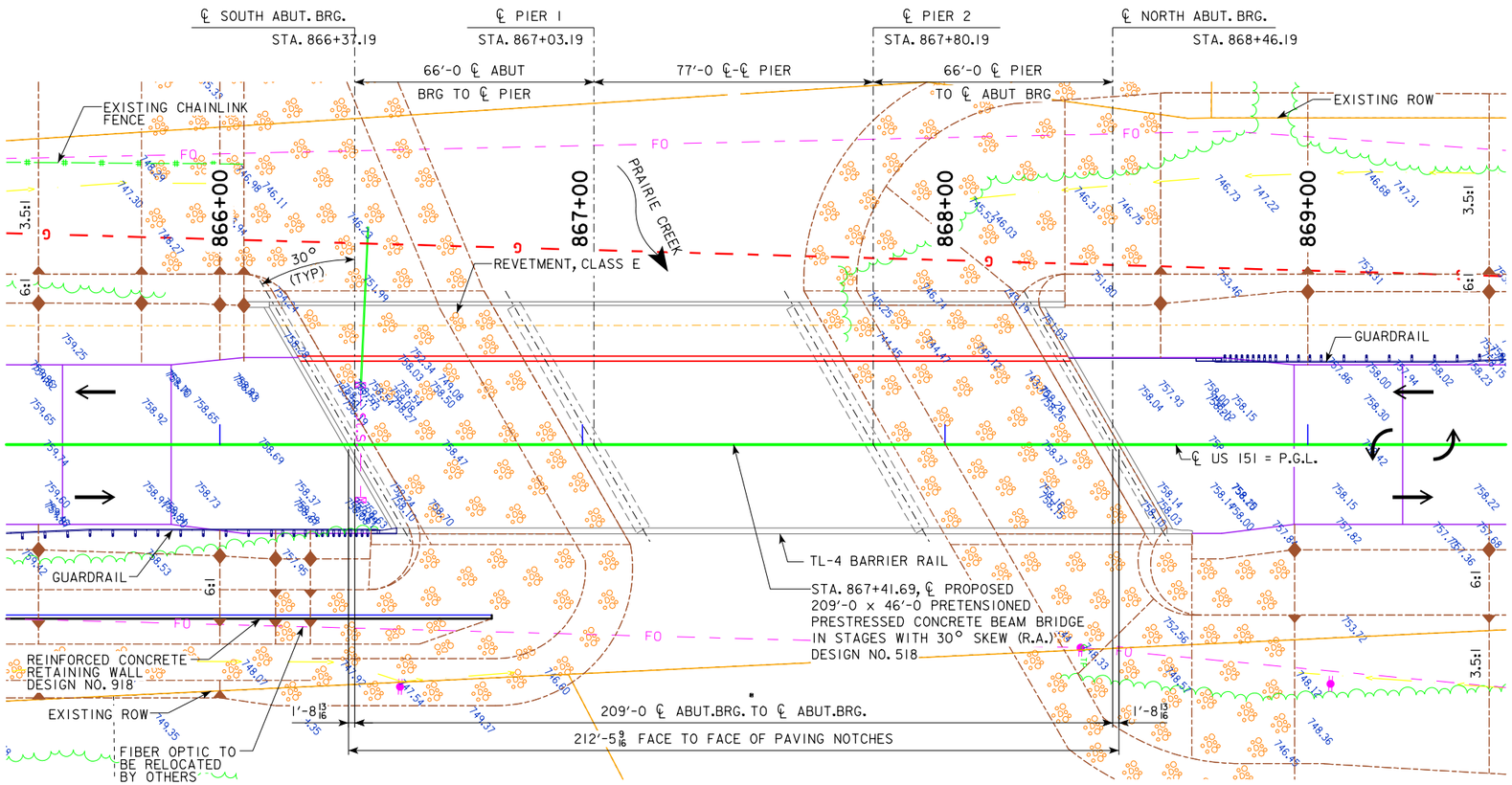
BENCH MARK NO. BM2 STA. 871+35.96, 70.098 RT, RR SPIKE IN POWER POLE, EAST SIDE HWY 151, 200' ± NORTH OF NORTH END OF RIVER BRIDGE AT BEGGINNING OF CLEARING. ELEV. 750.420, N = 705704.166 E = 2107504.303

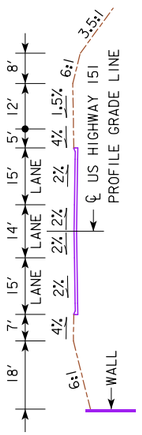


LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

TOP OF BRIDGE DECK CROWN 0.03' BELOW PROFILE GRADE



TYPICAL APPROACH SECTION



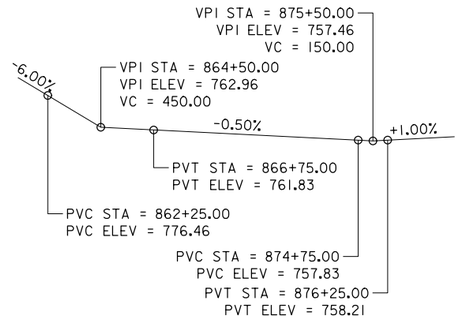
NOTE:
PIERS ARE WALL PIERS (SOLID STEM) ON PILE CAP FOOTINGS.
BEAM TYPE BTB, DEPTH = 3'-0.
TL-4 SEPARATION RAILING AND BARRIER RAIL IS PROPOSED.
BRIDGE AESTHETICS TO BE INCORPORATED DURING FINAL DESIGN.

SITUATION PLAN FINAL

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 = 6.11 FT./MI.
AVG. LOW WATER STAGE = 736.6

Q_{50} = 13,480 CFS
STAGE = 752.66
BACKWATER = 0.41 FT.

Q_{100} = 16,060 CFS
STAGE = 753.41
BACKWATER = 0.48 FT.
AVG. BRIDGE VELOCITY = 6.19 FPS

Q_{200} = 18,991 CFS
STAGE = 753.99
CALCULATED DESIGN SCOUR = 721.7

Q_{500} = 22,750 CFS
STAGE = 754.91
CALCULATED CHECK SCOUR = 717.56

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

UTILITIES LEGEND:

FO - FIBER OPTIC - SOUTH SLOPE
G - GAS - MIDAMERICAN ENERGY

LOCATION

US HIGHWAY 151
OVER PRAIRIE CREEK
T-82N R-8W
SECTION 9
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33781
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 (BTB BEAMS)

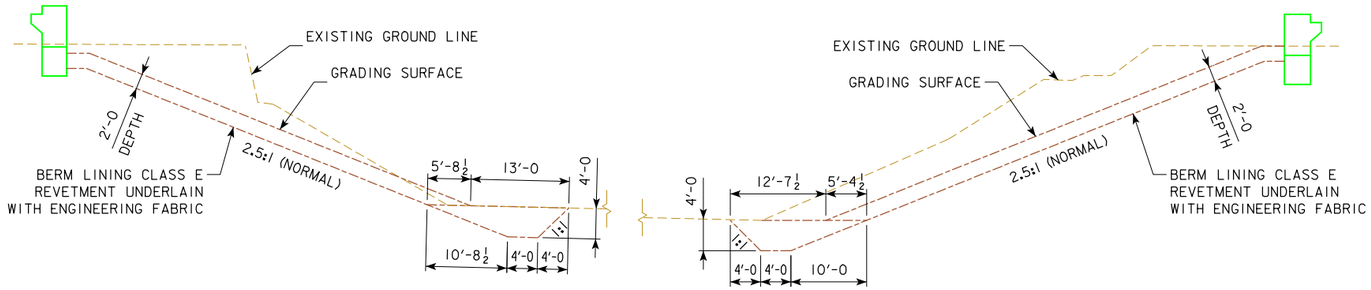
SPANS (66'-0, 77'-0, 66'-0)

SITUATION PLAN - FINAL

STATION 867+41.69 LINN COUNTY AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. 31286 DESIGN NO. 518



SECTION THRU EMBEDDED REVETMENT BERM

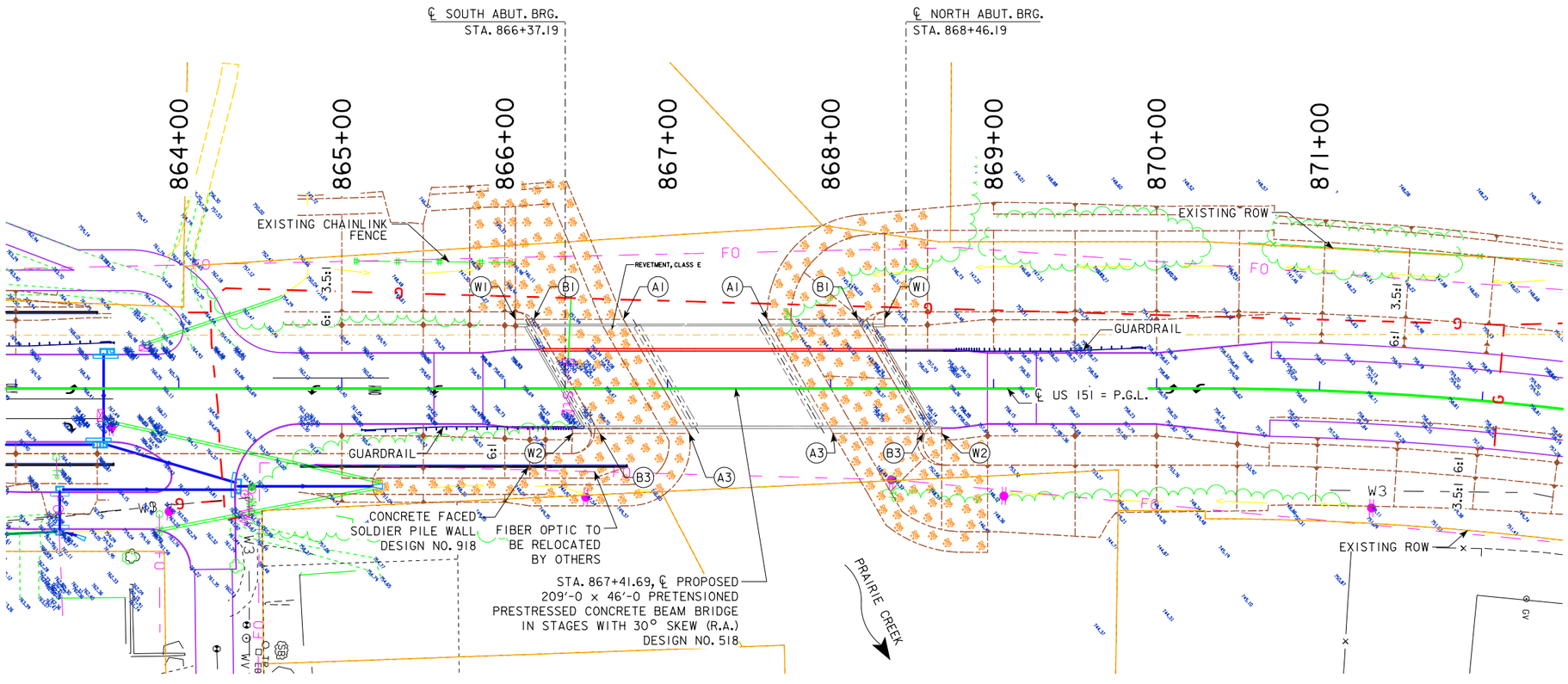
BENCH MARK NO. BM2 STA. 871+35.96, 70.098 RT, RR SPIKE IN POWER POLE, EAST SIDE HWY 151, 200' ± NORTH OF NORTH END OF RIVER BRIDGE AT BEGGINNING OF CLEARING.
ELEV. 750.420, N = 705704.166 E = 2107504.303

BERM SLOPE LOCATION TABLE

	SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV
A1	866+72.83	42.42 LT	737.00	867+61.05	42.42 LT	735.66
A3	867+13.25	27.58 RT	737.00	868+01.46	27.58 RT	735.66
B1	866+17.90	42.42 LT	756.03	868+16.50	42.42 LT	754.87
B3	866+58.31	27.58 RT	756.03	868+56.92	27.58 RT	754.87
W1	866+06.61	42.42 LT	761.64	868+33.08	42.42 LT	760.23
W2	866+41.74	27.58 RT	761.49	868+68.20	27.58 RT	760.29

BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE

NOTE:
SEE SHEETS V.5 AND V.7 FOR BERM ARMORING QUNATITIES.



SITE PLAN
FINAL

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

N

0 ENGLISH 80
SCALE IN FEET

UTILITIES LEGEND:

FO - FIBER OPTIC - SOUTH SLOPE
G - GAS - MIDAMERICAN ENERGY

PRELIMINARY

DESIGN FOR 30° SKEW (R.A.)

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

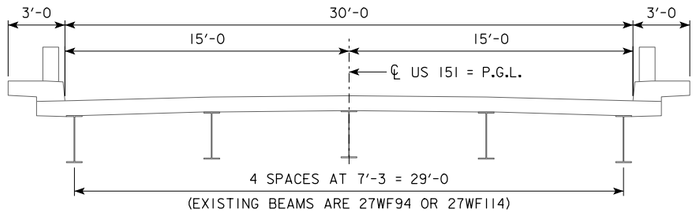
SPANS (66'-0, 77'-0, 66'-0)

SITE PLAN - FINAL

STATION 867+41.69 LINN COUNTY AUGUST 2016

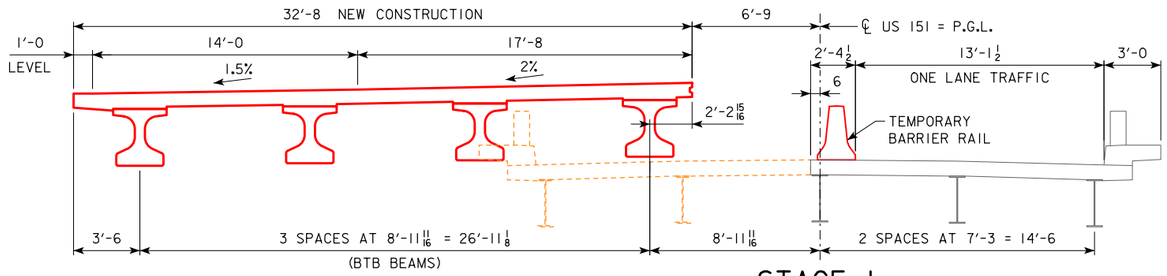
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 518



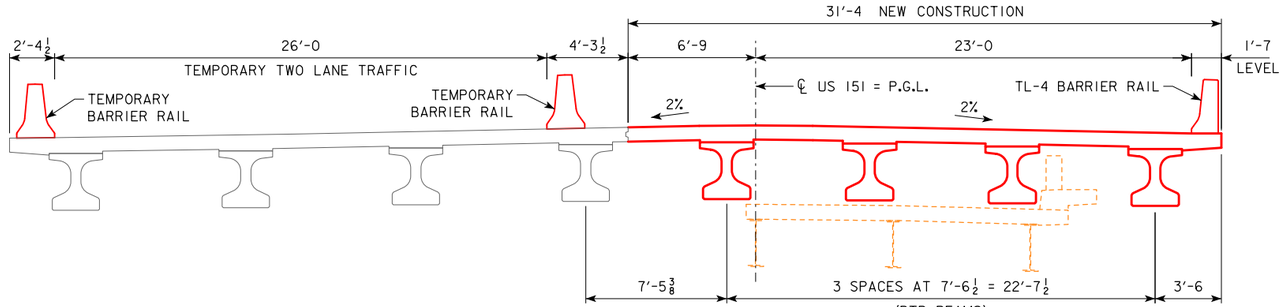
EXISTING

(LOOKING UP STATION - NORTH)



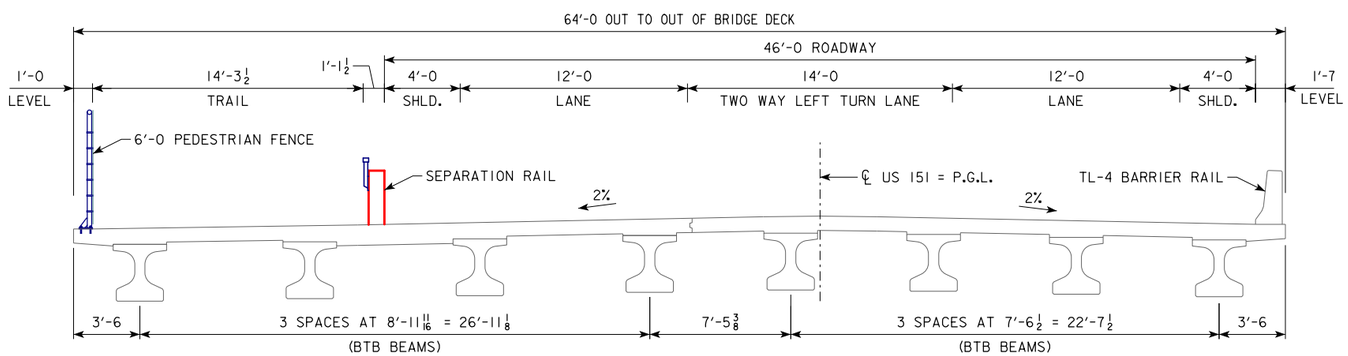
STAGE 1

STAGE 1
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.



FINAL

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

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 (BTB BEAMS)

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

STAGING

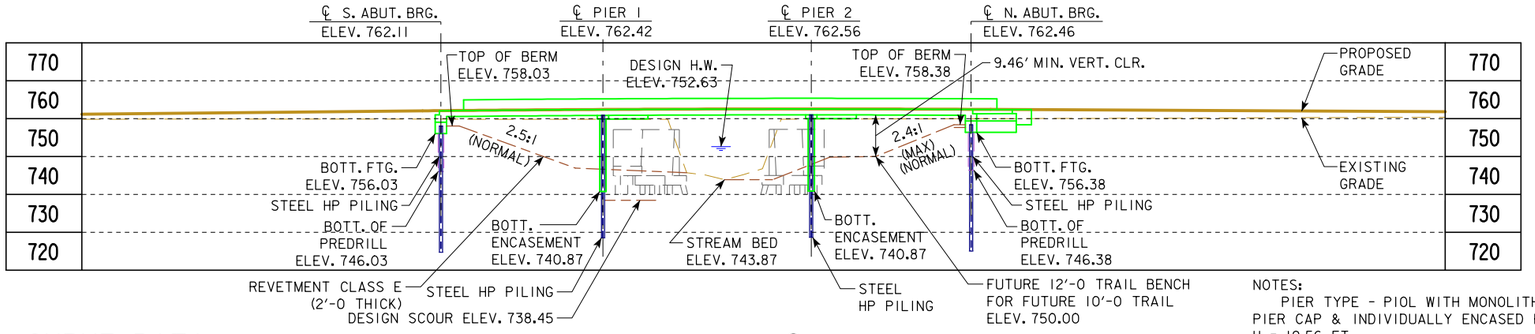
STATION 867+41.69 LINN COUNTY AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 518

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

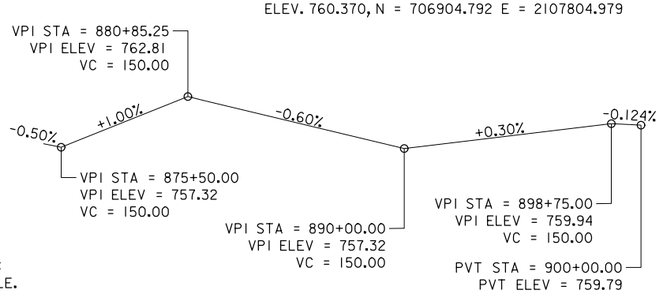
S.B.I. NO. 112.0807.01 | LINN COUNTY | PROJECT NUMBER BRF-151-3(142)--38-57 | SHEET NUMBER V.10



LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

NOTE: BERM IS NOT LEVEL IT SLOPES WITH THE ROADWAY SUPERELEVATION.

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

NOTES:
PIER TYPE - PIOL WITH MONOLITHIC PIER CAP & INDIVIDUALLY ENCASED PILE.
H = 19.56 FT.
TL-4 BARRIER RAILING PROPOSED.
BRIDGE AESTHETICS TO BE INCORPORATED DURING FINAL DESIGN.

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

MINIMUM VERTICAL CLEARANCE

OVERHEAD STATION = 881+24.90, OFFSET 30.58'
OVERHEAD ELEVATION = 761.33
DEPTH OF SUPERSTRUCTURE = 1.875'
UNDERPASS STATION = N/A, OFFSET N/A
UNDERPASS ELEVATION = 750.00
MINIMUM VERTICAL CLEARANCE = 9.46'

HYDRAULIC DATA

DRAINAGE AREA = 3.0 SQ. MI.
STREAM SLOPE = 32.65 FT./MI.
AVG. LOW WATER STAGE = 752.63

Q_{50} = 2120 CFS
STAGE = 752.63
BACKWATER = 0.19 FT.
AVE. BRIDGE VELOCITY = 4.5 FPS

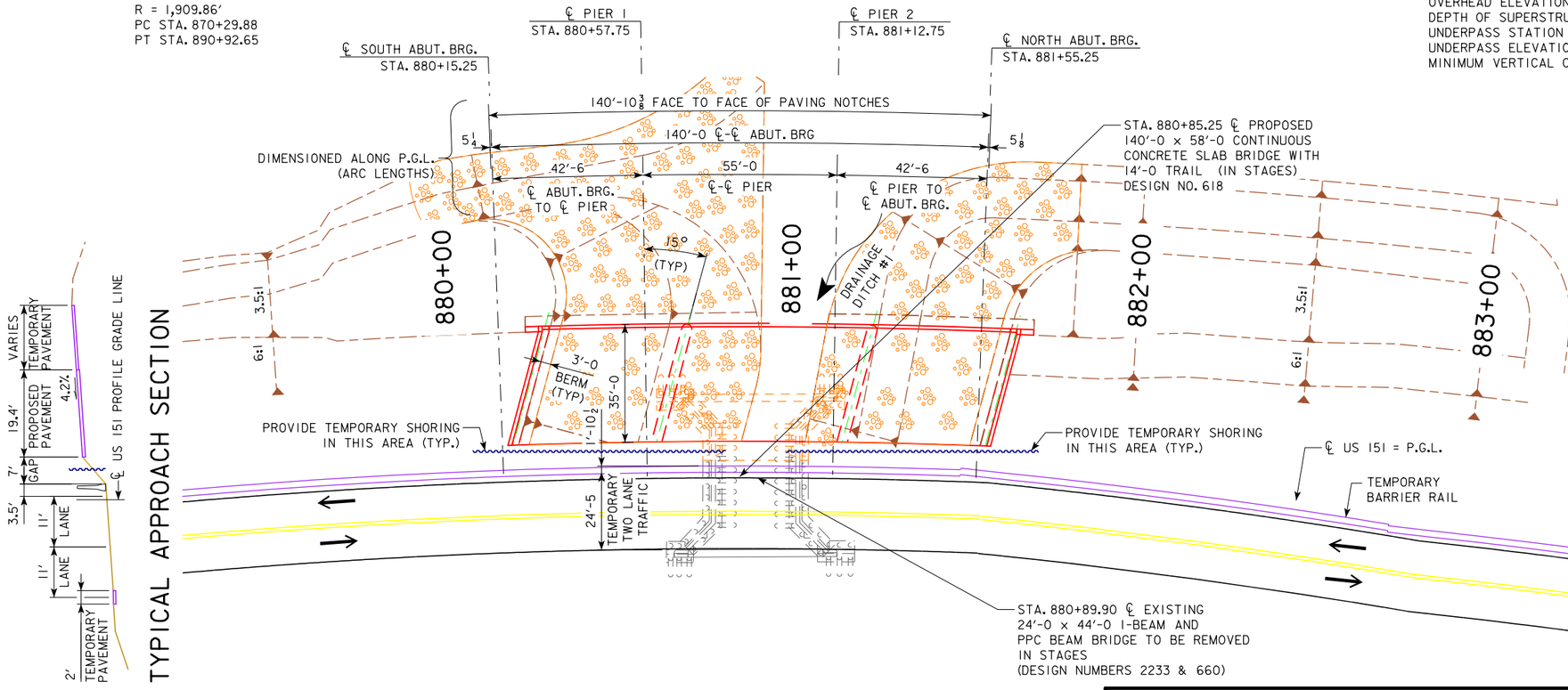
Q_{100} = 2530 CFS
STAGE = 753.07
BACKWATER = 0.22 FT.

Q_{200} = 3310 CFS
STAGE = 753.84
CALCULATED DESIGN SCOUR = 738.45

Q_{500} = 3680 CFS
STAGE = 754.22
CALCULATED CHECK SCOUR = 738.33

ROADWAY OVERTOP 757.60
STA. 875+25

ALL ELEVATIONS NAVD88



TYPICAL APPROACH SECTION

UTILITIES LEGEND:

TV - CABLE TELEVISION - UNDERGROUND TV CABLE CO. I
FO - FIBER OPTIC - SOUTH SLOPE
T2 - TELEPHONE - CENTURYLINK

LOCATION

US HIGHWAY 151
OVER DRAINAGE DITCH #1
T-82N R-8W
SECTION 9
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33791
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.

__-__-2016
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 V.11,V.13,V.15 - HYDRAULIC DATA

DESIGN FOR 15° SKEW (L.A.)

140'-0 x 35'-0 CONTINUOUS CONCRETE SLAB BRIDGE

SPANS (42'-6, 55'-0, 42'-6) ℄ RADIUS = 1,909.86 FT.

SITUATION PLAN - STAGE 1

STATION 880+85.25 LINN COUNTY AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. 31286 DESIGN NO. 618

SITUATION PLAN
STAGE 1

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

N

0 ENGLISH 40
SCALE IN FEET

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

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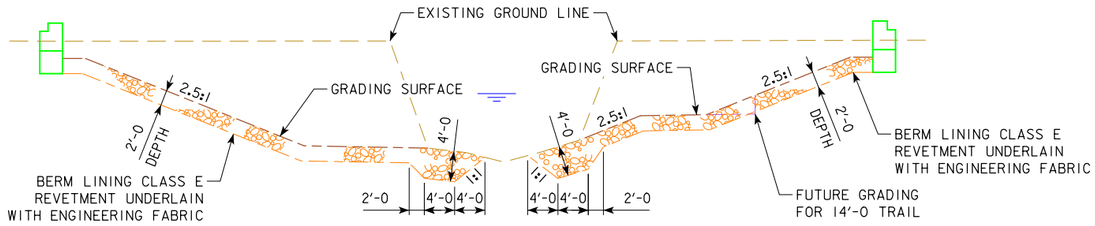
BENCH MARK NO. BM3 STA. 883+94.08, 58.416 LT, RR SPIKE IN POWER POLE, NW QUADRANT OF CEMETARY ROAD AND HWY 151
ELEV. 760.370, N = 706904.792 E = 2107804.979



SECTION THRU EMBEDDED REVETMENT BERM

BERM SLOPE LOCATION TABLE

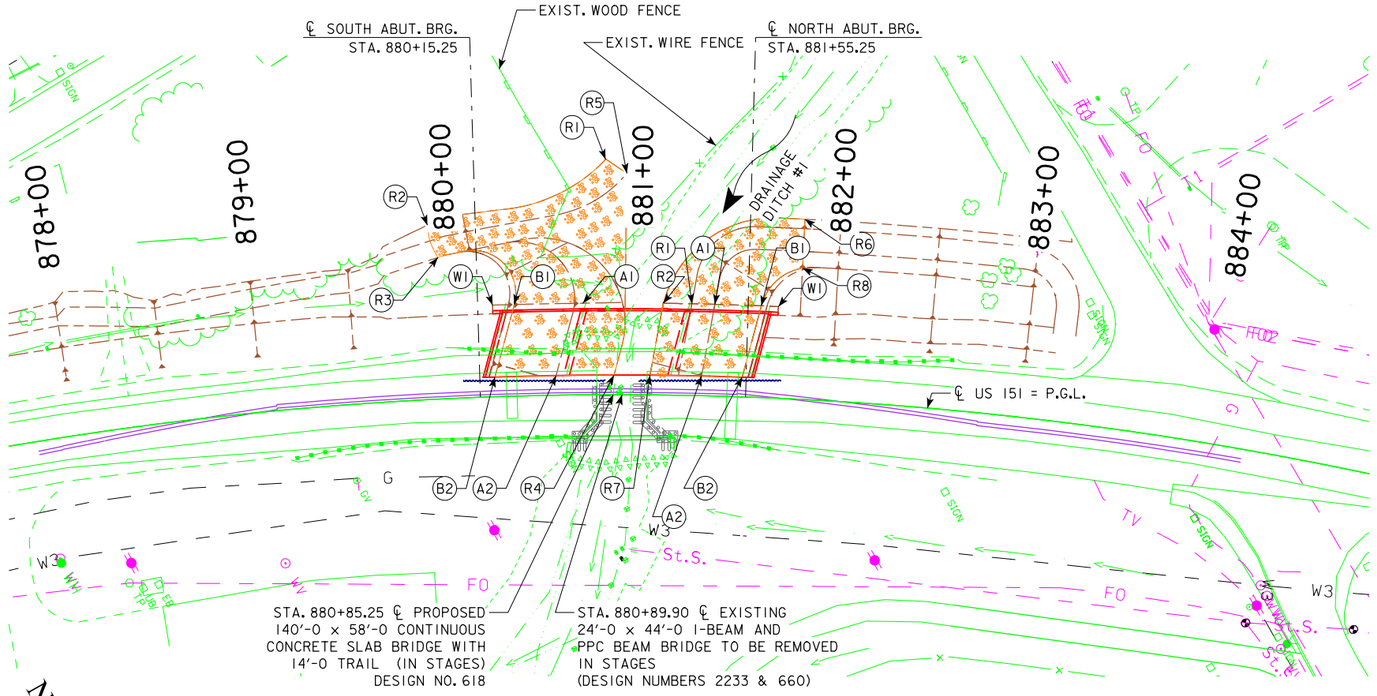
	SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV
A1	880+69.64	48.42 LT	746.75	881+37.62	48.42 LT	750.00
A2	880+54.80	10.42 LT	746.75	881+31.64	10.42 LT	750.00
B1	880+34.34	48.42 LT	760.22	881+61.56	48.42 LT	760.38
B2	880+23.11	10.42 LT	758.53	881+53.03	10.42 LT	758.82
R1	-----	----	----	881+25.77	48.42 LT	749.82
R3	-----	----	----	881+19.55	10.42 LT	749.82
W1	880+22.98	48.42 LT	763.52	881+70.46	48.42 LT	763.72

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	900	-	840	560
BERM LINING - NORTH ABUTMENT	540	-	510	340
STONE TOE - SOUTH ABUTMENT	320	-	310	200
STONE TOE - NORTH ABUTMENT	350	-	340	220
TOTALS	2110	-	2000	1320

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.



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

REVETMENT LAYOUT:

- (R1) 880+81.71, 124.45 LT, END STONE TOE
- (R2) 879+91.64, 92.01 LT, END BERM LINING
- (R3) 879+96.19, 74.70 LT, END BERM LINING
- (R4) 880+85.70, 10.42 LT, END STONE TOE
- (R5) 880+92.09, 116.84 LT, END STONE TOE
- (R6) 881+81.83, 95.12 LT, END STONE TOE
- (R7) 881+04.54, 10.42 LT, END STONE TOE
- (R8) 881+81.82, 69.32 LT, END BERM LINING

UTILITIES LEGEND:

TV - CABLE TELEVISION - UNDERGROUND TV CABLE CO. 1
FO - FIBER OPTIC - SOUTH SLOPE
T2 - TELEPHONE - CENTURYLINK

PRELIMINARY

DESIGN FOR 15° SKEW (L.A.)

140'-0 x 35'-0 CONTINUOUS CONCRETE SLAB BRIDGE

SPANS (42'-6, 55'-0, 42'-6) ℄ RADIUS = 1,909.86 FT.

SITE PLAN - STAGE 1

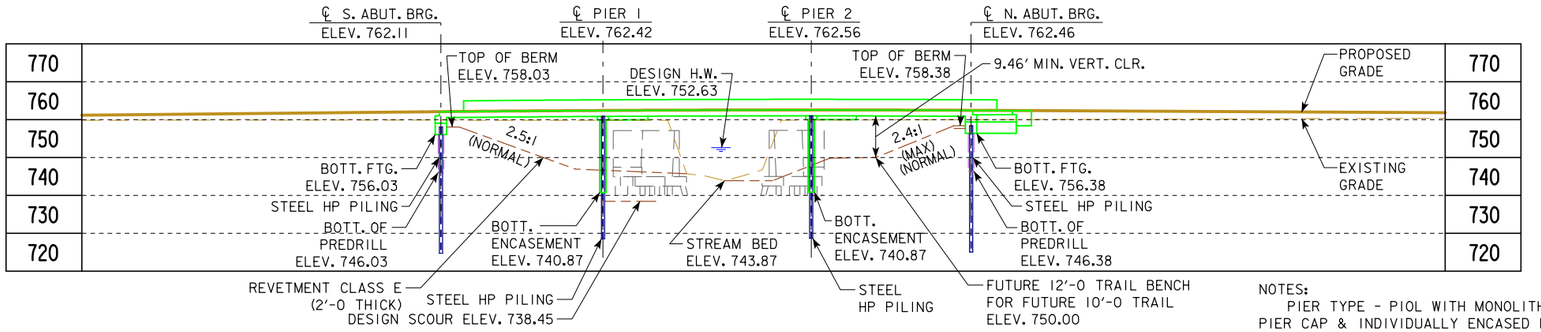
STATION 880+85.25 LINN COUNTY AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 618

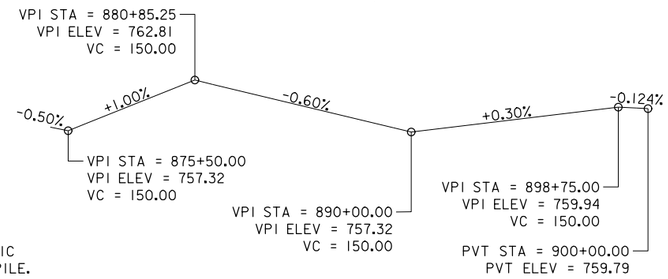
DESIGN TEAM SHUCK-BRITSON INC. 400 EAST COURT AVE. SUITE 140 DES MOINES, IOWA 50309 515-243-4447

S.B.I. NO. 112.0807.01 | LINN COUNTY | PROJECT NUMBER BRF-151-3(152)--38-57 | SHEET NUMBER V.12



LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

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+29.88
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. BRIDGE AESTHETICS TO BE INCORPORATED DURING FINAL DESIGN.

MINIMUM VERTICAL CLEARANCE

OVERHEAD STATION = 881+24.90, OFFSET 30.58'
OVERHEAD ELEVATION = 761.33
DEPTH OF SUPERSTRUCTURE = 1.875'
UNDERPASS STATION = N/A, OFFSET N/A
UNDERPASS ELEVATION = 750.00
MINIMUM VERTICAL CLEARANCE = 9.46'

HYDRAULIC DATA

DRAINAGE AREA = 3.0 SQ. MI.
STREAM SLOPE = 32.65 FT./MI.
AVG. LOW WATER STAGE = 752.63

Q_{50} = 2120 CFS
STAGE = 752.63
BACKWATER = 0.19 FT.
AVE. BRIDGE VELOCITY = 4.5 FPS

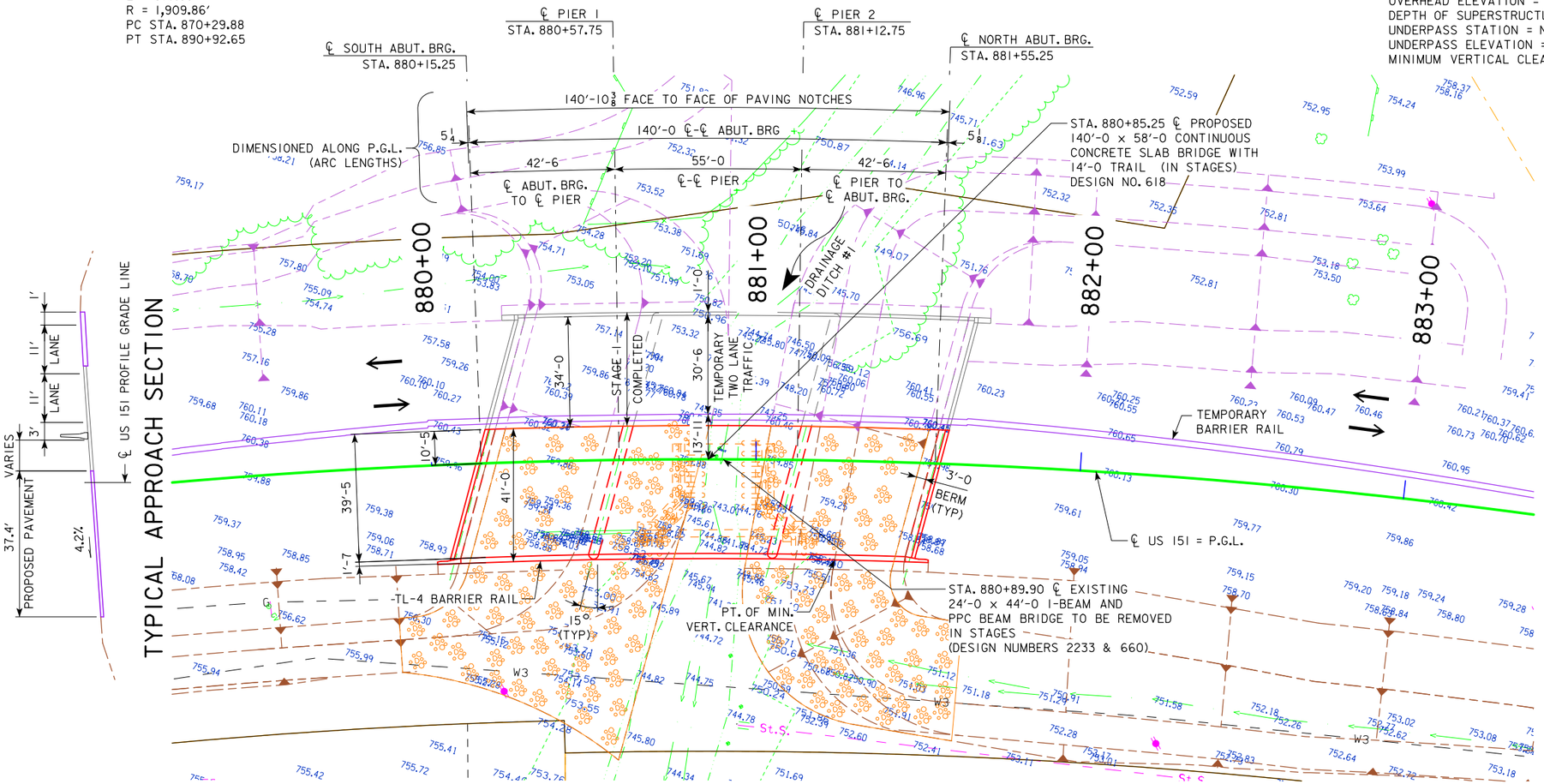
Q_{100} = 2530 CFS
STAGE = 753.07
BACKWATER = 0.22 FT.

Q_{200} = 3310 CFS
STAGE = 753.84
CALCULATED DESIGN SCOUR = 738.45

Q_{500} = 3680 CFS
STAGE = 754.22
CALCULATED CHECK SCOUR = 738.33

ROADWAY OVERTOP 757.60
STA. 875+25

ALL ELEVATIONS NAVD88



SITUATION PLAN
STAGE 2

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

UTILITIES LEGEND:

TV - CABLE TELEVISION - UNDERGROUND TV CABLE CO. I
FO - FIBER OPTIC - SOUTH SLOPE
T2 - TELEPHONE - CENTURYLINK

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.)

140'-0 x 35'-0 CONTINUOUS CONCRETE SLAB BRIDGE WIDENED TO 140'-0 x 76'-0

SPANS (42'-6, 55'-0, 42'-6) ℄ RADIUS = 1,909.86 FT.

SITUATION PLAN - STAGE 2

STATION 880+85.25 LINN COUNTY AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. 31286 DESIGN NO. 618

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.13

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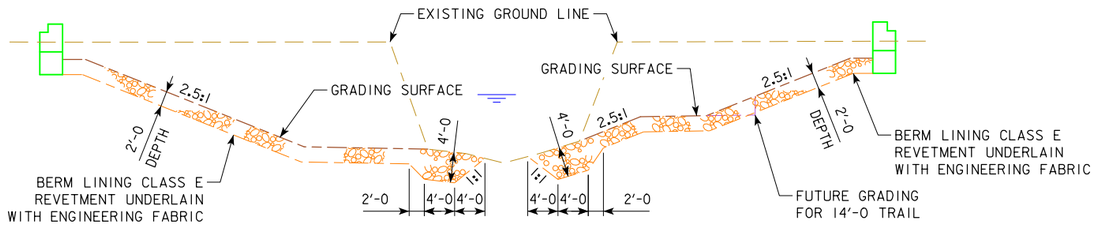
BENCH MARK NO. BM3 STA. 883+94.08, 58.416 LT, RR SPIKE IN POWER POLE, NW QUADRANT OF CEMETARY ROAD AND HWY 151
ELEV. 760.370, N = 706904.792 E = 2107804.979



SECTION THRU EMBEDDED REVETMENT BERM

BERM SLOPE LOCATION TABLE

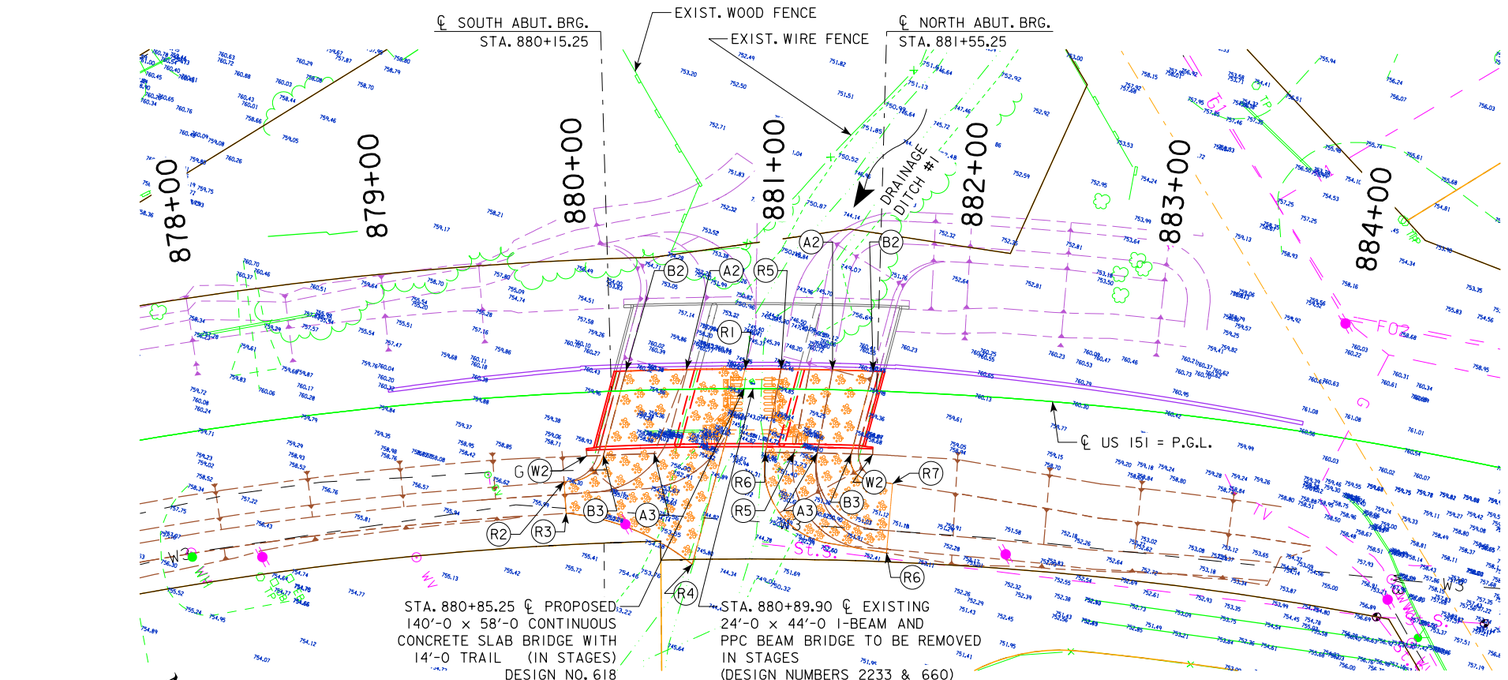
	SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV
A2	880+54.80	10.42 LT	746.75	881+31.64	10.42 LT	750.00
A3	880+36.80	33.58 RT	746.75	881+24.40	33.58 RT	750.00
B2	880+23.11	10.42 LT	758.53	881+53.03	10.42 LT	758.82
B3	880+09.52	33.58 RT	756.56	881+42.71	33.58 RT	757.01
R3	-----	----	----	881+19.55	10.42 LT	749.82
R5	-----	----	----	881+12.02	33.58 RT	749.82
W2	880+00.52	33.58 RT	760.59	881+54.13	33.58 RT	761.10

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	740	-	690	460
BERM LINING - NORTH ABUTMENT	590	-	560	370
STONE TOE - SOUTH ABUTMENT	270	-	270	170
STONE TOE - NORTH ABUTMENT	370	-	360	230
TOTALS	1970	-	1880	1230

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.



SITE PLAN
STAGE 2

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

REVETMENT LAYOUT:

- (R1) 880+85.70, 10.42 LT, END STONE TOE
- (R2) 879+87.60, 46.55 RT, END BERM LINING
- (R3) 879+87.60, 46.55 RT, END BERM LINING
- (R4) 880+56.25, 65.00 RT, END STONE TOE
- (R5) 881+04.54, 10.42 LT, END STONE TOE
- (R6) 881+63.78, 85.20 RT, END STONE TOE
- (R7) 881+65.57, 100.57 RT, END BERM LINING

UTILITIES LEGEND:

TV - CABLE TELEVISION - UNDERGROUND TV CABLE CO. I
FO - FIBER OPTIC - SOUTH SLOPE
T2 - TELEPHONE - CENTURYLINK

PRELIMINARY

DESIGN FOR 15° SKEW (L.A.)

140'-0 x 35'-0 CONTINUOUS CONCRETE SLAB BRIDGE WIDENED TO 140'-0 x 76'-0

SPANS (42'-6, 55'-0, 42'-6) ℄ RADIUS = 1,909.86 FT.

SITE PLAN - STAGE 2

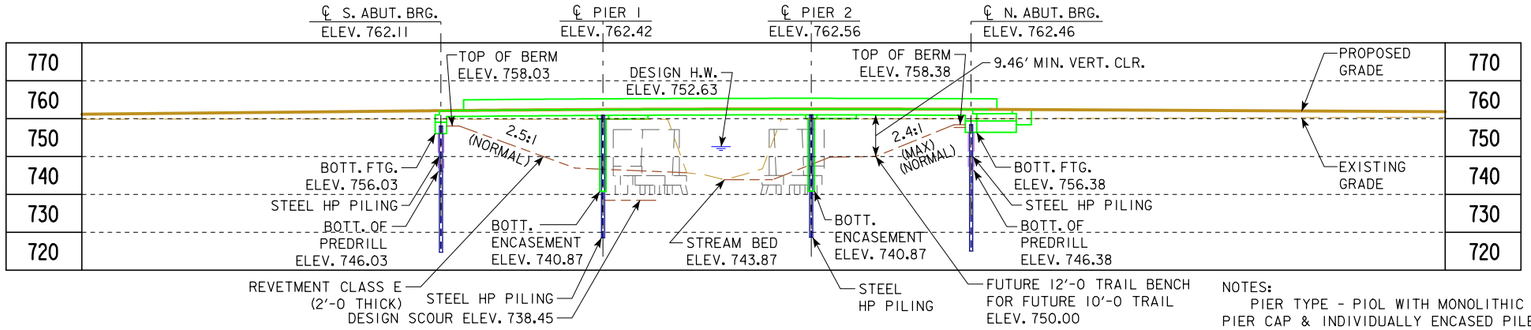
STATION 880+85.25 LINN COUNTY AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 618

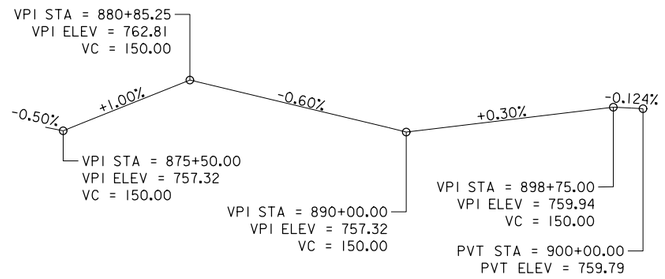
DESIGN TEAM	SHUCK-BRITSON	400 EAST COURT AVE. SUITE 140 DES MOINES, IOWA 50309 515-243-4477	S.B.I. NO. 112.0807.01	LINN COUNTY	PROJECT NUMBER BRF-151-3(152)--38-57	SHEET NUMBER V.14

8/5/2016 4:29:43 PM DCH pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\US151 @ DD1\57151152_Shuck-Britson.str TSL_57_0618_14 - 140ft CCS 11x17_pdf.pltcfg



LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

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+29.88
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.
BRIDGE AESTHETICS TO BE INCORPORATED DURING FINAL DESIGN.

MINIMUM VERTICAL CLEARANCE

OVERHEAD STATION = 881+24.90, OFFSET 30.58'
OVERHEAD ELEVATION = 761.33
DEPTH OF SUPERSTRUCTURE = 1.875'
UNDERPASS STATION = N/A, OFFSET N/A
UNDERPASS ELEVATION = 750.00
MINIMUM VERTICAL CLEARANCE = 9.46'

HYDRAULIC DATA

DRAINAGE AREA = 3.0 SQ. MI.
STREAM SLOPE = 32.65 FT./MI.
AVG. LOW WATER STAGE = 752.63

Q_{50} = 2120 CFS
STAGE = 752.63
BACKWATER = 0.19 FT.
AVE. BRIDGE VELOCITY = 4.5 FPS

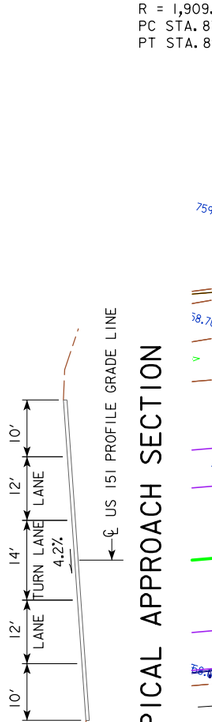
Q_{100} = 2530 CFS
STAGE = 753.07
BACKWATER = 0.22 FT.

Q_{200} = 3310 CFS
STAGE = 753.84
CALCULATED DESIGN SCOUR = 738.45

Q_{500} = 3680 CFS
STAGE = 754.22
CALCULATED CHECK SCOUR = 738.33

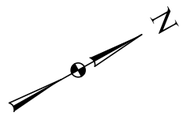
ROADWAY OVERTOP 757.60
STA. 875+25

ALL ELEVATIONS NAVD88



SITUATION PLAN
FINAL STAGE

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED



0 ENGLISH 40
SCALE IN FEET

UTILITIES LEGEND:

TV - CABLE TELEVISION - UNDERGROUND TV CABLE CO. I
FO - FIBER OPTIC - SOUTH SLOPE
T2 - TELEPHONE - CENTURYLINK

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.)

140'-0 x 58'-0 CONTINUOUS CONCRETE SLAB BRIDGE WITH 14'-0 TRAIL

SPANS (42'-6, 55'-0, 42'-6) ℄ RADIUS = 1,909.86 FT.

SITUATION PLAN - FINAL STAGE

STATION 880+85.25 LINN COUNTY AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 618

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.15

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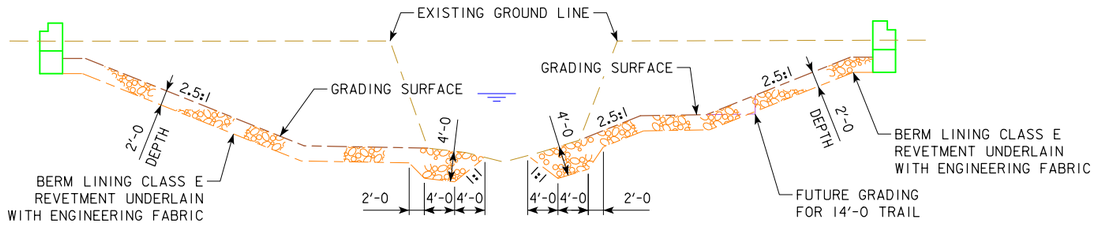
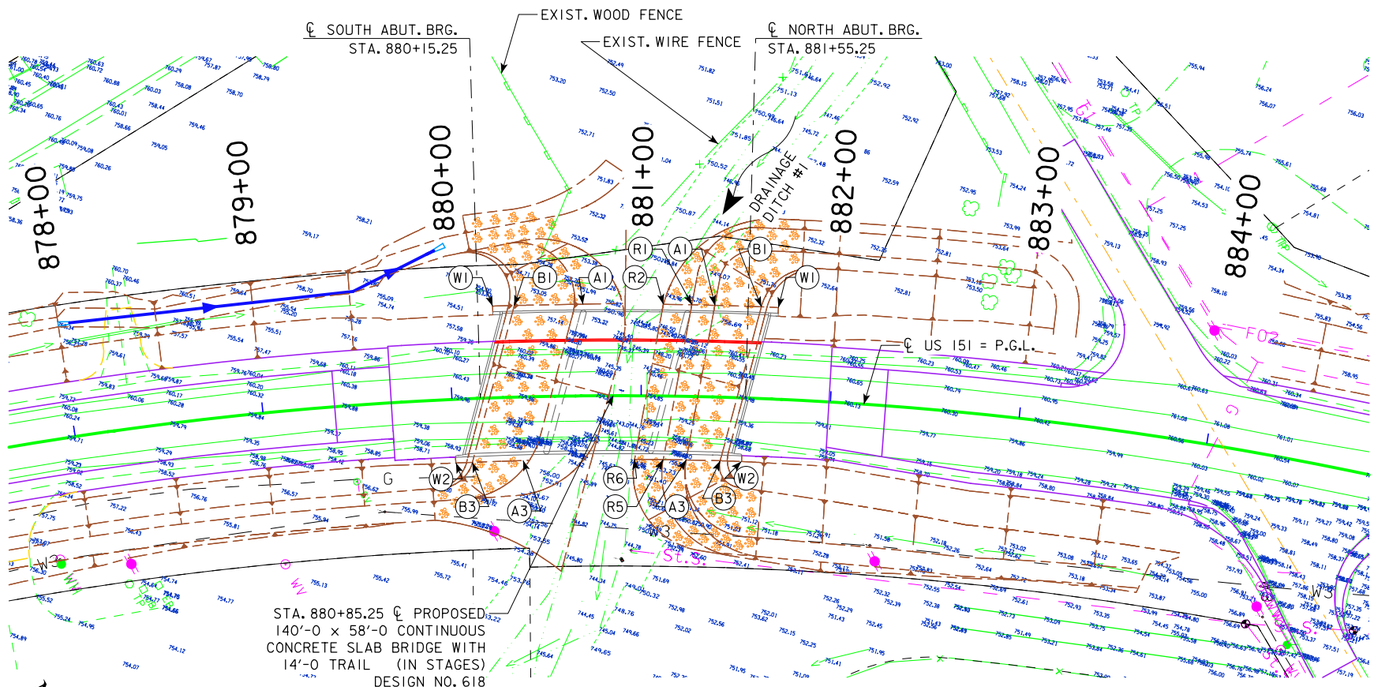
BENCH MARK NO. BM3 STA. 883+94.08, 58.416 LT, RR SPIKE IN POWER POLE, NW QUADRANT OF CEMETARY ROAD AND HWY 151
ELEV. 760.370, N = 706904.792 E = 2107804.979



SECTION THRU EMBEDDED REVETMENT BERM

NOTES:
1. SEE SHEETS V.12 AND V.14 FOR BERM SLOPE LOCATION TABLES.
2. SEE SHEETS V.12 AND V.14 FOR ESTIMATED BERM ARMORING QUANTITIES.



SITE PLAN
FINAL STAGE

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

UTILITIES LEGEND:

TV - CABLE TELEVISION - UNDERGROUND TV CABLE CO. I
FO - FIBER OPTIC - SOUTH SLOPE
T2 - TELEPHONE - CENTURYLINK

PRELIMINARY

DESIGN FOR 15° SKEW (L.A.)

140'-0 x 58'-0 CONTINUOUS CONCRETE SLAB BRIDGE WITH 14'-0 TRAIL

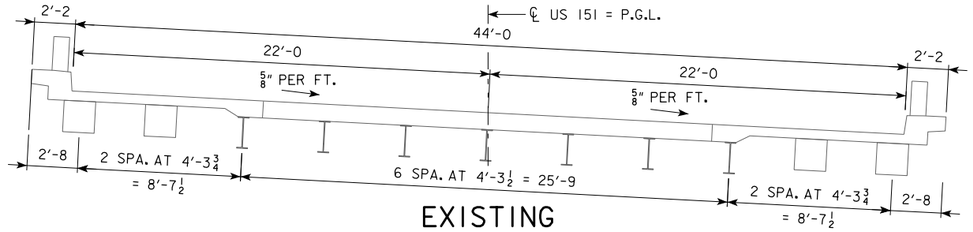
SPANS (42'-6, 55'-0, 42'-6) ℄ RADIUS = 1,909.86 FT.

SITE PLAN - FINAL STAGE

STATION 880+85.25 LINN COUNTY AUGUST 2016

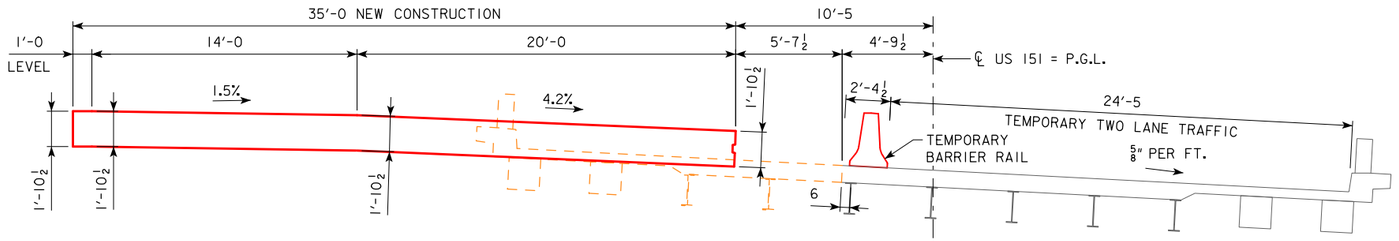
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 618



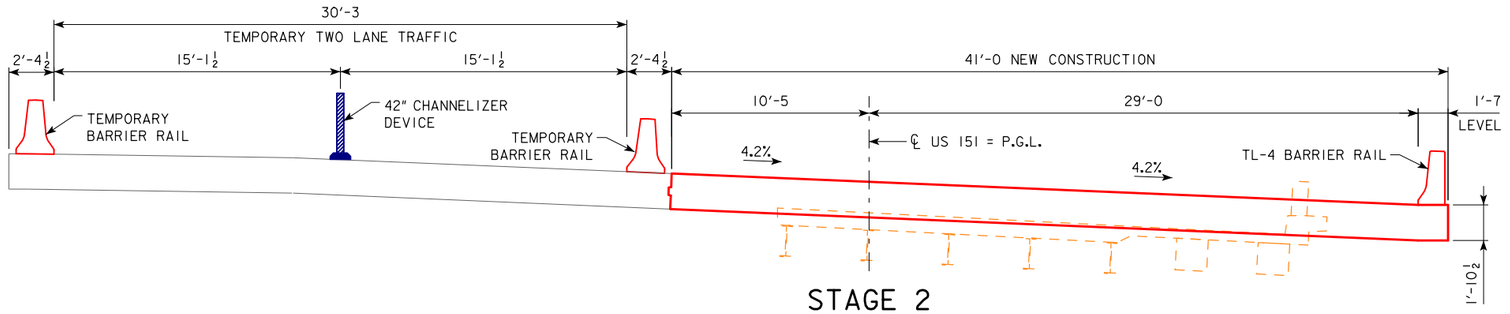
EXISTING

(LOOKING UP STATION - NORTH)

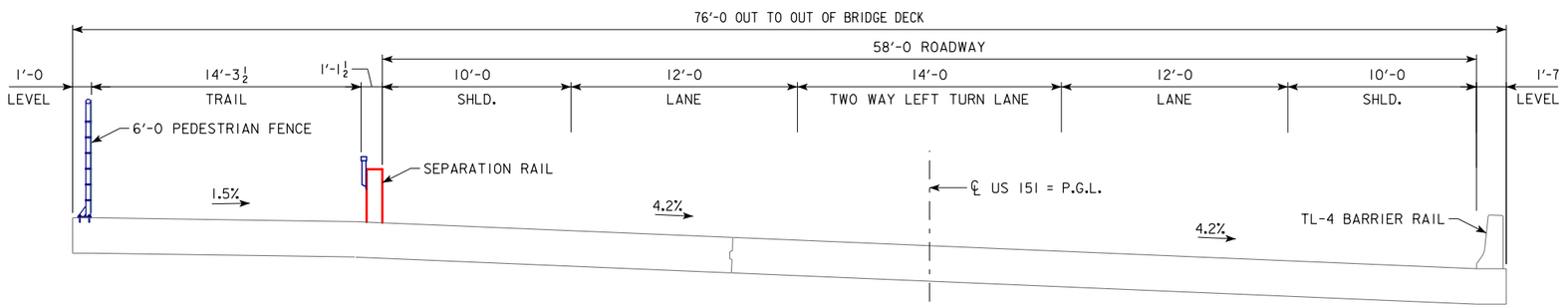


STAGE 1

STAGE 1
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



FINAL STAGE

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

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

NOTE:
CLOSURE POUR NOT REQUIRED PER BDM 5.2.4.1.2.

PRELIMINARY

DESIGN FOR 15° SKEW (L.A.)

140'-0 x 58'-0 CONTINUOUS CONCRETE SLAB BRIDGE WITH 14'-0 TRAIL

SPANS (42'-6, 55'-0, 42'-6) ℄ RADIUS = 1,909.86 FT.

STAGING

STATION 880+85.25 LINN COUNTY AUGUST 2016

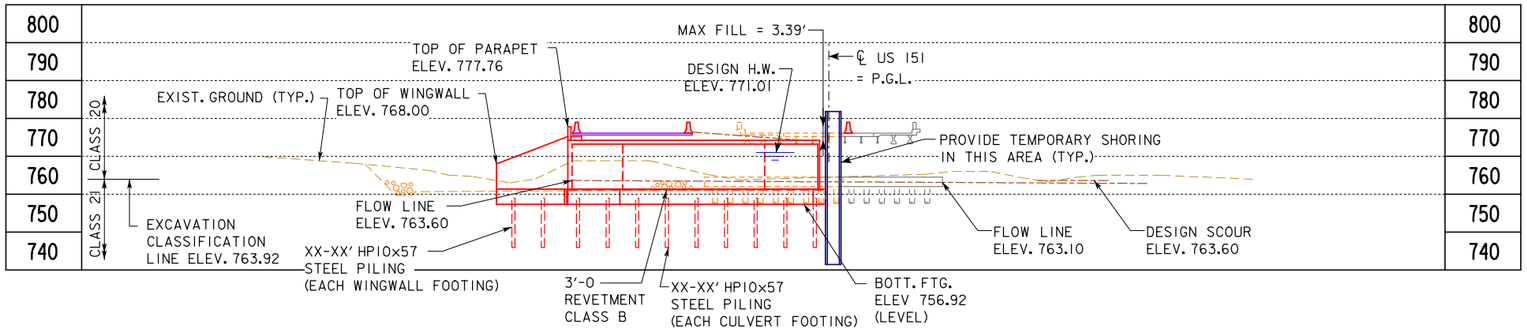
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. 31286 DESIGN NO. 618

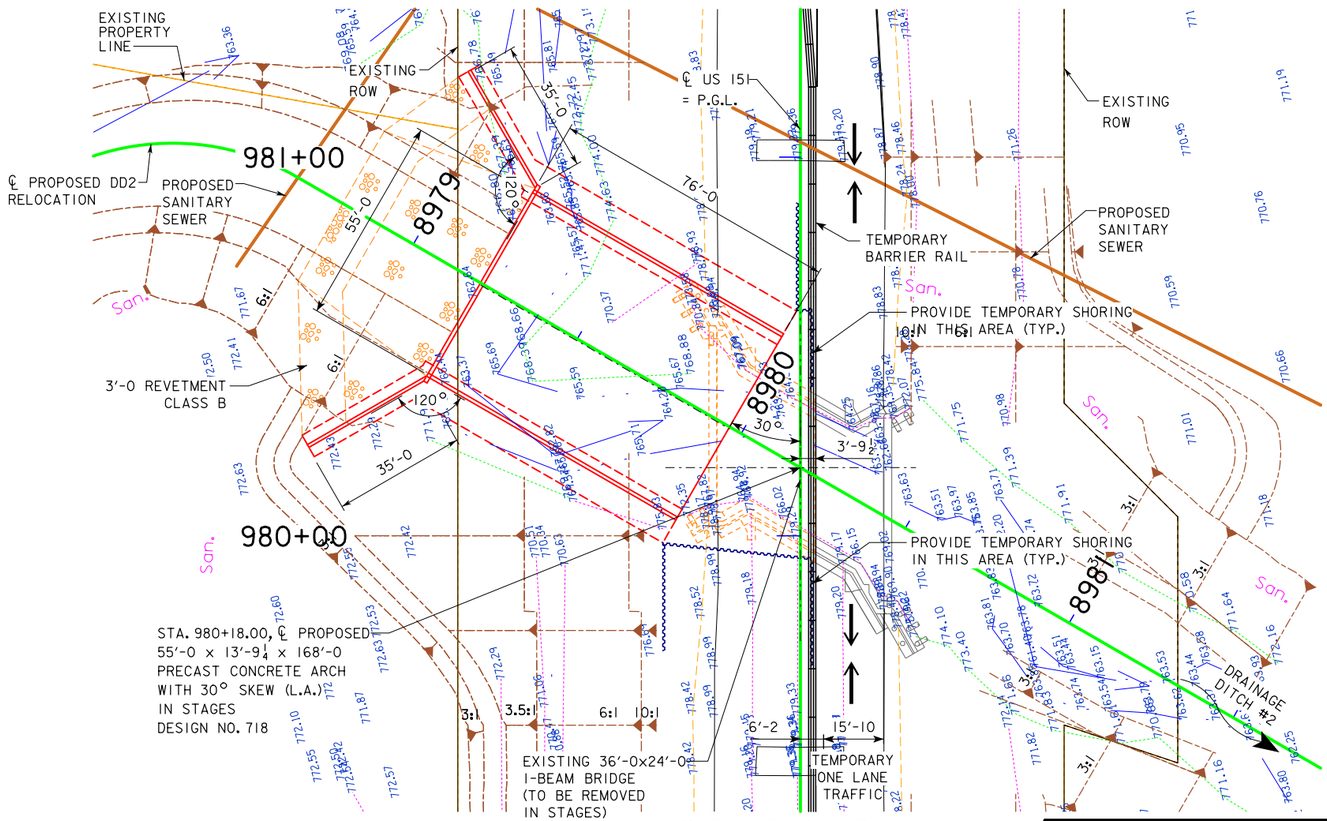
DESIGN TEAM	SHUCK-BRITSON INC. 400 EAST COURT AVE. SUITE 140 DES MOINES, IOWA 50309 515-243-4477	S.B.I. NO. 112.0807.01	LINN COUNTY	PROJECT NUMBER BRF-151-3(152)--38-57	SHEET NUMBER V.17

8/5/2016 4:30:01 PM DCH pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\US151 @ DD1\57151152_Shuck-Britson.str TSL_57_0618_17 - 140ft CCS 11x17_pdf.pltcfg

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

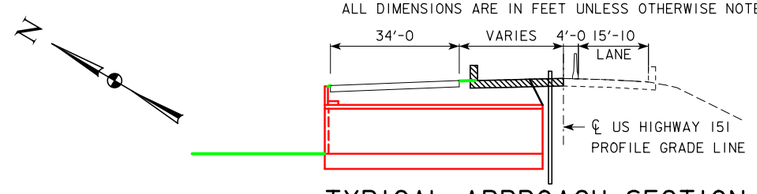


LONGITUDINAL SECTION ALONG ℄ CULVERT



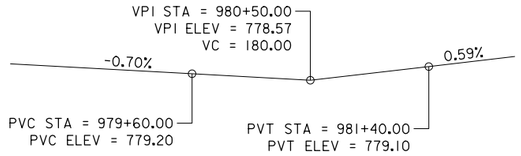
SITUATION PLAN STAGE I

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED



TYPICAL APPROACH SECTION

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 = 0.12 FT.
AVG. BRIDGE VELOCITY = 3.4 FPS

Q_{100} = 1,449 CFS
STAGE = 771.37
BACKWATER = 0.15 FT.

Q_{200} = 1,449 CFS
STAGE = 771.68
CALCULATED DESIGN SCOUR = 763.6

Q_{500} = 2,190 CFS
STAGE = 772.16
CALCULATED CHECK SCOUR = 763.6

ROADWAY OVERTOP 778.86
STA. 980+57.67

UTILITIES LEGEND:

San. - SANITARY SEWER - LINN COUNTY

LOCATION

US HIGHWAY 151
OVER DRAINAGE DITCH #2
T-82N R-8W
SECTION 2
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33801
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	-	

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.

__-__-2016
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 V.18,V.20,V.22 - HYDRAULIC DATA

DESIGN FOR 30° SKEW (L.A.)

55'-0 x 13'-9¼ x 76'-0 PRECAST CONCRETE ARCH

SITUATION PLAN - STAGE I

STATION 980+18.00

AUGUST 2016

LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 718

DESIGN TEAM SHUCK-BRITSON INC. 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.18

8/5/2016 8:53:16 AM DCH pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\US151 @ DD2\57151134_Shuck-Britson.str TSL_57_0718_18 - 1 lane traffic 11x17_pdf.pltcfg

ESTIMATED CHANNEL ARMORING QUANTITIES

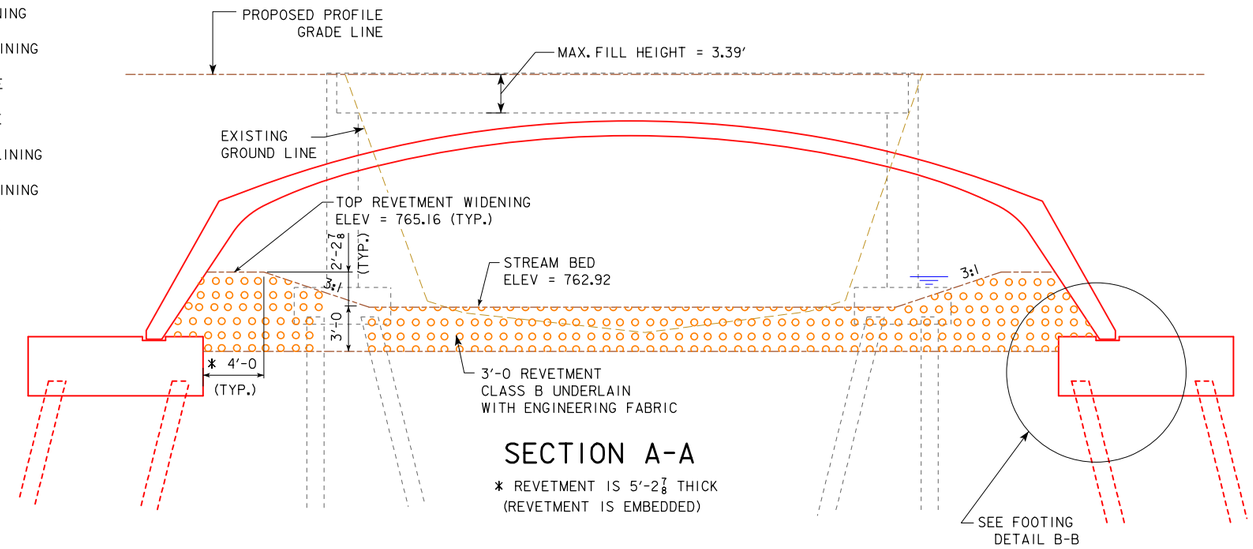
LOCATION	REVETMENT CL. B (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	EXCAVATION CLASS 10 CHANNEL (CY)
CHANNEL LINING - SOUTH APRON	--	--	--	--
CHANNEL LINING - NORTH APRON	378	--	236	236
CHANNEL LINING - ARCH	892	--	464	464
STONE TOE - SOUTH APRON	--	--	--	--
STONE TOE - NORTH APRON	286	--	176	179
TOTALS	1556	--	876	879

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

REVETMENT LAYOUT:

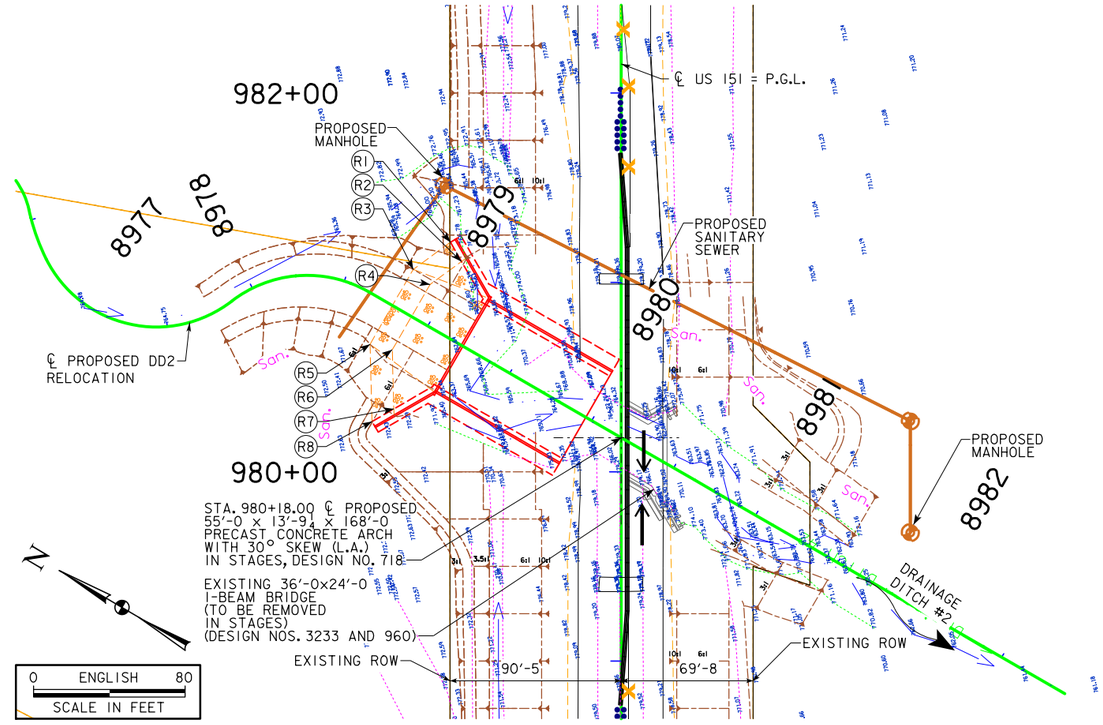
- (R1) 981+21.18, 90.20' LT., END STONE TOE
- (R2) 981+11.02, 84.33 LT., END CHANNEL LINING
- (R3) 981+06.83, 109.85 LT., END CHANNEL LINING
- (R4) 980+98.86, 100.98 LT., END STONE TOE
- (R5) 980+67.35, 132.64 LT., END STONE TOE
- (R6) 980+64.36, 120.90 LT., END CHANNEL LINING
- (R7) 980+33.18, 120.08 LT., END CHANNEL LINING
- (R8) 980+26.54, 131.58 LT., END STONE TOE

BENCH MARK NO. #588, CUT TRIANGLE ON BASE WALL OF REINFORCED CONCRETE BOX CULVERT
STA. 979+81.20, 23.19l OFFSET, ELEV. = 781.700



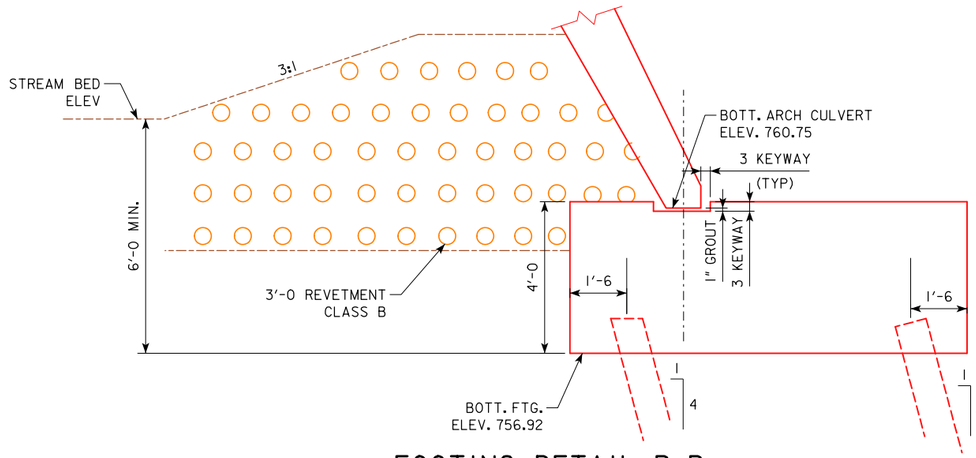
SECTION A-A

* REVETMENT IS 5'-2 7/8" THICK (REVETMENT IS EMBEDDED)

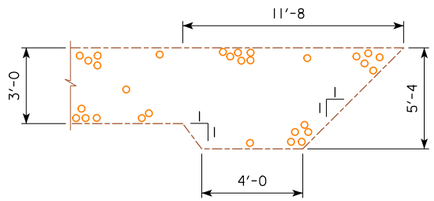


SITE PLAN

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED



FOOTING DETAIL B-B



SITE PLAN

PRELIMINARY

DESIGN FOR 30° SKEW (L.A.)

55'-0 x 13'-9 1/4 x 76'-0 PRECAST CONCRETE ARCH

SITE PLAN - STAGE I

STATION 980+18.00

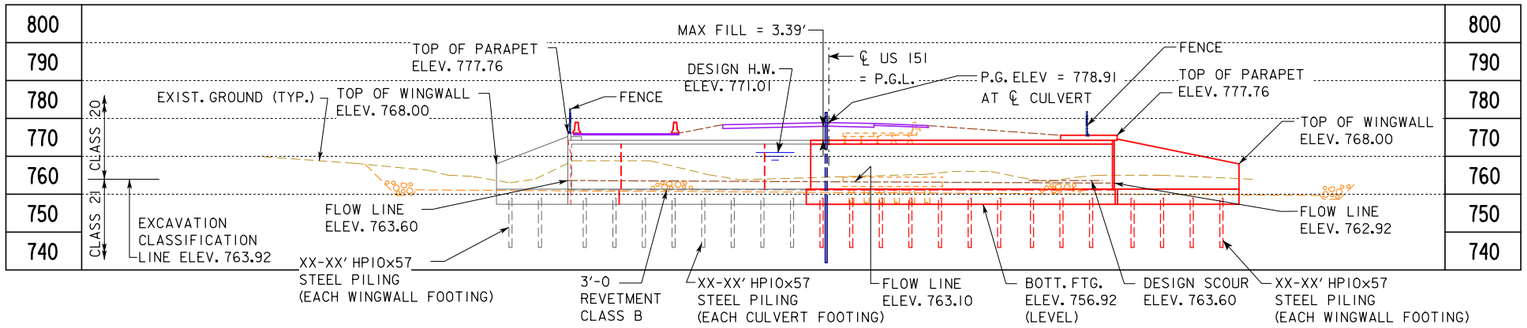
AUGUST 2016

LINN COUNTY

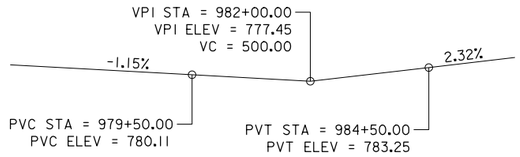
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 718

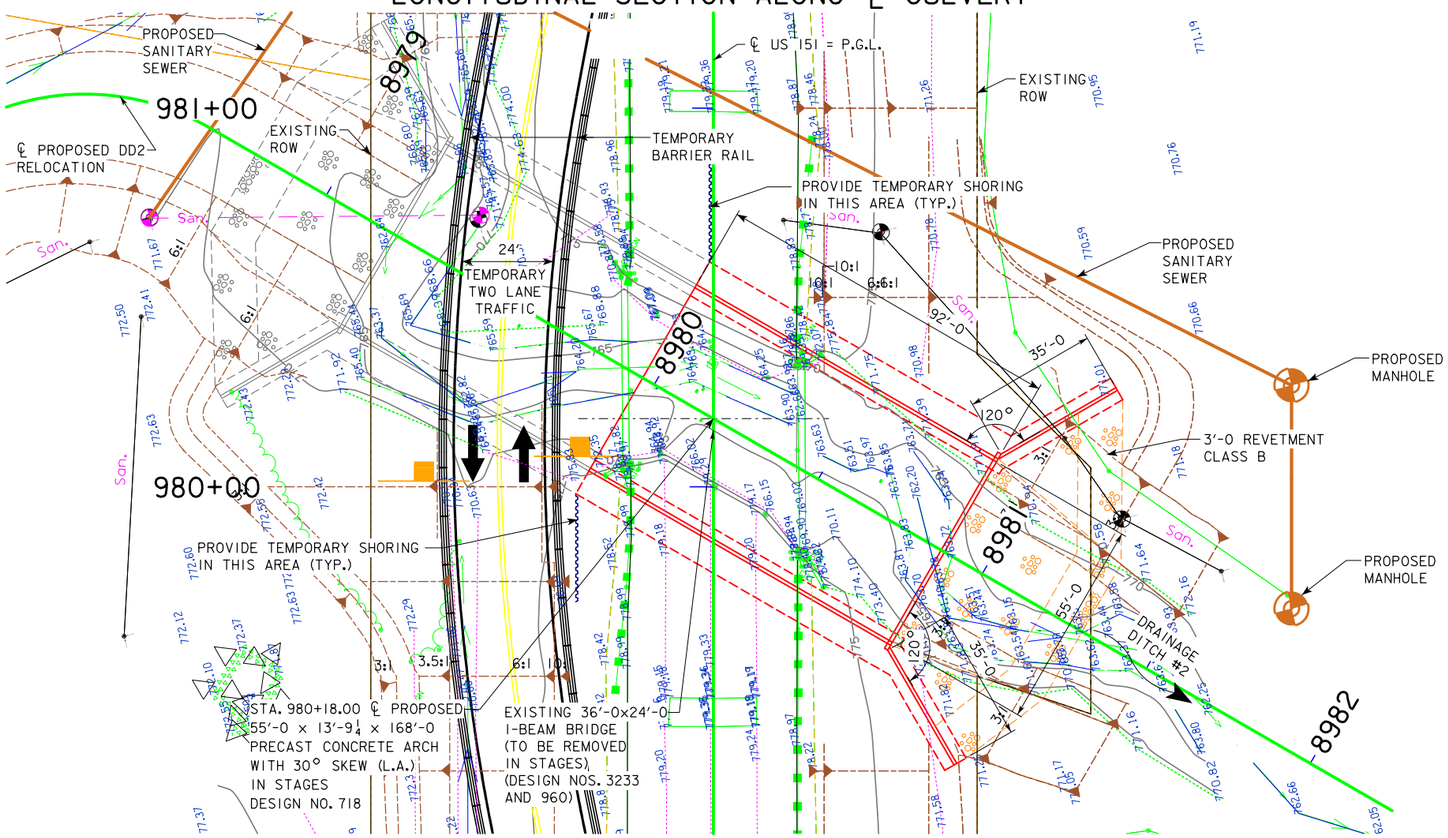
BENCH MARK: #588, CUT TRIANGLE ON BASE WALL OF REINFORCED CONCRETE BOX CULVERT STA. 979+81.20, 23.19l OFFSET, ELEV. = 781.700



LONGITUDINAL SECTION ALONG ℄ CULVERT



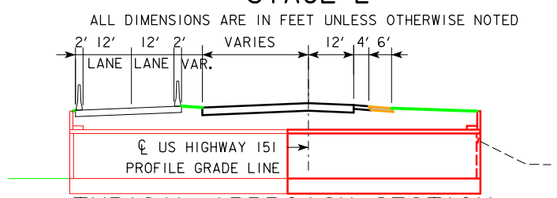
PROPOSED PROFILE GRADE



SITUATION PLAN

STAGE 2

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED



TYPICAL APPROACH SECTION

0 ENGLISH 40
SCALE IN FEET

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 = 0.12 FT.
AVG. BRIDGE VELOCITY = 3.4 FPS

Q_{100} = 1,449 CFS
STAGE = 771.37
BACKWATER = 0.15 FT.

Q_{200} = 1,449 CFS
STAGE = 771.68
CALCULATED DESIGN SCOUR = 763.6

Q_{500} = 2,190 CFS
STAGE = 772.16
CALCULATED CHECK SCOUR = 763.6

ROADWAY OVERTOP 778.86
STA. 980+57.67

UTILITIES LEGEND:

San. - SANITARY SEWER - LINN COUNTY

LOCATION

US HIGHWAY 151
OVER DRAINAGE DITCH #2
T-82N R-8W
SECTION 2
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33801
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	-	

PRELIMINARY

DESIGN FOR 30° SKEW (L.A.)

55'-0 x 13'-9¼ x 76'-0 PRECAST CONCRETE ARCH EXTENDED TO 55'-0 X 168'-0 SITUATION PLAN - STAGE 2

STATION 980+18.00

AUGUST 2016

LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 718

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.20

8/5/2016 8:53:27 AM DCH pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\US151 @ DD2\57151134_Shuck-Britson.str TSL_57_0718_20 - 1 lane traffic 11x17_pdf.pltcfg

ESTIMATED CHANNEL ARMORING QUANTITIES

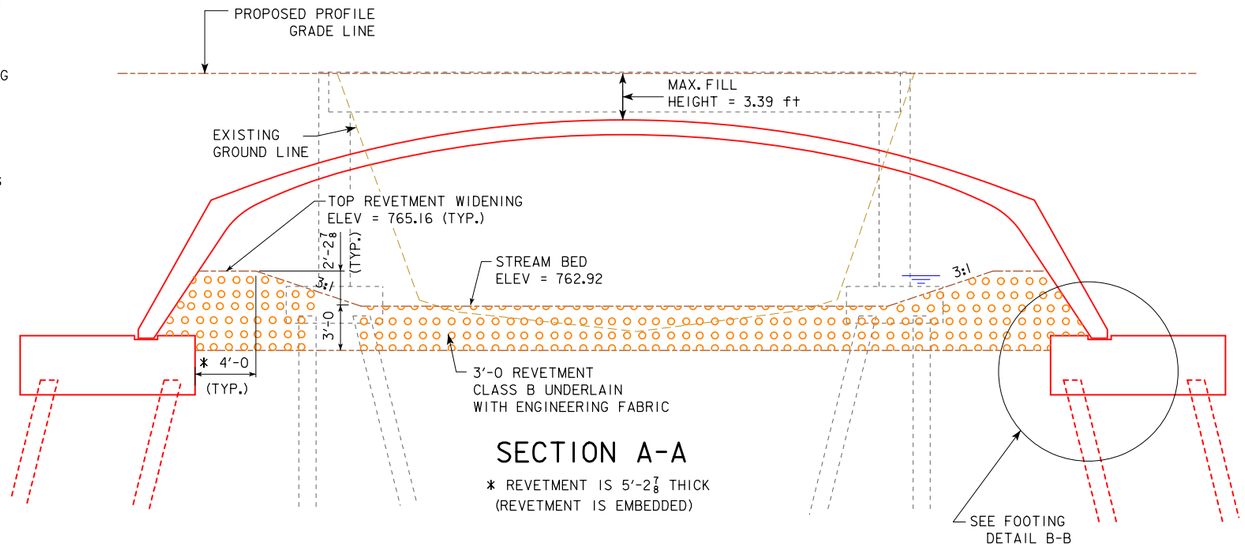
LOCATION	REVETMENT CL. B (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	EXCAVATION CLASS 10 CHANNEL (CY)
CHANNEL LINING - SOUTH APRON	373	--	233	233
CHANNEL LINING - NORTH APRON	--	--	--	--
CHANNEL LINING - ARCH	1078	--	562	562
STONE TOE - SOUTH APRON	286	--	176	179
STONE TOE - NORTH APRON	--	--	--	--
TOTALS	1737	--	971	974

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

REVETMENT LAYOUT:

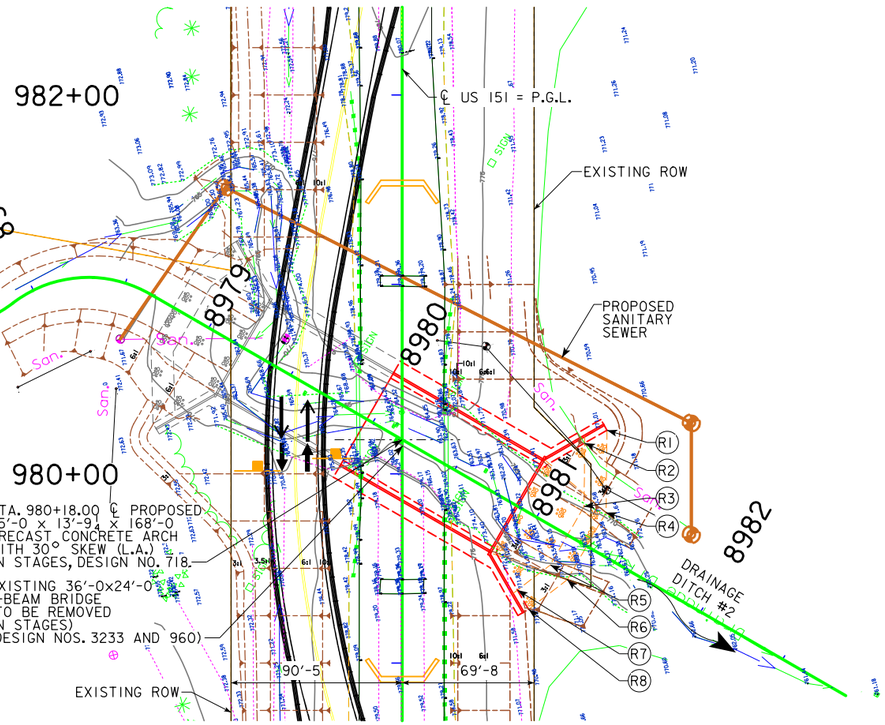
- R1 980+23.00, 108.13 RT., END STONE TOE
- R2 980+16.22, 96.39 RT., END CHANNEL LINING
- R3 979+82.71, 96.02 RT., END STONE TOE
- R4 979+79.53, 107.66 RT., END CHANNEL LINING
- R5 979+51.85, 78.21 RT., END CHANNEL LINING
- R6 979+44.00, 87.15 RT., END STONE TOE
- R7 979+38.58, 60.86 RT., END CHANNEL LINING
- R8 979+28.39, 66.74 RT., END STONE TOE

BENCH MARK NO. #588, CUT TRIANGLE ON BASE WALL OF REINFORCED CONCRETE BOX CULVERT
STA. 979+81.20, 23.19l OFFSET, ELEV. = 781.700



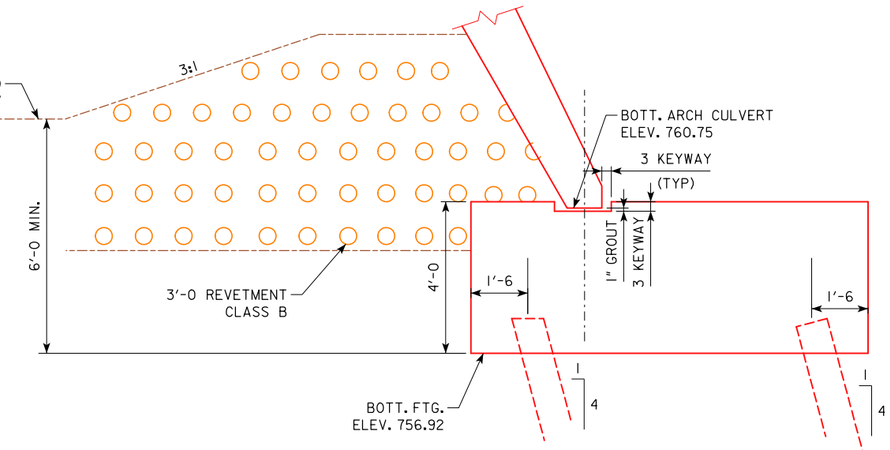
SECTION A-A

* REVETMENT IS 5'-2 7/8" THICK (REVETMENT IS EMBEDDED)

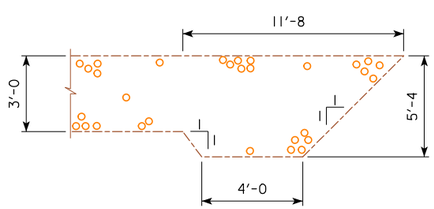


SITE PLAN

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED



FOOTING DETAIL B-B



SITE PLAN

PRELIMINARY

DESIGN FOR 30° SKEW (L.A.)

55'-0 x 13'-9 1/4 x 76'-0 PRECAST CONCRETE ARCH EXTENDED TO 55'-0 X 168'-0 SITE PLAN - STAGE 2

STATION 980+18.00

AUGUST 2016

LINN COUNTY

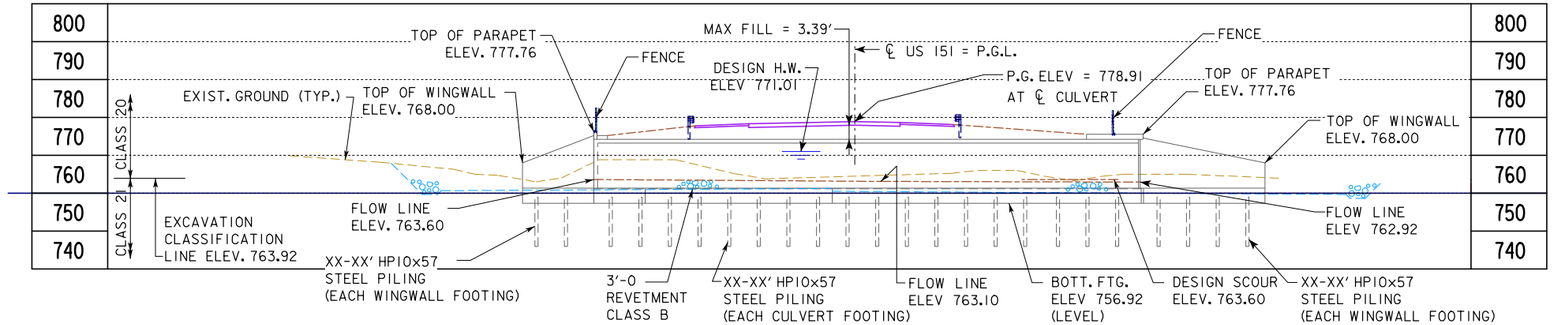
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

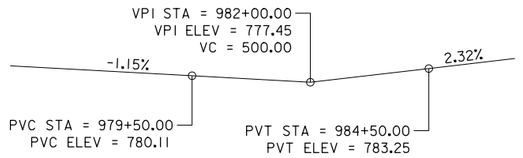
DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 718

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.21

8/5/2016 8:53:29 AM DCH pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\US151 @ DD2\57151134_Shuck-Britson.str TSL_57_0718_21 - 1 lane traffic 11x17_pdf.pltcfg

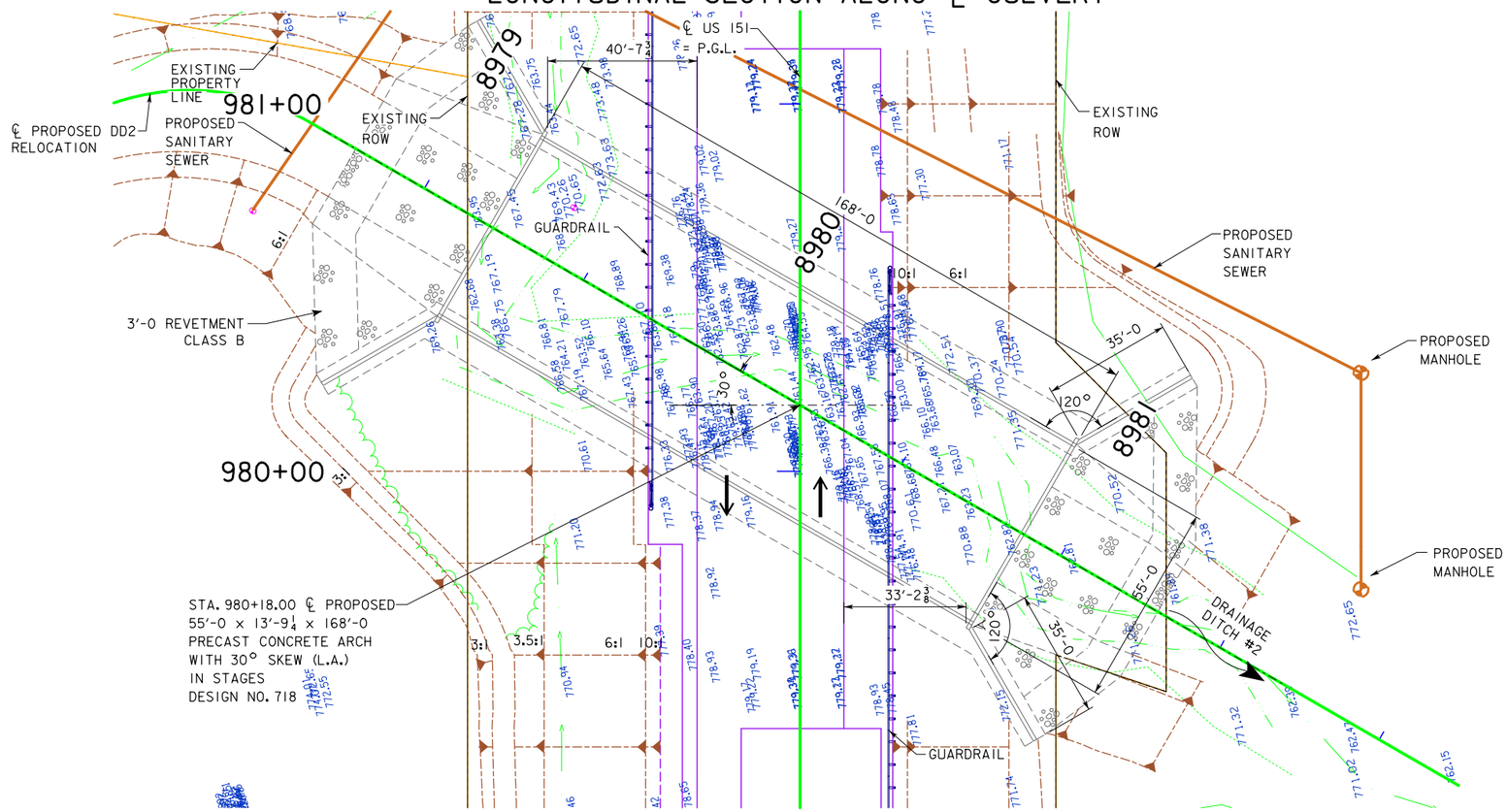
BENCH MARK: #588, CUT TRIANGLE ON BASE WALL OF REINFORCED CONCRETE BOX CULVERT STA. 979+81.20, 23.19I OFFSET, ELEV. = 781.700



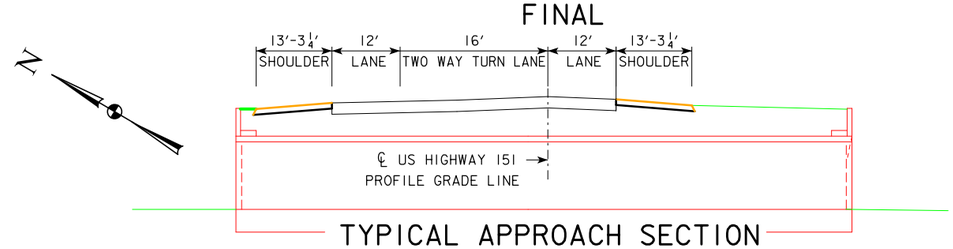


PROPOSED PROFILE GRADE

LONGITUDINAL SECTION ALONG ℄ CULVERT



SITUATION PLAN FINAL



TYPICAL APPROACH SECTION

0 ENGLISH 40
SCALE IN FEET

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 = 0.12 FT.
AVG. BRIDGE VELOCITY = 3.4 FPS

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Q_{200} = 1,449 CFS
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STAGE = 772.16
CALCULATED CHECK SCOUR = 763.6

ROADWAY OVERTOP 778.86
STA. 980+57.67

UTILITIES LEGEND:

San. - SANITARY SEWER - LINN COUNTY

LOCATION

US HIGHWAY 151
OVER DRAINAGE DITCH #2
T-82N R-8W
SECTION 2
FAIRFAX TOWNSHIP
LINN COUNTY
FHWA NO. 33801
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	-	

PRELIMINARY

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

DESIGN FOR 30° SKEW (L.A.)

55'-0 x 13'-9 1/4 x 168'-0 PRECAST CONCRETE ARCH

SITUATION PLAN - FINAL

STATION 980+18.00

AUGUST 2016

LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. 31286 DESIGN NO. 718

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.22

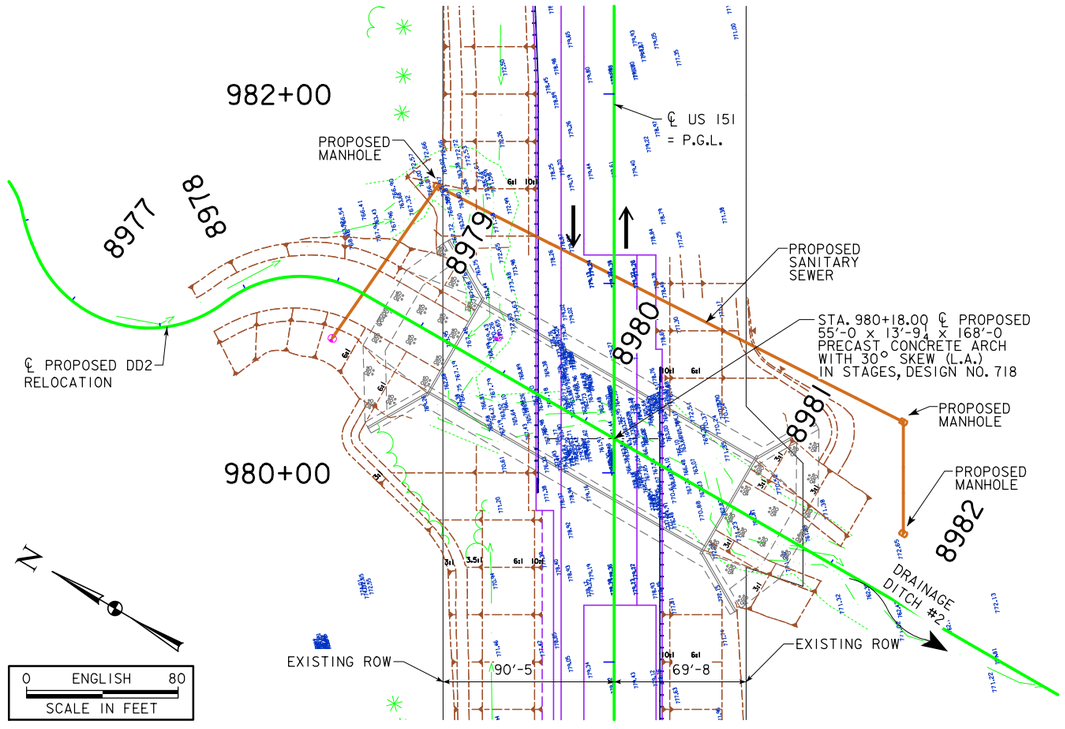
8/5/2016 8:53:32 AM DCH pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\US151 @ DD2\57151134_Shuck-Britson.str TSL_57_0718_22 - 1 lane traffic 11x17_pdf.pltcfg

NOTES:

1. SEE SHEETS V.19 AND V.21 FOR REVETMENT LAYOUT INFORMATION.

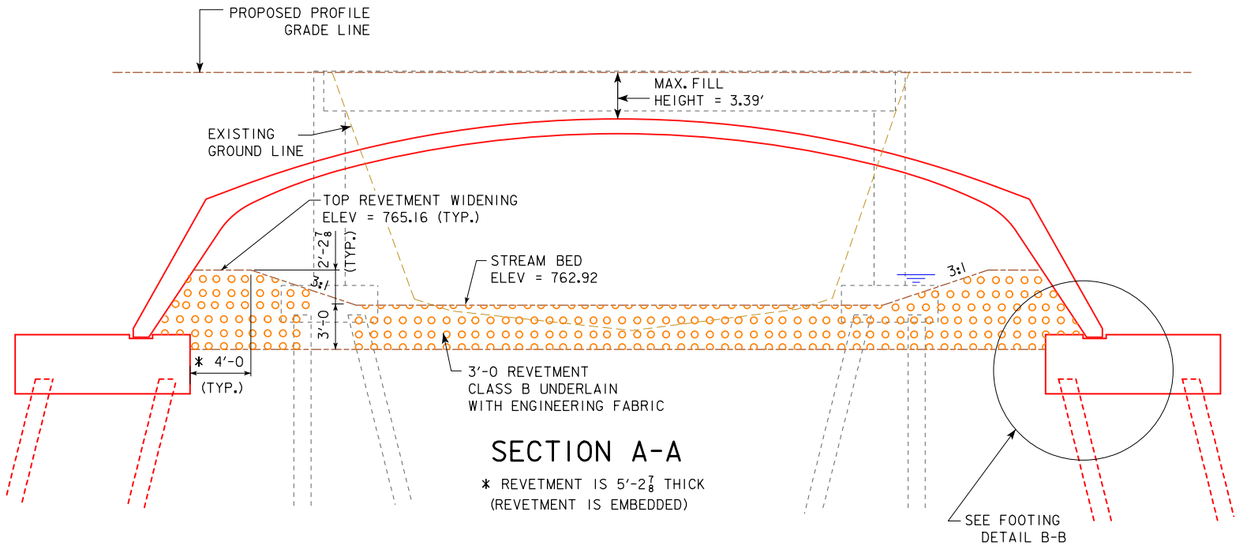
2. SEE SHEETS V.19 AND V.21 FOR CHANNEL ARMORING QUANTITIES.

BENCH MARK NO. #588, CUT TRIANGLE ON BASE WALL OF REINFORCED CONCRETE BOX CULVERT
STA. 979+81.20, 23.191 OFFSET, ELEV. = 781.700



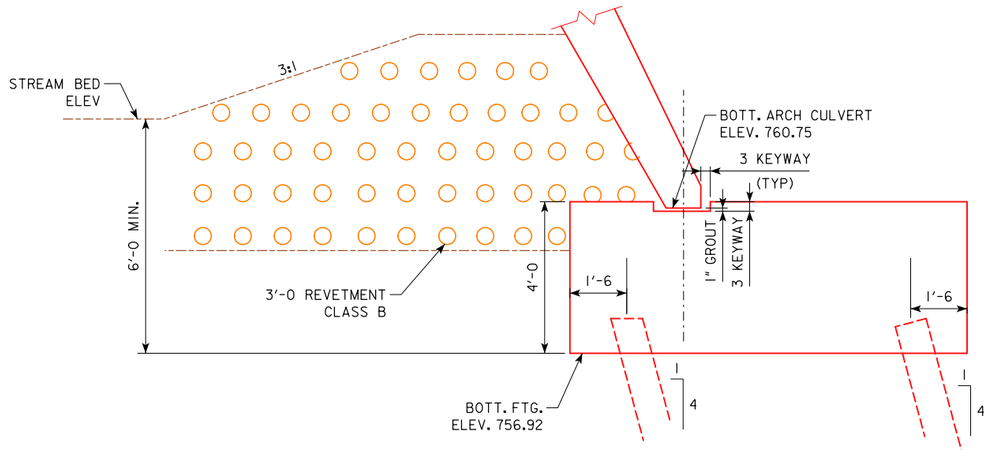
SITE PLAN

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

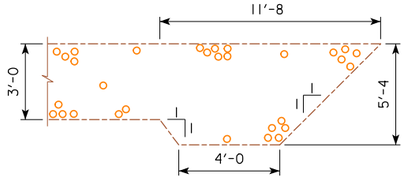


SECTION A-A

* REVETMENT IS 5'-2 7/8" THICK (REVETMENT IS EMBEDDED)



FOOTING DETAIL B-B



SITE PLAN

PRELIMINARY

DESIGN FOR 30° SKEW (L.A.)

55'-0 x 13'-9 1/4 x 168'-0 PRECAST CONCRETE ARCH

SITE PLAN - FINAL

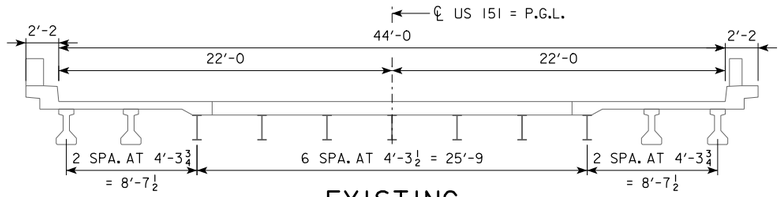
STATION 980+18.00

AUGUST 2016

LINN COUNTY

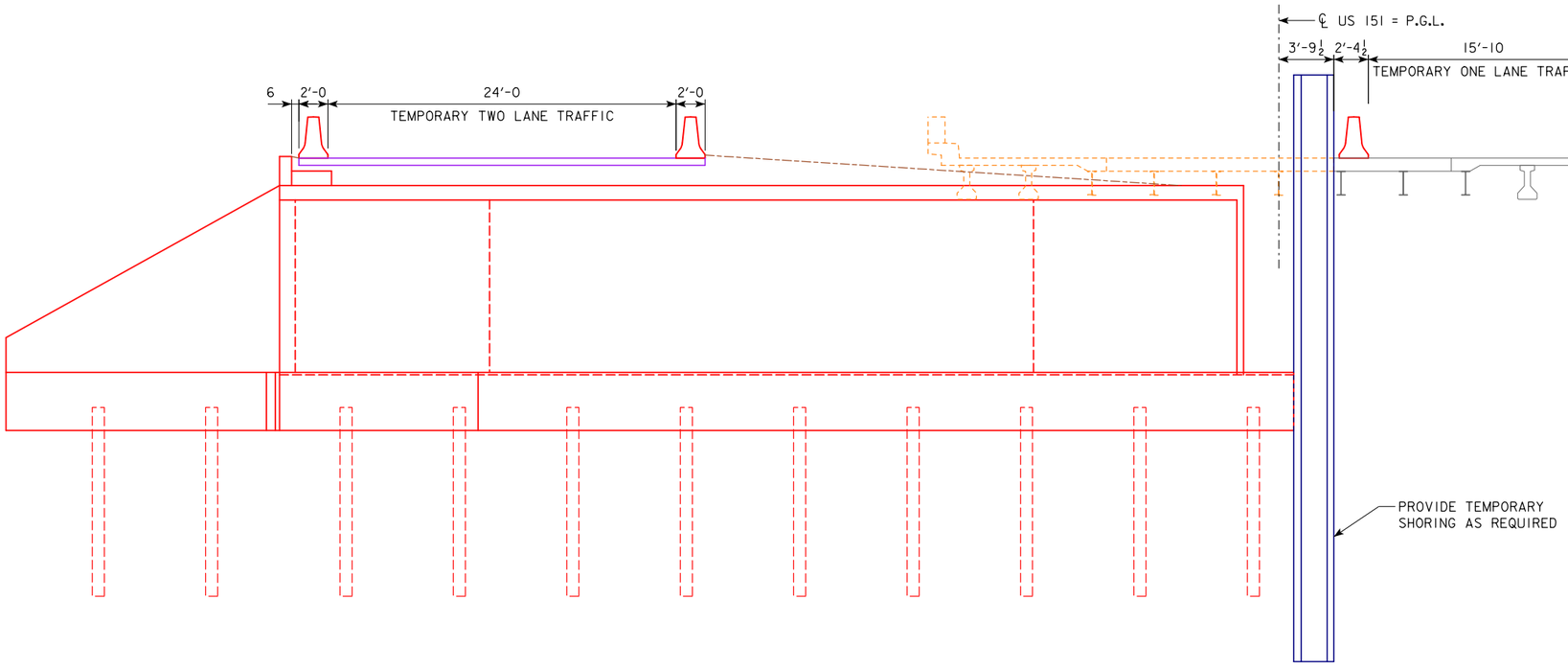
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 718



EXISTING

(LOOKING UP STATION - NORTH)



STAGE I

PRELIMINARY

DESIGN FOR 30° SKEW (L.A.)

55'-0 x 13'-9 1/4 x 168'-0 PRECAST CONCRETE ARCH

STAGING

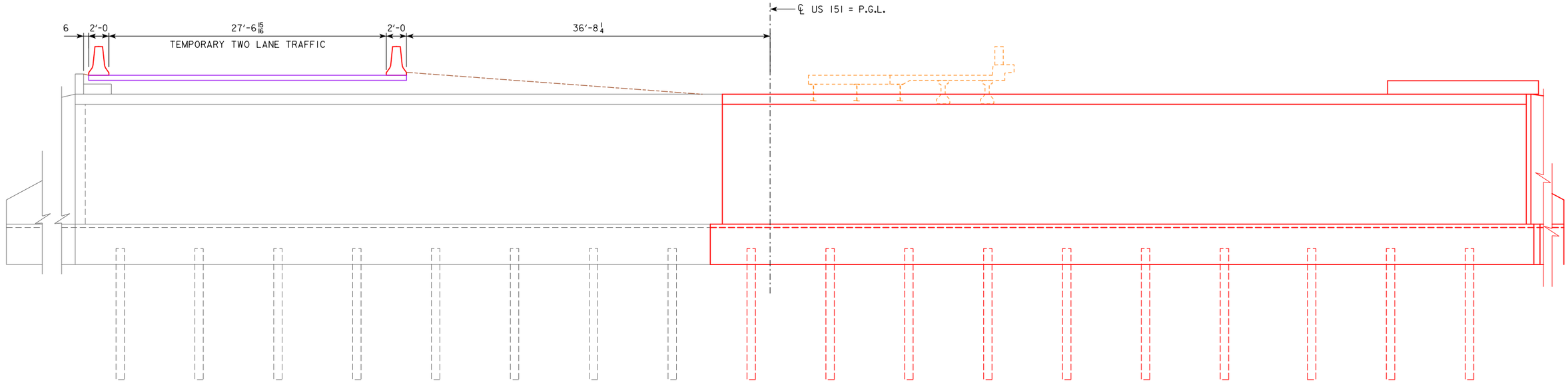
STATION 980+18.00

LINN COUNTY

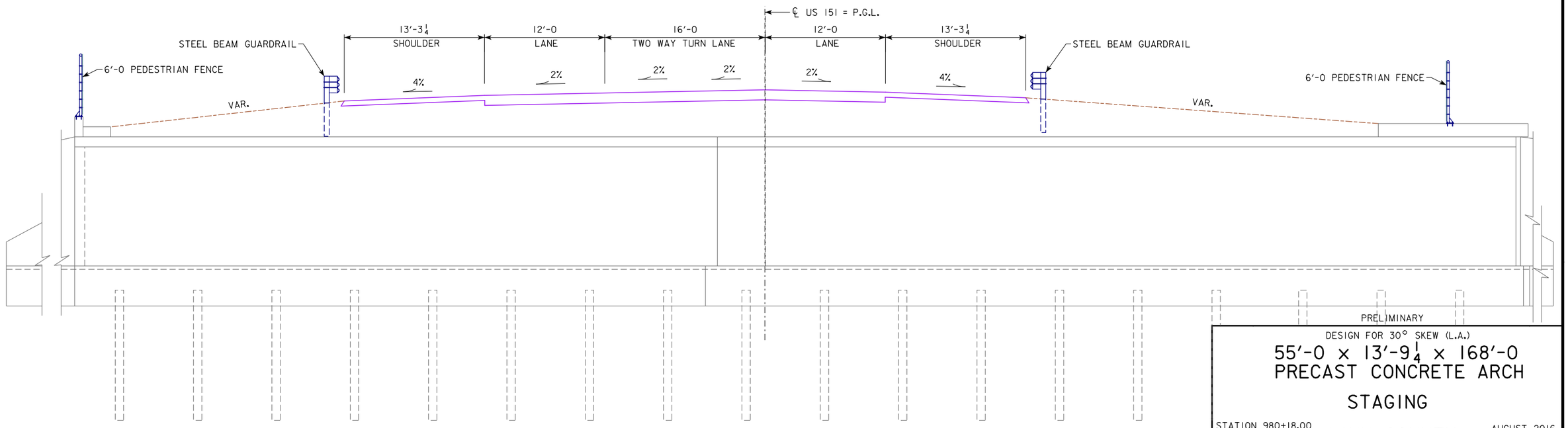
AUGUST 2016

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ___ FILE NO. 31286 DESIGN NO. 718



STAGE 2



FINAL

PRELIMINARY

DESIGN FOR 30° SKEW (L.A.)

55'-0 x 13'-9 1/4 x 168'-0 PRECAST CONCRETE ARCH

STAGING

STATION 980+18.00

AUGUST 2016

LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. 31286 DESIGN NO. 718

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.25

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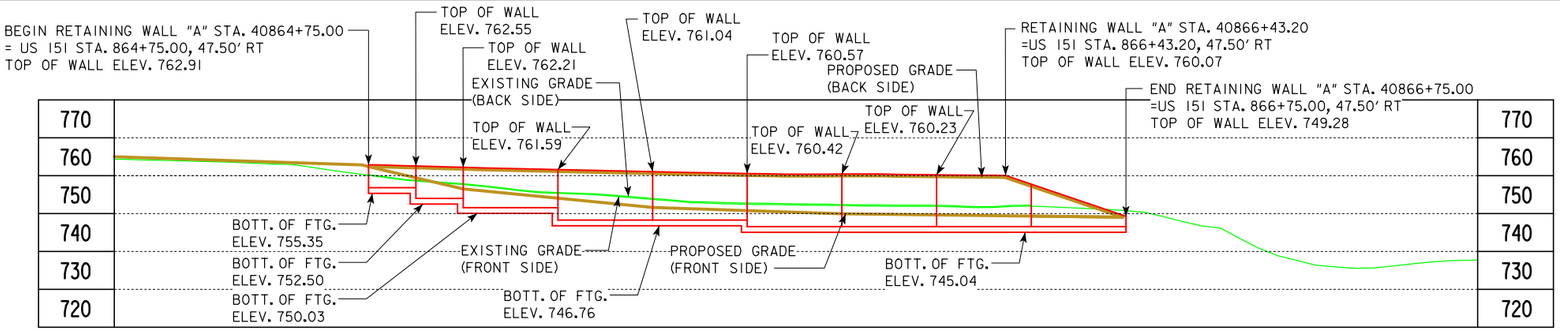
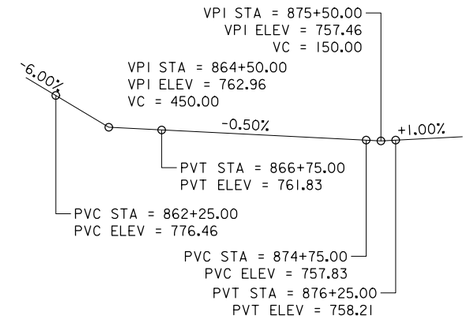
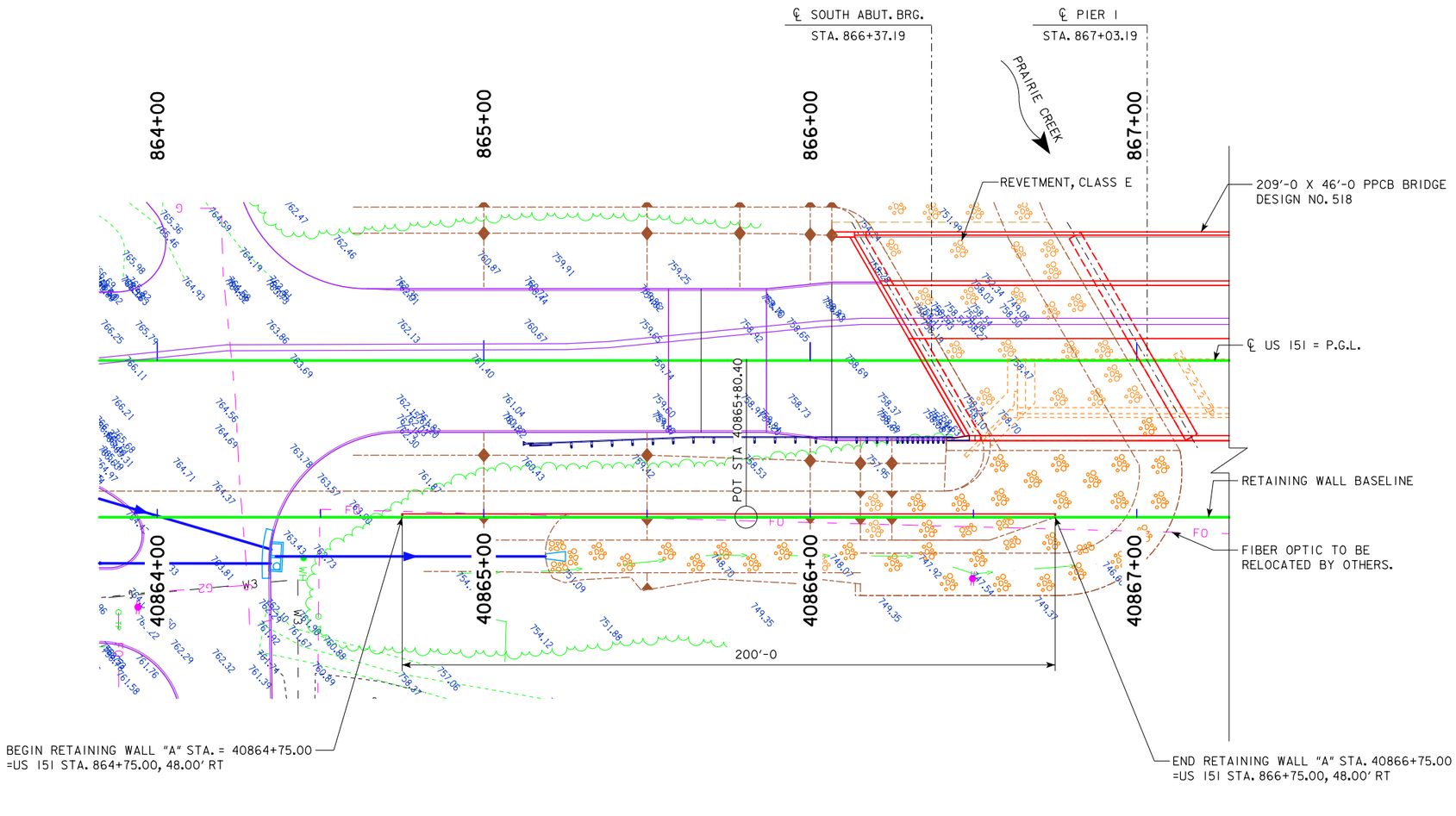


RETAINING WALL "A" ELEVATION

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



PROPOSED PROFILE GRADE (US 151)



NOTES: AESTHETICS TO BE INCORPORATED DURING FINAL DESIGN.
SEE DESIGN NO. 518 FOR LIMITS OF REVETMENT, CLASS E.

UTILITIES LEGEND:

FO - FIBER OPTIC - SOUTH SLOPE
G - GAS - MIDAMERICAN ENERGY
TI - TELEPHONE - SOUTH SLOPE
W3 - WATER - FAIRFAX

RETAINING WALL
AT US HIGHWAY 151
OVER PRAIRIE CREEK
T-82N R-8W
SECTION 9
FAIRFAX TOWNSHIP
LINN COUNTY
LATITUDE 41.922715°
LONGITUDE -91.783648°

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
200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00
END STATION 40866+75.00

AUGUST 2016

SITUATION PLAN
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF 2 FILE NO. 30839 DESIGN NO. 918

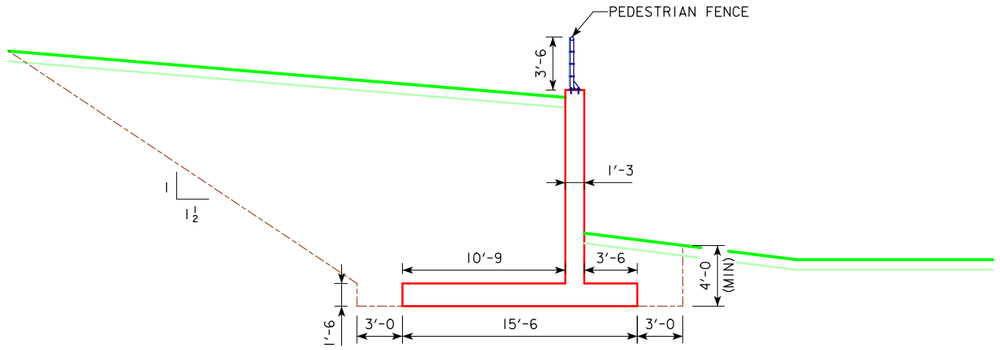
N

0 ENGLISH 40
SCALE IN FEET

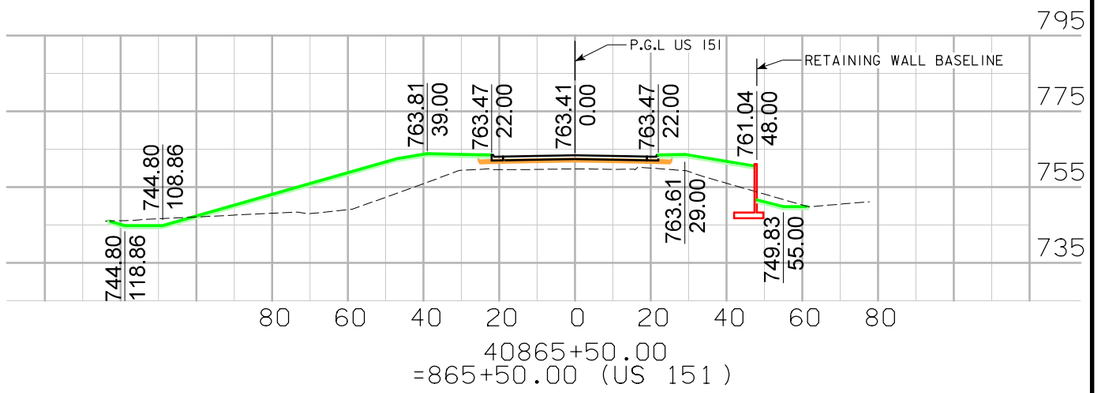
SITUATION PLAN

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED.

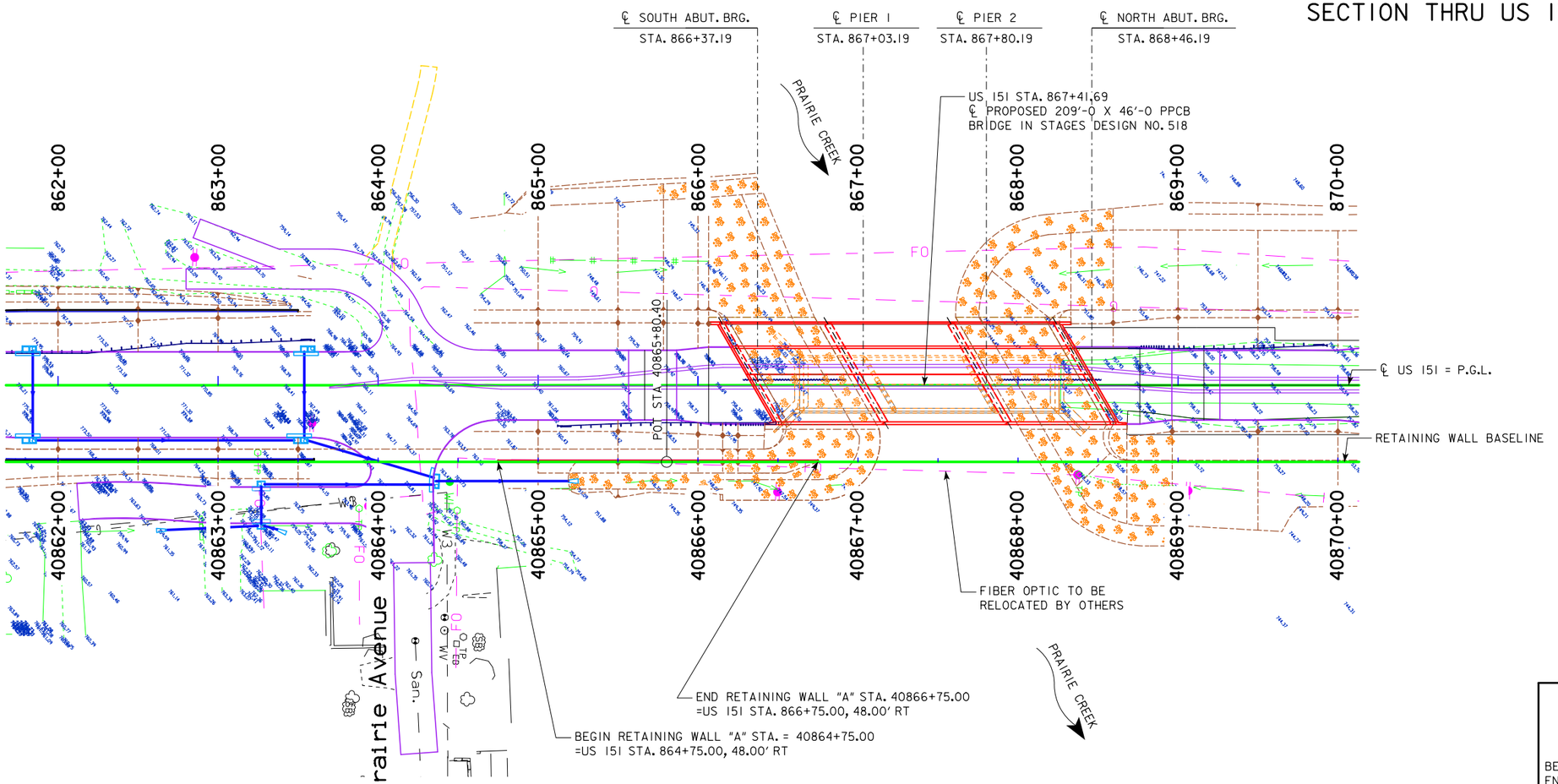
BENCH MARK NO. BM2 STA. 871+35.96, 70.098 RT, RR SPIKE IN POWER POLE,
EAST SIDE HWY 151, 200' ± NORTH OF NORTH END OF
RIVER BRIDGE AT BEGGINNING OF CLEARING.
ELEV. 750.420, N = 705704.166 E = 2107504.303



TYPICAL SECTION



SECTION THRU US 151 WITH WALL SECTION



SITE PLAN
ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED.

UTILITIES LEGEND:
FO - FIBER OPTIC - SOUTH SLOPE
G - GAS - MIDAMERICAN ENERGY

PRELIMINARY

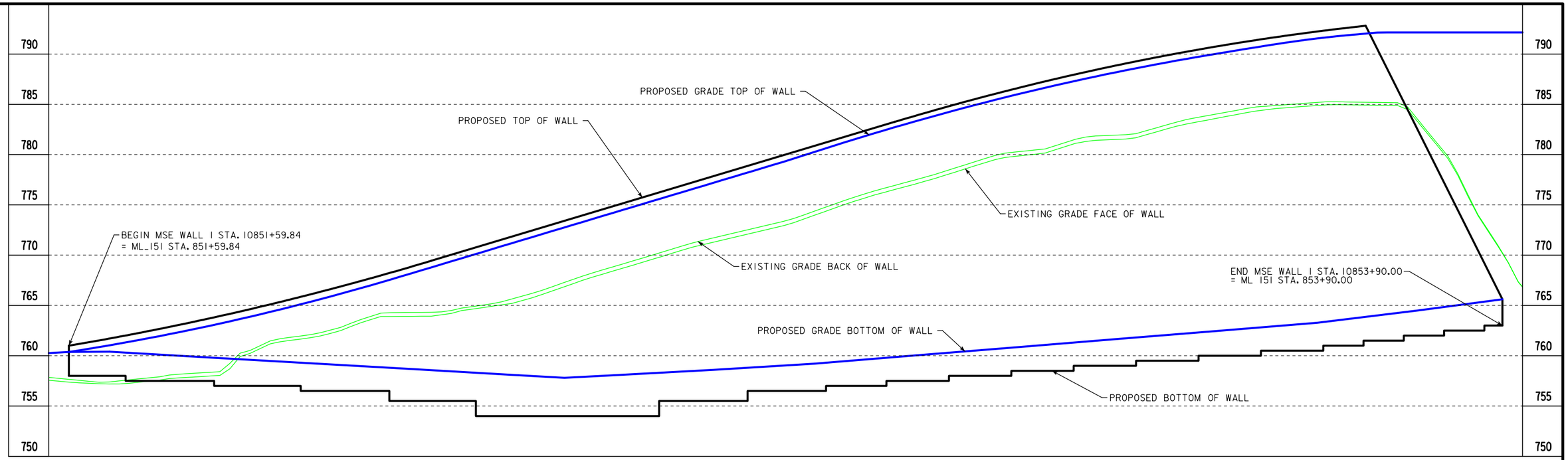
DESIGN FOR
200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00
END STATION 40866+75.00
AUGUST 2016

SITE PLAN
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. ___ OF 2 FILE NO. 30839 DESIGN NO. 918

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 NHSX-151-3(158)--3H-57 | SHEET NUMBER V.27

8/4/2016 9:02:02 AM V8i_IDOTBridge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRPrelim\CADD\Retaining Wall @ Prairie Creek\57151158_Shuck-Britson.str TSL_57_0918_27 11x17_pdf.pltcfg



BENCH MARK: BM1
DESCRIPTION: GIN SPIKE IN POWER POLE, EAST SIDE HWY 151, ACROSS FROM "PIT STOP"
STA. 846+60.91, 23.069' RT.
ELEV. = 763.60

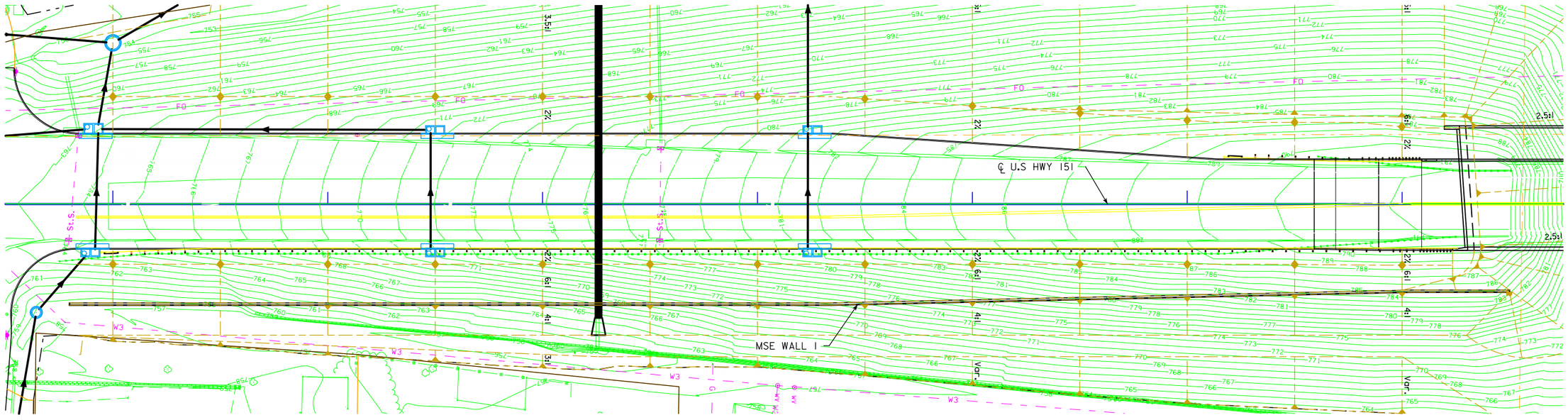
UTILITIES LEGEND:

REFER TO SHEET D.1

LOCATION

U.S. 151
T-82N R-8W
SECTION 16
FAIRFAX TOWNSHIP
LINN COUNTY

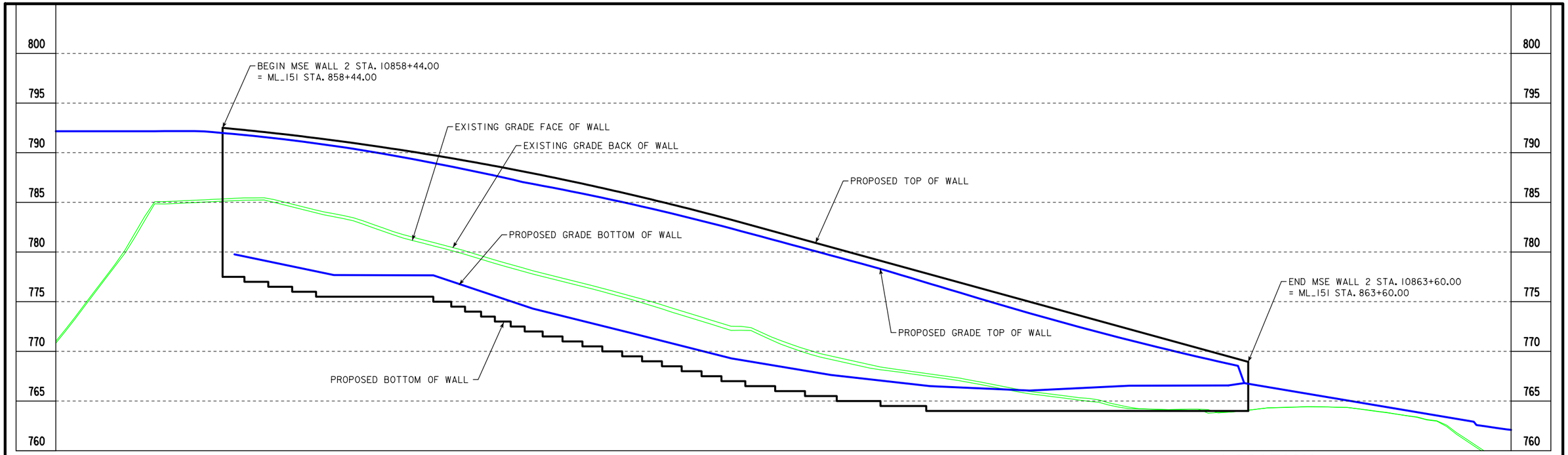
0 ENGLISH 50
SCALE IN FEET



SITUAION PLAN

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

1:32:34 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158V28.sht



BENCH MARK: BM1
DESCRIPTION: GIN SPIKE IN POWER POLE, EAST SIDE HWY 151, ACROSS FROM "PIT STOP"
STA. 846+60.91, 23.069' RT.
ELEV. = 763.60

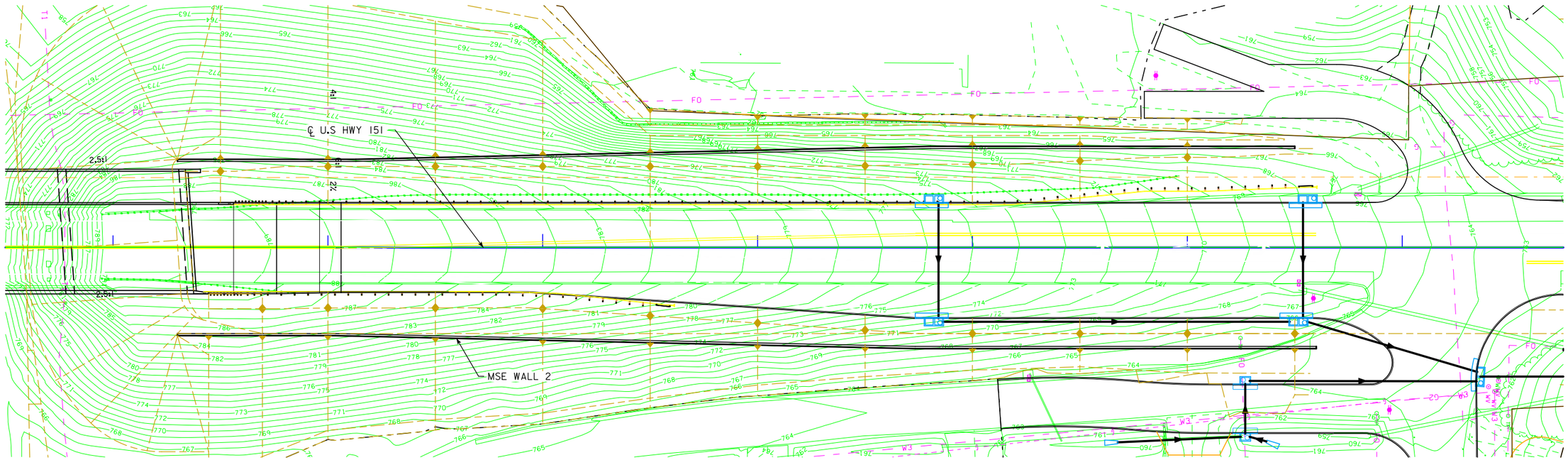
UTILITIES LEGEND:

REFER TO SHEET D.1

LOCATION

U.S. 151
T-82N R-8W
SECTION 16
FAIRFAX TOWNSHIP
LINN COUNTY

0 ENGLISH 50
SCALE IN FEET



SITUAION PLAN

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

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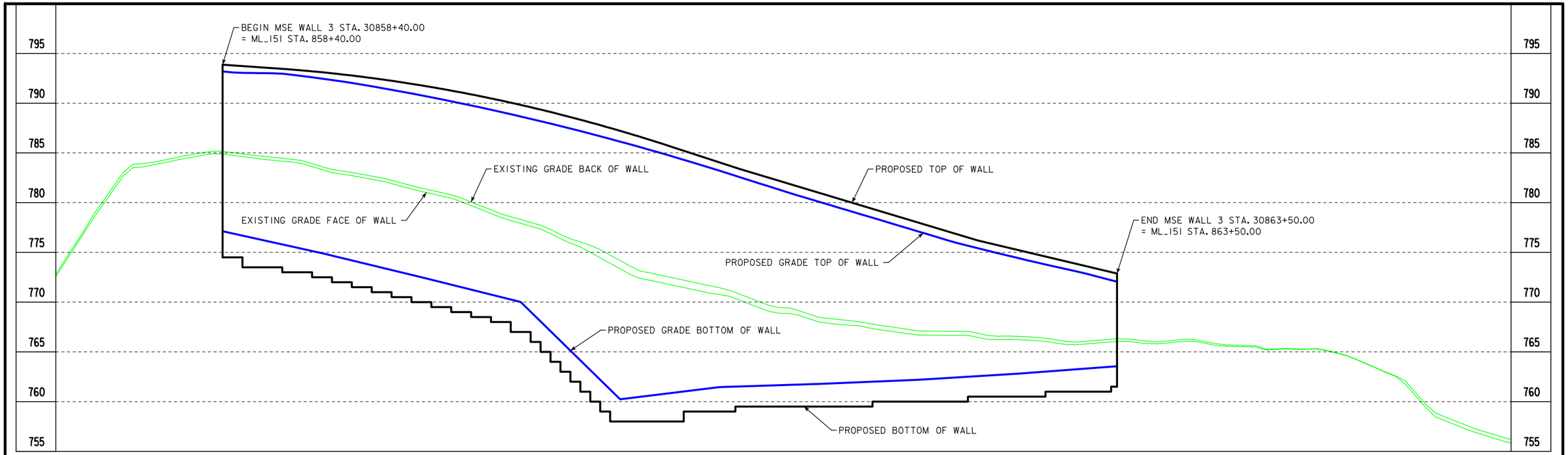


BENCH MARK: BM1
DESCRIPTION: GIN SPIKE IN POWER POLE, EAST SIDE HWY 151, ACROSS FROM "PIT STOP"
STA. 846+60.91, 23.069' RT.
ELEV. = 763.60

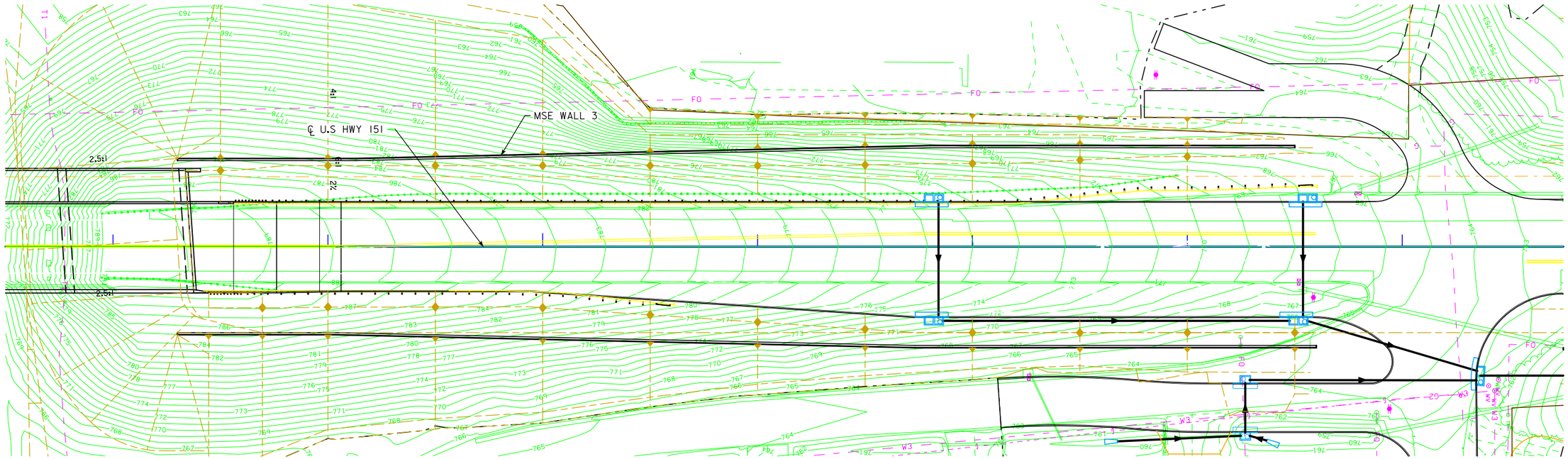
UTILITIES LEGEND:

REFER TO SHEET D.1

LOCATION

U.S. 151
T-82N R-8W
SECTION 16
FAIRFAX TOWNSHIP
LINN COUNTY

0 ENGLISH 50
SCALE IN FEET



SITUAION PLAN

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

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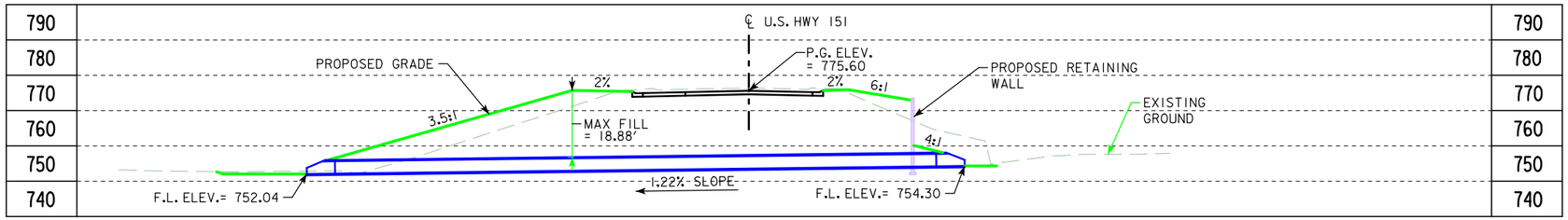
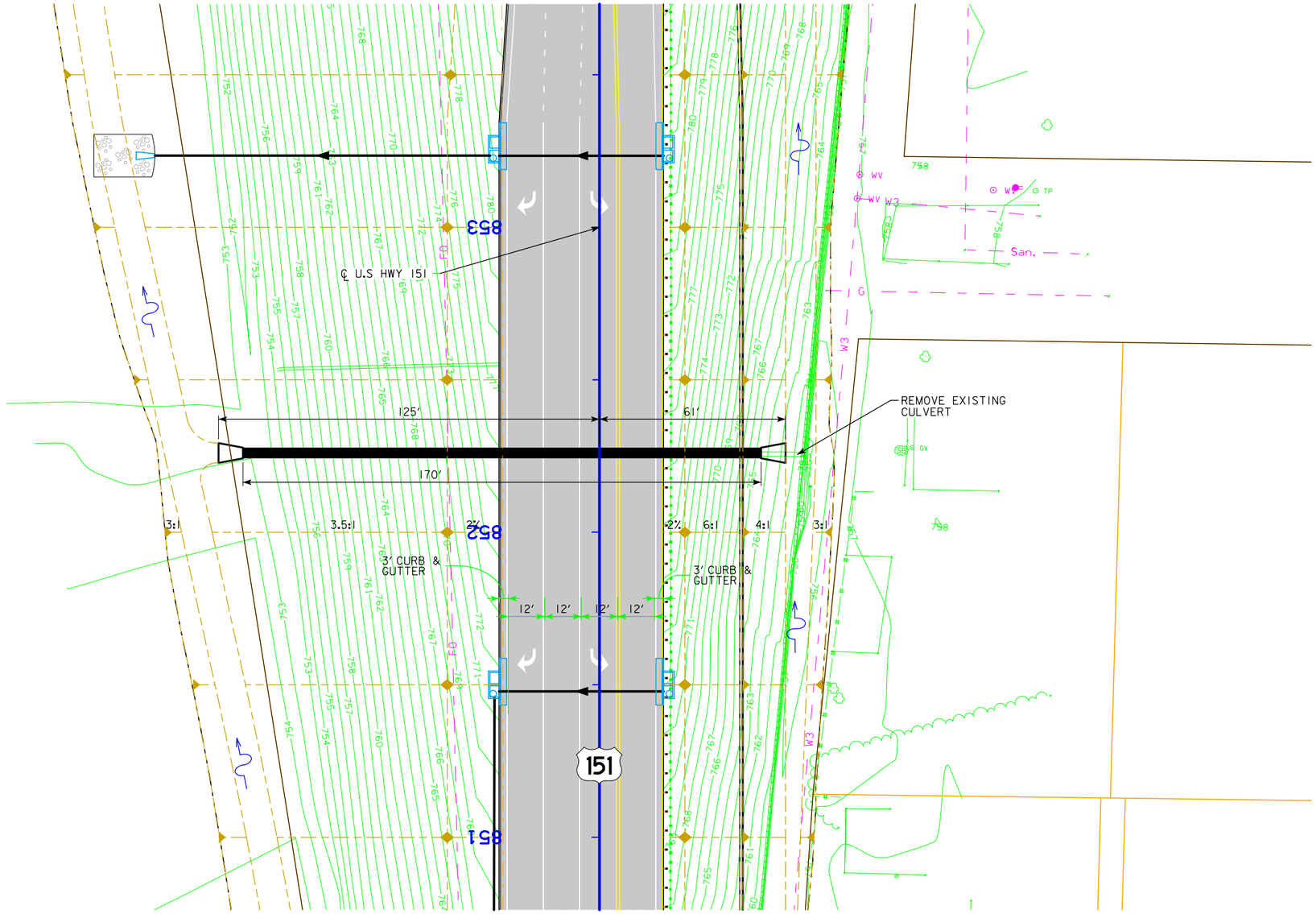


LONGITUDINAL SECTION ALONG ℄ CULVERT



PLAT PLAN

0 ENGLISH 40
SCALE IN FEET

BENCH MARK: BMI
DESCRIPTION: GIN SPIKE IN POWER POLE, EAST SIDE HWY 151, ACROSS FROM "PIT STOP"
STA. 846+60.91, 23.069' RT.
ELEV. = 763.60

HYDRAULIC DATA

DRAINAGE AREA = 11.97 ACRES ROLLING
DESIGN DISCHARGE, Q_{50}= 35.79 CFS

UTILITIES LEGEND:

REFER TO SHEET D.1

LOCATION

U.S. 151
T-82N R-8W
SECTION 16
FAIRFAX TOWNSHIP
LINN COUNTY

STAGING NOTES

REMOVE EXISTING 3' x 2' BOX CULVERT EXTENDED WITH 36" RCP AND INSTALL NEW 36" PIPE AND APRONS.

DESIGN FOR 0° SKEW R.A.

42" X 170' REINFORCED CONCRETE PIPE

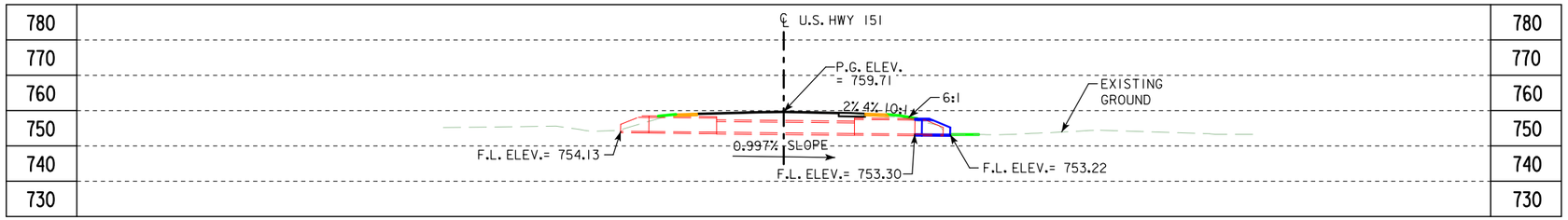
PLAT PLAN

STA. 852+26.00 ℄ U.S. HWY. 151 NOVEMBER 2018

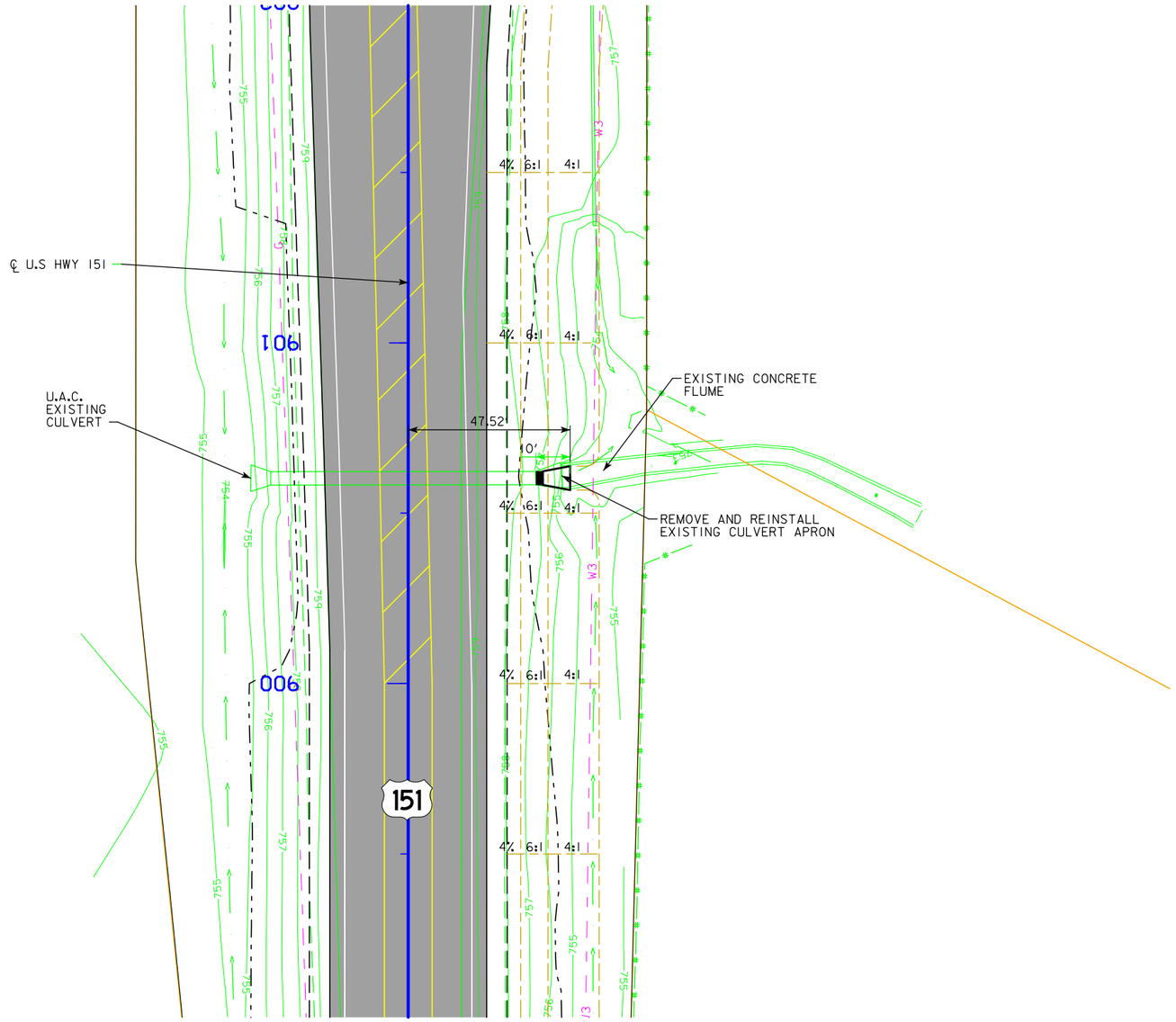
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

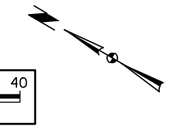
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____



LONGITUDINAL SECTION ALONG ℄ CULVERT



PLAT PLAN



BENCH MARK: #4
DESCRIPTION: RR SPIKE IN POWER POLE, SOUTH SIDE OF 80TH ST SW, 70' +/- WEST OF STOP SIGN ON HWY 151.
STA. 909+53.51, 171.787' LT.
ELEV. = 767.94

HYDRAULIC DATA

DRAINAGE AREA = 67 ACRES ROLLING
DESIGN DISCHARGE, Q = 35.07 CFS

UTILITIES LEGEND:

REFER TO SHEET D.1

LOCATION

U.S. 151
T-82N R-8W
SECTION 9
FAIRFAX TOWNSHIP
LINN COUNTY

STAGING NOTES

REMOVE EXISTING 48" RCP APRON. INSTALL 2' SECTION OF 48" RCP WITH APRON.

DESIGN FOR 0° SKEW R.A.

48" X 78' REINFORCED CONCRETE PIPE

PLAT PLAN

STA. 900+59.26 ℄ U.S. HWY. 151 NOVEMBER 2018

LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

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

DESIGN TEAM	SNYDER AND ASSOCIATES, INC.	LINN	COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER V.32

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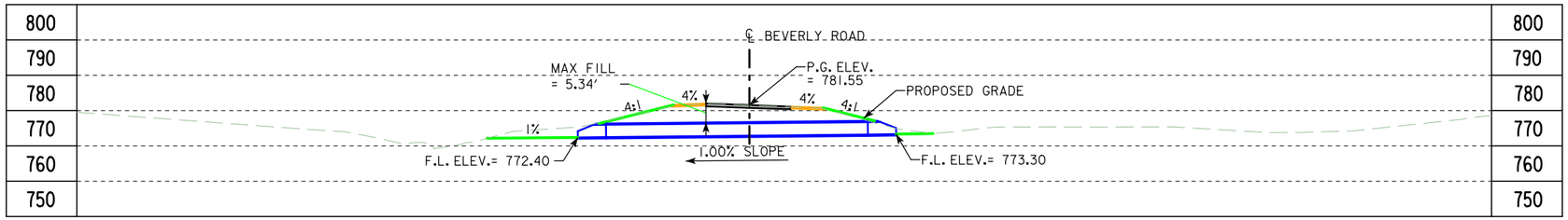
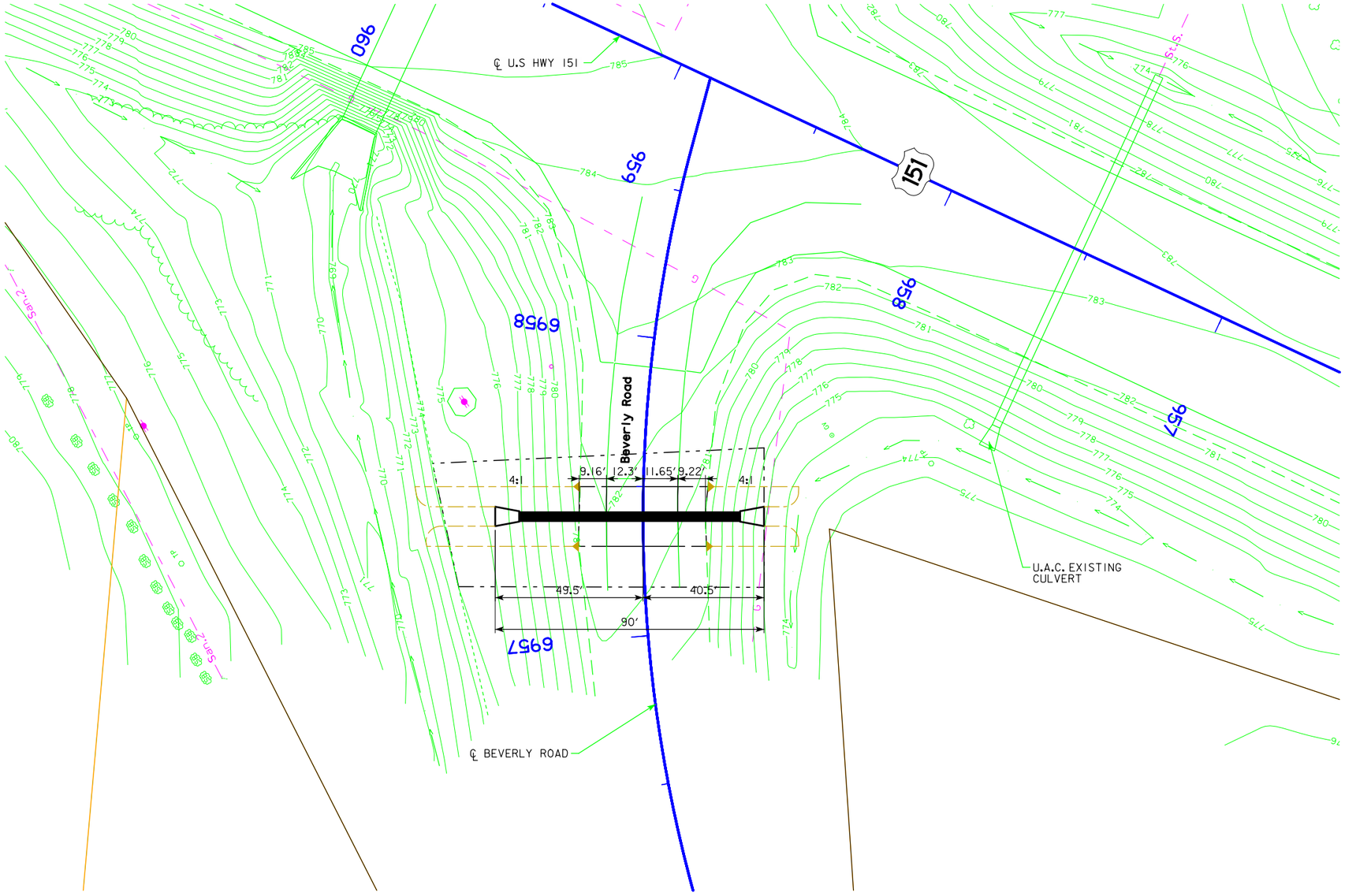


LONGITUDINAL SECTION ALONG ℄ CULVERT



PLAT PLAN

0 ENGLISH 40
SCALE IN FEET

BENCH MARK: #5
DESCRIPTION: GIN SPIKE IN LIGHT POLE, NW QUAD OF BEVERLY DRIVE WEST AND HWY 151
STA. 958+96.64, 109.70 LT.
ELEV. = 781.81

HYDRAULIC DATA

DRAINAGE AREA = 40.3 ACRES ROLLING
DESIGN DISCHARGE, Q_{50}= 67.56 CFS

UTILITIES LEGEND:

REFER TO SHEET D.1

LOCATION

U.S. 151
T-82N R-8W
SECTION 3
FAIRFAX TOWNSHIP
LINN COUNTY

STAGING NOTES

INSTALL 49' LF 48" RCP WITH APRONS.

DESIGN FOR 0° SKEW R.A.

42" X 78'
REINFORCED CONCRETE PIPE

PLAT PLAN

STA. 6957+40.00 ℄ BEVERLY ROAD NOVEMBER 2018

LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

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

DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER V.33

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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

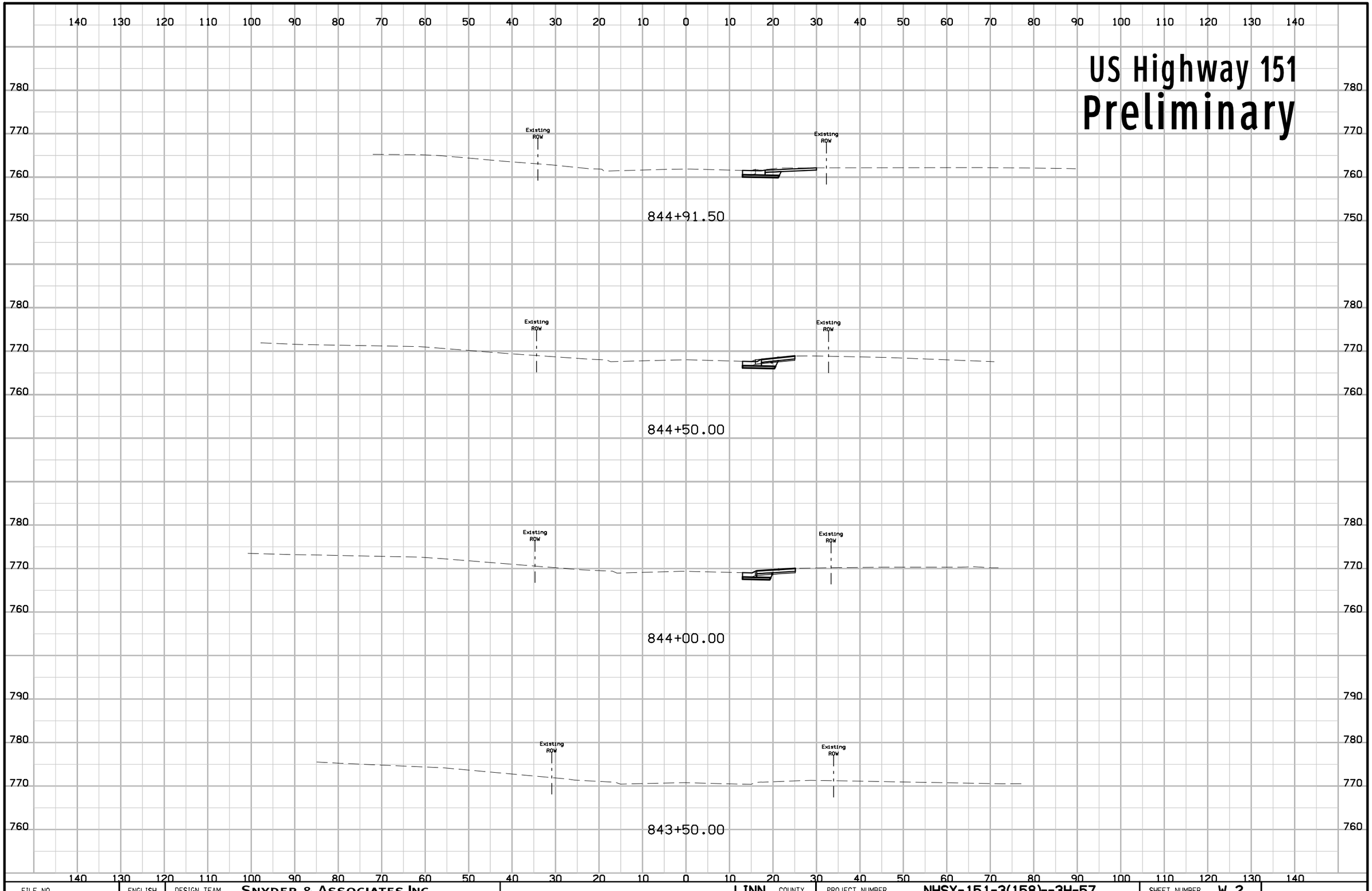
Proposed ROW — Proposed Right-of-Way Limit

Temporary ROW — Temporary Right-of-Way Limit

CROSS SECTION LEGEND AND SYMBOL INFORMATION SHEET

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

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

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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

845+50.00

845+34.00

845+00.00

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

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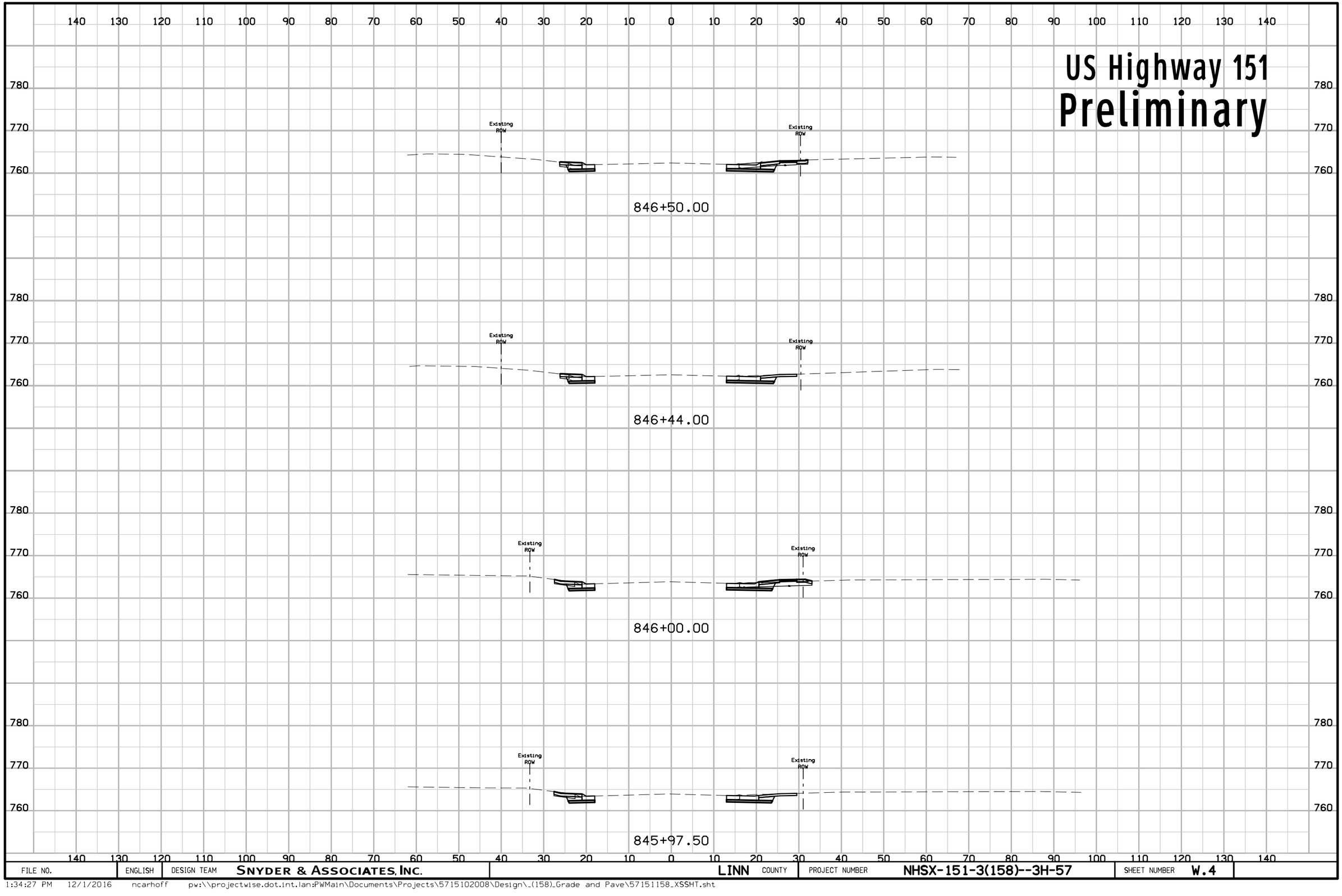
US Highway 151
Preliminary



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

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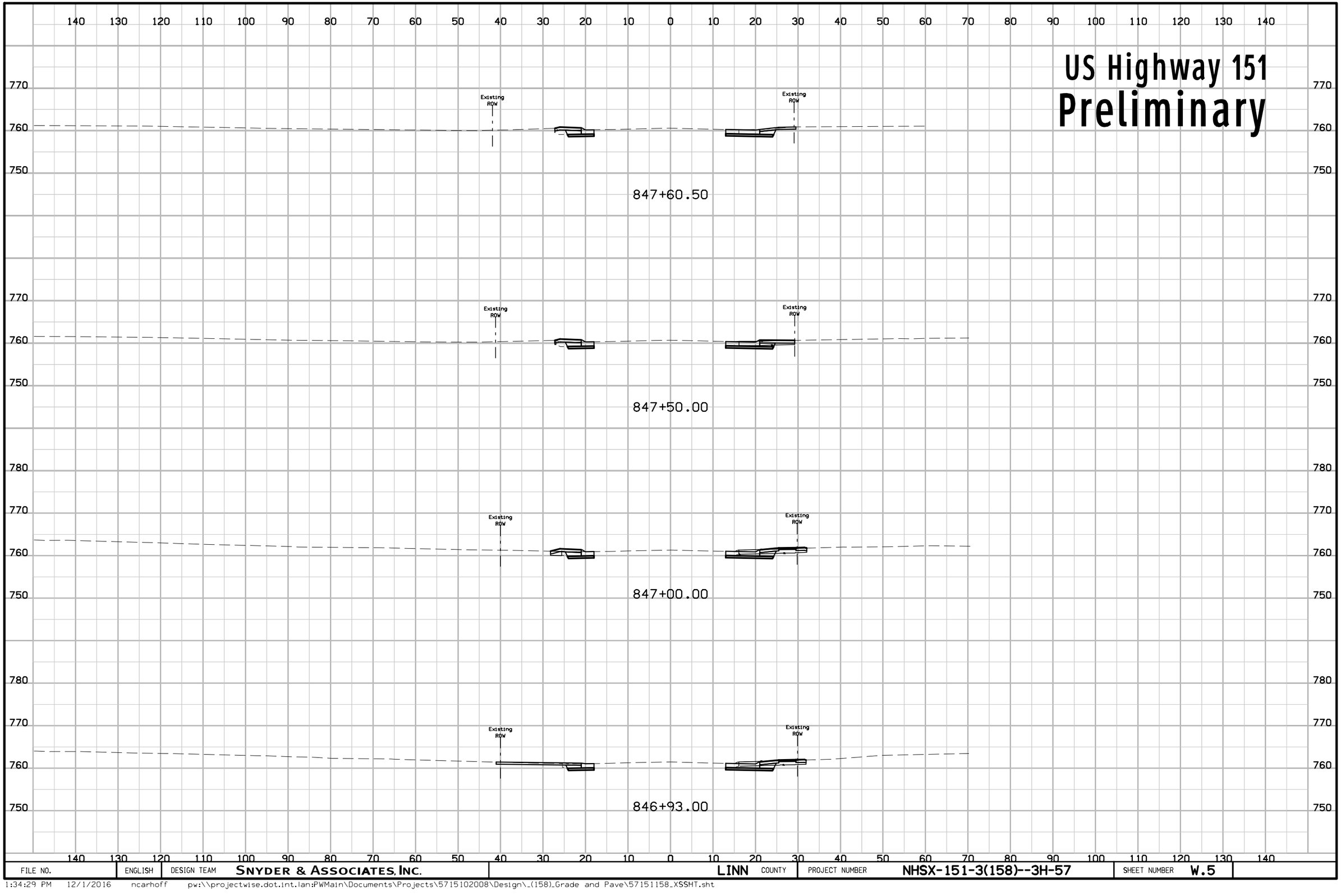
US Highway 151
Preliminary



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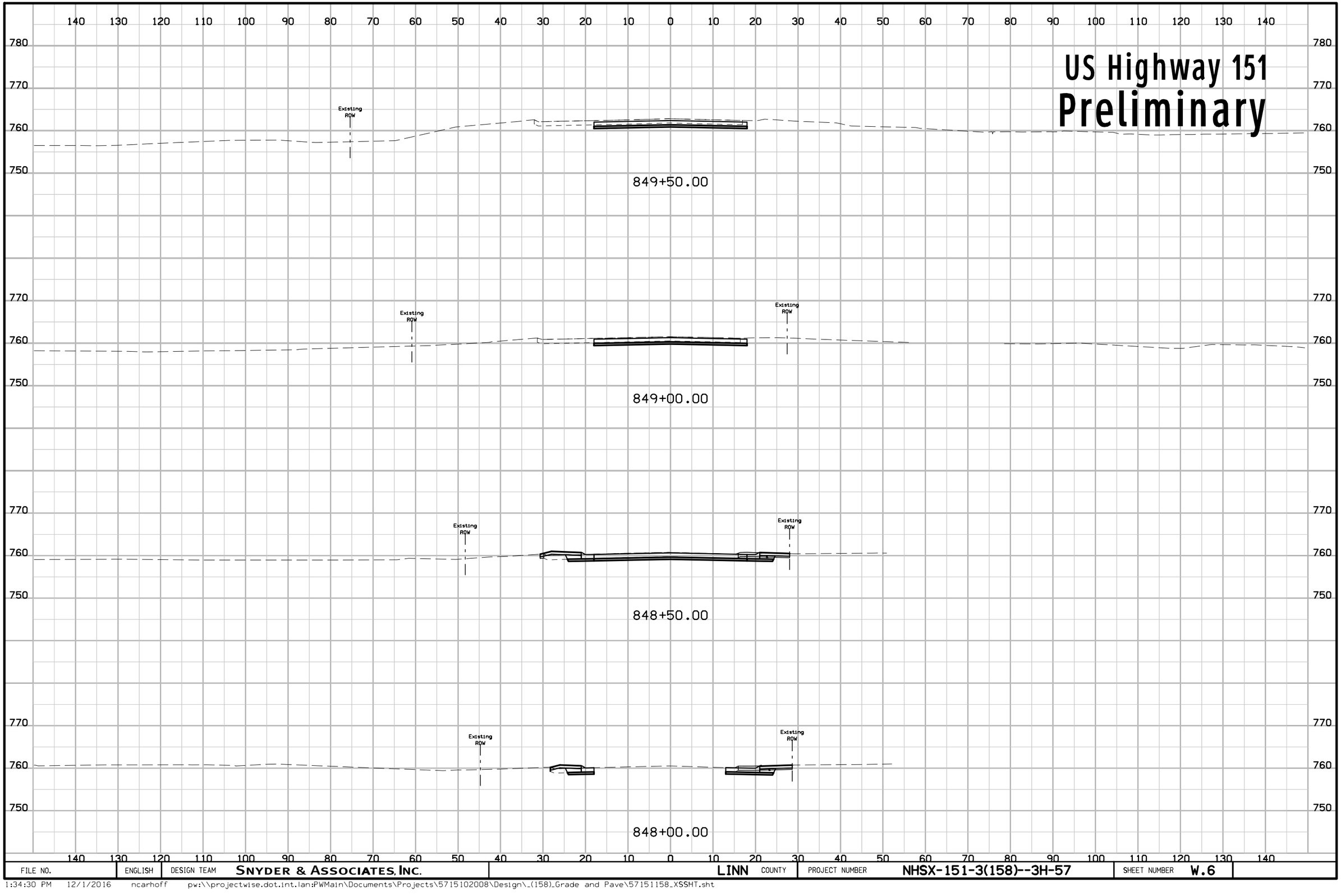
US Highway 151
Preliminary



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

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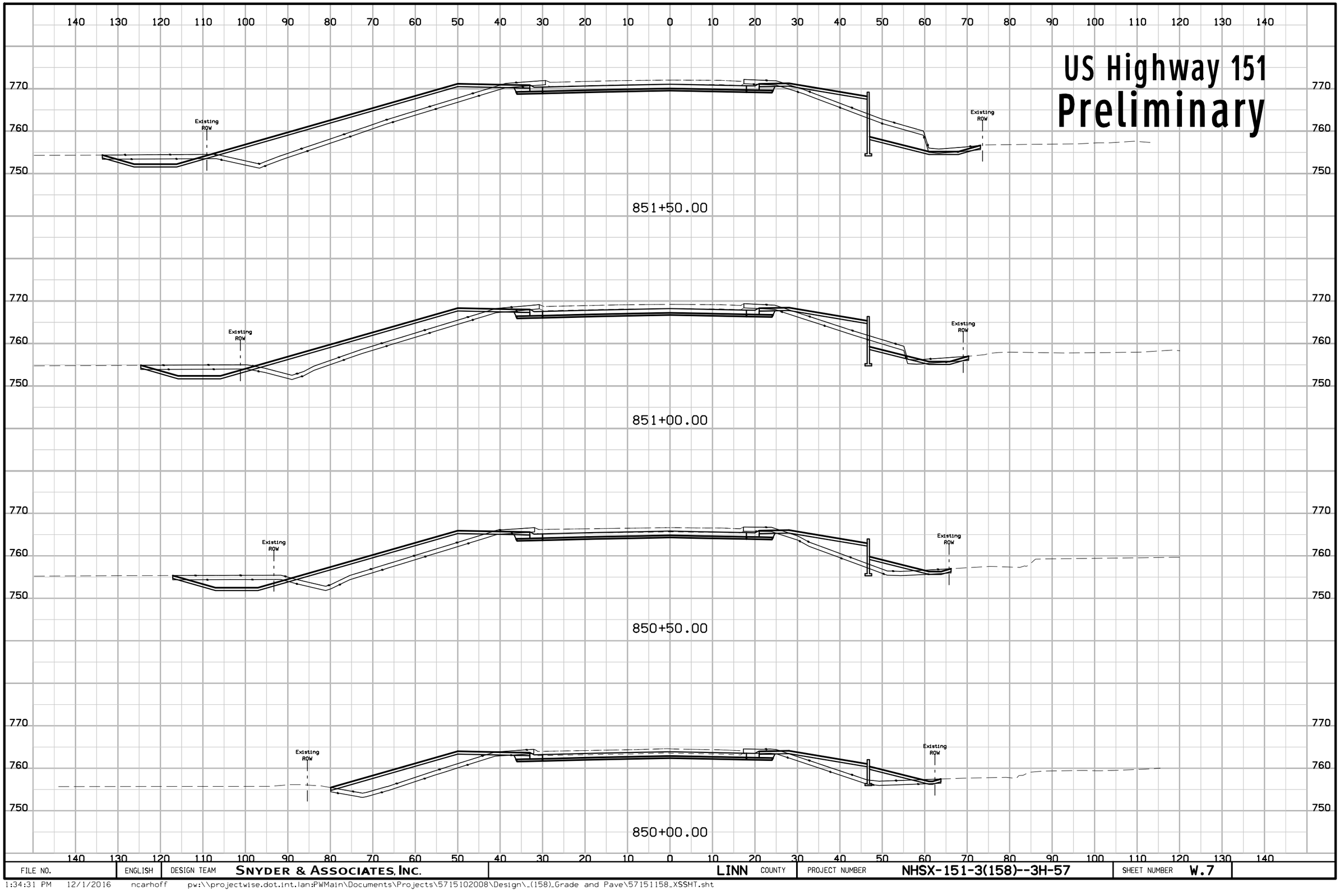
US Highway 151
Preliminary



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

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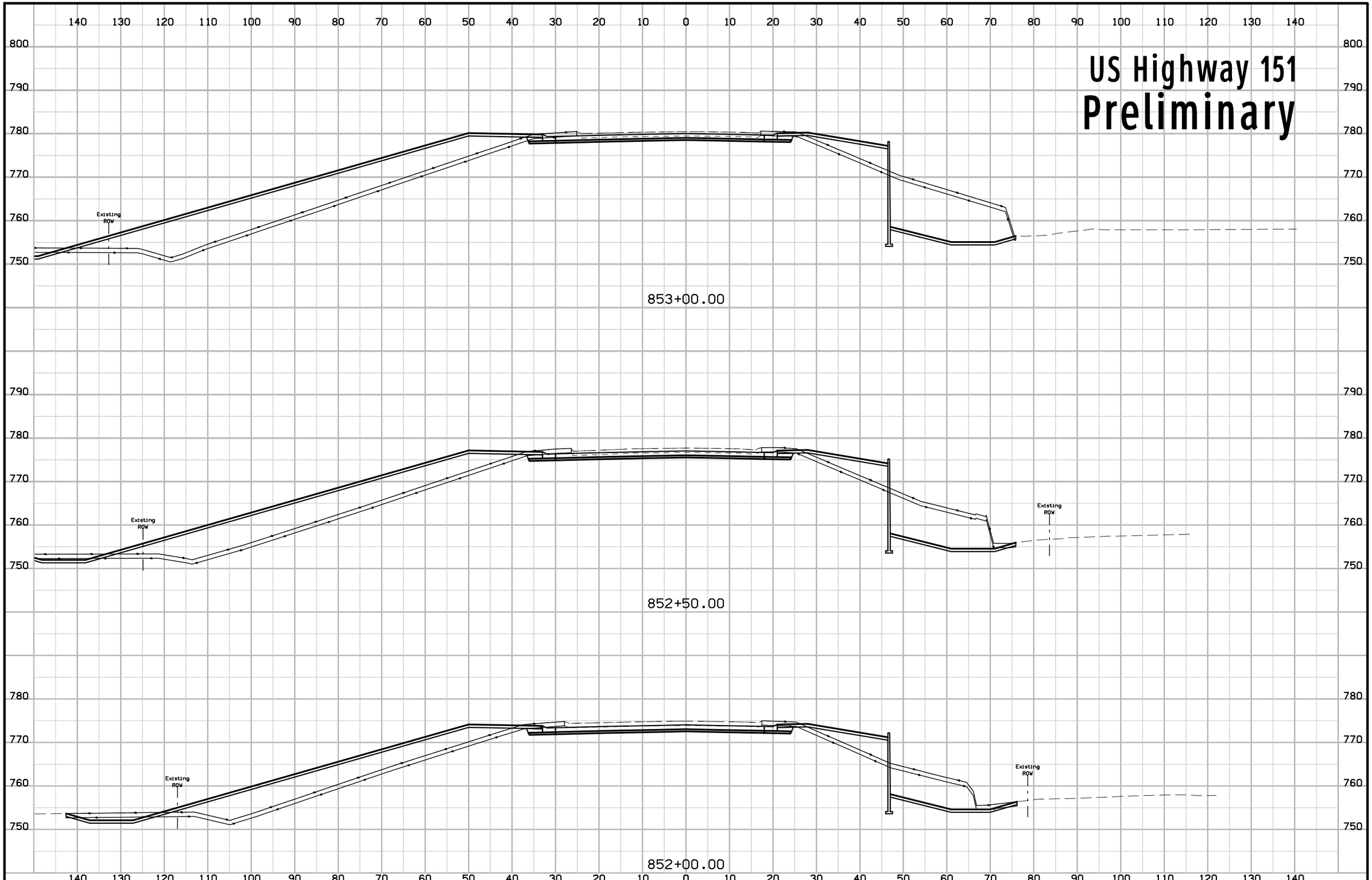
US Highway 151
Preliminary



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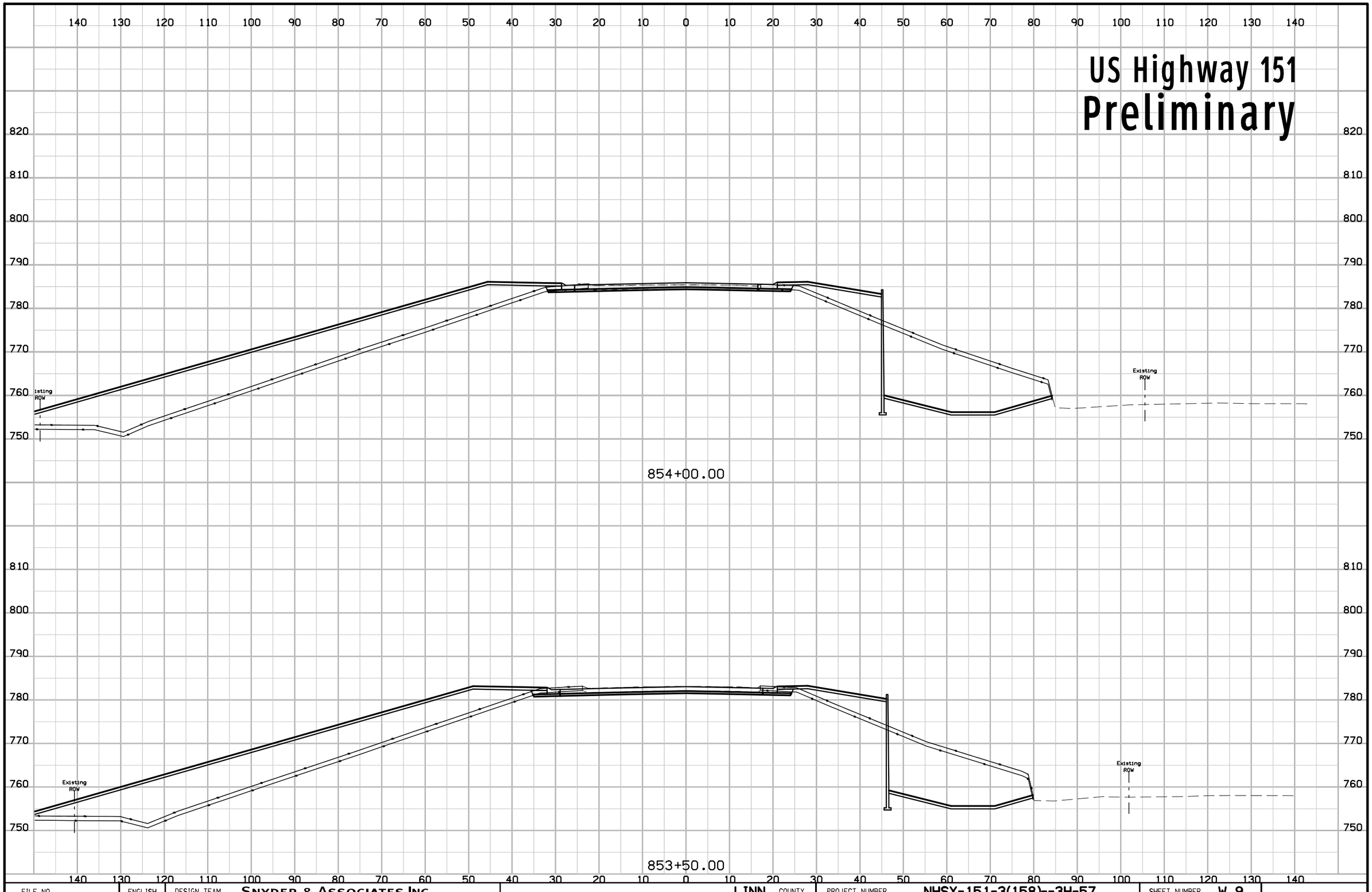
US Highway 151
Preliminary



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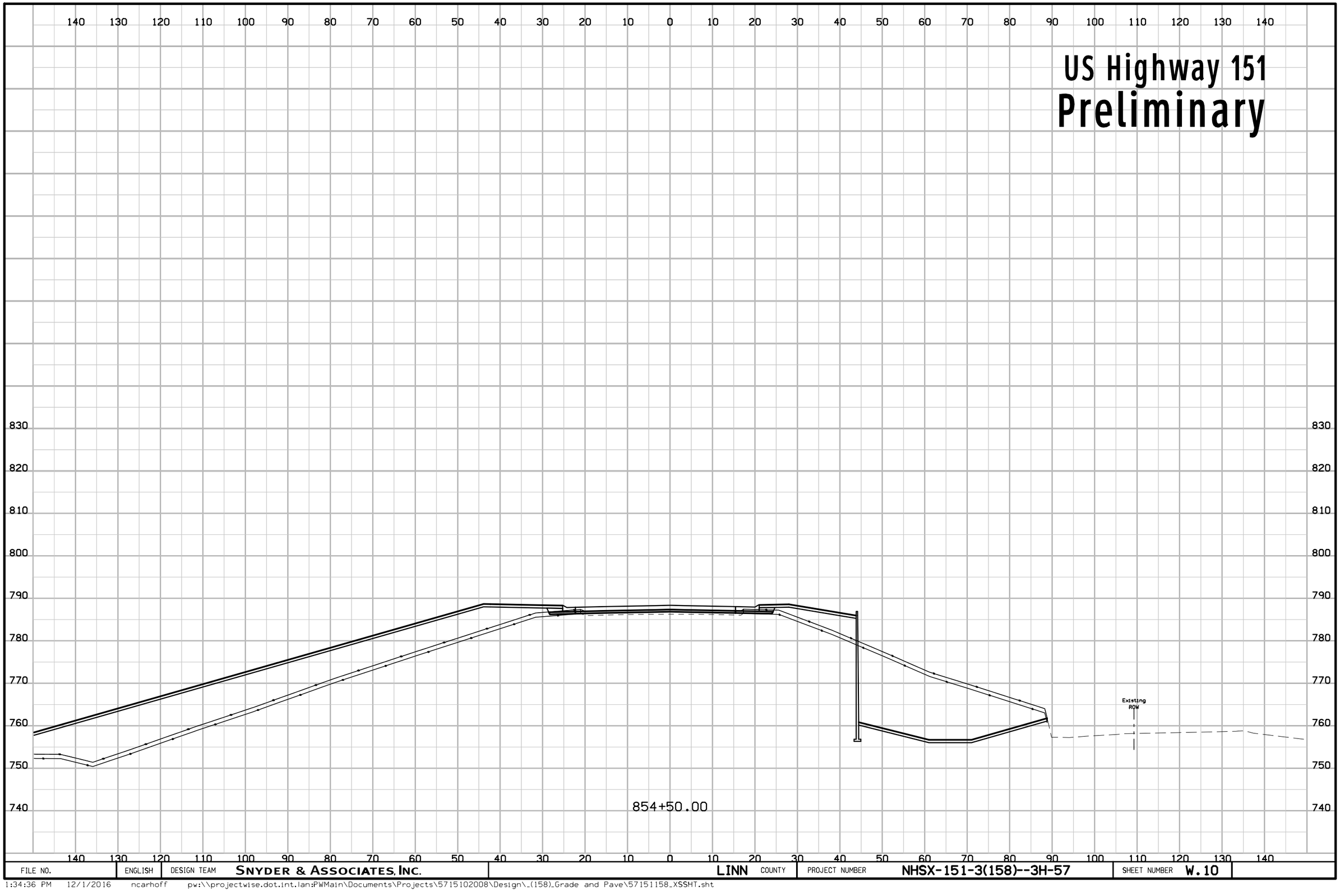
US Highway 151
Preliminary



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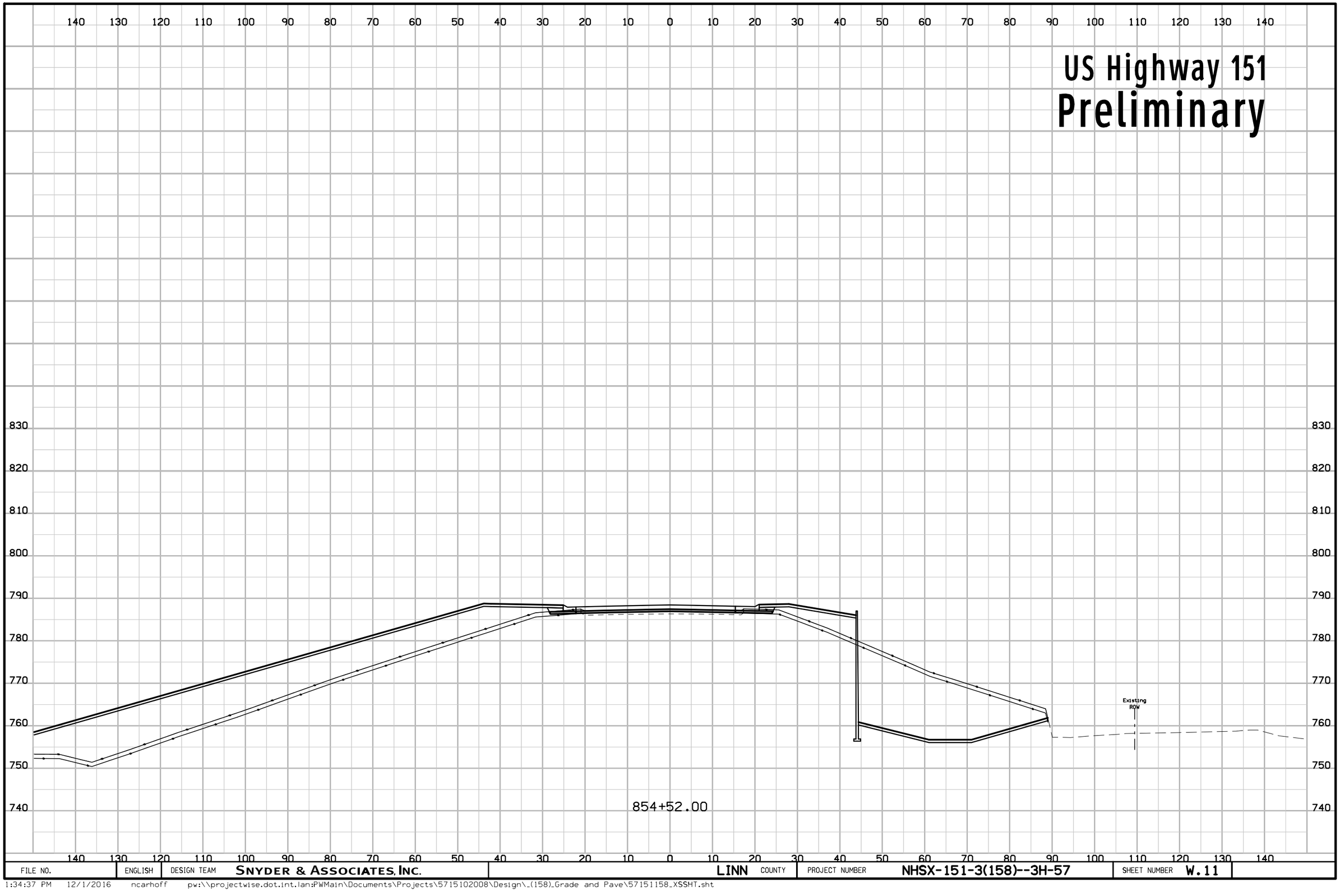
US Highway 151
Preliminary



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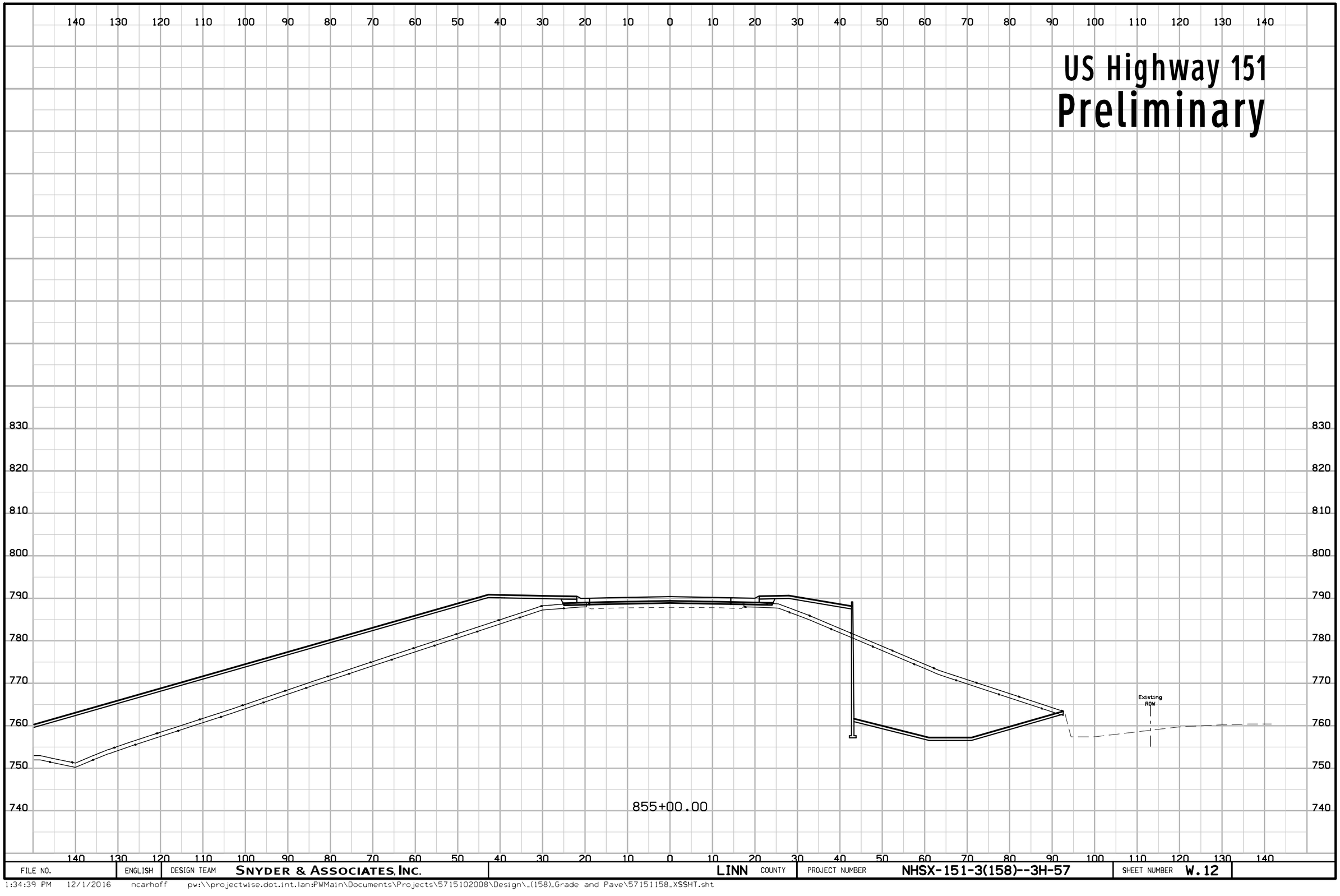
US Highway 151
Preliminary



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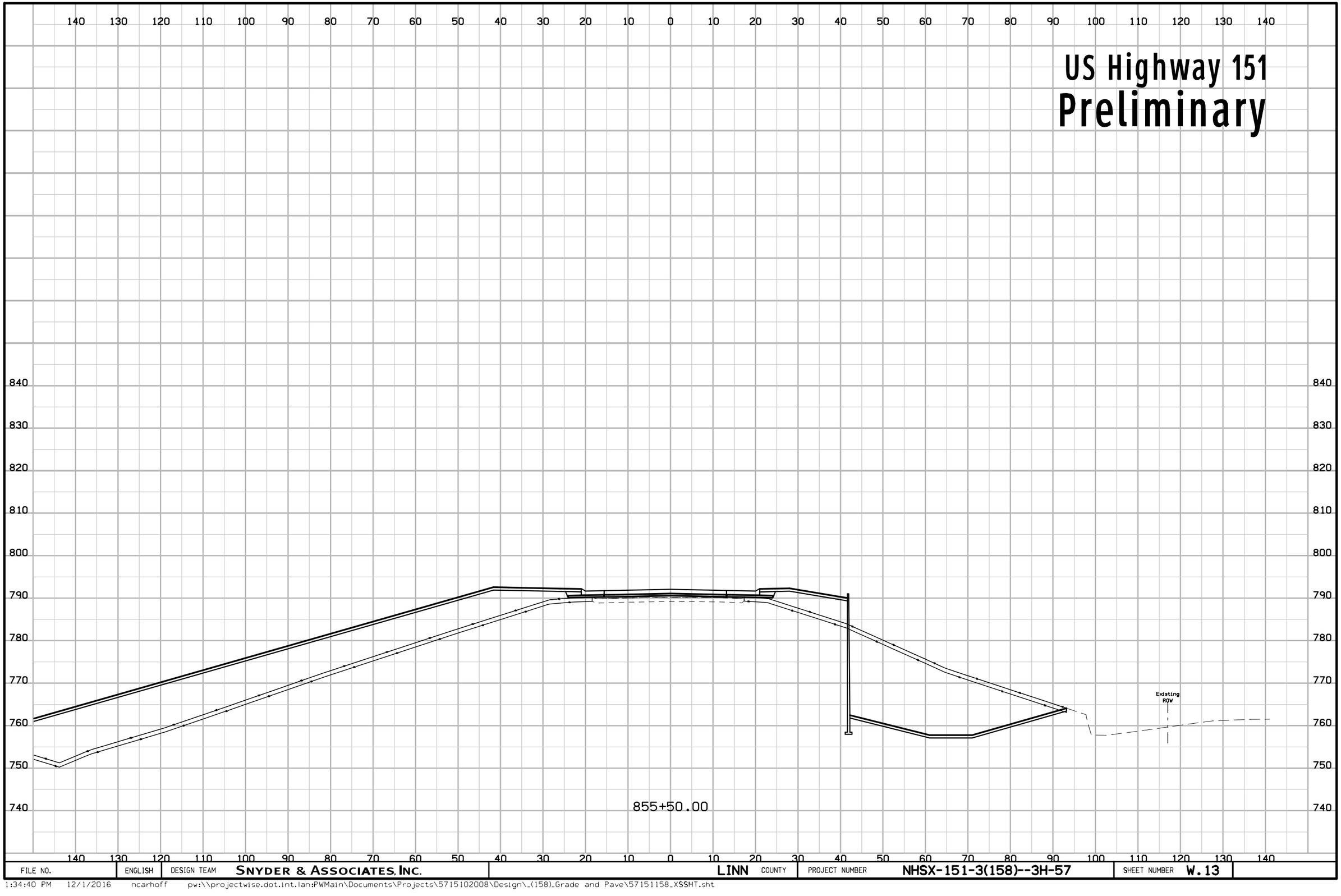
US Highway 151
Preliminary



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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

856+50.00

840 830 820 810 800 790 780 770 760 750 740

Existing ROW

856+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.14

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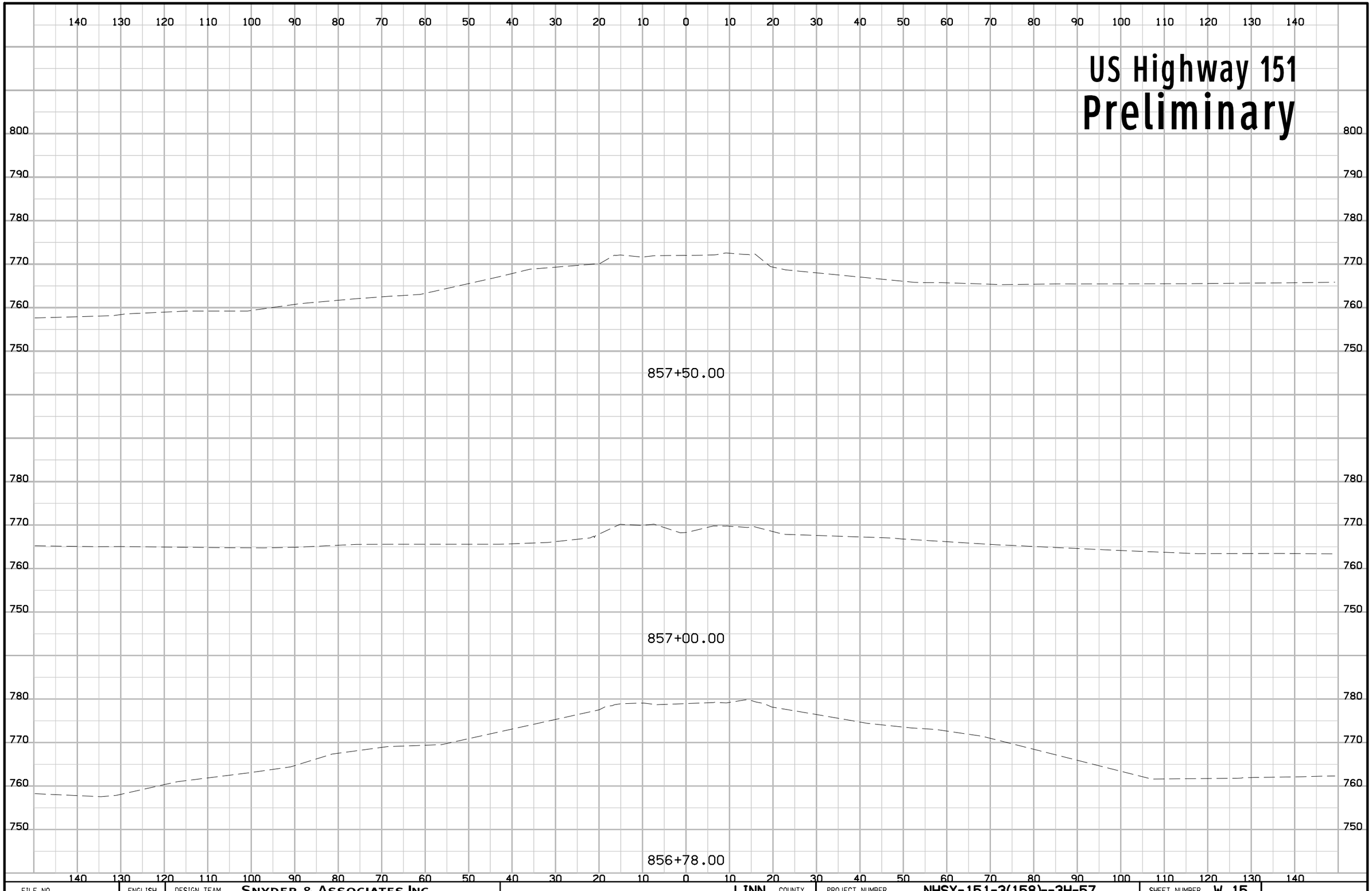
US Highway 151
Preliminary



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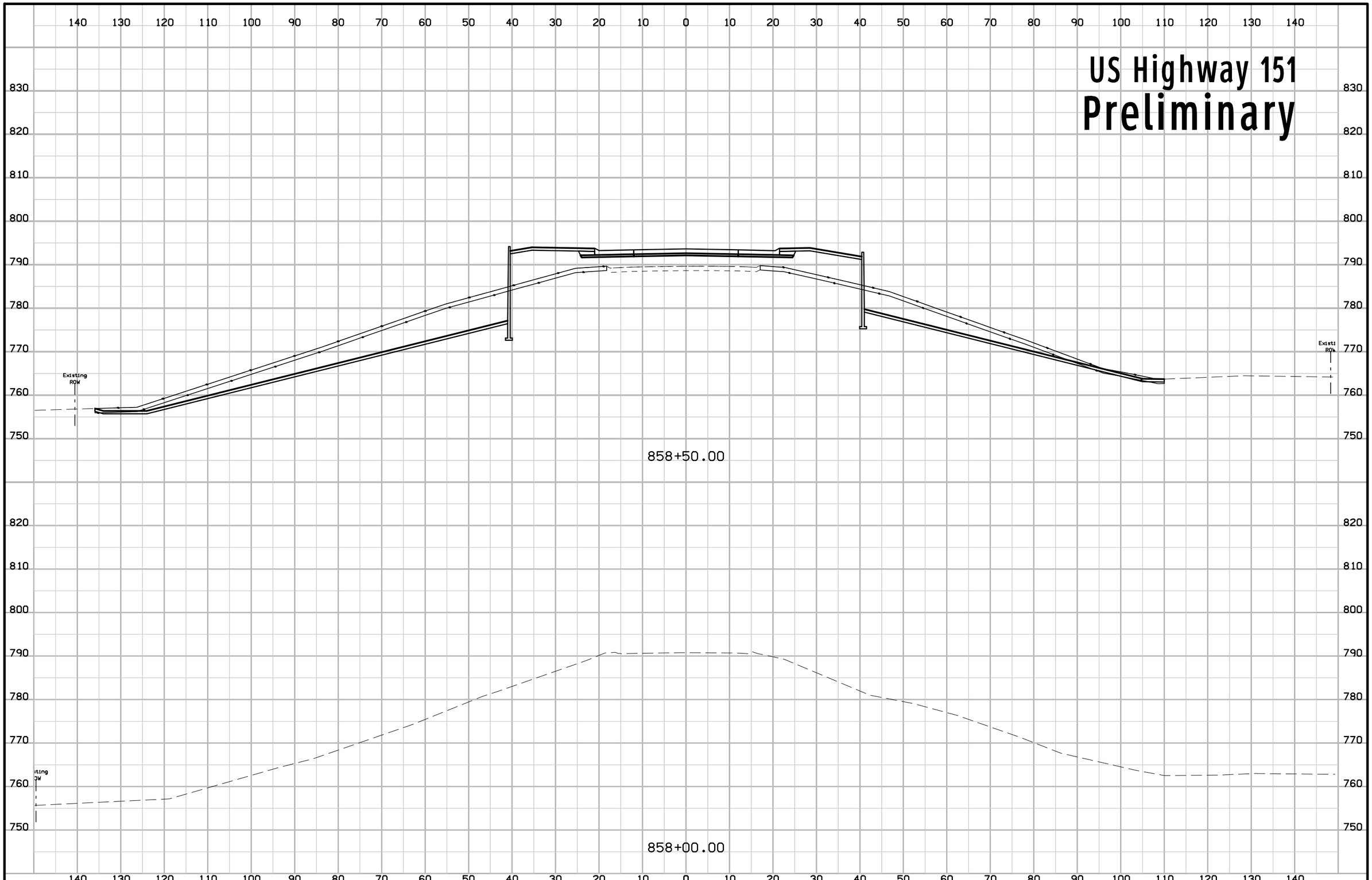
US Highway 151
Preliminary



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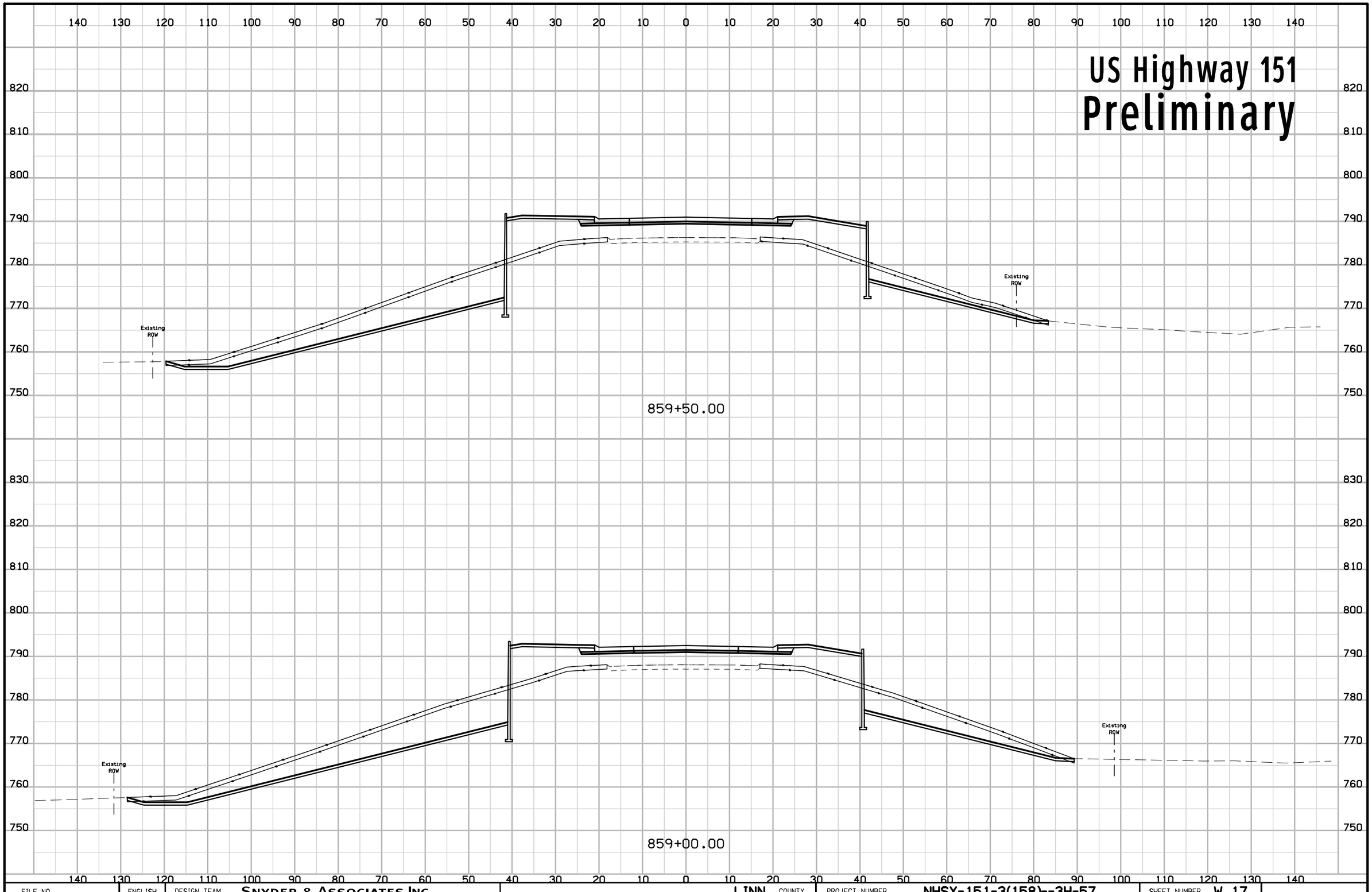
US Highway 151
Preliminary



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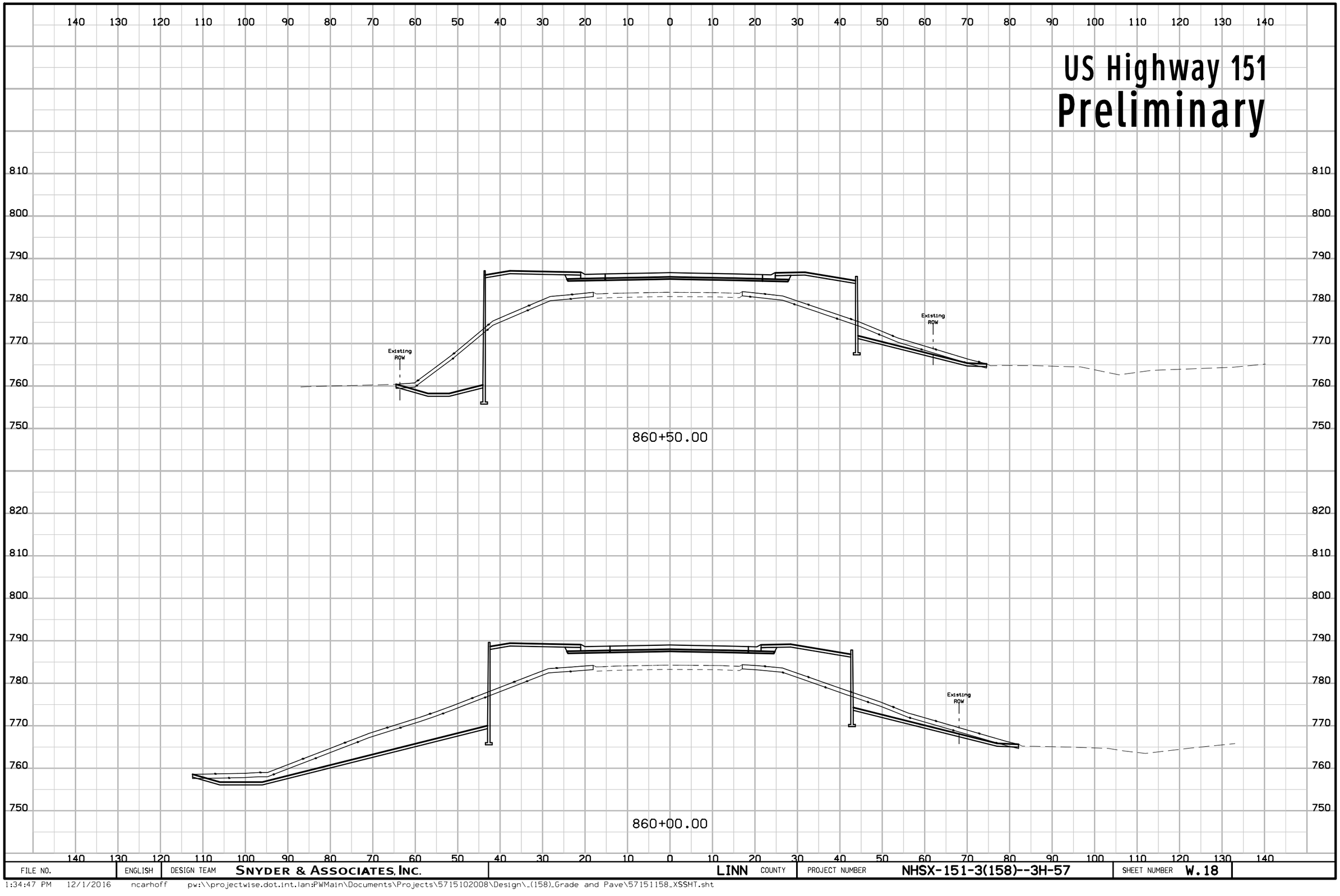
1:34:46 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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

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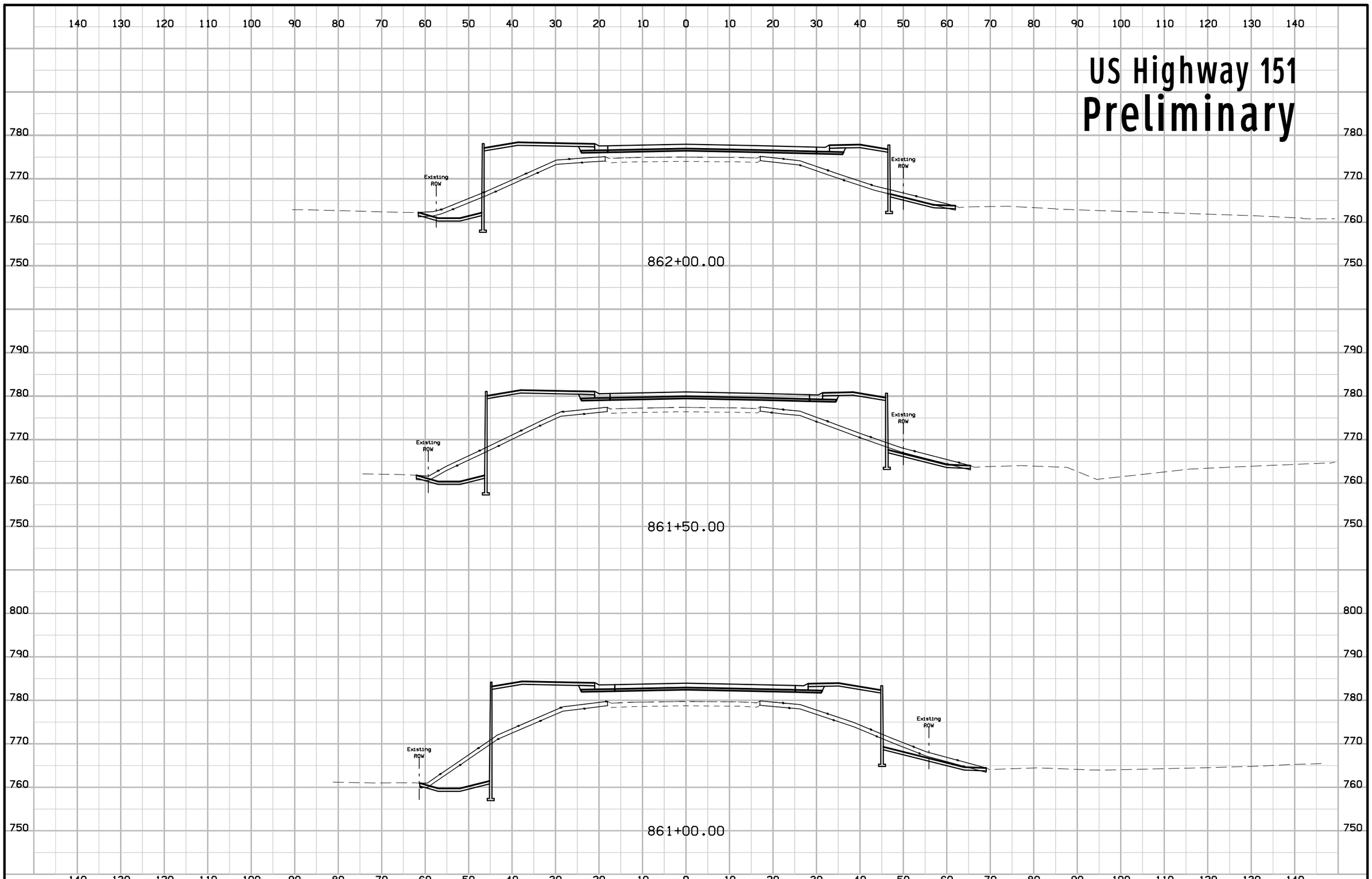
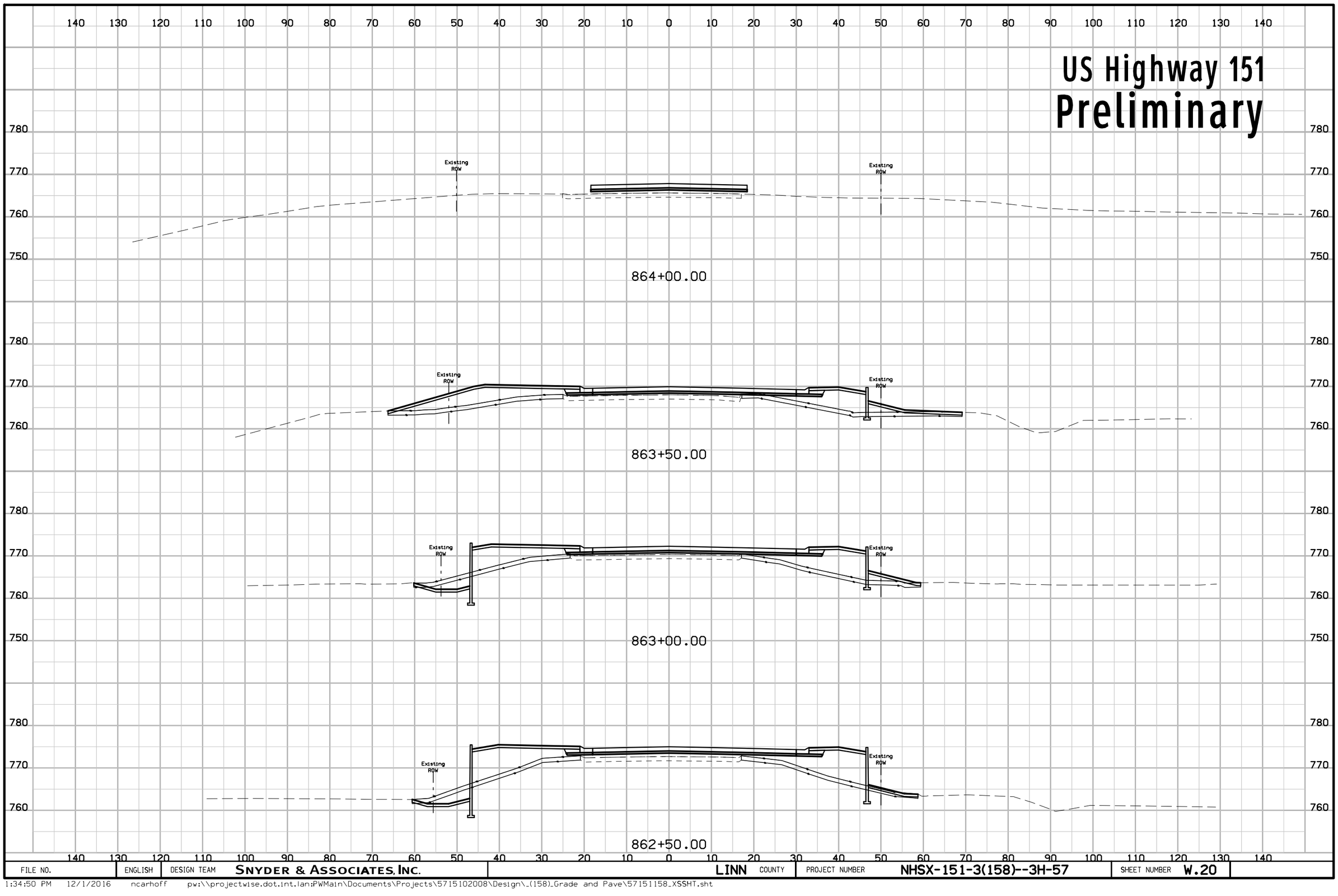
US Highway 151
Preliminary



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

1:34:49 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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

1:34:50 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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

Existing ROW

865+50.00

760
750
740

Existing ROW

Existing ROW

865+00.00

790
780
770
760
750

Existing ROW

Existing ROW

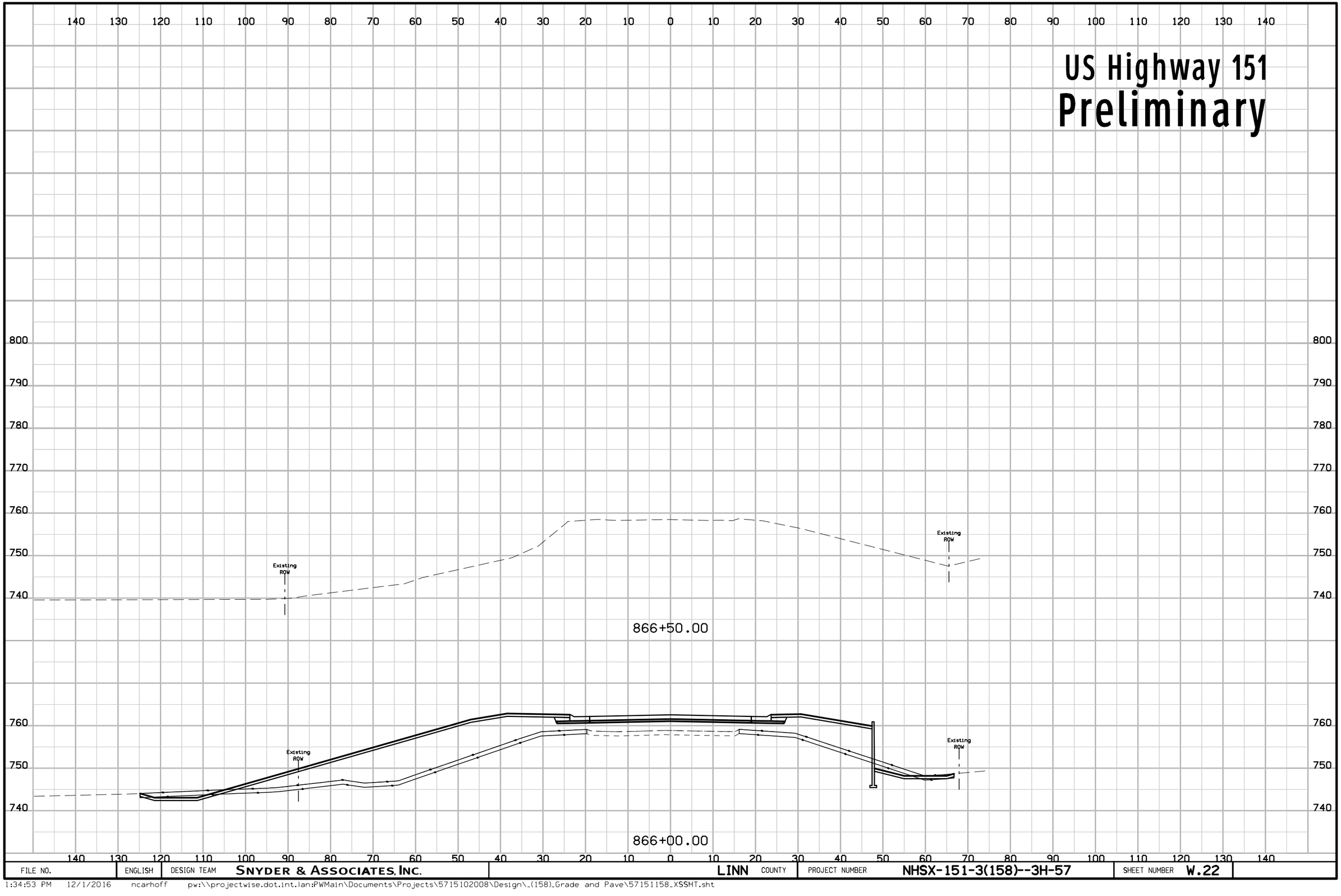
864+50.00

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.21

1:34:51 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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.22

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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

867+50.00

Existing ROW

790
780
770
760
750
740

Existing ROW

867+00.00

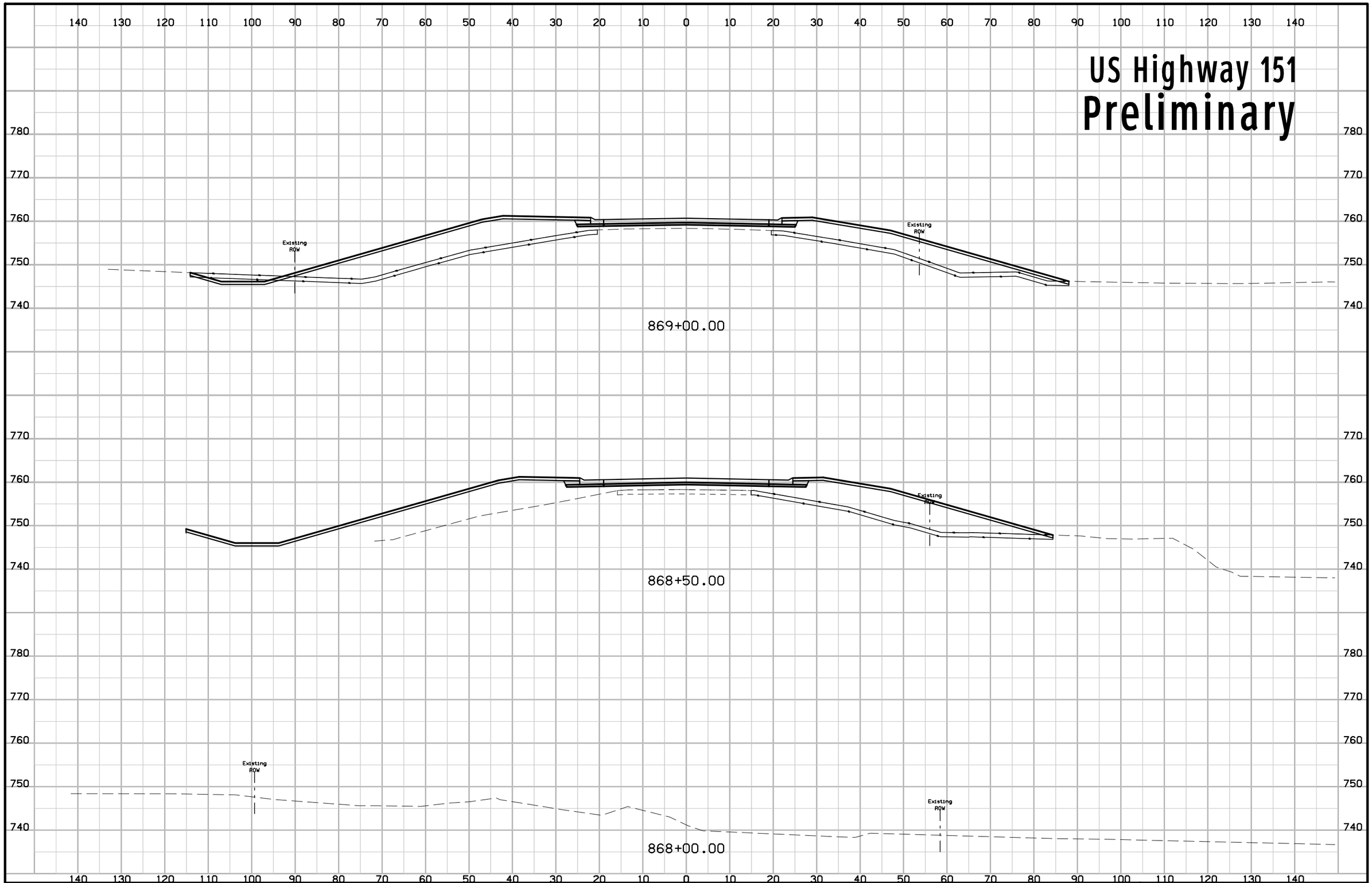
Existing ROW

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.23

1:34:54 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

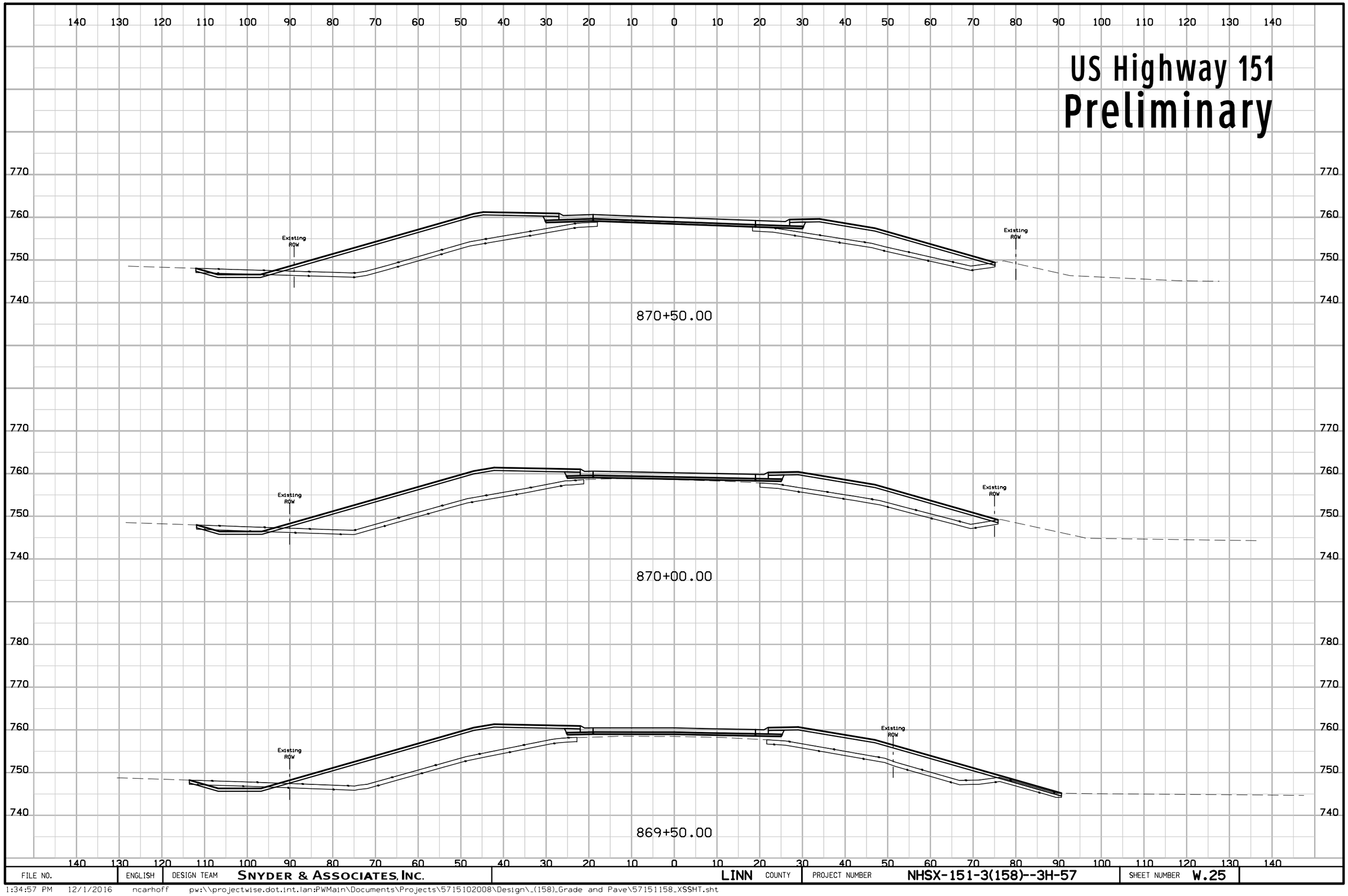
US Highway 151
Preliminary



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

1:34:56 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

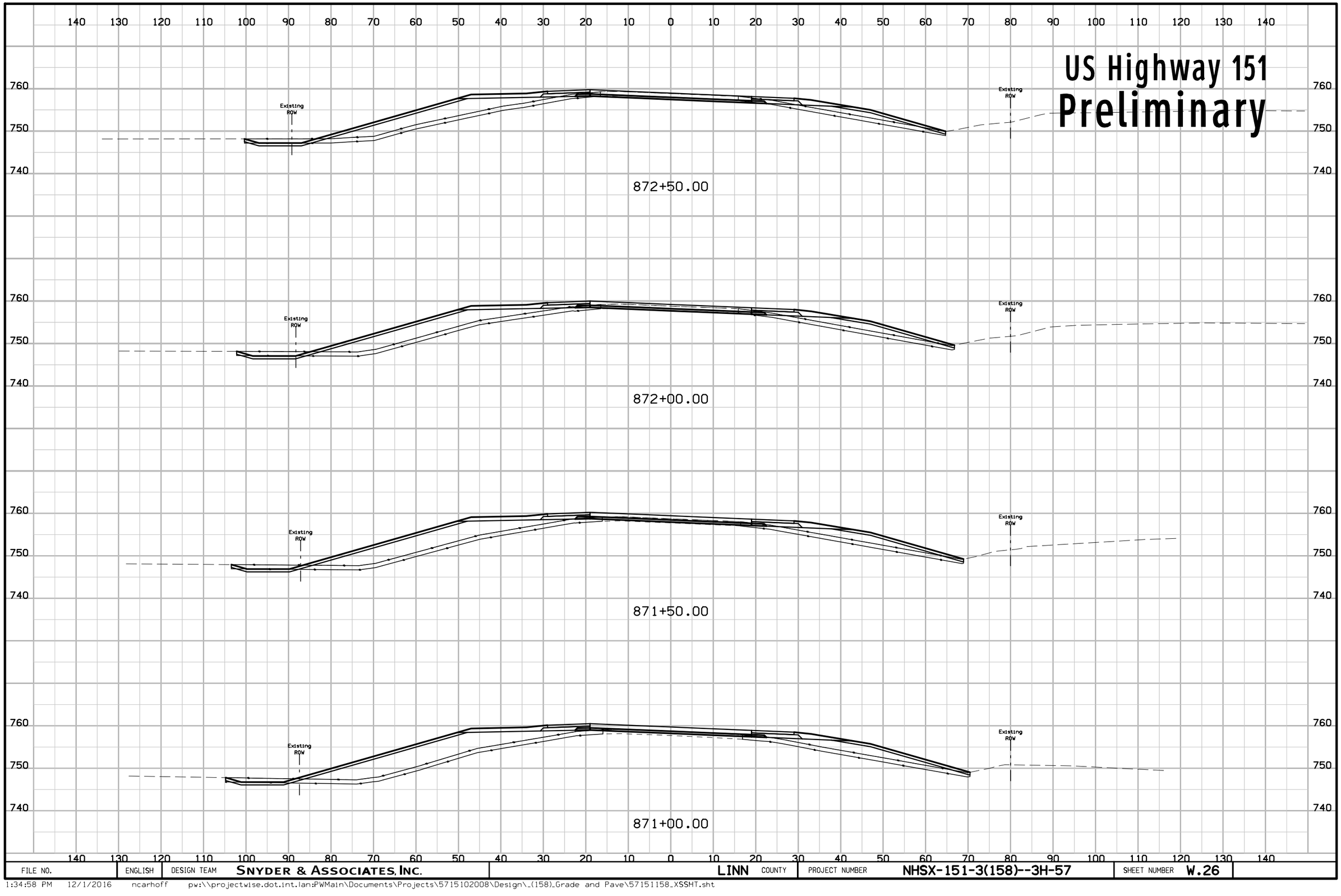
US Highway 151
Preliminary



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

1:34:57 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

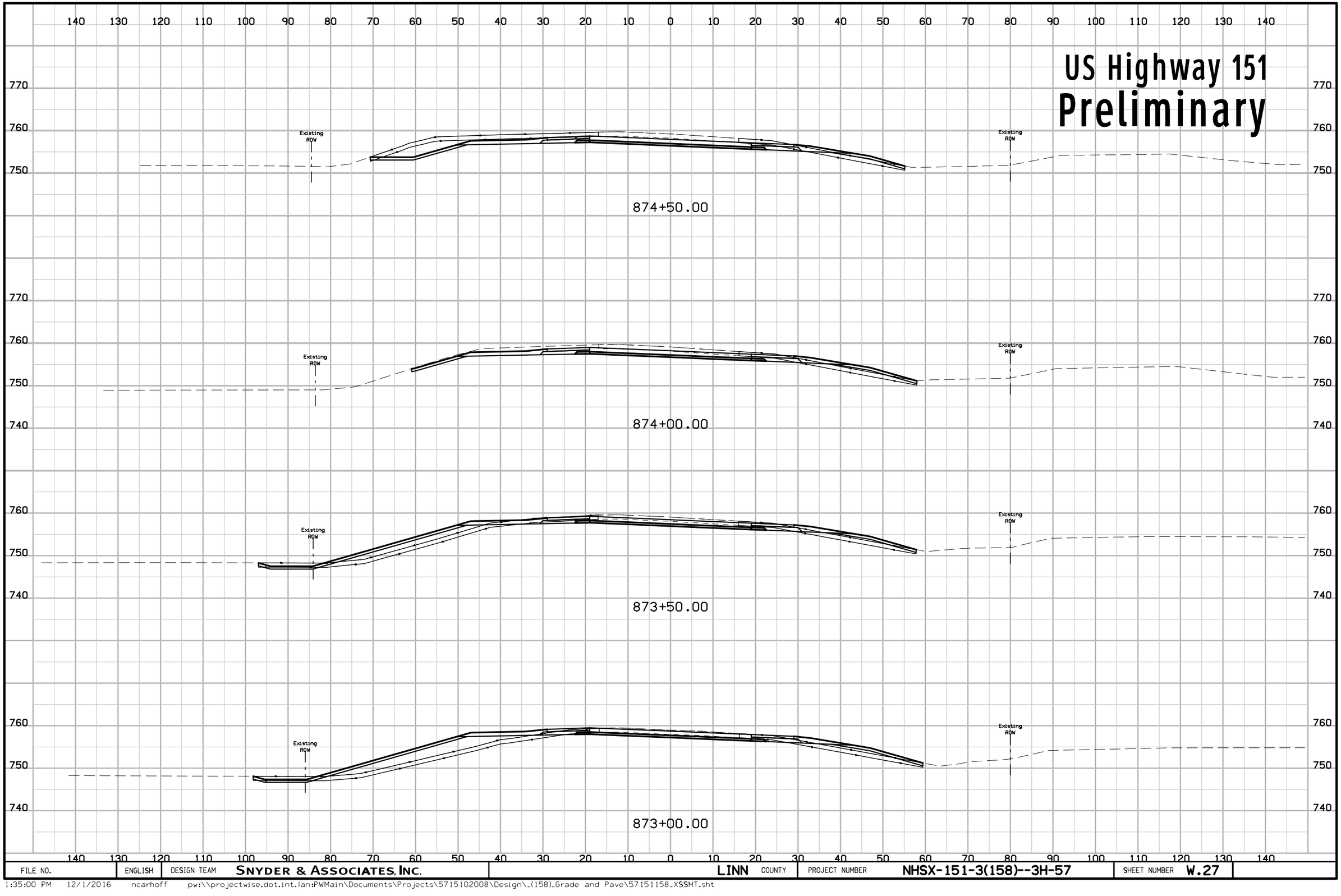
US Highway 151
Preliminary



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

1:34:58 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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

1:35:00 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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

Existing ROW

876+50.00

770
760
750

Existing ROW

Existing ROW

876+00.00

770
760
750

Existing ROW

Existing ROW

875+50.00

770
760
750

Existing ROW

Existing ROW

875+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.28

1:35:01 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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

878+31.00

878+00.00

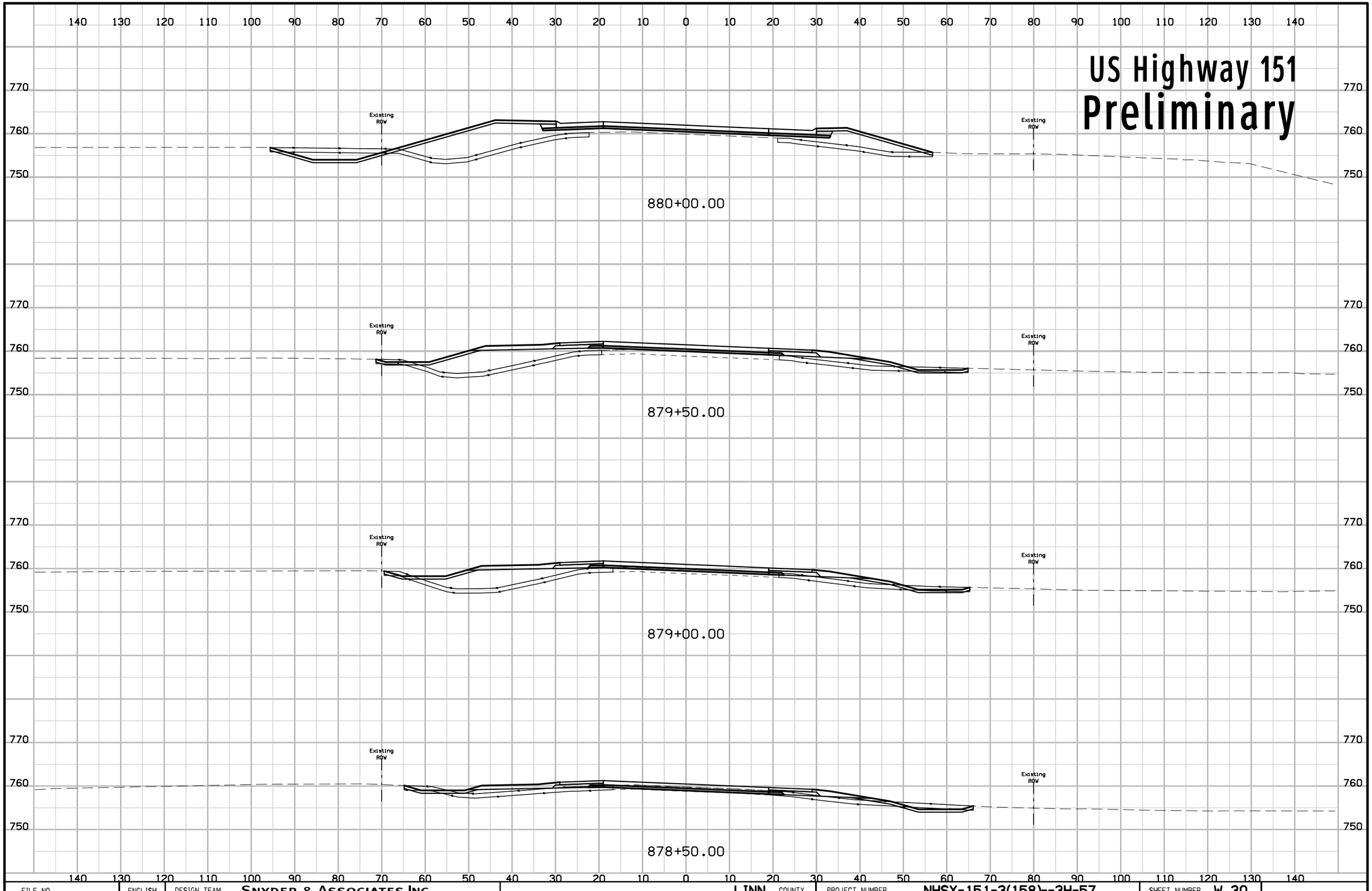
877+50.00

877+00.00

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

1:35:03 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

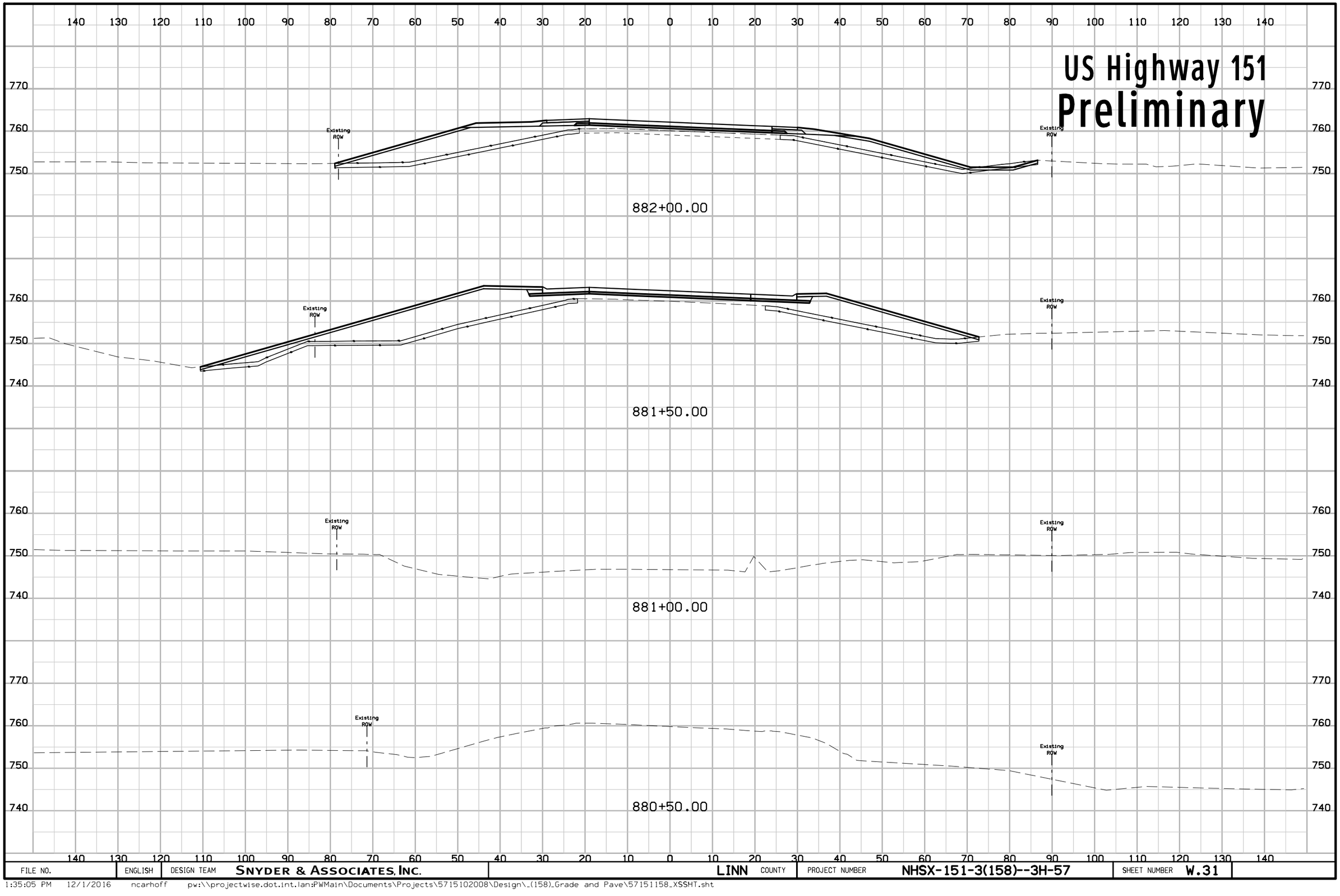
US Highway 151
Preliminary



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

1:35:04 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

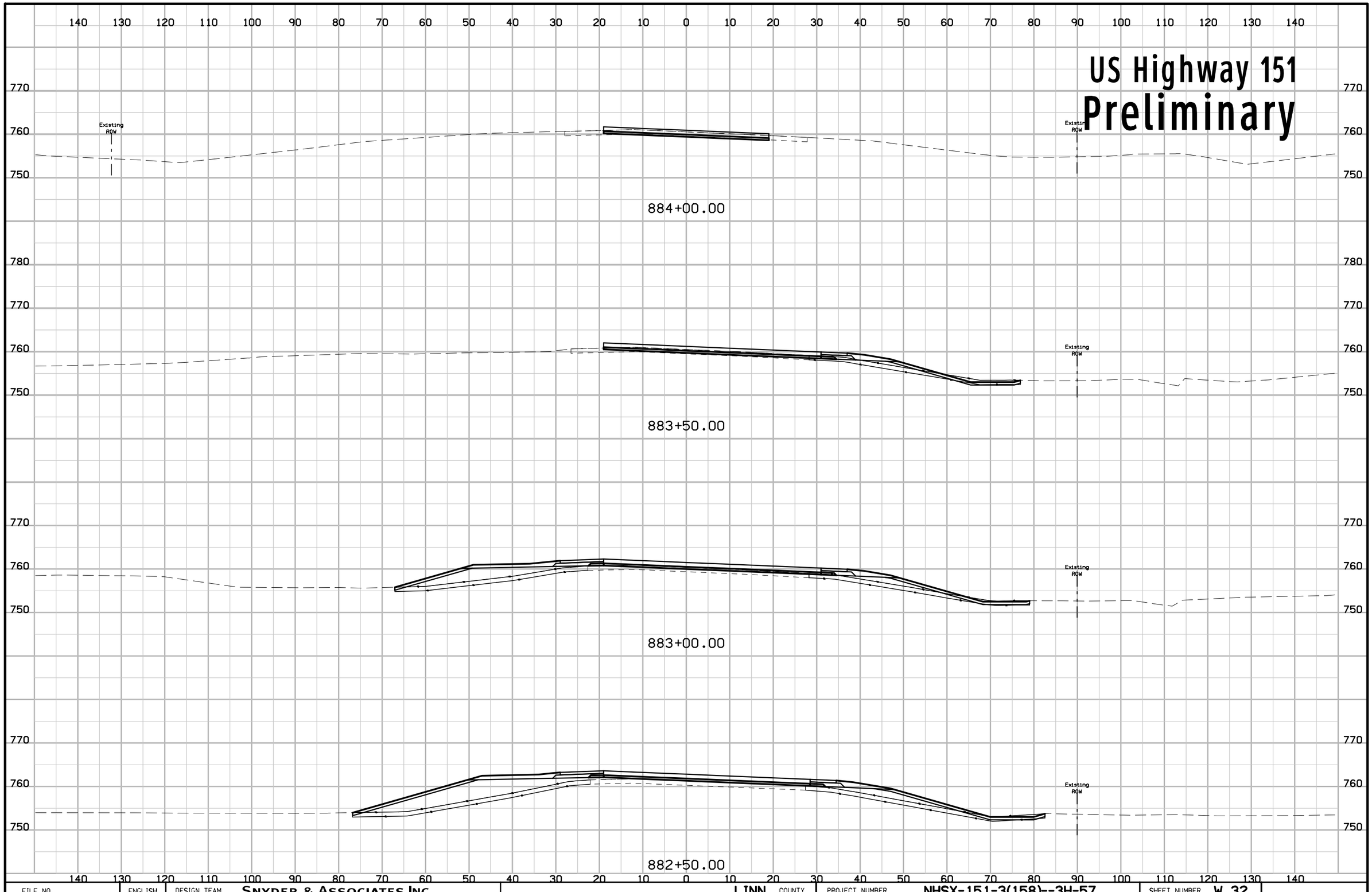
US Highway 151
Preliminary



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

1:35:05 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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

1:35:07 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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

886+00.00

770
760
750

Existing ROW

885+50.00

770
760
750

Existing ROW

885+00.00

770
760
750

Existing ROW

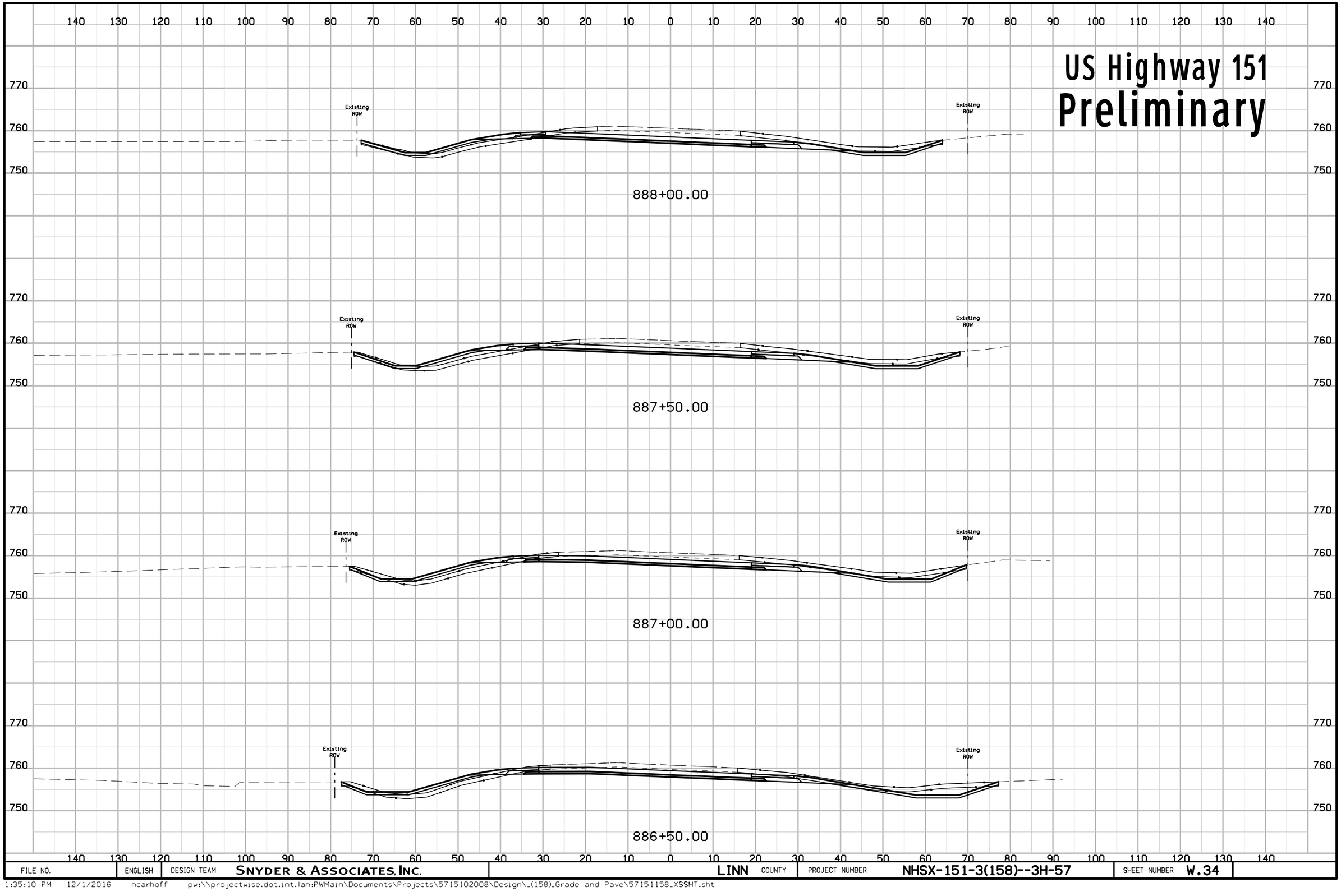
884+50.00

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.33

1:35:08 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

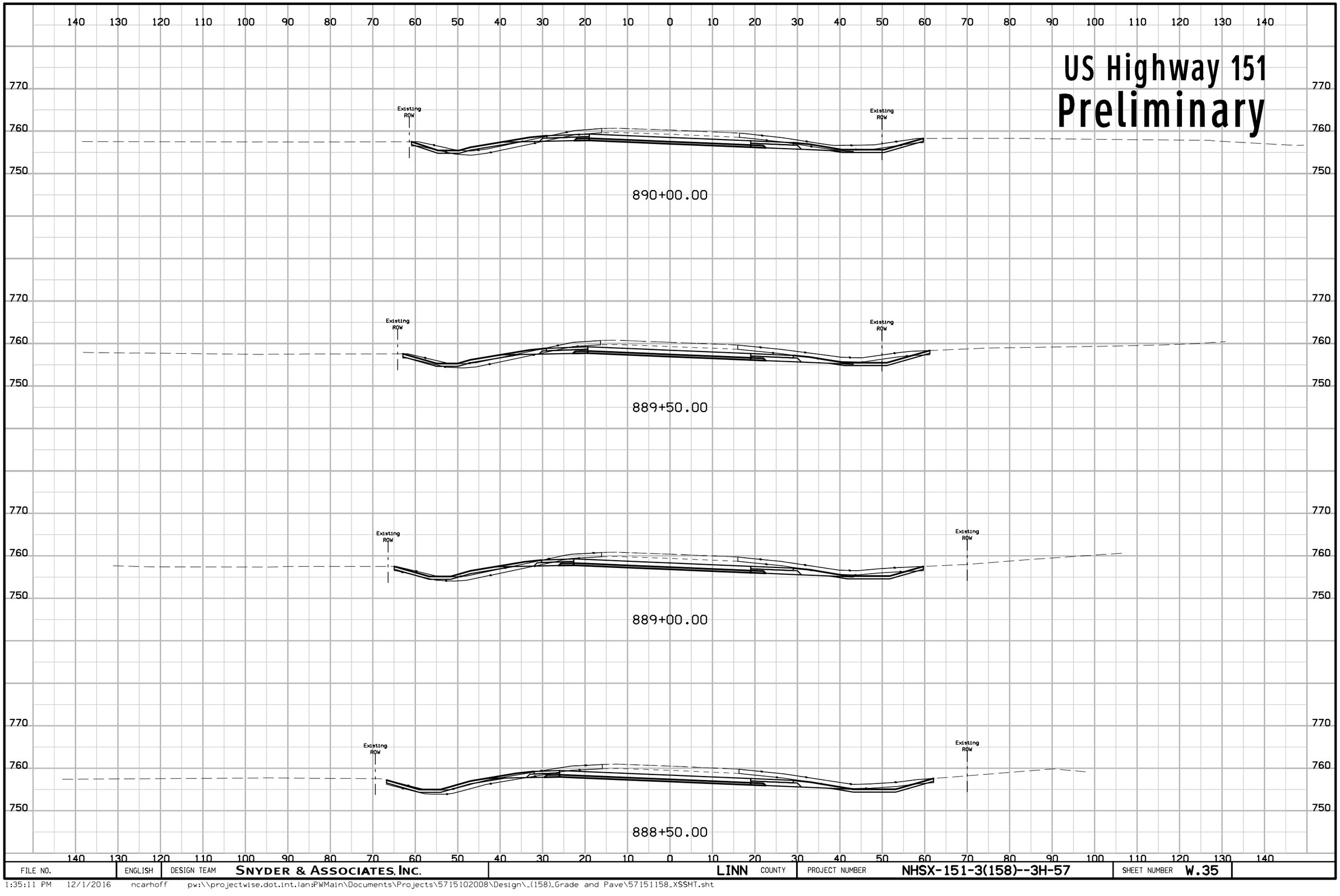
US Highway 151
Preliminary



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

1:35:10 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

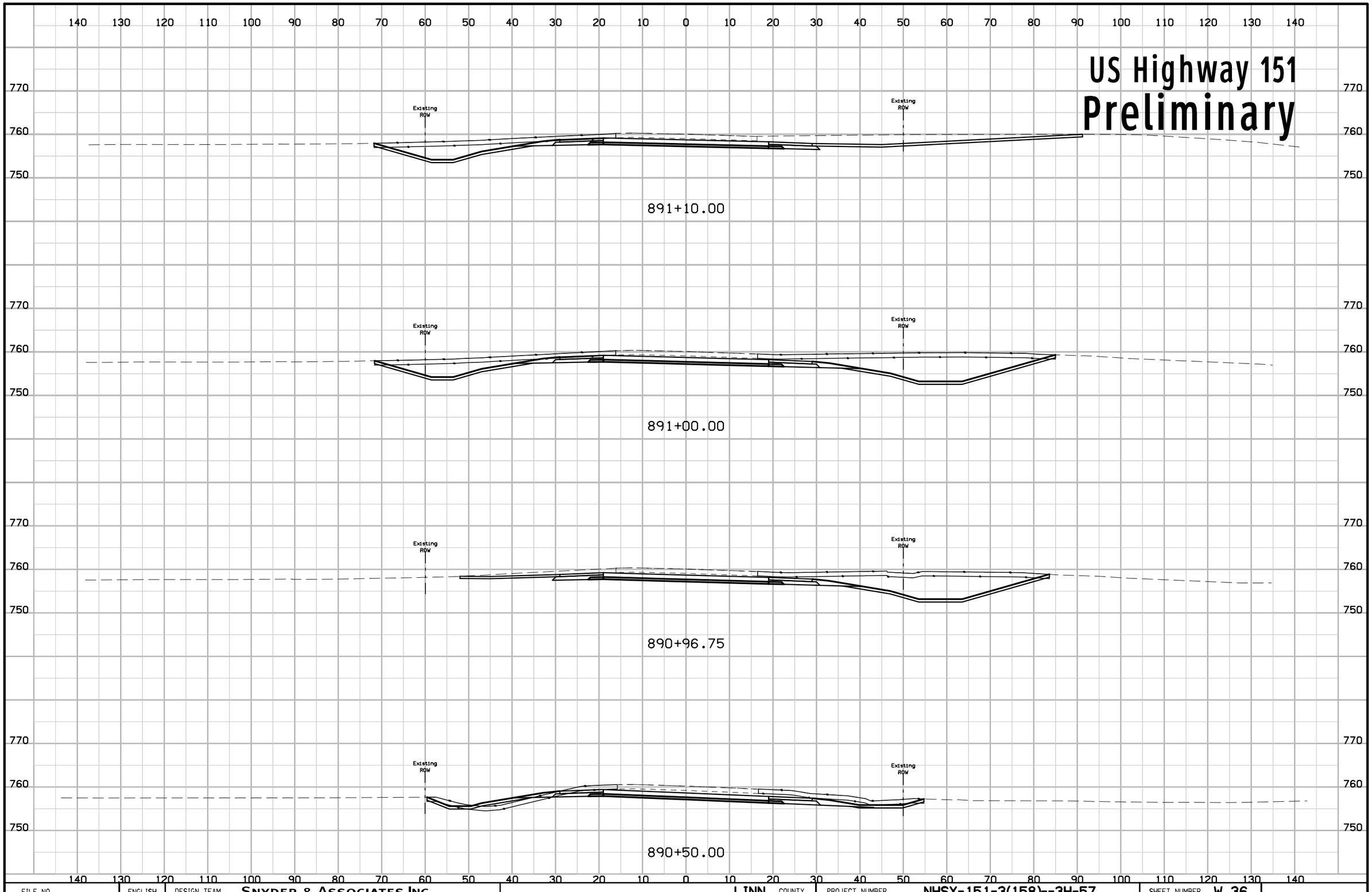
US Highway 151
Preliminary



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

1:35:11 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

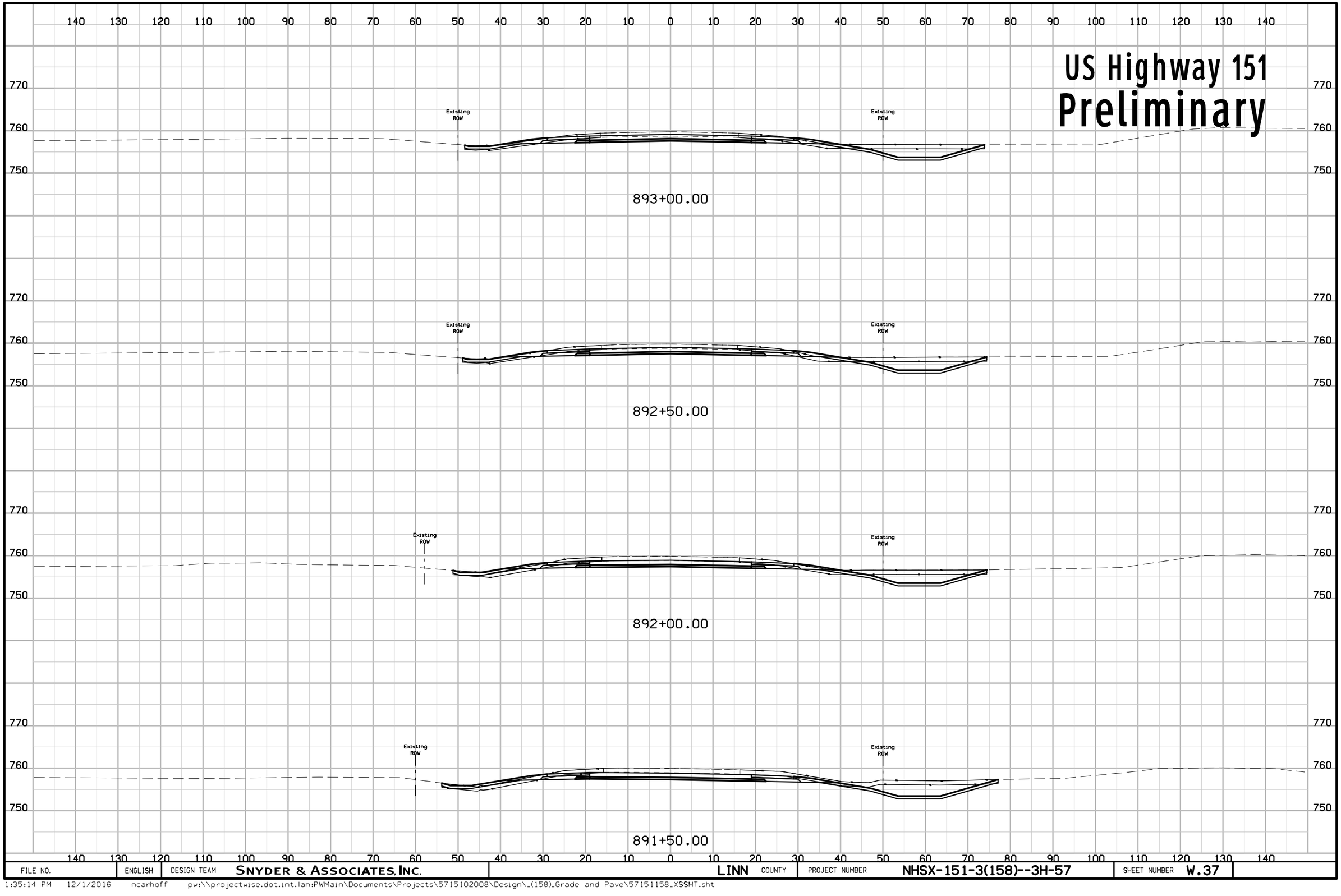
US Highway 151
Preliminary



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

1:35:13 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

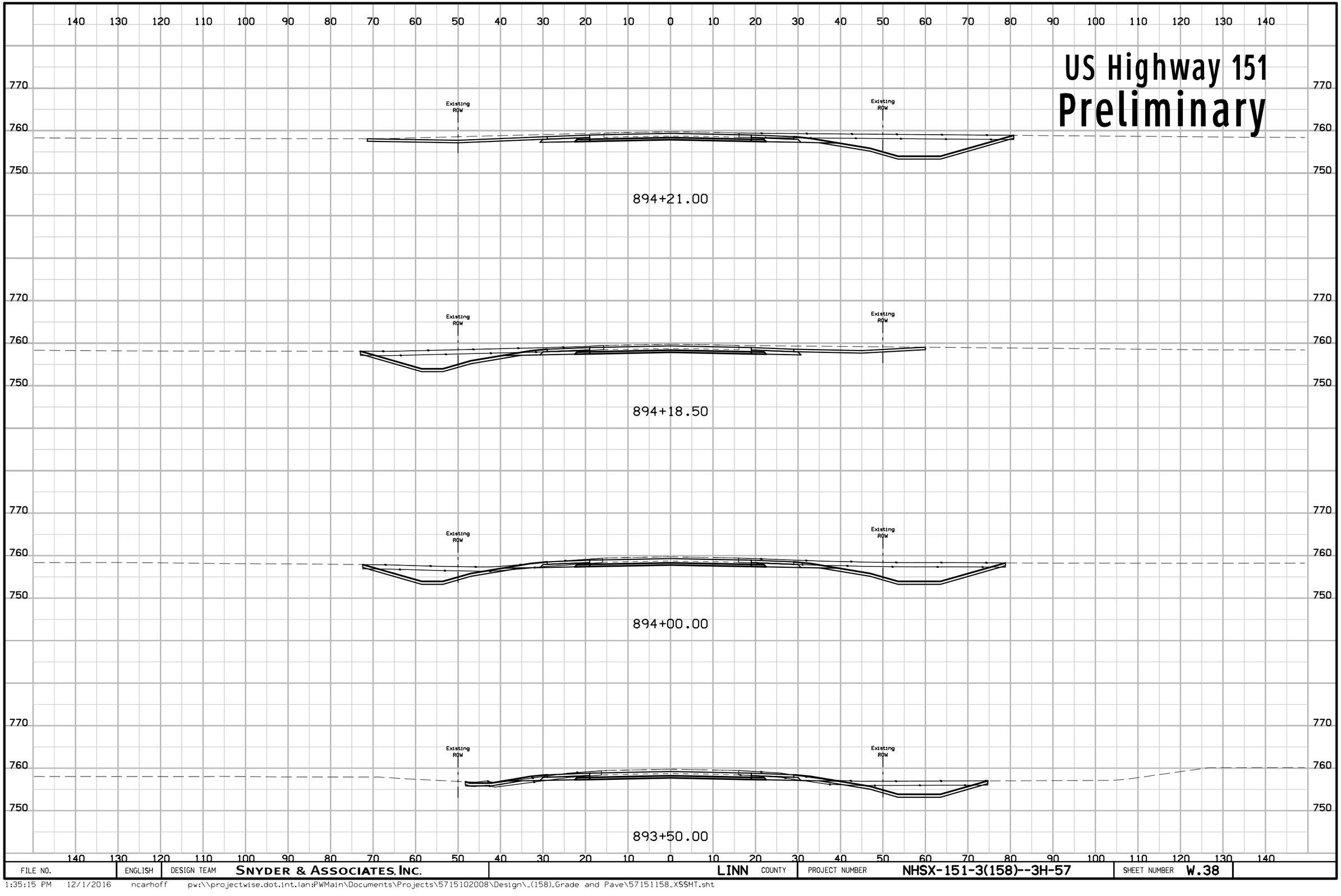
US Highway 151
Preliminary



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

1:35:14 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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

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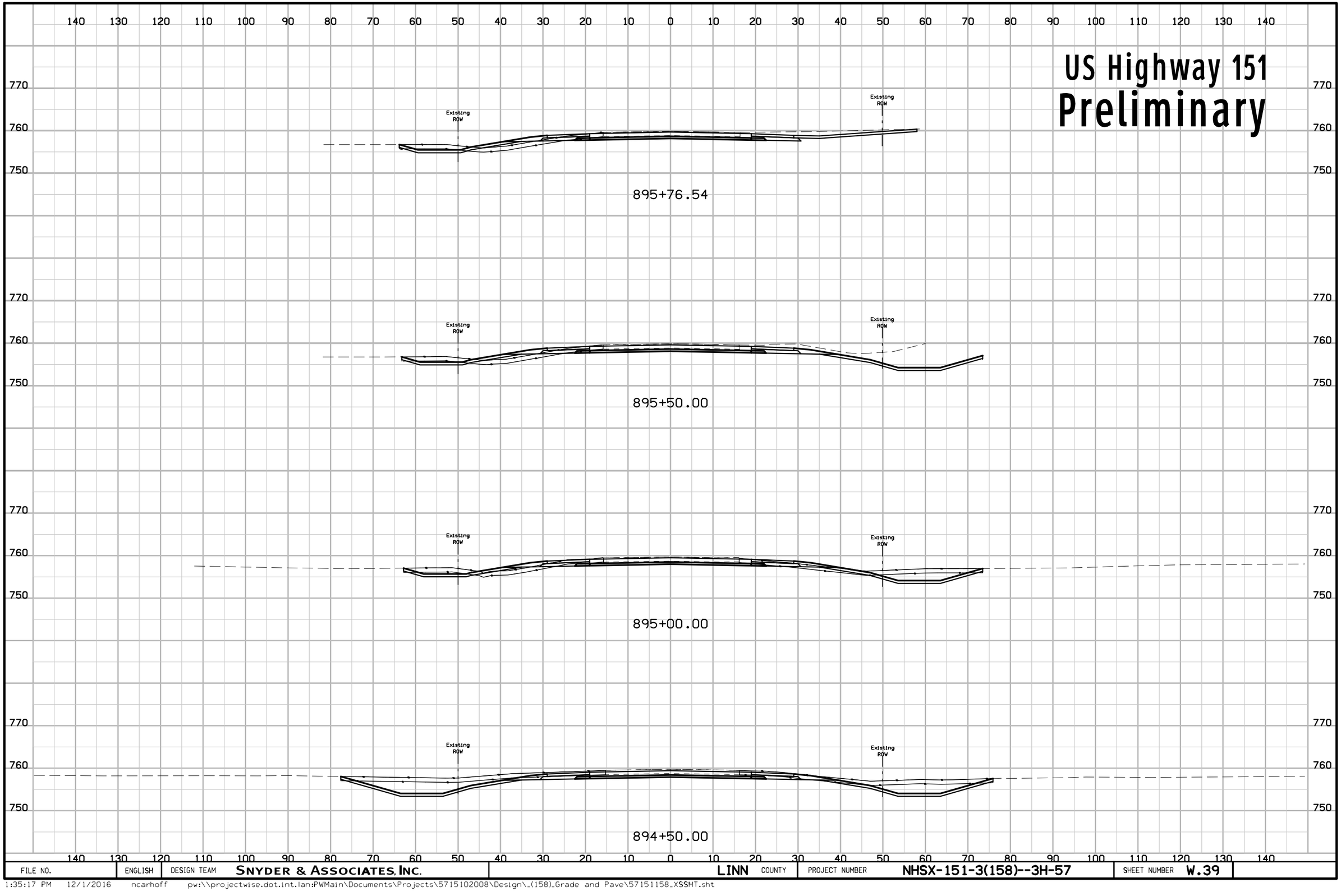
US Highway 151
Preliminary



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

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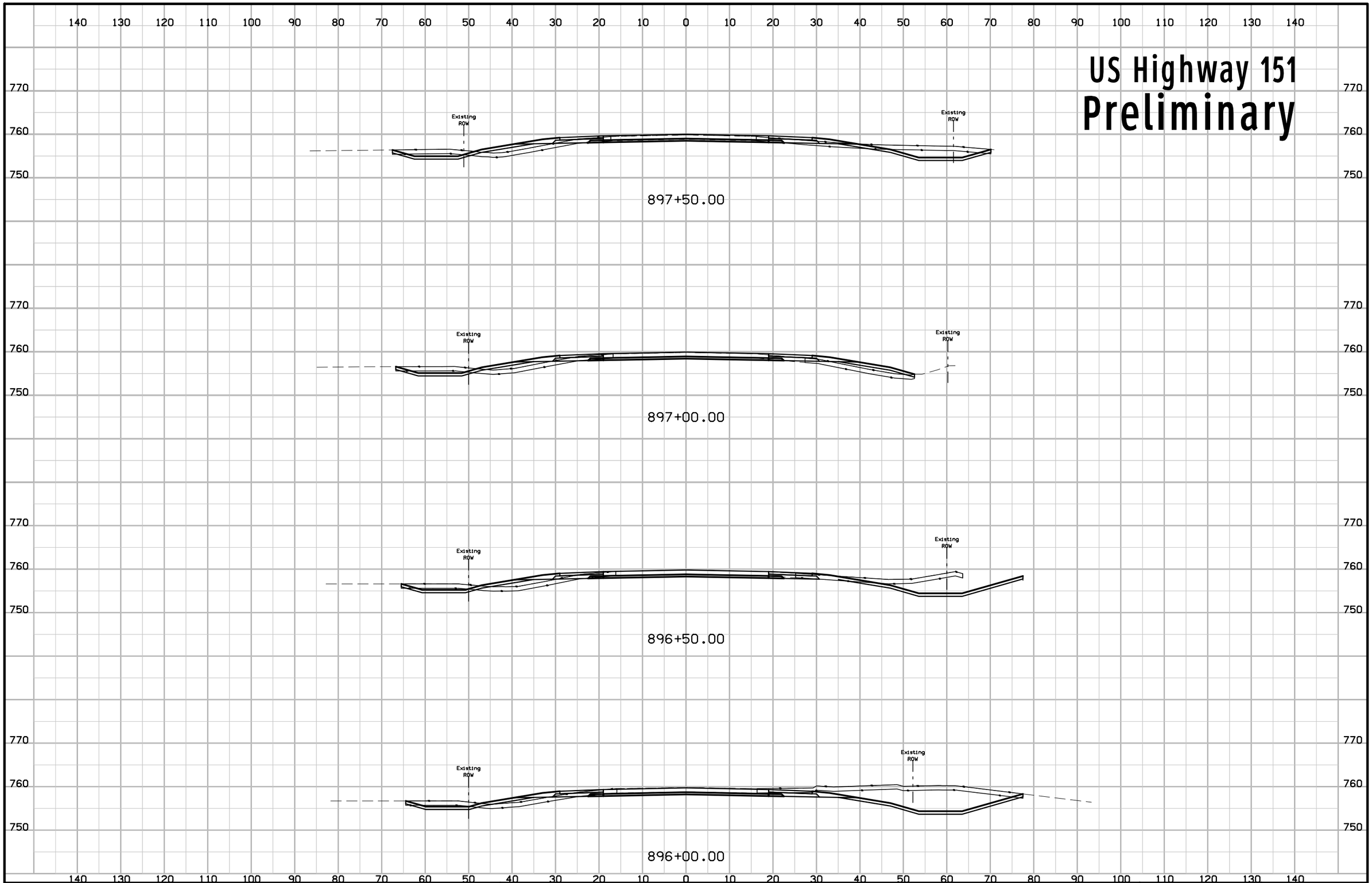
US Highway 151
Preliminary



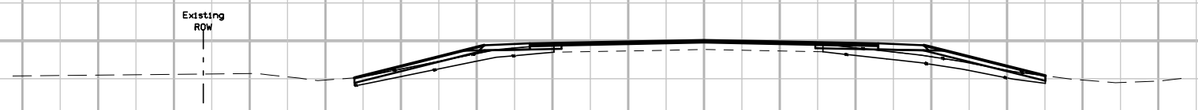
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.40

1:35:18 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

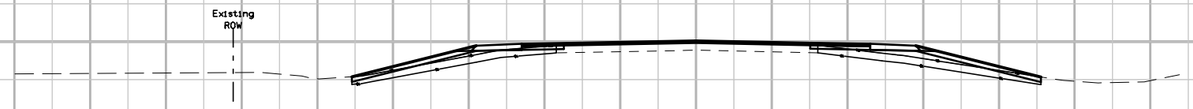
US Highway 151
Preliminary

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

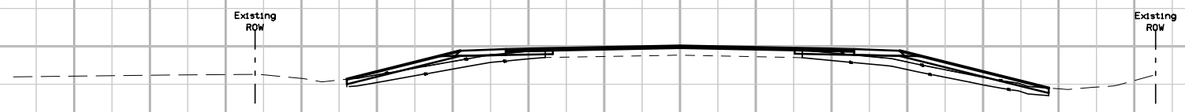
770
760
750



899+00.00



898+50.00



898+00.00



897+64.90

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

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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

901+00.00

900+50.00

900+00.00

899+50.00

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.42

1:35:21 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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

Existing ROW

903+00.00

770
760
750

Existing ROW

902+50.00

770
760
750

Existing ROW

902+00.00

770
760
750

Existing ROW

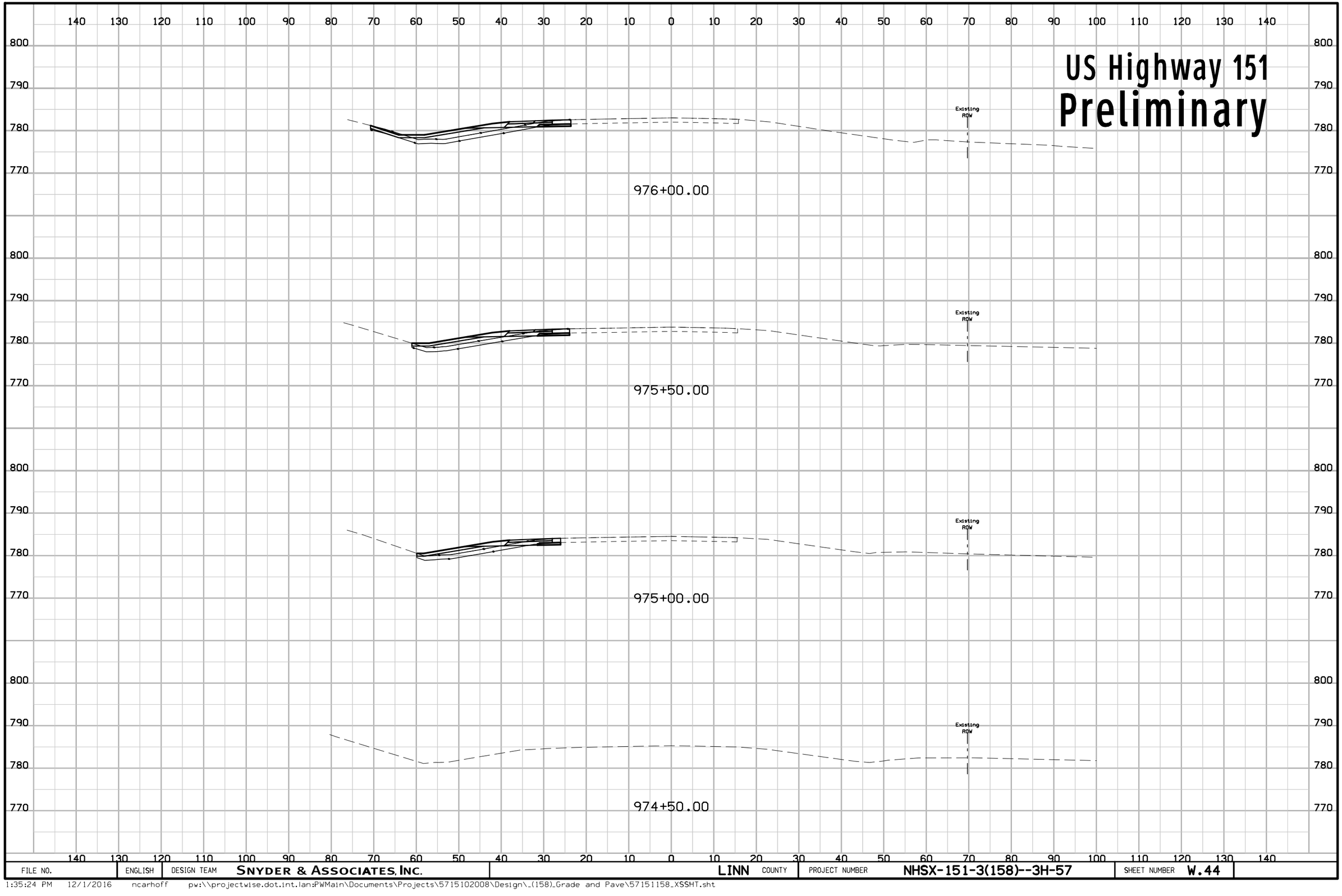
901+50.00

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.43

1:35:22 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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.44

1:35:24 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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

977+00.00

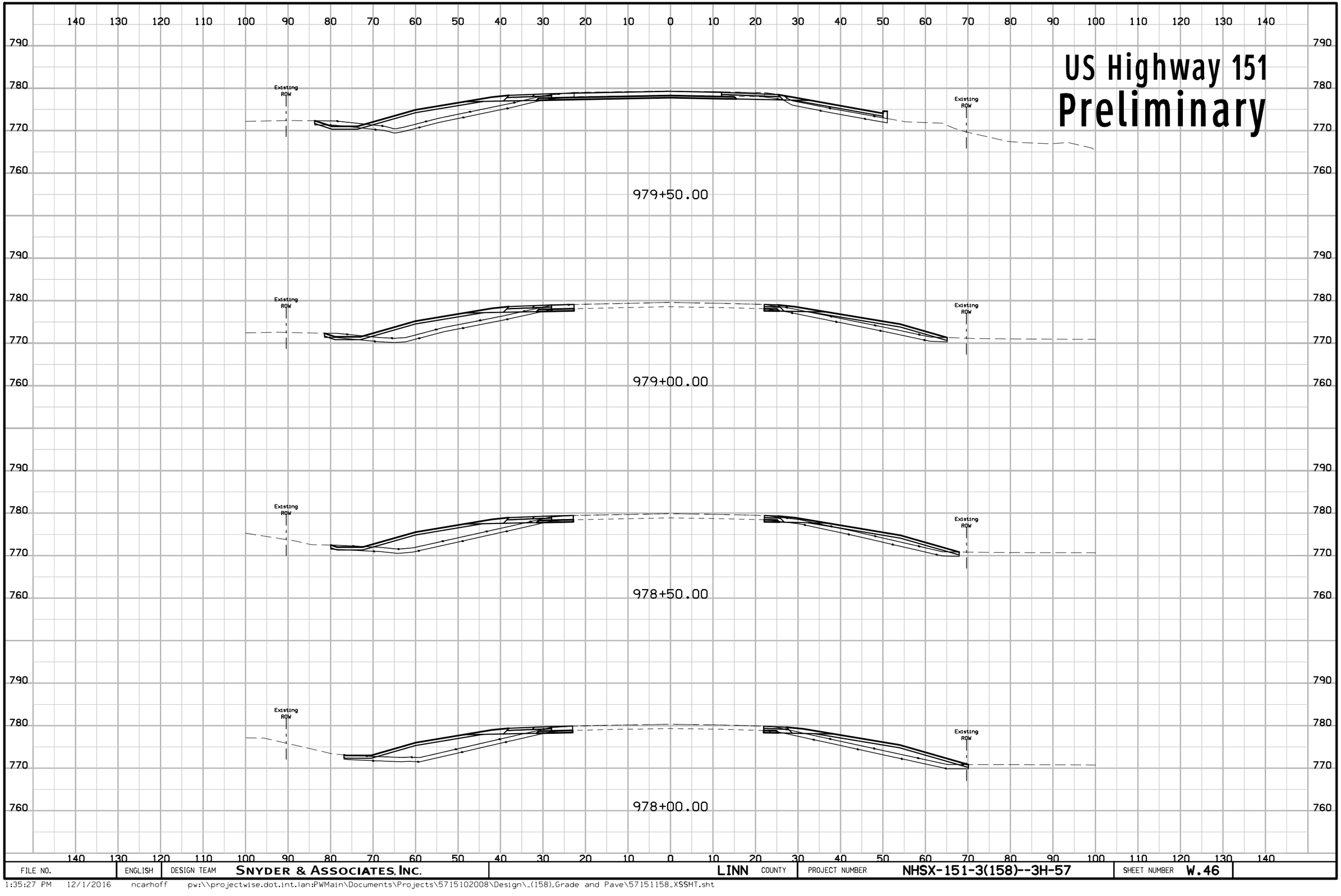
976+50.00

800
790
780
770

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.45

1:35:25 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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.46

1:35:27 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

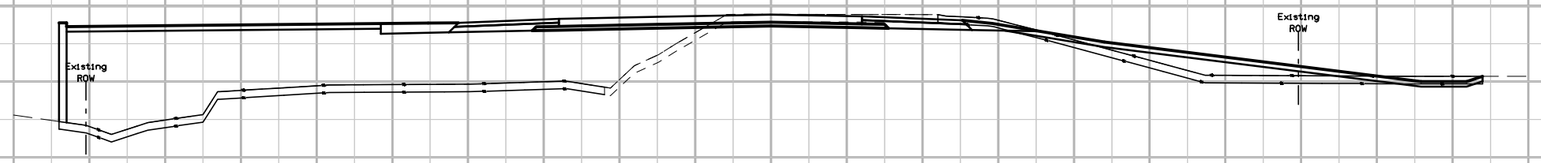
US Highway 151
Preliminary

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

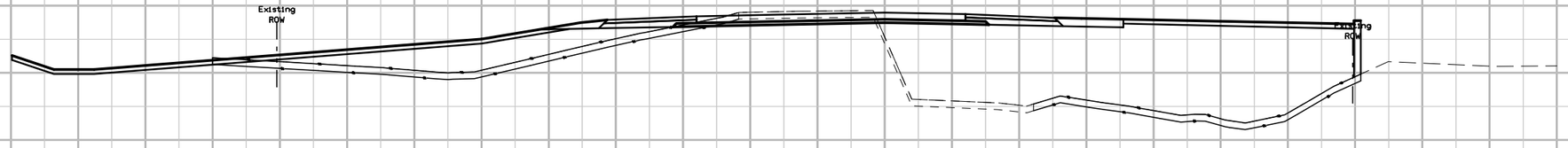


981+00.00



980+50.00

790
780
770
760



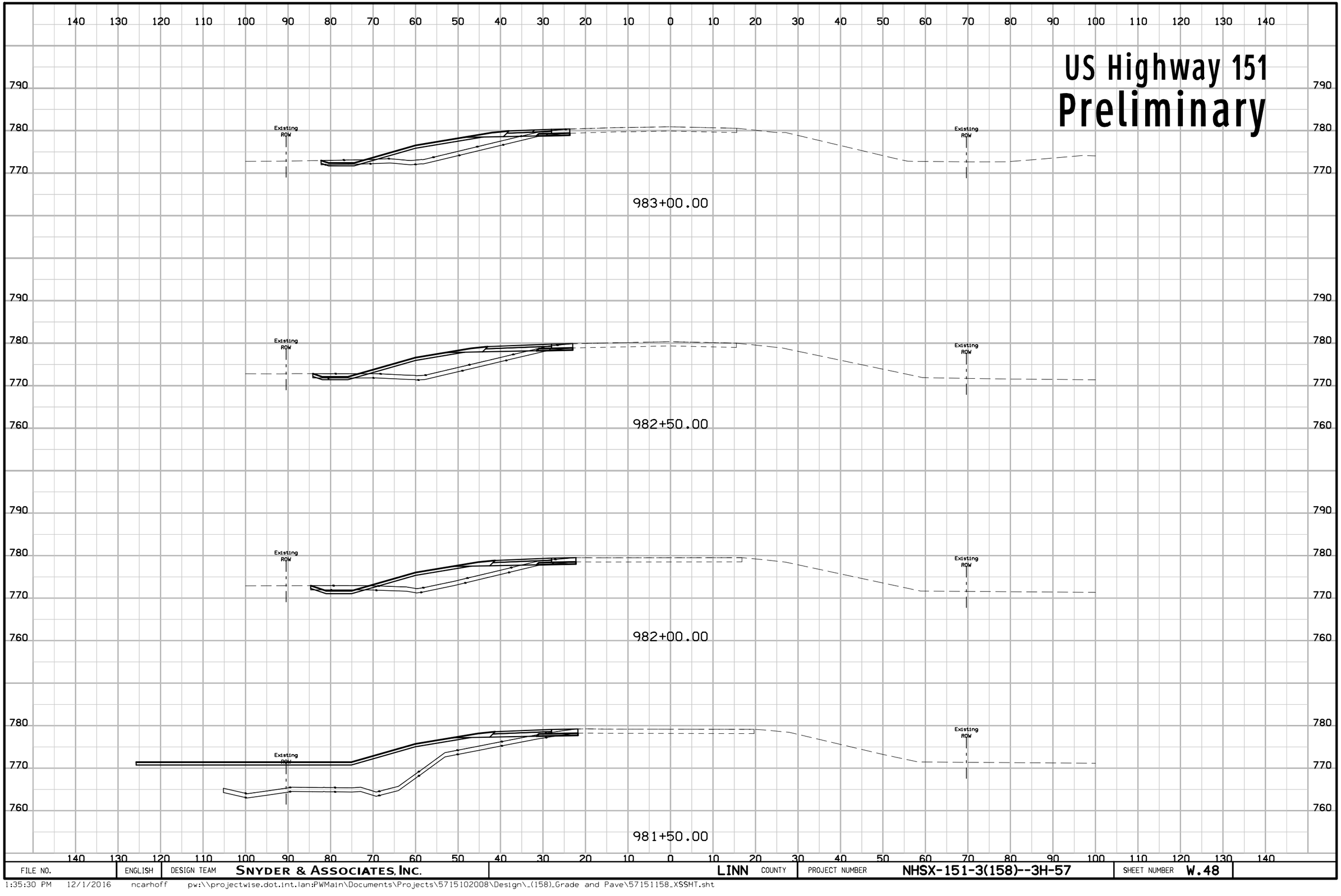
980+00.00

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.47

1:35:28 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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.48

1:35:30 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

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

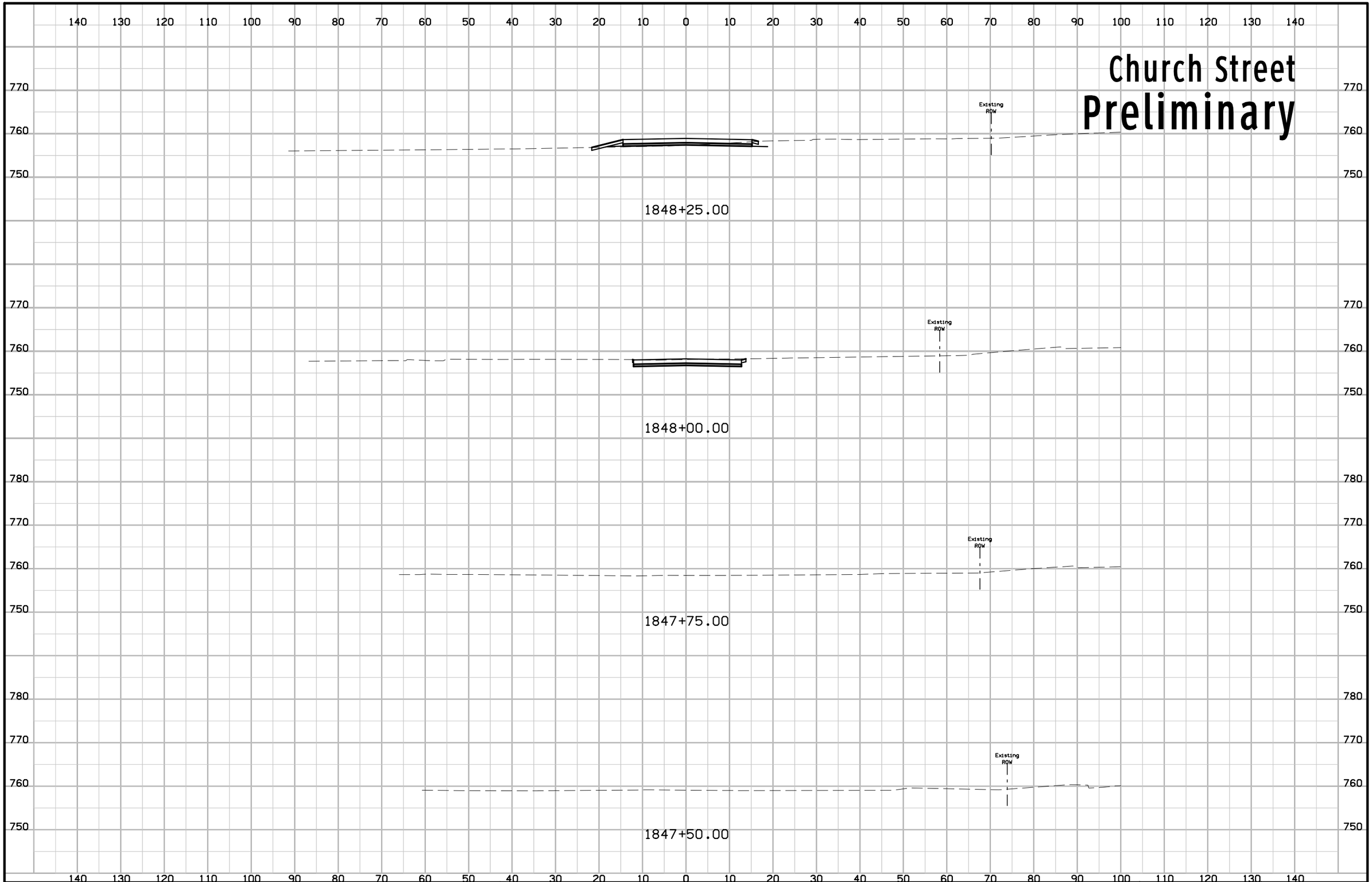
984+00.00

983+50.00

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	W.49

1:35:31 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_XSSHT.sht

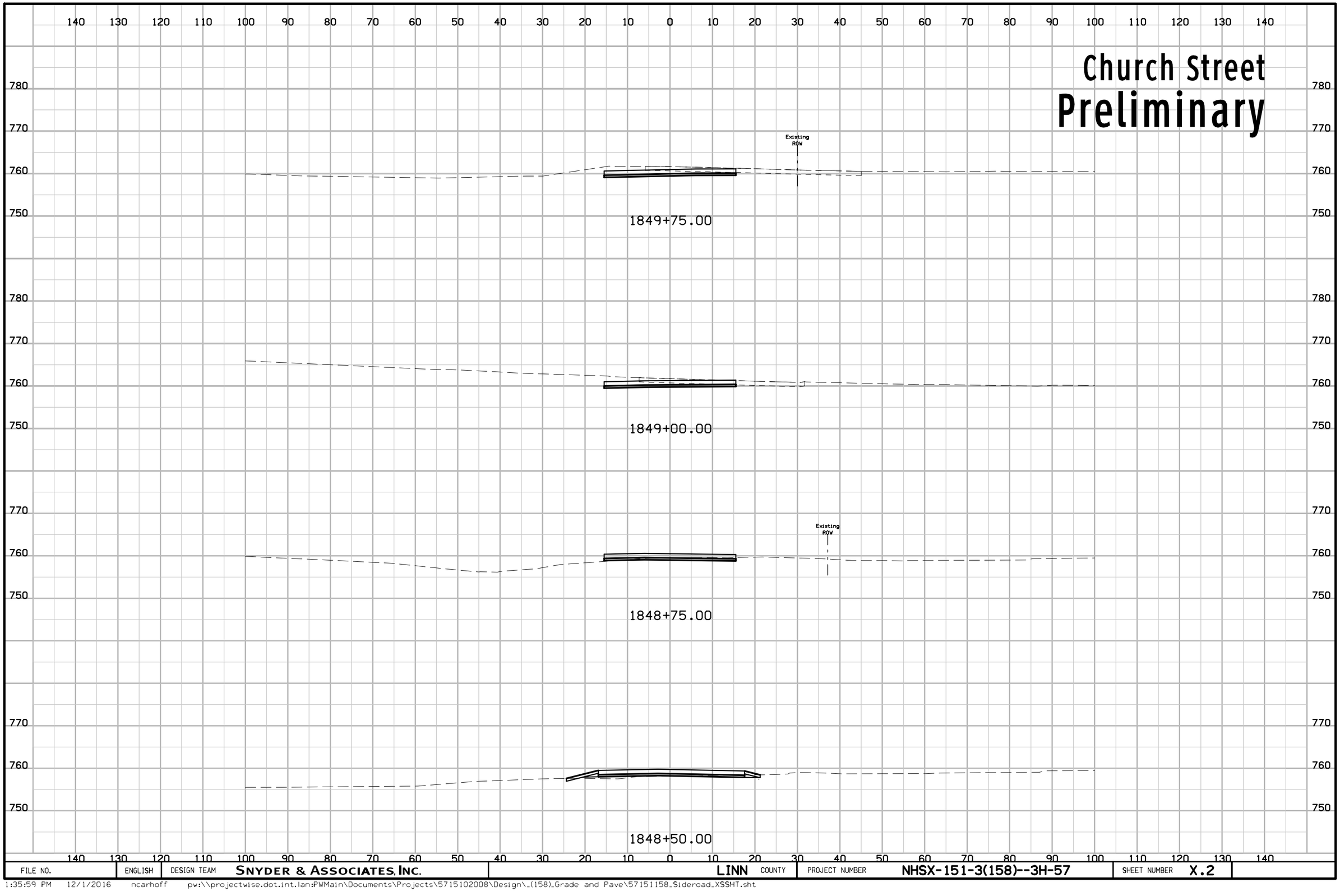
Church Street
Preliminary



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

1:35:58 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_Sideroad_XSSHT.sht

Church Street
Preliminary



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

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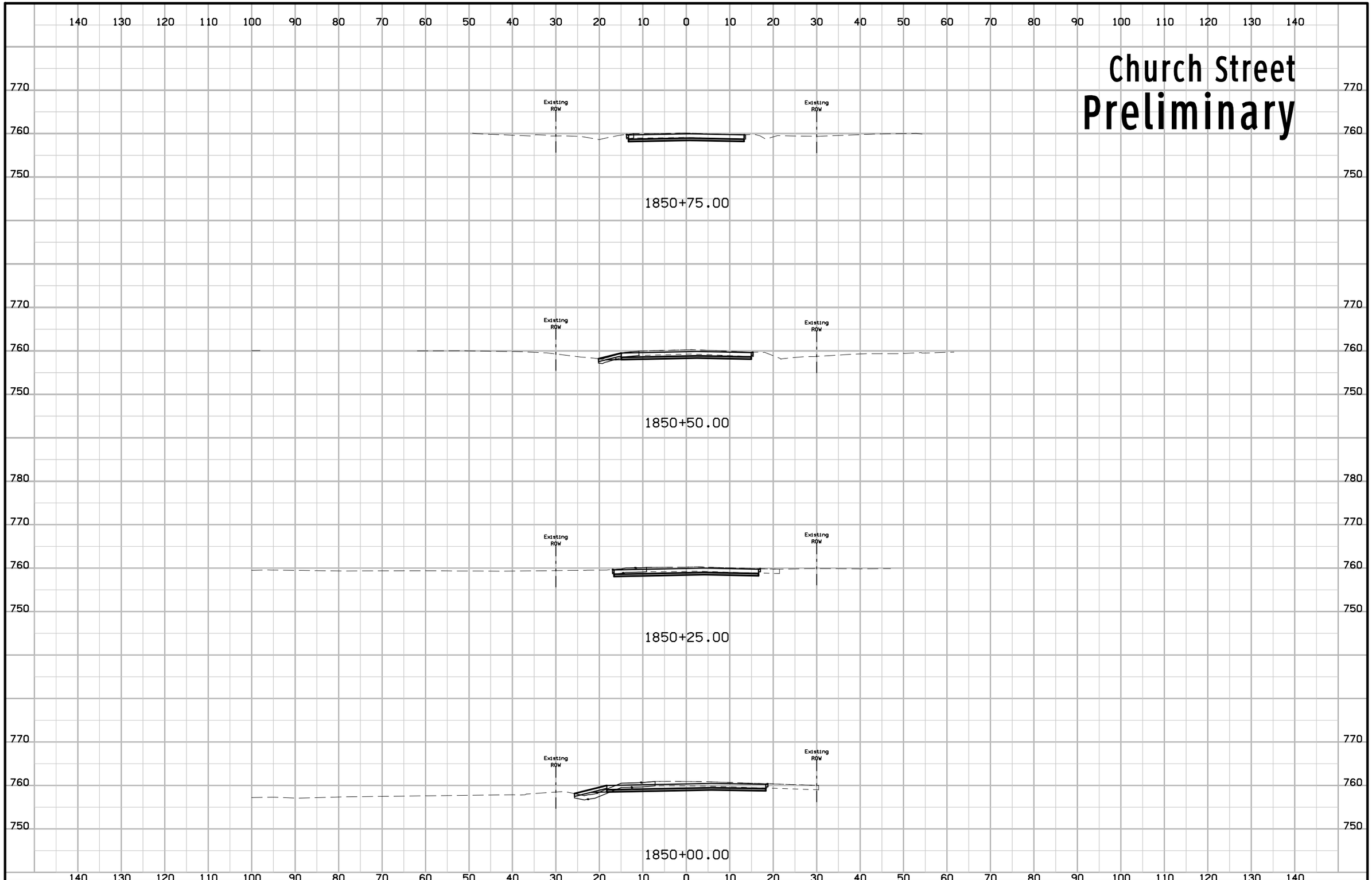
Church Street
Preliminary



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

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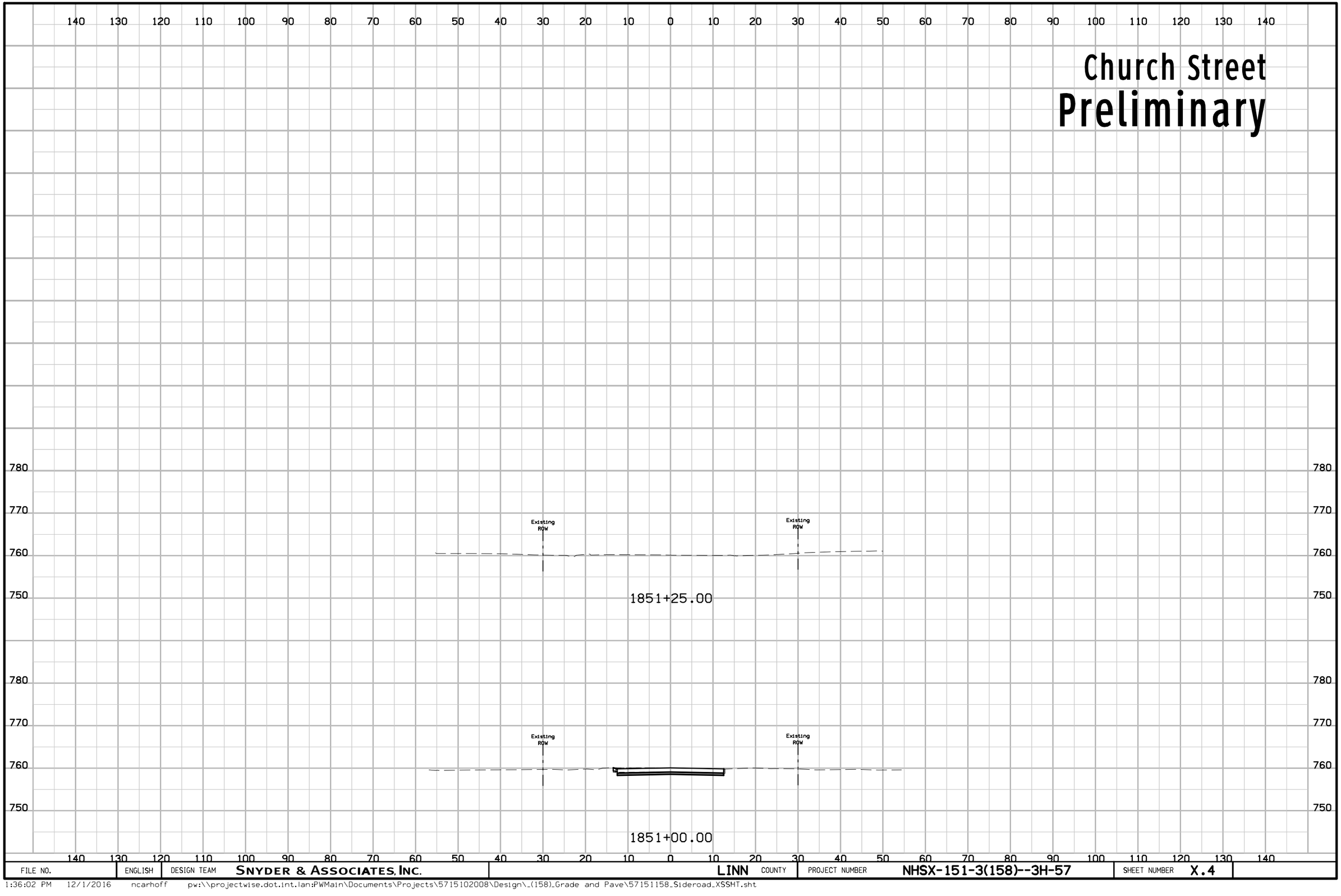
Church Street
Preliminary



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

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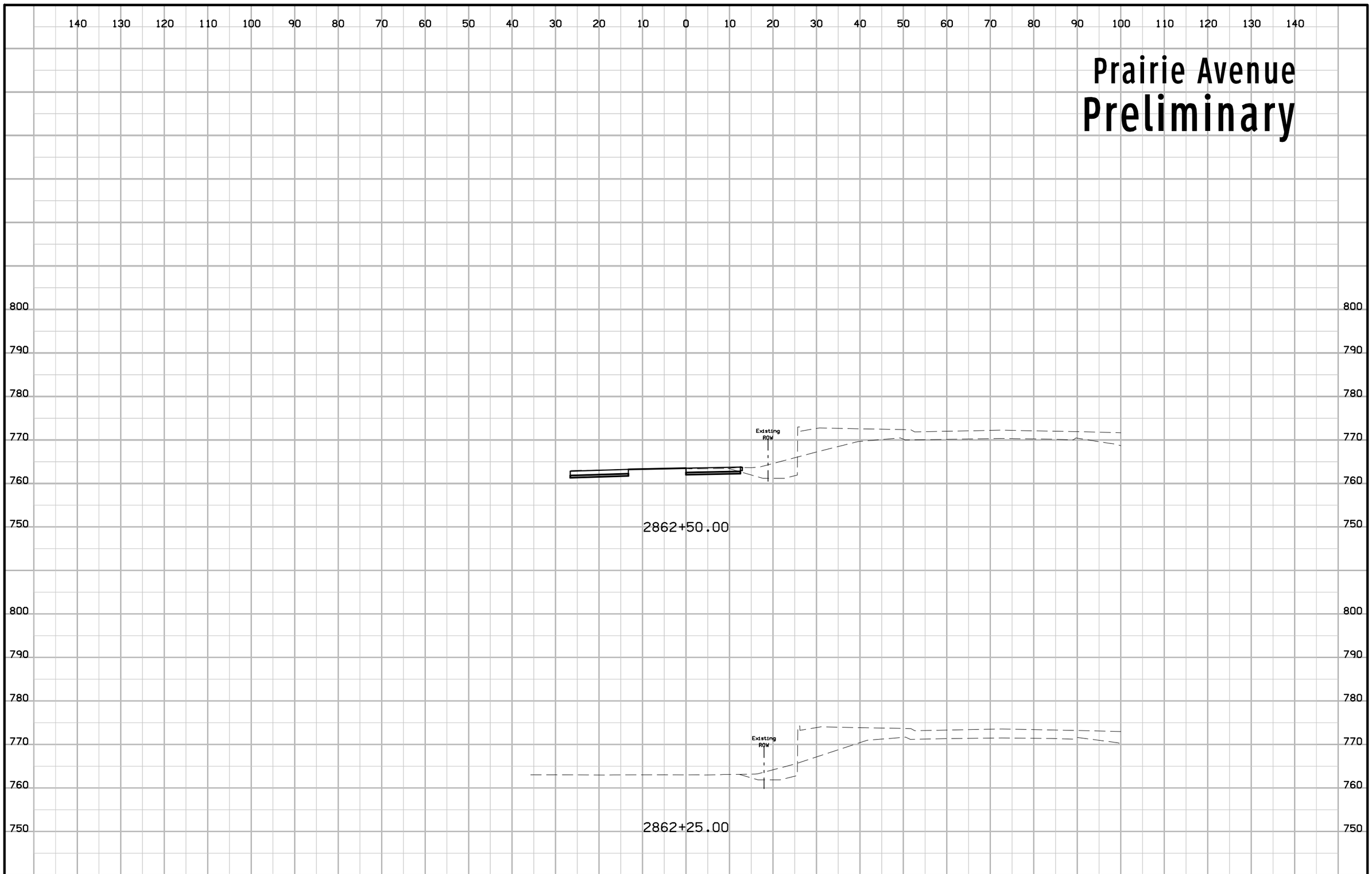
Prairie Avenue
Preliminary



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

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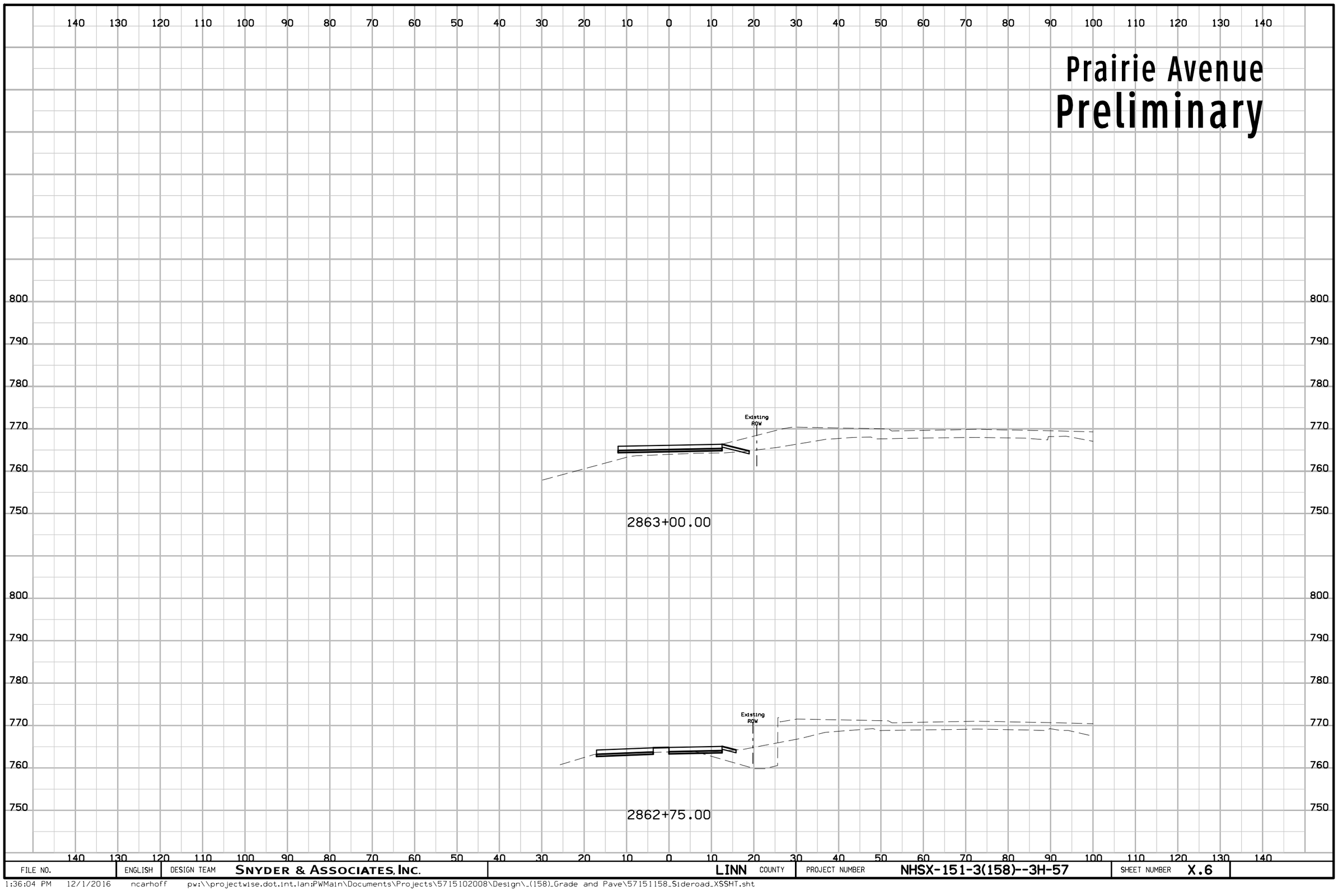
Prairie Avenue
Preliminary



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

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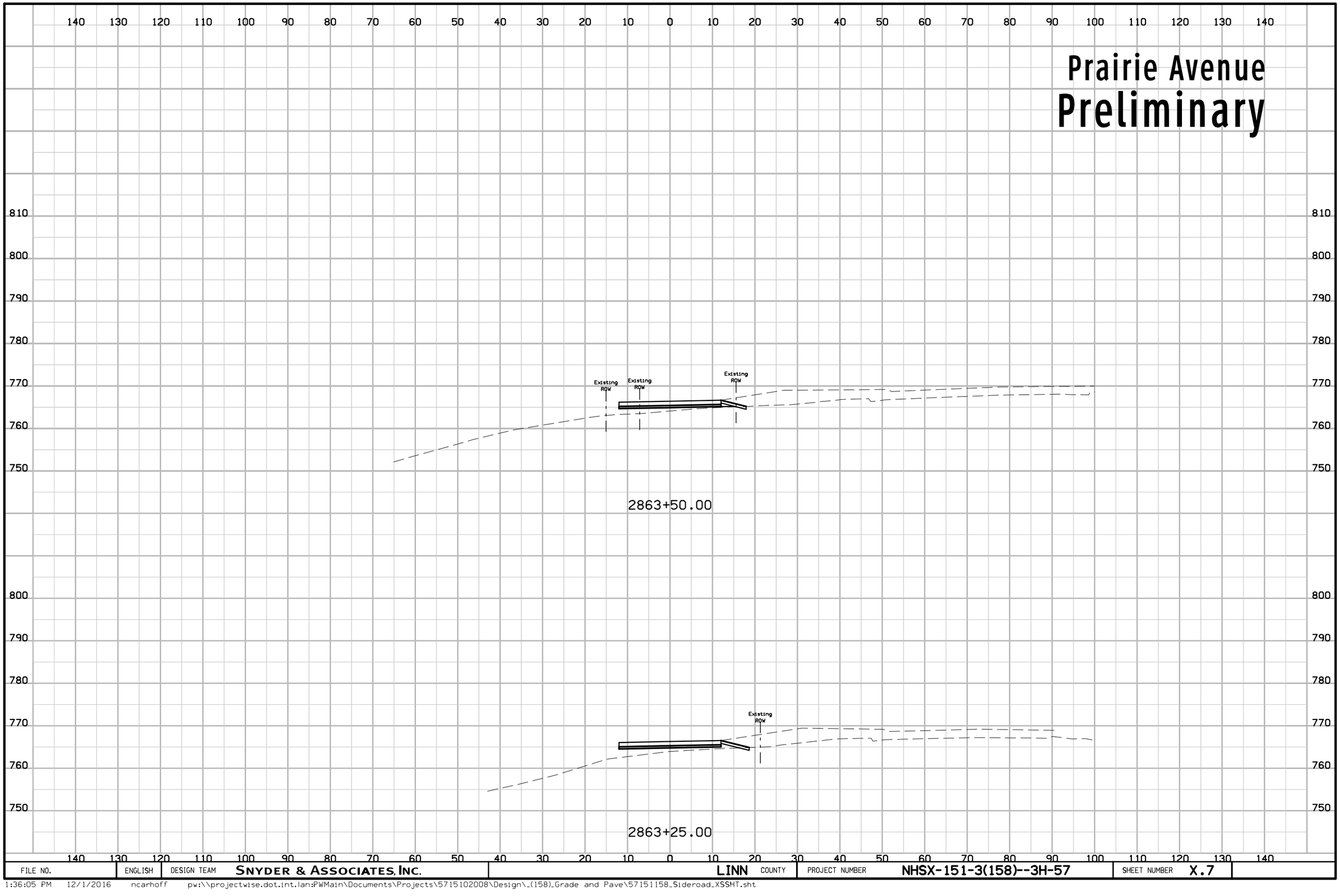
Prairie Avenue
Preliminary



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

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Prairie Avenue
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
820
810
800
790
780
770
760
750
740

2864+00.00

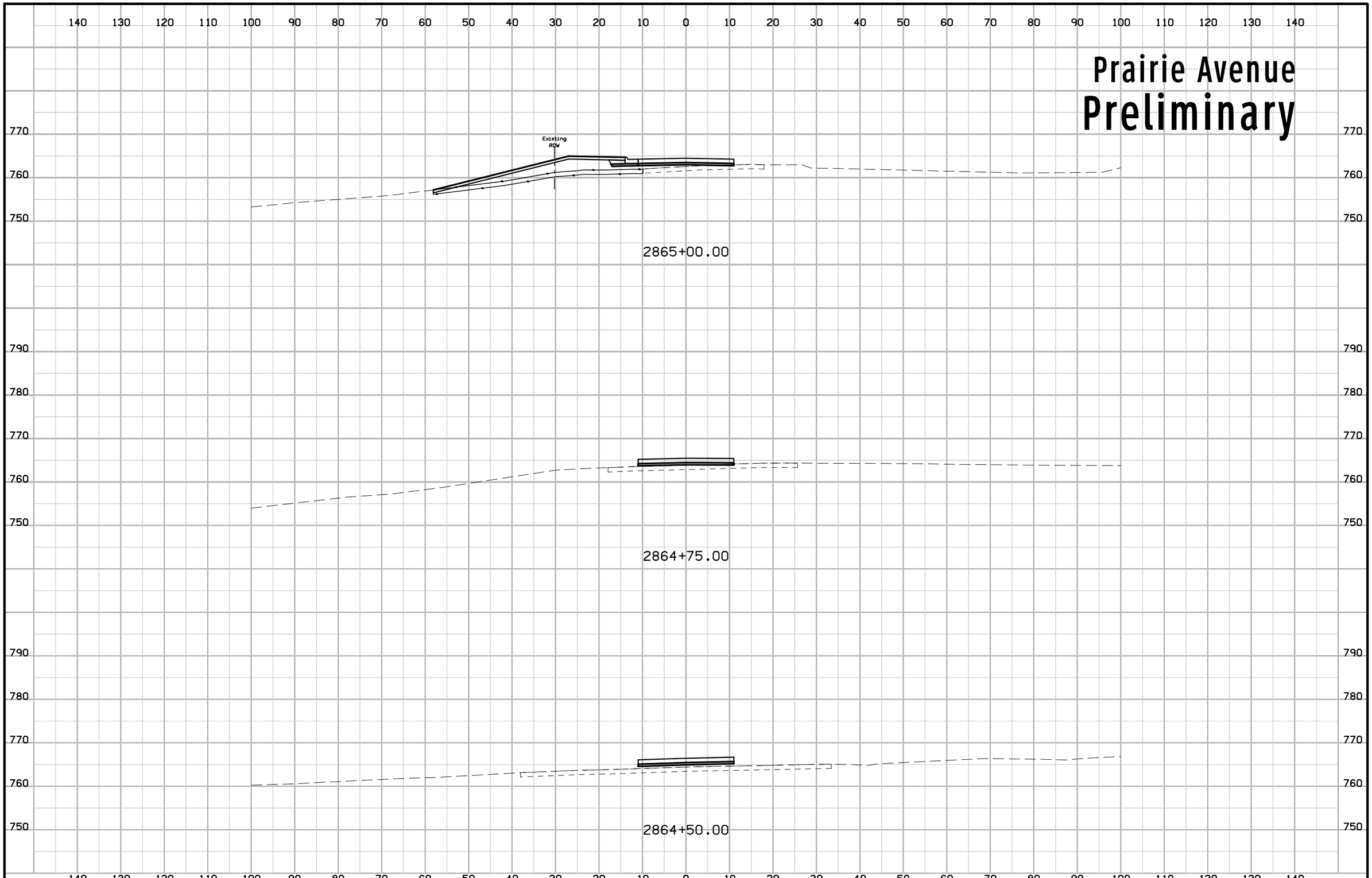
Existing ROW

2863+75.00

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

1:36:06 PM 12/1/2016 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158_Sideroad_XSSHT.sht

Prairie Avenue
Preliminary



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

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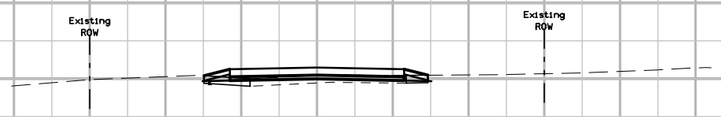
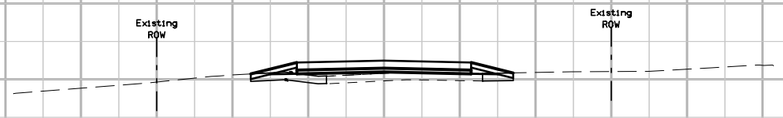
Prairie Avenue
Preliminary



2866+00.00



2865+75.00



2865+50.00



2865+25.00

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

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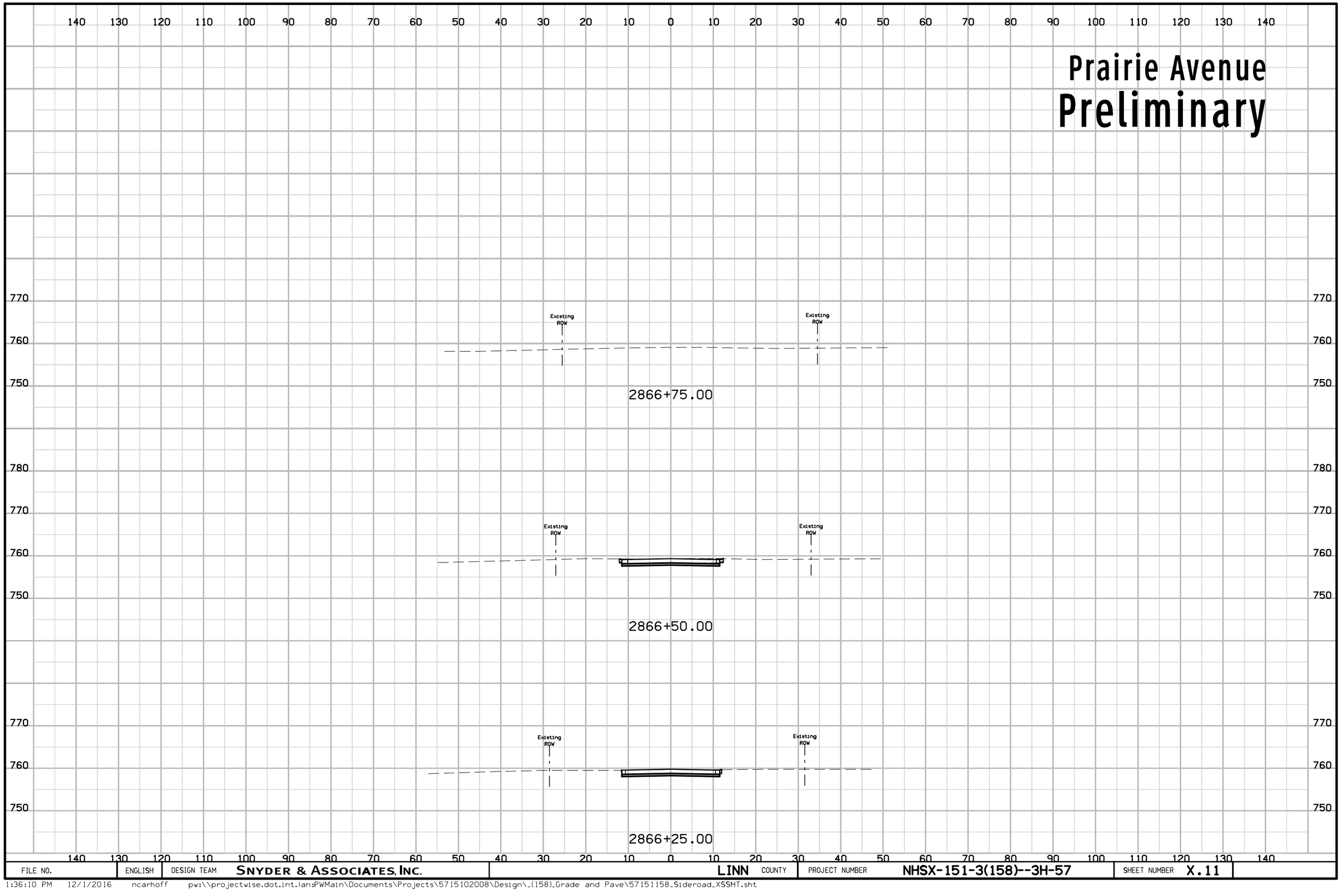
Prairie Avenue
Preliminary



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

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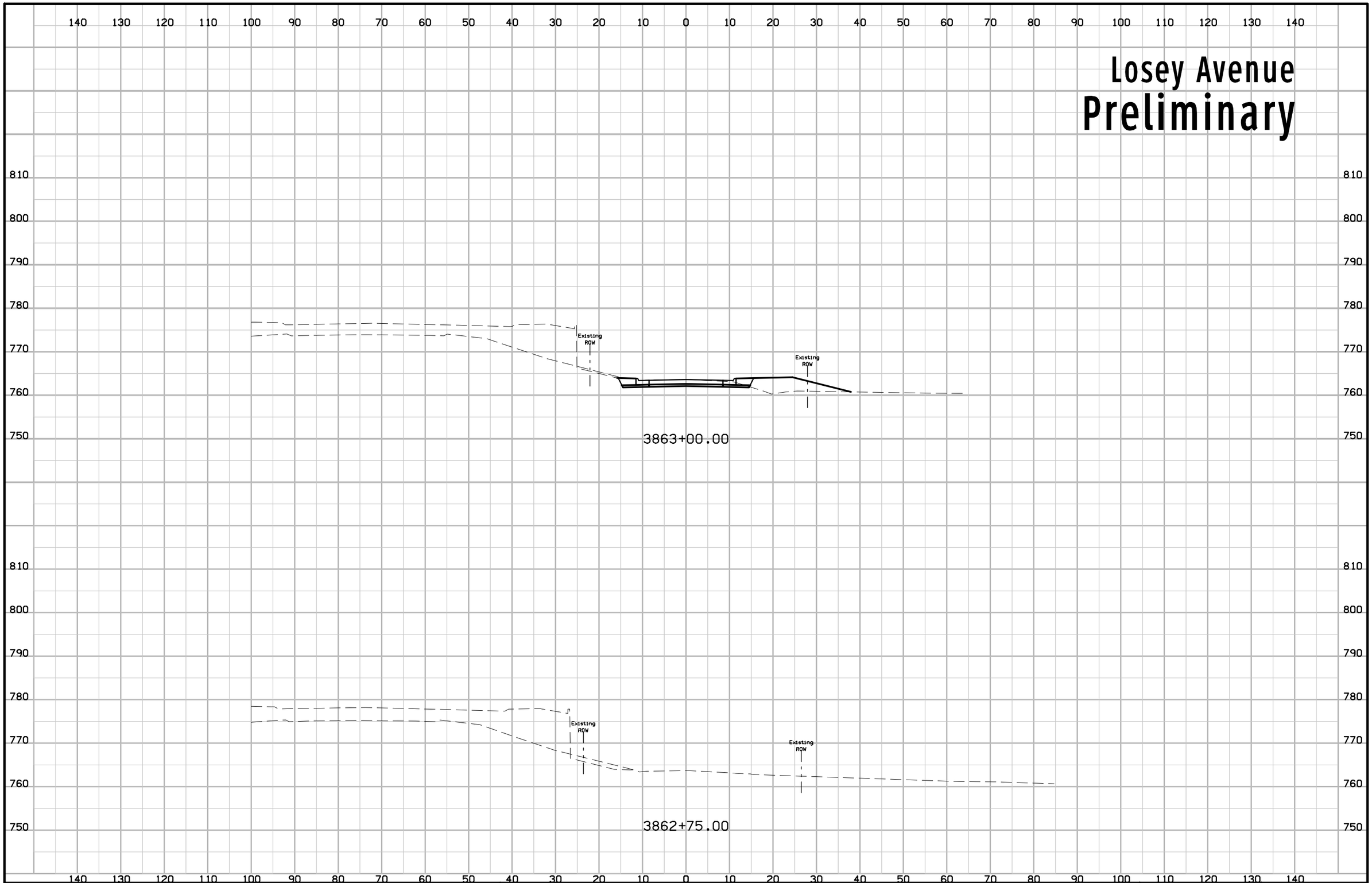
Losey Avenue
Preliminary



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

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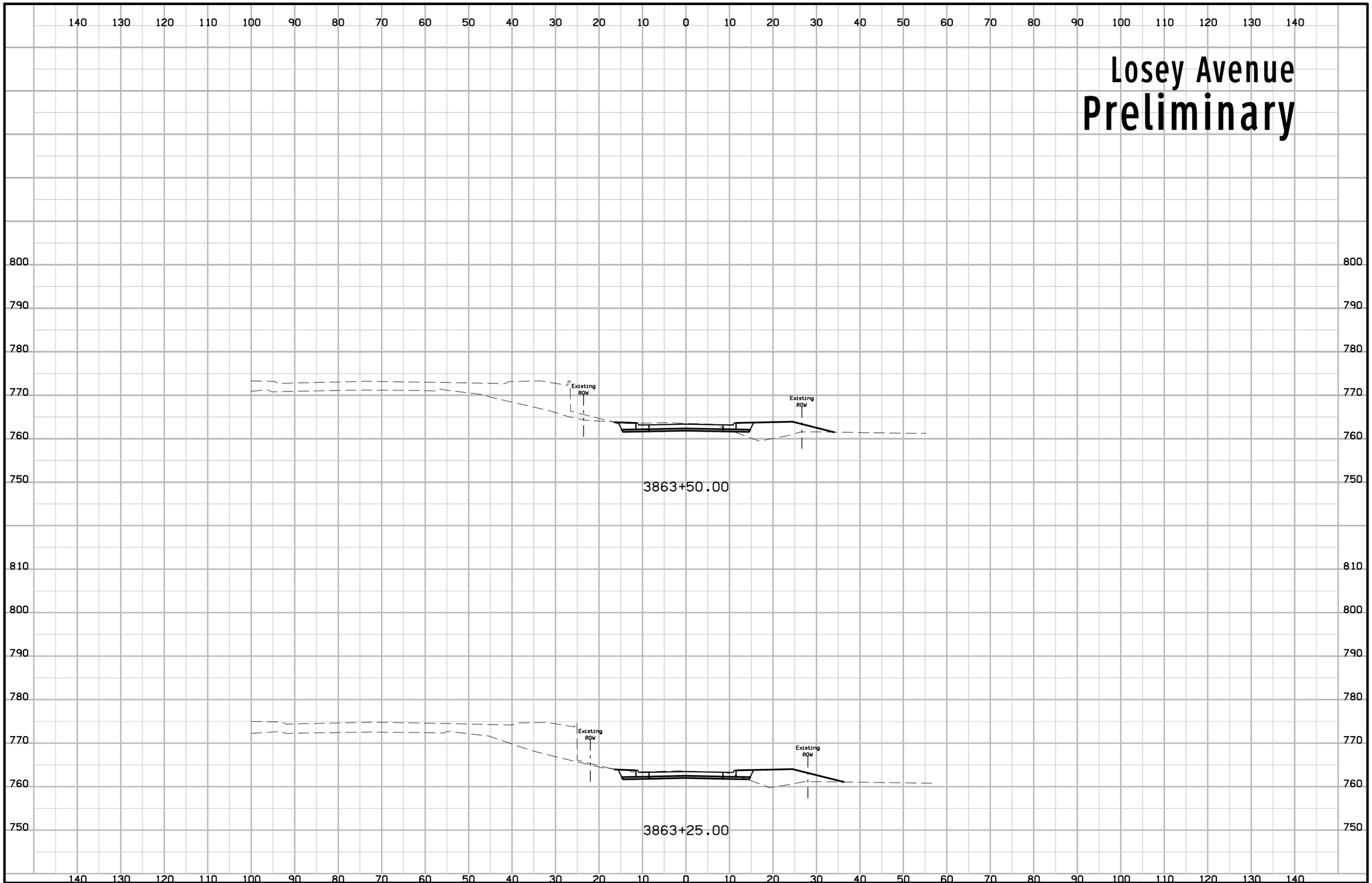
Losey Avenue
Preliminary



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

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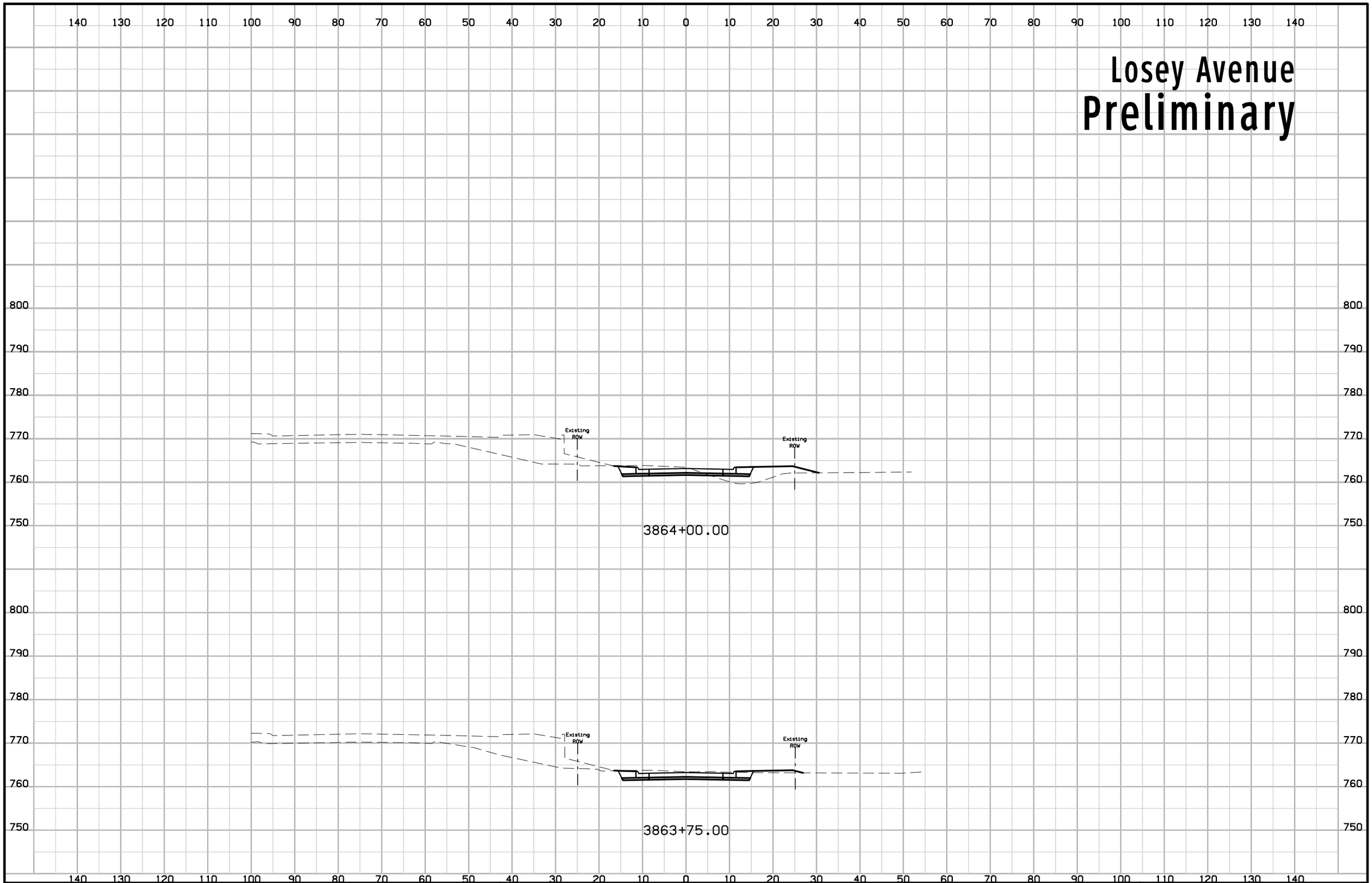
Losey Avenue
Preliminary



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

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Losey Avenue
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

3864+50.00

790
780
770
760
750

Existing ROW

Existing ROW

3864+25.00

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	X.15

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Losey Avenue
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

3864+75.00

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

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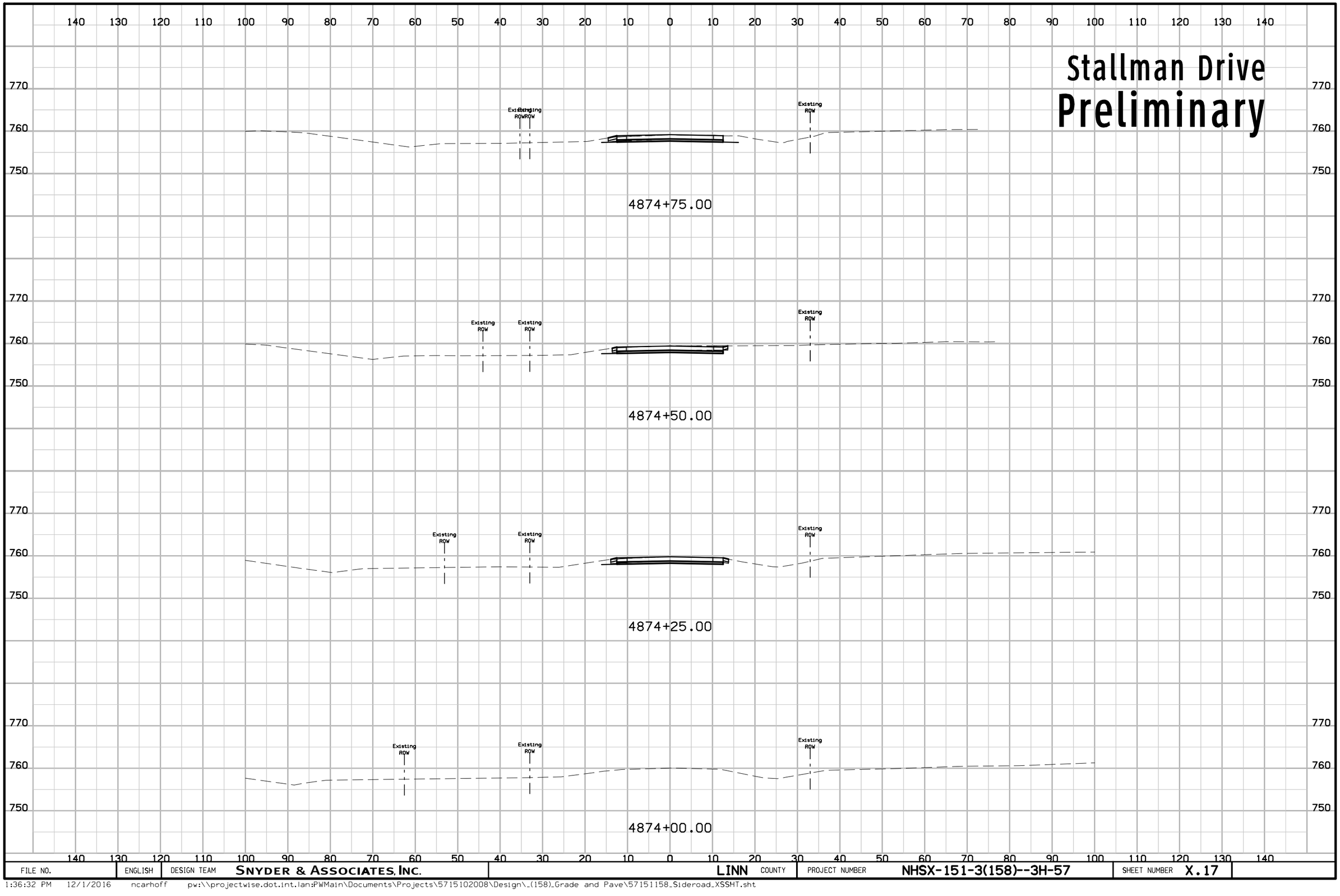
Stallman Drive
Preliminary



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

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Stallman Drive
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

4875+75.00

4875+50.00

4875+25.00

Existing ROW

4875+00.00

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

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Cemetary Road
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

5883+00.00

5882+75.00

5882+50.00

5882+25.00

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

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Cemetary Road
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

5884+50.00

770
760
750

5883+75.00

770
760
750

Existing ROW

5883+50.00

770
760
750

Existing ROW

5883+25.00

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	X.20

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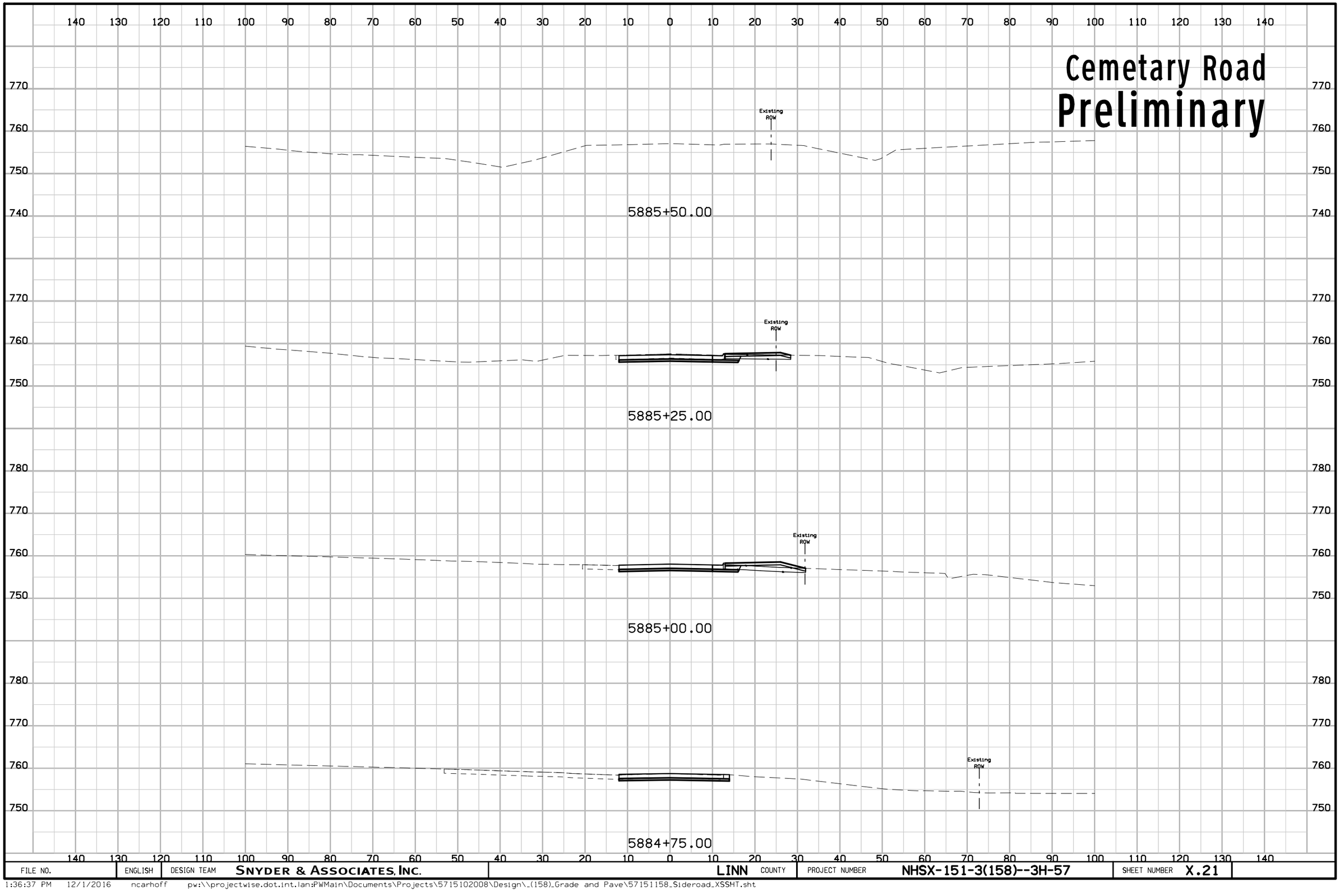
Cemetary Road
Preliminary



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

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