LETTING DATE
November 20, 2018

LINN Co.

UNKNOWN PAVEMENT - GRADE AND REPLACE

NHSX-151-3(158)--3H-57

INDEX OF SHEETS

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

LINN COUNTY

PCC 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.

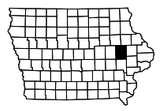
NO MILEAGE SUMMARY

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

REVISIONS

TOTAL
255
PROJECT IDENTIFICATION NUMBER
08-57-151-020
PROJECT NUMBER
NHSX-151-3(158)--3H-57
R.O.W. PROJECT NUMBER
NHSN-151-3(135)--2R-57
NHSN-151-3(147)--2R-57

For Project Location Map
Refer to Sheet A.2



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

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

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Nathan E. Carhoff	Primary Signature Block
CS.1	Matthew D. Cushman	Geotechincal Design

ROADWAY DESIGN

LICENSED PROFESSIONAL ENGINEER
NATHAN E. CARHOFF
19699
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.

Signature Nathan E. Carhoff Date
Printed or Typed Name
My license renewal date is December 31, 2019

Pages or sheets covered by this seal: A.1, B.1-B.7, C.1-C.24, D.1-D.7, E.1-E.7, F.1, G.1-G.6, J.1-J.37, L.1-L.22, M.1-M.10, U.1-U.8, W.1-W.49, X.1-X.21

CHECK PLANS

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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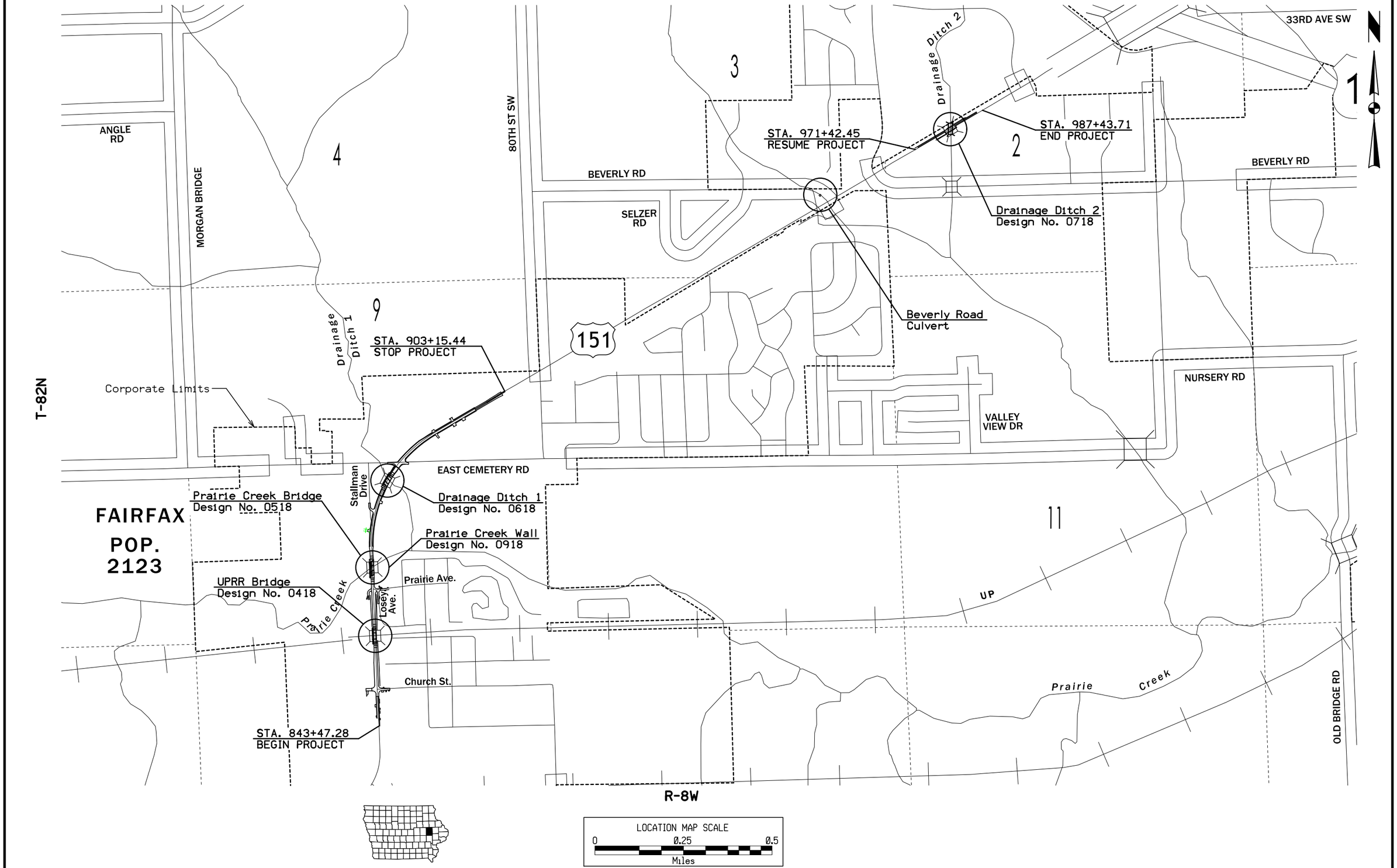


FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER A.2	X

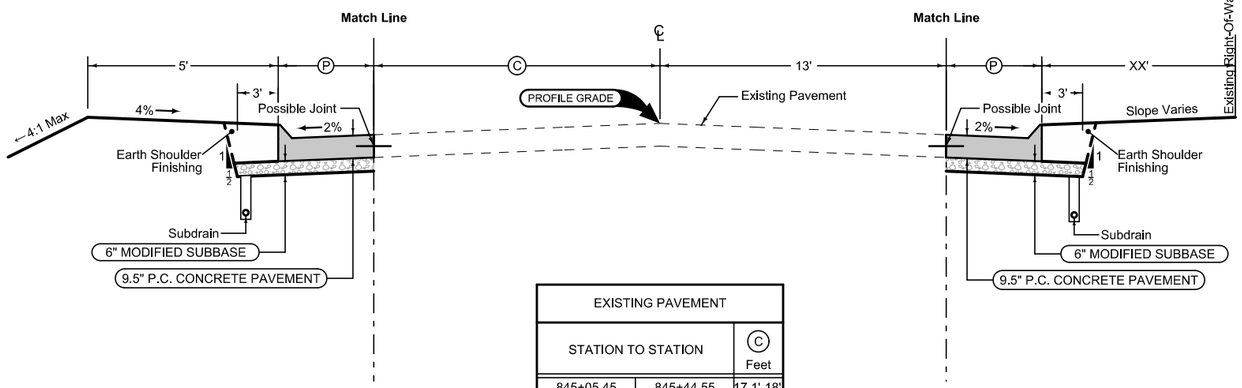
5:04:38 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158A01.sht

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_ Modified
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
845+05.45	848+30.33	3'	6" Sloped



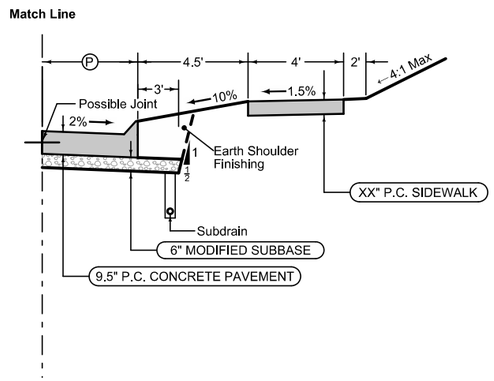
EXISTING PAVEMENT		
STATION TO STATION		(C) Feet
845+05.45	845+44.55	17.1'-18'
845+44.55	848+30.33	18'

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

			2_Curb_ Modified
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
847+90.50	848+30.33	8'	6" Sloped

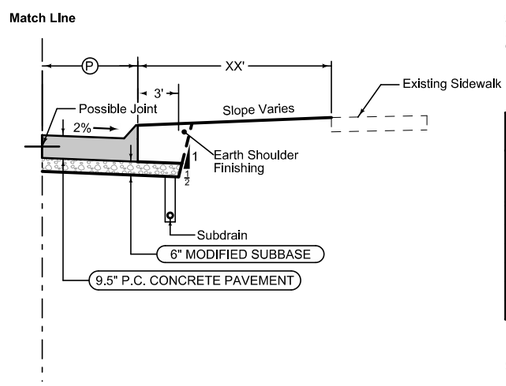


Curbed Shoulder

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

			2_Curb_ Modified
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+90.50	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

			2_Curb_ Modified
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
843+88.58	845+60.00	2.9'-6.7'	6" Sloped

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

See Tab 112-9 for shoulder quantities.

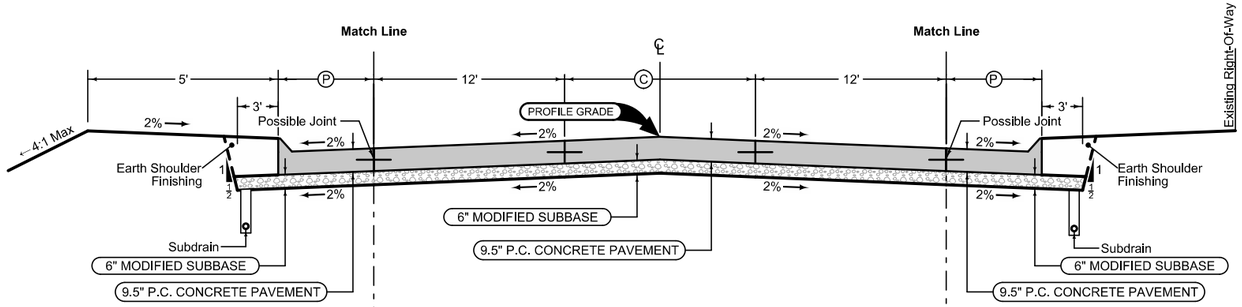
US HIGHWAY 151

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

			2_Curb_ Modified
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
848+30.33	848+69.80	3'	6" Sloped



Curbed Shoulder

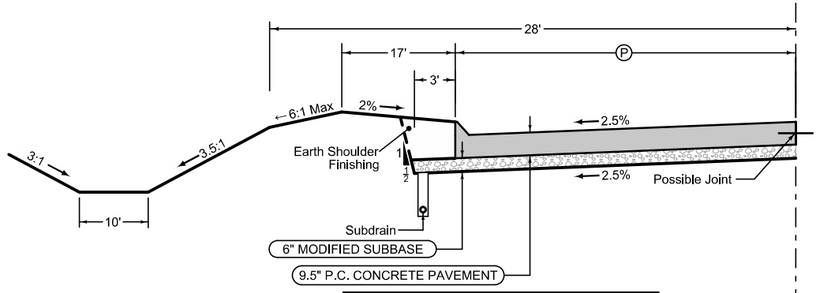
Shoulder Jointing:
Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

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

			2_Curb_ Modified
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
848+30.33	848+70.64	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+48.61	14'
869+26.20	879+38.00	14'
882+34.00	898+00.00	14'

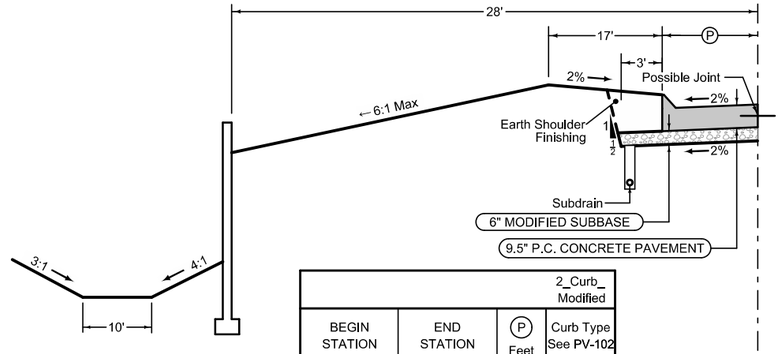


Curbed Shoulder

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

			2_Curb_ Modified
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
850+01.96	853+34.27	15'	6" Sloped
853+34.27	855+14.27	15'-3'	6" Sloped

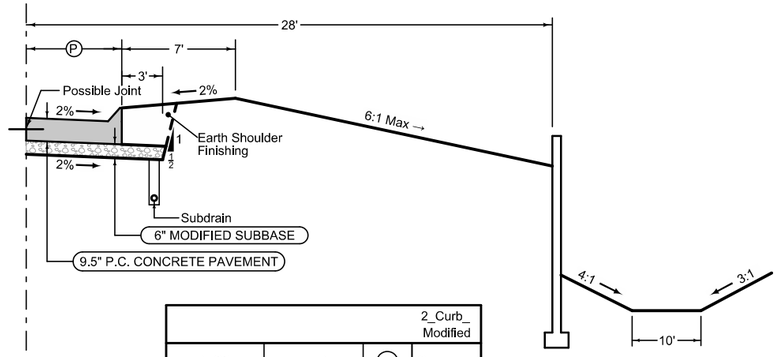


			2_Curb_ Modified
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
855+14.27	855+59.10	3'-6'	6" Sloped
859+06.10	861+73.23	9'-3'	6" Sloped
861+73.23	863+92.97	3'	6" Sloped

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

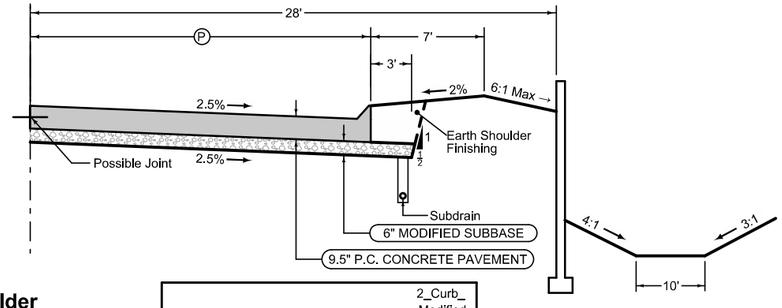


			2_Curb_ Modified
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
849+97.65	853+34.27	3'	6" Sloped
853+34.27	855+59.10	3'-8'	6" Sloped
859+06.10	859+93.36	9.0'-3'	6" Sloped
864+74.60	865+48.61	3'	6" Sloped

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



			2_Curb_ Modified
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

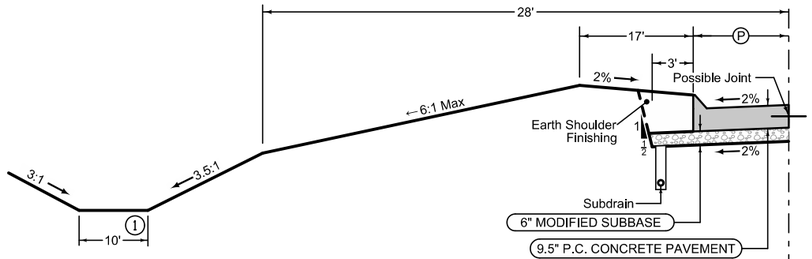
See Tab 100-24 or 100-25 for pavement quantities.

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

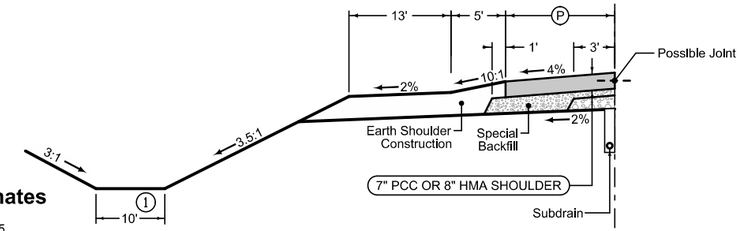


Curbed Shoulder

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

			2_Curb_ Modified
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
864+64.13	865+48.61	3'	6" Sloped
869+26.20	870+00.00	3'	6" Sloped
870+00.00	870+70.00	3'-10'	6" Sloped

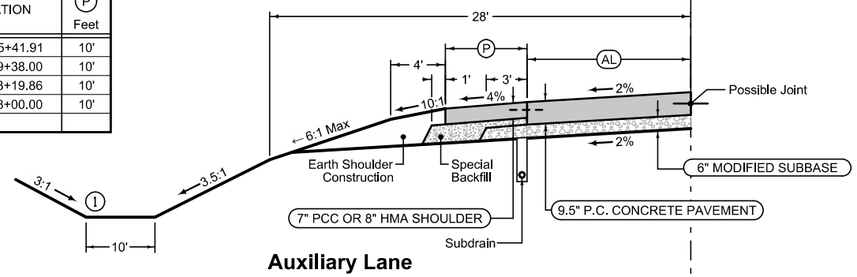


Paved Shoulder Alternates

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	875+41.91	10'
876+49.90	879+38.00	10'
882+34.00	883+19.86	10'
890+21.24	898+00.00	10'

NOTES:
(1) Ditch width varies, see cross sections



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

Auxiliary Lane

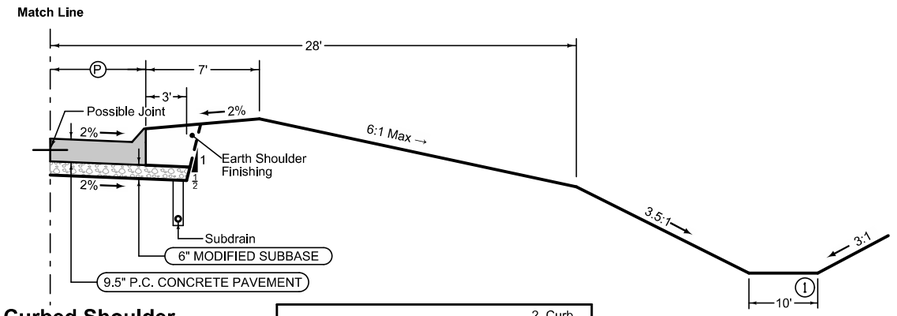
Longitudinal joint: L or KT
Transverse joint: Match Mainline

		2_AuxLane_PCC_ 10-18-16		2_AL_Shldr_ALT_ 10-21-14
STATION TO STATION		(AL) Feet	(P) Feet	
884+25.93	888+43.66	12'	6'	
888+43.66	889+31.04	12'-4'	6'	
889+31.04	890+21.24	4'-0'	6'-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

Match Line

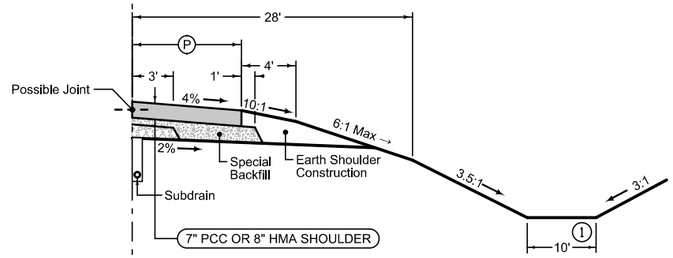


Curbed Shoulder

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

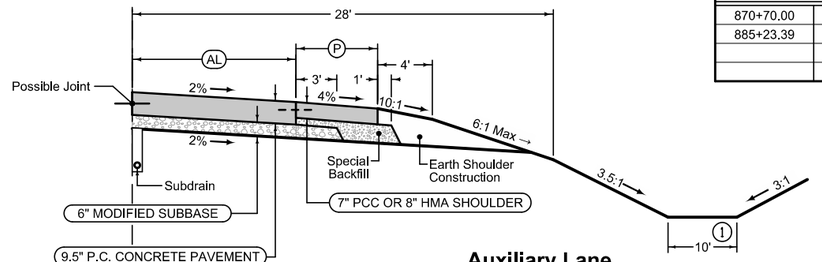
			2_Curb_ Modified
BEGIN STATION	END STATION	(P) Feet	Curb Type See PV-102
869+26.20	870+00.00	3'	6" Sloped
870+00.00	870+70.00	3'-10'	6" Sloped



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+38.00	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

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

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+34.00	882+78.25	8.5'-12'	6'	
882+78.25	883+76.66	12'	6'	
883+76.66	883+95.73	12'	6'-8'	

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

See Tab 112-9 for shoulder quantities.

US HIGHWAY 151

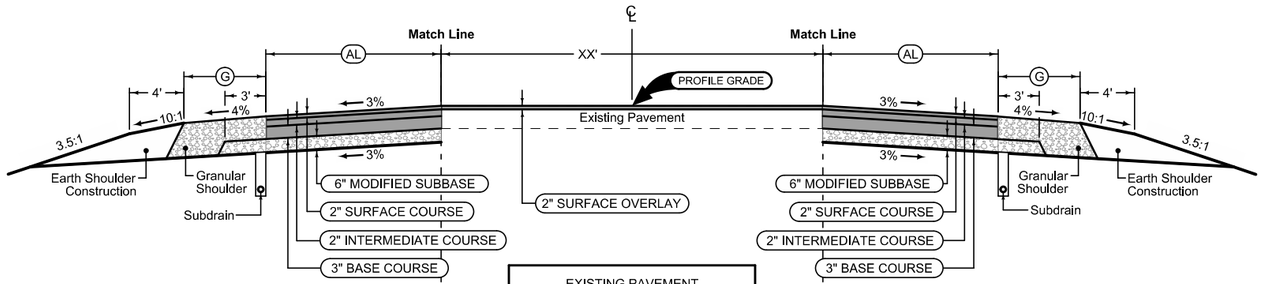
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	B.3

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	900+09.70	5.2'-0'	6'
900+09.70	902+58.42	0'	6'



EXISTING PAVEMENT		
STATION TO STATION		(C) Feet
-	-	-

Auxiliary Lane

Longitudinal joint: B

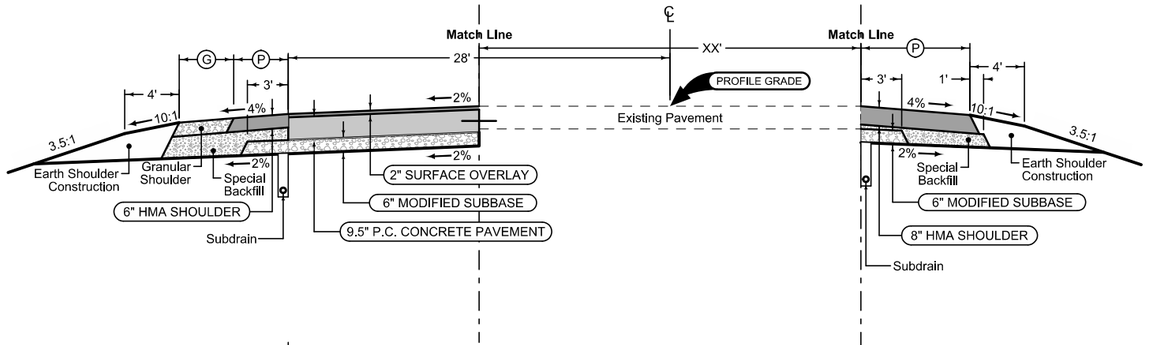
Auxiliary Lane Granular Shoulder

	2_AuxLane_HMA_ 10-18-16		2_AL_Shldr_G_ 10-19-10
STATION TO STATION		(AL) Feet	(G) Feet
898+00.00	901+81.55	7.5'-1.7'	6'
901+81.55	902+58.42	1.7'-2'	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'



HMA Shoulder

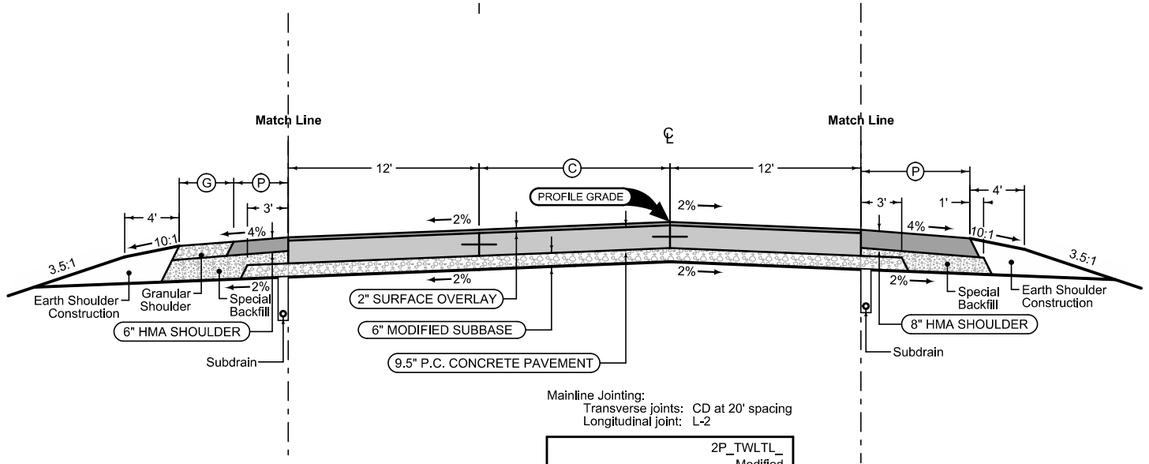
Shoulder Jointing:
Longitudinal joint: B

	2_P_HMA_ 10-19-10	
STATION TO STATION		(P) Feet
977+81.50	978+01.97	6.9'-5.2'
978+01.97	978+51.41	5.2'-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+80.09	4'	6'
979+80.09	981+15.00	13.3'	0'



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

	2P_TWLTL_ Modified	
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.

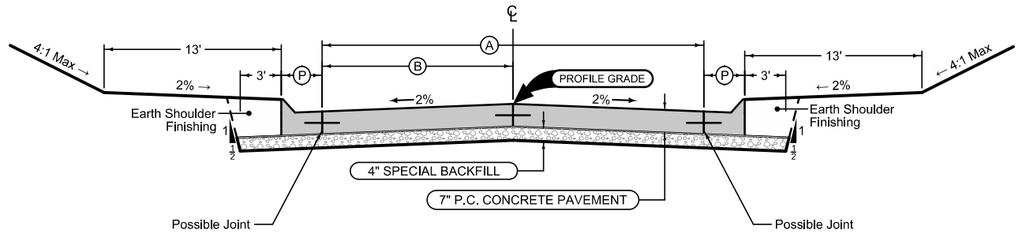
US HIGHWAY 151

Curbed Shoulder

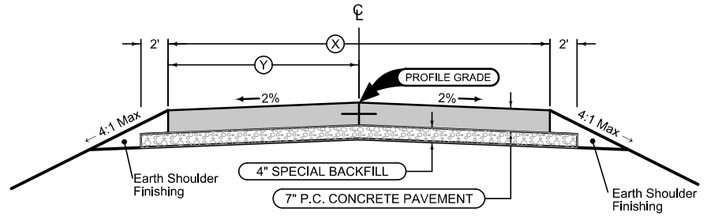
Shoulder Jointing:
Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

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

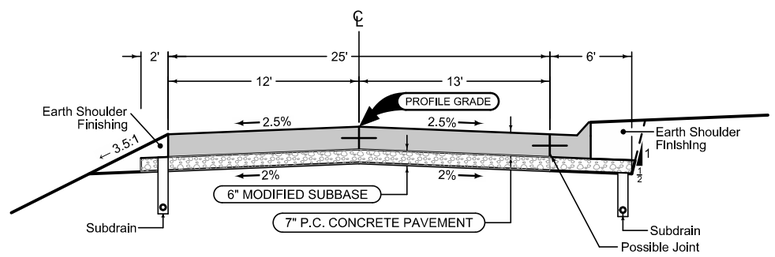
			2_Curb_ 10-17-17
STATION TO STATION		(P) Feet	Curb Type See PV-102
1848+56.14	1848+69.79	3'	6" Std.
2864+82.50	2865+30.81	2.5'	6" Std.
3862+86.45	3864+59.42	2.5'	6" Std.



LOCATION			DIMENSIONS	
ROAD IDENTIFICATION	STATION TO STATION		(A) Feet	(B) Feet
CHURCH STREET	1848+56.14	1848+69.79	36'	18'
CHURCH STREET	1850+00.18	1850+11.77	31'	15.5'
PRAIRIE AVENUE	2864+82.50	2865+30.81	23'	11.5'
LOSEY AVENUE	3862+86.45	3864+59.42	18'	9'



LOCATION			DIMENSIONS	
ROAD IDENTIFICATION	STATION TO STATION		(X) Feet	(Y) Feet
CHURCH STREET	1847+69.25	1848+56.14	36'	18'
CHURCH STREET	1850+11.77	1851+01.77	37'-25'	18.5'-12.5'
CHURCH STREET	1851+01.77	1851+25.00	25'	12.5'
PRAIRIE AVENUE	2865+30.81	2866+56.00	23'	11.5
STALLMAN DRIVE	4874+25.00	4875+43.95	25'	12.5'
CEMETERY ROAD	5882+30.00	5883+60.60	25'	12.5'



LOCATION			DIMENSIONS	
ROAD IDENTIFICATION	STATION TO STATION		(X) Feet	(Y) Feet
CEMETERY ROAD	5884+86.04	5885+42.00	25'	12.5'

Curbed Shoulder

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

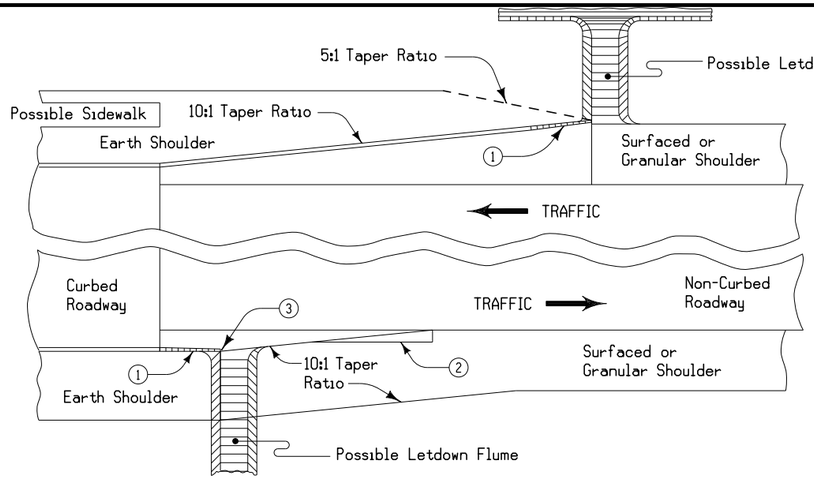
Single pour: L-2
Staged : KT-2
Transverse:C at 20' spacing

			2_Curb_ 10-17-17
STATION TO STATION		(P) Feet	Curb Type See PV-102
1848+56.14	1848+69.79	3'	6" Std.
2864+82.50	2865+30.81	2.5'	6" Std.
3862+85.37	3864+56.28	2.5'	6" Std.

See Tab 100-24 for pavement quantities.

SIDEROADS

6147
10-20-15



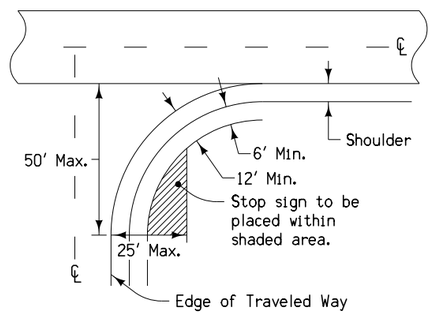
(1) Runout curb according to PV-102

(2) End of Taper Details see Typical Detail 7101

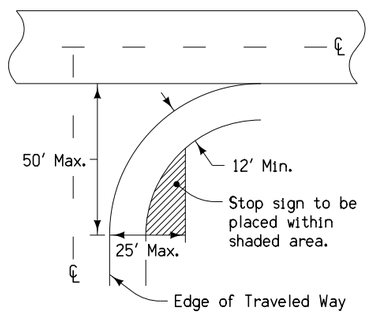
(3) End earth shoulder at the end of the curb transition when no flume is needed.

TRANSITION BETWEEN CURBED AND NON-CURBED ROADWAYS

9503
07-15-97



CASE 'A' WITH SHOULDER



CASE 'B' WITHOUT SHOULDER

NOTES:

Stop signs should be confined to the shaded areas, but as close to the approach roadway as possible to provide the motorist with the best visual impact.

If possible, stop signs should be placed at the point where vehicles are to stop or as near as practical.

In rural areas, the lateral clearance should not be closer than 6′ from the edge of a usable shoulder, or if none, 12′ from edge of the traveled way.

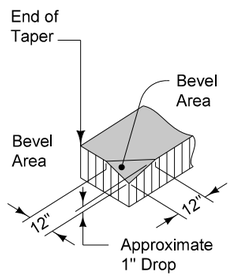
In urban areas, stop signs should be placed a minimum of 6′ from the near edge of the intersected street or a minimum of 4′ in advance of the near edge of a marked crosswalk. Lateral clearance may be reduced to a minimum of 2′ from the face of a curb.

Where the approach roadway consists of two lanes of traffic, a second stop sign should be placed where it is visible to traffic in the inner lane.

At channelized intersections, the additional stop sign may be placed on a channelized island or median.

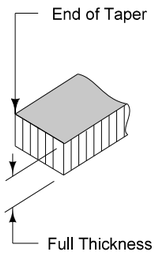
STOP SIGN PLACEMENT

7101
10-19-10



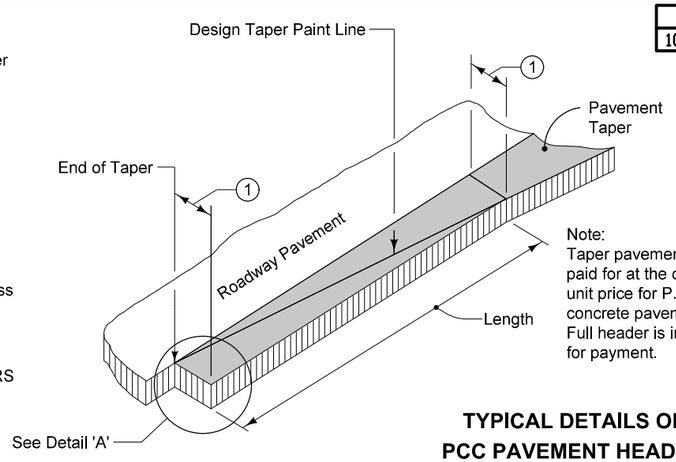
DETAIL 'A'

FOR
GRANULAR SHOULDERS



DETAIL 'A'

FOR
PAVED SHOULDERS

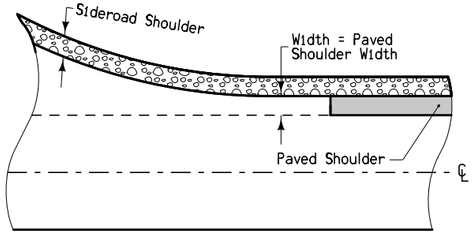


Note:
Taper pavement to be paid for at the contract unit price for P.C. concrete pavement. Full header is included for payment.

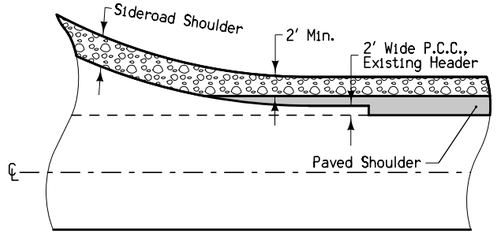
(1) Normal width is 2'-0". Construct 4'-0" width when butting into 4' wide HMA shoulders (See Typical 7154A).

TYPICAL DETAILS OF PCC PAVEMENT HEADER

7154B
10-20-09



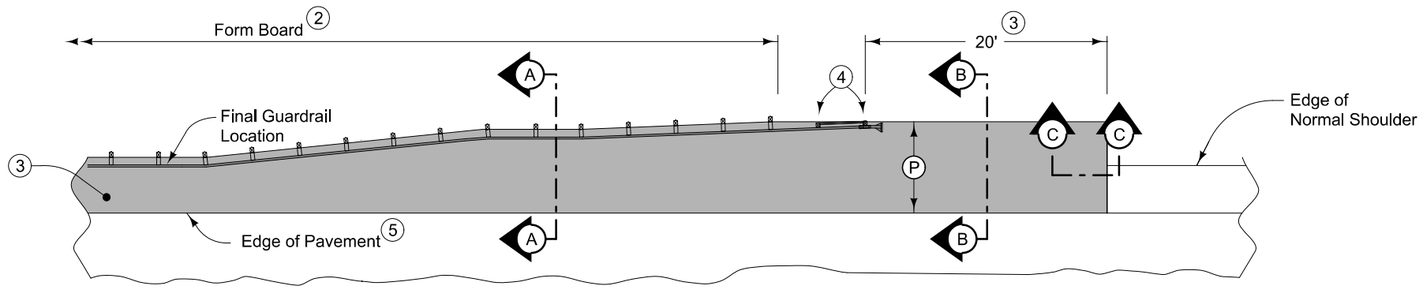
With Newly Constructed Returns



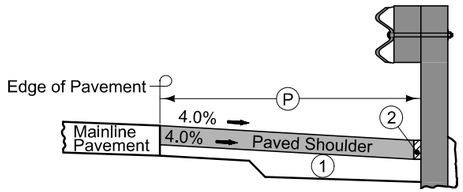
At UAC Returns

PAVED SHOULDER DETAIL AT RETURNS

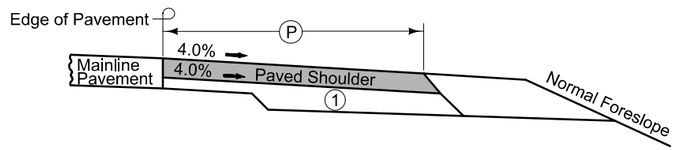
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	B.6



PLAN VIEW

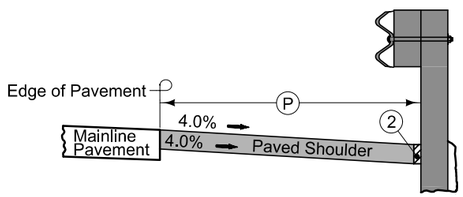


Section A-A

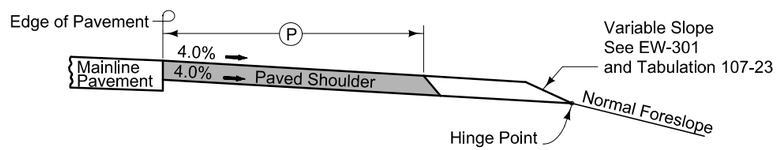


Section B-B

NEW CONSTRUCTION



Section A-A



Section B-B

EXISTING SHOULDER

9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal joint at transverse joint less than 10' in length.

Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

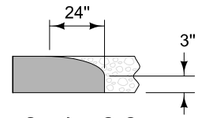
(1) For subgrade treatment, refer to other details in the plan.

(2) PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown. Refer to note 4 for final 2 posts.

(3) Continue paved shoulder to existing paved shoulder or 20 feet beyond the center of the first post.

(4) Shoulder may be notched for final 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.

(5) 'KT-1 joint for PCC shoulder.
'B' joint for HMA shoulder.



Section C-C
Roll down at granular shoulder or earth.

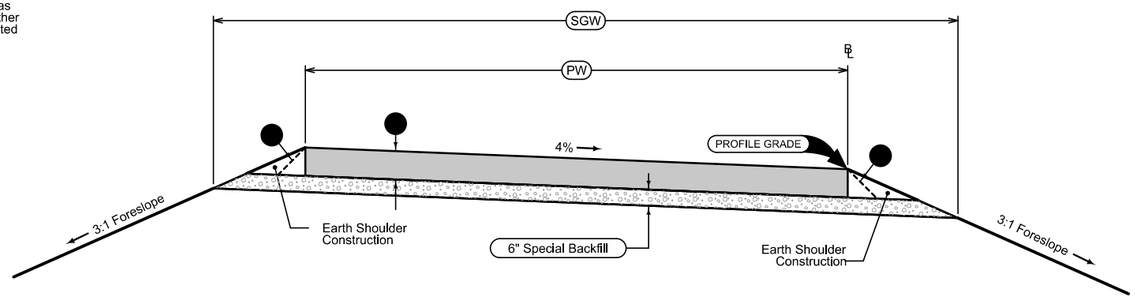
PAVED SHOULDER AT GUARDRAIL

LOCATION			DIMENSIONS						6" Special Backfill	Earth Shoulder Construction
ROAD IDENTIFICATION	STATION TO STATION		HMA			PCC				
			(PW) Feet	(T) Inches	(SGW) Feet	(PW) Feet	(T) Inches	(SGW) Feet	Tons/Station	Station

Quantity calculations based on vertical pavement edges.

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

● Possible HMA 1:1 slope

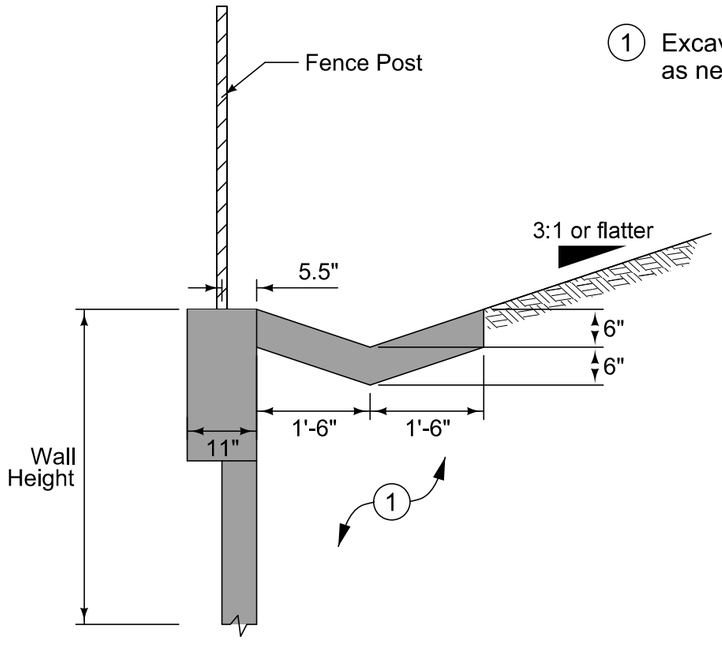


DETOUR PAVING

D_Detour
10-21-14

DESIGNER INFO

Rtng Wall
07-29-18



1 Excavate and place backfill material as necessary.

TYPE A WALL TYPICAL SECTION

ESTIMATED PROJECT QUANTITIES
(UP TO A 5 DIVISION PROJECT)

Division 1: State Funding
Division 2: Fairfax

Item No.	Item Code	Item	Unit	Quantities				
				Estimated				
				Division 1	Division 2	Division 3	Total	
1	2101-0850001	CLEARING & GRUBBING	ACRE	2.50			2.5	
2	2101-0850002	CLEARING & GRUBBING	UNIT	29.00			29	
3	2102-0425071	SPECIAL BACKFILL	CY	1918.40			1918.4	
4	2102-2710070	EXCAVATION CLASS 10, ROADWAY & BORROW	CY	57762.00			57762	
5	2102-2712070	EXCAVATION CLASS 12, ROADWAY & BORROW	CY	50.00			50	
6	2105-8425015	TOPSOIL STRIP SALVAGE & SPREAD	CY	14686.00			14686	
7	2107-3825025	GRANULAR MATERIAL FOR BLANKET AND SUBDRAIN	CY	2513.00			2513	
8	2115-0100000	MODIFIED SUBBASE	CY	5412.90			5412.9	
9	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	1034.00			1034	
10	2122-5190007	PAVED SHOULDERS, PCC, 7 INCH	SY	5731.44			5731.44	
11	2122-5500060	PAVED SHOULDERS, HMA MIXTURE, 6 IN.	SY	684.09			684.09	
12	2122-5500080	PAVED SHOULDERS, HMA MIXTURE, 8 IN.	SY	319.14			319.14	
13	2123-7450000	EARTH SHOULDER CONSTRUCTION	STA	69.00			69	
14	2123-7450020	EARTH SHOULDER FINISHING	STA	39.00			39	
15	2213-7100400	RELOCATION OF MAIL BOX	EACH	10.00			10	
16	2214-5145150	PAVEMENT SCARIFICATION	SY	2102.62			2102.62	
17	2301-0690203	BRIDGE APPROACH, BR-203	SY	667.90			667.9	
18	2301-0690205	BRIDGE APPROACH, BR-205	SY	1992.91			1992.91	
19	2301-1003070	STD OR SLIP FORM PCC PAVEMENT, QM-C, CL. 3, 7 IN.	SY	4511.21			4511.209089	
20	2301-1003095	STD OR SLIP FORM PCC PAVEMENT, QM-C, CL. 3, 9.5 IN.	SY	21559.88			21559.88416	
21	2303-1041500	HOT MIX ASPHALT HIGH TRAFFIC, BASE COURSE, 1/2 IN. MIX	TON	113.25			113.2505034	
22	2303-1042500	HOT MIX ASPHALT HIGH TRAFFIC, INTERMEDIATE COURSE, 1/2 IN. MIX	TON	61.77			61.77300188	
23	2303-1043502	HOT MIX ASPHALT HIGH TRAFFIC, SURFACE COURSE, 1/2 IN. MIX, FRICTION L-2	TON	383.20			383.2047737	
24	2303-1264224	ASPHALT BINDER, PG 64-22H, HIGH TRAFFIC	TON	33.49			33.49369674	
25	2304-0101000	TEMPORARY PAVEMENT	SY	8275.20			8275.2	
26	2315-8275025	DRIVEWAY SURFACING, CLASS A CRUSHED STONE	TON	414.42			414.42	
27	2402-0425040	FLOODED BACKFILL	TON				0	
28	2402-2720100	EXCAVATION, CLASS 20, ROADWAY PIPE CULVERTS	CY				0	
29	2402-0425030	GRANULAR BACKFILL	TON				0	
30	2401-6750001	REMOVALS, AS PER PLAN	LS	1.00			1	
31	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE	SY	0.00			0	
32	2416-0100015	APRON CONC 15 IN	EACH	6.00			6	
33	2416-0100018	APRON CONC 18 IN	EACH	1.00			1	
34	2416-0100030	APRON CONC 30 IN	EACH	1.00			1	
35	2416-0100048	APRON CONC 48 IN	EACH	1.00			1	
36	2416-1160018	CULVERT, CONCRETE ENTRANCE PIPE, 18 INCH	LF	151.00			151	
37	2416-1160042	CULVERT, CONCRETE ENTRANCE PIPE, 42 INCH	LF	77.00			77	
38	2416-1180042	CULVERT, CONCRETE ROADWAY PIPE, 42 INCH	LF	244.00			244	
39	2416-1180048	CULVERT, CONCRETE ROADWAY PIPE, 48 INCH	LF	2.00			2	
40	2432-0000100	MECHANICALLY STABILIZED EARTH RETAINING WALL	SF	173214.25			173214.25	
41	2435-0130148	MANHOLE, SANITARY SEWER, SW-301, 48 IN.	EACH		1.00	3.00	4	
42	2435-0140148	MANHOLE, STORM SEWER, SW-401, 48 IN.	EACH	1.00			1	
43	2435-0140172	MANHOLE, STORM SEWER, SW-401, 72 IN.	EACH	1.00			1	
44	2435-0250700	INTAKE, SW-507	EACH	2.00			2	
45	2435-0250900	INTAKE, SW-509	EACH	13.00			13	
46	2435-0251000	INTAKE, SW-510	EACH	3.00			3	
47	2435-0251230	INTAKE, SW-512, 30 IN.	EACH	1.00			1	
48	2435-0251300	INTAKE, SW-513	EACH	1.00			1	
49	2435-0600010	MANHOLE ADJUSTMENT, MINOR	EACH		2.00		2	
50	2435-0600020	MANHOLE ADJUSTMENT, MAJOR	EACH	1.00	2.00		3	
51	2435-0700010	CONNECTION TO EXISTING MANHOLE	EACH		1.00	1.00	2	
52	2435-0700020	CONNECTION TO EXISTING INTAKE	EACH	1.00			1	
53	2499-3575000	SPECIAL FLUME	EACH	3.00			3	
54	2501-8400172	TEMPORARY SHORING	LS	1.00			1	
55	2502-8212034	SUBDRAIN LONGITUDINAL (SHLD) 4 IN	LF	0.00			0	
56	2502-8221303	SUBDRAIN OUTLET, DR-303	EACH	63.00			63	
57	2502-8221305	SUBDRAIN OUTLET, DR-305	EACH	37.00			37	
58	2503-0124215	STORM SEWER GRAVITY MAIN, TRENCHLESS, RCP, 2000D (CLASS III), 15 IN.	LF	1565.00			1565	
59	2503-0124218	STORM SEWER GRAVITY MAIN, TRENCHLESS, RCP, 2000D (CLASS III), 18 IN.	LF	548.00			548	
60	2503-0124224	STORM SEWER GRAVITY MAIN, TRENCHLESS, RCP, 2000D (CLASS III), 24 IN.	LF	150.00			150	
61	2503-0124230	STORM SEWER GRAVITY MAIN, TRENCHLESS, RCP, 2000D (CLASS III), 30 IN.	LF	380.00			380	
62	2503-0200036	REMOVE STORM SEWER PIPE LESS THAN OR EQUAL TO 36 IN.	LF	2053.00			2053	
63	2503-0500402	BRIDGE END DRAIN, DR-402	EACH	1.00			1	
64	2504-0112224	SANITARY SEWER GRAVITY MAIN, TRENCHED, RCP, 2000D (CLASS III), 24 IN.	LF			432.00	432	
65	2504-0114010	SANITARY SEWER GRAVITY MAIN, TRENCHED, PVC, 10 IN.	LF		131.00		131	
66	2504-0240036	REMOVE SANITARY SEWER PIPE LESS THAN OR EQUAL TO 36 IN.	LF	242.00		100.00	342	
67	2504-0240236	SANITARY SEWER ABANDONMENT, FILL AND PLUG, LESS THAN OR EQUAL TO 36 IN. DIA.	LF			246.00	246	
68	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	0.00			0	
69	2505-4008300	STEEL BEAM GUARDRAIL	LF	2135.00			2135	
70	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	LF	300.00			300	
71	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	0.00			0	
72	2505-4021020	STEEL BEAM GUARDRAIL END ANCHOR, W-BEAM	EACH	2.00			2	
73	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	2.00			2	
74	2505-4502100	STEEL BEAM GUARDRAIL, POST ADAPTER UNIT, BA-210	EACH	0.00			0	
75	2507-3250005	ENGINEERING FABRIC	SY	0.00			0	
76	2507-6800061	REVETMENT, CLASS E	TON	0.00			0	
77	2510-6745850	REMOVAL OF PAVEMENT	SY	0.00			0	
78	2510-6750600	REMOVAL OF INTAKES AND UTILITY ACCESSES	EACH	16.00			16	
79	2511-6745900	REMOVAL OF SIDEWALK	SY	0.00			0	
80	2511-7526004	SIDEWALK, PCC, 4 IN	SY	0.00			0	

ESTIMATED PROJECT QUANTITIES
(UP TO A 5 DIVISION PROJECT)

Division 1: State Funding
Division 2: Fairfax

Item No.	Item Code	Item	Unit	Quantities				
				Estimated				
				Division 1	Division 2	Division 3	Total	
81	2505-4021020	STEEL BEAM GUARDRAIL END ANCHOR, W-BEAM	EACH	2.00			2	
82	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	2.00			2	
83	2505-4502100	STEEL BEAM GUARDRAIL, POST ADAPTER UNIT, BA-210	EACH	0.00			0	
84	2507-3250005	ENGINEERING FABRIC	SY	0.00			0	
85	2507-6800061	REVETMENT, CLASS E	TON	0.00			0	
86	2510-6745850	REMOVAL OF PAVEMENT	SY	0.00			0	
87	2510-6750600	REMOVAL OF INTAKES AND UTILITY ACCESSES	EACH	16.00			16	
88	2511-6745900	REMOVAL OF SIDEWALK	SY	0.00			0	
89	2511-7526004	SIDEWALK, PCC, 4 IN	SY	0.00			0	
90	2512-1725306	CURB AND GUTTER, P.C. CONCRETE, 3.0 FT	LF	4286.00			4286	
91	2513-2350010	CONCRETE BARRIER (PEDESTRIAN/TRAFFIC)	LF	155.00			155	
92	2513-2350015	CONCRETE BARRIER END SECTION (PEDESTRIAN/TRAFFIC)	EACH	4.00			4	
93	2515-2475006	DRIVEWAY, PCC, 6 IN	SY	0.00			0	
94	2515-6745600	REMOVAL OF PAVED DRIVEWAY	SY	0.00			0	
95	2518-6910000	SAFETY CLOSURE	EACH	10.00			10	
96	2519-1004072	FENCE, CHAIN LINK, 72 IN. HEIGHT, ON WALL	LF	1982.00			1982	
97	2519-4200140	REMOVAL OF FENCE, FIELD	LF	0.00			0	
98	2524-6765010	REMOVE AND REINSTALL SIGN, AS PER PLAN	EACH	0.00			0	
99	2526-8285000	CONSTRUCTION SURVEY	LS	1.00			1	
100	2527-9263109	PAINTED PAVEMENT MARKING WATERBORNE OR SOLVENT-BASED	STA	263.00			263	
101	2527-9263137	PAINTED SYMBOLS AND LEGENDS, WATERBORNE OR SOLVENT-BASED	EACH	43.00			43	
102	2527-9263600	REMOVABLE NONREFLECTIVE PREFORMED TAPE	LF	332.00			332	
103	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	8841.00			8841	
104	2528-8400157	TEMPORARY FLOODLIGHTING LUMINAIRE	EACH	2.00			2	
105	2528-8400256	TEMPORARY TRAFFIC SIGNALS	EACH	4.00			4	
106	2528-8445110	TRAFFIC CONTROL	LS	1.00			1	
107	2529-5070110	PATCHES, FULL DEPTH FINISH, BY AREA	SY	0.00			0	
108	2529-5070120	PATCHES, FULL DEPTH FINISH, BY COUNT	EACH	2.00			2	
109	2533-4980005	MOBILIZATION	LS	1.00			1	
110	2548-0000200	MILLED SHOULDER RUMBLE STRIPS, PCC SURFACE	STA	16.42			16.42	
111	2548-0000320	MILLED CENTERLINE RUMBLE STRIPS, PCC SURFACE	STA	35.91			35.91	
112	2551-0000110	TEMPORARY CRASH CUSHION	EACH	14.00			14	
113	2552-0000300	TRENCH COMPACTION TESTING	LS			1.00	1	
114	2554-0112012	WATER MAIN, TRENCHED, DUCTILE IRON PIPE (DIP), 12 IN.	LF		7.00		7	
115	2554-0132008	WATER MAIN WITH CASING PIPE, TRENCHED, DUCTILE IRON PIPE (DIP), 8 IN.	LF		84.00		84	
116	2554-0132012	WATER MAIN WITH CASING PIPE, TRENCHED, DUCTILE IRON PIPE (DIP), 12 IN.	LF		130.00		130	
117	2554-0207008	VALVE, GATE, DIP, 8 IN.	EACH		2.00		2	
118	2554-0207012	VALVE, GATE, DIP, 12 IN.	EACH		1.00		1	
119	2554-0210201	FIRE HYDRANT ASSEMBLY, WM-201	EACH		3.00		3	
120	2554-0214000	FIRE HYDRANT ADJUSTMENT	EACH		4.00		4	
121	2599-9999010	INTERMEDIATE FOUNDATION IMPROVEMENTS	LS	1.00			1	
122	2599-9999010	INTERMEDIATE FOUNDATION IMPROVEMENTS VERIFICATION TESTING	LS	1.00			1	
123	2601-2634100	MULCHING	ACRE	11.82			11.82	
124	2601-2636043	SEEDING & FERTILIZING (RURAL)	ACRE	11.82			11.82	
125	2602-0000020	SILT FENCE	LF	7540.00			7540	
126	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	0.00			0	
127	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	3770.00			3770	
128	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	754.00			754	
129	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	0.00			0	
130	2602-0000350	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	LF	0.00			0	
131	2602-0000400	TEMPORARY INTAKE OR MANHOLE COVER ASSEMBLY	EACH	0.00			0	
132	2602-0000410	MAINTENANCE OF TEMPORARY INTAKE OR MANHOLE COVER ASSEMBLY	EACH	0.00			0	
133	2602-0000420	REMOVAL OF TEMPORARY INTAKE OR MANHOLE COVER ASSEMBLY	EACH	0.00			0	
134	2602-0000500	OPEN-THROAT CURB INTAKE SEDIMENT FILTER	LF	0.00			0	
135	2602-0000510	MAINTENANCE OF OPEN-THROAT CURB INTAKE SEDIMENT FILTER	EACH	0.00				
136	2602-0000520	REMOVAL OF OPEN-THROAT CURB INTAKE SEDIMENT FILTER	EACH	0.00				
137	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	2.00				
138	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	2.00				
139								
140								

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	2101-0850001	CLEARING & GRUBBING
2	2101-0850002	CLEARING & GRUBBING
		Refer to Tab. 110-17 and D Sheets for locations. Clearing and grubbing areas shall be marked out and approved by the City prior to beginning of clearing operations. Take care to protect all trees and other plant material to remain. All trees to be felled a minimum of 48 inches form ground between October 1st and March 31st. Grubbing work can be completed after April 1st.
3	2102-0425071	SPECIAL BACKFILL
		Place under all PCC and HMA shoulder. Refer to typical sections on B Sheets and Tab. 112-9 for locations.
4	2102-2710070	EXCAVATION CLASS 10, ROADWAY & BORROW
		Quantity includes 30,304 CY adjusted roadway cut and 57,762 adjusted fill +30% shrink for a net waste of 27,457 CY. Refer to T Sheets for information. There will be no additional compensation for overhaul of excavated materials.
5	2102-2712070	EXCAVATION CLASS 12, ROADWAY & BORROW
		Refer to CS.1 for locations.
6	2105-8425015	TOPSOIL STRIP SALVAGE & SPREAD
		Quantity is based on 6 inch cut depth over all vegetative disturbed areas. Topsoil placement shall be a uniform 6 inches over all seeded areas. Quantity includes: 12,707 CY of strip and 14,686 CY of placement +40% shrink for a net furnish of 1,979 CY. There will be no additional compensation for overhaul of excess materials.
7	2107-3825025	GRANULAR MATERIAL FOR BLANKET AND SUBDRAIN
8	2115-0100000	MODIFIED SUBBASE
		Refer to Tab 100-24 and B Sheets for locations.
9	2121-7425020	GRANULAR SHOULDERS, TYPE B
10	2122-5190007	PAVED SHOULDERS, PCC, 7 INCH
11	2122-5500060	PAVED SHOULDERS, HMA MIXTURE, 6 IN.
12	2122-5500080	PAVED SHOULDERS, HMA MIXTURE, 8 IN.
		Refer to Tab. 112-9, Tab. 100-25, and B Sheets for locations.
13	2123-7450000	EARTH SHOULDER CONSTRUCTION
14	2123-7450020	EARTH SHOULDER FINISHING
		Refer to B Sheets for locations. Includes backfill and finish grading behing all curbs.
15	2213-7100400	RELOCATION OF MAIL BOX
		Item includes removing, salvaging, and maintaining temporary mailboxes during construction. After project is completed, reinstall mailboxes per https://www.usps.com/manage/mailboxes.htm. Contact Clifford Brause, Postmaster - (319) 984-6230 to ascertain the requirements for maintenance of postal service to residents and businesses within the project area. Place and maintain mailboxes at temporary locations as designated by the postmaster. Reinstalled mailboxes to be approved by the postmaster following construction. Not less than 48 hour prior to removing any mailbox, notify each affected property owner in writing notifying them of the move and the location of the temporary mailbox. Temporary mailboxes shall be in a place so postal service is maintained at al times. Any permanent mailbox that must be removed shall be stored on the property to which it belongs and at a sufficient distance from the work area to ensure it will not be damaged during construction. Provide an accessib route to the temporary mailbox location for each property. This item includes all materials, labor, equipment, a coordination to maintain postal service to property owners and properly reinstall mailboxes.
16	2214-5145150	PAVEMENT SCARIFICATION
		Refer to B Sheets for locations. Average scarification depth is XX inches.
17	2301-0690203	BRIDGE APPROACH, BR-203
18	2301-0690205	BRIDGE APPROACH, BR-205
		Refer to Tab. 112-6 for locations. Certified plant inspection is required and is incidental to this item.
19	2301-1003080	STD OR SLIP FORM PCC PAVEMENT, QM-C, CL. 3, 8 IN.
20	2301-1003100	STD OR SLIP FORM PCC PAVEMENT, QM-C, CL. 3, 10 IN.
		Refer to Tab. 100-24 and B Sheets for locations. Certified plant inspection is required for this item and is considered incidental to the contract unit cost.
21	2303-1041500	HOT MIX ASPHALT HIGH TRAFFIC, BASE COURSE, 1/2 IN. MIX
22	2303-1042500	HOT MIX ASPHALT HIGH TRAFFIC, INTERMEDIATE COURSE, 1/2 IN. MIX
23	2303-1043502	HOT MIX ASPHALT HIGH TRAFFIC, SURFACE COURSE, 1/2 IN. MIX, FRICTION L-2
		Refer to Tab. 100-25 and B Sheets for locations.
24	2303-1264224	ASPHALT BINDER, PG 64-22H, HIGH TRAFFIC
		Quantity is based on 6.0% binder content. Quantities have been increased 5% to account for overruns.
25	2304-0101000	TEMPORARY PAVEMENT
		Material to used for temporary pavement shall be XX" HMA.
26	2315-8275025	DRIVEWAY SURFACING, CLASS A CRUSHED STONE
		Refer to Tab. 102-3 for locations and quantities.
27	2402-0425030	GRANULAR BACKFILL
		For material placed as part of the MSE Wall construction. Material depth is assumed to be equal to the wall height. Actual material quantity will be determined based on wall design and delivery tickets.

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10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
28	2402-0425040	FLOODED BACKFILL
29	2402-2720100	EXCAVATION, CLASS 20, ROADWAY PIPE CULVERTS
		Refer to Tab. 104-3 for locations and quantities.
32	2416-0100015	APRON CONC 15 IN
33	2416-0100018	APRON CONC 18 IN
34	2416-0100030	APRON CONC 30 IN
		Refer to the M Sheets, Tab. 102-3, and Tab 104-3 for locations. Install apron guards and footings on all aprons. Apron guards are incidental to the contract unit price for each apron.
36	2416-1160018	CULVERT, CONCRETE ENTRANCE PIPE, 18 INCH
		Refer to Tab. 102-3 for locations and additional information.
37	2416-0100042	APRON CONC 42 IN
38	2416-1180042	CULVERT, CONCRETE ROADWAY PIPE, 42 INCH
		Refer to Tab. 104-3 for locations and additional information.
40	2432-0000100	MECHANICALLY STABILIZED EARTH RETAINING WALL
		Refer to D Sheets for retaining wall locations and U Sheets for retaining wall profile. Submit shop drawings for approval by the Iowa DOT prior to construction of wall.
41	2435-0130148	MANHOLE, SANITARY SEWER, SW-301, 48 IN.
		Refer to Sheets U.XX-U.XX for locations and additional information.
42	2435-0140148	MANHOLE, STORM SEWER, SW-401, 48 IN.
43	2435-0140172	MANHOLE, STORM SEWER, SW-401, 72 IN.
		Refer to Tab. 104-5B and the M Sheets for manhole locations and information.
44	2435-0250700	INTAKE, SW-507
45	2435-0250900	INTAKE, SW-509
46	2435-0251000	INTAKE, SW-510
47	2435-0251230	INTAKE, SW-512, 30 IN.
48	2435-0251300	INTAKE, SW-513
		Refer to Tab. 104-5B and M Sheets for intake locations and additional information.
54	2501-8400172	TEMPORARY SHORING
55	2502-8212034	SUBDRAIN LONGITUDINAL (SHLD) 4 IN
56	2502-8221303	SUBDRAIN OUTLET, DR-303
57	2502-8221305	SUBDRAIN OUTLET, DR-305
		Refer to Tab. 104-9 for locations.
58	2503-0124215	STORM SEWER GRAVITY MAIN, TRENCHLESS, RCP, 2000D (CLASS III), 15 IN.
59	2503-0124218	STORM SEWER GRAVITY MAIN, TRENCHLESS, RCP, 2000D (CLASS III), 18 IN.
60	2503-0124224	STORM SEWER GRAVITY MAIN, TRENCHLESS, RCP, 2000D (CLASS III), 24 IN.
61	2503-0124230	STORM SEWER GRAVITY MAIN, TRENCHLESS, RCP, 2000D (CLASS III), 30 IN.
		Refer to M Sheets for pipe locations and Sheet M.1 for tabulation of pipes. All RCP storm sewer shall be installed with O-ring or profile gasketed joints.
62	2503-0200036	REMOVE STORM SEWER PIPE LESS THAN OR EQUAL TO 36 IN.
		Refer to Tab. 110-14 for locations. Item includes disposal of material offsite. Removal of flared end sections a incidental to this bid item.
64	2504-0112224	SANITARY SEWER GRAVITY MAIN, TRENCHED, RCP, 2000D (CLASS III), 24 IN.
		Refer to Sheet U.XX for locations and additional information.
68	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL
		Refer to Tab. 110-7A for locations and quantities.
69	2505-4008300	STEEL BEAM GUARDRAIL
70	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201
71	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED
72	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205
73	2505-4502100	STEEL BEAM GUARDRAIL, POST ADAPTER UNIT, BA-210
		Refer to Tab. 108-8A for locations and additional information.
75	2507-3250005	ENGINEERING FABRIC
76	2507-6800061	REVETMENT, CLASS E
		Refer to Tab. 100-23 for locations and quantities.
77	2510-6745850	REMOVAL OF PAVEMENT
		Refer to Tab 110-1 for locations. Refer to Tab. 102-5 for existing pavement information. If the removal limits are within 2' of an existing joint, extend removal to the joint. The Contractor is responsible for replacing any damaged pavement beyond the removal limits at no cost to the owner.
78	2510-6750600	REMOVAL OF INTAKES AND UTILITY ACCESSES
		Refer to Tab. 110-15 for locations.
79	2511-6745900	REMOVAL OF SIDEWALK
		Refer to Tab. 110-5 for locations. Contractor is responsible for replacing any damaged pavement beyond the

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
		removal limits at no cost to the owner.
80	2511-7526004	SIDEWALK, PCC, 4 IN
		Refer to S Sheets for shaping information and B Sheets for typicals. Refer to Tab 113-1 for locations and quanti
		driveways shall be paid for as PCC Driveway. Use Class C concrete for all sidewalk construction. Certified
		Plant Inspection is required and is incidental to this item.
84	2515-2475006	DRIVEWAY, PCC, 6 IN
		Refer to Tab. 102-3 for locations. Quantity includes sidewalk area within driveways. Certified plant inspection
		is required and is incidental to this item.
85	2515-6745600	REMOVAL OF PAVED DRIVEWAY
		Refer to Tab. 110-8 for locations. Contractor is responsible for replacing any damaged pavement beyond the
		removal limits at no cost to the owner.
86	2518-6910000	SAFETY CLOSURE
		Refer to Tab. 108-13A and J Sheets for locations.
87	2519-1004072	FENCE, CHAIN LINK, 72 IN. HEIGHT, ON WALL
		Refer to Tab. 100-7 for locations. Install per wall manufacturer's recommendations.
89	2524-6765010	REMOVE AND REINSTALL SIGN, AS PER PLAN
91	2527-9263109	PAINTED PAVEMENT MARKING WATERBORNE OR SOLVENT-BASED
92	2527-9263137	PAINTED SYMBOLS AND LEGENDS, WATERBORNE OR SOLVENT-BASED
93	2527-9263600	REMOVABLE NONREFLECTIVE PREFORMED TAPE
		Refer to Tab. 108-22 and Tab. 108-29 for locations of pavement markings and symbols. Refer to J Sheets for layou
		during staging of construction. Pavement cure shall be completely removed from pavement surface prior to
		application of pavement markings and symbols and legends.
94	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE
		Refer to Tab. 108-33 and J Sheets for locations.
95	2528-8400157	TEMPORARY FLOODLIGHTING LUMINAIRE
96	2528-8400256	TEMPORARY TRAFFIC SIGNALS
		Refer to Tab. 108-28 and J Sheets for locations.
97	2528-8445110	TRAFFIC CONTROL
		Refer to J Sheets for traffic control information.
98	2529-5070110	PATCHES, FULL DEPTH FINISH, BY AREA
99	2529-5070120	PATCHES, FULL DEPTH FINISH, BY COUNT
		Refer to Tab. 102-6C for locations and additional information.
103	2551-0000110	TEMPORARY CRASH CUSHION
		Refer to Tab. 108-30 and J Sheets for locations.
106	2554-0132008	WATER MAIN WITH CASING PIPE, TRENCHED, DUCTILE IRON PIPE (DIP), 8 IN.
107	2554-0132012	WATER MAIN WITH CASING PIPE, TRENCHED, DUCTILE IRON PIPE (DIP), 12 IN.
		Refer to U Sheets for locations and additional information.
114	2601-2634100	MULCHING
115	2601-2636043	SEEDING & FERTILIZING (RURAL)
		Seeding, fertilizing, and mulching are intended for use on all final restoration areas within the project limits
		Mulching is intended to be used for any temporary seeding that is needed to comply with the NPDES
		Permit. Use Mulching, Bonded Fiber Matrix (2601-2634105) for permanent seeding areas as noted above.
116	2602-0000020	SILT FENCE
		Refer to Tab. 100-17. The tabulation includes estimated locations for placement of silt fence to address
		possible erosion during construction. Verify the specific locations with the Engineer prior to placement. Bid
		item includes 25% additional quantity for field adjustments and replacements.
117	2602-0000030	SILT FENCE FOR DITCH CHECKS
		Refer to Tab. 100-18. The tabulation includes estimated locations for placement of silt fence for ditch checks
		to address possible erosion during construction. Verify the specific locations with the Engineer prior to
		placement. Bid item includes 50% additional quantity for field adjustments and replacements.
118	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS
		This item is included for silt fence and silt fence for ditch check removal required for staging reasons, for
		replacement (replacement to be paid separately), or for areas that have achieved 70% permanent growth.
119	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK
		This item is included for cleanout and repair of the silt fence and silt fence for ditch checks during the
		project.
120	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.
121	2602-0000350	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE
		Refer to Tab. 100-19 for locations.

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10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
122	2602-0000400	TEMPORARY INTAKE OR MANHOLE COVER ASSEMBLY
123	2602-0000410	MAINTENANCE OF TEMPORARY INTAKE OR MANHOLE COVER ASSEMBLY
124	2602-0000420	REMOVAL OF TEMPORARY INTAKE OR MANHOLE COVER ASSEMBLY
		Refer to Tab. 100-11 for locations. Refer to Sheet U.XX for details.
125	2602-0000500	OPEN-THROAT CURB INTAKE SEDIMENT FILTER
126	2602-0000510	MAINTENANCE OF OPEN-THROAT CURB INTAKE SEDIMENT FILTER
127	2602-0000520	REMOVAL OF OPEN-THROAT CURB INTAKE SEDIMENT FILTER
		Refer to Tab. 100-36 for locations. Refer to Sheet U.XX for details.
128	2602-0010010	MOBILIZATIONS, EROSION CONTROL
129	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL

100-1D
10-18-05

PROJECT DESCRIPTION

This project is for the grading and paving of a two lane roadway with the addition of turning lanes and/or a two-way left turn lane from just south of Church St north about 0.5 miles to just west of the intersection of 80th St SW in Fairfax.

This project involves the replacement of bridges over the Union Pacific Railroad, Prairie Creek, a drainage ditch that lies between Stallman Dr and Cemetery Rd, and a drainage ditch that lies between Stoney Point Rd/Beverly Rd and Dean Rd.

105-4
10-18-11

STANDARD ROAD PLANS

The following Standard Road Plans apply to construction work on this project.

Number	Date	Title
BA-108	10-17-17	Concrete Barrier Tapered End Section
BA-200	10-18-16	Steel Beam Guardrail Components
BA-201	04-18-17	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	10-20-15	Steel Beam Guardrail Bolted End Anchor
BA-205	04-19-16	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-250	10-18-16	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)
BA-401	04-16-13	Temporary Barrier Rail (Precast Concrete)
BA-500	04-19-16	Temporary Crash Cushions Sand Barrel
BR-101	04-21-15	Bridge Approach Section (General Details)
BR-203	10-17-17	Double Reinforced 12" Approach
BR-211	10-17-17	Bridge Approach (Abutting PCC or Composite Pavement)
BR-231	10-17-17	Bridge Approach (Multi-Lane, Curbed Roadway)
DR-101	04-18-17	Pipe Culvert (Bedding and Backfill)
DR-102	04-21-15	Pipe Culvert (Cover and Camber)
DR-103	04-21-15	Pipe Culvert (Installation Details)
DR-104	04-19-16	Depth of Cover Tables for Concrete and Corrugated Pipe
DR-121	10-17-17	Connected Pipe Joints
DR-122	10-18-16	Construction of Type "C" Concrete Adaptors for Pipe Culvert Connections
DR-141	04-18-17	Pipe Bends and Half Pipe
DR-201	04-21-15	Concrete Aprons
DR-213	10-17-17	Pipe Apron Guard
DR-303	10-17-17	Subdrains (Longitudinal)
DR-305	04-17-18	Subdrain Outlets (Standard Subdrain, Pressure Release and Special)
DR-402	04-17-18	Rock Flume for Bridge End Drain
DR-601	04-18-17	Reinforced Concrete Pipe Culvert
DR-621	04-18-17	Pipe Extension
EC-103	04-21-15	Wood Excelsior Mat for Slope Protection
EC-201	10-17-17	Silt Fence
EC-204	04-18-17	Perimeter and Slope Sediment Control Devices
EC-301	10-18-16	Rock Erosion Control (REC)
EW-101	10-17-17	Embankment and Rebuilding Embankments
EW-102	10-20-15	Allowable Placement of Unsuitable Soil in Embankments
EW-103	10-20-15	Embankment Subgrade Treatment, Moisture Density Control and Special Compaction
EW-201	04-19-16	Bridge Berm Grading without Recoverable Slope (Barnroof Section)
EW-301	10-20-15	Guardrail Grading
EW-401	10-20-15	Temporary Stream Crossing, Causeway, or Equipment Pad
EW-402	04-18-17	Temporary Stream Diversion
EW-501	10-20-15	Rural Entrance
EW-502	04-18-17	Safety Ramp
EW-503	10-20-15	Side Road Grading
MI-101	10-20-15	Fencing Layout
MI-103	10-20-15	Deer Fence and Field Fence Construction
MI-210	10-20-15	PCC Driveways and Alleys
MI-220	10-20-15	Detectable Warnings and Pedestrian Ramp
PM-110	04-16-13	Line Types
PM-111	04-21-15	Symbols and Legends
PM-210	10-18-11	Separation in Two-Lane Roadway
PM-521	04-19-11	Two-Lane Roadway with Right Turn Lanes
PM-522	10-16-12	Two-Lane Roadway with Left Turn Lanes
PM-550	04-19-11	Two-Lane Roadway with Two-Way Left Turn Lane
PR-103	10-21-14	Full Depth PCC Patch with Dowels
PV-3	10-18-11	Safety Edge
PV-101	10-17-17	Joints
PV-102	10-18-16	PCC Curb Details
PV-103	04-19-11	Manhole Boxouts in PCC Pavement
PV-105	10-21-14	PCC Pavement Widening
PV-121	04-21-15	Jointing PCC Pavement Widening
PV-203	10-15-13	HMA Base Widening
PV-301	04-19-11	Superelevation Details Two Lane Roadway
SI-101	04-19-16	Locations - Type 'A' Signs
SI-111	04-19-16	Support Structures - Wood Posts
SI-131	10-18-16	Installation - Type 'A' Signs
SI-171	04-18-17	Reference Location Sign Posts
SI-172	04-19-16	Delineators
SI-173	04-19-16	Object Markers
SI-211	10-18-16	Object Marker and Delineator Placement with Guardrail
SI-881	10-17-17	Special Signs for Workzones
SI-882	10-18-16	Special Signs for Restricted Width Traffic Control Zones
SW-101	04-17-18	Trench Bedding and Backfill Zones
SW-102	04-18-17	Rigid Gravity Pipe Trench Bedding
SW-301	04-17-18	Circular Sanitary Sewer Manhole
SW-401	04-17-18	Circular Storm Sewer Manhole

105-4
10-18-11

STANDARD ROAD PLANS

The following Standard Road Plans apply to construction work on this project.

Number	Date	Title
SW-507	04-17-18	Single Open-Throat Intake, Small Box
SW-509	04-17-18	Double Open-Throat Curb Intake, Small Box
SW-510	04-17-18	Double Open-Throat Curb Intake, Large Box
SW-511	04-17-18	Rectangular Area Intake
SW-512	04-17-18	Circular Area Intake
SW-513	04-17-18	Open-Sided Area Intake
SW-601	04-21-15	Castings for Sanitary Sewer Manholes
SW-602	04-21-15	Castings for Storm Sewer Manholes
SW-603	04-17-18	Castings for Grate Intakes
SW-604	04-17-18	Castings for Area Intakes
TC-1	04-16-13	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-81	04-20-10	Restricted Width Signing (Less Than 14.5 Feet)
TC-202	04-21-15	Work Within 15 ft of Traveled Way
TC-216	10-18-16	Lane Closure with Signals
TC-217	10-18-16	Lane Closure with Signals and TBR
TC-252	04-19-16	Routes Closed to Traffic
TC-253	10-18-16	Paved On-Site Detour
WM-201	04-18-17	Fire Hydrant Assembly

111-25
10-18-11

INDEX OF TABULATIONS

102-5
04-18-17

EXISTING PAVEMENT

No.	Location					Year	Type	Project Number	Surface		Base		Subbase		Removal		Coarse Aggregate			Reinforcement	Remarks
	County	Route	Dir. of Travel	Begin Ref. Loc. Sign	End Ref. Loc. Sign				Type	Depth IN	Type	Depth IN	Type	Depth IN	Type	Depth IN	Source	Type	Durability Class	Type	
	Linn	US 151	Both	2156	2494	2007	HMA	STPN-151-3(120)--2J-57	HMA	2	HMA	2			HMA	2	BEVERLY	C.LST.			Surface Treatment
						2007	HMA	STPN-151-3(120)--2J-51	HMA	4	HMA	7.5	Modified	12	HMA	3.5	BEVERLY	C.LST.			Widening Project
						1995	PCC	NHS-151-2(3)--19-06	PCC	9											Grade and Replace
						1985	PCC	FN-149-4(16)--21-57	PCC	12											Paved Shoulder Widening
						1983	HMA	FR-151-1(3)--2G-48	RAC	1.5											
						1966	HMA	FN-255	AAC	1.5	AAC	1.5					CEDAR RAPIDS	C.LST.			Surfacing
						1961	PCC	FN-255	PCC	10											Widening roadway from 18' to 24'
						1952	HMA	P-10027	HMA	1.5	HMA	1.5					OTIS QRY.	C.LST.			
						1934	PCC	NRH-NRM-255	PCC	7							GLORY	C.LST.	1		C. Rapids St. = 1

110-17
04-18-17

CLEARING AND GRUBBING

Location		Work and Material Type	Trees, Stumps, and Logs and Down Timber Material Diameters												All Other Materials		Estimated Quantities			Remarks
Station to Station or Ref. Loc. Sign to Ref. Loc. Sign or Description	Direction of Travel		3"-6"	>6"-9"	>9"-12"	>12"-15"	>15"-18"	>18"-24"	>24"-30"	>30"-36"	>36"-42"	>42"-48"	>48"-60"	>60"-72"	>72"	Length FT	Width FT	Units	Area Acres	Herbicide Application Each	
864+11 to 866+82	SB	Trees - Clearing and Grubbing																0.5		
864+47 to 867+38	NB	Trees - Clearing and Grubbing																0.2		
867+06 to 871+88	SB	Trees - Clearing and Grubbing																0.5		
867+99 to 871+24	NB	Trees - Clearing and Grubbing																0.2		
878+25 to 881+93	SB	Trees - Clearing and Grubbing																0.5		
882+64 to 882+89	SB	Trees - Clearing and Grubbing							5								29.0			
979+60 to 982+06	SB	Trees - Clearing and Grubbing																0.5		
1847+74		Trees - Clearing and Grubbing				1														
1848+12		Trees - Clearing and Grubbing				1														
1848+28 to 1848+45		Brush - Clearing																		

100-34
10-17-17

STORMWATER DRAINAGE BASIN AND STORAGE

Refer to EC Standards and 570s Details.

Drainage Basin Location					Summary of Stormwater Storage							Remarks
Basin No.	Station to Station		Side	Discharge Point Station	Discharge Point Side	Total Disturbed Area Acres	Disturbed Area with Storage Provided Acres	Disturbed Area without Storage Provided Acres	Best Management Practice	Total Storage Volume Provided CF	Total Storage Volume Required CF	Storage Volume Met? Yes/No	
1	843+88.58	857+30.60	B	856+47.00	L	5.5	5.1	0.3	Silt Fence for Ditch Check (EC-201)	18500.1	19700.3	No	BMP - Add Silt Fence and Perimeter Control in Urban Section
2	857+19.65	863+87.05	L	857+95.00	L	1.0	1.5	-0.6	Silt Fence for Ditch Check (EC-201)	5456.5	3447.4	Yes	
3	857+32.60	862+11.74	R	857+75.00	R	0.7	0.0	0.7	Silt Fence Installation for Shallow or No Ditch (570-4)	0.0	2376.7	No	BMP - Silt Fence on toe and sides of Bridge Berm
4	857+32.60	867+43.51	R	867+35.00	R	1.7	0.5	1.2	Silt Fence for Ditch Check (EC-201)	1628.8	6016.7	No	BMP - Add Silt Fence and Perimeter Control in Urban Section
5	863+26.51	877+50.00	B	869+15.00	R	2.9	1.7	1.2	Silt Fence for Ditch Check (EC-201)	6120.3	10282.7	No	BMP - Silt Fence on toe and sides of Bridge Berm
6	863+64.55	866+97.78	L	866+40.00	L	0.5	0.5	0.0	Silt Fence for Ditch Check (EC-201)	1736.3	1882.8	No	BMP - Silt Fence on sides of Bridge Berm
7	867+32.12	876+88.72	L	867+50.00	L	1.4	2.5	-1.1	Silt Fence for Ditch Check (EC-201)	9115.4	4990.3	Yes	
8	876+00.00	881+42.33	L	880+94.00	L	0.8	1.5	-0.7	Silt Fence for Ditch Check (EC-201)	5230.8	2714.0	Yes	
9	877+50.00	880+85.25	R	881+50.00	R	0.8	1.7	-0.9	Silt Fence for Ditch Check (EC-201)	6076.9	2714.0	Yes	
10	880+85.25	894+18.50	R	880+90.00	R	2.9	3.5	-0.6	Silt Fence for Ditch Check (EC-201)	12732.6	10473.1	Yes	
11	881+10.56	883+97.52	L	881+18.70	L	0.5	0.0	0.5	Silt Fence Installation for Shallow or No Ditch (570-4)	0.0	1713.6	No	BMP - Silt Fence on toe and sides of Bridge Berm
12	883+02.70	894+18.50	L	883+94.00	L	1.2	3.4	-2.2	Silt Fence for Ditch Check (EC-201)	12153.9	4401.4	Yes	
13	894+18.50	902+58.42	B	900+65.00	L	2.0	2.0	0.0	Silt Fence for Ditch Check (EC-201)	7177.4	7056.4	Yes	
14	957+90.14	959+26.08	L	959+15.00	L	0.1	0.0	0.1	Silt Fence Installation for Shallow or No Ditch (570-4)	0.0	463.0	No	BMP - Silt Fence on up and downstream ends of culvert
15	974+69.95	980+87.89	L	980+66.77	L	1.1	1.4	-0.3	Silt Fence for Ditch Check (EC-201)	5021.2	3842.3	Yes	
16	977+80.36	980+18.00	R	979+48.00	R	0.4	0.0	0.4	Silt Fence Installation for Shallow or No Ditch (570-4)	0.0	1305.0	No	BMP - Silt Fence on toe of foreslope and edge of culvert
17	979+54.70	981+15.00	R	979+61.25	R	0.4	0.2	0.1	Silt Fence for Ditch Check (EC-201)	842.5	1359.4	No	BMP - Silt Fence on toe of foreslope and edge of culvert
18	980+18.00	985+76.79	L	980+66.77	L	0.9	1.0	-0.1	Silt Fence for Ditch Check (EC-201)	3760.6	3321.4	Yes	
19	2863+12.74	2863+63.66	L	2863+00.00	L	0.2	0.0	0.2	Silt Fence Installation for Shallow or No Ditch (570-4)	0.0	888.5	No	BMP - Silt Fence on toe slope tie in
20	2864+71.51	2866+50.03	B	2866+50.03	B	0.2	0.0	0.2	Silt Fence Installation for Shallow or No Ditch (570-4)	0.0	652.3	No	BMP - Silt Fence on toe sbope tie in

100-23
04-17-18

ROCK EROSION CONTROL

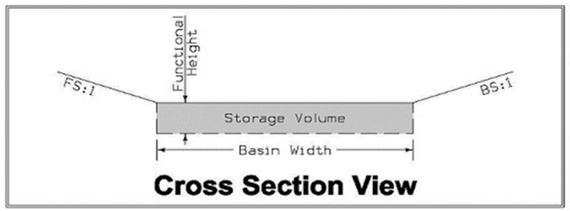
Refer to EC-301 and Detail 570-8

Location						Rock Erosion Control (REC)					Material Bid Quantities			
Road Identification	Begin Station	End Station	Side	L	W	Type 1 Rock Ditch Check	Type 2 Rock Ditch	Type 3 Rock Flume	Type 4 Rock Splash Basin	Type 5 Rock Slope Protection	Eng. Fabric	Class E Revetment	Erosion Stone	Remarks
			Lt./Rt.	FT	FT						SY	TON	TON	
U.S. 151	850+50.00		LT	19	11				X		36.6	17.8		
	852+26.00		LT	40	12.5				X		76.6	40.9		
	853+23.50		LT	16	8.5				X		26.2	11.7		
	865+25.00		RT	18	10				X		32.5	14.2		
	872+58.55		LT	35	12.5				X		66.5	36.0		
	890+65.73		LT	15.6	9				X		26.8	12.2		
	890+84.92		RT	15.6	9				X		26.8	12.2		
	900+60.31		RT	30	13				X		61.3	32.2		
	983+50.00		LT	19	9				X		31.3	14.6		
Church Street	1850+50.00		RT	19	9				X		31.3	14.6		
Beverly Rd.	6957+40.00		LT	30	12.5				X		59.4	31.0		

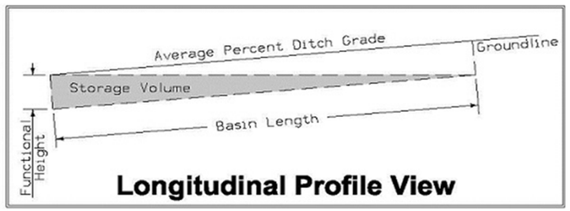
100-14
10-17-17

SILT BASINS

Possible Standard: EW-403



Cross Section View



Longitudinal Profile View

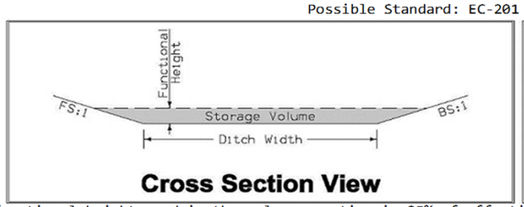
* The functional height used in the volume equation is 95% of effective height. Effective height is 3 feet as shown in EW-403.
* Volume equation: (0.5*Length*(Width*Height+Width*(Height-Length*Avg%Slope))

Basin No.	Location Station	Location Side	Bid Items Installation	Bid Items Removal	Stormwater Storage Volume Summary Basin Width	Basin Length	Height	Avg. % Slope	Volume*	Remarks
			EACH	EACH	FT	FT	FT		CF	
1	+01.00		1	1	50.0	50.0	2.85	3.3%	5062.5	
2	+01.00		1	1	50.0	50.0	2.85	0.3%	6937.5	
3	+01.00		1	1	50.0	50.0	2.85	1.5%	6187.5	

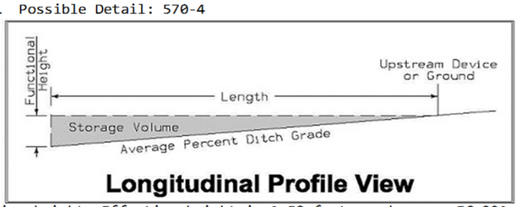
100-18
10-17-17

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201 Possible Detail: 570-4



Cross Section View



Longitudinal Profile View

* The functional height used in the volume equation is 85% of effective height. Effective height is 1.58 feet as shown in EC-201.
* Volume equation: [0.5*Spacing*(0.5*H^2*FS+DW*H+0.5*H^2*BS)]

Basin No.	Type	Location Station	Location Side	Bid Items Installation	Bid Items Maintenance	Bid Items Removal	Stormwater Storage Volume Summary Foreslope	Backslope	Ditch Width	Avg.% Slope Ditch Grade	Volume*	Remarks
				LF	LF	LF	FS:1	BS:1	FT		CF	
1	1	851+00.88	L	23.0	2.3	11.5	3.5	3.0	10.0	0.6%	3038.5	
1	1	854+10.82	L	23.0	2.3	11.5	3.5	3.0	10.0	0.6%	3038.5	
1	1	856+47.43	L	44.0	4.4	22.0	3.5	3.0	28.0	0.6%	6845.9	
1	1	852+00.00	R	24.0	2.4	12.0	4.0	3.0	10.0	1.2%	987.1	
1	1	852+50.00	R	24.0	2.4	12.0	4.0	3.0	10.0	1.1%	1530.1	
1	1	854+00.00	R	24.0	2.4	12.0	4.0	3.0	10.0	1.1%	1530.1	
1	1	855+50.00	R	24.0	2.4	12.0	4.0	3.0	10.0	1.1%	1530.1	
						0.0						
2	1	858+31.97	L	26.0	2.6	13.0	4.0	3.0	10.0	0.3%	3109.5	
2	1	860+01.80	L	21.0	2.1	10.5	4.0	3.0	7.0	3.0%	392.8	
2	1	860+35.00	L	21.0	2.1	10.5	4.0	3.0	5.0	3.0%	325.7	

100-36
04-18-17

OPEN-THROAT CURB INTAKE SEDIMENT FILTER

Possible Detail: 570-6

Location Station	Side	Installation LF	Maintenance EACH	Removal EACH	Remarks
845+65.00	R	8.0	1	1	
846+64.33	L	8.0	1	1	
847+21.58	R	8.0	1	1	
848+39.00	R	8.0	1	1	
848+39.00	L	8.0	1	1	
849+89.28	L	8.0	1	1	
849+89.12	R	8.0	1	1	
851+50.00	R	8.0	1	1	
851+50.00	L	8.0	1	1	
853+25.60	R	8.0	1	1	
853+25.60	L	8.0	1	1	
861+82.03	R	8.0	1	1	
861+82.03	L	8.0	1	1	
863+51.70	R	8.0	1	1	
863+51.69	L	8.0	1	1	
2864+80.06	L	8.0	1	1	
3864+01.00	R	4.0	1	1	
3864+01.00	L	4.0	1	1	

232-10
04-18-17

EMERALD ASH BORER

Any living, dead, cut or fallen material of the ash (Fraxinus spp.) including trees, nursery stock, logs, firewood, stumps, roots, branches, and composted or uncomposted ash chips can be freely moved within the yellow areas of the most recent Federal EAB Quarantine & Authorized Transit.

https://www.aphis.usda.gov/plant_health/plant_pest_info/emerald_ash_b/downloads/eab_quarantine_map.pdf.

Obtain appropriate Compliance Agreements from USDA APHIS PPQ prior to moving any of the above listed ash articles to areas outside the yellow zone on the map.

For questions, concerns, and general assistance, contact:

USDA APHIS PPQ, Iowa office, 515-414-3295

Or

Iowa Department of Agriculture & Land Stewardship
515-725-1470
Entomology@IowaAgriculture.gov

100-17
04-20-10

TABULATION OF SILT FENCES

Refer to EC-201

Location Begin Station	Location End Station	Location Side	Length LF	Remarks
856+50.00	856+72.74	R	40.0	
856+30.00	857+06.47	R	110.0	
857+61.74	862+11.90	R	525.0	
857+86.47	858+57.24	R	100.0	
868+13.65	870+60.23	R	300.0	
881+00.59	881+41.41	R	45.0	
897+87.39	900+57.87	R	300.0	
900+62.87	902+63.35	R	215.0	
980+05.18	980+81.26	R	100.0	
849+52.94	850+48.22	L	200.0	
849+71.92	856+47.40	L	735.0	
850+87.26	856+86.53	L	650.0	
853+17.90	856+68.52	L	385.0	
856+18.50	856+72.02	L	75.0	
856+26.96	856+67.90	L	45.0	
857+97.04	860+22.74	L	270.0	
862+75.00	864+55.00	L	310.0	
867+61.12	867+91.93	L	65.0	
881+39.12	882+79.31	L	220.0	
881+81.81	883+03.62	L	195.0	
897+87.24	902+62.55	L	505.0	
958+85.92	959+32.40	L	85.0	
975+50.00	980+35.62	L	510.0	
2866+37.26	2866+50.00	R	20.0	
2866+37.26	2866+50.00	L	20.0	
	Total:		6025.0	
	Bid Quantity:		7540.0	plus 25% adjustment
	Maintenance:		760.0	10% of bid
	Removal:		3770.0	50% of bid

100-11
04-18-17

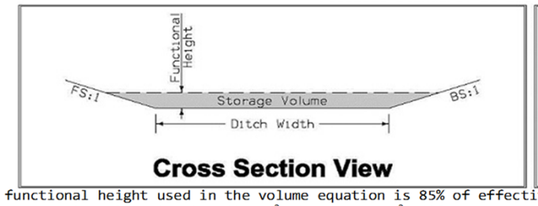
EROSION CONTROL FOR INTAKE OR MANHOLE WELL

Possible Detail: 570-5

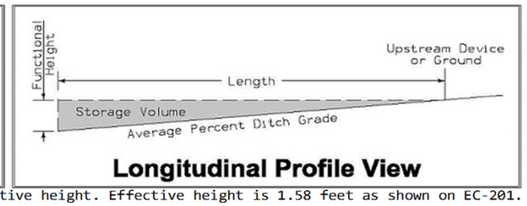
Location Station	Side	Cover Assembly Installation EACH	Cover Assembly Maintenance EACH	Cover Assembly Removal EACH	Remarks
845+64.97	R	1	1	1	
846+64.33	L	1	1	1	
847+21.58	R	1	1	1	
848+39.00	R	1	1	1	
848+39.00	L	1	1	1	
849+89.12	R	1	1	1	
849+89.28	L	1	1	1	
851+50.00	R	1	1	1	
851+50.00	L	1	1	1	
853+25.60	R	1	1	1	
853+25.60	L	1	1	1	
861+82.03	R	1	1	1	
861+82.03	L	1	1	1	
863+51.69	L	1	1	1	
863+51.70	L	1	1	1	
1848+52.82	R	1	1	1	
1848+59.16	L	1	1	1	
1849+85.00	L	1	1	1	
1850+50.00	L	1	1	1	
2864+80.06	L	1	1	1	
3864+01.00	R	1	1	1	
3864+01.00	L	1	1	1	

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201 Possible Detail: 570-4



Cross Section View



Longitudinal Profile View

* The functional height used in the volume equation is 85% of effective height. Effective height is 1.58 feet as shown on EC-201.

* Volume equation: $[0.5*Spacing*(0.5*H^2*FS+DW*H+0.5*H^2*BS)]$

Basin No.	Type	Location		Bid Items			Stormwater Storage Volume Summary					Remarks
		Station	Side	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Avg.% Slope	Volume*	
				LF	LF	LF	FS:1	BS:1	FT	Ditch Grade	CF	
2	1	860+73.46	L	19.0	1.9	9.5	4.0	3.0	5.0	3.0%	325.7	
2	1	861+73.46	L	19.0	1.9	9.5	4.0	3.0	5.0	1.2%	651.4	
2	1	862+73.46	L	19.0	1.9	9.5	4.0	3.0	5.0	1.2%	651.4	
						0.0						
3	1	865+55.00	R	23.0	2.3	11.5	4.0	3.0	10.0	3.3%	444.2	
3	1	866+00.00	R	23.0	2.3	11.5	4.0	3.0	10.0	3.3%	444.2	
3	1	866+75.00	R	23.0	2.3	11.5	4.0	3.0	10.0	1.9%	740.4	
						0.0						
5	1	871+00.00	R	24.0	2.4	12.0	4.0	3.0	10.0	0.8%	1530.1	
5	1	872+50.00	R	30.0	3.0	15.0	4.0	3.0	10.0	0.8%	1530.1	
5	1	874+00.00	R	30.0	3.0	15.0	4.0	3.0	10.0	0.8%	1530.1	
5	1	875+50.00	R	30.0	3.0	15.0	4.0	3.0	10.0	0.8%	1530.1	
						0.0						
6	1	864+95.00	L	24.0	2.4	12.0	3.5	3.0	10.0	3.5%	434.1	
6	1	865+40.00	L	24.0	2.4	12.0	3.5	3.0	10.0	3.5%	434.1	
6	1	865+85.00	L	24.0	2.4	12.0	3.5	3.0	10.0	3.5%	434.1	
6	1	866+30.00	L	24.0	2.4	12.0	3.5	3.0	10.0	3.5%	434.1	
						0.0						
7	1	868+50.00	L	24.0	2.4	12.0	3.5	3.0	10.0	0.3%	3038.5	
7	1	871+50.00	L	24.0	2.4	12.0	3.5	3.0	10.0	0.3%	3038.5	
7	1	874+50.00	L	24.0	2.4	12.0	3.5	3.0	10.0	0.3%	3038.5	
						0.0						
8	1	877+90.00	L	19.0	1.9	9.5	3.5	3.0	6.0	0.2%	2192.4	
8	1	879+50.00	L	24.0	2.4	12.0	3.5	3.0	10.0	0.2%	3038.5	
						0.0						
9	1	878+00.00	R	24.0	2.4	12.0	3.5	3.0	10.0	0.2%	3038.5	
9	1	879+50.00	R	24.0	2.4	12.0	3.5	3.0	10.0	0.2%	3038.5	
						0.0						
10	1	881+64.00	R	24.0	2.4	12.0	3.5	3.0	10.0	1.0%	1495.1	
10	1	882+50.00	R	24.0	2.4	12.0	3.5	3.0	10.0	1.0%	1495.1	
10	1	883+50.00	R	24.0	2.4	12.0	3.5	3.0	10.0	1.0%	1495.1	
10	1	885+35.00	R	24.0	2.4	12.0	3.5	3.0	10.0	1.6%	723.4	
10	1	886+10.00	R	24.0	2.4	12.0	3.5	3.0	10.0	1.6%	723.4	
10	1	886+85.00	R	24.0	2.4	12.0	3.5	3.0	10.0	1.6%	723.4	
10	1	890+00.00	R	24.0	2.4	12.0	3.5	3.0	10.0	0.4%	3038.5	
10	1	891+50.00	R	24.0	2.4	12.0	3.5	3.0	10.0	0.3%	3038.5	
						0.0						
12	1	885+00.00	L	24.0	2.4	12.0	3.5	3.0	10.0	0.6%	3038.5	
12	1	886+50.00	L	19.0	1.9	9.5	3.5	3.0	10.0	0.3%	3038.5	
12	1	889+50.00	L	24.0	2.4	12.0	3.5	3.0	10.0	0.3%	3038.5	
12	1	891+50.00	L	24.0	2.4	12.0	3.5	3.0	10.0	0.3%	3038.5	
						0.0						
13	1	895+40.00	R	18.0	1.8	9.0	3.5	3.0	5.0	1.5%	628.8	
13	1	895+50.00	L	24.0	2.4	12.0	3.5	3.0	10.0	0.3%	3038.5	
13	1	897+30.00	R	19.0	1.9	9.5	3.5	3.0	5.0	1.9%	471.6	
13	1	898+00.00	L	24.0	2.4	12.0	3.5	3.0	10.0	0.3%	3038.5	
						0.0						
15	1	975+50.00	L	22.0	2.2	11.0	6.0	3.0	4.0	1.1%	674.4	
15	1	976+00.00	L	24.0	2.4	12.0	6.0	3.0	6.0	2.0%	606.5	
15	1	976+50.00	L	24.0	2.4	12.0	6.0	3.0	6.0	2.0%	606.5	
15	1	977+50.00	L	24.0	2.4	12.0	6.0	3.0	6.0	3.0%	404.4	
15	1	978+00.00	L	24.0	2.4	12.0	6.0	3.0	6.0	2.0%	606.5	
15	1	978+50.00	L	19.0	1.9	9.5	3.5	3.0	6.0	2.0%	522.0	
15	1	979+58.00	L	19.0	1.9	9.5	3.5	3.0	6.0	1.0%	1078.8	
15	1	980+35.62	L	19.0	1.9	9.5	3.5	3.0	6.0	1.6%	522.0	
						0.0						
17	1	980+05.18	R	16.0	1.6	8.0	3.5	3.0	3.0	5.9%	123.6	
17	1	980+23.67	R	16.0	1.6	8.0	3.5	3.0	3.0	5.9%	123.6	
17	1	980+44.66	R	16.0	1.6	8.0	3.5	3.0	3.0	2.8%	247.3	
17	1	980+81.26	R	19.0	1.9	9.5	3.5	3.0	6.0	2.8%	348.0	
						0.0						
18	1	981+75.00	L	24.0	2.4	12.0	6.0	3.0	6.0	0.7%	1253.5	
18	1	983+25.00	L	24.0	2.4	12.0	6.0	3.0	6.0	0.7%	1253.5	
18	1	984+55.00	L	24.0	2.4	12.0	6.0	3.0	6.0	0.7%	1253.5	
		Totals:		1800.0	150.0	717.5						

PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE

Possible Standards: EC-204

Location		Side	Length of Installation			Remarks
Begin Station	End Station		9 inch Dia	12 inch Dia	20 inch Dia	
			LF	LF	LF	
843+82.80	844+80.61	R			105.0	
845+02.39	845+60.29	R			62.0	
845+53.50	845+74.49	R			23.0	PLACE DEVICE AROUND ST-03
845+71.14	845+78.87	R			12.0	
846+16.12	847+16.92	R			103.0	
847+08.92	847+32.25	R			27.0	PLACE DEVICE AROUND ST-05
847+26.64	847+29.38	R			5.0	
847+91.50	848+34.33	R			49.0	
848+26.33	848+51.67	R			29.0	PLACE DEVICE AROUND ST-06
848+43.67	849+14.43	R			115.0	
849+53.66	849+85.29	R			89.0	
849+78.87	850+01.85	R			27.0	PLACE DEVICE AROUND ST-11
849+93.65	851+45.33	R			154.0	
851+39.33	851+62.67	R			27.0	PLACE DEVICE AROUND ST-12
851+54.67	853+20.93	R			168.0	
853+14.93	853+38.27	R			27.0	PLACE DEVICE AROUND ST-18
853+30.27	856+27.50	R			299.0	
858+40.50	861+77.30	R			338.0	
861+69.36	861+92.70	R			27.0	PLACE DEVICE AROUND ST-22
861+86.70	863+47.03	R			162.0	
863+39.03	863+62.37	R			27.0	PLACE DEVICE AROUND ST-24
863+56.36	863+91.45	R			235.0	
864+38.58	866+45.74	R			227.0	
868+68.20	870+69.91	R			202.0	
891+34.27		R			20.0	PLACE DEVICE AROUND FLARED END SECTION INLET
845+01.31	845+23.11	L			29.0	
845+44.89	846+59.66	L			121.0	
846+51.66	846+75.00	L			27.0	PLACE DEVICE AROUND ST-04
846+70.10	846+75.00	L			21.0	
847+11.00	848+34.33	L			140.0	
848+26.33	848+51.67	L			29.0	PLACE DEVICE AROUND ST-07
848+43.67	849+13.96	L			104.0	
849+57.96	849+86.40	L			54.0	
849+79.55	850+01.91	L			27.0	PLACE DEVICE AROUND ST-14
849+95.31	851+45.33	L			152.0	
851+39.33	851+62.67	L			27.0	PLACE DEVICE AROUND ST-13
851+54.67	853+20.93	L			168.0	
853+14.93	853+38.27	L			27.0	PLACE DEVICE AROUND ST-19
853+30.30	856+26.31	L			298.0	
858+35.82	861+77.36	L			342.0	
861+69.36	861+92.70	L			27.0	PLACE DEVICE AROUND ST-21
861+86.70	863+47.02	L			162.0	
863+39.03	863+62.37	L			27.0	PLACE DEVICE AROUND ST-23
863+56.35	864+01.57	L			187.0	
864+64.13	866+19.58	L			156.0	
868+34.07	870+70.00	L			237.0	
873+46.48		L			20.0	PLACE DEVICE AROUND FLARED END SECTION INLET
878+00.00		L			20.0	PLACE DEVICE AROUND FLARED END SECTION INLET
891+26.45		L			20.0	PLACE DEVICE AROUND FLARED END SECTION INLET
1847+58.76	1847+69.25	R			12.0	
1847+99.25	1848+04.15	R			45.0	
1848+03.25	1848+56.14	R			53.0	
1850+50.00		R			20.0	PLACE DEVICE AROUND ST-08
1850+75.00	1850+79.96	R			24.0	
1850+83.37		R			20.0	PLACE DEVICE AROUND FLARED END SECTION INLET
1851+20.06	1851+25.17	R			16.0	
1848+56.14	1848+93.77	L			54.0	
1850+38.75	1851+20.00	L			90.0	
2865+30.81	2865+91.27	R			67.0	
2866+07.73	2866+50.00	R			48.0	
2863+13.40	2863+35.85	L			102.0	
2863+47.68	2863+97.37	L			78.0	
2864+69.49	2864+90.74	L			26.0	PLACE DEVICE AROUND ST-24
2864+84.75	2865+30.81	L			47.0	
2865+30.81	2865+46.05	L			18.0	
2865+57.76	2866+49.96	L			94.0	
				Total:	5795.0	

100-26
10-15-13

INCIDENTAL ITEMS

Special or unique items where method of measurement / basis of payment is not indicated in the specifications or other contract documents.

No.	Incidental Item	Unit	Quantity	Incidental To		Remarks
				Item Code	Item	
1	Relocation of Mailbox	EACH	2			863+80
2	Relocation of Mailbox	EACH	1			877+10
3	Relocation of Mailbox	EACH	1			897+15
4	Relocation of Mailbox	EACH	1			899+40
5	Relocation of Mailbox	EACH	1			983+45
6	Relocation of Mailbox	EACH	1			2866+25
7	Relocation of Mailbox	EACH	3			4874+75
	Bid Quantity:		10			

100-08
04-17-18

REMOVAL OF FENCE

Removal of Field Fence is incidental to Clearing and Grubbing.

Location				Type	Length	Remarks
From		To				
Station	Offset	Station	Offset			
					LF	
865+07.45	78.22	866+06.64	77.4	Field	97.2	
870+54.67	89.63	873+54.10	84.11	Field	313.3	
880+48.18	72.72	881+22.57	115.82	Field	95.0	

190-62
10-15-13

EXISTING SIGNS TO BE REMOVED

SIGN NUMBER OR DESCRIPTION	LOCATION STATION	DIRECTION OF TRAVEL	TYPE 'A' SIGN ASSEMBLY (RA) EACH	TYPE 'B' SIGN ASSEMBLY (RB) EACH	REMOVE & REINSTALL EXISTING SIGNS TYPE 'A' (RR) EACH	REMOVE & REINSTALL EXISTING SIGNS TYPE 'B' (RR) EACH	CONCRETE FOUNDATION (RF) EACH	SUPPORT STRUCTURE & FOUNDATION (RS) EACH	APPLICABLE SIGNING NOTES	REMARKS
I-8 / M6-1	851+24.52	SB			1					
Recreational Sign	852+47.07	SB			1					Fetter Field City Pa
R2-1	854+28.24	NB			1					45 MPH
R2-1	854+29.93	SB			1					45 MPH
W1-2	860+41.04	NB			1					Curve Right
D10-1	864+74.77	NB			1					22
Adopt a Highway	882+64.72	NB			1					Litter Removal
R2-1	886+79.24	NB			1					50 MPH
R2-1	886+81.39	SB			1					45 MPH
W1-2	893+74.18	SB			1					Curve Left
R2-1	897+14.82	SB			1					50 MPH
R2-1	897+15.28	NB			1					55 MPH
Address	983+55.24	SB			1					6424
R1_1 / D3-1 x 2	1849+62.32	WB			1					Church / Williams
R2-1	1850+40.97	EB			1					25 MPH
R1-1 / R5-1	2864+56.24	WB			1					
R7-1	3864+28.98	NB			1					
R1-1	3864+65.52	NB			1					
D3-1 x 2	3864+68.12	NB			1					Losey / Prairie
R7-1	4875+37.07	SB			1					
R1-1	4875+66.67	SB			1					
D3-1 x 2	4875+67.49	NB			1					Stallman / Williams
R1-1	5883+09.40	EB			1					
D3-1 x 2	5883+15.57	EB			1					W Cemetery / William
R1-1	5885+00.92	WB			1					
D3-1 x 2	5885+04.48	WB			1					E Cemetery / William
W11-15P	5885+14.40	EB			1					

110-1
04-16-13

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5

* Not a Bid Item

Begin Station	End Station	Side	Pavement Type	Area	Saw Cut*	Remarks
				SY	LF	
U.S. 151						
843+88.58	848+30.33	RT	PCC	147.8	444.7	
845+05.45	848+30.33	LT	PCC	255.2	327.8	
848+30.33	856+49.78	BOTH	PCC	3912.8	31.0	Includes bridge approach pavement
857+96.27	866+58.20	BOTH	HMA	3528.2	0.0	Includes bridge approach pavement
868+26.92	880+76.66	BOTH	HMA	4958.8	0.0	Includes bridge approach pavement
881+03.29	898+00.00	BOTH	HMA	7108.4	33.9	Includes bridge approach pavement
974+69.95	979+30.00	LT	HMA	394.3	472.1	
979+30.00	980+04.24	BOTH	HMA	309.4	38.1	Includes bridge approach pavement
908+39.13	981+15.00	BOTH	HMA	339.8	37.7	Includes bridge approach pavement
981+15.00	984+83.16	LT	HMA	333.4	380.2	
CHURCH ST						
1849+50.85	1851+25.00	BOTH	HMA	681.6	25.5	
PRAIRIE AVE						
2864+31.44	2866+56.00	BOTH	HMA	789.3	20.8	
LOSEY AVE						
3862+86.45	3864+60.40	BOTH	HMA	552.0	22.8	
STALLMAN DR						
4874+25.00	4876+09.97	BOTH	HMA	1098.5	21.6	
CEMETERY RD						
5882+30.91	5884+06.32	BOTH	HMA	526.5	24.4	
5884+13.31	5885+43.06	BOTH	PCC	640.1	25.0	
BEVERLY RD						
6957+29.75	6957+50.25	BOTH	PCC	53.2	48.0	
TEMPORARY PVT						
869+62.80	879+14.71	RT	HMA	1859.8	0.0	From Stage 1A
882+63.44	883+99.64	RT	HMA	46.5	0.0	
884+99.85	890+92.64	RT	HMA	1258.4	0.0	
891+26.36	893+97.90	RT	HMA	580.0	0.0	
894+36.83	895+56.60	RT	HMA	242.8	0.0	
895+99.26	902+84.55	RT	HMA	1020.1	0.0	
977+97.82	982+28.46	LT	HMA	1124.8	0.0	
860+76.91	866+23.04	LT	HMA	753.4	0.0	From Stage 2A
868+28.00	872+09.69	LT	HMA	525.1	0.0	
876+23.77	880+26.41	LT	HMA	422.9	0.0	
881+63.08	883+46.75	LT	HMA	238.4	0.0	
898+00.00	901+97.45	LT	HMA	203.0	0.0	

110-2
04-16-13

REMOVAL OF EXISTING STRUCTURES

Location	Description	Remarks
2865+65.30, 19.9' LT	Water Meter Pit	Existing Pit is Abandoned

110-15
04-16-13

REMOVAL OF INTAKES AND UTILITY ACCESSES

No.	Location/Description	Type	Remarks
1	845+62.23, 15.8' RT	Intakes	
2	848+39.00, 17.5' RT	Intakes	
3	848+38.51, 31.1' LT	Intakes	
4	849+81.45, 33.6' LT	Intakes	
5	849+83.26, 18.5' RT	Intakes	
6	851+13.72, 32.05' LT	Utilities	
7	852+52.07, 19.1' RT	Intakes	
8	852+52.60, 28.0' LT	Intakes	
9	863+47.15, 18.4' RT	Intakes	
10	863+75.18, 26.6' LT	Intakes	
11	866+38.87, 15.2' RT	Intakes	
12	866+38.76, 16.5' LT	Intakes	
13	979+91.50, 107.9' RT	Utilities	
14	980+67.32, 44.3' RT	Utilities	
15	980+70.64, 62.0' LT	Utilities	
16	3863+00.28, 13.2' LT	Intakes	

110-14
04-16-13

SANITARY OR STORM SEWER ABANDONMENT OR REMOVAL

* Not a bid item

Location/Description	Sanitary or Storm Sewer	Abandonment, Plug Only or Abandonment, Plug and Fill or Removal	Length of Pipe ≤ 36 inch diameter (LF)	Length of Pipe > 36 inch diameter (LF)	Fill Material* Flowable Mortar or CLSM (CY)	Remarks
845+03.54, 21.8' LT to 848+41.19, 31.2' LT	Storm Sewer	Removal	338			
845+66.89, 18.0' RT to 848+36.31, 17.7' RT	Storm Sewer	Removal	269			
848+36.31, 17.7' RT to 848+41.19, 31.2' LT	Storm Sewer	Removal	49			
848+41.19, 31.2' LT to 849+64.23, 67.7' LT	Storm Sewer	Removal	128			Culvert
849+83.52, 33.7' LT to 849+77.89, 59.3' LT	Storm Sewer	Removal	26			Culvert
849+79.37, 19.3' RT to 849+84.13, 33.9' LT	Storm Sewer	Removal	53			
852+24.76, 67.9' RT to 852+25.96, 101.9' LT	Storm Sewer	Removal	170			Culvert
852+54.46, 19.3' RT to 852+55.17, 28.2' LT	Storm Sewer	Removal	48			
852+55.17, 28.2' LT to 852+53.65, 105.8' LT	Storm Sewer	Removal	78			Culvert
863+51.70, 19.9' RT to 865+23.54, 58.4' RT	Storm Sewer	Removal	176			Culvert
863+79.55, 26.5' LT to 864+64.02, 56.0' LT	Storm Sewer	Removal	89			Culvert
866+38.82, 14.4' RT to 866+38.88, 15.6' LT	Storm Sewer	Removal	30			
866+38.88, 15.6' LT to 866+40.71, 60.2' LT	Storm Sewer	Removal	45			Culvert
878+02.76, 49.2' LT to 878+64.19, 52.0' LT	Storm Sewer	Removal	63			Culvert
890+74.23, 45.6' LT to 891+32.52, 44.1' LT	Storm Sewer	Removal	59			Culvert
890+89.31, 45.9' RT to 891+33.18, 43.8' RT	Storm Sewer	Removal	44			Culvert
895+45.07, 42.1' RT to 896+92.96, 49.2' RT	Storm Sewer	Removal	148			Culvert
897+37.95, 50.4' RT to 897+93.20, 52.7' RT	Storm Sewer	Removal	55			Culvert
980+70.92, 148.9' LT to 980+70.64, 62.0' LT	Sanitary Sewer	Removal	87			
980+70.64, 62.0' LT to 980+67.31, 44.3' RT	Sanitary Sewer	Removal	106			
980+67.31, 44.3' RT to 979+92.02, 107.3' RT	Sanitary Sewer	Removal	98			
979+92.02, 107.3' RT to 979+67.84, 152.7' RT	Sanitary Sewer	Removal	51			
983+01.47, 59.8' LT to 984+24.29, 65.2' LT	Storm Sewer	Removal	123			Culvert
1850+45.88, 21.4' RT to 1850+10.75, 17.5' LT	Storm Sewer	Removal	52			Culvert
2865+07.86, 36.6' RT to 2864+83.69, 101.3' LT	Storm Sewer	Removal	141			Culvert
3863+00.80, 13.3' LT to 3863+15.40, 18.6' RT	Storm Sewer	Removal	35			Culvert
3863+63.65, 15.5' RT to 3864+00.13, 13.5' RT	Storm Sewer	Removal	37			Culvert

107-23
10-18-11

GRADING FOR GUARDRAIL INSTALLATIONS

(1) Lane(s) to which the installation is adjacent. Refer to EW-301

Location No.	(1) Direction of Traffic	Station	Side	Foreslope at Guardrail	Dimensions (Feet) X1	Y1	X2	Y2	X3	Y3	X4	Y4	Z	Earthwork Excavation Class 10 (CY)	Earthwork Embankment In Place (CY)	Remarks
1	SB	856+09.10	L	6:1	40.0	3.7					90.2	6.0	43.0			
2	NB	856+23.50	R	2%	34.4	3.9	64.4	4.4	577.5	4.4	627.7	6.4	47.0			
3	NB	858+44.50	R	6:1	31.6	3.9	61.6	4.4	165.0	4.3	214.9	6.4	47.0			
4	SB	858+56.10	L	2%	365.0	3.7	437.2	10.0	452.2	10.0	502.4	12.0	65.0			
5	NB	866+41.74	R	6:1	35.1	3.9	55.1	6.4	77.5	6.4	127.7	8.4	54.0			
6	SB	868+76.20	L	2%	65.0	5.7					115.2	7.7	50.0			
7	NB	880+00.66	R	6:1	32.1	3.9	77.2	5.4			127.2	6.6	47.0			
8	SB	881+99.22	L	6:1	40.0	5.1					90.0	8.8	54.0			
9	NB	979+26.40	R	6:1	75.0	7.2					125.2	9.2	54.0			
10	SB	981+18.84	L	6:1	87.5	7.3					137.7	9.0	54.0			

110-7A
04-17-12

REMOVAL OF STEEL BEAM GUARDRAIL

(1) Lane(s) to which the installation is adjacent.
(2) Includes length of End Terminals and End Anchors.

Location No.	(1) Direction of Traffic	Station to Station		Side	Removal of Guardrail (2) (LF)
1	NB	849+74.84	856+50.00	RT	674.8
2	SB	855+61.06	856+51.59	LT	90.9
3	NB	857+94.75	858+84.84	RT	90.4
4	SB	857+94.97	862+96.35	LT	502.6
5	NB	865+77.61	866+60.69	RT	83.3
6	SB	865+78.29	866+61.42	LT	83.6
7	NB	868+27.45	869+48.28	RT	121.4
8	SB	868+27.61	869+48.29	LT	121.3
9	NB	879+15.90	880+63.70	RT	146.3
10	SB	880+03.89	880+61.94	LT	59.1
11	NB	881+15.77	881+75.06	RT	58.9
12	SB	881+17.73	882+62.14	LT	146.4
13	NB	978+35.42	979+83.13	RT	148.0
14	SB	979+46.38	980+06.71	LT	60.5
15	NB	980+31.32	980+91.56	RT	60.5
16	SB	980+54.10	982+02.06	LT	148.2

110-08
04-17-18

REMOVAL OF CONCRETE DRIVES

* Not a Bid Item

Location Station	Side	Area SY	Saw Cut* LF	Remarks
846+02.15	RT	69.1	35.0	
846+93.00	LT	60.2	37.0	
847+60.50	RT	96.8	0.0	
849+17.07	LT	161.2	0.0	
877+50.00	RT	197.4	30.0	Estimate only
890+96.75	LT	192.8	36.7	
891+10.00	RT	285.4	24.7	
894+18.50	RT	229.6	34.1	
894+21.00	LT	309.4	49.4	
895+76.54	RT	222.5	43.2	
896+81.65	RT	82.7	0.0	
2866+42.33	LT	3.9	16.0	

110-5
10-20-15

SIDEWALK REMOVAL

* Not a bid item

Begin Station	End Station	Area SY	Saw Cut* LF	Remarks
845+60.00	845+80.00	9.3	24.0	
846+23.90	847+08.40	33.3	0.0	
1850+41.51	1850+57.84	6.9	4.0	

DRAINAGE STRUCTURE BY ROAD CONTRACTOR

Length of unclassified pipe calculated is based on using Reinforced Concrete Pipe.
* Not a bid item
(1) Diameter or equivalent diameter
(2) UNCL = Unclassified Pipe CMP = Corrugated Metal Pipe RCP = Reinforced Concrete Pipe LCP = Arch or Elliptical Low Clearance Pipe SARC = Steel Arch Pipe

Drainage Area	Location	Type	Size (1)	Kind Of Pipe (2)	Length New Const.	Bedding Class	Design Cover (H)	Camber* (DR-102)	Apron No.		Apron Guard* (DR-213)	Elbow* (DR-141)	Diaphragm* (DR-501)	Tee Section* (DR-142)	"D" Section* (DR-141)	Reducer*	Type 'C' Connections* (DR-122)		Connected Pipe Joint* (DR-121)	4" Perforated Subdrain*	Flow Line Elevations				Dimensions Lin. Ft. Total		Dimensions Lin. Ft. Extensions		Skew Ahead Degrees		Dike Rt.	Dike Location Station	Dike Top Elevation	Dike Type	Class 20	Flowable Mortar	Floodable* Backfill	Porous* Backfill	Flooded Backfill	Remarks
																					Lt.	Rt.	Other	Other	Lt.	Rt.	Lt.	Rt.	Lt.	Rt.										
ACRE			IN		LF		FT	FT	IN	OUT	No.	No.	No.	No.	No.	No.	Type	No.	Type	FT															CY	CY	(A) CY	(B) CY	(A+B) CY	
12.0	852+26.00	2000D	42	RCP	170	B	18.9		1	1	2										752.04	754.30			117.0	53.0														
	873+00.00		18	CMP	80	B			1	1	2												747.21	747.49														

LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

Refer to Soils Sheets

* Not a bid item. Bridge berm quantities assume a trench depth of 24 inches.

Location						Longitudinal Subdrain (DR-303)							Subdrain Outlet		Porous* Backfill	Class "A"* Crushed Stone	Remarks
Line No.	Road or Lane Identification	Station to Station		Side	Depth (D)	Shoulder Size	Shoulder Length	Backslope Size	Backslope Length	Bridge Berm (EW-203 or EW-204) Standard Road Plan and Type	Bridge Berm Size	Bridge Berm Length	DR-303, DR-305 or DR-306 Station	DR-303, DR-305 or DR-306 Standard Road Plan and Type			
					IN	IN	FT	IN	FT		IN	FT			CY	CY	
1	US 151	843+88.65	845+64.97	RT	45.0	4.0	176.3						843+88.65	DR-303	17.7		Type 12, Install Subdrain Cleanout
													845+64.97	DR-303			Type 12, Outlet into Intake ST-03
2	US 151	845+64.97	847+21.58	RT	45.0	4.0	156.6						845+64.97	DR-303	15.7		Type 12, Outlet into Intake ST-03
													847+21.58	DR-303			Type 12, Outlet into Intake ST-05
3	US 151	847+21.58	848+39.00	RT	45.0	4.0	117.4						847+21.58	DR-303	11.8		Type 12, Outlet into Intake ST-05
													848+39.00	DR-303			Type 12, Outlet into Intake ST-06
4	US 151	848+39.00	849+89.38	RT	45.0	4.0	152.4						848+39.00	DR-303	15.3		Type 12, Outlet into Intake ST-06
													849+89.38	DR-303			Type 12, Outlet into Intake ST-11
5	US 151	849+89.38	851+50.00	RT	45.0	4.0	160.6						849+89.38	DR-303	16.1		Type 12, Outlet into Intake ST-11
													851+50.00	DR-303			Type 12, Outlet into Intake ST-12
6	US 151	851+50.00	853+25.60	RT	45.0	4.0	175.6						851+50.00	DR-303	17.6		Type 12, Outlet into Intake ST-12
													853+25.60	DR-303			Type 12, Outlet into Intake ST-18
7	US 151	853+25.60	855+69.10	RT	45.0	4.0	243.5						853+25.60	DR-303	24.4		Type 12, Outlet into Intake ST-18
													855+69.10	DR-303			Type 12, Connect to Slab Bridge 4" Subdrain
8	US 151	858+96.10	861+82.03	RT	45.0	4.0	285.9						858+96.10	DR-303	28.7		Type 12, Connect to Slab Bridge 4" Subdrain
													861+82.03	DR-303			Type 12, Outlet into Intake ST-22
9	US 151	861+82.03	863+51.70	RT	45.0	4.0	169.7						861+82.03	DR-303	17.0		Type 12, Outlet into Intake ST-22
													863+51.70	DR-303			Type 12, Outlet into Intake ST-24
10	US 151	863+51.70	865+66.60	RT	45.0	4.0	237.9						863+51.70	DR-303	23.9		Type 12, Outlet into Intake ST-24
													865+66.60	DR-305, Type A			Type 12, Connect to Slab Bridge 4" Sub, Outlet through MSE retaining wall
11	US 151	869+26.20	870+70.00	RT	45.0	4.0	195.8						869+26.20	DR-305, Type A	19.6		Type 12
													870+70.00	DR-305, Type A			Type 12
12	US 151	870+70.00	875+24.64	RT	45.0	4.0	507.1						870+70.00	DR-305, Type A	50.9		Type 7A
													875+24.64	DR-305, Type A			Type 7A
13	US 151	875+24.64	879+37.99	RT	45.0	4.0	452.4						875+24.64	DR-305, Type A	45.4		Type 7A
													879+37.99	DR-305, Type A			Type 7A
14	US 151	882+29.22	885+23.39	RT	45.0	4.0	330.2						882+29.22	DR-305, Type A	33.1		Type 7A
													885+23.39	DR-305, Type A			Type 7A
15	US 151	885+23.39	888+50.00	RT	45.0	4.0	371.6						885+23.39	DR-305, Type A	37.3		Type 7A
					30.0								888+50.00	DR-305, Type A			Type 7A
16	US 151	888+50.00	893+00.00	RT	30.0	4.0	480.5						888+50.00	DR-305, Type A	29.7		Type 7A
					45.0								893+00.00	DR-305, Type A			Type 7A
17	US 151	893+00.00	898+00.00	RT	45.0	4.0	535.5						893+00.00	DR-305, Type A	53.7		Type 7A
													898+00.00	DR-305, Type A			Type 7A
18	US 151	898+00.00	902+58.42	RT	45.0	4.0	491.9						898+00.00	DR-305, Type A	49.3		Type 7A
													902+58.42	DR-305, Type A			Type 7A
19	US 151	845+05.46	846+64.33	LT	45.0	4.0	158.9						845+05.46	DR-303	15.9		Type 12, Outlet into Intake ST-02
													846+64.33	DR-303			Type 12, Outlet into Intake ST-04
20	US 151	846+64.33	848+39.00	LT	45.0	4.0	174.7						846+64.33	DR-303	17.5		Type 12, Outlet into Intake ST-04
													848+39.00	DR-303			Type 12, Outlet into Intake ST-07
21	US 151	848+39.00	849+89.28	LT	45.0	4.0	150.3						848+39.00	DR-303	15.1		Type 12, Outlet into Intake ST-07
													849+89.28	DR-303			Type 12, Outlet into Intake ST-14
22	US 151	849+89.28	851+50.00	LT	45.0	4.0	160.7						849+89.28	DR-303	16.1		Type 12, Outlet into Intake ST-14
													851+50.00	DR-303			Type 12, Outlet into Intake ST-13
23	US 151	851+50.00	853+25.60	LT	45.0	4.0	175.6						851+50.00	DR-303	17.6		Type 12, Outlet into Intake ST-13
													853+25.60	DR-303			Type 12, Outlet into Intake ST-18
24	US 151	853+25.60	855+69.10	LT	45.0	4.0	243.5						853+25.60	DR-303	24.4		Type 12, Outlet into Intake ST-18
													855+69.10	DR-303			Type 12, Connect to Slab Bridge 4" Subdrain
25	US 151	858+96.10	861+82.03	LT	45.0	4.0	285.9						858+96.10	DR-303	28.7		Type 12, Connect to Slab Bridge 4" Subdrain
													861+82.03	DR-303			Type 12, Outlet into Intake ST-21
26	US 151	861+82.03	863+51.69	LT	45.0	4.0	169.7						861+82.03	DR-303	17.0		Type 12, Outlet into Intake ST-21
													863+51.69	DR-303			Type 12, Outlet into Intake ST-23
27	US 151	863+51.69	865+66.60	LT	45.0	4.0	214.9						863+51.69	DR-303	21.6		Type 12, Outlet into Intake ST-23

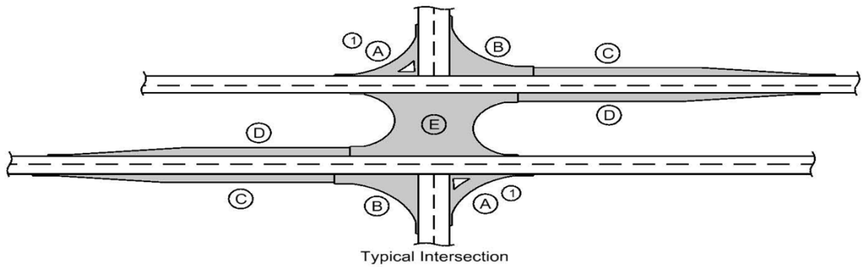
LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

Refer to Soils Sheets

* Not a bid item. Bridge berm quantities assume a trench depth of 24 inches.

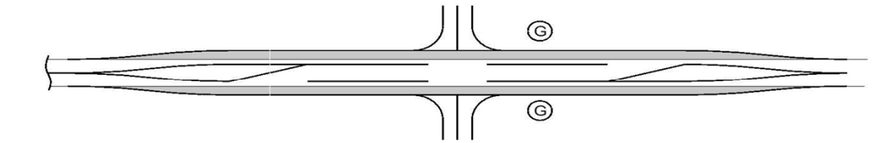
Location						Longitudinal Subdrain (DR-303)							Subdrain Outlet		Porous* Backfill	Class "A"* Crushed Stone	Remarks
Line No.	Road or Lane Identification	Station to Station		Side	Depth D	Shoulder		Backslope		Bridge Berm (EW-203 or EW-204)			DR-303, DR-305 or DR-306				
						Size	Length	Size	Length	Standard Road Plan and Type	Size	Length	Station	Standard Road Plan and Type			
					IN	IN	FT	IN	FT		IN	FT			CY	CY	
													865+66.60	DR-303			Type 12, Connect to Slab Bridge 4" Subdrain
28	US 151	869+16.20	870+70.00	LT	45.0	4.0	179.8						869+16.20	DR-303	18.0		Type 12, Connect to Slab Bridge 4" Subdrain
													870+70.00	DR-305, Type A			Type 12
29	US 151	870+70.00	875+24.64	LT	45.0	4.0	519.6						870+70.00	DR-305, Type A	52.1		Type 7A
													875+24.64	DR-305, Type A			Type 7A
30	US 151	875+24.64	879+37.99	LT	45.0	4.0	469.9						875+24.64	DR-305, Type A	47.1		Type 7A
													879+37.99	DR-305, Type A			Type 7A
31	US 151	882+29.22	883+19.86	LT	45.0	4.0	164.1						882+29.22	DR-305, Type A	16.5		Type 7A
													883+19.86	DR-305, Type A			Type 7A
32	US 151	883+19.86	888+11.75	LT	45.0	4.0	553.4						883+19.86	DR-305, Type A	55.5		Type 7A
													888+11.75	DR-305, Type A			Type 7A
33	US 151	888+11.75	893+07.78	LT	45.0	4.0	533.5						888+11.75	DR-305, Type A	53.5		Type 7A
					30.0								893+07.78	DR-305, Type A			Type 7A
34	US 151	893+07.78	898+00.00	LT	30.0	4.0	527.7						893+07.78	DR-305, Type A	32.6		Type 7A
					45.0								898+00.00	DR-305, Type A			Type 7A
35	US 151	898+00.00	902+58.42	LT	45.0	4.0	489.4						898+00.00	DR-305, Type A	49.1		Type 7A
													902+58.42	DR-305, Type A			Type 7A
otals							10412.6		0.0					DR-303 = 38	1005.5	0.0	
														DR-305, Type A = 32			

PCC PAVEMENT

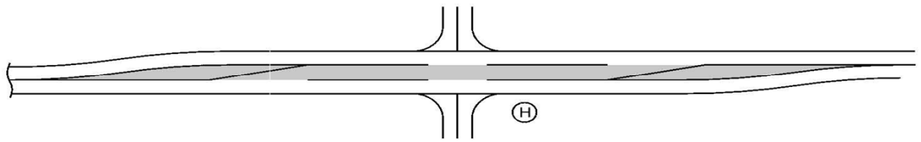


Typical Intersection

Ramp or Loop Taper (2)



Channelized Intersection
Widen Existing Roadway



Channelized Intersection
Reconstructed Roadway

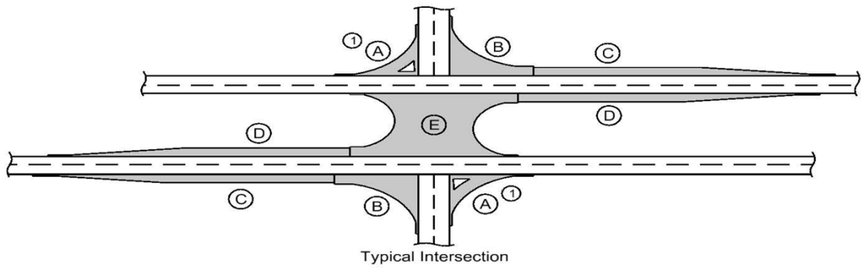
(1) Does not include raised island area or curb. Refer to tabulation 112-4 for quantities.

(2) Refer to PV-410, PV-411, PV-412, and PV-414.

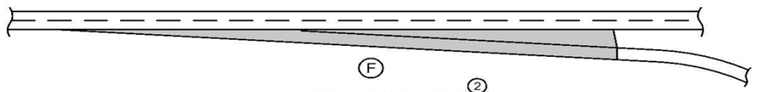
(3) Quantity includes Pavement Header.

Location				Mainline			Area (3)								Total Area By Pavement Thickness		Special Backfill	Modified Subbase	Granular Subbase	Remarks
Road Identification	Direction of Travel	Station to Station		Width	Length	Area	A (1)	B	C	D	E	F (2)	G	H	SY					
				FT	FT	SY	SY	SY	SY	SY	SY	SY	SY	SY	9.5 IN	7 IN	TONS	CY	SY	
US 151 - ML	NB/SB	848+30.33	853+34.27	36.0	503.9	2015.8									2015.8			335.9		
US 151 - ML	NB/SB	853+34.27	855+59.10	VARIES	224.8	774.5									774.5			129.1		
US 151 - ML	NB/SB	859+06.10	861+73.36	VARIES	267.3	892.7									892.7			148.8		
US 151 - ML	NB/SB	861+73.36	863+59.72	36.0	186.4	745.4									745.4			124.2		
US 151 - ML	NB/SB	863+59.72	864+57.82	VARIES	98.1	401.9									401.9			67.0		
US 151 - ML	NB/SB	864+57.82	865+56.60	38.0	98.8	417.1									417.1			69.5		
US 151 - ML	NB/SB	869+26.20	879+37.99	38.0	1011.8	4272.0									4272.0			802.4		
US 151 - ML	NB/SB	882+29.22	898+00.00	38.0	1570.8	6632.2									6632.2			1224.3		
US 151	NB	843+88.58	846+17.11		228.5				138.7						138.7			35.8		
US 151	SB	845+05.45	848+30.33		324.9				108.3						108.3			36.1		
US 151	NB	846+17.11	848+30.33		213.2				189.5						189.5			43.4		
US 151	NB	848+30.33	848+70.64		40.3				13.4						13.4			4.5		
US 151	SB	848+30.33	848+69.80		39.5				13.2						13.2			4.4		
US 151	NB	849+97.65	853+34.27		336.6				112.2						112.2			37.4		
US 151	SB	850+01.96	853+34.27						553.9						553.9			110.8		
US 151	NB	853+34.27	855+59.10						137.3						137.3			35.4		
US 151	SB	853+34.27	855+14.27						220.6						220.6			46.7		
US 151	SB	855+14.27	855+59.10						37.7						37.7			8.7		
US 151	NB/SB														0.0			61.6		Bridge Approach Subbase
US 151	NB/SB														0.0			61.6		Bridge Approach Subbase
US 151	NB	859+06.10	859+93.36						77.3						77.3			17.7		
US 151	SB	859+06.10	861+73.36						177.2						177.2			44.4		
US 151	NB	859+93.36	861+73.36						220.0						220.0			46.7		
US 151	NB	861+73.36	863+58.36						308.3						308.3			61.7		
US 151	SB	861+73.36	863+59.72						62.1						62.1			20.7		
US 151	SB	863+59.72	864+57.82						36.6						36.6			11.6		
US 151	SB	864+57.82	865+56.60						32.9						32.9			11.0		
US 151	NB	864+74.60	865+56.60						27.3						27.3			9.1		
															0.0			74.9		Bridge Approach Subbase
															0.0			74.1		Bridge Approach Subbase
US 151	NB	869+26.20	870+00.00						24.6						24.6			8.2		
US 151	SB	869+26.20	870+00.00						24.6						24.6			8.2		
US 151	NB	870+00.00	870+70.00						51.2						51.2			12.4		
US 151	SB	870+00.00	870+70.00						49.8						49.8			12.3		
															0.0			80.6		Bridge Approach Subbase
															0.0			80.3		Bridge Approach Subbase
US 151	NB	882+29.22	882+78.25						54.7						54.7			11.8		
US 152	NB	882+78.25	883+95.73						154.3						154.3			32.1		
US 151	SB	884+25.93	888+43.66						563.8						563.8			117.6		
US 151	SB	888+43.66	890+21.24						92.2						92.2			25.4		
US 151 - DD #2	SB	974+69.95	979+30.00	12.0	460.1	613.4									613.4			127.8		
US 151 - DD #2	NB/SB	979+30.00	981+15.00	40.0	185.0	822.2									822.2			157.6		
US 151 - DD #2	SB	981+15.00	984+83.16	12.0	368.2	490.9									490.9			102.3		
SIDE STREETS																				
Church St	EB/WB	1847+69.25	1848+56.14	36.0	86.9	347.6										347.6		57.9		
Church St	EB/WB	1848+56.14	1849+16.97	42.0	60.8	283.9	82.1	146.0								511.9		86.9		
Church St	EB/WB	1849+52.97	1850+11.77	31.0	58.8	202.5	81.4	84.4								368.3		70.2		
Church St	EB/WB	1850+11.77	1851+01.77	VARIES	90.0	310.0										310.0		51.7		
Church St	EB/WB	1851+01.77	1851+25.00	25.0	23.2	64.5										64.5		10.8		

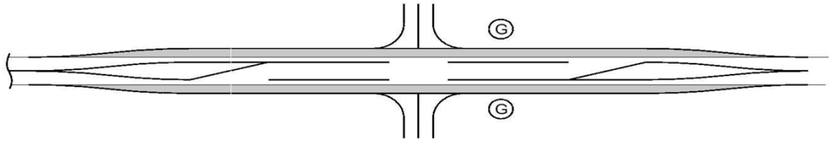
PCC PAVEMENT



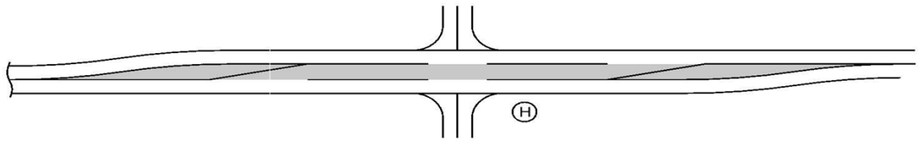
Typical Intersection



Ramp or Loop Taper (2)



Channelized Intersection
Widen Existing Roadway



Channelized Intersection
Reconstructed Roadway

(1) Does not include raised island area or curb. Refer to tabulation 112-4 for quantities.

(2) Refer to PV-410, PV-411, PV-412, and PV-414.

(3) Quantity includes Pavement Header.

Location				Mainline			Area (3)								Total Area By Pavement Thickness		Special Backfill	Modified Subbase	Granular Subbase	Remarks
Road Identification	Direction of Travel	Station to Station		Width	Length	Area	A (1)	B	C	D	E	F (2)	G	H	SY					
				FT	FT	SY	SY	SY	SY	SY	SY	SY	SY	SY	9.5 IN	7 IN	TONS	CY	SY	
Prairie Ave	EB/WB	2864+38.42	2865+30.81	23.0	92.4	236.1	78.7	122.0								436.8		80.9		
Prairie Ave	EB/WB	2865+30.81	2866+56.00	23.0	125.2	319.9										319.9		53.3		
Prairie Ave																0.0		79.0		Driveway West of 151
Losey Ave	NB/SB	3862+86.45	3864+83.31	23.0	196.9	503.1	21.3	29.7								554.1		114.6		
Stallman Dr	NB/SB	4874+25.00	4875+81.00	25.0	156.0	433.3	48.9	47.0								529.2		90.0		
Cemetery Street	EB/WB	5882+30.00	5883+88.70	25.0	158.7	440.8	96.7	33.2								570.8		96.9		
Cemetery Street	EB/WB	5884+37.80	5885+42.00	25.0	104.2	289.4	161.9	46.7								498.0		84.9		

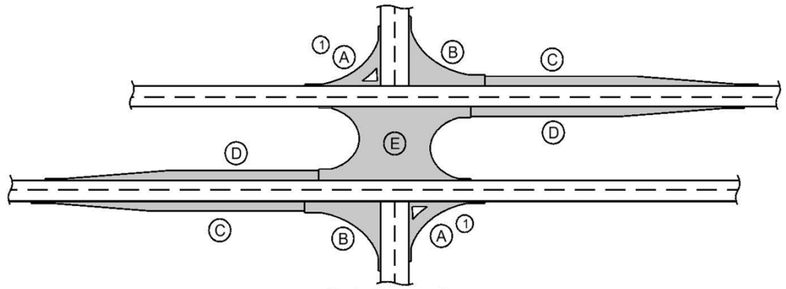
BRIDGE APPROACH SECTION

Refer to the BR Series.

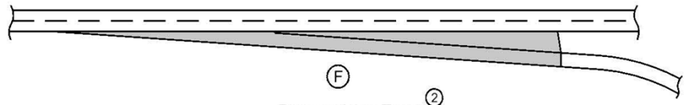
* Not a bid item

Location				Approach Pavement					Standard Road Plans BR Series			Subdrain					* Modified Subbase	* Polymer Grid	* Special Backfill	Remarks
Bridge Station	End	Skew Ahead Degrees		T Thickness	Pay Length	Non-Reinf. Pavement Area	Single-Reinf. Pavement Area	Double-Reinf. Pavement Area	Approach	Fixed or Movable Abutment	Abutting Pavement	* Perforated Subdrain 4"	* Subdrain Outlet		* Porous Backfill	* Class 'A' Crushed Stone Backfill				
		LEFT	RIGHT	Inches	FT	SY	SY	SY				LF	STA	Side	CY	CY	TON	SY	TON	
857+34.00	S		4	12.0	70.0	140.8	94.4	93.7	BR-205	Fixed	BR-211	60.0	855+69.10	LT	1.9		350.121	370.5		
	N		4	12.0	70.0	140.8	94.4	93.5	BR-205	Fixed	BR-211	60.0	858+96.10	RT	1.9		350.228	370.6		
867+36.83	S		30	12.0	78.9	146.7	102.8	155.4	BR-205	Fixed	BR-211	60.0	865+66.60	RT	1.9		429.597	454.6		
	N		30	12.0	78.2	146.7	102.8	150.9	BR-205	Fixed	BR-211	60.0	869+16.20	RT	1.9		425.869	450.7		
880+85.25	S	17		12.0	76.8	126.7	141.7	171.6	BR-205	Fixed	BR-211	60.0	879+47.99	LT	1.9		463.115	490.1		
	N	13		12.0	73.5	148.2	134.4	158.1	BR-205	Fixed	BR-211	60.0	882+19.22	RT	1.9		460.932	487.8		

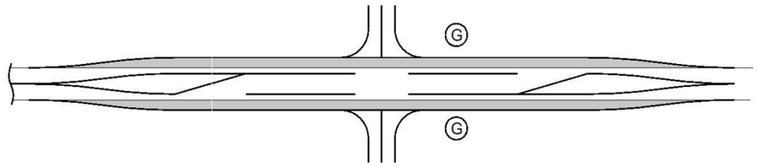
HMA PAVEMENT



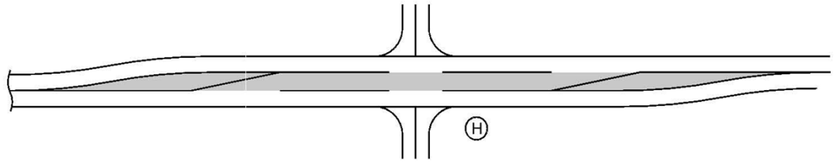
Typical Intersection



Ramp or Loop Taper (2)



Channelized Intersection
Widen Existing Roadway



Channelized Intersection
Reconstructed Roadway

(1) Does not include raised island area or curb. Refer to tabulation 112-4 for quantities.

(2) Refer to PV-410, PV-411, PV-412, and PV-414.

(3) Quantity includes Pavement Header.

Calculations assume a surface course unit weight (lbs/cf) of 155, an intermediate course unit weight (lbs/cf) of 150, a base course unit weight (lbs/cf) of 150, and a special backfill unit weight (lbs/cf) of 140.

Location				Mainline			Area (3)								Bid Items												
															Hot Mix Asphalt Pavement						Binder						
Road Identification	Direction of Travel	Station to Station		Width	Length	Area	A (1)	B	C	D	E	F (2)	G	H	Surface		Intermediate		Base		Surface	Intermediate	Base	Special Backfill	Modified Subbase	Granular Subbase	Pavement Scarification	Remarks
				FT	FT	SY	SY	SY	SY	SY	SY	SY	SY	SY	TONS	SY	TONS	SY	TONS	SY	TONS	TONS	TONS	TONS	CY	SY	SY	
Stage 1 - Temp																											
US 151	NB	869+62.80	879+14.71	varies	951.9	1859.8																					
US 151	NB	882+63.44	883+99.64	varies	136.2	46.5																					
US 151	NB	884+99.85	890+92.91	varies	593.1	1258.4																					
US 151	NB	891+26.36	893+97.90	varies	271.5	580.0																					
US 151	NB	894+36.83	895+56.60	varies	119.8	242.8																					
US 151	NB	895+99.26	902+84.55	varies	685.3	1020.1																					
US 151 - DD #2	NB/SB	977+97.82	982+28.46	varies	430.6	1124.8																					
Stage 2 - Temp																											
US 151	SB	860+76.91	866+23.04	varies	546.1	753.4																					
US 151	SB	868+28.00	872+09.69	varies	381.7	525.1																					
US 151	SB	876+23.77	880+26.41	varies	402.6	422.9																					
US 151	SB	881+63.08	883+46.75	varies	183.7	238.4																					
US 151	SB	898+00.00	901+97.45	varies	397.4	203.0																					
US 151	NB/SB	898+00.00	902+58.42	varies	458.4	2102.6									183.322	2102.6					10.999						
US 151	SB	898+00.00	900+09.70	varies	209.7	0.0			68.4						5.961	68.4	11.538	68.4	21.153	68.4	0.358	0.692	1.269				
US 151	NB	898+00.00	902+58.42	varies	458.4	0.0			297.7						25.955	297.7	50.235	297.7	92.098	297.7	1.557	3.014	5.526				
US 151 - DD #2	SB	974+69.95	979+30.00	12.0	460.1	613.4									53.481	613.4					3.209						
US 151 - DD #2	NB/SB	979+30.00	981+15.00	40.0	185.0	822.2									71.688	822.2					4.301						
US 151 - DD #2	SB	981+15.00	984+83.16	12.0	368.2	490.9									42.799	490.9					2.568						

FULL-DEPTH PATCHES

Possible Standards: PR-101, PR-102, PR-103, PR-104, PR-105 and PR-140.

Location				Dimension			PCC Patches												
Count	Station	Reference Location Sign	Lane	Length	Width	Patch Thickness	With Dowels	Without Dowels	C R C	Ramp with Dowels	HMA Patches	Composite HMA	Subbase Patches	Subbase Patch w/ 'EF' Joint	Patch Subdrain	'CD' Joints	'CT' Joints	'EF' Joints	Anchor Lugs Removal	Remarks
							PR-103	PR-102	PR-104	PR-105			PR-140	PR-101	PR-101 or PR-140			PR-101		
			L, R, or B	FT	FT	IN	SY	SY	SY	SY	SY	TON	SY	SY	No.	No.	No.	No.	No.	
1	6957+40.00		B	20.0	24.0		53.3													

SHOULDERS

(1) Lane(s) to which the shoulder is adjacent.
(2) Bid Item
(3) Applies only for Paved Shoulders constructed on project with existing granular shoulders.
(4) Does not include shrink.

Calculations assume a HMA unit weight (lbs/cf) of 155, a Special Backfill unit weight (lbs/cf) of 140, and a Granular Shoulder unit weight (lbs/cf) of 140.

Location							Quantities															
Road Identification	Direction Of Traffic (1)	Station to Station		Side	P Width	G Width	L Length	Class 13 Excavation (3)	Hot Mix Asphalt		Binder	Paved Shoulder	Reinforced Paved Shoulder	Special Backfill				Modified Subbase	Granular Shoulder		Earth Shoulder Construction Alternates			Remarks
														HMA Alternate		PCC Alternate					STA (2)	HMA	PCC	
					FT	FT	FT	CY (2)	TON	TON/STA	TONS	SY (2)	SY (2)	TON (2)	TON/STA	TON (2)	TON/STA	CY (2)	TON (2)	TON/STA		CY (4)	CY (4)	
U.S. 151	NB	870+70.00	879+67.99	RT	10.0		898.0		463.962	51.667	27.838	997.8		251.437	28.000	251.437	28.000				9.0	138.6	127.5	
U.S. 151	SB	870+70.00	875+71.16	LT	10.0		501.2		258.933	51.667	15.536	556.8		140.325	28.000	140.325	28.000				5.0	77.3	71.2	
U.S. 151	SB	876+25.92	879+67.99	LT	10.0		342.1		176.736	51.667	10.604	380.1		95.780	28.000	95.780	28.000				3.4	52.8	48.6	
U.S. 151	NB	881+99.22	884+48.42	RT	6.0		249.2		77.252	31.000	4.635	166.1		34.888	14.000	34.888	14.000				2.5	38.5	35.4	
U.S. 151	SB	881+99.22	883+41.77	LT	10.0		142.6		73.651	51.667	4.419	158.4		39.914	28.000	39.914	28.000				1.4	22.0	20.2	
U.S. 151	NB	884+94.40	890+90.18	RT	10.0		595.8		307.820	51.667	18.469	662.0		166.818	28.000	166.818	28.000				6.0	91.9	84.6	
U.S. 151	SB	884+02.90	889+31.04	LT	6.0		528.1		163.723	31.000	9.823	352.1		73.940	14.000	73.940	14.000				5.3	81.5	75.0	
U.S. 151	SB	889+31.04	890+21.24	LT	6 to 10		90.2		37.283	41.333	2.237	80.2		18.942	21.000	18.942	21.000				0.9	13.9	12.8	
U.S. 151	SB	890+21.24	890+71.27	LT	10.0		50.0		25.849	51.667	1.551	55.6		14.008	28.000	14.008	28.000				0.5	7.7	7.1	
U.S. 151	SB	891+22.89	893+98.36	LT	10.0		275.5		142.326	51.667	8.540	306.1		77.132	28.000	77.132	28.000				2.8	42.5	39.1	
U.S. 151	NB	891+29.64	893+93.86	RT	10.0		264.2		136.514	51.667	8.191	293.6		73.982	28.000	73.982	28.000				2.6	40.8	37.5	
U.S. 151	NB	894+43.14	895+47.30	RT	10.0		104.2		53.816	51.667	3.229	115.7		29.165	28.000	29.165	28.000				1.0	16.1	14.8	
U.S. 151	SB	894+43.64	898+00.00	LT	10.0		356.4		184.119	51.667	11.047	396.0		99.781	28.000	99.781	28.000				3.6	55.0	50.6	
U.S. 151	NB	896+05.78	898+00.00	RT	10.0		194.2		100.347	51.667	6.021	215.8		54.382	28.000	54.382	28.000				1.9	30.0	27.6	
U.S. 151	NB	898+00.00	902+58.42	RT		6.0	458.4							144.402	31.500				192.536	42.000	4.6			
U.S. 151	SB	898+00.00	902+58.42	LT		6.0	458.4							144.402	31.500				192.536	42.000	4.6			
U.S. 151	SB	974+22.81	979+80.09	LT	4.0	6.0	557.3		86.378	15.500	5.183	247.7		331.582	59.500				117.029	21.000	5.6			
U.S. 151	NB	977+81.50	978+01.97	RT	5.9 to 5.2		20.5		6.451	31.517	0.387	13.8		7.965	38.908				0.000	0.000	0.2			
U.S. 151	NB	978+01.97	978+51.41	RT	5.2 to 3.2		49.4		10.856	21.958	0.651	23.1		11.767	23.800				0.000	0.000	0.5			
U.S. 151	NB	978+51.41	979+30.00	RT	3.2		78.6		12.994	16.533	0.780	27.9		12.286	15.633				0.000	0.000	0.8			
U.S. 151	NB	979+30.00	980+65.15	RT	13.3		135.1		92.871	68.717	5.572	199.7		132.605	98.117				0.000	0.000	1.4			
U.S. 151	SB	979+80.09	981+15.00	LT	13.3		134.9		69.529	51.538	4.172	199.4		111.436	82.600				0.000	0.000	1.3			
U.S. 151	NB	980+61.15	981+15.00	RT	10.0		53.9		27.823	51.667	1.669	59.8		38.323	71.167				0.000	0.000	0.5			
U.S. 151	SB	981+15.00	982+06.32	LT	13.3		91.3		47.064	51.538	2.824	135.0		75.430	82.600				0.000	0.000	0.9			
U.S. 151	SB	982+06.32	982+49.62	LT	13.3 to 15		43.3		23.742	54.831	1.425	68.1		38.342	88.550				0.000	0.000	0.4			
U.S. 151	SB	982+49.62	982+76.24	LT	15.0		26.6		15.473	58.125	0.928	44.4		25.156	94.500				0.000	0.000	0.3			
U.S. 151	SB	982+76.24	984+83.16	LT	4.0	6.0	206.9		32.073	15.500	1.924	92.0		123.117	59.500				43.453	21.000	2.1			
Beverly Rd.		6957+30.01	6957+50.00	LT		9.0	20.0												8.396	42.000	0.2			
		6957+30.01	6957+50.00	RT		10.0	20.0												9.333	46.690	0.2			

MILLED RUMBLE STRIPS

See PV-12 and PV-13.

* Calculated at 18" width for Shoulder.

Location			Length		Type (Centerline, Rt or Lt Shoulder	Fog Seal* (Milled Rumble Strip)	Effective Shoulder Width			Remarks
Road Identification	Station to Station		PCC	HMA		Shoulder	PCC Paved	HMA Paved	Granular\ Earth	
			STA	STA		GAL	FT	FT	FT	
Hwy 151	870+70.00	872+51.73	1.82		Left Shoulder	0.0	10.0			
	870+70.00	875+67.22	4.97		Right Shoulder	0.0	10.0			
	874+78.29	874+96.89	0.19		Left Shoulder	0.0	10.0			
	877+74.13	877+81.75	0.08		Left Shoulder	0.0	10.0			
	878+00.77	879+45.63	1.45		Right Shoulder	0.0	10.0			
	882+22.39	882+73.88	0.51		Left Shoulder	0.0	10.0			
	885+60.56	889+28.15	3.68		Right Shoulder	0.0	10.0			
	891+58.75	892+38.50	0.80		Right Shoulder	0.0	10.0			
	892+77.09	893+71.00	0.94		Left Shoulder	0.0	10.0			
	896+01.00	898+00.00	1.99		Left Shoulder	0.0	10.0			
	870+70.00	872+92.46	2.22		Centerline	0.0				
	870+70.00	875+25.00	4.55		Centerline	0.0				
	876+75.00	879+44.58	2.70		Centerline	0.0				
	876+75.00	879+44.58	2.70		Centerline	0.0				
	882+26.56	883+36.00	1.09		Centerline	0.0				
	884+86.00	898+00.00	13.14		Centerline	0.0				
	888+48.62	898+00.00	9.51		Centerline	0.0				

LONGITUDINAL GROOVING

Location	Total SY	Remarks
UPRR	278.0	South Approach
UPRR	847.0	Bridge Deck
UPRR	278.0	North Approach
Prairie Creek	409.0	South Approach
Prairie Creek	1274.0	Bridge Deck
Prairie Creek	402.0	North Approach
Drain Ditch 1	482.0	South Approach
Drain Ditch 1	1025.0	Bridge Deck
Drain Ditch 1	488.0	North Approach
Total	5483.0	

102-3
10-15-13

ACCESS POINTS AND SAFETY RAMPS

Refer to Cross-Sections

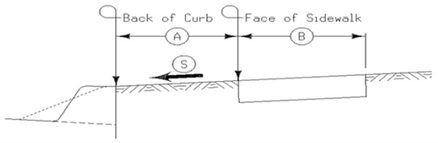
Length of unclassified pipe calculated is based on using Reinforced Concrete Pipe.
(1) Refer to MI-210
(2) Refer to EW-501.
(3) Refer to EW-501 or EW-502.
*Predetermined for access point not constructed with this project.

Location		Type	Length of Opening (1)			W	(1)(2) PR	(2) SR	Pipe Culvert (3)					Aprons	Driveway Surface Area		Driveway Surfacing Material	Remarks
Station	Side	A, B, C, Safety Ramp, or Predetermined*	Case	1½" Dropped Curb	3" Dropped Curb				H	Size	Pipe Length	Lt.	Rt.		HMA	PCC		
			1 or 2	LF	LF	FT	FT	FT	FT	IN	LF	LF	LF	No.	SY	SY	TON	
844+91.50	R	C	2	26.8		20.0										28.8		
845+34.00	L	C	2	30.0		20.0										28.2		
845+97.50	R	B	2	40.0		35.0										36.1		
846+44.00	R	C	2	24.5		20.0										42.2		
846+93.00	L	B	2	44.0		34.0										81.1		
847+60.50	R	B	2	64.5		60.0										57.8		Ex. Entrance 65' wide
864+19.80	L	C				25.0	VAR									493.6		Refer to L sheets
864+19.80	L	C				15.0		15.0									102.153	
873+00.00	L	B				30.0		30.0	3.4	18	80.0	747.2	747.5	2			159.050	
877+50.00	R	B	2			30.0	30.0									149.8		
878+31.00	L	C				20.0		15.0									27.450	Refer to M.1 for culv info
890+96.75	L	B	1			37.0	30.0		1.2	18	56.0	31.7	29.7	2		181.0		
891+10.00	R	B	1			24.0	30.0		1.5	18	44.0	24.5	25.1	2		238.6		
894+18.50	R	B	1			34.0	30.0									201.0		
894+21.00	L	B	1			30.0	30.0									230.7		
895+76.54	R	B	1			43.0	30.0									233.3		UAC Existing pipe
897+64.90	R	C				26.0		15.0									18.850	UAC Existing Pipe
983+85.00	L	C				15.0		15.0	2.4	18	50.0	35.7	26.5	2				
1847+85.30	R	B	2			24.0										169.9		
1850+17.23	R	B	2			30.0										83.1		
1850+31.75	L	C	2			12.0										21.2		
1850+68.00	R	C	2			12.0										35.6		
1851+11.39	R	C	2			16.0										32.7		
2865+51.90	L	C	2			10.0										75.3		
2866+00.00	R	C	2			16.0										23.9		
2866+42.33	L	C				16.0										23.3		
3863+77.60	R	C	2	34.4		24.0										32.9		

113-1
MODIFIED

SIDEWALKS

See MI-220 and S Sheets



Intersection	Quadrant	Length	A	B	S	4" PCC Sidewalk	6" PCC Sidewalk	8" PCC Sidewalk	10" PCC Sidewalk	Detectable Warnings	Remarks
			FT	FT	%	SY	SY	SY	SY	SF	
845+60.00 - 845+80.00		20	5.30	4.00		8.9					Sidewalk
846+15.00 - 846+34.00		19	4.50	4.00		8.4					
846+54.00 - 847+30.50		76.5	4.50	4.00		34.0					
849+65.25 - 856+27.46		657.61	5.00	10.00		730.7				20	Trail
858+33.77 - 864+01.58		567.84	Varies	10.00		630.9				20	
864+32.90 - 866+20.21		178.53	5.00	10.00		198.4				20	
868+26.90 - 875+83.97		762.06	5.00	10.00		846.7				20	
876+17.20 - 880+27.40		414.72	5.00	10.00		460.8				20	
881+62.83 - 883+48.99		187.68	Varies	10.00		208.5				20	
881+08.05 - 881+37.78		84	-	10.00		93.3					DD #1

108-13A
08-01-08

SAFETY CLOSURES

Refer to Section 2518 of the Standard Specifications

Station	Closure Type		Remarks
	Road Qty.	Hazard Qty.	
847+31.00	1		NBL - Stage 1A
849+84.00	1		NBL - Stage 1B/2A/2B
863+62.00	1		NBL - Stage 3A/3B
863+98.00	1		SBL - Stage 2B
864+01.00	1		SBL - Stage 1A/2B
864+58.00	1		NBL - Stage 2A
873+76.00	1		SBL - Stage 2A
875+33.00	1		NBL - Stage 2A
883+63.00	1		SBL - Stage 3B
883+30.00	1		SBL - Stage 2B
884+12.00	1		NBL - Stage 2B
885+14.00	1		NBL - Stage 3B
890+53.00	1		SBL - Stage 3B
890+55.00	1		SBL - Stage 2A
890+87.00	1		Parcel ## Driveway
891+40.00	1		NBL - Stage 2A
891+61.00	1		NBL - Stage 3B
892+37.00	1		Parcel ## Driveway
893+70.00	1		SBL - Stage 2B
893+77.00	1		SBL - Stage 3A
894+18.00	1		Parcel ## Driveway
894+60.00	1		NBL - Stage 3A
894+71.00	1		NBL - Stage 2B
895+14.00	1		SBL - Stage 3B
895+77.00	1		Parcel ## Driveway
896+35.00	1		NBL - Stage 3B
902+66.00	1		SBL - Stage 2A/2B
902+73.00	1		SBL - Stage 3A/3B
978+90.00	1		NBL - Stage 2A
981+55.00	1		SBL - Stage 2A
1849+92.00	1		Church St - Stage 1B
1850+05.00	1		Church St - Stage 1A
1851+27.00	1		Church St - Stage 1B
2864+73.00	1		Prairie Ave - Stage 3B
2866+64.00	1		Prairie Ave - Stage 3A
3862+72.00	1		Losey Ave - Stage 3A
4874+17.00	1		Stallman Dr - Stage 2B
5882+20.00	1		Cemetery Rd - Stage 2A
5885+56.00	1		Cemetery Rd - Stage 3A

108-28
08-01-08

TEMPORARY TRAFFIC SIGNALS

No.	Location Station	Type			Remarks
		One Lane Traffic	Haul Road	Intersection	
1	864+23.00	YES	NO	US 151/PRAIRIE AVE	Stage 2
1	870+20.00	YES	NO	Praire Creek Bridge	Stage 2
1	977+59.00	YES	NO	DD #2	Stage 1
1	982+87.00	YES	NO	DD #2	Stage 1

252-1
10-16-12

TEMPORARY CROSSINGS AND DETOURS

Blading, shaping, and other work in preparation for maintaining temporary crossings or detours is incidental to other work. Furnish and spread additional granular surfacing needed for temporary crossings or detours during construction at the contract price.

104-10
08-01-08

ADJUSTMENT OF FIXTURES

No.	Location Station	Type of Fixture	Adjustment
1	844+66.07	Water Hydrant	MINOR ADJUSTMENT, RAISE 0.06', REFER TO SHEET D.2
2	844+67.84	Water Valve	MINOR ADJUSTMENT (INCIDENTAL), RAISE 0.11', REFER TO SHEET D.2
3	848+94.53	Sanitary Sewer Manhole	MINOR ADJUSTMENT, RAISE 0.56', REFER TO SHEET D.2
4	849+34.14	Sanitary Sewer Manhole	MAJOR ADJUSTMENT, LOWER 0.40', REFER TO SHEET D.2
5	864+23.29	Sanitary Sewer Manhole	MAJOR ADJUSTMENT, RAISE 0.94', REFER TO SHEET D.3
6	864+41.61	Water Meter Pit	MAJOR ADJUSTMENT, LOWER 0.73', REFER TO SHEET D.3
7	864+43.03	Water Valve	
8	875+18.26	Gas Valve	MINOR ADJUSTMENT (INCIDENTAL), RAISE 0.39', REFER TO SHEET D.4
9	879+46.82	Gas Valve	MINOR ADJUSTMENT (INCIDENTAL), RAISE 1.86', REFER TO SHEET D.4
10	882+66.49	Sanitary Sewer Manhole	MINOR ADJUSTMENT, RAISE 0.41', REFER TO SHEET D.5
11	884+41.93	Water Valve	MINOR ADJUSTMENT (INCIDENTAL), RAISE 0.32', REFER TO SHEET D.5
12	884+46.48	Water Valve	MINOR ADJUSTMENT (INCIDENTAL), RAISE 0.32', REFER TO SHEET D.5
13	884+49.62	Water Valve	MINOR ADJUSTMENT (INCIDENTAL), LOWER 0.08', REFER TO SHEET D.5
14	884+59.52	Water Valve	MINOR ADJUSTMENT (INCIDENTAL), RAISE 0.51', REFER TO SHEET D.5
15	884+62.29	Water Hydrant	MINOR ADJUSTMENT, RAISE 0.49', REFER TO SHEET D.5
16	884+96.80	Storm Sewer Manhole	MAJOR ADJUSTMENT, LOWER 0.19', REFER TO SHEET D.5
17	885+38.91	Water Valve	MINOR ADJUSTMENT (INCIDENTAL), LOWER 1.49', REFER TO SHEET D.5
18	887+15.05	Gas Valve	MINOR ADJUSTMENT (INCIDENTAL), RAISE 1.43', REFER TO SHEET D.5
19	888+23.42	Water Valve	MINOR ADJUSTMENT (INCIDENTAL), LOWER 1.58', REFER TO SHEET D.5
20	888+23.46	Water Valve	MINOR ADJUSTMENT (INCIDENTAL), LOWER 0.74', REFER TO SHEET D.5
21	888+85.61	Gas Valve	MINOR ADJUSTMENT (INCIDENTAL), RAISE 1.48', REFER TO SHEET D.5
22	890+58.90	Gas Valve	
23	891+40.33	Water Hydrant	MINOR ADJUSTMENT, LOWER 0.62', REFER TO SHEET D.5
24	893+80.70	Water Hydrant	
25	893+80.80	Water Valve	
26	893+91.45	Gas Valve	
27	897+07.51	Water Valve	MINOR ADJUSTMENT (INCIDENTAL), RAISE 0.70', REFER TO SHEET D.6
28	897+07.66	Water Hydrant	MINOR ADJUSTMENT, RAISE 1.48', REFER TO SHEET D.6
29	897+12.00	Water Valve	MINOR ADJUSTMENT (INCIDENTAL), RAISE 0.65', REFER TO SHEET D.6
30	899+40.71	Gas Valve	MINOR ADJUSTMENT (INCIDENTAL), RAISE 0.56', REFER TO SHEET D.6

108-33
04-19-16

TEMPORARY BARRIER RAIL

Possible Standards: BA-400, BA-401

* Not a bid item. Anchorage requirements are based on TBR locations shown in the plans. TBR alignments that vary from what is shown in the plans may result in additional TBR sections requiring anchorage.

No.	Station to Station		Length	(Select One)		Anchored*	Modular Glare Screen System	Remarks
			LF	Steel BA-400	Concrete BA-401	(Y/N)	(Y/N)	
1	978+79.00	981+68.50	289.5		X	Yes		Stage 1 - DD #2
2	863+89.00	903+13.00	3924.0		X	Yes		Stage 2A/2B
3	978+53.00	982+58.00	405.0		X	Yes		Stage 2 - DD #2
4	978+96.00	981+47.00	251.0		X	Yes		Stage 2 - DD #2
5	863+42.00	903+23.00	3981.0		X	Yes		Stage 3A/3B
6	865+56.00	866+20.00	64.0		X	Yes		Stage 3A/3B
7	866+05.00	868+86.00	281.0		X	Yes		Stage 3A/3B
8	868+36.00	869+00.00	64.0		X	Yes		Stage 3A/3B
9	879+59.00	880+22.00	63.0		X	Yes		Stage 3A/3B
10	880+22.00	882+34.00	212.0		X	Yes		Stage 3A/3B
11	881+64.00	882+26.00	62.0		X	Yes		Stage 3A/3B

108-30
04-16-13

CRASH CUSHIONS

* Bid Item
(1) Lane(s) to which the installation is adjacent.
(2) Complete this section when using the Temporary Crash Cushion bid item and Earthwork is needed for Sand Barrel placement. Refer to BA-500

No.	(1) Direction of Traffic	Location Station	Side	Obstacle Width	Crash Cushion (Select One)*					Sand Barrel Details (2)					Earthwork*		Spare Parts Kit (Select One)*		Obstacle Description	Remarks
					Temporary	Temporary Redirective	Temporary Severe Use	Permanent	Permanent Severe Use	V Length	W Length	X Length	Y Length	Z Length	Excavation Class 10	Embankment in Place	Permanent	Permanent Severe Use		
				FT						FT	FT	FT	FT	FT	CY	CY	EACH	EACH		
1	NB	864+78.00	LT	1.88		1													Temporary Barrier Rail	Stage 2A
2	SB	873+63.00	LT	1.88		1													Temporary Barrier Rail	Stage 2A
3	NB	875+44.00	LT	1.88		1													Temporary Barrier Rail	Stage 2A
4	SB	890+33.00	LT	1.88		1													Temporary Barrier Rail	Stage 2A
5	NB	891+63.00	LT	1.88		1													Temporary Barrier Rail	Stage 2A
6	SB	903+13.00	LT	1.88	1						24.25	5.25	3.25	12.00					Temporary Barrier Rail	Stage 2A/2B
7	NB	978+79.00	LT	1.88	1						24.25	5.25	3.25	12.00					Temporary Barrier Rail	Stage 2A
8	NB	981+68.00	RT	1.88	1						24.25	5.25	3.25	12.00					Temporary Barrier Rail	Stage 2A
9	SB	883+00.00	LT	1.88		1													Temporary Barrier Rail	Stage 2B
10	NB	884+67.00	LT	1.88		1													Temporary Barrier Rail	Stage 2B
11	SB	893+67.00	LT	1.88		1													Temporary Barrier Rail	Stage 2B
12	NB	894+70.00	LT	1.88		1													Temporary Barrier Rail	Stage 2B
13	NB	863+42.00	RT	1.88	1						24.25	5.25	3.25	12.00					Temporary Barrier Rail	Stage 3A/3B
14	SB	869+12.00	LT	1.88	1						24.25	5.25	3.25	12.00		71.7			Temporary Barrier Rail	Stage 3A/3B
15	SB	876+82.00	LT	1.88		1													Temporary Barrier Rail	Stage 3A/3B
16	SB	882+59.00	RT	1.88	1						24.25	5.25	3.25	12.00		91.9			Temporary Barrier Rail	Stage 3A/3B
17	SB	893+63.00	RT	1.88		1													Temporary Barrier Rail	Stage 3A
18	NB	894+79.00	RT	1.88		1													Temporary Barrier Rail	Stage 3A
19	SB	903+23.00	RT	1.88		1													Temporary Barrier Rail	Stage 3A/3B
20	NB	978+53.00	LT	1.88		1													Temporary Barrier Rail	Stage 3A
21	NB	978+95.00	LT	1.88	1						24.25	5.25	3.25	12.00					Temporary Barrier Rail	Stage 3A
22	SB	981+47.00	LT	1.88	1						24.25	5.25	3.25	12.00					Temporary Barrier Rail	Stage 3A
23	SB	982+59.00	LT	1.88		1													Temporary Barrier Rail	Stage 3A
24	SB	865+08.00	LT	1.88	1						24.25	5.25	3.25	12.00					Temporary Barrier Rail	Stage 3B
25	NB	878+22.00	LT	1.88		1													Temporary Barrier Rail	Stage 3B
26	NB	883+39.00	RT	1.88	1						24.25	5.25	3.25	12.00					Temporary Barrier Rail	Stage 3B
27	NB	885+49.54	RT	1.88	1						24.25	5.25	3.25	12.00					Temporary Barrier Rail	Stage 3B
28	SB	890+43.00	RT	1.88		1													Temporary Barrier Rail	Stage 3B

108-8A
Modified

STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION

Possible Standards: BA-200, BA-201, BA-202, BA-205, BA-206, BA-210, BA-211, BA-221, BA-225, BA-250, BA-260, LS-625, LS-626, LS-630, LS-635, SI-172, SI-173 and SI-211.

(1) Lane(s) to which the obstacle is adjacent.
(2) Not a bid item. Incidental to guardrail installation.

Location					Layout Lengths BA-250, BA-260, LS-630, or LS-635				Long-Span System		Delineators and Object Markers (2)					Bid Items										Remarks
																				BA-250 or LS-630					BA-260 or LS-635		
No.	(1) Direction of Traffic	Side O = Outside M = Median	Station	Offset	VT1	VF	VT2	ET	BA-211		SI-211	Delineator SI-172	Object Marker SI-173			Bolted End Anchor		Post Adapter	Steel Beam Guardrail	Barrier Transition Section	End Terminal				Barrier Transition Section	End Terminal	
													Type 1	Type 2	Type 3						Tangent	Flared	Tangent	Flared		Tangent	
				FT	LF	LF	LF	LF	STATION	TYPE	TYPE	White	OM2-2	OM3-L	OM3-R	TYPE	EACH	EACH	LF	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
1	SB	O	856+09.10	20.0	578.125			47.7								A	1		537.5	1	1						
2	NB	O	856+23.50	20.8	40.625			47.7								A	1		0.0	1	1						
3	NB	O	858+44.50	20.8	365.625	62.50	25.00	47.7								A	1		412.5	1	1						
4	SB	O	858+56.10	20.0	165.625			47.7								A	1		125.0	1	1						
5	NB	O	866+41.74	23.8	78.125			47.7								A	1		37.5	1	1						
6	SB	O	868+76.20	23.0	65.625			47.7								A	1		25.0	1	1						
7	NB	O	880+00.67	29.8	78.125			47.7								A	1		37.5	1	1						
8	SB	O	881+99.22	29.0	40.625			47.7								A	1		0.0	1	1						

108-8B
04-19-16

STEEL BEAM GUARDRAIL FOR SIDE OBSTACLE (TWO-WAY PROTECTION)

Possible Standards: BA-200, BA-205, BA-206, BA-210, BA-211, BA-251, LS-625, LS-626, LS-631, SI-172, SI-173, and SI-211.

(1) Lane(s) to which the obstacle is adjacent.

Location						Layout Lengths BA-251 or LS-631								Long-Span System		Delineators and Object Markers					Bid Items				Remarks
						Approach Side (A)				Trailing Side (T)												End Terminal			
No.	(1) Direction of Traffic	Side O= Outside M= Median	Station	O_L	D_O	ET	$VT2_A$	VF_A	$VT1_A$	$VT1_T$	VF_T	$VT2_T$	ET	BA-211		SI-211	Delineator SI-172	Object Marker SI-173			Steel Beam Guardrail	Standard	Count	Post Adapter	
																	Type 1	Type 2	Type 3						
				FT	FT	LF	LF	LF	LF	LF	LF	LF	LF	STATION	TYPE	TYPE	White	OM2-2	OM3-L	OM3-R	BA-200			BA-210	
																					LF		EACH	EACH	
1	NB	O	979+26.55	99.63	12.00	47.7			78.13	128.13											200.0	BA-205	1	11	
2	SB	O	981+22.99	99.63	12.00	47.7			90.63	128.13											212.5	BA-205	1	11	

108-22
04-16-13

PAVEMENT MARKING LINE TYPES

See PM-110

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY4 - Factor of 1.00 as value includes number of 4-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.25
DCY4: Double Centerline (Yellow) @ 2.00
NPY4: No Passing Zone Line (Yellow) @ 1.25
BLW4: Broken Lane Line (White) @ 0.25
ELW4: Edge Line Right (White) @ 1.00
ELY4: Edge Line Left (Yellow) @ 1.00
SLW4: Solid Lane Line (White) @ 1.00
DLW4: Dotted Line (White) @ 0.33
CHY8: Channelizing Line (Yellow) @ 2.00
SLW2: Stop Line (White) @ 6.00
CHW8: Channelizing Line (White) @ 2.00

Location					Length by Line Type (Unfactored)													Remarks
Road ID	Station to Station		Dir. of Travel	Marking Type	Side L	Side C	Side R	BCY4*	DCY4	NPY4**	BLW4	ELW4	ELY4	SLW4	DLW4	CHY8	SLW2	CHW8	
								STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
STAGE 1A																			
US 151	843+05.21	848+61.10	NB	Removal of Paint			X					5.56							
	844+44.63	849+06.02	SB	Removal of Paint			X					4.61							
	843+15.27	843+63.64	BOTH	Removal of Paint		X			0.48										
	843+63.64	848+89.13	BOTH	Removal of Paint		X										5.25			
	863+43.03	863+86.67	NB	Removal of Paint			X					0.44							
	863+43.03	883+61.30	BOTH	Removal of Paint		X			20.18										
	863+43.03	866+23.80	SB	Removal of Paint			X								2.81				
	864+73.88	883+85.71	NB	Removal of Paint			X					19.12							
	866+23.80	872+81.22	SB	Removal of Paint			X					6.57							
	872+81.22	875+06.67	SB	Removal of Paint			X								2.25				
	875+06.67	883+15.10	SB	Removal of Paint			X					8.08							
	882+57.57	884+07.82	NB	Removal of Paint			X							1.50					
	883+15.10	884+35.77	SB	Removal of Paint			X								1.21				
	884+07.82	885+34.50	NB	Removal of Paint			X								1.27				
	884+35.77	886+69.70	SB	Removal of Paint			X							2.34					
	884+35.77	902+58.42	SB	Removal of Paint			X					18.23							
	884+95.42	897+41.17	BOTH	Removal of Paint		X			12.46										
	885+34.50	903+67.56	NB	Removal of Paint			X					18.33							
	900+33.77	903+67.54	BOTH	Removal of Paint		X										3.34			
	902+97.41	903+67.55	NB	Removal of Paint	X									0.70					
	972+69.70	987+40.69	SB	Removal of Paint			X					14.71							
	973+03.60	978+73.23	BOTH	Removal of Paint		X										5.70			
	974+66.78	978+83.75	NB	Removal of Paint			X					4.17							
	978+73.23	979+88.23	BOTH	Removal of Paint		X			1.15										
	979+88.23	987+40.50	BOTH	Removal of Paint		X										7.52			

PAVEMENT MARKING LINE TYPES

See PM-110

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY4 - Factor of 1.00 as value includes number of 4-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.25
DCY4: Double Centerline (Yellow) @ 2.00
NPY4: No Passing Zone Line (Yellow) @ 1.25
BLW4: Broken Lane Line (White) @ 0.25
ELW4: Edge Line Right (White) @ 1.00
ELY4: Edge Line Left (Yellow) @ 1.00
SLW4: Solid Lane Line (White) @ 1.00
DLW4: Dotted Line (White) @ 0.33
CHY8: Channelizing Line (Yellow) @ 2.00
SLW2: Stop Line (White) @ 6.00
CHW8: Channelizing Line (White) @ 2.00

Location								Length by Line Type (Unfactored)														Remarks
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			BCY4*	DCY4	NPY4**	BLW4	ELW4	ELY4	SLW4	DLW4	CHY8	SLW2	CHW8				
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
	843+15.27	846+73.01	BOTH	Nonreflective, Preformed Removable Tape		X			3.58													
	864+26.66	900+33.77	BOTH	Nonreflective, Preformed Removable Tape		X			36.07													
	900+33.77	903+67.54	BOTH	Nonreflective, Preformed Removable Tape		X										3.34						
	900+33.77	903+67.56	NB	Nonreflective, Preformed Removable Tape			X					3.34										
	902+97.41	903+67.55	BOTH	Nonreflective, Preformed Removable Tape	X									0.70								
	967+48.23	974+69.74	BOTH	Nonreflective, Preformed Removable Tape		X										7.22						
	972+69.66	987+40.69	SB	Nonreflective, Preformed Removable Tape			X					14.71										
	974+66.78	987+83.75	NB	Nonreflective, Preformed Removable Tape			X					13.17										
	974+69.74	976+10.00	BOTH	Nonreflective, Preformed Removable Tape		X			1.40													
	976+10.00		NB	Nonreflective, Preformed Removable Tape		X											0.11					
	984+92.67		SB	Nonreflective, Preformed Removable Tape		X											0.11					
	984+93.06	987+83.75	BOTH	Nonreflective, Preformed Removable Tape		X										2.91						
STAGE 1B																						
US 151	843+15.27	846+73.01	BOTH	Removal of Removable Tape		X			3.58													
	843+15.27	848+85.83	BOTH	Nonreflective, Preformed Removable Tape		X			5.71													
STAGE 2A																						
US 151	843+15.27	848+85.83	BOTH	Removal of Removable Tape		X			5.71													
	864+26.66	900+33.77	BOTH	Removal of Removable Tape		X			36.07													
	900+33.77	903+67.54	BOTH	Removal of Removable Tape		X										3.34						
	900+33.77	903+67.56	NB	Removal of Removable Tape			X					3.34										
	902+58.42	907+90.11	SB	Removal of Paint			X					5.32										
	902+97.41	903+67.55	BOTH	Removal of Removable Tape	X									0.70								
	903+67.55	907+88.37	BOTH	Removal of Paint		X										4.21						
	903+67.55	908+46.42	NB	Removal of Paint	X									4.79								
	903+67.56	908+46.42	NB	Removal of Paint			X					4.79										
	972+85.46	974+69.74	BOTH	Removal of Removable Tape		X										1.84						
	974+69.74	976+10.00	BOTH	Removal of Removable Tape		X			1.40													
	976+10.00		NB	Removal of Removable Tape		X											0.11					
	976+10.19	987+40.69	SB	Removal of Removable Tape			X					11.31										
	976+78.36	984+07.88	NB	Removal of Removable Tape			X					7.30										
	984+92.67		SB	Removal of Removable Tape		X											0.11					
	984+92.67	987+83.75	BOTH	Removal of Removable Tape		X										2.91						
	987+40.66	988+78.46	SB	Removal of Paint			X					1.38										
	987+83.75	922+16.81	BOTH	Removal of Paint		X										65.67						
	870+96.50		SB	Nonreflective, Preformed Removable Tape		X											0.11					
	870+96.50	904+14.47	BOTH	Nonreflective, Preformed Removable Tape		X			33.18													
	902+58.05	907+90.11	SB	Nonreflective, Preformed Removable Tape			X					5.32										
	902+58.71	905+63.73	NB	Nonreflective, Preformed Removable Tape			X					3.05										
	904+14.47	905+34.13	BOTH	Nonreflective, Preformed Removable Tape		X										1.20						
	905+34.13	907+88.75	BOTH	Nonreflective, Preformed Removable Tape		X										2.55						
	905+88.42	908+46.42	NB	Nonreflective, Preformed Removable Tape	X									2.58								
	905+89.66	908+46.42	NB	Nonreflective, Preformed Removable Tape			X					2.57										
	972+85.46	986+49.80	BOTH	Nonreflective, Preformed Removable Tape		X			13.82													
	976+78.38	984+07.88	NB	Nonreflective, Preformed Removable Tape			X					7.41										
	976+78.38	988+78.48	SB	Nonreflective, Preformed Removable Tape			X					12.72										
	986+49.80	992+10.80	BOTH	Nonreflective, Preformed Removable Tape		X										5.61						
Praire Ave	2864+63.88		WB	Nonreflective, Preformed Removable Tape		X											0.11					
	2864+63.88	2865+30.81	BOTH	Nonreflective, Preformed Removable Tape		X			0.67													
STAGE 3A																						
US 151	870+96.50			Removal of Removable Tape		X											0.11					
	870+96.50	904+14.47	BOTH	Removal of Removable Tape		X			33.18													
	902+58.05	907+90.11	SB	Removal of Removable Tape			X					5.32										
	902+58.71	905+63.73	NB	Removal of Removable Tape			X					3.05										
	904+14.47	905+34.13	BOTH	Removal of Removable Tape		X										1.20						
	905+88.42	908+46.42	NB	Removal of Removable Tape	X									2.58								
	972+85.46	986+49.80	BOTH	Removal of Removable Tape		X			13.82													
	976+78.38	984+07.88	NB	Removal of Removable Tape			X					7.41										
	976+78.38	988+78.48	SB	Removal of Removable Tape			X					12.72										
	986+49.80	992+10.80	BOTH	Removal of Removable Tape		X										5.61						
Praire Ave	2864+63.88		WB	Removal of Removable Tape		X											0.11					
	2864+63.88	2865+30.81	BOTH	Removal of Removable Tape		X			0.67													
US 151	859+03.36	864+62.18	BOTH	Nonreflective, Preformed Removable Tape		X			5.59													
	864+62.18	869+93.99	BOTH	Nonreflective, Preformed Removable Tape		X										5.32						
	869+93.99	878+66.58	BOTH	Nonreflective, Preformed Removable Tape		X			8.73													
	878+66.58	883+19.14	BOTH	Nonreflective, Preformed Removable Tape		X										4.53						
	883+19.14	903+45.90	BOTH	Nonreflective, Preformed Removable Tape		X			20.27													
	890+92.65	903+45.31	NB	Nonreflective, Preformed Removable Tape			X					12.53										
	890+92.65	903+46.49	SB	Nonreflective, Preformed Removable Tape			X					12.54										
	903+45.90	908+46.34	BOTH	Nonreflective, Preformed Removable Tape		X										5.00						
	976+20.09	979+79.88	BOTH	Nonreflective, Preformed Removable Tape		X										3.60						
	979+79.88	980+77.49	BOTH	Nonreflective, Preformed Removable Tape		X			0.98													
	980+77.49	985+07.58	BOTH	Nonreflective, Preformed Removable Tape		X										4.30						

PAVEMENT MARKING LINE TYPES

See PM-110

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY4 - Factor of 1.00 as value includes number of 4-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.25
DCY4: Double Centerline (Yellow) @ 2.00
NPY4: No Passing Zone Line (Yellow) @ 1.25
BLW4: Broken Lane Line (White) @ 0.25
ELW4: Edge Line Right (White) @ 1.00
ELY4: Edge Line Left (Yellow) @ 1.00
SLW4: Solid Lane Line (White) @ 1.00
DLW4: Dotted Line (White) @ 0.33
CHY8: Channelizing Line (Yellow) @ 2.00
SLW2: Stop Line (White) @ 6.00
CHW8: Channelizing Line (White) @ 2.00

Location								Length by Line Type (Unfactored)														Remarks
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			BCY4*	DCY4	NPY4**	BLW4	ELW4	ELY4	SLW4	DLW4	CHY8	SLW2	CHW8					
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
STAGE 3B																							
US 151	976+20.09	979+79.88	BOTH	Removal of Removable Tape		X										3.60							
	979+79.88	980+77.49	BOTH	Removal of Removable Tape		X			0.98														
	980+77.49	985+07.58	BOTH	Removal of Removable Tape		X										4.30							
	882+91.42	890+92.65	NB	Nonreflective, Preformed Removable Tape			X					8.01											
	883+43.68	890+92.65	SB	Nonreflective, Preformed Removable Tape			X					7.49											
STAGE 4A																							
US 151	859+03.36	864+62.18	BOTH	Removal of Removable Tape		X			5.59														
	864+62.18	869+93.99	BOTH	Removal of Removable Tape		X										5.32							
	869+93.99	878+66.58	BOTH	Removal of Removable Tape		X			8.73														
	878+66.58	883+19.14	BOTH	Removal of Removable Tape		X										4.53							
	882+91.42	890+92.65	NB	Removal of Removable Tape			X					8.01											
	883+19.14	903+45.90	BOTH	Removal of Removable Tape		X			20.27														
	883+43.68	890+92.65	SB	Removal of Removable Tape			X					7.49											
	890+92.65	903+45.31	NB	Removal of Removable Tape			X					12.53											
	890+92.65	903+46.49	SB	Removal of Removable Tape			X					12.54											
	903+45.90	908+46.34	BOTH	Removal of Removable Tape		X										5.00							
	859+03.36	890+21.29	BOTH	Nonreflective, Preformed Removable Tape		X			31.18														
	861+73.36	863+59.65	NB	Nonreflective, Preformed Removable Tape			X							1.86									
	882+78.25	883+95.73	NB	Nonreflective, Preformed Removable Tape			X							1.17									
	884+25.93	888+42.90	SB	Nonreflective, Preformed Removable Tape			X							4.17									
	888+42.90	890+21.31	SB	Nonreflective, Preformed Removable Tape			X								1.78								
	890+21.24	892+66.28	SB	Nonreflective, Preformed Removable Tape			X											2.45					
	890+21.24	893+71.50	BOTH	Nonreflective, Preformed Removable Tape		X										3.50							
	890+21.24	893+71.50	BOTH	Nonreflective, Preformed Removable Tape		X												3.50					
STAGE 4A																							
US 151	859+03.36	890+21.29	BOTH	Removal of Removable Tape		X			31.18														
	861+73.36	863+59.65	NB	Removal of Removable Tape			X							1.86									
	882+78.25	883+95.73	NB	Removal of Removable Tape			X							1.17									
	884+25.93	888+42.90	SB	Removal of Removable Tape			X							4.17									
	888+42.90	890+21.31	SB	Removal of Removable Tape			X								1.78								
	890+21.24	892+66.28	SB	Removal of Removable Tape			X											2.45					
	890+21.24	893+71.50	BOTH	Removal of Removable Tape		X										3.50							
	890+21.24	893+71.50	BOTH	Removal of Removable Tape		X												3.50					
STAGE 5																							
US 151	843+47.01	848+87.11	SB	Waterborne/Solvent Paint			X					5.40											
	843+47.14	848+85.83	NB	Waterborne/Solvent Paint			X					5.39											
	843+47.28	847+37.11	BOTH	Waterborne/Solvent Paint		X										3.90							
	847+37.11	848+87.11	BOTH	Waterborne/Solvent Paint		X			1.50														
	847+37.11	848+87.11	NB	Waterborne/Solvent Paint	X									1.50									
	849+82.84	863+58.36	NB	Waterborne/Solvent Paint			X					13.76											
	849+82.84	863+59.72	BOTH	Waterborne/Solvent Paint		X			13.77														
	849+82.84	853+34.27	SB	Waterborne/Solvent Paint			X							3.51									
	849+82.84	853+34.27	SB	Waterborne/Solvent Paint	X									3.51									
	849+84.27	863+59.72	SB	Waterborne/Solvent Paint			X					13.75											
	853+34.27	856+04.15	SB	Waterborne/Solvent Paint			X								2.70								
	853+34.26	856+04.27	SB	Waterborne/Solvent Paint	X										2.70								
	859+03.36	861+73.36	NB	Waterborne/Solvent Paint	X										2.70								
	859+03.48	861+73.36	NB	Waterborne/Solvent Paint			X								2.70								
	861+73.36	863+59.72	NB	Waterborne/Solvent Paint	X									1.86									
	861+73.36	863+59.72	NB	Waterborne/Solvent Paint			X							1.86									
	864+57.82	875+41.91	SB	Waterborne/Solvent Paint			X					10.84											
	864+57.82	865+28.73	SB	Waterborne/Solvent Paint	X									0.71									
	864+57.82	866+07.82	BOTH	Waterborne/Solvent Paint		X			1.50														
	864+73.10	883+95.73	NB	Waterborne/Solvent Paint			X					19.23											
	866+07.82	873+92.46	BOTH	Waterborne/Solvent Paint		X				7.85													
	866+07.82	873+92.46	BOTH	Waterborne/Solvent Paint		X				7.85													
	873+92.46	875+41.91	BOTH	Waterborne/Solvent Paint		X			1.49														
	874+71.65	875+41.91	NB	Waterborne/Solvent Paint	X									0.70									
	876+51.53	883+19.86	SB	Waterborne/Solvent Paint			X					6.68											
	876+51.53	881+81.40	BOTH	Waterborne/Solvent Paint		X				5.30													
	876+51.53	881+90.88	BOTH	Waterborne/Solvent Paint		X				5.39													
	881+58.25	883+19.31	NB	Waterborne/Solvent Paint			X								1.61								
	881+81.40	883+33.93	BOTH	Waterborne/Solvent Paint		X			1.53														
	882+74.38	883+56.04	NB	Waterborne/Solvent Paint	X									0.82									
	883+19.31	883+75.59	NB	Waterborne/Solvent Paint			X							0.56									
	884+25.93	902+58.42	SB	Waterborne/Solvent Paint			X					18.32											
	884+47.51	888+43.66	SB	Waterborne/Solvent Paint			X							3.96									
	884+70.51	886+48.98	SB	Waterborne/Solvent Paint	X									1.78									
	884+98.43	886+48.98	BOTH	Waterborne/Solvent Paint		X			1.51														
	885+23.39	903+15.00	NB	Waterborne/Solvent Paint			X					17.92											
	886+48.98	898+00.00	BOTH	Waterborne/Solvent Paint		X				11.51													
	887+48.62	898+00.00	BOTH	Waterborne/Solvent Paint		X				10.51													

PAVEMENT MARKING LINE TYPES

See PM-110

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY4 - Factor of 1.00 as value includes number of 4-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.25
DCY4: Double Centerline (Yellow) @ 2.00
NPY4: No Passing Zone Line (Yellow) @ 1.25
BLW4: Broken Lane Line (White) @ 0.25
ELW4: Edge Line Right (White) @ 1.00
ELY4: Edge Line Left (Yellow) @ 1.00
SLW4: Solid Lane Line (White) @ 1.00
DLW4: Dotted Line (White) @ 0.33
CHY8: Channelizing Line (Yellow) @ 2.00
SLW2: Stop Line (White) @ 6.00
CHW8: Channelizing Line (White) @ 2.00

Location								Length by Line Type (Unfactored)																Remarks
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			BCY4*	DCY4	NPY4**	BLW4	ELW4	ELY4	SLW4	DLW4	CHY8	SLW2	CHW8						
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA		
	888+43.66	890+21.24	SB	Waterborne/Solvent Paint			X								1.78									
	898+00.00	903+15.00	BOTH	Waterborne/Solvent Paint		X										5.15								
	971+42.45	987+43.71	BOTH	Waterborne/Solvent Paint		X										16.01								
	974+24.12	987+43.71	SB	Waterborne/Solvent Paint			X					13.20												
	976+81.50	982+15.00	NB	Waterborne/Solvent Paint			X					5.34												
Church St	1848+69.25	1849+04.89	BOTH	Waterborne/Solvent Paint		X				0.36														
	1848+69.25	1849+05.04	EB	Waterborne/Solvent Paint			X							0.36										
	1849+52.90	1850+11.77	WB	Waterborne/Solvent Paint			X							0.59										
	1849+53.05	1851+25.00	BOTH	Waterborne/Solvent Paint		X				1.72														

PAVEMENT MARKING SYMBOLS AND LEGENDS

Refer to PM-111

Road Identification	Location															SCHOOL	XING	STOP	AHEAD	ONLY	BIKE	LANE	EXIT	Groove Cuts	Remarks
	Station	Side	STAW	RTAW	LTAW	CSRW	CSLW	CSTW	CRLW	FERW	LLRW	RLRW	RRCW	BLSW	WCSW	WPSB	SCLW	XNGW	STPW	AHDW	ONLW	BIKW	LANW	XITW	EACH	
US 151	847+87.00	RT			1																				
US 151	848+25.00	RT																			1				
US 151	848+62.00	RT			1																				
US 151	850+08.00	LT		1	1																				
US 151	850+45.00	LT																			1				
US 151	851+58.00	LT		1	1																				
US 151	853+08.00	LT		1	1																				
US 151	862+60.00	RT		1	1																				
US 151	862+97.00	RT																			1				
US 151	863+35.00	RT		1	1																				
US 151	864+83.00	LT			1																				
US 151	865+20.00	LT																			1				
US 151	865+58.00	LT			1																				
US 151	870+10.00				1																				TWLT
US 151	870+25.00				1																				TWLT
US 151	874+52.00	RT			1																				
US 151	874+89.00	RT																			1				
US 151	875+27.00	RT			1																				
US 151	878+61.00				1																				TWLT
US 151	878+77.00				1																				TWLT
US 151	882+41.00	RT			1																				
US 151	882+78.00	RT																			1				
US 151	882+97.00	RT		1																					
US 151	883+16.00	RT			1																				
US 151	883+55.00	RT		1																					
US 151	884+81.00	LT		1	1																				
US 151	885+19.00	LT																			1				
US 151	885+56.00	LT		1	1																				
US 151	888+34.00				1																				TWLT
US 151	888+50.00				1																				TWLT
US 151	894+28.00				1																				TWLT
US 151	894+44.00				1																				TWLT
US 151	897+73.00				1																				TWLT
US 151	897+89.00				1																				TWLT
Church St	1848+95.00				1																				
Church St	1849+68.00				1																				

POLLUTION PREVENTION PLAN

This project is regulated by the requirements of the Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) General Permit No. 2 OR an Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) individual storm water permit. The Contractor shall carry out the terms and conditions of this permit and the Pollution Prevention Plan (PPP).

This Base PPP includes information on Roles and Responsibilities, Project Site Description, Controls, Maintenance Procedures, Inspection Requirements, Non-Storm Water Controls, Potential Sources of Off Right-of-Way Pollution, and Definitions. This plan references other documents rather than repeating the information contained in the documents. A copy of this Base Pollution Prevention Plan, amended as needed per plan revisions or by contract modification, will be readily available for review.

All contractors shall conduct their operations in a manner that controls pollutants, minimizes erosion, and prevents sediments from entering waters of the state and leaving the highway right-of-way. The prime contractor shall be responsible for compliance and implementation of the PPP for their entire contract. This responsibility shall be further shared with subcontractors whose work is a source of potential pollution as defined in this PPP.

I. ROLES AND RESPONSIBILITES
- A. Designer:
  1. Prepares Base PPP included in the project plan.
  2. Prepares Notice of Intent (NOI) submitted to Iowa DNR.
  3. Signature authority on the Base PPP and NOI.
- B. Contractor/Subcontractor:
  1. Affected contractors/subcontractors are co-permittees with the IDOT and will sign a certification statement adhering to the requirements of the NPDES permit and this PPP plan. Affected contractors/subcontractors are anyone responsible for sediment or erosion controls or involved in land disturbing activities. All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
  2. Submit an Erosion Control Implementation Plan (ECIP) according to Specifications Section 2602 and any additional plan notes.
  3. Install and maintain appropriate controls.
  4. Supervise and implement good housekeeping practices.
  5. Conduct joint required inspections of the site with inspection staff.
  6. Comply with training and certification requirements of Specifications Section 2602.
  7. Signature authority on Co-Permittee Certification Statements and storm water inspection reports.
- C. RCE/Inspector:
  1. Update PPP whenever there is a change in design, construction, operation or maintenance, which has a significant effect on the discharge of pollutants from the project.
  2. Maintain an up-to-date record that identifies contractors and subcontractors as co-permittees.
  3. Make these plans available to the DNR upon their request.
  4. Conduct joint required inspections of the site with the contractor/subcontractor.
  5. Complete an inspection report after each inspection.
  6. Signature authority on storm water inspection reports and Notice of Discontinuation (NOD).

II. PROJECT SITE DESCRIPTION
- A. This Pollution Prevention Plan (PPP) is for the reconstruction of a PCC highway and four bridges.
- B. This PPP covers approximately 28.1 acres with an estimated 25.1 acres being disturbed. The portion of the PPP covered by this contract has 25.1 acres disturbed.
- C. The PPP is located in an area of one soil association (Dinsdale - Klinger). The estimated weighted average runoff coefficient number for this PPP after completion will be 0.48.
- D. Storm Water Site Map - Multiple sources of information comprise the base storm water site map including:
  1. Drainage patterns – Plan and Profile sheets and Situation plans.
  2. Proposed Slopes – Cross Sections.
  3. Areas of Soil Disturbance – construction limits shown on Plan and Profile sheets.
  4. Location of Structural Controls – Tabulations on C sheets.
  5. Locations of Non-structural Controls – Tabulations on C sheets.
  6. Locations of Stabilization Practices – generally within construction limits shown on Plan and Profile sheets.
  7. Surface Waters (including wetlands) – Project Location Map and Plan and Profile sheets.
  8. Locations where storm water is discharged – Plan and Profile sheets.
- E. The base site map is amended by contract modifications and progress payments (fieldbook entries) of completed erosion control work. Also, due to project phasing, erosion and sediment controls shown on project plans may not be installed until needed, based on site conditions. For example, silt fence ditch checks will typically not be installed until the ditch has been installed. Installed locations may also be modified from tabulation locations by field staff. Installed locations will be documented by fieldbook entries.
- F. Runoff from this work will flow into Prairie Creek which flows into Cedar River.

III. CONTROLS
- A. The contractor’s ECIP specified in Article 2602.03 for accomplishment of storm water controls should clearly describe the intended sequence of major activities and for each activity define the control measure and the timing during the construction process that the measure will be implemented.
- B. Preserve vegetation in areas not needed for construction.
- C. Sections 2601 and 2602 of the Standard Specifications define requirements to implement erosion and sediment control measures. Actual quantities used and installed locations may vary from the Base PPP and amendment of the plan will be documented via fieldbook entries or by contract modification. Additional erosion and sediment control items may be required as determined by the inspector and/or contractor during storm water monitoring inspections. If the work involved is not applicable to any contract items, the work will be paid for according to Article 1109.03 paragraph B.
  1. EROSION AND SEDIMENT CONTROLS
     a. Stabilization Practices
        1) Site plans will ensure that existing vegetation or natural buffers are preserved where attainable and disturbed portions of the site will be stabilized.
        2) Initialize stabilization of disturbed areas immediately after clearing, grading, excavating, or other earth disturbing activities have:
           a) Permanently ceased on any portion of the site, or
           b) Temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days.
        3) Staged permanent and/or temporary stabilizing seeding and mulching shall be completed as the disturbed areas are completed. Incomplete areas shall be stabilized according to paragraph III, C, 1, a, 2, b above.
        4) Permanent and Temporary Stabilization practices to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation.
        5) Preservation of existing vegetation within right-of-way or easements will act as vegetative buffer strips.
        6) Preservation of topsoil: Bid items to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan. Additional information may be found in Tabulations in the C or T sheets of the plans or is referenced in Standard Specifications Section 2105.
     b. Structural Practices
        1) Structural practices will be implemented to divert flows from exposed soils and detain or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Additionally, structural practices may include: silt basins that provide 3600 cubic feet of storage per acre drained or equivalent sediment controls, outlet structures that withdraw water from surface when discharging basins, and controls to direct storm water to vegetated areas.
        2) Structural practices to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan, as well as all other item specific Tabulations. Typical drawings detailing construction of the devices to be used on this project can be found on the B sheets of the plans or are referenced in the Standard Road Plans Tabulation.
     c. Storm Water Management
        1) Measures shall be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. This may include velocity dissipation devices at discharge locations and along length of outfall channel as necessary to provide a non-erosion velocity flow from structure to water course. If included with this project, these items are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan, as well as all other item specific Tabulations. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation. The installation of these devices may be subject to Section 404 of the Clean Water Act.
  2. OTHER CONTROLS
     a. Contractor disposal of unused construction materials and construction material wastes shall comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations. In the event of a conflict with other governmental laws, rules and regulations, the more restrictive laws, rules or regulations shall apply.
        1) Vehicle Entrances and Exits - Construct and maintain entrances and exits to prevent tracking of sediments onto roadways.
        2) Material Delivery, Storage and Use - Implement practices to prevent discharge of construction materials during delivery, storage, and use.
        3) Stockpile Management - Install controls to reduce or eliminate pollution of storm water from stockpiles of soil and paving.
        4) Waste Disposal - Do not discharge any materials, including building materials, into waters of the state, except as authorized by a Section 404 permit.
        5) Spill Prevention and Control - Implement procedures to contain and clean-up spills and prevent material discharges to the storm drain system and waters of the state.
        6) Concrete Residuals and Washout Wastes - Designate temporary concrete washout facilities for rinsing out concrete trucks. Provide directions to truck drivers where designated washout facilities are located. Designated washout areas should be located at least 50 feet away from storm drains, streams or other water bodies. Care should be taken to ensure these facilities do not overflow during storm events.
        7) Concrete Grooving/Grinding Slurry – Do not discharge slurry to a waterbody or storm drain. Slurry may be applied on foreslopes or removed from the project.
        8) Vehicle and Equipment Storage and Maintenance Areas - Perform on site fueling and maintenance in accordance with all environment laws such as proper storage of onside fuels and proper disposal of used engine oil or other fluids on site. Employ washing practices that prevent contamination of surface and ground water from wash water.
        9) Litter Management - Ensure employees properly dispose of litter.
        10) Dewatering – Properly treat water to remove suspended sediment before it re-enters a waterbody or discharges off-site. Measures are also to be taken to prevent scour erosion at dewatering discharge point.
  3. APPROVED STATE OR LOCAL PLANS
     During the course of this construction, it is possible that situations will arise where unknown materials will be encountered. When such situations are encountered, they will be handled according to all federal, state, and local regulations in effect at the time.

IV. MAINTENANCE PROCEDURES
The contractor is required to maintain all temporary erosion and sediment control measures in proper working order, including cleaning, repairing, or replacing them throughout the contract period. This shall begin when the features have lost 50% of their capacity.

V. INSPECTION REQUIREMENTS
- A. Inspections shall be made jointly by the contractor and the contracting authority at least once every seven calendar days. Storm water monitoring inspections will include:
  1. Date of the inspection.
  2. Summary of the scope of the inspection.
  3. Name and qualifications of the personnel making the inspection.
  5. Review erosion and sediment control measures within disturbed areas for the effectiveness in preventing impacts to receiving waters.
  6. Major observations related to the implementation of the PPP.
  7. Identify corrective actions required to maintain or modify erosion and sediment control measures.
- B. Include storm water monitoring inspection reports in the Amended PPP. Incorporate any additional erosion and sediment control measures determined as a result of the inspection. Immediately begin corrective actions on all deficiencies found within 3 calendar days of the inspection.

VI. NON-STORM WATER DISCHARGES
This includes subsurface drains (i.e. longitudinal and standard subdrains) and slope drains. The velocity of the discharge from these features may be controlled by the use of patio blocks, Class A stone, erosion stone or other appropriate materials. This also includes uncontaminated groundwater from dewatering operations, which will be controlled as discussed in Section III of the PPP.

VII. POTENTIAL SOURCES OF OFF RIGHT-OF-WAY (ROW) POLLUTION
Silts, sediment, and other forms of pollution may be transported onto highway right-of-way (ROW) as a result of a storm event. Potential sources of pollution located outside highway ROW are beyond the control of this PPP. Pollution within highway ROW will be conveyed and controlled per this PPP.

VIII. DEFINITIONS
- A. Base PPP - Initial Pollution Prevention Plan.
- B. Amended PPP - May include Plan Revisions or Contract Modifications for new items, storm water monitoring inspection reports, and

110-12A
10-17-17

POLLUTION PREVENTION PLAN

POLLUTION PREVENTION PLAN

fieldbook entries made by the inspector.

C. IDR - Inspector's Daily Report – this contains the inspector's daily diary and bid item postings.

D. Controls - Methods, practices, or measures to minimize or prevent erosion, control sedimentation, control storm water, or minimize contaminants from other types of waste or materials. Also called Best Management Practices (BMPs).

E. Signature Authority - Representative from Designer, Contractor/Subcontractor, or RCE/Inspector authorized to sign various storm water documents.

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____
Signature

_____
Printed or Typed Name

_____
Signature

_____
Printed or Typed Name

104-5C
10-17-17

LIST OF SUBDRAIN WORK

Possible Standards: DR-121, DR-201, DR-203, DR-301, DR-302, DR-303, DR-305 and DR-306. Possible Detail: 500-10.

* Not a bid item

Location			Pipe			Aprons		Outlets				Connected Pipe Joints*		Trench Drain	Granular Material	Porous Backfill*	Class "A" Crushed Stone*	Remarks
No.	Station to Station		Type of Installation	Concrete, C.M.P., or Plastic	Dia.	Length	DR-201	DR-203	500-10	DR-305		DR-306	DR-121			Blanket			
			DR-301, DR-302, DR-303		IN	LF	No.	No.	No.	Type	No.	No.	Type	No.	LF	CY	CY	CY	
US 151																			
1	850+00.00	856+00.00														645.0			Working blanket in the left existing ditch
2	965+00.00	866+75.00														410.0			Working blanket in the left existing ditch
3	868+94.00	873+00.00														1033.0			Working blanket in the left existing ditch
4	868+80.00	873+30.00														425.0			Working blanket in the right existing ditch
															Total	2513.0			

Note:
1. The Working Blankets shown on the Q sheets and Tab 104-5C may be deleted if determined not to be necessary at the time of construction.
2. The Working Blanket depth varies up to a maximum of 2 feet.

103-6
10-17-17

EMBANKMENT WITH MOISTURE CONTROL

Moisture Control is required for all Class 10 fill placed in all locations and depths. Stability berms placed outside the normal foreslope template and topsoil will not require Moisture Control.

103-7
08-01-08

SHRINKAGE DATA

Material	%	Remarks
Barrow & Template Cut	30%	
Topsoil	40%	
Estimated Boulder Quantity		50 CY

103-10
04-18-17

TOPSOIL STRIPPING AND PLACEMENT

Location				Topsoil Stripping Thickness	Topsoil Placement Thickness	Remarks
Road Identification	Dir. of Traffic	Begin Station	End Station	IN	IN	
US 151	NB/SB	850+00.00	856+00.00	4.0		
US 151	NB/SB	858+50.00	866+50.00	4.0		
US 151	NB/SB	869+00.00	879+50.00	4.0		
US 151	NB/SB	882+00.00	903+00.00	4.0		

107-31
04-19-11

PLOWING AND SHAPING

Refer to Standard Road Plan EW-101

Station to Station		D	Remarks
		FT	
US 151			
861+00.00	863+50.00	5.0	Refer to W Sheets
980+00.00	981+00.00	5.0	Refer to W Sheets

GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
MATTHEW D. CUSHMAN
20478
IOWA

I hereby certify that this engineering document was prepared under my supervision and that engineering decisions with regard to the design were made by me or by other duly licensed Professional Engineers under the laws of the State of Iowa.

07/26/2018

Signature Date

MATTHEW D. CUSHMAN

Printed or Typed Name

My license renewal date is December 31, 2018

Pages or sheets covered by this seal: CS.1 & Q.1–Q.24

SURVEY SYMBOLS

- CP Control Point
- 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
- WH WHD Water Hydrant
- TP TPD Telephone Pedestal
- TDC Tree Deciduous
- TEV Evergeen Tree
- SHR Shrub
- PR Electric 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 UB Utility Box
- FHD Fire Hydrants
- TVP TVP TV Pedestal
- G – GLA MidAmerican Energy
- E2 – ELB Linn County Rural Electric Cooperative
- FO – FOA South Slope Phone Internet Television
- FO2 – FOB Mediacom
- FO3(C) – FOC Sprint/Nextel
- 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 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

4:53:21 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158LGD.sht

Keyed Notes
① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Manhole to Grade
④ Adjust Hydrant to Grade

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

835 840 845 850

PT Sta 840+20.65

STA 845+05.45
BEGIN PCC WIDENING LT.

STA 843+88.58
BEGIN PCC WIDENING RT.

STA 843+47.28
BEGIN PROJECT

STA 848+30.33
END PCC WIDENING LT. AND RT.
BEGIN PCC PAVING

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

Relocate Monument (By Others)

U.S. Hwy. 151

45:1 Taper

+34.00 Prop. Type "C" Ent.

+93.00 Prop. Type "B" Ent.

+91.50 Prop. Type "C" Ent.

+97.50 Type "B" Ent.

+44.00 Prop. Type "C" Ent.

+60.50 Prop. Type "B" Ent.

42'

Do Not Disturb Sign

Church Street

Curve Data
Δ = 66° 14' 42.26" (LT)
T = 623.05
L = 1,104.08
R = 954.93
E = 185.28

0 FEET 50

Existing Ground

846+93.00
Prop. Type "B"
Ent. Lt.

+1.164%
2" Drop Curb
-2.000%

-2.000%
+6.676%
2" Drop Curb

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

-2.000%
+2.000%
+9.318%
2" Drop Curb

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

STA 848+30.33
ELEV = 760.54
MATCH EXISTING

Profile Grade

762.62

-2.752%

+6.000%

4.50% RT Ditch Grade

+80
757.80

VPI +95.000 +00
Elv 755.74 756.90
Len 500.00 ft
K = 57

-2.000%
2" Drop Curb
+4.516%

844+91.50
Prop. Type "C"
Ent. Rt.

-2.000%
+2.000%
+8.296%
2" Drop Curb

845+97.50
Prop. Type "B"
Ent. Rt.

2" Drop Curb
-2.000%
+2.000%
+11.482%

847+60.50
Prop. Type "B"
Ent. Rt.

No Ditch
Ent.
No Ditch
Ent.
No Ditch
Side Rd.
No Ditch
Ditch Grade

Lt
Rt

788.09 787.25 786.39 785.50 784.61 783.74 782.90 782.09 781.24 780.34 779.47 778.60 777.78 777.02 776.29 775.58 774.87 774.17 773.48 772.79 772.12 771.45 770.75 770.05 769.37 768.69 768.01 767.32 766.64 765.95 765.26 764.56 763.84 763.11 762.39 761.86 761.32 760.95 760.70 760.49 760.51 760.53 760.66 760.79 760.92 761.11 761.30 761.52 761.78 762.05 762.37 762.81 763.07 763.61 763.88 764.56

838 839 840 841 842 843 844 845 846 847 848 849 850

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

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Sta. 852+26.00 U.S. Hwy. 151
Install 42"x170' 3000D RCP
F.L. = Lt. 752.04
Rt. 754.30

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

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

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

Union Pacific Railroad

Keyed Notes
① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Manhole to Grade
④ Adjust Hydrant to Grade

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

+19.80 Prop. Type "C" Granular Ent.

+19.80 Prop. Type "C" Paved Ent.

Proposed MSE Wall No. 3

15:1 Taper

U.S. Hwy. 151

45:1 Taper

Proposed MSE Wall No. 1

Sta 857+32.60
Construct 204'-0" x 40'-0"
Pretensioned Prestressed Concrete
Beam Bridge with 4° Skew (R.A.)

Remove Existing Retaining Wall

Proposed MSE Wall No. 2

Losey Avenue

Prairie Avenue

0 FEET 50

VPI +32.600
Elv 806.00
Len 750.00 ft
K = 62
SSD = 288'

+5.390% +1.700% +0.500% +1.955%
10' V.C. 10' V.C.
770 760
864+19.80 Prop. Type "C" Paved Ent. Lt.

+6.000% -6.000%
Profile Grade
Existing Ground

+2.000% +0.500% +1.955% +15.000%
10' V.C.
770 760 750
864+19.80 Prop. Type C Granular Ent. Lt.

VPI +50.000
Elv 762.96
Len 450.00 ft
K = 82

+6.000% -6.000% -0.500%

+00 756.90 +26 754.30 -1.15% RT Ditch Grade +1.07% RT Ditch Grade +00 758.30 +2.40% Ditch Grade +50 759.50
+50 752.50 -0.26% LT Ditch Grade +25 751.01
+33 762.82 +5.820% RT Ditch Grade +00 756.25 +0.25% LT Ditch Grade
+50 767.26 +1.160% RT Ditch Grade +50 763.77
+00 765.85 -2.82% RT Ditch Grade +00 756.75
+50 765.39 -0.920% RT Ditch Grade +3.00% LT Ditch Grade
+00 764.64 -0.80% RT Ditch Grade +00 759.75
+50 764.24 -0.48% RT Ditch Grade +1.20% LT Ditch Grade
+00 764.00 -0.12% +00 762.15
+50 763.94 -0.48% +2.72%
+50 763.70 +0.00% +00 763.70
+25 763.70 +60 762.83 +73 759.21 -6.14% RT Ditch Grade
+50 748.30 -3.50% LT Ditch Grade

Lt	No Ditch	Ditch Grade	Bridge	Ditch Grade	Entrance	Ditch Grade
Rt	Ditch Grade	Bridge	U.A.C. Ex. Ditch	No Ditch	Side Road	D.G.

850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865
763.88 764.56	764.80 765.55	765.83 766.64	766.97 767.90	768.22 769.21	769.58 770.62	771.04 772.02	772.54 773.47	774.04 774.92	775.54 776.32	777.04 777.70	778.54 779.09	780.04 780.47	781.54 781.85	783.04 783.10	784.52 784.35	785.90 785.41	787.18 786.42	788.36 787.28	789.44 788.11	790.42 788.86	791.30 789.55	792.08 790.19	792.76 790.65	793.34 791.10	793.82 791.36	794.20 791.31	794.48 791.62	794.66 791.30	794.75 791.72	794.73 792.02	794.61 791.31	794.39 790.78	794.07 790.21	793.65 789.64	793.13 788.95	792.51 788.09	791.79 787.23	790.97 786.29	790.05 785.34	789.03 784.27	787.91 783.19	786.69 782.06	785.37 780.90	783.95 779.75	782.46 778.61	780.96 777.39	779.46 776.18	777.96 775.01	776.46 773.85	774.99 772.69	773.61 771.54	772.30 770.37	771.07 769.19	769.91 768.01	768.83 766.83	767.83 765.64	766.90 764.44	766.05 763.31	765.28 762.28	764.58 761.30

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

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Sta. 873+00.00, 91' LT U.S. Hwy. 151
Install 18" X 80' CMP or HDPE With Two Aprons
F.L. = Sta. 872+58.55, Lt. 747.21
Sta. 873+46.49, Lt. 747.49
Note: FL Elevations are Designed to Work With Proposed Highway 151 Ditch.

Sta 867+44.52
160'-0"x30'-0" Continuous I-Beam Bridge with 0° skew (Remove)

Prairie Creek

+00.00 Prop. Type "B" Ent.

+31.00 Prop. Type "C" Ent.

+50.00 Prop. Type "B" Ent.

Stallman Drive

U.S. Hwy. 151

38'

44'

48'

PC Sta 870+29.88

Sta 867+41.69
Construct 209'-0" x 40'-0"
Pretensioned Prestressed Concrete Beam Bridge with 30° Skew (R.A.)

Proposed Cast in Place Concrete Wall

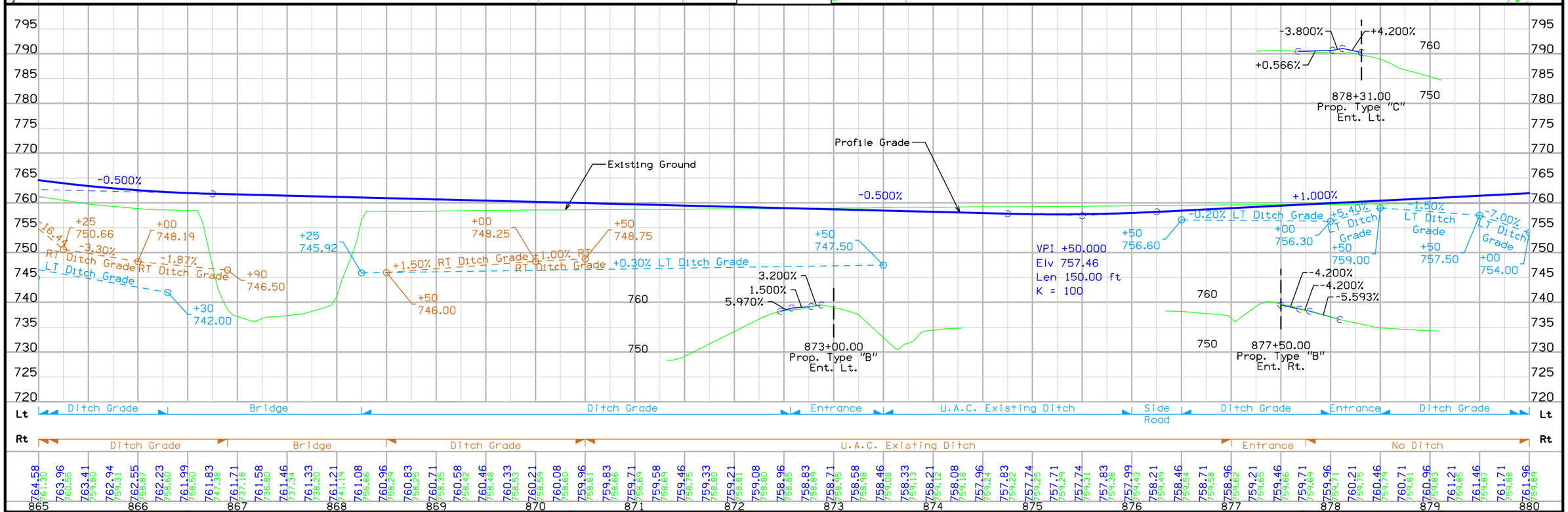
FAIRFAX TWP.
T-82N R-8W
SEC. 9

Keyed Notes
① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Manhole to Grade
④ Adjust Hydrant to Grade

STA 876+00.00 (HWY 151) =
STA 4876+00.00 (STALLMAN DRIVE)

Curve Data
Δ = 61° 52' 59.64" (RT)
T = 1,144.91
L = 2,062.78
R = 1,909.86
E = 316.88
e = 4.2%
l = 120'
x = 57'

0 50 FEET



FILE NO.	ENGLISH	DESIGN TEAM	COUNTY	PROJECT NUMBER	SHEET NUMBER D.4

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Curve Data
Δ = 61° 52′ 59.64″ (RT)
T = 1,144.91
L = 2,062.78
R = 1,909.86
E = 316.88
e = 4.2%
I = 120′
x = 57

Keyed Notes
① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Manhole to Grade
④ Adjust Hydrant to Grade

Sta 880+89.90
24′-0″x44′-0″ I-Beam and PPC Beam Bridge with 0° skew (Remove)

STA 884+13.63 (HWY 151) =
STA 5884+13.63 (CEMETERY ROAD)

Construct PCC Trail Under Bridge

Protect Well

Cemetery Road

U.S. Hwy. 151

Sta. 890+96.75, 48′ LT U.S. Hwy. 151
Install 18″ X 56′ CMP With Two Aprons
F.L. = Sta. 890+65.73, Lt. 755.67
F.L. = Sta. 891+26.45, Lt. 755.84

Sta. 891+10.00, 46.3′ RT U.S. Hwy. 151
Install 18″ X 44′ CMP With Two Aprons
F.L. = Sta. 890+84.92, Rt. 755.46
F.L. = Sta. 891+34.27, Rt. 755.60

Sta 880+85.25
Construct 140′-0″ x 58′-0″ Continuous Concrete Slab Bridge with 15° Skew (L.A.)

Do Not Disturb Sign

+96.75 Prop. Type "B" Ent.
+21.00 Prop. Type "B" Joint Ent.
+10.00 Prop. Type "B" Ent.
+18.50 Prop. Type "B" Ent.
Sta 890+92.65
16.54 Prop. Type "B"

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

0 FEET 50

VPI +85.250
Elv 762.81
Len 150.00 ft
K = 94
SSD = 490′

+1.000% -0.600% -0.600% +0.200%

-3.75% LT Ditch Grade
+1.00% RT Ditch Grade
+0.20% LT Ditch Grade
+1.60% RT Ditch Grade
+0.25% RT Ditch Grade
+0.30% RT Ditch Grade
+0.30% LT Ditch Grade
-1.85% RT D.G.

+80 751.00
+00 754.00
+00 750.50
+00 754.34
+75 753.25
+25 751.66
+00 754.46
VPI +50.000
Elv 758.22
Len 150.00 ft
K = 187
+65 755.38
+90 755.72
+30 755.84
+35 756.10
+75 756.58
+80 756.84
+50 758.24

Profile Grade
Existing Ground

890+96.75 Prop. Type "B" Ent. Lt.
-2.797% +4.000% +3.000% -0.853%

894+21.00 Prop. Type "B" Joint Ent. Lt.
+2.000% +4.000% +4.000% -1.692%

891+10.00 Prop. Type "B" Ent. Rt.
-2.333% -4.000% +5.097% -1.500%

894+18.50 Prop. Type "B" Ent. Rt.
-2.000% -4.000% -2.000% +5.374%

Lt: Ditch Grade | Bridge | U.A.C. Existing Ditch | Side Road | Ditch Grade | Ent. | Ditch Grade | Entrance
Rt: No Ditch | Bridge | Ditch Grade | Side Road | Ditch Grade | Ent. | Ditch Grade | Ent. | D.G.

880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895
761.96 / 759.89	762.19 / 759.85	762.37 / 759.83	762.48 / 759.85	762.53 / 746.76	762.50 / 759.91	762.41 / 759.98	762.27 / 760.03	762.12 / 760.10	761.97 / 760.18	761.82 / 760.27	761.67 / 760.34	761.52 / 760.39	761.37 / 760.45	761.22 / 760.50	761.07 / 760.53
760.92 / 760.56	760.77 / 760.56	760.62 / 760.61	760.47 / 760.67	760.32 / 760.73	760.17 / 760.77	760.02 / 760.79	759.87 / 760.80	759.72 / 760.78	759.57 / 760.75	759.42 / 760.71	759.27 / 760.70	759.12 / 760.67	758.97 / 760.64	758.82 / 760.59	758.67 / 760.58
758.54 / 760.57	758.44 / 760.54	758.37 / 760.51	758.34 / 760.46	758.34 / 760.40	758.37 / 760.35	758.42 / 760.28	758.47 / 760.28	758.52 / 760.27	758.57 / 760.25	758.62 / 760.21	758.67 / 760.15	758.72 / 760.08	758.77 / 760.01	758.82 / 759.94	758.87 / 759.89
758.92 / 759.84	758.97 / 759.80	759.02 / 759.77	759.07 / 759.74	759.12 / 759.72	759.17 / 759.73	759.22 / 759.74	759.27 / 759.75	759.32 / 759.73	759.37 / 759.74	759.42 / 759.74	759.47 / 759.72	759.52 / 759.71			

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

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Keyed Notes
① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Manhole to Grade
④ Adjust Hydrant to Grade

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

STA 898+00.00
END PCC PAVING
BEGIN HMA PAVING

STA 900+00.00
END HMA PAVING
BEGIN HMA OVERLAY

STA 902+58.42
END HMA OVERLAY

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.

Do Not Disturb Sign
Protect Gas Shut-off Valve

Sta. 900+59.26 U.S. Hwy. 151
Install 48"x2' 2000D RCP
Lt. U.A.C
F.L. = Other 753.30
Rt. 753.22

0 FEET 50

VPI +75.000
Elv 760.27
Len 150.00 ft
K = 257
SSD = 1213'

STA 900+00.00
ELEV = 759.79
MATCH EXISTING

Profile Grade

-1.85%
+45
756.48
-0.88%
RT D.G.
-0.30% LT Ditch Grade
+29
757.70
+86
757.20
+00
755.70
-0.384%
-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
D.G
Ent.
U.A.C.
Ex. Ditch Ent.
U.A.C. Ex. Ditch

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

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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)

Protect Tile Outlet

Sta. 983+85.00, 69' LT U.S. Hwy. 151
Install 18" X 50' CMP With Two Aprons
F.L. = Sta. 983+56.52, Lt. 775.93
Sta. 984+18.68, Lt. 777.19

+85.00 Prop. Type "C" Ent.

STA 984+83.16
END PCC PAVING (SBL)

U.S. Hwy. 151

STA 971+42.45
RESUME PROJECT

STA 974+69.95
BEGIN PCC PAVING (SBL)

STA 979+30.00
BEGIN PCC PAVING (NBL)

STA 981+15.00
END PCC PAVING (NBL)

STA 987+43.71
END PROJECT

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 U.A.C. Type "C" Ent.

0 FEET 50

STA 979+30.00
ELEV = 779.40
MATCH EXISTING

VPI +50.000
Elv 778.57
ex = 0.00'
K = 139.6
Len 180.00 ft

STA 981+15.00
ELEV = 779.26
MATCH EXISTING

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
+00 775.50 -3.00% LT Ditch Grade
+50 774.00 -2.00% LT Ditch Grade
+50 772.00 -1.00% LT Ditch Grade
+00 770.50 -0.802%
-0.700%
+0.590%
+0.752%
-1.63% LT Ditch Grade
+30.60 770.00
+05.65 766.95 -6.87% RT Ditch Grade
+50 770.00 +2.36% RT Ditch Grade
+92.38 771.00
+23.12 771.22
+0.67% LT Ditch Grade
+6.25% LT Ditch Grade
+00 772.40
+56.52 775.93
+18.68 777.19
+2.7% LT Ditch Grade
+88.53 779.10
-4.000%
-1.983%
983+85.00 Prop. Type "C" Ent. Lt.

Existing Ground

STA 987+43.71
END PROJECT

Ditch Grade | Culvert | Ditch Grade | Entrance | D.G.

Lt

Rt

U.A.C. Existing Ditch | Culvert | Ditch Grade | U.A.C. Existing Ditch

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

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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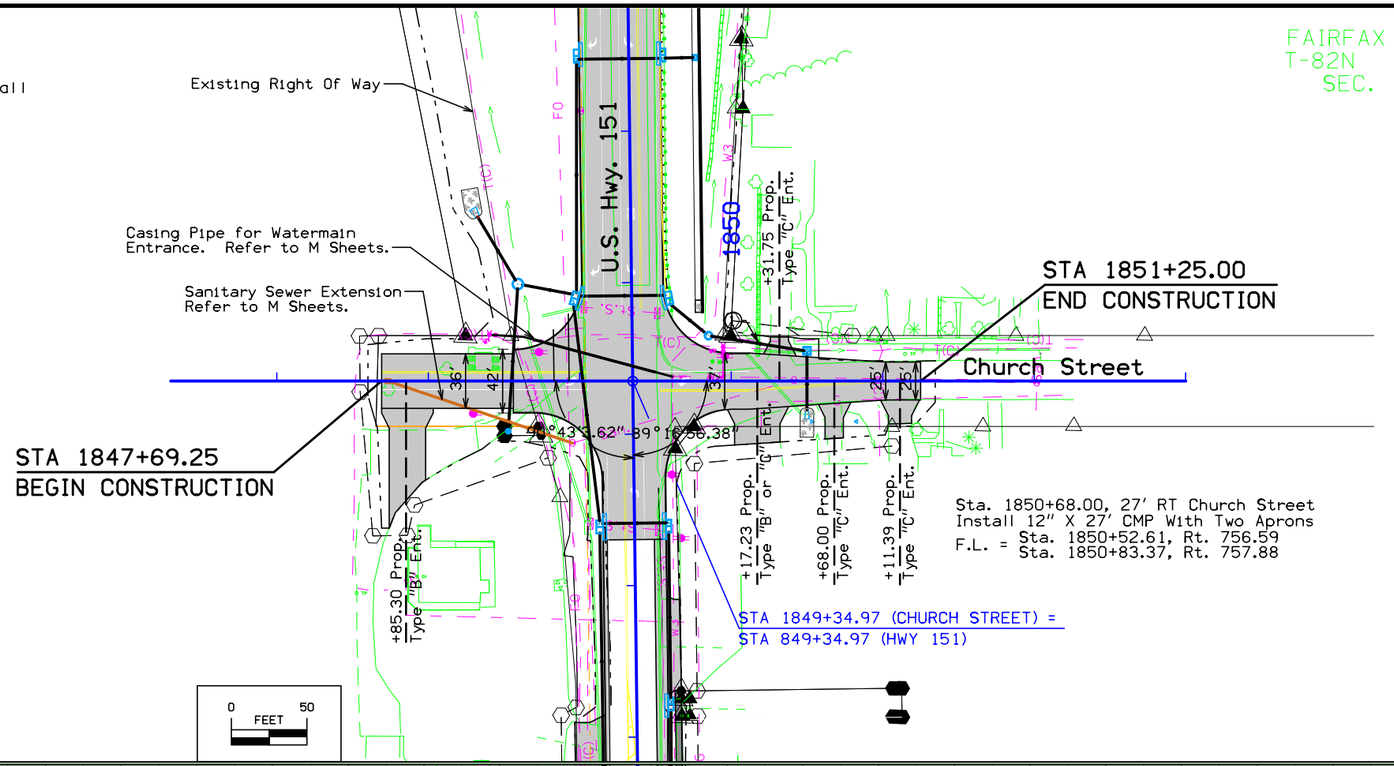
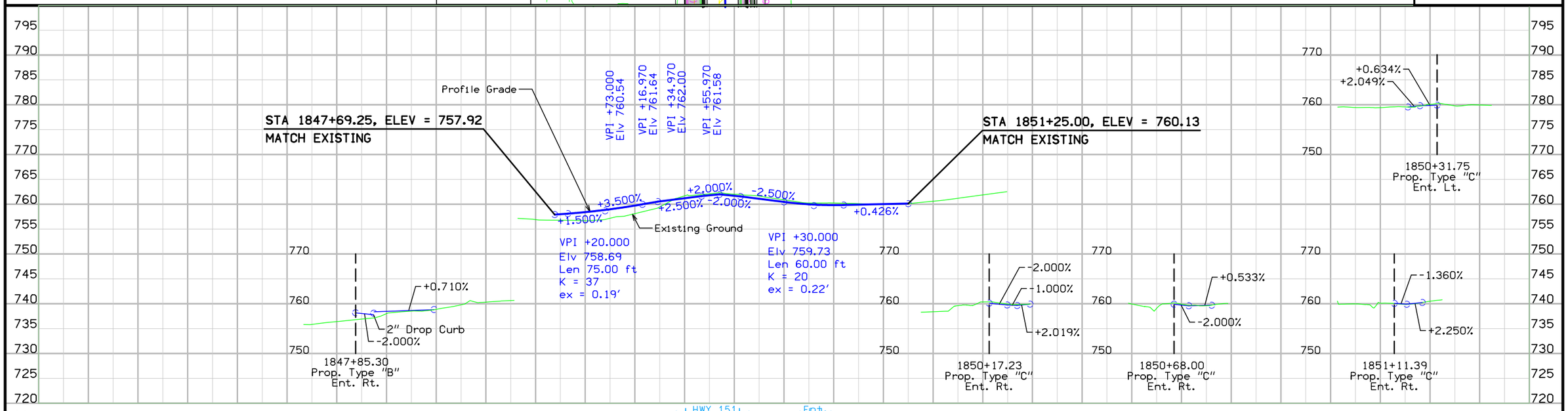
Keyed Notes

① Remove 15 LF Existing Retaining Wall

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

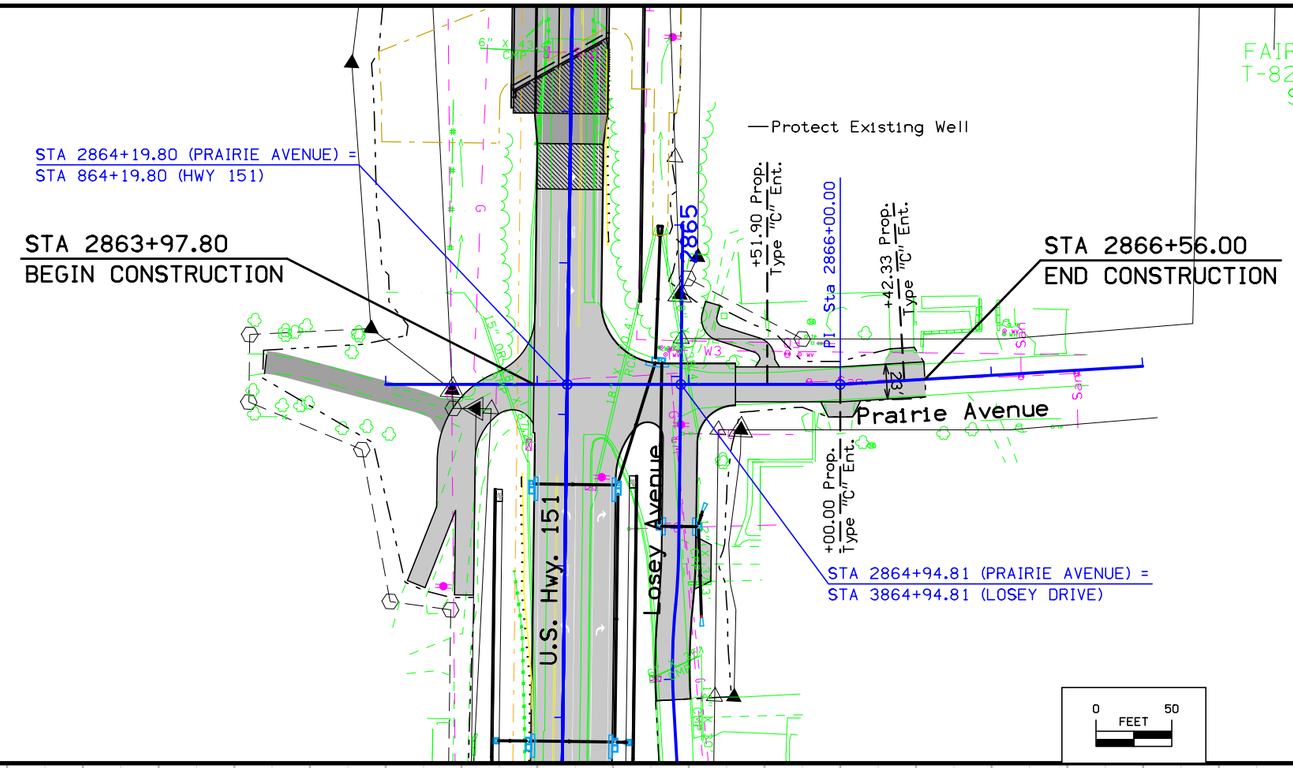


CHURCH STREET

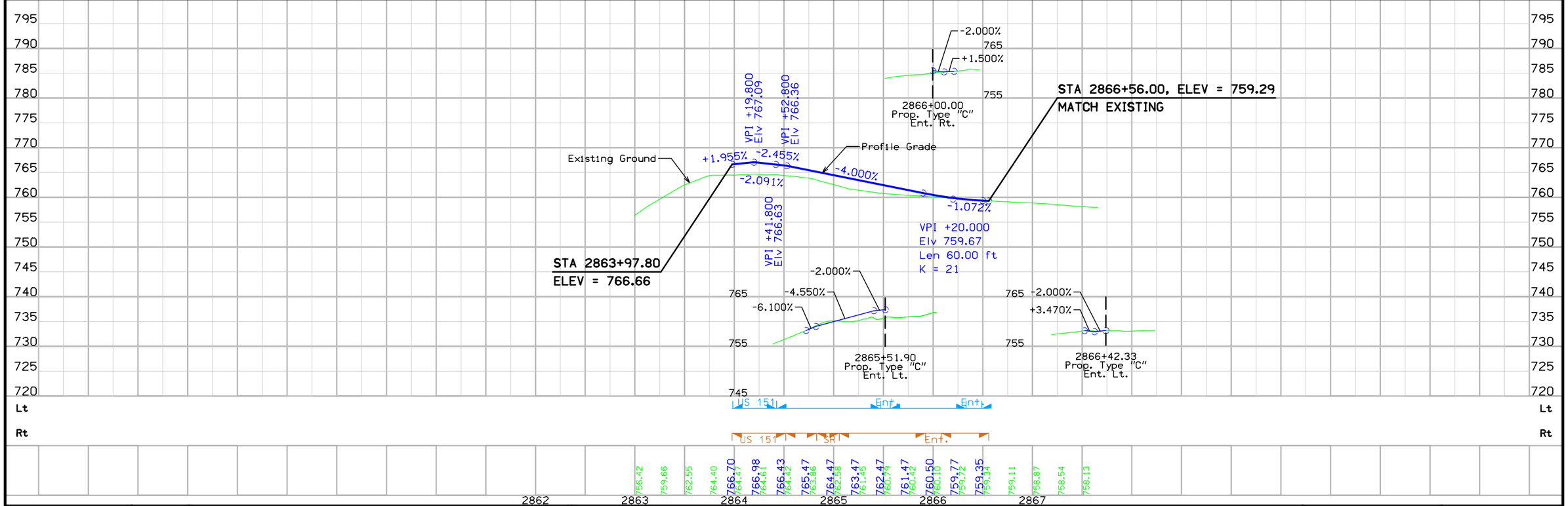


FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.1

4:56:46 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158E01.sht

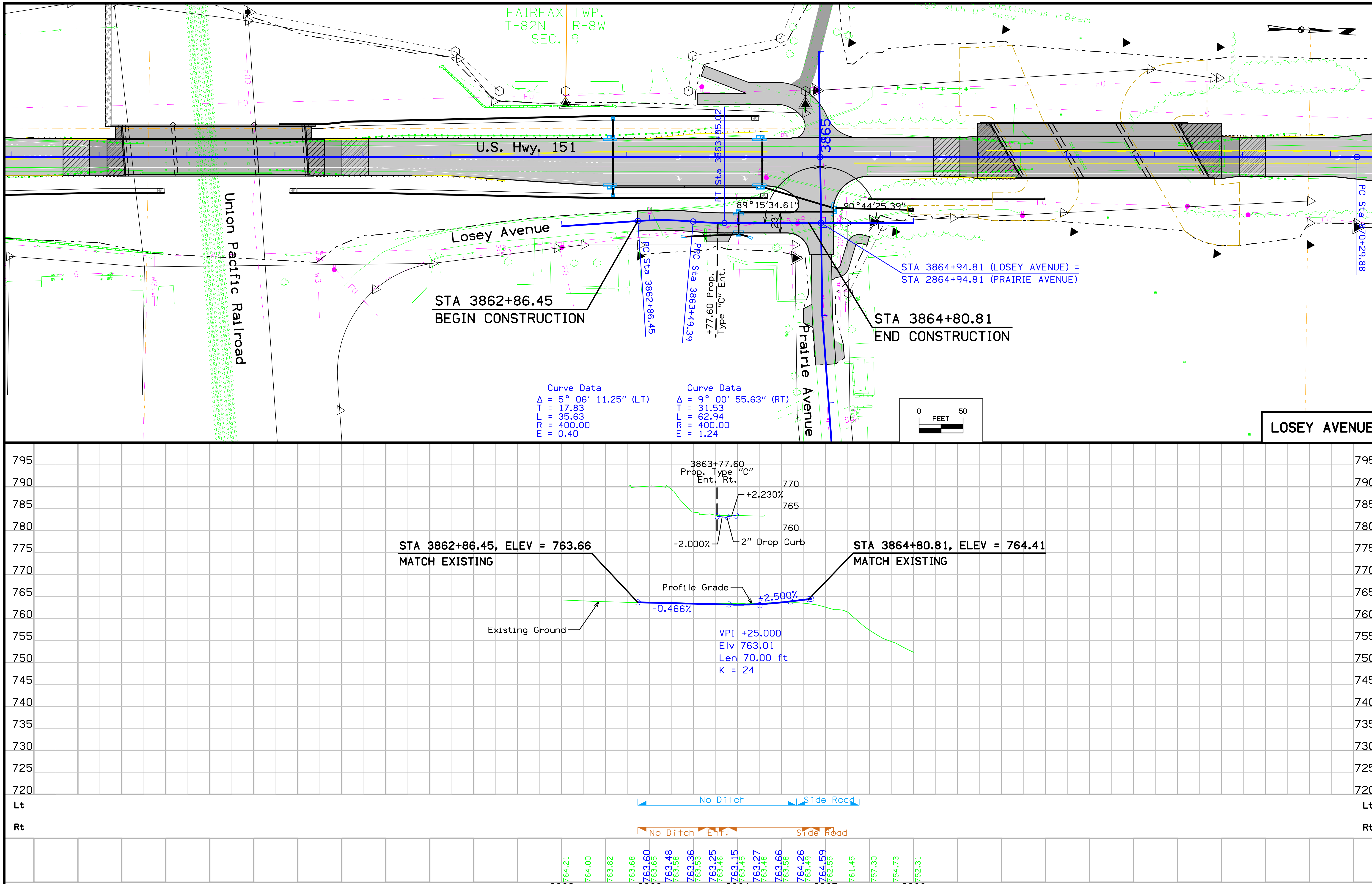


PRAIRIE AVENUE



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

4:56:48 PM 7/30/2018 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
U.S. Hwy. 151
Losey Avenue
Union Pacific Railroad
Prairie Avenue
3865
STA 3862+86.45
BEGIN CONSTRUCTION
STA 3864+80.81
END CONSTRUCTION
STA 3864+94.81 (LOSEY AVENUE) =
STA 2864+94.81 (PRAIRIE AVENUE)
89°15'34.61"
90°44'25.39"
PC Sta 3862+86.45
PRC Sta 3863+49.39
PT Sta 3863+85.02
+77.60 Prop. Type "C" Ent.
PC Sta 3870+29.88
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 FEET 50
LOSEY AVENUE
3863+77.60
Prop. Type "C"
Ent. Rt.
+2.230%
-2.000%
2" Drop Curb
STA 3862+86.45, ELEV = 763.66
MATCH EXISTING
STA 3864+80.81, ELEV = 764.41
MATCH EXISTING
Profile Grade
-0.466%
+2.500%
Existing Ground
VPI +25.000
Elv 763.01
Len 70.00 ft
K = 24
No Ditch
Side Road
Ent.
Lt
Rt
3862
3863
3864
3865
3866

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

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

Stallman Drive

U.S. Hwy. 151

STA 4874+25.00
BEGIN CONSTRUCTION

STA 4875+81.00
END CONSTRUCTION

+49.94 Exist. Ent. (U.A.C.)

PC Sta 4874+79.34

PT Sta 4875+23.63

PT Sta 4875+55.65

Curve Data
Δ = 72° 52' 18.32" (LT)
T = 44.29
L = 76.31
R = 60.00
E = 14.58

STA 4876+00.00 (STALLMAN DRIVE) =
STA 876+00.00 (HWY 151)

0 FEET 50

STALLMAN DRIVE

STA 4874+25.00, ELEV = 759.79
MATCH EXISTING

STA 4875+81.00, ELEV = 758.79
MATCH EXISTING

Profile Grade

Existing Ground

1.500%

+0.626%

-2.200%

-4.200%

VPI +90.000
Elv 758.81
Len 100.00 ft
K = 47

VPI +60.000
Elv 759.25
Len 40.00 ft
K = 14
SSD = 255'

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

Lt

Rt

U.A.C.

Ent. U.A.C.

U.S. HWY 151

760.74 760.69 760.43 760.24 760.05 759.79 759.79 759.42 759.45 759.17 759.11 759.04 758.65 759.05 757.87 759.15 757.09 758.91 759.15 757.99 759.43 757.81 754.06 752.82 752.84

4873 4874 4875 4876 4877 4879

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

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

Casing Pipe for
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

PI Sta 5884+32.27

PC Sta 5884+77.29

PT Sta 5885+77.84

PI Sta 5886+39.30

PI Sta 5885+27.68

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

Cemetery Road

26'

STA 5882+30.00
BEGIN CONSTRUCTION

STA 5885+42.00
END CONSTRUCTION

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

STA 5884+13.63 (CEMETERY ROAD) =
STA 884+13.63 (HWY 151)

0 FEET 50

CEMETERY ROAD

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

STA 5882+30.00, ELEV = 758.62
MATCH EXISTING

VPI +40.000
Elv 761.27
Len 30.00 ft
K = 12

VPI +70.40
Elv 761.76
VPI +86.06
Elv 761.75

VPI +11.00
Elv 760.85

VPI +32.12
Elv 759.95
VPI +51.34
Elv 759.40

Profile Grade

STA 5885+42.00, ELEV = 756.90
MATCH EXISTING

+1.10% +3.500% +1.000% -3.609% -2.862% +1.149% -4.261% -2.761%

Existing Ground

VPI +80.000
Elv 759.17
Len 90.00 ft
K = 38

Ent. U.A.C. | No Ditch | U.S. HWY. 51 | No Ditch

Lt

Rt

No Ditch | U.S. HWY. 51 | No Ditch

759.08 758.64 758.29 757.99 746.97 757.75 757.70 758.01 758.30 758.58 758.87 758.81 759.32 758.99 759.95 759.29 760.74 759.69 761.36 760.15 761.62 760.60 761.25 761.01 760.25 760.21 759.44 759.46 758.75 758.74 758.06 758.10 757.37 757.58 757.08 756.68 756.40 756.20 756.13 756.15 756.44 756.30 756.36 756.45

5880 5881 5882 5883 5884 5885 5886 5887 5888 5889

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

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

Sta. 6957+40.00 Beverly Rd.
Install 42"x74' 2000D RCP
F.L. = Lt. 772.40
Rt. 773.30

Existing Right Of Way

P1 Sta 6956+71.71

6955

STA 6957+30.00
BEGIN CONSTRUCTION

Beverly Road

PC Sta 6954+49.20

STA 6957+50.00
END CONSTRUCTION

20'

24"

PT Sta 6958+65.65

U.S. Hwy. 151

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

Prairie View Drive

Curve Data
Δ = 49° 58' 30.00" (RT)
T = 222.52
L = 416.45
R = 477.46
E = 49.31

0 FEET 50

BEVERLY ROAD

STA 6957+50.00, ELEV = 781.78
MATCH EXISTING

781.32

781.78

+2.300%

Existing Ground

Profile Grade

STA 6957+30.00, ELEV = 781.32
MATCH EXISTING

U.A.C. Ex. Ditch

U.A.C. Ex. Ditch

781.55

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

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

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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)

8980

STA 8981+50.00
END STREAM
REALIGNMENT

STA 8977+75.00
BEGIN STREAM
REALIGNMENT

8975

Drainage Ditch #2

120°0'0"

U.S. Hwy. 151

Curve Data
Δ = 67° 47' 47.16" (RT)
T = 43.68
L = 76.91
R = 65.00
E = 13.31
e = Normal Crown

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

DRAINAGE DITCH #2

STA 8977+75.00, ELEV = 764.42
MATCH EXISTING

STA 8981+50.00, ELEV = 762.61
MATCH EXISTING

VPI +20.460
Elv 763.60

VPI +88.460
Elv 762.92

Existing Ground

Profile Grade

-0.564%

-0.405%

-0.500%

8977	8978	8979	8980	8981	8982	8983
764.75	764.42	764.28	764.14	764.00	763.86	763.72
	764.42	764.07	765.88	766.85	769.01	765.40

763.58	763.48	763.38	763.28	763.18	763.08	762.97
763.33	769.61	765.65	764.49	764.75	765.70	764.16

762.86	762.74	762.61
765.12	764.47	763.06

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

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

STA 1978+59.07
Begin Runaround

STA 1981+48.08
End Runaround

Protect Tile Outlet

STA 1976+78.38 Runaround
STA 976+78.38 U.S. 151

STA 1984+18.94 Runaround
STA 984+07.88 U.S. 151

U.S. Hwy. 151

Curve Data
Δ = 19° 15′ 45.67″ (LT)
T = 84.85
L = 168.10
R = 500.00
E = 7.15

Curve Data
Δ = 29° 50′ 23.42″ (RT)
T = 135.89
L = 265.61
R = 510.00
E = 17.79

Curve Data
Δ = 10° 34′ 37.75″ (LT)
T = 46.28
L = 92.30
R = 500.00
E = 2.14

0 50
FEET

STA 1978+59.07
ELEV = 779.16
MATCH PROPOSED PAVEMENT

STA 1981+48.08
ELEV = 778.50
MATCH PROPOSED PAVEMENT

Profile Grade

VPI +50.000
Elv 777.06
K = 70
Len 180.00 ft

-1.100%

-1.100%

+1.469%

Existing Ground

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

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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)

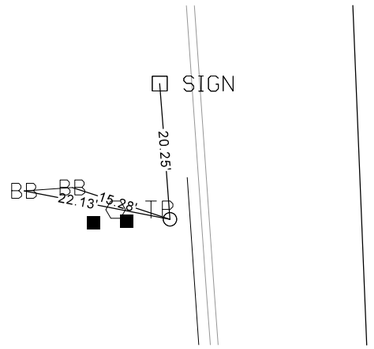
VERTICAL CONTROL

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

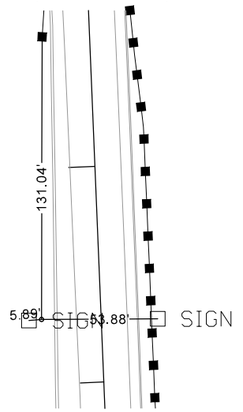
CP STA 837+45.84, 38.77 FT RT
CP 118, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=702310.552, E=2107568.859, ELEV. 790.030

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

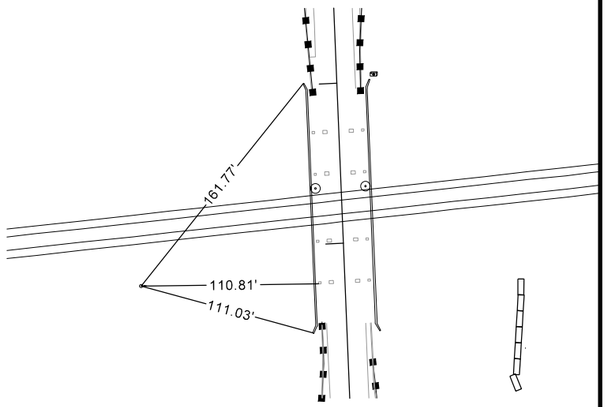
CP STA 846+36.12, 28.47 FT LT
CP 100, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=703206.207, E=2107505.596, ELEV. 763.43



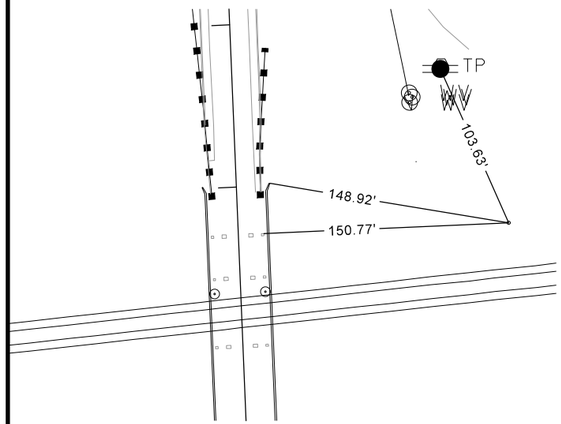
CP STA 854+30.14, 27.69 FT LT
CP 101, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=703999.594, E=2107473.736, ELEV. 786.630



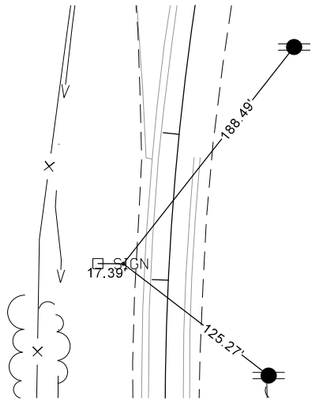
CP STA 856+78.46, 127.36 FT LT
CP 201, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=704243.606, E=2107363.943, ELEV. 758.070



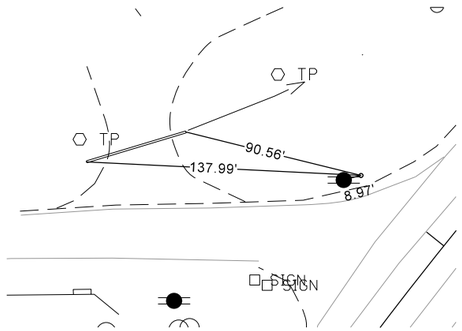
CP STA 857+71.20, 166.58 FT RT
CP 200, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=704348.351, E=2107653.822, ELEV. 763.240



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

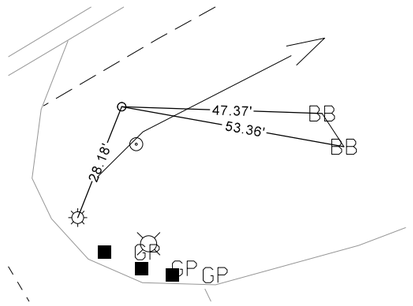


CP STA 884+01.50, 54.56 FT LT
CP 104, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=706908.345, E=2107812.761, ELEV. 759.410



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

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

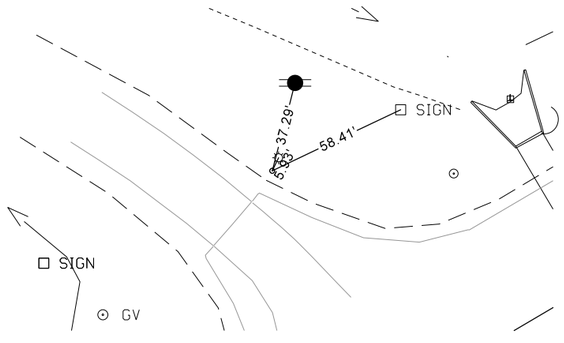
CP STA 948+82.87, 40.35 FT RT
CP 111, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=710225.327, E=2113386.176, ELEV. 800.680

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

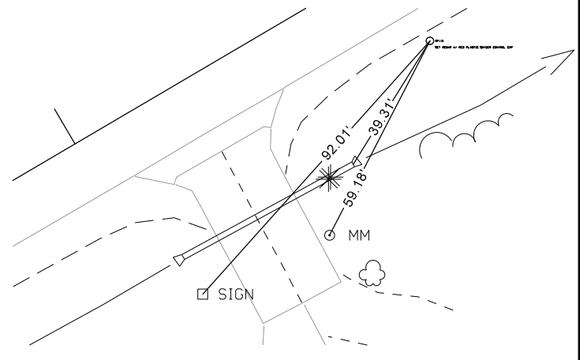
CP STA 958+91.52, 106.92 FT LT
CP 113, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=710863.774, E=2114180.813, ELEV. 781.940



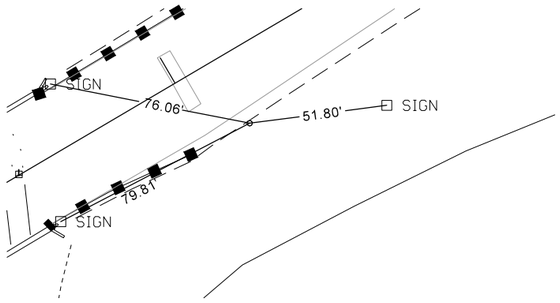
CP STA 968+92.74, 78.50 FT LT
CP 114, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=711347.028, E=2115058.146, ELEV. 790.110

MONUMENT MAY BE LOCATED BY
STAKING OUT COORDINATE

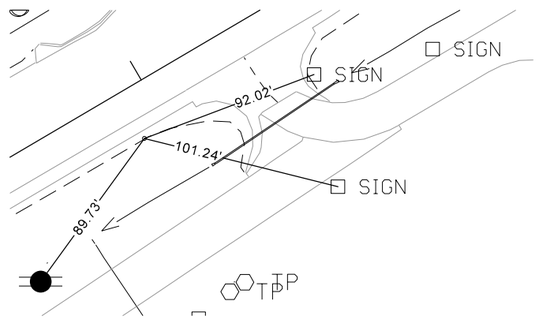
CP STA 973+96.87, 24.64 FT RT
CP 115, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=711513.799, E=2115544.949, ELEV. 785.140



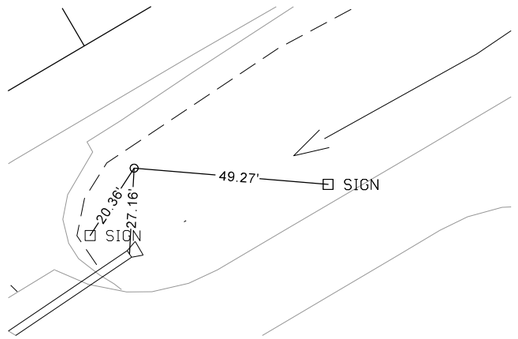
CP STA 981+16.48, 27.08 FT RT
CP 116, SET REBAR W/ RED PLASTIC SNYDER CONTROL CAP
N=711876.636, E=2116166.395, ELEV. 778.680



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



DESCRIBE CHAIN ML151 (US HIGHWAY 151)

Chain ML151 contains:
1 2 CUR CUR1 CUR CUR2 CUR CUR3 CUR CUR4 CUR CUR5 CUR CUR6 CUR CUR7 CUR CUR8 CU-R CUR9 CUR CUR10 33

Beginning chain ML151 description

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

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

Ending chain ML151 description

DESCRIBE CHAIN SRCHURCH (CHURCH STREET)

Chain SRCHURCH contains:
SRCHURCH102 SRCHURCH103

Beginning chain SRCHURCH description

Point SRCHURCH102 N 703,497.26 E 2,107,216.91 Sta 1846+30.00

Course from SRCHURCH102 to SRCHURCH103 N 88° 21′ 40.74″ E Dist 670.00

Point SRCHURCH103 N 703,516.42 E 2,107,886.64 Sta 1853+00.00

Ending chain SRCHURCH description

DESCRIBE CHAIN SRPRAIRIE (PRAIRIE AVENUE)

Chain SRPRAIRIE contains:
2863 2864 2865

Beginning chain SRPRAIRIE description

Point 2863 N 704,983.08 E 2,107,341.09 Sta 2863+00.00

Course from 2863 to 2864 N 86° 54′ 11.73″ E Dist 300.00

Point 2864 N 704,999.28 E 2,107,640.65 Sta 2866+00.00

Course from 2864 to 2865 N 83° 28′ 37.57″ E Dist 200.00

Point 2865 N 705,022.00 E 2,107,839.35 Sta 2868+00.00

Ending chain SRPRAIRIE description

DESCRIBE CHAIN SRLOSEY (LOSEY AVENUE)

Chain SRLOSEY contains:
3862 CUR SRLOSEY-1 CUR SRLOSEY-2 3863

Beginning chain SRLOSEY description

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

Ending chain SRLOSEY description

DESCRIBE CHAIN SRSTALLMAN (STALLMAN DRIVE)

Chain SRSTALLMAN contains:
4873 CUR SRSTALLMAN-1 4874

Beginning chain SRSTALLMAN description

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

Ending chain SRSTALLMAN description

DESCRIBE CHAIN SRCEMETERY (CEMETERY ROAD)

Chain SRCEMETERY contains:
5880 5881 CUR SRCEMETERY-1 5882 5883

Beginning chain SRCEMETERY description

Point 5880 N 706,872.56 E 2,107,449.44 Sta 5880+00.00

Course from 5880 to 5881 N 88° 28′ 15.30″ E Dist 432.27

Point 5881 N 706,884.09 E 2,107,881.55 Sta 5884+32.27

Course from 5881 to PC SRCEMETERY-1 S 83° 10′ 44.90″ E Dist 45.02

Curve Data

Curve SRCEMETERY-1
P.I. Station 5885+27.68 N 706,872.76 E 2,107,976.29
Delta = 9° 36′ 05.14″ (LT)
Degree = 9° 32′ 57.47″
Tangent = 50.39
Length = 100.55
Radius = 600.00
External = 2.11
Long Chord = 100.43
Mid. Ord. = 2.10
P.C. Station 5884+77.29 N 706,878.75 E 2,107,926.26
P.T. Station 5885+77.84 N 706,875.21 E 2,108,026.62
C.C. N 707,474.50 E 2,107,997.52
Back = S 83° 10′ 44.90″ E
Ahead = N 87° 13′ 09.96″ E
Chord Bear = S 87° 58′ 47.47″ E

Course from PT SRCEMETERY-1 to 5882 N 87° 13′ 09.96″ E Dist 61.46

Point 5882 N 706,878.19 E 2,108,088.01 Sta 5886+39.30

Course from 5882 to 5883 N 88° 27′ 55.32″ E Dist 361.76

Point 5883 N 706,887.88 E 2,108,449.64 Sta 5890+01.06

Ending chain SRCEMETERY description

DESCRIBE CHAIN SRBEVERLY (BEVERLY ROAD)

Chain SRBEVERLY contains:
6952 CUR SRBEVERLY-1 6953

Beginning chain SRBEVERLY description

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

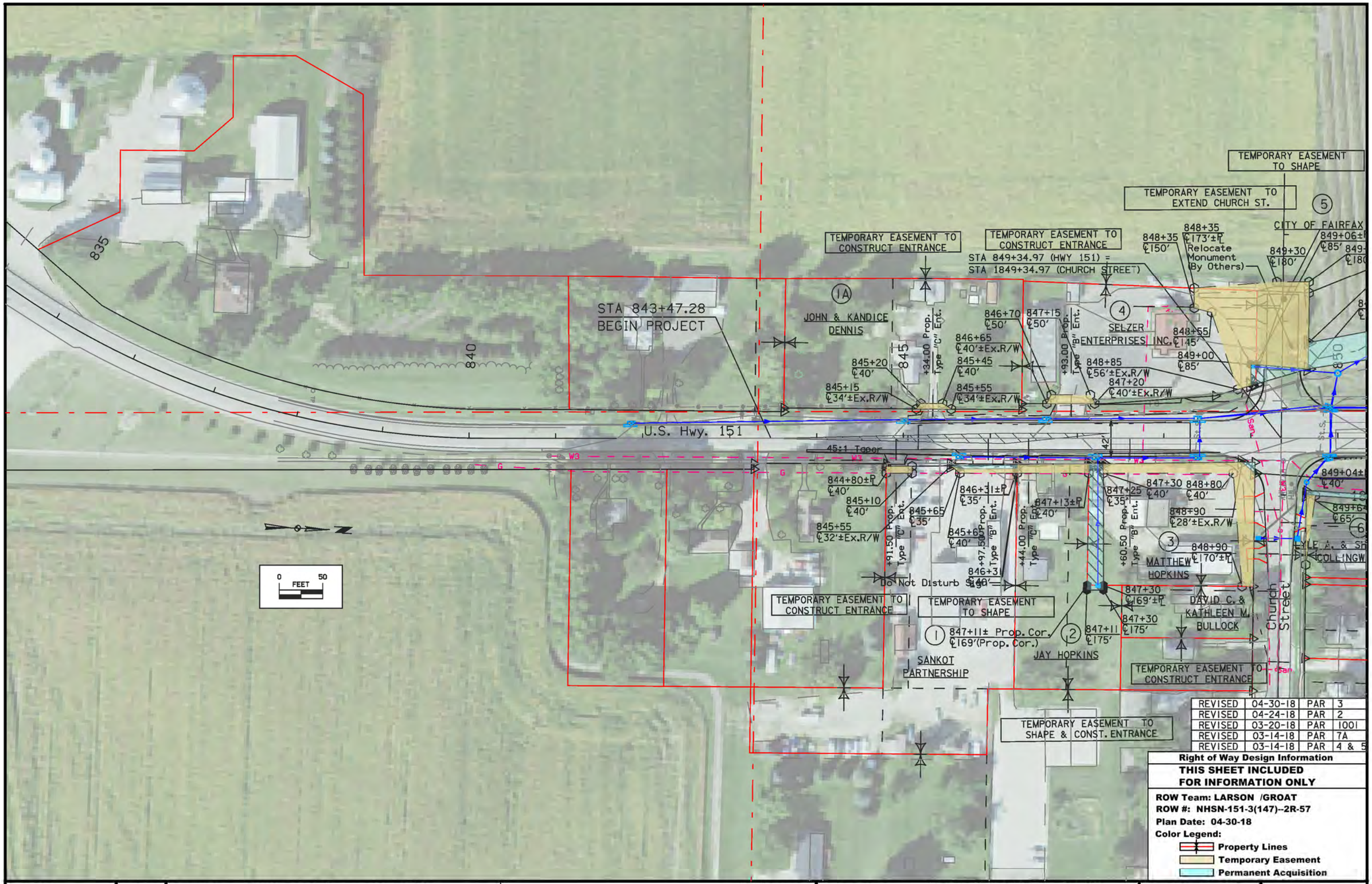
Point 6953 N 710,770.46 E 2,114,233.07 Sta 6958+89.23

Ending chain SRBEVERLY description

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



REVISED	04-30-18	PAR	3
REVISED	04-24-18	PAR	2
REVISED	03-20-18	PAR	1001
REVISED	03-14-18	PAR	7A
REVISED	03-14-18	PAR	4 & 5

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)--2R-57
Plan Date: 04-30-18
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

11:17:48 AM 5/1/2018 untitled pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\ROW\57151158H2.sht

(5)
F FAIRFAX
849+06±℄
℄85'
849+67
℄180'
849+67(Prop. Cor.)
℄167'±Prop. Cor.
849+66±Ex.R/W
℄110'
849+66±R/W.Cor.
℄80'

(7A)
BELLON-AFRICA
FAMILY FARMS LC.
Sta 857+23.00
144'-10"x30'-0" I-Beam
Span Bridge with 0° skew

853+90
℄190'
856+14±Ex.R/W
℄220'

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

(8R)
UNION PACIFIC
RAILROAD CO

Union Pacific Railroad

857+69±Ex.R/W
℄165'

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

(9)
KATHLEEN M MCNAMARA

TEMPORARY EASEMENT
TO SHAPE

DAVID T MCNAMARA &
KATHLEEN M MCNAMARA
(14)

TEMPORARY EASEMENT TO
SHAPE & CONST. ENTRANCE

(10)
DAVID T MCNAMARA

860+05
℄120'
860+55
℄75'±Prop.R/W
862+70
℄75'±Prop.R/W
862+75
℄115'
861+31±℄
℄75'
861+30±℄
℄80'
863+75
℄135'
+19.80 Prop.
Type "C" Ent.
864+05±℄
℄210'
864+50
℄210'
864+55
℄130'
864+03±℄
℄60'

855
860
865
3865

U.S. Hwy. 151

849+64±Ex.R/W
℄65'
(6)
E. A. & SHERRY K.
COLLINGWOOD

851+60
℄75'±Ex.R/W
851+14±℄
℄75'
(7)
852+55.00
℄84'±Ex.R/W
CHRISTOPHER N.
SANKOT

TEMPORARY EASEMENT
TO SHAPE

0 FEET 50

Losey Avenue

JEFFREY IA
GUCKENBERGER
(12)
AMY JO JORDAN

Prairie Avenue

864+80
℄74'±Ex.R
JUL

REVISED	02-22-18	PAR	8R

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)--2R-57
Plan Date: 04-16-18
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.2

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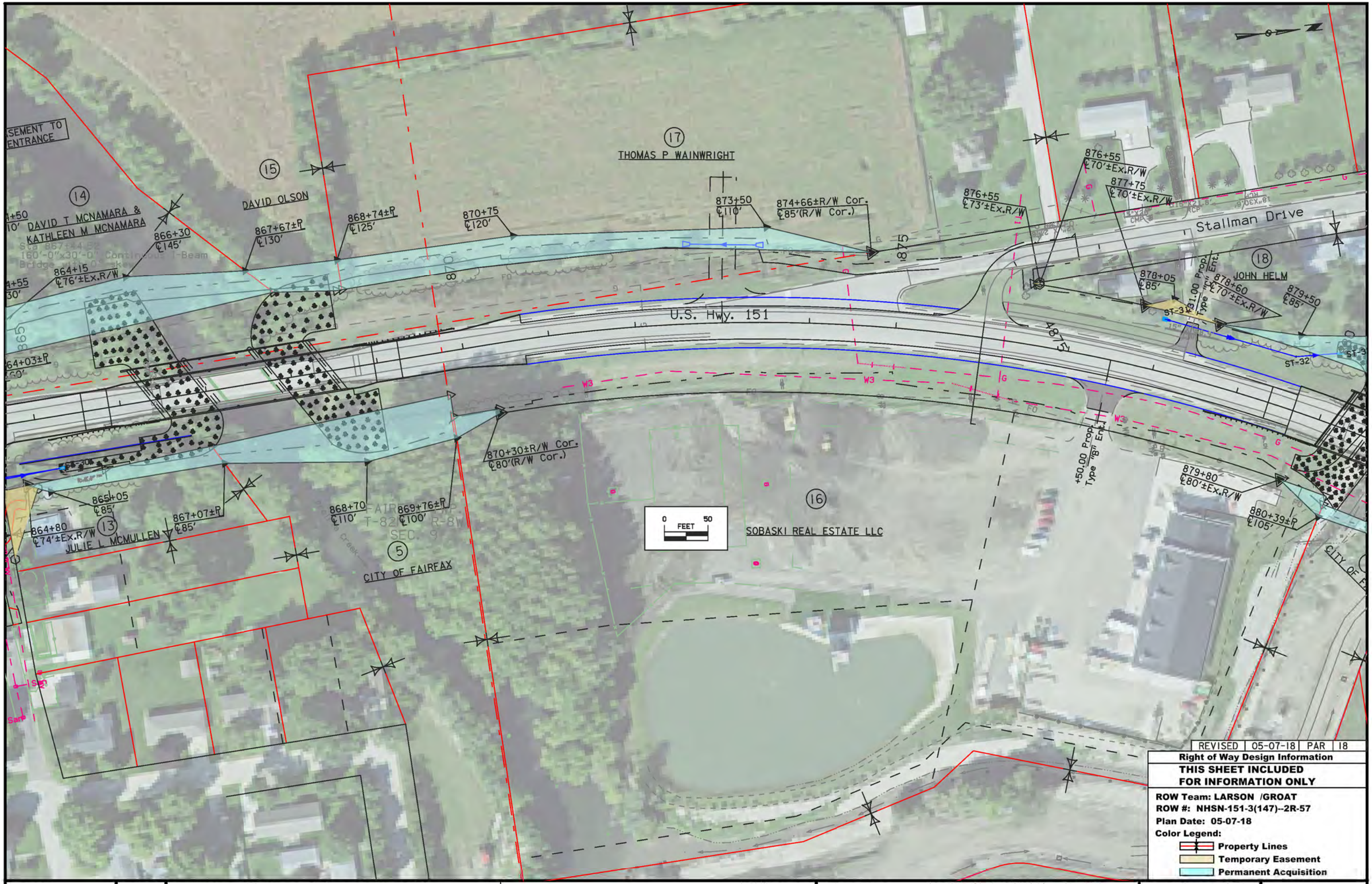

REVISED | 05-07-18 | PAR | 18

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)--2R-57
Plan Date: 05-07-18
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.3

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TEMPORARY EASEMENT TO SHAPE

TEMPORARY EASEMENT TO SHAPE

TEMPORARY EASEMENT TO SHAPE

TEMPORARY EASEMENT TO SHAPE & CONSTRUCT ENTRANCE

TEMPORARY EASEMENT TO CONSTRUCT ENTRANCE

TEMPORARY EASEMENT TO SHAPE & CONSTRUCT ENTRANCES

TEMPORARY EASEMENT TO SHAPE

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

Sta. 890+96.75, 48' LT U.S. Hwy. 151
Install 18" X 56' CMP With Two Aprons
F.L. = Sta. 889+65.73, Lt. 755.67
Sta. 891+28.45, Rt. 755.60

MATTHEW ST GERMAIN INVESTMENTS, LLC
Sta. 891+10.00, 48.3' RT U.S. Hwy. 151
Install 18" X 44' CMP With Two Aprons
F.L. = Sta. 890+84.92, Rt. 755.46
Sta. 891+34.27, Rt. 755.60

FAIRFAX TWP.
T-92N R-8W
SEC. 9

0 FEET 50

REVISED	05/24/18	PAR	24&25
REVISED	03-28-18	PAR	19
REVISED	02-02-18	PAR	24A
REVISED	12-27-17	PAR	24A

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)--2R-57
Plan Date: 07/20/18
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.4

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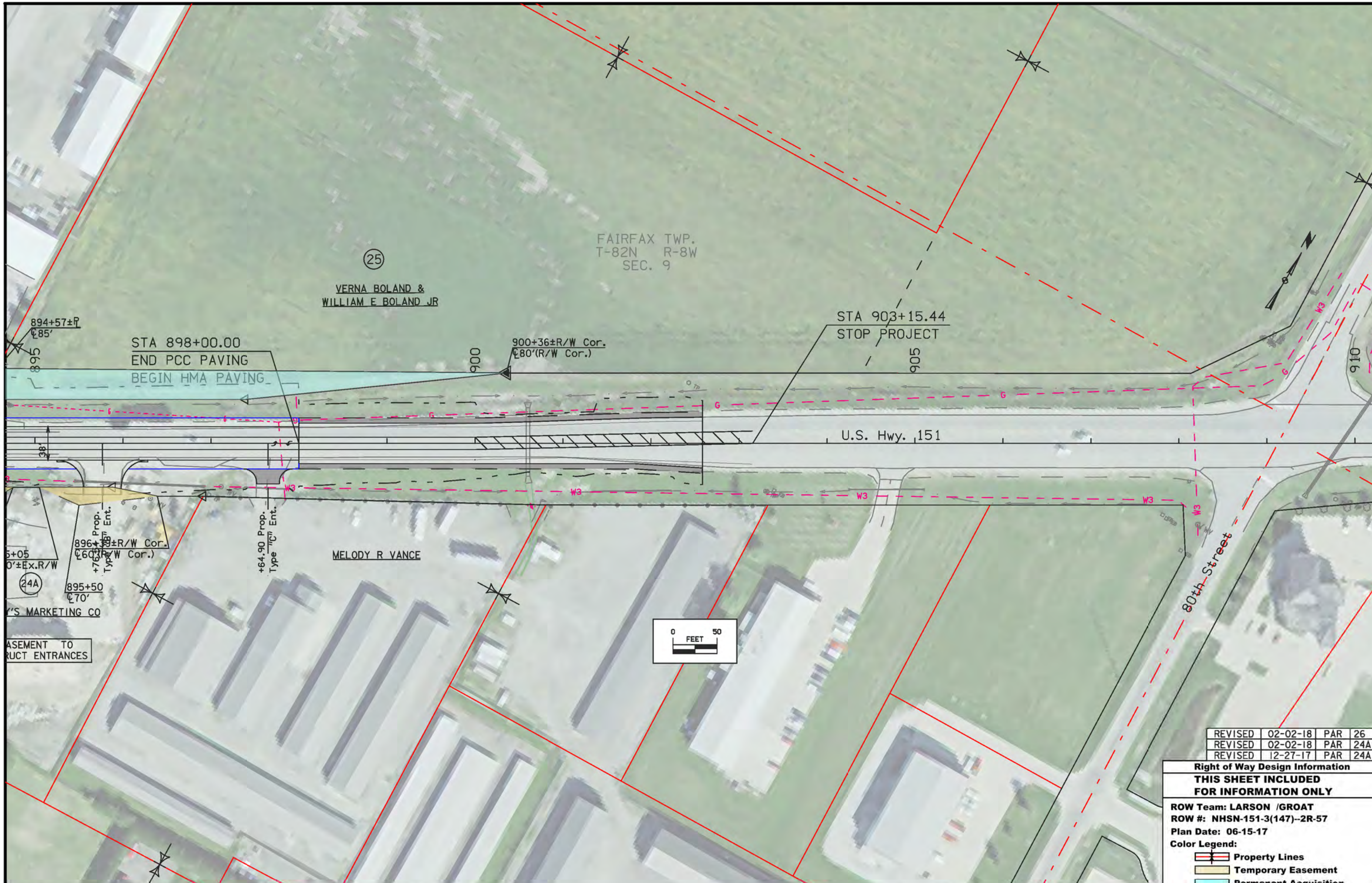

REVISED	02-02-18	PAR	26
REVISED	02-02-18	PAR	24A
REVISED	12-27-17	PAR	24A

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)--2R-57
Plan Date: 06-15-17
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

STA 974+70.00
RESUME PROJECT

975

980

979+45
℄90'±Ex.R/W

980+60
℄150'±Prop. R/W

980+40
℄215'

980+30
℄165'

980+95
℄245'

980+70
℄165'

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

(28)
HAWKS RIDGE
HOMEOWNERS ASSOC.

981+15±R
℄135'

981+14±R
℄125'

981+27±R
℄200'

981+50
℄155'

981+30
℄120'

981+45
℄90'±Ex.R/W

982+50
℄130'
(Remove)

981+70
℄90'±Ex.R/W

981+80
℄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'

985

TEMPORARY EASEMENT TO
SHAPE & CONSTRUCT ENT.

STA 984+83.16
END PROJECT

U.S. Hwy. 151

977+75
℄80'

978+85
℄80'

978+95
℄100'

979+50
℄140'

979+50
℄160'

(29)
IRVIN I MARTINSON RESIDUARY TRUST &
MARCELLA MARTINSON REVOCABLE TRUST

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

981+05
℄70'±Ex.R/W

980+80
℄70'±Ex.R/W

980+45
℄135'

980+30
℄165'

TEMPORARY EASEMENT TO
SHAPE & CONSTRUCT
SANITARY SEWER

979+70
℄190'

979+70
℄230'

980+20
℄150'

980+15
℄230'

980+00
℄142'±Prop.R/W

+75.00 Prop. Type "C" Ent.

RICHARD & ROBERTA
REID

0 50
FEET

REVISED	02-08-18	PAR	28&30

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(135)--2R-57
Plan Date: 04-26-18
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.6

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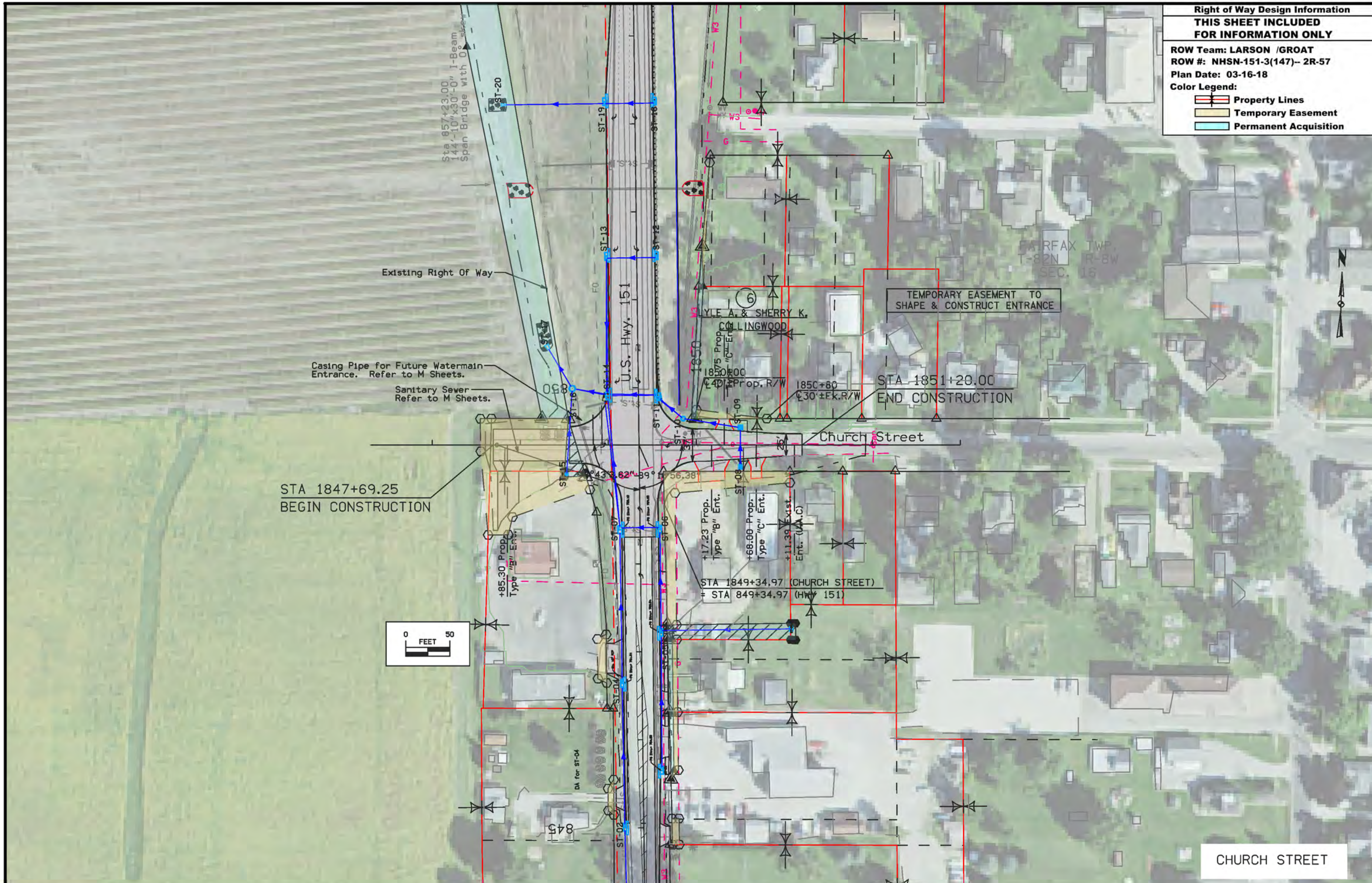
Right of Way Design Information
THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)-- 2R-57
Plan Date: 03-16-18
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition



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: 04-03-18
Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition

REVISED	04-03-18	PAR	12

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

(13) JULIE L. MCMULLEN

Protect Existing Well

TEMPORARY EASEMENT TO SHAPE & CONSTRUCT ENTRANCE

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

2865+00±Prop.R/W

2865+30±Prop.R/W

89°15'34.61"

Prairie Avenue

3864+65±PI
℄40'
3864+50
℄40'
3863+90
℄39'

STA 2864+99.34 (PRAIRIE AVENUE)
3863+65 = STA 3864+99.34 (LOSEY DRIVE)

(12) AMY JO JORDAN

3862+86±PI
℄40'
3863+50
℄40'

U.S. Hwy. 151

Losey Avenue

0 FEET 50

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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108-23A
08-01-08

TRAFFIC CONTROL PLAN

U.S. 151 will be closed to through traffic throughout the project area for the duration of the project. Through traffic will use the detour route details on Sheets J.3-J.7. The road will remain open to local traffic throughout construction via local detour route, as detailed on Sheet J.8-J.9, with the exception of the UPRR Bridge, which will be closed. Refer to Staging Notes for additional information. All conflicting route markers along detour route shall be covered or removed. Detour signing and traffic control devices shall be in place prior to start of work. At the direction of the Engineer, remove, cover relocate or adjust existing signs for temporary traffic control, this shall be considered incidental to the project.

Church Street
Access to Church Street from U.S. 151 must be maintained between May 1st and August 15th. Church Street may be closed at U.S. 151 during intersection reconstruction utilizing the local detour route shown on Sheet J.8.

Prairie Avenue
Acccess to Prairie Avenue from U.S. 151 shall be maintained through Stage 2. Following completion and opening of U.S. Highway 151 bridge at UPRR, access will be closed to complete intersection reconstruction.

Stallman Drive
Stallman Drive will be closed at U.S. 151 during intersection construction. Access to Stallman Drive via West Cemetery Road and access to West Cemetery Road intersection at U.S. 151 shall be maintained during Stallman Drive intersection closure.

Cemetery Road
Cemetery Road will be closed at U.S. 151 during intersection reconstruction. West Cemetery Road and East Cemetery Road intesections shall not be closed at the same time. West Cemetery Road and Stallman Drive intersetions with U.S. 151 shall not be closed at the same time.

Beverly Road
Beverly Road will be closed at U.S. 151 during culvert installation. Refer to local detour route on Sheet J.9.

Access to properties within the project area shall be maintained at all times. Provide access to emergency vehicles at all times during construction. If alternative construction staging is requested, it must be submitted to and approved by the Engineer prior to the start of the project. Maintain garbage and mail service to properties as necessary throughout construciton, this shall be considered incidental to the project.

111-01
04-17-12

COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
BRF-151-3(141)--38-57	UPRR Bridge
BRF-151-3(142)--38-57	Prairie Creek Bridge
BRF-151-3(152)--38-57	Drainage Ditch No. 1 Bridge
NHSX-151-3(134)--3H-57	Drainage Ditch No. 2 Structure

108-26A
08-01-08

STAGING NOTES

Staging designations may not match designations shown in structural plans.

U.S. HIGHWAY 151, SOUTH OF CHURCH STREET

Stage 1A:
Traffic utilizes existing pavement, U.S. 151 to remain open to maintain access to properties located adjacent to construction area. Shift traffic to westen half of existing pavement. Construct U.S. 151 improvements on east side. Construct Church Street intersection from western limit to eastern end of radius. Sub-stage driveway replacement to maintain property access.

Stage 1B:
Shift traffic to east half of existing pavement utilizing previously constructed pavement. Construct U.S. Highway 151 improvements on west side. Construct remaining portion of Church Street east of U.S. Highway 151. Sub-stage driveway replacement as much as practical to maintain property access. Upon completion, open Church Street intersection to local traffic, U.S. Highway 151 to remain closed north of Church Street until completion of U.S. Highway 151 pavement and bridge at UPRR.

U.S. HIGHWAY 151, CHURCH STREET TO PRAIRIE AVENUE (UPRR BRIDGE CONSTRUCTION)

Stage 1A-2B:
Close roadway from north of Church Street to south of Prairie Avenue. Construct walls, bridge, pavement and temporary pavement. Perform longitudinal grooving on the bridge deck and approach pavement prior to opening to traffic.

U.S. HIGHWAY 151, UPRR TO 80TH STREET

Stage 1C:
Traffic utilizes existing roadway. Construct temporary pavement along east side of U.S. 151 between Prairie Creek and STA 902+85.

Stage 2A:
Shift traffic to east side of U.S. Highway 151. Install temporary traffic signal at Prairie Avenue and north of Prairie Creek Bridge, install per these plans and TC-216. Traffic will utilize a single lane across the existing Prairie Creek Bridge. North of Prairie Creek Bridge, two lanes of traffic will utilize existing pavement and previously constructed temporary pavement. Maintain access to Stallman Drive, close West Cemetery Road at U.S. Highway 151 to complete intersection improvements. Construct proposed improvements on west half of U.S. Highway 151 and install temporary pavement at the Prairie Creek and Drainage Ditch #1 Bridge. Close and reconstruct entrance at STA 894+21 (LT), maintain access to entrance at STA 890+96.75 (LT).

Stage 2B:
Maintain traffic as described in Stage 2A. Reopen U.S. Highway 151 intersection at West Cemetery Road. Close and reconstruct Stallman Drive intersection. Reopen driveway at STA 894+21 (LT), close and reconstruct entrance at STA 890+96.75 (LT). Construct improvements on west half of U.S. Highway 151 from STA 898+00 to STA 903+15. Construct temporary pavement to maintain a minimum of 29’ from centerline.

Stage 3A:
Open U.S. Highway 151 bridge at UPRR. Shift traffic to the west side of U.S. Highway 151. Two lanes of traffic will utilize previously constructed pavement and temporary pavement. Close access to U.S. Highway 151 at Prairie Avenue intersection, construct Prairie Avenue and Losey Avenue. Construct proposed improvements on east half of U.S. Highway 151. Maintain access at STA 877+50 (RT). Close East Cemetery Road intersection at U.S. Highway 151. Close and reconstruct entrance at STA 891+10 (RT) and STA 895+76.54, maintain access to entrance at STA 894+18.50 (Casey's General Store). Close and reconstruct entrance at STA 897+94.90 (RT).

Stage 3B:
Maintain traffic as described in Stage 3A. Reopen U.S. Highway 151 access to East Cemetery Road and driveways constructed in Stage 3A. Reconstruct entrance at STA 877+50 (RT), sub-stage to maintain access. Close and reconstruct entrance at STA. 894+18.50 (RT). Construct improvements on east half of U.S. Highway 151 from STA 898+00 to STA 903+15.

Stage 4:
Shift traffic to east side of previously constructed pavement. Remove temporary pavement and construct remaining improvements on west side.

BEVERLY ROAD

Stage 1: Close Beverly Road at U.S. Highway 151 intersection, utilize local detour shown on sheet J.9. Complete proposed improvements.

U.S. HIGHWAY 151, DRAINAGE DITCH #2

Stage 1:
Traffic utilizes existing roadway. Traffic will utilize a single lane across the existing Drainage Ditch #2 Bridge. Install temporary signals on east and west side of bridge per these plans and TC-216. Construct portion of structure and U.S. highway 151 improvements left of centerline and construct temporary detour pavement to accommodate two-way traffic in Stage 2.

Stage 2:
Shift traffic to temporary detour pavement constructed in previous stage. Construct remaining portion of structure and U.S. Highway 151 improvements right of centerline.

Stage 3:
Shift traffic to previously constructed pavement. 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

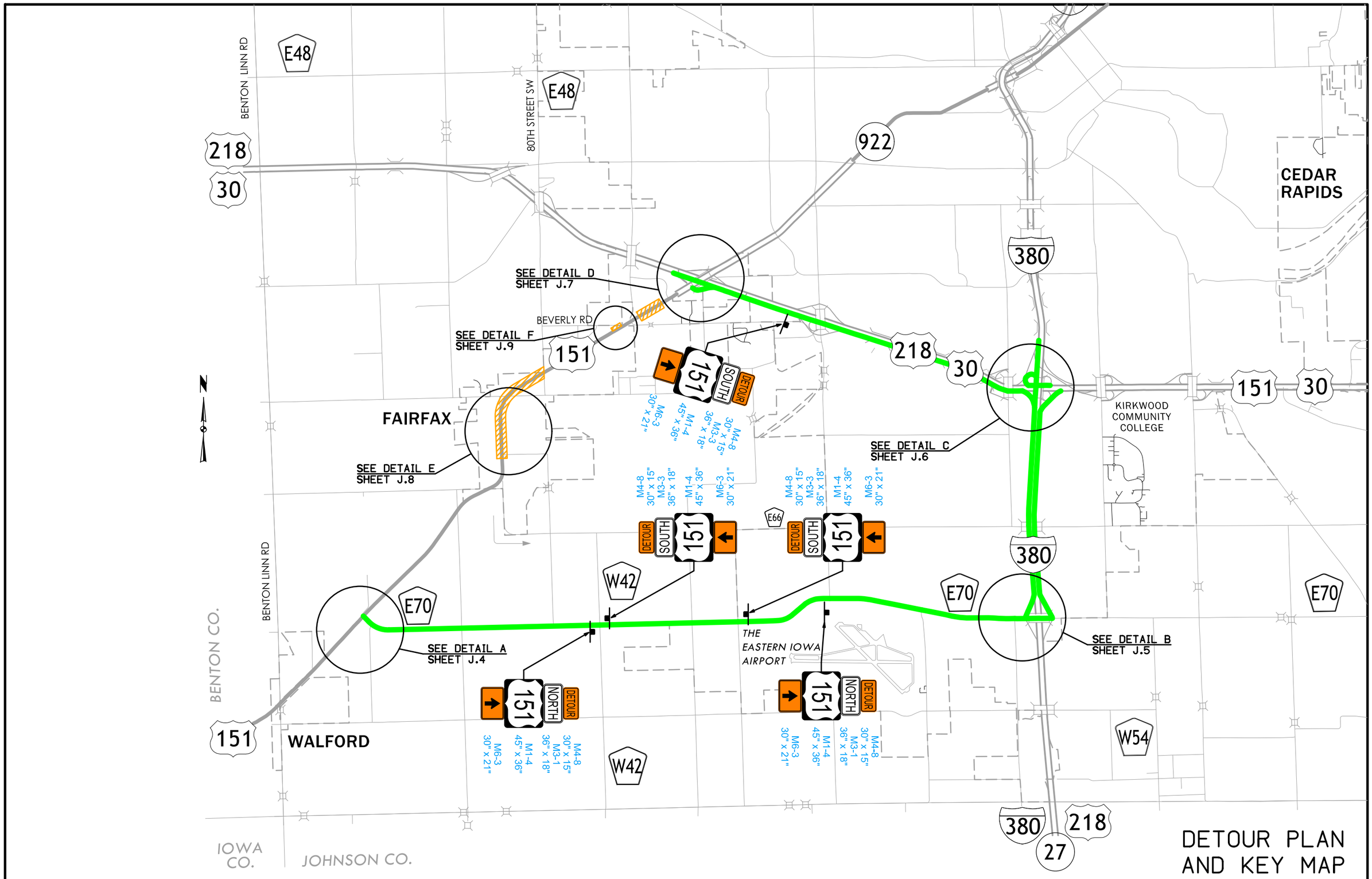
PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

- Channelizing Device
- Drum
- Temporary Lane Separator
- Tubular Marker
- Channelizer Marker
- Concrete Barrier Marker
- Delineator
- Temporary Barrier Rail
- Pavement Removal
- Sand Barrel Layout
- Portable Changeable Message Sign
- Work Area
- Detour Route
- Crash Cushion (Temp or Perm)
- Traffic Signal
- Flagger
- Temporary Floodlighting
- Existing Traffic Sign
- Proposed Traffic Sign
- Type III Barricade
- Type A Warning Light
- Type B High Intensity Flashing Warning Light
- Direction of Traffic
- Safety Closure
- Lane Identification (1)

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

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES J)



DETOUR PLAN AND KEY MAP

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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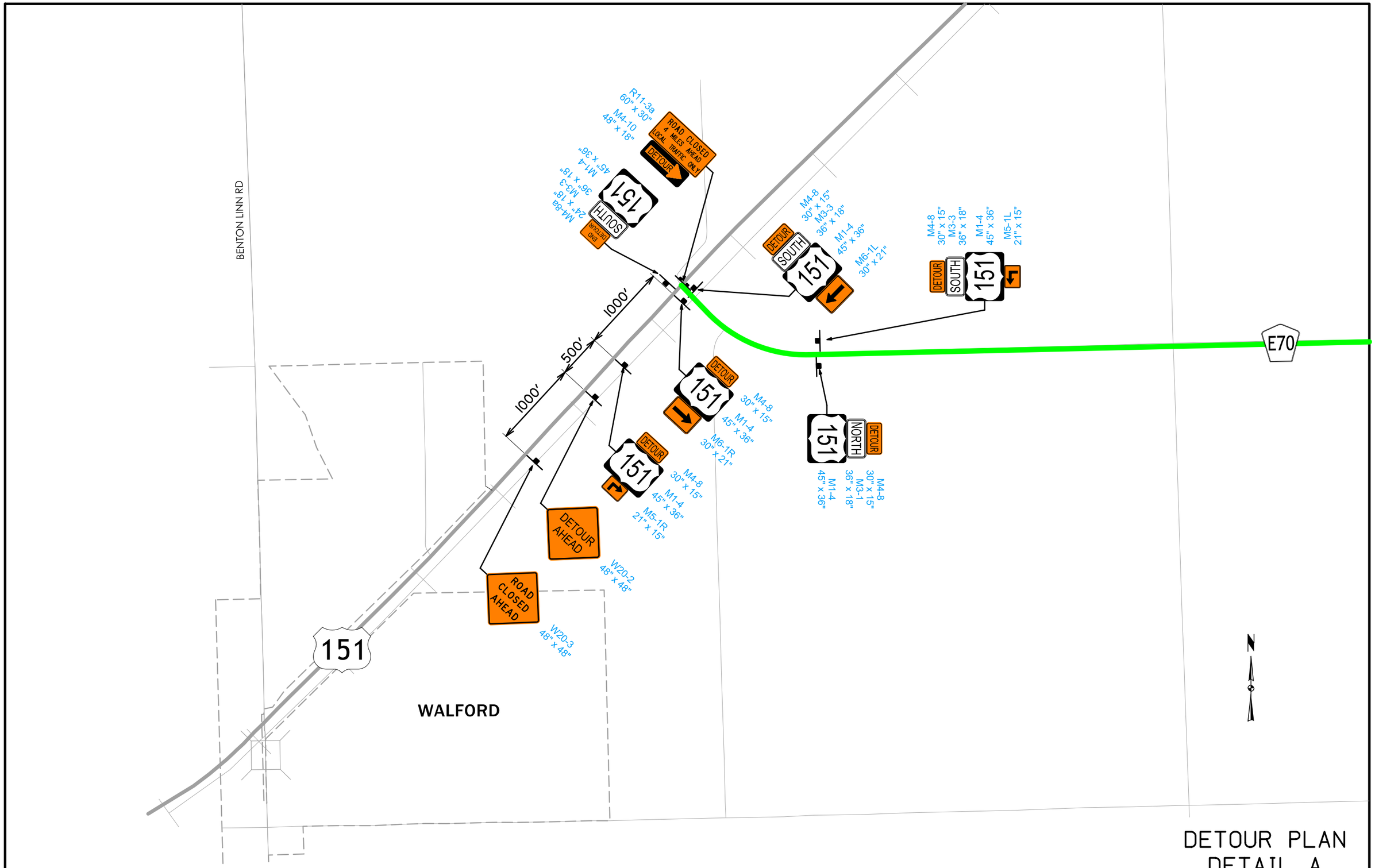

DETOUR PLAN
DETAIL A

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

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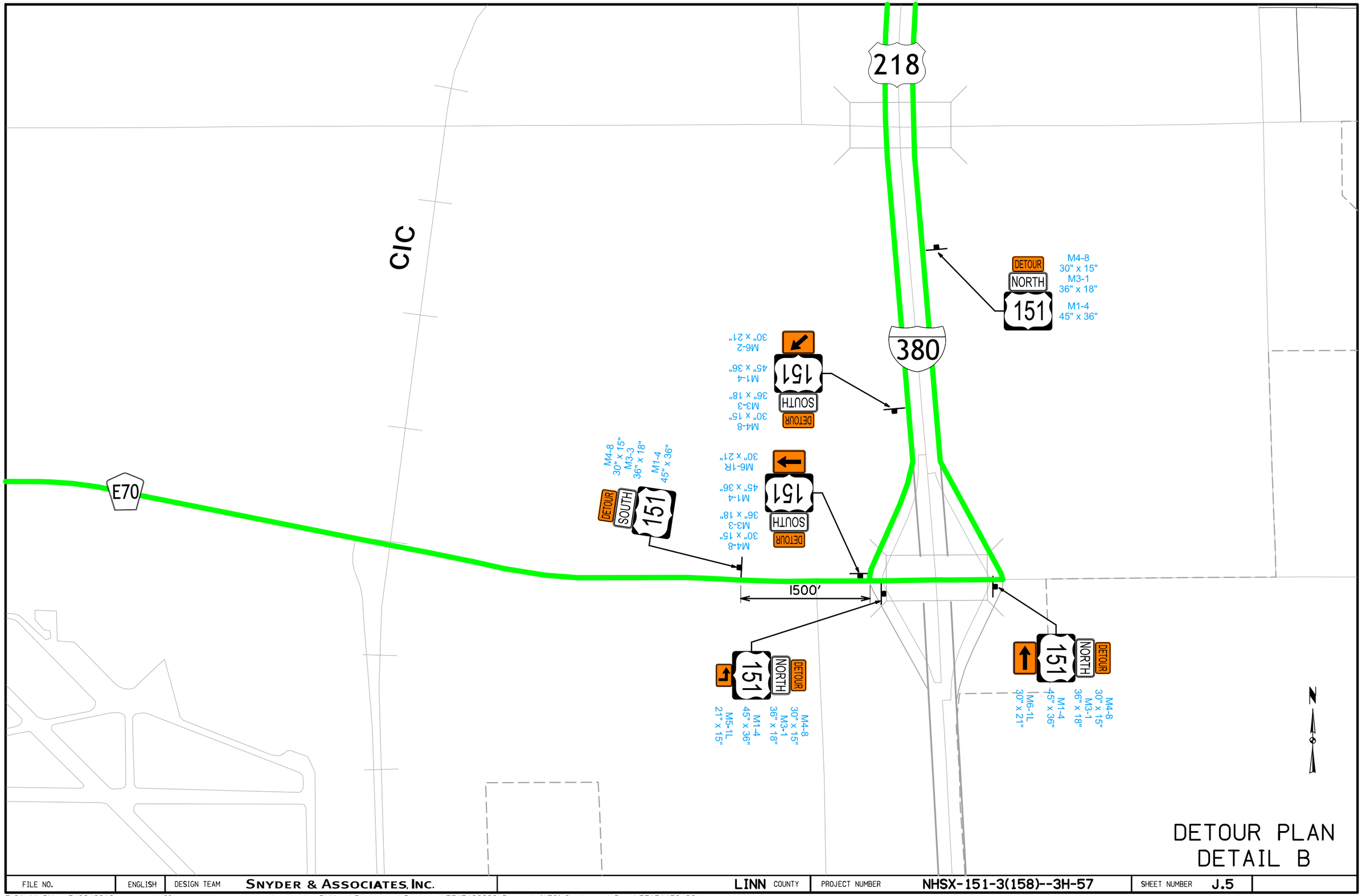

DETOUR PLAN
DETAIL B

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

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Cover Conflicting Route Signing on Existing Overhead Truss Sign

SPECIAL SIGN 120" x 84"

151 CLOSED SOUTH OF 30 FOLLOW DETOUR

380

UP

CIC

BOWLING STREET SW

C STREET SW

SPECIAL SIGN 120" x 84"

151 CLOSED SOUTH OF 30 FOLLOW DETOUR

M6-3 30" x 21"
M1-4 45" x 36"
M3-3 36" x 18"
M4-8 30" x 15"
151 SOUTH DETOUR

M4-8 30" x 15"
M3-3 36" x 18"
M1-4 45" x 36"
M6-2 30" x 21"
DETOUR SOUTH 151

218

30

151

KIRKWOOD COMMUNITY COLLEGE

M6-2 30" x 21"
M1-4 45" x 36"
M3-3 36" x 18"
M4-8 30" x 15"
151 SOUTH DETOUR

M4-8a 24" x 18"
M3-1 36" x 18"
M1-4 45" x 36"
151 NORTH END DETOUR

DETOUR NORTH 151

M4-8 30" x 15"
M3-1 36" x 18"
M1-4 45" x 36"
M6-2 30" x 21"

218

M1-4 45" x 36"
M3-3 36" x 18"
M4-8 30" x 15"
151 SOUTH DETOUR

380

N

DETOUR PLAN DETAIL C

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

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218

30

922

151

Cover Conflicting Route Signing on Existing Sign

SPECIAL SIGN 120" x 84"

FOLLOW DETOUR
151 SOUTH OF 30 CLOSED

SPECIAL SIGN 120" x 84"

FOLLOW DETOUR
151 SOUTH OF 30 CLOSED

Cover Conflicting Route Signing on Existing Sign

R11-3a 60" x 30"
M4-10 48" x 18"
ROAD CLOSED 1/2 MILES AHEAD
LOCAL TRAFFIC ONLY
DETOUR

M4-8 30" x 15"
M3-3 36" x 18"
M1-4 45" x 36"
M6-1L 30" x 21"
151 SOUTH
DETOUR

M6-3 30" x 21"
M1-4 45" x 36"
M3-3 36" x 18"
M4-8 30" x 15"
151 SOUTH
DETOUR

Cover Conflicting Route Signing on Existing Sign

Cover Conflicting Route Signing on Existing Sign

M4-8 30" x 15"
M3-3 36" x 18"
M1-4 45" x 36"
M6-1L 21" x 15"
151 SOUTH
DETOUR

M1-4 45" x 36"
M3-3 36" x 18"
M4-8 30" x 15"
151 SOUTH
DETOUR

STONEY POINT ROAD NW

BEVERLY ROAD

BEVERLY ROAD

151

N

DETOUR PLAN DETAIL D

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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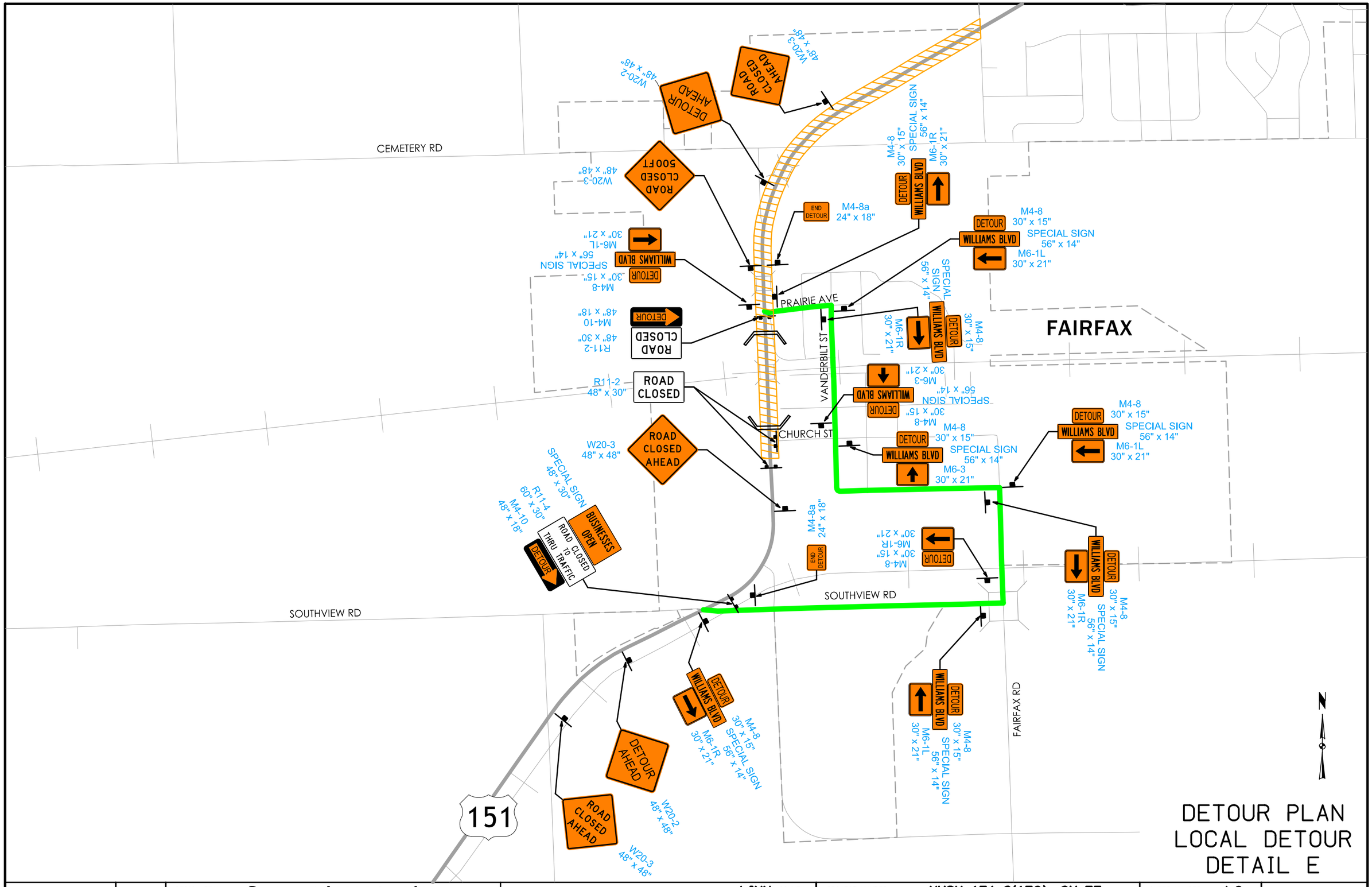
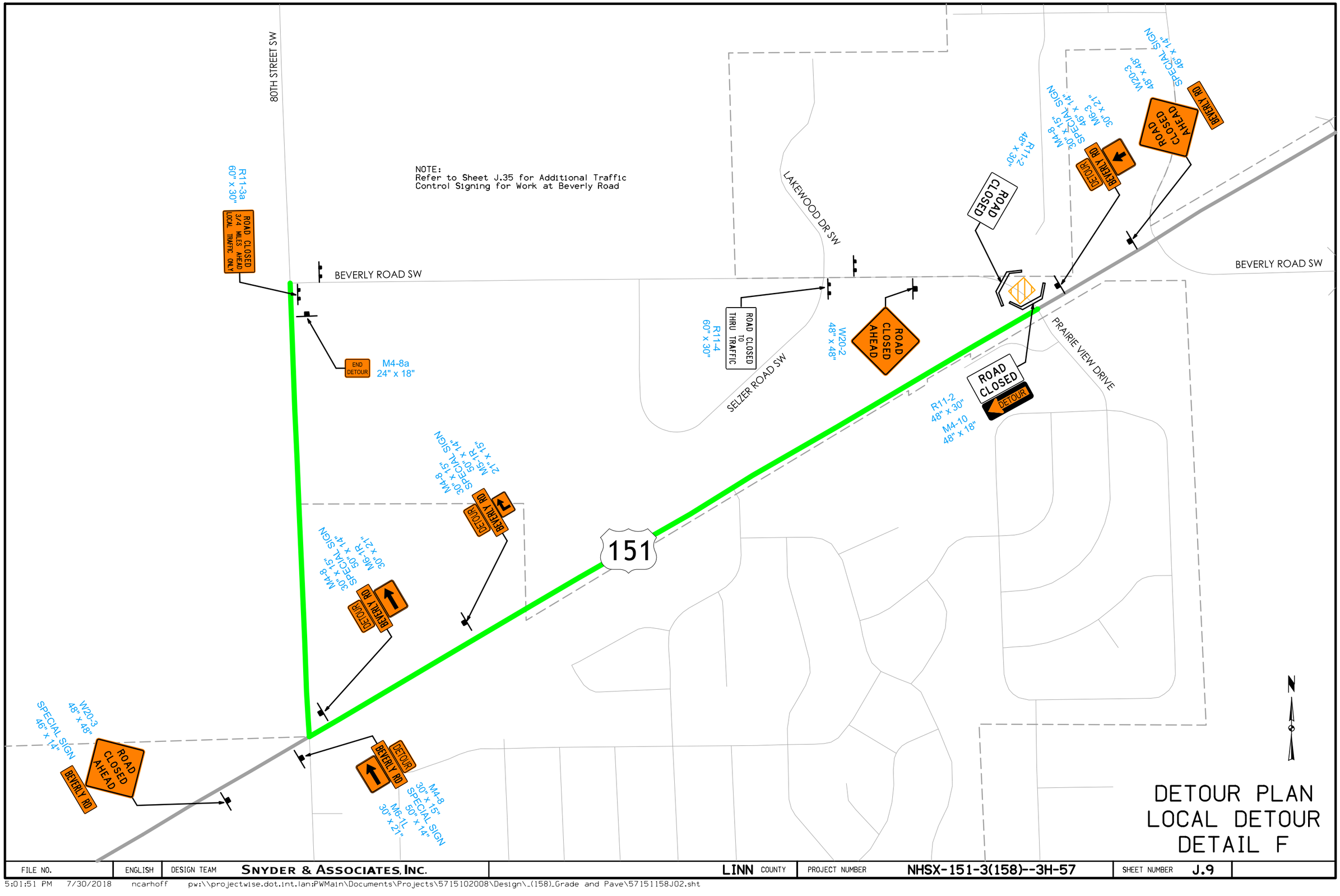


DETOUR PLAN
LOCAL DETOUR
DETAIL E

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

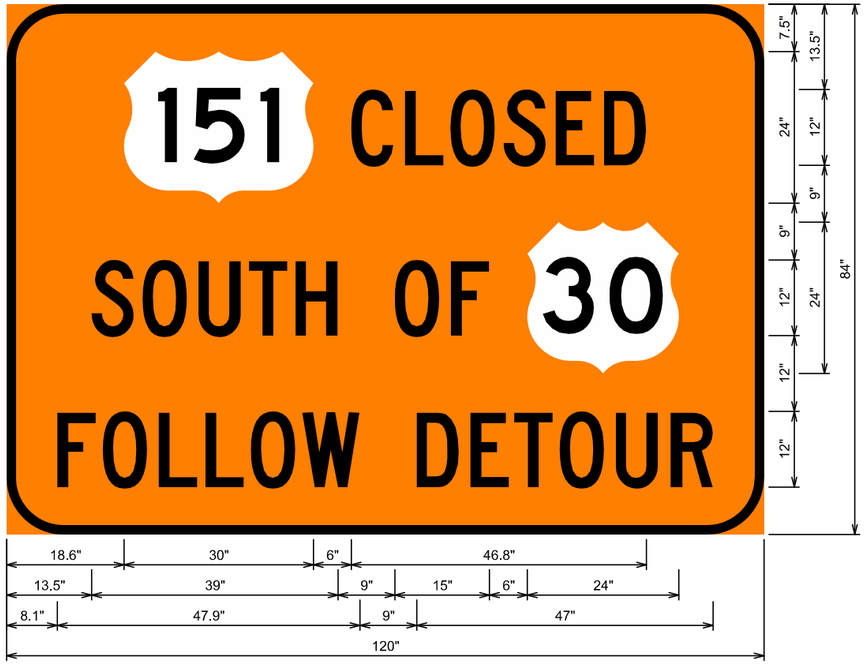
5:01:49 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



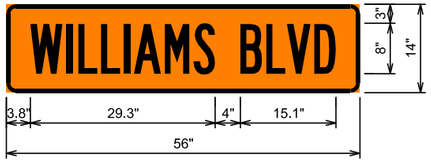
DETOUR PLAN
LOCAL DETOUR
DETAIL F

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

5:01:51 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



9.0" Radius, 1.5" Border, Black on Orange:
[CLOSED] C 2K 75 Spacing; [SOUTH OF] C 2K 75 Spacing; [FOLLOW DETOUR] C 2K 75 Spacing



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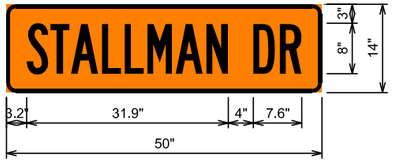
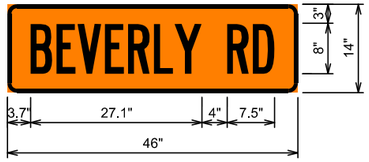
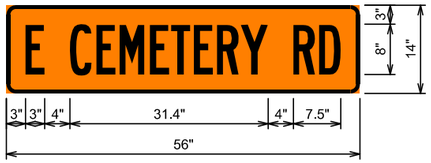
[WILLIAMS BLVD] B 2K 50 Spacing



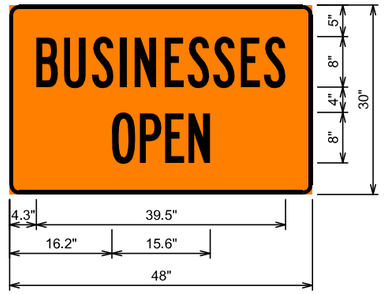
1.5" Radius, 0.6" Border, Black on Orange:
[STALLMAN DR] B 2K 50 Spacing



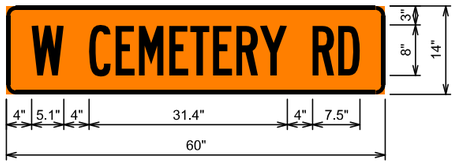
1.5" Radius, 0.6" Border, Black on Orange:
[BEVERLY ROAD] B 2K 50 Spacing



1.5" Radius, 0.6" Border, Black on Orange:
[E CEMETERY RD] B 2K 50 Spacing

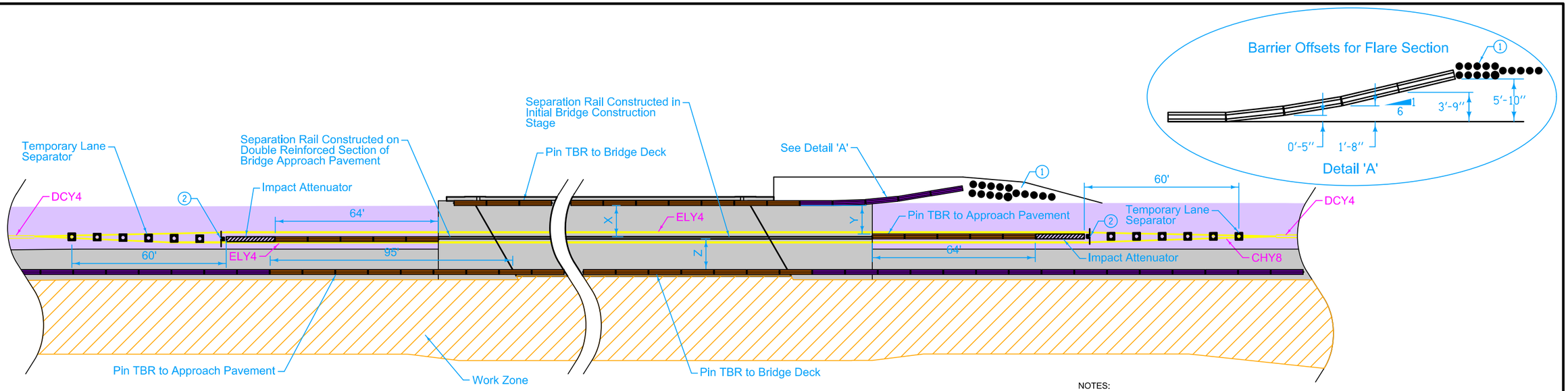


1.5" Radius, 0.6" Border, Black on Orange:
[BUSINESSES] B 2K 75 Spacing; [OPEN] B 2K 50 Spacing



1.5" Radius, 0.6" Border, Black on Orange:
[W CEMETERY RD] B 2K 50 Spacing

SPECIAL DETOUR SIGN DETAILS



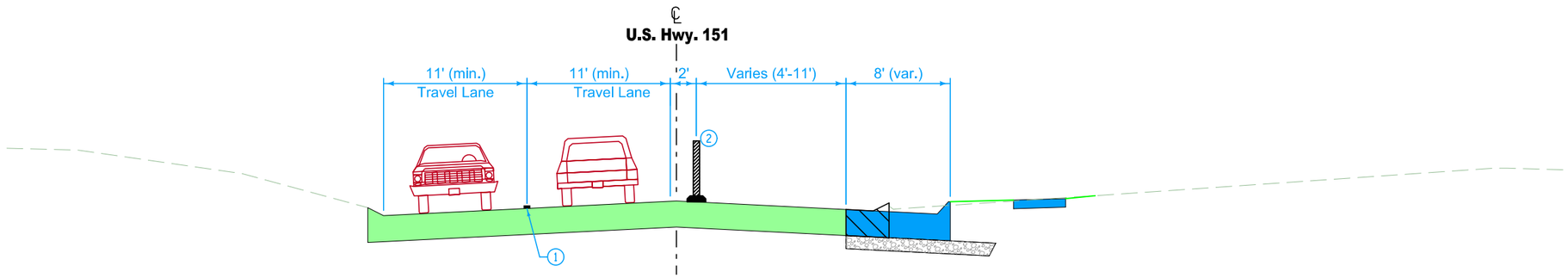
Construction Stage	Location	X	Y	Z	Remarks
Stage 3A/3B	Prairie Creek	12'-3"	11'-2"	12'-0"	Refer to Structual Drawings for Bridge Staging Details
	Drainage Ditch No. 1	12'-4"	11'-5"	12'-4"	Refer to Structual Drawings for Bridge Staging Details

NOTES:

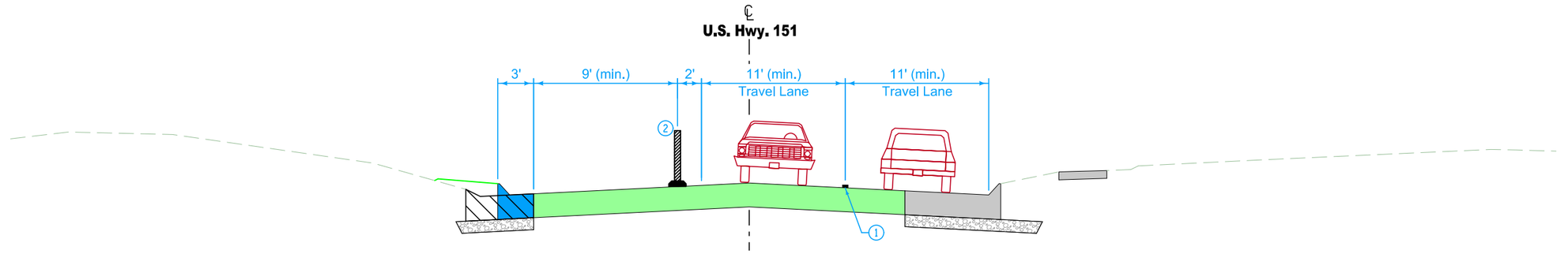
(1) Refer to Standard Road Plan BA-500 For Grading and Sand Barrel Layout Details.

(2) R4-7C Sign.

TEMPORARY BARRIER RAIL AT BRIDGE



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 1A
STA 843+88 TO 848+30
SHOWN IN DIRECTION OF STATIONING



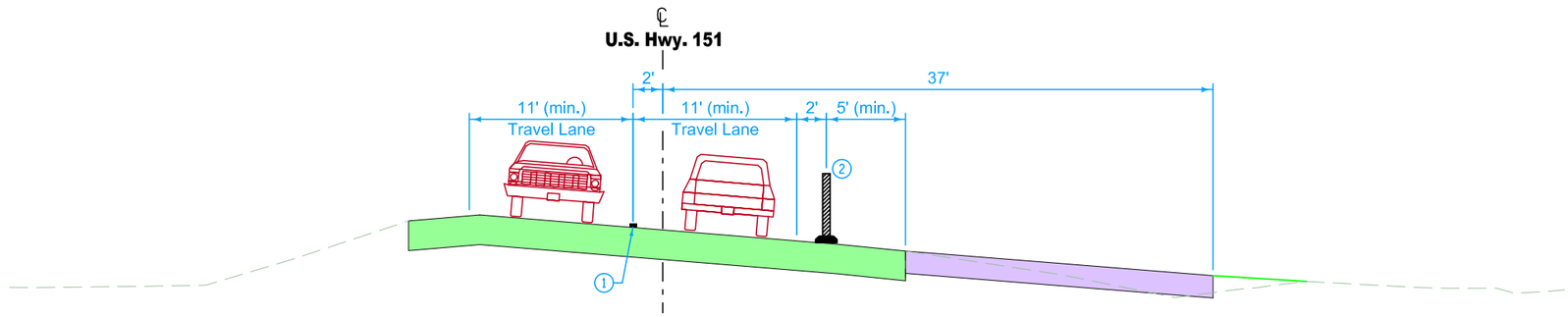
TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 1B
STA 845+05 TO 848+30
SHOWN IN DIRECTION OF STATIONING

NOTES:
1. Temporary Pavement Markings
2. 42" Channelizing Device

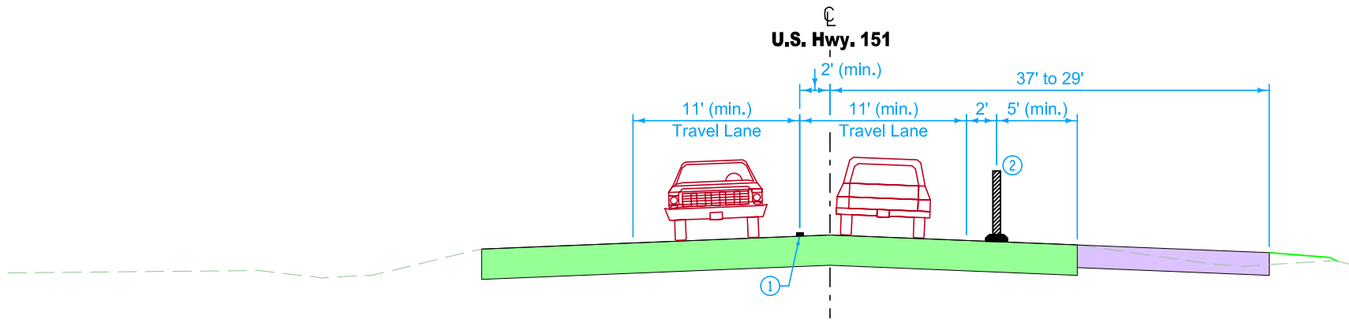
STAGING AT CHURCH STREET

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

5:01:54 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht

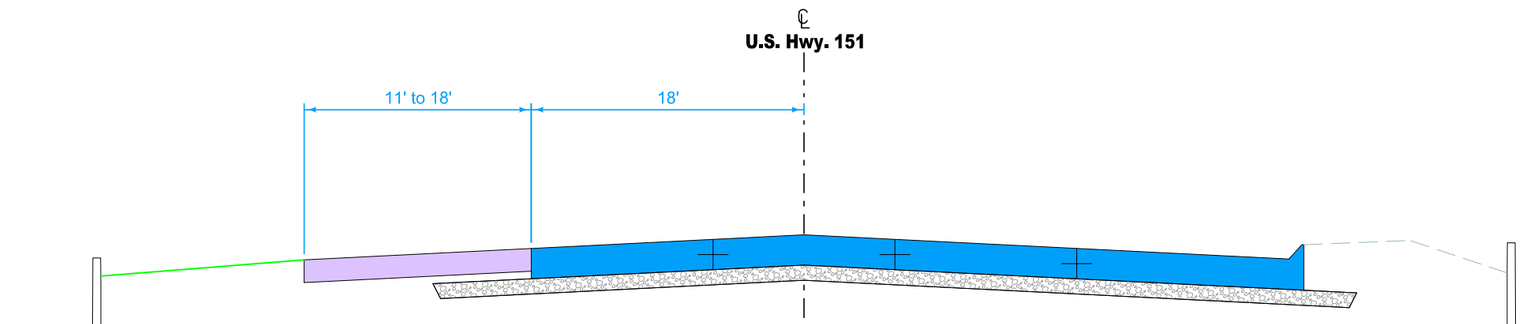


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 1C
STA 864+70 TO 898+00



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 1C
STA 898+00 TO 902+85

NOTES:
1. Temporary Pavement Markings
2. 42" Channelizing Device
3. Section of roadway to be closed while under construction, no temporary pavement markings needed

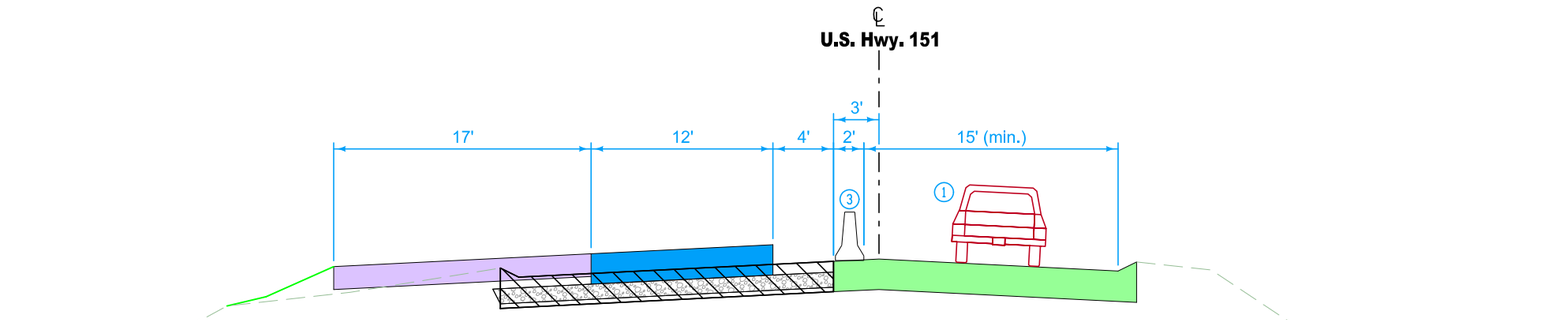


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
STA 860+20 TO 863+92

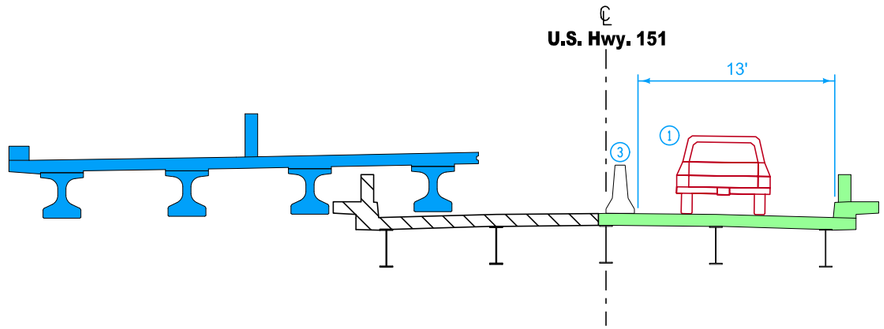
STAGING
PRAIRIE AVE. TO 80TH STREET

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

5:01:55 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
STA 863+92 TO 870+70



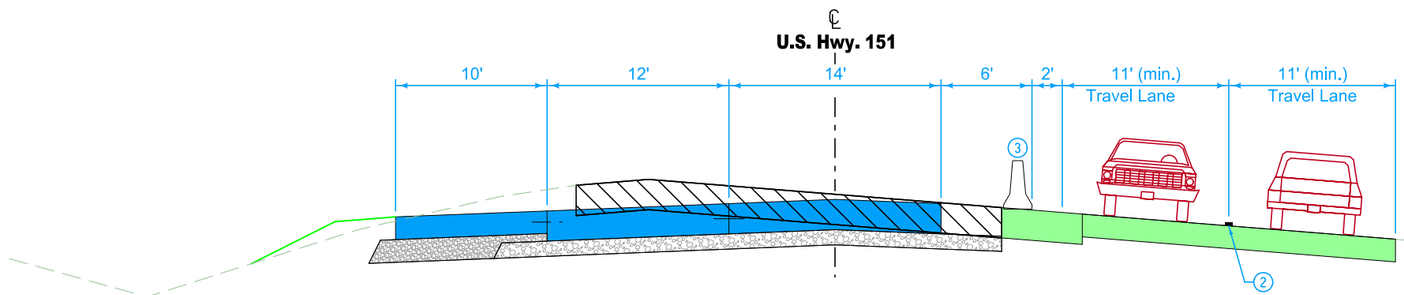
TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
PRAIRIE CREEK BRIDGE
BRF-151-3(142)–38-57

STAGE 2A:

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 and separation rail.

NOTES:

1. Traffic Lane to be Alternating Traffic by use of Temporary Traffic Signals
2. Temporary Pavement Markings
3. Temporary Barrier Rail, Anchored Across Bridge

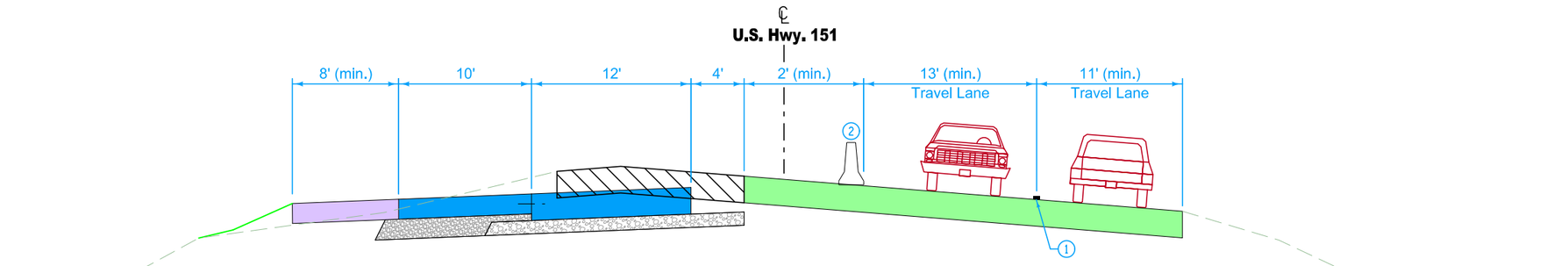


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
STA 870+70 TO 876+99

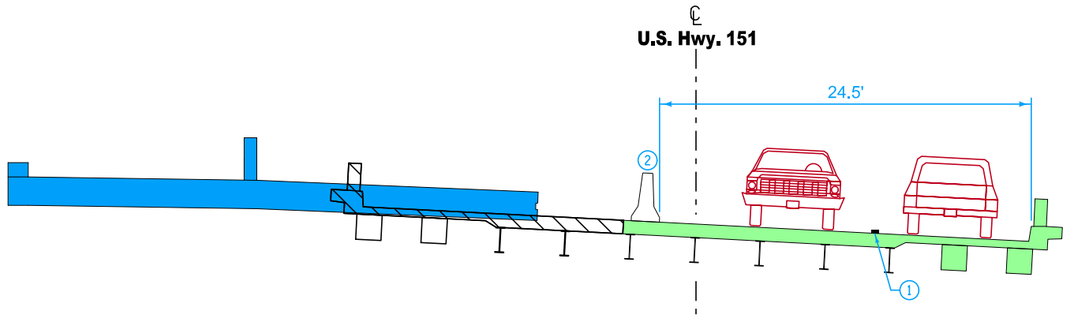
STAGING
PRAIRIE AVE. TO 80TH STREET

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

5:01:57 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
STA 876+99 TO 884+26



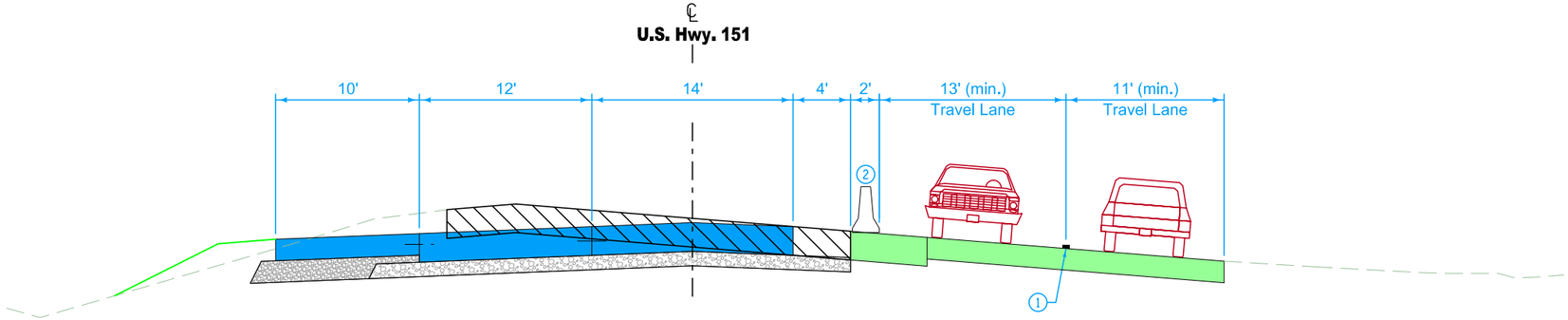
STAGE 2A:

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 and separation rail.

NOTES:

1. Temporary Pavement Markings
2. Temporary Barrier Rail, Anchored Across Bridge

TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
DRAINAGE DITCH NO. 1 BRIDGE
BRF-151-3(152)–38-57

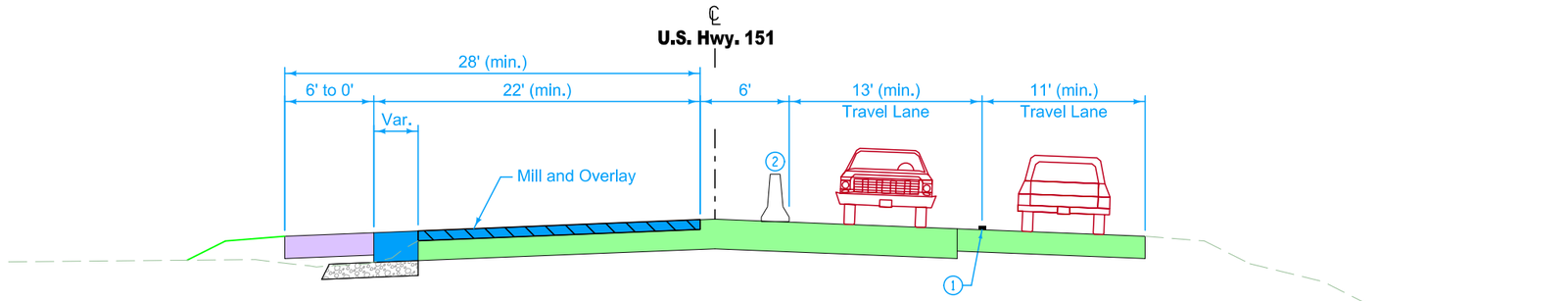


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
STA 884+26 TO 898+00

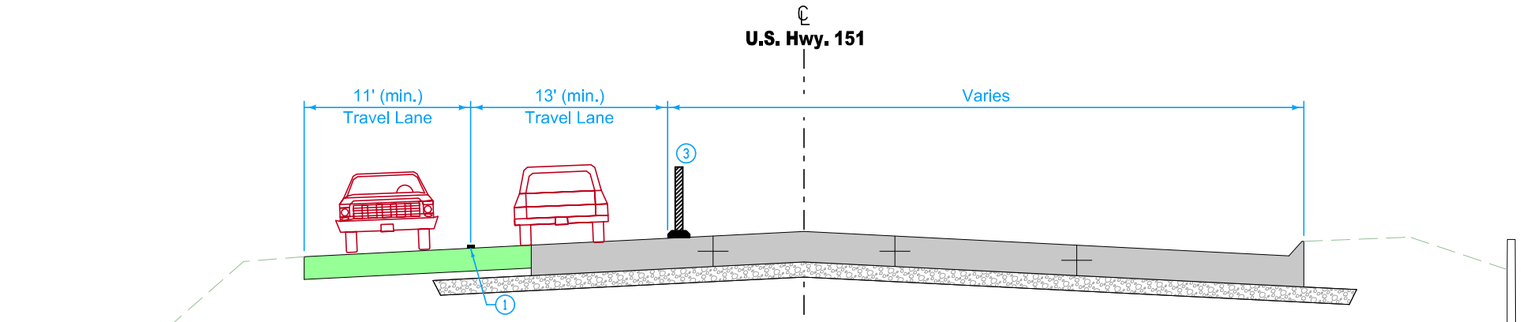
STAGING PRAIRIE AVE. TO 80TH STREET

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

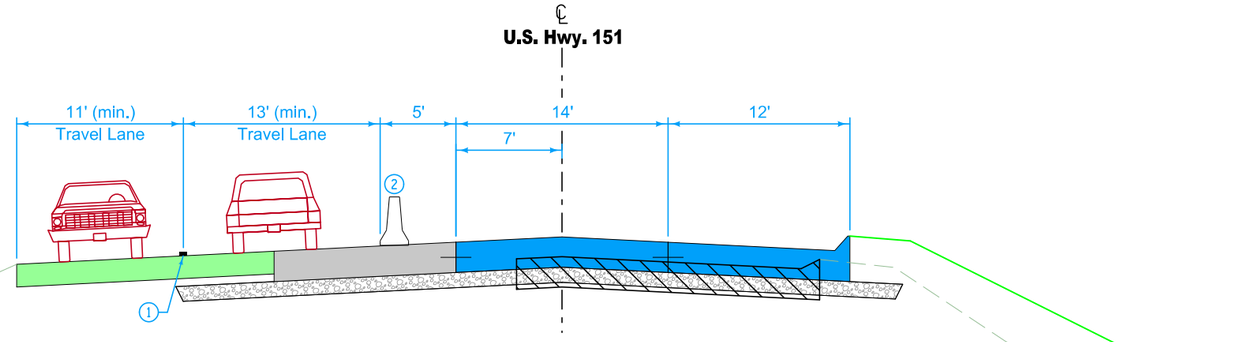
5:01:59 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2B
STA 898+00 TO 902+58



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3A
STA 860+20 TO 863+92



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3A
STA 863+92 TO 870+70

NOTES:
1. Temporary Pavement Markings
2. Temporary Barrier Rail
3. 42" Channelizing Device

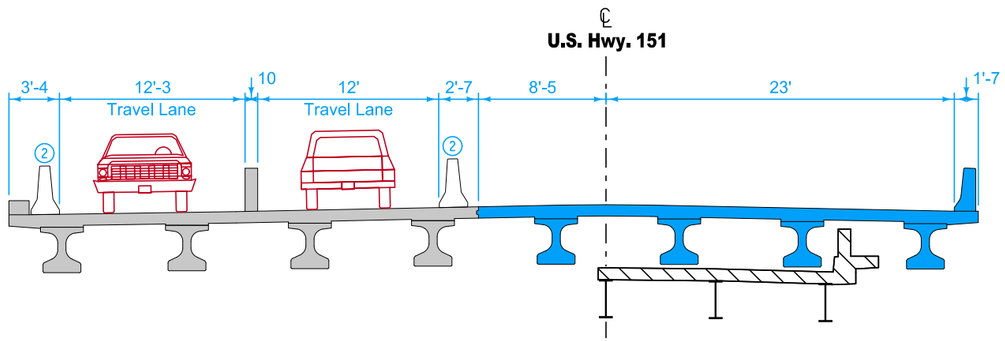
STAGING PRAIRIE AVE. TO 80TH STREET

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

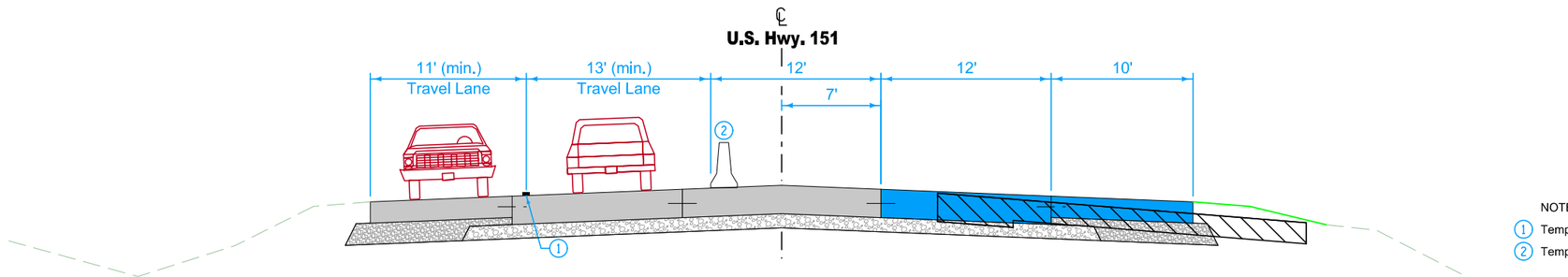
5:02:01 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht

STAGE 3A:

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.

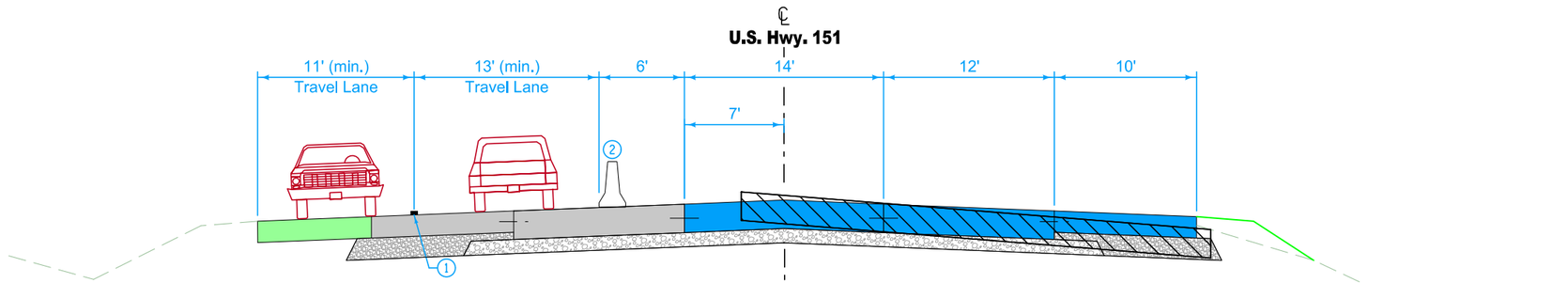


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3A
PRAIRIE CREEK BRIDGE
BRF-151-3(142)–38-57



NOTES:
1. Temporary Pavement Markings
2. Temporary Barrier Rail, Anchored Across Bridge

TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3a
STA 870+70 TO 876+99



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3A
STA 876+99 TO 884+26

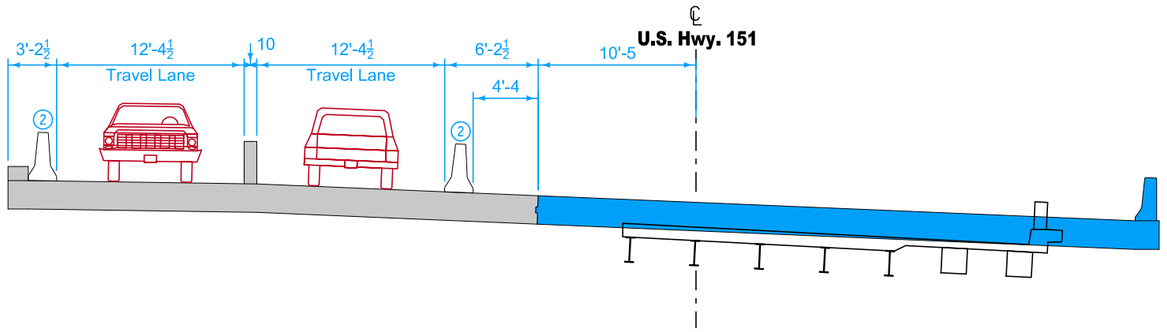
STAGING
PRAIRIE AVE. TO 80TH STREET

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

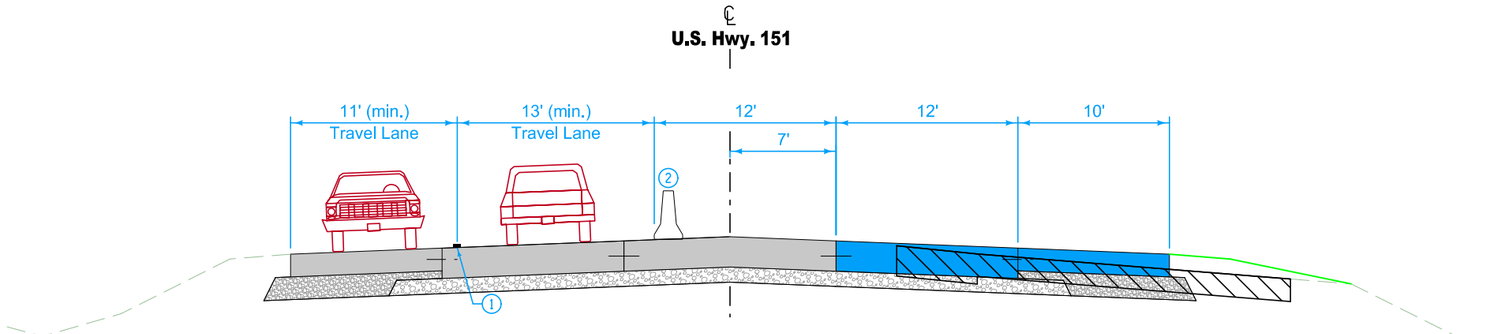
5:02:03 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht

STAGE 3A:

Shift traffic to two lane traffic on the west side of bridge. Remove east half of existing bridge and construct east portion of bridge, place temporary barrier rail.

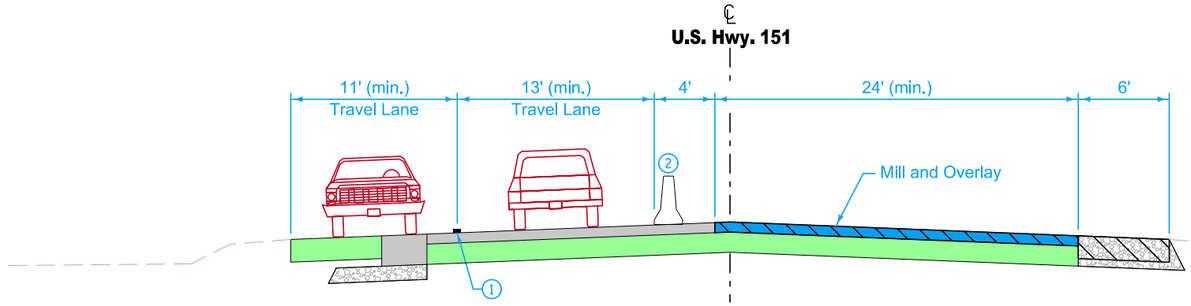


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3A
DRAINAGE DITCH NO. 1 BRIDGE
BRF-151-3(152)–38-57



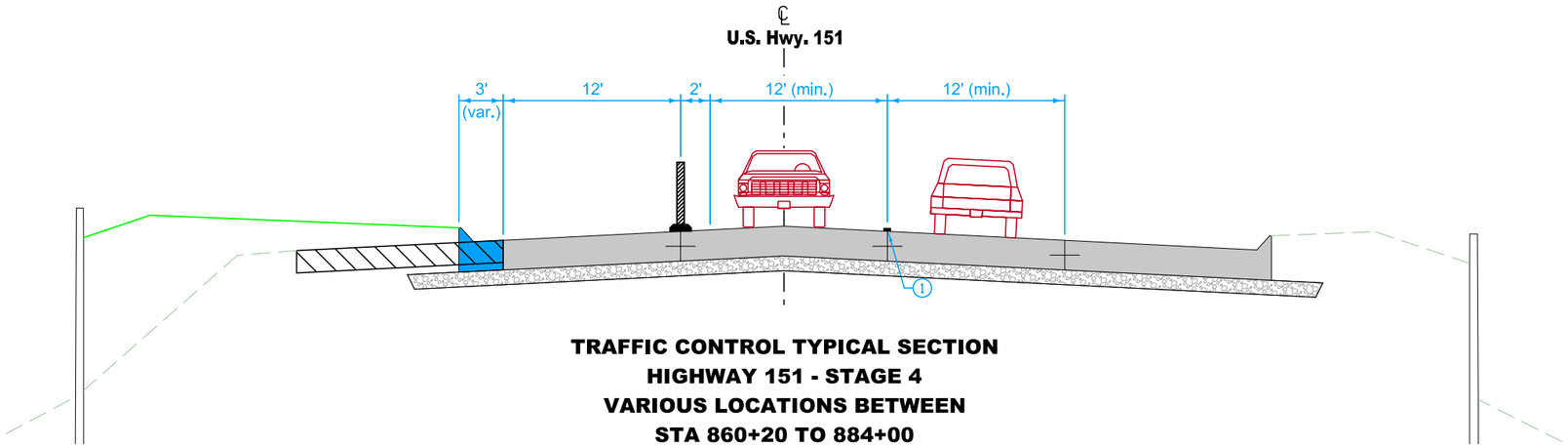
TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3A
STA 884+26 TO 898+00

NOTES:
1. Temporary Pavement Markings
2. Temporary Barrier Rail, Anchored Across Bridge

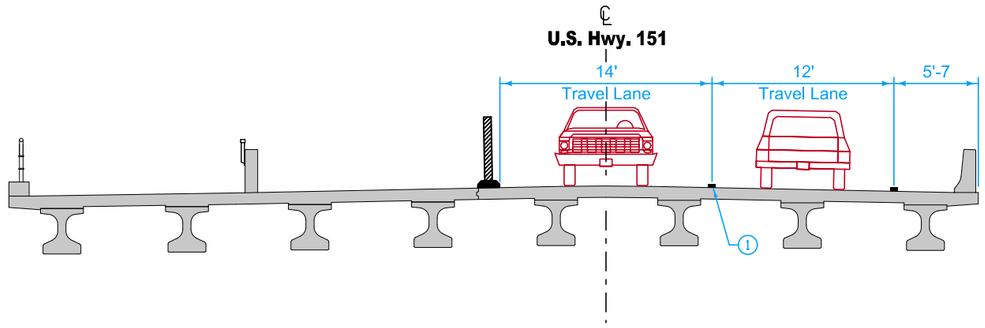


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3B
STA 898+00 TO 902+58

STAGING
PRAIRIE AVE. TO 80TH STREET



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 4
VARIOUS LOCATIONS BETWEEN
STA 860+20 TO 884+00

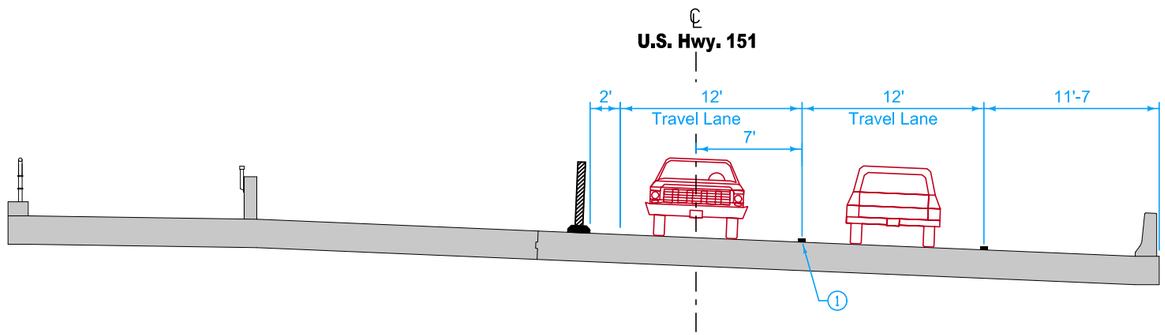


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 4
PRAIRIE CREEK BRIDGE
BRF-151-3(142)–38-57

NOTES:
(1) Temporary pavement markings

STAGE 4:

Shift traffic to east portion of bridge. Remove temporary barrier rail. Place steel pipe pedestrian hand railing and pedestrian fence.

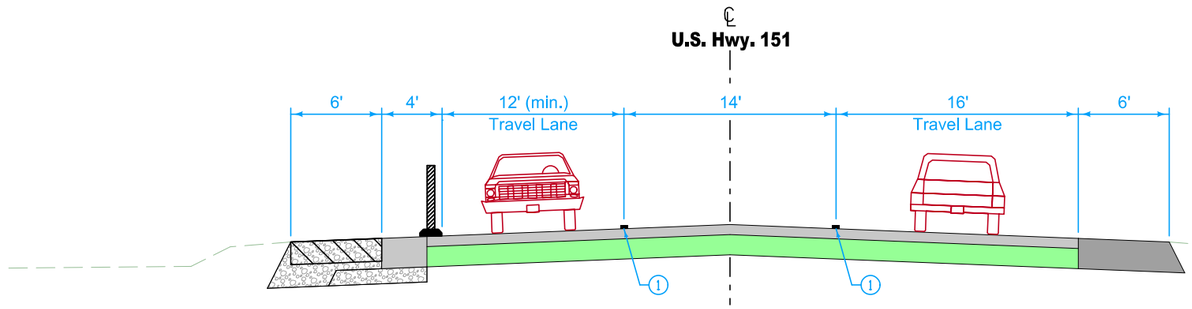


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 4
DRAINAGE DITCH NO. 1 BRIDGE
BRF-151-3(152)–38-57

STAGING
PRAIRIE AVE. TO 80TH STREET

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

5:02:07 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



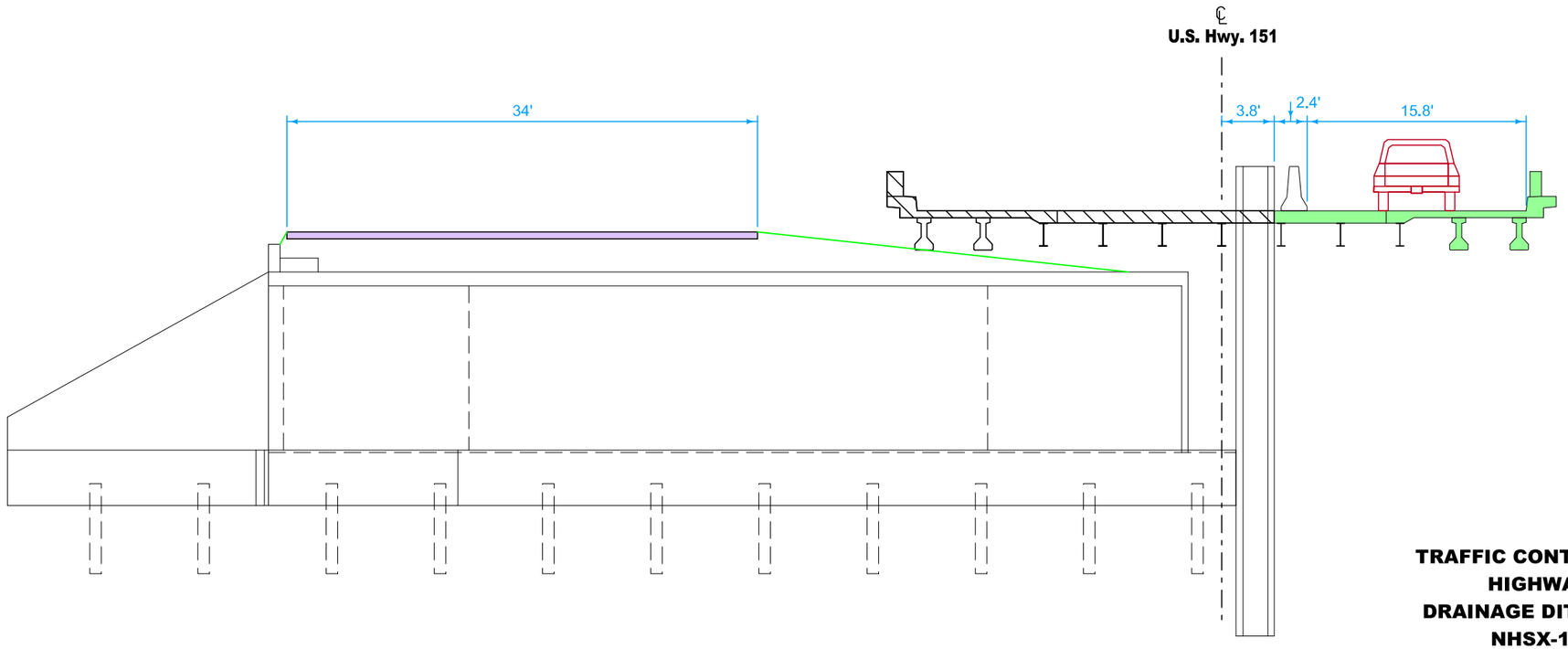
TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 4
STA 898+00 TO 902+58

NOTES:
(1) Temporary pavement markings

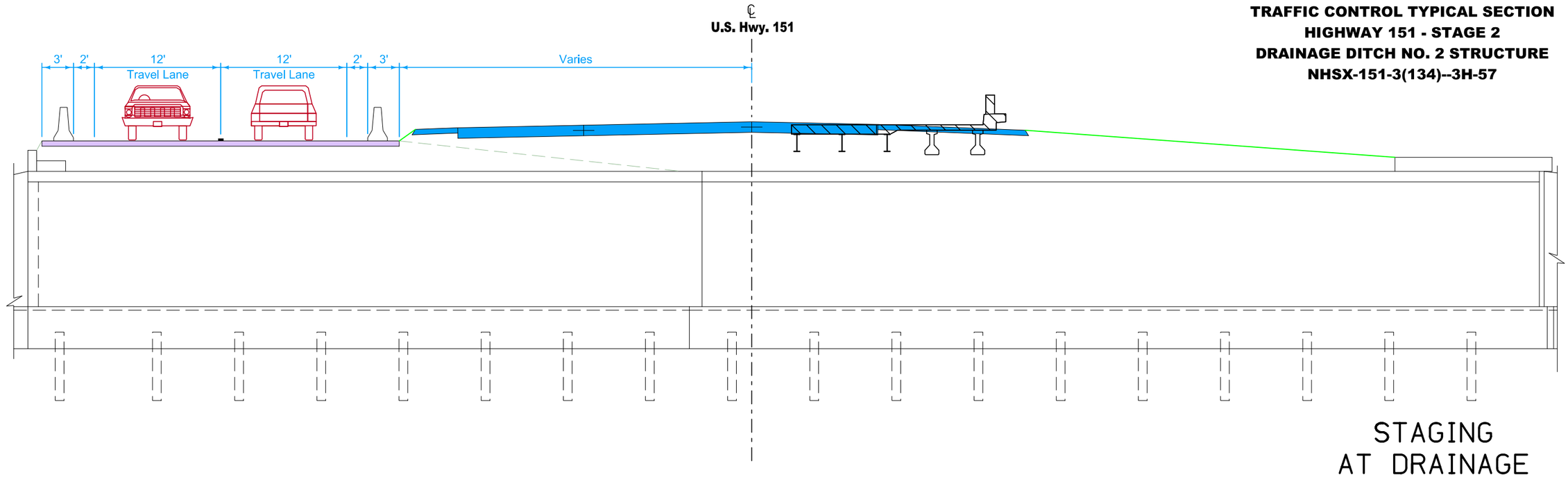
STAGING
PRAIRIE AVE. TO
80TH STREET

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

5:02:09 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 1
DRAINAGE DITCH NO. 2 STRUCTURE
NHSX-151-3(134)--3H-57

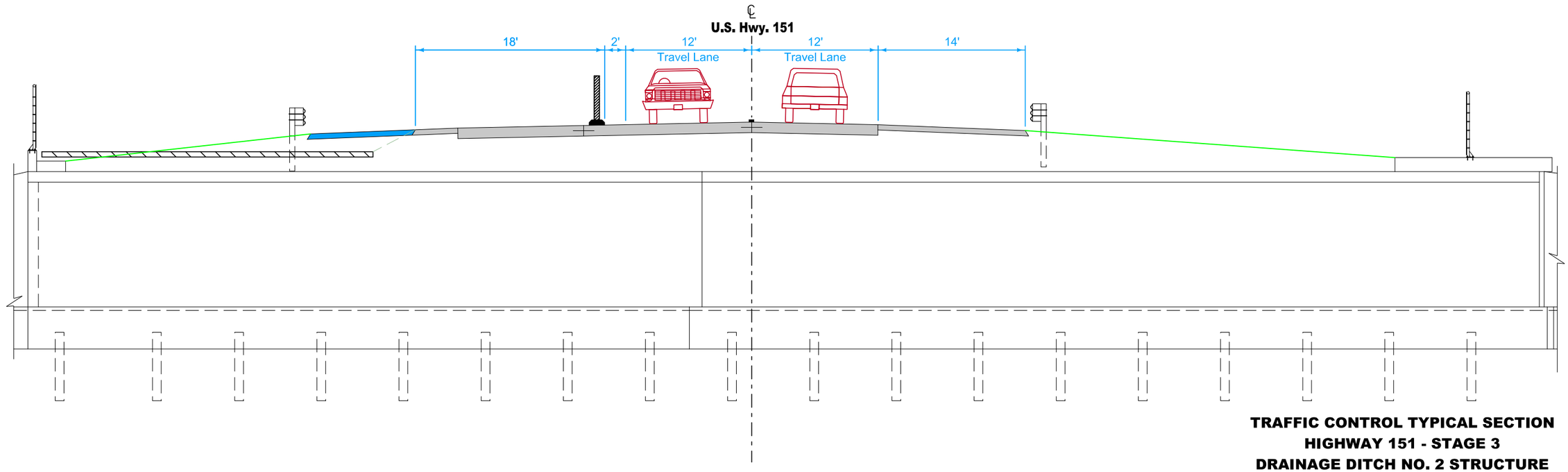


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2
DRAINAGE DITCH NO. 2 STRUCTURE
NHSX-151-3(134)--3H-57

STAGING AT DRAINAGE DITCH NO. 2

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

5:02:10 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3
DRAINAGE DITCH NO. 2 STRUCTURE
NHSX-151-3(134)--3H-57

STAGING AT DRAINAGE DITCH NO. 2

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

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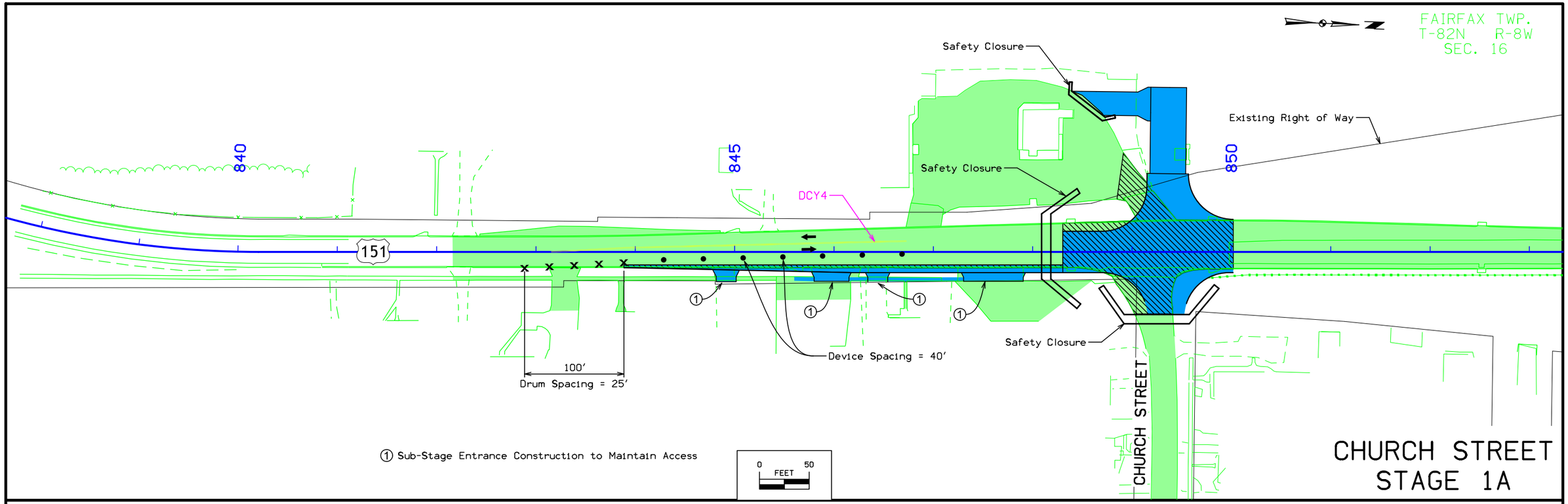
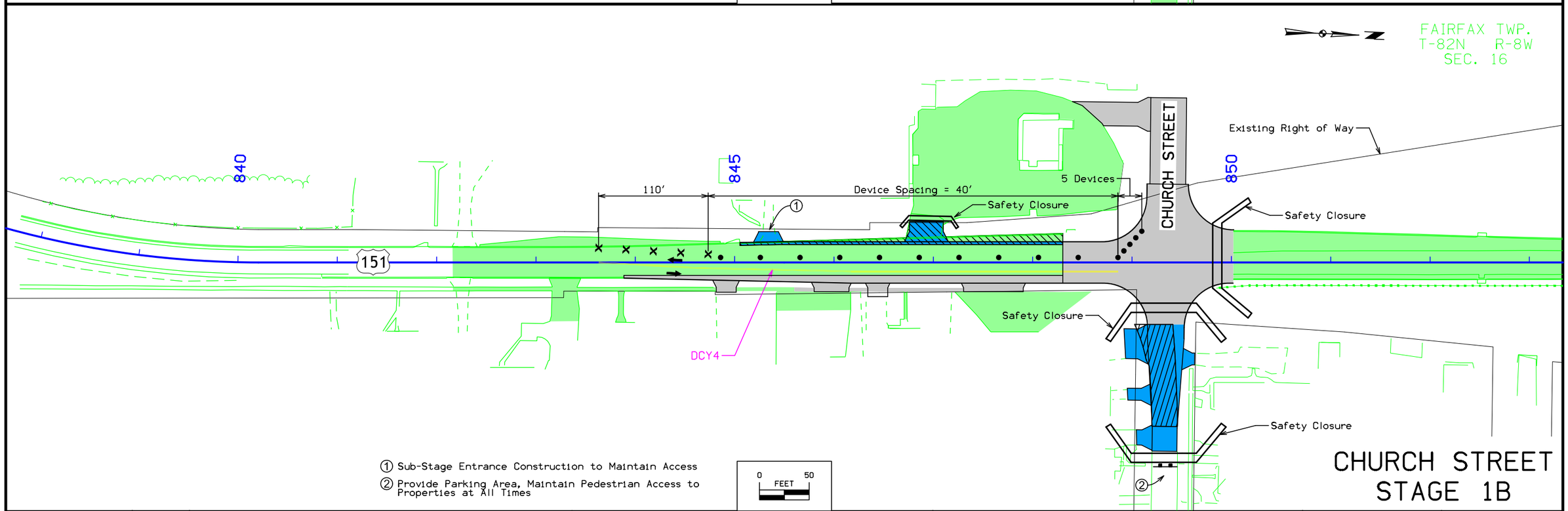


CHURCH STREET STAGE 1A



CHURCH STREET STAGE 1B

① Sub-Stage Entrance Construction to Maintain Access

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

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

Existing Right of Way

Safety Closure

865

870

875

DCY4

151

STALLMAN DRIVE

LOSEY AVENUE

Device Spacing = 40'

SPEED LIMIT 35

R2-1 30" x 36"

STA 869+62.80
BEGIN TEMPORARY PAVEMENT

PRAIRIE AVENUE

Prairie Creek

Device Spacing = 40'

0 50 FEET

PRAIRIE AVE
TO 80TH STREET
STAGE 1C

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

STALLMAN DRIVE

SPEED LIMIT 35

R2-1 30" x 36"

880

Drainage Ditch #1

885

5 Devices

Device Spacing = 40'

Sta 882+63.44
Resume Temporary Pavement

151

890

DCY4

Sta 879+14.71
Stop Temporary Pavement

Existing Right of Way

CEMETERY ROAD

5 Devices

Device Spacing = 40'

SPEED LIMIT 35

R2-1 30" x 36"

151

0 50 FEET

PRAIRIE AVE
TO 80TH STREET
STAGE 1C

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

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

890 895 900 905

DCY4

CHY8

Existing Right of Way

151

20'

Device Spacing = 40'

Device Spacing = 40'

STA 902+84.55
END TEMPORARY PAVEMENT

0 50
FEET

PRAIRIE AVE TO 80TH STREET STAGE 1C

80TH STREET SW

910

300'

500' 500' 500'

W1-4L
48" x 48"

SPEED LIMIT 35

R2-1
30" x 36"

W3-5
48" x 48"

925

ROAD WORK AHEAD

W20-1
48" x 48"

151

Existing Right of Way

Note:
Signs North/East of 80TH Street to Remain in Place Through Stage 3B. Following Stage 2B, W1-4L Sign Can be Removed.

0 50
FEET

PRAIRIE AVE TO 80TH STREET STAGE 1C

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

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

CHURCH STREET

Existing Right of Way

850

Safety Closure

855

UNION PACIFIC RAILROAD

860

Safety Closure

151

LOSEY AVENUE

0 50
FEET

CHURCH STREET TO 80TH STREET STAGE 2A

PRAIRIE AVE TO 80TH STREET STAGE 2A

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

① Mount On/Near Temporary Signal Visible to Drivers
② Mount On Temporay Signal
③ Maintain Access
④ Temporary Traffic Signal, Refer to TC-216 for Additional Details

R10-5
24" x 36"
STOP HERE ON RED

① ONE LANE ROAD AHEAD
W20-4
48" x 48"

② NO TURN ON RED
R10-11
24" x 36"

865

Existing Right of Way

870

W3-3
48" x 48"

R1-1
48" x 48"
STOP

Maintain Access to Stallman Drive

875

Safety Closure

③ ④

70'

STOP HERE ON RED
R10-6
24" x 36"

151

STALLMAN DRIVE

SPECIAL SIGN
60" x 14"

SLW2

Temporary Crash Cushion

R2-1
30" x 36"
SPEED LIMIT 35

370'

80'

170'

Device Spacing = 20'

SLW2

DCY4

M4-8
30" x 15"
DETOUR
W CEMETERY RD

M6-1L
30" x 21"

M6-1R
30" x 21"

Temporary Crash Cushion

DCY4

STOP HERE ON RED
R10-6
24" x 36"

PRAIRIE AVENUE

Prairie Creek

W3-3
48" x 48"

ONE LANE ROAD AHEAD
W20-4
48" x 48"

265'

Maintain Access

Drum Spacing = 40'

0 50
FEET

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

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CHURCH STREET TO 80TH STREET STAGE 2A

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

Safety Closure

Existing Right of Way

Drainage Ditch #1

SPECIAL SIGN 60" x 14"

M4-8 30" x 15"

DETOUR W CEMETERY RD

M6-3 30" x 21"

SPEED LIMIT 35

R2-1 30" x 36"

151

880

885

890

Maintain Access

Safety Closure

Safety Closure

Safety Closure

Temporary Crash Cushion

Temporary Crash Cushion

210′

Device Spacing = 40′

280′

DCY4

CEMETERY ROAD

M4-8 30" x 15"

DETOUR W CEMETERY RD

SPECIAL SIGN 60" x 14"

M6-1L 30" x 21"

SPEED LIMIT 35

R2-1 30" x 36"

0 FEET 50

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

895

900

905

910

Existing Right of Way

530′

Drum Spacing = 40′

Safety Closure

Sand Barrels

DCY4

CHY8

ELW4

Device Spacing = 40′

ELW4

DCY4

140′

305′

Drum Spacing = 40′

50′

5 Devices

R4-7C 36" x 48"

80TH STREET SW

151

Note:
Refer to Stage 1C for Signs North/East of 80TH Street.

0 FEET 50

CHURCH STREET TO 80TH STREET STAGE 2A

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

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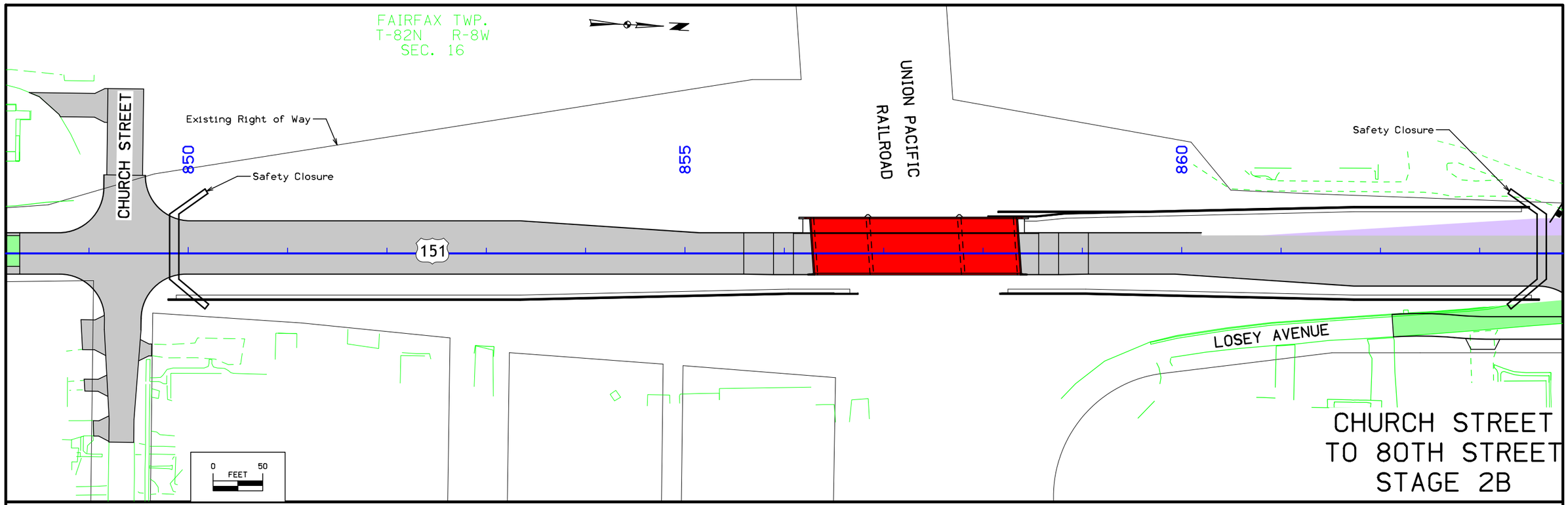

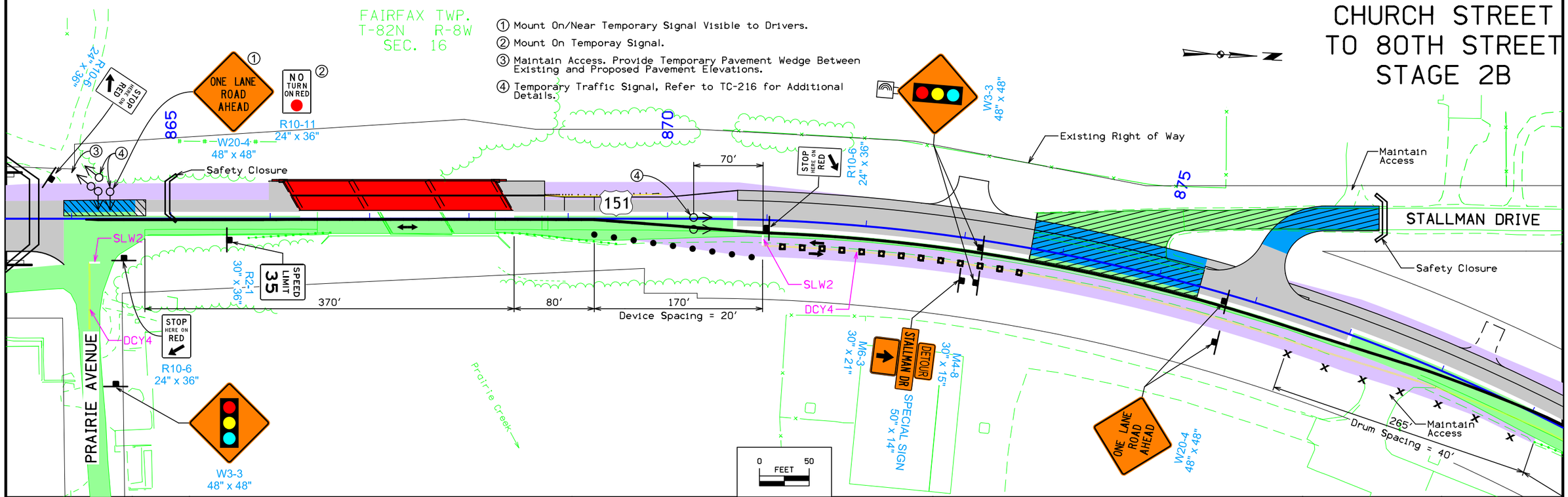

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.27

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CHURCH STREET TO 80TH STREET STAGE 2B

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

Maintain Access to Cemetery Rd

R1-1 48" x 48"
STOP

Drainage Ditch #1

Safety Closure

Safety Closure

SPECIAL SIGN 50" x 14"
M4-8 30" x 15"
DETOUR
STALLMAN DR
M6-1R 30" x 21"

Existing Right of Way

SPEED LIMIT 35
R2-1 30" x 36"

880 885 890

151

Temporary Crash Cushion

Temporary Crash Cushion

DCY4

210'

Device Spacing = 40'

280'

DCY4

M6-1L 30" x 21"
STALLMAN DR
DETOUR
M4-8 30" x 15"

SPECIAL SIGN 50" x 14"

M4-8 30" x 15"
DETOUR
STALLMAN DR
M6-3 30" x 21"

SPECIAL SIGN 50" x 14"

CEMETERY ROAD

R2-1 30" x 36"
SPEED LIMIT 35

Safety Closure

Maintain Access

Safety Closure

Temporary Crash Cushion

Temporary Crash Cushion

0 50 FEET

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

895 900 905 910

Existing Right of Way

530'
Drum Spacing = 40'

Safety Closure

Sand Barrels

DCY4

Device Spacing = 40'

ELW4

CHY8

ELW4

DCY4

140'

305'
Drum Spacing = 40'

50'
5 Devices

R4-7C 36" x 48"

80TH STREET SW

151

Note:
Refer to Stage 1C for Signs North/East of 80TH Street.

0 50 FEET

CHURCH STREET TO 80TH STREET STAGE 2B

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

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

315′ 680′ Device Spacing = 20′ 100′

860 865 870

Maintain Driveway Access

Impact ① Attenuator

CHY8

DCY4

Existing Right of Way

Sand Barrels ①

Impact Attenuator

CHY8

DCY4

151

Sand Barrels

Safety Closure

Device Spacing = 40′

① LOSEY AVENUE

SPEED LIMIT 35

R2-1 30" x 36"

R4-7C 36" x 48"

R4-7C 36" x 48"

Safety Closure

PRAIRIE AVENUE

Prairie Creek

Safety Closure ②

0 FEET 50

① Refer to Sheet J.10 for Additional Detail.

② Provide Parking Area, Maintain Pedestrian Access to Properties at All Times

UPRR TO 80TH STREET STAGE 3A

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

140′ 145′ 100′ 315′ 100′

STALLMAN DRIVE

Temporary Crash Cushion

SPEED LIMIT 35

R2-1 30" x 36"

880

Drainage Ditch #1

Impact Attenuator ①

Impact Attenuator

Sand ① Barrels

CHY8

DCY4

875

885

CHY8

DCY4

151

Safety Closure

Maintain Access

R4-7C 36" x 48"

R4-7C 36" x 48"

Safety Closure

Temporary Crash Cushion

E CEMETERY RD DETOUR

M6-3 30" x 21"

M4-8 30" x 15"

SPECIAL SIGN 56" x 14"

CEMETERY ROAD

Safety Closure

R2-1 30" x 36"

SPEED LIMIT 35

Existing Right of Way

① Refer to Sheet J.10 for Additional Detail.

0 FEET 50

UPRR TO 80TH STREET STAGE 3A

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

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

140'
Drum Spacing = 35'

890

Temporary
Crash Cushion

895

Temporary
Crash Cushion

DCY4

Existing Right of Way

900

DCY4

151

Safety Closure
Maintain Access

Safety Closure

Safety Closure

Safety Closure

SPEED LIMIT 35
R2-1
30" x 36"

0 FEET 50

UPRR TO 80TH STREET STAGE 3A

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

SPECIAL SIGN
56" x 14"

M4-8
30" x 15"

DETOUR

E CEMETERY RD

M6-1L
30" x 21"

80TH STREET SW

905

910

915

DCY4

100'
6 Devices

CHY8

151

Sand
Barrels

Safety
Closure

240'
Device Spacing = 40'

5 Devices

M6-1R
30" x 21"

E CEMETERY RD

DETOUR

M4-8
30" x 15"

SPECIAL SIGN
56" x 14"

Note:
Refer to Stage 1C for Signs North/East of 80TH Street.
Remove W1-4L Sign.

0 FEET 50

UPRR TO 80TH STREET STAGE 3A

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

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

315′ 680′ Device Spacing = 20′ 100′

860 865 870

Maintain Driveway Access

Impact ① Attenuator

Existing Right of Way

Sand Barrels ①

Impact Attenuator

CHY8 DCY4

151

5 Devices

Device Spacing = 40′

Sand Barrels

Safety Closure

LOSEY AVENUE

PRAIRIE AVENUE

R2-1 30" x 36" SPEED LIMIT 35

R4-7C 36" x 48"

Prairie Creek

① Refer to Detail on Sheet J.10 for Additional Detail.

0 50 FEET

UPRR TO 80TH STREET STAGE 3B

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

140′ 145′ 100′ 315′ 100′

STALLMAN DRIVE

Temporary Crash Cushion

SPEED LIMIT 35 R2-1 30" x 36"

Impact Attenuator ①

Drainage Ditch #1

Impact Attenuator

Sand ① Barrels

880 885

CHY8 DCY4

548

151

Safety Closure

① Temporary Crash Cushion

R4-7C 36" x 48"

Safety Closure

Safety Closure

STOP R1-1 48" x 48"

CEMETERY ROAD

R2-1 30" x 36" SPEED LIMIT 35

Existing Right of Way

① Sub-Stage Entrance Construction to Maintain Access.

0 50 FEET

UPRR TO 80TH STREET STAGE 3B

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

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

120'
Drum Spacing = 40'

860

Temporary
Crash Cushion

Safety Closure

SPEED LIMIT 35
R2-1
30" x 36"

Temporary
Crash Cushion

Safety Closure

DCY4

Temporary
Crash Cushion

895

Safety Closure

151

Existing Right of Way

900

Temporary
Crash Cushion

Safety Closure

DCY4

0 FEET 50

UPRR TO 80TH STREET STAGE 3B

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

905

80TH STREET SW

910

915

DCY4

100'
6 Devices

CHY8

151

Sand
Barrels

Safety
Closure

240'
Device Spacing = 40'

5 Devices

Note:
Refer to Stage 1C for Signs North/East of 80TH Street.
Remove W1-4L Sign.

0 FEET 50

UPRR TO 80TH STREET STAGE 3B

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

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

Refer to TC-228 For Advanced Signing

280'
Device Spacing = 40'

Existing Right of Way

860

865

870

Device Spacing = 40'

5 Devices

151

Device Spacing = 40'

5 Devices

Device Spacing = 20'

Device Spacing = 20'

SPEED LIMIT 35

R2-1
30" x 36"

SPEED LIMIT 35

R2-1
30" x 36"

LOSEY AVENUE

PRAIRIE AVENUE

Prairie Creek

① Sub-Stage Entrance Construction to Maintain Access

0 FEET 50

UPRR TO 80TH STREET STAGE 4

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

STALLMAN DRIVE

Existing Right of Way

SPEED LIMIT 35

R2-1
30" x 36"

880

Device Spacing = 40'

5 Devices

875

5 Devices

5 Devices

Device Spacing = 20'

151

100'
5 Devices

885

Device Spacing = 40'

Device Spacing = 20'

SPEED LIMIT 35

R2-1
30" x 36"

CEMETERY ROAD

0 FEET 50

UPRR TO 80TH STREET STAGE 4

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

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

890

Device Spacing = 40′

240′
Drum Spacing = 40′

100′
5 Devices

Device Spacing = 40′

Device Spacing = 20′

895

Existing Right of Way

W1-4L
48" x 48"

440′
Device Spacing = 40′

900

151

R2-1
30" x 36"
SPEED LIMIT 35

0 50
FEET

UPRR TO 80TH STREET STAGE 4

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

440′
Device Spacing = 40′

100′
5 Devices

250′

Existing Right of Way

905

W8-9A
48" x 48"
SHOULDER DROP OFF

SPEED LIMIT 35
R2-1
30" x 36"

500′

500′

80TH STREET SW

910

W3-5
48" x 48"
SPEED LIMIT 35

W20-1
48" x 48"
ROAD WORK AHEAD

151

G20-2A
48" x 24"
END ROAD WORK

0 50
FEET

UPRR TO 80TH STREET STAGE 4

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

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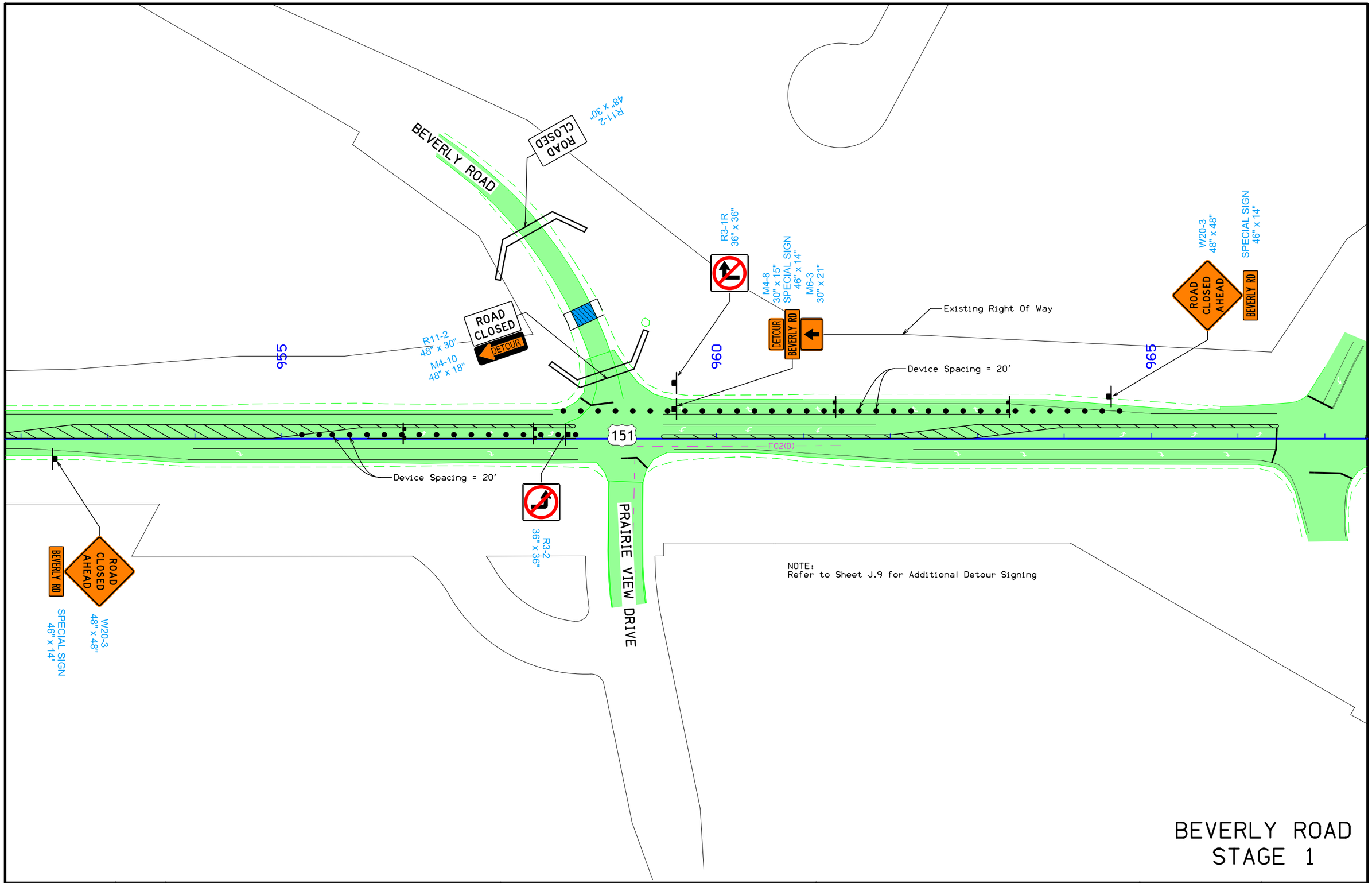

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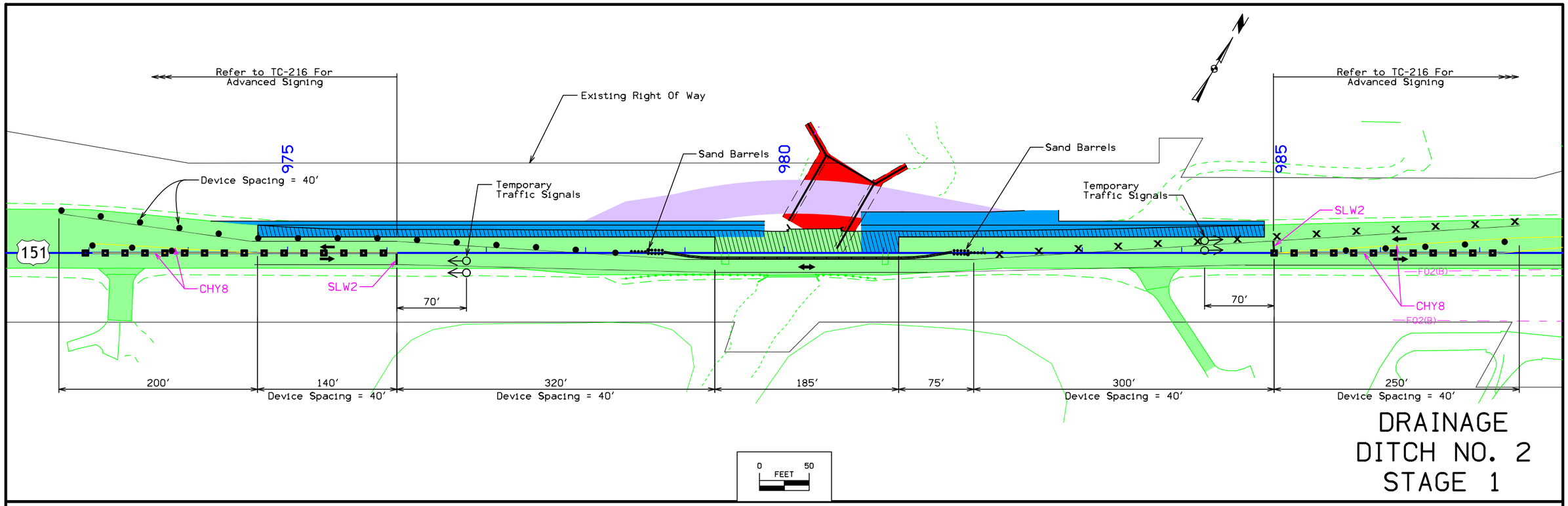
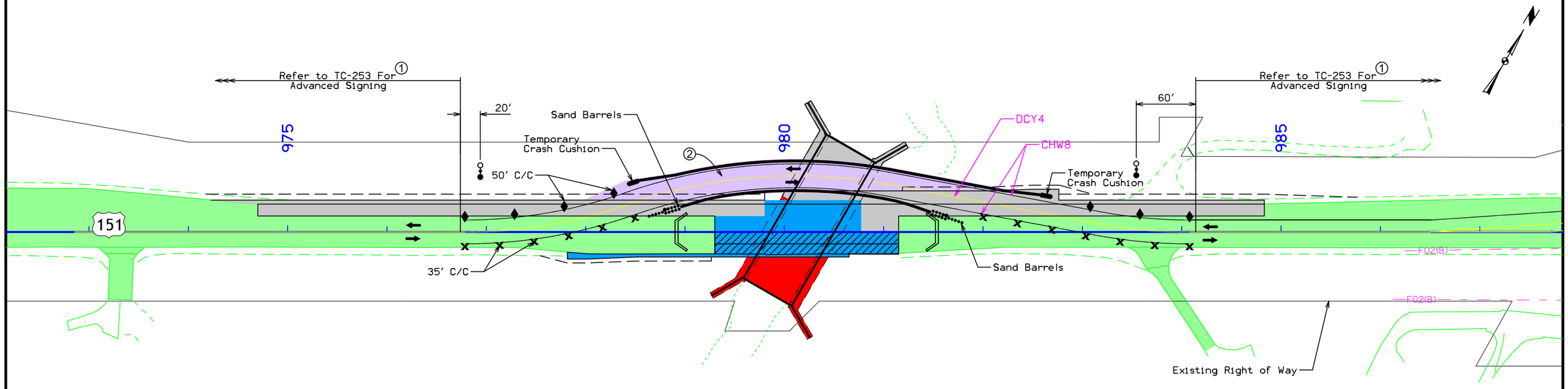


DRAINAGE DITCH NO. 2 STAGE 1



① Replace W1-4L Sign Shown in TC-253 with W24-1 Sign (48" x 48").
② Refer to Sheet F.1 for Additional Details of Temporary Pavement.

DRAINAGE DITCH NO. 2 STAGE 2

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

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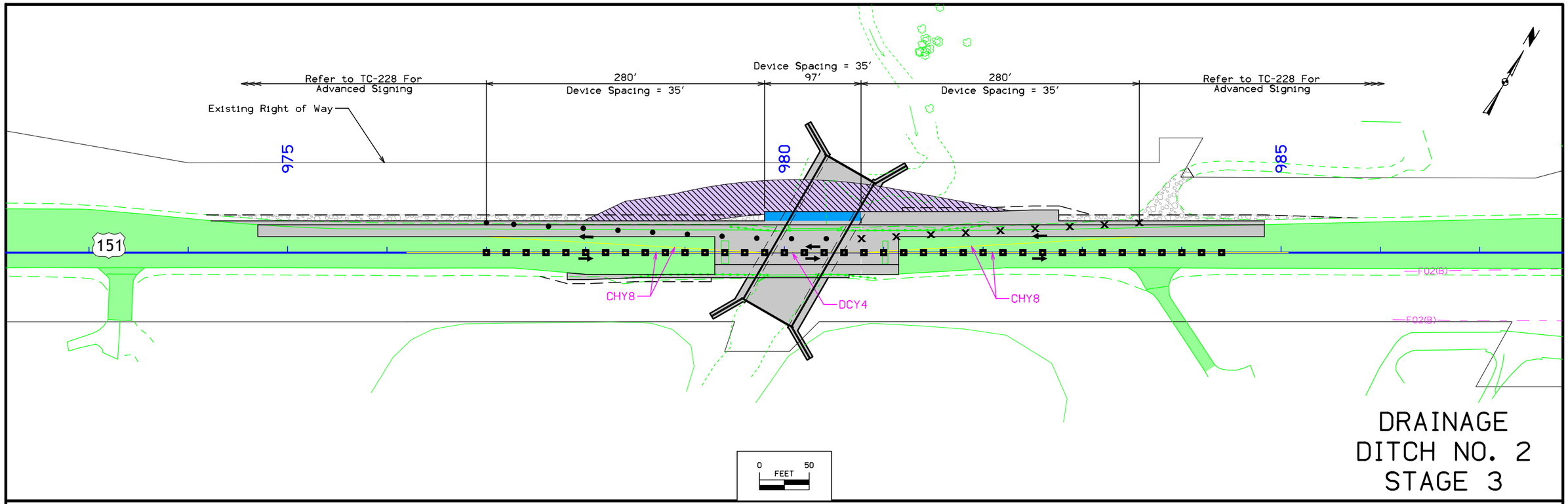

DRAINAGE DITCH NO. 2 STAGE 3

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

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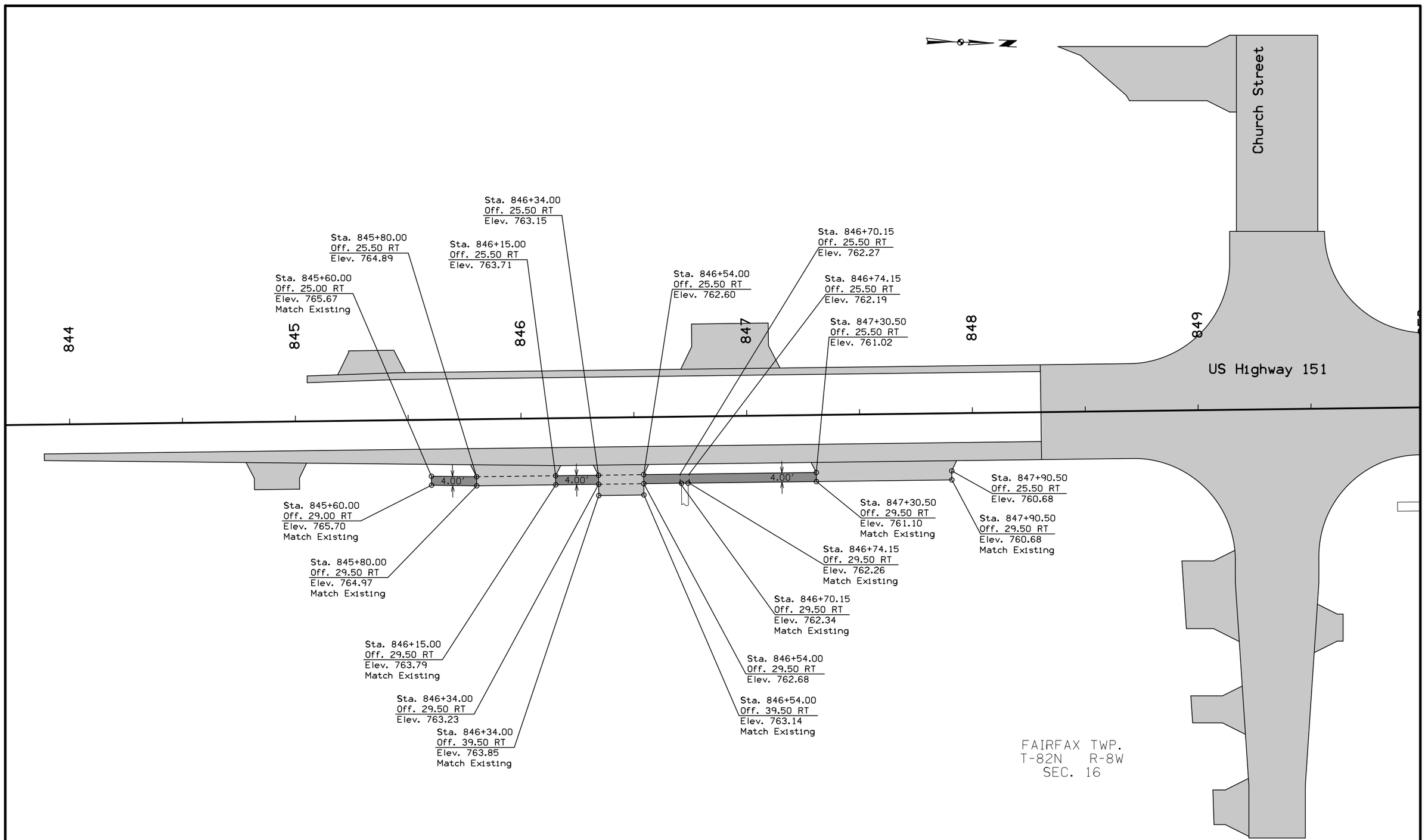

NOTES:

Refer to G sheets for horizontal alignment information.

Refer to appropriate Standard Road Plans for additional information.

0 FEET 20

Geometric Details
Sidewalk Southeast of Intersection
US Highway 151 and Church Street

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

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CIRCULAR CURVE DATA

Name	Δ	D	T	L	E	R
CURVE SRCHRCH_RET_1-2	90° 43′ 03.62″	127° 19′ 26.24″	45.57′	71.25′	19.04′	45′
CURVE SRCHRCH_RET_2-1	89° 16′ 56.38″	127° 19′ 26.24″	44.44′	70.12′	18.24′	45′
CURVE SRCHRCH_RET_3-1	90° 43′ 03.62″	127° 19′ 26.24″	45.57′	71.25′	19.04′	45′
CURVE SRCHRCH_RET_4-1	89° 16′ 56.38″	127° 19′ 26.24″	44.44′	70.12′	18.24′	45′

End Church Street Construction
Sta 849+19.05 165.93′ LT US 151

End Church Street Construction
Sta 849+55.05 165.48′ LT US 151

Church Street

1848

SRCHRCH_RET_1

Sta 849+56.96 78.56 LT US 151
Sta 1+00.00 SRCHRCH_RET_1

Sta 849+14.96 79.09′ LT US 151
Sta 1+90.12 SRCHRCH_RET_2

SRCHRCH_RET_2

Sta 849+14.79 65.44′ LT US 151
Sta 1+80.12 SRCHRCH_RET_2

18.00′ 18.00′

30′ Radius Point
Curve SRCHRCH_RET_2-1
Sta 848+69.80 66.00′ LT US 151

30′ Radius Point
Curve SRCHRCH_RET_1-2
Sta 850+01.96 78.00′ LT US 151

CURVE SRCHRCH_RET_2-1

CURVE SRCHRCH_RET_1-2

Sta 848+69.80 21.00′ LT US 151
Sta 1+10.00 SRCHRCH_RET_2

Sta 850+01.96 33.00′ LT US 151
Sta 1+71.25 SRCHRCH_RET_1

847 848 849 1849 850 851 852

Sta 849+34.97 US 151 =
Sta 1849+34.97 Church Avenue

US Highway 151

21.00′ 3.00′ 33.00′

21.00′ 8.00′ 21.00′

89°16′56.38″ 90°43′3.62″

Sta 849+97.65 21.00 RT US 151
Sta 1+80.12 SRCHRCH_RET_4

CURVE SRCHRCH_RET_4-1

Sta 848+70.64 21.00′ RT US 151
Sta 1+10.00 SRCHRCH_RET_3

1850

30′ Radius Point
Curve SRCHRCH_RET_4
Sta 849+97.65 66.00′ RT US 151

CURVE SRCHRCH_RET_3-1

18.50′ 18.50′

SRCHRCH_RET_3

Sta 849+52.66 65.44′ RT US 151
Sta 1+10.00 SRCHRCH_RET_4

30′ Radius Point
Curve SRCHRCH_RET_3
Sta 848+70.64 66.00′ RT US 151

End Taper
Sta 849+52.51 77.03′ RT US 151

Sta 849+15.64 66.56′ RT US 151
Sta 1+81.25 SRCHRCH_RET_3

90.2 ft 15:1 Taper

90.2 ft 15:1 Taper

SRCHRCH_RET_4

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

End Taper
Sta 849+15.51 76.56′ RT US 151

Begin Taper
Sta 849+20.39 166.63′ RT US 151

Begin Taper
Sta 849+45.38 166.94′ RT US 151

1851

Begin Church Street Construction
SRT 849+20.10 189.86′ US 151

12.50′ 12.50′

Begin Church Street Construction
Sta 849+45.09 190.17′ RT US 151

0 20
FEET

NOTES:

Dimensions shown are to the back of curb.

Refer to G sheets for horizontal alignment information.

Refer to appropriate Standard Road Plans for additional information.

Geometric Details
Intersection of
US Highway 151 and Church Street

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

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SRCHRCH_RET_2

SRCHRCH_RET_1

Church Street

1848

Sta 1847+91.97

2.0%
18.0'

Constant 2.0% Slope

Uniform Transition

Elev = 760.10

Elev = 760.01

Sta 1848+91.97

Sta 1+43.89 SRCHRCH_RET_2
= Sta 1849+02.24 34.82' RT Church Street
Elev = 760.65

Sta 1+35.91 SRCHRCH_RET_1
= Sta 1848+88.36 34.58' LT Church Street
Elev = 761.67

Special Shaping

2.0%
18.5'

U.T.

847

848

849

850

851

852

1849

Elev = 763.22

Elev = 761.83

Elev = 760.44

Sta 848+55.33

Elev = 761.21

2.5%
15.0'

US Highway 151

Constant 2.5% Slope

Constant 2.0% Slope

Constant 2.0% Slope

Constant 2.0% Slope

Constant 2.0% Slope

Constant 2.0% Slope

2.0%
15.0'

2.0%
6.0'

2.0%
12.0'

2.5%
15.0'

3.5%
15.0'

Uniform Transition

Elev = 761.18

Sta 848+50.33

Elev = 760.45

Sta 848+75.33

Elev = 762.04

Elev = 763.38

Sta 849+80.00
Begin 4" Sloped Curb

Sta 850+45.98
End 4" Sloped Curb

Sta 1+45.62 SRCHRCH_RET_3
= Sta 1849+69.75 31.88' RT Church Street
Elev = 760.67

Sta 1849+66.21

Sta 1+45.06 SRCHRCH_RET_4
= Sta 1849+68.56 31.48' LT Church Street
Elev = 761.76

1850

Elev = 760.59

Elev = 760.07

Constant 2.0% Slope

Uniform Transition

2.0%
15.0'

Sta 1850+65.00

Constant 2.0% Slope

1851

2.0%
12.5'

0.5%
12.5'

0.7%
12.5'

Sta 1851+01.77

SRCHRCH_RET_3

SRCHRCH_RET_4

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

0 20
FEET

Staking Details
Intersection of
US Highway 151 and Church Street

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

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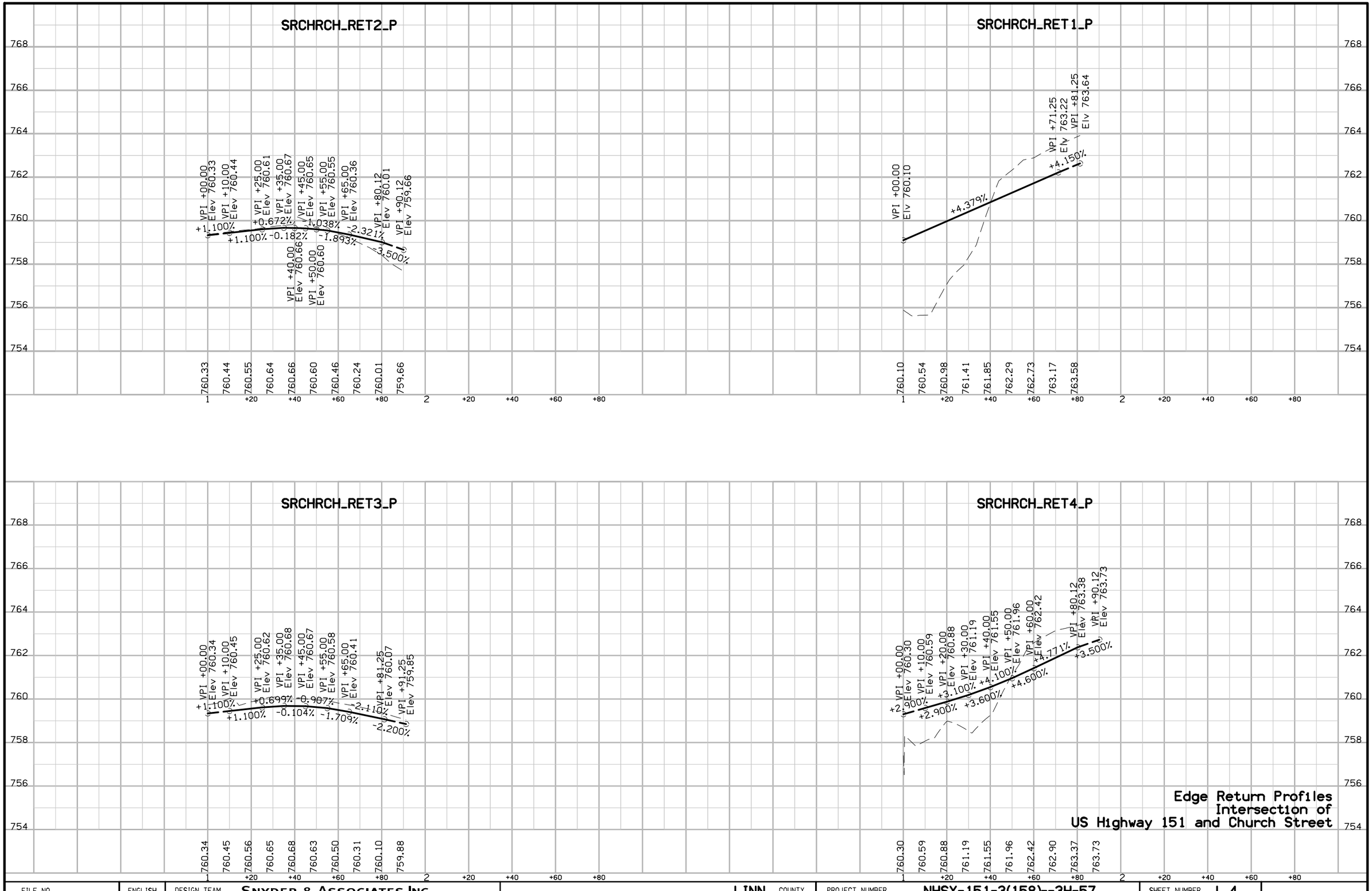
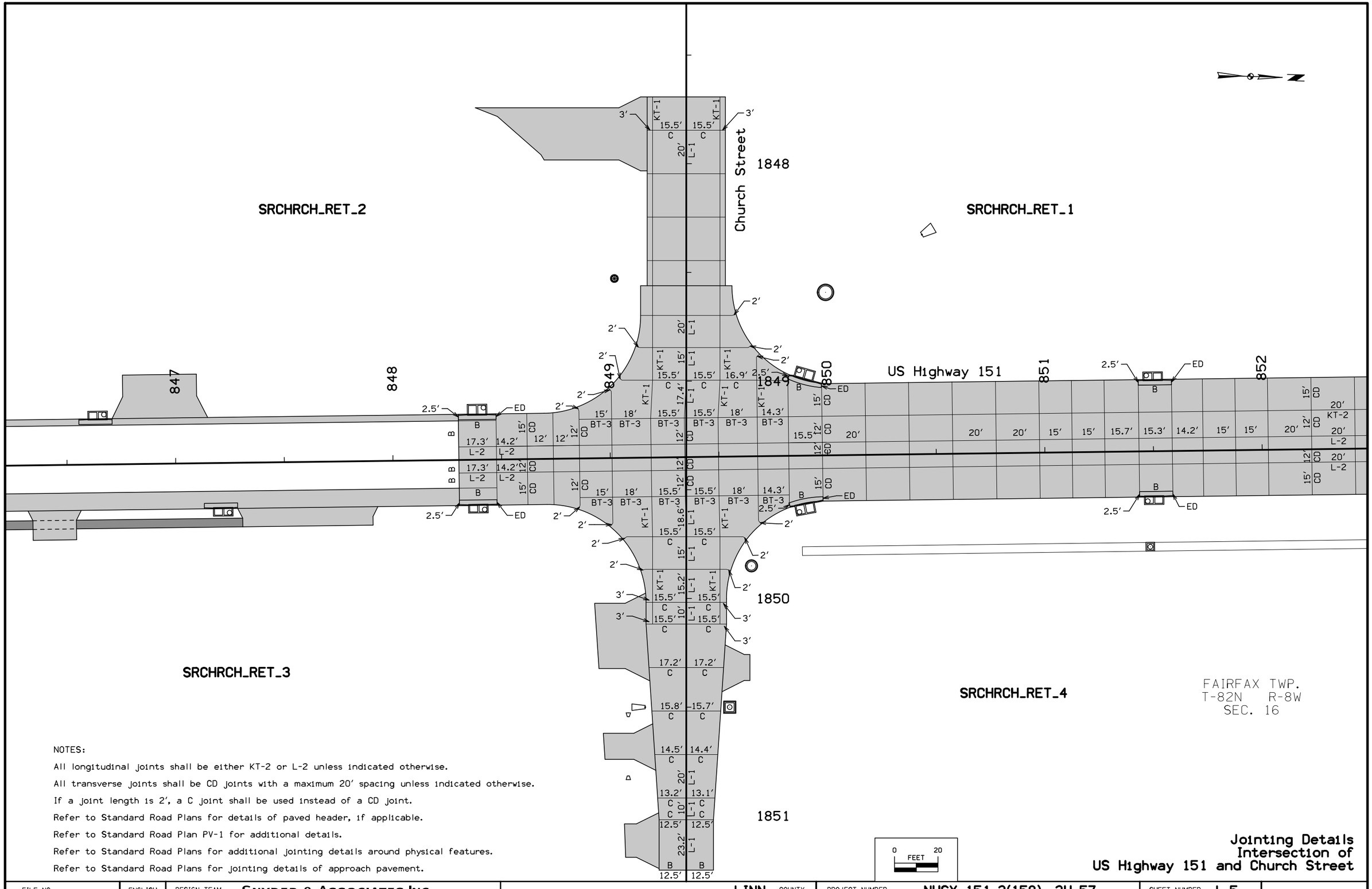


FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	L.4

4:50:23 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158L01.sht



NOTES:

All longitudinal joints shall be either KT-2 or L-2 unless indicated otherwise.

All transverse joints shall be CD joints with a maximum 20′ spacing unless indicated otherwise.

If a joint length is 2′, a C joint shall be used instead of a CD joint.

Refer to Standard Road Plans for details of paved header, if applicable.

Refer to Standard Road Plan PV-1 for additional details.

Refer to Standard Road Plans for additional jointing details around physical features.

Refer to Standard Road Plans for jointing details of approach pavement.

Jointing Details Intersection of US Highway 151 and Church Street

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

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

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

Union Pacific Railroad

Sta 856+18.66, 34.83′
Elev =

Sta 856+18.66, 21.00′
Elev =

Sta 856+09.10, 21.00′
Elev =

Sta 855+89.10, 21.00′
Elev =

Sta 855+59.10, 21.00′
Elev =

Sta 855+14.27, 21.00′
Elev =

855 856 857 858 859 860

US Highway 151

21.00′ 21.00′

Sta 858+41.67, 34.83′
Elev =

Sta 858+41.67, 21.00′
Elev =

Sta 858+56.11, 21.00′
Elev =

Sta 858+76.10, 21.00′
Elev =

Sta 859+06.10, 21.00′
Elev =

21.00′ 21.00′

Sta 855+59.10, 21.00′
Elev =

Sta 855+89.10, 21.50′
Elev =

Sta 856+09.10, 21.50′
Elev =

Sta 856+23.50, 21.50′
Elev =

Sta 858+44.50, 21.50′
Elev =

Sta 858+56.11, 21.50′
Elev =

Sta 858+76.10, 21.50′
Elev =

Sta 859+06.10, 21.00′
Elev =

Sta 859+93.36, 21.00′
Elev =

0 20
FEET

Geometric Details
Union Pacific Railroad Bridge

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

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CIRCULAR CURVE DATA

Name	Δ	D	T	L	E	R
CURVE SRPRAIR_RET_1-1	67° 24′ 00.13″	91° 40′ 23.69″	41.68′	73.68′	12.62′	62.5′
CURVE SRPRAIR_RET_1-2	67° 24′ 00.13″	143° 14′ 22.02″	26.68′	47.05′	8.08′	40′
CURVE SRPRAIR_RET_2-1	105° 28′ 54.30″	21° 58′ 18.71″	19.72′	27.62′	9.78′	15′
CURVE SRPRAIR_RET_2-2	53° 28′ 43.61″	152° 47′ 19.48″	18.89′	35.00′	4.49′	37.5′
CURVE SRPRAIR_RET_4-1	90° 44′ 25.39″	143° 14′ 22.02″	40.52′	63.35′	16.94′	40′
CURVE SRLOSEY_RET_3-1	137° 31′ 07.99″	212° 57′ 29.06″	25.73′	46.75′	17.60′	10′
CURVE SRLOSEY_RET_3-2	42° 28′ 52.01″	114° 35′ 29.61″	19.43′	37.07′	3.64′	50′
CURVE SRLOSEY_RET_4-1	89° 15′ 34.61″	229° 10′ 59.22″	24.68′	38.95′	10.13′	25′

SRPRAIR_RET_1

SRPRAIR_RET_2

SRPRAIR_RET_4

SRLOSEY_RET_3

SRLOSEY_RET_4

US Highway 151

Losey Avenue

Prairie Avenue

CURVE SRPRAIR_RET_1-1

CURVE SRPRAIR_RET_1-2

CURVE SRPRAIR RET 2-2

CURVE SRPRAIR RET 2-1

STA 864+19.80 (HWY 151) =
STA 2864+19.83 (PRAIRIE AVENUE)

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

2863 2864 2865 2866

3862 3863 3864 3865 3866

862 863 864 865 866 867

21.00′ 33.00′ 22.00′ 22.00′

Sta 863+92.13 46.13′ RT US 151
Sta 1+44.00 SRLOSEY_RET_3

Sta 861+73.36 33.00′ RT US 151

CURVE SRLOSEY_RET_3-1

CURVE SRLOSEY_RET_3-2

Sta 863+58.36 33.00′ RT US 151
Sta 1+81.07 SRLOSEY_RET_3

90°44′25.39″ 89°15′34.61″

10′ Radius Point
Curve SRLOSEY_RET_3-1
Sta 863+85.38 53.50′ RT US 151

Sta 863+85.38 63.50′ RT US 151
Sta 1+20.00 SRLOSEY_RET_3

End Pavement
Sta 862+11.74 61.29′ RT US 151

End Pavement
Sta 862+13.31 84.23′ RT US 151

Sta 862+76.42 61.96′ RT US 151

Sta 862+74.37 84.87′ RT US 151

Sta 863+10.97 63.50′ RT US 151

Sta 863+10.97 86.50′ RT US 151

50′ Radius Point
Curve SRLOSEY_RET_3-2
Sta 863+58.36 83.00′ RT US 151

Sta 863+82.23 86.50′ RT US 151
Sta 1+20.00 SRLOSEY_RET_4

CURVE SRLOSEY_RET_4-1

25′ Radius Point
Curve SRLOSEY_RET_4-1
Sta 863+82.23 111.50′ RT US 151

Sta 864+07.23 111.18′ RT US 151
Sta 1+58.95 SRLOSEY_RET_4

Begin 23′ Wide Pavement
Sta 864+09.73 111.14′ RT US 151

Sta 864+10.63 180.68′ RT US 151

Sta 864+74.60 22.00′ RT US 151
Sta 1+73.35 SRPRAIR_RET_4

CURVE SRPRAIR_RET_4-1

90°44′25.39″ 89°15′34.61″

14.00′ 14.00′
11.50′ 11.50′

40′ Radius Point
Curve SRPRAIR_RET_4-1
Sta 864+74.60 62.00′ RT US 151

Sta 864+34.60 62.52′ RT US 151
Sta 1+10.00 SRPRAIR_RET_4

End 28′ Wide Pavement
Sta 864+35.23 110.82′ RT US 151

Begin 23′ Wide Pavement
Sta 864+32.73 110.85′ RT US 151

Sta 864+33.62 179.69′ RT US 151

End Prairie Avenue Construction
Sta 864+14.72 236.87′ RT US 151

End Prairie Avenue Construction
Sta 864+37.66 235.20′ RT US 151

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

NOTES:

Dimensions shown are to the back of curb.

Refer to G sheets for horizontal alignment information.

Refer to appropriate Standard Road Plans for additional information.

0 20
FEET

**Geometric Details
Intersection of
US Highway 151 and Prairie Avenue and Losey Avenue**

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

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Staking Details
Intersection of
US Highway 151 and Prairie Avenue and Losey Avenue

SRPRAIR_RET_2

SRPRAIR_RET_1

SRPRAIR_RET_4

SRLOSEY_RET_3

SRLOSEY_RET_4

US Highway 151

Losey Avenue

Prairie Avenue

2863

2864

2865

2866

Sta 862+21.12
Begin 4" Sloped Curb

Sta 1+43.48 SRLOSEY_RET_3
= Sta 2864+65.93 27.89' RT Prairie Avenue
= Sta 3864+66.55 28.51' LT Losey Avenue
Elev = 765.68

Sta 863+87.58
End 4" Sloped Curb

Elev = 766.01
Elev = 766.01
Elev = 767.07
Elev = 767.66
Elev = 766.07
Elev = 765.16
Elev = 766.22
Elev = 764.85
Elev = 768.81
Elev = 766.86
Elev = 778.79
Elev = 764.14
Elev = 765.26
Elev = 765.85
Elev = 764.89
Elev = 763.50
Elev = 764.03
Elev = 762.96

Sta 864+59.90
Begin 4" Sloped Curb

Sta 865+98.61
End 4" Sloped Curb

Sta 1+43.55 SRPRAIR_RET_4
= Sta 2864+52.75, 27.27' LT Prairie Avenue
Elev = 765.39

Sta 2864+82.80

Sta 1+31.31 SRLOSEY_RET_3
= Sta 2864+77.23 26.12' RT Prairie Avenue
= Sta 3864+68.47 17.24' LT Losey Avenue
Elev = 764.73

Sta 3862+96.45
Sta 3863+51.45
Sta 3864+10.81
Sta 3864+50.95

Sta 1+39.47 SRLOSEY_RET_4
= Sta 2865+13.24 21.21' RT Prairie Avenue
= Sta 3864+73.84 18.71' RT Losey Avenue
Elev = 763.64

Sta 2865+12.62

Sta 2866+15.00

Sta 2866+30.00

Constant 2.0% Slope
Constant 2.5% Slope
Uniform Transition
Special Shaping
U.T.

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

0 20
FEET

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

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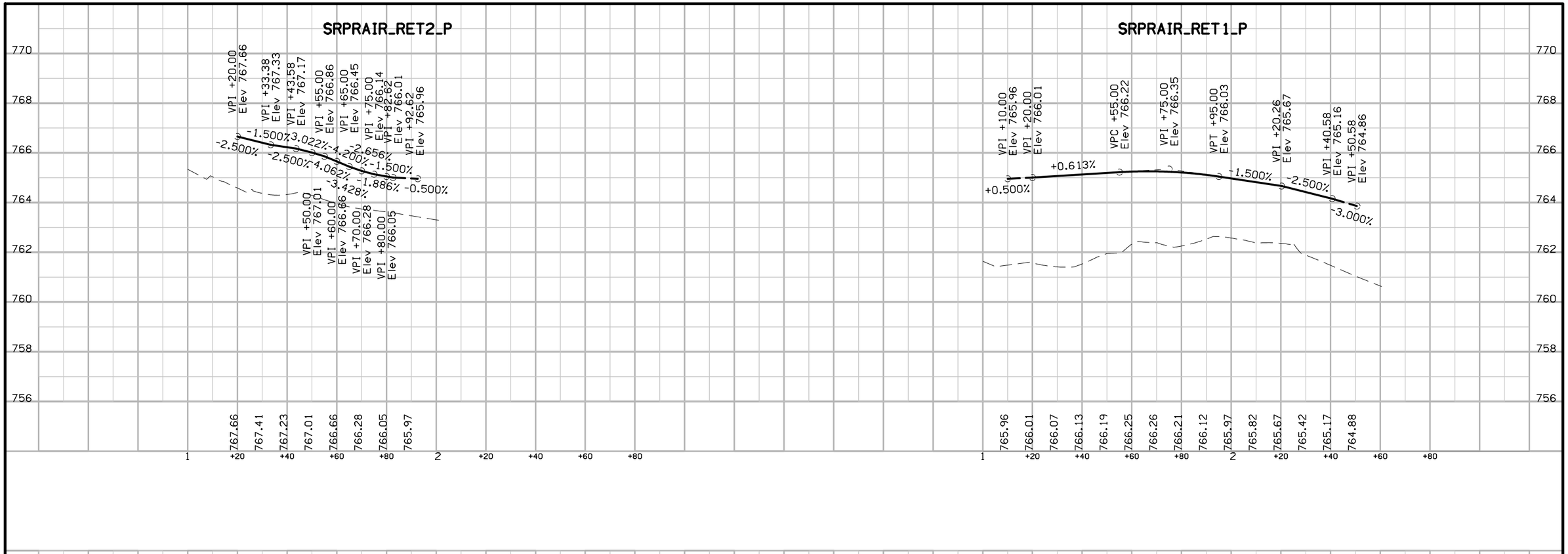

Edge Return Profiles
Intersection of
US Highway 151 and Prairie Avenue

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

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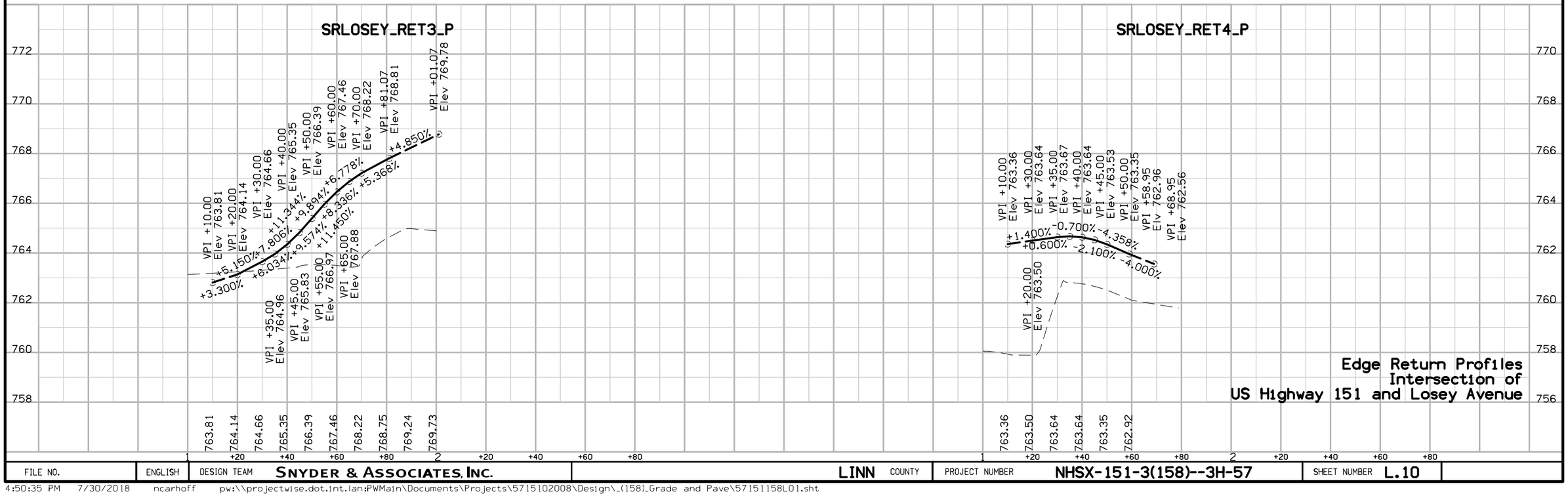
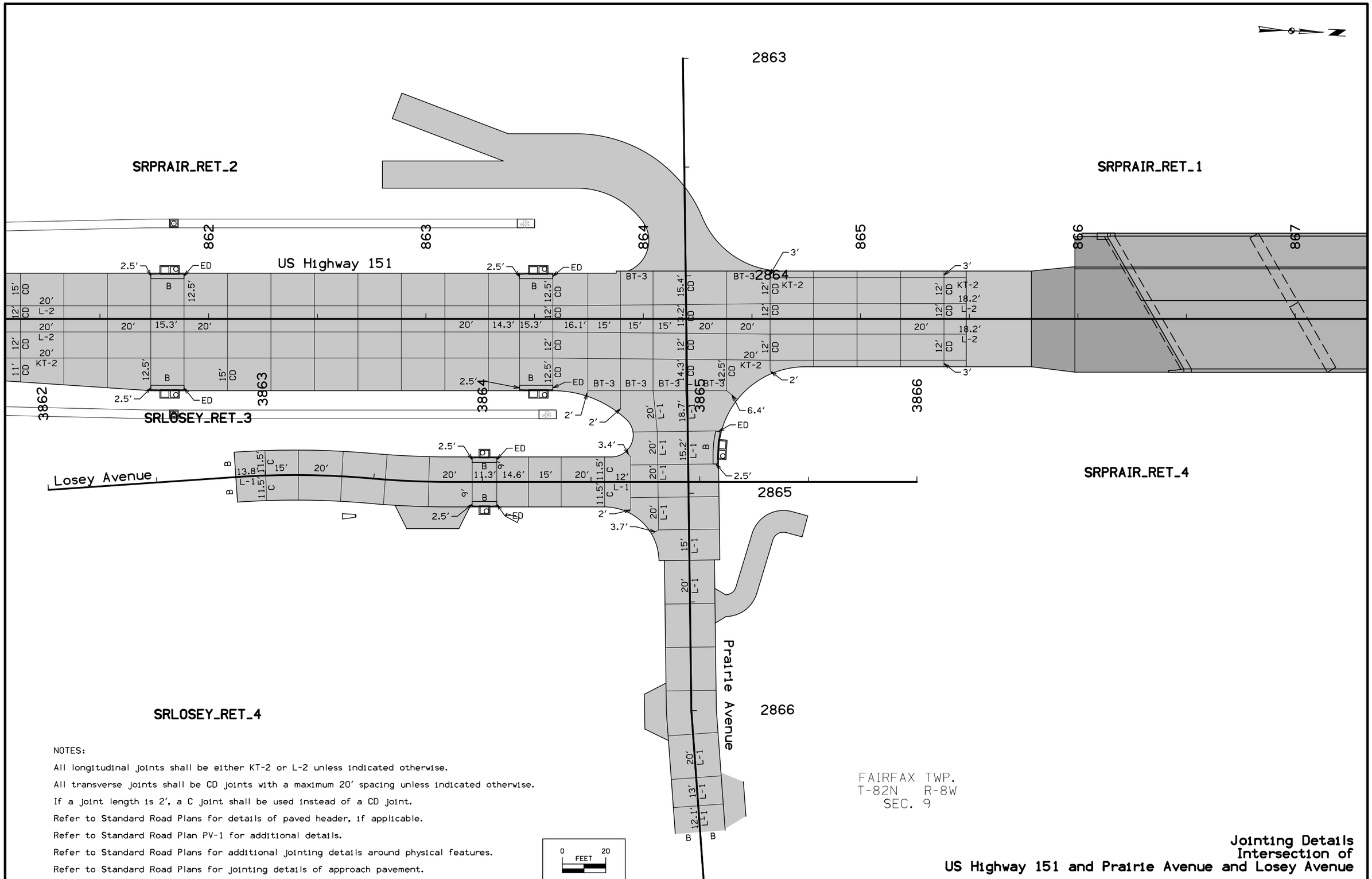


FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	L.10

4:50:35 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158L01.sht



NOTES:

All longitudinal joints shall be either KT-2 or L-2 unless indicated otherwise.

All transverse joints shall be CD joints with a maximum 20′ spacing unless indicated otherwise.

If a joint length is 2′, a C joint shall be used instead of a CD joint.

Refer to Standard Road Plans for details of paved header, if applicable.

Refer to Standard Road Plan PV-1 for additional details.

Refer to Standard Road Plans for additional jointing details around physical features.

Refer to Standard Road Plans for jointing details of approach pavement.

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

Jointing Details Intersection of US Highway 151 and Prairie Avenue and Losey Avenue

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

Prairie Creek

US Highway 151

Sta 865+48.61, 22.00′
Elev =

Sta 865+78.61, 22.00′
Elev =

Sta 865+98.61, 37.92′
Elev =

Sta 866+01.85, 37.83′
Elev =

866

867

868

Sta 868+37.70, 37.92′
Elev =

Sta 868+76.20, 37.92′
Elev =

Sta 868+76.20, 24.00′
Elev =

869

Sta 868+96.20, 22.00′
Elev =

Sta 869+26.20, 22.00′
Elev =

Sta 870+00.00, 22.00′
Elev =

870

Sta 870+70.00, 29.00′
Elev =

Sta 870+70.00, 19.00′
Elev =

871

10:1 Taper

10:1 Taper

9:1 Taper

9:1 Taper

22.00′

22.00′

22.00′

22.00′

19.00′

19.00′

10.00′

10.00′

3866

10:1 Taper

10:1 Taper

Sta 866+41.74, 24.50′
Elev =

Sta 865+98.61, 24.50′
Elev =

Sta 865+78.61, 22.00′
Elev =

Sta 865+48.61, 22.00′
Elev =

Sta 868+68.20, 24.58′
Elev =

Sta 868+76.20, 24.50′
Elev =

Sta 868+96.20, 22.00′
Elev =

Sta 869+26.20, 22.00′
Elev =

Sta 870+00.00, 22.00′
Elev =

Sta 870+70.00, 19.00′
Elev =

Sta 870+70.00, 29.00′
Elev =

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

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

0 20
FEET

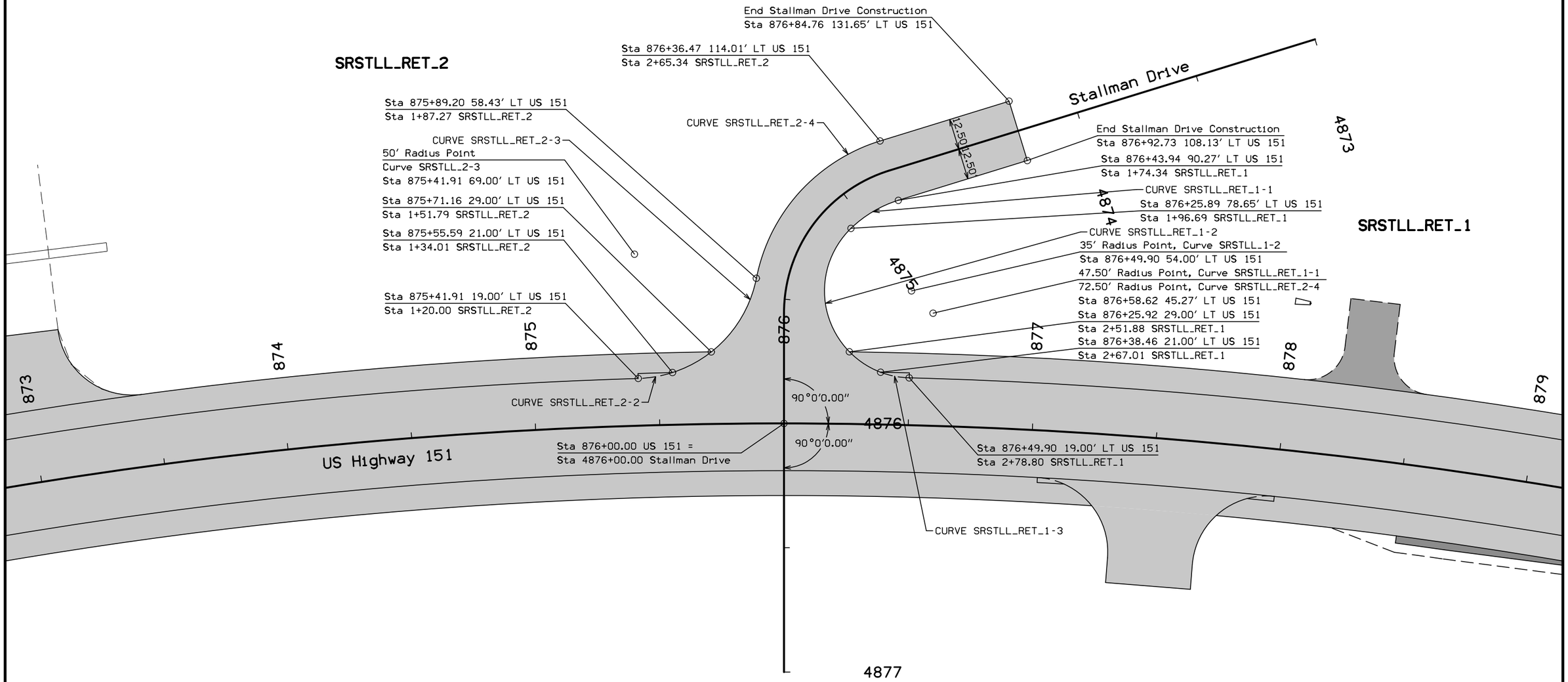
Geometric Details
Prairie Creek Bridge

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

4:50:38 PM 7/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158L01.sht

CIRCULAR CURVE DATA

Name	Δ	D	T	L	E	R
CURVE SRSTLL_RET_1-1	26° 57′ 38.81″	120° 37′ 21.70″	11.39′	22.35′	1.35′	47.50′
CURVE SRSTLL_RET_1-2	115° 07′ 18.95″	163° 42′ 08.02″	55.07′	70.32′	30.25′	35.00′
CURVE SRSTLL_RET_1-3	19° 17′ 31.60″	163° 42′ 08.02″	5.95′	11.75′	0.50′	35.00′
CURVE SRSTLL_RET_2-2	114° 03′ 22.62″	114° 35′ 29.61″	7.05′	14.01′	0.49′	50.00′
CURVE SRSTLL_RET_2-3	61° 01′ 47.56″	114° 35′ 29.61″	29.47′	53.26′	8.04′	50.00′
CURVE SRSTLL_RET_2-4	61° 42′ 02.18″	79° 01′ 43.18″	43.31′	78.07′	11.95′	72.50′



NOTES:

Dimensions shown are to the back of curb.

Refer to G sheets for horizontal alignment information.

Refer to appropriate Standard Road Plans for additional information.

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

0 20
FEET

Geometric Details
Intersection of
US Highway 151 and Stallman Drive

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

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SRSTLL_RET_2

SRSTLL_RET_1

Stallman Drive

Elev = 758.51

CONSTANT 2.0% SLOPE

2.0%
12.5'

CONSTANT 2.0% SLOPE

2.0%
12.5'

Elev = 758.89

Elev = 758.78

Sta 4875+46.00

Elev = 758.89

Special Shaping

2.0%
12.5'

2.0%
12.5'

Uniform Transition

Uniform Transition

Special Shaping

Sta 4875+56.00

Sta 1+57.00 SRSTLL_RET_2
= Sta 4875+67.79 25.36' RT Stallman Drive
Elev = 758.72

Sta 2+50.11 SRSTLL_RET_1
= Sta 4875+69.88 25.10' LT Stallman Drive
Elev = 759.09

US Highway 151

CONSTANT 3.8% SLOPE

3.8%
10'

Elev = 758.70

Elev = 758.52

CONSTANT 4.2% SLOPE

CONSTANT 4.2% SLOPE

CONSTANT 4.2% SLOPE

CONSTANT 4.2% SLOPE

CONSTANT 4.2% SLOPE

4.2%
10'

4.2%
12'

4.2%
7'

4.2%
12'

4.2%
10'

3.8%
10'

CONSTANT 3.8% SLOPE

3.8%
10'

Elev = 758.89

Elev = 759.26

UNIFORM TRANSITION

4.2%
10'

4.2%
12'

4.2%
7'

4.2%
12'

4.2%
10'

4873

4874

4875

4876

4877

873

874

875

876

877

878

879

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

0 20
FEET

Staking Details
Intersection of
US Highway 151 and Stallman Drive

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

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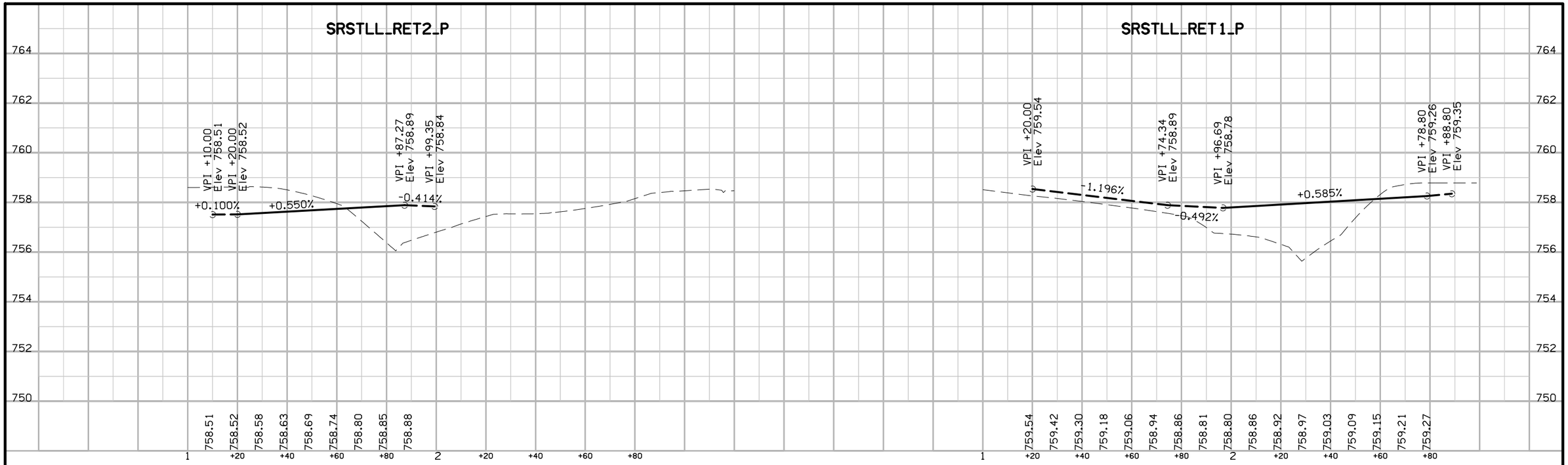

Edge Return Profiles
Intersection of
US Highway 151 and Stallman Drive

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

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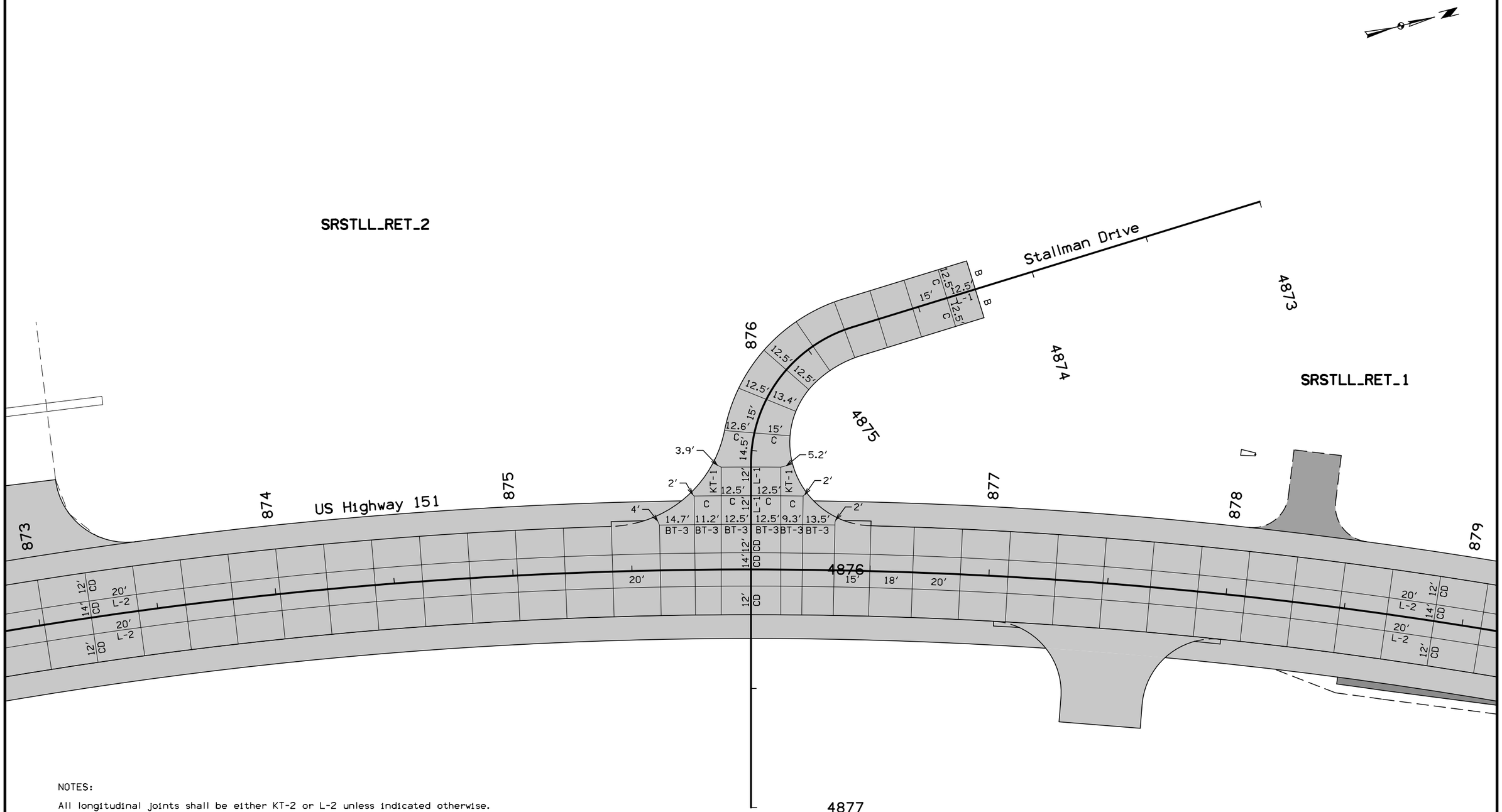

NOTES:

All longitudinal joints shall be either KT-2 or L-2 unless indicated otherwise.

All transverse joints shall be CD joints with a maximum 20′ spacing unless indicated otherwise.

If a joint length is 2′, a C joint shall be used instead of a CD joint.

Refer to Standard Road Plans for details of paved header, if applicable.

Refer to Standard Road Plan PV-1 for additional details.

Refer to Standard Road Plans for additional jointing details around physical features.

Refer to Standard Road Plans for jointing details of approach pavement.

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

0 20
FEET

Jointing Details Intersection of US Highway 151 and Stallman Drive

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

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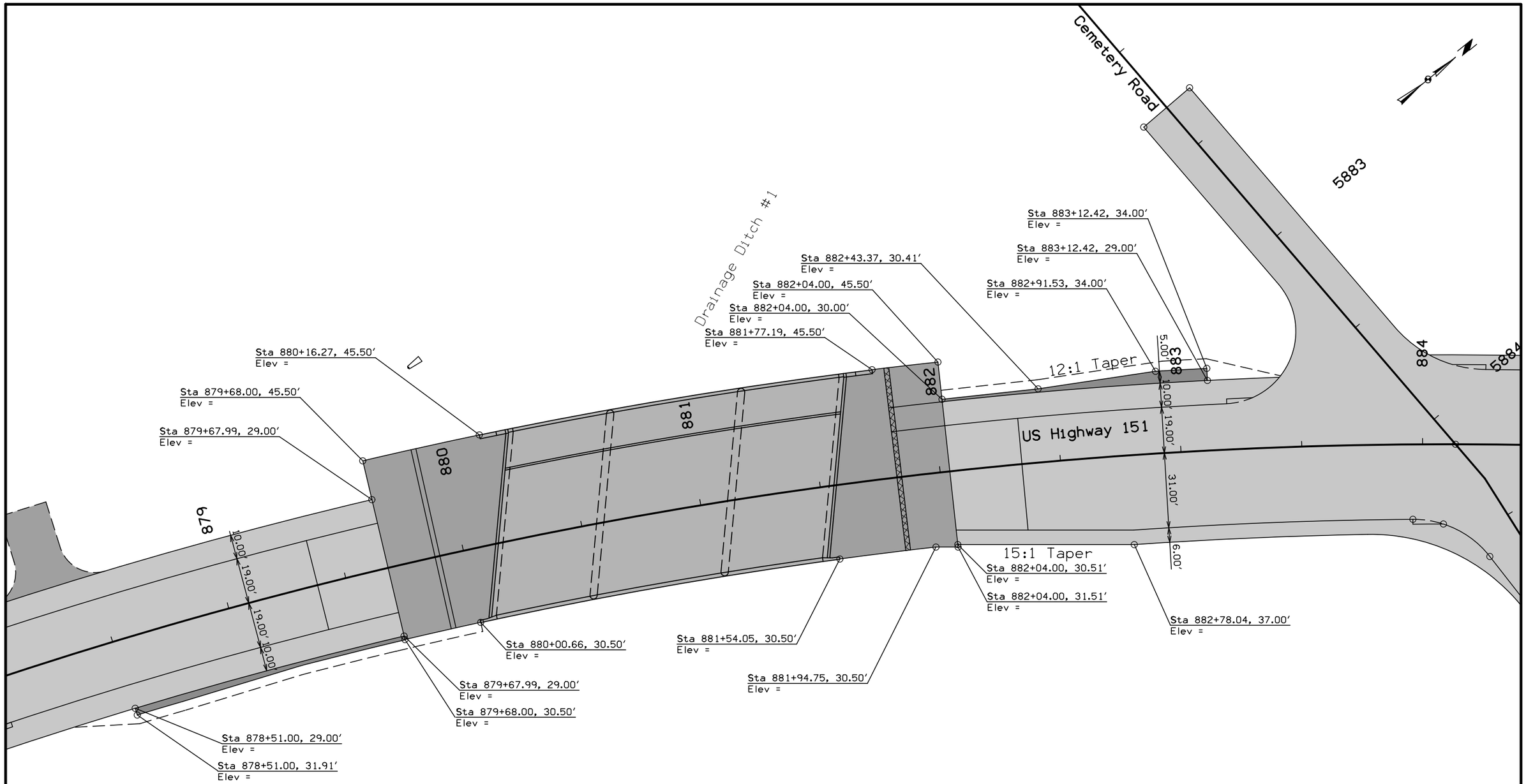

FAIRFAX TWP.
T-82N R-8W
SEC. 9

0 FEET 20

Geometric Details
Drainage Ditch #1 Bridge

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

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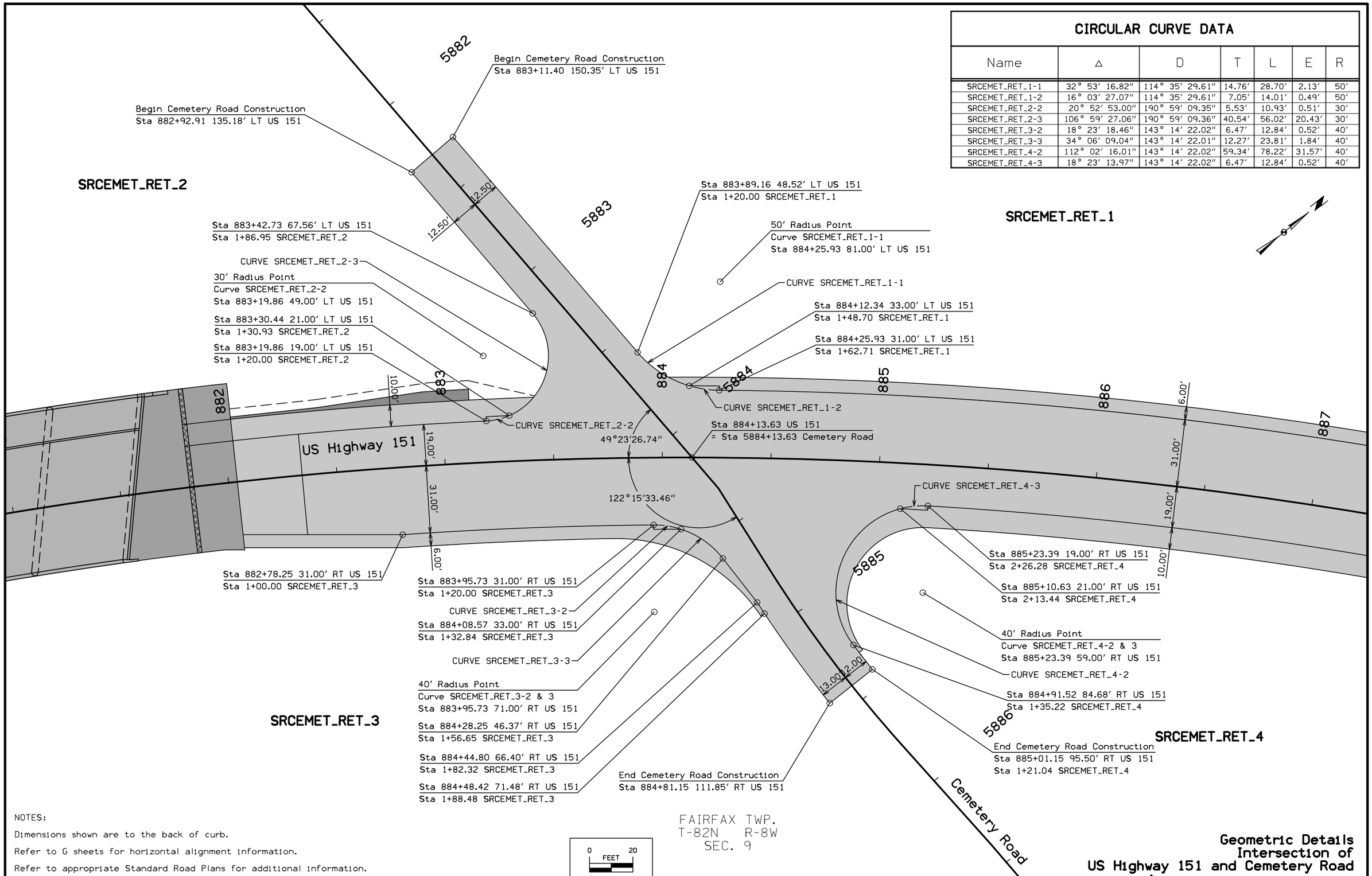
CIRCULAR CURVE DATA

Name	Δ	D	T	L	E	R
SRCEMET_RET_1-1	32° 53′ 16.82″	114° 35′ 29.61″	14.76′	28.70′	2.13′	50′
SRCEMET_RET_1-2	16° 03′ 27.07″	114° 35′ 29.61″	7.05′	14.01′	0.49′	50′
SRCEMET_RET_2-2	20° 52′ 53.00″	190° 59′ 09.35″	5.53′	10.93′	0.51′	30′
SRCEMET_RET_2-3	106° 59′ 27.06″	190° 59′ 09.36″	40.54′	56.02′	20.43′	30′
SRCEMET_RET_3-2	18° 23′ 18.46″	143° 14′ 22.02″	6.47′	12.84′	0.52′	40′
SRCEMET_RET_3-3	34° 06′ 09.04″	143° 14′ 22.01″	12.27′	23.81′	1.84′	40′
SRCEMET_RET_4-2	112° 02′ 16.01″	143° 14′ 22.02″	59.34′	78.22′	31.57′	40′
SRCEMET_RET_4-3	18° 23′ 13.97″	143° 14′ 22.02″	6.47′	12.84′	0.52′	40′



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

NOTES:

Dimensions shown are to the back of curb.

Refer to G sheets for horizontal alignment information.

Refer to appropriate Standard Road Plans for additional information.

Geometric Details
Intersection of
US Highway 151 and Cemetery Road

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

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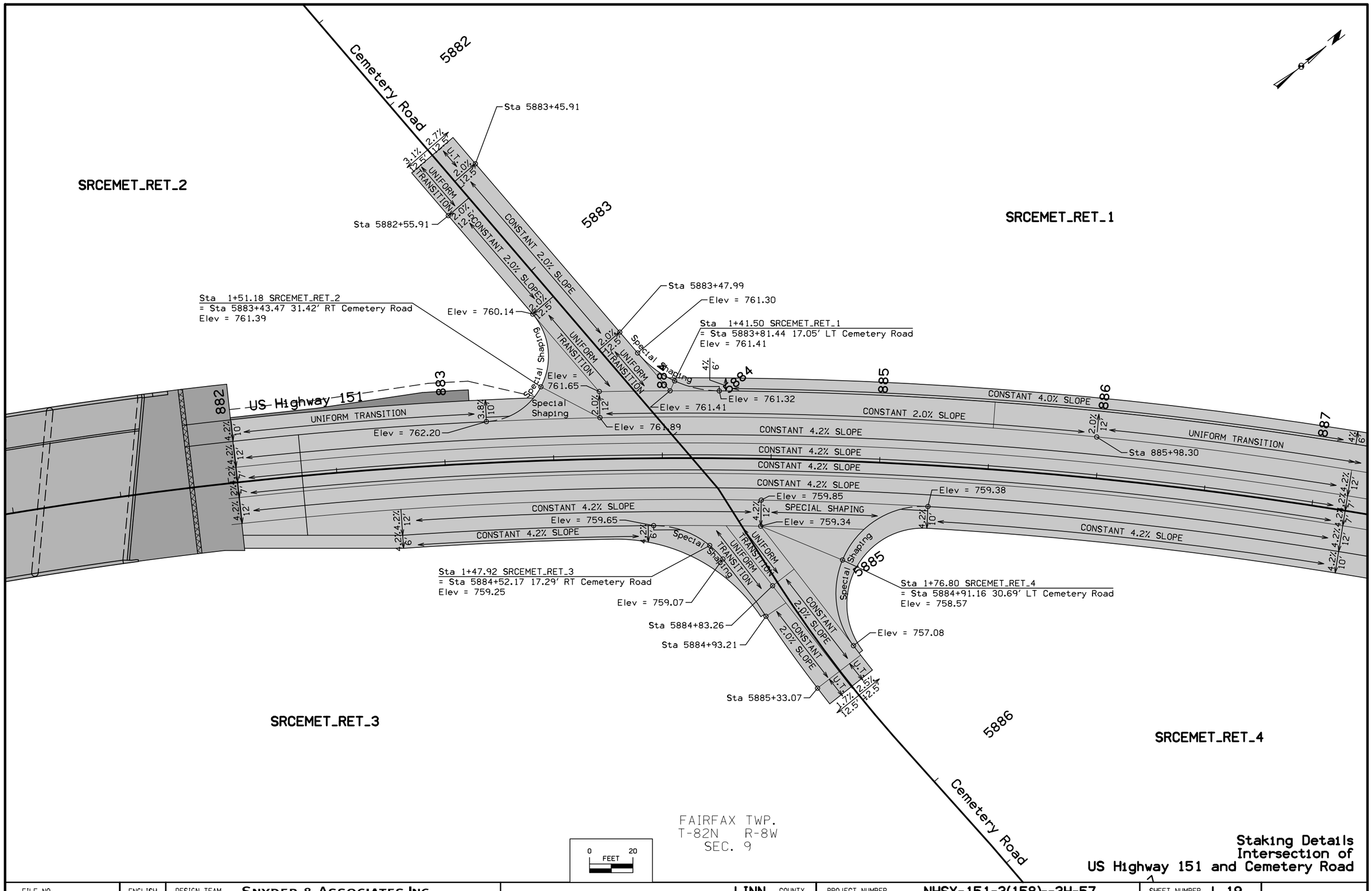

Staking Details
Intersection of
US Highway 151 and Cemetery Road

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

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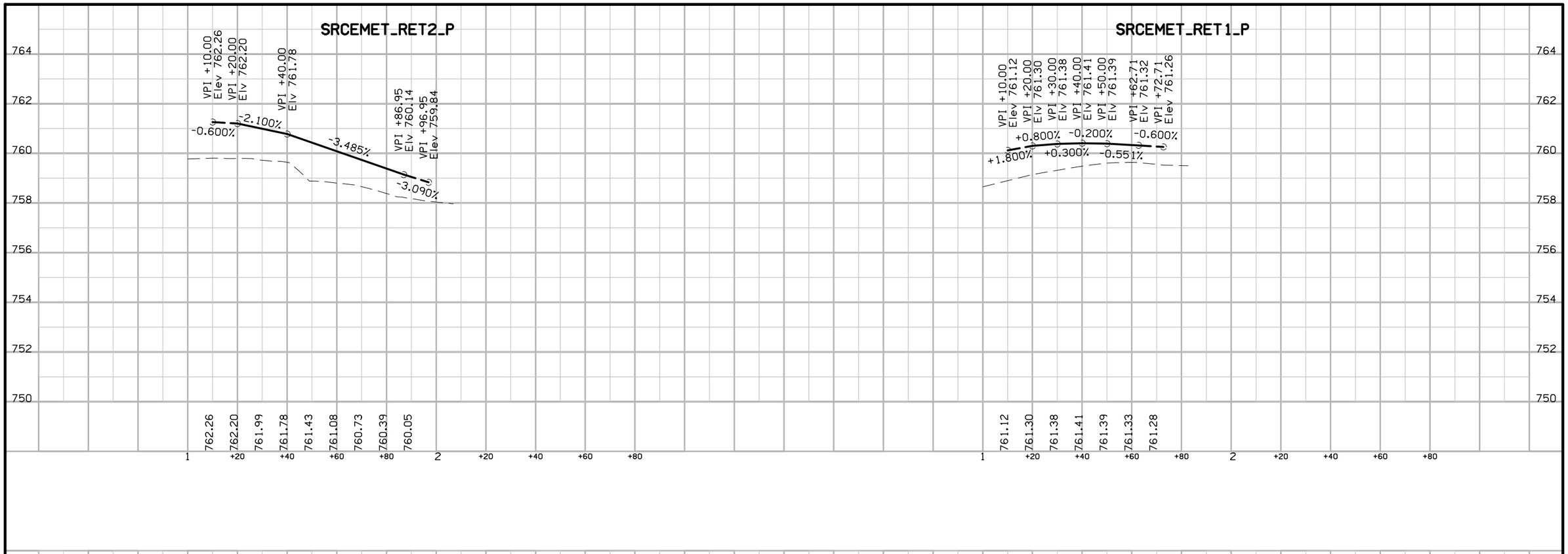

Edge Return Profiles
Intersection of
US Highway 151 and Cemetery Road

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

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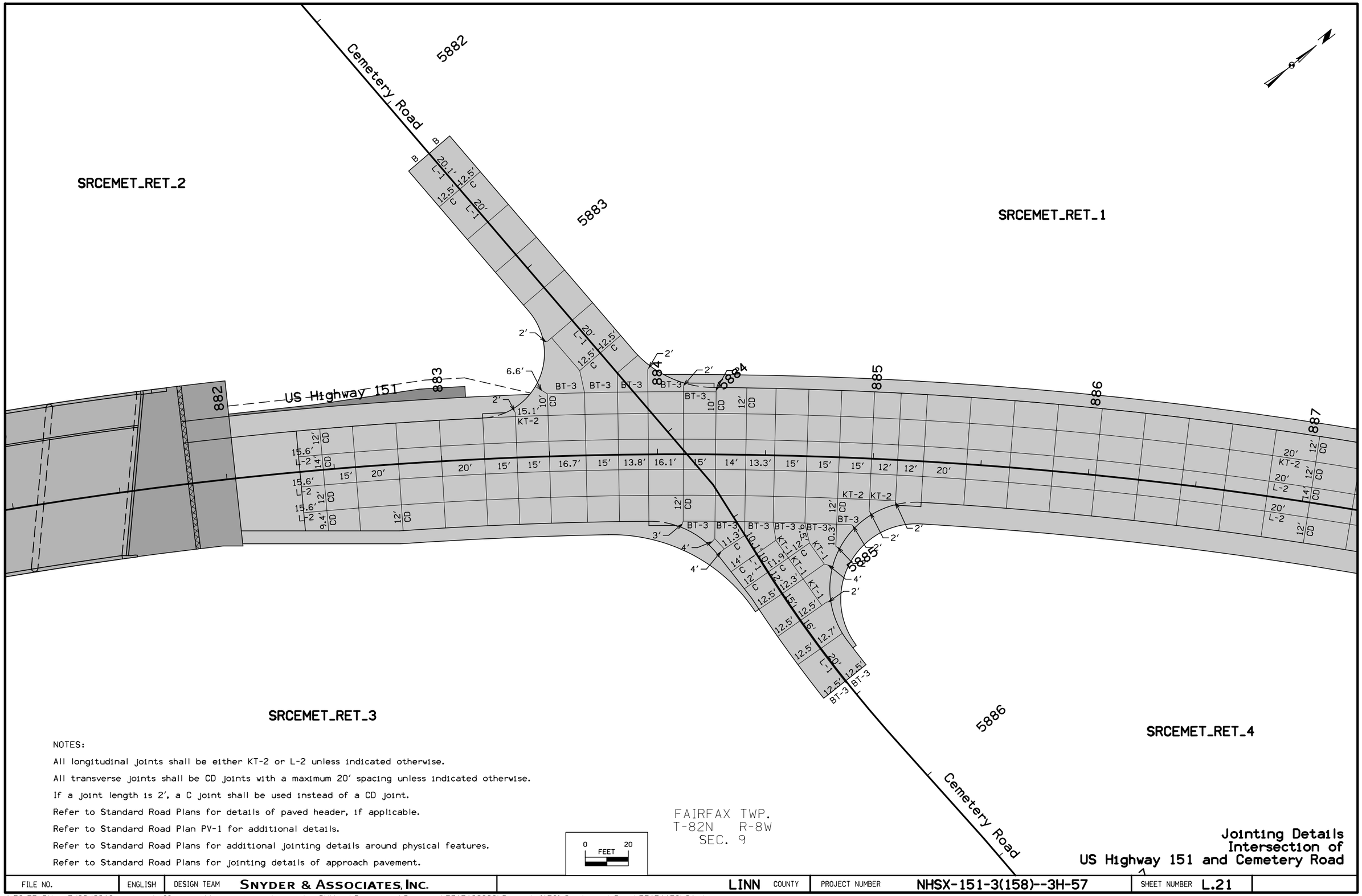

NOTES:

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Refer to Standard Road Plan PV-1 for additional details.

Refer to Standard Road Plans for additional jointing details around physical features.

Refer to Standard Road Plans for jointing details of approach pavement.

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

0 20
FEET

Jointing Details Intersection of US Highway 151 and Cemetery Road

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

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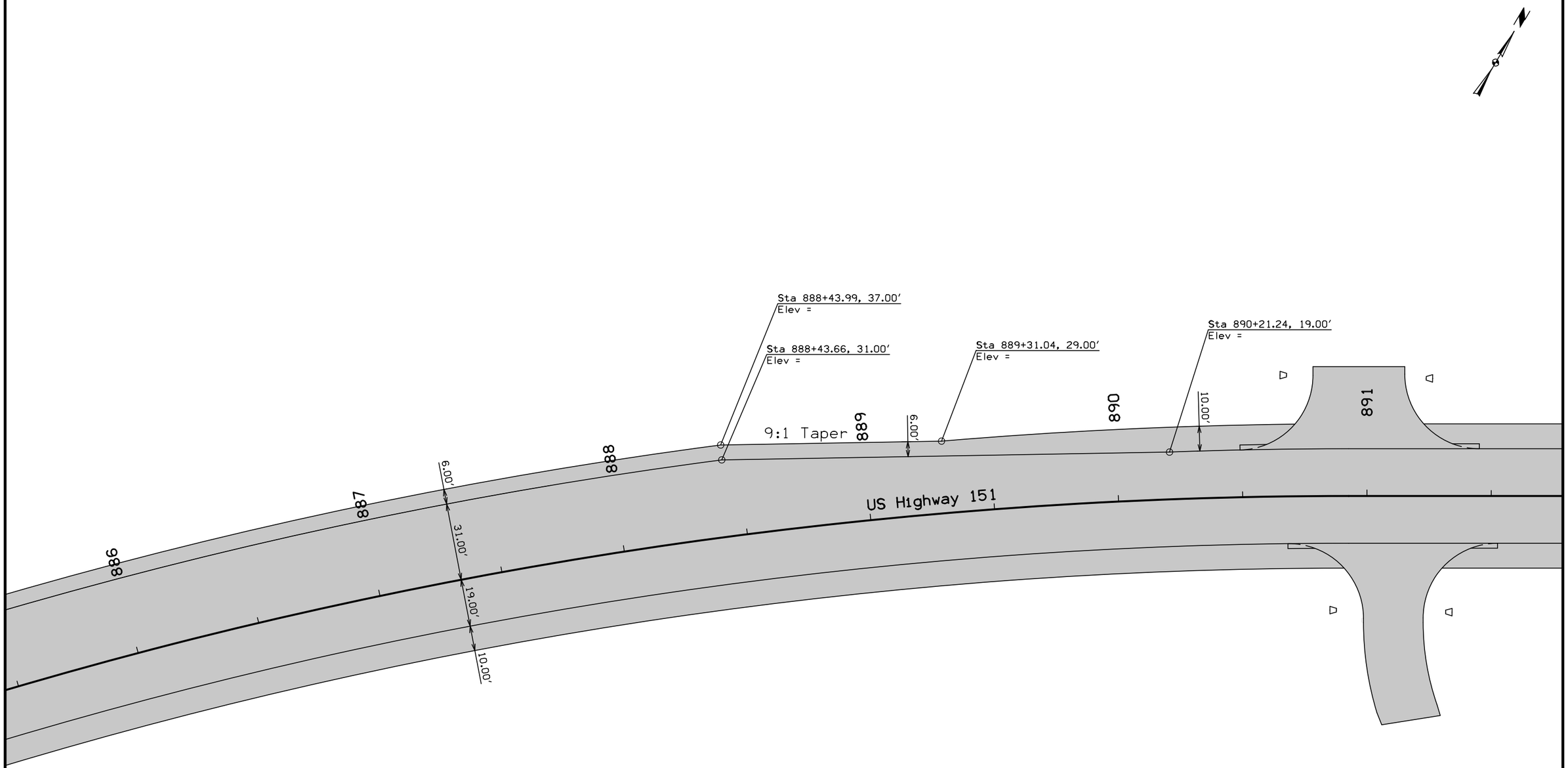

FAIRFAX TWP.
T-82N R-8W
SEC. 9

0 20
FEET

Geometric Details
Right Turn Lane

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

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

STORM AND SANITARY SEWER

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	761.62	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 (15-Inch)	756.56			
ST-09	1850+50.00, 20.00 LT	SW-513 (4'x 4')	758.23	754.70		Note 1
ST-10	1849+85.00, 30.00 LT	SW-401 (48-Inch)	761.83	754.30		
ST-11	849+89.12, 22.51 RT	SW-510	762.96	753.90		
ST-12	851+48, 43.90 RT	SW-513 (3'x 3')	768.83	765.88		Note 2
ST-13	851+50.00, 21.00 RT	SW-509	770.62	765.60		
ST-14	851+50.00, 33.00 LT	SW-509	770.31	764.69		
ST-15	849+89.35, 35.68 LT	SW-510	762.65	753.00		
ST-16	1848+30.00, 30.00 RT	SW-512 (30-Inch)	758.75	754.26		Type 5 Casting
ST-17	850+00.00, 75.00 LT	SW-401 (72-Inch)	758.25	752.55		
ST-18	850+50.00, 104.06 LT	DR-201 (30-Inch)	752.50			
ST-19	853+25.60, 21.00 RT	SW-509	781.16	776.45		
ST-20	853+25.60, 33.00 LT	SW-509	780.85	775.64		
ST-21	853+23.50, 152.00 LT	DR-201 (15-Inch)	751.79			
ST-22	861+84.00, 43.90 LT	SW-513 (3'x 3')	778.50	775.50		Note 2
ST-23	861+84.00, 43.90 RT	SW-513 (3'x 3')	778.20	775.20		Note 2
ST-24	861+82.03, 21.00 LT	SW-509	778.61	773.61		
ST-25	861+82.03, 33.00 RT	SW-509	778.30	772.70		
ST-26	863+51.70, 21.00 LT	SW-509	769.42	764.35		
ST-27	863+51.70, 33.00 RT	SW-509	769.10	759.10		
ST-28	3863+35.00, 18.50 RT	DR-201 (15-Inch)	759.65			
ST-29	3864+18.00, 17.50 RT	DR-201 (15-Inch)	760.44			
ST-30	3864+01.00, 11.50 RT	SW-507	762.92	758.00		
ST-31	3864+01.00, 11.50 LT	SW-507	762.92	757.67		
ST-32	2864+80.00, 14.00 LT	SW-509	764.95	751.79		
ST-33	865+25.00, 60.00 RT	DR-201 (18-Inch)	750.66			
ST-34	878+00.00, 60.00 LT	DR-201 (15-Inch)	756.3			
ST-35	879+52.00, 60.00 LT	DR-141	754.58			
ST-36	879+99.50, 81.36 LT	DR-201 (15-Inch)	754			
SN-01	1848+95.23, 40.95 RT	Existing Sanitary Manhole	761.33			Adjust +0.80'
SN-02	1847+73.25	SW-301	757.98			

Note 1: Form Grade Elev. = Inlet Elev.
Note 2: Provide Precast Base, Form Grade Elev. = Inlet Elev.

PIPES

Design Length, Slope, and Flowlines are calculated from inside wall to inside wall along CL of pipe. Additional length is added to each side of the Design Length to account for estimated length to center of structures, rounded to nearest 2-feet.

Line Number	Intake/ Utility Access No. From	To	Class 'D'	(1) Pipe Size 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	12					771.69	762.18			Existing Pipe
P-02	ST-02	ST-04	2000	15	164	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	18	176	166.7	1.86		758.90	755.80		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	143.9	0.49		754.80	754.10		M.3	Gasket Pipe
P-08	ST-08	ST-09	2000	15	40	36.9	3.00		756.38	755.30	756.56	M.5	Apron Inlet
P-09	ST-09	ST-10	2000	24	68	62.8	0.48		755.20	754.90		M.5	
P-10	ST-10	ST-11	2000	24	38	30.9	0.97		754.80	754.50		M.5	
P-11	ST-11	ST-14	2000	24	62	57.2	0.70		754.40	754.00		M.5	
P-12	ST-12	ST-13	2000	15	22	18.4	1.00		766.38	766.20		M.4	
P-13	ST-13	ST-14	2000	15	58	54.0	1.50		766.10	765.29		M.4	
P-14	ST-14	ST-15	2000	15	160	152.3	6.46		765.19	755.35		M.4	
P-15	ST-15	ST-17	3000	30	40	33.9	1.03		753.50	753.15		M.5	
P-16	ST-16	ST-17	2000	15	98	93.1	1.20		754.76	753.64		M.4	
P-17	ST-17	ST-18	3000	30	52	48.7	1.00		753.05	752.56	752.50	M.5	Apron Outlet
P-19	ST-19	ST-20	2000	15	58	54.0	1.50		776.95	776.14		M.4	
P-20	ST-20	ST-21	2000	15	114	109.9	Var.		776.14	751.85	751.97	M.4	Let Down Pipe
P-22	ST-22	ST-24	2000	15	22	18.4	1.50		776.00	775.72		M.6	
P-23	ST-23	ST-25	2000	15	10	6.4	1.50		775.70	775.60		M.6	
P-24	ST-24	ST-25	2000	15	58	54.0	1.50		774.11	773.30		M.6	
P-25	ST-25	ST-27	2000	15	170	161.7	5.66		773.20	764.05		M.6	
P-26	ST-26	ST-27	2000	15	58	54.0	1.50		764.85	764.04		M.6	
P-27	ST-27	ST-32	2000	15	90	82.2	4.38		759.60	756.00		M.6	
P-28	ST-28	ST-30	2000	15	66	61.5	1.71		759.65	758.6	759.75	M.6	Apron Inlet
P-29	ST-29	ST-30	2000	15	18	12.4	10		759.84	758.6	760.44	M.6	Apron Inlet
P-30	ST-30	ST-31	2000	15	26	23.0	1		758.5	758.27		M.6	
P-31	ST-31	ST-32	2000	15	108	103.6	2.09		758.17	756		M.6	
P-32	ST-32	ST-33	2000	18	86	81.4	2		752.29	750.78	750.66	M.6	Apron Outlet
P-34	ST-34	ST-35	2000	15	152	150.8	1.1		756.23	754.58		M.7	
P-35	ST-35	ST-36	2000	15	47.6	47.6	1.08		754.58	754.07	754	M.7	Apron Outlet
P-S01		SN-02	PVC	10	6	4.0	0.3		752.39	752.38		M.8	Stub Pipe
P-S02	SN-02	SN-01	PVC	10	132	126.7	0.3		752.38	752		M.8	

SURVEY SYMBOLS

- CP Control Point
- 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
- WH WHD Water Hydrant
- TP TPD Telephone Pedestal
- TDC Tree Deciduous
- TEV Evergeen Tree
- SHR Shrub
- PR Electric 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
- TP TPD Telephone Pedestal
- WV WV Water Valve
- WH WHD Water Hydrant
- PR Electric Riser Pole
- GV GV Gas Valve
- EB EB Electrical Box
- UB UB Utility Box
- FHD Fire Hydrants
- TVP TVP TV Pedestal
- G - GLA MidAmerican Energy
- E2 - ELB Linn County Rural Electric Cooperative
- FO - FOA South Slope Phone Internet Television
- FO2 - FOB Mediacom
- FO3(C) - FOC Sprint/Nextel
- 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
Station

- Survey Line
- 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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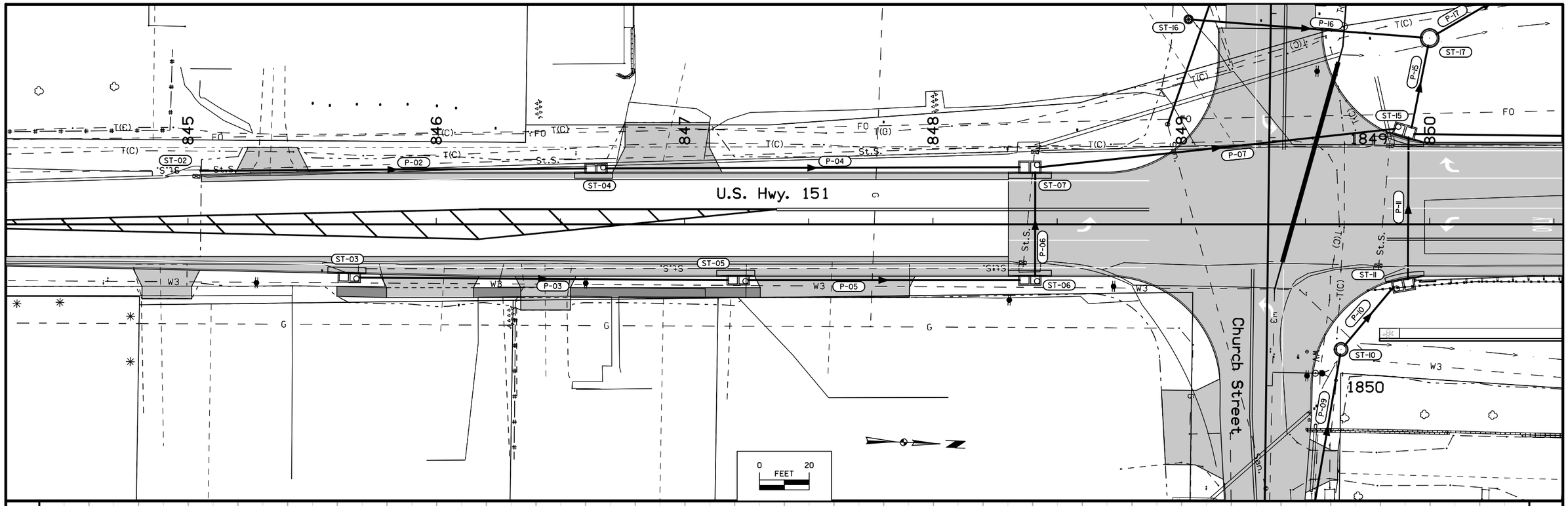

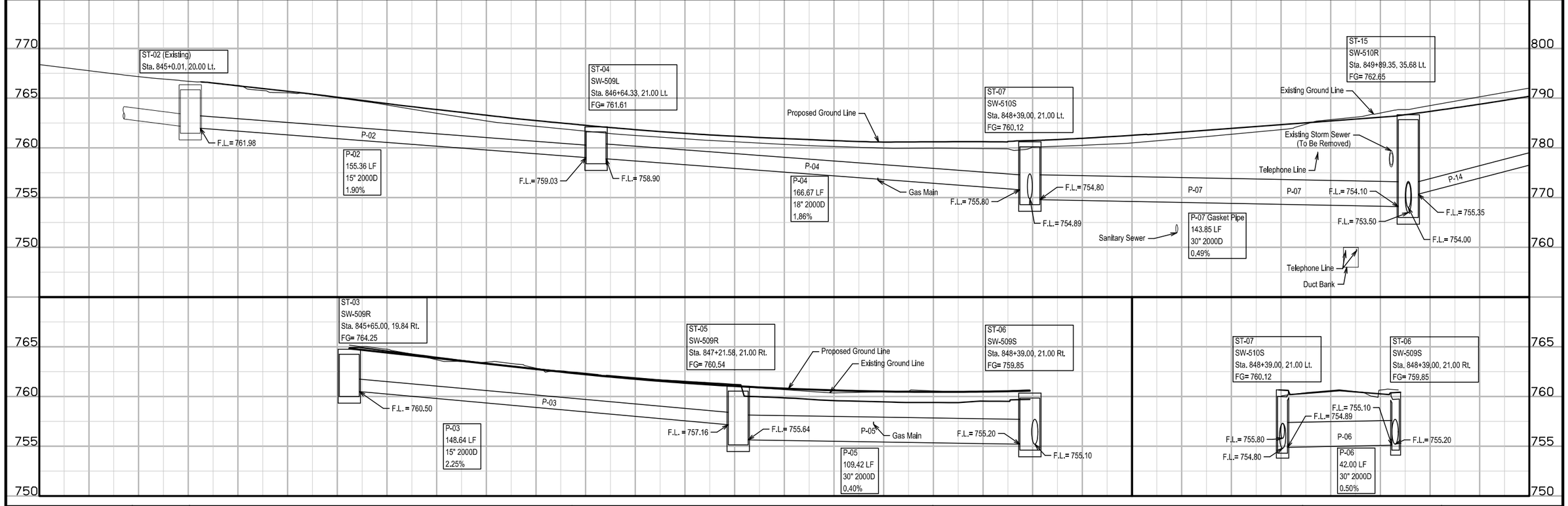

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	M.3

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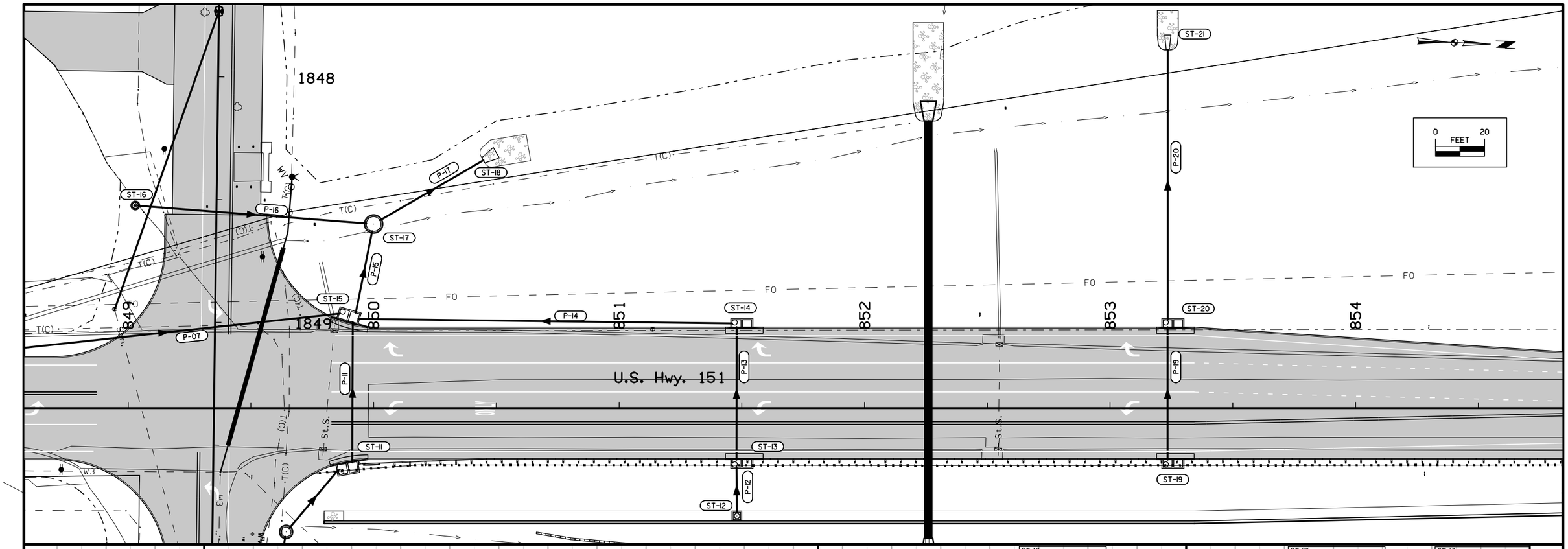

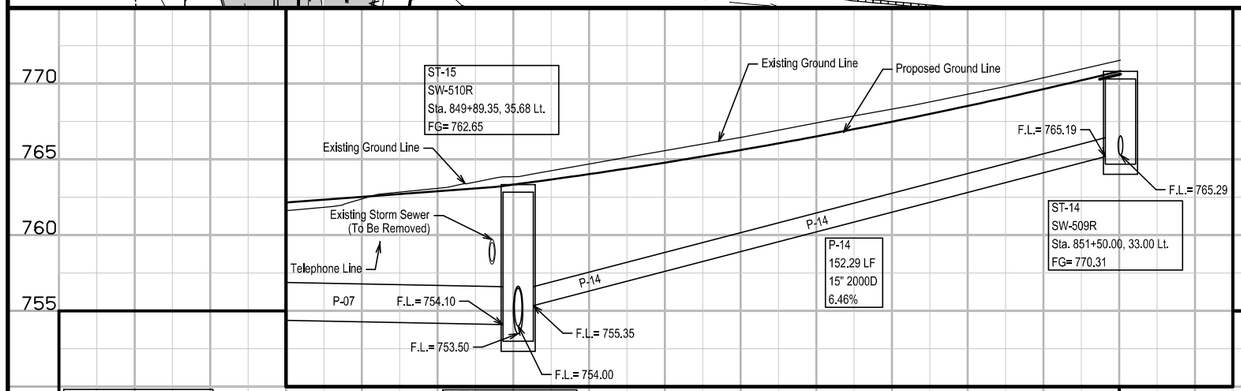

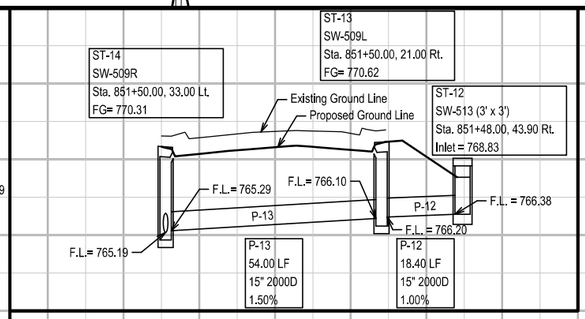

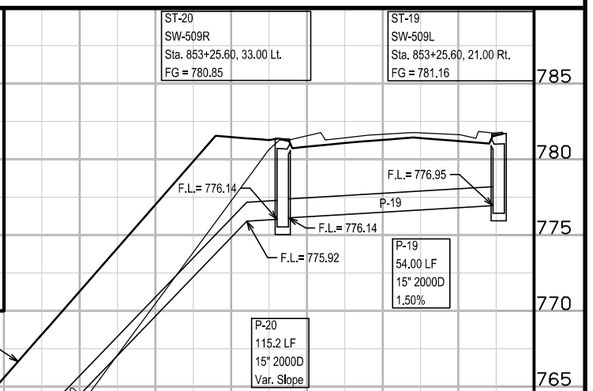

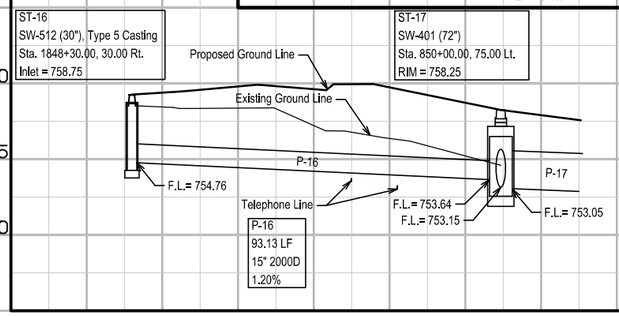

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	M.4

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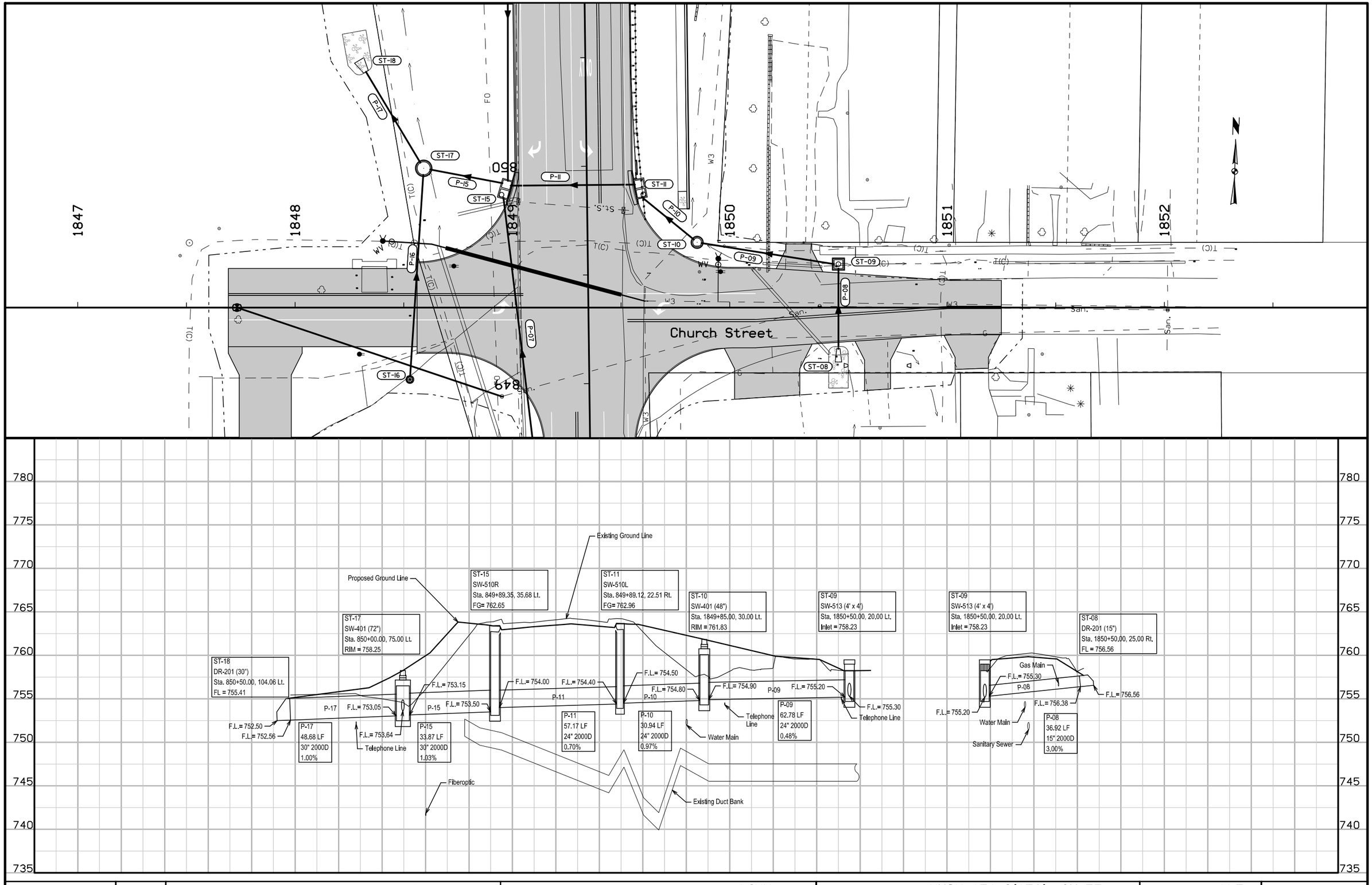

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	M.5

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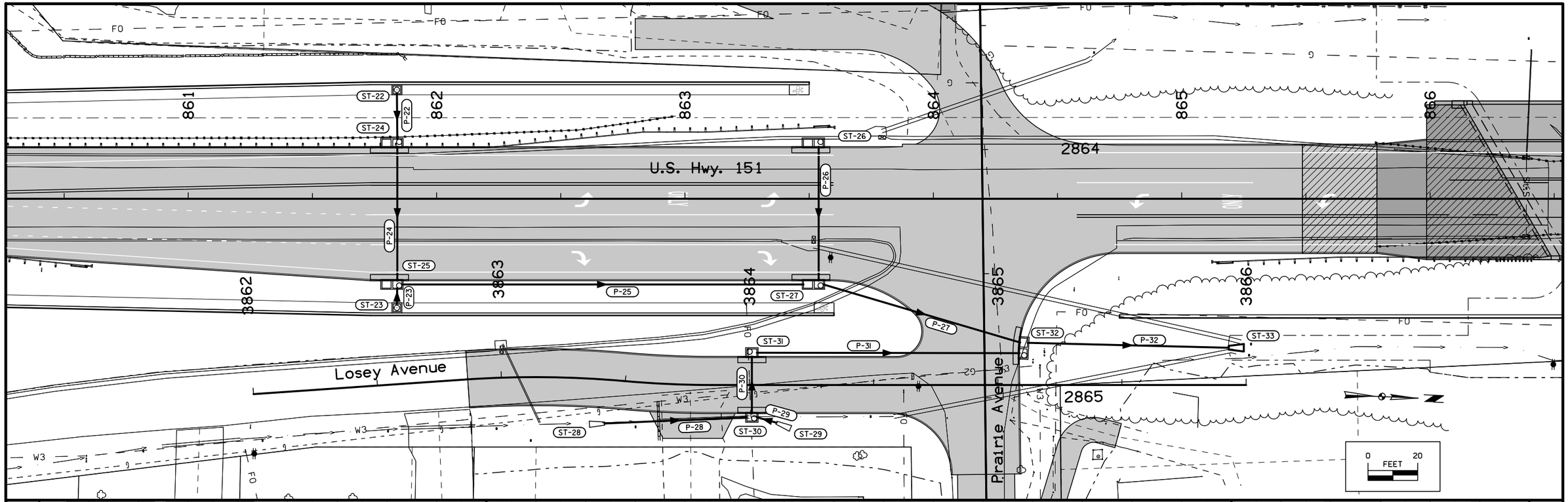

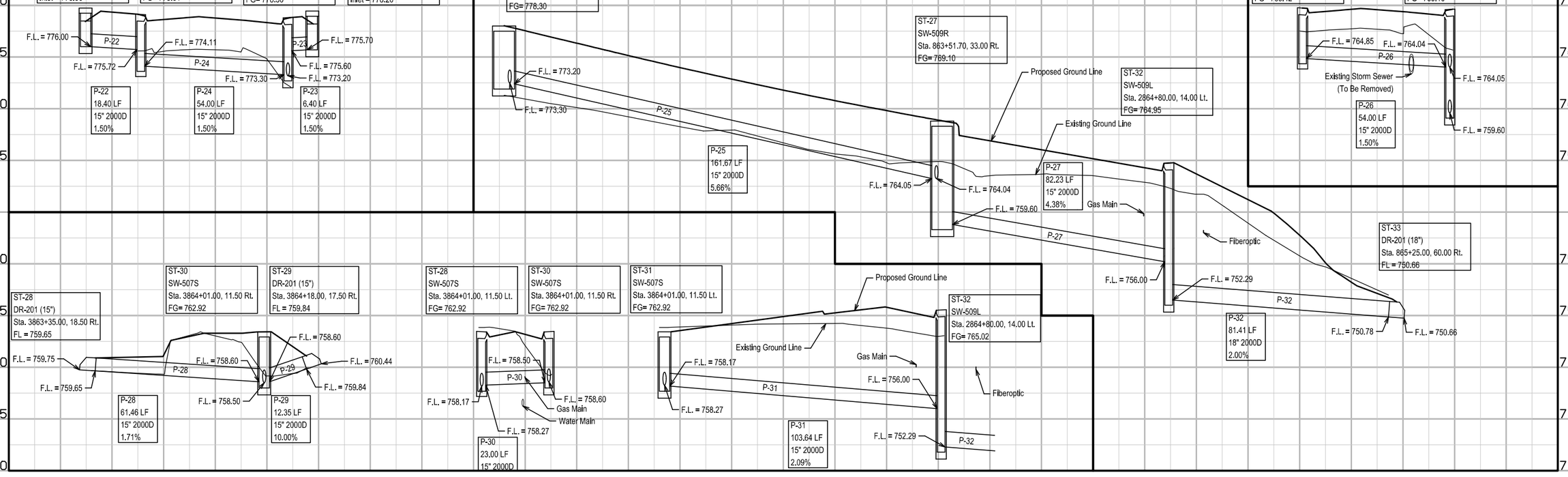

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	M.6

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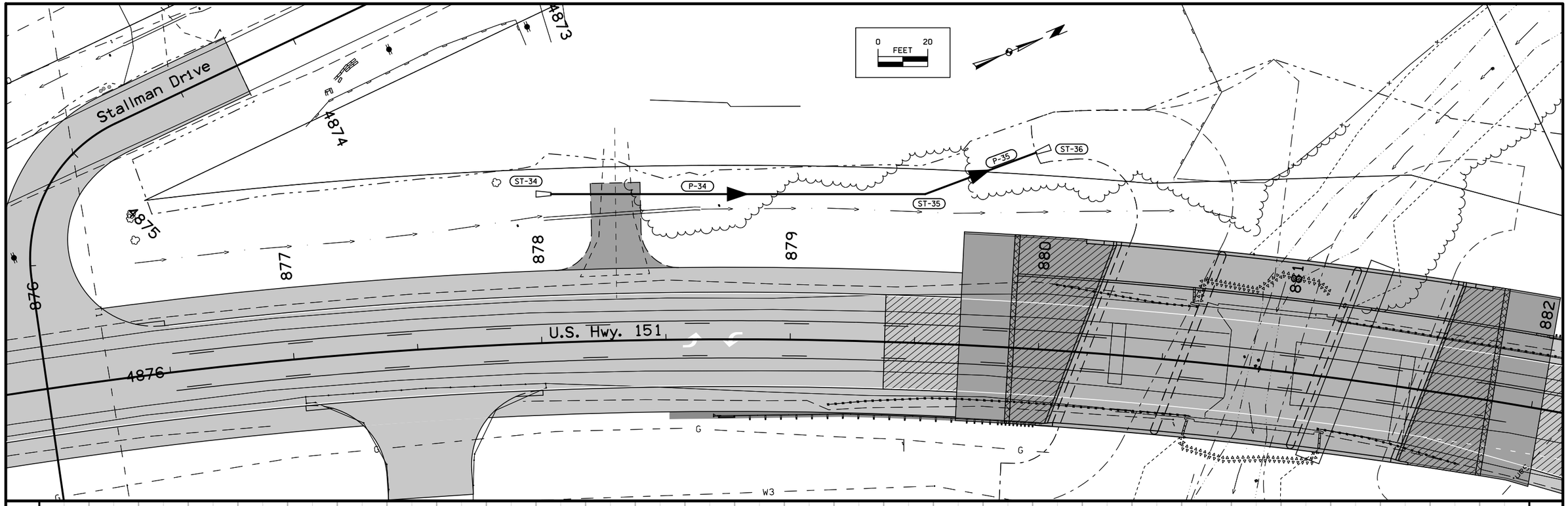
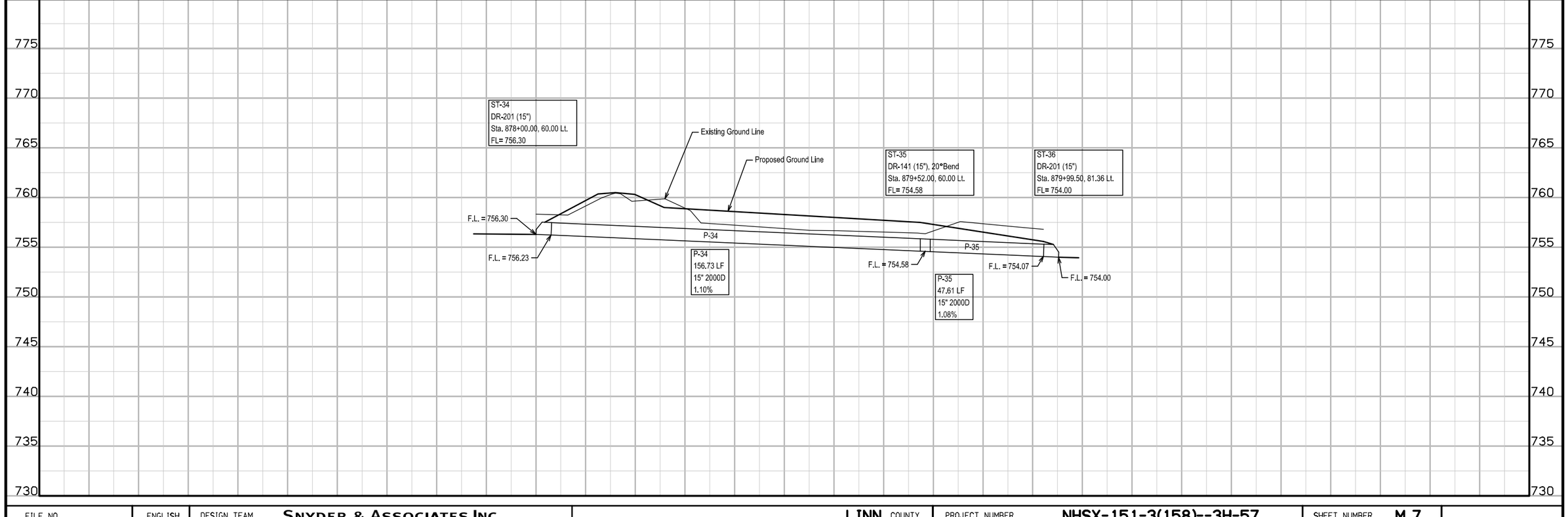
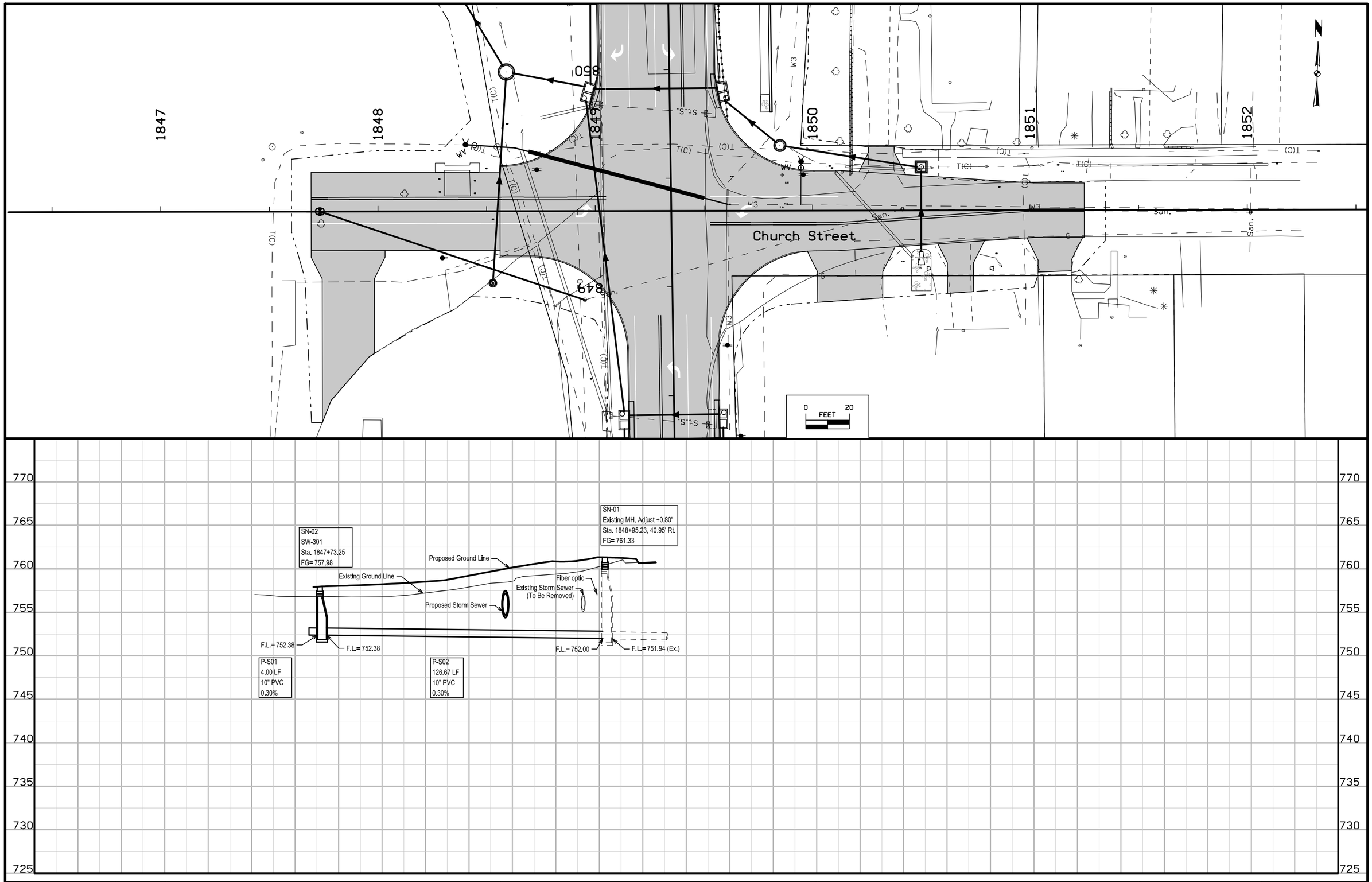




FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	M.7

4:40:09 PM 7/30/2018 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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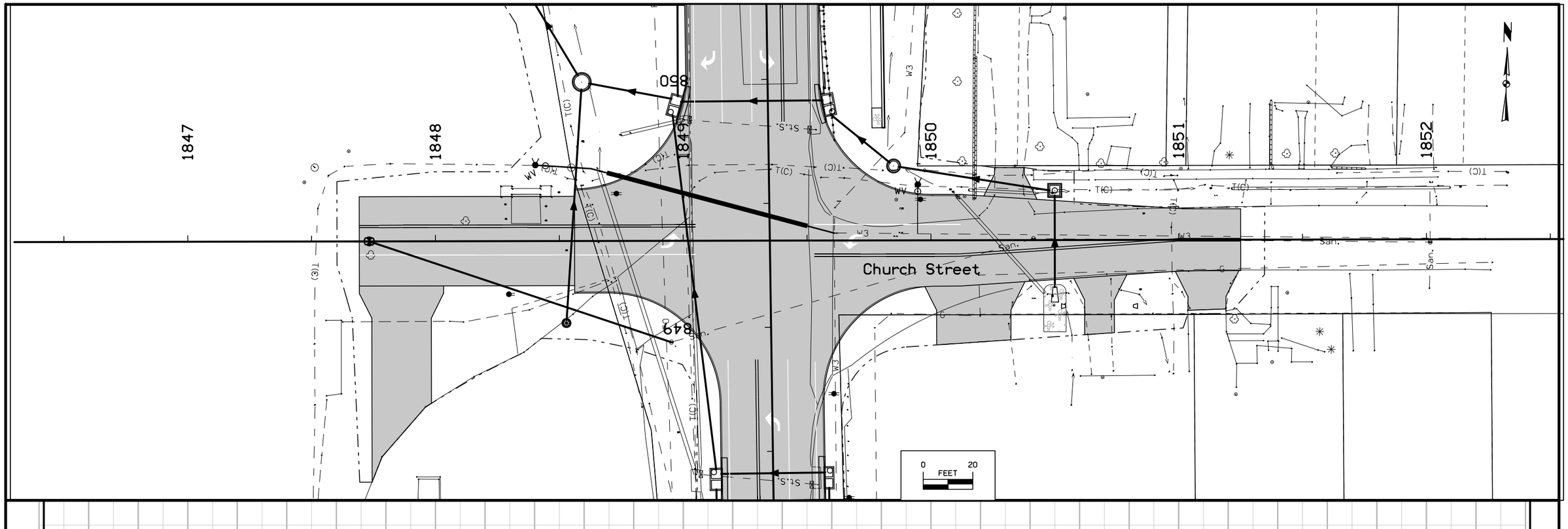
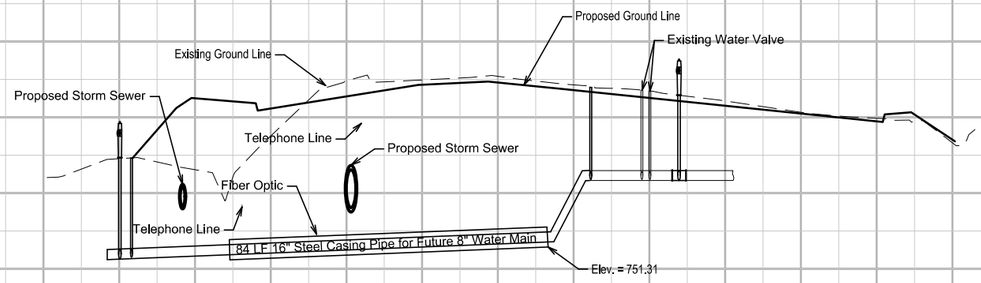
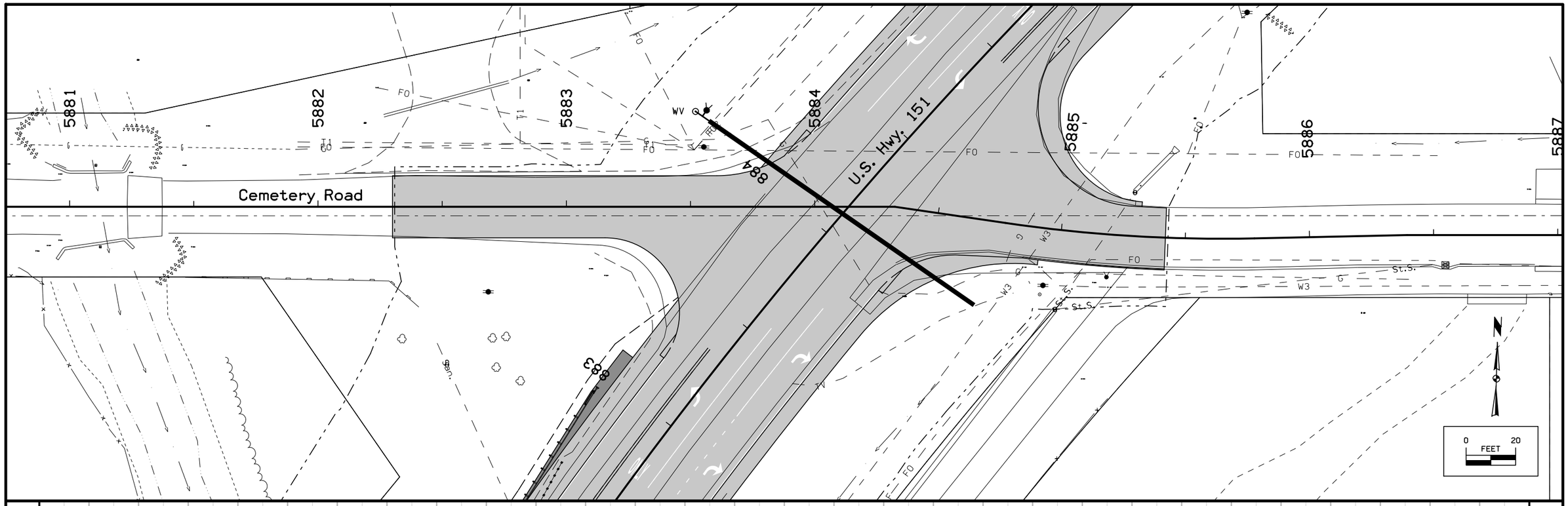
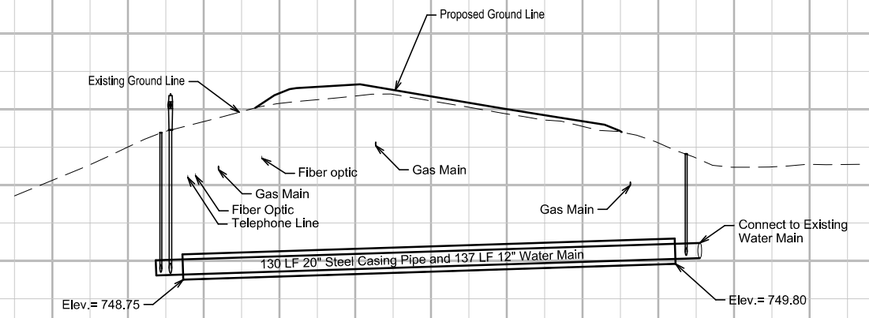

1847
1848
1849
1850
1851
1852
850
849
Church Street
San.
St.S.
W3
W4
T(C)
I(C)
0
FEET
20


Proposed Ground Line
Existing Water Valve
Existing Ground Line
Proposed Storm Sewer
Telephone Line
Proposed Storm Sewer
Fiber Optic
Telephone Line
84 LF 16" Steel Casing Pipe for Future 8" Water Main
Elev. = 751.31





770 765 760 755 750 745 740 735 730 725

750.66 753.32
750.82 760.64
750.98 760.99
751.14 760.13
751.30 759.29
751.46 758.51

1884

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

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- CP Control Point
- 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
- WH WHD Water Hydrant
- TP TPD Telephone Pedestal
- TDC Tree Deciduous
- TEV Evergeen Tree
- SHR Shrub
- PR Electric 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

- PPA Alliant Energy
- TPD Telephone Pedestal
- WV Water Valve
- WHD Water Hydrant
- PR Electric Riser Pole
- GV Gas Valve
- EB Electrical Box
- UB Utility Box
- FHD Fire Hydrants
- TVP TVP TV Pedestal
- G - GLA MidAmerican Energy
- E2 - ELB Linn County Rural Electric Cooperative
- FO - FOA South Slope Phone Internet Television
- FO2 - FOB Mediacom
- FO3(C) - FOC Sprint/Nextel
- 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 SOILS SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Purple (Halo)	(15)	Backslope Drains
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
SHADING	**Design Color No.**	
Brown, Light	(236)	Core Out

PROFILE VIEW COLOR LEGEND OF SOILS SHEETS

LINEWORK	Design Color No.	
Blue	(1)	Proposed Alignment, Stationing, and Alignment Annotation
Green	(2)	Existing Ground Line Profile
Green, Med	(227)	Topsoil
Green, Med	(227)	Slope Dressing Only
Orange	(6)	Loam
Brown, Dark	(238)	Class 10
Brown, Med	(237)	Sand
Red	(3)	Unsuitable A
Pink, Dark	(13)	Unsuitable B
Pink	(11)	Unsuitable C
Red	(3)	Shale
Red	(3)	Waste
Gray, Light	(48)	Broken and Weathered Rock
Gray, Med	(80)	Rock
Gray, V.Dark	(128)	Boulders

PATTERN AND SYMBOL LEGEND OF SOILS SHEETS

- Drill
- Dig/Core
- Date(s) Drilled_____
- $-H_2O-$ Water
- Treatment
- Sandstone
- DRY Dry
- Sand Blanket
- Unsuitable A
- S Sample
- Soil Remediation Area
- Unsuitable B
- Plugged
- Select Soil
- Unsuitable C
- M Moisture
- Select Sand
- Sandy Soil
- Shelby
- Slope Dressing Only
- Boulders
- Blow Count
- Broken and Weathered Rock
- Shale
- Dens. Core
- Rock

Reference Point
Station
Survey Line
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

NOTE: Sounding and test boring data shown in the plans were accumulated for designing and estimating purposes. Their appearance on the plans does not constitute a guarantee that conditions other than those indicated will be encountered. Details and notes shown elsewhere shall be used for roadway and structure construction.

SOILS

(COVERS SHEET SERIES Q)

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.1

3:24:56 PM kekausalik N:\Projects\2017\08175112\CAD\SHT\571511580Q1.sht

Keyed Notes

① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Manhole to Grade
④ Adjust Hydrant to Grade

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

0 FEET 50

STA 845+05.45
BEGIN PCC WIDENING LT.

STA 843+88.58
BEGIN PCC WIDENING RT.

STA 843+47.28
BEGIN PROJECT

STA 848+30.33
END PCC WIDENING LT. AND RT.
BEGIN PCC PAVING

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

Relocate Monument (By Others)

WORKING BLANKET 1

835 840 845 850

PT Sta 840+20.65

U.S. Hwy. 151

45:1 Taper

+34.00 Prop. Type "C" Ent.
+93.00 Prop. Type "B" Ent.
+91.50 Prop. Type "C" Ent.
+97.50 Prop. Type "B" Ent.
+44.00 Prop. Type "C" Ent.
+60.50 Prop. Type "B" Ent.

Do Not Disturb Sign

Church Street

20 21 30 101 18

W3 G F.O. San.

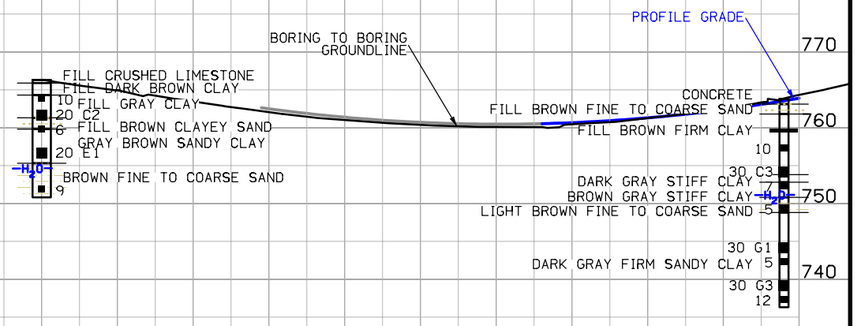
SPECIAL ATTENTION (SLIVER FILL)
Special attention should be given to Article 2107.03.C,
of the current Standard Specification Series, on this project.

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.2

3:24:57 PM kekausalik N:\Projects\2017\08175112\CAD\SHT\5715115801.sht

CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

30 | 20, 106, ,



SHELBY TUBE CORE DATA

CORE NO.	20 C2	20 E1	30 C3	30 G1	30 G3
DEPTH IN FEET	4	9	9	19	24
CLASSIFICATION (AASHTO)	A-2-6(1)	A-6(12)	-	-	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UC	UC	UC
COHESION - PSF	2460	540	2010	1100	2350
FRICTION COEFF.	-	-	-	-	-
MOISTURE CONTENT %	9	21	28	18	17
DRY DENSITY - PCF	110	106	87	110	115

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

US HWY 151 NB

20
RT.15

30
RT.12

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.3

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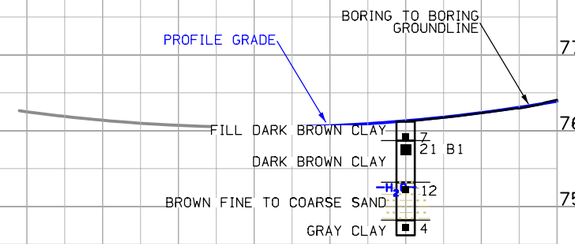

SHELBY TUBE CORE DATA	
CORE NO.	21 B1
DEPTH IN FEET	3
CLASSIFICATION (AASHTO)	-
COEFF.CONSOL.(SQ. FT /DAY)	-
TRIAXIAL COMPRESSION	UC
COHESION - PSF	1690
FRICTION COEFF.	-
MOISTURE CONTENT %	28
DRY DENSITY - PCF	86
CU-CONSOLIDATED UNDRAINED	
UU-UNCONSOLIDATED UNDRAINED	
UC-UNCONFINED COMPRESSION (c=1/2 Qu)	

US HWY 151 SB

21
LT.15

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.4

Sta. 852+26.00 U.S. Hwy. 151
Install 42"x170' 3000D RCP
F.L. = Lt. 752.04
Rt. 754.30

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

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

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

Union Pacific Railroad

WORKING BLANKET 1

WORKING BLANKET 2

IFI REMEDIATION 2
SEE Q.21-Q.22

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

Keyed Notes
① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Manhole to Grade
④ Adjust Hydrant to Grade

Proposed MSE Wall

Sta 857+32.60
Construct 204'-0" x 40'-0"
Pretensioned Prestressed Concrete
Beam Bridge with 4° Skew (R.A.)

U.S. Hwy. 151

15:1 Taper

45:1 Taper

5:1 Taper

+19.80 Prop.
Type "C" Paved Ent.

+19.80 Prop.
Type "C" Granular Ent.

Losey Avenue

Prairie Avenue

IFI REMEDIATION 1
SEE Q.17-Q.18

CORE-OUT REMEDIATION 1
SEE Q.19-Q.20

CORE-OUT REMEDIATION 2
SEE Q.23

0 50
FEET

Install a working blanket (maximum 2-ft thickness) Consisting of Special Backfill in embankment fill areas as tabulated on CS.1 and shown on Q sheets. Working blankets may be deleted if determined not to be necessary at the time of construction.

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.5

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CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

37	, , ,
	, , ,
	15, 17, 20,

4	, ,
	, ,
	18, 20,

39	12,
	,
	,

41	,
	,
	17,

43	5,
	122,
	,

PROFILE GRADE

BORING TO BORING GROUNDLINE

CONCRETE
FILL BROWN FINE TO COARSE SAND
32 C1
9
9 FILL BROWN FIRM CLAY
10
32 C5
12 BROWN GRAY STIFF CLAY
12 BROWN FINE TO COARSE SAND
6
GRAY STIFF SANDY CLAY
10

FILL DARK BROWN STIFF SANDY CLAY
4
22 B1
FILL BROWN FIRM CLAY
9
22 B3
11 DARK BROWN FIRM SANDY CLAY
18 GRAY FINE TO COARSE SAND

CONCRETE
FILL BROWN FINE TO COARSE SAND
FILL BROWN STIFF CLAY
13 FILL BROWN FINE TO COARSE SAND
35 E2
10
35 E4
12
FILL YELLOW BROWN FIRM CLAY
11
35 E7
6
35 E9
16
GRAY FIRM SANDY CLAY
16
15 BROWN FINE TO COARSE SAND

ASPHALT
CONCRETE
FILL BROWN FINE TO COARSE SAND
A-6(10) LO Y BR 113pcf @15%
37 D2
7
6
37 D5
9
A-6(10) SI LO Y BR 114pcf @14.5%
15
37 D9
17
A-6(7) SI LO Y BR 111pcf @15.9%
19
37 D13
12 GRAY BROWN STIFF CLAY
37 G1
9 BROWN FIRM SANDY CLAY
17

ASPHALT
CONCRETE
4 C1
10
4 C4
12
4 C6
21
4 C8
21
4 C10
21
11
A-6(9) SI LO Y BR 112pcf @15.5%
A-7-6(19) SI LO V DK GR BR
11
27
14 BROWN GRAY FINE TO COARSE SAND
22
50/0" SEAT
LIGHT BROWN SLIGHTLY WEATHERED LIMESTONE
PRACTICAL AUGER REFUSAL AT 53 FEET

CONCRETE
FILL BROWN FINE TO COARSE SAND
11
39 C2
8
39 C4
16
FILL YELLOW BROWN FIRM CLAY
18
17 YELLOW BROWN FIRM SANDY CLAY
39 D1
23 BROWN FINE TO COARSE SAND
6 GRAY BROWN STIFF SANDY CLAY
28 BROWN FINE TO COARSE SAND

CONCRETE
FILL BROWN FINE TO COARSE SAND
A-7-6(8) SI LO 113pcf @15%
41 D2
9
16
41 D5
12
41 D7
6
BROWN STIFF SANDY CLAY
8
BROWN FINE TO COARSE SAND
2 LIGHT BROWN WEATHERED LIMESTONE

CONCRETE
FILL GRAY BROWN FINE TO COARSE SAND
4
30
FILL GRAY BROWN FIRM CLAY
13
10
BROWN FINE TO COARSE SAND

ASPHALT
YELLOW BROWN STIFF SANDY CLAY
44 B1
6
5
BROWN FINE TO COARSE SAND
8
50/1" SEAT
LIGHT BROWN WEATHERED LIMESTONE

ASPHALT
FILL BROWN FINE TO COARSE SAND
FILL BROWN STIFF CLAY
FILL BROWN FINE TO COARSE SAND
11
45 E1
6 YELLOW BROWN FIRM CLAY
6 BROWN FINE TO COARSE SAND
50/4" SEAT
LIGHT BROWN HIGHLY TO MODERATELY WEATHERED LIMESTONE

BORING 45 SHOWN HERE FOR CLARITY
SEE PLAN VIEW FOR BORING LOCATION

SHELBY TUBE CORE DATA

CORE NO.	32 C1	32 C5	22 B1	22 B3	35 E2	35 E4	35 E7	35 E9	37 D2	37 D5	37 D9	37 D13	4 C1	4 C4	4 C6	4 C8	4 C10	39 C2	39 C4	39 D1	41 D2	41 D5	41 D7	44 B1
DEPTH IN FEET	4	19	3	18	9	14	24	29	4	14	24	34	3	8	13	18	23	9	14	29	4	14	19	4
CLASSIFICATION (AASHTO)	-	-	A-6(10)	-	-	-	-	-	-	-	-	-	-	A-4(5)	-	A-6(9)	-	-	-	-	-	-	-	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-	-	-	-	-	-	-	-	-	-	0.43	-	-	-	-	-	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	-	UC	CU	UC	UC	UC	UC	UC	UC	UC	UC
COHESION - PSF	660	1940	790	1200	620	500	610	1790	650	780	820	3690	720	-	1370	420	920	1410	1040	1830	970	1120	1100	1300
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	19	31	19	19	20	17	22	29	17	17	21	20	16	18	14	15	15	22	15	16	18	19	22	16
DRY DENSITY - PCF	98	92	108	104	104	105	97	83	109	108	103	104	112	109	115	112	108	107	113	109	108	104	96	107

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

US HWY 151 NB

32 RT.12	22 RT.15	35 RT.12	37 RT.12	4 RT.12	39 RT.12	41 RT.12	43 RT.12	44 RT.40	45 RT.20

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.6

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CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

54		56		—		57		59		62		63
	, 16, 22, , 14,		13, 19,		11,		, , 21,		19, 25,		, 10, , 6,		25,
	, 111, 103, , ,		116, 102,		117,		, , 106,		108, 97,		, 121, , ,		98,
	19, , , 17, ,		, ,		,		17, 18, ,		, ,		15, , 16, ,		,

PROFILE GRADE

BORING TO BORING GROUNDLINE

ASPHALT
CRUSHED LIMESTONE
FILL BROWN
50 C1 STIFF CLAY
FILL DARK BROWN
5 STIFF CLAY
3 FILL DARK BROWN SOFT CLAY
H_2O
11 BROWN FINE TO COARSE SAND
5
5 GRAY STIFF SANDY CLAY
50 H1
11 GRAY FIRM SANDY CLAY

CONCRETE
CRUSHED LIMESTONE
8
52 C2 FILL BROWN WITH DARK BROWN STIFF CLAY
12
7
9 FILL DARK BROWN STIFF CLAY
52 E1 GRAY STIFF SANDY CLAY
H_2O
11 BROWN FINE TO MEDIUM SAND
6
BROWN STIFF SANDY CLAY
5 GRAY STIFF CLAY
13 BROWN GRAY FIRM SANDY CLAY

CONCRETE
CRUSHED LIMESTONE
A-4(5) GR SI LO Y BR 115pcf @15.1%
15
12
54 C5
14
14
A-6(10) SI LO DK GR BR 112pcf @15.5%
10
54 D3
13 FILL DARK BROWN FIRM CLAY
H_2O
24 GRAY BROWN FINE TO MEDIUM SAND
50 BROWN FINE TO COARSE SAND

CONCRETE
FILL DARK BROWN AND BROWN FINE TO MEDIUM SAND
5
17 FILL BROWN STIFF CLAY
56 C4
11
18 FILL GRAY BROWN FIRM CLAY
15 GRAY STIFF CLAY
56 F1
15
12 DARK BROWN AND DARK GRAY FIRM CLAY
H_2O
11

ASPHALT
CONCRETE
4
1 C3
10
12 FILL BROWN STIFF CLAY
9
1 C8
12
13 DARK BROWN FIRM CLAY
8
13
15 BROWN FINE TO COARSE SAND
20
RUN1 LIGHT BROWN MODERATELY WEATHERED LIMESTONE
RUN2

BORING 1 SHOWN HERE FOR CLARITY SEE PLAN VIEW FOR BORING LOCATION

A-6(7) SI LO Y BR 116pcf @13.6%
A-6(9) SI LO GR BR 118pcf @12.9%

ASPHALT
FILL BROWN FINE TO COARSE SAND
57 C2
14
8
14
57 C8
15
12
DARK BROWN
11 FIRM CLAY
57 E1 GRAY FIRM SANDY CLAY
14
BROWN FINE TO
24 COARSE SAND
BROWN GRAY FIRM
30 SANDY CLAY
LIGHT BROWN WEATHERED LIMESTONE

CONCRETE
11
FILL LIGHT BROWN, BROWN, GRAY, AND DARK BROWN FIRM
8 CLAY
59 B4
18 FILL BROWN FINE TO COARSE SAND
12
FILL GRAY BROWN FIRM CLAY
14
DARK BROWN
4 FIRM CLAY
H_2O
BROWN FINE TO
18 COARSE SAND

FILL DARK BROWN STIFF SANDY CLAY
9
23 B1
FILL BROWN
FIRM CLAY
18
BROWN FINE TO COARSE SAND
10

CONCRETE
A-6(10) SI LO V DK GR BR 116pcf @13.6%
7
62 B5
8 ASPHALT RUBBLE
7
10
BROWN FINE TO COARSE SAND
BROWN FIRM SANDY CLAY

A-6(6) GR LO BR Y 120pcf @12.3%
CRUSHED LIMESTONE WITH SAND
FILL DARK BROWN STIFF CLAY
63 C1
19
BROWN VERY FIRM CLAY
5 GRAY FINE TO COARSE
3 SAND
BROWN STIFF SANDY CLAY
50/1" SEAT
LIGHT BROWN WEATHERED LIMESTONE
H_2O
PRACTICAL AUGER REFUSAL AT 19.1 FEET

SHELBY TUBE CORE DATA

CORE NO.	50 C1	50 H1	52 C2	52 E1	54 C5	54 D3	56 C4	56 F1	1 C3	1 C8	57 C2	57 C8	57 E1	59 B4	23 B1	62 B5	63 C1
DEPTH IN FEET	4	29	9	24	14	29	14	29	6	20	4	19	34	14	3	9	4
CLASSIFICATION (AASHTO)	-	-	-	-	-	-	-	-	A-6(15)	A-4(6)	-	-	-	-	-	-	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-	-	-	-	-	-	0.17	-	-	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UC	UC	UC	UC	UC	UC	CU	-	UC	UC	UC	UC	UC	UC	UC
COHESION - PSF	1370	2370	970	1100	580	1840	1060	1550	260	-	980	1070	1430	2050	1080	1120	1480
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	16	17	20	12	19	31	18	29	18	18	18	14	18	14	27	13	17
DRY DENSITY - PCF	112	112	104	114	102	84	107	89	107	109	104	115	102	112	84	110	107

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

US HWY 151 SB

50	52	54	56	1	57	59	23	62	63
LT.30	LT.26	LT.23	LT.12	LT.12	LT.12	LT.12	LT.15	LT.14	LT.25

850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.7

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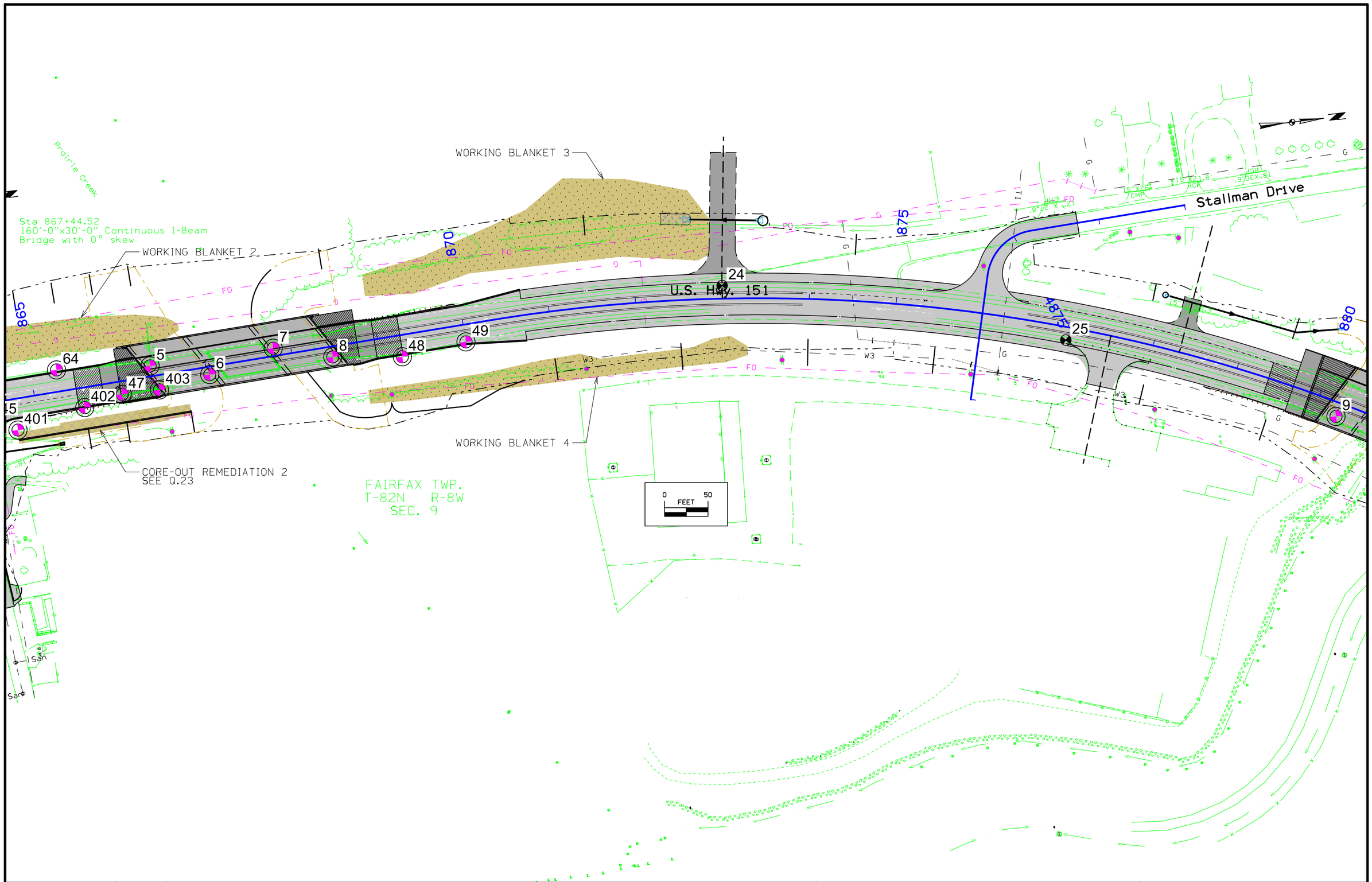

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.8

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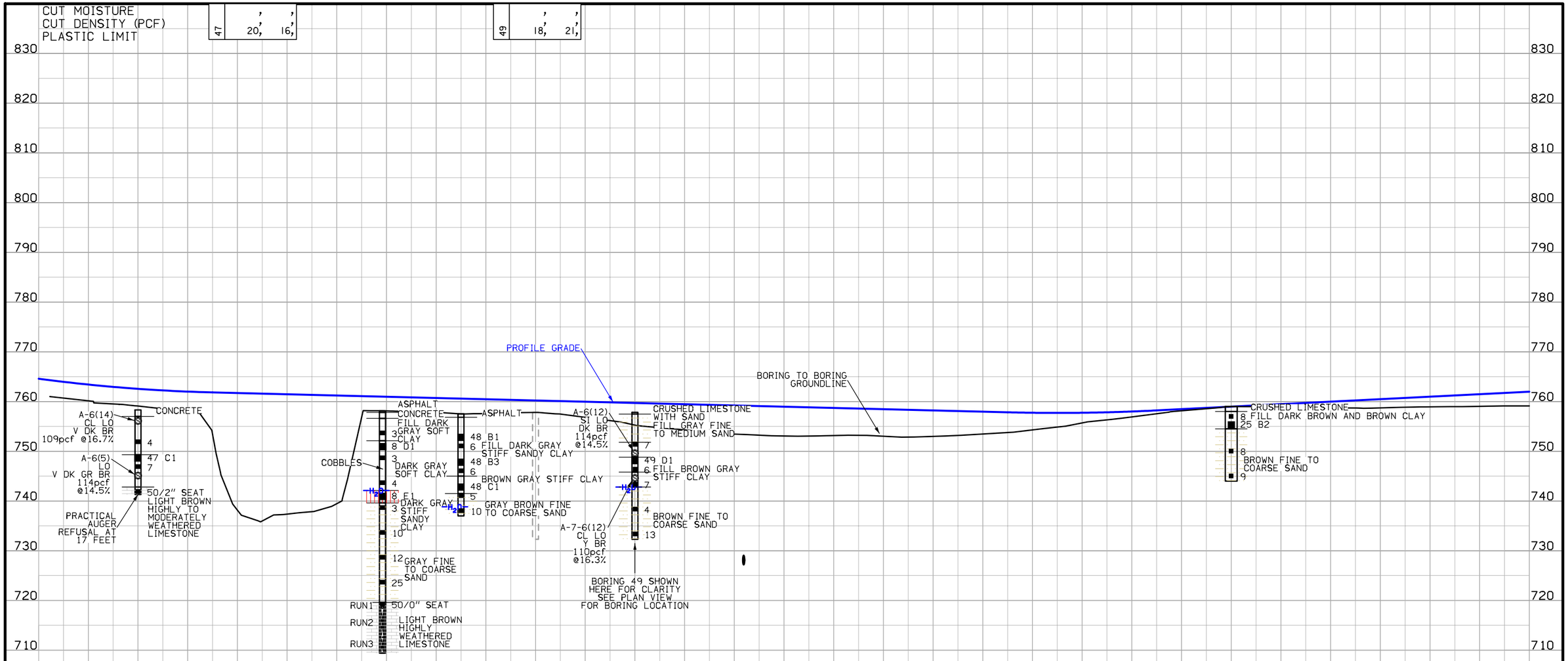
	47	49
CUT MOISTURE	, ,	, ,
CUT DENSITY (PCF)	, ,	, ,
PLASTIC LIMIT	20, 16,	18, 21,



SHELBY TUBE CORE DATA

CORE NO.	45 E1	47 C1	8 D1	8 E1	48 B1	48 B3	48 C1	49 D1	25 B2
DEPTH IN FEET	9	9	6.5	16.5	4	9	14	9	3
CLASSIFICATION (AASHTO)	-	-	A-7-6(16)	A-7-6(21)	-	-	-	-	A-6(15)
COEFF.CONSOL.(SQ. FT /DAY)	-	-	0.15	-	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	CU	CU	UC	UC	UC	UC	UC
COHESION - PSF	1610	1240	120	70	610	460	860	530	1460
FRICTION COEFF.	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	27	12	24	44	24	29	19	33	24
DRY DENSITY - PCF	97	104	93	77	90	90	105	78	94

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

US HWY 151 NB

47 RT.15	8 RT.12	48 RT.25	49 RT.20	49 RT.20	25 RT.15

865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.9

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SHELBY TUBE CORE DATA

CORE NO.	64 A1	64 B3	64 B6	5 F1
DEPTH IN FEET	4	9	14	16.5
CLASSIFICATION (AASHTO)	-	-	-	A-6(2)
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UC	CU
COHESION - PSF	710	420	630	160
FRICTION COEFF.	-	-	-	-
MOISTURE CONTENT %	7	23	25	23
DRY DENSITY - PCF	117	100	90	101

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.10

Keyed Notes

① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Manhole to Grade
④ Adjust Hydrant to Grade

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

STA 884+13.63 (HWY 151) =
STA 5884+13.63 (CEMETERY ROAD)

Construct PCC
Trail Under
Bridge

15:1 Taper

Protect Well

Cemetery Road

U.S. Hwy. 151

+96.75 Prop.
Type "B" Ent.

+21.00 Prop.
Type "B" Joint Ent.

+10.00 Prop.
Type "B" Ent.

+18.50 Prop.
Type "B" Ent.

+76.54 Prop.
Type "B"

Do Not Disturb Sign

Sta 880+85.25
Construct 140'-0" x 58'-0"
Continuous Concrete Slab
Bridge with 15° Skew (L.A.)

0 FEET 50

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

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.11

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CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

9	,	10,	
	,	,	
	16,	,	

PROFILE GRADE

BORING TO BORING GROUNDLINE

ASPHALT
FILL BROWN FINE TO COARSE SAND
9 C2
8
A-6(5)
GR LO
DK BR
6 115pcf @14.1%
12
6 BROWN FINE TO COARSE SAND
4
18 GRAY STIFF SANDY CLAY
15
6
GRAY FINE TO COARSE SAND
4
48
RUN1
LIGHT BROWN SLIGHTLY TO MODERATELY WEATHERED LIMESTONE
RUN2

ASPHALT
CONCRETE
FILL DARK BROWN STIFF SANDY CLAY
ASPHALT RUBBLE
11 C1
4
4
LIGHT BROWN STIFF CLAY
0
GRAY VERY SOFT CLAY
2
17
DARK GRAY FINE TO COARSE SAND
6
6
GRAY STIFF CLAY
8
10
7
LIGHT BROWN SLIGHTLY WEATHERED LIMESTONE

BORING 11 SHOWN HERE FOR CLARITY
SEE PLAN VIEW FOR BORING LOCATION

CRUSHED LIMESTONE
10 FILL BROWN CLAY
26 B2
20
BROWN FINE TO COARSE SAND
20

CRUSHED LIMESTONE
10 FILL DARK BROWN CLAY
28 C1
DARK BROWN CLAY
21
BROWN FINE TO COARSE SAND
26

SHELBY TUBE CORE DATA

CORE NO.	9 C2	11 C1	26 B2	28 C1
DEPTH IN FEET	4	4	3	3
CLASSIFICATION (AASHTO)	A-7-6(12)	-	-	A-6(6)
COEFF.CONSOL.(SQ. FT /DAY)	0.003	-	-	-
TRIAXIAL COMPRESSION	CU	UC	UC	UC
COHESION - PSF	170	550	780	1090
FRICTION COEFF.	-	-	-	-
MOISTURE CONTENT %	27	8	21	21
DRY DENSITY - PCF	92	114	107	107

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

US HWY 151 NB

9 RT.16 | 11 RT.13 | 11 RT.13 | 26 RT.15 | 28 RT.15

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.12

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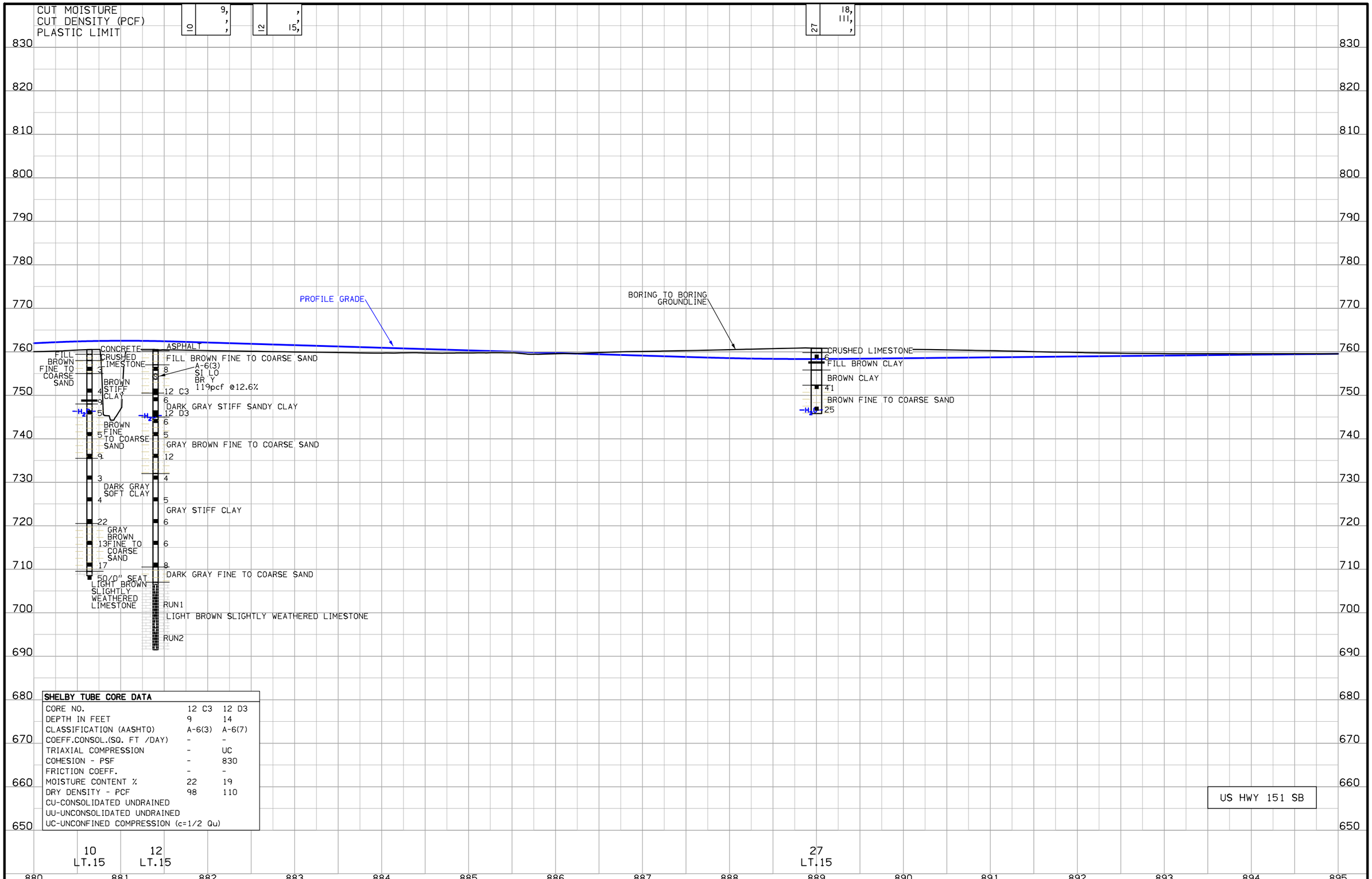

SHELBY TUBE CORE DATA		
CORE NO.	12 C3	12 D3
DEPTH IN FEET	9	14
CLASSIFICATION (AASHTO)	A-6(3)	A-6(7)
COEFF.CONSOL.(SQ. FT /DAY)	-	-
TRIAXIAL COMPRESSION	-	UC
COHESION - PSF	-	830
FRICTION COEFF.	-	-
MOISTURE CONTENT %	22	19
DRY DENSITY - PCF	98	110

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

US HWY 151 SB

10 LT.15

12 LT.15

27 LT.15

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.13

Keyed Notes
Adjust Water Valve to Grade
Adjust Gas Valve to Grade
Adjust Manhole to Grade
Adjust Hydrant to Grade

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

STA 898+00.00
END PCC PAVING
BEGIN HMA PAVING

STA 900+00.00
END HMA PAVING
BEGIN HMA OVERLAY

STA 902+58.42
END HMA OVERLAY

STA 903+15.44
STOP PROJECT

U.S. Hwy. 151

80th Street

+76.54 Prop. Type "B" Ent.

+64.90 Prop. Type "C" Ent.

—Do Not Disturb Sign
—Protect Gas Shut-off Valve

Sta. 900+59.26 U.S. Hwy. 151
Install 48"x2' 2000D RCP
Lt. U.A.C
F.L. = Other 753.30
Rt. 753.22

0 FEET 50

CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

29 | 17, , ,

BORING TO BORING GROUNDLINE

PROFILE GRADE

CRUSHED LIMESTONE
6 FILL BROWN AND DARK BROWN CLAY
BROWN CLAY
36
BROWN FINE TO COARSE SAND
HJO
26

US HWY 151 NB/SB

29
LT.15

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon		LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.14

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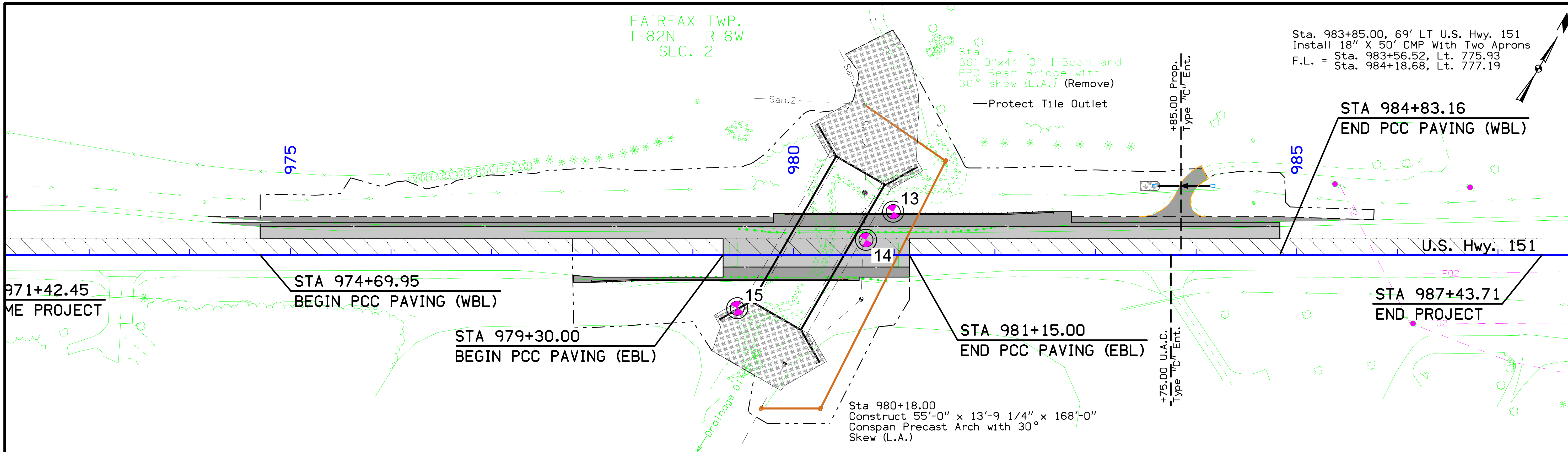
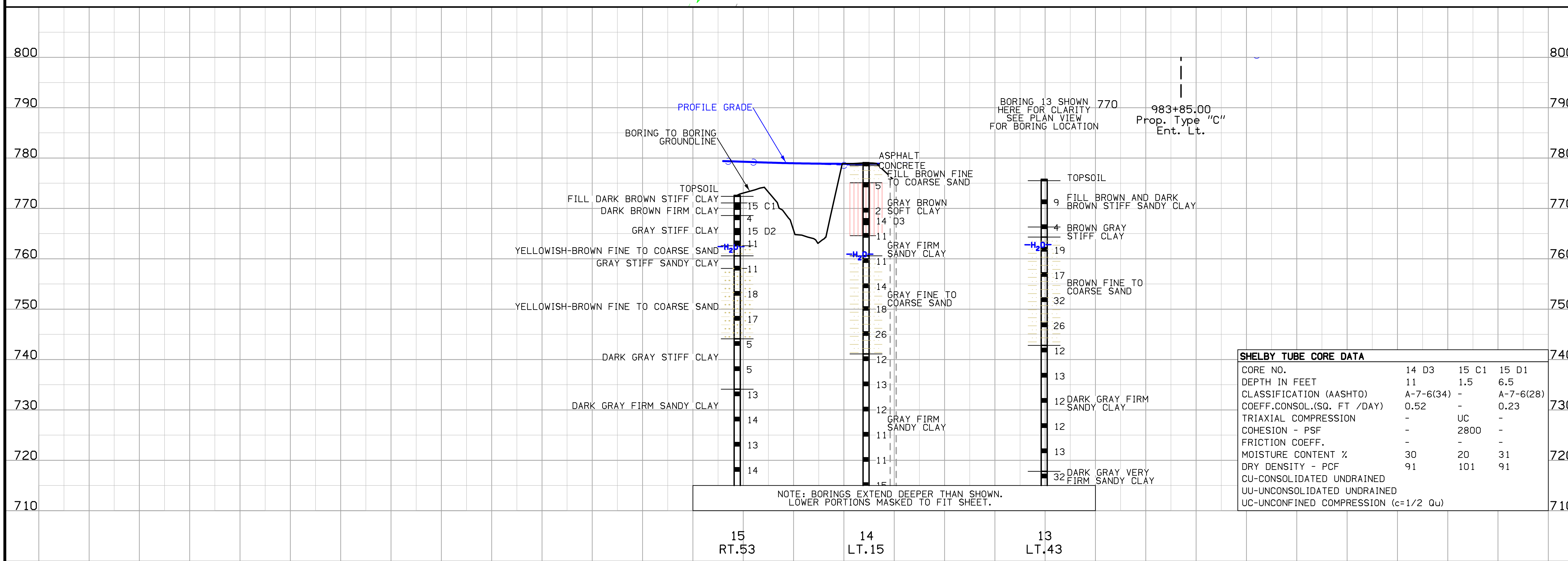

FAIRFAX TWP.
T-82N R-8W
SEC. 2
Sta. 983+85.00, 69' LT U.S. Hwy. 151
Install 18" X 50' CMP With Two Aprons
F.L. = Sta. 983+56.52, Lt. 775.93
Sta. 984+18.68, Lt. 777.19
36'-0"x44'-0" I-Beam and
PPC Beam Bridge with
30° skew (L.A.) (Remove)
Protect Tile Outlet
+85.00 Prop.
Type "C" Ent.
STA 984+83.16
END PCC PAVING (WBL)
975
980
985
13
14
15
U.S. Hwy. 151
971+42.45
ME PROJECT
STA 974+69.95
BEGIN PCC PAVING (WBL)
STA 979+30.00
BEGIN PCC PAVING (EBL)
STA 981+15.00
END PCC PAVING (EBL)
STA 987+43.71
END PROJECT
+75.00 U.A.C.
Type "C" Ent.
Drainage Ditch
Sta 980+18.00
Construct 55'-0" x 13'-9 1/4" x 168'-0"
Conspan Precast Arch with 30°
Skew (L.A.)


800
790
780
770
760
750
740
730
720
710
PROFILE GRADE
BORING TO BORING
GROUNDLINE
BORING 13 SHOWN
HERE FOR CLARITY
SEE PLAN VIEW
FOR BORING LOCATION
770
983+85.00
Prop. Type "C"
Ent. Lt.
TOPSOIL
FILL DARK BROWN STIFF CLAY
DARK BROWN FIRM CLAY
GRAY STIFF CLAY
YELLOWISH-BROWN FINE TO COARSE SAND
GRAY STIFF SANDY CLAY
YELLOWISH-BROWN FINE TO COARSE SAND
DARK GRAY STIFF CLAY
DARK GRAY FIRM SANDY CLAY
ASPHALT
CONCRETE
FILL BROWN FINE
TO COARSE SAND
GRAY BROWN
SOFT CLAY
GRAY FIRM
SANDY CLAY
GRAY FINE TO
COARSE SAND
GRAY FIRM
SANDY CLAY
TOPSOIL
FILL BROWN AND DARK
BROWN STIFF SANDY CLAY
BROWN GRAY
STIFF CLAY
BROWN FINE TO
COARSE SAND
DARK GRAY FIRM
SANDY CLAY
DARK GRAY VERY
FIRM SANDY CLAY
15 C1
15 D2
14 D3
NOTE: BORINGS EXTEND DEEPER THAN SHOWN.
LOWER PORTIONS MASKED TO FIT SHEET.
15
RT.53
14
LT.15
13
LT.43
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987

SHELBY TUBE CORE DATA

CORE NO.	14 D3	15 C1	15 D1
DEPTH IN FEET	11	1.5	6.5
CLASSIFICATION (AASHTO)	A-7-6(34)	-	A-7-6(28)
COEFF.CONSOL.(SQ. FT /DAY)	0.52	-	0.23
TRIAXIAL COMPRESSION	-	UC	-
COHESION - PSF	-	2800	-
FRICTION COEFF.	-	-	-
MOISTURE CONTENT %	30	20	31
DRY DENSITY - PCF	91	101	91

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.15

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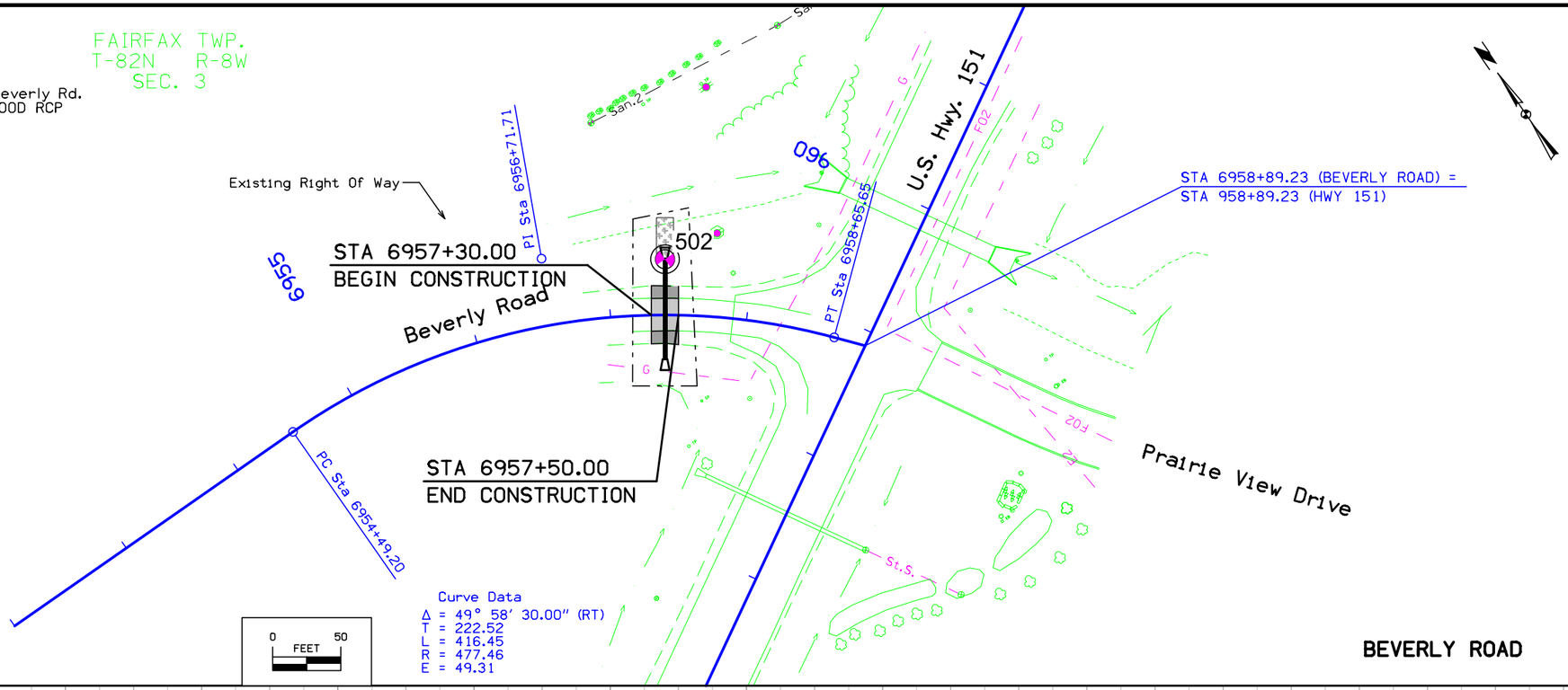
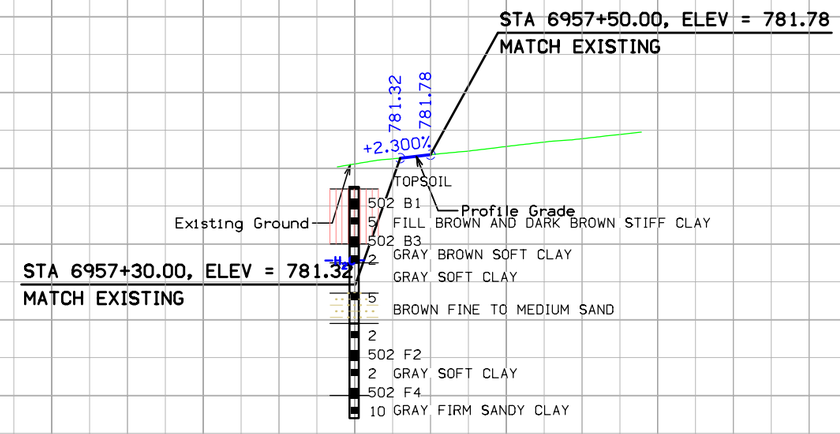
FAIRFAX TWP.
T-82N R-8W
SEC. 3

Sta. 6957+40.00 Beverly Rd.
Install 42"x74' 2000D RCP
F.L. = Lt. 772.40
Rt. 773.30





SHELBY TUBE CORE DATA				
CORE NO.	502 B1	502 B3	502 F2	502 F4
DEPTH IN FEET	1.5	6.5	21.5	26.5
CLASSIFICATION (AASHTO)	-	A-7-6(31)	A-6(12)	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-
TRIAXIAL COMPRESSION	UC	CU	CU	UC
COHESION - PSF	770	90	560	280
FRICTION COEFF.	-	-	-	-
MOISTURE CONTENT %	22	31	31	19
DRY DENSITY - PCF	89	90	96	117
CU-CONSOLIDATED UNDRAINED				
UU-UNCONSOLIDATED UNDRAINED				
UC-UNCONFINED COMPRESSION (c=1/2 Qu)				

502
LT.41

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.16

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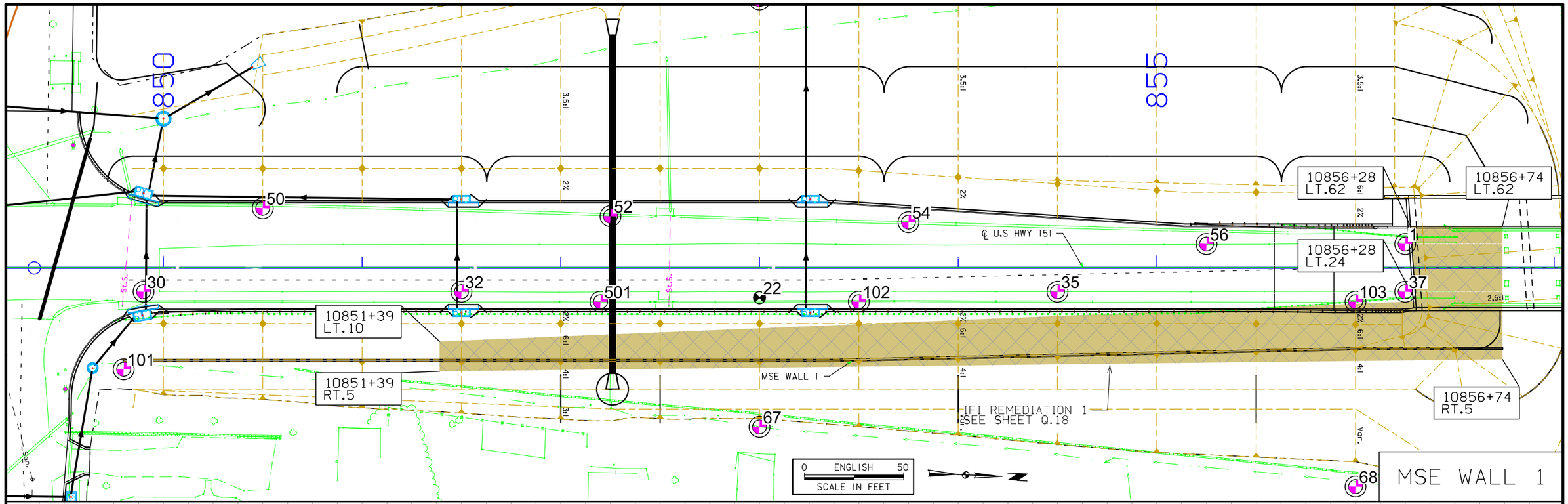


For Soil Profile Information Refer to Sheet Q.18

850	851	852	853	854	855	856

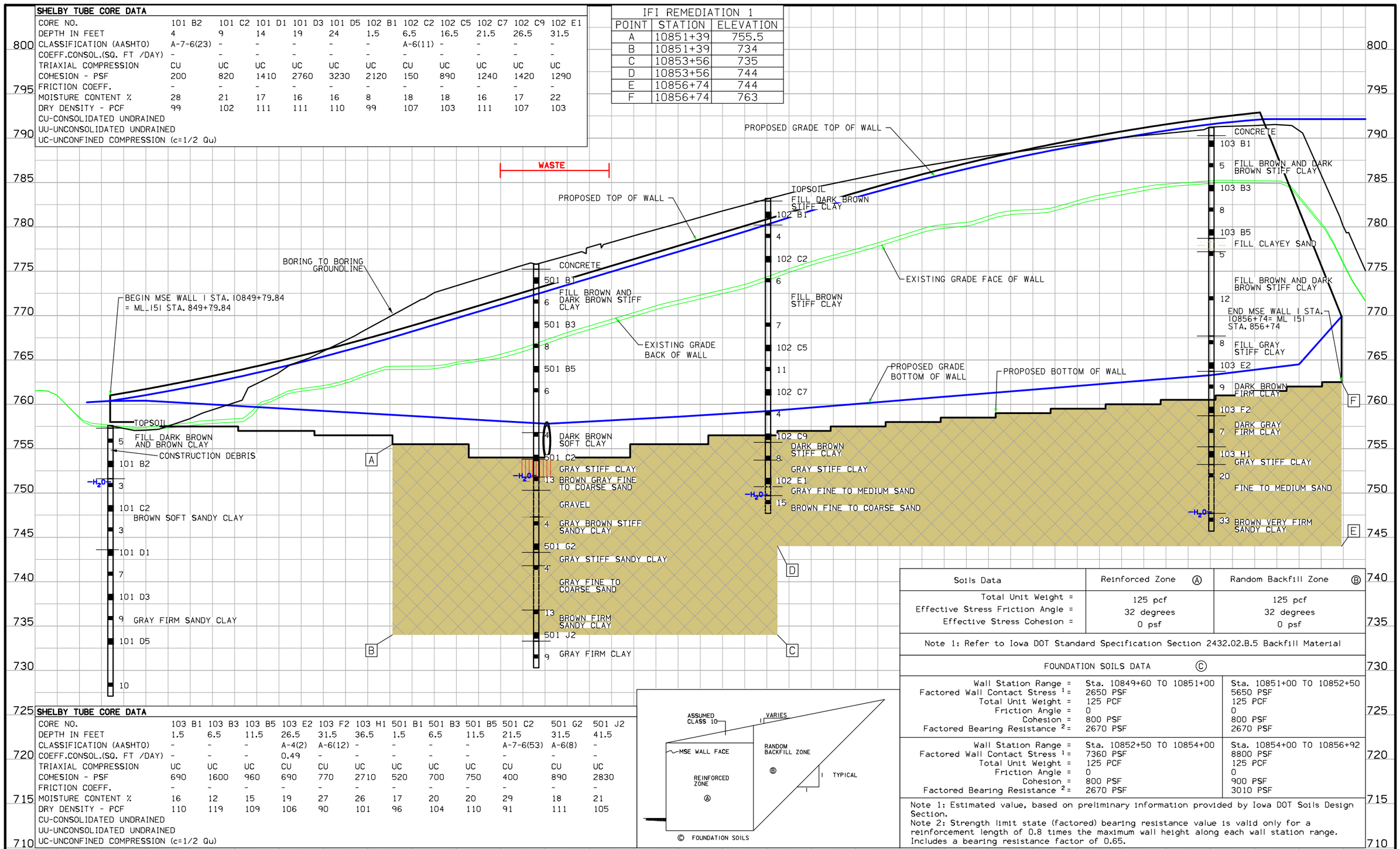
ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.17

SHELBY TUBE CORE DATA

CORE NO.	101 B2	101 C2	101 D1	101 D3	101 D5	102 B1	102 C2	102 C5	102 C7	102 C9	102 E1
DEPTH IN FEET	4	9	14	19	24	1.5	6.5	16.5	21.5	26.5	31.5
CLASSIFICATION (AASHTO)	A-7-6(23)	-	-	-	-	-	A-6(11)	-	-	-	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-	-	-	-	-	-	-	-
TRIAXIAL COMPRESSION	CU	UC	UC	UC	UC	UC	CU	UC	UC	UC	UC
COHESION - PSF	200	820	1410	2760	3230	2120	150	890	1240	1420	1290
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	28	21	17	16	16	8	18	18	16	17	22
DRY DENSITY - PCF	99	102	111	111	110	99	107	103	111	107	103

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

IFI REMEDIATION 1		
POINT	STATION	ELEVATION
A	10851+39	755.5
B	10851+39	734
C	10853+56	735
D	10853+56	744
E	10856+74	744
F	10856+74	763



SHELBY TUBE CORE DATA

CORE NO.	103 B1	103 B3	103 B5	103 E2	103 F2	103 H1	501 B1	501 B3	501 B5	501 C2	501 G2	501 J2
DEPTH IN FEET	1.5	6.5	11.5	26.5	31.5	36.5	1.5	6.5	11.5	21.5	31.5	41.5
CLASSIFICATION (AASHTO)	-	-	-	A-4(2)	A-6(12)	-	-	-	-	A-7-6(53)	A-6(8)	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	0.49	-	-	-	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UC	CU	CU	UC	UC	UC	UC	CU	CU	UC
COHESION - PSF	690	1600	960	690	770	2710	520	700	750	400	890	2830
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	16	12	15	19	27	26	17	20	20	29	18	21
DRY DENSITY - PCF	110	119	109	106	90	101	96	104	110	91	111	105

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

Soils Data	Reinforced Zone Ⓐ	Random Backfill Zone Ⓑ
Total Unit Weight =	125 pcf	125 pcf
Effective Stress Friction Angle =	32 degrees	32 degrees
Effective Stress Cohesion =	0 psf	0 psf

Note 1: Refer to Iowa DOT Standard Specification Section 2432.02.B.5 Backfill Material

FOUNDATION SOILS DATA Ⓒ

Wall Station Range =	Sta. 10849+60 TO 10851+00	Sta. 10851+00 TO 10852+50
Factored Wall Contact Stress [1] =	2650 PSF	5650 PSF
Total Unit Weight =	125 PCF	125 PCF
Friction Angle =	0	0
Cohesion =	800 PSF	800 PSF
Factored Bearing Resistance [2] =	2670 PSF	2670 PSF
Wall Station Range =	Sta. 10852+50 TO 10854+00	Sta. 10854+00 TO 10856+92
Factored Wall Contact Stress [1] =	7360 PSF	8800 PSF
Total Unit Weight =	125 PCF	125 PCF
Friction Angle =	0	0
Cohesion =	800 PSF	900 PSF
Factored Bearing Resistance [2] =	2670 PSF	3010 PSF

Note 1: Estimated value, based on preliminary information provided by Iowa DOT Soils Design Section.
Note 2: Strength limit state (factored) bearing resistance value is valid only for a reinforcement length of 0.8 times the maximum wall height along each wall station range. Includes a bearing resistance factor of 0.65.

101 RT.4 | 501 LT.30 | 102 LT.30 | 103 LT.25

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.18

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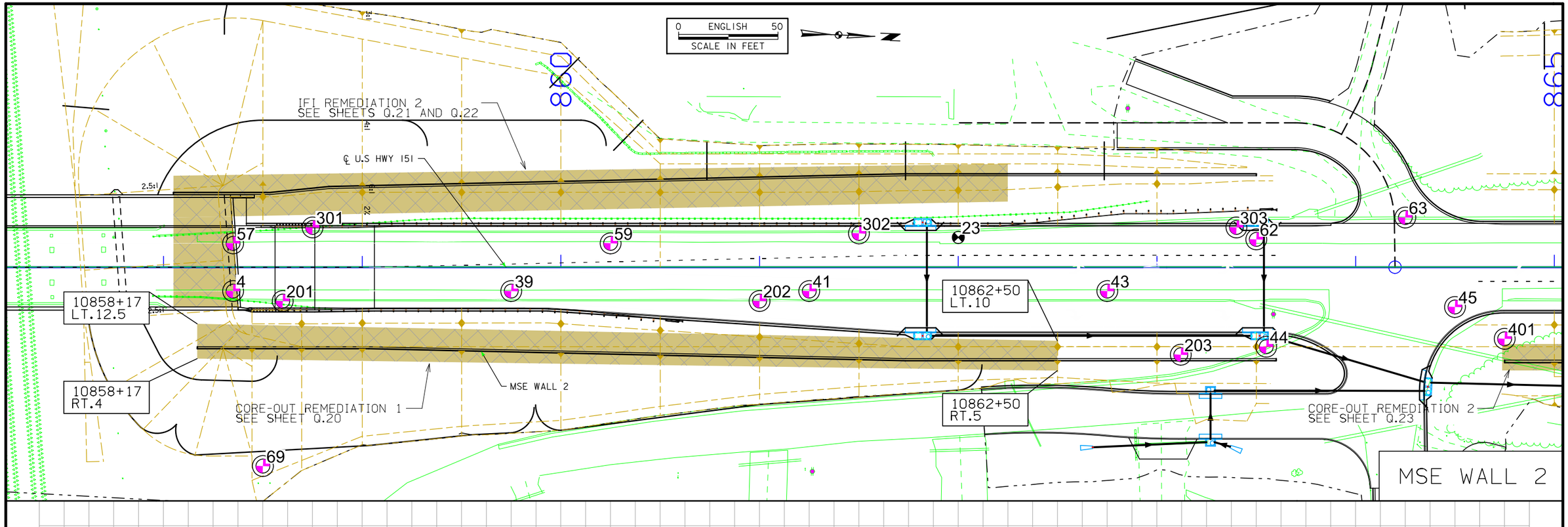

For Soil Profile Information Refer to Sheet Q.20

858 859 860 861 862 863 864

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.19

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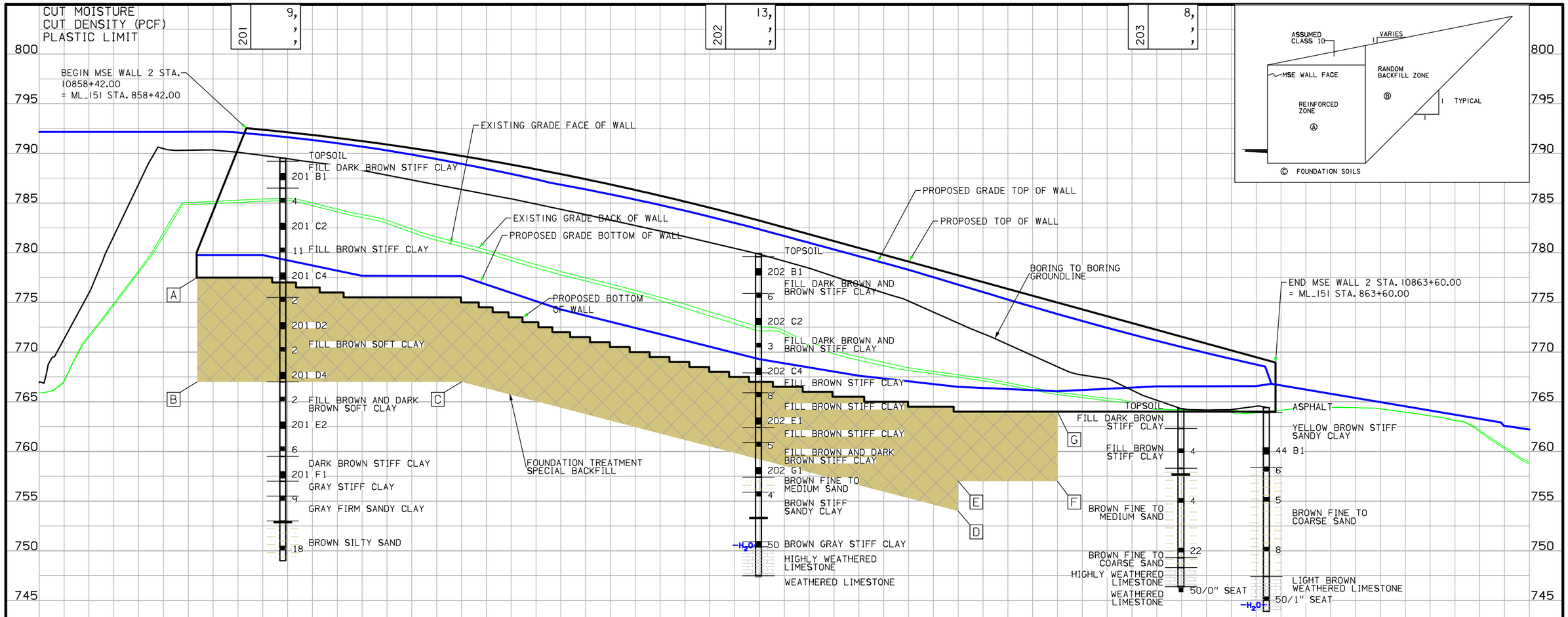


Soils Data	Reinforced Zone Ⓐ	Random Backfill Zone Ⓑ
Total Unit Weight =	125 pcf	125 pcf
Effective Stress Friction Angle =	32 degrees	32 degrees
Effective Stress Cohesion =	0 psf	0 psf

Note 1: Refer to Iowa DOT Standard Specification Section 2432.02.B.5 Backfill Material

FOUNDATION SOILS DATA Ⓒ

	Sta. 10858+44 TO 10862+00	Sta. 10862+00 TO 10863+60
Wall Station Range =		
Factored Wall Contact Stress [1] =	4360 PSF	3500 PSF
Total Unit Weight =	125 PCF	120 PCF
Friction Angle =	0	0
Cohesion =	800 PSF	800 PSF
Factored Bearing Resistance [2] =	2670 PSF	2670 PSF

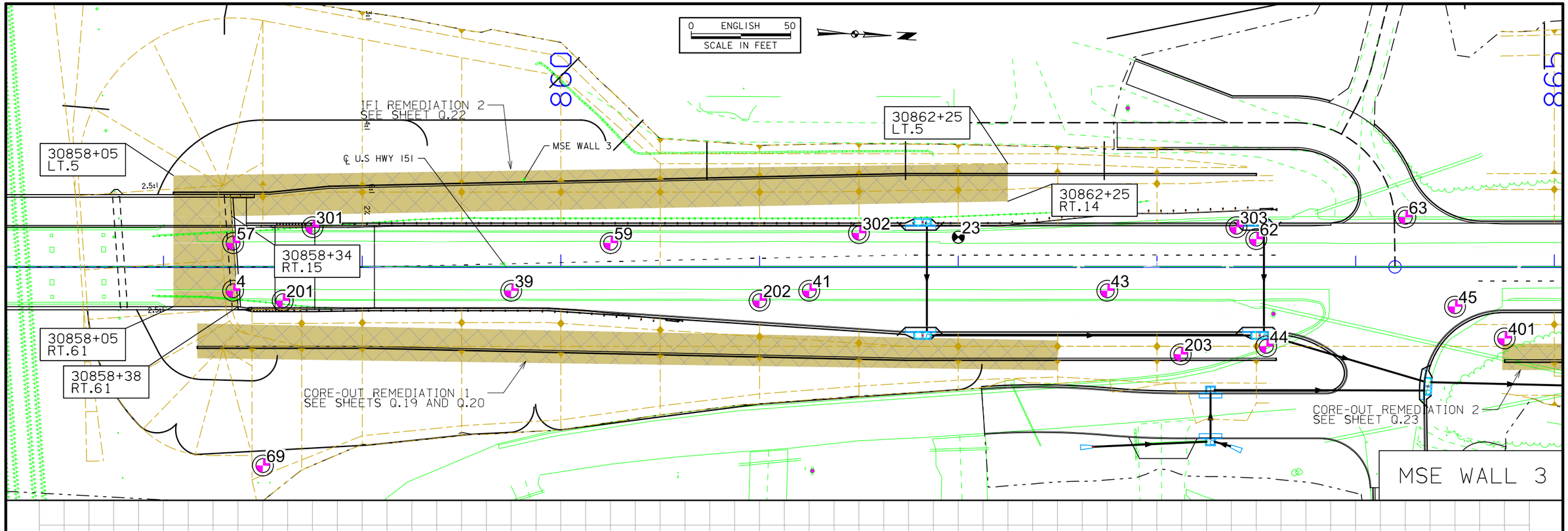
Note 1: Estimated value, based on preliminary information provided by Iowa DOT Soils Design Section.
Note 2: Strength limit state (factored) bearing resistance value is valid only for a reinforcement length of 0.8 times the maximum wall height along each wall station range. Includes a bearing resistance factor of 0.65.

CORE-OUT REMEDIATION 1		
POINT	STATION	ELEVATION
A	10858+17	777.5
B	10858+17	767
C	10859+50	767
D	10862+00	754
E	10862+00	757
F	10862+50	757
G	10862+50	764

SHELBY TUBE CORE DATA

CORE NO.	201 B1	201 C2	201 C4	201 D2	201 D4	201 E2	201 F1	202 B1	202 C2	202 C4	202 E1	202 G1	44 B1
DEPTH IN FEET	1.5	6.5	11.5	16.5	21.5	26.5	31.5	1.5	6.5	11.5	16.5	21.5	4
CLASSIFICATION (AASHTO)	-	-	-	A-4(3)	-	-	A-7-6(28)	-	-	-	A-4(7)	-	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-	-	-	0.43	-	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UC	CU	UC	UC	CU	UC	UC	UC	CU	UC	UC
COHESION - PSF	5230	2510	1580	140	460	340	500	6420	1190	1830	270	880	1300
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	11	14	18	22	24	27	29	7	19	16	21	23	16
DRY DENSITY - PCF	117	106	114	97	93	85	92	123	104	112	102	104	107

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)



For Soil Profile Information Refer to Sheet Q.22

858 859 860 861 862 863 864

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.21

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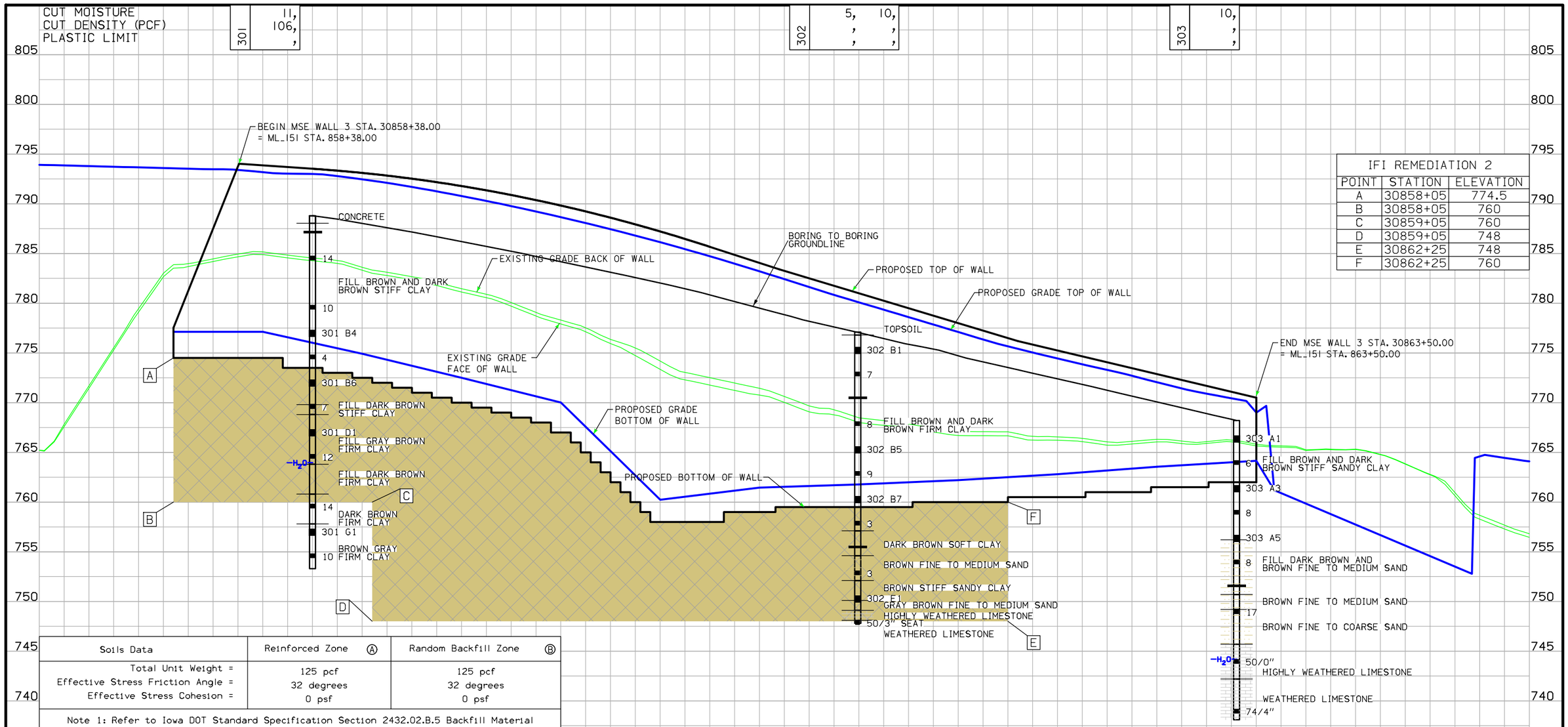
	301	302	303
CUT MOISTURE	11,	5, 10,	10,
CUT DENSITY (PCF)	106,	, ,	,
PLASTIC LIMIT	,	, ,	,



IFI REMEDIATION 2		
POINT	STATION	ELEVATION
A	30858+05	774.5
B	30858+05	760
C	30859+05	760
D	30859+05	748
E	30862+25	748
F	30862+25	760

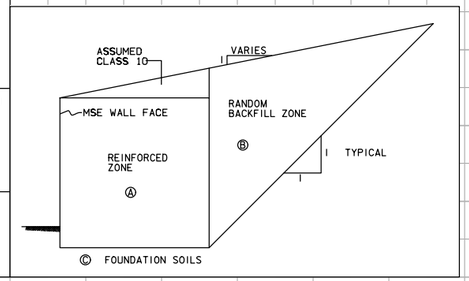
Soils Data	Reinforced Zone Ⓐ	Random Backfill Zone Ⓑ
Total Unit Weight =	125 pcf	125 pcf
Effective Stress Friction Angle =	32 degrees	32 degrees
Effective Stress Cohesion =	0 psf	0 psf

Note 1: Refer to Iowa DOT Standard Specification Section 2432.02.B.5 Backfill Material

FOUNDATION SOILS DATA Ⓒ

Wall Station Range =	Sta. 30858+40 TO 30859+50	Sta. 30859+50 TO 30861+00
Factored Wall Contact Stress [1] =	4010 PSF	7800 PSF
Total Unit Weight =	125 PCF	125 PCF
Friction Angle =	0	0
Cohesion =	900 PSF	900 PSF
Factored Bearing Resistance [2] =	3010 PSF	3010 PSF
Wall Station Range =	Sta. 30861+00 TO 30862+00	Sta. 30862+00 TO 30863+50
Factored Wall Contact Stress [1] =	6510 PSF	4510 PSF
Total Unit Weight =	125 PCF	125 PCF
Friction Angle =	0	0
Cohesion =	800 PSF	800 PSF
Factored Bearing Resistance [2] =	2670 PSF	2670 PSF

Note 1: Estimated value, based on preliminary information provided by Iowa DOT Soils Design Section.
Note 2: Strength limit state (factored) bearing resistance value is valid only for a reinforcement length of 0.8 times the maximum wall height along each wall station range. Includes a bearing resistance factor of 0.65.



SHELBY TUBE CORE DATA

CORE NO.	301 B4	301 B6	301 D1	301 G1	302 B1	302 B5	302 B7	302 E1	303 A1	303 A3	303 A5
DEPTH IN FEET	11.5	16.5	21.5	31.5	1.5	11.5	16.5	26.5	1.5	6.5	11.5
CLASSIFICATION (AASHTO)	-	A-4(6)	-	A-6(19)	-	-	A-4(7)	-	-	A-4(1)	-
COEFF.CONSOL.(SQ. FT /DAY)	-	0.67	-	0.48	-	-	-	-	-	0.31	-
TRIAXIAL COMPRESSION	UC	CU	UC	CU	UC	CU	CU	UC	UC	CU	UC
COHESION - PSF	1460	360	1620	940	2160	2160	180	310	1930	270	350
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	16	18	16	24	11	20	15	15	13	16	18
DRY DENSITY - PCF	115	116	107	94	115	111	117	103	119	116	103

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

301 RT.21 | 302 RT.29 | 303 RT.27

858 859 860 861 862 863 864

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.22

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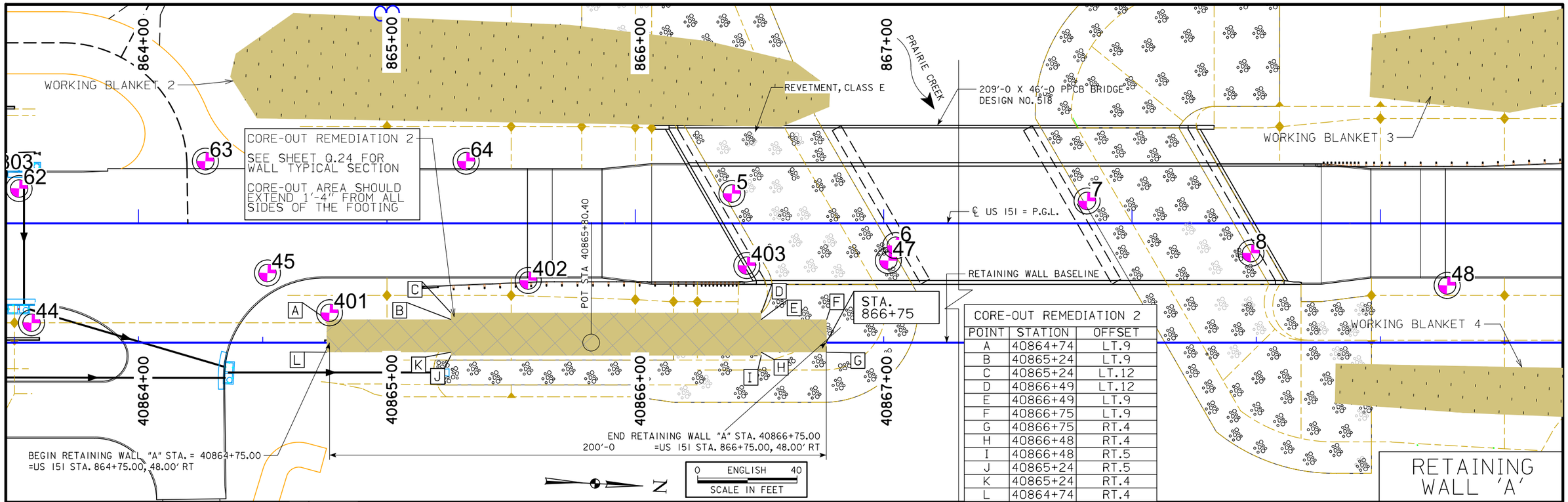
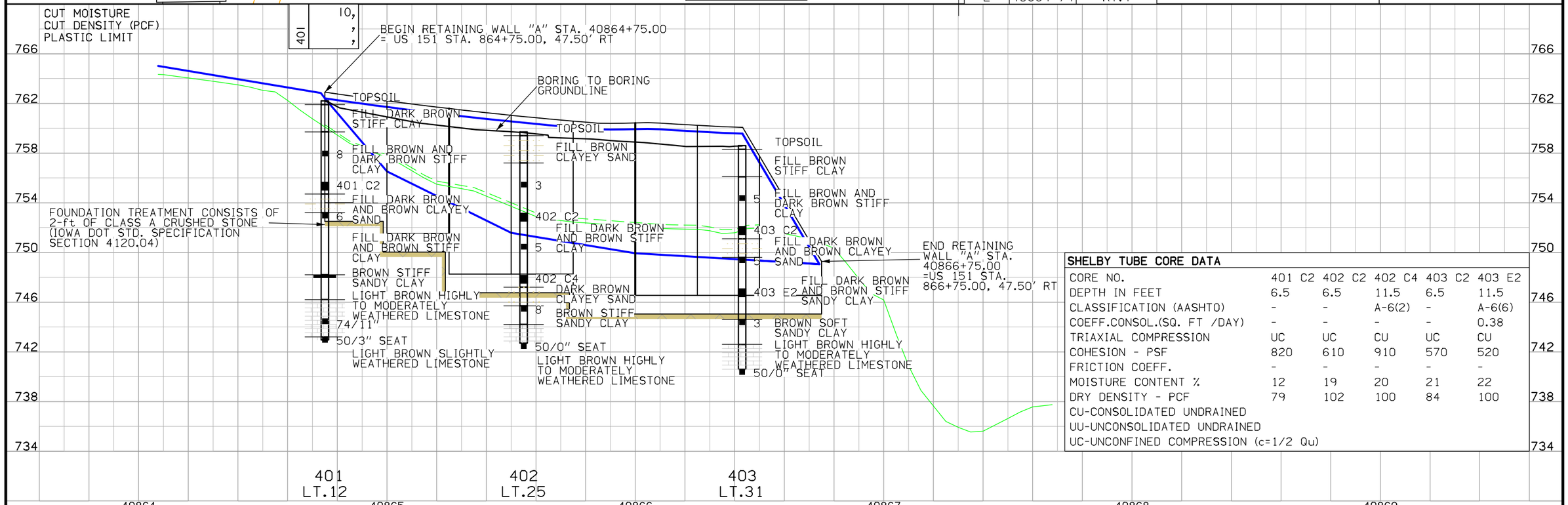


CORE-OUT REMEDIATION 2		
POINT	STATION	OFFSET
A	40864+74	LT.9
B	40865+24	LT.9
C	40865+24	LT.12
D	40866+49	LT.12
E	40866+49	LT.9
F	40866+75	LT.9
G	40866+75	RT.4
H	40866+48	RT.4
I	40866+48	RT.5
J	40865+24	RT.5
K	40865+24	RT.4
L	40864+74	RT.4

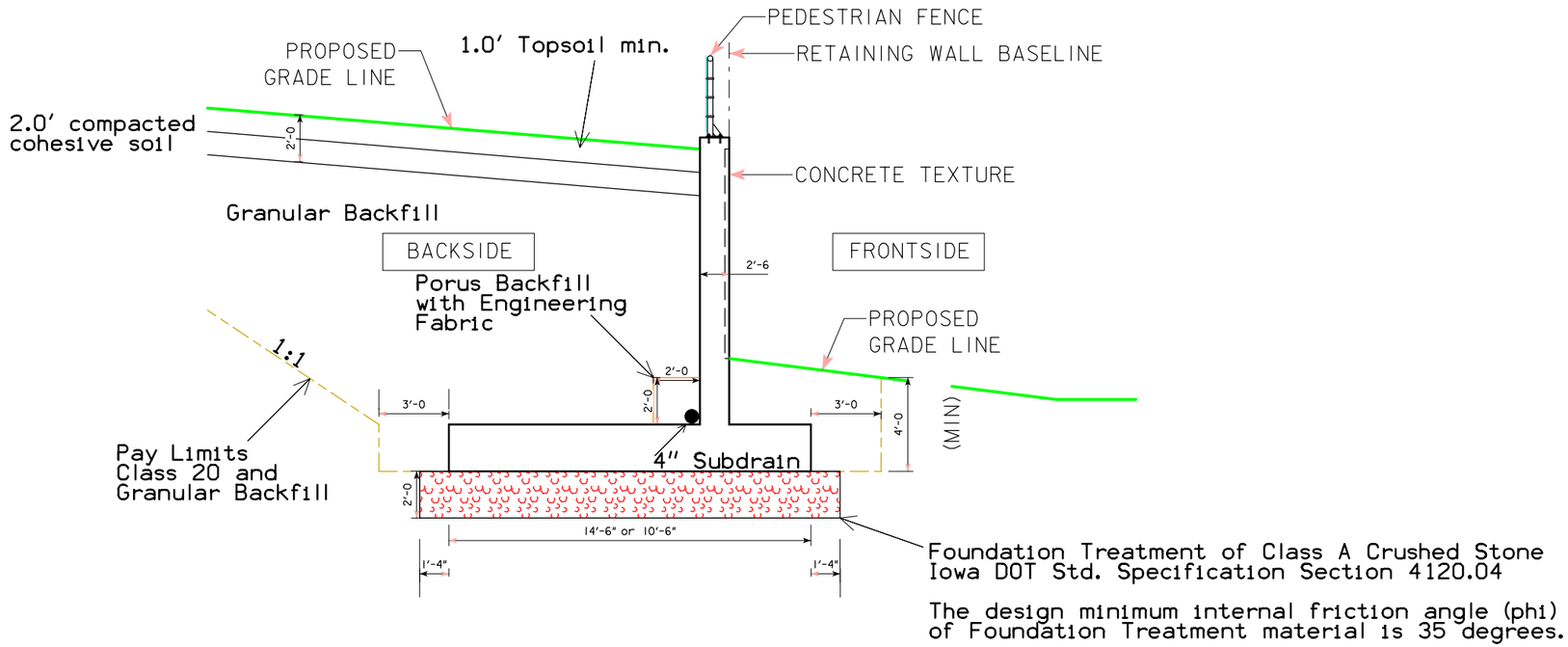


SHELBY TUBE CORE DATA					
CORE NO.	401 C2	402 C2	402 C4	403 C2	403 E2
DEPTH IN FEET	6.5	6.5	11.5	6.5	11.5
CLASSIFICATION (AASHTO)	-	-	A-6(2)	-	A-6(6)
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-	0.38
TRIAXIAL COMPRESSION	UC	UC	CU	UC	CU
COHESION - PSF	820	610	910	570	520
FRICTION COEFF.	-	-	-	-	-
MOISTURE CONTENT %	12	19	20	21	22
DRY DENSITY - PCF	79	102	100	84	100

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.23

RETAINING WALL 'A'



WALL TYPICAL SECTION

Showing Excavation and Backfill Limits
(See also SITE PLAN on sheet V.04)

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut				Fill				Checks (EW-102)		Topsoil											
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink								
CEMETERY																						
5882+50.91	31	31	0	31	0	0	0	31	0	0	0	0	0	0								
5882+75.91	22	22	0	22	0	0	0	22	0	0	0	0	0	0								
5883+00.91	11	11	0	11	1	1	1	10	0	0	0	0	0	0								
5883+25.91	2	2	0	2	1	1	1	1	0	0	0	0	0	0								
5883+50.91	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
5883+75.91	28	28	0	28	3	3	4	24	0	0	0	0	0	0								
5884+51.06	53	53	0	53	2	2	3	50	0	0	0	0	0	0								
5884+76.06	53	53	0	53	7	7	9	44	0	0	0	0	0	0								
5885+01.06	45	45	0	45	8	8	10	35	0	0	0	0	0	0								
5885+26.06																						
CEMETERY																						
Totals:	245	245	0	245	22	22	29	217	0	0	0	0	0	0								

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut				Fill				Checks (EW-102)		Topsoil											
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink								
CHURCH																						
1848+00.00	22	22	0	22	1	1	1	21	0	0	0	3	4	-4								
1848+25.00	8	8	0	8	4	4	5	3	0	0	0	6	8	-8								
1848+50.00	10	10	0	10	3	3	4	6	0	0	0	3	4	-4								
1848+75.00	66	66	23	66	0	0	0	66	0	0	0	0	0	0								
1849+75.00	37	37	22	37	1	1	1	36	0	0	0	2	3	-3								
1850+00.00	27	27	24	27	1	1	1	26	0	0	0	3	4	-4								
1850+25.00	24	24	24	24	0	0	0	24	0	0	0	2	3	-3								
1850+50.00	18	18	14	18	0	0	0	18	0	0	0	2	3	-3								
1850+75.00	13	13	13	13	0	0	0	13	0	0	0	0	0	0								
1851+00.00																						
CHURCH																						
Totals:	225	225	120	225	10	10	13	212	0	0	0	21	30	-30								

FILE NO.	ENGLISH	DESIGN TEAM	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)-3H-57	SHEET NUMBER T.2

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut				Fill				Checks (EW-102)		Topsoil											
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink								
LOSEY																						
3863+00.00																						
3863+25.00	41	41	0	41	58	58	75	-34	0	0	0	0	0	0								
3863+50.00	40	40	0	40	58	58	75	-35	0	0	0	0	0	0								
3863+75.00	46	46	0	46	36	36	47	-1	0	0	0	0	0	0								
3864+00.00	45	45	0	45	32	32	42	3	0	0	0	0	0	0								
3864+25.00	37	37	0	37	53	53	69	-32	0	0	0	0	0	0								
3864+50.00	34	34	0	34	61	61	79	-45	0	0	0	0	0	0								
3864+75.00	20	20	0	20	32	32	42	-22	0	0	0	0	0	0								
LOSEY																						
Totals:	263	263	0	263	330	330	429	-166	0	0	0	0	0	0								

FILE NO.	ENGLISH	DESIGN TEAM	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)-3H-57	SHEET NUMBER T.3

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut				Fill				Checks (EW-102)		Topsoil											
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink								
ML151																						
844+00.00	22	22	0	22	0	0	0	22	0	0	0	0	0	0								
844+50.00	20	20	0	20	0	0	0	20	0	0	0	0	0	0								
844+91.50	5	5	0	5	0	0	0	5	0	0	0	0	0	0								
845+00.00	4	4	0	4	0	0	0	4	0	0	0	0	0	0								
845+05.45	25	25	0	25	0	0	0	25	0	0	0	0	0	0								
845+34.00	15	15	0	15	0	0	0	15	0	0	0	0	0	0								
845+50.00	48	48	0	48	2	2	3	45	0	0	0	0	0	0								
845+97.50	2	2	0	2	0	0	0	2	0	0	0	0	0	0								
846+00.00	37	37	0	37	3	3	4	33	0	0	0	0	0	0								
846+44.00	4	4	0	4	0	0	0	4	0	0	0	0	0	0								
846+50.00	34	34	0	34	1	1	1	33	0	0	0	0	0	0								
846+93.00	6	6	0	6	0	0	0	6	0	0	0	0	0	0								
847+00.00	39	39	0	39	3	3	4	35	0	0	0	0	0	0								
847+50.00	7	7	0	7	1	1	1	6	0	0	0	0	0	0								
847+60.50	33	33	0	33	3	3	4	29	0	0	0	0	0	0								
848+00.00	89	89	0	89	6	6	8	81	0	0	0	0	0	0								
848+50.00	144	144	0	144	48	48	62	82	0	0	0	0	0	0								
849+00.00	381	381	0	381	452	452	588	-207	0	0	0	0	0	0								
850+00.00	296	296	0	296	374	374	486	-190	0	0	0	0	0	0								
850+50.00	390	390	0	390	383	383	498	-108	0	0	0	0	0	0								
851+00.00	443	443	0	443	454	454	590	-147	0	0	0	0	0	0								
851+50.00	516	516	0	516	646	646	840	-324	0	0	0	0	0	0								
852+00.00	295	295	0	295	434	434	564	-269	0	0	0	0	0	0								
852+26.00	294	294	0	294	459	459	597	-303	0	0	0	0	0	0								
852+50.00	733	733	0	733	1,138	1,138	1,479	-746	0	0	0	0	0	0								
853+00.00	872	872	0	872	1,408	1,408	1,830	-958	0	0	0	0	0	0								
853+50.00	1,003	1,003	0	1,003	1,633	1,633	2,123	-1,120	0	0	0	0	0	0								
854+00.00	1,154	1,154	0	1,154	1,789	1,789	2,326	-1,172	0	0	0	0	0	0								
854+50.00	49	49	0	49	75	75	98	-49	0	0	0	0	0	0								
854+52.00	1,230	1,230	0	1,230	1,891	1,891	2,458	-1,228	0	0	0	0	0	0								
855+00.00	1,411	1,411	0	1,411	2,163	2,163	2,812	-1,401	0	0	0	0	0	0								
855+50.00	1,539	1,539	0	1,539	2,381	2,381	3,095	-1,556	0	0	0	0	0	0								
856+00.00	1,104	1,104	0	1,104	1,238	1,238	1,609	-505	0	0	0	0	0	0								
858+50.00	1,134	1,134	0	1,134	600	600	780	354	0	0	0	0	0	0								
859+00.00	992	992	0	992	702	702	913	79	0	0	0	0	0	0								
859+50.00	710	710	0	710	794	794	1,032	-322	0	0	0	0	0	0								
860+00.00	445	445	0	445	856	856	1,113	-668	0	0	0	0	0	0								
860+50.00	271	271	0	271	868	868	1,128	-857	0	0	0	0	0	0								
861+00.00	173	173	0	173	827	827	1,075	-902	0	0	0	0	0	0								
861+50.00	114	114	0	114	726	726	944	-830	0	0	0	0	0	0								
862+00.00	112	112	0	112	626	626	814	-702	0	0	0	0	0	0								
862+50.00	126	126	0	126	505	505	657	-531	0	0	0	0	0	0								
863+00.00	92	92	0	92	434	434	564	-472	0	0	0	0	0	0								
863+50.00	40	40	0	40	267	267	347	-307	0	0	0	0	0	0								
864+00.00	69	69	0	69	1,165	1,165	1,515	-1,446	0	0	0	0	0	0								
865+00.00	42	42	0	42	1,176	1,176	1,529	-1,487	0	0	0	0	0	0								
865+50.00	47	47	0	47	1,281	1,281	1,665	-1,618	0	0	0	0	0	0								
866+00.00	51	51	0	51	449	449	584	-533	0	0	0	0	0	0								
868+50.00	64	64	0	64	555	555	722	-658	0	0	0	0	0	0								
869+00.00	41	41	0	41	1,096	1,096	1,425	-1,384	0	0	0	0	0	0								
869+50.00	36	36	0	36	1,051	1,051	1,366	-1,330	0	0	0	0	0	0								
870+00.00	30	30	0	30	964	964	1,253	-1,223	0	0	0	0	0	0								
870+50.00	32	32	0	32	747	747	971	-939	0	0	0	0	0	0								
871+00.00	48	48	0	48	538	538	699	-651	0	0	0	0	0	0								
871+50.00	77	77	0	77	447	447	581	-504	0	0	0	0	0	0								
872+00.00	104	104	0	104	378	378	491	-387	0	0	0	0	0	0								
872+50.00	140	140	0	140	297	297	386	-246	0	0	0	0	0	0								
873+00.00	184	184	0	184	140	140	182	2	0	0	0	0	0	0								
873+50.00	240	240	0	240	38	38	49	191	0	0	0	0	0	0								
874+00.00	313	313	0	313	29	29	38	275	0	0	0	0	0	0								
874+50.00	370	370	0	370	17	17	22	348	0	0	0	0	0	0								
875+00.00	397	397	0	397	6	6	8	389	0	0	0	0	0	0								
875+50.00	359	359	0	359	11	11	14	345	0	0	0	0	0	0								
876+00.00	325	325	0	325	31	31	40	285	0	0	0	0	0	0								
876+50.00	228	228	0	228	39	39	51	177	0	0	0	0	0	0								
877+00.00	121	121	0	121	48	48	62	59	0	0	0	0	0	0								
877+50.00	127	127	0	127	59	59	77	50	0	0	0	0	0	0								
878+00.00																						
Subtotals:	19,898	19,898	0	19,898	34,752	34,752	45,178	-25,280	0	0	0	0	0	0								

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut				Fill				Checks (EW-102)		Topsoil											
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink								
878+00.00	99	99	0	99	19	19	25	74	0	0	0	0	0	0								
878+31.00	47	47	0	47	9	9	12	35	0	0	0	0	0	0								
878+50.00	40	40	0	40	144	144	187	-147	0	0	0	0	0	0								
879+00.00	15	15	0	15	262	262	341	-326	0	0	0	0	0	0								
879+50.00	52	52	0	52	434	434	564	-512	0	0	0	0	0	0								
880+00.00	17	17	0	17	80	80	104	-87	0	0	0	0	0	0								
881+50.00	23	23	0	23	374	374	486	-463	0	0	0	0	0	0								
882+00.00	13	13	0	13	555	555	722	-709	0	0	0	0	0	0								
882+50.00	11	11	0	11	176	176	229	-218	0	0	0	0	0	0								
883+00.00	33	33	0	33	65	65	85	-52	0	0	0	0	0	0								
883+50.00	70	70	0	70	19	19	25	45	0	0	0	0	0	0								
884+00.00	163	163	0	163	23	23	30	133	0	0	0	0	0	0								
884+50.00	225	225	0	225	17	17	22	203	0	0	0	0	0	0								
885+00.00	257	257	0	257	15	15	20	238	0	0	0	0	0	0								
885+50.00	299	299	0	299	36	36	47	252	0	0	0	0	0	0								
886+00.00	320	320	0	320	48	48	62	258	0	0	0	0	0	0								
886+50.00	353	353	0	353	50	50	65	288	0	0	0	0	0	0								
887+00.00	371	371	0	371	50	50	65	306	0	0	0	0	0	0								
887+50.00	378	378	0	378	48	48	62	316	0	0	0	0	0	0								
888+00.00	388	388	0	388	43	43	56	332	0	0	0	0	0	0								
888+50.00	387	387	0	387	34	34	44	343	0	0	0	0	0	0								
889+00.00	370	370	0	370	20	20	26	344	0	0	0	0	0	0								
889+50.00	345	345	0	345	15	15	20	326	0	0	0	0	0	0								
890+00.00	347	347	0	347	41	41	53	294	0	0	0	0	0	0								
890+50.00	490	490	0	490	75	75	98	393	0	0	0	0	0	0								
891+50.00	184	184	0	184	6	6	8	176	0	0	0	0	0	0								
892+00.00	240	240	0	240	1	1	1	239	0	0	0	0	0	0								
892+50.00	227	227	0	227	1	1	1	226	0	0	0	0	0	0								
893+00.00	213	213	0	213	1	1	1	212	0	0	0	0	0	0								
893+50.00	590	590	0	590	23	23	30	560	0	0	0	0	0	0								
895+00.00	167	167	0	167	18	18	23	144	0	0	0	0	0	0								
895+50.00	79	79	0	79	11	11	14	65	0	0	0	0	0	0								
895+76.54	69	69	0	69	10	10	13	56	0	0	0	0	0	0								
896+00.00	168	168	0	168	27	27	35	133	0	0	0	0	0	0								
896+50.00	169	169	0	169	46	46	60	109	0	0	0	0	0	0								
897+00.00	145	145	0	145	47	47	61	84	0	0	0	0	0	0								
897+50.00	43	43	0	43	11	11	14	29	0	0	0	0	0	0								
897+64.90	74	74	0	74	28	28	36	38	0	0	0	0	0	0								
898+00.00	56	56	0	56	41	41	53	3	0	0	0	0	0	0								
898+50.00	108	108	0	108	67	67	87	21	0	0	0	0	0	0								
899+50.00	60	60	0	60	21	21	27	33	0	0	0	0	0	0								
900+00.00	67	67	0	67	11	11	14	53	0	0	0	0	0	0								
900+50.00	14	14	0	14	2	2	3	11	0	0	0	0	0	0								
900+59.23	59	59	0	59	7	7	9	50	0	0	0	0	0	0								
901+00.00	67	67	0	67	8	8	10	57	0	0	0	0	0	0								
901+50.00	65	65	0	65	14	14	18	47	0	0	0	0	0	0								
902+00.00	68	68	0	68	16	16	21	47	0	0	0	0	0	0								
902+50.00	44	44	0	44	20	20	26	18	0	0	0	0	0	0								
975+00.00	45	45	0	45	38	38	49	-4	0	0	0	0	0	0								
975+50.00	42	42	0	42	49	49	64	-22	0	0	0	0	0	0								
976+00.00	38	38	0	38	63	63	82	-44	0	0	0	0	0	0								
976+50.00	38	38	0	38	70	70	91	-53	0	0	0	0	0	0								
977+00.00	38	38	0	38	87	87	113	-75	0	0	0	0	0	0								
977+50.00	41	41	0	41	152	152	198	-157	0	0	0	0	0	0								
978+00.00	48	48	0	48	185	185	241	-193	0	0	0	0	0	0								
978+50.00	52	52	0	52	165	165	215	-163	0	0	0	0	0	0								
979+00.00	109	109	0	109	168	168	218	-109	0	0	0	0	0	0								
979+50.00	155	155	0	155	1,088	1,088	1,414	-1,259	0	0	0	0	0	0								
980+00.00	132	132	0	132	1,675	1,675	2,178	-2,046	0	0	0	0	0	0								
980+50.00	163	163	0	163	856	856	1,113	-950	0	0	0	0	0	0								
981+00.00	119	119	0	119	585	585	761	-642	0	0	0	0	0	0								
981+50.00	45	45	0	45	466	466	606	-561	0	0	0	0	0	0								
982+00.00	51	51	0	51	156	156	203	-152	0	0	0	0	0	0								
982+50.00	43	43	0	43	160	160	208	-165	0	0	0	0	0	0								
983+00.00	99	99	0	99	66	66	86	13	0	0	0	0	0	0								
983+50.00	161	161	0	161	0	0	0	161	0	0	0	0	0	0								
984+00.00	106	106	0	106	32	32	42	64	0	0	0	0	0	0								
984+50.00																						
ML151																						
Totals:	29,512	29,512	0	29,512	43,902	43,902	57,073	-27,561	0	0	0	0	0	0								

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut				Fill				Checks (EW-102)		Topsoil											
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink								
PRAIRIE																						
2864+50.00	0	0	0	0	18	18	23	-23	0	0	0	0	0	0								
2864+75.00	0	0	1	0	42	42	55	-55	0	0	0	14	20	-20								
2865+00.00	0	0	0	0	70	70	91	-91	0	0	0	24	34	-34								
2865+25.00	0	0	0	0	35	35	46	-46	0	0	0	14	20	-20								
2865+50.00	0	0	5	0	2	2	3	-3	0	0	0	6	8	-8								
2865+75.00	2	1	18	1	0	0	0	1	0	0	0	3	4	-4								
2866+00.00	7	7	23	7	0	0	0	7	0	0	0	1	1	-1								
2866+25.00	12	12	19	12	0	0	0	12	0	0	0	1	1	-1								
2866+50.00																						
PRAIRIE																						
Totals:	21	20	66	20	167	167	218	-198	0	0	0	63	89	-89								

FILE NO.	ENGLISH	DESIGN TEAM	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)-3H-57	SHEET NUMBER T.6

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut				Fill				Checks (EW-102)		Topsoil											
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink								
STALLMAN																						
4874+25.00	12	12	19	12	0	0	0	12	0	0	0	2	3	-3								
4874+50.00	11	11	19	11	0	0	0	11	0	0	0	1	1	-1								
4874+75.00	9	9	19	9	0	0	0	9	0	0	0	1	1	-1								
4875+00.00	7	7	12	7	0	0	0	7	0	0	0	1	1	-1								
4875+25.00																						
STALLMAN																						
Totals:	39	39	69	39	0	0	0	39	0	0	0	5	7	-7								

FILE NO.	ENGLISH	DESIGN TEAM	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)-3H-57	SHEET NUMBER T.7

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

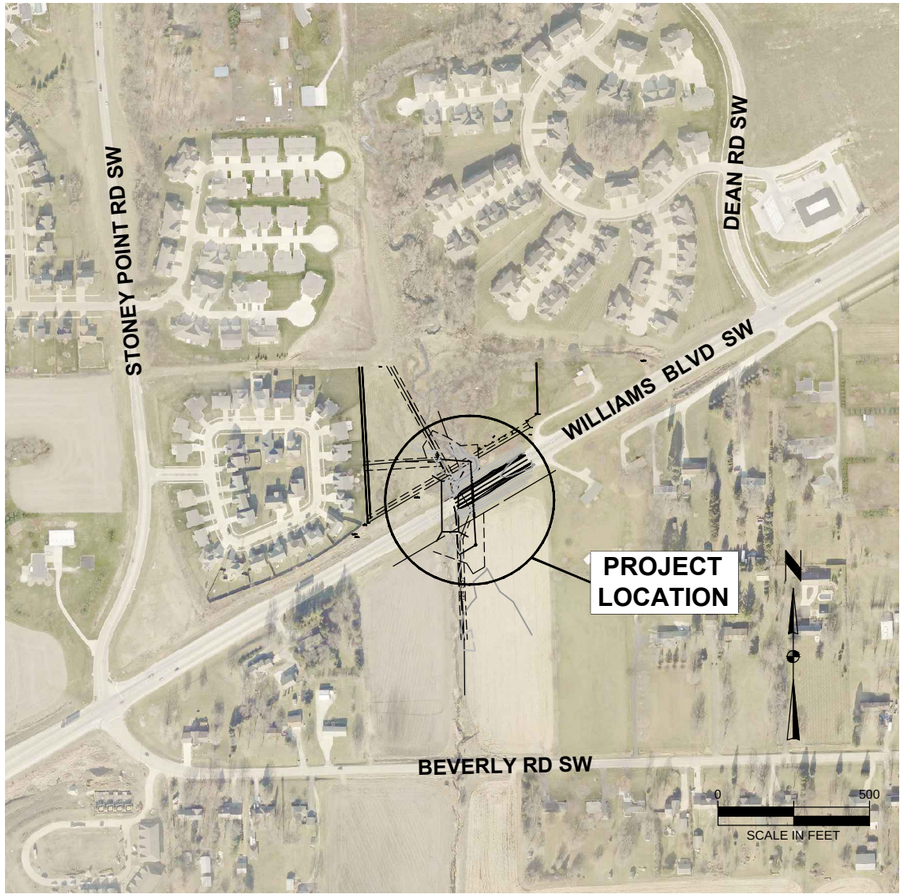
Station	Cut				Fill				Checks (EW-102)		Topsoil											
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink								
Summary:																						
CEMETERY	245	245	0	245	22	22	29	217	0	0	0	0	0	0								
CHURCH	225	225	120	225	10	10	13	212	0	0	0	21	30	-30								
LOSEY	263	263	0	263	330	330	429	-166	0	0	0	0	0	0								
ML151	29,512	29,512	0	29,512	43,902	43,902	57,073	-27,561	0	0	0	0	0	0								
PRAIRIE	21	20	66	20	167	167	218	-198	0	0	0	63	89	-89								
STALLMAN	39	39	69	39	0	0	0	39	0	0	0	5	7	-7								
Project Totals:	30,305	30,304	255	30,304	44,431	44,431	57,762	-27,457	0	0	0	89	126	-126								

LEGEND

EXISTING		PROPOSED (AS-BUILT)
(SS) (SS)	SANITARY SEWER	SS SS
(ST) (ST)	STORM SEWER	ST ST
	SUBDRAIN	
(FM) (FM)	FORCE MAIN	FM FM
(W) (W)	WATER	W W
(G) (G)	GAS	G G
(S) (S)	STEAM	S S
OHE OHE	ELECTRICAL - OVERHEAD	OHE OHE
(E) (E)	ELECTRICAL - UNDERGROUND	E E
OHT OHT	TELEPHONE - OVERHEAD	OHT OHT
(T) (T)	TELEPHONE - UNDERGROUND	T T
OHC OHC	CATV - OVERHEAD	OHC OHC
(C) (C)	CATV - UNDERGROUND	C C
OHF OHF	FIBER OPTIC - OVERHEAD	OHF OHF
(FO) (FO)	FIBER OPTIC - UNDERGROUND	FO FO
X X X X	FENCE LINE	
	REMOVALS	
	LIGHT POLE W/O MAST	
	LIGHT POLE W/MAST	
	FIRE HYDRANT	
	UTILITY POLE	
	GUY ANCHOR	
	TELEPHONE PEDESTAL	
	HANDHOLE	
	MANHOLE	
	VALVE, WATER OR GAS	
	CLEANOUT, STORM OR SANITARY	
	CURB AND APRON INTAKE	
OR	GRATE INTAKE	OR
	METRO RA-3 OR RA-5 INTAKE	
	METRO RA-8 INTAKE	
	FLARED END SECTION	
	UTILITY/CONTROL CABINET	
	TRAFFIC SIGNAL	
BM #	BENCHMARK	BM #
B #	SOIL BORING	B #
	VALVE MANHOLE	
	WATER BLOWOFF	

TABLE OF QUALITY LEVEL OF UTILITY INVESTIGATION IN ACCORDANCE WITH CI/ASCE 38-02

UTILITY	OWNER	QUALITY LEVEL
EXISTING SANITARY SEWER	CITY OF CEDAR RAPIDS	C



Design drawings M.09-M.13 incorporate underground utility information based upon subsurface utility engineering practices and standard guidelines for the collection and depiction of existing subsurface utility data (CI/ASCE 38-02).

Utility quality level A: Precise horizontal and vertical location of utilities obtained by the actual exposure (or verification of previously exposed and surveyed utilities) and subsequent measurement of subsurface utilities, usually at a specific point. Minimally intrusive excavation equipment is typically used to minimize the potential for utility damage. A precise horizontal and vertical location, as well as other utility attributes, is shown on plan documents. Accuracy is typically set to 15-mm vertical and to applicable horizontal survey and mapping accuracy as defined or expected by the project owner.

Utility quality level B: Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities. Quality level B data should be reproducible by surface geophysics at any point of their depiction. This information is surveyed to applicable tolerances defined by the project and reduced onto plan documents.

Utility quality level C: Information obtained by surveying and plotting visible above-ground utility features and by using professional judgement in correlating this information to quality level D information.

Utility quality level D: Information derived from existing records or oral recollections.

GENERAL NOTES:

1. SANITARY SEWER SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CEDAR RAPIDS METROPOLITAN AREA STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC IMPROVEMENTS, LATEST EDITIONS AND THE IOWA DOT STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, LATEST EDITION. WHERE CONFLICTS EXIST, THE CITY OF CEDAR RAPIDS SPECIFICATIONS SHALL PREVAIL.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL EXISTING UTILITIES AND PAVED AREAS, INCLUDING ANY NOT SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER IF ANY CONFLICTS WITH THE DRAWINGS OCCUR. ANY DAMAGE TO EXISTING UTILITIES, SOD, LANDSCAPE AND/OR PAVED AREAS CAUSED BY TRENCHING, GRADING, AND PAVING OPERATIONS NOT IDENTIFIED FOR REPLACEMENT SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. EXISTING UTILITY LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE.
3. ALL DEBRIS RESULTING FROM CONSTRUCTION OPERATIONS SHALL BE PROPERLY DISPOSED OF OFF-SITE.
4. ALL WORK TO BE COMPLETED WITHIN EASEMENTS AND PUBLIC R.O.W.
5. WORK ITEMS NOT SPECIFICALLY CALLED OUT FOR PAYMENT SHALL BE INCIDENTAL TO CONTRACT ITEMS.
6. REFER TO G-SHEETS FOR CONTROL POINT INFORMATION.
7. INSPECTION FOR SANITARY SEWER CONSTRUCTION WILL BE PROVIDED BY THE CEDAR RAPIDS PUBLIC WORKS DEPARTMENT CONSTRUCTION ENGINEERING DIVISION. PROVIDE A MINIMUM OF 72 HOURS NOTICE PRIOR TO STARTING CONSTRUCTION.
8. DIMENSIONS, STREET LOCATIONS, UTILITIES AND GRADING ARE BASED ON AVAILABLE INFORMATION AT THE TIME OF DESIGN. DEVIATIONS MAY BE NECESSARY IN THE FIELD. ANY SUCH CHANGES OR CONFLICTS BETWEEN THE PLAN AND FIELD CONDITIONS SHALL BE REPORTED TO THE CITY INSPECTOR.
9. IF THE CONTRACTOR OBTAINS ADDITIONAL EASEMENTS FOR STORAGE OF EQUIPMENT AND MATERIALS, COPIES OF AGREEMENTS WITH PROPERTY OWNERS SHALL BE PROVIDED TO THE CITY.
10. THE CONTRACTOR IS RESPONSIBLE FOR ALL SITE SAFETY INCLUDING FENCING AND SIGNAGE ON SITE AND SHALL COMPLY WITH ALL STATE, LOCAL AND FEDERAL REGULATIONS.
11. THE CONTRACTOR SHALL COMPLY WITH ALL STATE REGULATIONS REGARDING AIR, WATER, AND NOISE POLLUTION.
12. WHERE SECTION OF SUBSECTION MONUMENTS, BENCHMARKS, RIGHT-OF-WAY PINS, OR IRON PIPE MONUMENTS ARE ENCOUNTERED, THE CITY SHALL BE NOTIFIED BEFORE SUCH MONUMENTS ARE REMOVED OR DISTURBED. THE CONTRACTOR SHALL PROTECT AND CAREFULLY PRESERVE ALL MONUMENTS UNTIL THE CITY AND AUTHORIZED SURVEYOR, OR AGENT, HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION. THE CONTRACTOR WILL BE RESPONSIBLE FOR HAVING AN AUTHORIZED SURVEYOR RE-ESTABLISH ANY MONUMENTS UNNECESSARILY DESTROYED BY CONTRACT OPERATIONS.
13. PROTECT EXISTING FACILITIES, TREES, AND OTHER APPURTENANCES NOT TO BE REMOVED FROM THE SITE DURING CONSTRUCTION.
14. THE CONTRACTOR SHALL ASSIST THE CITY'S INSPECTOR WITH DAILY RECORD KEEPING INCLUDING DOCUMENTING ALL NECESSARY FIELD LOCATIONS AND MEASUREMENTS. THE CONTRACTOR IS REQUIRED TO ATTEND FINAL AND INTERMEDIATE INSPECTIONS OF THE PROJECT AND IS RESPONSIBLE FOR OPENING ALL MANHOLES FOR INSPECTION.
15. TRAFFIC CONTROL SHALL CONFORM TO OTHER PROJECT STAGING PLANS AND SHALL NOT CONFLICT WITH SAID PLAN.
16. ANY TEMPORARY GRADING AND SUBSEQUENT RESTORATION REQUIRED FOR SITE ACCESS SHALL BE INCIDENTAL TO SANITARY SEWER CONSTRUCTION.

NOTE:
THE PROPOSED SANITARY SEWER IMPROVEMENTS INCLUDED IN THESE DRAWINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE CEDAR RAPIDS METROPOLITAN AREA DESIGN STANDARDS MANUAL (LATEST EDITION) WITH NO DESIGN EXCEPTIONS.

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LICENSED PROFESSIONAL ENGINEER
MATTHEW J. FEUERHELM
21301
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.

MATTHEW J. FEUERHELM, P.E. DATE
LICENSE NUMBER: 21301
MY LICENSE RENEWAL DATE IS: DECEMBER 31, 2017

PAGES OR SHEETS COVERED BY THIS SEAL: M.9-M.13

FILE NO.	ENGLISH	DESIGN TEAM CITY OF CEDAR RAPIDS	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER U.1

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SANITARY SEWER

UTILITY ACCESSES

* Bid Item

No.	Location Station and Offset	Type or Standard Road Plan*	Rim Elev.	Bottom Well Elev.	Notes
SMH-01	979+67.8, 152.7' Rt.	SW-301 (60")	772.03	758.34	Bolt-down lid, connected manhole joints
SMH-02	980+26.8, 152.7' Rt.	SW-301 (60")	770.33	758.52	Bolt-down lid, connected manhole joints
SMH-03	981+51.2, 93.4' Lt.	SW-301 (60")	769.45	759.47	Bolt-down lid, connected manhole joints
SMH-04	980+71.2, 148.9' Lt.	SW-301 (60")	769.77	759.86	Replace Ex. Structure, bolt-down lid, connected manhole joints

PIPES

1 LENGTH COMPUTED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.

No.	UTILITY ACCESS NO. FROM	UTILITY ACCESS NO. TO	TYPE	PIPE SIZE IN.	LENGTH[1] FT	SLOPE %	FLOW LINES INLET ELEVATION	FLOW LINES OUTLET ELEVATION	Pipe Profile Sheet No.	Notes
P-1	SMH-01	SMH-02	DIP	24"	59.0	0.35	758.52	758.34	M.11	Restrained Joint DIP w/ Ceramic Epoxy interior lining
P-2	SMH-02	SMH-03	DIP	24"	275.7	0.35	759.47	758.52	M.11	Restrained Joint DIP w/ Ceramic Epoxy interior lining, 48" Dia. Casing Pipe
P-3	SMH-03	SMH-04	DIP	24"	97.3	0.35	759.86	759.47	M.11	Restrained Joint DIP w/ Ceramic Epoxy interior lining, PC Concrete Arch

ESTIMATED PROJECT QUANTITIES

ITEM CODE	DESCRIPTION	UNITS	QUANTITY
2435-0130160	MANHOLE, SANITARY SEWER, SW-301, 60 IN.	EA	4
2504-0146024	SANITARY SEWER GRAVITY MAIN WITH CASING PIPE, TRENCHLESS, DUCTILE IRON PIPE (DIP), 24 IN.	LF	155
2504-0116024	SANITARY SEWER GRAVITY MAIN, TRENCHED, DUCTILE IRON PIPE (DIP), 24 IN.	LF	277
2504-0240036	REMOVE SANITARY SEWER PIPE LESS THAN OR EQUAL TO 36 IN.	LF	100
2504-0240236	SANITARY SEWER ABANDONMENT, FILL AND PLUG, LESS THAN OR EQUAL TO 36 IN. DIA.	LF	246
2552-0000230	SPECIAL PIPE EMBEDMENT OR ENCASEMENT	LF	95
2552-0000300	TRENCH COMPACTION TESTING	LS	1

SANITARY SEWER ABANDONMENT, FILL AND PLUG, LESS THAN OR EQUAL TO 36 IN. DIA.

Location	Length (LF)	Remarks
Sta. 980+71.2, 148.9' Rt. to Sta. 979+67.8, 152.7' Rt.	246	Plug upstream and downsteam ends, remove and dispose of existing cone sections. Fill pipe with flowable mortar.

REMOVE SANITARY SEWER PIPE LESS THAN OR EQUAL TO 36 IN.

Location	Length (LF)	Remarks
Sta. 979+67.8, 152.7' Rt. to Sta. 979+91.9, 107.5' Rt	50	Remove ex. 24" RCP from SMH-01 upstream to Ex. MH
Sta. 980+70.6, 98.9' Lt. to Sta. 980+71.2, 148.9' Lt.	50	Remove ex. 24" RCP to 50' downstream of SMH-04.

APPLICABLE CEDAR RAPIDS METROPOLITAN AREA STANDARD DETAILS FOR PUBLIC IMPROVEMENTS, STATEWIDE URBAN DESIGN AND SPECIFICATION STANDARDS AND IOWA DOT STANDARD ROAD PLANS

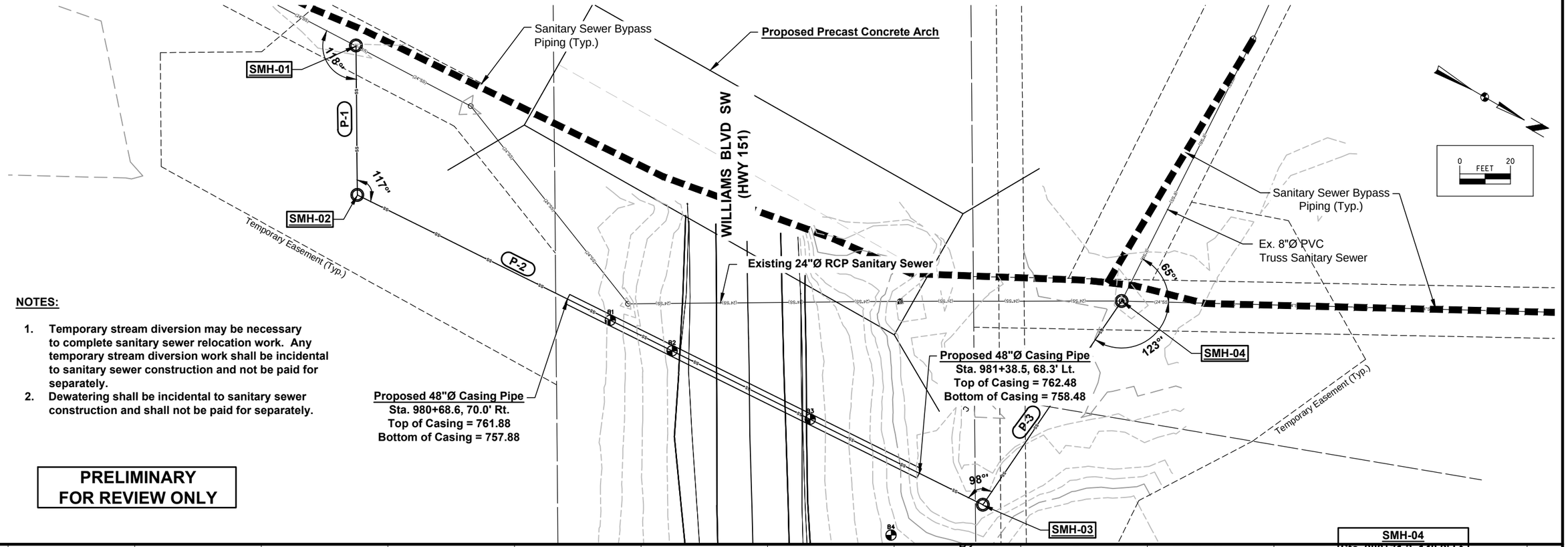
ALL STANDARD DETAILS SHALL BE CONSIDERED APPLICABLE TO CONSTRUCTION WORK ON THIS PROJECT. THE FOLLOWING DETAILS ARE BROUGHT TO THE CONTRACTOR'S ATTENTION:

SW-101	Trench Bedding and Backfill Zones
SW-103	Flexible Gravity Pipe Trench Bedding
SW-301	Circular Sanitary Sewer Manhole
SW-306	Chimney Seals for Sanitary Sewer Manholes
TC-1	Work Not Affecting Traffic (Two-Lane)
TC-202	Work Within 15 ft of Traveled Way
2300-043	Installation of Connected Manhole Joints - Detail on M.13
2300-049	Sanitary Sewer Bolt Down Lids - Detail on M.13
2200-041	PC Concrete Arch - Modified Detail on M.13

ESTIMATE REFERENCE INFORMATION

ITEM CODE	DESCRIPTION
2435-0130160	MANHOLE, SANITARY SEWER, SW-301, 60 IN. A. Manhole joints shall be tied per detail on M.13. B. Manhole lids shall be bolt down lids per detail on M.13. C. Item includes external chimney seal, bolt-down frame and lid, adjusting rings (pro-ring), and PVC liner. D. Sanitary sewer bypass pumping and dewatering are incidental to sanitary sewer construction. E. Construction survey shall be incidental to sanitary sewer construction.
2504-0146024	SANITARY SEWER GRAVITY MAIN WITH CASING PIPE, TRENCHLESS, DUCTILE IRON PIPE (DIP), 24 IN. A. Refer to tabulation on Sheet M.10 and plan on Sheet M.11. B. Access for lauching and receiving pits is limited to the temporary easements. C. Casing pipe shall be coal tar epoxied and incidental to this bid item. D. Comply with Section 2553 of the Standard Specifications. E. Steel casing pipe shall be 48" diameter and minimum wall thickness shall be 0.344". F. Carrier pipe shall be 24" DIP with ceramic epoxy lining and restrained joints. G. Construction survey shall be incidental to sanitary sewer construction. H. Any necessary dewatering or temporary stream diversion is incidental to this item. I. Sanitary sewer bypass pumping is incidental to sanitary sewer construction.
2504-0116024	SANITARY SEWER GRAVITY MAIN, TRENCHED, DUCTILE IRON PIPE (DIP), 24 IN. A. Refer to tabulation on Sheet M.10 and plan on Sheet M.11. B. Pipe shall be 24" DIP with ceramic expoxy lining, restrained joints and encased in polyethylene. C. Dewatering is incidental to this item. D. Temporary stream diversion is incidental to this item. E. Pipe bedding to be Class F-3 per SW-103 and shall be incidental to this item. Modify where Special Pipe Embedment or Encasement is used. F. Pipe bedding material shall be granular backfill. G. Construction survey shall be incidental to sanitary sewer construction. H. Disposal of excess material from trench shall be incidental to this item. I. Sanitary sewer bypass pumping is incidental to sanitary sewer construction.
2504-0240036	REMOVE SANITARY SEWER PIPE LESS THAN OR EQUAL TO 36 IN. A. Refer to tabulation on Sheet M.10. B. Contractor shall dispose of removed pipe.
2504-0240236	SANITARY SEWER ABANDONMENT, FILL AND PLUG, LESS THAN OR EQUAL TO 36 IN. DIA. A. Refer to tabulation on Sheet M.10. B. Removal and disposal of existing manhole cone sections is incidental to this bid item. C. Pipe and remaining manhole sections to be filled with flowable mortar. D. Plug upstream and downstream pipe ends.
2552-0000230	SPECIAL PIPE EMBEDMENT OR ENCASEMENT A. Refer to tabulation on Sheet M.10. Applies to P-3. B. Refer to detail on Sheet M.13
2552-0000300	TRENCH COMPACTION TESTING A. Contractor shall be responsible for trench compaction testing performed by an independent testing laboratory hired by Contractor. B. Provide a minimum of 6 tests randomly spaced over sewer trench. No compensation shall be made for re-testing failed tests.

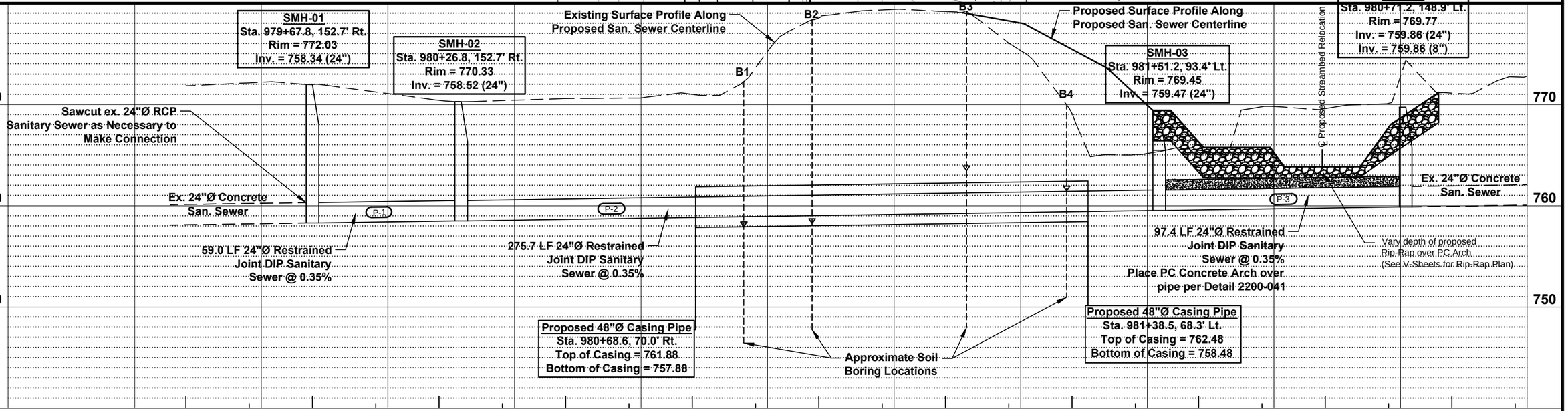
PRELIMINARY FOR REVIEW ONLY



NOTES:

1. **Temporary stream diversion may be necessary to complete sanitary sewer relocation work. Any temporary stream diversion work shall be incidental to sanitary sewer construction and not be paid for separately.**
2. **Dewatering shall be incidental to sanitary sewer construction and shall not be paid for separately.**

PRELIMINARY FOR REVIEW ONLY



FILE NO.	ENGLISH	DESIGN TEAM CITY OF CEDAR RAPIDS	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER U.3

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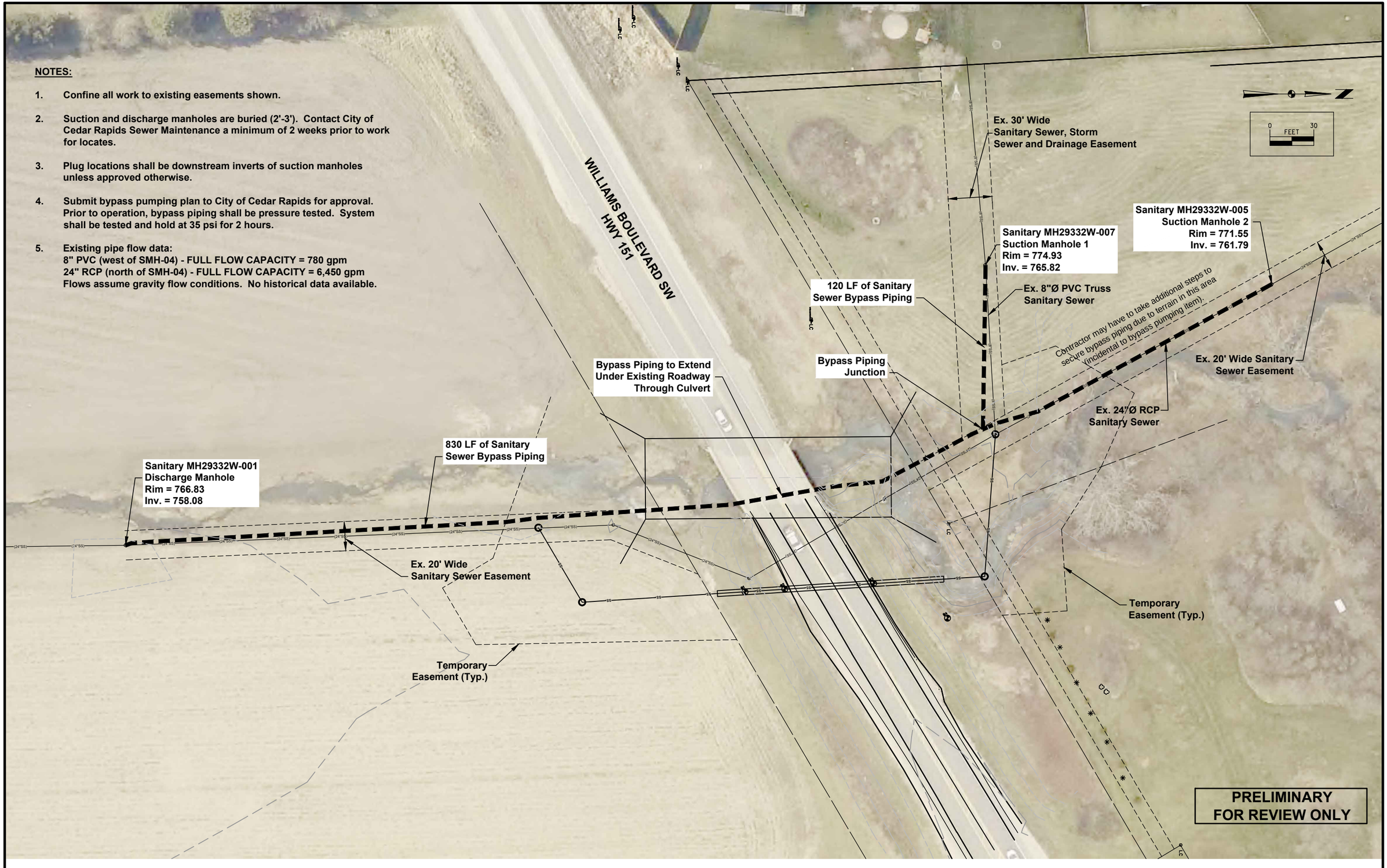
NOTES:

1. Confine all work to existing easements shown.
2. Suction and discharge manholes are buried (2'-3'). Contact City of Cedar Rapids Sewer Maintenance a minimum of 2 weeks prior to work for locates.
3. Plug locations shall be downstream inverts of suction manholes unless approved otherwise.
4. Submit bypass pumping plan to City of Cedar Rapids for approval. Prior to operation, bypass piping shall be pressure tested. System shall be tested and hold at 35 psi for 2 hours.
5. Existing pipe flow data:
   8" PVC (west of SMH-04) - FULL FLOW CAPACITY = 780 gpm
   24" RCP (north of SMH-04) - FULL FLOW CAPACITY = 6,450 gpm
   Flows assume gravity flow conditions. No historical data available.



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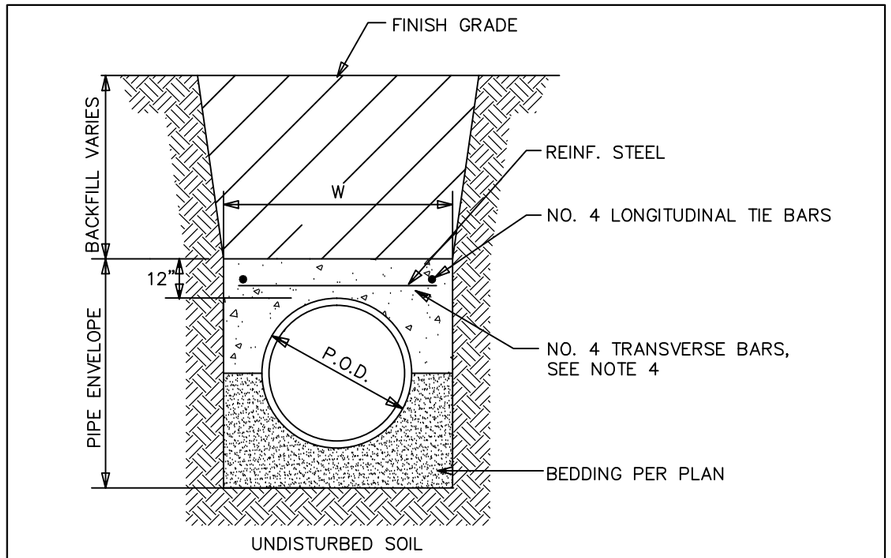
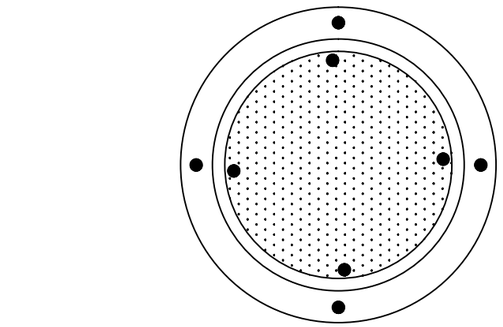
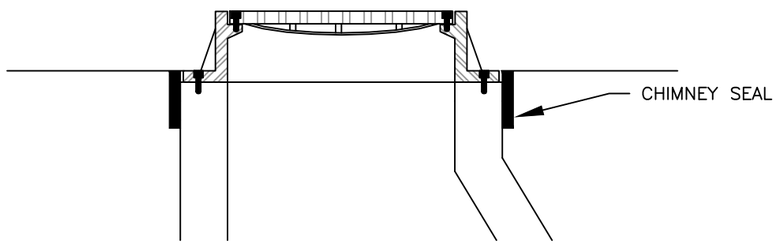


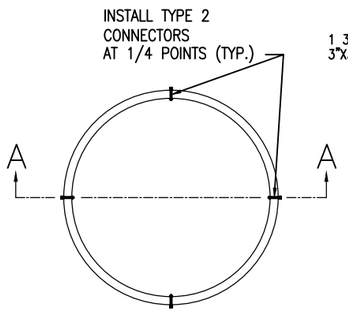
NOTES:
1. CONCRETE SHALL BE CLASS "C" UNLESS OTHERWISE NOTED.
2. BACKFILL ABOVE PIPE ENVELOPE SHALL BE ACCORDING TO SW–101 AND SW–103.
3. PIPE ENVELOPE (W) SHALL BE ACCORDING TO SW–103.
4. SPACING OF TRANSVERSE BARS SHALL BE 12–INCHES.



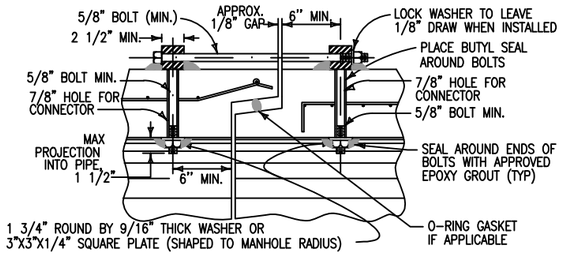
SEE CASTING CHART IN APPENDIX A, SECTION 2300 FOR CASTING DESIGNATION



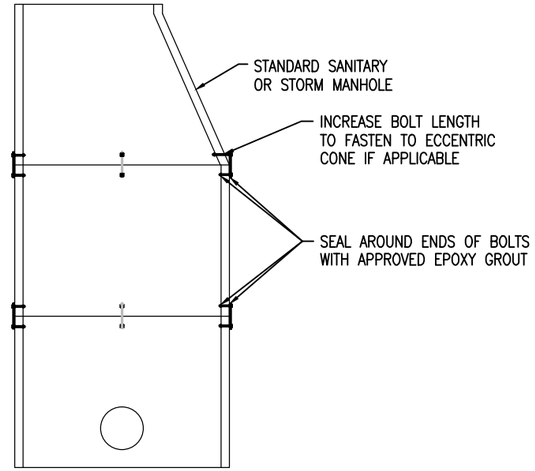
NOTE: 4– ANCHOR BOLTS FROM LID TO FRAME AS FURNISHED BY MANUFACTURER
4 –1" ANCHOR BOLTS FROM FRAME TO STRUCTURE. (BRASS OR STAINLESS STEEL)



TYPICAL PLAN



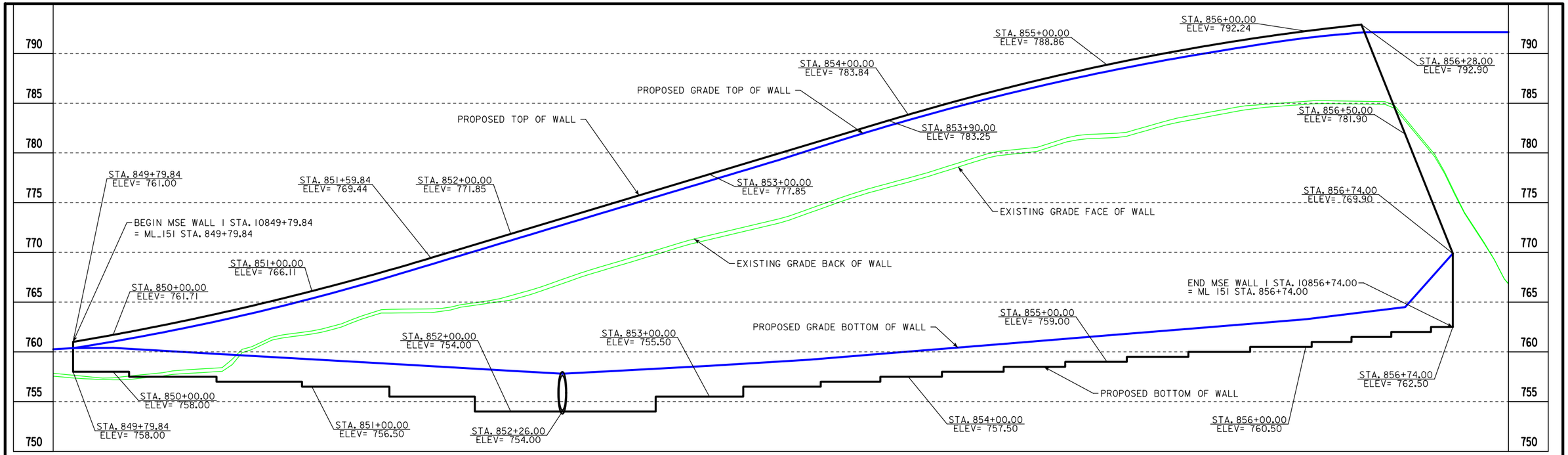
SECTION OF TYPICAL MANHOLE CONNECTOR



SECTION A–A

FILE NO.: 2300–043	CEDAR RAPIDS METROPOLITAN AREA STANDARD DETAILS FOR PUBLIC IMPROVEMENTS
APPROVAL DATE: APRIL 2003	
REVISION NO.:	INSTALLATION OF CONNECTED MANHOLE JOINTS — NO. 2300–043
REVISION DATE:	

PRELIMINARY FOR REVIEW ONLY

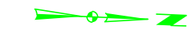


BENCH MARK: BM1
DESCRIPTION: GIN SPIKE IN POWER POLE, EAST SIDE HWY 151, ACROSS FROM "PIT STOP"
STA. 846+60.91, 23.069' RT.
ELEV. = 763.60'

UTILITIES LEGEND:

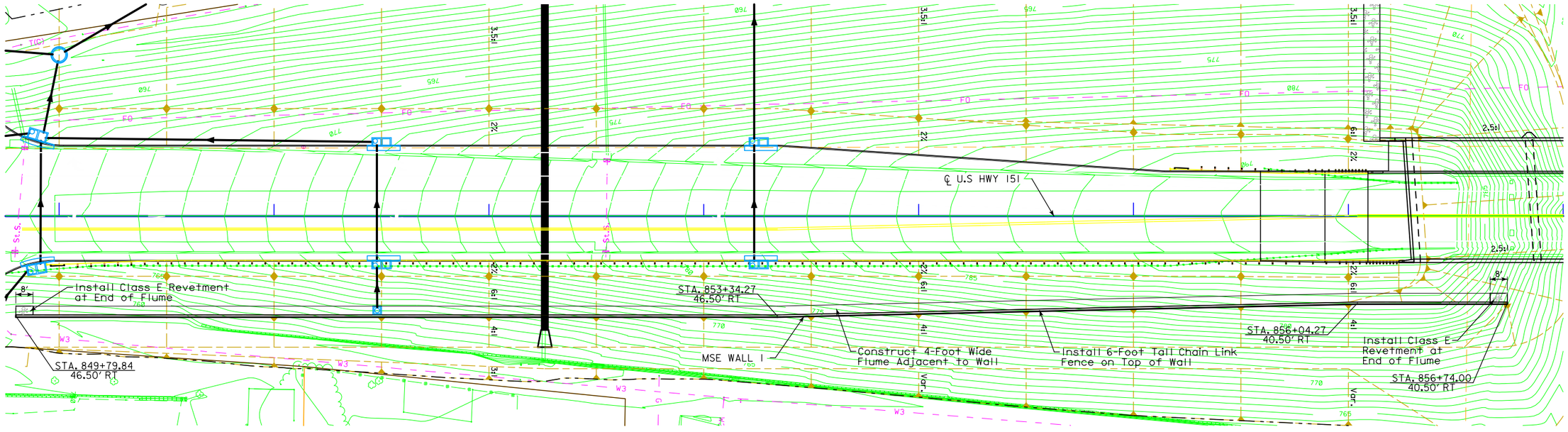
REFER TO SHEET D.1

LOCATION



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

0 ENGLISH 50
SCALE IN FEET



SITUATION PLAN

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

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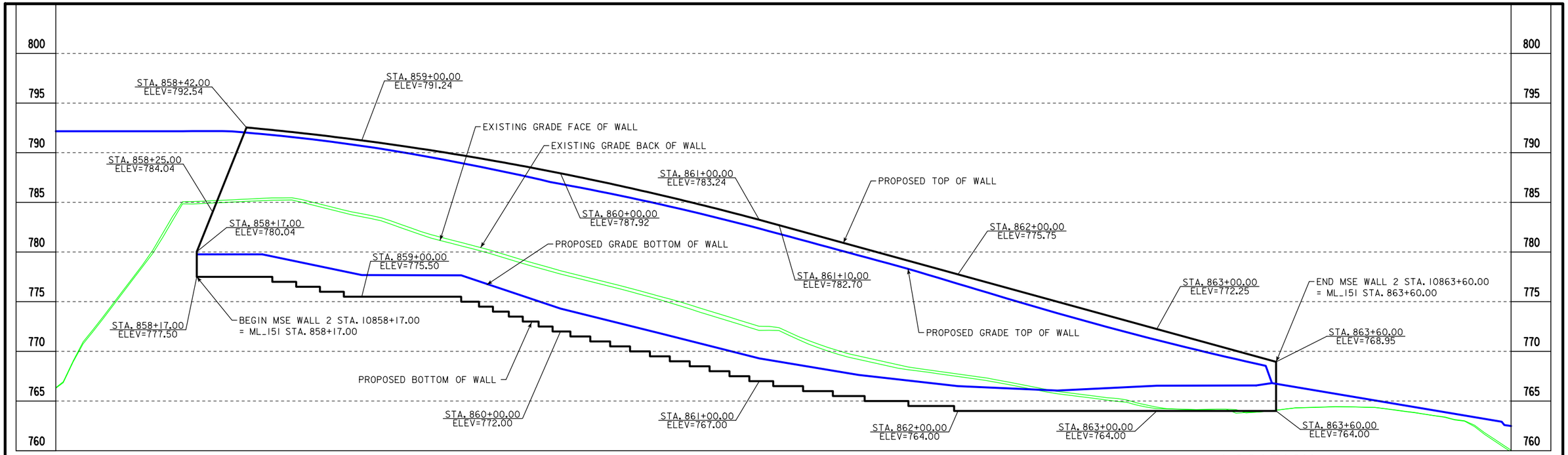

BENCH MARK: BM1
DESCRIPTION: GIN SPIKE IN POWER POLE, EAST SIDE HWY 151, ACROSS FROM "PIT STOP"
STA. 846+60.91, 23.069' RT.
ELEV. = 763.60

UTILITIES LEGEND:

REFER TO SHEET D.1

LOCATION

U.S. 151
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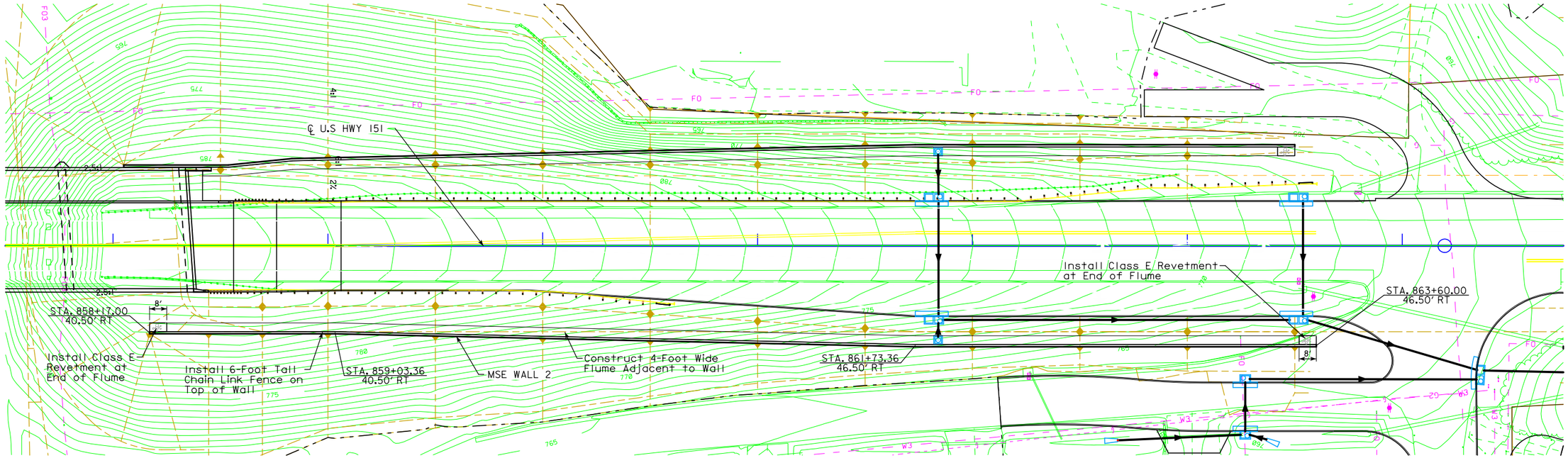
SECTION 16
FAIRFAX TOWNSHIP
LINN COUNTY

0 ENGLISH 50
SCALE IN FEET



SITUATION PLAN

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

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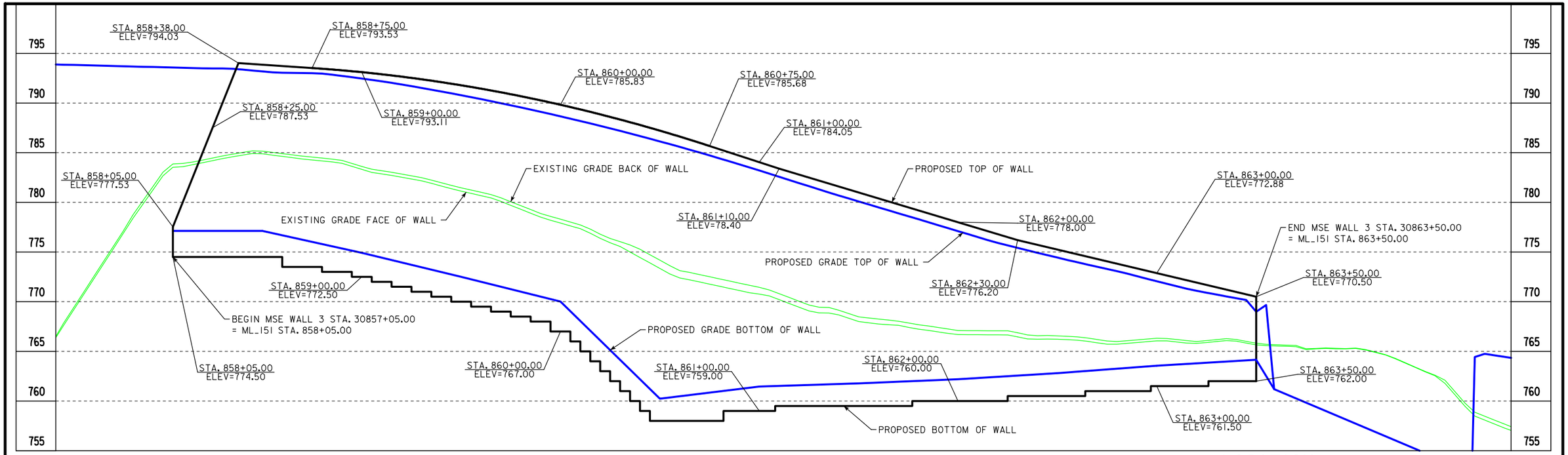
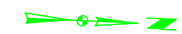


BENCH MARK: BMI
DESCRIPTION: GIN SPIKE IN POWER POLE, EAST SIDE HWY 151, ACROSS FROM "PIT STOP"
STA. 846+60.91, 23.069' RT.
ELEV. = 763.60

UTILITIES LEGEND:

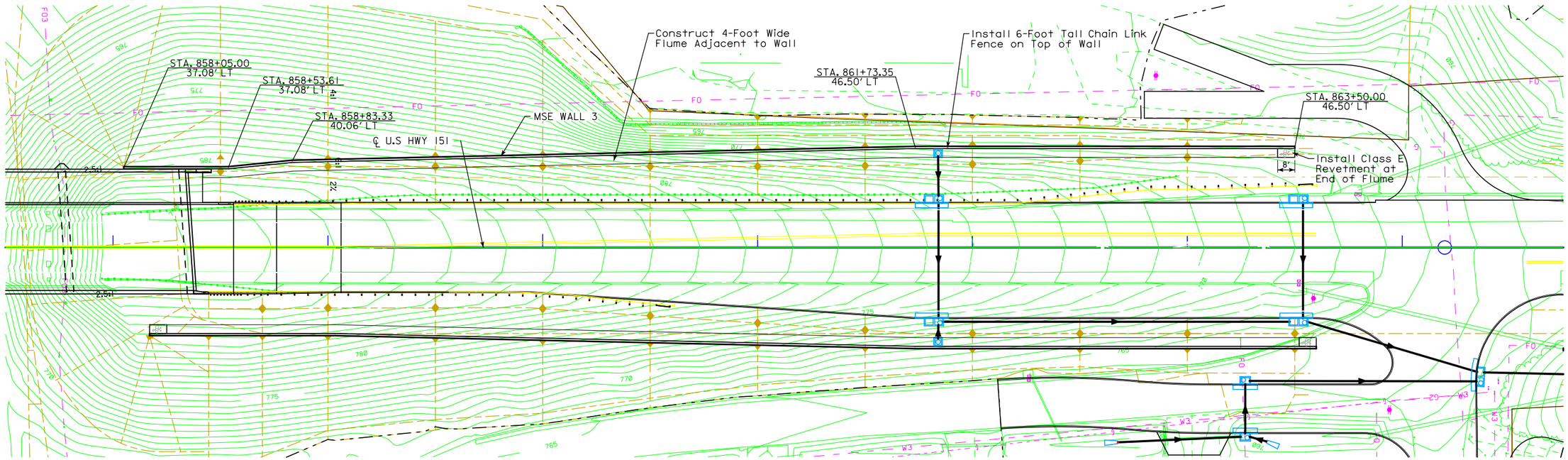
REFER TO SHEET D.1

LOCATION



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

0 ENGLISH 50
SCALE IN FEET



SITUATION PLAN

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

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ESTIMATED RETAINING WALL QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	300.5	
2	2404-7775000	REINFORCING STEEL	LB	21,790	
3	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	17,989	
4	2519-1001000	FENCE, CHAIN LINK, VINYL COATED	LF	200.0	

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
1	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS) INCLUDES MATERIAL AND LABOR ASSOCIATED WITH FURNISHING AND INSTALLING EXPANSION AND CONSTRUCTION JOINT. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH FURNISHING AND INSTALLING CONCRETE TEXTURING AND CONCRETE RUSTIFICATION. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH FURNISHING AND INSTALLING 4 INCH DIAMETER SUBDRAIN.
2	2404-7775000	REINFORCING STEEL - -
3	2404-7775005	REINFORCING STEEL, EPOXY COATED - -
4	2519-1001000	FENCE, CHAIN LINK, VINYL COATED - -

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER
Haiping Chen
17377
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.

Haiping Chen 11/6/2018
Signature Date

Haiping Chen
Printed or Typed Name

My license renewal date is December 31, 2018

Pages or sheets covered by this seal: SHEETS V.1 THRU V.19

DESIGN FOR

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

BEGIN STATION 40864+75.00 NOVEMBER 2018
END STATION 40866+75.00

ESTIMATED QUANTITIES
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON INC | LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.1

GENERAL NOTES:

THIS DESIGN IS FOR A NEW CAST-IN-PLACE CANTILEVER RETAINING WALL LOCATED ON US 151, SOUTH OF PRAIRIE CREEK BRIDGE IN LINN COUNTY, IA.

U.S. 151 WILL BE OPEN TO TRAFFIC DURING CONSTRUCTION. REFER TO THE TRAFFIC CONTROL PLAN INCLUDED ELSEWHERE IN THESE PLANS.

THE CITY AND UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

STRUCTURAL CONCRETE FOR THE FOOTING AND WALL SHALL BE CLASS 'C'.

BACKFILLING OPERATIONS SHALL BE IN ACCORDANCE WITH SECTION 2402.03.H OF THE STANDARD SPECIFICATIONS. SECTION 2403.03.N SHALL BE FOLLOWED WITH RESPECT TO SUBJECTING WALLS AND FOOTINGS TO EXTERIOR LOADS.

THE FRONTSIDE AND BACKSIDE OF THE WALL SHALL BE BACKFILLED SIMULTANEOUSLY. UNTIL THE FRONT OF THE WALL IS BACKFILLED TO GRADE, THERE SHALL NEVER BE GREATER THAN A FOOT DIFFERENCE IN HEIGHT BETWEEN THE FRONTSIDE AND BACKSIDE BACKFILL ELEVATIONS.

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

ALL COSTS ASSOCIATED WITH EXPANSION AND CONSTRUCTION JOINTS, INCLUDING ALL RESILANT JOINT FILLER, WATERSTOPS AND EXPANSION DOWEL ASSEMBLIES SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "STRUCTURAL CONCRETE ('MISCELLANEOUS')".

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

SURCHARGE LOADING IS NOT INCLUDED IN THE DESIGN.

THE DESIGN NOMINAL BEARING RESISTANCE FOR THE FOOTING IS 5,000 PSF. THE CONTRACTOR SHALL VERIFY THE SOIL AT THE SITE MEETS THE DESIGN BEARING PRESSURE PRIOR TO PLACING ANY RETAINING WALL FOOTING CONCRETE.

THE EXCAVATION AND BACKFILLING QUANTITIES ARE INCLUDED THE ROADWAY PLANS.

SHOP DRAWING SUBMITTALS

SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS SHOWN IN THE TABLE BELOW. (NOTE ADDITIONAL SHOP DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS.)

SUBMITTAL REQUIREMENTS FOR SHOP DRAWINGS SHOULD BE IN ACCORDANCE WITH ARTICLE 1105.03, OF THE STANDARD SPECIFICATIONS, FOR HIGHWAY AND BRIDGE CONSTRUCTION OF THE IOWA DEPARTMENT OF TRANSPORTATION.

SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION:
(Paren)_County_DesignNumber_SubmittalDescription.pdf
Example: (090)_BlackHawk_Design915_DeckDrains.pdf

1	CHAIN LINK FENCE

SPECIFICATIONS:

DESIGN: AASHTO LRFD 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.
CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.
REINFORCING STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 5, GRADE 60.
CONCRETE IN ACCORDANCE WITH AASHTO SECTION 5, f'c= 4.0 KSI
STRUCTURAL STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 6. ASTM A709 GRADE 36, GRADE 50, AND GRADE 50W (AASHTO M270 GRADE 36, GRADE 50, AND GRADE 50W).

NOTE:
POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

NOTE:
ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

TRAFFIC CONTROL PLAN
NOTE: ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

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

BEGIN STATION 40864+75.00
END STATION 40866+75.00
NOVEMBER 2018

GENERAL NOTES
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 19 FILE NO. 31286 DESIGN NO. 918

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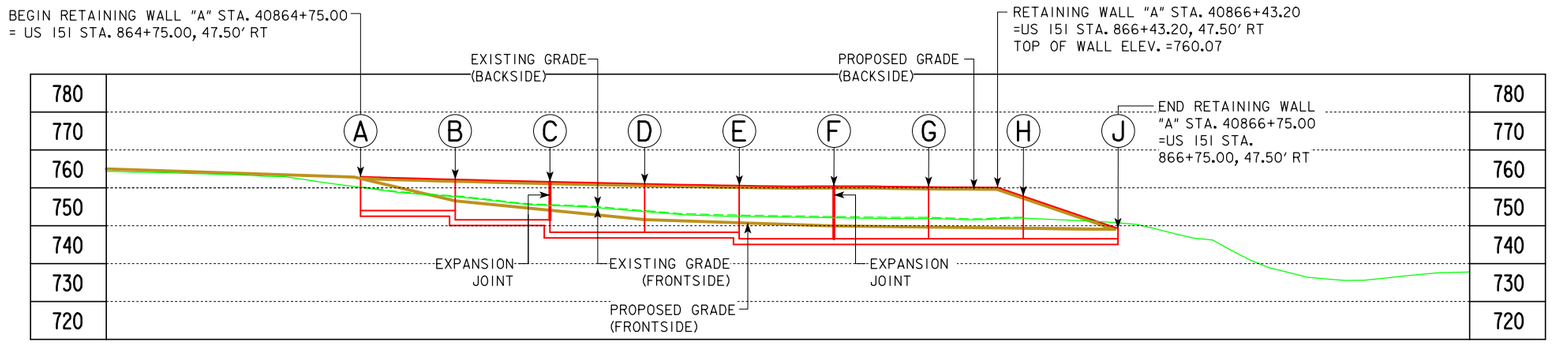
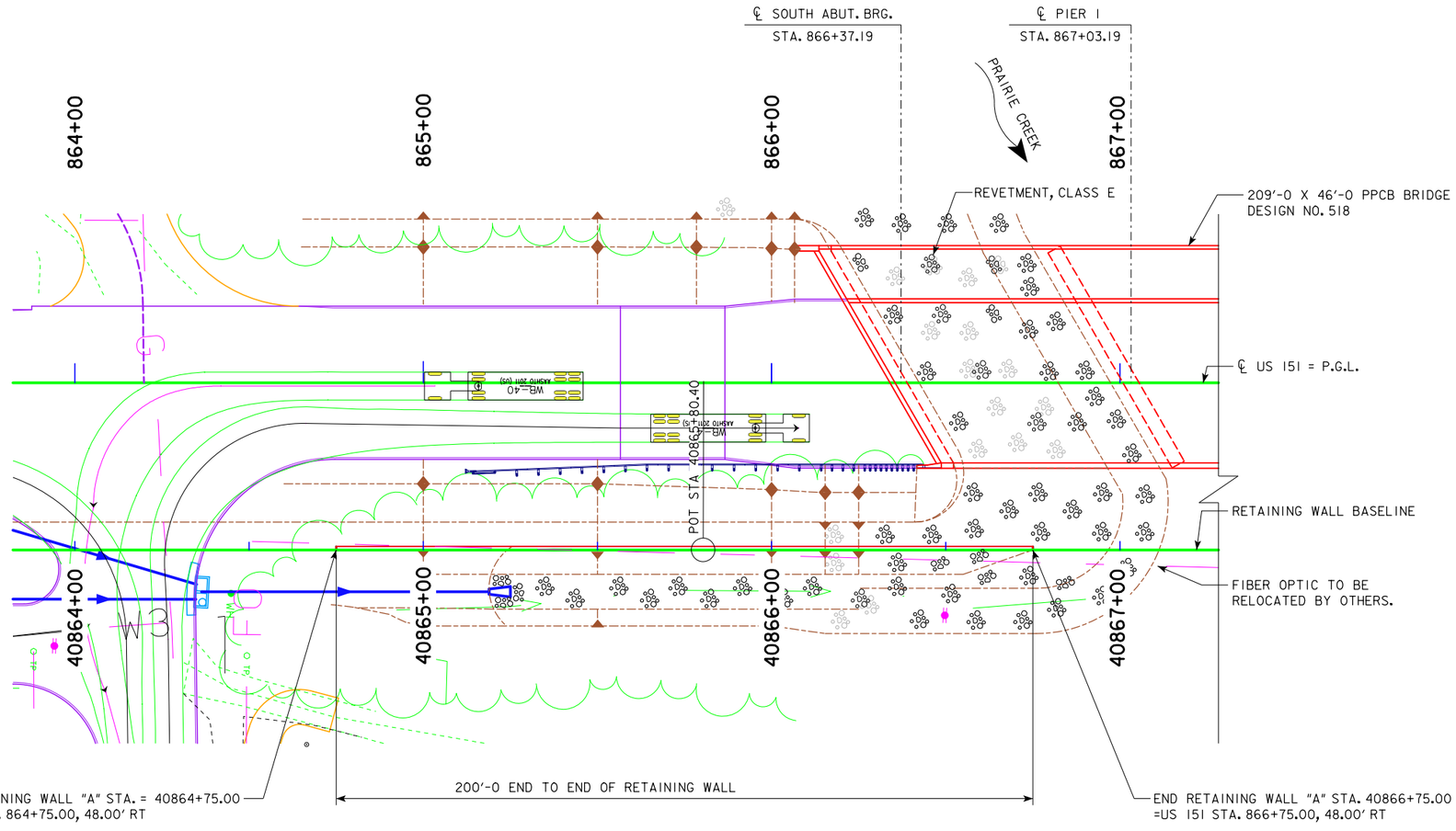


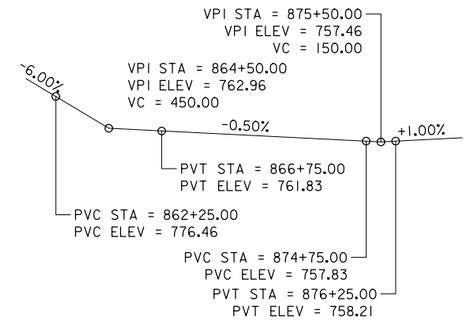
RETAINING WALL "A" ELEVATION



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



PROPOSED PROFILE GRADE (US 151)

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

WALL ELEVATIONS

LOCATION	STATION (US 151)	TOP OF WALL ELEVATION	BOTTOM OF FOOTING ELEVATION	WALL HEIGHT (FT.)	WALL LENGTH (FT.)
A	864+75.00	762.91	752.50	10.41	25.0
B	865+00.00	762.21	750.03	12.18	25.0
C	865+25.00	761.59	746.76	14.83	25.0
D	865+50.00	761.04	746.76	14.28	25.0
E	865+75.00	760.57	745.04	15.53	25.0
F	866+00.00	760.42	745.04	15.38	25.0
G	866+25.00	760.23	745.04	15.19	25.0
START OF WALL SLOPE	866+43.20	760.07	745.04	15.03	18.2
H	866+50.00	757.76	745.04	12.72	6.8
J	866+75.00	749.28	745.04	4.24	25.0

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.
TRUCKS	6	%
TOTAL DESIGN ESALs	2,104,152	

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

BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

SITUATION PLAN
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON INC | LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.3

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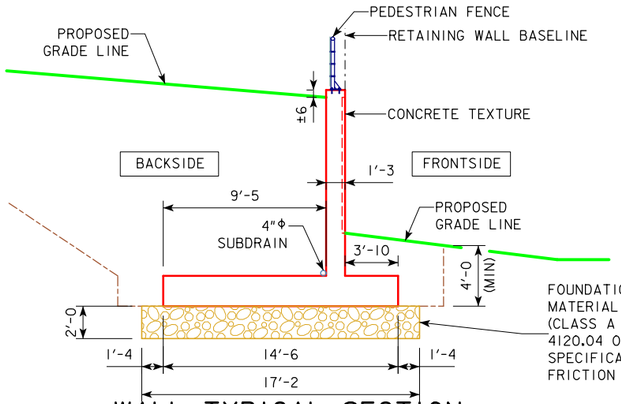
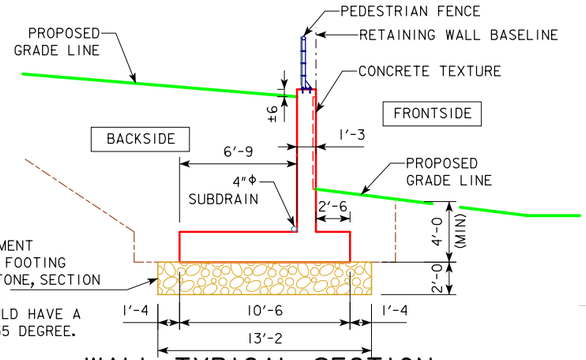
BENCH MARK NO. BM2 STA. 871+35.96, 70.098 RT, RR SPIKE IN POWER POLE,
EAST SIDE HWY 151, 200' ± NORTH OF NORTH END OF
RIVER BRIDGE AT BEGGINNING OF CLEARING.
ELEV. 750.420, N = 705704.166 E = 2107504.303

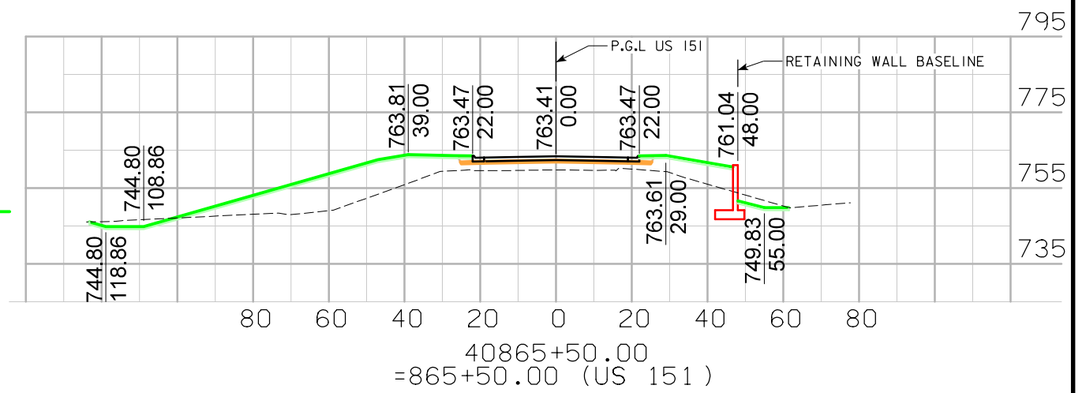


WALL TYPICAL SECTION
(LOOKING NORTH, BETWEEN C & H)

FOUNDATION IMPROVEMENT MATERIAL UNDER THE FOOTING (CLASS A CRUSHED STONE, SECTION 4120.04 OF STANDARD SPECIFICATIONS) SHOULD HAVE A FRICTION ANGLE OF 35 DEGREE.



WALL TYPICAL SECTION
(LOOKING NORTH, BETWEEN A & C, H & J)



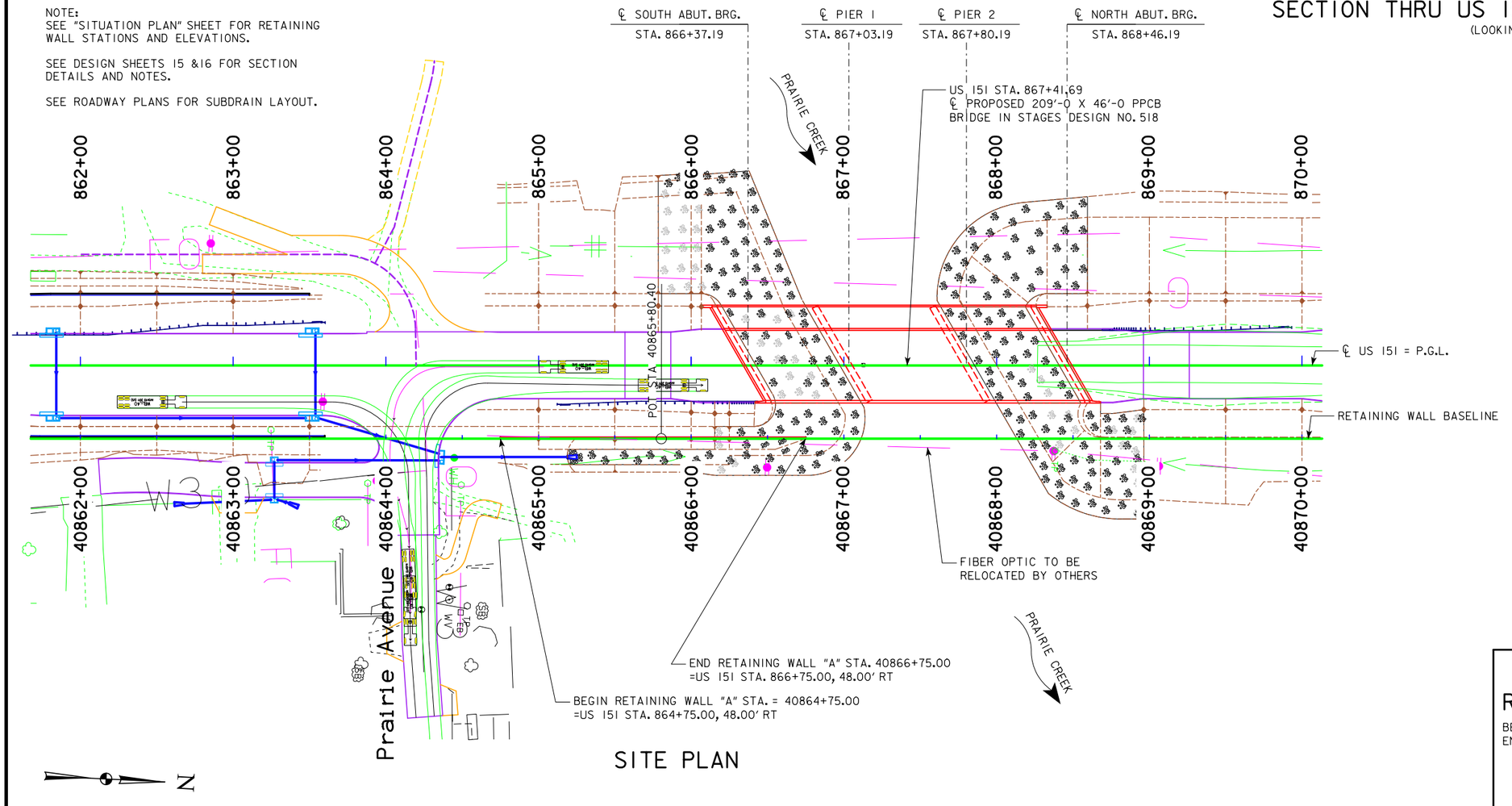
40865+50.00
=865+50.00 (US 151)

SECTION THRU US 151 WITH WALL SECTION
(LOOKING NORTH)

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 &16 FOR SECTION DETAILS AND NOTES.

SEE ROADWAY PLANS FOR SUBDRAIN LAYOUT.



SITE PLAN

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

DESIGN FOR
200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL
BEGIN STATION 40864+75.00
END STATION 40866+75.00
NOVEMBER 2018

SITE PLAN
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 4 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON | LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.4

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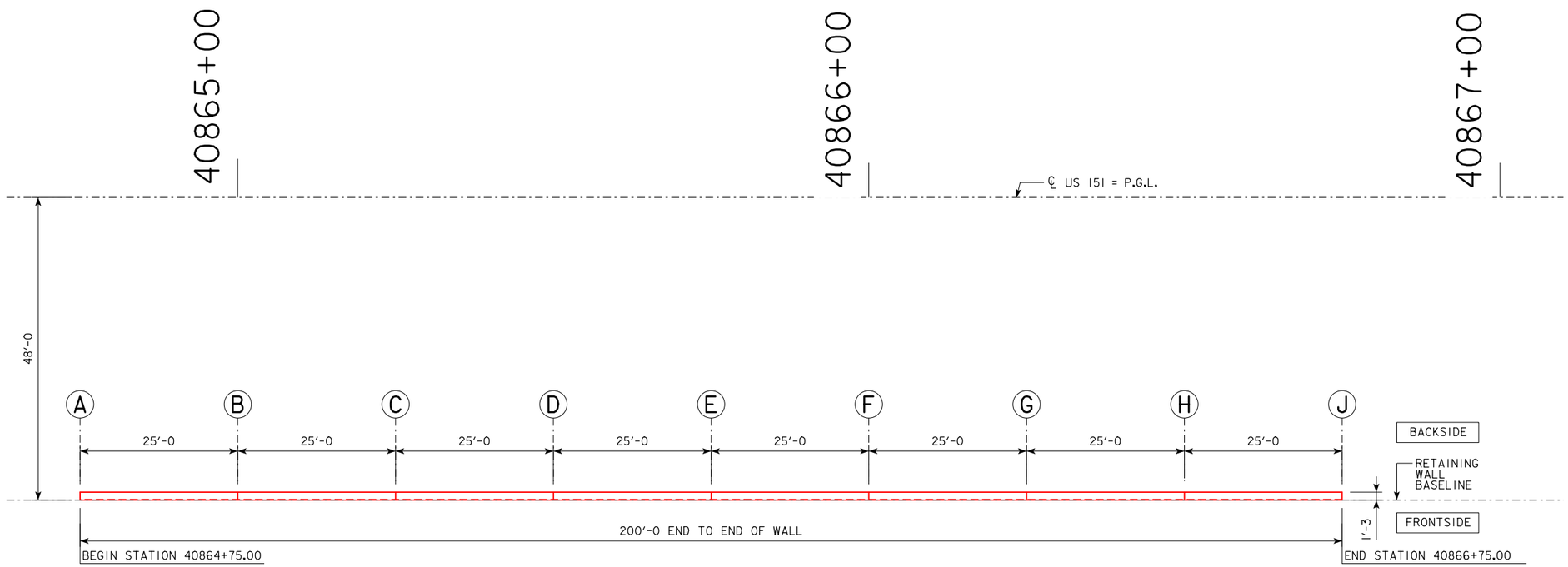

N

STAKING DIAGRAM

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

DESIGN FOR
200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL
BEGIN STATION 40864+75.00 NOVEMBER 2018
END STATION 40866+75.00
STAKING DIAGRAM
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 5 OF 19 FILE NO. 31286 DESIGN NO. 918

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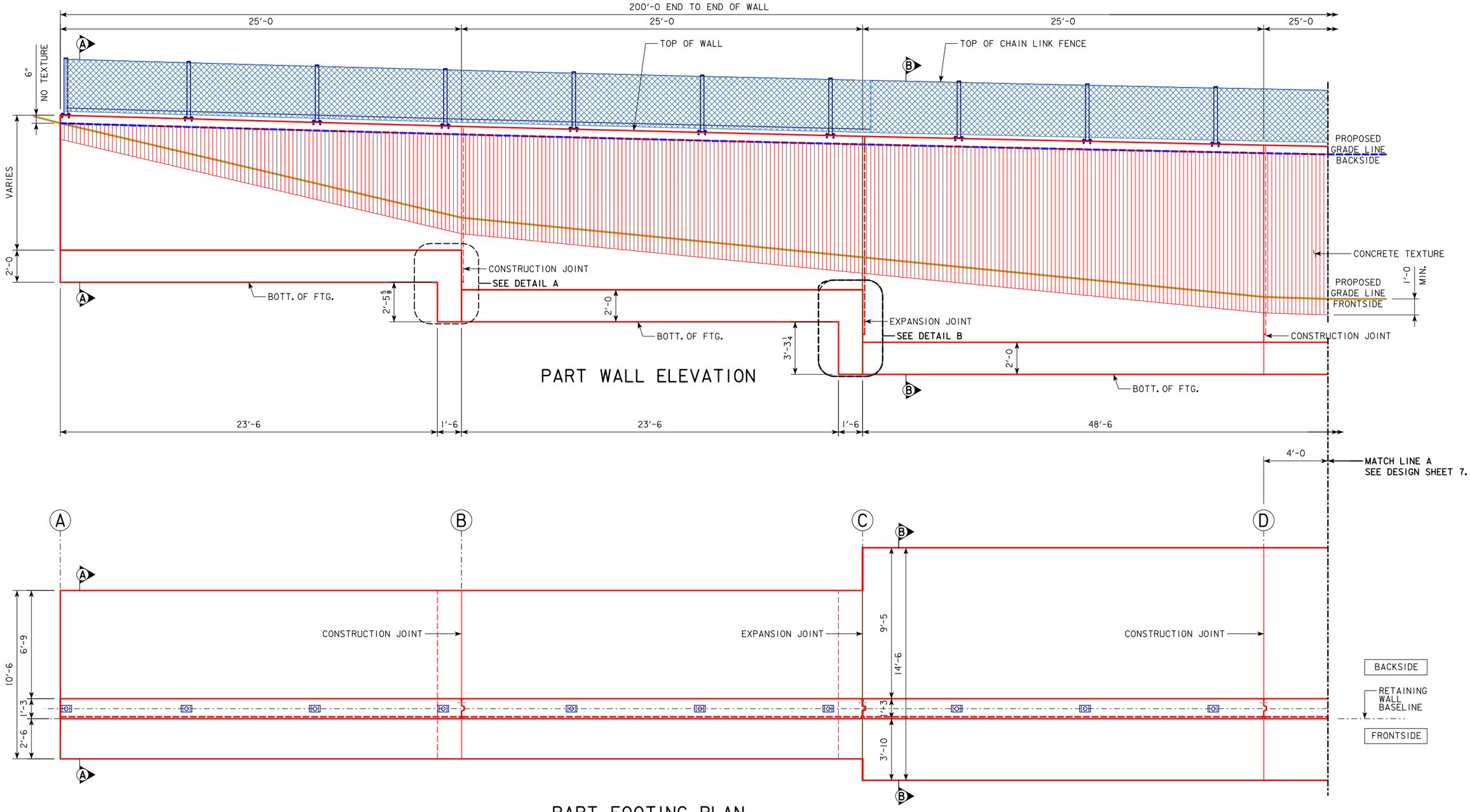

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

DESIGN FOR

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

BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

WALL SECTION DETAILS
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.6

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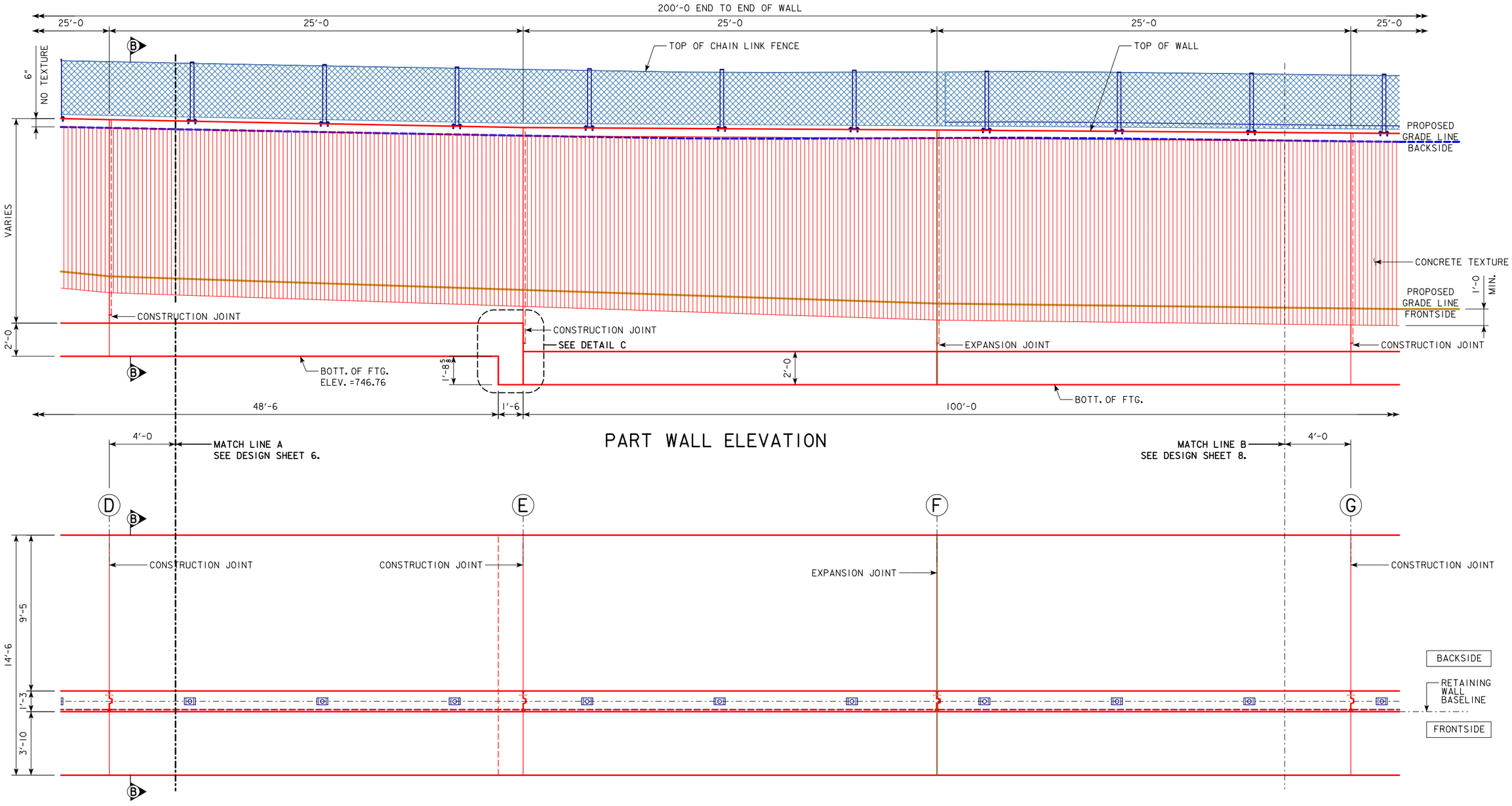

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

DESIGN FOR

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

BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

WALL SECTION DETAILS LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.7

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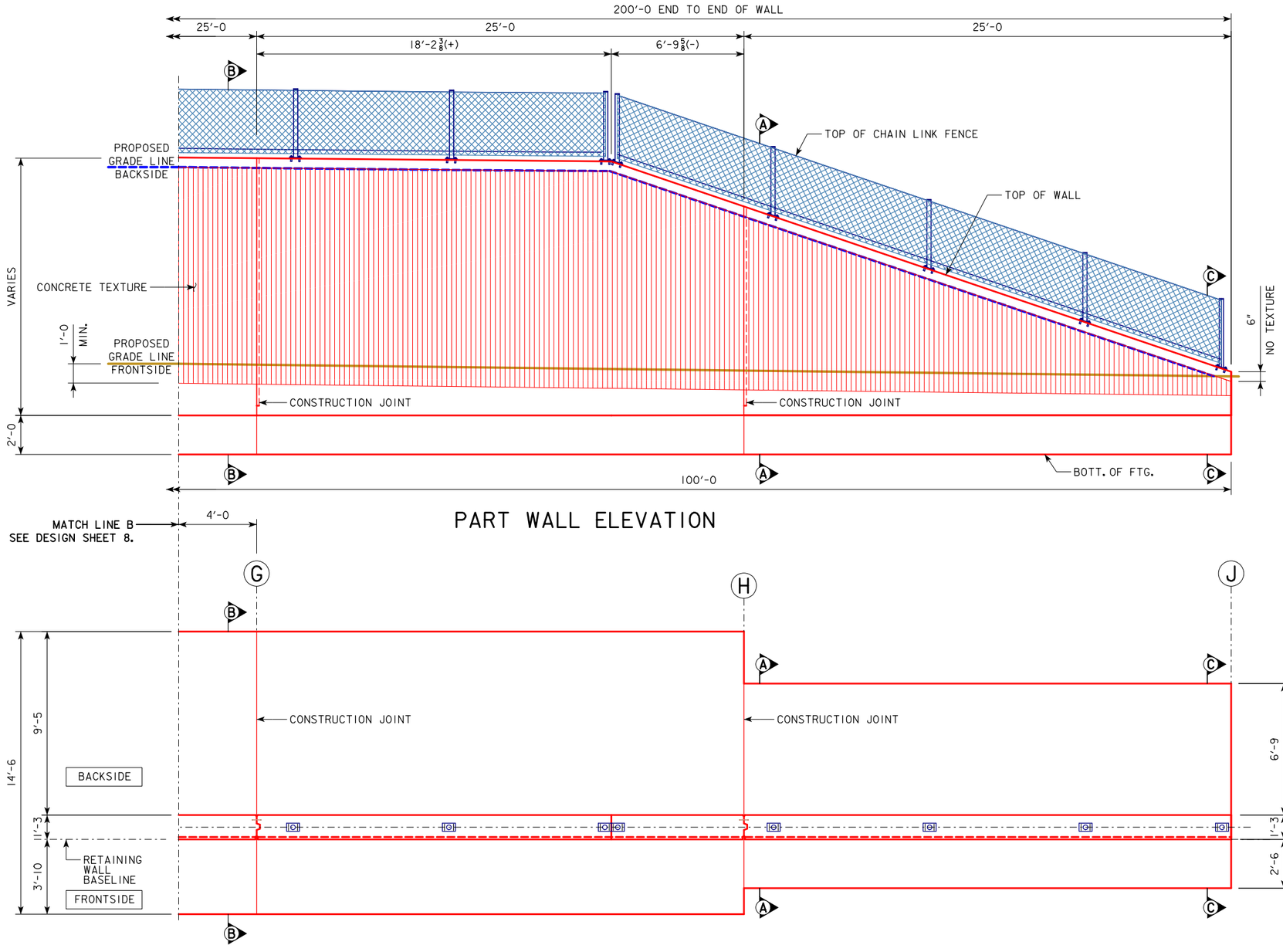

PART WALL ELEVATION

PART FOOTING PLAN

N

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

DESIGN FOR

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

BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

WALL SECTION DETAILS

LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON INC

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.8

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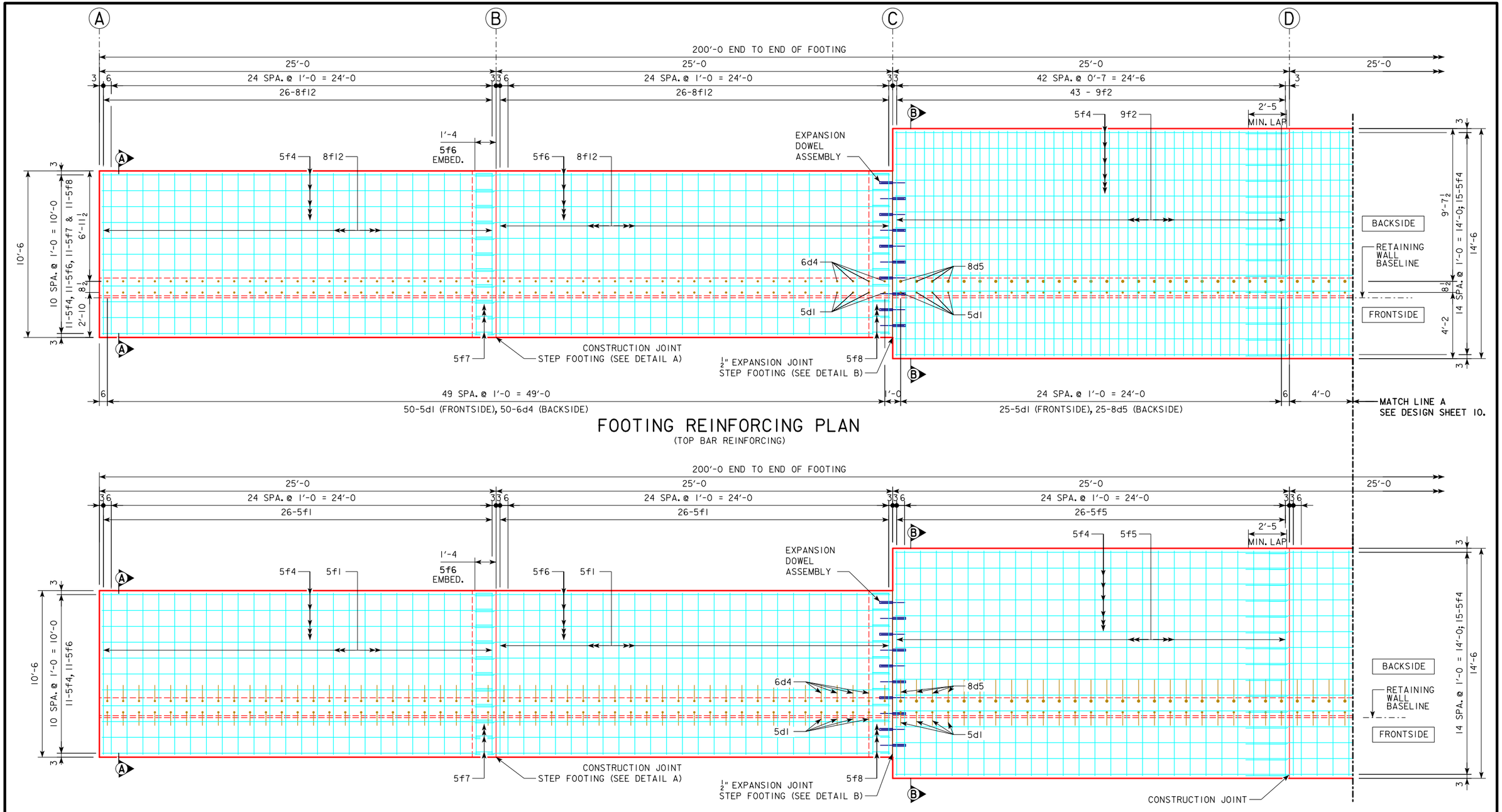


FOOTING REINFORCING PLAN
(TOP BAR REINFORCING)

FOOTING REINFORCING PLAN
(BOTTOM BAR REINFORCING)

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

RETAINING WALL NOT SHOWN FOR CLARITY.

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

BEGIN STATION 40864+75.00
END STATION 40866+75.00
NOVEMBER 2018

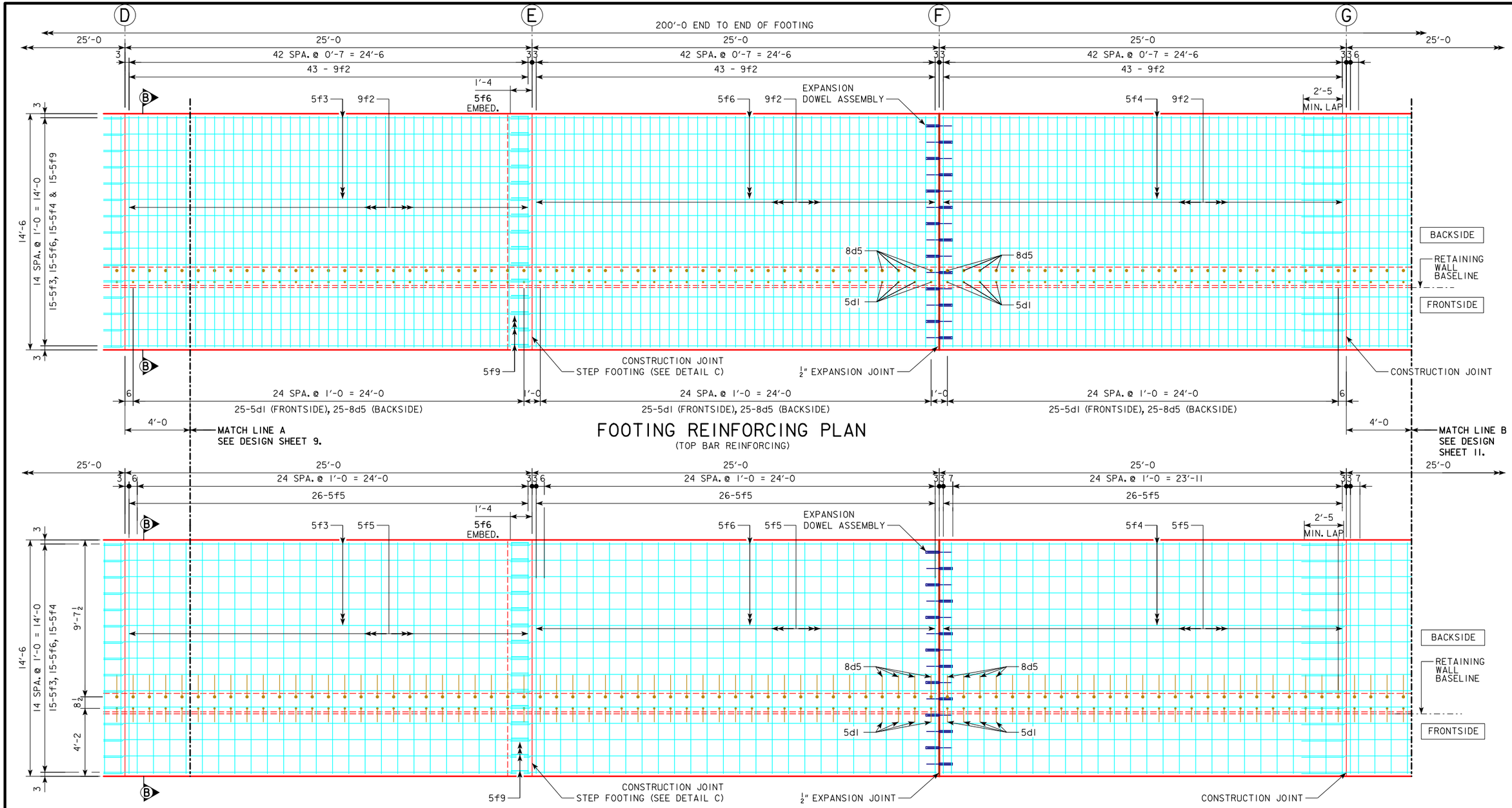
FOOTING REINFORCING
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.9



FOOTING REINFORCING PLAN
(TOP BAR REINFORCING)

FOOTING REINFORCING PLAN
(BOTTOM BAR REINFORCING)

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

RETAINING WALL NOT SHOWN FOR CLARITY.

DESIGN FOR
200'-0 × VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL
BEGIN STATION 40864+75.00
END STATION 40866+75.00
NOVEMBER 2018
FOOTING REINFORCING
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 10 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON INC | LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.10

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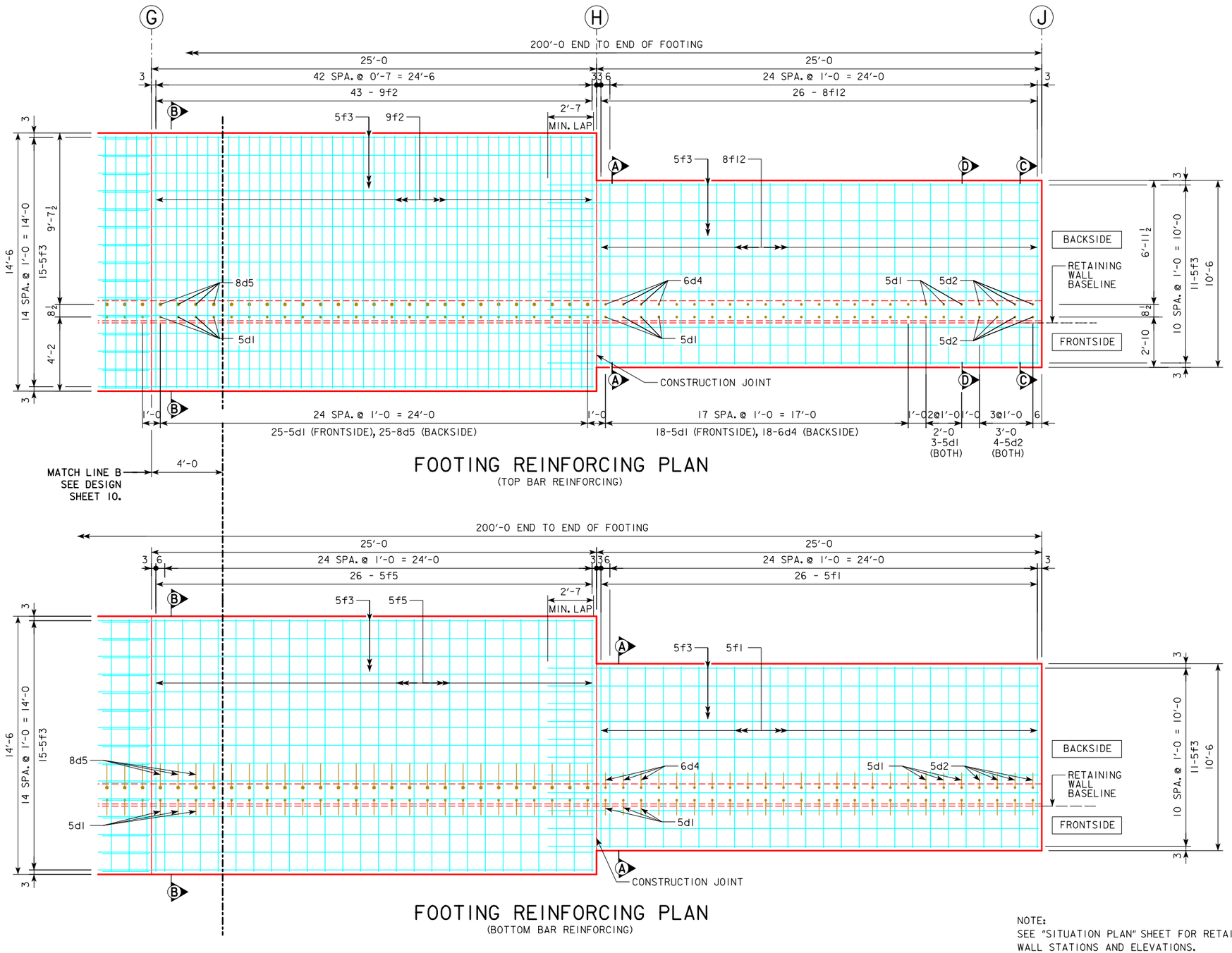


FOOTING REINFORCING PLAN
(TOP BAR REINFORCING)

FOOTING REINFORCING PLAN
(BOTTOM BAR REINFORCING)

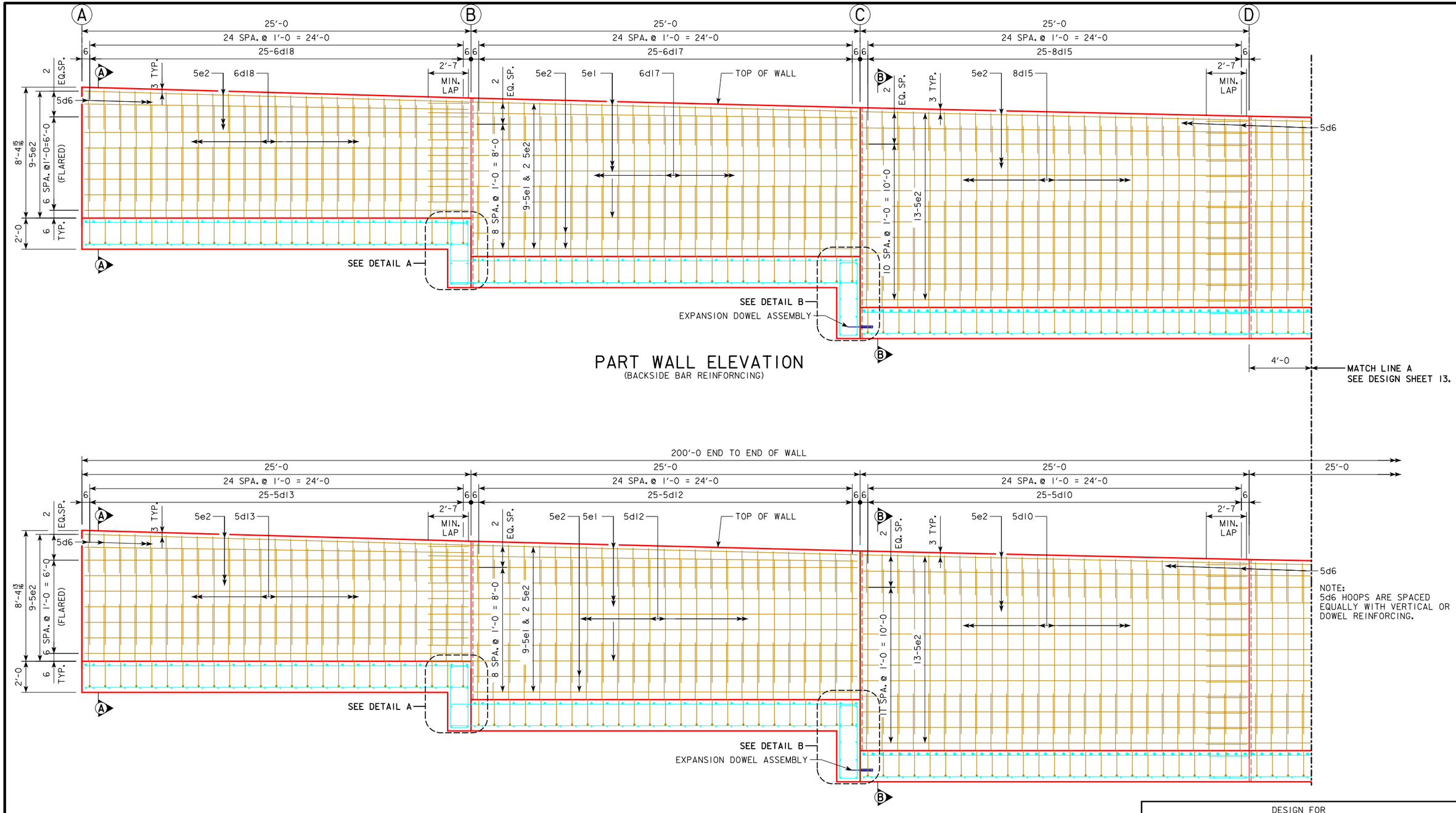
NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

RETAINING WALL NOT SHOWN FOR CLARITY.

DESIGN FOR
200'-0 × VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL
BEGIN STATION 40864+75.00
END STATION 40866+75.00
NOVEMBER 2018
FOOTING REINFORCING
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 11 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON
LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.11



PART WALL ELEVATION
(BACKSIDE BAR REINFORNCING)

PART WALL ELEVATION
(FRONTSIDE BAR REINFORNCING)

NOTE:
5d6 HOOPS ARE SPACED EQUALLY WITH VERTICAL OR DOWEL REINFORCING.

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

CHAIN LINK FENCE NOT SHOWN FOR CLARITY
SEE DESIGN SHEETS 18 & 19 FOR DETAILS.

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

BEGIN STATION 40864+75.00
END STATION 40866+75.00
NOVEMBER 2018

WALL REINFORCING
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 12 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON INC

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.12

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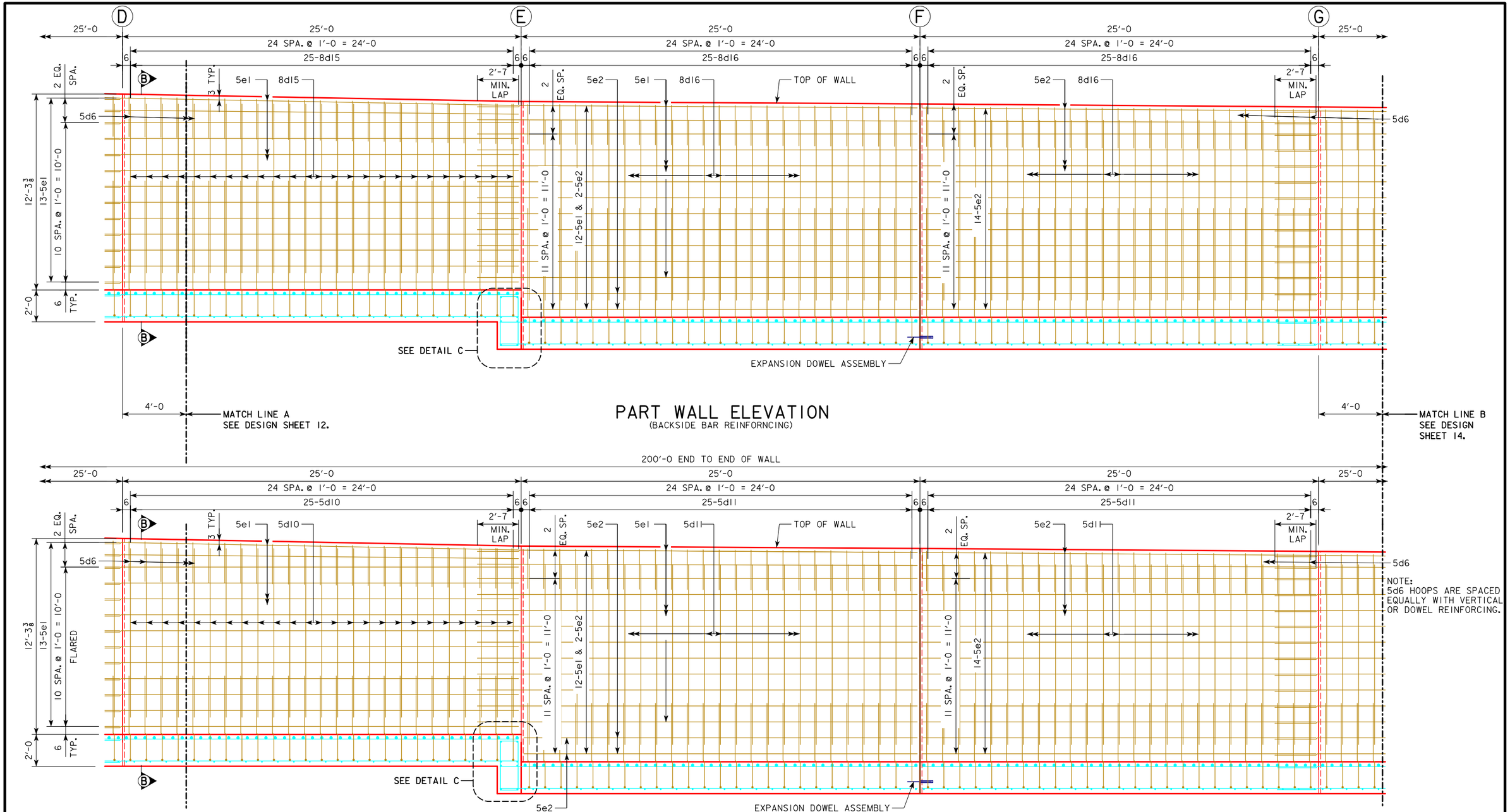

PART WALL ELEVATION
(BACKSIDE BAR REINFORNCING)

PART WALL ELEVATION
(FRONTSIDE BAR REINFORNCING)

NOTE:
5d6 HOOPS ARE SPACED EQUALLY WITH VERTICAL OR DOWEL REINFORCING.

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

CHAIN LINK FENCE NOT SHOWN FOR CLARITY
SEE DESIGN SHEETS 18 & 19 FOR DETAILS.

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

BEGIN STATION 40864+75.00
END STATION 40866+75.00
NOVEMBER 2018

WALL REINFORCING
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 13 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.13

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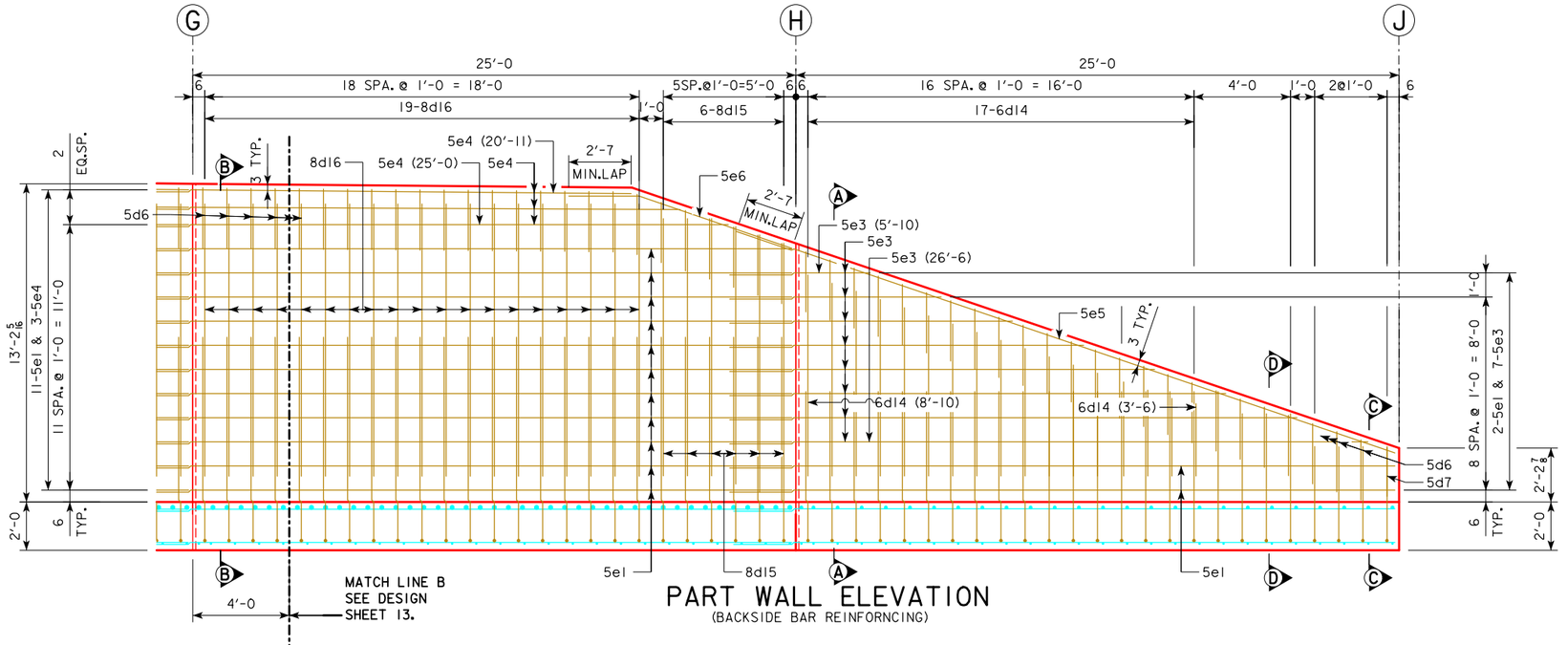
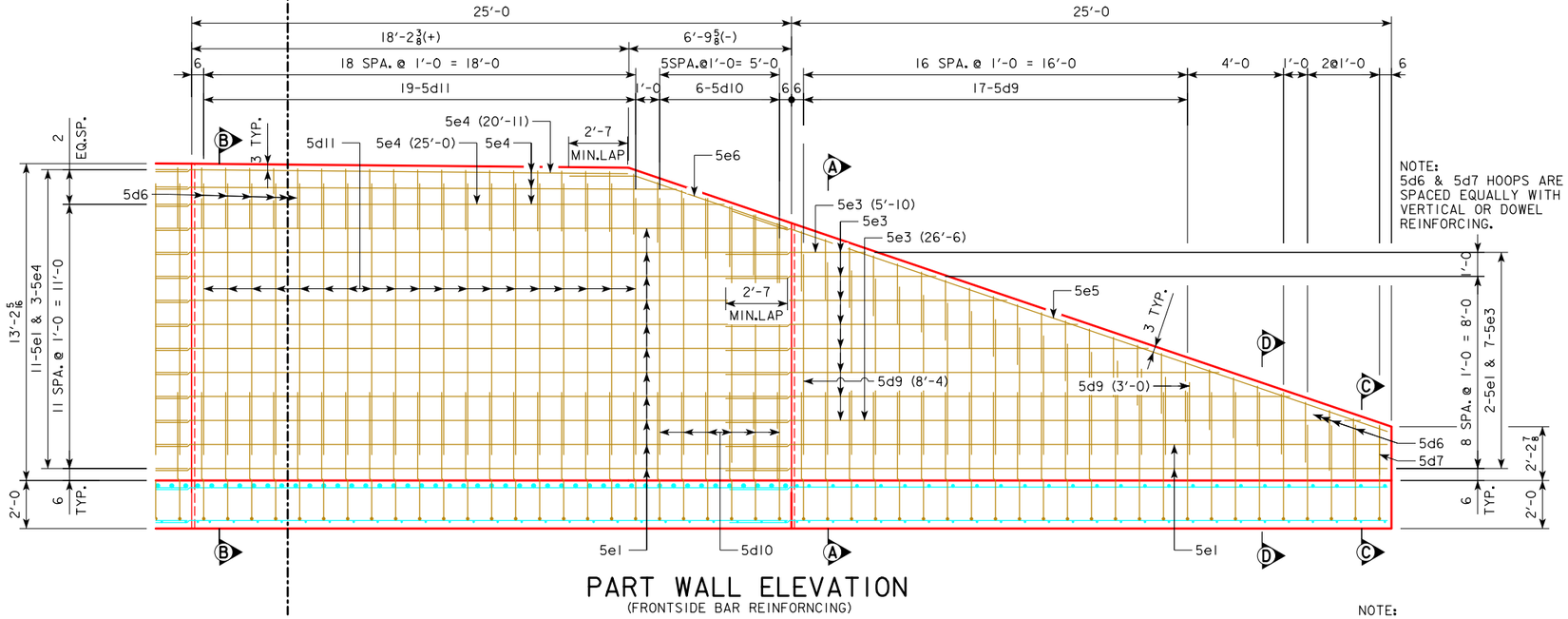


PART WALL ELEVATION
(BACKSIDE BAR REINFORNCING)



PART WALL ELEVATION
(FRONTSIDE BAR REINFORNCING)

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

CHAIN LINK FENCE NOT SHOWN FOR CLARITY SEE DESIGN SHEETS 18 & 19 FOR DETAILS.

DESIGN FOR

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

BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

WALL REINFORCING
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 14 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.14

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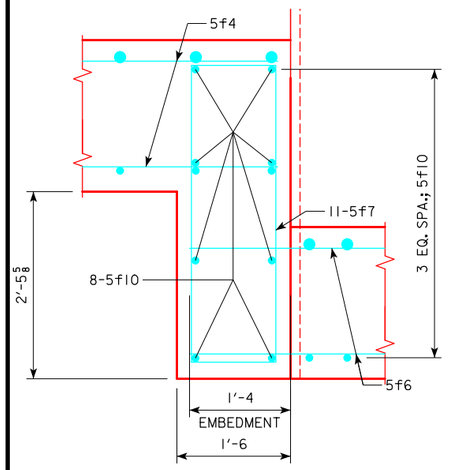
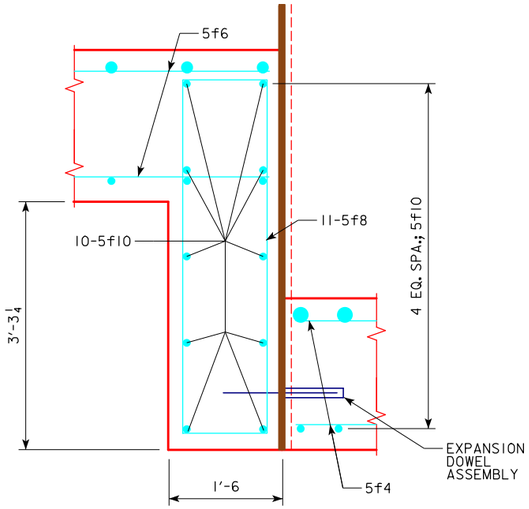


DETAIL A



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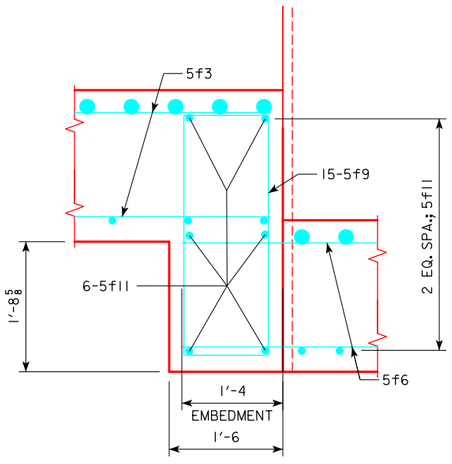

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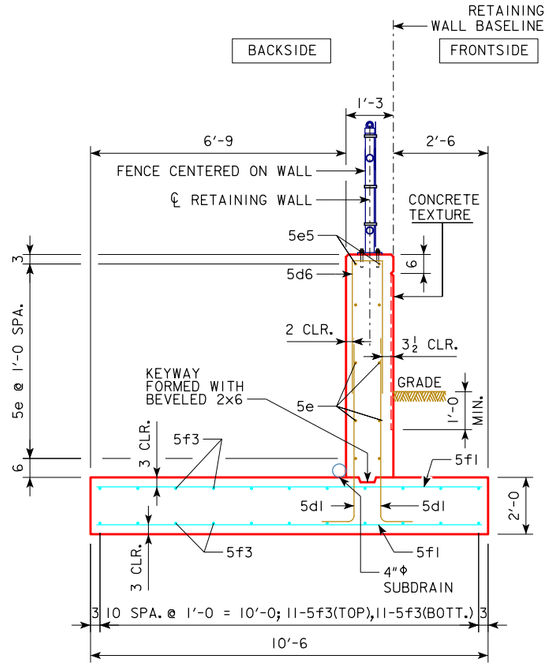
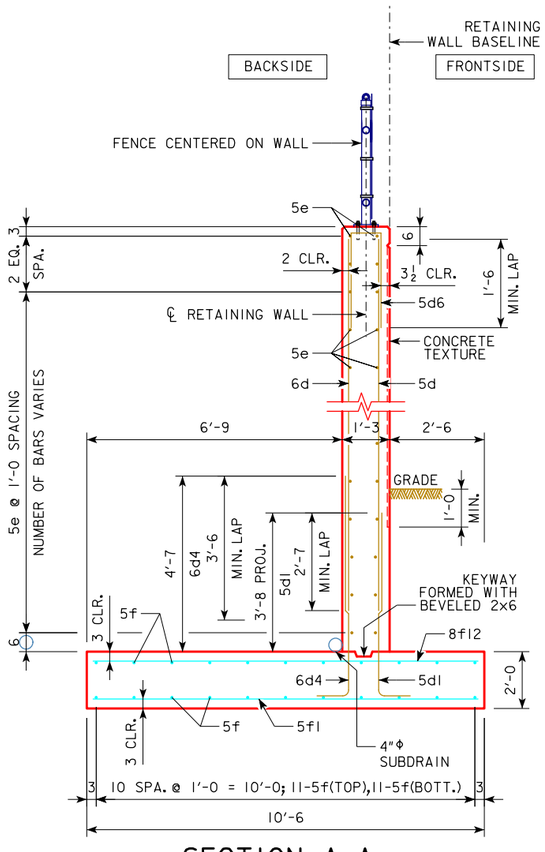
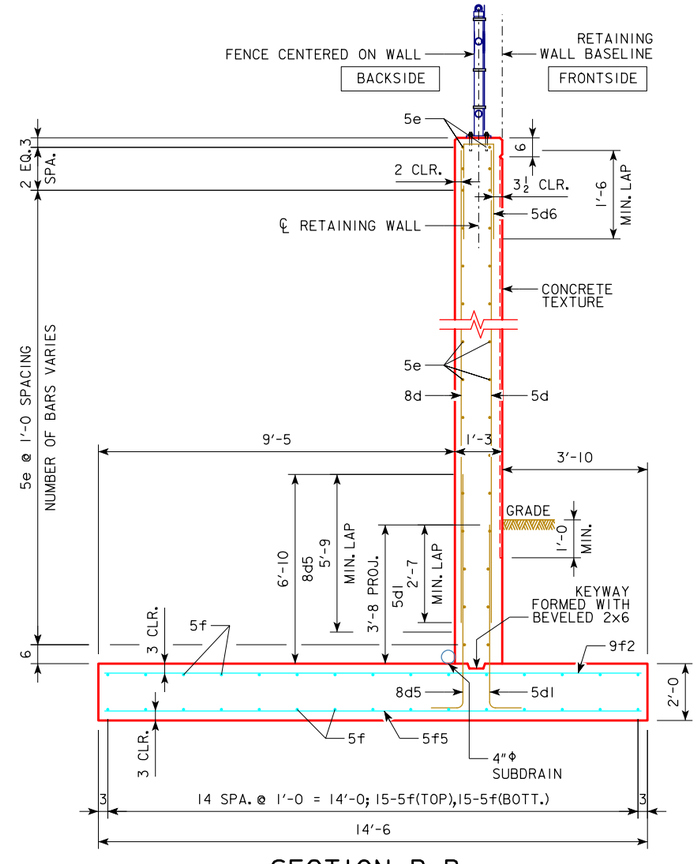


SECTION D-D



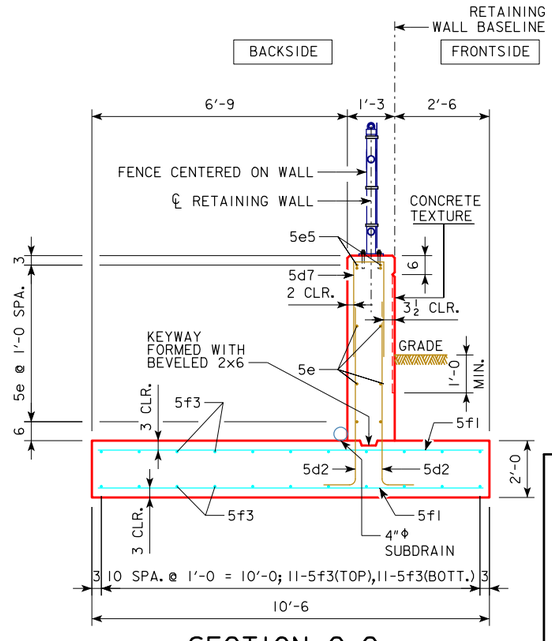
SECTION A-A

(LOOKING NORTH, BETWEEN A-C & H-J)



SECTION B-B

(LOOKING NORTH, BETWEEN C-H)



SECTION C-C

(LOOKING NORTH, BETWEEN H-J)

KEYWAY NOTE:

NOTE: KEYWAYS SHALL BE FORMED IN THE FOOTING BETWEEN THE PROTRUDING WALL REINFORCING BARS. KEYWAYS SHALL BE CONTINOUS BETWEEN WALL JOINTS AND SHALL TERMINATE WITH APPROXIMATELY 6 INCHES CLEARANCE FROM WALL JOINTS OR WALL ENDS. KEYWAYS FOR WALL SECTIONS SHALL BE FORMED WITH BEVELED 2"x6" LUMBER.

NOTE:

SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 16 FOR ADDITIONAL SECTION DETAILS AND NOTES.

SEE ROADWAY PLANS FOR SUBDRAIN LAYOUT.

DESIGN FOR

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

BEGIN STATION 40864+75.00 NOVEMBER 2018

END STATION 40866+75.00

RETAINING WALL DETAILS LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 15 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.15

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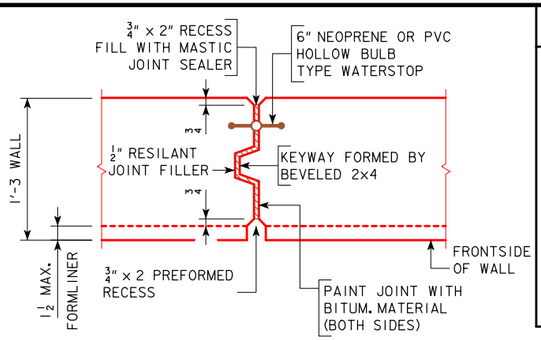
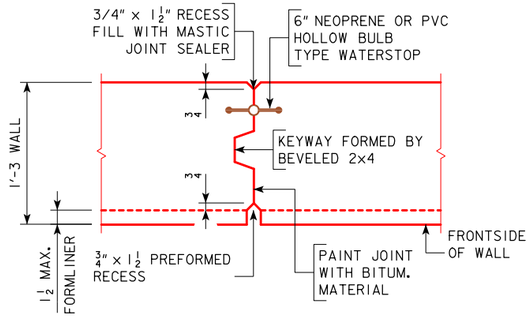
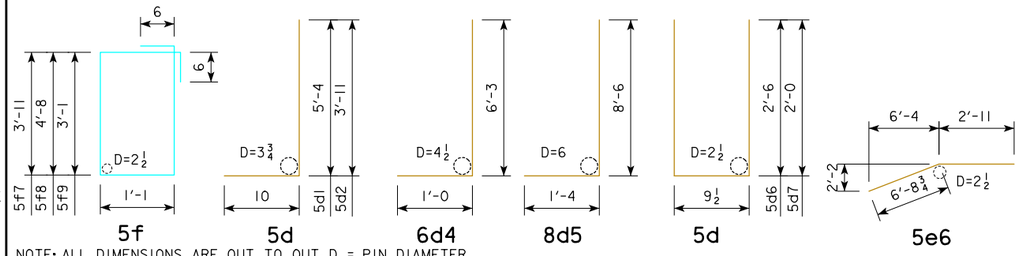


WALL EXPANSION JOINT DETAIL



WALL CONSTRUCTION JOINT DETAIL

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

NON-COATED REINFORCING STEEL - FOOTING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5f1	FOOTING TRANSV. BOTT. (SECT. A-A & C-C)	—	78	10'-2	827
9f2	FOOTING TRANSV. TOP (SECT. B-B)	—	215	14'-2	10,356
5f3	FOOTING LONGIT. TOP & BOTT. (SECT. B-B & C-C)	—	82	27'-5	2,345
5f4	FOOTING LONGIT. TOP & BOTT. (SECT. A-A & B-B)	—	82	24'-8	2,110
5f5	FOOTING TRANSV. BOTT. (SECT. B-B)	—	130	14'-2	1,921
5f6	FOOTING LONGIT. TOP & BOTT. (SECT. A-A & B-B)	—	52	26'-2	1,419
5f7	STEP HOOP (DETAIL A)	▭	11	11'-0	126
5f8	STEP HOOP (DETAIL B)	▭	11	12'-6	143
5f9	STEP HOOP (DETAIL C)	▭	15	9'-4	146
5f10	STEP TRANSV. (DETAIL A & B)	—	18	10'-2	191
5f11	STEP TRANSV. (DETAIL C)	—	6	14'-2	89
8f12	FOOTING TRANSV. TOP (SECT. A-A & C-C)	—	78	10'-2	2,117
				TOTAL (LBS)	21,790

EPOXY-COATED REINFORCING STEEL

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5d1	FOOTING TO WALL DOWELS (ALL SECTIONS)	⌊	199	6'-2	1,280
5d2	FOOTING TO WALL DOWELS (SECT. C-C)	⌊	8	4'-9	40
6d4	FOOTING TO WALL DOWELS (SECT. A-A)	⌊	68	7'-3	740
8d5	FOOTING TO WALL DOWELS (SECT. B-B)	⌊	125	9'-10	3,282
5d6	WALL, TOP, HOOPS	⌐	199	5'-10	1,211
5d7	WALL, TOP, HOOPS (SECT. C-C)	⌐	1	4'-10	5
5d9	WALL, VERTICAL (SECT. C-C)	—	17	VARIES	100
5d10	WALL, VERTICAL (SECT. B-B)	—	56	10'-8	623
5d11	WALL, VERTICAL (SECT. B-B)	—	69	11'-4	816
5d12	WALL, VERTICAL (SECT. A-A)	—	25	8'-0	209
5d13	WALL, VERTICAL (SECT. A-A)	—	25	6'-2	161
6d14	WALL, VERTICAL (SECT. A-A)	—	17	VARIES	157
8d15	WALL, VERTICAL (SECT. B-B)	—	56	10'-8	1,595
8d16	WALL, VERTICAL (SECT. B-B)	—	69	11'-4	2,088
6d17	WALL, VERTICAL (SECT. B-B)	—	25	8'-0	300
6d18	WALL, VERTICAL (SECT. A-A)	—	25	6'-2	232
5e1	WALL, HORIZONAL (ALL SECTIONS)	—	94	27'-7	2,704
5e2	WALL, HORIZONAL (SECT. A-A & B-B)	—	80	24'-8	2,058
5e3	WALL, HORIZONAL (SECT. A-A)	—	14	VARIES	236
5e4	WALL, HORIZONAL (SECT. B-B)	—	3	VARIES	72
5e5	WALL, HORIZONAL (SECT. A-A, C-C & D-D)	—	2	29'-0	60
5e6	WALL, HORIZONAL (SECT. B-B)	⌒	2	9'-7	20
				TOTAL (LBS)	17,989

CONCRETE PLACEMENT SUMMARY

LOCATION	WALL	FOOTING	TOTAL
BETWEEN A & C	20.8	42.4	63.2
BETWEEN C & F	44.1	82.2	126.3
BETWEEN F & H	30.2	53.7	83.9
BETWEEN H & J	7.5	19.6	27.1
TOTAL - CU. YDS.	102.6	197.9	300.5

EXPANSION DOWEL NOTES:

EXPANSION DOWELS ARE REQUIRED AT THE FOOTING EXPANSION JOINT.

ALL COSTS ASSOCIATED WITH EXPANSION DOWELS AND DOWEL SUPPORT ASSEMBLIES SHALL BE INCIDENTAL TO THE PRICE BID FOR "STRUCTURAL CONCRETE (MISCELLANEOUS)".

EXPANSION DOWEL BARS SHALL BE 1 1/2" DIAMETER, 18" LONG. CENTER TO CENTER SPACING OF DOWELS SHALL BE 12". CENTERLINES OF INDIVIDUAL DOWELS SHALL BE PARALLEL TO THE OTHER DOWELS IN THE ASSEMBLY WITHIN 1/8".

EACH DOWEL BAR SHALL BE FITTED WITH APPROVED 6"LONG EXPANSION TUBE AT ONE END. EXPANSION TUBE SHALL BE POSITIONED TO PROVIDE 1" CLEAR SPACE FOR DOWEL MOVEMENT. THE EXPANSION SIDE OF THE DOWEL SHALL BE COATED TO PREVENT BOND WITH THE FOOTING. THE OPPOSITE SIDE OF THE DOWEL SHALL BE WELDED TO THE WIRE DOWEL SUPPORT ASSEMBLY. DOWEL BARS SHALL BE PLACED TO ALTERNATE FIXED ENDS AND EXPANSION TUBE ENDS ALONG THE LENGTH OF THE SUPPORT ASSEMBLY.

WIRES FOR THE DOWEL SUPPORT ASSEMBLY SHALL HAVE A MINIMUM TENSILE STRENGTH OF 50 KSI. MINIMUM WIRE DIAMETER SHALL BE AS FOLLOWS:

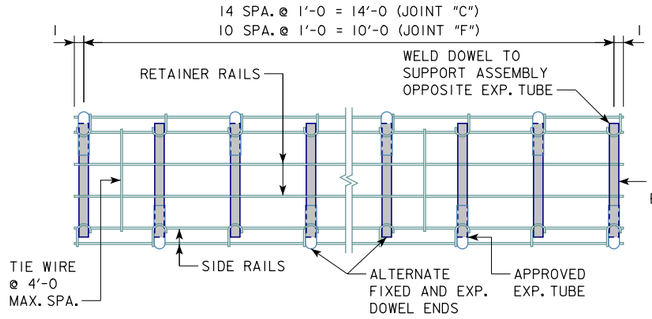
LOCATION	MIN. WIRE DIAMETER
LEGS	0.306" DIAMETER
SIDE RAILS	0.306" DIAMETER
RETAINER RAILS	0.250" DIAMETER WIRE
TIE WIRES	0.135" DIAMETER
ANCHOR PINS	0.306" DIAMETER

CLIP AND REMOVE CENTER PORTION OF TIE WIRE DURING FIELD ASSEMBLY.

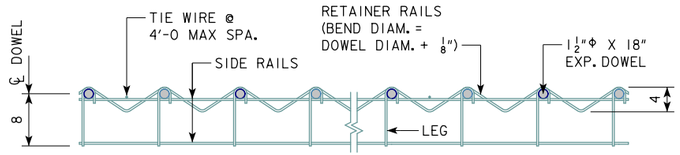
A MINIMUM OF 8 ANCHOR PINS (4 PER SIDE, EVENLY SPACED) ARE REQUIRED AT EACH EXPANSION JOINT TO PREVENT MOVEMENT OF EXPANSION DOWEL ASSEMBLY. SEE ROAD STANDARD PV-101 FOR TYPICAL ANCHOR PIN DETAIL.

WATERSTOP NOTE:

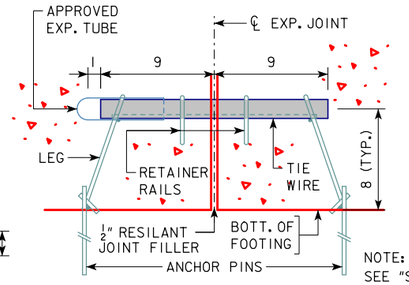
NOTE: WATERSTOP TO BE CENTER BULB TYPE. WATERSTOPS ARE TO EXTEND FROM TOP OF FOOTINGS TO 6" BELOW TOP OF WALLS.



EXPANSION DOWEL ASSEMBLY PLAN



EXPANSION DOWEL ASSEMBLY ELEVATION



SECTION THROUGH EXPANSION JOINT

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 FOR ADDITIONAL SECTION DETAILS AND NOTES.

DESIGN FOR

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

BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

REINFORCING BAR LIST
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 16 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON INC

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.16

CONCRETE RUSTICATION NOTES

STRIPS AND PANELS USED AS INSERTS WITHIN CONCRETE FORMS TO CREATE THE RUSTICATION FEATURES MAY BE MADE OF WOOD, STEEL, PLASTIC OR OTHER NONPOROUS MATERIAL CAPABLE OF WITHSTANDING ANTICIPATED CONCRETE POUR PRESSURES WITHOUT PHYSICAL DEFECTS. WOOD INSERTS, IF USED, SHALL BE FREE OF WARP, TWIST, CHECKS OR CRACKS, AND SHALL BE PRESOAKED PRIOR TO PLACEMENT OF CONCRETE IN THE FORMS.

RUSTICATION INSERTS SHALL EASILY ATTACH TO FORMS AND SHALL NOT ALLOW LEAKAGE OF CONCRETE BETWEEN THE FORM AND THE INSERT. WHEN STEEL FORMS ARE USED, RUSTICATION STRIPS MAY BE RIGIDLY ATTACHED TO THE INSIDE SURFACES OF THE FORMS. WHEN STEEL FORMS ARE NOT USED, RUSTICATION STRIPS AND OTHER INSERTS FOR SMALL RECESSES ON EXPOSED CONCRETE SURFACES SHALL BE FASTENED TO THE FORMS IN A MANNER THAT WILL PERMIT THEM TO REMAIN IN PLACE WHEN THE FORMS ARE REMOVED. LEAVE INSERTS IN PLACE UNTIL THEY CAN BE REMOVED WITHOUT DAMAGE TO THE SURROUNDING CONCRETE.

THE INSERTS SHALL BE DESIGNED TO FORM SURFACES AND FEATURES CONFORMING TO THE DESIGN INTENT INCLUDING THE SHAPE, LINES, DEPTHS AND DIMENSIONS SHOWN IN THE PLANS. CREATE INSERTS USING A MINIMUM NUMBER OF SPLICE JOINTS IN THEIR LENGTH. SPLICES, IF USED, SHALL BE TIGHTLY JOINED SO AS NOT TO ALLOW GAPS OR LEAKS, AND SHALL NOT CREATE ANY CHANGE IN ALIGNMENT OR SHAPE OF THE RUSTICATION FEATURE.

FOR RUSTICATION FEATURES FOLLOWING THE PERIMETER OF ROUNDED SURFACES, IT MAY BE NECESSARY TO USE MULTIPLE LAYERS OF INSERT MATERIAL IN ORDER TO ACHIEVE THE RADIUS CURVE. THIS IS ACCEPTABLE, PROVIDED THAT THE FINAL SHAPE, LINE, DEPTH, AND DIMENSION OF THE FEATURES ARE MAINTAINED IN THE FINAL RESULT.

DURING LOADING OF FORMS WITH CONCRETE, TAKE EXTRA CARE TO ENSURE PROPER CONSOLIDATION OF CONCRETE AROUND ALL RUSTICATION INSERTS TO PRESERVE THE SHAPE, LINE AND DEPTH OF ALL INTENDED FEATURES IN THE FINAL CONCRETE SURFACE. FOLLOWING REMOVAL OF FORMS, REPAIR ALL DEFECTS TO ACHIEVE THE RUSTICATION FEATURES AS SPECIFIED IN THE PLANS. PATCH VOIDS, HONEYCOMB AREAS, ETC., IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. IF SURFACES WILL NOT RECEIVE A COLORED SEALER COATING, ADD WHITE CEMENT TO THE PATCHING MORTAR TO LIGHTEN IT IN ORDER TO MATCH SURROUNDING CONCRETE WHEN DRY. COMPLETED SURFACE SHALL BE FREE FROM BLEMISHES, SURFACE VOIDS AND CONSPICUOUS FORM MARKS TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL CORRECT ANY SURFACE DEFECTS AT NO ADDITIONAL COST TO THE PROJECT.

ALL COSTS ASSOCIATED WITH CONCRETE RUSTICATION ARE TO BE INCLUDED IN THE BID ITEM, "STRUCTURAL CONCRETE (MISCELLANEOUS)".

WALL CONCRETE TEXTURE NOTES

THE EXPOSED RETAINING WALL SURFACE AS DESIGNATED IN THE PLANS SHALL HAVE A SURFACE TEXTURE. WORK PERFORMED TO CREATE THE SURFACE TEXTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND THE FOLLOWING:

THE TEXTURED CONCRETE SURFACE SHALL BE FORMED USING A FORM LINING SYSTEM MADE OF HIGH-STRENGTH URETHANE ELASTOMER, PLASTIC, FLEXIBLE FOAM, OR OTHER SUITABLE MATERIALS CAPABLE OF WITHSTANDING ANTICIPATED CONCRETE POUR PRESSURES WITHOUT LEAKAGE OR CAUSING PHYSICAL DEFECTS. FORM LINERS SHALL ALLOW EASY REMOVAL FROM FORMED CONCRETE WITHOUT CAUSING CONCRETE SURFACE DAMAGE. IF RECOMMENDED BY THE FORM LINER MANUFACTURER, STRUCTURAL BACKERS SHALL BE USED TO PREVENT DEFORMATION OF THE LINER DURING LOADING OF THE FORMS. THE LINERS SHALL BE DESIGNED TO AVOID VISIBLE PATTERN REPEATS.

THE FORM LINER USED SHALL PRODUCE A TEXTURED EFFECT OF VERTICAL, FRACTURED-FACE RIBS ON APPROXIMATELY 2-INCH CENTERS. MAXIMUM TEXTURE DEPTH SHALL BE 1-1/2 INCHES, AND MINIMUM TEXTURE DEPTH SHALL BE 1-3/8 INCHES. THE CONTRACTOR SHALL SUBMIT MANUFACTURER'S CUT SHEETS FOR THE FORM LINER INTENDED FOR USE ON THE PROJECT TO THE ENGINEER FOR APPROVAL. FORM LINER APPROVAL MUST BE RECEIVED PRIOR TO PURCHASING FORM LINER MATERIALS OR BUILDING WALL FORMS. OBTAIN FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURERS:

1. ARCHITECTURAL POLYMERS (PATTERN NO. 204)
2. FITZGERALD FORMLINERS (PATTERN NO. 16959)
3. GREENSTREAK (PATTERN NO. 367)
4. SCOTT SYSTEM, INC. (PATTERN NO. 129A)
5. CUSTOM ROCK INTERNATIONAL (PATTERN NO. 206)
6. SUBMIT ALL OTHER UNLISTED MANUFACTURERS AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORM LINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, OFFICE OF BRIDGES AND STRUCTURES, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORM LINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

DURING LOADING OF FORMS WITH CONCRETE, CARE SHOULD BE TAKEN TO ADEQUATELY VIBRATE CONCRETE IN ORDER TO MAINTAIN ALL INTENDED FEATURES OF THE FORM LINER IN THE FINAL SURFACE AND TO PREVENT VOIDS. FOLLOWING REMOVAL OF FORMS, FINISH MINOR DEFECTS TO BLEND WITH THE BALANCE OF THE SURFACE TEXTURE. THE COMPLETED SURFACE SHALL BE FREE OF BLEMISHES, DISCOLORATIONS, SURFACE VOIDS AND CONSPICUOUS FORM MARKS TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL CORRECT ANY SURFACE DEFECTS AT NO EXTRA COST TO THE PROJECT.

RELEASE AGENTS USED SHALL BE VERIFIED TO BE COMPATIBLE WITH FORM LINER MATERIAL AND WITH THE CONCRETE MIX, AND SHALL BE NON-STAINING. RELEASE AGENT SHALL BE APPLIED IN ACCORDANCE WITH THE FORM LINER MANUFACTURER'S RECOMMENDATIONS.

STRIP FORMWORK USING TECHNIQUES IN ACCORDANCE WITH LINER MANUFACTURER'S RECOMMENDATIONS AFTER THE CONCRETE HAS ACHIEVED THE STRENGTHS AND CURE TIMES REQUIRED BY THE PLANS AND APPLICABLE SPECIFICATIONS AND AFTER THE CONCRETE HAS SUFFICIENT STRENGTH TO AVOID SURFACE DAMAGE. CLEAN AND REPAIR FORM LINER SURFACES PRIOR TO RE-USE. SPLIT, FRAYED, DELAMINATED OR OTHERWISE DAMAGED FORM LINERS SHALL NOT BE USED.

ALL COSTS ASSOCIATED WITH CONCRETE TEXTURING AND FORM LINERS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM, "STRUCTURAL CONCRETE (MISCELLANEOUS)".

DESIGN FOR

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

BEGIN STATION 40864+75.00 NOVEMBER 2018
END STATION 40866+75.00

RUSTICATION AND TEXTURED CONCRETE NOTES

LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 17 OF 19 FILE NO. 31286 DESIGN NO. 918

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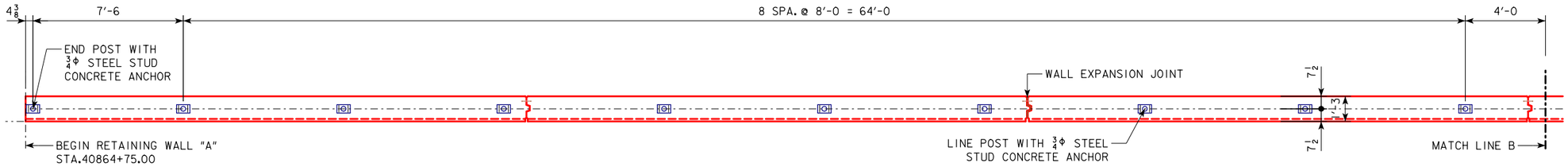
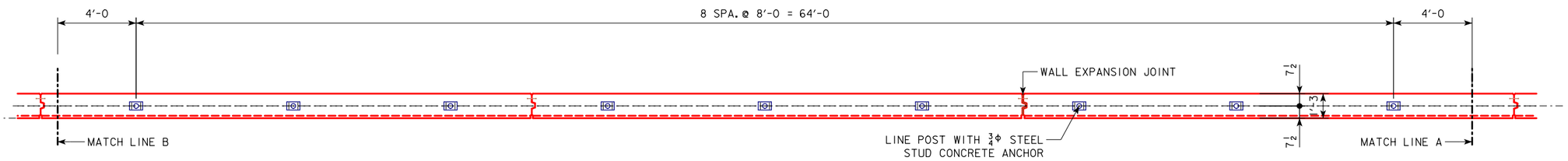
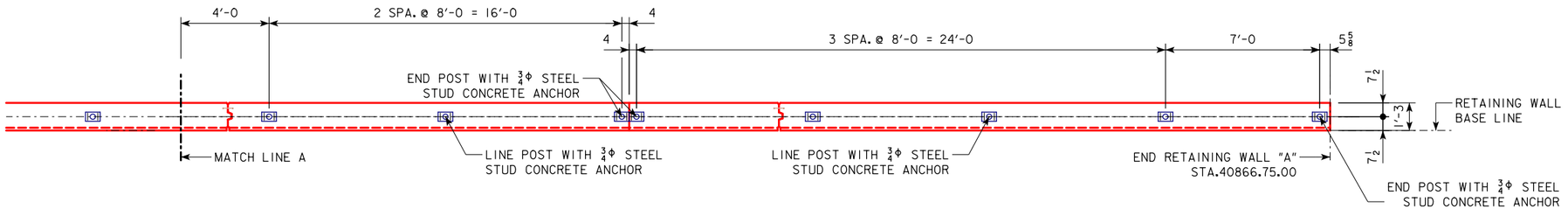


PARTIAL CHAIN FENCE PLAN



PARTIAL CHAIN FENCE PLAN



PARTIAL CHAIN FENCE PLAN

N

STEEL CHAIN LINK FENCE NOTES:

THE CHAIN LINK FENCE IS TO BE BID ON A LINEAR FOOT BASIS MEASURED FROM ℄ TO ℄ OF END POSTS. THE PRICE BID FOR "FENCE, CHAIN LINK, VINYL COATED" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING CONCRETE ANCHORS AND SHIMS, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE FENCE IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.

THE STUD CONCRETE ANCHORS SHALL BE GALVANIZED AND HAVE A MINIMUM PULLOUT STRENGTH OF 8000 POUNDS BASED ON 4000 PSI CONCRETE.

THE MATERIAL FOR POSTS, BRACES AND RAILS SHALL BE STEEL PIPE IN ACCORDANCE WITH ARTICLE 4154.10, A, OF THE STANDARDS SPECIFICATIONS. BASE PLATES AND SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A36. POSTS AND BASE PLATES SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123. SPECIAL FITTINGS SHALL BE IN ACCORDANCE WITH ARTICLE 4154.11, OF THE STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED.

THE FENCE SHALL BE TRUE TO LINE, TAUT, AND COMPLY WITH THE BEST PRACTICE FOR FENCE CONSTRUCTION OF THIS TYPE. ALL ENDS OF WIRES SHALL BE TURNED SO THAT THEY EXTEND AWAY FROM THE FILL SIDE OF THE FENCE.

CHAIN LINK FABRIC, RAILS, AND FENCE ACCESSORIES ARE TO BE PVC COATED IN ACCORDANCE WITH ASTM F 668, CLASS 2B. COLOR SHALL BE BLACK IN ACCORDANCE WITH ASTM F 934. THE COST OF PVC COATING IS TO BE INCLUDED IN THE PRICE BID FOR "FENCE, CHAIN LINK, VINYL COATED".

AFTER GALVANIZING, THE FENCE POST AND BASE PLATE ASSEMBLIES SHALL BE CLEANED AND PREPARED FOR POWDER COATING IN ACCORDANCE WITH ASTM D 6386, THEN POWDER COATED BY AN APPROVED POWDER COATING SHOP MEETING THE REQUIREMENTS LISTED IN IOWA DOT MATERIALS I.M. 568. PREPARATION FOR POWDER COATING SHALL INCLUDE ZINC PHOSPHATE PRETREATMENT AND PREHEATING OF RAILING COMPONENTS. PREHEATING TEMPERATURE SHALL NOT EXCEED 400° F. POWDER COATING MATERIALS SHALL BE COMPATIBLE WITH THE GALVANIZED COATING. POWDER COATING SHALL INCLUDE THE USE OF DEGASSING GRADE POLYESTER POWDER AND AN ANTI-BLISTERING AGENT. MINIMUM COATING COVERAGE SHALL BE 3 MILS WHEN MEASURED IN ACCORDANCE WITH ASTM D 2967. SUBMIT PROPOSED PREPARATION METHODS AND PRODUCT DATA FOR ALL COATINGS PROPOSED FOR USE TO THE IOWA DOT, OFFICE OF MATERIALS, FOR REVIEW AND APPROVAL PRIOR TO POWDER COATING. COLOR SHALL MATCH FEDERAL STANDARD 595C COLOR NUMBER 27038, SEMI-GLOSS BLACK. PROTECT ALL POWDER COATED RAILING SURFACES FROM DAMAGE DURING SHIPPING, HANDLING, AND INSTALLATION. FOLLOWING FENCE INSTALLATION, REPAIR ANY DAMAGE TO THE POWDER COATED FINISH IN ACCORDANCE WITH THE COATING MANUFACTURER'S RECOMMENDATIONS. ALL COSTS ASSOCIATED WITH POWDER COATING SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM, "CHAIN LINK FENCE, VINYL COATED".

IF AVAILABLE, VINYL COATED FENCE POST ASSEMBLIES MAY BE SUBSTITUTED FOR POWDER COATED COMPONENTS PROVIDED THE MATERIAL IS IN COMPLIANCE WITH ALL OTHER REQUIREMENTS LISTED IN THESE PLANS AND THE STANDARD SPECIFICATIONS. PVC COATING SHALL COMPLY WITH ASTM F 668, CLASS 2B AND SHALL BE BLACK IN ACCORDANCE WITH ASTM F 934. THE COST OF PVC COATED FENCE POST ASSEMBLIES SHALL BE INCLUDED IN THE PRICE BID FOR "FENCE, CHAIN LINK, VINYL COATED".

QUANTITIES

ITEM	UNITS	AMOUNT
FENCE, CHAIN LINK, VINYL COATED	LIN. FT.	200.0

NOTE:
FOR FENCE DETAILS SEE DESIGN SHEET 15.

DESIGN FOR

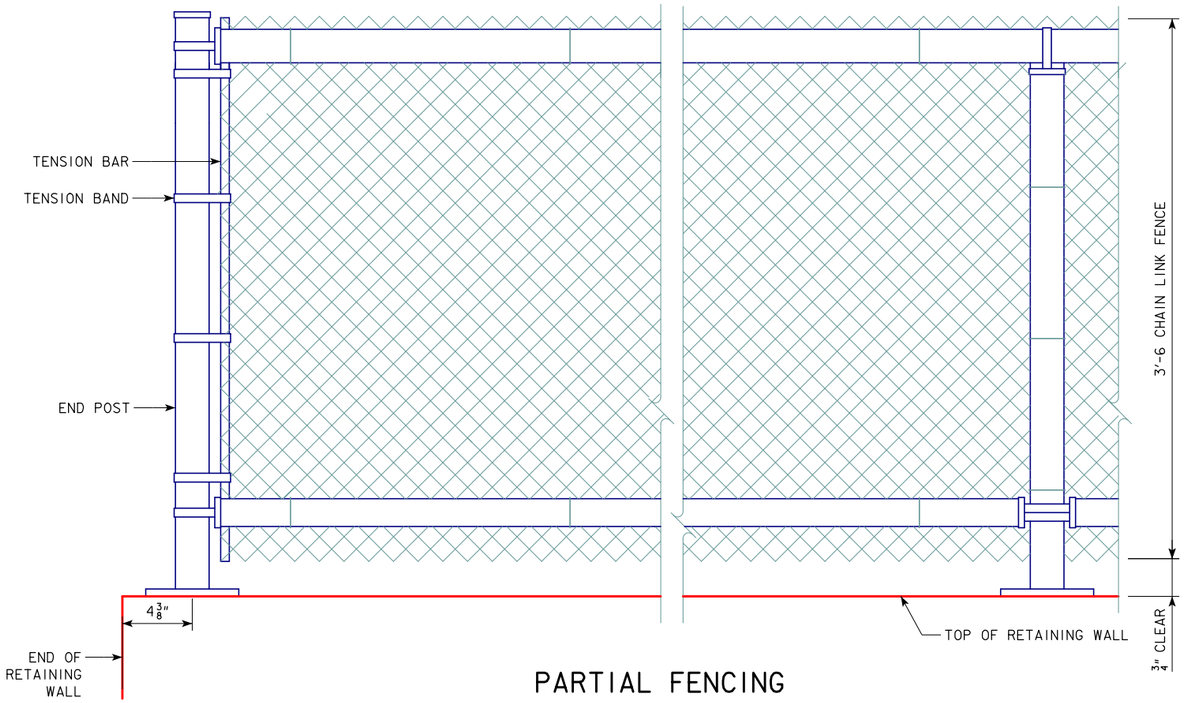
200'-0 × VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00 NOVEMBER 2018
END STATION 40866+75.00

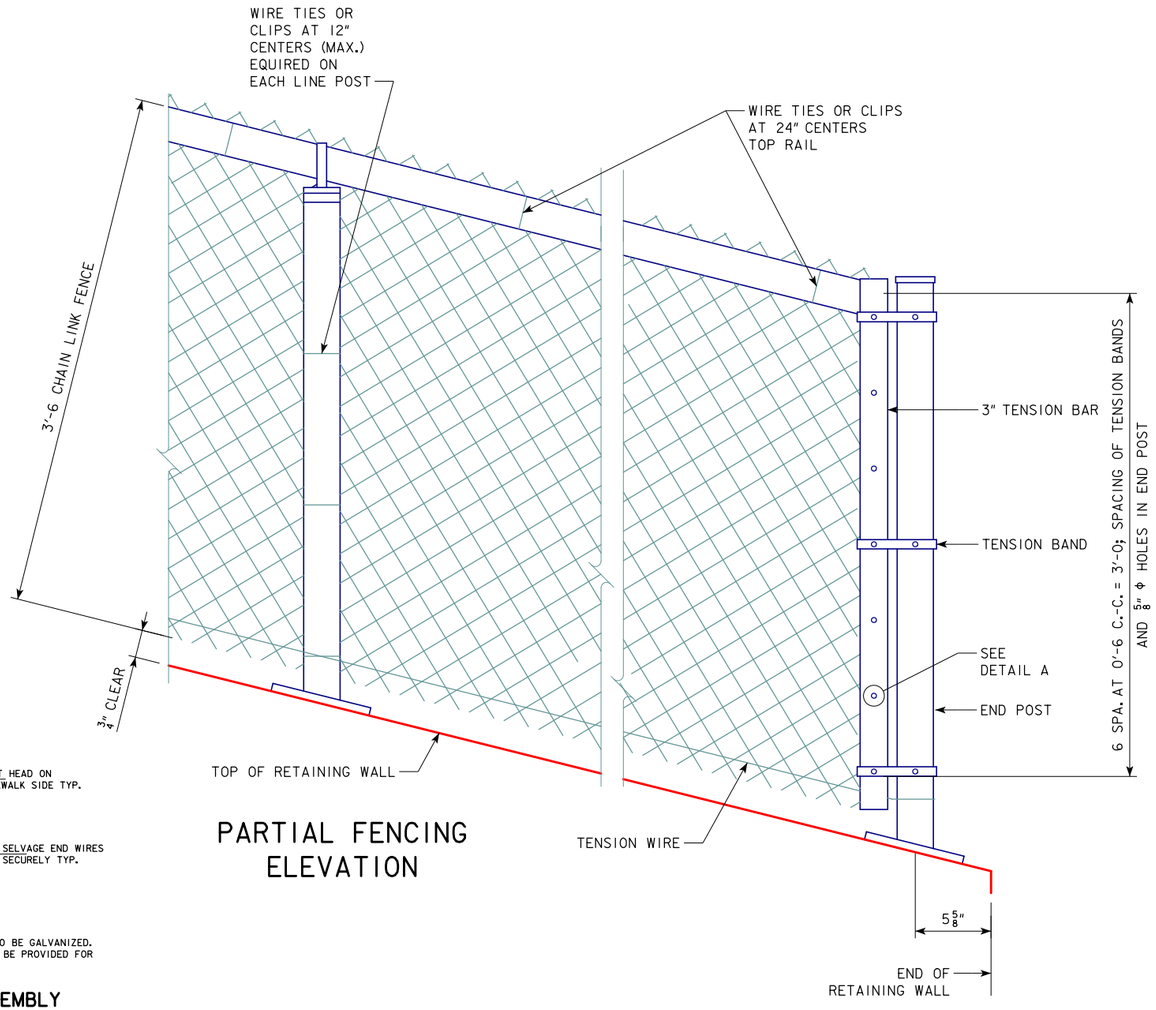
CHAIN FENCE PLAN
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 18 OF 19 FILE NO. 31286 DESIGN NO. 918



PARTIAL FENCING ELEVATION



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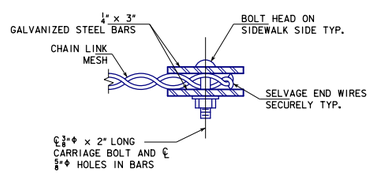
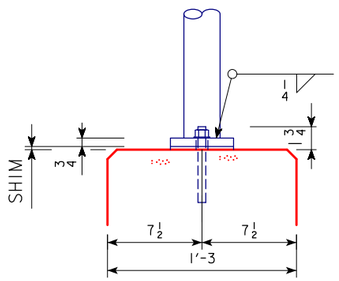
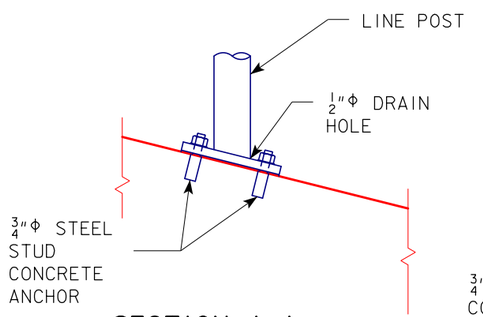


NOTE: CARRIAGE BOLTS, NUTS AND WASHERS ARE TO BE GALVANIZED. ONE LOCKNUT AND ONE STANDARD WASHER ARE TO BE PROVIDED FOR EACH BOLT.

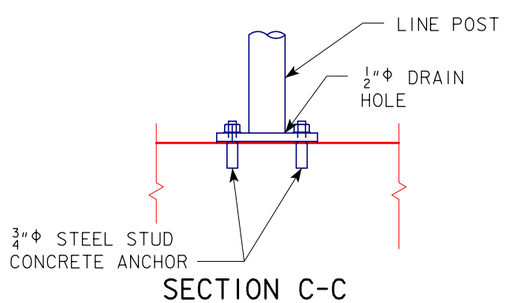
DETAIL 'A' TENSION BAR ASSEMBLY



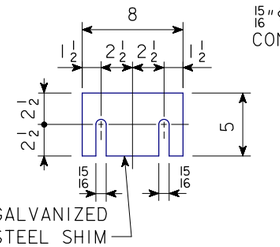
SECTION B-B



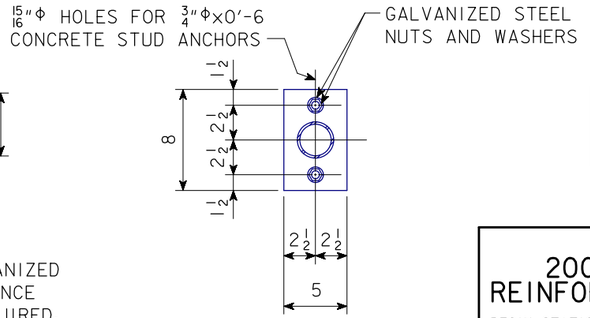
SECTION A-A



SECTION C-C



NOTE: PROVIDE 2-1/16" GALVANIZED STEEL SHIMS FOR EACH FENCE POST, TO BE USED AS REQUIRED.



BASE PLATE DETAILS FOR END POST AND LINE POSTS

NOTE : POSTS AND BASE PLATES SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123.

NOTE: USE NO ADDITIONAL BRACE RAILS OR DIAGONAL TENSION RODS IN FENCE CONSTRUCTION.

DESIGN FOR

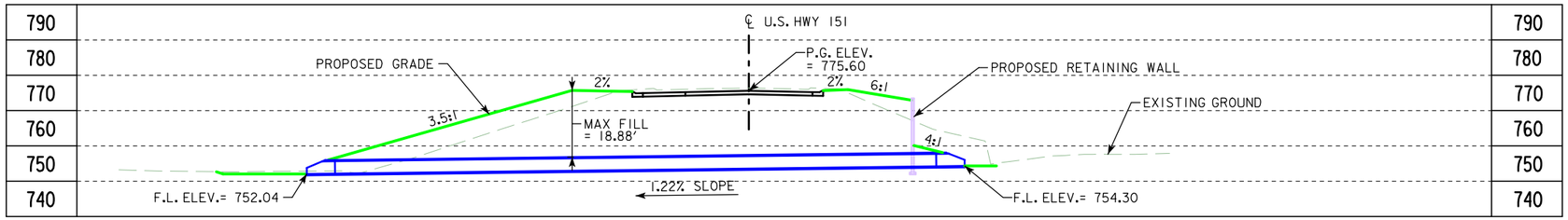
200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00 NOVEMBER 2018
END STATION 40866+75.00

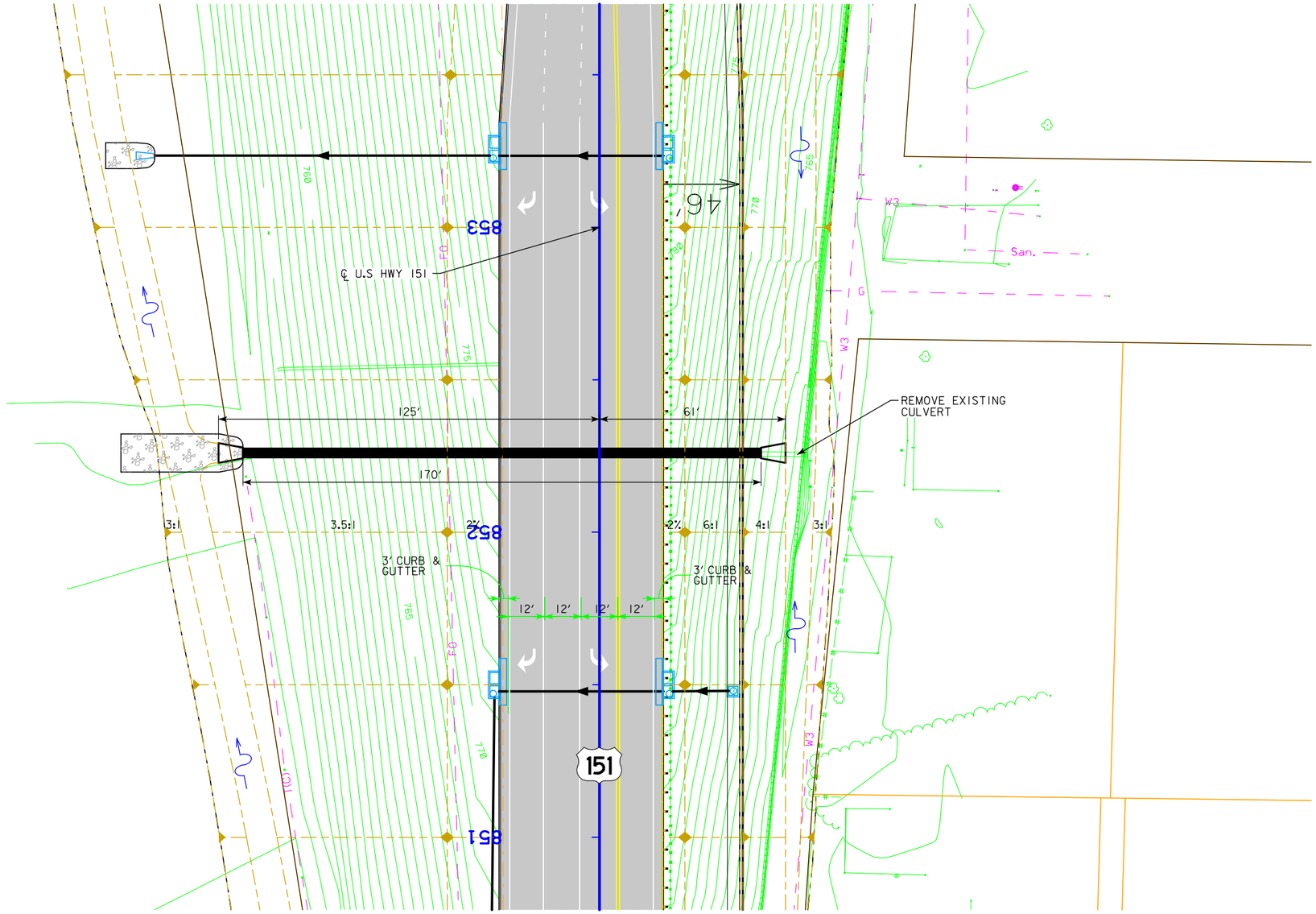
PEDESTRIAN RAILING DETAILS LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

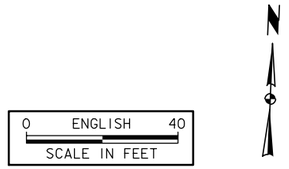
DESIGN SHEET NO. 19 OF 19 FILE NO. 31286 DESIGN NO. 918



LONGITUDINAL SECTION ALONG ℄ CULVERT



PLAT PLAN



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 42" PIPE AND APRONS.

DESIGN FOR 0° SKEW R.A.

42" X 170' REINFORCED CONCRETE PIPE

PLAT PLAN

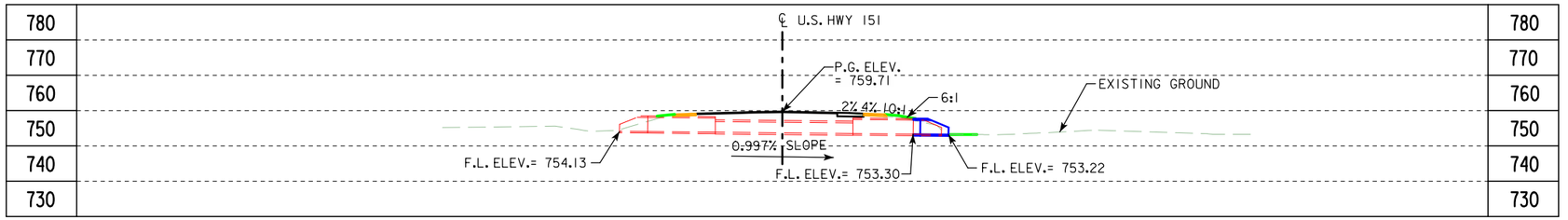
STA. 852+26.00 ℄ U.S. HWY. 151 NOVEMBER 2018

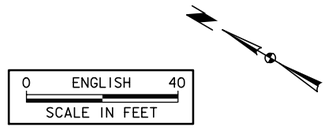
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

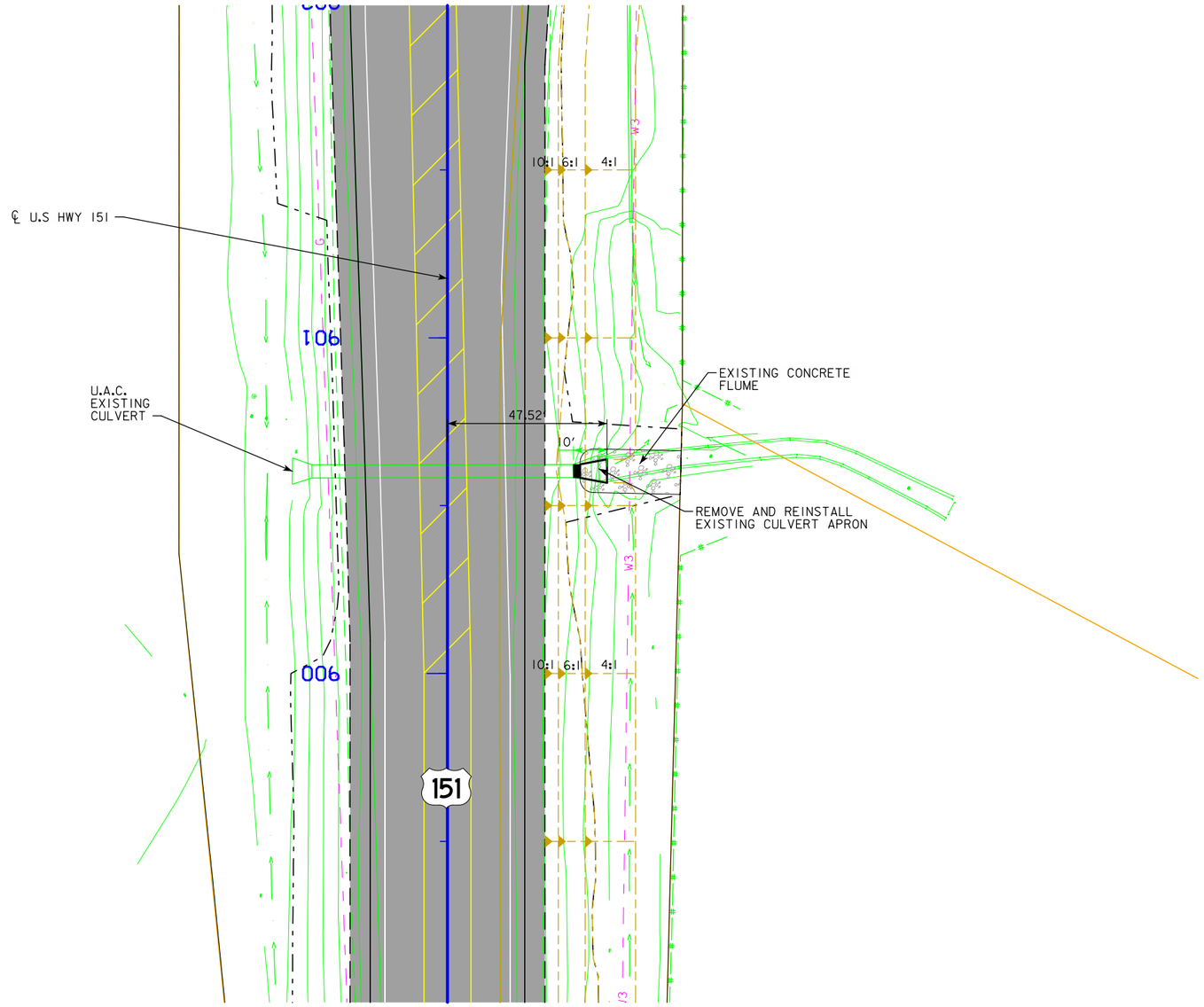
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	SNYDER AND ASSOCIATES, INC.	SNYDER & ASSOCIATES, INC.	LINN	COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER V.20





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 2'
REINFORCED CONCRETE PIPE

PLAT PLAN

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

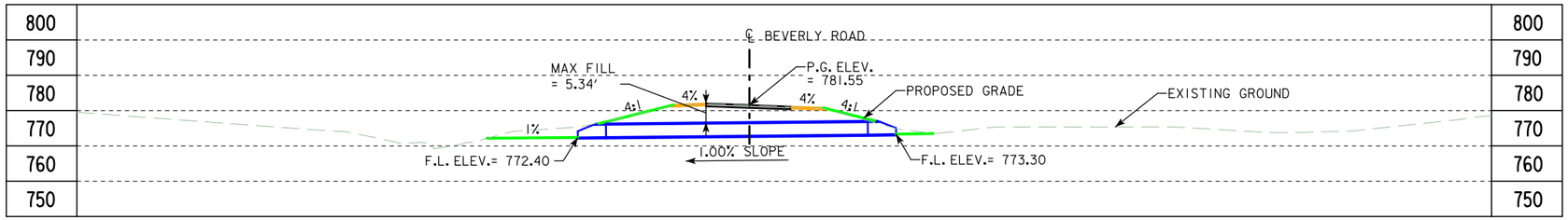
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

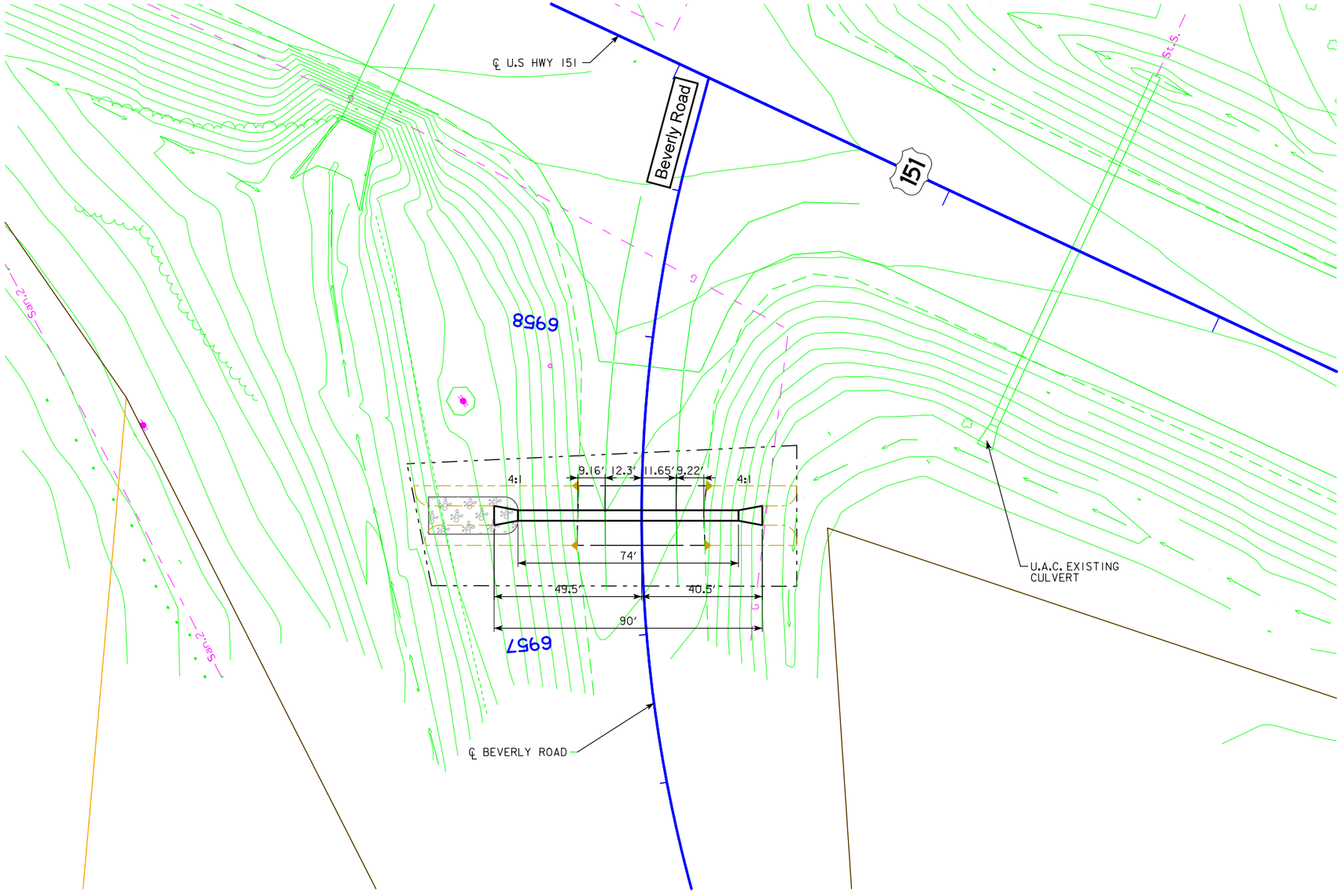
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	SNYDER AND ASSOCIATES, INC.	LINN	COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER V.21

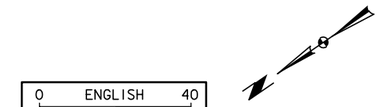
4:34:45 PM ncarhoff c:\pw_work\pwmain\nate.carhoff\d0667021\57151158V01.sht



LONGITUDINAL SECTION ALONG ℄ CULVERT



PLAT PLAN



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 74' LF 42" RCP WITH APRONS.

DESIGN FOR 0° SKEW R.A.

42" X 74'
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. _____