LETTING DATE

PAVEMENT - GRADE AND NEW
NHS-020-9(121)--19-31

DUBUQUE Co.

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
A.2	Project Location Map
A.3 - 4	Land Ownership Map
B Sheets	**Typical Cross Sections and Details**
B.1 - 16	Roadway Typical Sections & Details
C Sheets	**Points of Access**
C.1	Tabulation of Access Points
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2 - 9	Mainline Plan & Profile
E Sheets	**Side Road Plan and Profile Sheets**
* E.1 - 14	Side Road Plan & Profile
F Sheets	**Detour Plan and Profile Sheets**
* F.1 - 24	Detour Plan & Profile
G Sheets	**Survey Sheets**
G.1 - 8	Survey Control Reference Ties & Bench Marks
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* J.1 - 2	Traffic Control & Staging Notes
* J.3	Traffic Control & Staging Legend Sheets
* J.4 - 9	Traffic Control & Staging Sheet Typicals
* J.10 - 28	Traffic Control & Staging Sheet - US 20 Mainline Stage 1
* J.29 - 41	Traffic Control & Staging Sheet - US 20 Mainline Stage 2
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K Sheets	**Interchange Sheets**
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* K.3 - 4	Interchange Drainage & Site Grading
* K.5 - 8	Intersection Profile
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L Sheets	**Intersection Geometrics**
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* L.2	Swiss Valley Road with North Cascade Road
* L.3	Swiss Valley Road with Relocated Cottingham Road
* L.4	Cul-De-Sac on North Frontage Road
* L.5	Cul- De-Sac on South Frontage Road
U Sheets	**500 Series, Mod.Stds. and Detail Sheets**
U.1 - 8	Ramp Gore Details (Non Standard)
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V.1 - 3	Bridge TS&L
V.4 - 30	Culvert Pipe Plats
W Sheets	**Mainline Cross Sections**
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X Sheets	**Side Road Cross Sections**
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X.18 - 51	Relocated Cottingham Road Cross Sections
X.52 - 98	North Frontage Road Cross Sections
X.99 - 121	North Cascade Road West Cross Sections
X.122 - 142	North Cascade Road East Cross Sections
X.143 - 168	South Frontage Road Cross Sections
X.169 - 170	Cottingham Road Connector Cross Sections
X.171 - 183	Tower Drive Cross Sections
Y Sheets	**Ramp Cross Sections**
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Y.12 - 18	Ramp B Cross Sections
Y.19 - 23	Ramp C Cross Sections
Y.24 - 30	Ramp D Cross Sections
	* Color Plan Sheets

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

DUBUQUE COUNTY

PAVEMENT - GRADE AND NEW

US 20 SWISS VALLEY INTERCHANGE - FULL BUILD - DUBUQUE
FROM 0.2 MILES EAST OF COTTINGHAM ROAD
TO 1.5 MILES EAST OF SWISS VALLEY ROAD

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

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

REVISIONS

	TOTAL
PROJECT IDENTIFICATION NUMBER	
31-030-121-01	
PROJECT NUMBER	
NHS-020-9(121)--19-31	
R.O.W. PROJECT NUMBER	
NHSX-020-9(144)--2R-31	

For Project Location Map
Refer to Sheet A.2

DESIGN DATA URBAN

2017	AADT	15200	V.P.D.
2040	AADT	33900	V.P.D.
2040	DHV	3675	V.P.H.
TRUCKS		9	%
Total Design ESALs		N/A	

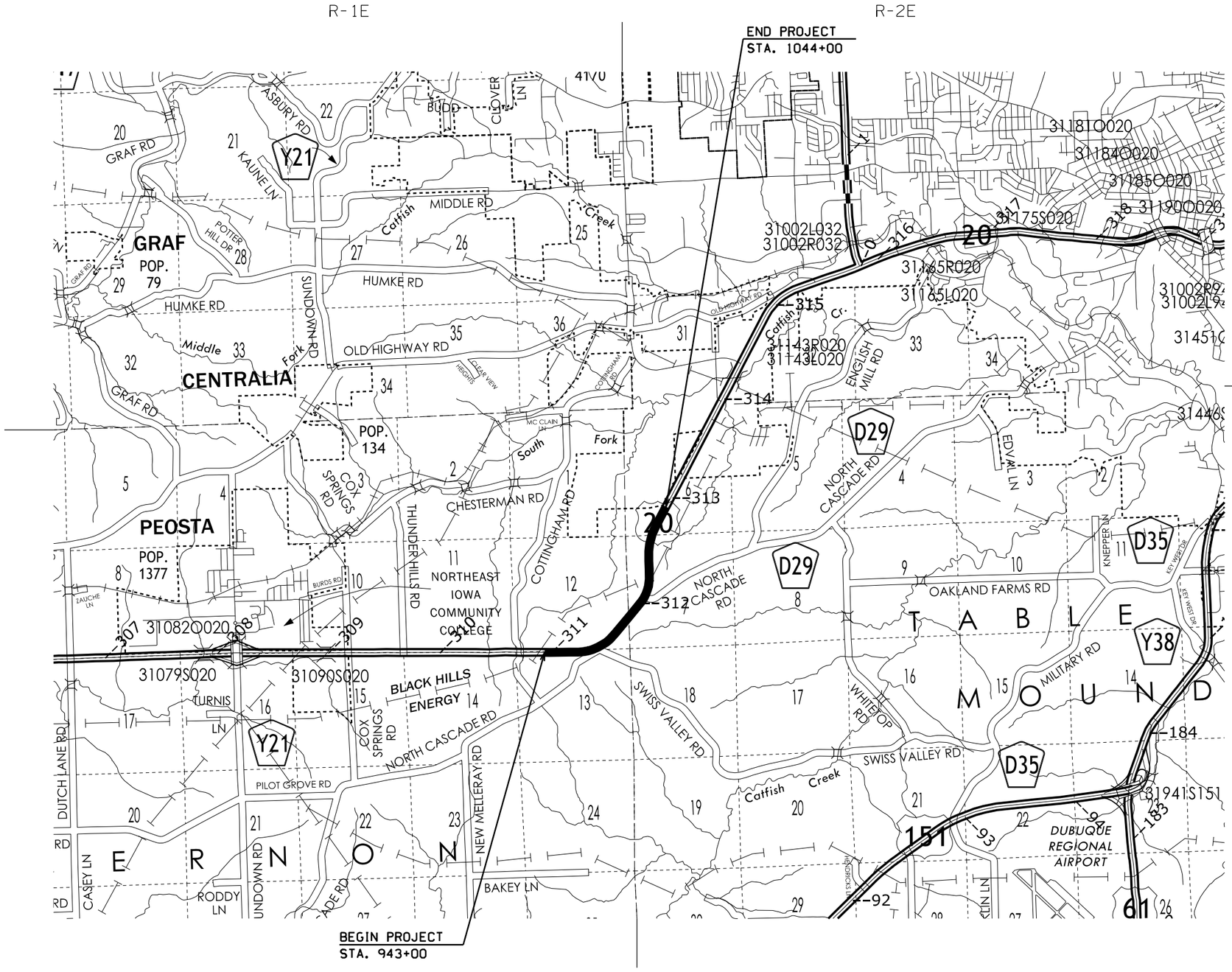
INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	X	Primary Signature Block
X	X	X

PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN SUBMITTAL
Date: March 3, 2015



LOCATION MAP SCALE
0 0.5 1 1.5
Miles

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER A.2

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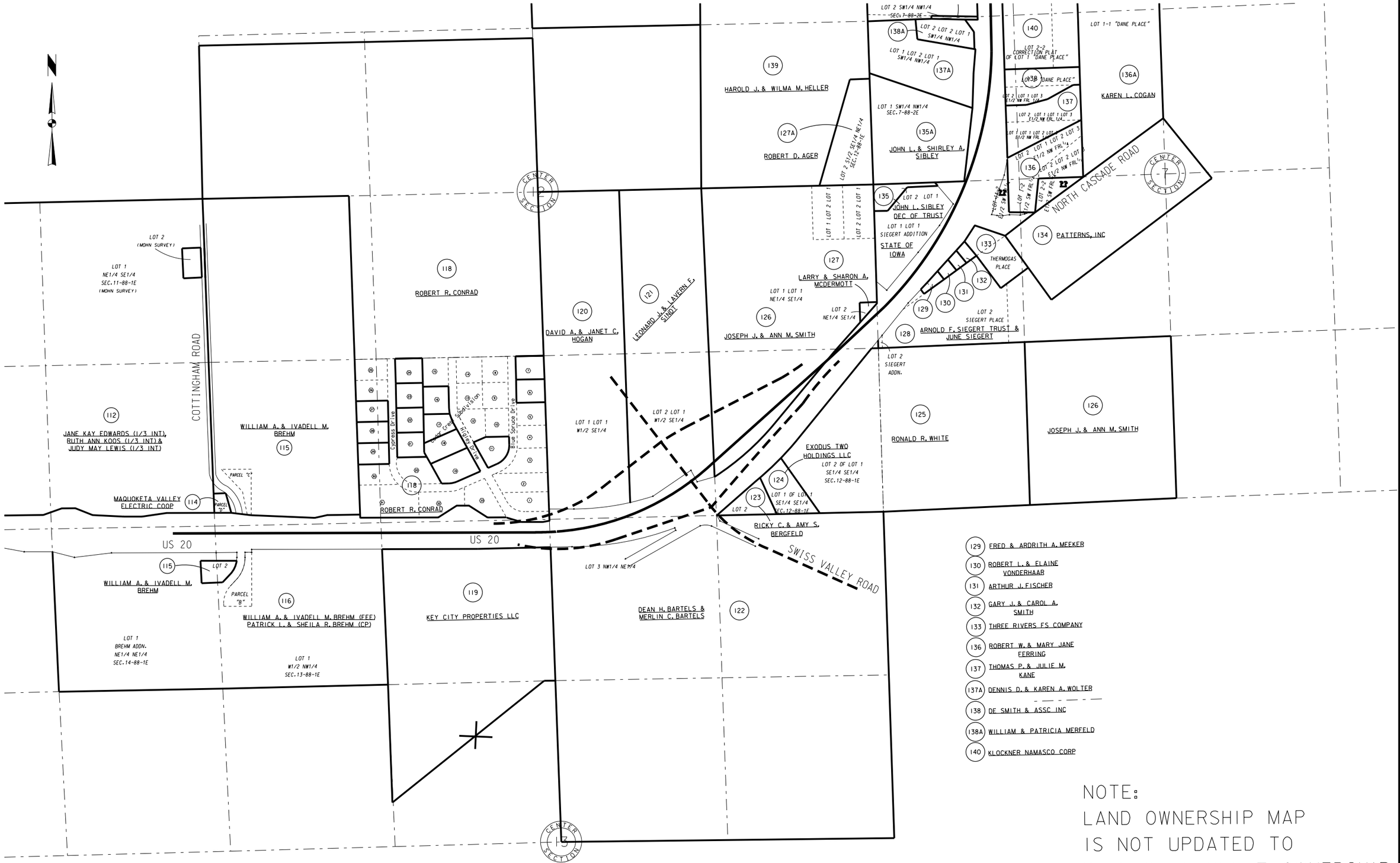

NOTE:
LAND OWNERSHIP MAP
IS NOT UPDATED TO
REFLECT CURRENT OWNERSHIP

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER A.3

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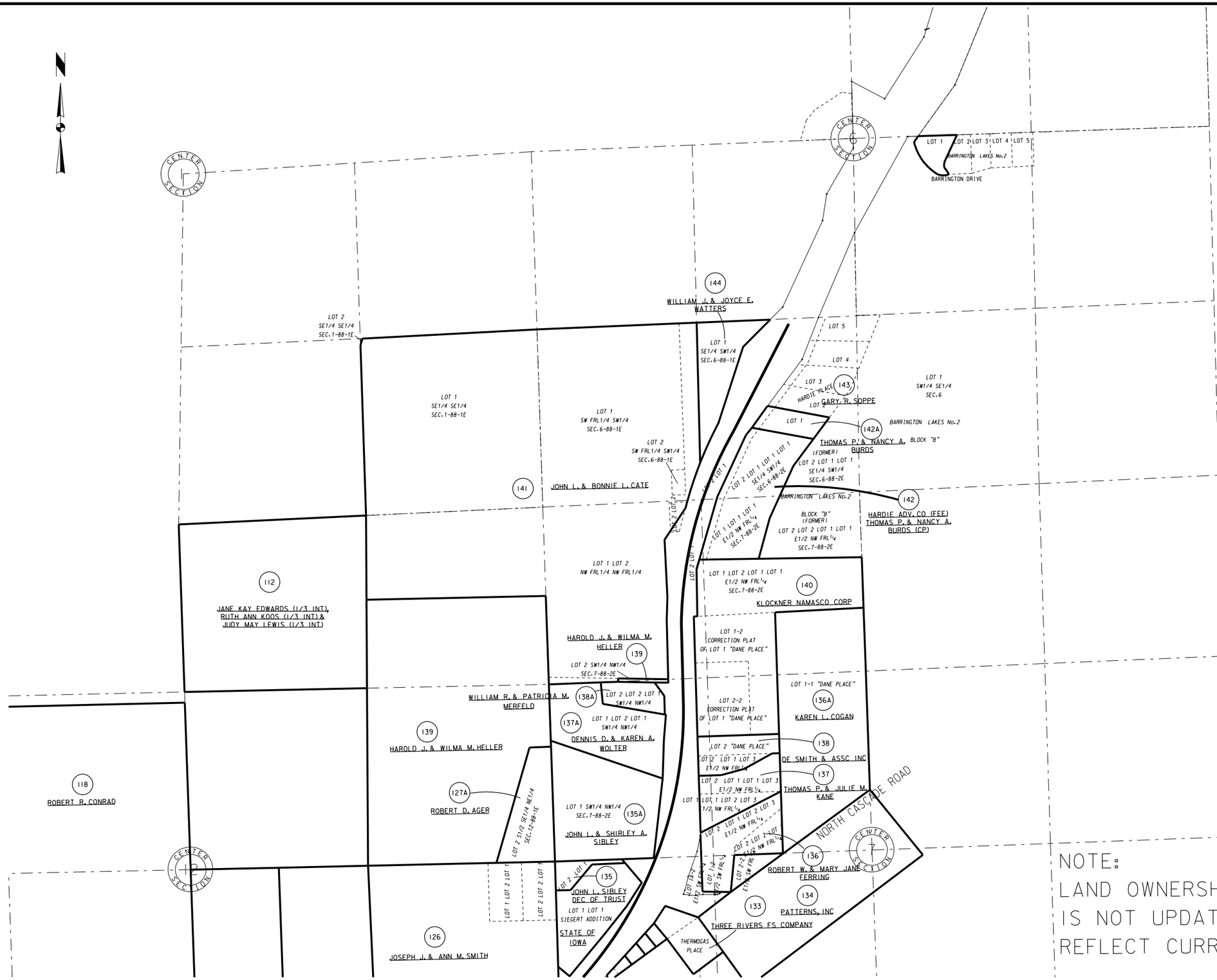

NOTE:
LAND OWNERSHIP MAP
IS NOT UPDATED TO
REFLECT CURRENT OWNERSHIP

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER A.4

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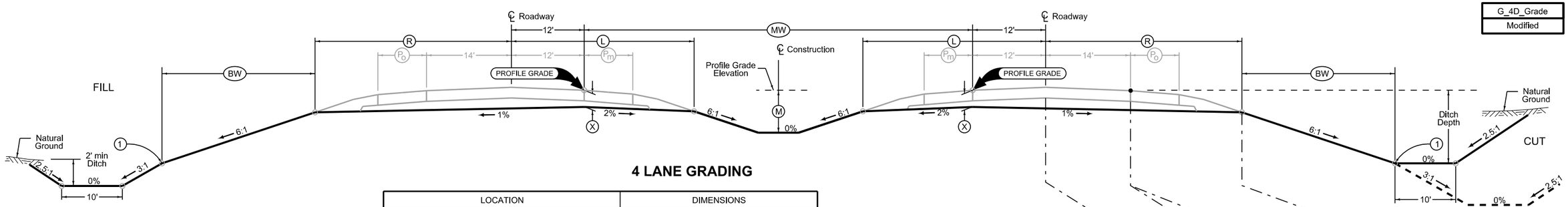
G_4D_Grade
Modified



4 LANE GRADING

LOCATION			DIMENSIONS					
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(BW) Feet	(MW) Feet	(M) Feet
US 20	943+00.00	1044+00.00	28.4	32.4	16.5	19.3	50	2.8

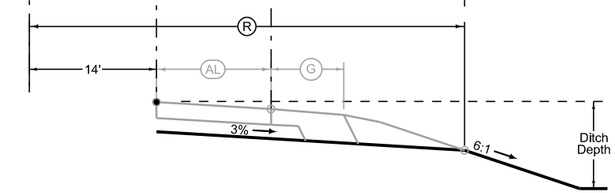
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

See Plan & Profile sheets and cross sections for additional details of ditches and backslopes.

(1) Refer to project plan and cross sections for specific location of foreslope change.

Auxiliary Lane Grading

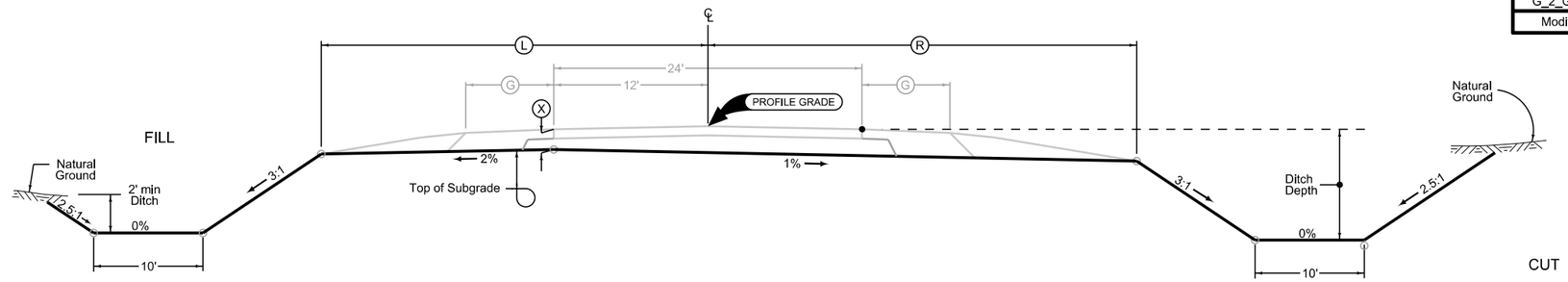
LOCATION			(R) Feet
ROAD IDENTIFICATION	STATION TO STATION		
US 20	943+00.00	943+29.78	32.4
US 20	943+29.78	944+80.00	32.4 - 42.4
US 20	944+80.00	952+20.00	42.4
US 20	952+20.00	956+50.00	42.4 - 73.1



US20

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(G) Feet	(X) Inches
SWISS VALLEY ROAD	5973+00.00	5976+24.00	30.1	30.5	8	8

G_2_Grade
Modified



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

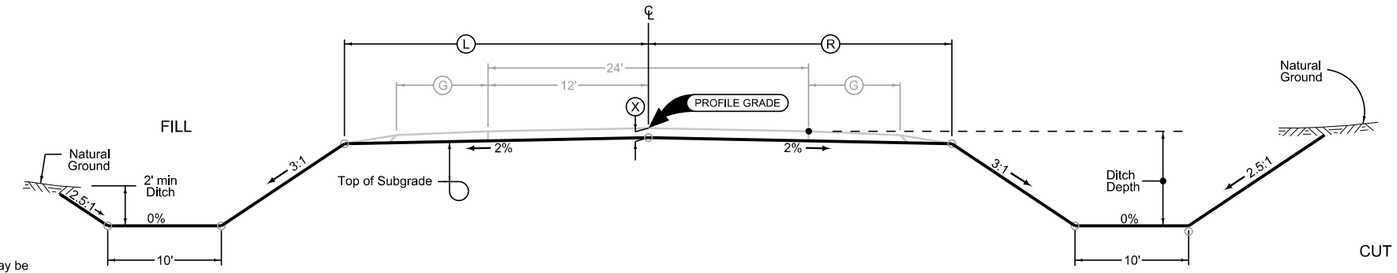
See plan & profile sheets and cross sections for additional details of ditches and backslopes.

2 LANE GRADING - RURAL SECONDARY ROADS
SUBGRADE CROWN AT LEFT EDGE OF PAVEMENT

SWISS VALLEY ROAD

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		Ⓛ Feet	Ⓡ Feet	Ⓖ Feet	Ⓧ Inches
NORTH CASCADE ROAD WEST	6931+50.00	6958+84.50	23.5	23.5	8	8
NORTH CASCADE ROAD EAST	7994+00.00	7997+00.00	23.5	23.5	8	8
RELOCATED COTTINGHAM ROAD	8931+65.00	8976+00.00	23.5	23.5	8	8
NORTH FRONTAGE ROAD	9976+24.00	10014+55.00	23.5	23.5	8	8

G_2_Grade
Modified



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

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

2 LANE GRADING - RURAL SECONDARY ROADS
SUBGRADE CROWN AT CENTERLINE

2 LANE RURAL SECONDARY ROADS

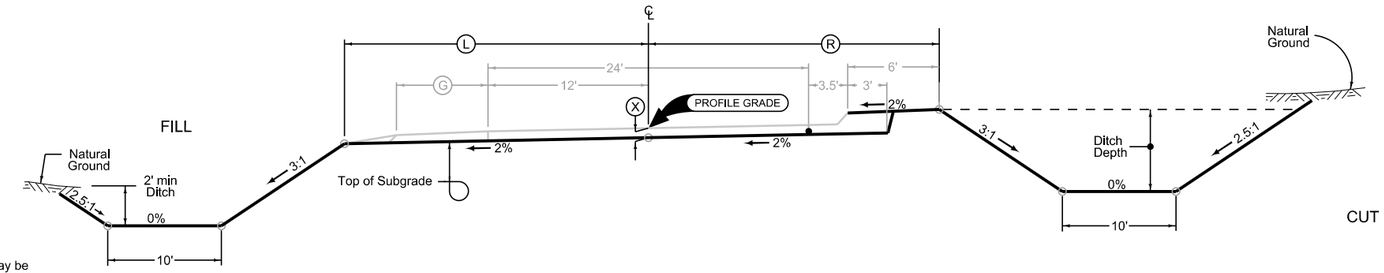
LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(G) Feet	(X) Inches
NORTH FRONTAGE ROAD	10014+55	100024+42.34	23.5	21.5	8	8

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

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

NOTES:

(1) Left Side Only

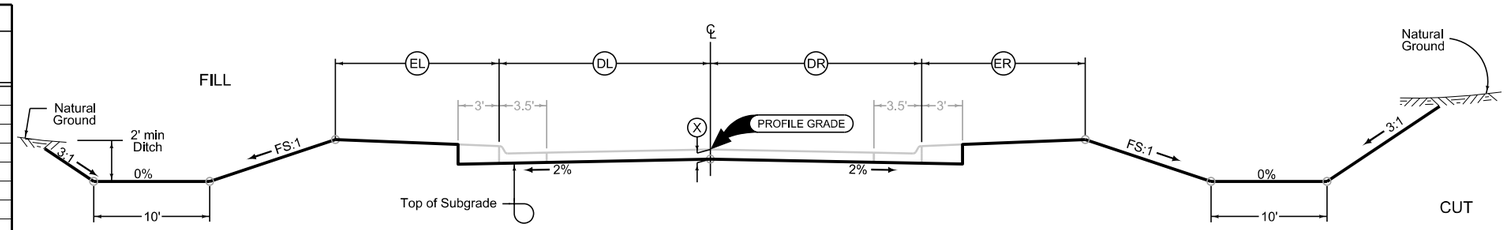


G_2_Grade
Modified

2 LANE GRADING - RURAL SECONDARY ROADS

NORTH FRONTAGE ROAD

LOCATION			DIMENSIONS					
ROAD IDENTIFICATION	STATION TO STATION		(DL) Feet	(DR) Feet	(EL) Feet	(ER) Feet	(X) Inches	FS
SOUTH FRONTAGE ROAD	1992+15.50	2030+79.58	15.5	15.5	6.0	12.0	8	3
SWISS VALLEY ROAD	5954+50.00	5967+48.00	15.5	15.5	12.0	12.0	8	3
SWISS VALLEY ROAD	5967+48.00	5967+68.00	15.5	15.5 - 17.5	12.0	12.0	8	3
SWISS VALLEY ROAD	5967+68.00	5968+28.83	15.5 - 21.6	17.5 - 23.6	12.0	12.0	8	3
SWISS VALLEY ROAD	5968+28.83	5968+48.83	21.6 - 23.6	23.6	12.0	12.0	8	3
SWISS VALLEY ROAD	5968+48.83	5971+01.04	23.6	23.6	12.0	12.0	8	3
SWISS VALLEY ROAD	5971+01.04	5971+26.00	23.6	23.6 - 21.1	12.0	12.0	8	3
SWISS VALLEY ROAD	5971+26.00	5971+81.87	23.6 - 18.0	21.1 - 15.5	12.0	12.0	8	3
SWISS VALLEY ROAD	5971+81.87	5972+06.83	18.0 - 15.5	15.5	12.0	12.0	8	3
SWISS VALLEY ROAD	5972+06.83	5973+00.00	15.5	15.5	12.0	12.0	8	3
NORTH CASCADE ROAD EAST	7958+66.12	7994+00.00	15.5	15.5	6.0	12.0	8	3



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

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

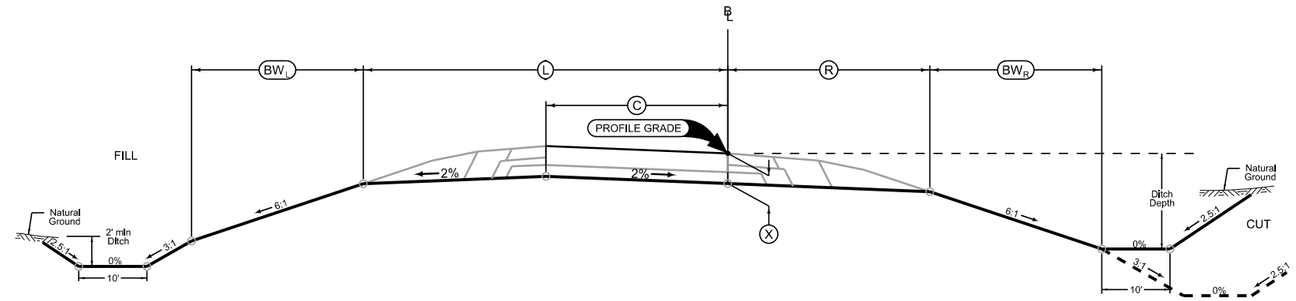
2 LANE GRADING - URBAN

G_2_Grade
Modified

2 LANE URBAN ROADS

LOCATION				DIMENSIONS					
INTERCHANGE	RAMP	STATION TO STATION		(L) Feet	(R) Feet	(C) Feet	(X) Inches	(BW_L) Feet	(BW_R) Feet
SWISS VALLEY ROAD	A	1969+70.86	1971+94.74	38.7	16.4	24	16.5	9.5	7.7
		1971+94.74	1973+14.73	38.7 - 30.7	16.4	24 - 16	16.5	9.5	7.7
		1973+14.73	1983+10.13	30.7	16.4	16	16.5	9.5	7.7
SWISS VALLEY ROAD	B	2956+40.00	2967+62.30	30.7	16.4	16	16.5	9.5	7.7
		2967+62.30	2968+82.30	30.7 - 38.7	16.4	16 - 24	16.5	9.5	7.7
		2968+82.30	2971+29.80	38.7	16.4	24	16.5	9.5	7.7
SWISS VALLEY ROAD	C	3957+91.54	3968+75.26	30.7	16.4	16	16.5	9.5	7.7
SWISS VALLEY ROAD	D	4969+65.53	4981+91.34	30.7	16.4	16	16.5	9.5	7.7

G_1R_Grade
Modified



RAMP GRADING

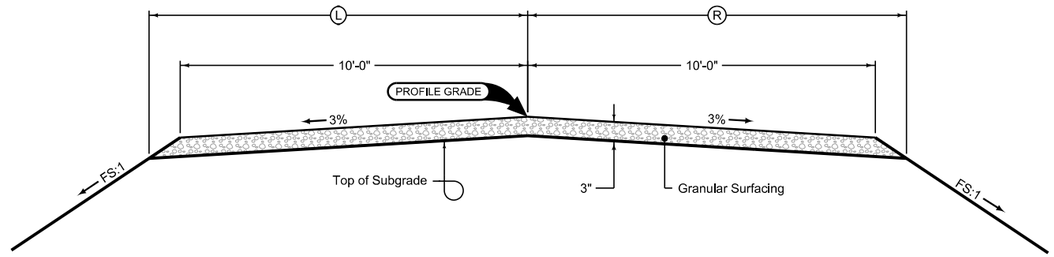
Section view is in direction of traffic.

Normal sections shown may be appropriately modified for areas specifically designated by the Engineer such as intersections or superelevated curves.

RAMPS

LOCATION			DIMENSIONS				
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	FS	BS	Ditch Depth Feet
Tower Drive	400+15.00	419+54.22	10.8	10.8	3		

2_GradeGran
Modified



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

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

Place Granular Surfacing as follows:
Grading and Paving design application rate is 2330 tons per mile.

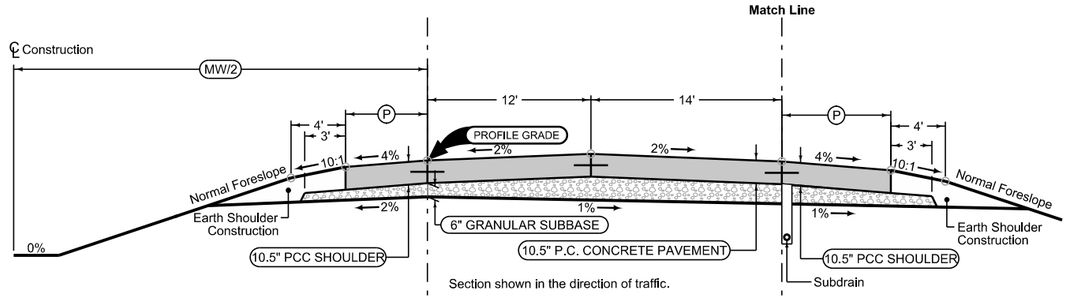
GRADING AND GRANULAR SURFACING

TOWER DRIVE

Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: L-2 or KT-2
Transverse joints: C at 20' spacing

			4_P_FullPCC_ 10-19-10
Direction of Travel	BEGIN STATION	END STATION	(P) Feet
E.B.	943+00.00	1044+00.00	6
W.B.	943+00.00	1044+00.00	6



Section shown in the direction of traffic.

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

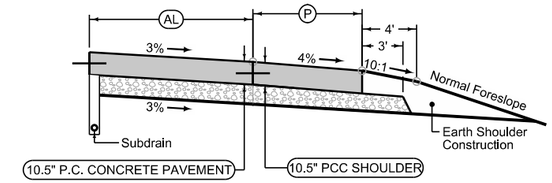
			4DP_ 10-19-10
Direction of Travel	BEGIN STATION	END STATION	(MW) Feet
E.B.	943+00.00	1044+00.00	50
W.B.	943+00.00	1044+00.00	50

US 20 PAVING

Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: L-2 or KT-2
Transverse joints: C at 20' spacing

			4_P_FullPCC_ 10-19-10
Direction of Travel	BEGIN STATION	END STATION	(P) Feet
E.B.	956+40.00	1044+00.00	8
W.B.	943+00.00	1021+02.81	8
W.B.	1032+89.32	1044+00.00	8



Auxiliary Lane

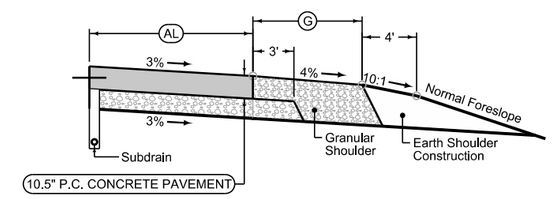
Longitudinal joint: L or KT
Transverse joint: Match Mainline

			4_AuxLane_PCC_ 10-19-10
Direction of Travel	BEGIN STATION	END STATION	(AL) Feet
E.B.	943+00.00	943+30.00	2
E.B.	943+30.00	944+20.00	2 - 8

Auxiliary Lane Full Depth Shoulder

Shoulder Jointing:
Longitudinal joint: L-2 or KT-2
Transverse joints: C at 20' spacing

	4_AL_Shldr_FullPCC_ 10-19-10
(P) Feet	
6	
6	



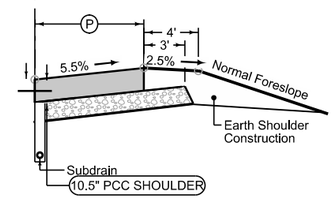
Auxiliary Lane

Longitudinal joint: L or KT
Transverse joint: Match Mainline

			4_AuxLane_PCC_ 10-19-10
Direction of Travel	BEGIN STATION	END STATION	(AL) Feet
E.B.	944+20.00	944+80.00	8 - 12
E.B.	944+80.00	952+20.00	12
E.B.	952+20.00	956+40.00	12 - 40

Auxiliary Lane Granular Shoulder

	4_AL_Shldr_G_ 10-19-10
(G) Feet	
6	
6	
6	



Modified Full Depth PCC Shoulder

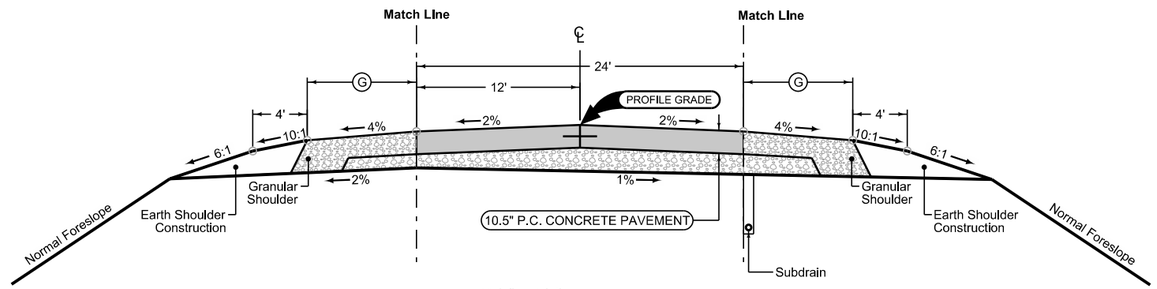
Shoulder Jointing:
Longitudinal joint: L-2 or KT-2
Transverse joints: C at 20' spacing

			4_P_FullPCC_ 10-19-10
Direction of Travel	BEGIN STATION	END STATION	(P) Feet
W.B.	1021+02.81	1032+89.32	8

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

See Tab 112-9 for shoulder quantities.

US 20



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

Granular Shoulder

2_G_SR_Mod
02-14-14

ROAD IDENTIFICATION	STATION TO STATION		G Feet
SWISS VALLEY ROAD	5973+00.00	5976+24.00	8

2P_Mod
02-14-14

	STATION TO STATION	
SWISS VALLEY ROAD	5973+00.00	5976+24.00

Granular Shoulder

2_G_SR_Mod
02-14-14

	STATION TO STATION		G Feet
SWISS VALLEY ROAD	5973+00.00	5976+24.00	8

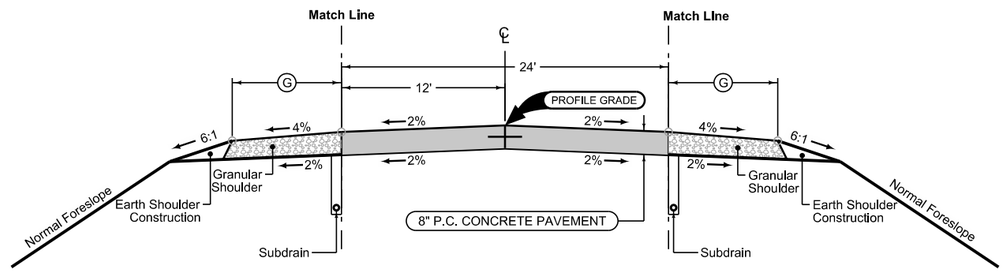
2 LANE PAVING - RURAL SECONDARY ROADS
SUBGRADE CROWN AT LEFT EDGE OF PAVEMENT

See Tab 100-24 or 100-25 for pavement quantities.
See Tab 112-9 for shoulder quantities.

SWISS VALLEY ROAD

Granular Shoulder

2_G_SR_Mod 02-14-14			
ROAD IDENTIFICATION	STATION TO STATION		(G) Feet
NORTH CASCADE WEST	6931+50.00	6958+84.50	8
NORTH CASCADE EAST	7994+00.00	7997+00.00	8
COTTINGHAM	8931+65.00	8976+00.00	8
NORTH FRONTAGE ROAD	9976+24.00	10014+55.00	8



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

2P_Mod 02-14-14		
ROAD IDENTIFICATION	STATION TO STATION	
NORTH CASCADE WEST	6931+50.00	6958+84.50
NORTH CASCADE EAST	7994+00.00	7997+00.00
COTTINGHAM	8931+65.00	8976+00.00
NORTH FRONTAGE ROAD	9976+24.00	10014+55.00

Granular Shoulder

2_G_SR_Mod 02-14-14			
ROAD IDENTIFICATION	STATION TO STATION		(G) Feet
NORTH CASCADE WEST	6931+50.00	6958+84.50	8
NORTH CASCADE EAST	7994+00.00	7997+00.00	8
COTTINGHAM	8931+65.00	8976+00.00	8
NORTH FRONTAGE ROAD	9976+24.00	10014+55.00	8

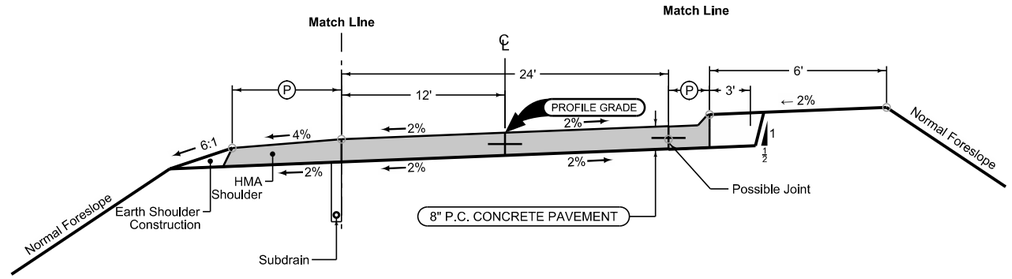
2 LANE PAVING - RURAL SECONDARY ROADS
SUBGRADE CROWN AT CENTERLINE

See Tab 100-24 or 100-25 for pavement quantities.
See Tab 112-9 for shoulder quantities.

RURAL SECONDARY ROADS

HMA Shoulder

2_P_SR_Mod 02-14-14			
ROAD IDENTIFICATION	STATION TO STATION		(G) Feet
NORTH FRONTAGE ROAD	10014+55.00	10024+42.34	8



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

2P_Mod 02-14-14		
ROAD IDENTIFICATION	STATION TO STATION	
NORTH FRONTAGE ROAD	10014+55.00	10024+42.34

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_MOD 02-14-14
ROAD IDENTIFICATION	STATION TO STATION		(P) Feet	Curb Type See PV-102
NORTH FRONTAGE ROAD	10014+55	10024+42.34	3.5	6" STANDARD

2 LANE PAVING - RURAL SECONDARY ROADS
SUBGRADE CROWN 3' RIGHT OF B.O.C.

See Tab 100-24 or 100-25 for pavement quantities.
See Tab 112-9 for shoulder quantities.

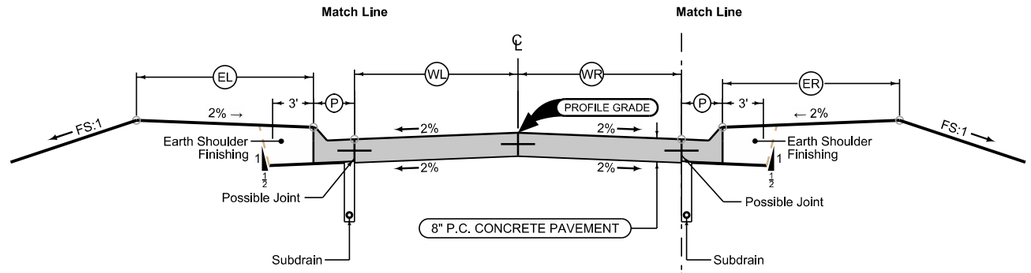
NORTH FRONTAGE ROAD

Curbed Shoulder

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

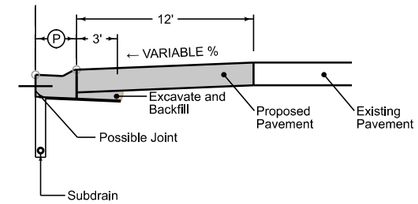
Single pour: L-2
Staged : KT-2
Transverse:C at 20' spacing

				2_Curb_MOD 02-14-14
ROAD IDENTIFICATION	STATION TO STATION		(P) Feet	Curb Type See PV-102
SOUTH FRONTAGE ROAD	1992+15.50	2030+80.00	3.5	6" STANDARD
SWISS VALLEY ROAD	5954+50.00	5967+48.00	3.5	6" STANDARD
SWISS VALLEY ROAD	5967+48.00	5967+68.00	3.5	6" STANDARD
SWISS VALLEY ROAD	5967+68.00	5968+28.83	3.5	6" STANDARD
SWISS VALLEY ROAD	5968+28.83	5968+48.83	3.5	6" STANDARD
SWISS VALLEY ROAD	5968+48.83	5971+01.04	3.5	6" STANDARD
SWISS VALLEY ROAD	5971+01.04	5971+26.00	3.5	6" STANDARD
SWISS VALLEY ROAD	5971+26.00	5971+81.87	3.5	6" STANDARD
SWISS VALLEY ROAD	5971+81.87	5972+06.83	3.5	6" STANDARD
SWISS VALLEY ROAD	5972+06.83	5973+00.00	3.5	6" STANDARD
NORTH CASCADE EAST	7958+66.12	7992+75.71	3.5	6" STANDARD
NORTH CASCADE EAST				



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

				2P_MOD 02-14-14
ROAD IDENTIFICATION	STATION TO STATION		(WL) Feet	(WR) Feet
SOUTH FRONTAGE ROAD	1992+15.50	2030+80.00	12.0	12.0
SWISS VALLEY ROAD	5954+50.00	5967+48.00	12.0	12.0
SWISS VALLEY ROAD	5967+48.00	5967+68.00	12.0	12.0 - 14.0
SWISS VALLEY ROAD	5967+68.00	5968+28.83	12.0 - 18.1	14.0 - 20.1
SWISS VALLEY ROAD	5968+28.83	5968+48.83	18.1 - 20.1	20.1
SWISS VALLEY ROAD	5968+48.83	5971+01.04	20.1	20.1
SWISS VALLEY ROAD	5971+01.04	5971+26.00	20.1	20.1 - 17.6
SWISS VALLEY ROAD	5971+26.00	5971+81.87	20.1 - 14.5	17.6 - 12.0
SWISS VALLEY ROAD	5971+81.87	5972+06.83	12.8 - 12.0	12.0 - 14.7
SWISS VALLEY ROAD	5972+06.83	5973+00.00	12.0	12.0
NORTH CASCADE EAST	7958+66.12	7992+75.71	12.0	12.0
NORTH CASCADE EAST	7992+75.71	7994+00.00	N \ A	12.0



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_MOD 02-14-14
ROAD IDENTIFICATION	STATION TO STATION		(P) Feet	Curb Type See PV-102
SOUTH FRONTAGE ROAD	1992+15.50	2003+37.36	3.5	6" STANDARD
	2012+16.00	2030+80.00	3.5	6" STANDARD
SWISS VALLEY ROAD	5954+50.00	5967+48.00	3.5	6" STANDARD
SWISS VALLEY ROAD	5967+48.00	5967+68.00	3.5	6" STANDARD
SWISS VALLEY ROAD	5967+68.00	5968+28.83	3.5	6" STANDARD
SWISS VALLEY ROAD	5968+28.83	5968+48.83	3.5	6" STANDARD
SWISS VALLEY ROAD	5968+48.83	5971+01.04	3.5	6" STANDARD
SWISS VALLEY ROAD	5971+01.04	5971+26.00	3.5	6" STANDARD
SWISS VALLEY ROAD	5971+26.00	5971+81.87	3.5	6" STANDARD
SWISS VALLEY ROAD	5971+81.87	5972+06.83	3.5	6" STANDARD
	5972+06.83	5973+00.00	3.5	6" STANDARD
NORTH CASCADE EAST	7958+66.12	7992+75.71	3.5	6" STANDARD
NORTH CASCADE EAST	(1) 7992+75.71	7994+00.00	3.5	6" STANDARD
SOUTH FRONTAGE ROAD	10014+55.00	10015+00.00	3.5	6" STANDARD
SOUTH FRONTAGE ROAD	10015+00.00	10037+00.00	3.5	6" STANDARD

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

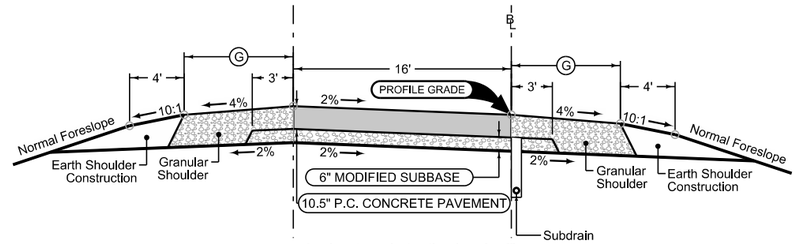
				2_Curb_MOD 02-14-14
ROAD IDENTIFICATION	STATION TO STATION		(P) Feet	Curb Type See PV-102
SOUTH FRONTAGE ROAD	2003+37.36	2012+16.00	3.5	4" SLOPED

2 LANE PAVING - RURAL SECONDARY ROADS
SUBGRADE CROWN AT CENTERLINE

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

See Tab 112-9 for shoulder quantities.

2 LANE URBAN ROADS



Section shown in the direction of traffic.

Ramp Jointing:
Transverse joints: CD at 20' spacing.

Granular Shoulder

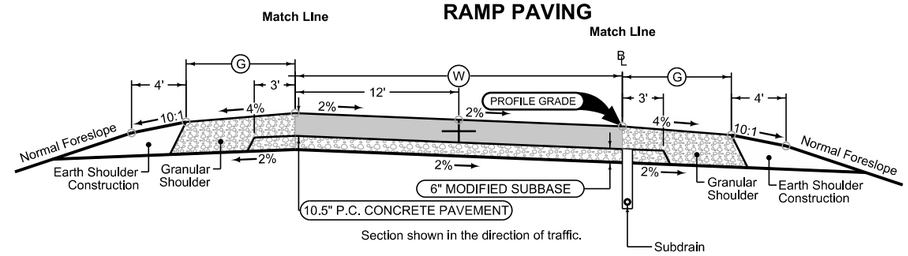
			1R_G_ 10-19-10
ROAD IDENTIFICATION	BEGIN STATION	END STATION	G Feet
RAMP A	1973+14.74	1983+10.13	4
RAMP B	2956+40.00	2967+62.30	4
RAMP C	3957+91.54	3968+75.26	4
RAMP D	4969+65.53	4981+91.34	4

			1RP_ Modified
ROAD IDENTIFICATION	BEGIN STATION	END STATION	
RAMP A	1973+14.74	1983+10.13	
RAMP B	2956+40.00	2967+62.30	
RAMP C	3957+91.54	3968+75.26	
RAMP D	4969+65.53	4981+91.34	

Granular Shoulder

			1R_G_ 10-19-10
ROAD IDENTIFICATION	BEGIN STATION	END STATION	G Feet
RAMP A	1973+14.74	1983+10.13	6
RAMP B	2956+40.00	2967+62.30	6
RAMP C	3957+91.54	3968+75.26	6
RAMP D	4969+65.53	4981+91.34	6

RAMP PAVING



Section shown in the direction of traffic.

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

Granular Shoulder

			1R_G_ 10-19-10
ROAD IDENTIFICATION	BEGIN STATION	END STATION	G Feet
RAMP A	1969+70.86	1973+14.73	4
RAMP C	2967+62.30	2971+29.80	4

			2RP_ Modified
ROAD IDENTIFICATION	BEGIN STATION	END STATION	W Feet
RAMP A	1969+70.86	1971+94.74	24
RAMP B	1971+94.74	1973+14.73	24 - 16
RAMP C	2967+62.30	2968+82.30	16 - 24
RAMP D	2968+82.30	2971+29.80	24

RAMP PAVING

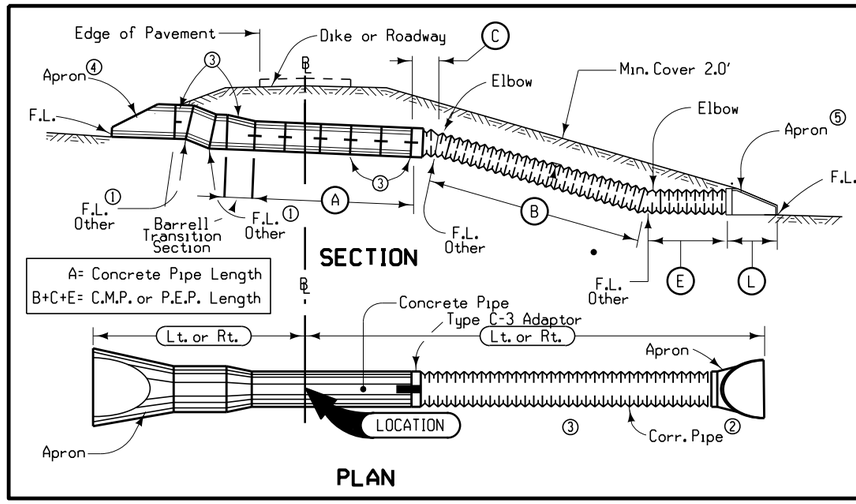
Granular Shoulder

			1R_G_ 10-19-10
ROAD IDENTIFICATION	BEGIN STATION	END STATION	G Feet
RAMP A	1969+70.86	1973+14.73	6
RAMP C	2967+62.30	2971+29.80	6

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

See Tab 112-9 for shoulder quantities.

RAMPS



HDR-1
02-23-05

Notes:

℄ shall be ℄ of roadway, dike, survey, or other; as detailed on plans.

Skew angle is the angle which one end of the pipe is ahead (by stationing) of a line perpendicular to the ℄ (example skew Rt. ahead 30°).

Refer to tabular listing and other plans for additional information.

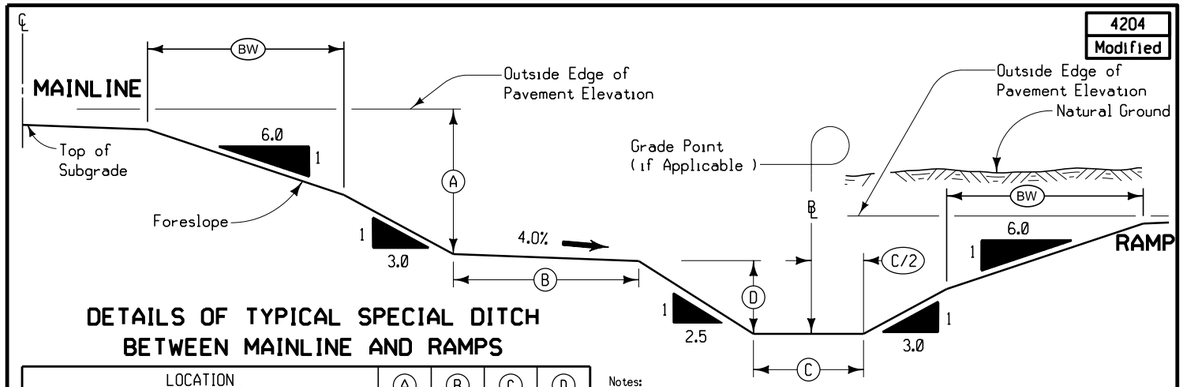
1. Optional D section only when specified in tabulation.
2. Standard type joint couplings are required. (See Materials I.M. 441)
3. See Standard Road Plan RF-2 & RF-14.
4. See Standard Road Plan RF-3.
5. See Standard Road Plan RF-5 for Metal and Polyethylene

SLOPE TAPERED PIPE LETDOWN STRUCTURE

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER B.14

6:54:55 AM 1/19/2016 CPODANY c:\pwworking\oma\d1308983\31020121B01.sht

4204
Modified



DETAILS OF TYPICAL SPECIAL DITCH BETWEEN MAINLINE AND RAMPS

LOCATION			A	B	C	D
STATION TO STATION		SIDE	Feet	Feet	Feet	Feet
958+05	963+00	RT	Varies	Varies	0'-10'	Varies
963+00	968+96	RT	Varies	Varies	10'	2'
958+50	961+50	LT	Varies	Varies	0'-10'	Varies
961+50	968+52	LT	Varies	Varies	10'	2'
970+87	977+75	RT	Varies	Varies	10'	2'
977+75	979+75	RT	Varies	Varies	0'-10'	Varies
970+94	978+50	LT	Varies	Varies	10'	2'
978+50	980+00	LT	Varies	Varies	0'-10'	Varies

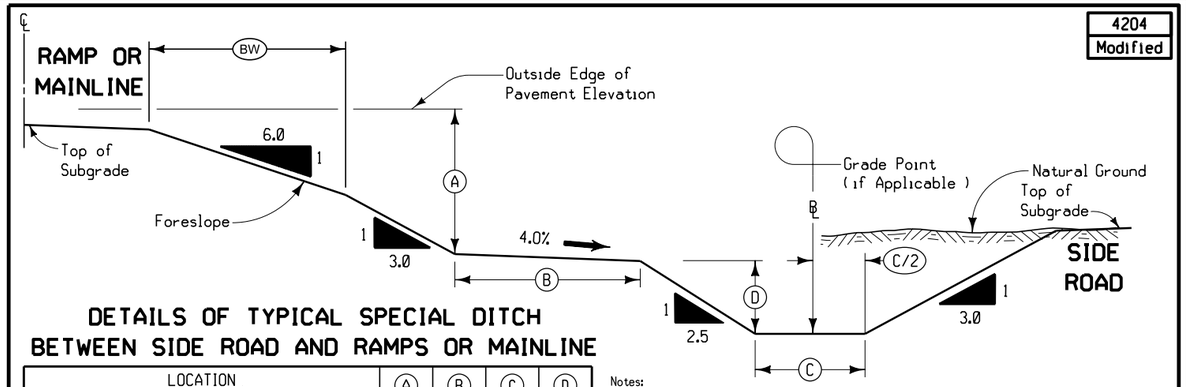
Notes:

Section view is in direction of traffic.

Normal sections shown may be appropriately modified for areas specifically designated by the Engineer such as intersections or superelevated curves.

Borrow backslope shall be used at those locations shown on plans or specifically required by the engineer.

4204
Modified



DETAILS OF TYPICAL SPECIAL DITCH BETWEEN SIDE ROAD AND RAMPS OR MAINLINE

LOCATION			A	B	C	D
STATION TO STATION		SIDE	Feet	Feet	Feet	Feet
943+00	957+95	LT	Varies	Varies	10'	2'
3957+91.5	3967+61	LT	Varies	Varies	10'	2'
1970+09	1983+10	LT	Varies	Varies	10'	2'
983+10	1008+61	LT	Varies	Varies	10'	2'

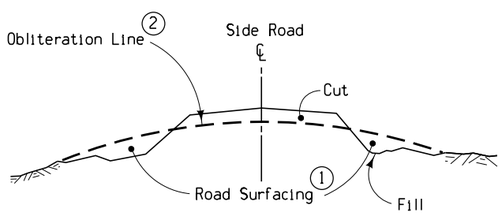
Notes:

Section view is in direction of traffic.

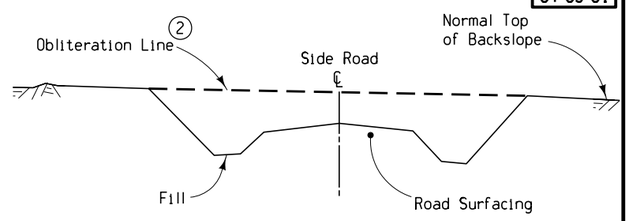
Normal sections shown may be appropriately modified for areas specifically designated by the Engineer such as intersections or superelevated curves.

Borrow backslope shall be used at those locations shown on plans or specifically required by the engineer.

4302
04-03-01



Fill Section



Cut Section

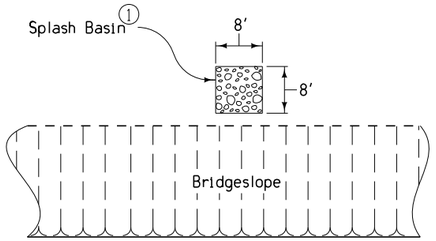
1 Existing road surfacing (granular material) shall be placed as shown unless otherwise directed by the Engineer or provided for in the detail project plans.

2 When specified, the upper 1' to be suitable for vegetation (grass or crops).

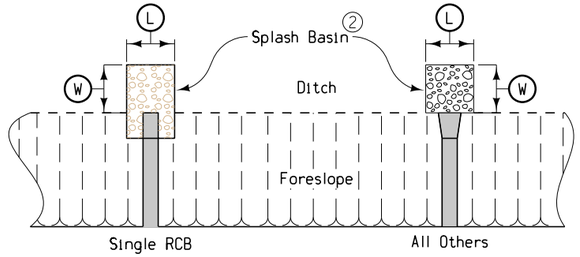
Note:
The work of obliterating or reshaping old roadbeds shall be done at the direction of the Engineer.

TYPICAL DETAILS FOR OBLITERATION EXISTING ROADBED

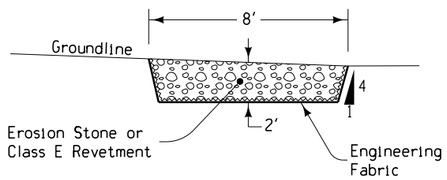
4404
10-16-12



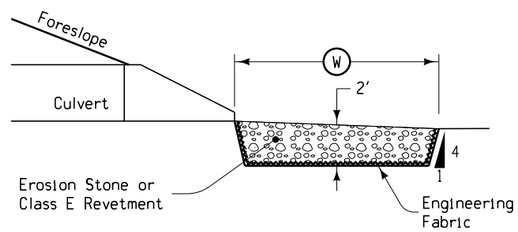
Splash Basin Under Bridge Drain
Plan View



Splash Basin at Culvert Outlet
Plan View



Splash Basin Under Bridge Drain
Typical Section



Splash Basin at Culvert Outlet
Typical Section

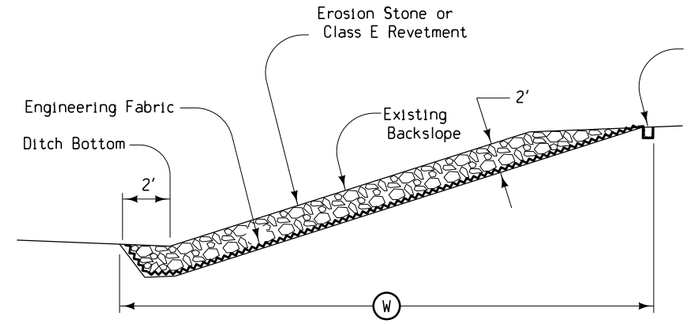
① Center splash basin directly under bridge drain.

② For single RCB, extend splash basin along the outside of the wings to the face of the parapet. Construct to a width of 3 feet and a depth of 2 feet.

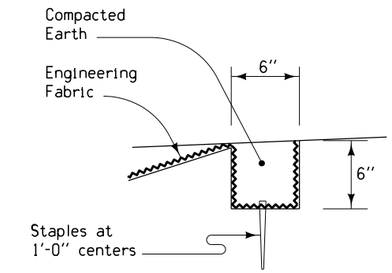
Refer to Tabulation 100-23 for additional information.

ROCK SPLASH BASIN

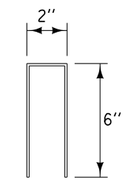
4405
04-20-10



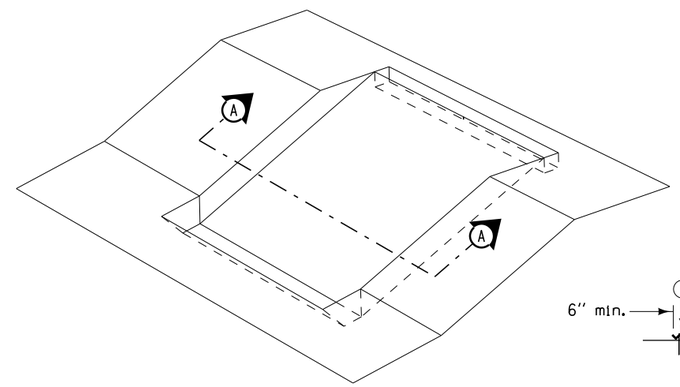
Typical Section



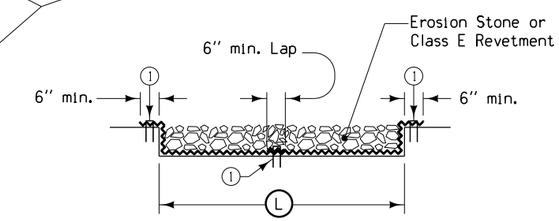
Anchor Slot



Staple
(No. 11 wire)



Isometric View



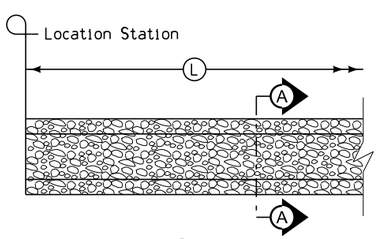
Section A-A

① Staples at 12" centers

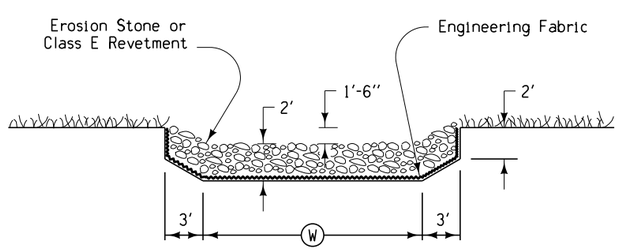
Refer to Tabulation 100-23 for additional information.

ROCK SLOPE PROTECTION

4402
04-16-13



Plan

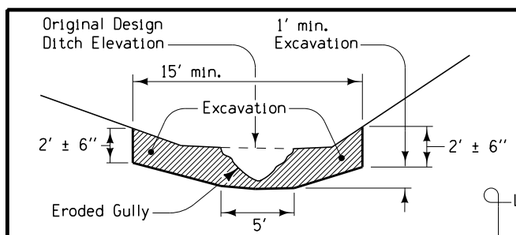


Section A-A

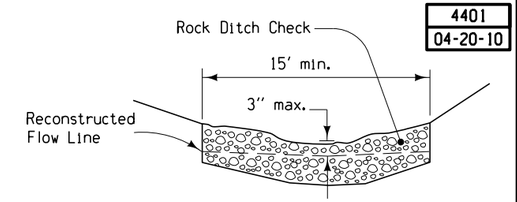
Refer to Tabulation 100-23 for additional information.

ROCK DITCH

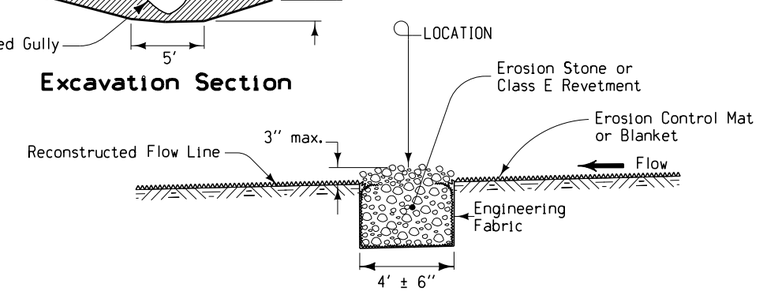
4401
04-20-10



Excavation Section



Ditch Check Section



Longitudinal Section at Centerline of Ditch

Refer to Tabulation 100-23 for additional information.

ROCK DITCH CHECK

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER B.16

6:55:01 AM 1/19/2016 CPODANY c:\pwworking\oma\d1308983\31020121B01.sht

① Refer to MI-210

② Refer to RL-8

POINTS OF ACCESS

102-3
04-20-10

Refer to Cross-Sections

Location		②	Length of Opening				①②	②	Pipe Culvert (RF-30A or RF-30B)					Aprons	Driveway Surface Area		Driveway Surfacing Material	Remarks
Station	Side	Type	Case ①	1½" Dropped Curb	3" Dropped Curb	W	PR	SR	H	Size	Pipe Length	Lt.②	Rt.②		H.M.A.	P.C.C.		
		A, B, or C	1, 2, or 3	Lin. Ft.	Lin. Ft.	Ft.	Ft.	Ft.	Ft.	Inches	Lin. Ft.	Lin. Ft.	Lin. Ft.	No.	Sq. Yds.	Sq. Yds.	Tons	
South Frontage Road																		
1993+25.00	LT	B	2	34.32		24												
1997+66.00	RT	B	2	51.00		36												
2000+00.00	RT	B	2	34.02		24												
2001+10.00	RT	B	2	34.02		24												
2001+86.00	RT	B	2	51.00		36												
2003+24.00	RT	B	2	39.00		24												
2004+67.00	RT	B	1	58.78		35												
2006+68.00	RT	B	1	59		35												
2009+23.00	RT	B	1	64		40												
2011+84.00	RT	B	1	64		40												
2013+56.00	RT	B	2	39		24												
2015+44.00	RT	B	1	74		24												
2022+00.00	RT	B	1	74		24												
2025+82.00	RT	B	1	55.28		35												
2027+40.00	RT	B	1	55.28		35												
2032+17.00	RT	B	1	31.02		24												
North Cascade (West)																		
6937+00.00	LT	C				30												
6949+98.00	LT	C				15												
6949+98.00	RT.	C				15												
North Cascade (East)																		
7960+00.00	LT	C	2	24.82		15												
7960+00.00	RT	C	2	25.23		15												
7964+50.00	LT	C	2	25.34		15												
7966+00.00	RT	B	1	87.11		30												
7971+20.00	RT	B	1	95		45												
7973+58.00	RT	B	1	84		24												
7975+15.00	RT	B	1	84.96		24												
7979+00.00	RT	C	2	25		15												
7980+70.00	RT	C	2	25		15												
7985+99.00	LT	C	2		28	18												
7987+29.00	LT	C	2		26	16												
7988+34.00	LT	C	2		26	16												
7988+79.00	LT	C	2		25	15												
7989+95.00	RT	B	2	34		24												
7993+52.00	RT	B	1	65.26		25												
7995+35.00	LT	B				24												
7995+91.00	LT	B	2	63.63		24												
Relocated Cottingham Road																		
8931+74.68	LT	C				16												
8953+65.00	LT	B				27												
8962+10.00	LT	B				27												
8967+50.00	LT	C				15												
Cottingham Road Connector																		
137+65.00	LT	C				28												
North Frontage Road																		
9982+57.00	LT	C				15												
9998+02.00	LT	C				15												
10008+00.00	LT	B				24												
10018+93.00	LT	C				15												
10020+00.00	LT	C				16												
10023+00.00	LT	C				16												
10024+41.12	LT	C				20												
Tower Drive																		
411+05.00	LT	C				16												

SURVEY SYMBOLS

- LUM Luminaire
- SIGN SI Sign
- ROW Right of Way Rail
- PPA Power Pole Co. 1
- PRA Power Riser Co. 1
- TEV Evergeen Tree
- SHR Shrub
- TDC Tree Deciduous
- SWAMP
- LP L.P. Tank
- OUT Tile Outlet
- TSG Traffic Signal
- IN Storm Sewer Intake
- INB Storm Sewer Intake Beehive
- MH Utility Access (Manhole)
- BB Billboard
- MIS Miscellaneous
- Flg FLG Flagpole
- MM MM Mile Marker Post
- SIGN SL Speed Limit Sign
- TP TPD Telephone Pedestal
- TCB TCB Utilities
- EB EB Electrical Box
- WV WV Water Valve
- FHYD Fire Hydrant
- UB UB Utility Box
- TVP TVP TV Pedestal
- TLN Tree Line
- TIL Tile Line
- FCL Chain Link and Security Fence
- FW Wire Fence
- FWD Wood Fence
- DU Centerline Draw or Stream (Up)
- D Centerline Draw or Stream (Down)
- DIK Centerline of Dike or Dam
- EW Edge of Water
- BNK Stream Bank
- GDL Guard Rail Steel
- RIP Rip-Rap
- RR Centerline of Railroad Tracks
- UV Underground Utility Vault
- E1 ELA Underground Electric Line Co. 1
- E2 ELB Underground Electric Line Co. 2
- E3 ELC Underground Electric Line Co. 3
- W WLA Underground Water Line Co. 1
- T1 TLA Underground Telephone Line Co. 1
- T2 TLB Underground Telephone Line Co. 2
- T3 TLC Underground Telephone Line Co. 3
- G GLA Underground Gas Line Co. 1
- FO FOA Underground Fiber Optic Co. 1
- FO2 FOB Underground Fiber Optic Co. 2
- St.S. STA Storm Sewer Co. 1
- St.S.2 STB Storm Sewer Co. 2

UTILITY LEGEND

GENERAL LOCATES: IOWA ONE CALL 800-292-8989

ELECRICAL:
E
MAQUOKETA VALLEY ELECTIC COOPERATIVE OFFICE 319-462-3541
P.O. BOX 370 jlauzon@mvec.com
ANAMOSA, IOWA 52205
ATTN: JAMES LAUZON

CENTRAL IOWA POWER COOPERATIVE (CIPCO) OFFICE 319-366-8011
1400 HWY. 13 SE FAX 319-366-8626
CEDAR RAPIDS, IOWA 52403
ATTN:

FIBER OPTICS:
FO
VERIZON BUSINESS (f.k.a. MCI) OFFICE 927-729-6322
2400 NORTH GLENNVILLE DRIVE dean.boyers@verizon
RICHARDSON, TX
ATTN: DEAN BOYERS

FO-2
IOWA COMMUNICATIONS NETWORK OFFICE 515-725-4741
400 EAST 1ST STREET larry.klawitter@iowa.gov
DES MOINES, IOWA 50319
ATTN: LARRY KLAWITTER

FO-3
QWEST COMMUNICATIONS OFFICE 563-588-6831
1600 JOHN F. KENNEDY ROAD
DUBUQUE, IOWA 52002
ATTN: CHRIS LOTSPEICH

GAS:
G
AQUILLA, INC. OFFICE 563-583-0415
1015 CEDAR CROSS ROAD FAX 563-583-0850
DUBUQUE, IOWA 52003
ATTN: LAURA ROUSSELL

G2
THREE RIVERS FS COMPANY (PROPANE) OFFICE 563-588-1250
14775 NORTH CASCADE ROAD
DUBUQUE, IOWA 52003
ATTN: DON ALBRECHT

GAS (HIGH PRESSURE):
G-HP
NORTHERN NATURAL GAS COMPANY. OFFICE
5557 COUNTY ROAD D
PLATTEVILLE, WISCONSIN 53818
ATTN: MIKE GLEAVES CELL 402-530-2852
ATTN: LENNY KLAAS CELL 402-530-2806

SEWER (SANITARY AND STORM):
San.
SANITARY SEWER (PRIVATE)
St. S.
STORM SEWER (STATE OF IOWA)

TELEPHONE:
T
QWEST COMMUNICATIONS OFFICE 563-588-6831
1600 JOHN F. KENNEDY ROAD
DUBUQUE, IOWA 52002
ATTN: CHRIS LOTSPEICH

TELEVISION:
TV
MEDIACOM COMMUNICATIONS OFFICE 563-387-6119
207 WEST PEARL STREET bfrazer@mediacomcc.com
DECORAH, IOWA 52101
ATTN: BOB FRAZOR

WATER:
W
WATER LINE (PRIVATE)

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
Cyan	(71)		Proposed Pavement Milling and Overlay 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

Proposed Borrow Elements
Aquisition Outline
Conceptual Outline

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)

VERNON TWP.
T-88N R-1E
SEC. 12

VERNON TWP.
T-88N R-1E
SEC. 12

NOTE: HIGH PRESSURE GAS PIPELINE

RELOCATED
COTTINGHAM ROAD

Sy Drive

PARCEL "C"

PARCEL "D"

PARCEL "A"

PARCEL "B"

LOT 2

LOT 1

(Close)

(USE AS CONSTRUCTED)

(USE AS CONSTRUCTED)

(Close)

U.S. 20

RAMP C

RAMP B

PI Sta 941+45.26

PS Sta 946+43.69

BC Sta 948+23.69

ES Sta 947+63.69

BEGIN PROJECT
STA. 943+00.00 BK (Exist. US 20) =
STA. 943+00.00 AH (NHS-20-9(121)-19-31)

+80 Prop. Type "M" Dike
Elev. = 1122.20

Sta. 945+00 - 37' Lt.
Install 24" - 1501
F.L. = Lt. 1104.56
Rt. 1120.27
Other 1105.05
Other 1116.04
Other 1117.43

Sta. 951+32.17 (Left)
Extend 3'x3' RCB & 42" RCP
With 42" - 1302 and RF-2
Skew = 15° Lt. Ahd. Extension Skew
Lt. 1086.19
F.L. = Rt. 1117.64 (Exist.)
Other 1091.19 (Exist.)
Other 1101.40 (Exist.)
Other 1102.00 (Exist.)
Other 1117.27 (Exist.)

Sta. 951+32.17 (Right)
Extend 3'x3' RCB
With 42" - 1301 and RF-2
Skew = 5° Lt. Ahd.
Lt. N\A
F.L. = Rt. 1119.20
Other 1117.27
Other 1102.00 (Exist.)

Sta. 934+00.60
5' X 7' X 142.9' RCB
D.A. = 20A - H
(U.A.C.)

Sta. 936+24.80
24" X 66.2' Conc Pipe
D.A. = A - MEDIAN
(U.A.C.)

Sta. 941+50.00
4' X 4' X 104' RCB
w/ 54" RCP
D.A. = 39A - H
(U.A.C.)

Sta. 944+98.70
24" X 66.3' Conc Pipe
D.A. = A - MEDIAN
(REMOVE)

Sta. 951+30.69
3' X 3' X 149.6' RCB
w/ 42" X 140' RCP
D.A. = 12A - H
(EXTEND LEFT AND RIGHT)

Sta. 954+92.79
24" X 64.0' Conc Pipe
D.A. = A - MEDIAN
(REMOVE)

0 100
FEET

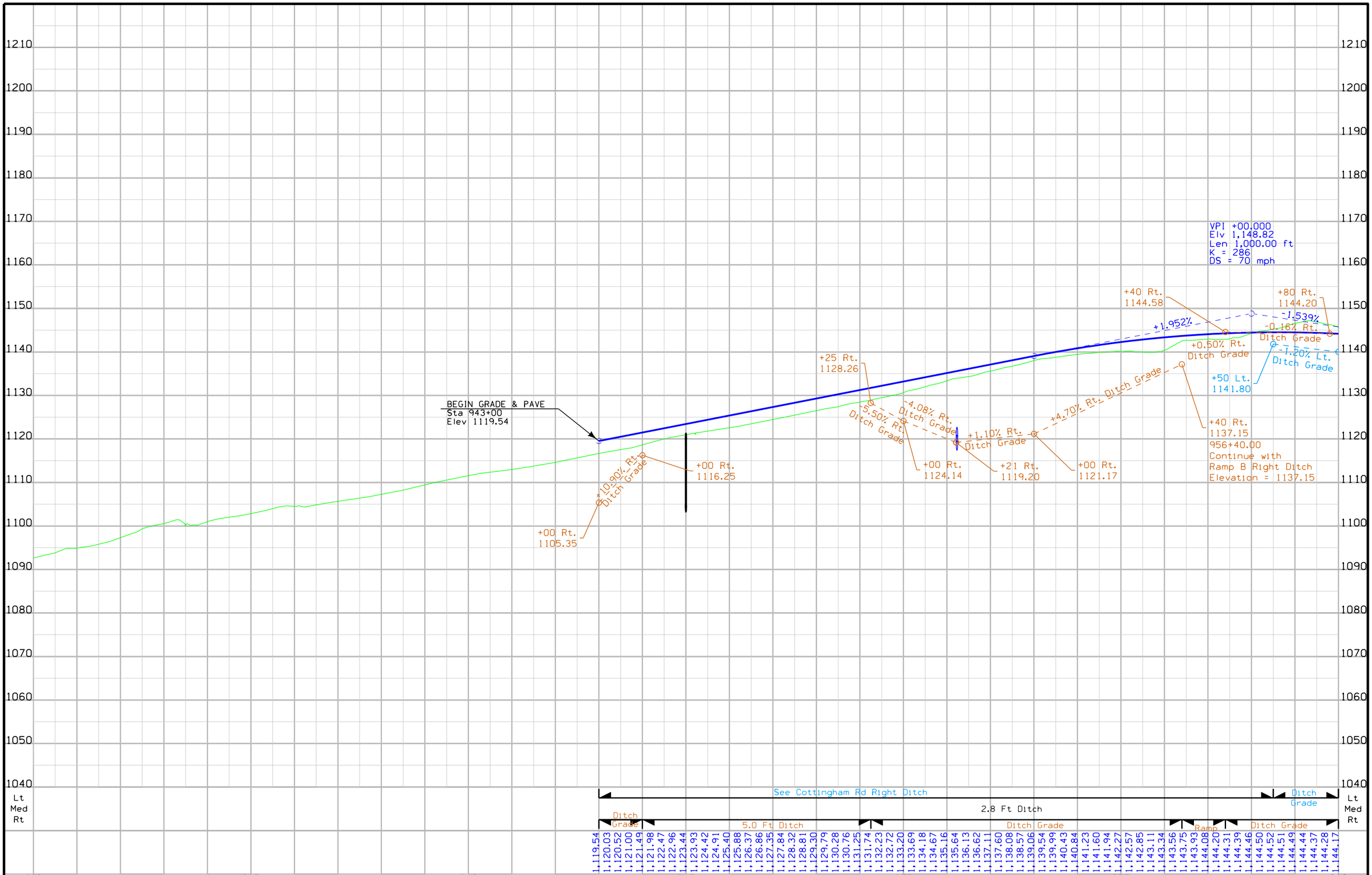
VERNON TWP.
T-88N R-1E
SEC. 13

VERNON TWP.
T-88N R-1E
SEC. 13

MAINLINE US 20

C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER D.2

6:55:47 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121D02.sht



C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER D.3

6:55:48 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121D02.sht

VERNON TWP.
T-88N R-1E
SEC. 12

VERNON TWP.
T-88N R-1E
SEC. 12

Sta. 966+80 - 37' Lt.
Install 24" x 76' - 1101 and RF-13
F.L. = Lt. 1126.270
Rt. 1132.17
Other 1131.00

Sta. 975+75
Install 36" x 250' - 1101
Skew = 35° Lt. Ahd.
F.L. = Lt. 1109.94
Rt. 1110.88

+20 Prop. Type "M" Dike
Elev. = 1110.00

NOTE: HIGH PRESSURE GAS PIPELINE

Sta. 985+00 - 37' Lt.
Install 24" - 1501
F.L. = Lt. 1083.15
Rt. 1109.12
Other 1083.64
Other 1104.14
Other 1106.29

LOT 1 LOT 1
NE1/4 SE1/4

RELOCATED
COTTINGHAM ROAD

SCS PI Sta 964+61.57
Δ = 41° 10' 21.30" (LT)
Theta = 1° 07' 15.62"
Ls = 180.00
Ts = 1,817.88
Es = 314.09
P = 0.29
K = 90.00
Xc = 179.99
Yc = 1.17
LT = 120.00
ST = 60.00
LC = 180.00

Curve Data
Δ = 38° 55' 50.07" (LT)
T = 1,625.81
L = 3,125.55
R = 4,600.00
E = 278.86
e = 4.0%
L = 180
x = 90
DS = 70

SWISS VALLEY ROAD

NORTH FRONTAGE ROAD

960

RAMP C

965

RAMP A

970

975

980

985

+00 Prop. Type "M" Dike
Elev. = 1134.20

STA. 5969+80.00 Swiss Valley Rd.
STA. 969+80.00 ML

U.S. 20

24" C.M.P. (REMOVE)

(CLOSE)

RAMP B

RAMP D

LOT 3 NW1/4 NE1/4

18" C.M.P. (REMOVE)

NORTH CASCADE ROAD EAST

Commercial Building

LOT 2 OF LOT 1
SE1/4 SE1/4
SEC.12-88-1E

SWISS VALLEY ROAD

Sta. 966+91.96
18" X 64.8' Conc Pipe
D.A. = A - MEDIAN
(REMOVE)

Sta. 969+47.15
24" X 85.0' Conc Pipe
D.A. = 3 A - R
(REMOVE)

Sta. 969+72.11
24" X 114.1' Conc Pipe
D.A. = 3 A - GR
(REMOVE)

Sta. 973+69.54
15" X 93.0' Conc Pipe
(REMOVE)

Sta. 974+53.69
24" X 163.0' Conc Pipe
D.A. = 6 A - R
(REMOVE)

Sta. 977+98.90
15" X 67.4' Conc Pipe
(REMOVE)

0 100
FEET

VERNON TWP.
T-88N R-1E
SEC. 13

VERNON TWP.
T-88N R-1E
SEC. 12

MAINLINE US 20

C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER D.4

6:55:48 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121D02.sht

C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER	NHS-020-9(121)--19-31	SHEET NUMBER D.5

6:55:50 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121D02.sht

VERNON TWP.
T-88N R-1E
SEC. 12

SCS PI Sta 1002+58.93
Δ = 50° 32' 23.51" (LT)
Theta = 2° 17' 30.59"
Ls = 240.00
Ts = 1,536.54
Es = 318.34
P = 0.80
K = 119.99
Xc = 239.96
Yc = 3.20
LT = 160.01
ST = 80.01
LC = 239.98

Curve Data
Δ = 45° 57' 22.32" (LT)
T = 1,272.07
L = 2,406.26
R = 3,000.00
E = 258.55
e = 5.3%
L = 240
x = 90
DS = 70

TABLE MOUND TWP.
T-88N R-2E
SEC. 7

NOTE: HIGH PRESSURE GAS PIPELINE

Sta. 996+00 - 37' Lt.
Install 24" x 86' - 1201 and RF-13
F.L. = Lt. 1080.93
Rt. 1085.83
Other 1082.99

Sta. 1010+50
Build 4' x 5' Drop Inlet w/ 36" x 200'
and 4' x 5' Drop Inlet w/ 42" x 114' and RF-13
F.L. = Lt. 1033.44 Inlet Weir F.L. = 1057.10
Rt. 1047.10 Mid Weir F.L. = 1048.00
Other 1035.97
Other 1038.87
Other 1039.52

Sta. 1011+74.41 - 37' Lt.
Install 24" x 80' - 1101 and RF-13
F.L. = Lt. 1049.54
Rt. 1056.39
Other 1051.05

+20 Prop. Type "M" Dike
Elev. = 1087.70

+90 Prop. Type "C" Ent.

NORTH FRONTAGE ROAD
U.S. 20
SOUTH FRONTAGE ROAD
NORTH CASCADE ROAD EAST

Sta. 1000+09.90
15" X 55.3' Conc Pipe
(REMOVE)

Sta. 1000+79.00
24" X 179' Conc Pipe
D.A. = 9 A - R
(REMOVE)

Sta. 1006+13.00
30" X 200.5' Conc Pipe
D.A. = 3 A - H
(REMOVE)

Sta. 1007+68.63
15" X 64.8' Conc Pipe
(REMOVE)

Sta. 1010+10.25
30" X 209.8' Conc Pipe
D.A. = 11 A - H
(REMOVE)

Sta. 1011+68.00
15" X 79.0' Conc Pipe
(REMOVE)

Sta. 1015+40.50
24" X 249.5' Conc Pipe
D.A. = 5 A - H
(REMOVE)

TABLE MOUND TWP.
T-88N R-2E
SEC. 7

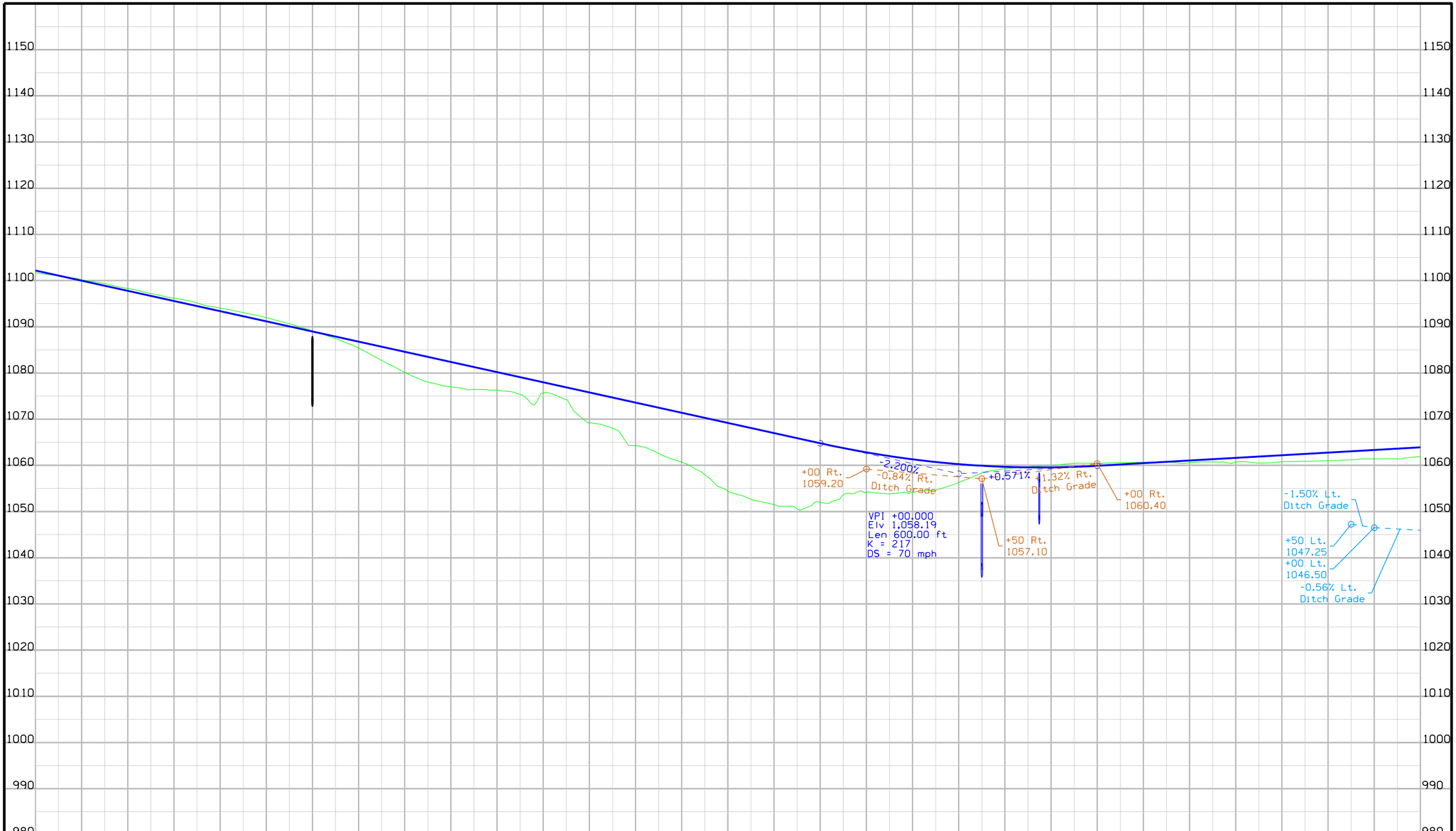
TABLE MOUND TWP.
T-88N R-2E
SEC. 7

0 FEET 100

MAINLINE US 20

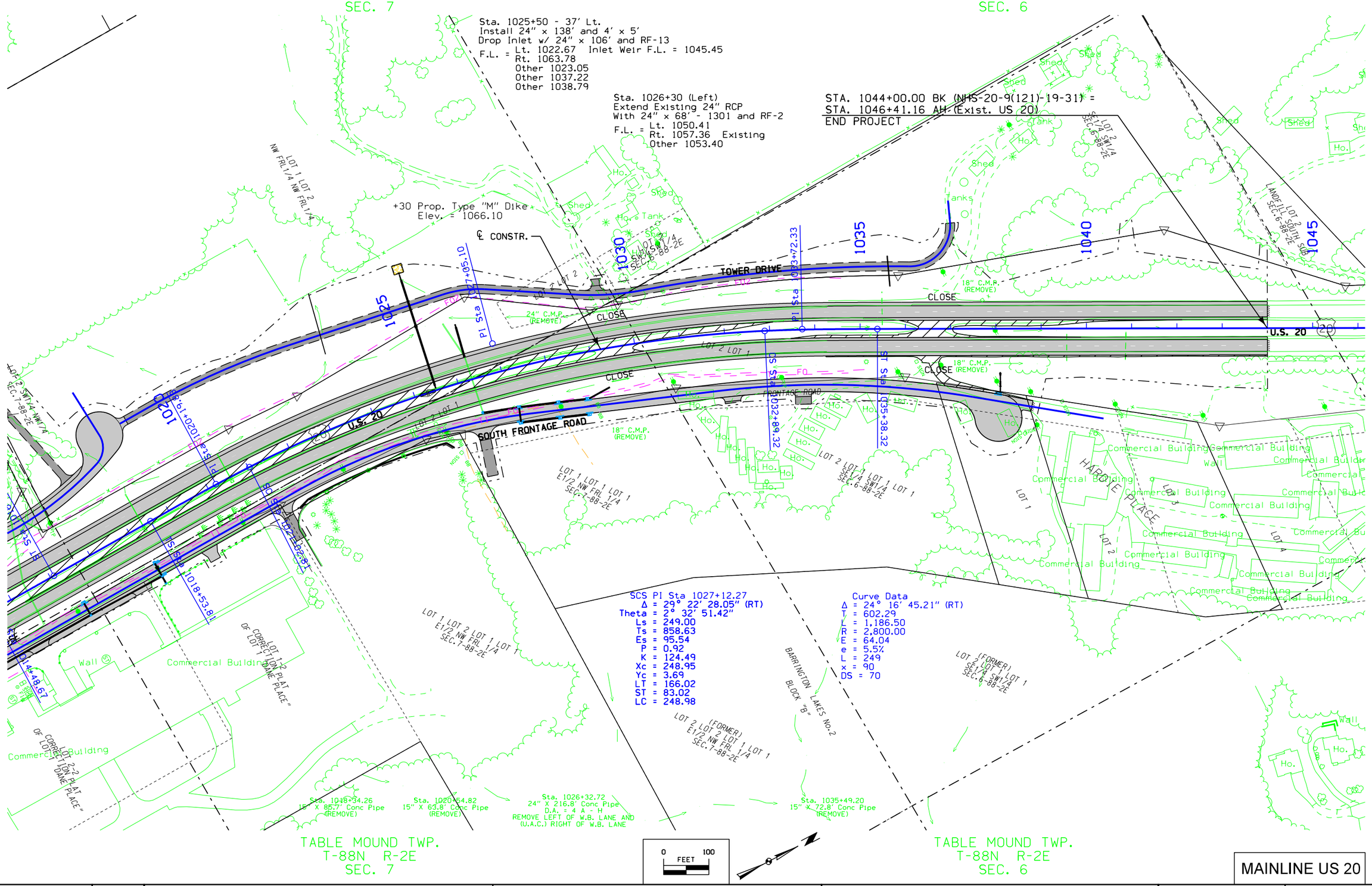
C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER D.6

6:55:50 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121D02.sht



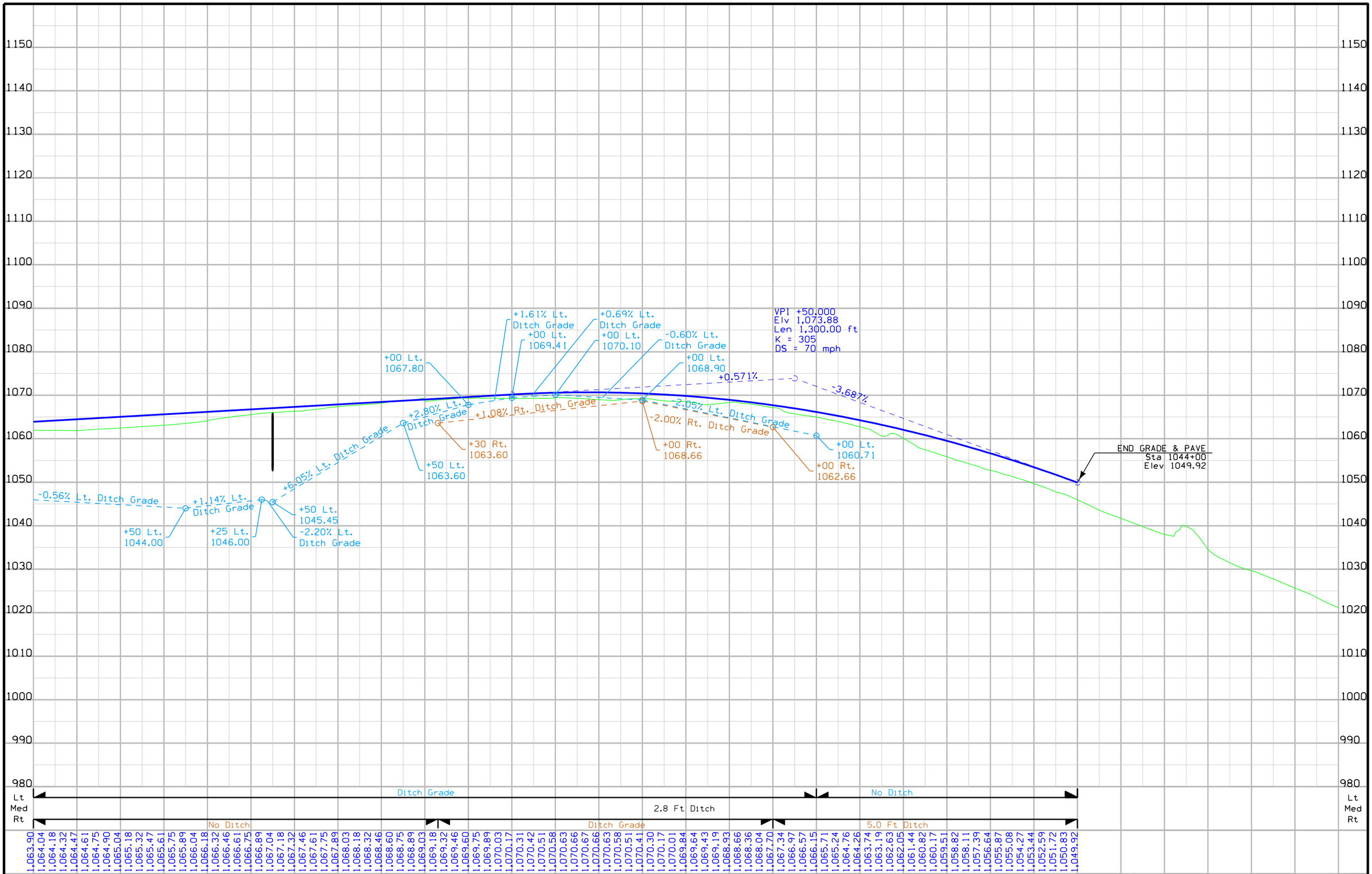
C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER D.7

6:55:52 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121D02.sht



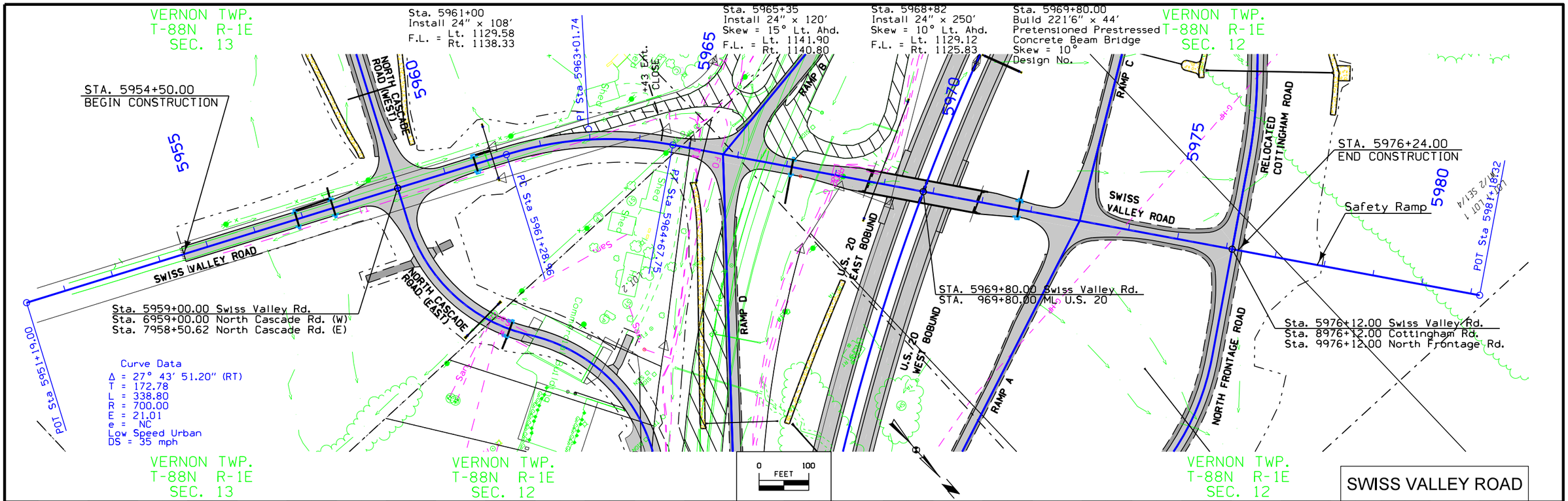
C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER D.8

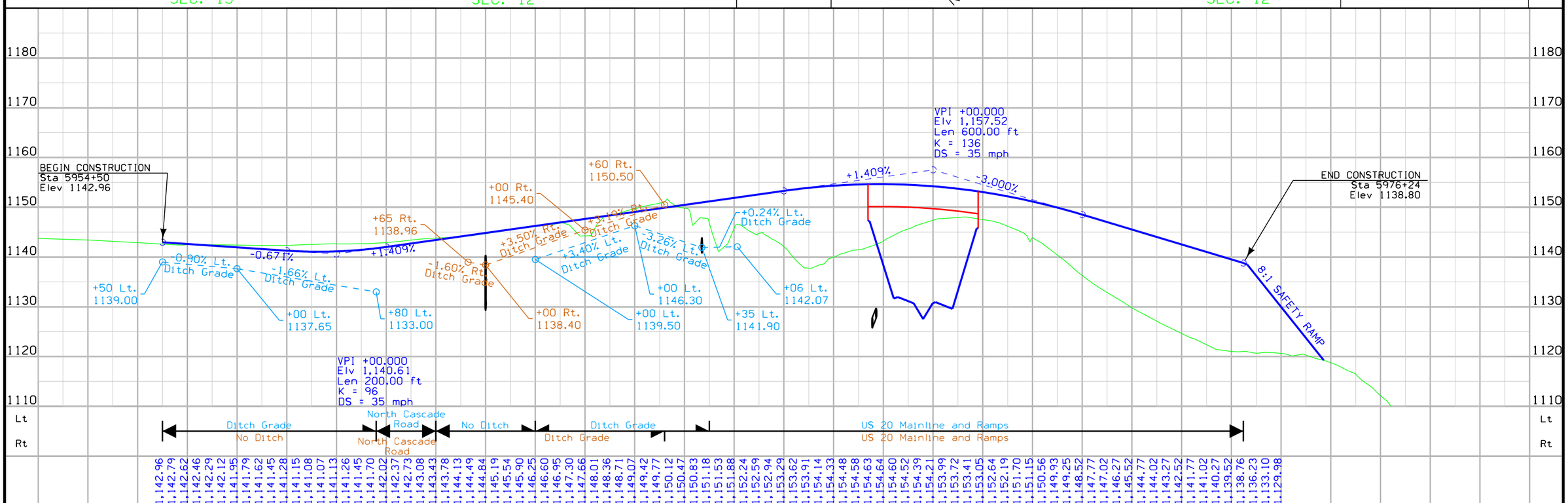
6:55:52 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121D02.sht



ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER D.9

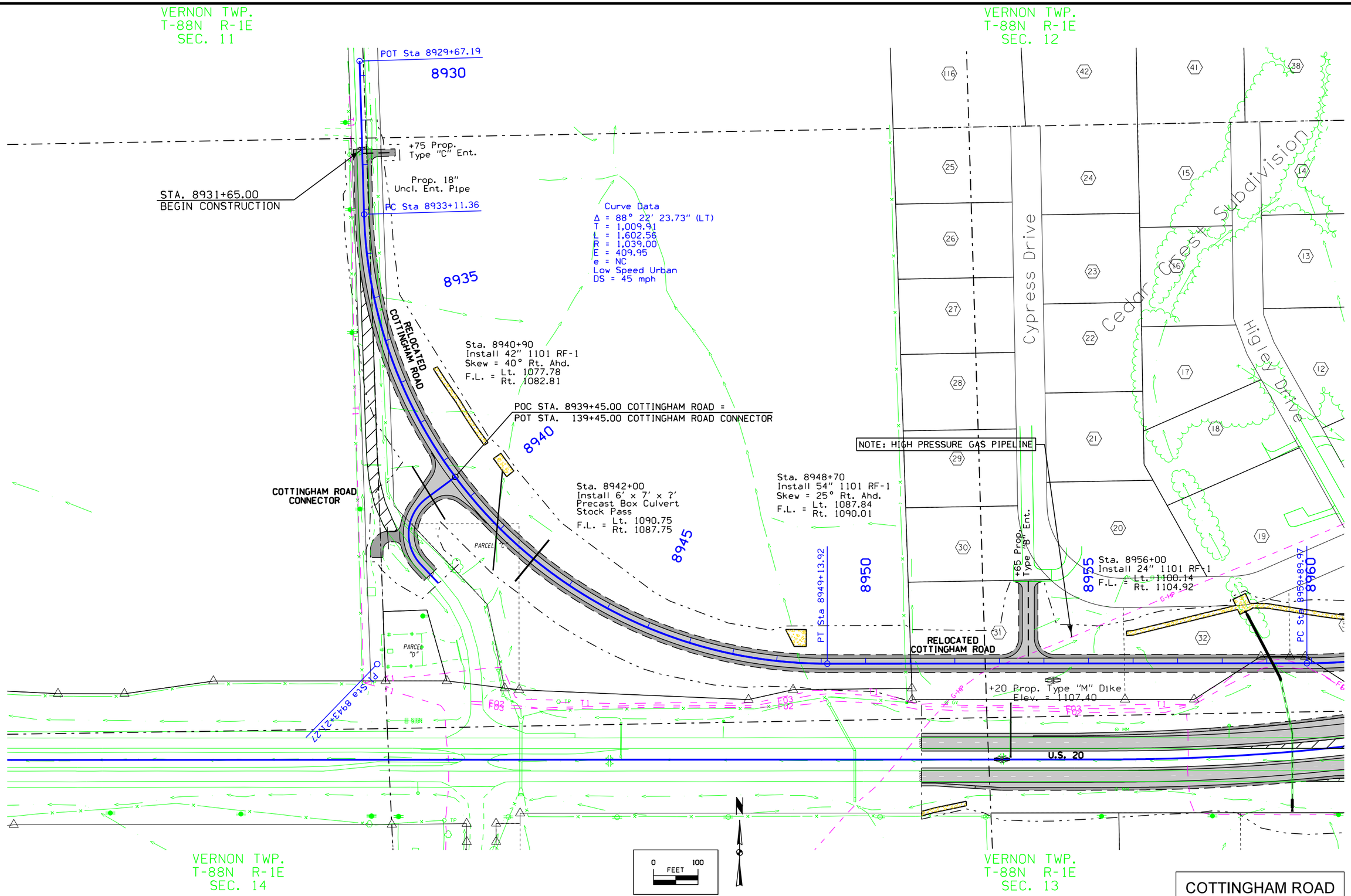
6:56:02 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121D02.sht





C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER E.1	

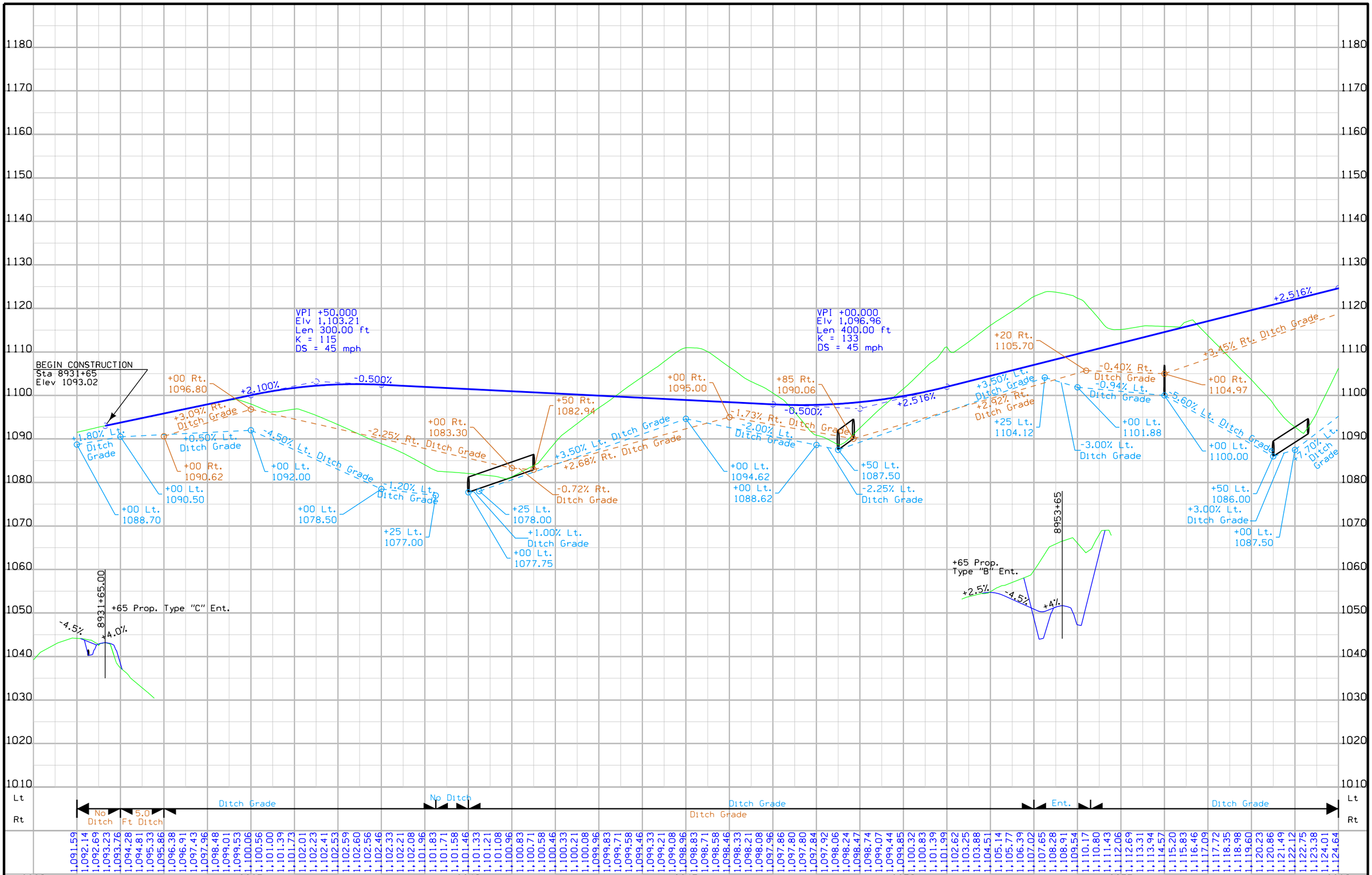
6:56:33 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht



COTTINGHAM ROAD

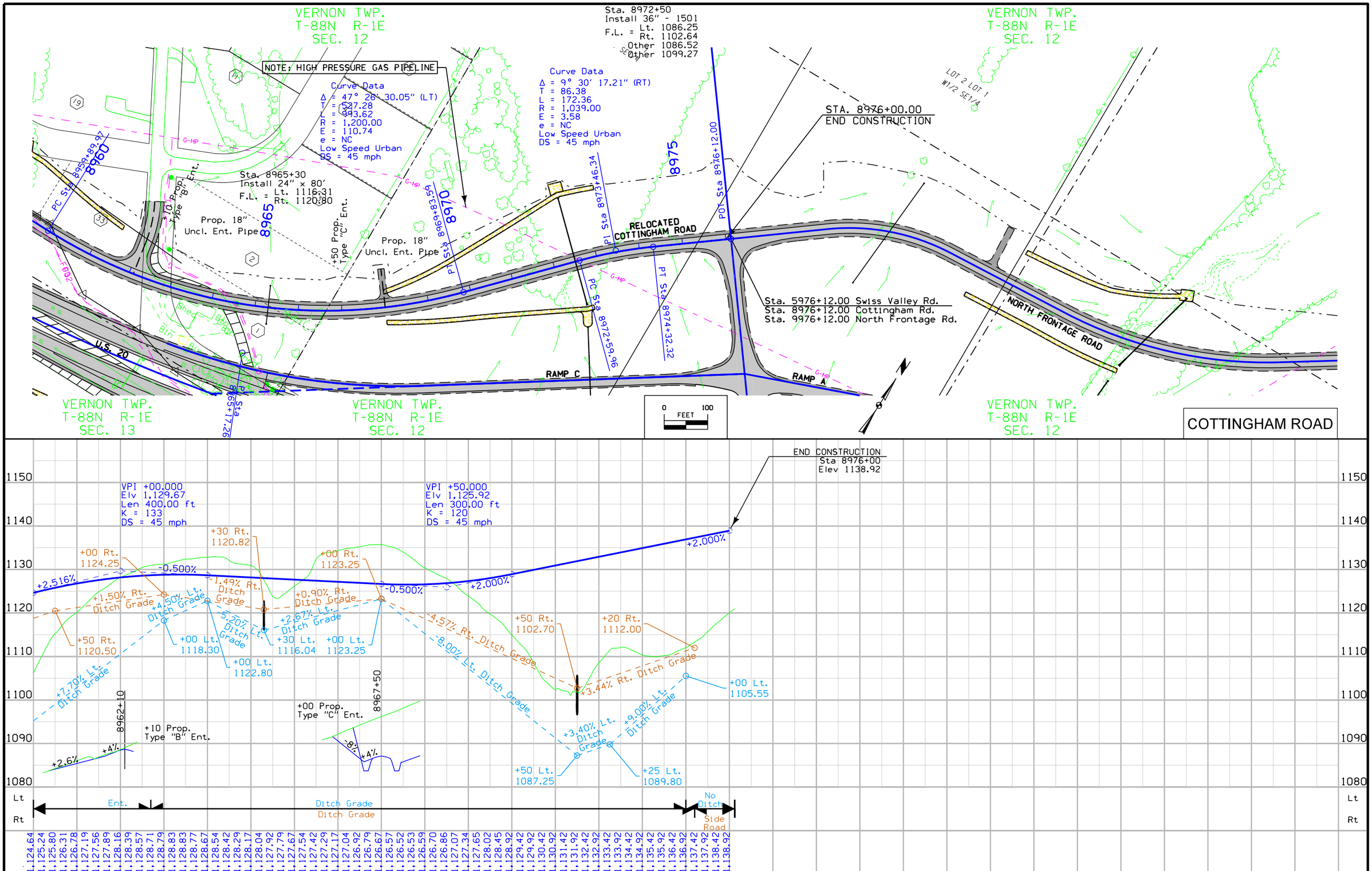
C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER E.2

6:56:34 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht



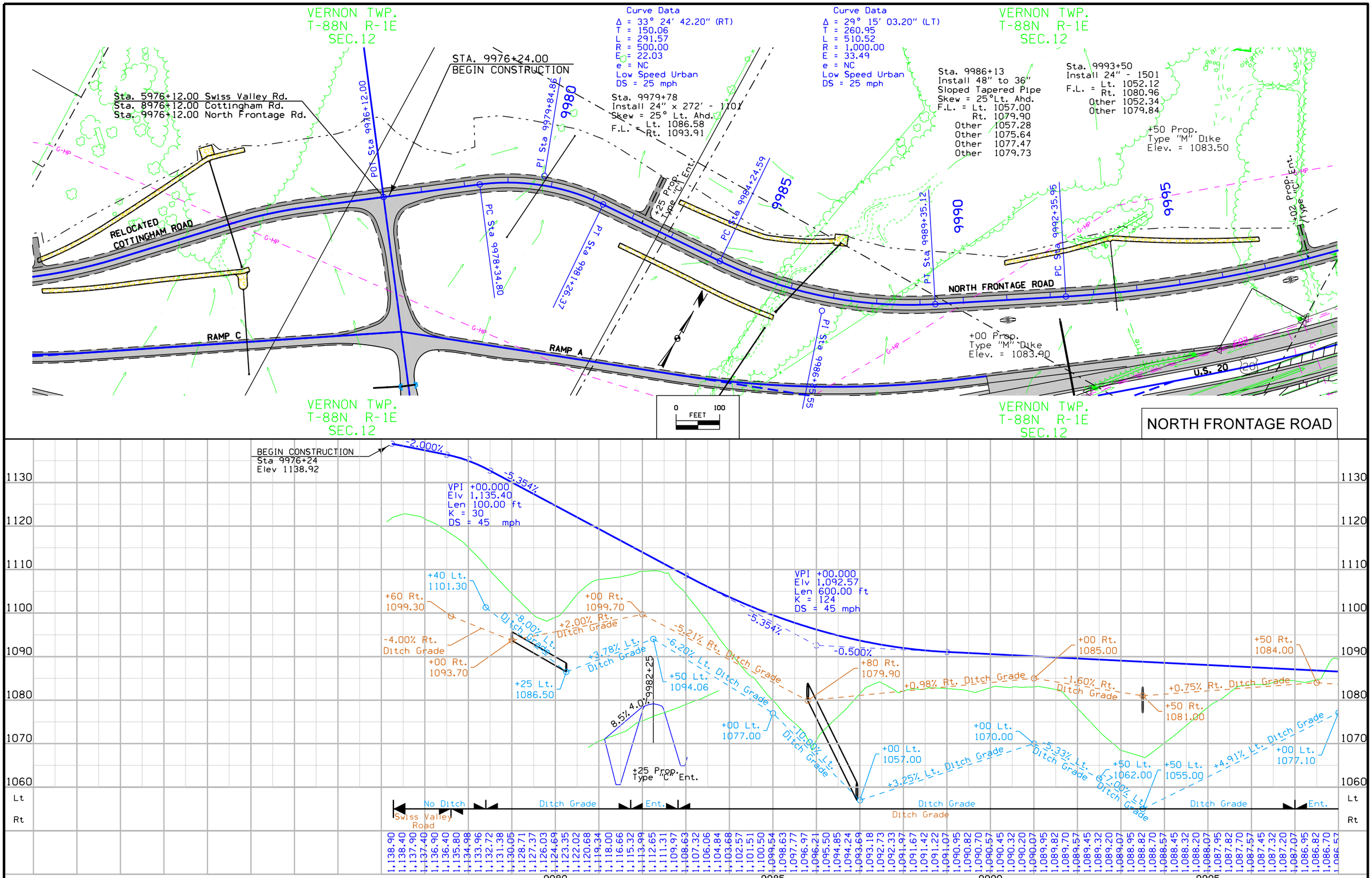
C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER E.3	

6:56:35 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht



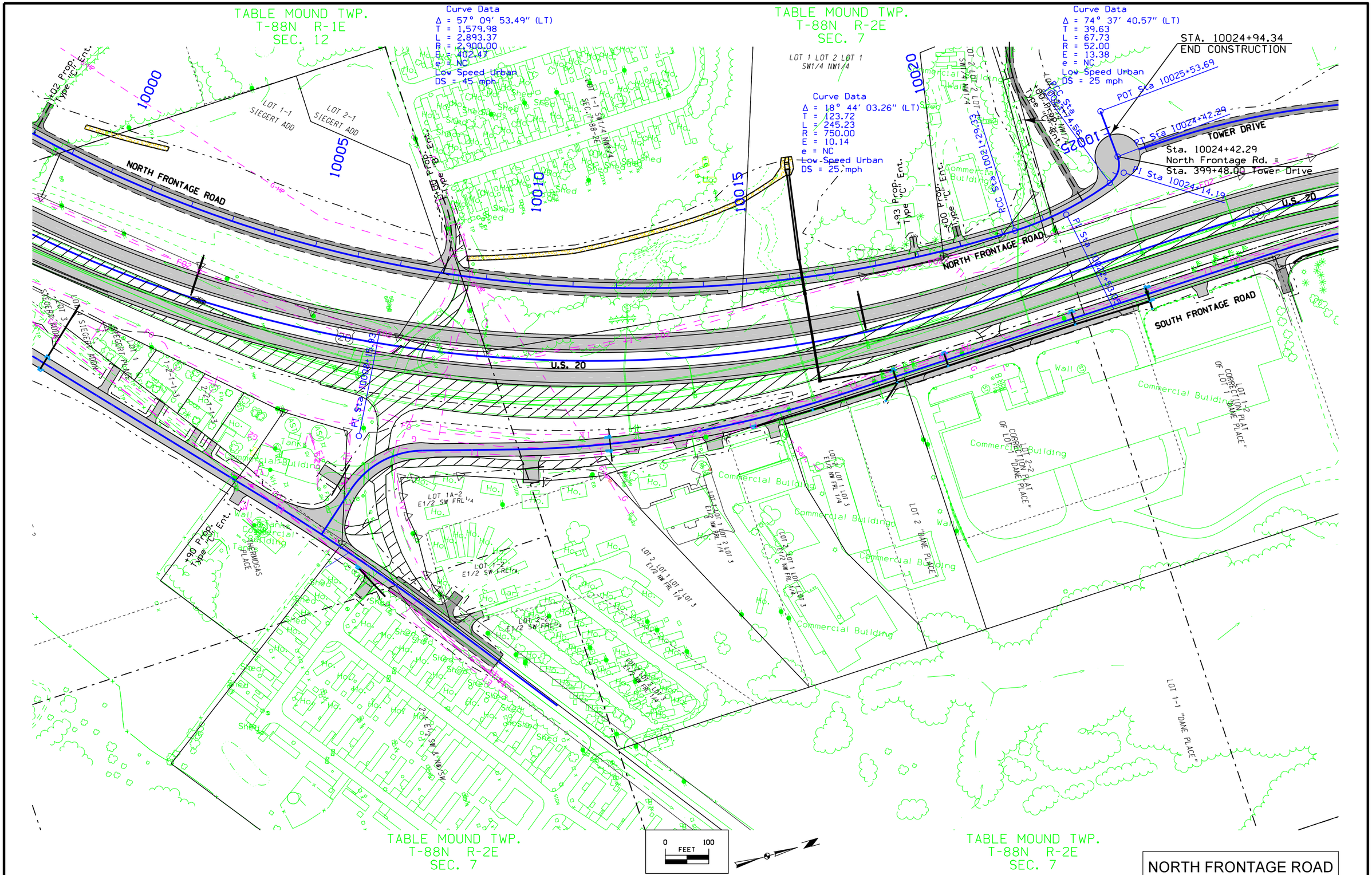
ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER E.4

6:56:36 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht



C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER	NHS-020-9(121)--19-31	SHEET NUMBER E.5

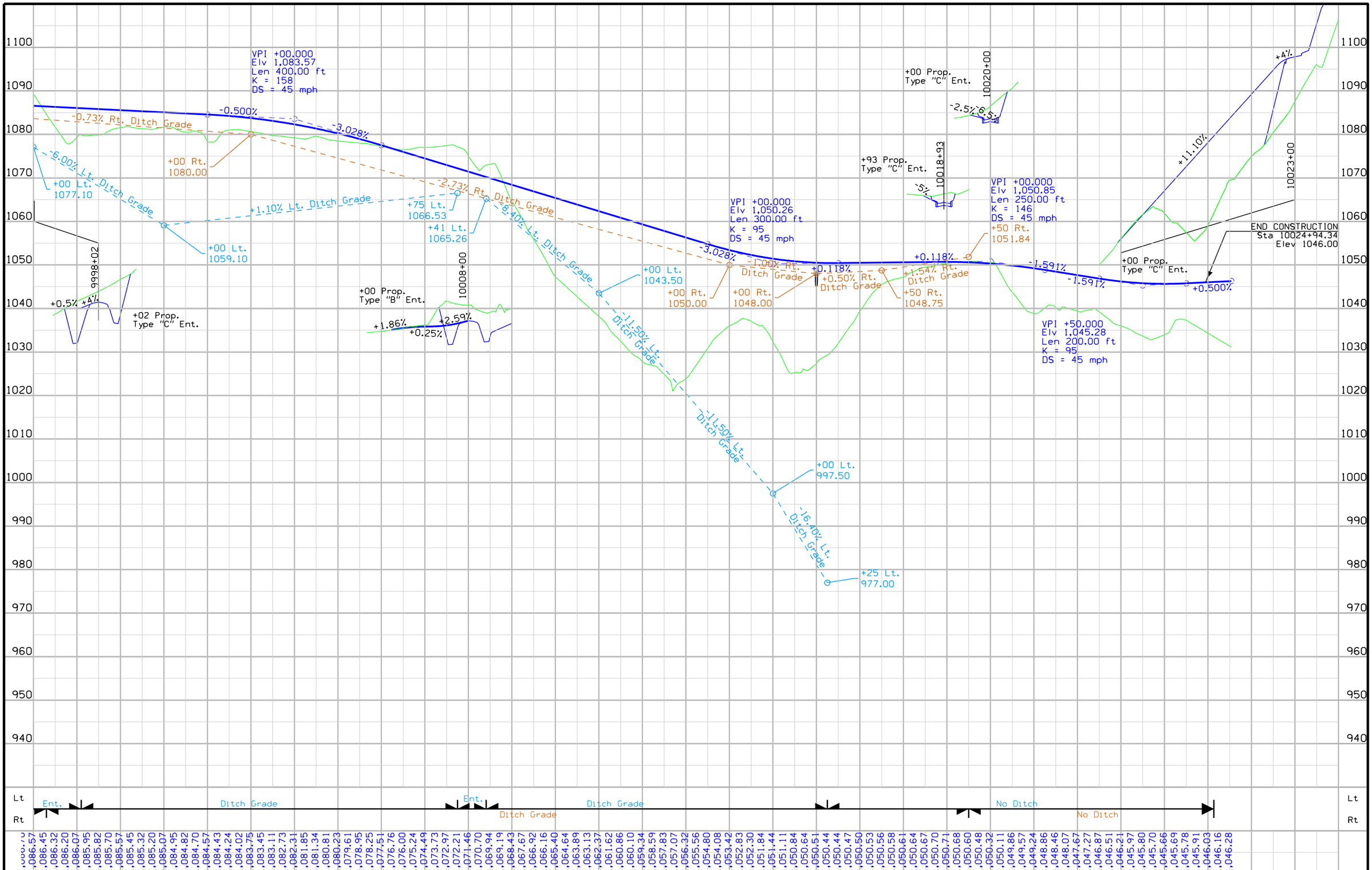
6:56:37 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht



NORTH FRONTAGE ROAD

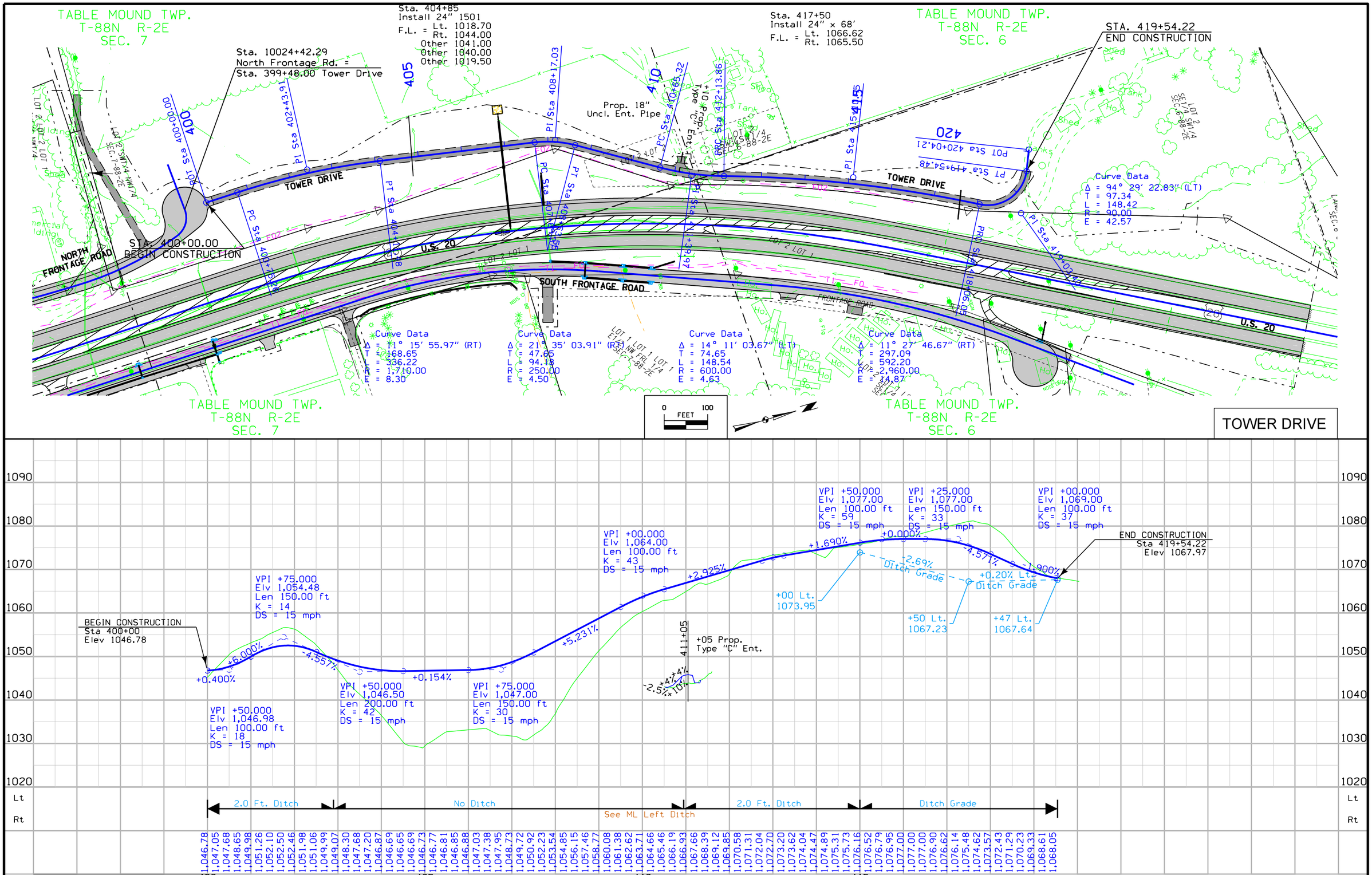
C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER	NHS-020-9(121)--19-31	SHEET NUMBER E.6

6:56:39 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht



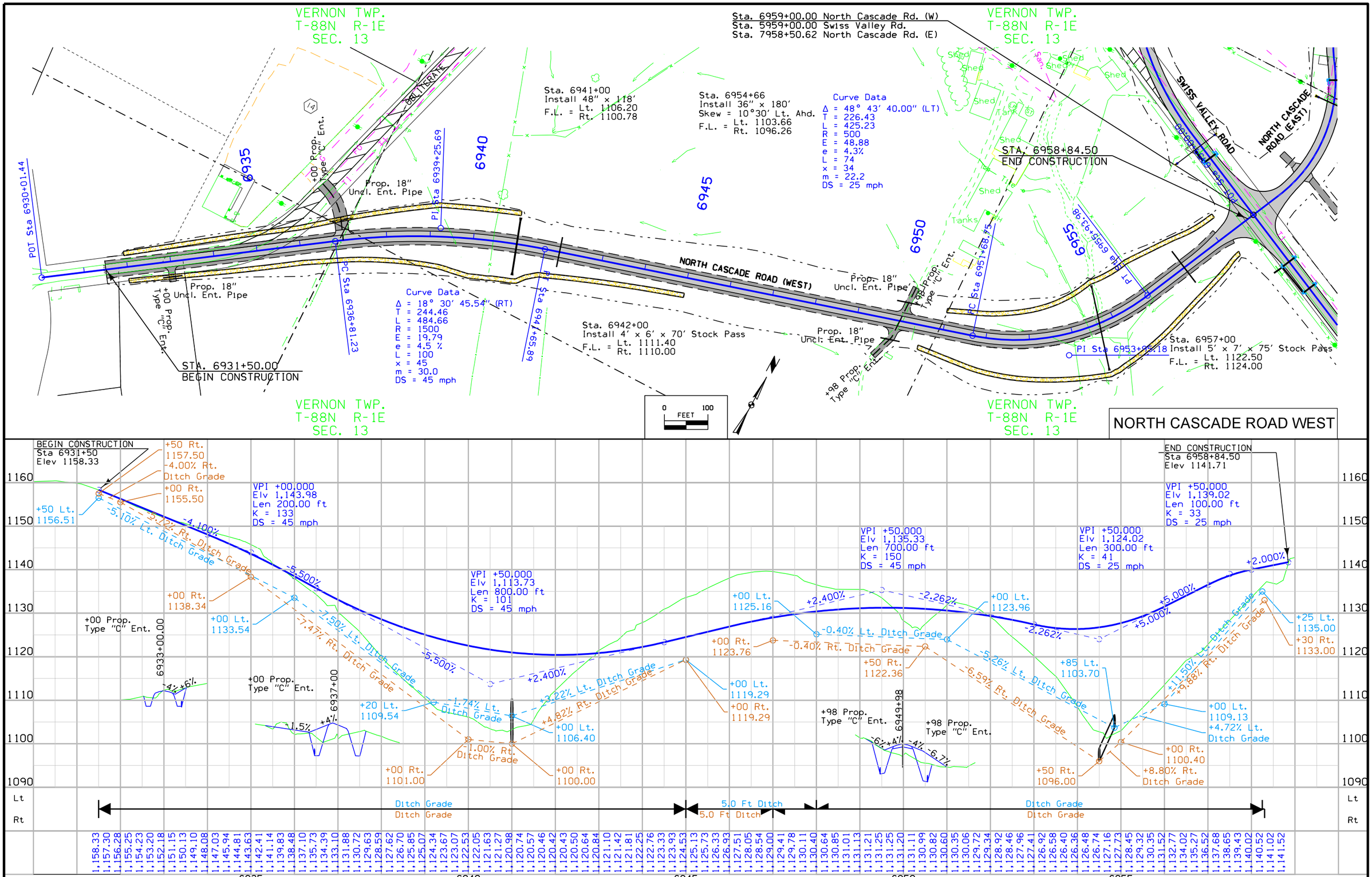
C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER E.7

6:56:40 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht



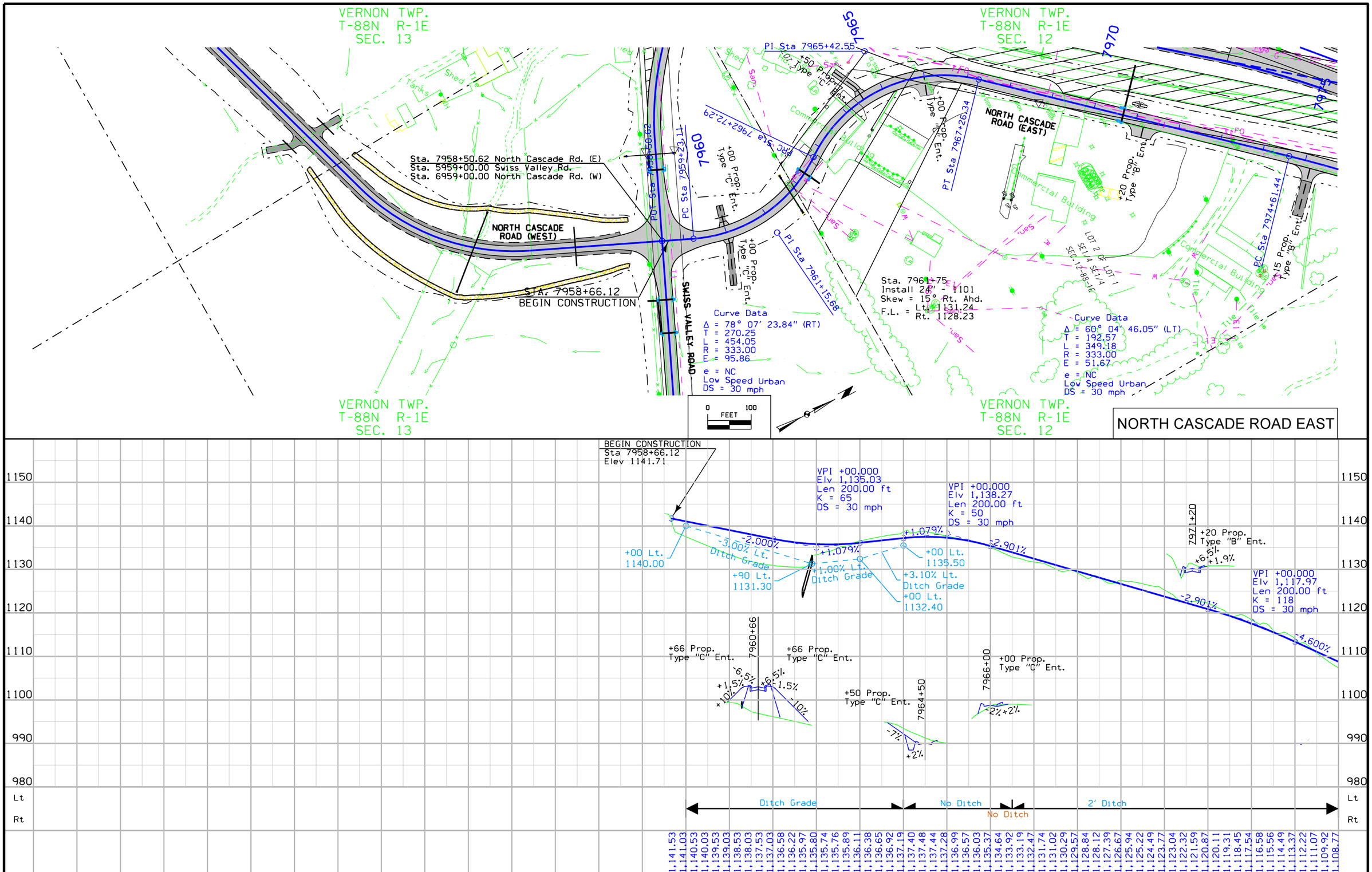
C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER E.8

6:56:41 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht



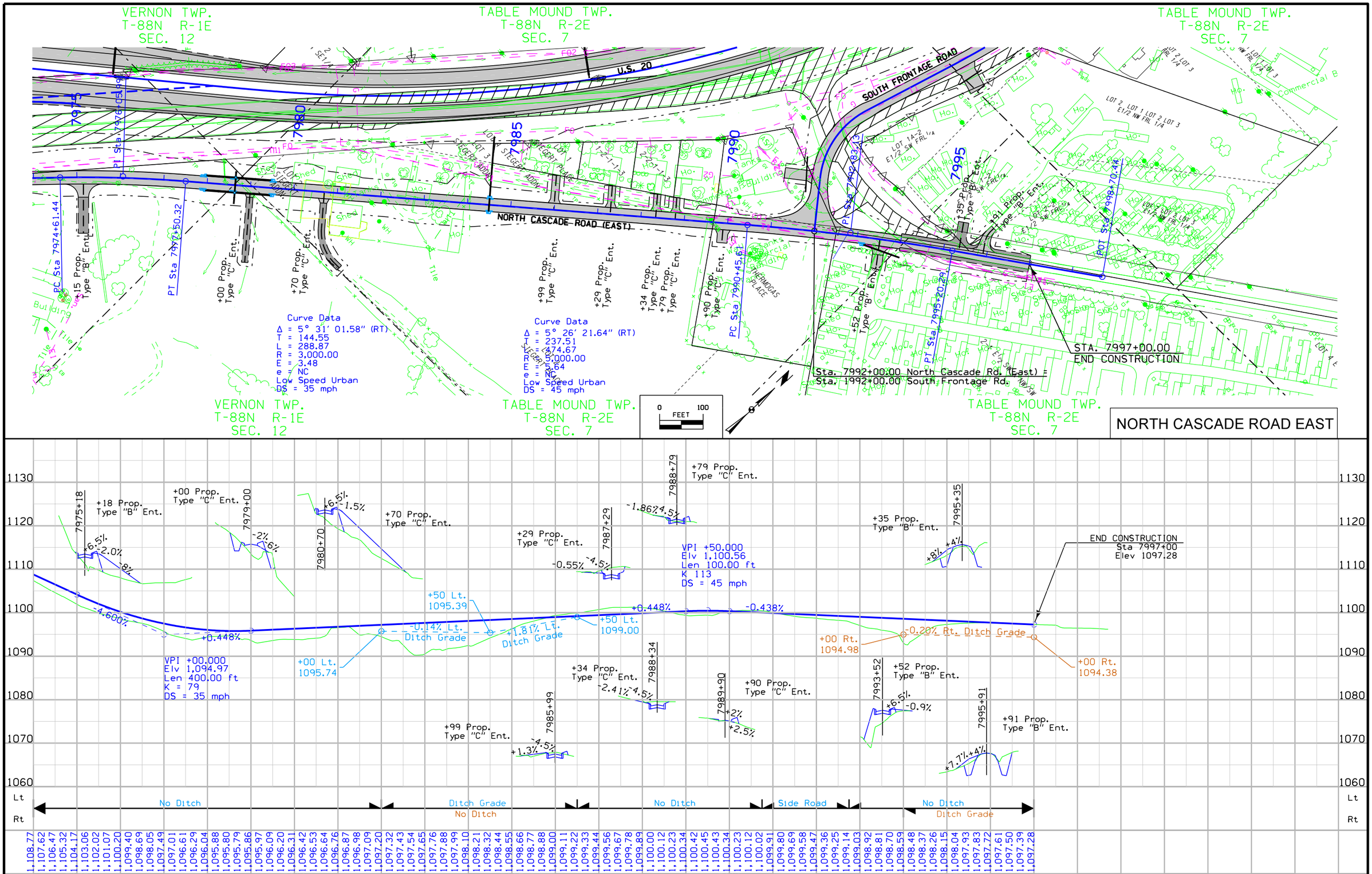
C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER E.9

6:56:42 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht



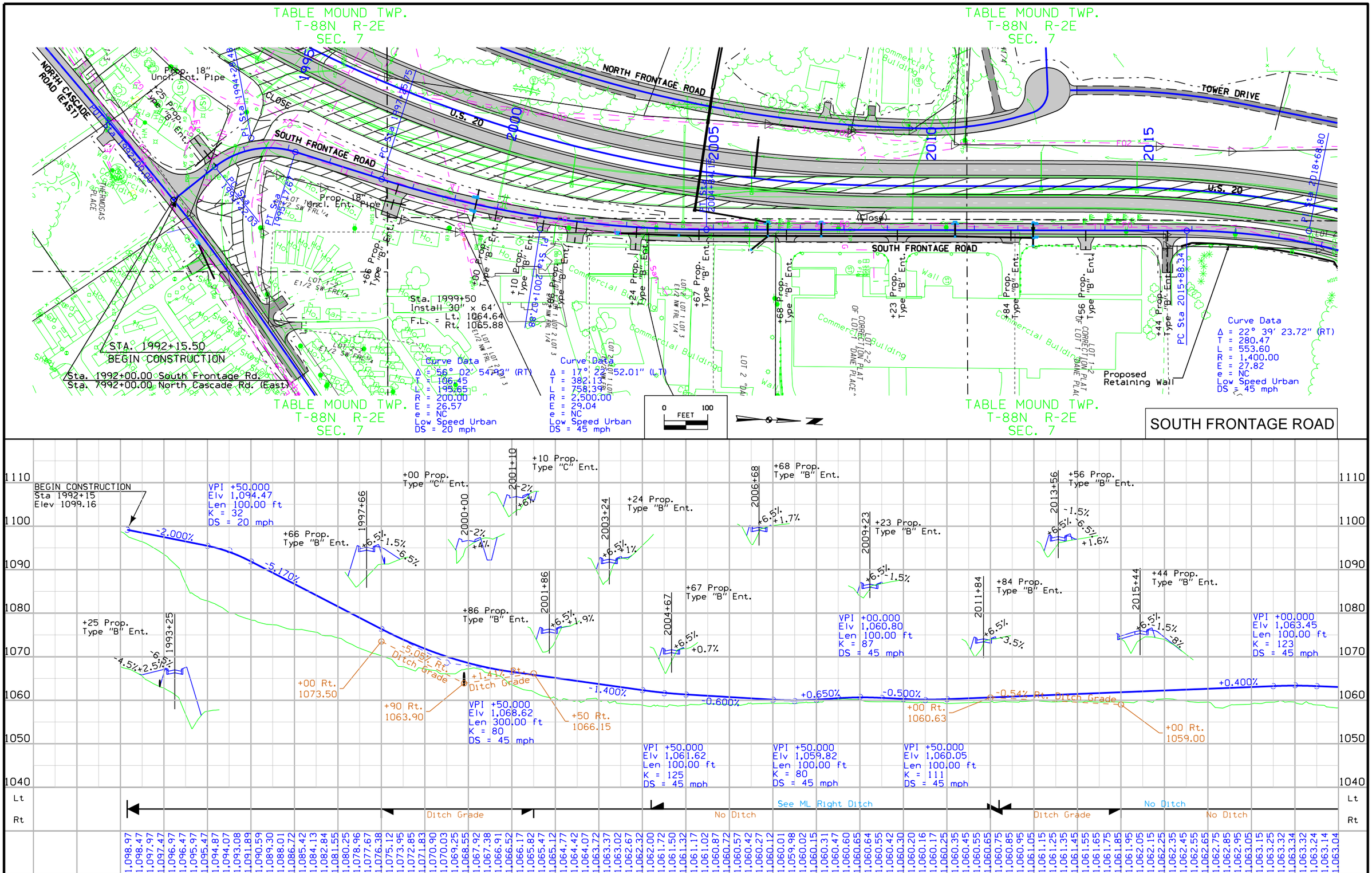
C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER E.10	

6:56:44 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht



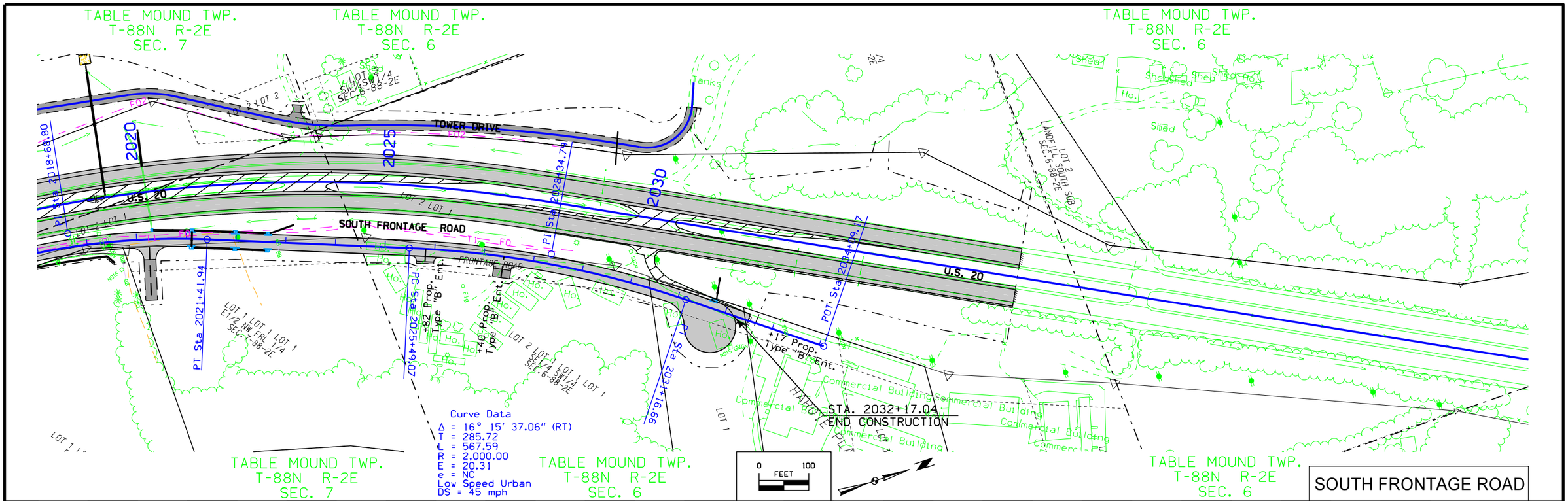
ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER E.11

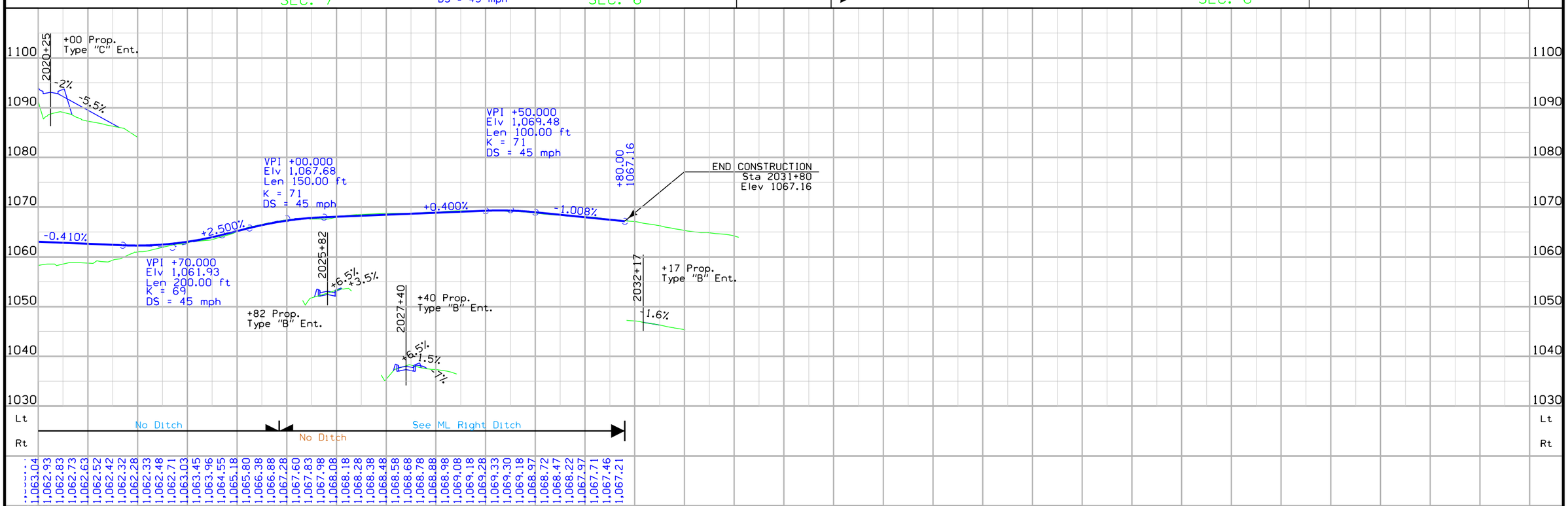
6:56:45 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht



C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER E.12

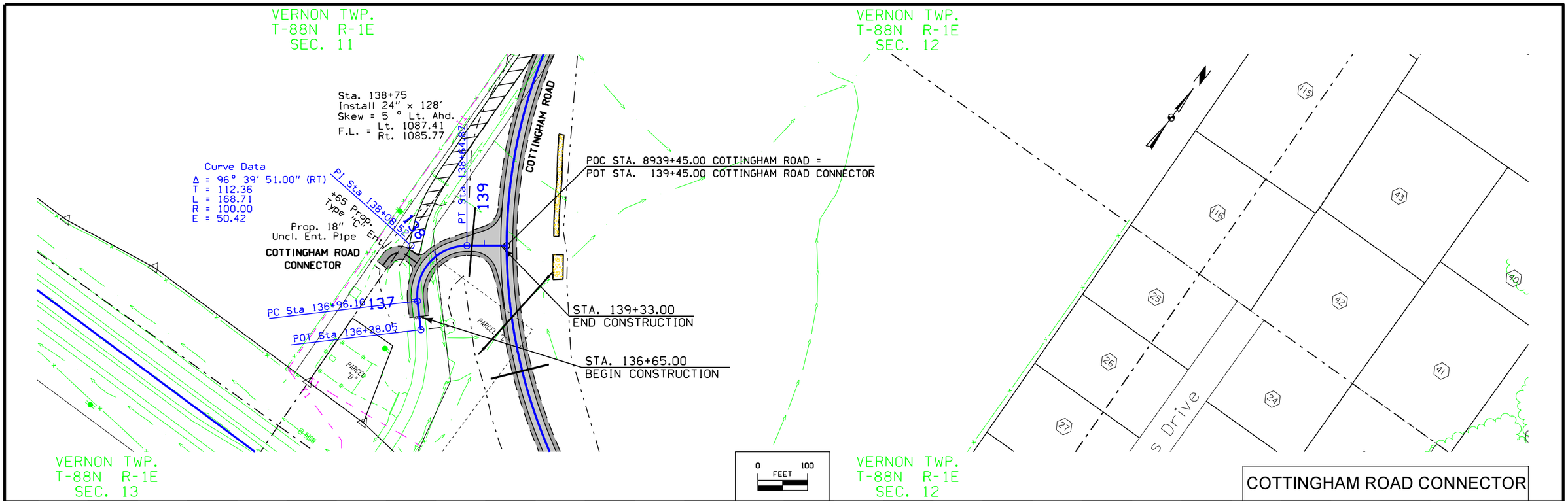
6:56:46 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht

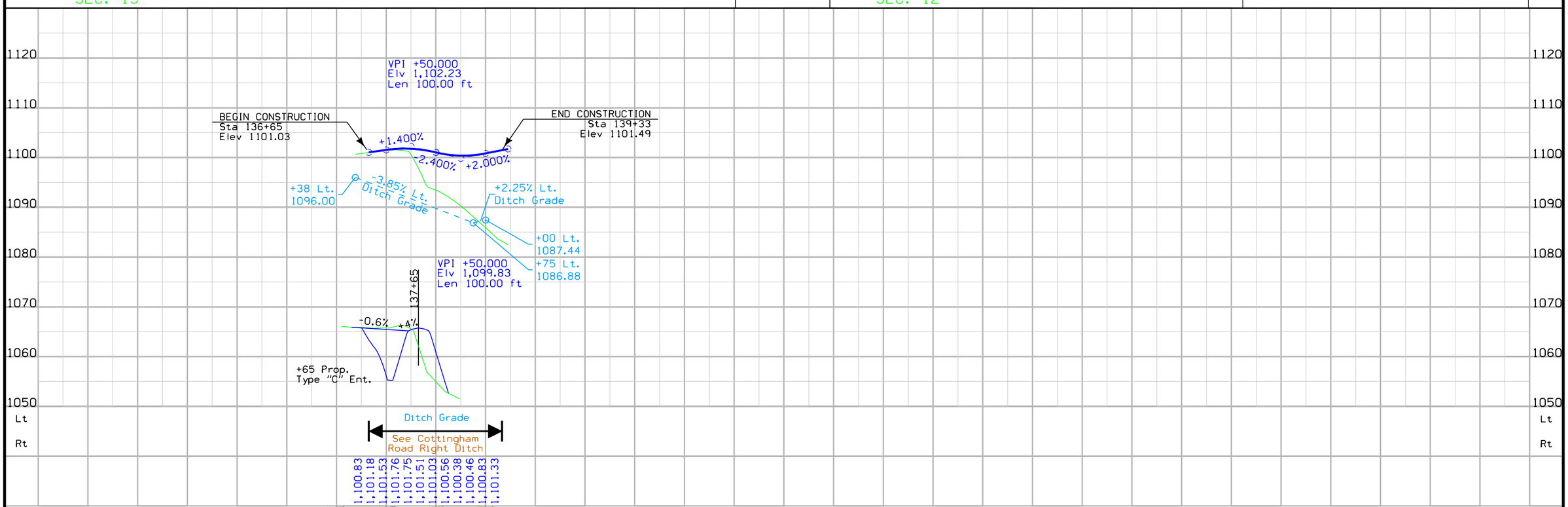




C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER E.13

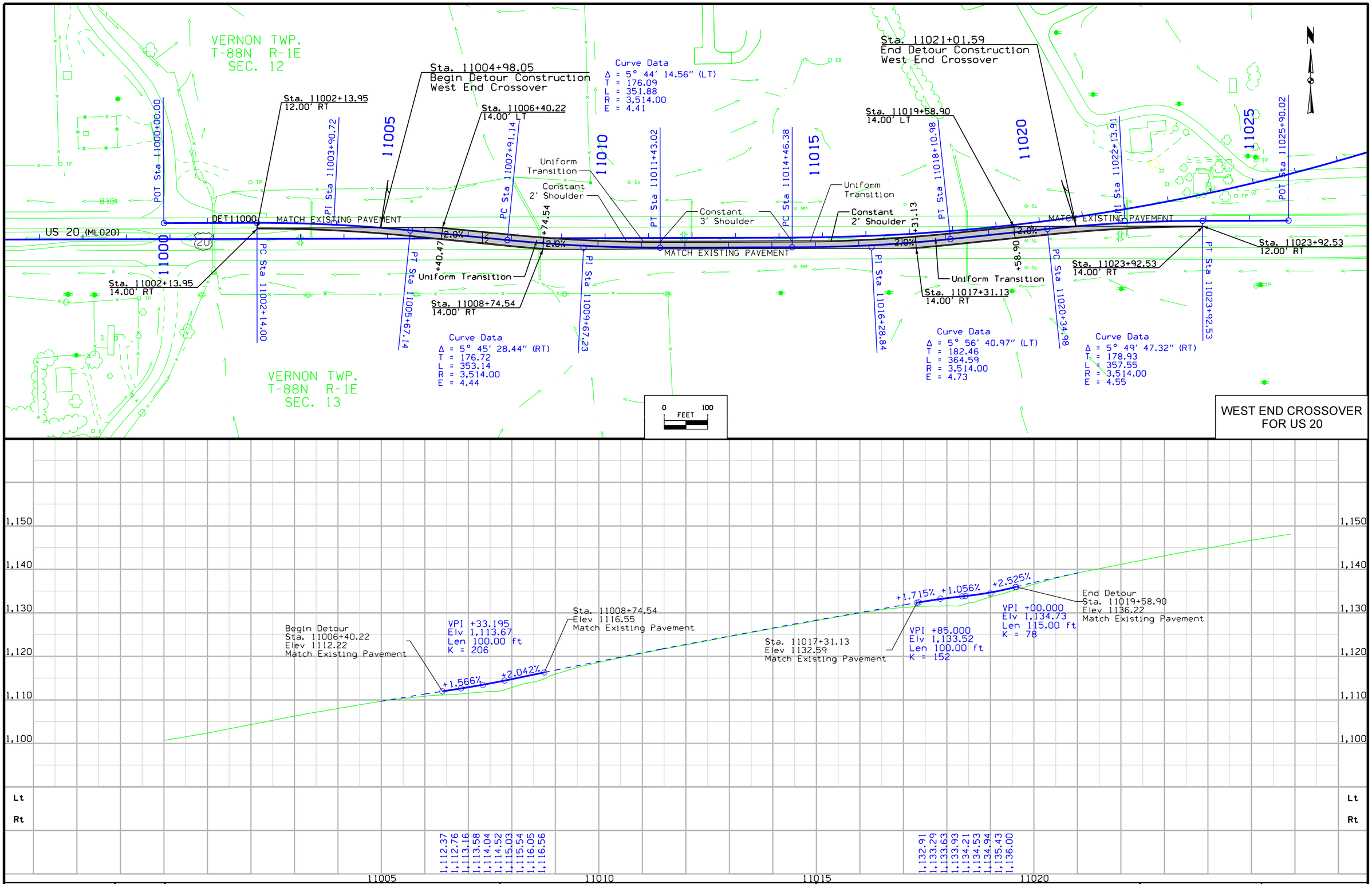
6:56:47 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht





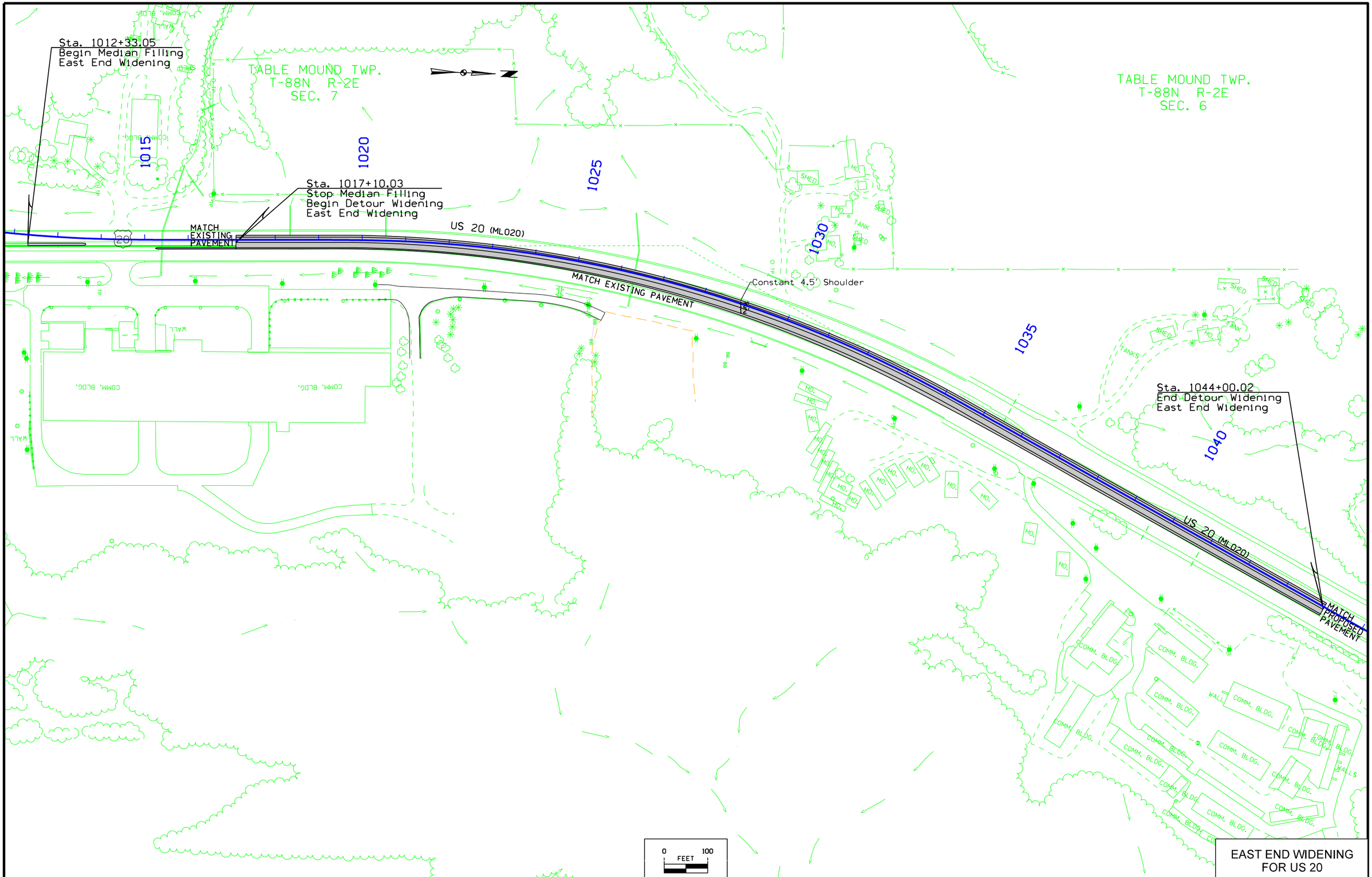
C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER E.14

6:56:48 AM 1/19/2016 CPODANY pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121E01.sht



FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.1

7:22:08 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



EAST END WIDENING
FOR US 20

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.2

7:22:09 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht

TABLE MOUND TWP.
T-88N- R-2E
SEC. 6

Curve Data
Δ = 4° 25' 43.93" (RT)
T = 135.88
L = 271.63
R = 3,514.00
E = 2.63

Sta. 1803+58.42
14.00' LT

Sta. 1800+31.32
16.50' LT

POT Sta 1800+00.00
PC Sta 1800+31.32
PT Sta 1803+25.98
1805
PC Sta 1805+49.38
PI Sta 1806+85.86
PT Sta 1808+21.61
POT Sta 1808+68.96

Constant
4.5' Shoulder

Uniform
Transition

Constant
2' Shoulder

MATCH EXISTING PAVEMENT

DET18000

Sta. 1807+90.42
14.00' RT

US 20 (ML020)

MATCH
PROPOSED
PAVEMENT

2.0%
12'
12'
2.0%

Constant
2' Shoulder

Sta. 1807+90.38
16.00' RT

Sta. 1800+31.32
Begin Detour Construction
East End Crossover

1800
+31.32

PI Sta 1801+78.74

+58.42

Uniform
Transition

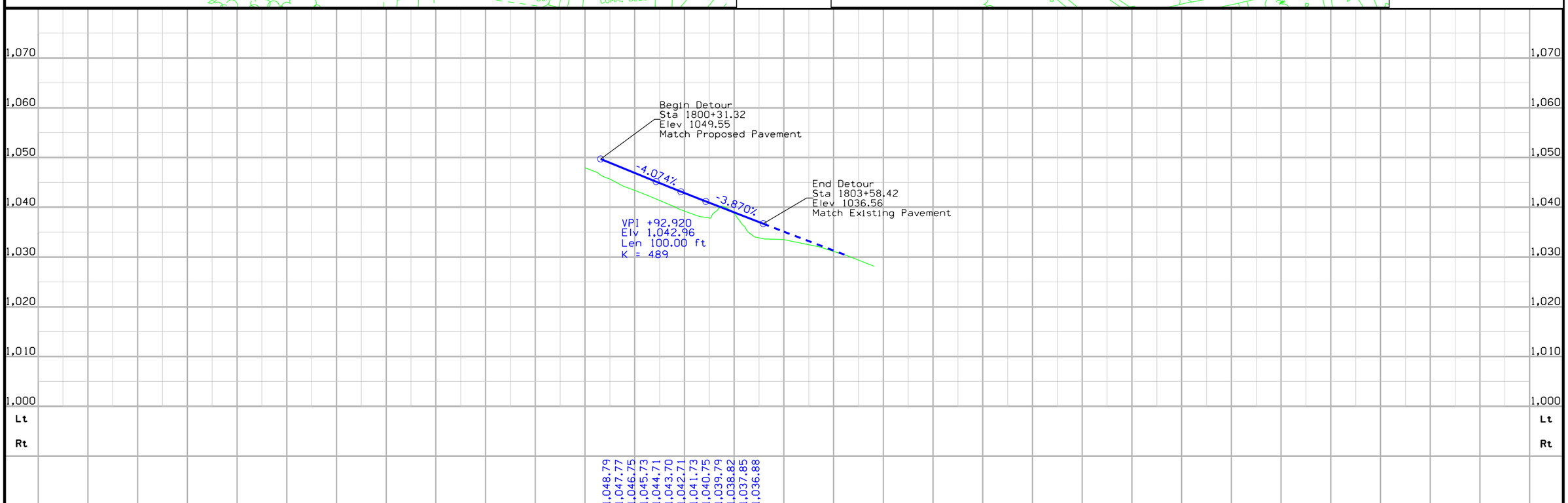
Curve Data
Δ = 4° 48' 16.06" (LT)
T = 147.42
L = 294.66
R = 3,514.00
E = 3.09

Sta. 1800+31.32
14.00' RT

Sta. 1805+27.77
End Detour Construction
East End Crossover

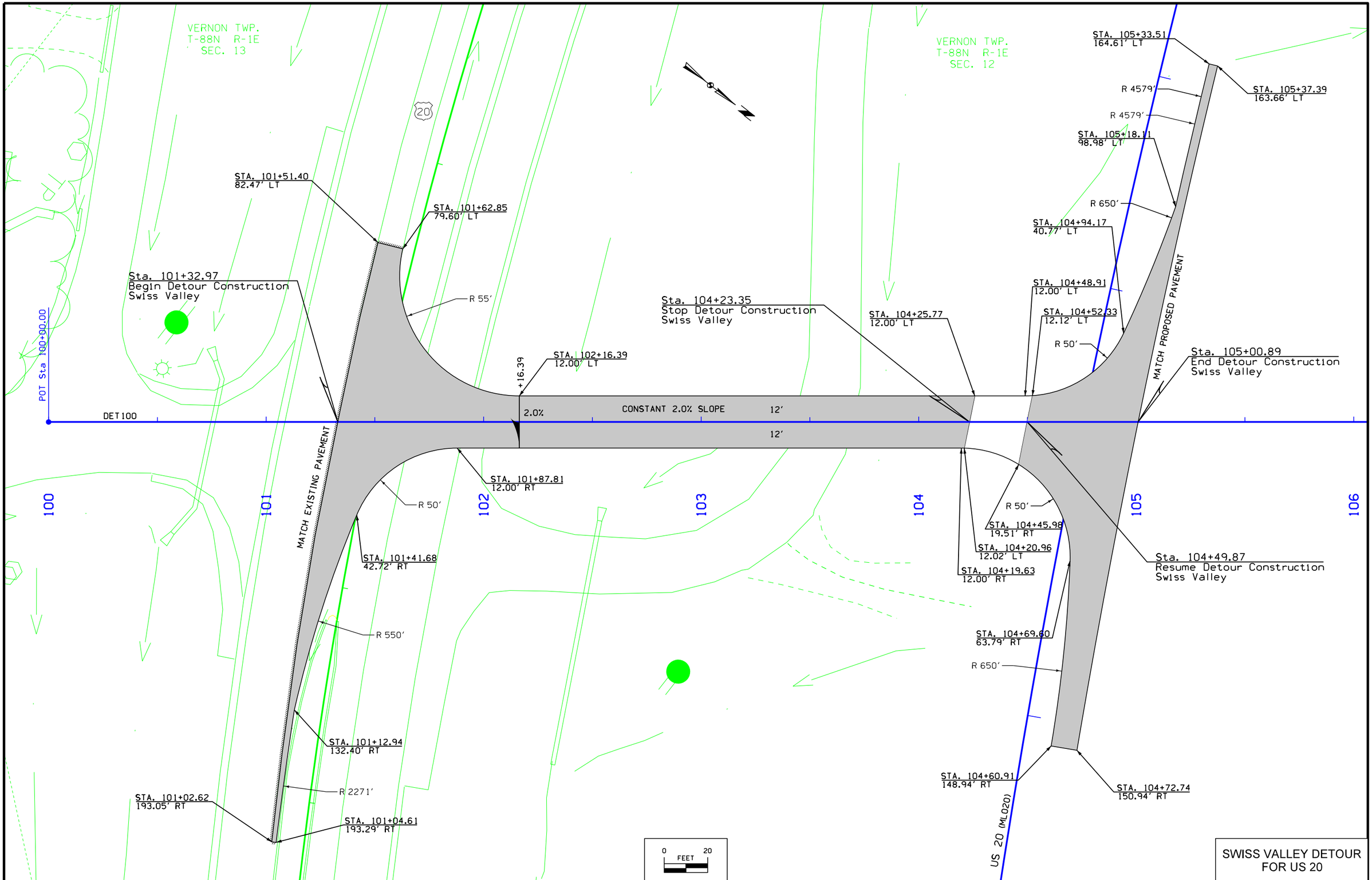
0 100
FEET

EAST END CROSSOVER
FOR US 20



FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.3

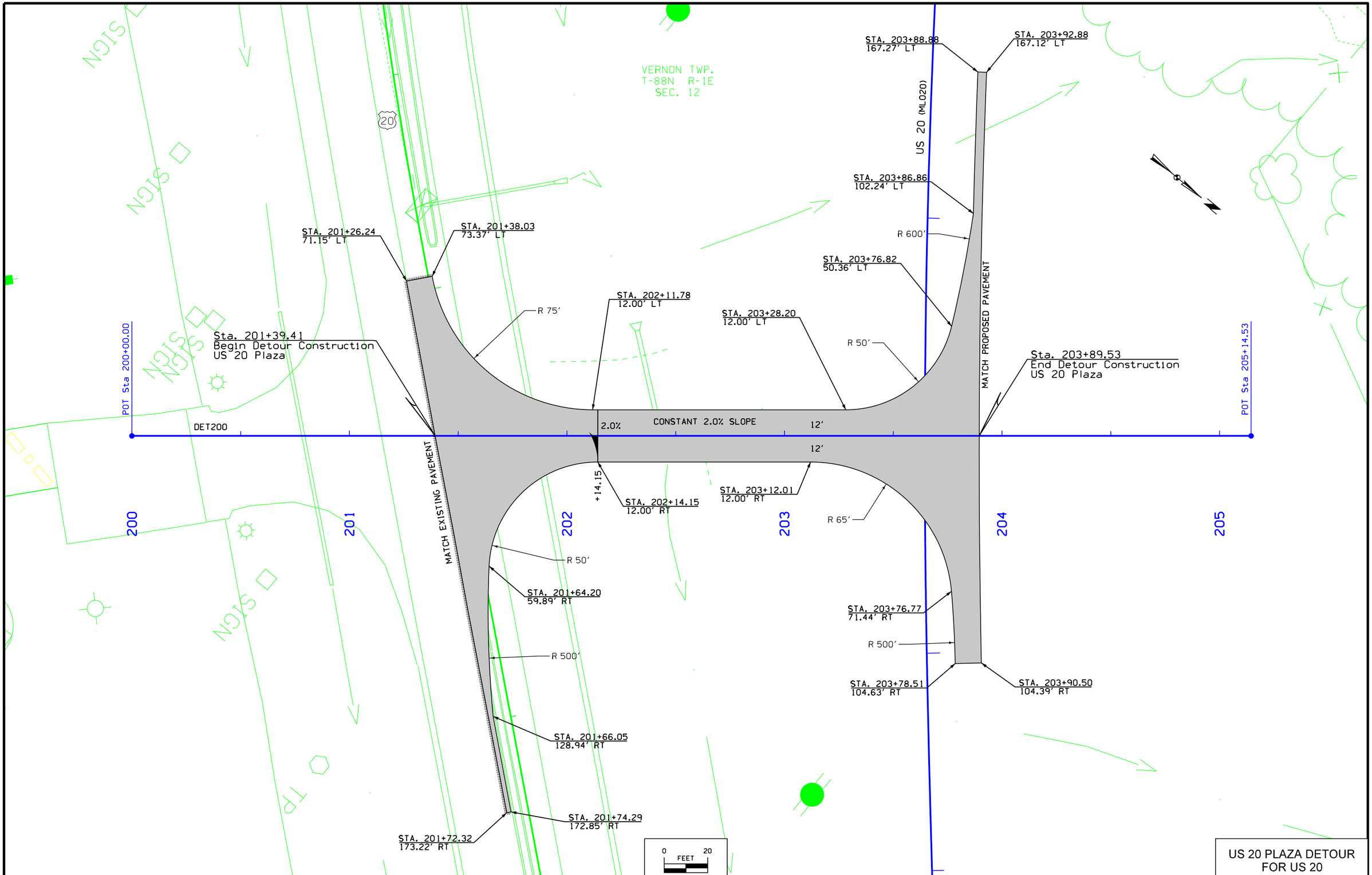
7:22:10 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



SWISS VALLEY DETOUR
FOR US 20

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.4

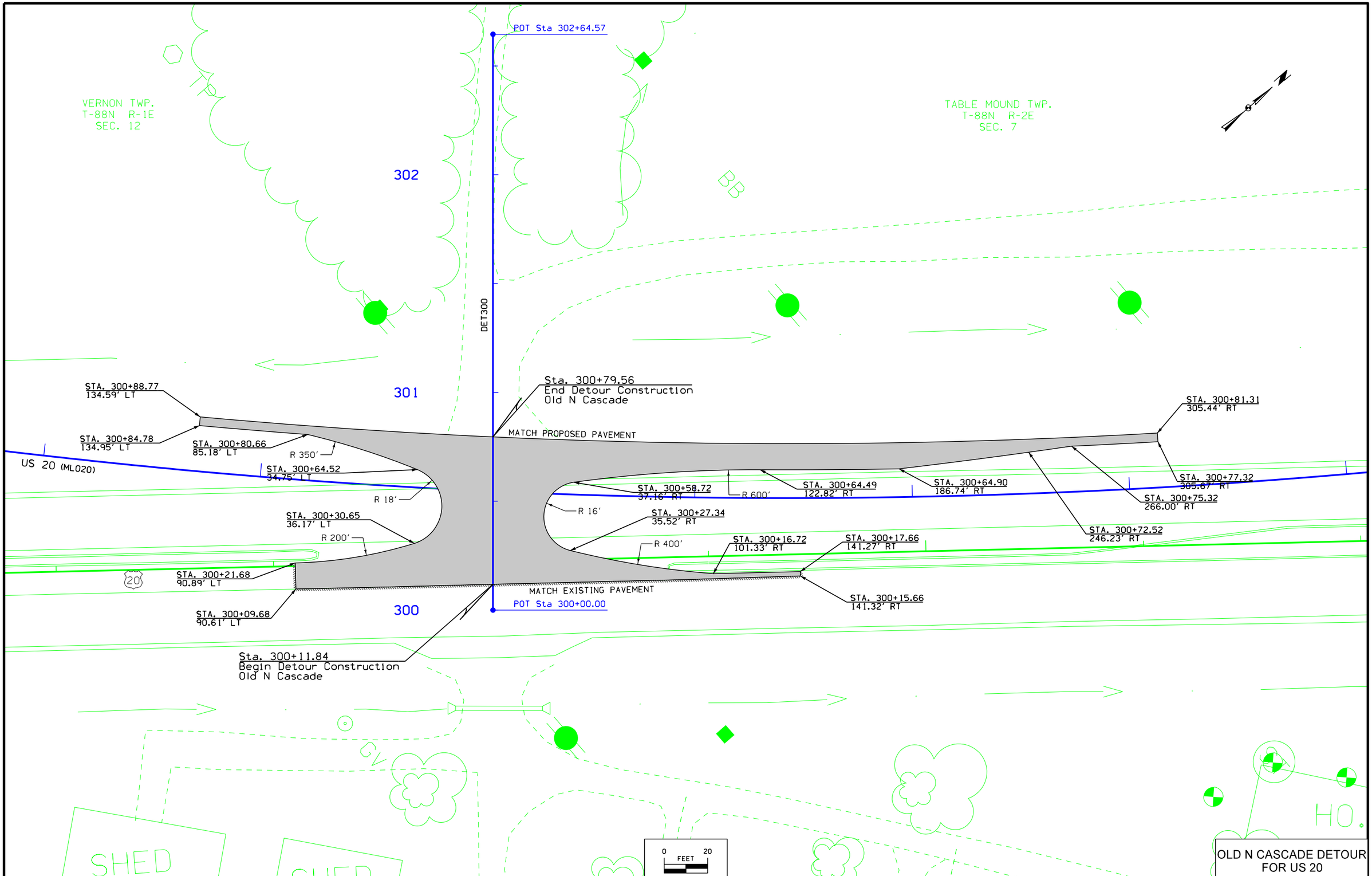
7:22:11 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



US 20 PLAZA DETOUR
FOR US 20

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.5

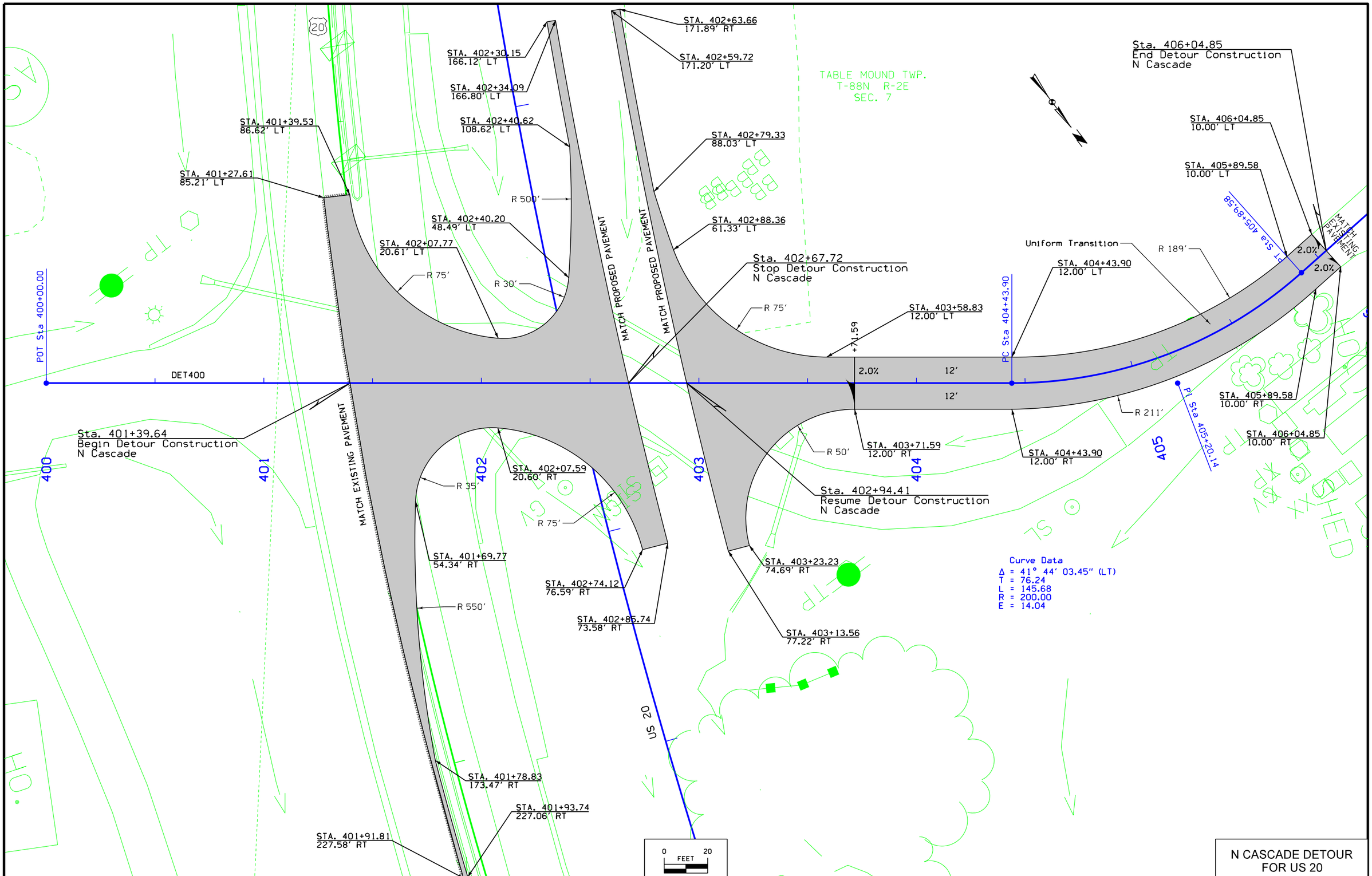
7:22:12 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



OLD N CASCADE DETOUR
FOR US 20

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.6

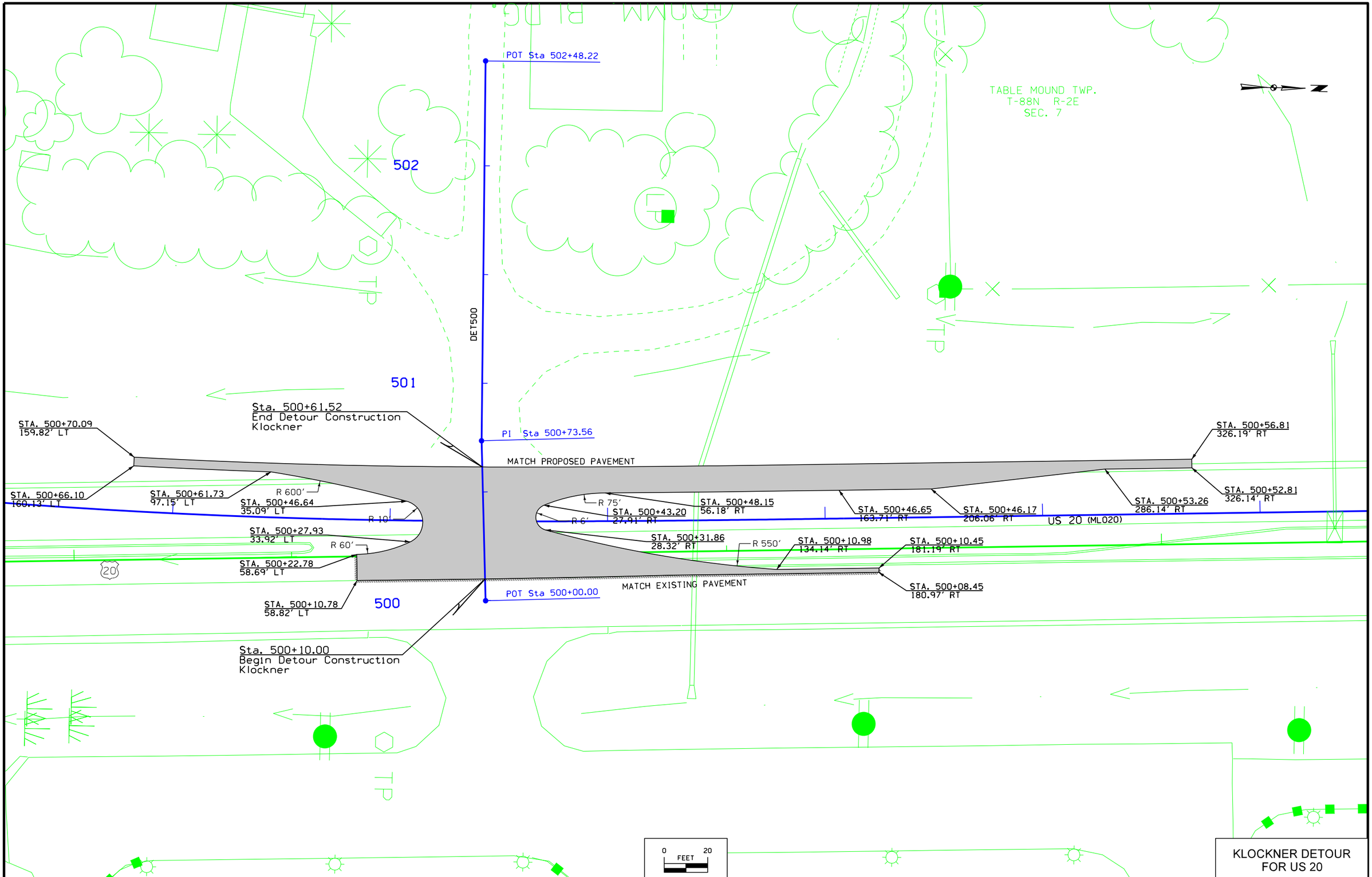
7:22:13 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



N CASCADE DETOUR
FOR US 20

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.7

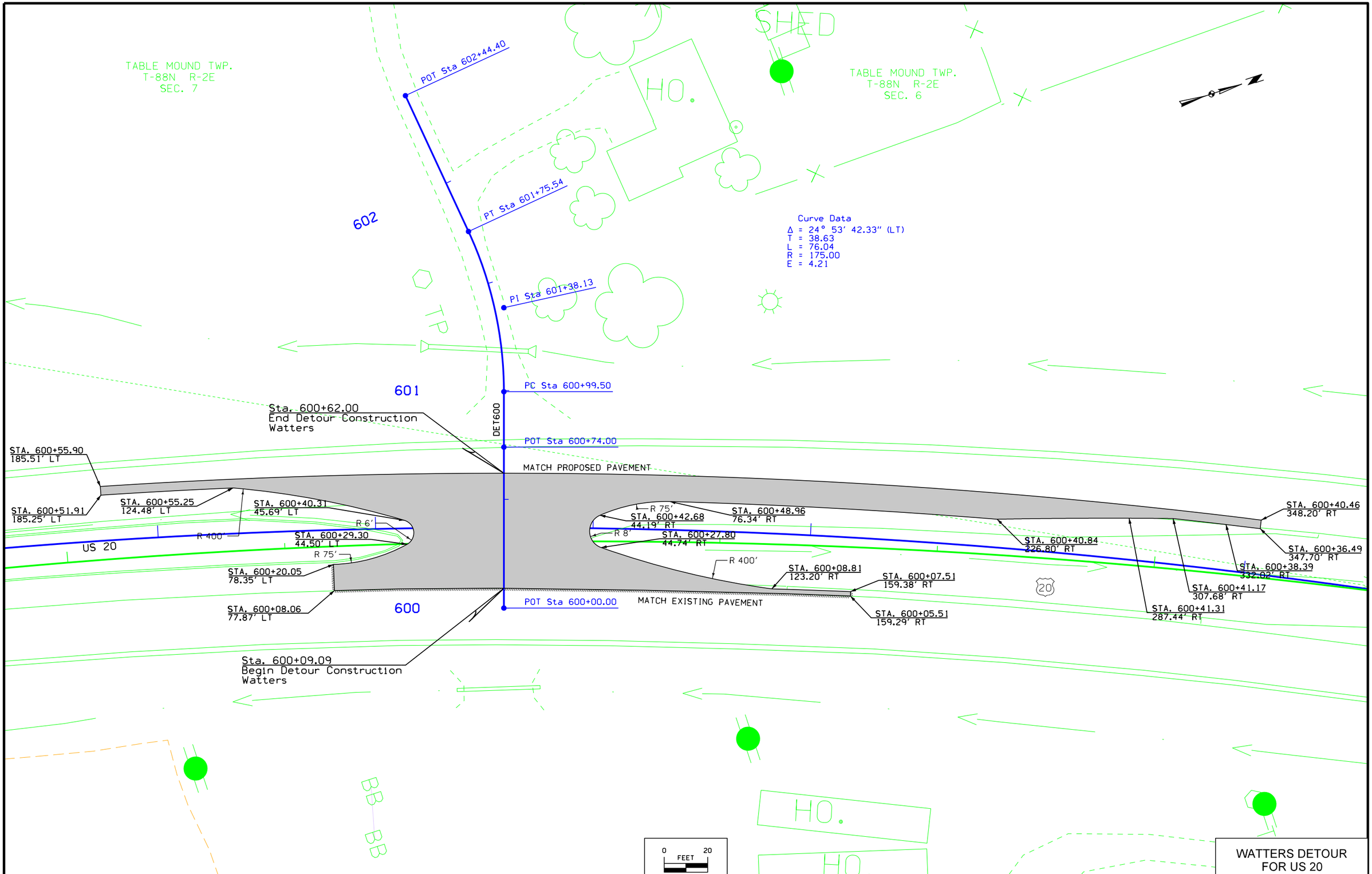
7:22:14 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



KLOCKNER DETOUR
FOR US 20

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.8

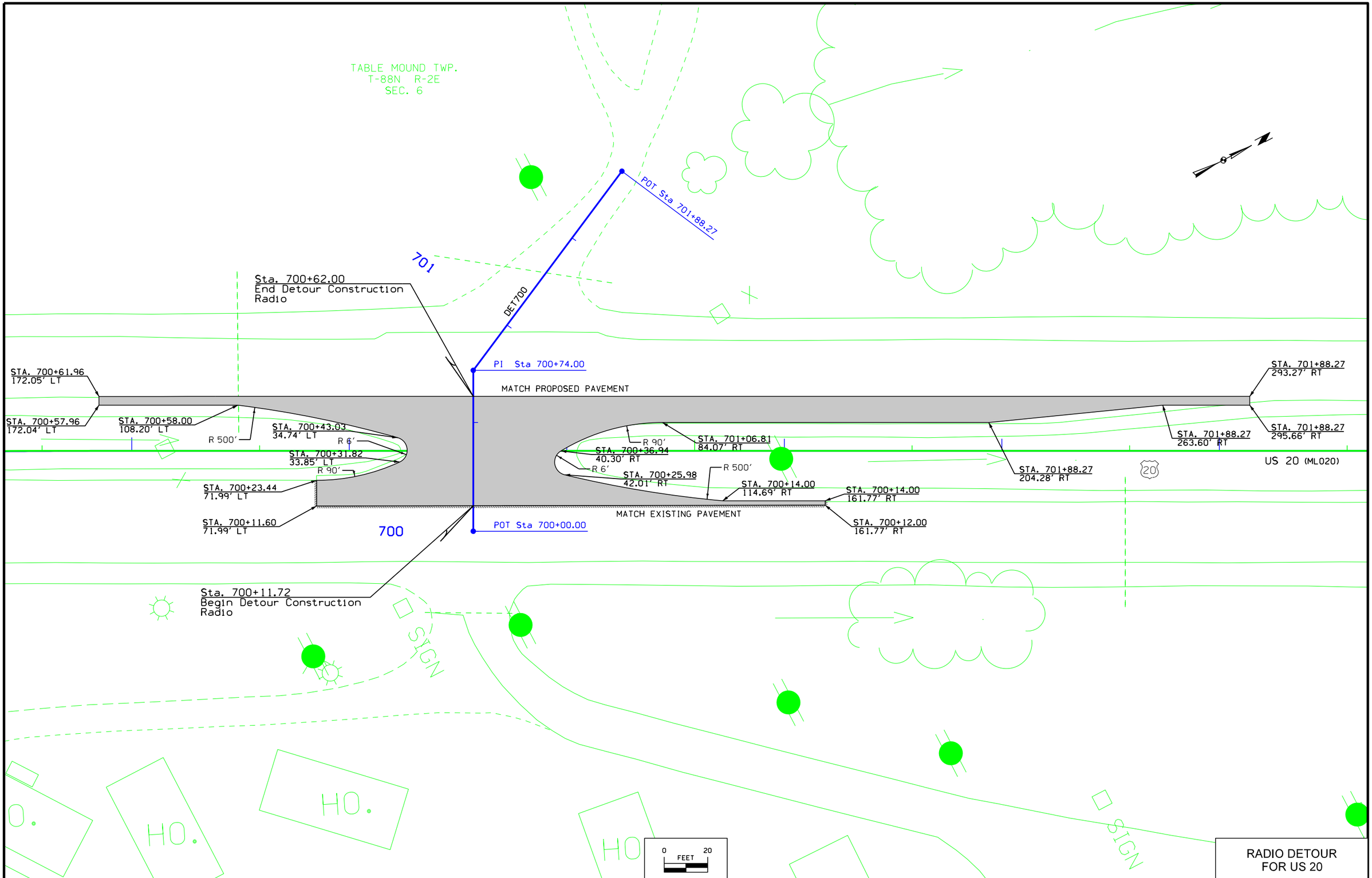
7:22:15 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



WATTERS DETOUR
FOR US 20

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.9

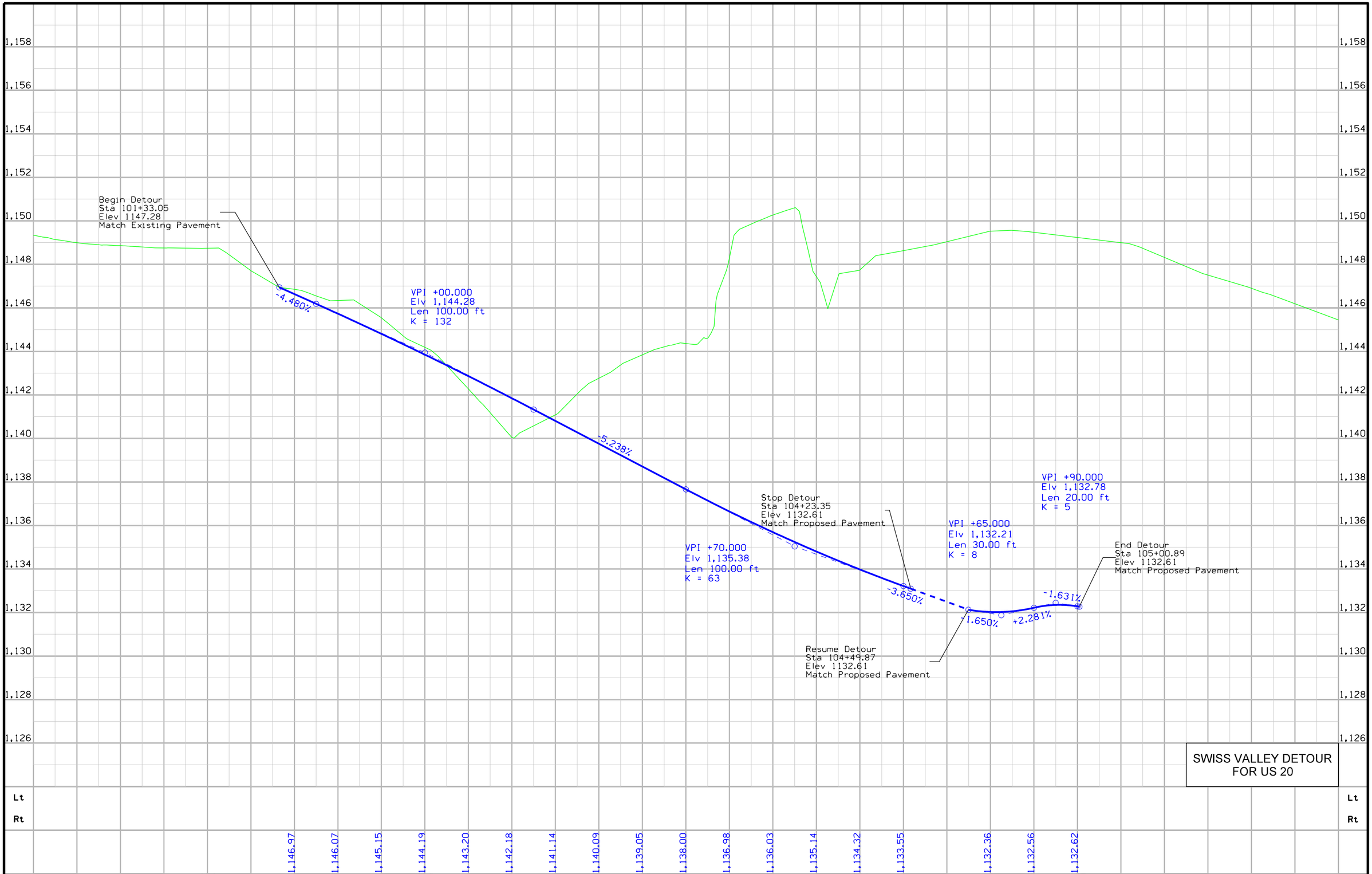
7:22:16 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



RADIO DETOUR
FOR US 20

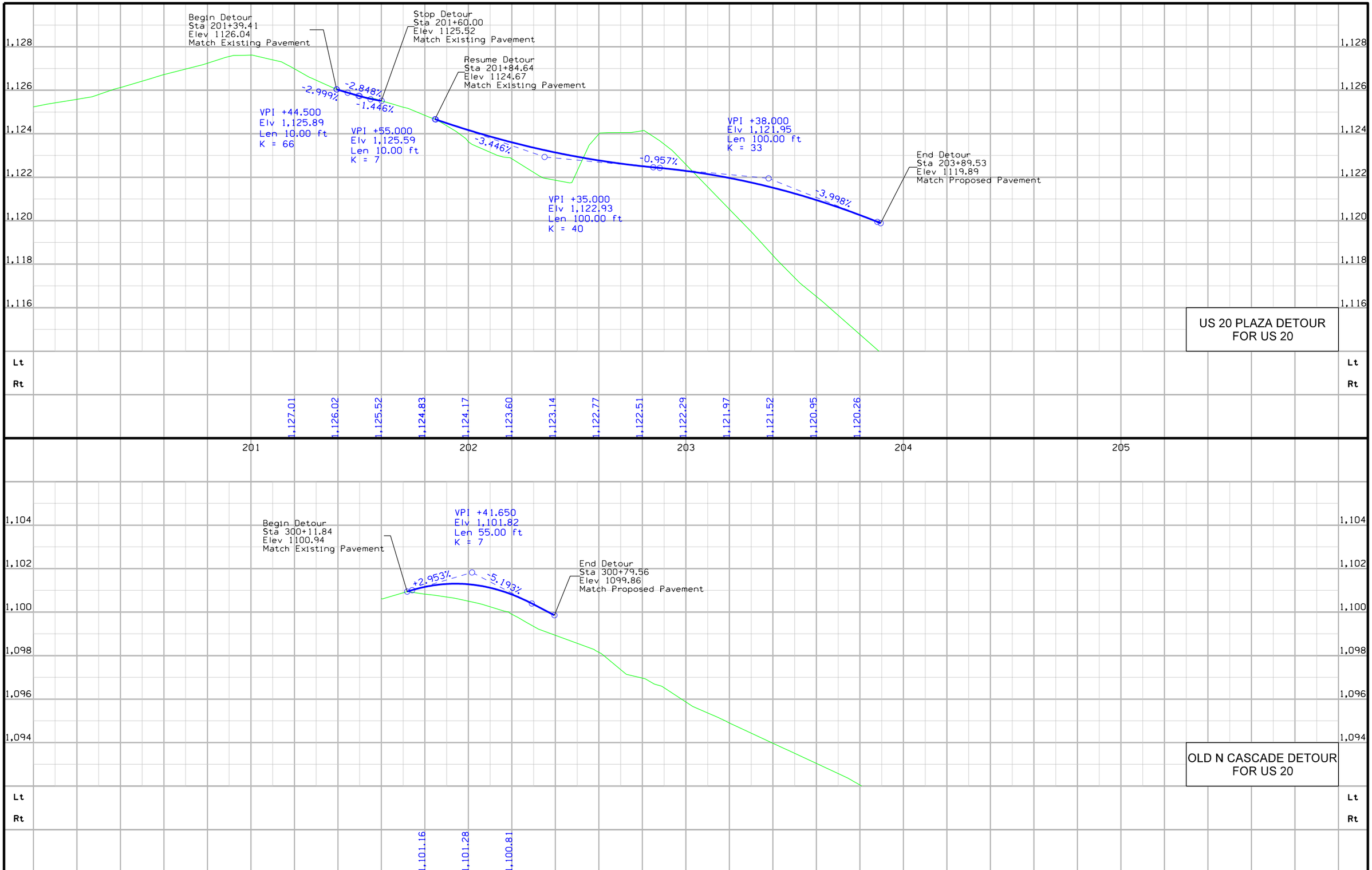
FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.10

7:22:17 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



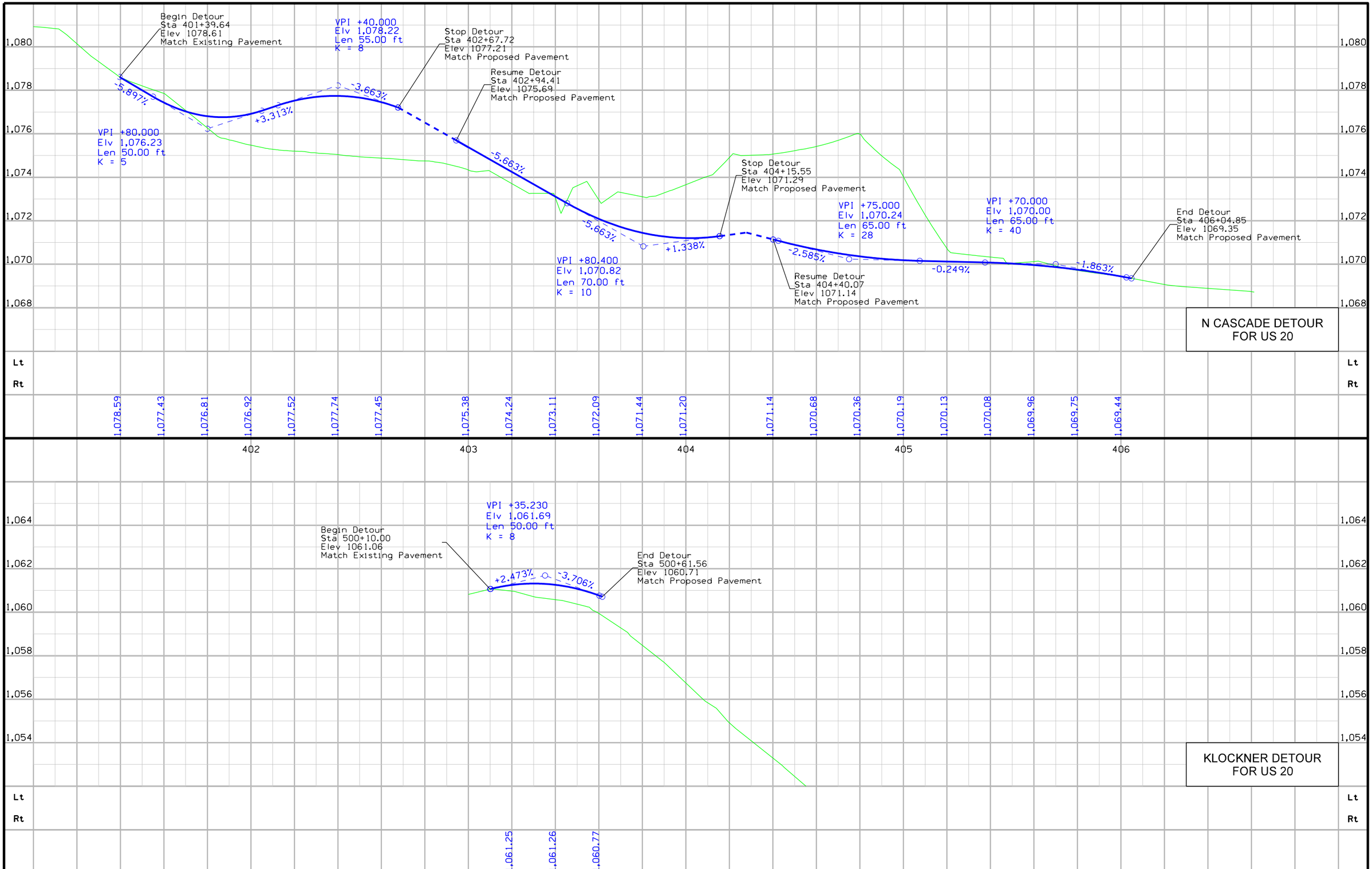
FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.11

7:22:19 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



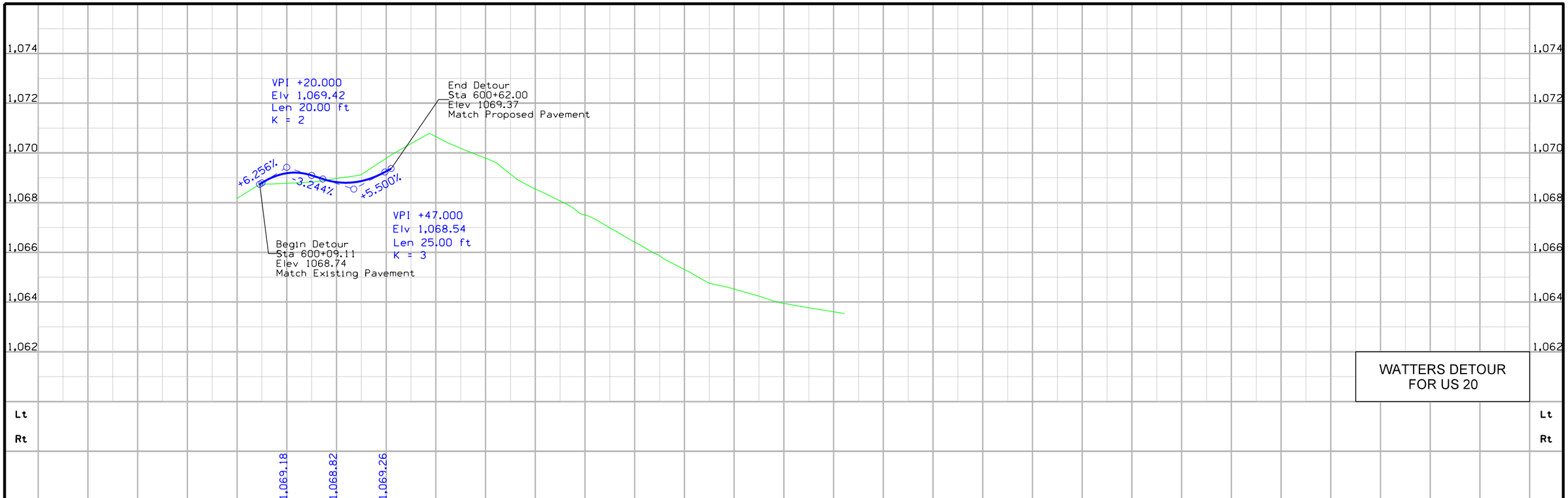
FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.12

7:22:20 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht

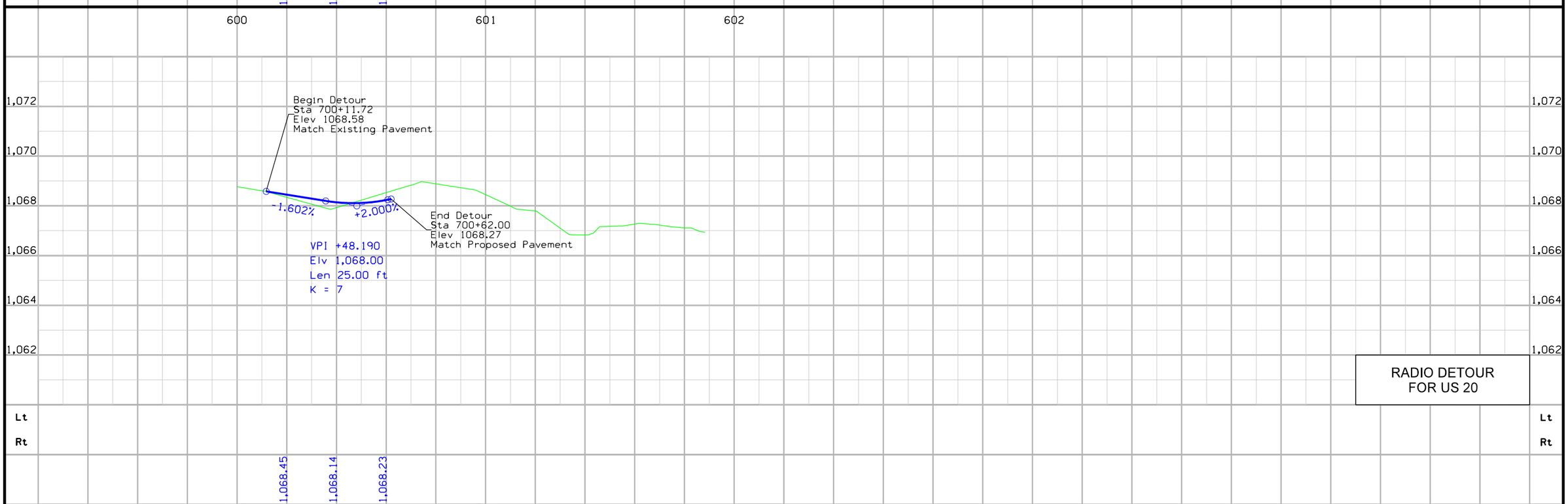


FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.13

7:22:21 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



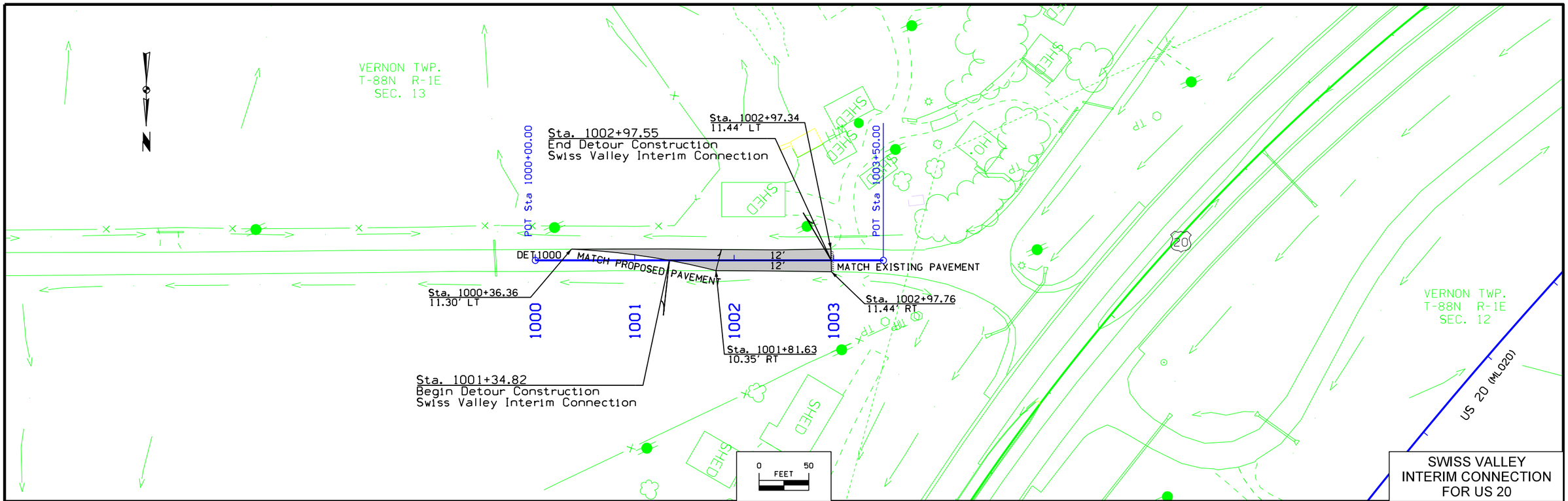
WATTERS DETOUR
FOR US 20

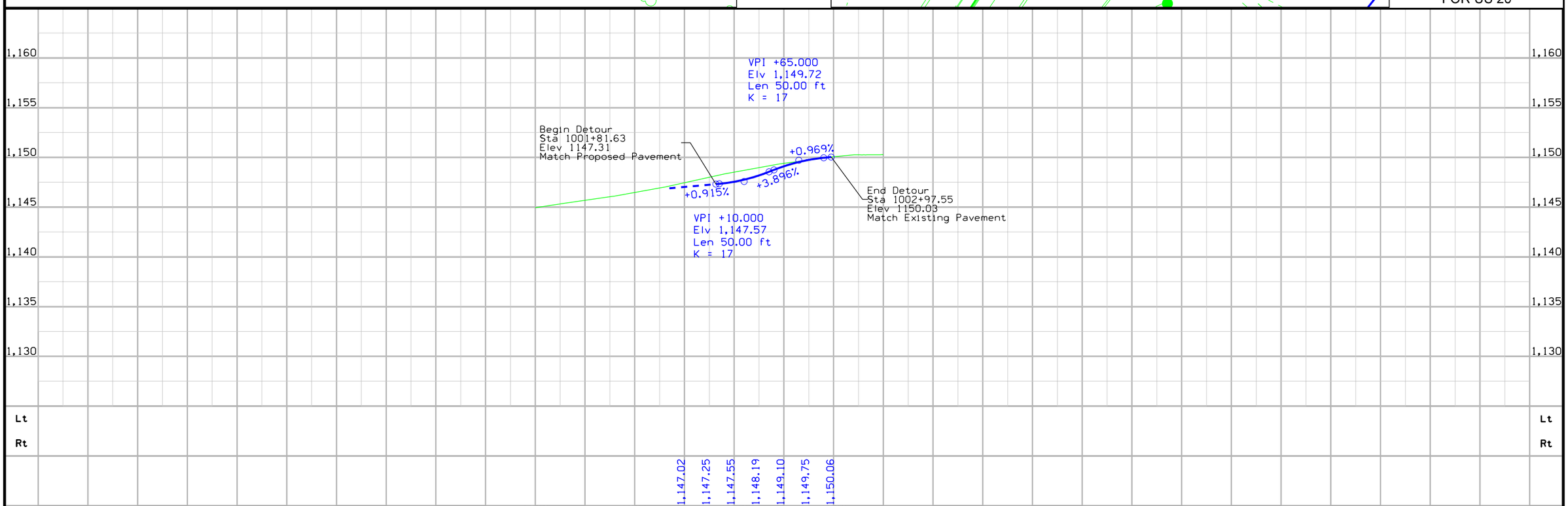


RADIO DETOUR
FOR US 20

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.14

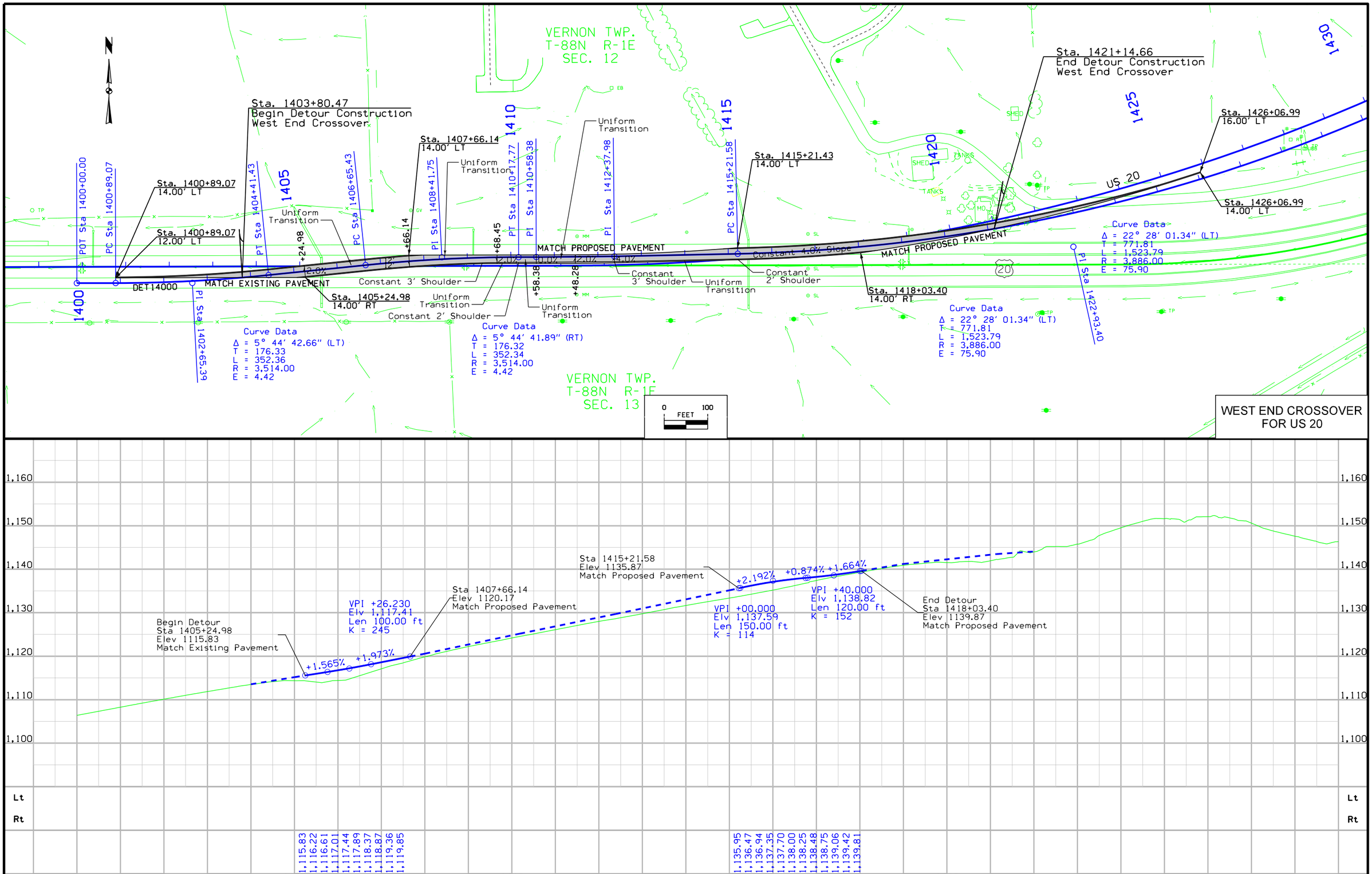
7:22:22 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht





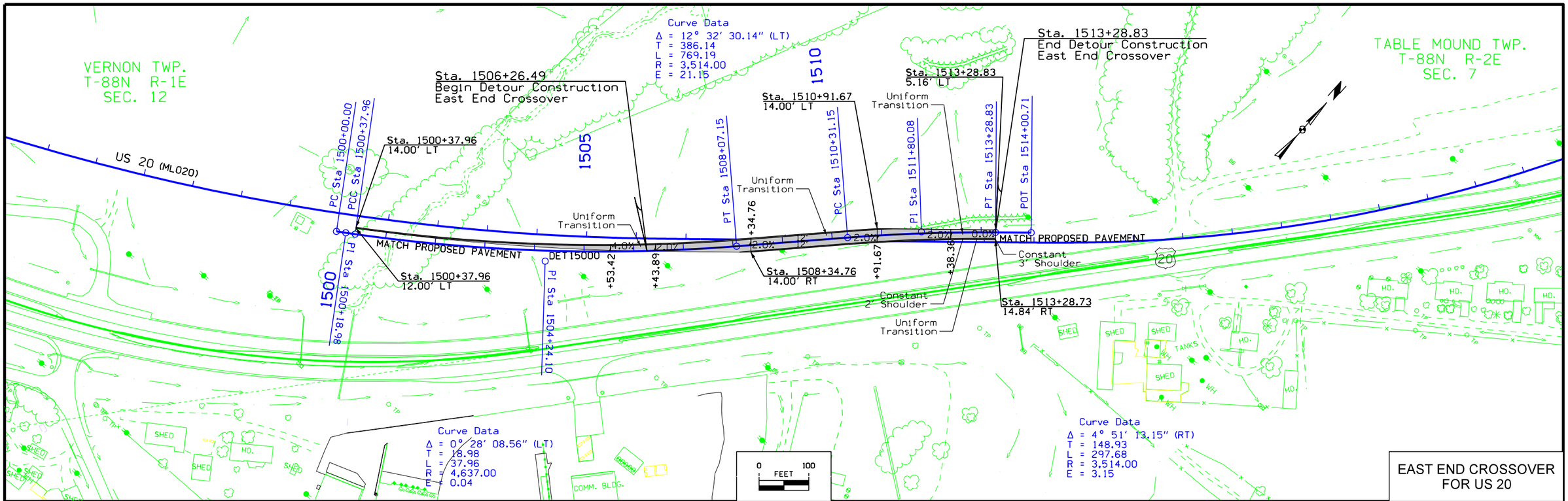
FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.15

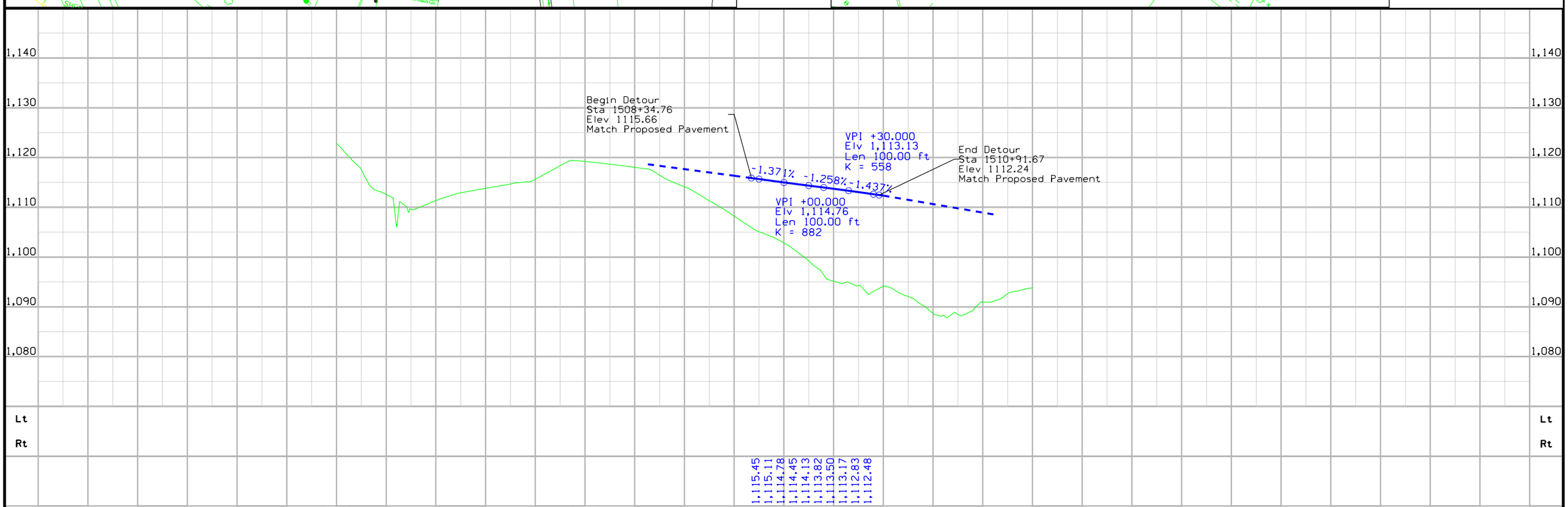
7:22:23 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.16

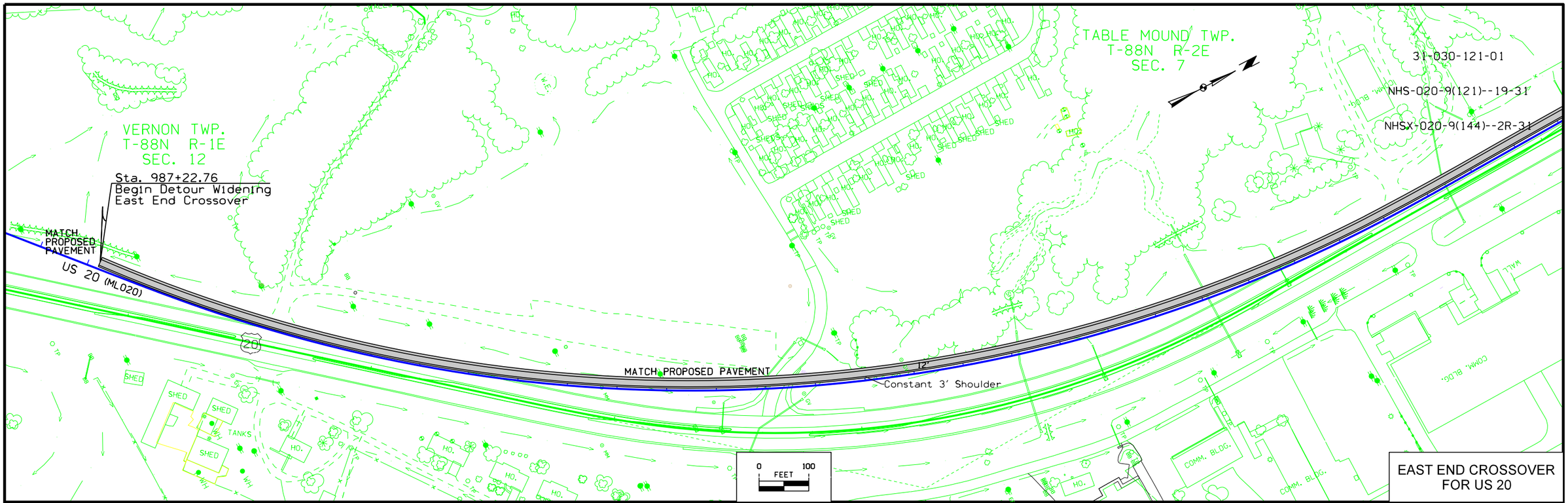
7:22:24 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht

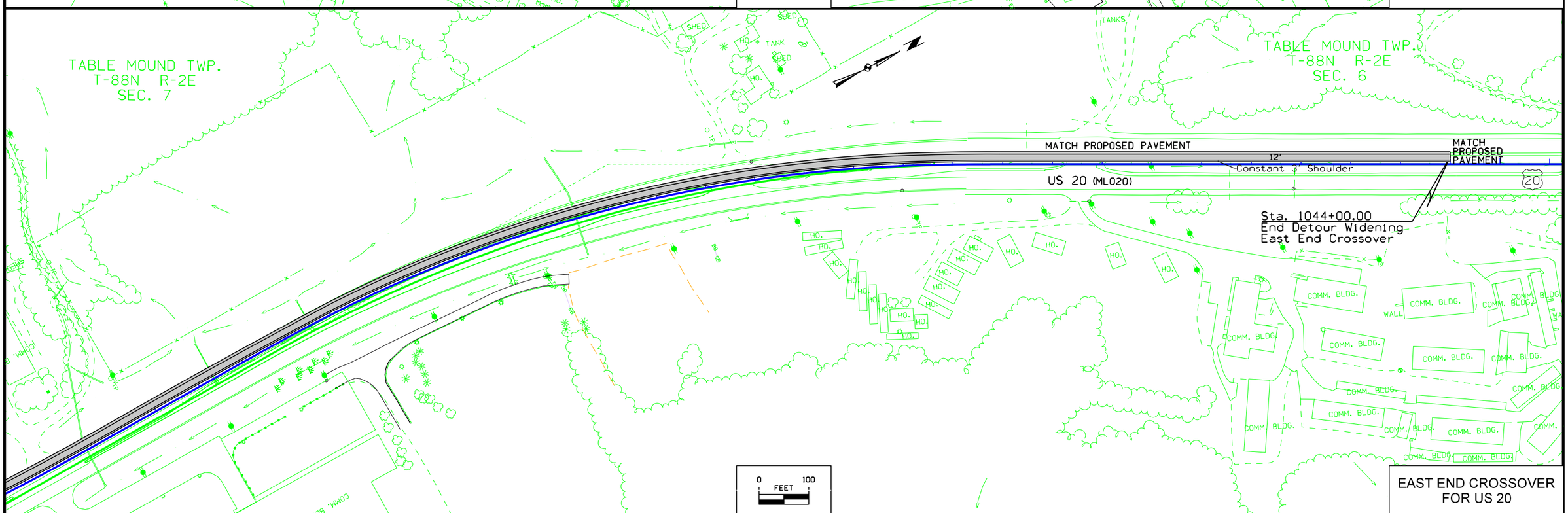




FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.17

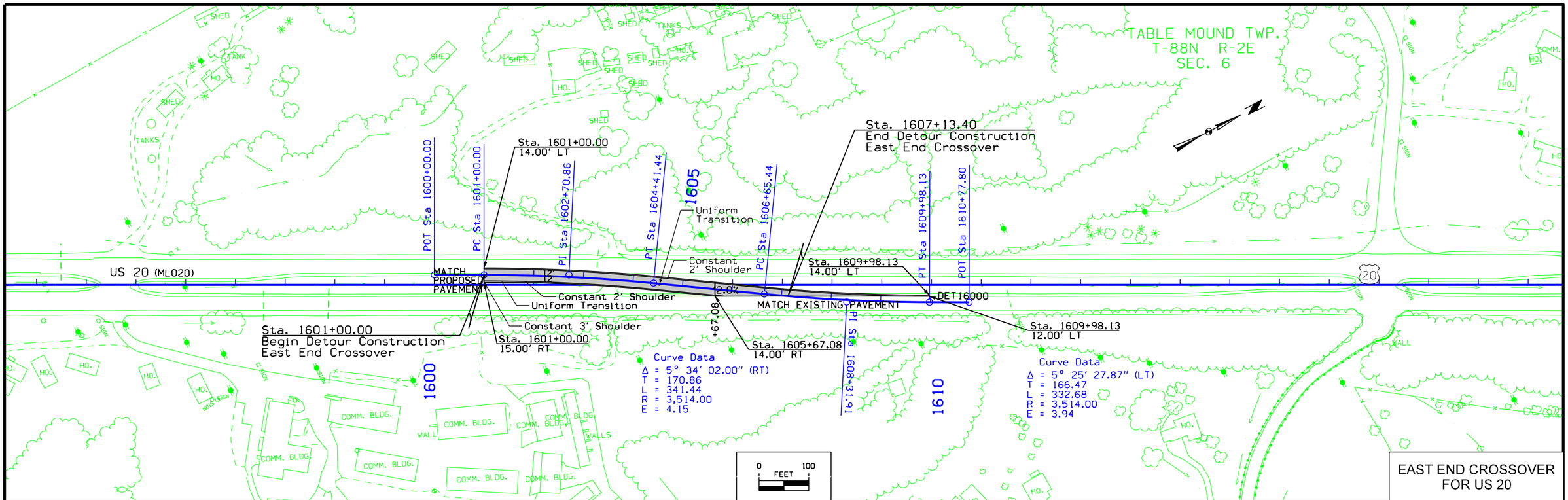
7:22:25 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht

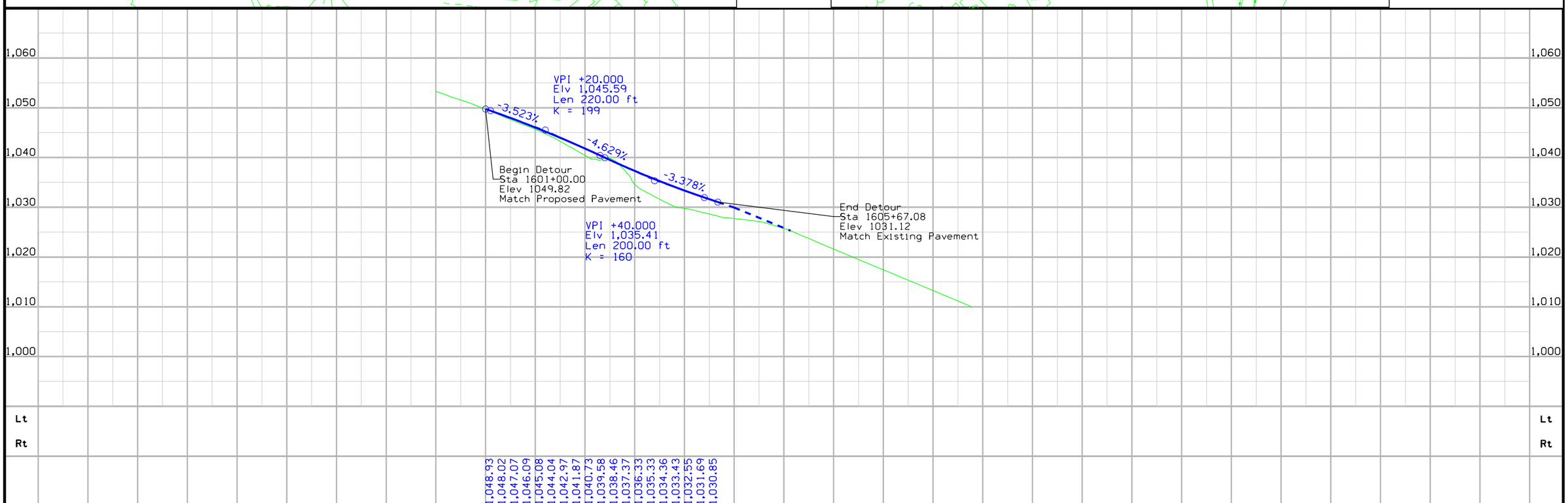




FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.18

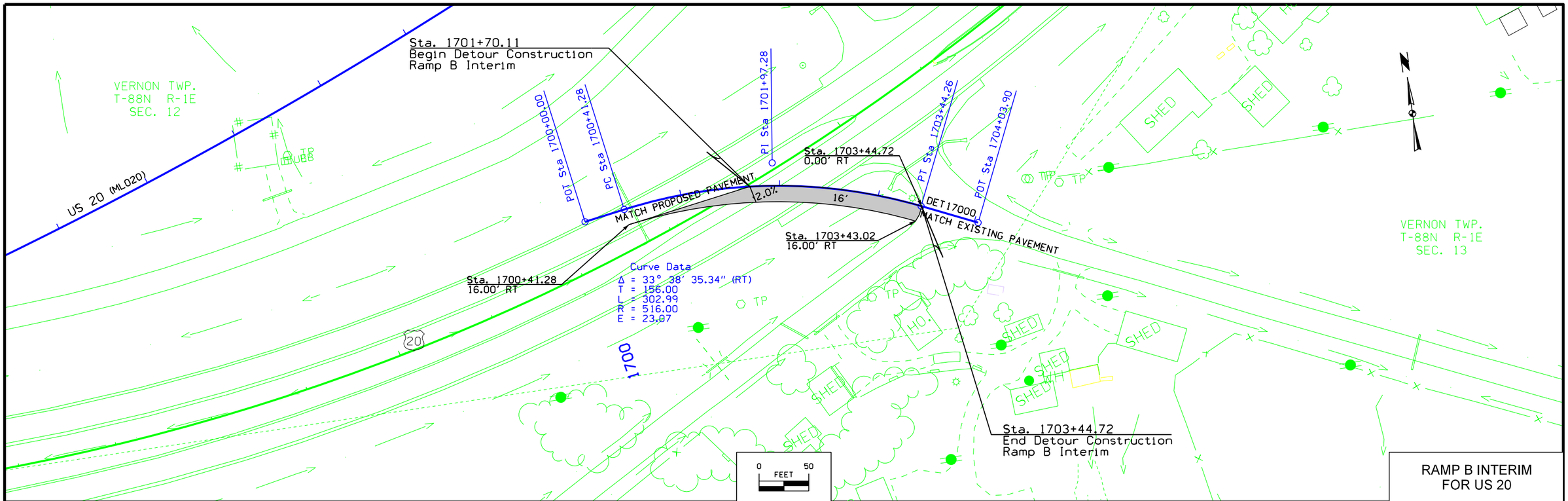
7:22:27 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



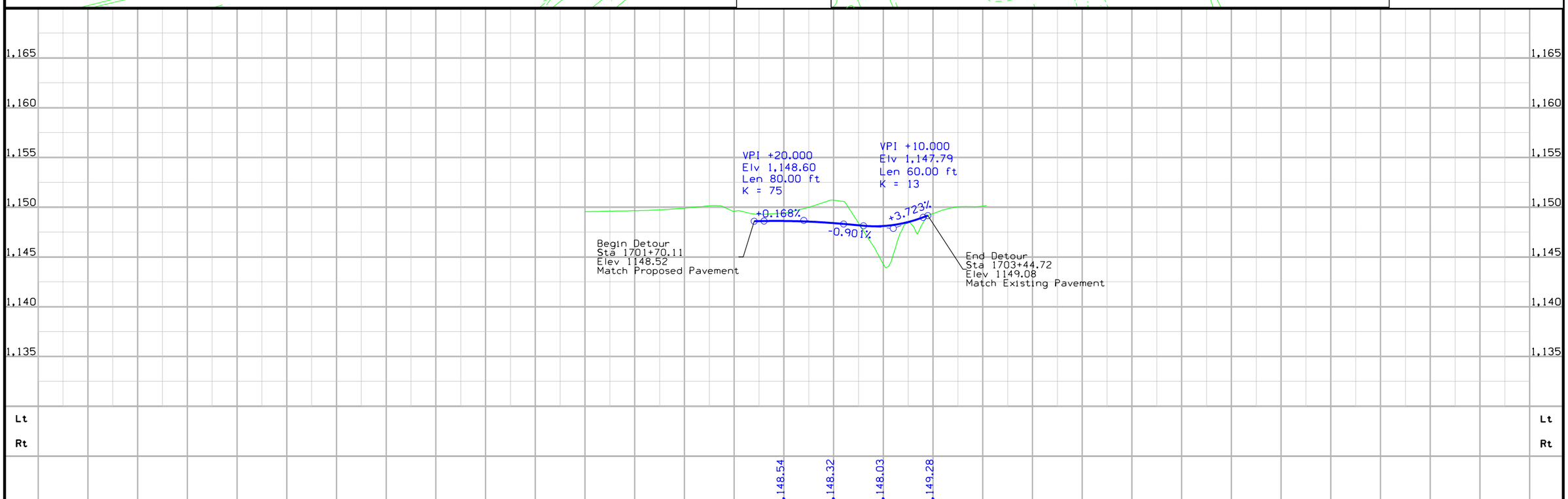


FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.19

7:22:28 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht

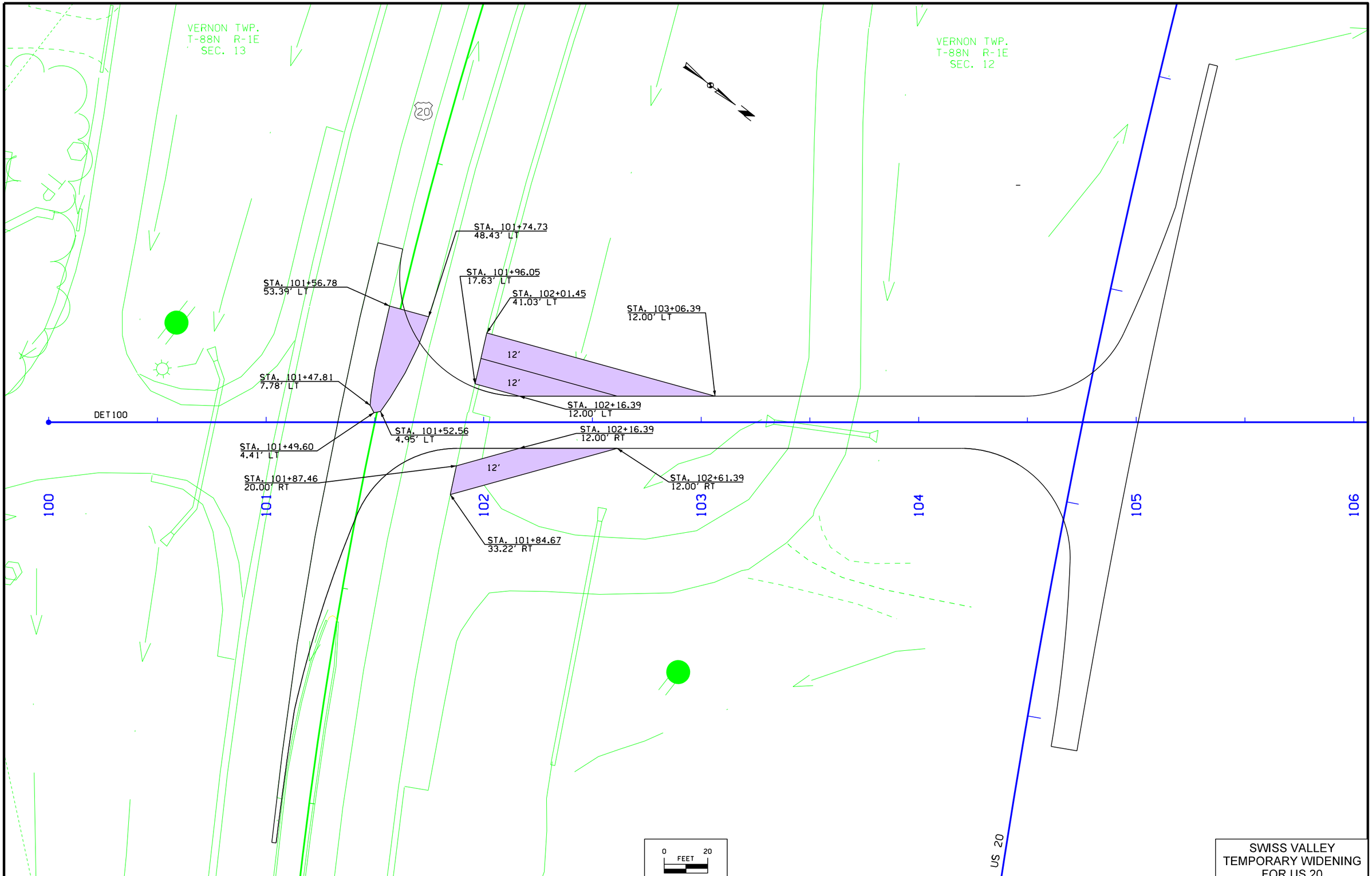


RAMP B INTERIM
FOR US 20



FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.20

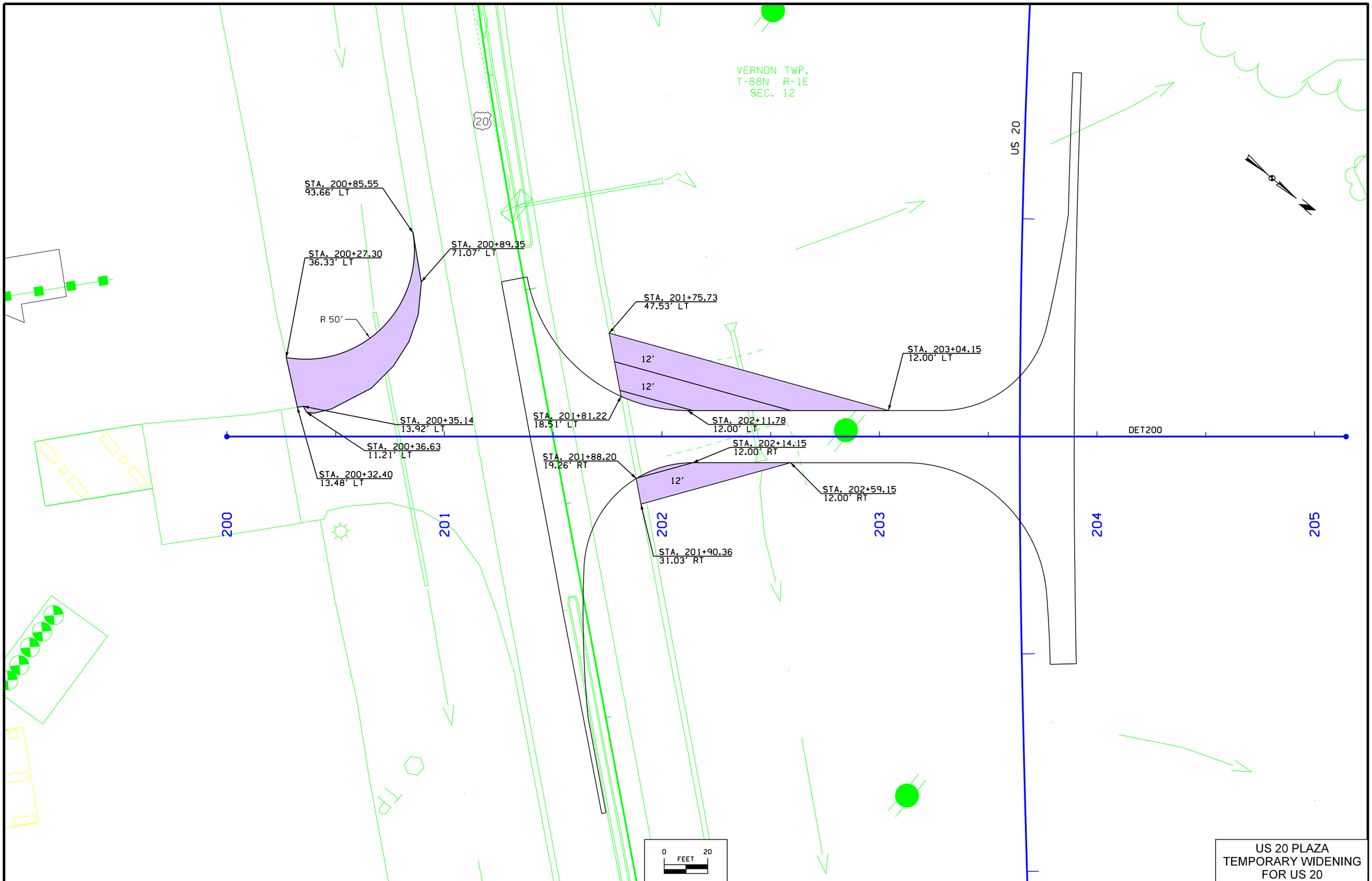
7:22:35 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



SWISS VALLEY
TEMPORARY WIDENING
FOR US 20

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.21

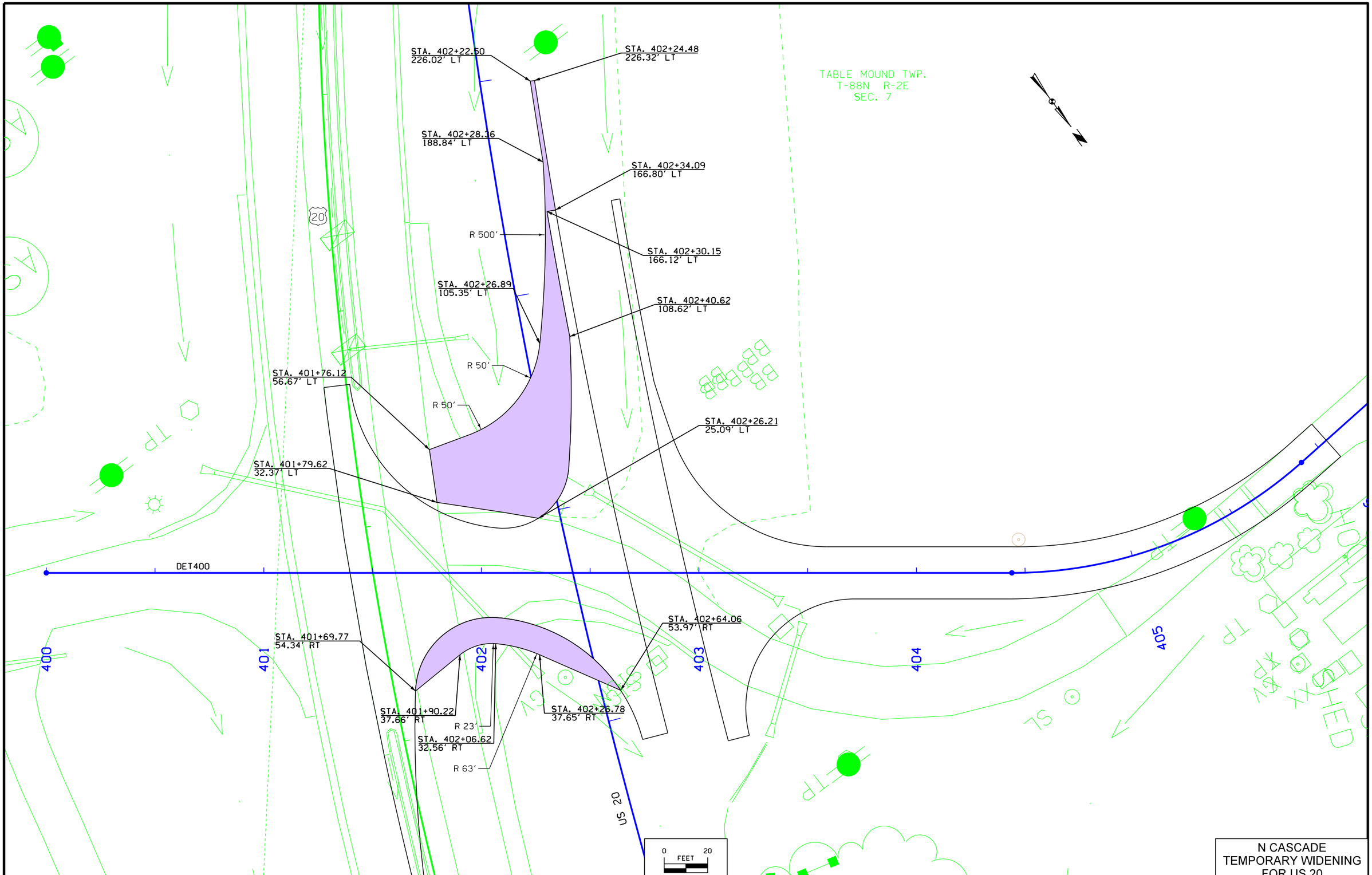
7:22:36 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



US 20 PLAZA
TEMPORARY WIDENING
FOR US 20

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.22

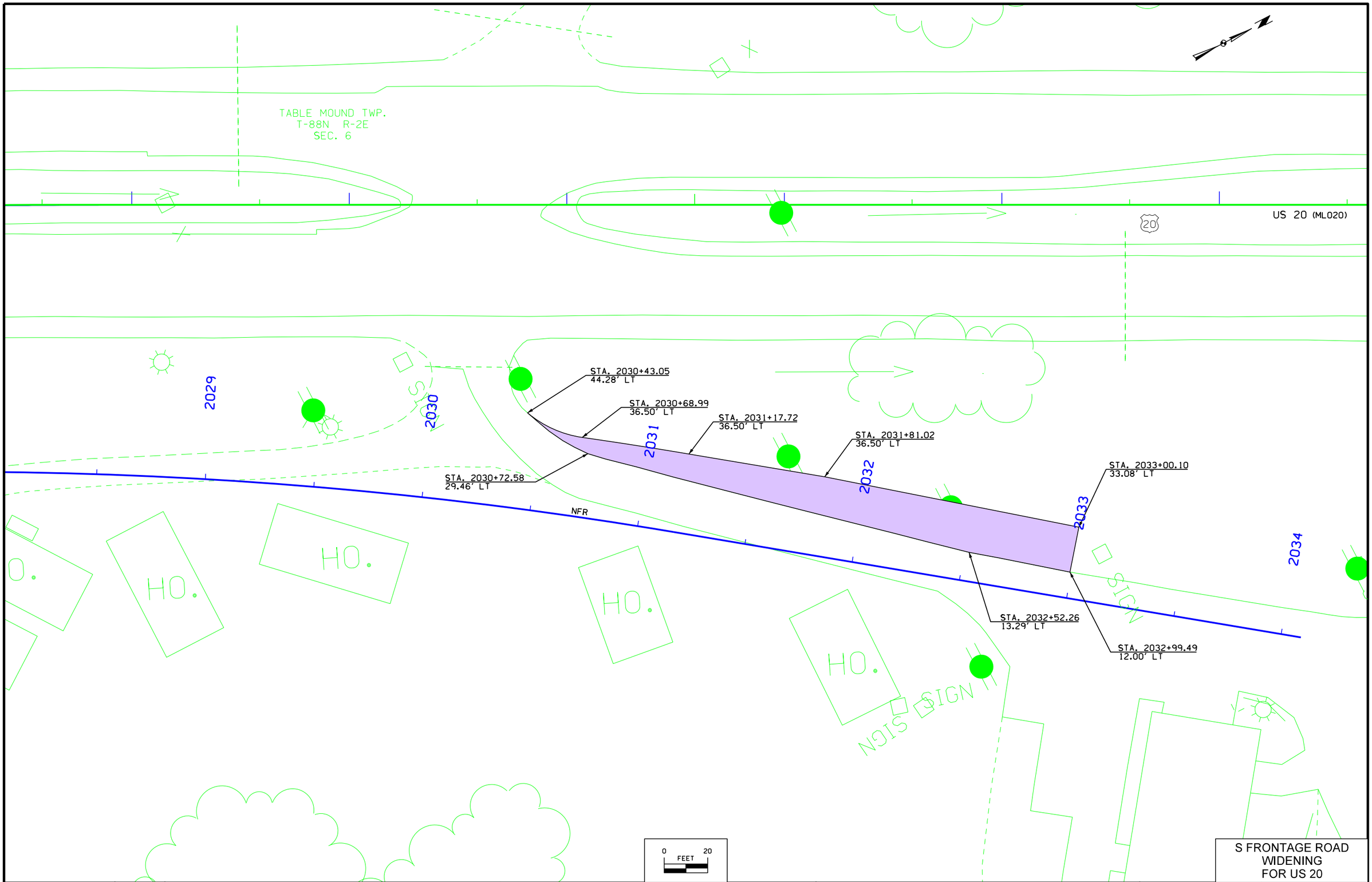
7:22:36 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



N CASCADE
TEMPORARY WIDENING
FOR US 20

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.23

7:22:37 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht



S FRONTAGE ROAD
WIDENING
FOR US 20

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER F.24

7:22:38 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121F01.sht

BENCH CONTROL

This survey is relative to the NAVD88 vertical datum. A three wire bench level loop was run from the beginning to the end of the project. An automatic engineer's level and three-section Philadelphia level rod was used. The bench loop originated and closed on project benchmark #501. This is benchmark #501 from the 1994 Iowa DOT US 20 Survey SAP# 331 NHS-20-9(121)--19-31. The elevation of 325.038 meters was converted to 1066.395 feet for this survey.

The bench loop followed the corridor of the 1987 US 20 P.C.C. Paving (Grading) As-built plans F-20-9(72)--20-31 and the 1986 US 20 Grading, P.C.C. Paving (& A.C.C Resurfacing) plans F-20-9(65)--20-31.

The datum plane for the above plans is indicated as "U.S.C. & G.S." The bench loop included 11 benchmarks recovered from the 1987 plans with the elevation differences ranging from 11.39 feet to 11.45 feet higher than this survey, and averaging 11.43 feet higher than this survey. The bench loop included 2 benchmarks recovered from the 1986 plans with the elevation differences being 0.01 feet higher and 0.04 feet higher than this survey.

Vertical equations to the Project Benchmarks and other benches along this survey are as follows:

BM	# 600	This survey	EL=1001.10
= BM	# 106A	1987 As-Built Plan F-20-9(72)-20-31	EL=1012.55
BM	# 601	This survey	EL=997.22
= BM	# 107B	1987 As-Built Plan F-20-9(72)-20-31	EL=1008.61
BM	# 602	This survey	EL=1051.59
= BM	# 108G	1987 As-Built Plan F-20-9(72)-20-31	EL=1062.99
BM	# 603	This survey	EL=1016.48
= BM	# 109B	1987 As-Built Plan F-20-9(72)-20-31	EL=1027.98
BM	# 606	This survey	EL=1027.31
= BM	# 112	1987 As-Built Plan F-20-9(72)-20-31	EL=1038.76
BM	# 608	This survey	EL=1044.33
= BM	# 114	1987 As-Built Plan F-20-9(72)-20-31	EL=1055.77
BM	# 611	This survey	EL=1082.32
= BM	# 116B	1987 As-Built Plan F-20-9(72)-20-31	EL=1093.71
BM	# 613	This survey	EL=1049.88
= BM	# 118	1987 As-Built Plan F-20-9(72)-20-31	EL=1061.27
BM	# 615	This survey	EL=1102.92
= BM	# 119	1987 As-Built Plan F-20-9(72)-20-31	EL=1114.35
BM	# 616	This survey	EL=1106.82
= BM	# 120	1987 As-Built Plan F-20-9(72)-20-31	EL=1118.26
BM	# 617	This survey	EL=1122.01
= BM	# 121	1987 As-Built Plan F-20-9(72)-20-31	EL=1133.46
BM	# 625	This survey	EL=1060.18
= BM	# 2	1986 Paving Plans F-20-9(65)-20-31	EL=1060.22
BM	# 501	This survey	EL=1066.40
= BM	# 118	1986 Paving Plans F-20-9(65)-20-31	EL=1066.41
= BM	# 501	1994 DOT Survey NHS-20-9(121)--19-31	EL=1066.40 (325.038 meters)

DENSIFICATION OF PROJECT CONTROL

The purpose of this portion of the survey was to retrace the as-built mainline horizontal alignment of U.S. 20 from the Peosta, Iowa interchange to the westerly terminus of the 1994 Iowa DOT US 20 Survey SAP# 331 NHS-20-9(121)--19-31.

This survey is in English units and the horizontal datum is the 2000 Iowa DOT Local Project Plane.

The 1987 US 20 P.C.C. Paving (Grading) As-Built Plans F-20-9(72)--20-31; the 1986 US 20 Grading, P.C.C. Paving (& A.C.C Resurfacing) Plans F-20-9(65)--20-31; and information from the 1994 Iowa DOT US 20 Survey SAP# 331 NHS-20-9(121)--19-31 were used.

BOP stationing started at a found 1/2" rod at POT Sta. 759+82.78 of the 1987 plans and carried forward to the EOP.

The alignment was retraced using found 1/2" rods at POT 759+82.78 and PC 792+99.93 of the F-20-9(72)--20-31 As-Built Plans; and found 1/2" rods at POT 941+51.21 (PI this survey) and PC 959+99.14, found cut "x" in centerline of WBL near PT 979+78.83, a found 1/2" rod at PI 1006+40.88, and a found cut "x" at ST 1014+43.49 of the F-20-9(65)--20-31 Plans.

Horizontal Equations are as follows:

BOP POT Sta 759+82.78 this survey
= POT Sta 759+82.78 F-20-9(72)--20-31 As-Built Plans

PC Sta 793+00.05 this survey =
= PC Sta 792+99.93 F-20-9(72)--20-31 As-Built Plans
PI Sta 798+75.60 this survey =
= PI Sta 798+75.48 F-20-9(72)--20-31 As-Built Plans

PT Sta 804+51.04 this survey = (not set in field)
= PI Sta 804+50.93 F-20-9(72)--20-31 As-Built Plans

PI Sta 941+51.26 this survey =
= POT Sta 941+51.21 F-20-9(72)--20-31 As-Built Plans
= POT Sta 941+51.21 F-20-9(65)--20-31 Plans.

PC Sta 959+99.27 this survey =
= PC Sta 959+99.14 F-20-9(65)--20-31 Plans.

PI Sta 970+56.50 this survey =
= PI Sta 970+57.36 F-20-9(65)--20-31 Plans.

PT Sta 979+76.89 this survey =
= PT Sta 979+78.83 F-20-9(65)--20-31 Plans.

TS Sta 997+74.34 this survey =
= TS Sta 997+73.34 F-20-9(65)--20-31 Plans.

SC Sta 1000+74.34 this survey =
= SC Sta 1000+73.34 F-20-9(65)--20-31 Plans.

PI Sta 1006+41.06 this survey =
= PI Sta 1006+40.88 F-20-9(65)--20-31 Plans.

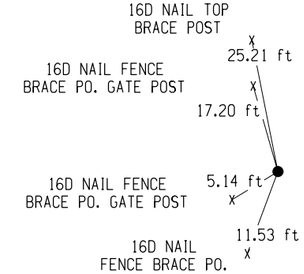
CS Sta 1011+43.04 this survey =
= CS Sta 1011+43.49 F-20-9(65)--20-31 Plans.

ST Sta 1014+43.04 this survey =
= ST Sta 1014+43.49 F-20-9(65)--20-31 Plans.
= PI Sta 309+18.604 (metric) NHS-20-9(121)--19-31 Survey

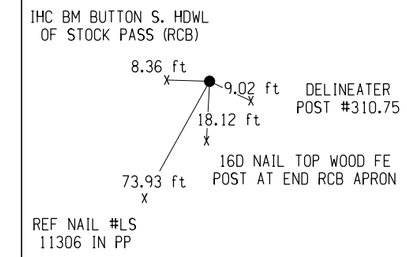
BENCHMARKS					ELEVATION
No. 600	Sta. 772+19.980	118.03 Rt.	FD RR SPK NO.SIDE PO.POLE		1001.095
No. 601	Sta. 783+69.982	86.98 Lt.	FD DOT PLUG TRIPLE		997.215
No. 602	Sta. 798+54.986	128.99 Rt.	FD DOT PLUG SW COR		1051.593
No. 603	Sta. 809+29.992	119.91 Rt.	FD "X" IN HEADWALL		1016.481
No. 604	Sta. 817+84.990	77.83 Rt.	FD IHC PLUG IN HDWL RCB		1012.821
No. 605	Sta. 829+09.987	64.73 Rt.	SET NAIL IN 54" RCP		1011.501
No. 606	Sta. 841+24.983	79.73 Rt.	FD CUT SQUARE HDWL RCB		1027.311
No. 640	Sta. 851+49.132	1017.74 Lt.	CUT + INLET HDWL 6'X6'RCB		1028.113
No. 639	Sta. 851+71.936	889.84 Rt.	SET RR SPK E.SIDE GATE PO		1076.404
No. 638	Sta. 852+26.020	1744.39 Rt.	CUT + OUTLET 60"CIR CMP		1048.848
No. 607	Sta. 854+17.981	129.74 Rt.	SET RR SPK N.SIDE PO.POLE		1068.793
No. 608	Sta. 864+23.978	68.73 Rt.	FD IHC PLUG IN HDWL RCB		1044.329
No. 609	Sta. 870+24.982	83.69 Rt.	SET RR SPK N.SIDE PO.POLE		1051.187
No. 642	Sta. 877+73.883	1629.38 Lt.	SET RR SPK W.SIDE PO.POLE		1061.998
No. 641	Sta. 878+05.215	496.79 Lt.	SET RR SPK W.SIDE PO.POLE		1068.093
No. 610	Sta. 882+03.986	107.63 Rt.	SET RR SPK N.SIDE PO.POLE		1060.656
No. 611	Sta. 893+71.982	110.57 Rt.	FD RR SPK N.SIDE PO.POLE		1082.317
No. 612	Sta. 906+18.979	113.54 Rt.	SET RR SPK N.SIDE PO.POLE		1098.110
No. 613	Sta. 918+24.977	127.52 Rt.	FD IHC PLUG IN HDWL RCB		1049.876
No. 614	Sta. 924+77.964	109.53 Rt.	SET RR SPK N.SIDE PO.POLE		1074.472
No. 615	Sta. 933+99.973	67.64 Rt.	FD IHC PLUG IN HDWL RCB		1102.916
No. 616	Sta. 941+49.972	84.72 Rt.	FD IHC PLUG IN HDWL RCB		1106.815
No. 617	Sta. 951+32.970	91.80 Rt.	FD IHC PLUG UPSTREAM		1122.007
No. 631	Sta. 957+01.410	1207.56 Rt.	SET RR SPK NW SIDE P.POLE		1138.617
No. 618	Sta. 957+49.983	81.15 Lt.	SET RR SPK S.SIDE PO.POLE		1145.132
No. 630	Sta. 958+06.699	110.01 Rt.	FD RR SPK N.SIDE POW POLE		1153.942
No. 619	Sta. 966+30.010	92.89 Rt.	SET RR SPK N.SIDE PO.POLE		1158.221
No. 632	Sta. 969+97.477	98.45 Rt.	FD RR SPK N.SIDE P. POLE		1151.920
No. 633	Sta. 975+64.875	1282.73 Rt.	SET RR SPK NE SIDE P.POLE		1144.442
No. 620	Sta. 976+00.046	110.93 Rt.	TOP OF BOLT AT NW CORNER		1138.111
No. 621	Sta. 984+30.059	101.96 Rt.	SET RR SPK N.SIDE PO.POLE		1114.297
No. 634	Sta. 990+16.090	86.64 Rt.	SET RR SPK NW SIDE PP		1102.173
No. 635	Sta. 993+32.166	82.51 Rt.	FD RR SPK SOUTH SIDE PP		1098.159
No. 622	Sta. 995+95.058	110.99 Rt.	SET RR SPK E.SIDE PO.POLE		1084.786
No. 636	Sta. 1002+11.952	264.71 Rt.	CUT + EAST BOLT FLAG POLE		1097.048
No. 637	Sta. 1003+68.565	376.36 Lt.	SET RR SPK NE SIDE PP		1072.407
No. 623	Sta. 1007+59.936	165.34 Rt.	SET RR SPK W.SIDE PO.POLE		1072.623
No. 624	Sta. 1016+09.892	77.52 Rt.	SET RR SPK W.SIDE PO.POLE		1059.135
No. 625	Sta. 1027+84.942	85.39 Rt.	FD RR SPK W.SIDE PO. POLE		1060.177
No. 627	Sta. 1037+83.643	90.99 Rt.	FD.RR SPK.W.SIDE PO.POLE		1067.250
No. 501	Sta. 1041+18.820	138.90 Rt.	FD.RR SPK.W.SIDE PO.POLE		1066.396

MISCELLANEOUS LOCATIONS

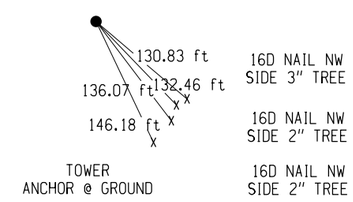
CP STA 930+28.9,935.2 LT
CP POINT 330
SET IRON PIN
XC=5649466.421, YC=3635898.358



GPS STA 934+08.72 63.46RT
GPS POINT G013
FOUND REBAR
XC=5649848.800, YC=3634900.610



CP STA 945+65.54,552.5 LT
CP POINT 337
SET IRON PIN ON TERRACE
XC=5653527.698, YC=3635918.819



CP STA 959+45.60 542.54RT
CP POINT 343
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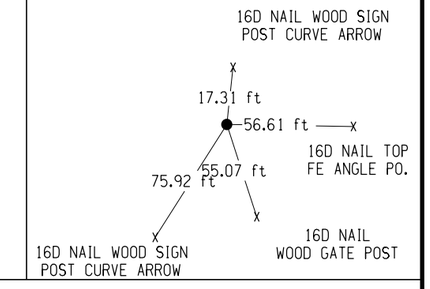
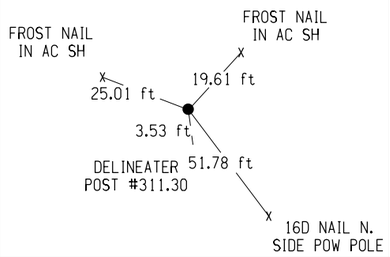


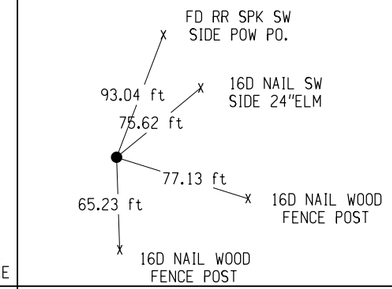
DETAILS OF REFERENCE INFORMATION

All References are Plumb Distances unless otherwise noted.

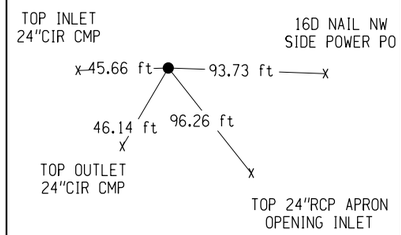
GPS STA 963+17.14 61.12RT
GPS POINT G014
FOUND REBAR
XC=5652764.660, YC=3634932.430



CP STA 965+77.53 177.33RT
CP POINT 342
SET IRON PIN
XC=5653056.262, YC=3634873.309



CP STA 970+22.63 204.90LT
CP POINT 336
SET FROST NAIL IN AC
XC=5653337.302, YC=3635383.963



CP STA 971+25.24 161.94RT
CP POINT 341
SET IRON PIN
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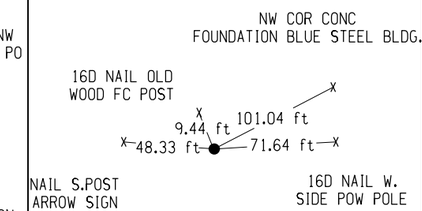

CP STA 974+09.30 815.31RT
CP POINT 340
SET IRON PIN
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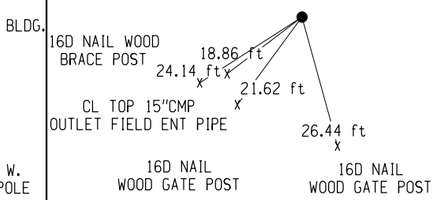
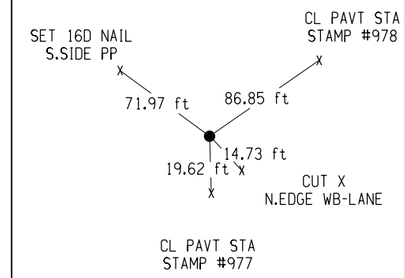
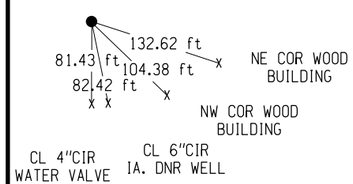


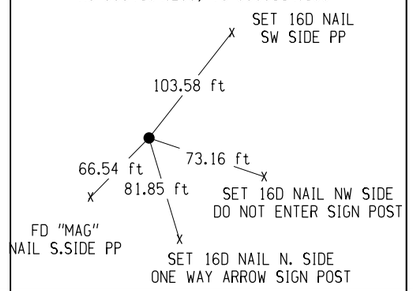
CP STA 977+11.41,50.7 LT
CP POINT 338
SET IRON PIN
XC=5653955.758, YC=3635628.404



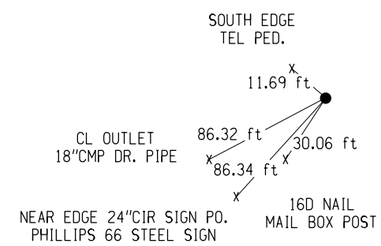
CP STA 977+98.75 352.89RT
CP POINT 344
SET FROST NAIL
XC=5654305.651, YC=3635406.934



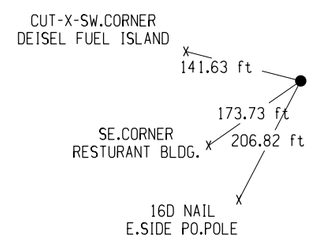
CP STA 981+56.23,126.35LT
CP POINT 339
SET IRON PIN
XC=5654189.266, YC=3636004.188



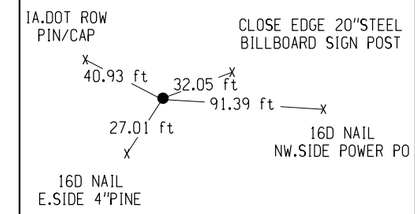
GPS STA982+04.79 103.01RT
GPS POINT G015
FOUND REBAR
XC=5654396.730, YC=3635895.000



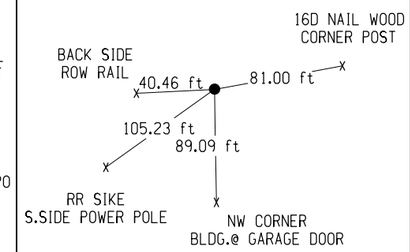
CP STA 982+55.87,404.20RT
CP POINT 345
SET FROST NAIL
XC=5654661.070, YC=3635741.865



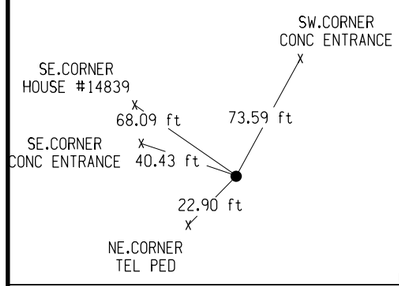
CP STA 993+84.90,188.72LT
CP POINT 348
SET IRON PIN 4" DEEP
XC=5654926.300, YC=3636989.228



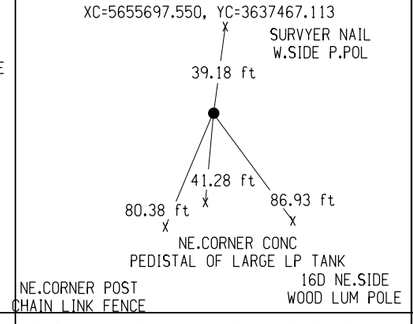
CP STA 994+33.27,111.58RT
CP POINT 349
SET IRON PIN 6"DEEP
XC=5655188.216, YC=3636834.570



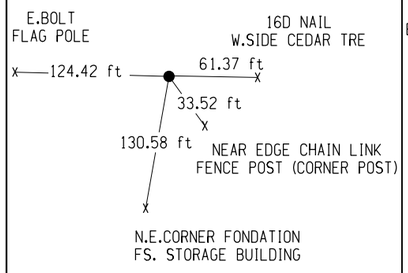
CP STA 998+52.01,244.78RT
CP POINT 350
SET IRON PIN 3"DEEP
XC=5655558.945, YC=3637072.690



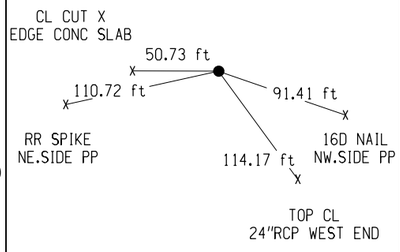
CP STA1002+26.38,126.99RT
CP POINT 352
SET IRON PIN 4"DEEP
XC=5655697.550, YC=3637467.113



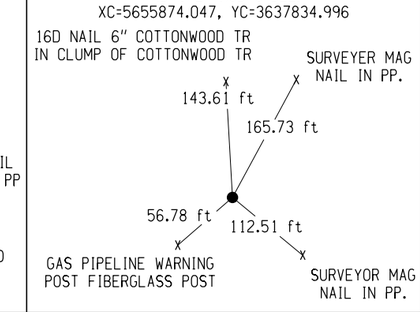
CP STA1002+63.04,373.79RT
CP POINT 351
SET IRON PIN 3" DEEP
XC=5655932.057, YC=3637379.739



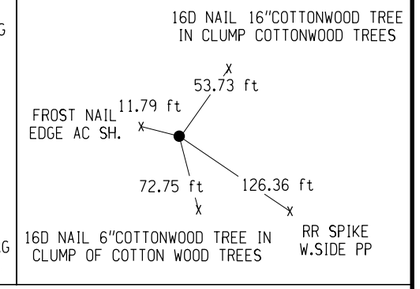
CP STA1004+49.47,288.47LT
CP POINT 353
SET IRON PIN 4"DEEP
XC=5655425.941, YC=3637846.287



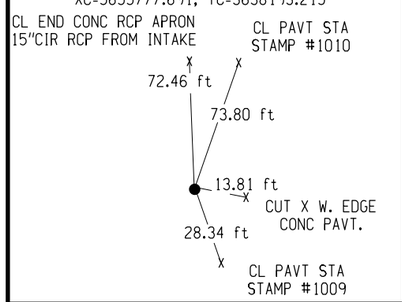
PI STA 1006+41.06
PI PIONT 410
FND 1/2" ROD 6"DEEP
XC=5655874.047, YC=3637834.996



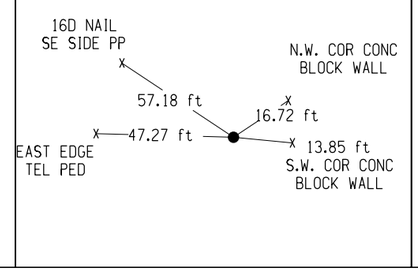
GPS STA1008+01.04,48.28RT
GPS PIONT 16
FND 5/8"REBAR
XC=5655847.980, YC=3638052.140



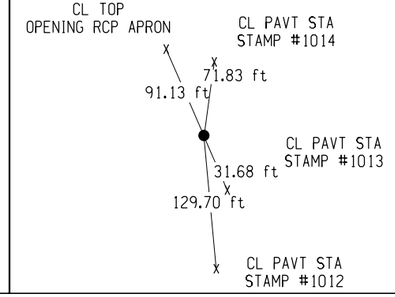
CP STA 1009+25.79 48.14LT
CP POINT 354
SET IRON PIN
XC=5655777.691, YC=3638193.215



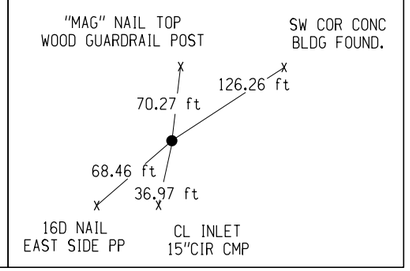
CN STA1011+70.25 136.43RT
CN POINT 356
SET FROST NAIL IN AC
XC=5655984.958, YC=3638424.187



CP STA1013+29.84 45.79LT.
CP POINT 355
SET IRON PIN
XC=5655803.705, YC=3638587.170



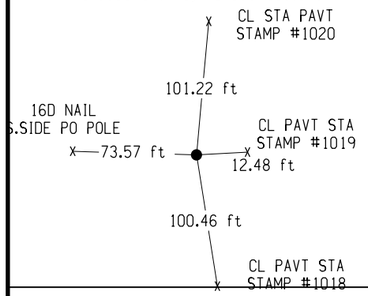
CP STA1014+45.28 135.23RT
CP POINT 357
SET IRON PIN
XC=5655981.367, YC=3638707.845



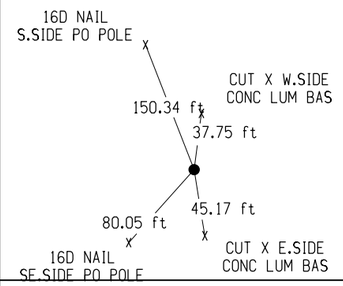
DETAILS OF REFERENCE INFORMATION

All References are Plumb Distances unless otherwise noted.

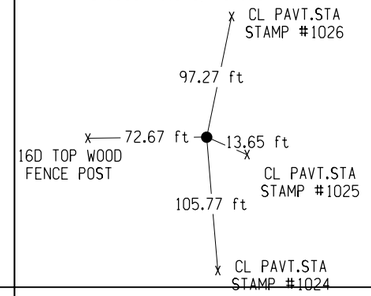
CP STA1018+99.42 45.99LT.
CP POINT 359
SET IRON PIN 4" DEEP
XC=5655784.793, YC=3639156.075



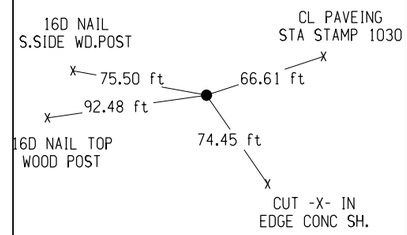
CN STA1019+19.47,136.24RT
CN POINT 358
CLOSE NAIL SET FROST NAIL
XC=5655966.274, YC=3639182.076



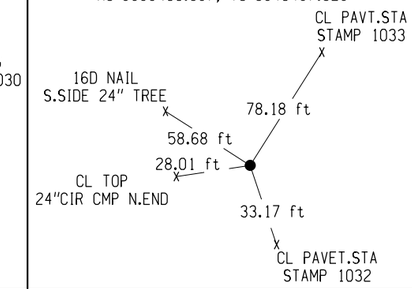
CP STA1025+04.13 49.23LT.
CP POINT 360
SET IRON PIN 6" DEEP
XC=5655775.573, YC=3639765.150



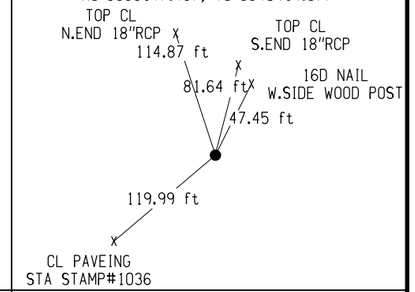
GPS STA1029+64.92,97.99LT
GPS PIONT 17
FND IRON PIN 3"DEEP
XC=5655795.360, YC=3640239.250



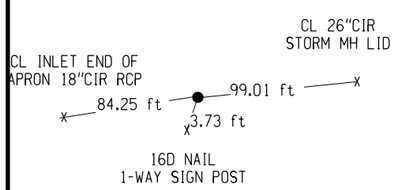
CP STA1032+24.86,62.62LT
CP POINT 361
SET IRON PIN 6"DEEP
XC=5655900.367, YC=3640487.328



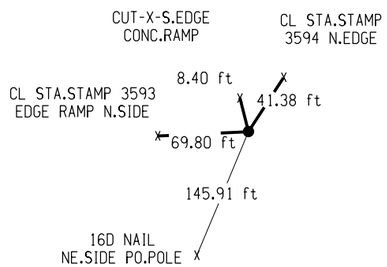
CP STA1037+09.61,0.09 RT.
CP POINT 362
FND.IRON PIN 7"DEEP
XC=5656147.487, YC=3640914.377



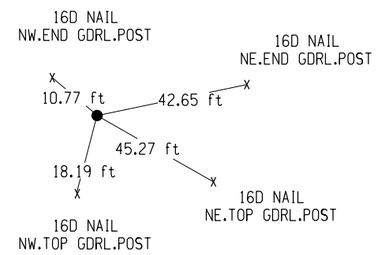
CP STA1093+94.28,68.85RT.
CP POINT 18818
SET IRON PIN
XC=5658836.755, YC=3645923.169



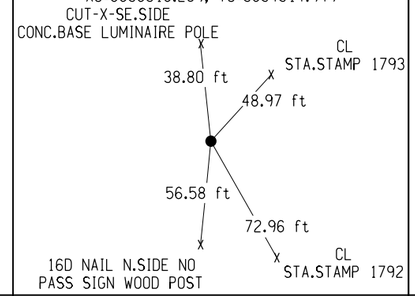
CP STA793+37.31,268.66LT.
CP POINT 365
SET IRON PIN 5"DEEP
XC=5635768.138, YC=3635179.173



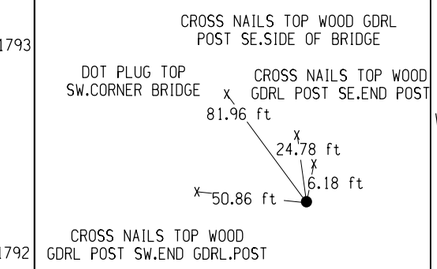
CP STA798+59.50,190.83LT.
CP POINT 366
SET IRON PIN 6"DEEP
XC=5636295.741, YC=3635115.727



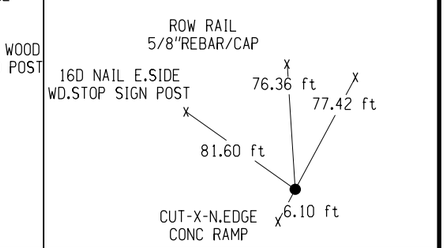
CP STA798+64.34,610.20RT.
CP POINT 363
SET IRON PIN 8"DEEP
XC=5636316.289, YC=3634314.949



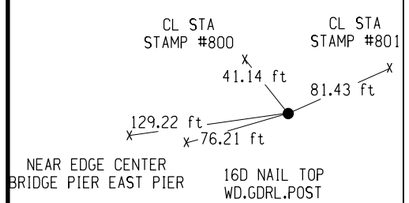
GPS STA799+07.21,191.75RT
GPS POINT 10
FND 5/8"REBAR 3"DEEP
XC=5636350.720, YC=3634734.130



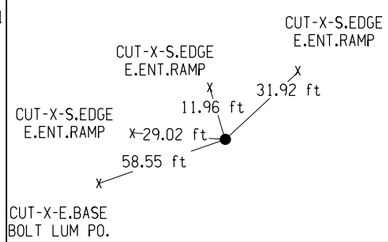
CP STA799+79.01,466.01LT.
CP POINT 367
SET IRON PIN 6"DEEP
XC=5636411.511, YC=3635393.034



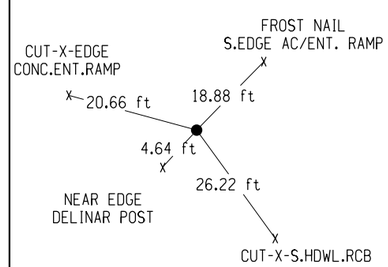
CP STA 800+24.80,15.60LT.
CP POINT 368
SET IRON PIN 6"DEEP
XC=5636464.540, YC=3634943.395



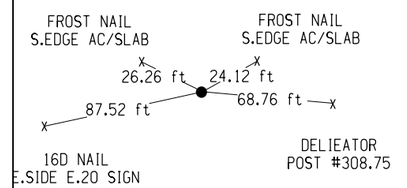
CP STA800+64.48,422.15RT.
CP POINT 364
SET IRON PIN 8"DEEP
XC=5636510.258, YC=3634506.257



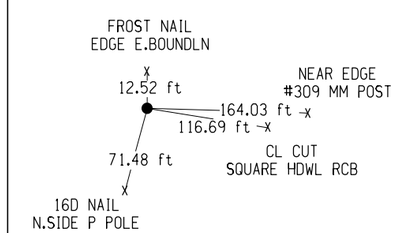
CP STA809+09.16,111.48RT.
CP POINT 369
SET IRON PIN 9"DEEP
XC=5637349.400, YC=3634821.189



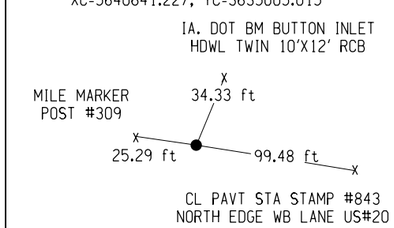
CP STA827+88.09,60.40RT.
CP POINT 370
SET IRON PIN 8"DEEP
XC=5639228.197, YC=3634876.982



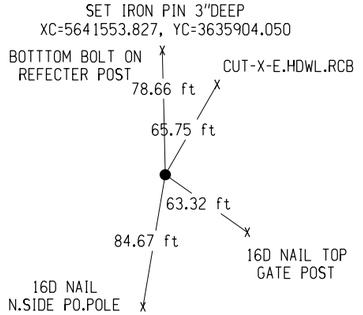
CP STA840+11.06,61.74 RT.
CP PIONT 371
SET IRON PIN 7"DEEP
XC=5640451.166, YC=3634878.723



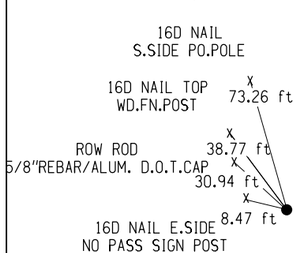
CP STA 842+01.44,64.08LT.
CP POINT 372
SET IRON PIN 6" DEEP
XC=5640641.227, YC=3635005.015



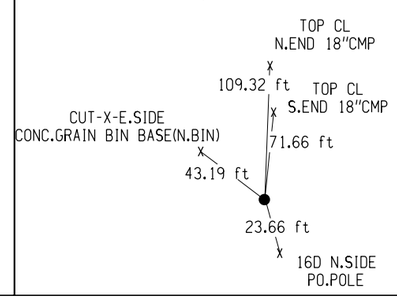
CP STA851+16.30,960.82LT.
CP PIONT 377
SET IRON PIN 3"DEEP
XC=5641553.827, YC=3635904.050



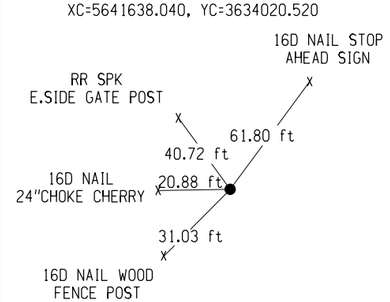
CP STA851+36.36,310.32LT.
CP POINT 376
SET IRON PIN 6"DEEP
XC=5641575.526, YC=3635253.603



CP STA851+47.19,339.10RT.
CP POINT 373
SET IRON PIN 3"DEEP
XC=5641587.987, YC=3634603.318



CP STA 851+95.78,922.92RT
CP POINT 374
SET IRON PIN 8" DEEP
XC=5641638.040, YC=3634020.520

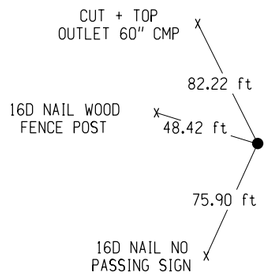


DETAILS OF REFERENCE INFORMATION

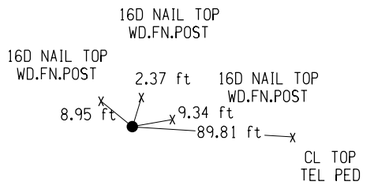
All References are Plumb Distances unless otherwise noted.

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER G.3

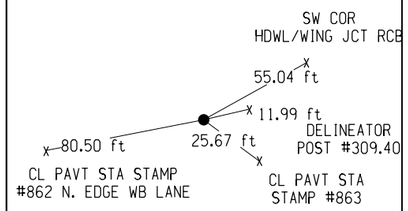
CP STA852+62.62,1818.02RT
CP POINT 375
SET IRON PIN 8" DEEP
XC=5641707.131, YC=3633125.588



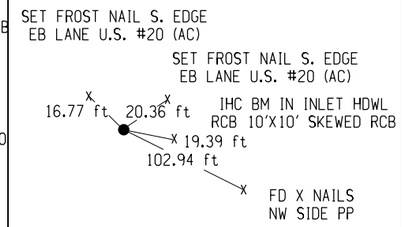
GPS STA853+08.95,138.54LT
GPS POINT 11
FND 5/8"REBAR 6"DEEP
XC=5641748.540, YC=3635082.260



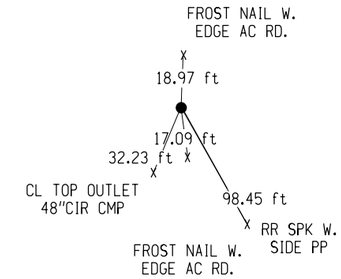
CP STA 862+80.43,63.77LT.
CP POINT 379
SET IRON PIN 6" DEEP
XC=5642720.206, YC=3635009.931



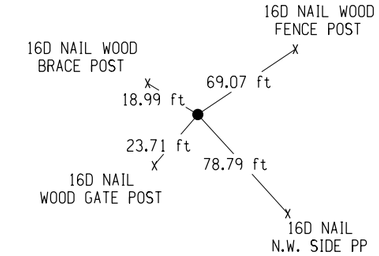
CP STA 864+08.50,60.59RT.
CP POINT 378
SET IRON PIN 4" DEEP
XC=5642848.592, YC=3634885.889



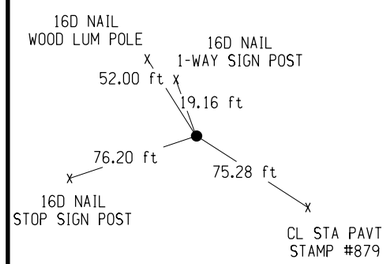
CP STA877+25.54,1715.09LT
CP POINT 383
SET IRON PIN
XC=5644161.162, YC=3636664.877



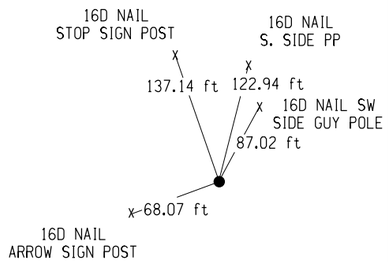
CP STA877+38.78,1153.32LT
CP POINT 382
SET IRON PIN
XC=5644175.815, YC=3636103.138



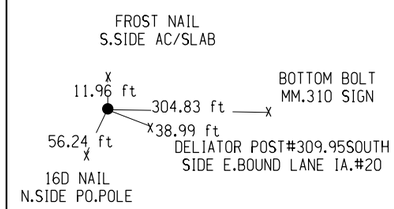
CP STA 878+36.33,89.44LT.
CP POINT 381
SET IRON PIN
XC=5644276.044, YC=3635039.510



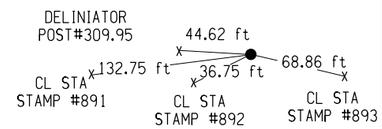
CP STA 878+56.23,225.65RT
CP POINT 380
SET IRON PIN 5" DEEP
XC=5644296.732, YC=3634724.473



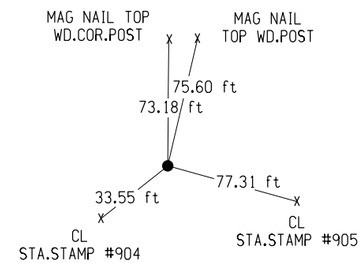
CP STA891+51.56,61.35RT.
CP POINT 384
SET IRON PIN 6"DEEP
XC=5645591.641, YC=3634892.030



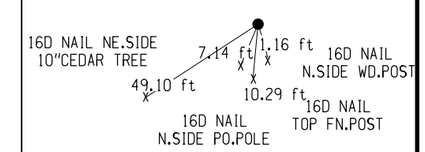
CP STA892+32.73,64.21LT.
CP POINT 385
SET IRON PIN 6"DEEP
XC=5645672.500, YC=3635017.788



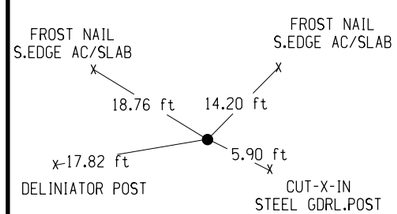
CP STA904+25.51,69.17LT.
CP POINT 388
SET IRON PIN 6"DEEP
XC=5646865.262, YC=3635025.749



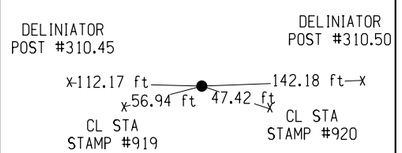
GPS STA904+80.33,122.52RT
GPS POINT 12
FND.5/8"REBAR 6"DEEP
XC=5646920.560, YC=3634834.190



CP STA917+71.19,59.53RT.
CP POINT 386
SET IRON PIN 3"DEEP
XC=5648211.260, YC=3634900.425



CP STA919+54.57,62.80 LT.
CP POINT 387
SET IRON PIN 3"DEEP
XC=5648394.337, YC=3635023.220



DETAILS OF REFERENCE INFORMATION

All References are Plumb Distances unless otherwise noted.

ALIGNMENT COORDINATES

101-16
10-20-09

Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
999	U.S. 20 (Survey)	941+51.26	3634965.9380	5650591.1740															
1000	U.S. 20 (Survey)							959+99.27	3634969.9150	5652439.1820	970+56.50	3634972.1902	5653496.4096	979+76.89	3635785.4982	5654171.8838			
1001	U.S. 20 (Survey)				997+74.34	3637168.2411	5655320.2891	1000+74.34	3637403.9550	5655505.7304	1006+23.44	3637852.8830	5655821.9142	1011+43.04	3638401.3635	5655847.9471	1014+43.04	3638701.2747	5655846.2820
1002	U.S. 20 (Survey)							1022+27.73	3639485.5602	5655821.1450	1029+84.57	3640242.0153	5655796.9000	1037+08.11	3640913.1081	5656146.8236			
1003	U.S. 20 (Survey)	1148+92.52	3650830.3178	5661317.8893															
499	U.S. 20	941+51.26	3634965.9380	5650591.1740															
500	U.S. 20				946+43.69	3634966.9977	5651083.6040	948+23.69	3634968.5590	5651263.5941	964+49.50	3635003.8643	5652889.0205	979+49.24	3636052.7112	5654131.2674	981+29.24	3636170.6153	5654267.2730
501	U.S. 20				987+22.39	3636562.0669	5654712.9175	989+62.39	3636722.8330	5654891.0919	1002+34.46	3637599.8807	5655812.4782	1013+68.65	3638871.9118	5655822.6040	1016+08.65	3639111.8528	5655818.1149
502	U.S. 20				1018+53.81	3639356.8850	5655810.2614	1021+02.81	3639605.8263	5655805.9746	1027+05.10	3640208.0729	5655813.4575	1032+89.32	3640753.9754	5656067.9127	1035+38.32	3640976.4258	5656179.7426
503	U.S. 20	1152+32.45	3651345.6000	5661586.5000															
99	Swiss Valley Road	5951+19.00	3634486.5206	5654832.3296															
100	Swiss Valley Road							5961+28.96	3634899.9907	5653910.8833	5963+01.74	3634970.7274	5653753.2418	5964+67.75	3635106.6930	5653646.6218			
101	Swiss Valley Road	5981+18.32	3636405.5383	5652628.1073															
109	Relocated Cottingham Road	8929+67.19	3636531.4723	5649475.5203															
110	Relocated Cottingham Road							8933+11.36	3636187.4736	5649486.2846	8943+21.27	3635178.0560	5649517.8709	8949+13.92	3635180.9740	5650527.7784			
111	Relocated Cottingham Road							8959+89.97	3635184.0831	5651603.8289	8965+17.26	3635185.6066	5652131.1105	8969+83.59	3635575.0271	5652486.6101			
112	Relocated Cottingham Road							8972+59.96	3635779.1413	5652672.9448	8973+46.34	3635842.9349	5652731.1816	8974+32.32	3635896.2360	5652799.1531			
113	Relocated Cottingham Road	8976+12.00	3636007.1095	5652940.5429															
119	North Frontage Road	9976+12.00	3636007.1095	5652940.5429															
120	North Frontage Road							9978+34.80	3636144.5925	5653115.8659	9979+84.86	3636237.1917	5653233.9517	9981+26.37	3636249.4635	5653383.5120			
121	North Frontage Road							9984+24.59	3636273.8513	5653680.7362	9986+85.55	3636295.1915	5653940.8169	9989+35.12	3636440.8950	5654157.3068			
122	North Frontage Road							9992+35.95	3636608.8644	5654406.8798	10008+15.93	3637491.0416	5655717.6404	10021+29.33	3639070.7249	5655687.1303			
123	North Frontage Road							10021+29.33	3639070.7249	5655687.1303	10022+53.05	3639194.4214	5655684.7412	10023+74.56	3639310.7969	5655642.7500			
124	North Frontage Road							10023+74.56	3639310.7969	5655642.7500	10024+14.19	3639348.0777	5655629.2982	10024+42.29	3639344.9897	5655589.7852			
125	North Frontage Road	10025+53.69	3639336.3096	5655478.7178															
126	Tower Drive	400+00.00	3639396.9590	5655588.0684															
127	Tower Drive							400+75.26	3639472.1779	5655585.6576	404+41.19	3639837.9199	5655573.9353	407+96.24	3640176.4287	5655712.9184			
128	Tower Drive							418+05.27	3641109.8410	5656096.1536	418+95.27	3641193.0969	5656130.3364	419+46.64	3641227.2796	5656047.0805			
129	Tower Drive	419+96.64	3641246.2700	5656000.8272															
130	North Cascade Road (West)	6930+01.44	3633348.7307	5651741.9004															
131	North Cascade Road (West)							6936+81.23	3633744.6229	5652294.5056	6939+25.69	3633886.9921	5652493.2314	6941+65.89	3633958.8961	5652726.8780			
132	North Cascade Road (West)							6951+68.75	3634253.8717	5653685.3803	6953+95.18	3634320.4723	5653901.7943	6955+93.98	3634527.0578	5653994.4930			
133	North Cascade Road (West)	6959+00.00	3634806.2571	5654119.7750															
139	North Cascade Road (East)	7958+50.62	3634806.2571	5654119.7750															
140	North Cascade Road (East)							7959+23.11	3634872.3967	5654149.4531	7961+15.68	3635048.0856	5654228.2879	7962+72.29	3635204.0466	5654115.3379			
141	North Cascade Road (East)							7962+72.29	3635204.0466	5654115.3379	7965+42.55	3635422.9260	5653956.8211	7967+26.34	3635623.0966	5654138.3915			
142	North Cascade Road (East)							7974+61.44	3636167.5723	5654632.2737	7976+05.99	3636274.6372	5654729.3900	7977+50.32	3636371.8691	5654836.3500			
143	North Cascade Road (East)							7990+45.61	3637243.1569	5655794.8111	7992+83.13	3637402.9224	5655970.5613	7995+20.29	3637545.3088	5656160.6646			
144	North Cascade Road (East)	7998+70.44	3637755.2212	5656440.9234															
149	South Frontage Road	1992+00.00	3637345.2259	5655910.6354															
150	South Frontage Road							1993+22.03	3637438.0125	5655831.3790	1994+28.48	3637518.9544	5655762.2403	1995+17.67	3637621.5110	5655790.7692			
151	South Frontage Road							1997+25.75	3637821.9758	5655846.5340	2001+07.88	3638190.1290	5655948.9459	2004+84.15	3638572.0649	5655936.7045			
152	South Frontage Road							2015+88.34	3639675.6893	5655901.3324	2018+68.80	3639956.0120	5655892.3479	2021+41.94	3640218.1632	5655992.0389			
153	South Frontage Road	2034+09.17	3641327.0619	5656586.9466				2025+49.07	3640598.7077	5656136.7526	2028+34.79	3640865.7653	5656238.3094	2031+16.66	3641093.7045	5656410.5805			
159	Swiss Valley Road Ramp A	1969+54.70	3635761.5941	5653133.0685															
160	Swiss Valley Road Ramp A							1975+89.67	3635996.5561	5653722.9694	1979+21.93	3636119.5038	5654031.6449	1982+50.00	3636321.6872	5654295.3086			
161	Swiss Valley Road Ramp A	1983+10.13	3636358.2788	5654343.0271															
169	Swiss Valley Road Ramp B	2956+40.00	3634969.2155	5652091.8715															
170	Swiss Valley Road Ramp B							2961+64.49	3635038.5632	5652611.7563	2964+27.10	3635073.2860	5652872.0653	2966+89.69	3635114.8317	5653131.3728			
171	Swiss Valley Road Ramp B	2971+47.52	3635187.2614	5653583.4426															
180	Swiss Valley Road Ramp C							3955+50.00	3635111.3309	5651972.7929	3958+55.65	3635171.7043	5652272.4181	3961+53.04	3635344.5026	5652524.5312			
181	Swiss Valley Road Ramp C	3968+90.79	3635761.5941	5653133.0685															
189	Swiss Valley Road Ramp D	4969+49.66	3635187.2614	5653583.4426															
190	Swiss Valley Road Ramp D							4981+37.05	3636104.1086	5654337.9588	4982+78.76	3636213.5296	5654428.0064	4984+20.00	3636309.1606	5654532.5829			
199	Cottingham Road Connector	136+38.05	3635359.5411	5649654.9636															
200	Cottingham Road Connector							136+96.16	3635401.7606	5649615.0405	138+08.52	3635483.4033	5649537.8383	138+64.87	3635550.6092	5649627.8887			
201	Cottingham Road Connector	139+45.00	3635598.5353	5649692.1057															

GEOMETRIC DESIGN U.S. 20 MAINLINE AND SIDEROADS

SPIRAL OR CIRCULAR CURVE DATA

101-17
04-19-11

Name	Location	Δ_{SCS}	Horizontal Alignment Data													Remarks
			Spiral Data								Curve Data					
			θs	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	Δ_c	T	L	R	E	
1000	U.S. 20 (Survey)										50° 09′ 58.14″	1057.2300	1977.6209	2258.6810	235.1865	
1001	U.S. 20 (Survey)	41° 32′ 46.68″	4° 33′ 11.45″	300					200.0662	100.0602	32° 26′ 23.77″	549.0980	1068.7011	1887.5520	78.2458	
1002	U.S. 20 (Survey)										29° 22′ 27.63″	756.8435	1480.3861	2887.5500	97.5391	
500	U.S. 20	41° 10′ 21.30″	1° 07′ 15.62″	180	1817.8795	314.09	179.9931		120.0024	60.0022	38° 55′ 50.07″	1625.8097	3125.5468	4600	278.8582	
501	U.S. 20	50° 32′ 23.51″	2° 17′ 30.59″	240	1536.5390	318.34	239.9616		160.0134	80.0122	45° 57′ 22.32″	1272.0714	2406.2610	3000	258.5527	
502	U.S. 20	29° 22′ 28.05″	2° 32′ 51.42″	249	858.6328	95.54	248.9508		166.0172	83.0156	24° 16′ 45.21″	602.2931	1186.5068	2800	64.0456	
100	Swiss Valley Road										27° 43′ 51.20″	172.7845	338.7967	700	21.0094	
110	Relocated Cottingham Road										88° 22′ 23.73″	1009.9117	1602.5581	1039	409.9454	
111	Relocated Cottingham Road										47° 26′ 30.05″	527.2839	993.6163	1200	110.7358	
112	Relocated Cottingham Road										9° 30′ 17.21″	86.3779	172.3594	1039	3.5844	
120	North Frontage Road										33° 24′ 42.20″	150.0629	291.5723	500	22.0334	
121	North Frontage Road										29° 15′ 03.20″	260.9548	510.5243	1000	33.4880	
122	North Frontage Road										57° 09′ 53.49″	1579.9779	2893.3735	2900	402.4733	
123	North Frontage Road										18° 44′ 03.26″	123.7195	245.2306	750	10.1359	
124	North Frontage Road										74° 37′ 40.57″	39.6334	67.7302	52	13.3820	
127	Tower Drive										24° 09′ 27.18″	365.9297	720.9852	1710	38.7151	
128	Tower Drive										90° 00′ 00.00″	90.0000	141.3717	90	37.2792	
131	North Cascade Road (West)										18° 30′ 45.54″	244.4605	484.6600	1500	19.7898	
132	North Cascade Road (West)										48° 43′ 40.00″	226.4302	425.2301	500	48.8813	
140	North Cascade Road (East)										60° 04′ 46.05″	192.5656	349.1786	333	51.6694	
141	North Cascade Road (East)										78° 07′ 23.84″	270.2518	454.0484	333	95.8648	
142	North Cascade Road (East)										5° 31′ 01.58″	144.5492	288.8750	3000	3.4804	
143	North Cascade Road (East)										5° 26′ 21.64″	237.5146	474.6723	5000	5.6381	
150	South Frontage Road										56° 02′ 54.93″	106.4507	195.6465	200	26.5651	
151	South Frontage Road										17° 22′ 52.01″	382.1321	758.3942	2500	29.0364	
152	South Frontage Road										22° 39′ 23.72″	280.4666	553.6049	1400	27.8171	
153	South Frontage Road										16° 15′ 37.06″	285.7159	567.5914	2000	20.3053	
160	Swiss Valley Road Ramp A										15° 45′ 50.56″	332.2600	660.3227	2400	22.8902	
170	Swiss Valley Road Ramp B										1° 30′ 16.50″	262.6146	525.1991	20000	1.7241	
180	Swiss Valley Road Ramp C										23° 02′ 03.79″	305.6472	603.0388	1500	30.8234	
190	Swiss Valley Road Ramp D										8° 06′ 20.88″	141.7093	282.9458	2000	5.0141	
200	Cottingham Road Connector										96° 39′ 51.00″	112.3642	168.7108	100	50.4184	

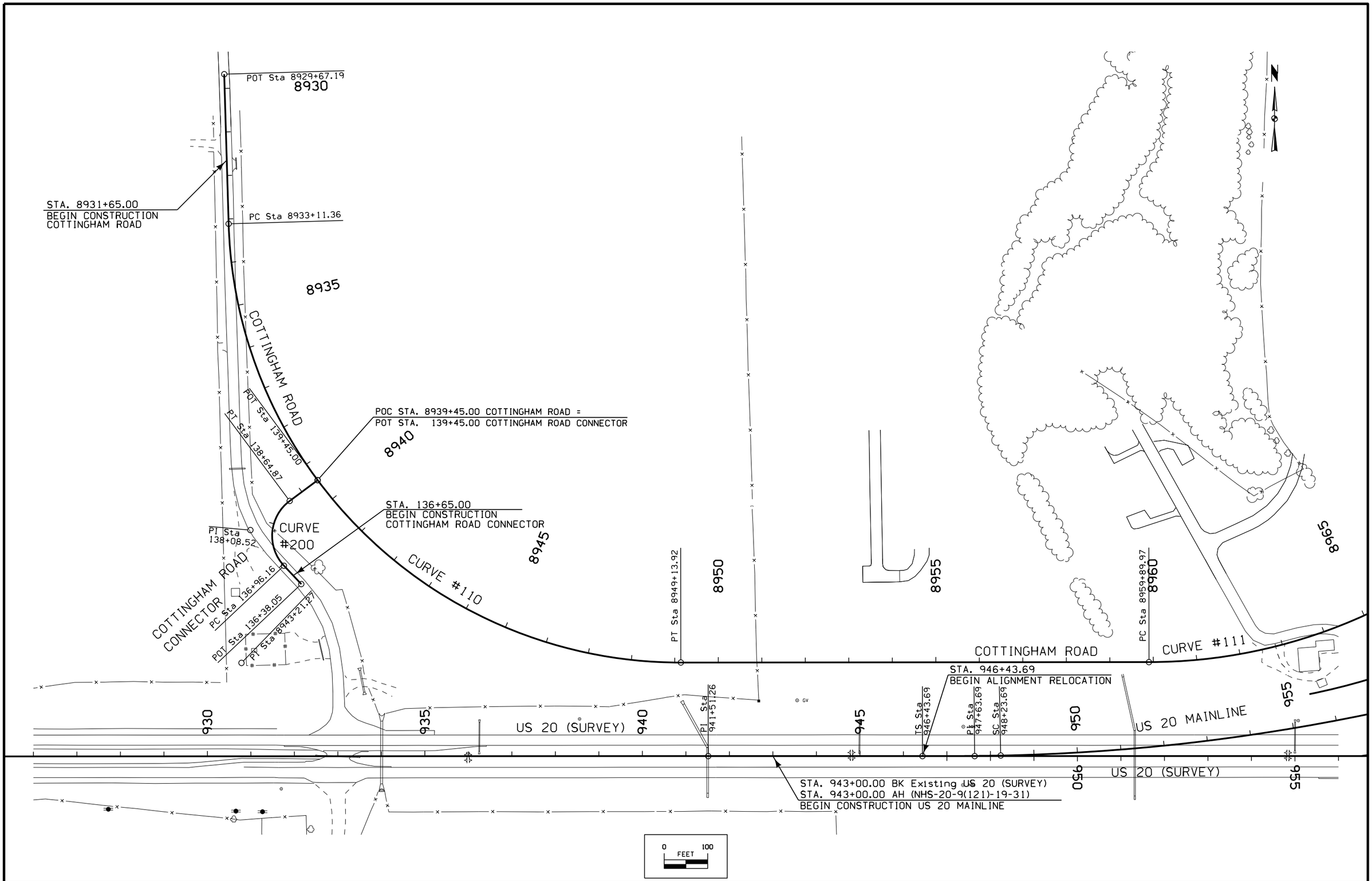
GEOMETRIC DESIGN U.S. 20 MAINLINE AND SIDEROADS

SPIRAL OR CIRCULAR CURVE DATA

101-17
04-19-11

Name	Location	Δ_{scs}	Horizontal Alignment Data													Remarks
			Spiral Data								Curve Data					
			θs	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	Δ_c	T	L	R	E	
24291	Ramp A at Swiss Valley										33° 20′ 10.98″	22.46′	43.64′	75′	3.29′	
24292	Ramp A at Swiss Valley										58° 03′ 05.96″	24.97′	45.59′	45′	6.46′	
24293	Ramp A at Swiss Valley										14° 59′ 42.27″	26.32′	52.34′	200′	1.72′	
24281	Ramp A at Swiss Valley										14° 55′ 33.15″	65.50′	130.25′	500′	4.27′	
24282	Ramp A at Swiss Valley										52° 25′ 37.06″	36.93′	68.63′	75′	8.60′	
24283	Ramp A at Swiss Valley										06° 15′ 41.27″	27.35′	54.64′	500′	0.75′	
24301	Ramp B at Swiss Valley										22° 03′ 31.07″	24.36′	48.12′	125′	2.35′	
24302	Ramp B at Swiss Valley										64° 01′ 55.07″	25.01′	44.70′	40′	7.18′	
24303	Ramp B at Swiss Valley										34° 12′ 40.26″	23.08′	44.78′	75′	3.47′	
24311	Ramp B at Swiss Valley										09° 47′ 33.28″	25.70′	51.27′	300′	1.10′	
24312	Ramp B at Swiss Valley										34° 23′ 46.14″	23.21′	45.02′	75′	3.51′	
24313	Ramp B at Swiss Valley										15° 04′ 36.13″	52.93′	105.26′	400′	3.49′	
24321	Ramp C at Swiss Valley										14° 19′ 26.20″	63.32′	125.59′	400′	4.98′	
24322	Ramp C at Swiss Valley										114° 35′ 29.61″	29.41′	53.17′	50′	8.01′	
24323	Ramp C at Swiss Valley										28° 38′ 52.40″	25.89′	51.50′	200′	1.67′	
24331	Ramp C at Swiss Valley										11° 27′ 32.96″	73.41′	145.77′	500′	5.36′	
24332	Ramp C at Swiss Valley										190° 59′ 09.35″	20.86′	36.45′	30′	6.54′	
24341	Ramp D at Swiss Valley										87° 39′ 16.98″	38.40′	61.19′	40′	15.45′	
24342	Ramp D at Swiss Valley										14° 47′ 25.44″	64.90′	129.07′	500′	4.19′	
24351	Ramp D at Swiss Valley										62° 25′ 15.96″	45.44′	81.71′	75′	12.69′	
24352	Ramp D at Swiss Valley										15° 08′ 03.09″	53.14′	105.66′	400′	3.51′	
1993	South Frontage Road at NCSD										11° 44′ 18.32″	30.84′	61.46′	300′	1.58′	
1994	South Frontage Road at NCSD										70° 48′ 35.10″	49.76′	86.51′	70′	15.88′	
1995	South Frontage Road at NCSD										19° 43′ 58.94″	34.79′	68.88′	200′	3.00′	
1996	South Frontage Road at NCSD										69° 17′ 16.60″	41.46′	72.56′	60′	12.93′	
7959	North Cascade at SVLLY										15° 22′ 56.20″	40.51′	80.54′	300′	2.72′	
7960	North Cascade at SVLLY										66° 20′ 39.69″	32.68′	57.90′	50′	9.74′	
7962	North Cascade at SVLLY										80° 01′ 10.34″	54.56′	90.78′	65′	19.86′	
7963	North Cascade at SVLLY										13° 53′ 26.67″	46.29′	92.13′	380′	2.81′	
7965	North Cascade at SVLLY										75° 46′ 14.62″	54.46′	92.57′	70′	18.69′	
7966	North Cascade at SVLLY										14° 13′ 46.41″	56.17′	111.76′	450′	3.49′	
7968	North Cascade at SVLLY										13° 13′ 06.72″	23.17′	46.14′	200′	1.34′	
7969	North Cascade at SVLLY										62° 35′ 36.18″	36.48′	65.55′	60′	10.22′	
7970	North Cascade at SVLLY										14° 11′ 15.42″	49.78′	99.05′	400′	3.09′	
5975	North Frontage at SVLLY										23° 02′ 36.51″	20.38′	40.22′	100′	10.22′	
5976	North Frontage at SVLLY										52° 40′ 57.58″	24.76′	45.97′	50′	3.09′	
5977	North Frontage at SVLLY										14° 16′ 44.35″	50.10′	99.69′	400′	9.74′	
5978	Cottingham at Swiss Valley										13° 28′ 21.89″	23.62′	47.03′	200′	3.49′	
5979	Cottingham at Swiss Valley										62° 29′ 52.80″	30.34′	54.54′	50′	18.69′	
5980	Cottingham at Swiss Valley										14° 01′ 45.31″	49.22′	97.94′	400′	1.34′	

GEOMETRIC DESIGN U.S. 20 MAINLINE AND SIDEROADS



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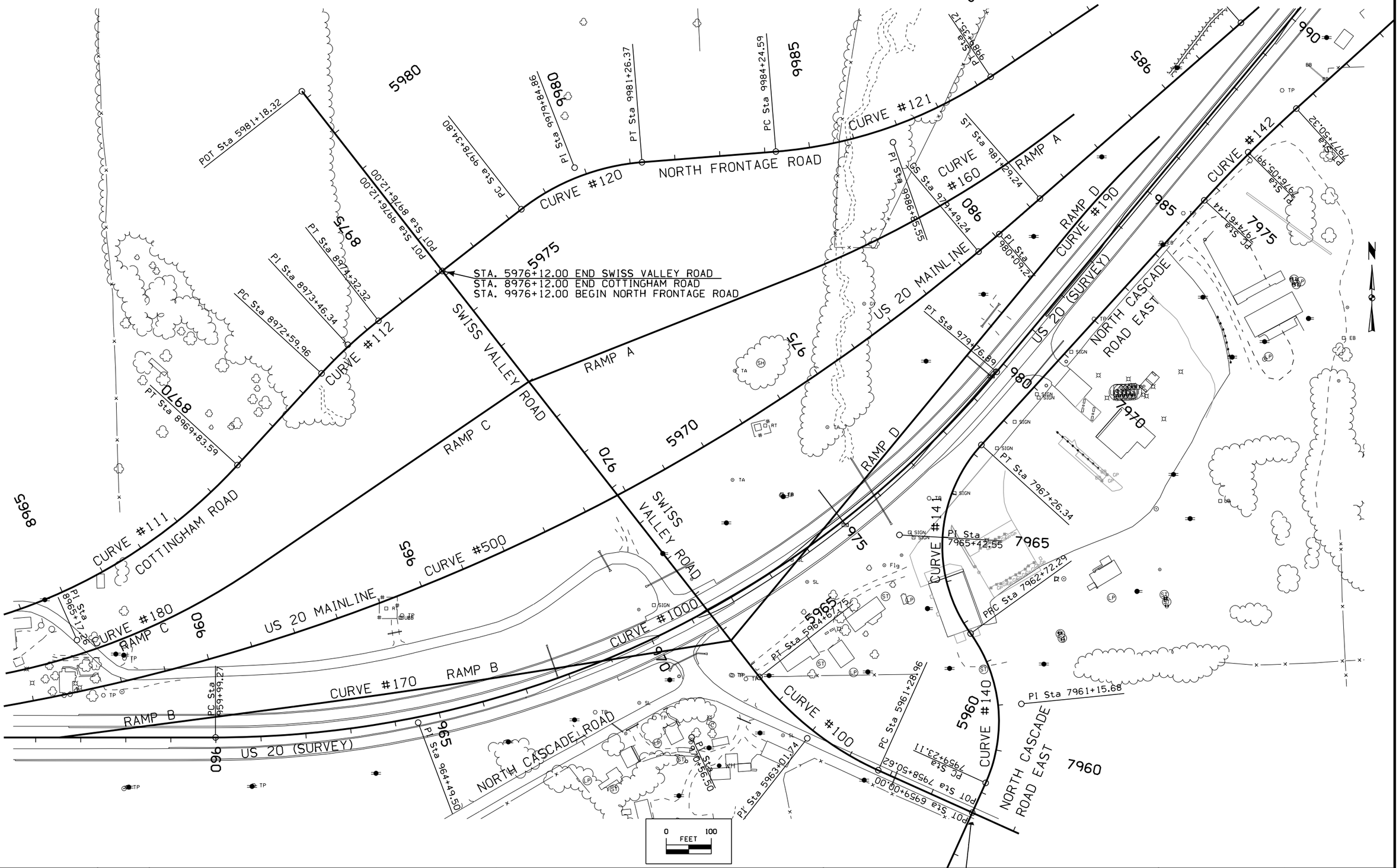

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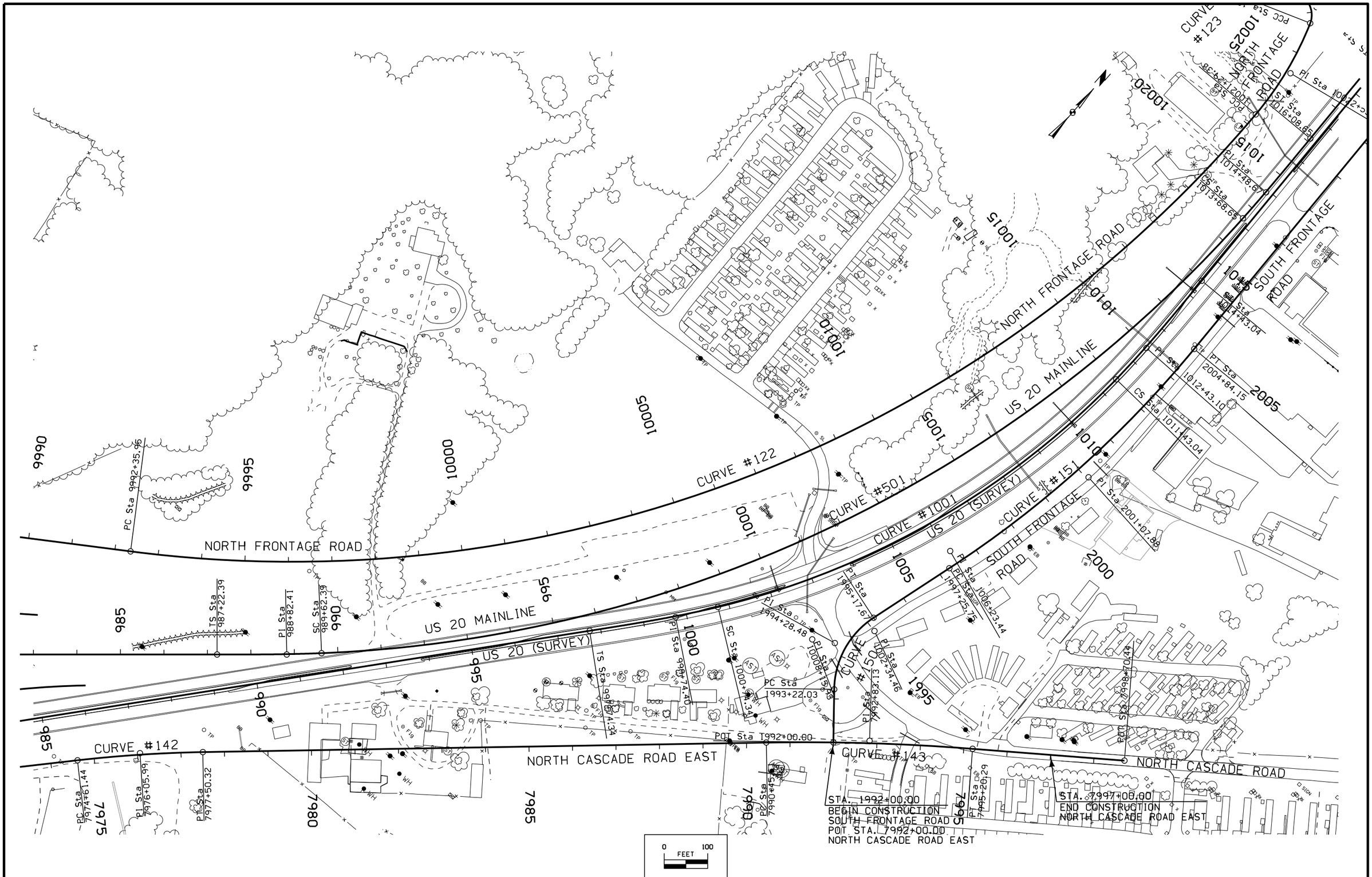

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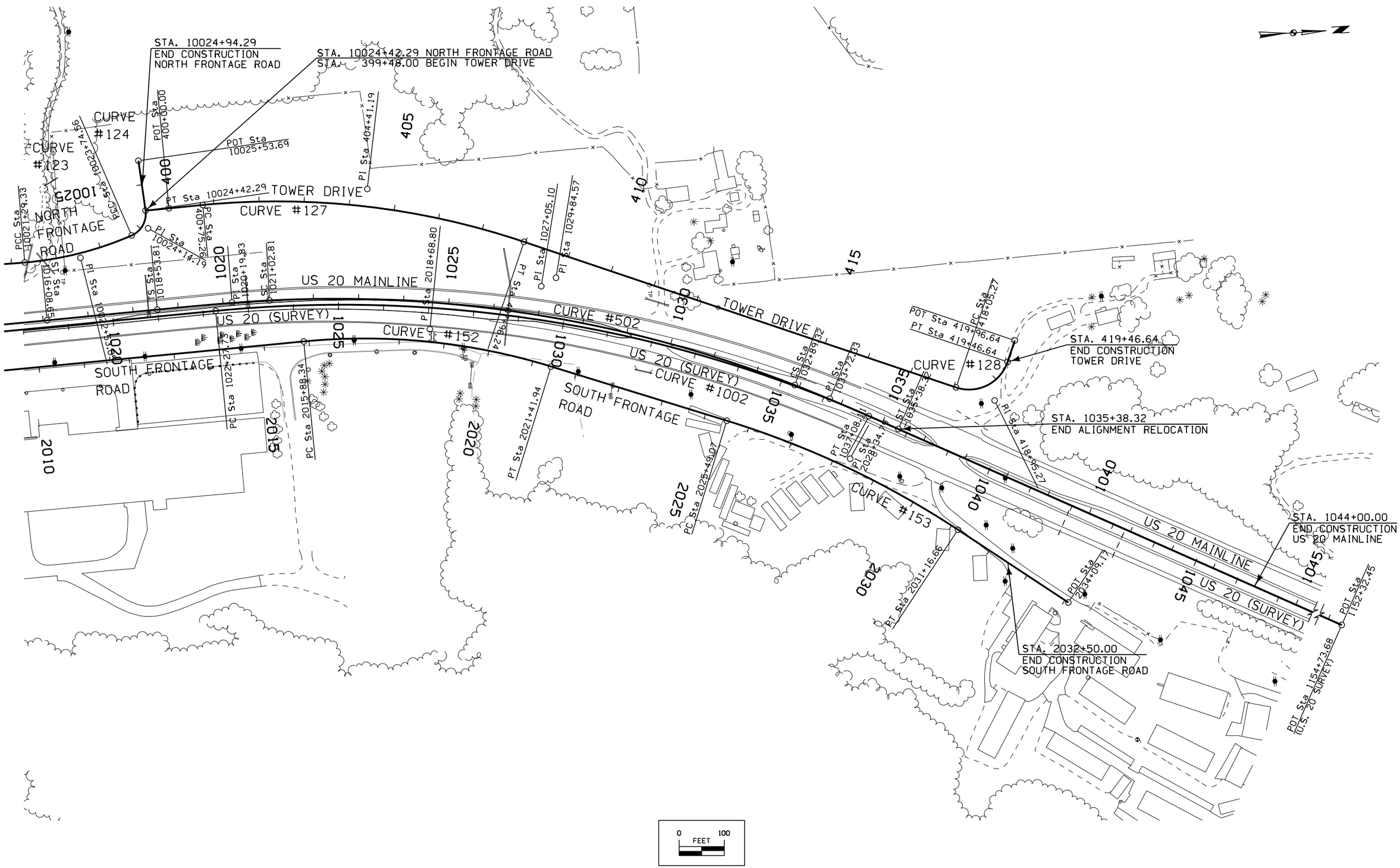

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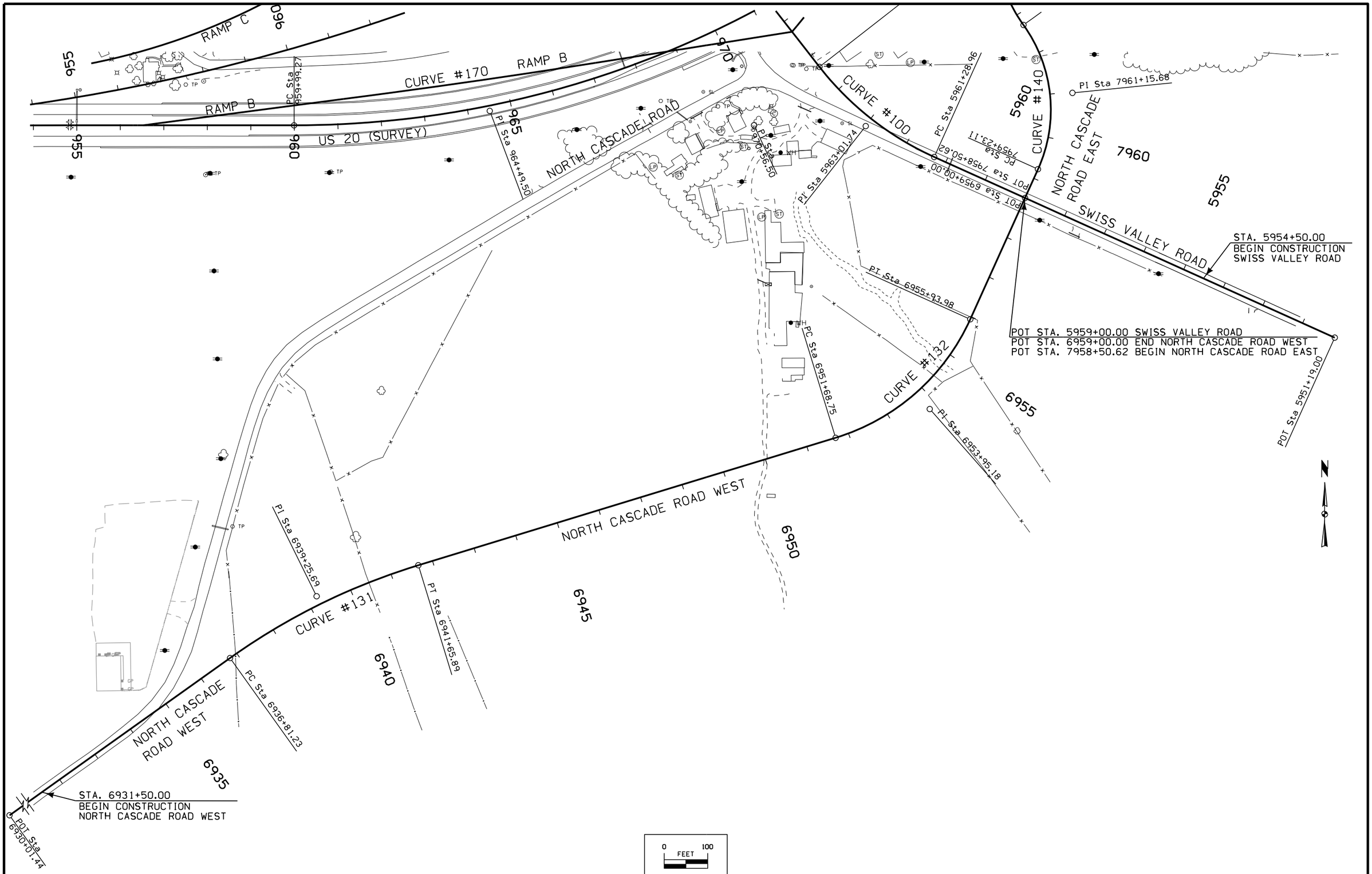

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STAGING NOTES

STAGING NOTES

Stage 1a:

Traffic:

• Maintain two lanes of traffic on US 20 Westbound.
• Shift traffic to the inside lane of US 20 Eastbound.
• Maintain access to all entrances.

Construction:

• Construct right shoulder along Eastbound US 20 from Station 937+95 to 1051+00.

Stage 1b:

Traffic:

• Shift traffic to the outside lane of US 20 Westbound from Station 934+50 to Station 1052+00.
• Open inside lane on US 20 Eastbound, and shift both lanes of traffic to the outside utilizing previously constructed widening from Station 937+95 to 1051+00.

Construction:

• Remove raised medians from Station 1001+80 to 1029+15.

Stage 1c:

Traffic:

• Maintain traffic to outside lane of US 20 Westbound for entire project.
• Close Cottingham Road North at US 20 to Proposed Station 8931+50.
• Detour Cottingham Raod Traffic North to Seippel Road, East on Seippel to US 20.
• Lane shifts will be required during construction of the widening along the north edge of pavement of US 20 Eastbound.

Construction:

• Build median crossovers from Station 935+00.00 to 943+50.18 and from Station 948+19.50 to Station 956+65.44.
• Construct widening along north edge of pavement on US 20 Eastbound from Station 943+50.18 to Station 948+19.50.
• Pave medians from Station 1012+33.05 to Station 1017+10.03.
• Build median crossover from Station 1044+00 to Station 1051+57.88.
• Construct 20' of widening along north edge of pavement on US 20 Eastbound from Station 1017+10.03 to Station 1044+00.
• Construct remaining widening along north edge of newly constructed widening on US 20 Eastbound from Station 1017+10.03 to Station 1044+00.
• Grade and pave Cottingham Road from Station 8931+65 to Station 8940+68
• Grade and pave Cottingham Connector from Station 136+65 to Cottingham Road.

Stage 1d:

Traffic:

• Open Cottingham Road North at US 20
• Open traffic to two lanes on US 20 Westbound for entire project.
• Shift traffic onto median crossovers and widening from Station 935+00 to Station 956+65.44
• Close the Eastbound lane of Lost Canyon Road reducing Lost Canyon Road to one lane from Station 404+80 to Station 406+05.
• Lane shifts will be required during the construction of the N Cascade median crossing.

Construction:

• Grade and pave Cottingham Road from Station 8940+68 to Station 8969+83.59.
• Construct entrances on Cottingham Road at Station 8953+65.02 and Station 8962+10.01.
• Obliterate Existing US 20 Westbound from Station 943+00 to Station 952+00.
• Obliterate portion of Existing US 20 Westbound in the clear from Station 1012+00 to Station 1044+00.
• Grade and pave Proposed US 20 Westbound from Station 943+00 to Station 1044+00.
• Grade and pave portion of Proposed US 20 Eastbound from Station 966+00 to Station 971+00.
• Build portion of median crossing at Swiss Valley Road from Station 102+16.39 to Station 105+00.89.
• Construct temporary widenings at northeast and southwest edges of pavement of Swiss Valley median crossing to the northwest edge of pavement of US 20 Westbound and the median of Existing US 20.
• Build portion of median crossing at US 20 Plaza from Station 202+12.97 to Station 203+89.53
• Construct temporary widenings at northeast and southwest edges of pavement of US 20 Plaza median crossing to the northwest edge of pavement of US 20 Westbound.
• Construct temporary widening along the south edge of pavement of the Eastbound return of Existing US 20 Plaza median crossing.
• Build portion of median crossing at Old N Cascade Road from Station 300+64.58 to Station 300+79.56.
• Grade and pave portion of Proposed North Frontage Road from Station 10007+00 to Station 10008+30.
• Build portion of median crossing at N Cascade Road from Station 402+07.68 to Station 406+04.85 south of the open lanes of traffic of Lost Canyon Road.
• Construct temporary widening between southwest edge of pavement line of the westbound return at Existing N Cascade Road and the southeast edge of pavement line of the newly constructed N Cascade median crossing return.
• Build remaining portions of median crossing at North Cascade Road from Station 402+07.68 to Station 406+04.85
• Build portion of median crossing at Klockner Road from Station 500+48.95 to Station 500+61.52.
• Build portion of median crossing at Watters from Station 600+50 to Station 600+62.
• Build portion of median crossing at Radio Road from Station 700+50 to Station 700+62.

Stage 1e:

Traffic:

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STAGING NOTES

• Shift Westbound traffic onto newly constructed US 20 Westbound from Station 943+00 to Station 1044+00.
• Shift both lanes of traffic to the southwest temporary pavement on the Swiss Valley, US 20 Plaza, and N Cascade median crossings.
• Lane shifts to the northeast temporary pavement will be required during construction on the Swiss Valley, US 20 Plaza, and N Cascade median crossings.

Construction:

• Build the Northeast half of the remaining median crossing on Swiss Valley from Station 101+32.97 to Station 102+16.39.
• Build the remaining portion of the median crossing at Swiss Valley from Station 101+32.97 to Station 102+16.39.
• Build the Northeast half of the remaining median crossing on US 20 Plaza from Station 201+39.41 to Station 202+12.97.
• Build the remaining portion of the median crossing at US 20 Plaza from Station 201+39.41 to Station 202+12.97.
• Build the remaining portion of the median crossing on Old N Cascade from Station 300+11.84 to Station 300+79.56.
• Build the Northeast half of the remaining median crossing on N Cascade from Station 401+39.64 to Station 402+07.68.
• Construct temporary widening along North edge of N Cascade median crossing.
• Build the remaining portion of the median crossing at N Cascade from Station 401+39.64 to Station 402+07.68.
• Build the remaining portion of the median crossing on Klockner from Station 500+10.00 to Station 500+48.95.
• Build the remaining portion of the median crossing on Watters from Station 600+09.09 to Station 600+50.
• Build the remaining portion of the median crossing on Radio from Station 700+11.72 to Station 700+50.

Stage 2a:

Traffic:

• Open all newly constructed median crossings to traffic.
• Close Swiss Valley road from Station 5954+00 to Existing North Cascade Rd.
• Detour Swiss Valley traffic south to Whitetop Road, north to North Cascade Road, and west to US 20.

Construction:

• Remove temporary widenings on Swiss Valley, US 20 Plaza, and N Cascade median crossings.
• Build North Cascade Road West from Station 6936+00 to Swiss Valley Road, including the portion of the entrance in the clear at Station 6937+00.
• Grade and pave Swiss Valley Road from Station 5954+50 to Station 5964+25.
• Build Swiss Valley Interim Connection from Station 1001+34.82 to Station 1002+97.34.
• Grade and pave North Frontage Road from Station 9998+00 to Station 10007+00 and from Station 1008+30 to Station 10025+00.
• Build Tower Drive.

Stage 2b:

Traffic:

• Open North Frontage Road to traffic from Station 9998+00 to Station 10025+00.
• Open Tower Drive to traffic.
• Open Swiss Valley Road utilizing the Interim Connection to traffic.
• Close N Cascade Road West from Cottingham Road to Swiss Valley. Open to local traffic only.
• Close median crossing at Watters Rd.

Construction:

• Grade and pave North Cascade Road West from Station 6931+50 to Station 6930+00.
• Grade and pave North Cascade Road East from Swiss Valley Road to Station 7969+10.
• Remove median crossing at Watters Rd.

Stage 2c:

Traffic:

• Open North Cascade Road West Connection to traffic.
• Close median crossover at US 20 Plaza.

Construction:

• Grade and pave North Cascade Road East from Station 7975+50 to Station 7990+50.
• Construct access from North Cascade Road East at Station 7981+92.32 to exsiting US 20 Eastbound.
• Remove median crossover at US 20 Plaza.

Stage 2d:

Traffic

• Open newly constructed North Cascade Road East from Station 7975+50 to Station 7990+50.
• Open newly constructed access from North Cascade Road East at Station 7981+92.32 to exsiting US 20 Eastbound.

Construction

• Build North Cascade Road East from 7969+10 to 7975+50.

Stage 2e

Traffic:

• Open newly constructed North Cascade Road East from Swiss Valley Rd to Station 7975+50.
• Close median crossing at Old N Cascade Rd.
• Close access from North Cascade Road East at Station 7981+92.32 to exsiting US 20 Eastbound.
• Close existing eastbound lane of N Cascade East and reduce to one-lane. Install temprary traffic signal to maintain two way traffic

STAGING NOTES

operations from Station 7994+00 to Station 7997+00.
• A traffic shift for the one-lane section will be required during the construction of N Cascade Road East.

Construction:

• Build North Cascade Road East from Station 7990+50 to Station 7997+00.
• Build South Frontage Road from Station 1992+00 to Station 1993+35.
• Obliterate Existing N Cascade Rd from newly constructed N Cascade Rd to existing W Ridge Lane.
• Construct temporary widening along South Frontage Road from Station 2030+43.05 to Station 2033+00.10.
• Remove median crossing at Old N Cascade Rd.
• Remove access from North Cascade Road East at Station 7981+92.32 to exsiting US 20 Eastbound.

Stage 2f:

Traffic:

• Open newly constructed North Cascade Road E to through traffic
• Shift traffic onto newly constructed temporary widening on South Frontage Road.
• Maintain access to Burds Housing, inc.
• Close existing N Cascade Road from W Ridge Ln to US 20 Eastbound.
• Close median crossing at N Cascade Road from US 20 Eastbound to US 20 Westbound.

Construction:

• Build South Frontage Road from Station 1993+35 to Station 2002+50 and from Station 2026+25 to Station 2032+17.04.
• Obliterate N Cascade Rd from US 20 Eastbound east to newly constructed South Frontage Road.
• Remove median crossing at N Cascade Road from US 20 Eastbound to US 20 Westbound.

Stage 2g:

Traffic:

• Open newly constructed South Frontage Rd to provide access to W Ridge Ln.
• Shift traffic onto South Frontage Rd from Station 2026+25 to 2032+17.04.

Construction:

• Remove temporary widening on South Frontage Road.
• Build South Frontage Road from Station 2021+75 to Station 2026+25.

Stage 2h

Traffic

• Open newly constructed South Frontage Road.

Construction:

• Build South Frontage Road from Station 2009+15 to Station 2021+75 including retaining wall.

Stage 2i:

Traffic:

• Open newly constructed South Frontage Road.

Construction:

• Build South Frontage Road from Station 2002+50 to Station 2009+15.

Stage 3a:

Traffic:

• Open South Frontage Road to traffic.
• Close median crossings at Klockner Rd and Radio Rd.

Construction:

• Grade and pave Cottingham Road from Station 8967+20 to Station 8976+12.00.
• Grade and pave North Frontage Road from Station 9976+12.00 to Station 9998+00.
• Remove median crossings at Klockner Rd and Radio Rd.

Stage 3b:

Traffic:

• Open Cottingham Road and North Frontage Road to traffic.
• Shift both lanes of traffic on US 20 Westbound outside utilizing existing 8' shoulder from Station 938+00 to Station 1050+00.
• Close median crossing at N Cascade Rd.

Construction:

• Grade and pave Proposed US 20 Eastbound from Station 956+50.55 to Station 966+00 and from Station 971+00 to Station 987+22.39.
• Build median crossovers from Station 936+76.68 to Station 945+19.42 and Station 948+23.68 to Station 961+89.35
• Construct widening on Southeast edge of US 20 Westbound from Station 945+19.42 to Station 948+23.68.

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STAGING NOTES

• Build median crossovers from Station 974+37.66 to Station 987+22.39 and from Station 1044+00 to Station 1052+96.03.
• Construct median widening on Southeast edge of US 20 Westbound from Station 987+22.39 to Station 1044+00.
• Remove median crossing at N Cascade Rd.

Stage 3c:

Traffic:

• Shift US 20 Eastbound traffic onto newly constructed US 20 Eastbound utilizing the newly constructed median crossovers and widenings from Station 936+76.68 to Station 1052+96.03.

Construction:

• Grade and pave Proposed US 20 Eastbound from Station 943+00 to Station 956+50.66 and from Station 987+22.39 to Station 1044+00.

Stage 3d:

Traffic:

• Shift eastbound traffic onto newly constructed US 20 Eastbound.
• Shift traffic to the final lane configuration of US 20 Westbound.

Construction:

• Build Ramp A, Ramp C, and Ramp D.
• Build Ramp B from 2956+40 to Station 2968+82.30.
• Build Swiss Valley Road from Station 5964+56.05 to Station 5975+58 and construct bridge over US 20.
• Construct Ramp B Interim Pavement from Station 1701+70.11 to Station 1703+44.72.

Stage 3e:

Traffic:

• Close Swiss Valley median crossing.
• Open Ramp A, Ramp C, Ramp D, and Swiss Valley to traffic.
• Open Ramp B utilizing interim pavement to traffic and restrict left turn onto Swiss Valley Rd.
• Maintain detour for US 20 Eastbound traffic to Cottingham Road utilizing Cottingham connector.

Construction:

• Build Ramp B from Station 2968+82.30 to Swiss Valley Road.
• Remove Swiss Valley median crossing.

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

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Proposed Granular Surface Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Light	(236)	Proposed Grading Limits Shading
Pink, Dark	(13)	Proposed MSE or CIP Wall Shading
Red	(3)	Proposed Bridge Shading and Sign Trusses
Black w/Gray, Light Fill	(0,48)	Previously Constructed Structure

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

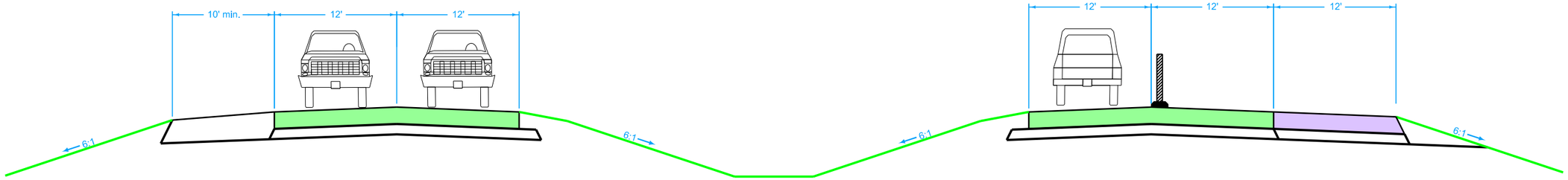
Channelizing Device	Crash Cushion
Drum	Traffic Signal
Temporary Lane Separator	Flagger
Tubular Marker	Temporary Floodlighting
Channelizer Marker	Traffic Sign
Concrete Barrier Marker	Type III Barricade
Delineator	Type A Warning Light
Temporary Barrier Rail	Direction of Traffic
Pavement Removal	Safety Closure

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

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

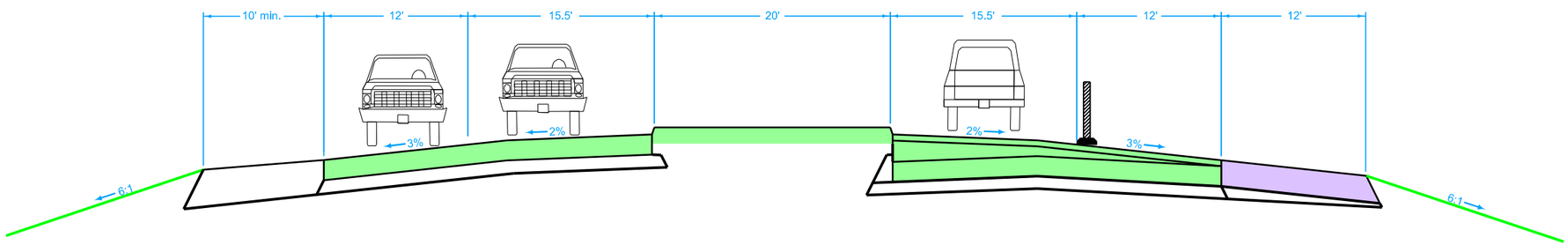
(COVERS SHEET SERIES J)

STAGE 1A
SHOULDER WIDENING



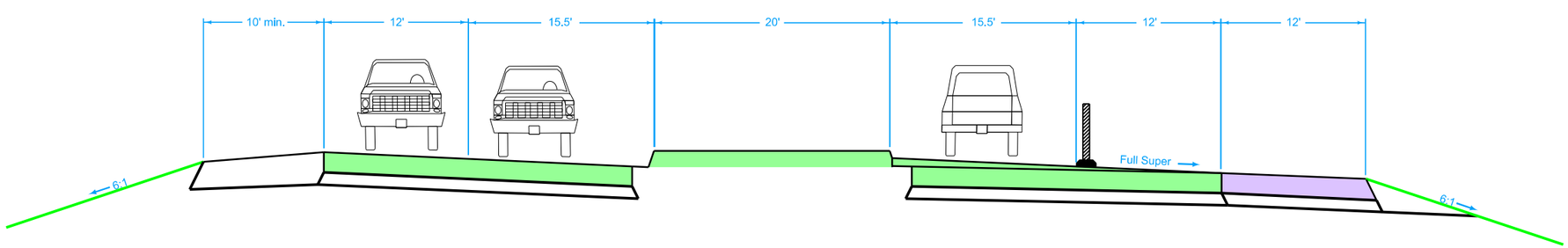
SECTION A-A

STAGE 1A
SHOULDER WIDENING



SECTION B-B

STAGE 1A
SHOULDER WIDENING



SECTION C-C

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.4

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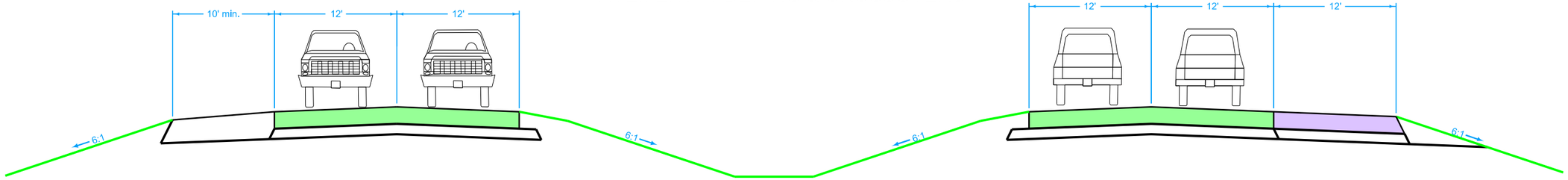
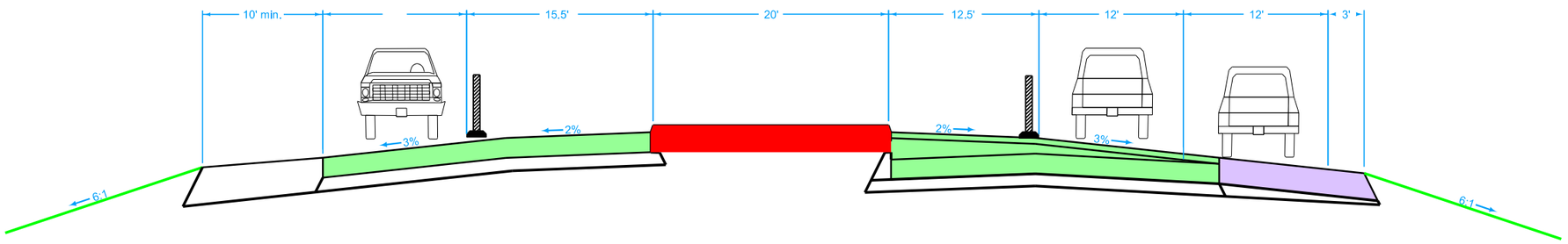
STAGE 1B
PAVEMENT WIDENING & CROSSOVERS



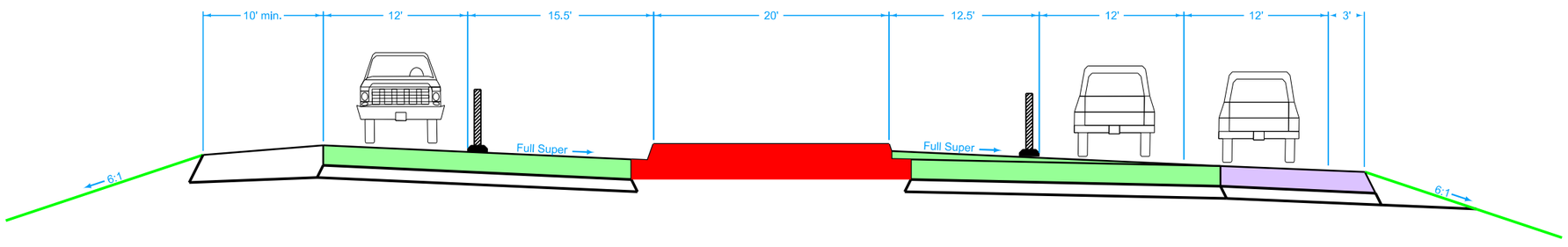
SECTION A-A

STAGE 1B
PAVEMENT WIDENING & CROSSOVERS



SECTION B-B

STAGE 1B
PAVEMENT WIDENING & CROSSOVERS



SECTION C-C

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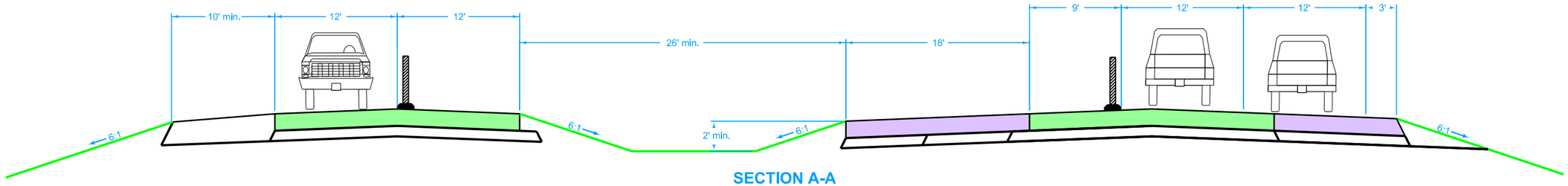
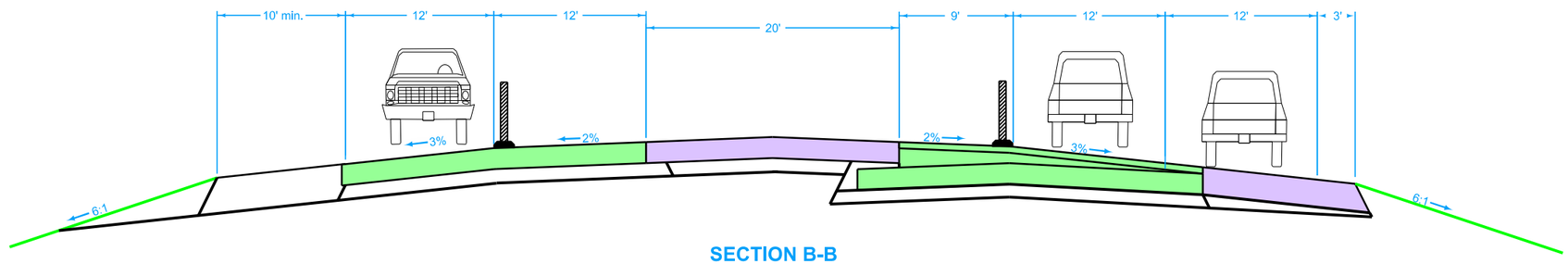
STAGE 1C
PAVEMENT WIDENING



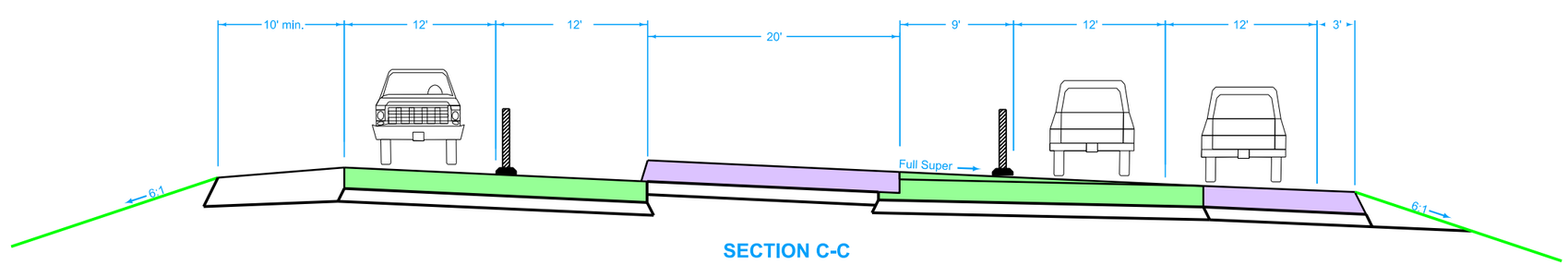
SECTION A-A

STAGE 1C
PAVEMENT WIDENING



SECTION B-B

STAGE 1C
PAVEMENT WIDENING

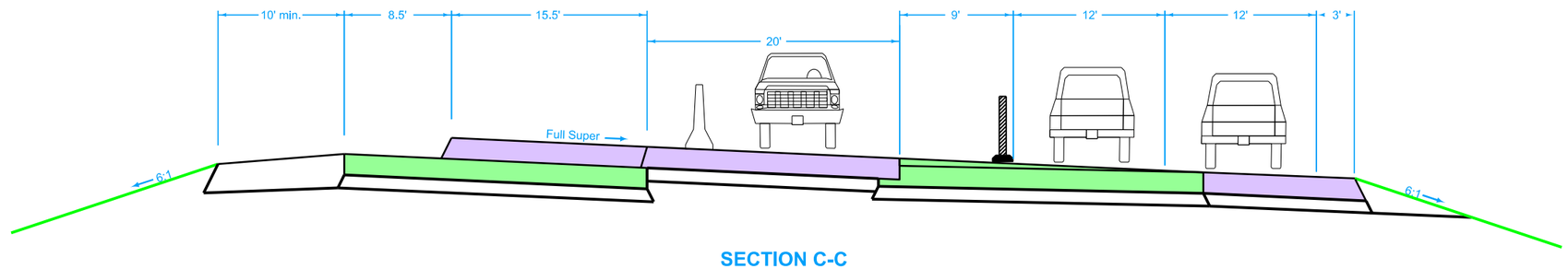


SECTION C-C
SUBSTAGE 1

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.6

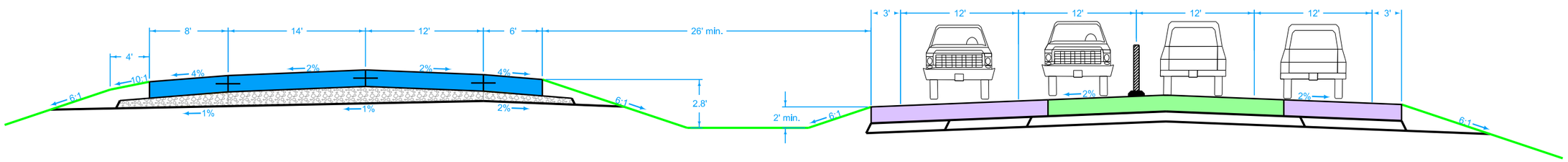
7:25:27 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

STAGE 1C
PAVEMENT WIDENING



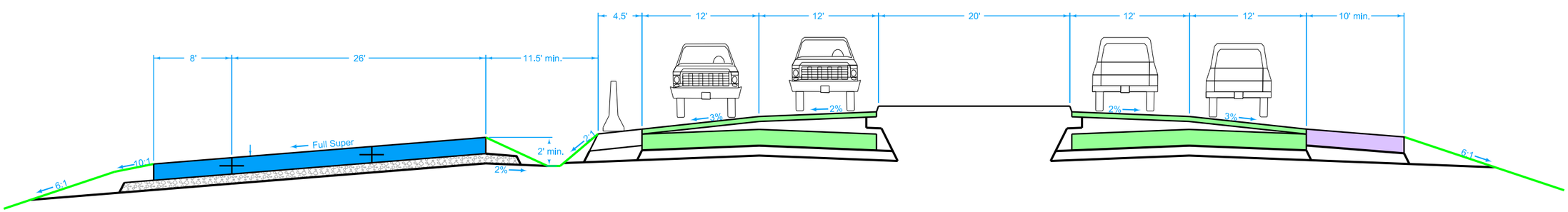
SECTION C-C
SUBSTAGE 2

STAGE 1D
STAGED CONSTRUCTION



SECTION A-A

STAGE 1D
STAGED CONSTRUCTION

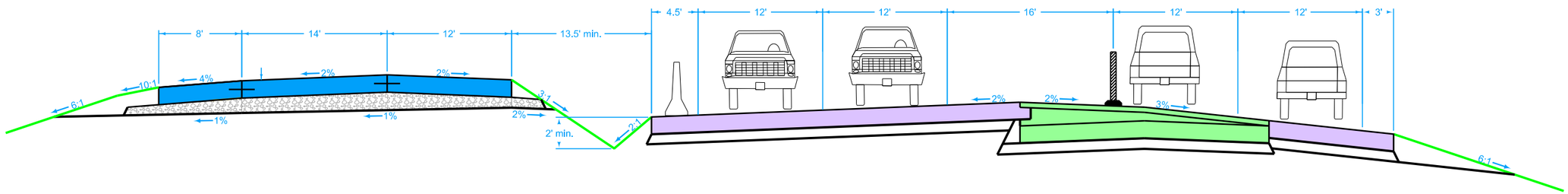


SECTION B-B

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.7

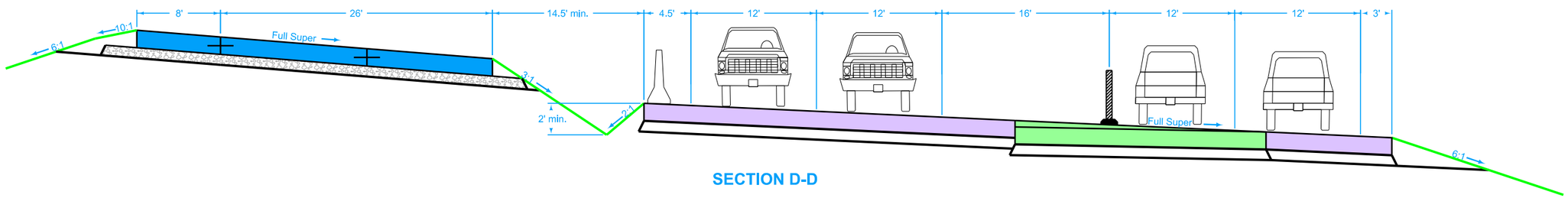
7:25:28 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

STAGE 1D
STAGED CONSTRUCTION



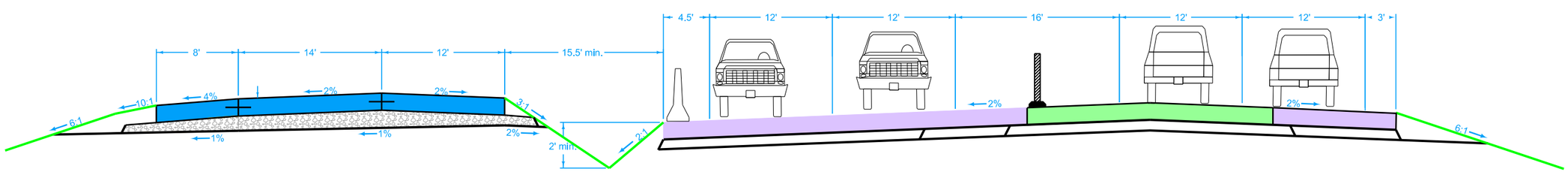
SECTION C-C

STAGE 1D
STAGED CONSTRUCTION



SECTION D-D

STAGE 1D
STAGED CONSTRUCTION

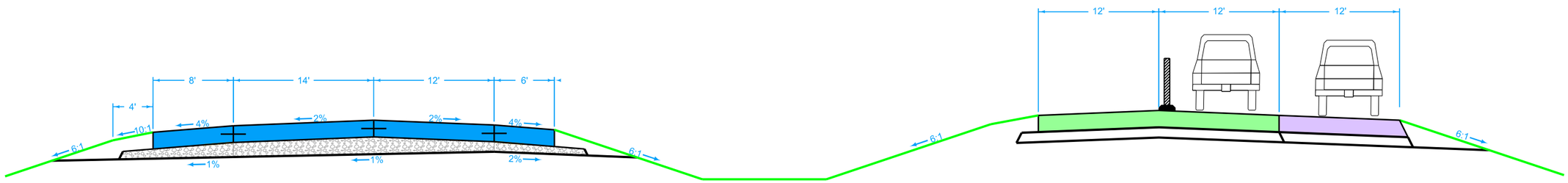


SECTION E-E

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.8

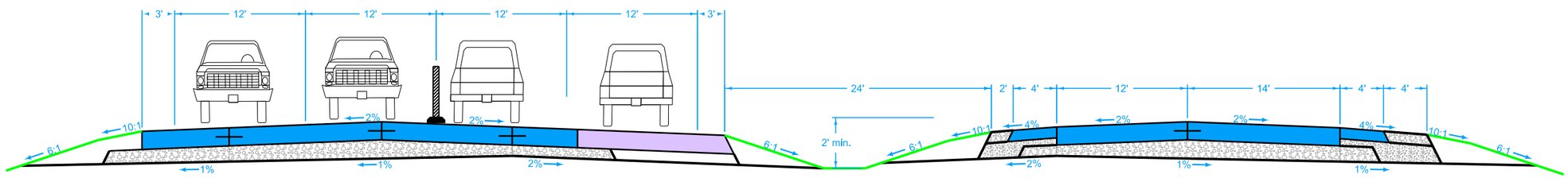
7:25:29 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

STAGE 1E
STAGED CONSTRUCTION



SECTION A-A

STAGE 3C
BUILD



SECTION A-A

REFER TO SHEET J.3 FOR PHASING
TYPICAL AT STA. 944+00

VERNON TWP.
T-88N R-1E
SEC. 12

CYPRESS DR

HIGLEY DR

COTTINGHAM RD

SUBSTATION

SHED

TANKS

HO.

930

935

940

945

950

955

ML020

WESTBOUND MAINLINE US 20

EASTBOUND MAINLINE US 20

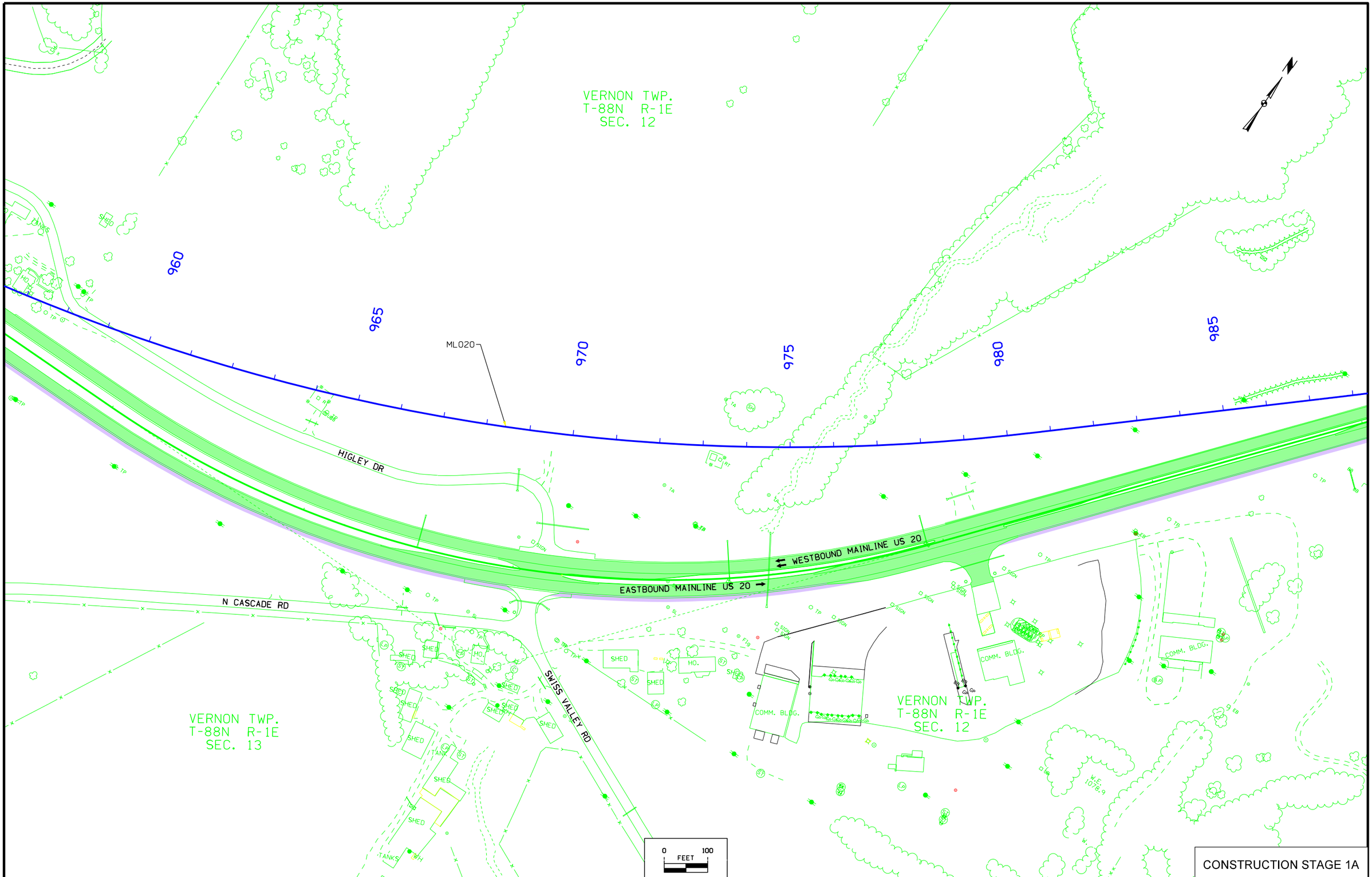
VERNON TWP.
T-88N R-1E
SEC. 13

0 FEET 100

CONSTRUCTION STAGE 1A

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.10

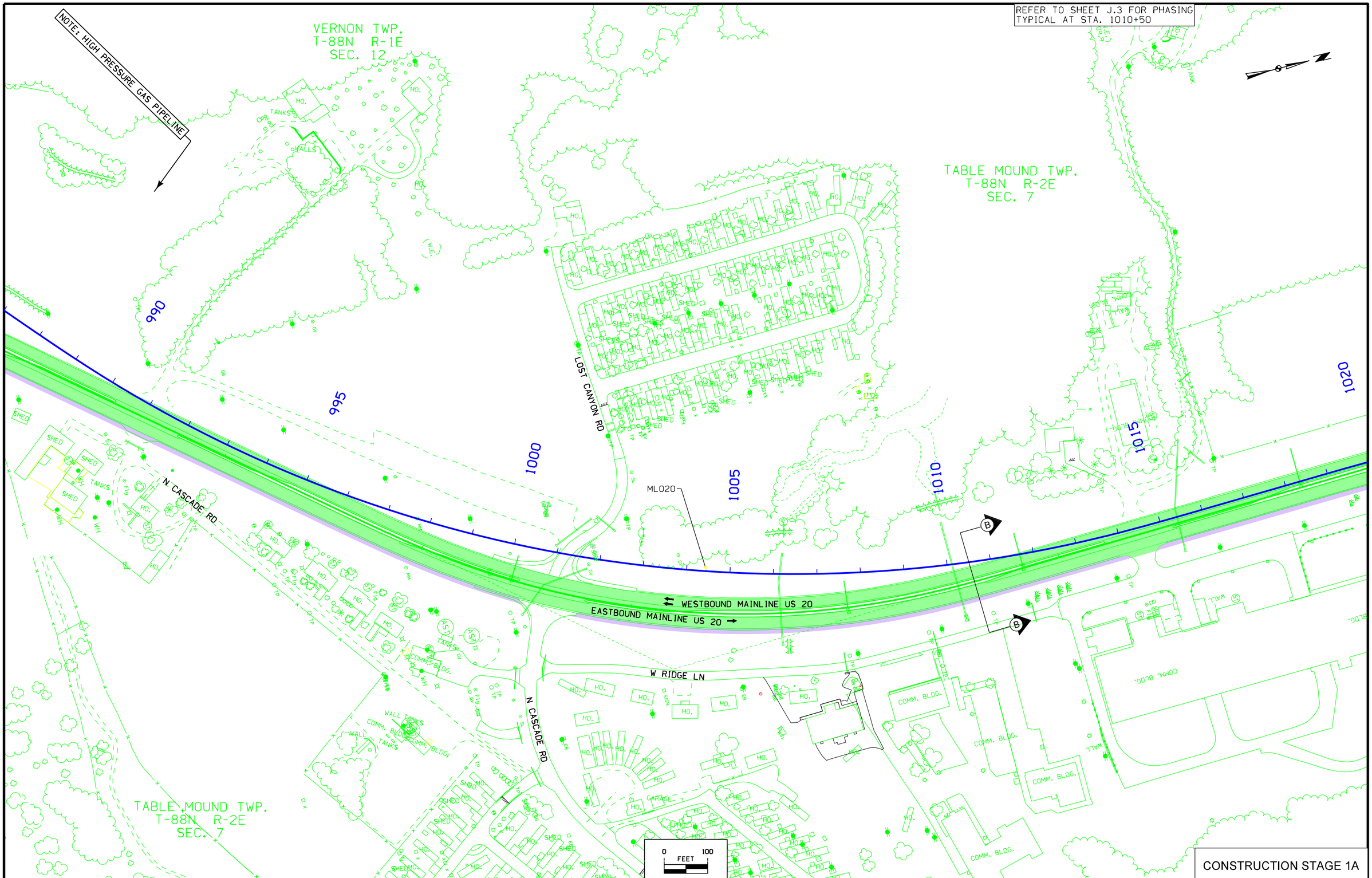
7:25:31 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 1A

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.11

7:25:32 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

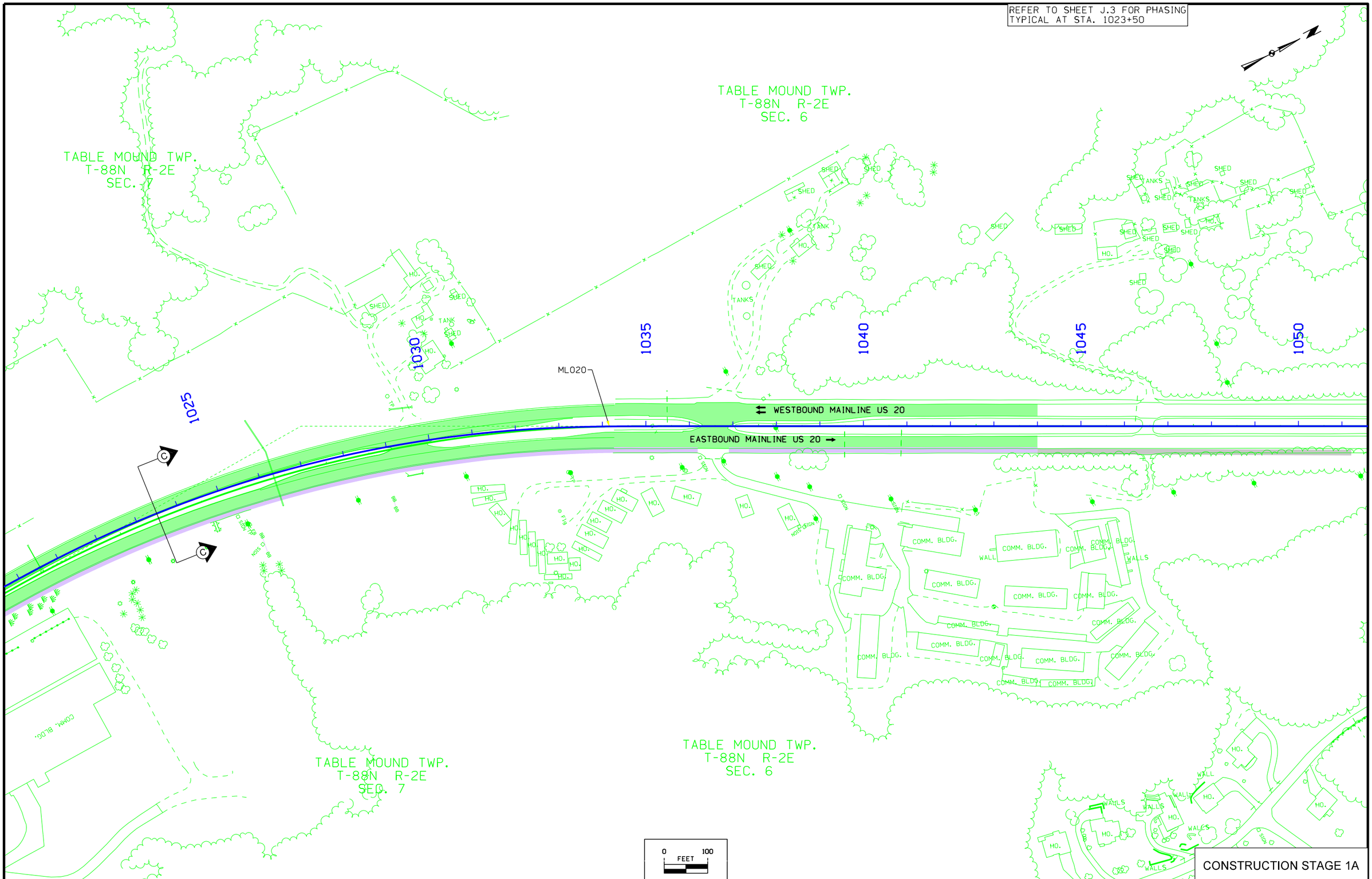


CONSTRUCTION STAGE 1A

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.12

7:25:33 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

REFER TO SHEET J.3 FOR PHASING
TYPICAL AT STA. 1023+50



CONSTRUCTION STAGE 1A

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.13

7:25:34 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

REFER TO SHEET J.4 FOR PHASING
TYPICAL AT STA. 944+00

VERNON TWP.
T-88N R-1E
SEC. 12

CYPRESS DR

HIGLEY DR

COTTINGHAM RD

930

935

940

945

950

955

ML020

WESTBOUND MAINLINE US 20

EASTBOUND MAINLINE US 20

VERNON TWP.
T-88N R-1E
SEC. 13

0 FEET 100

CONSTRUCTION STAGE 1B

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.14

7:25:44 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

VERNON TWP.
T-88N R-1E
SEC. 12

960

965

970

975

980

985

ML020

HIGLEY DR

WESTBOUND MAINLINE US 20

EASTBOUND MAINLINE US 20

N CASCADE RD

SWISS VALLEY RD

VERNON TWP.
T-88N R-1E
SEC. 13

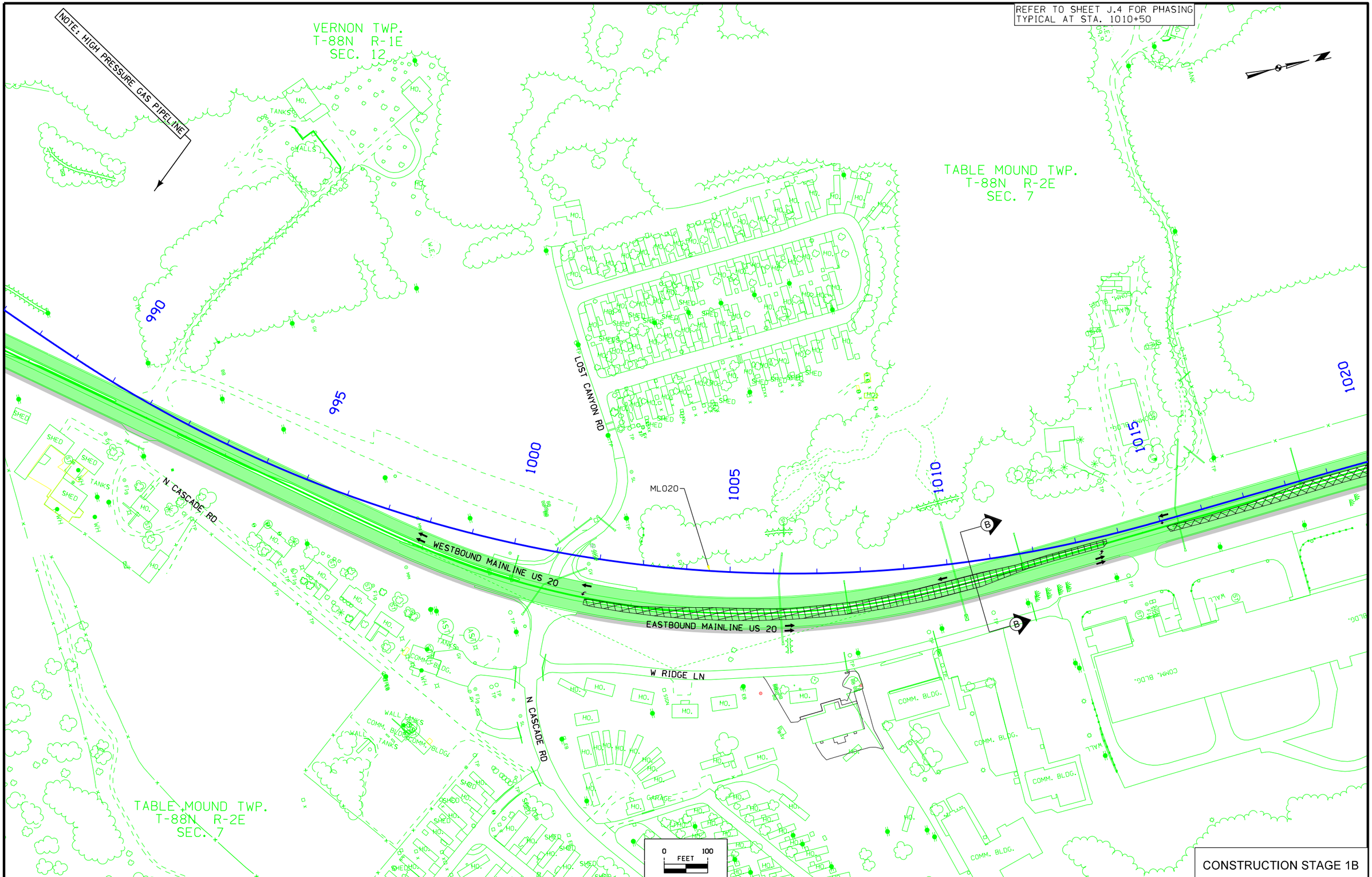
VERNON TWP.
T-88N R-1E
SEC. 12

0 FEET 100

CONSTRUCTION STAGE 1B

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.15

7:25:45 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

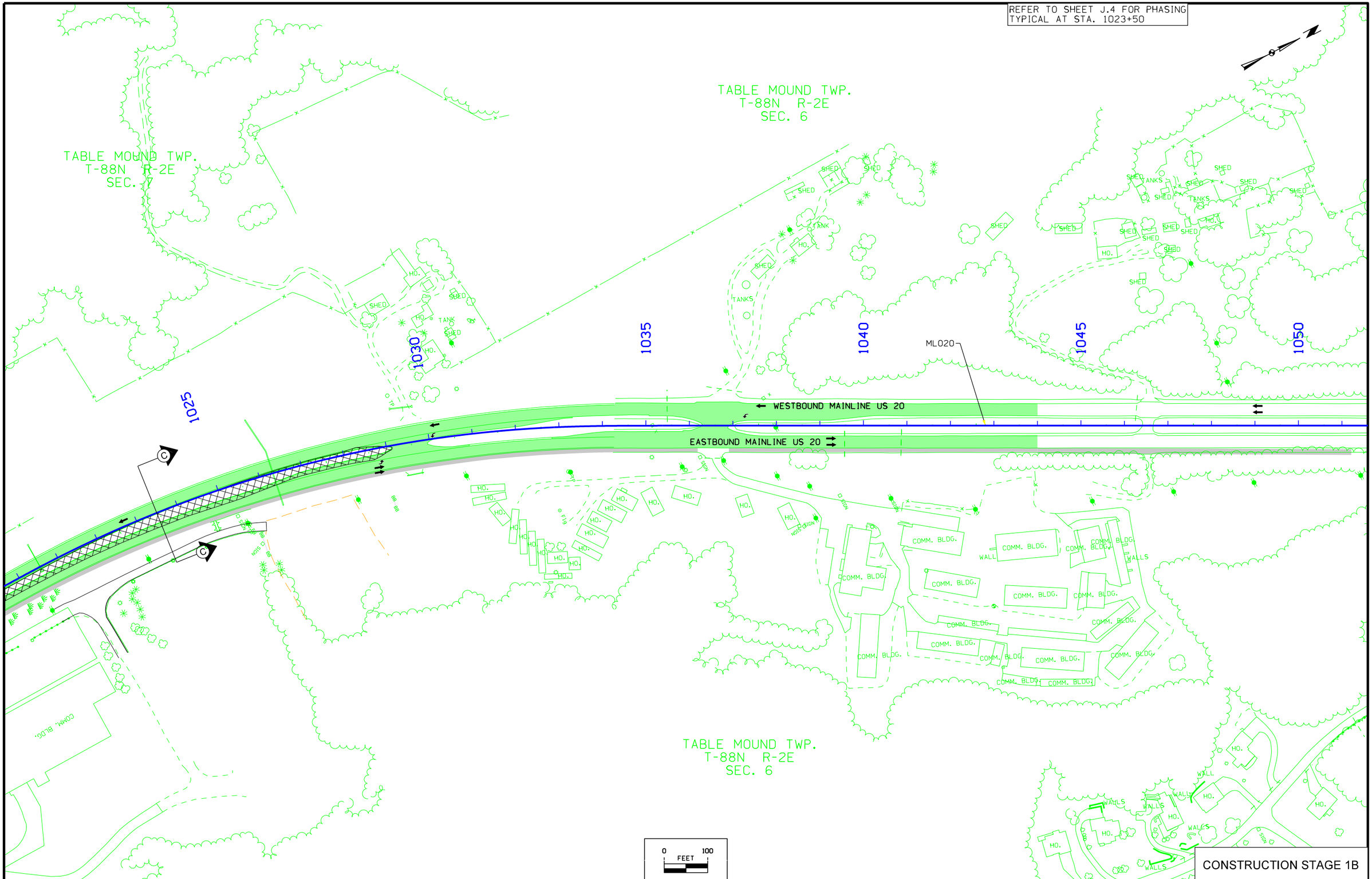


CONSTRUCTION STAGE 1B

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.16

7:25:46 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

REFER TO SHEET J.4 FOR PHASING
TYPICAL AT STA. 1023+50



CONSTRUCTION STAGE 1B

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.17

7:25:47 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

REFER TO SHEET J.5 FOR PHASING
TYPICAL AT STA. 944+00

VERNON TWP.
T-88N R-1E
SEC. 12

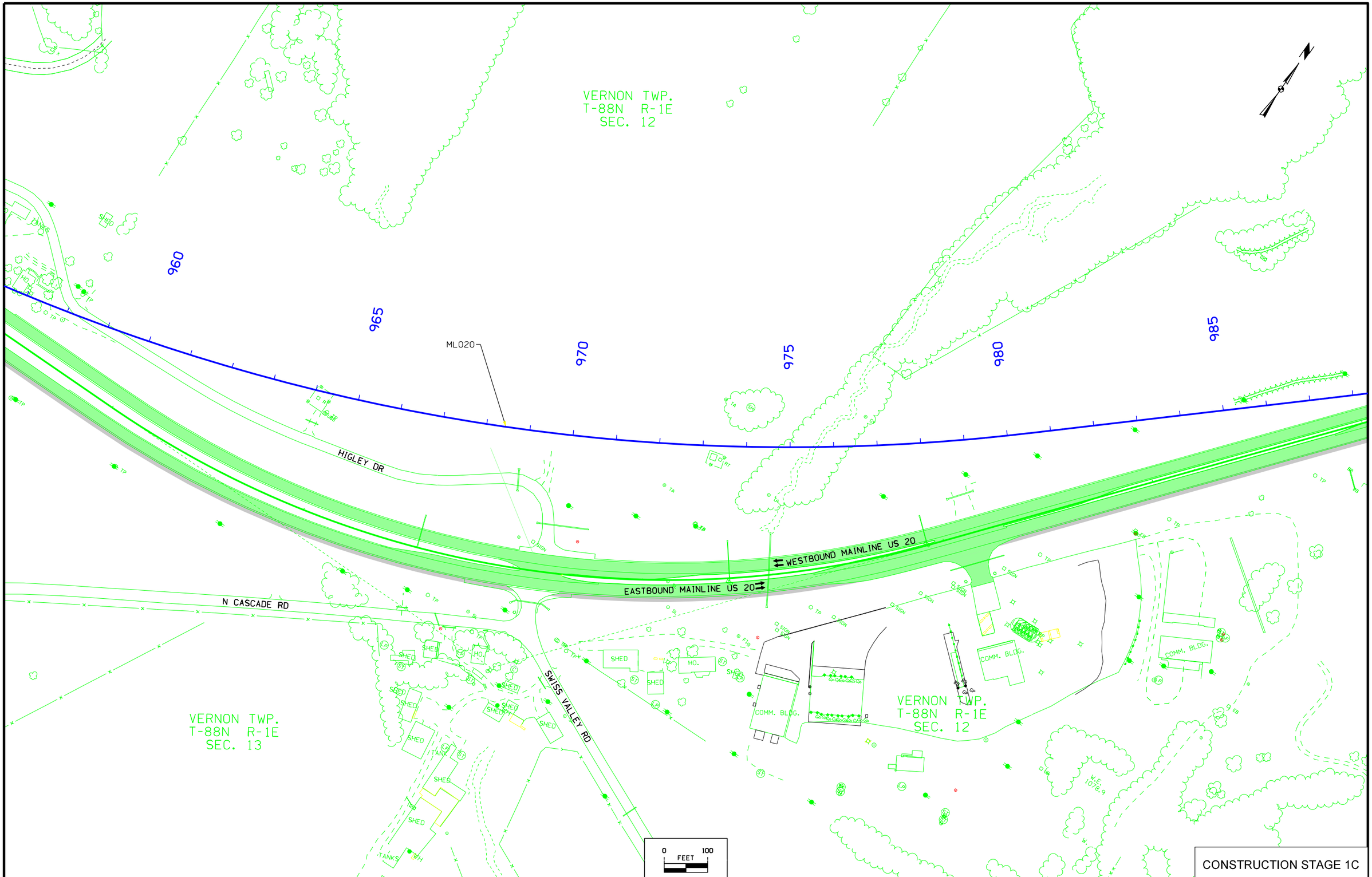
VERNON TWP.
T-88N R-1E
SEC. 13

8935
8940
8945
8950
8955
8960
8965
930
935
940
945
950
955
139
138
137
ML020
COTTINGHAM RD
CYPRESS DR
HIGLEY DR
WESTBOUND MAINLINE US 20
EASTBOUND MAINLINE US 20
EASTBOUND MAINLINE US 20
A
A
0 FEET 100

CONSTRUCTION STAGE 1C

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.18

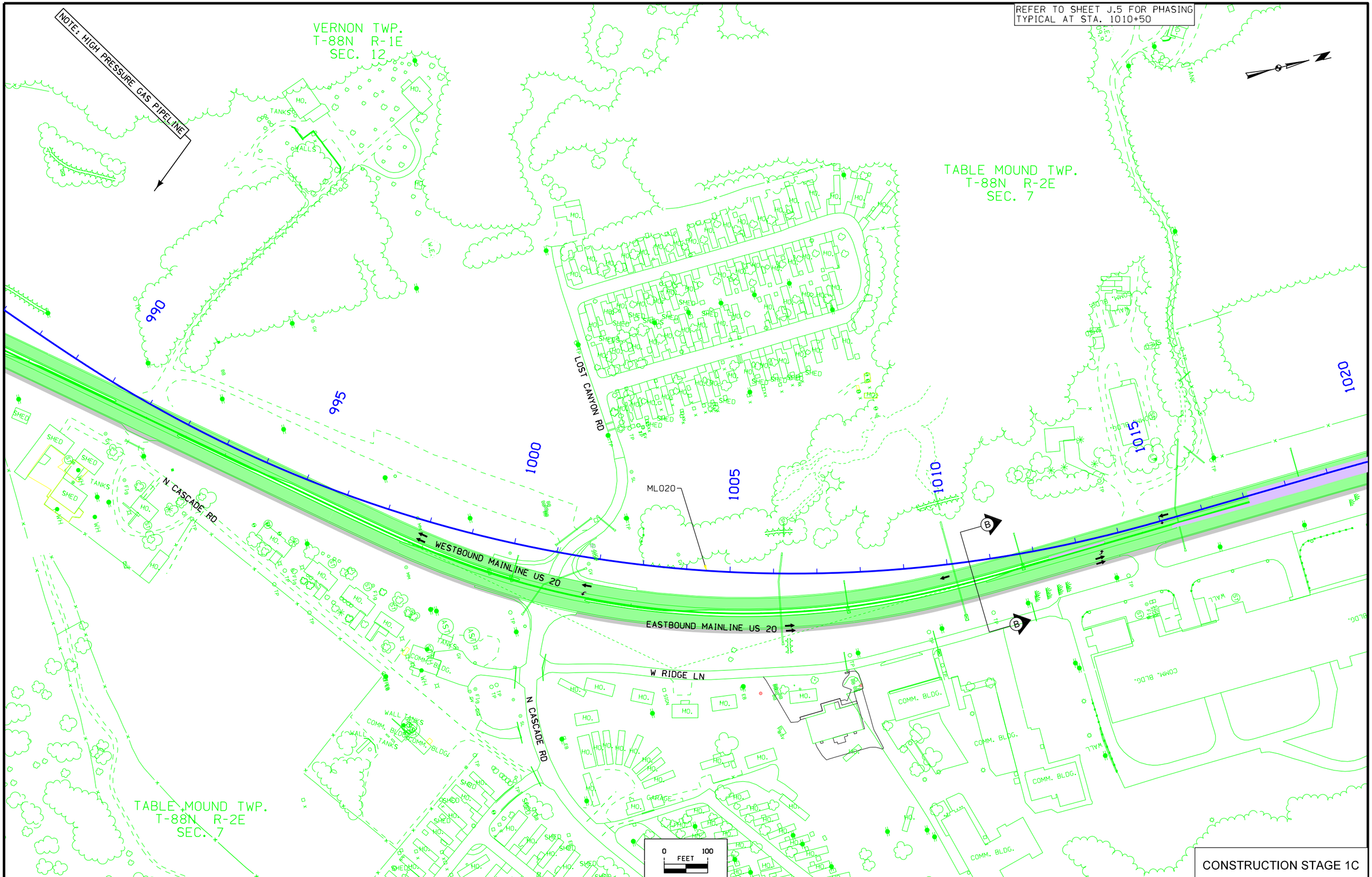
7:25:48 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 1C

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.19

7:25:49 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

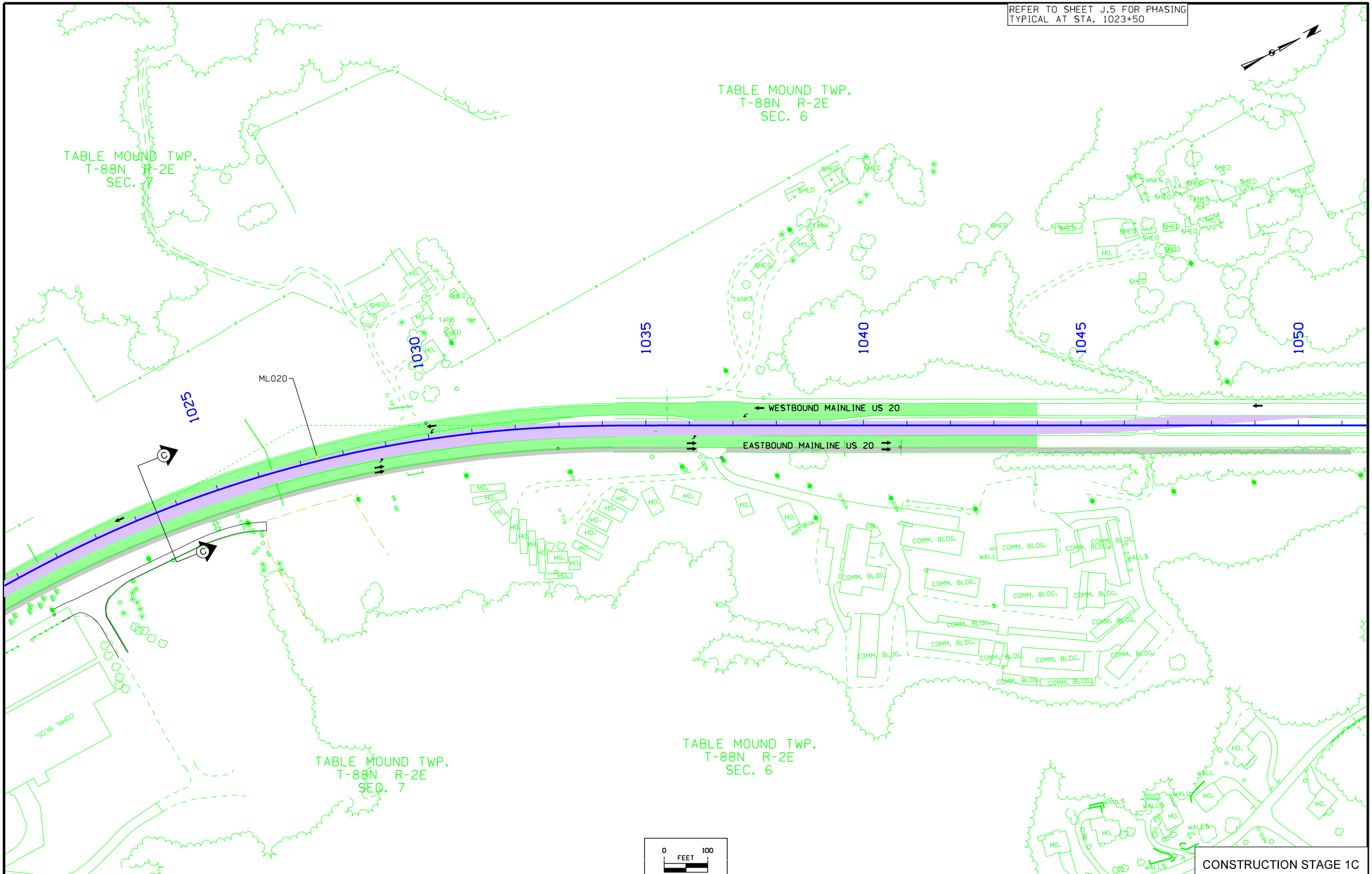


CONSTRUCTION STAGE 1C

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.20

7:25:50 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

REFER TO SHEET J.5 FOR PHASING
TYPICAL AT STA. 1023+50



CONSTRUCTION STAGE 1C

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.21

7:25:51 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

REFER TO SHEET J.6 FOR PHASING
TYPICAL AT STA. 944+00

N

VERNON TWP.
T-88N R-1E
SEC. 12

8935

8940

8945

8950

8955

8960

8965

CYPRESS DR

HIGLEY DR

RELOCATED COTTINGHAM RD

930

935

940

945

950

955

COTTINGHAM RD

ML020

A

WESTBOUND MAINLINE US 20

EASTBOUND MAINLINE US 20

WESTBOUND MAINLINE US 20

EASTBOUND MAINLINE US 20

A

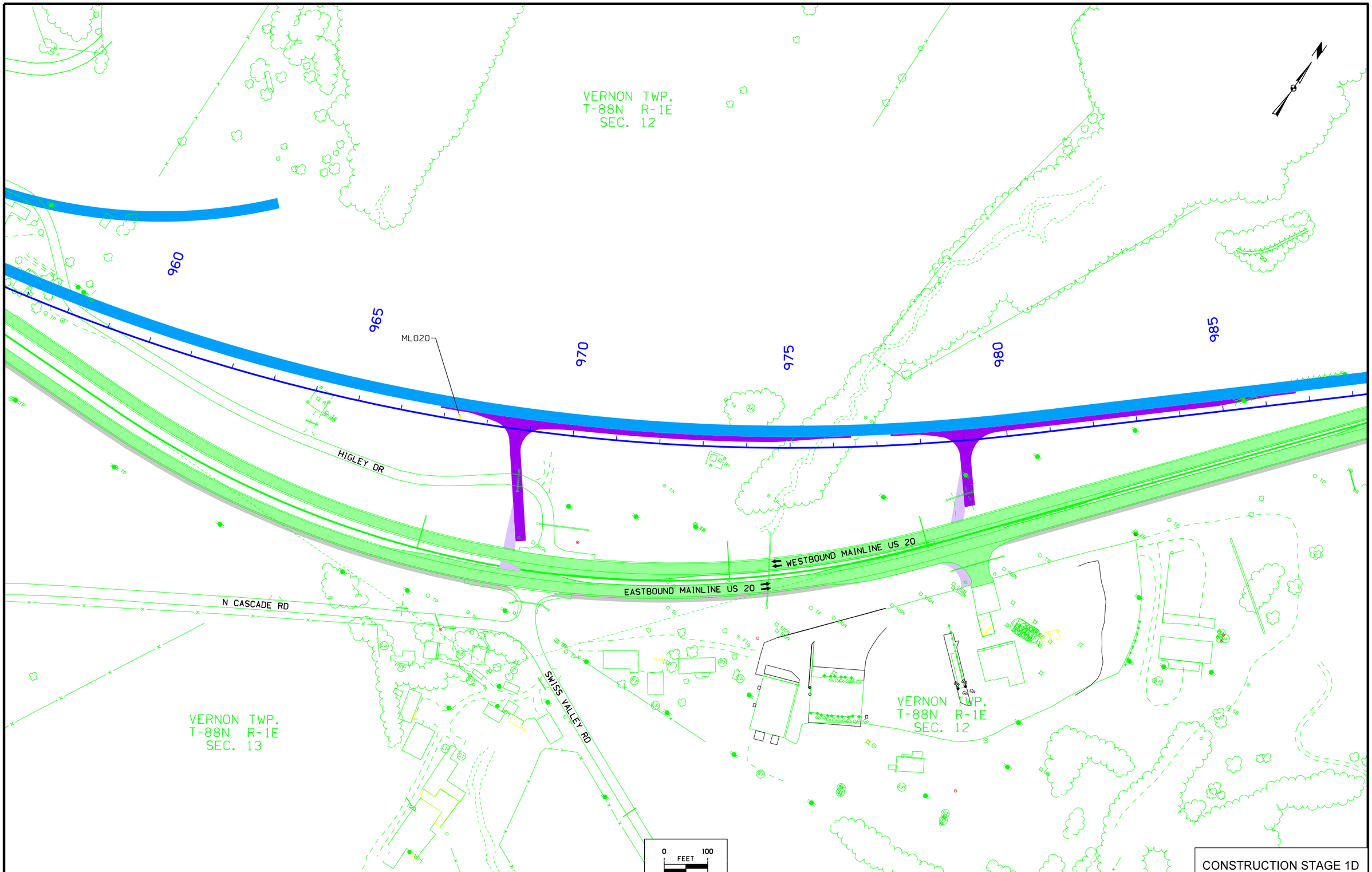
VERNON TWP.
T-88N R-1E
SEC. 13

0 100
FEET

CONSTRUCTION STAGE 1D

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.22

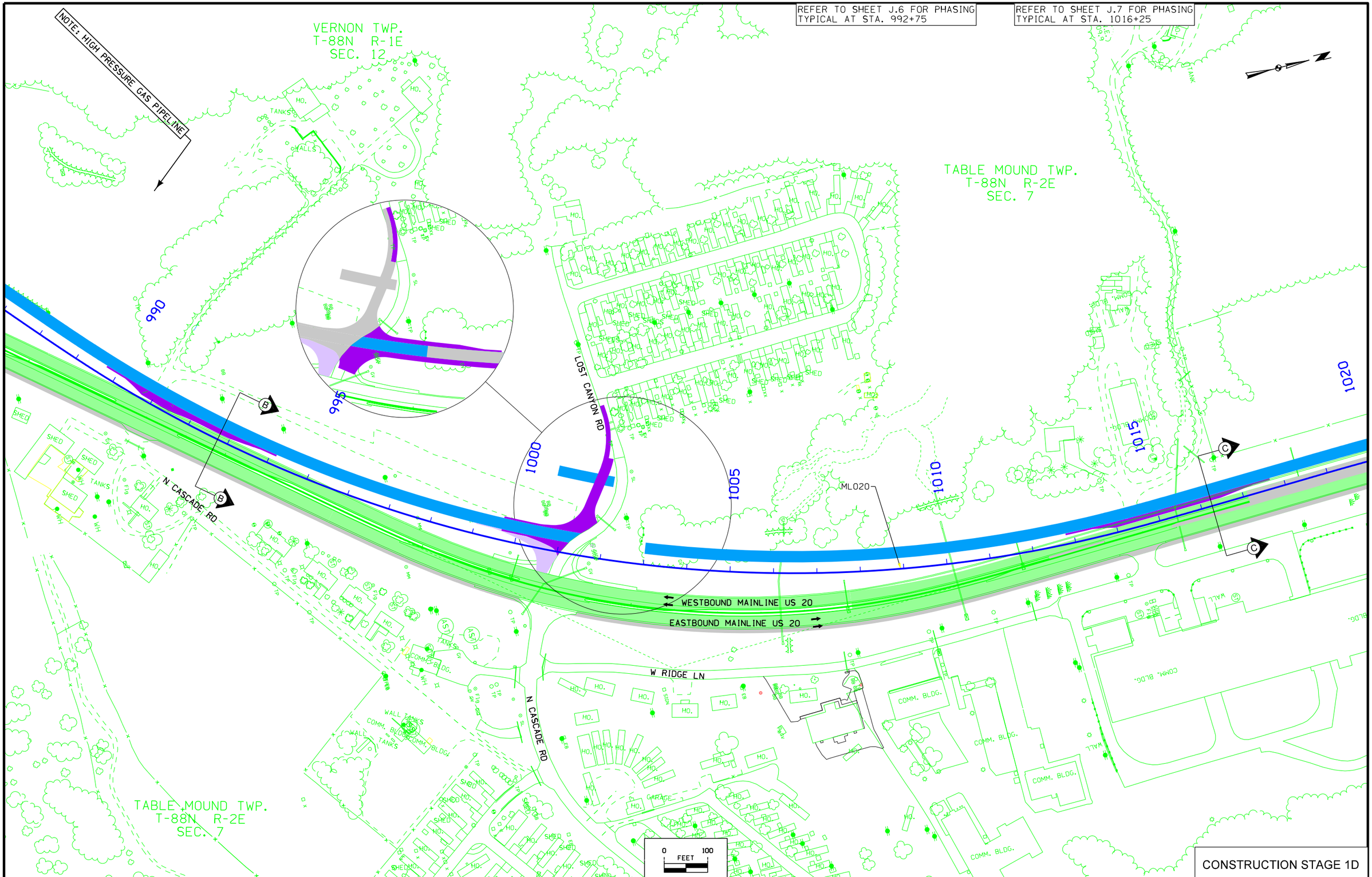
7:25:52 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 1D

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.23

7:25:53 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

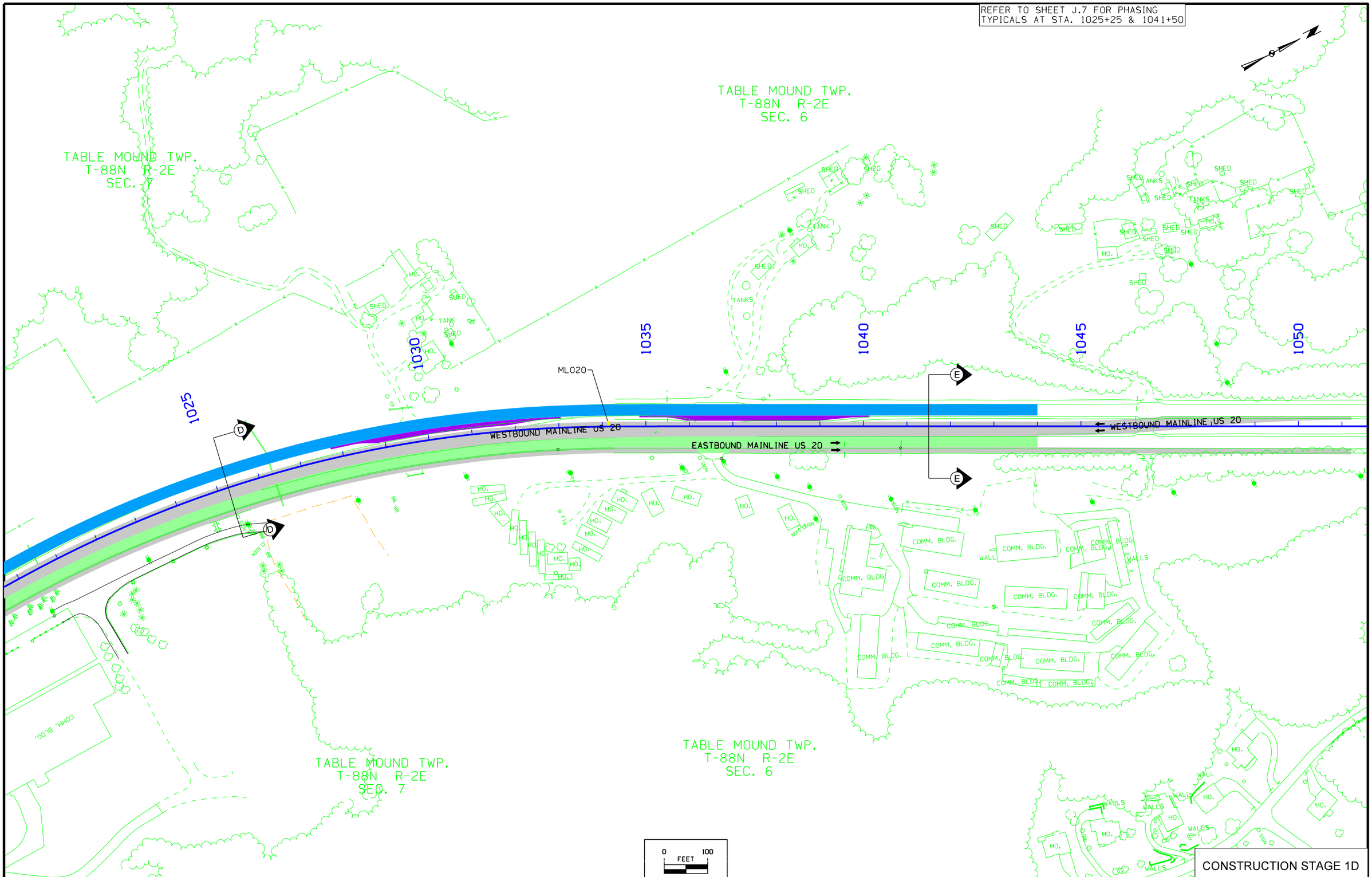


CONSTRUCTION STAGE 1D

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.24

7:25:54 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

REFER TO SHEET J.7 FOR PHASING
TYPICALS AT STA. 1025+25 & 1041+50



CONSTRUCTION STAGE 1D

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.25

7:25:55 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

REFER TO SHEET J.8 FOR PHASING
TYPICAL AT STA. 944+00

VERNON TWP.
T-88N R-1E
SEC. 12

VERNON TWP.
T-88N R-1E
SEC. 12

SUBSTAGE 2

SUBSTAGE 1

975

970

965

960

955

950

945

CYPRESS DR

HIGLEY DR

RELOCATED COTTINGHAM RD

WESTBOUND MAINLINE US 20

EASTBOUND MAINLINE US 20

HIGLEY DR

SWISS VALLEY RD

N CASCADE RD

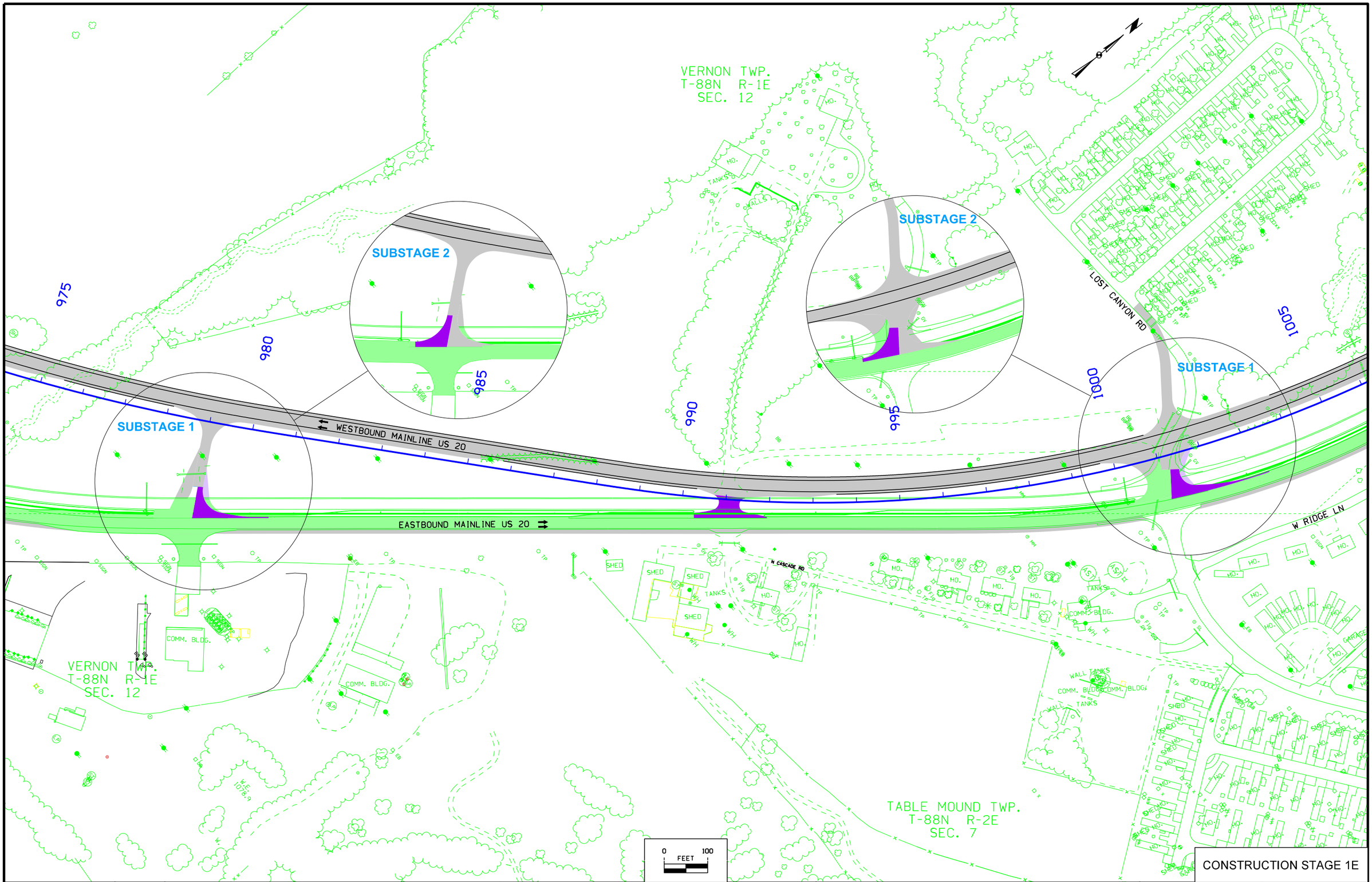
VERNON TWP.
T-88N R-1E
SEC. 13

0 FEET 100

CONSTRUCTION STAGE 1E

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.26

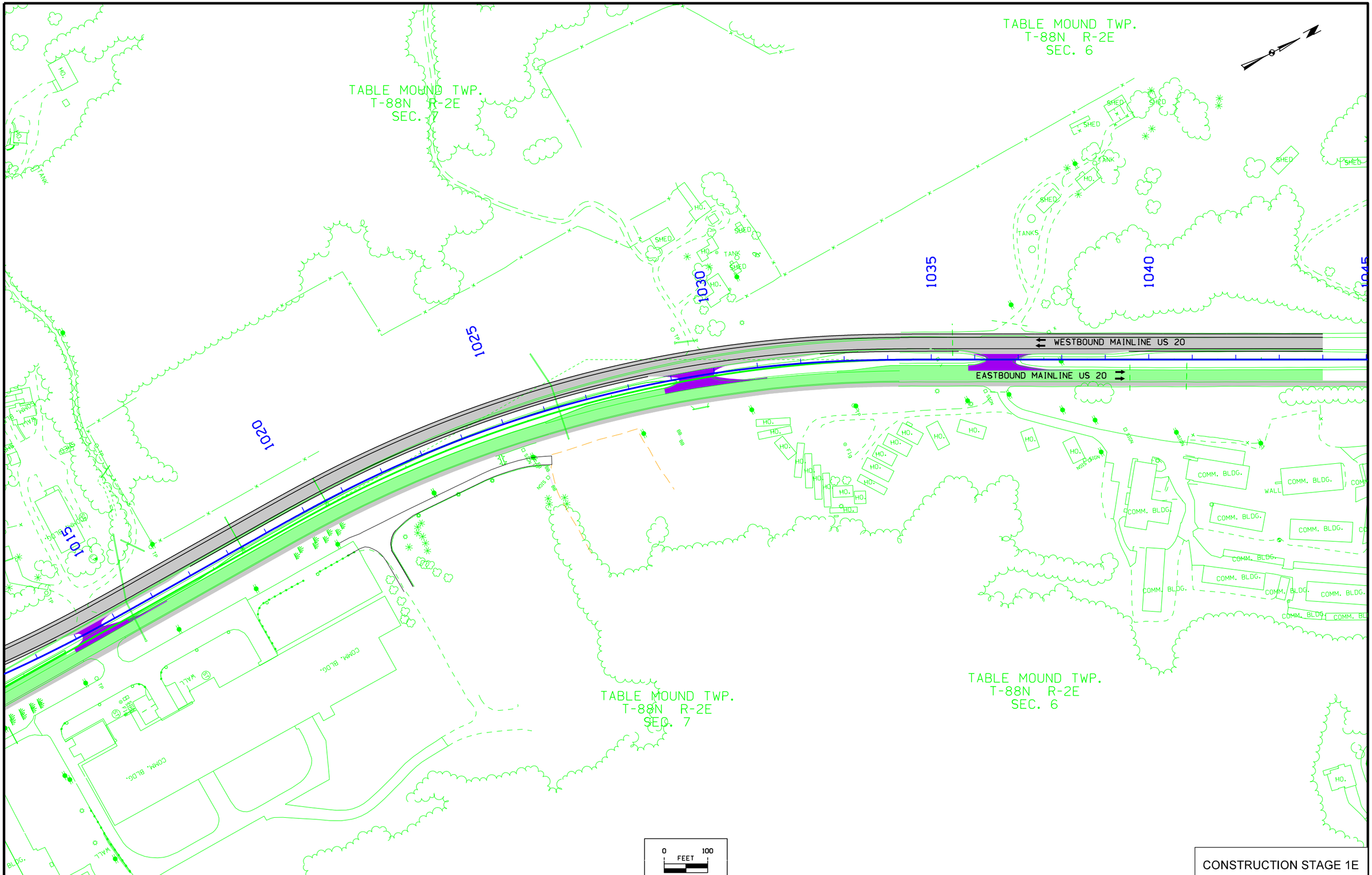
7:25:56 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 1E

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.27

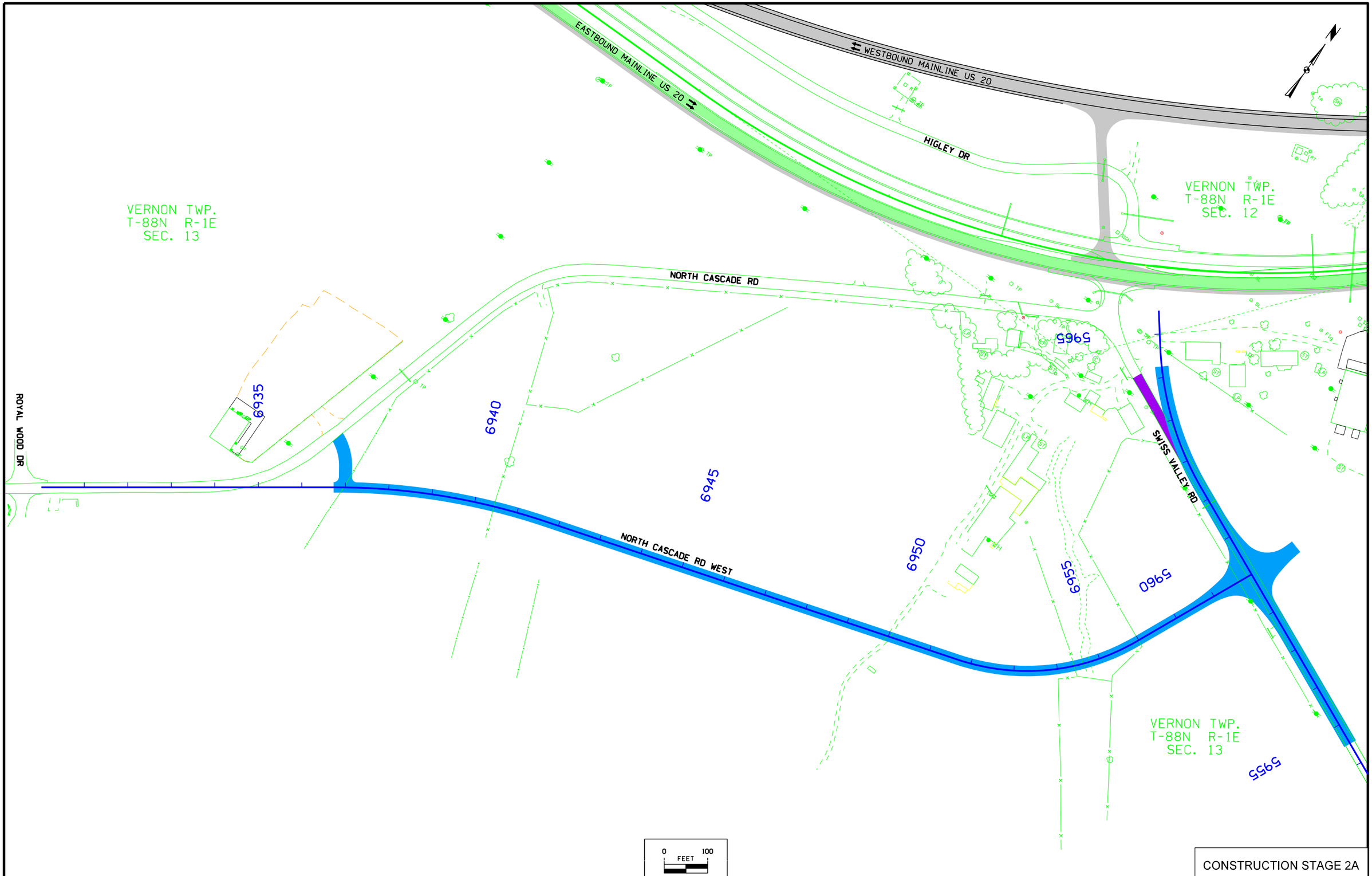
7:25:57 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 1E

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.28

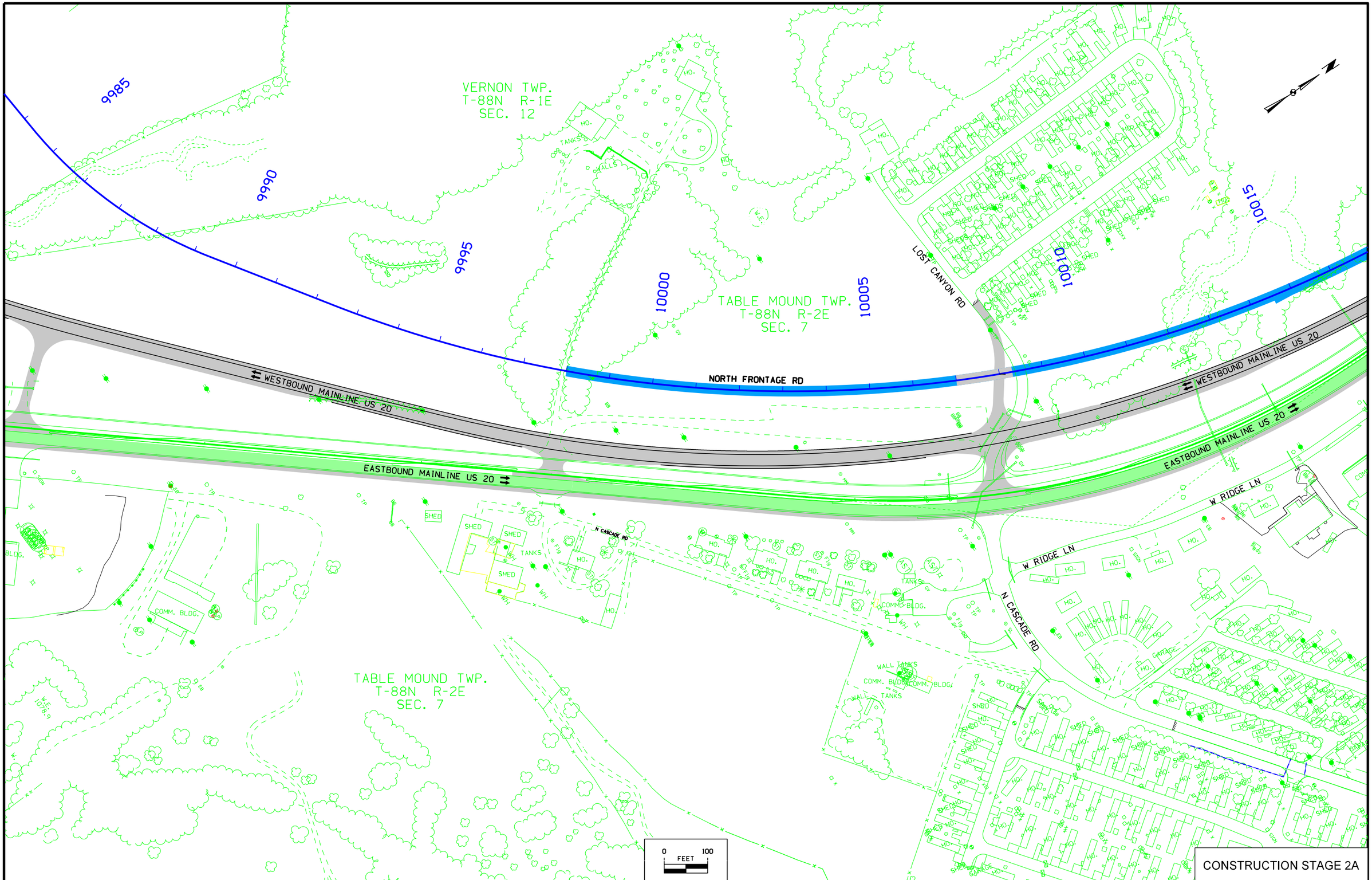
7:25:59 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2A

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.29

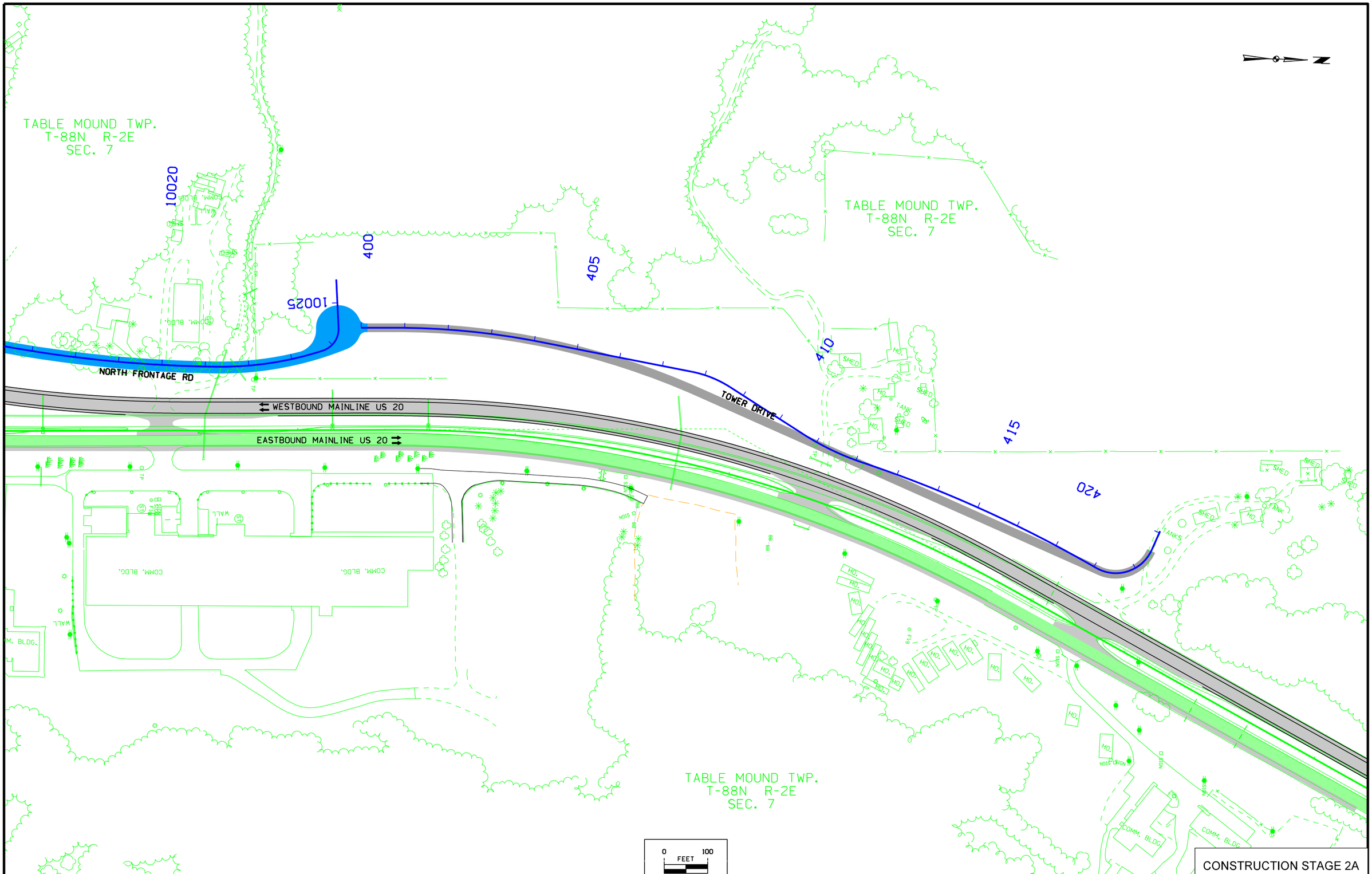
7:26:00 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2A

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.30

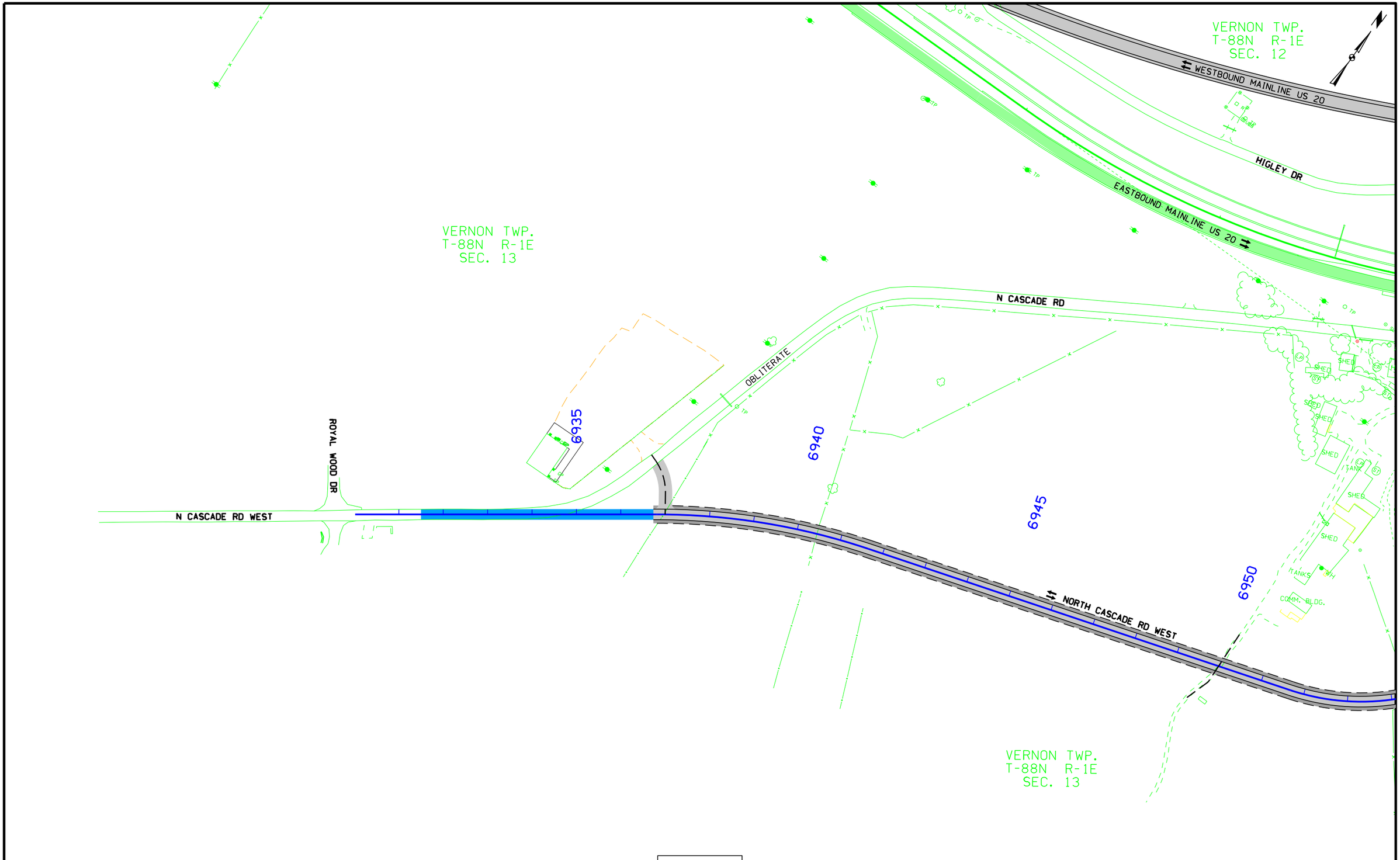
7:26:01 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2A

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.31

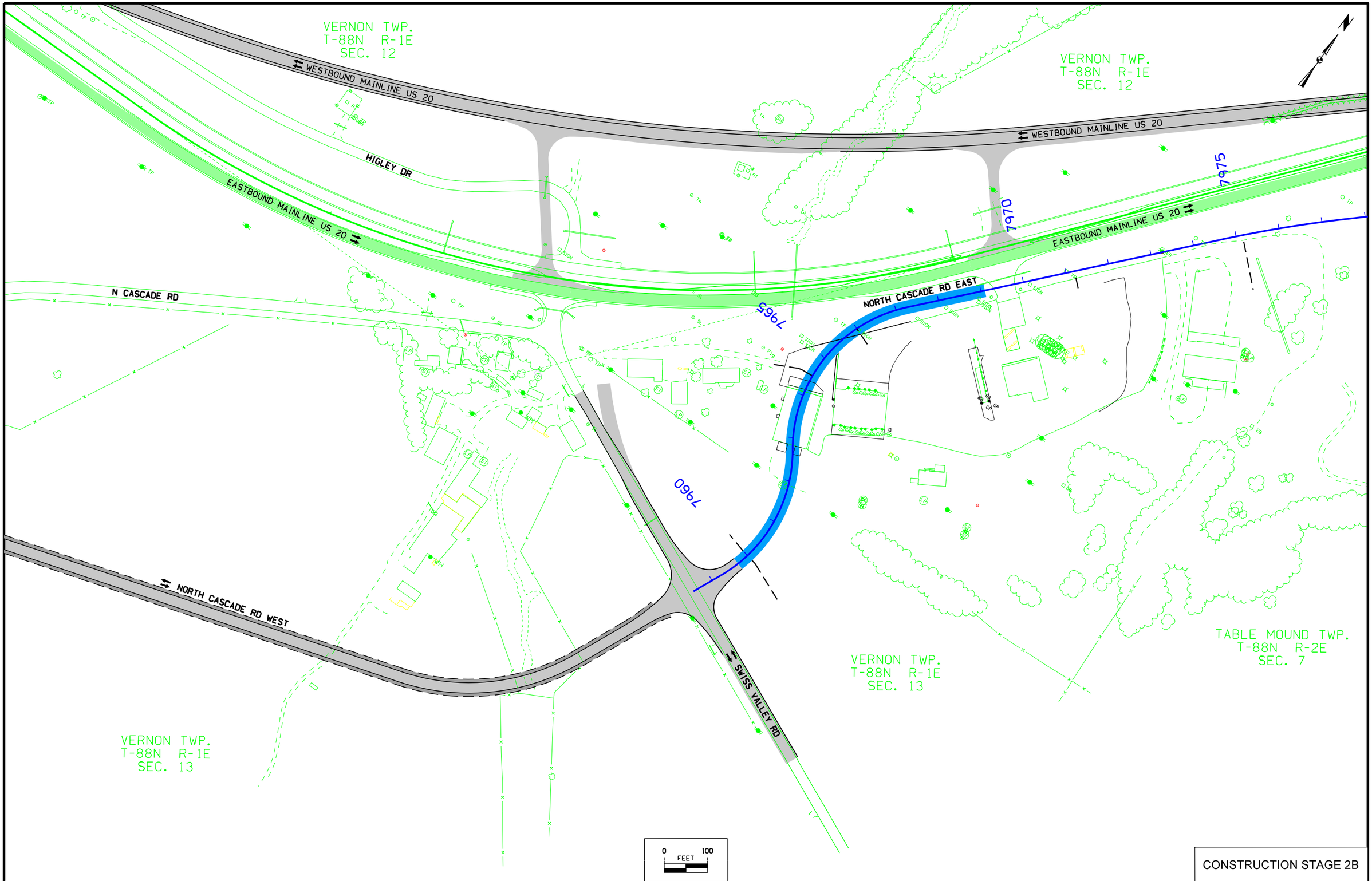
7:26:02 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2B

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.32

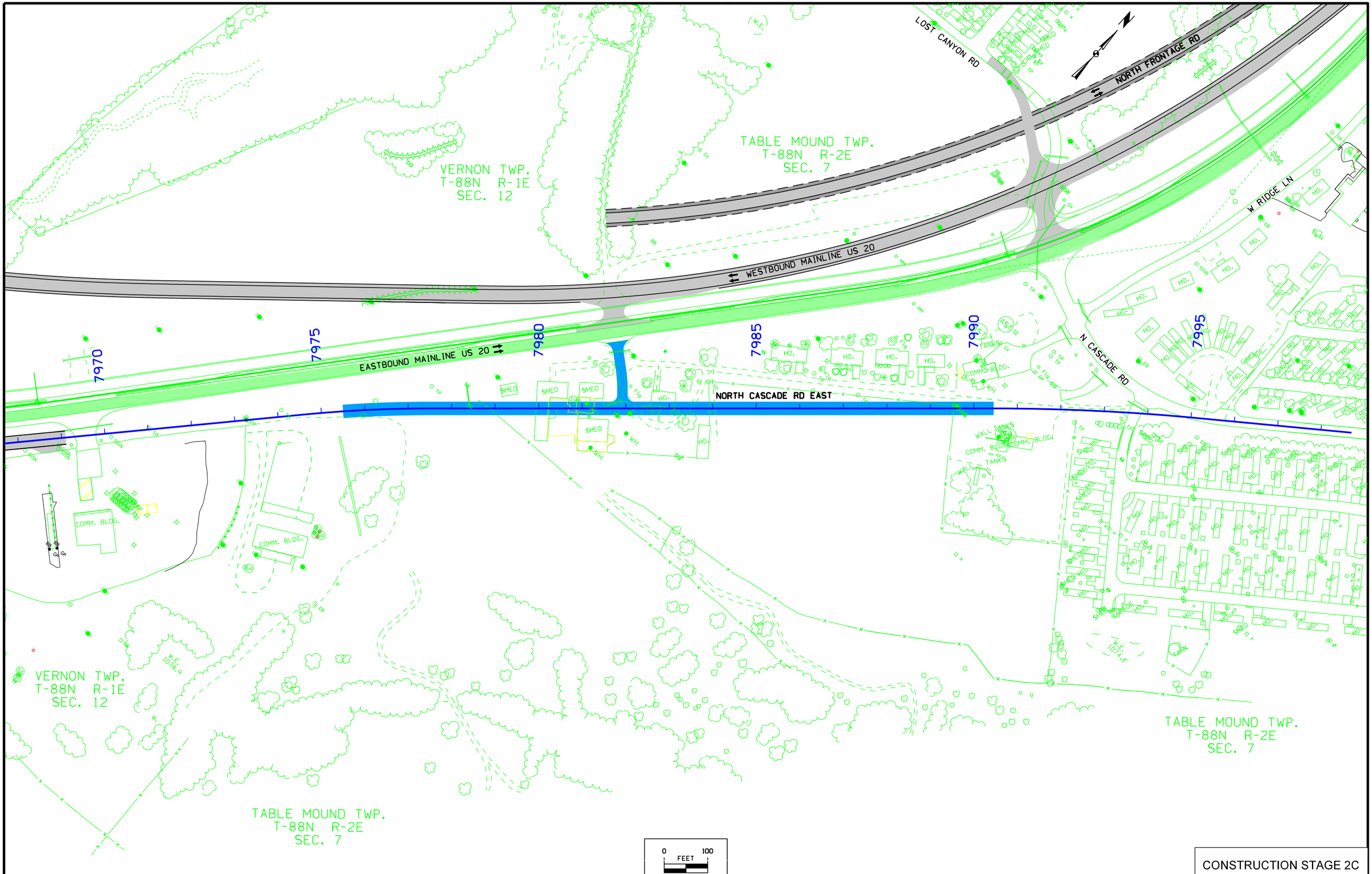
7:26:03 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2B

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.33

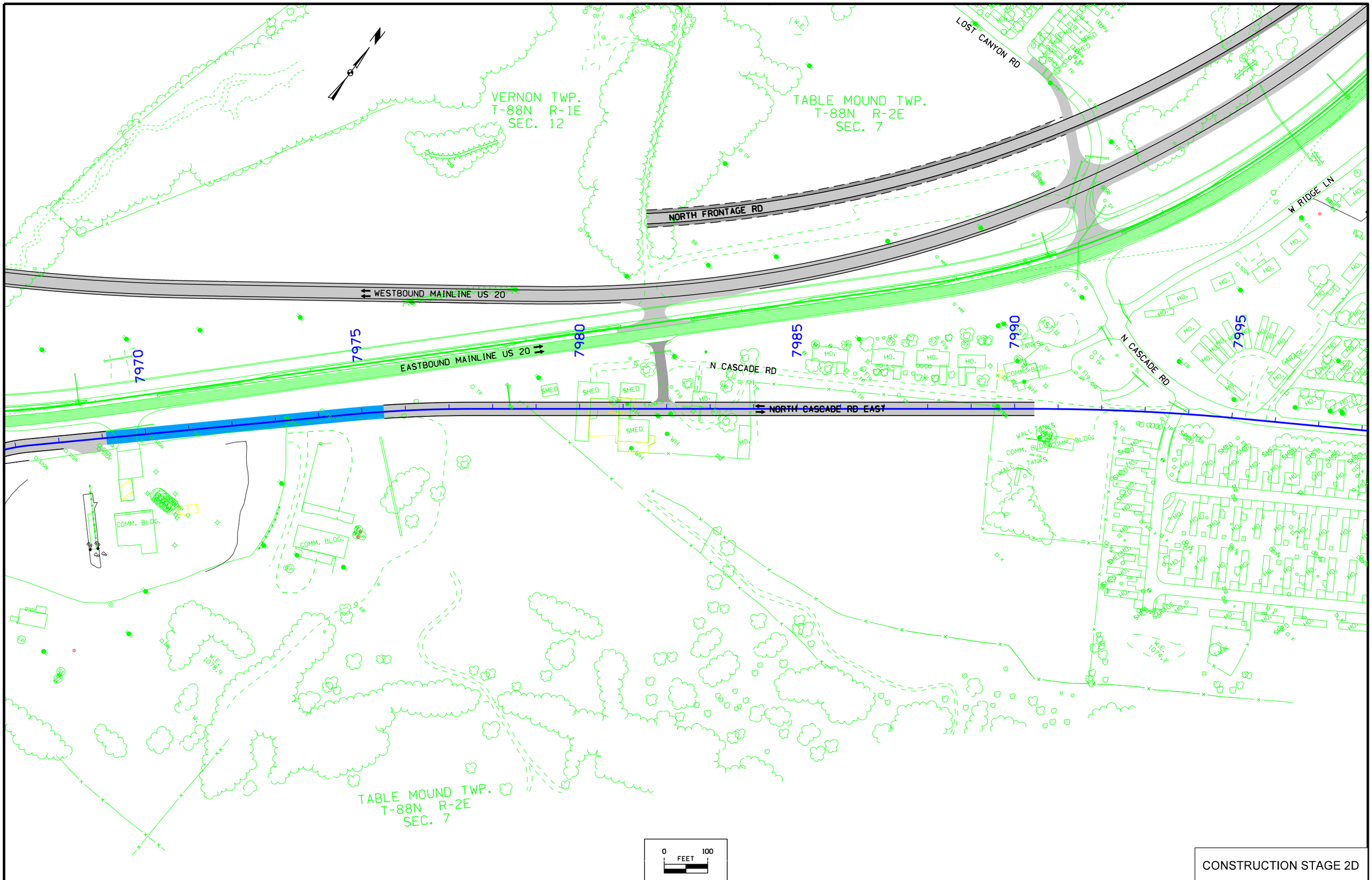
7:26:04 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2C

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.34

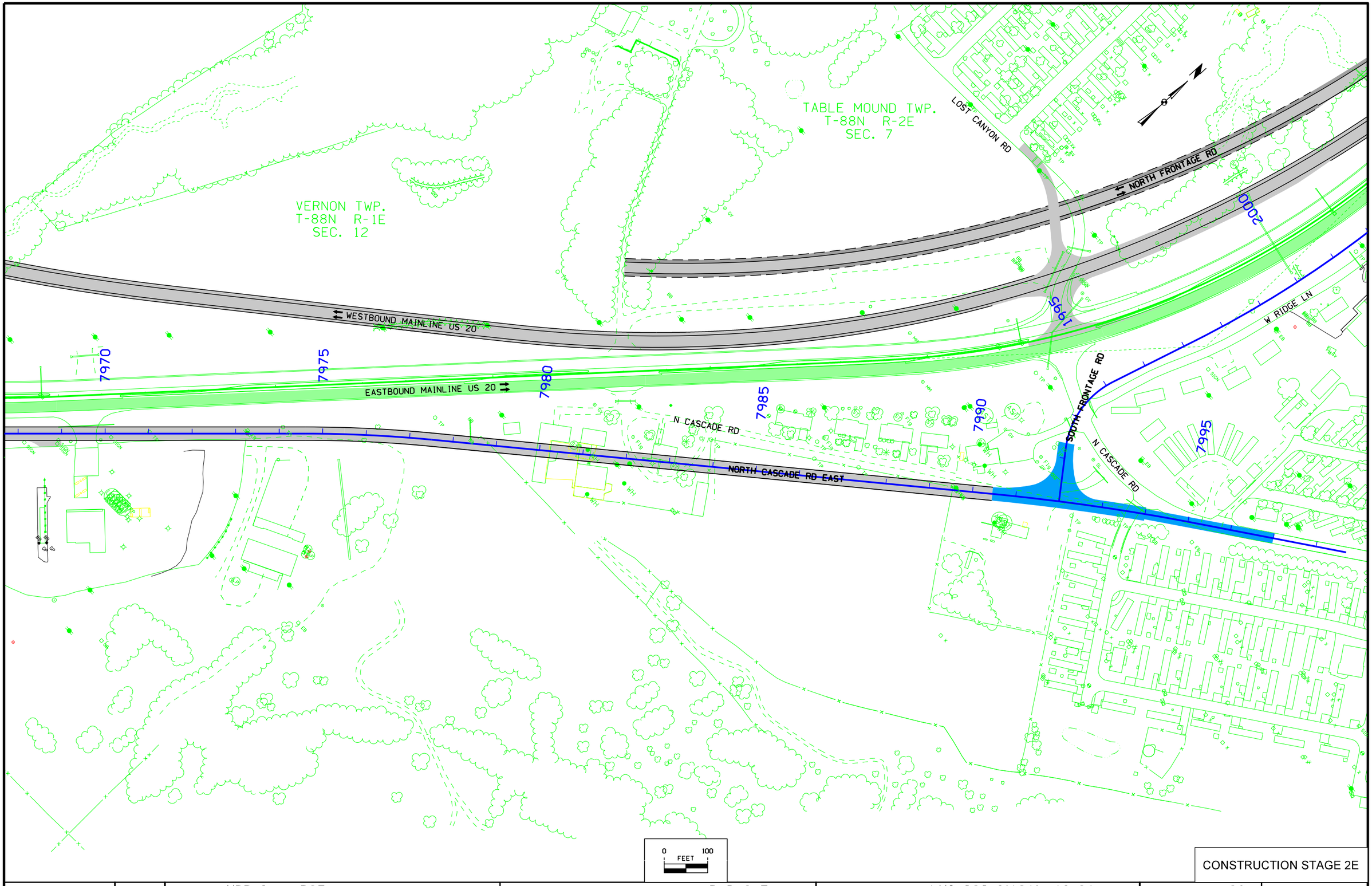
7:26:05 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2D

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.35

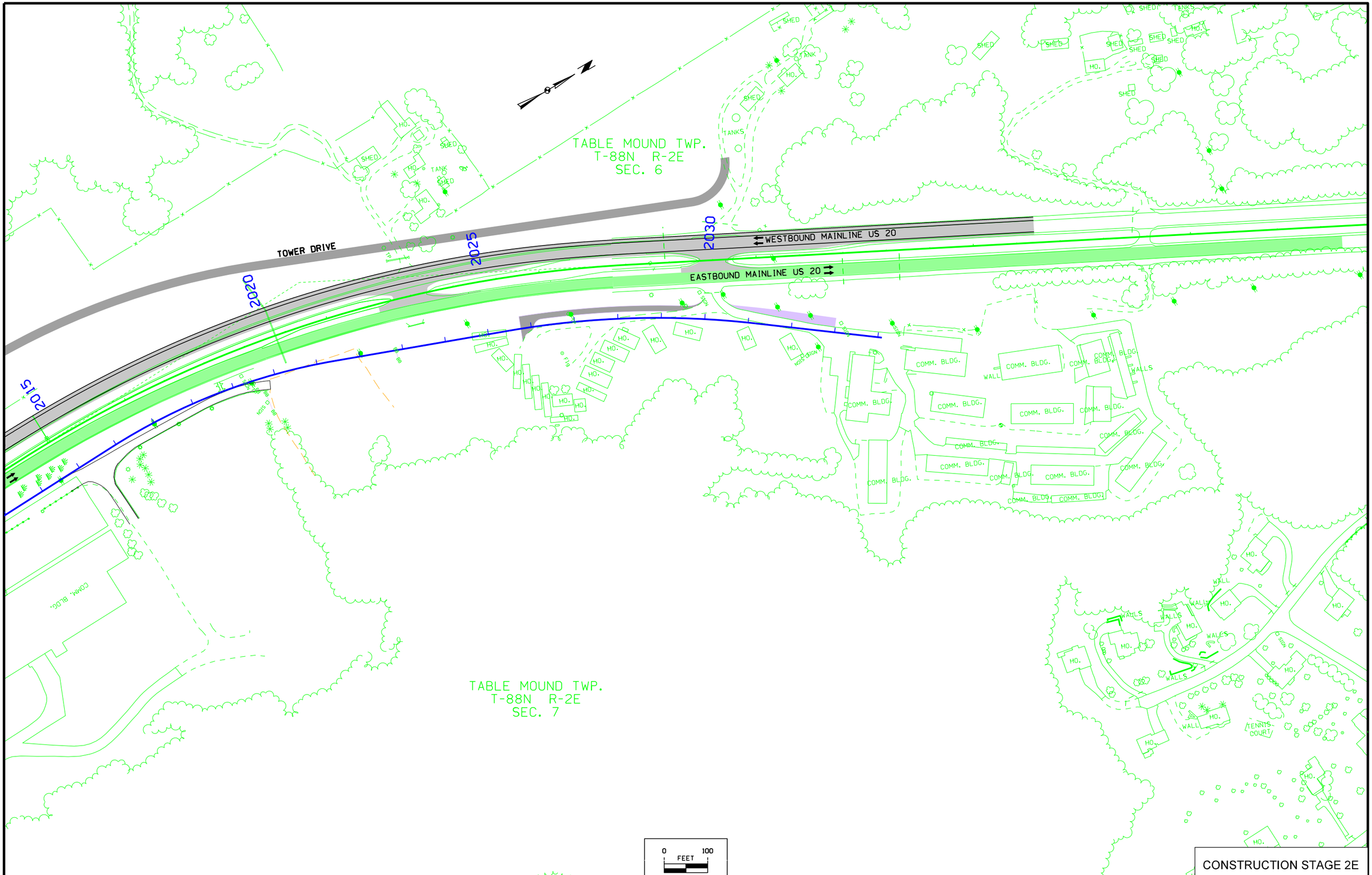
7:26:06 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2E

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.36

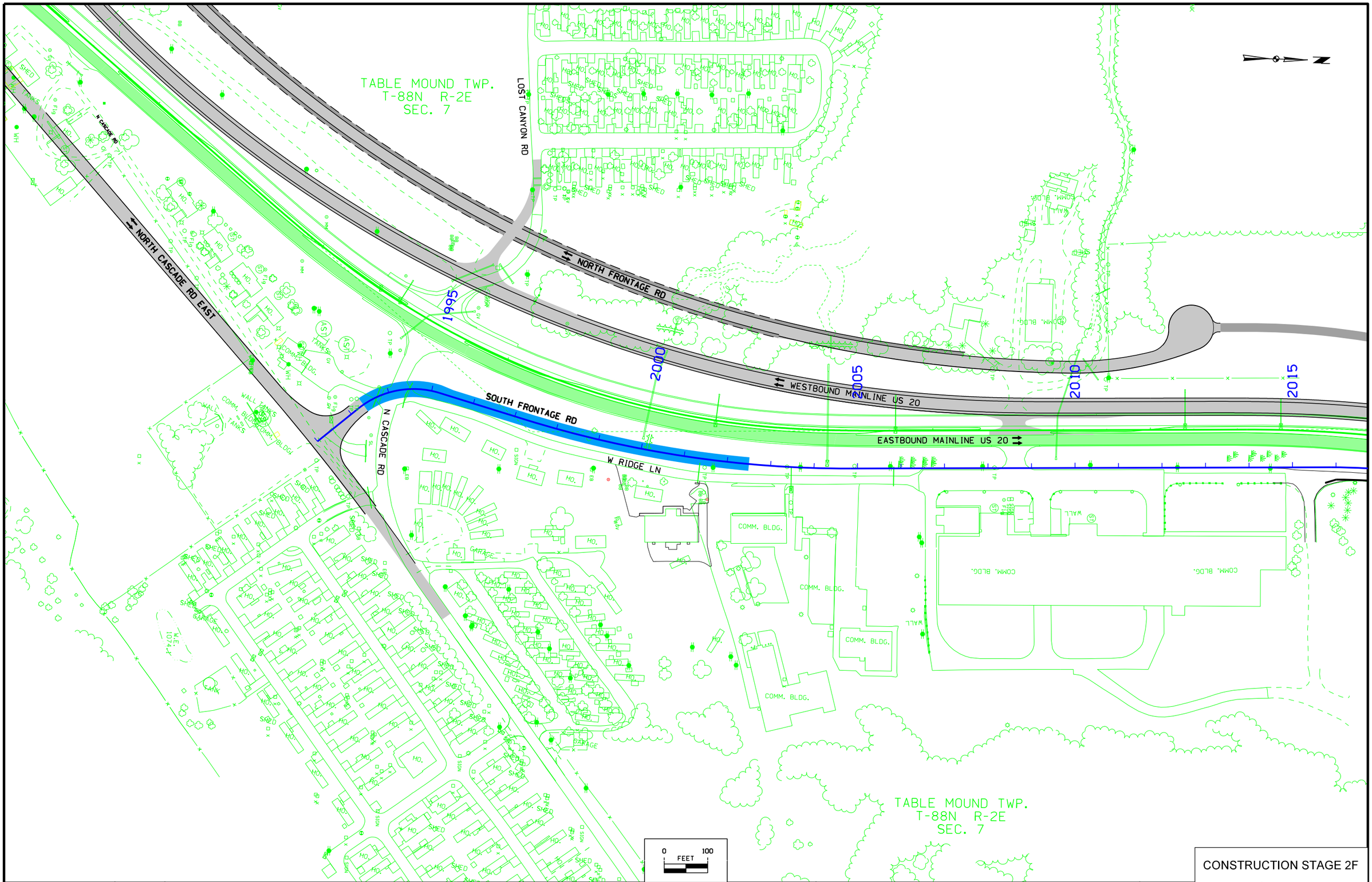
7:26:07 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2E

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.37

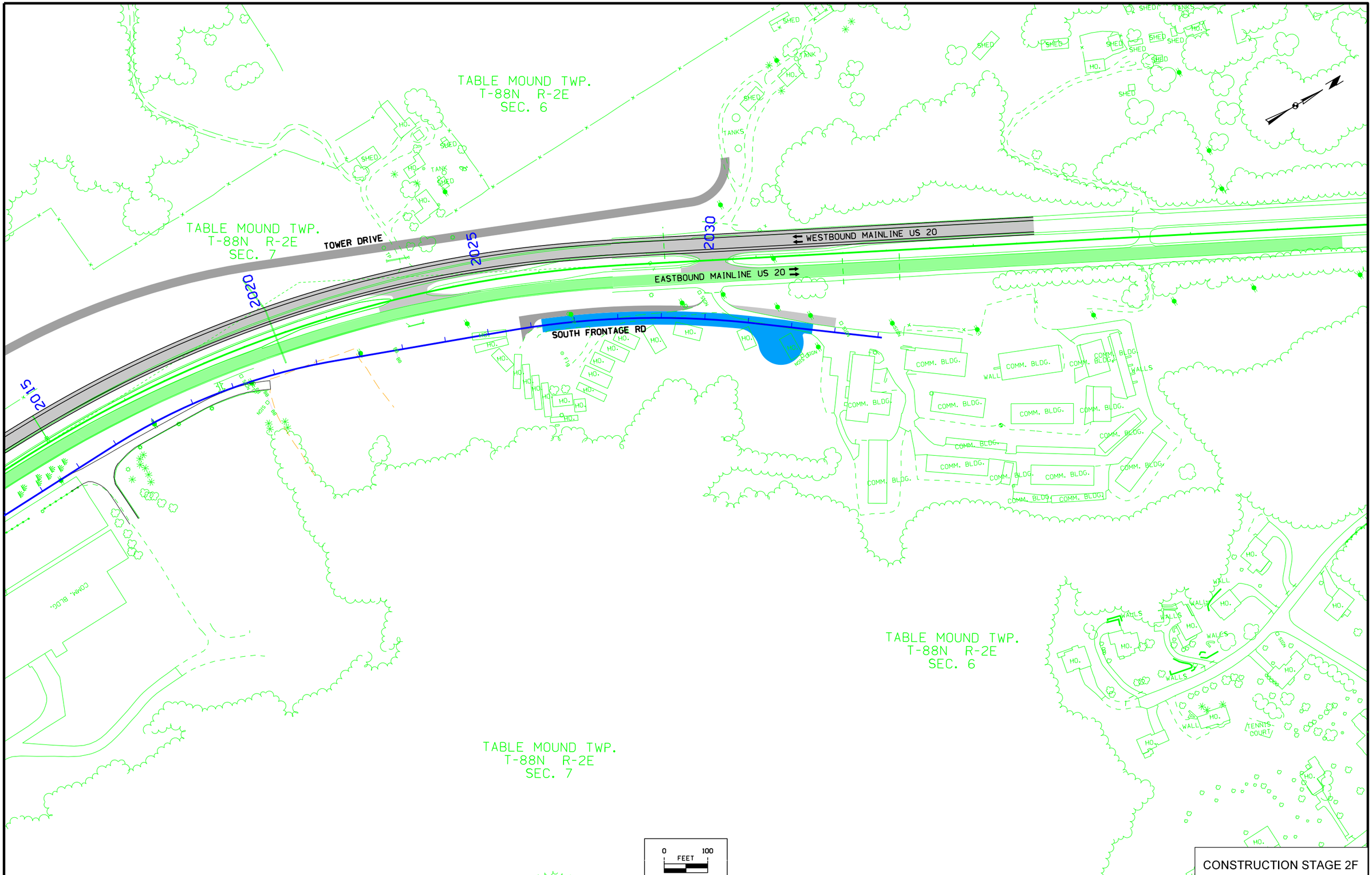
7:26:09 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2F

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.38

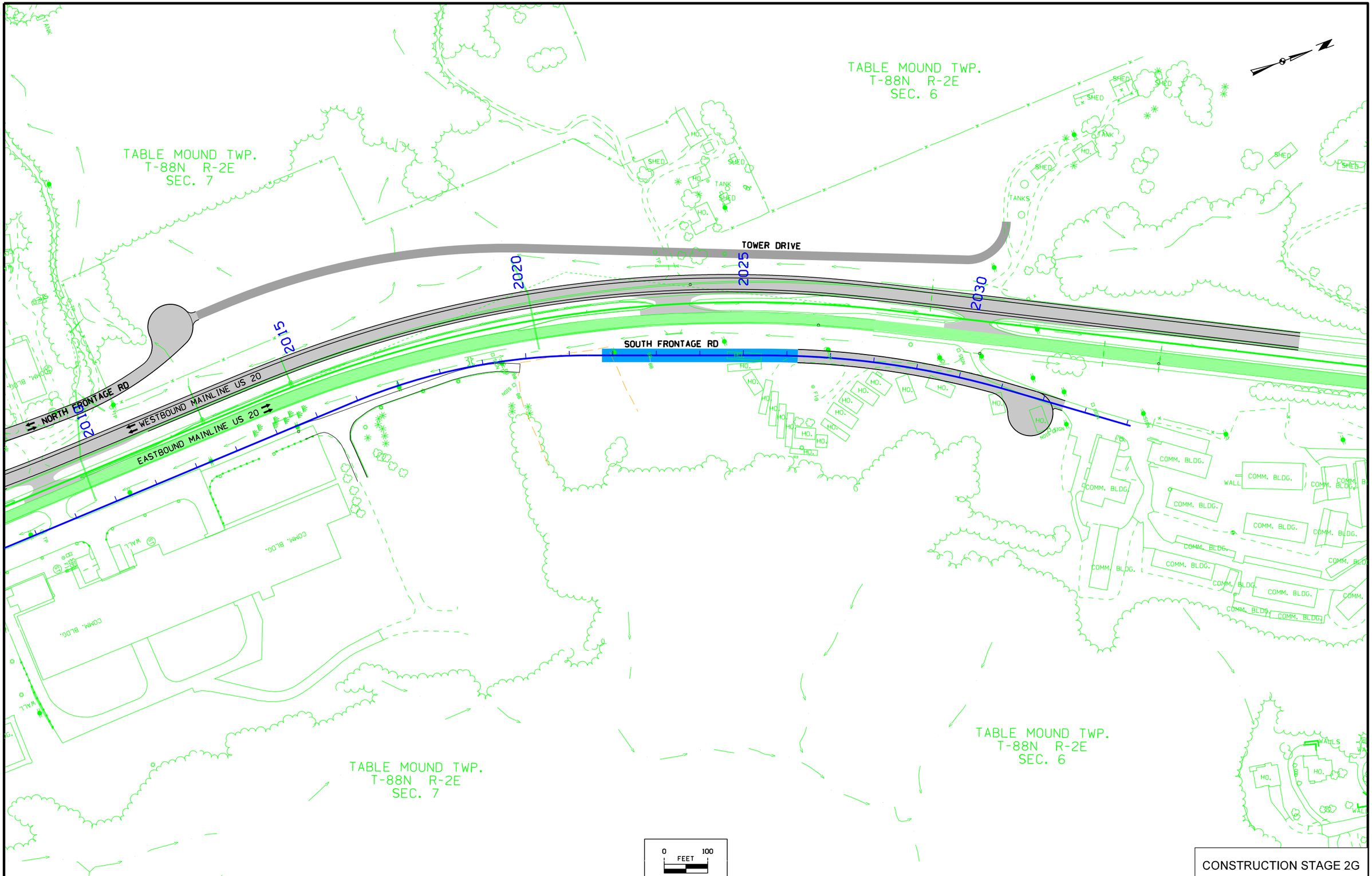
7:26:10 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2F

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.39

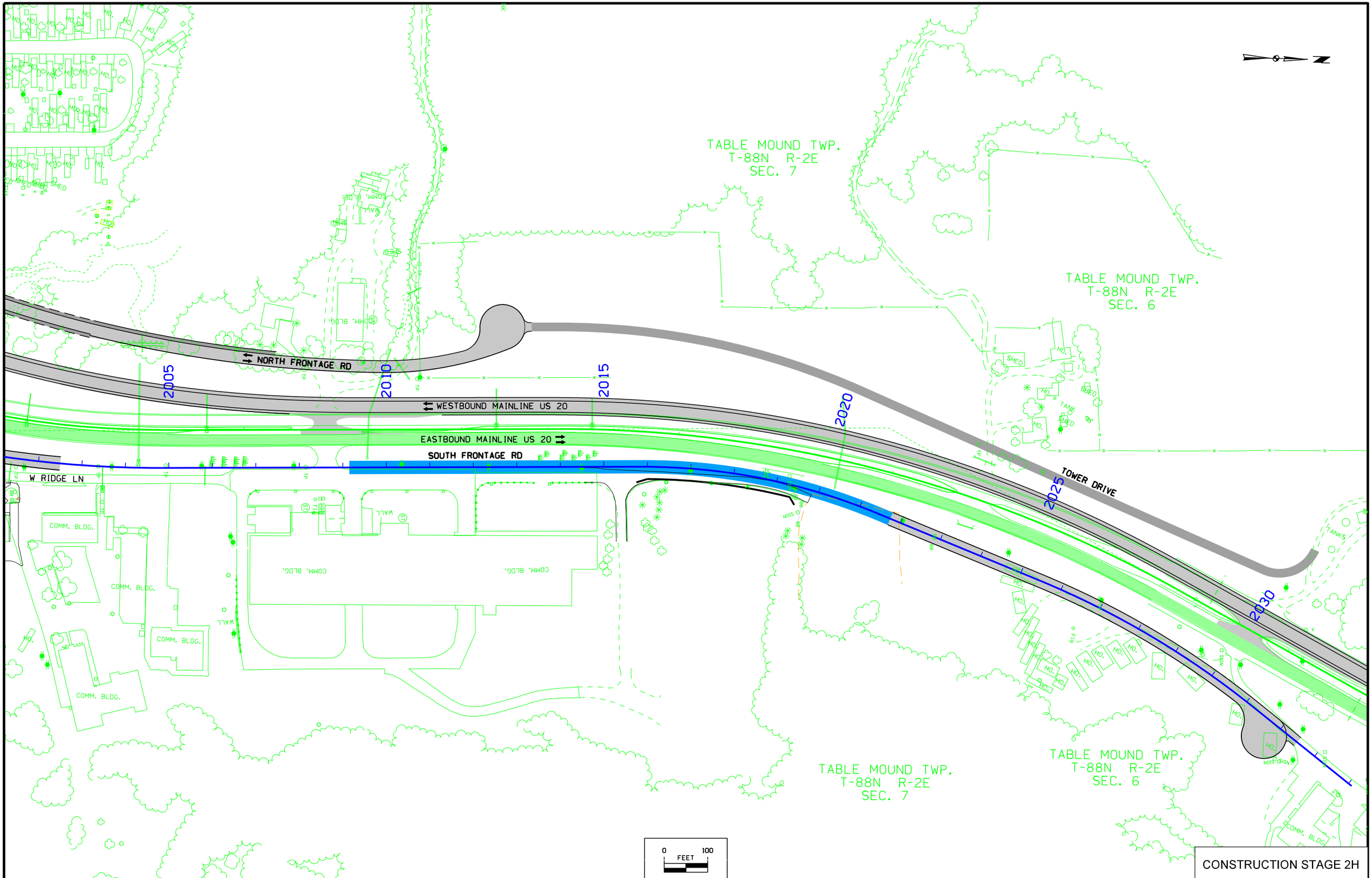
7:26:11 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2G

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.40

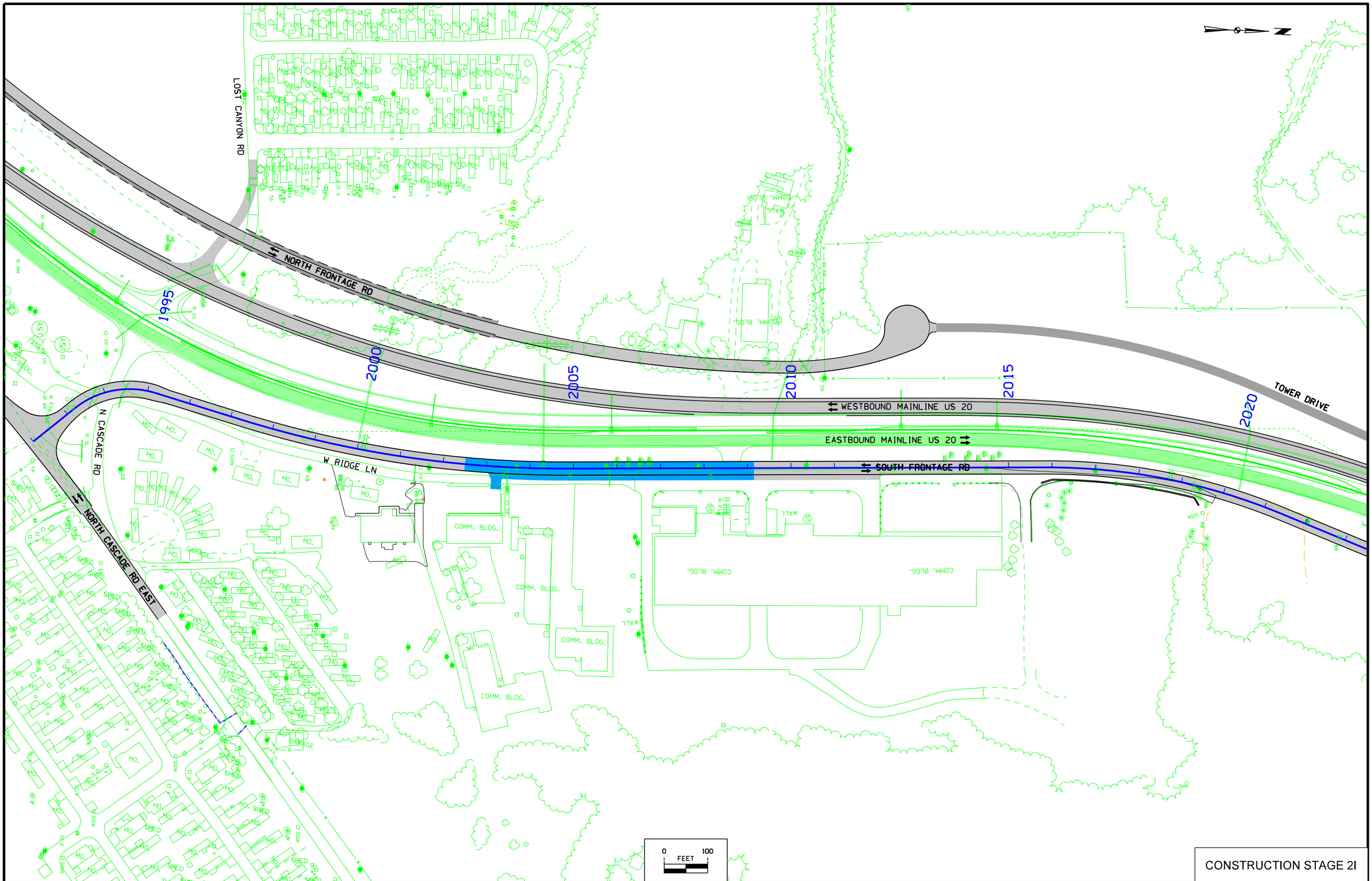
7:26:12 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2H

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.41

7:26:13 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 2I

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.42

7:26:14 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

RELOCATED COTTINGHAM RD

8960

8965

8970

8975

9980

9985

NORTH FRONTAGE RD

VERNON TWP.
T-88N R-1E
SEC. 12

WESTBOUND MAINLINE US 20

HIGLEY DR

EASTBOUND MAINLINE US 20

VERNON TWP.
T-88N R-1E
SEC. 13

N CASCADE RD

SWISS VALLEY RD

NORTH CASCADE RD EAST

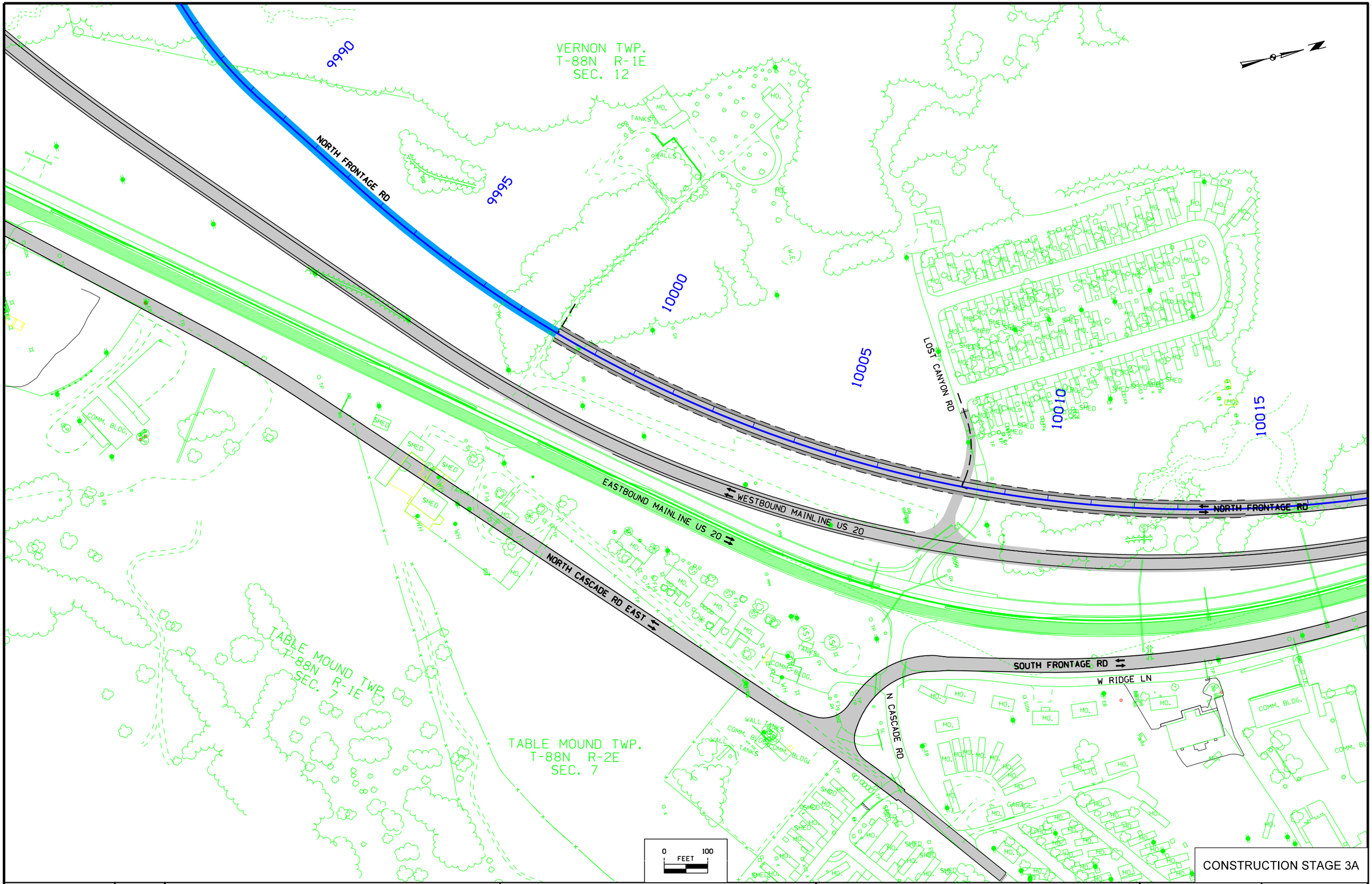
NORTH CASCADE RD WEST

0 100
FEET

CONSTRUCTION STAGE 3A

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.43

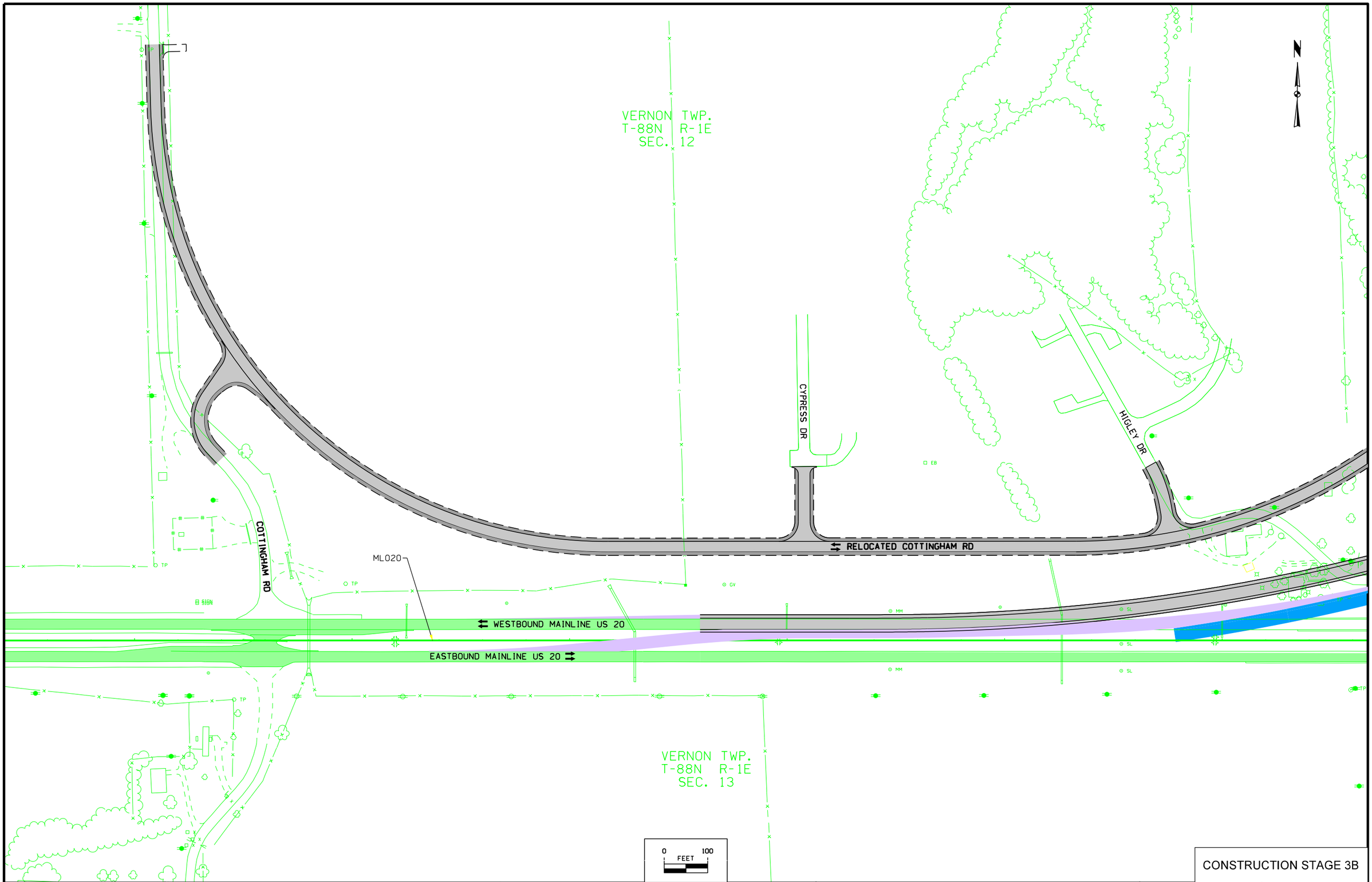
7:26:15 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 3A

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.44

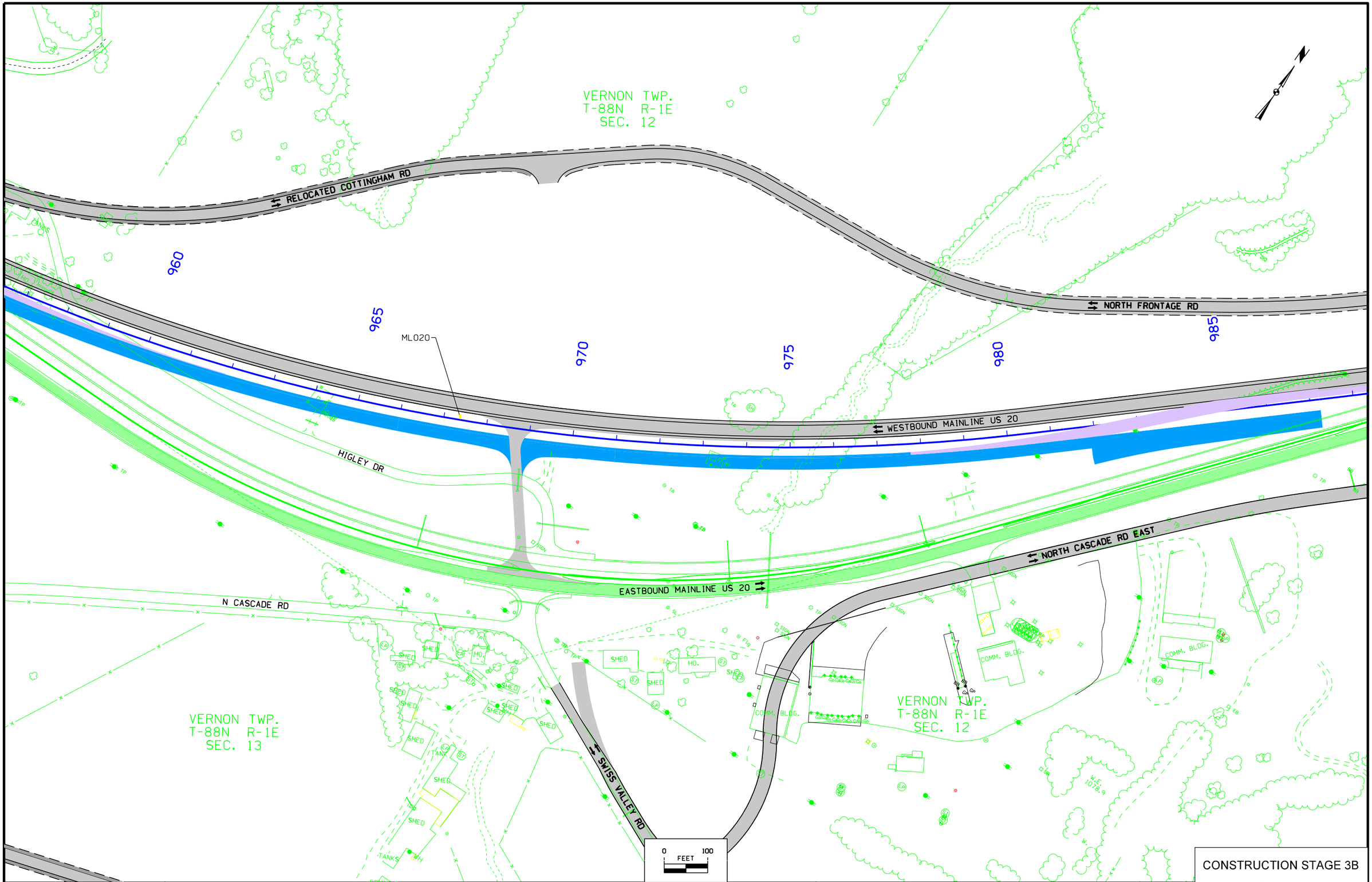
7:26:16 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 3B

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.45

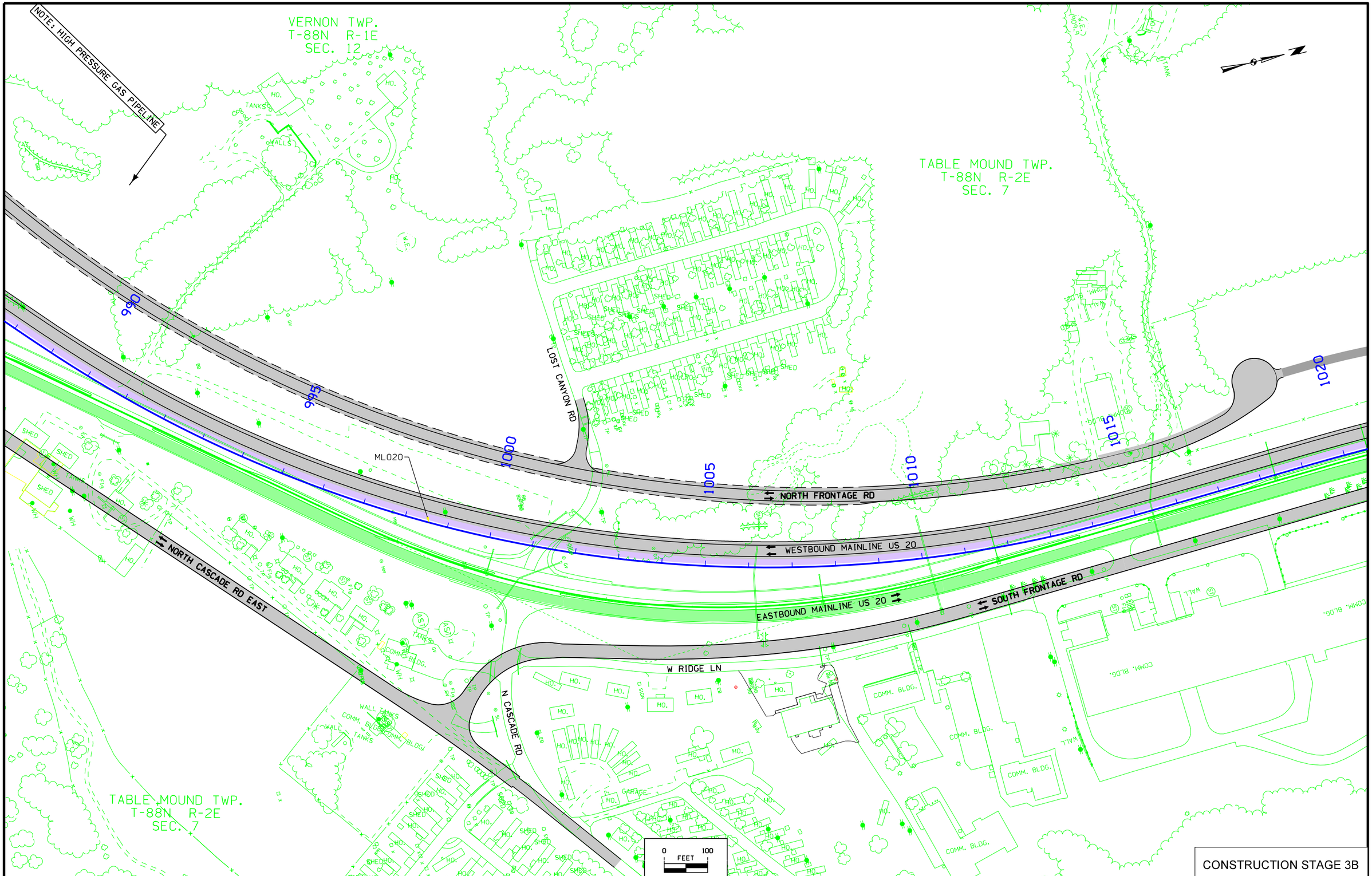
7:26:18 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 3B

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.46

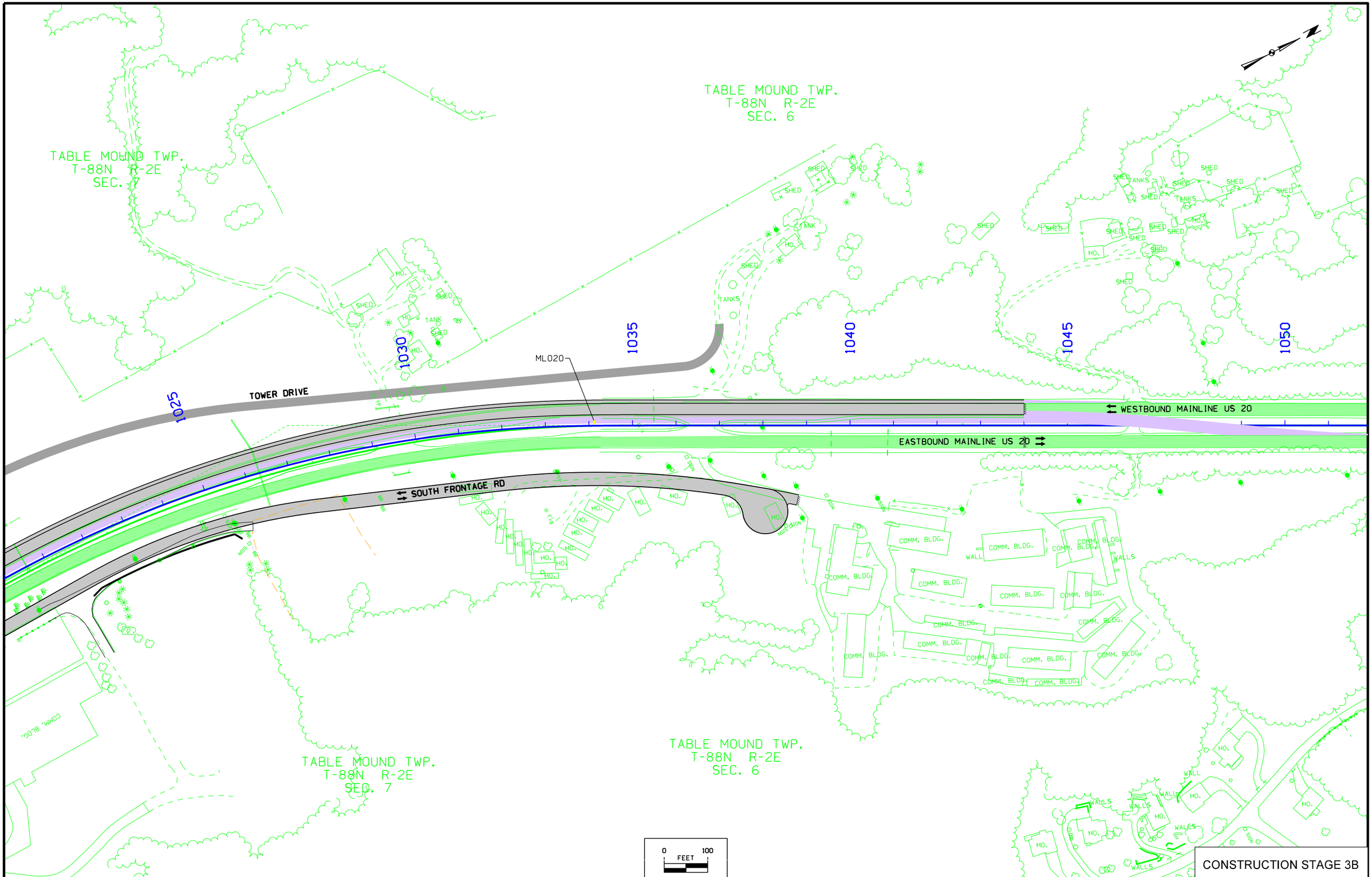
7:26:18 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 3B

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.47

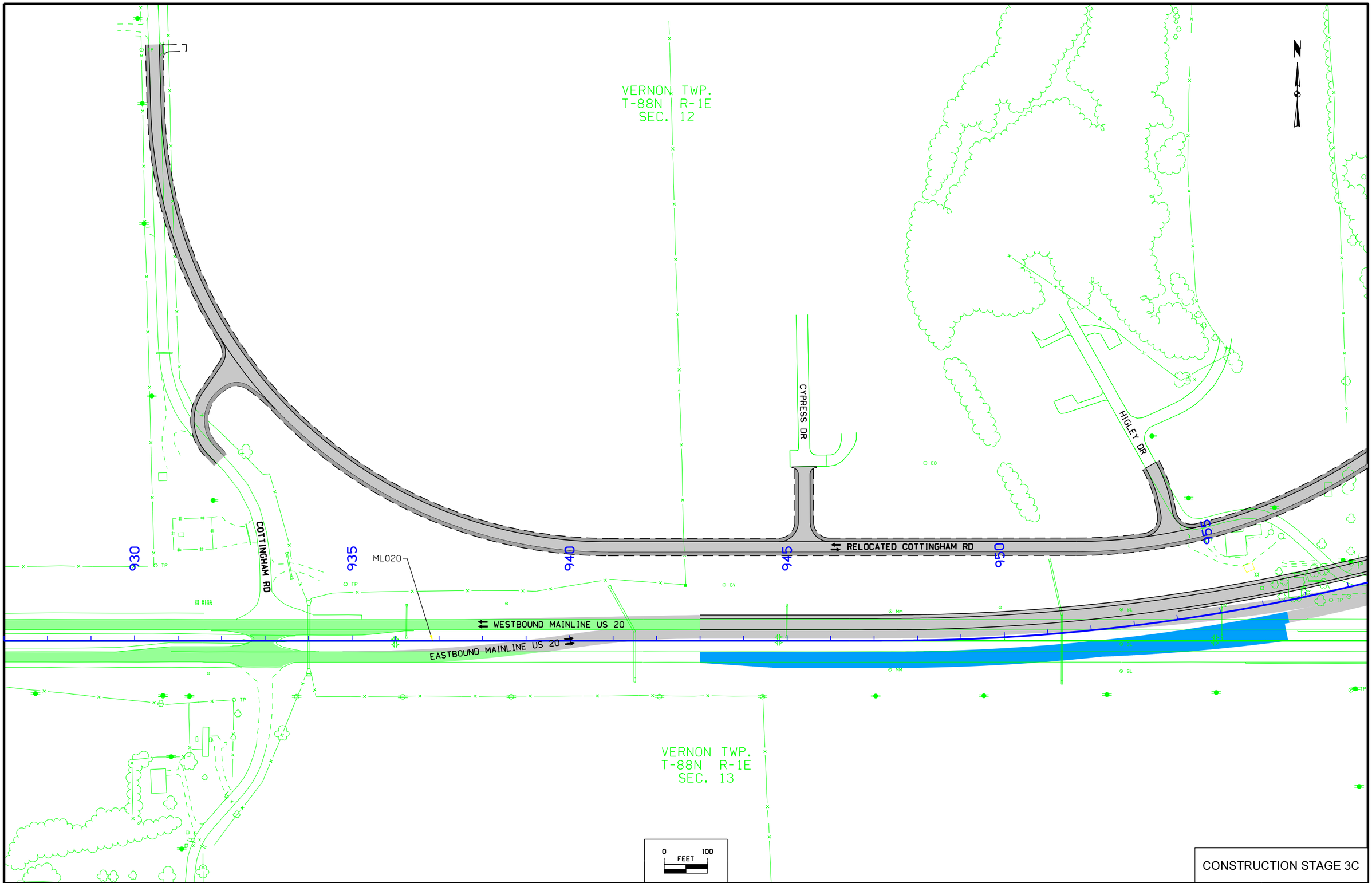
7:26:20 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 3B

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.48

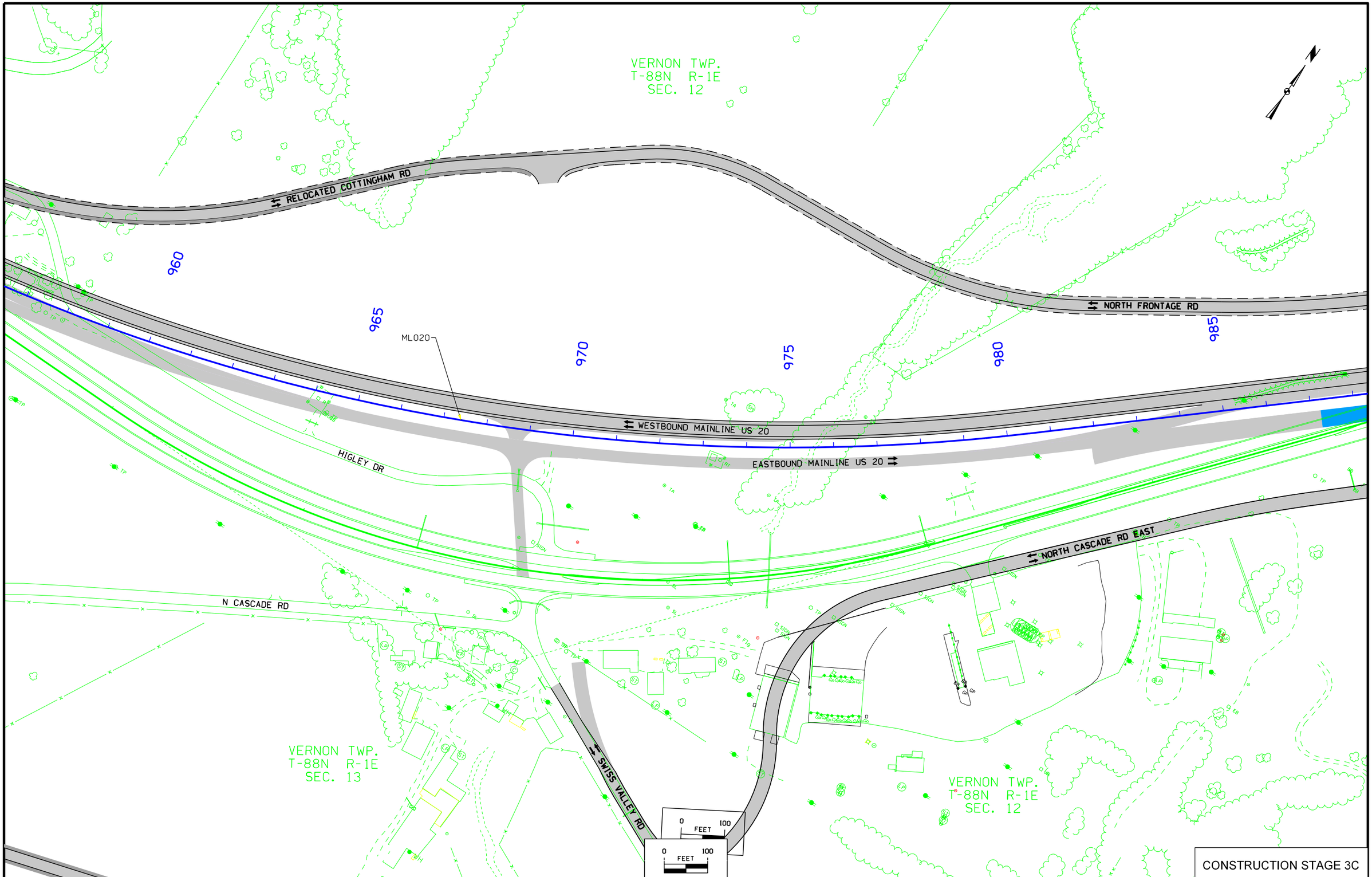
7:26:31 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 3C

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.49

7:26:32 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 3C

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.50

7:26:33 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

REFER TO SHEET J.8 FOR PHASING
TYPICAL AT STA. 1017+50

NOTE: HIGH PRESSURE GAS PIPELINE

VERNON TWP.
T-88N R-1E
SEC. 12

TABLE MOUND TWP.
T-88N R-2E
SEC. 7

990
995
1000
1005
1010
1015
1020

LOST CANYON RD

ML020

NORTH FRONTAGE RD

WESTBOUND MAINLINE US 20
EASTBOUND MAINLINE US 20

SOUTH FRONTAGE RD

NORTH CASCADE RD EAST

W RIDGE LN

N CASCADE RD

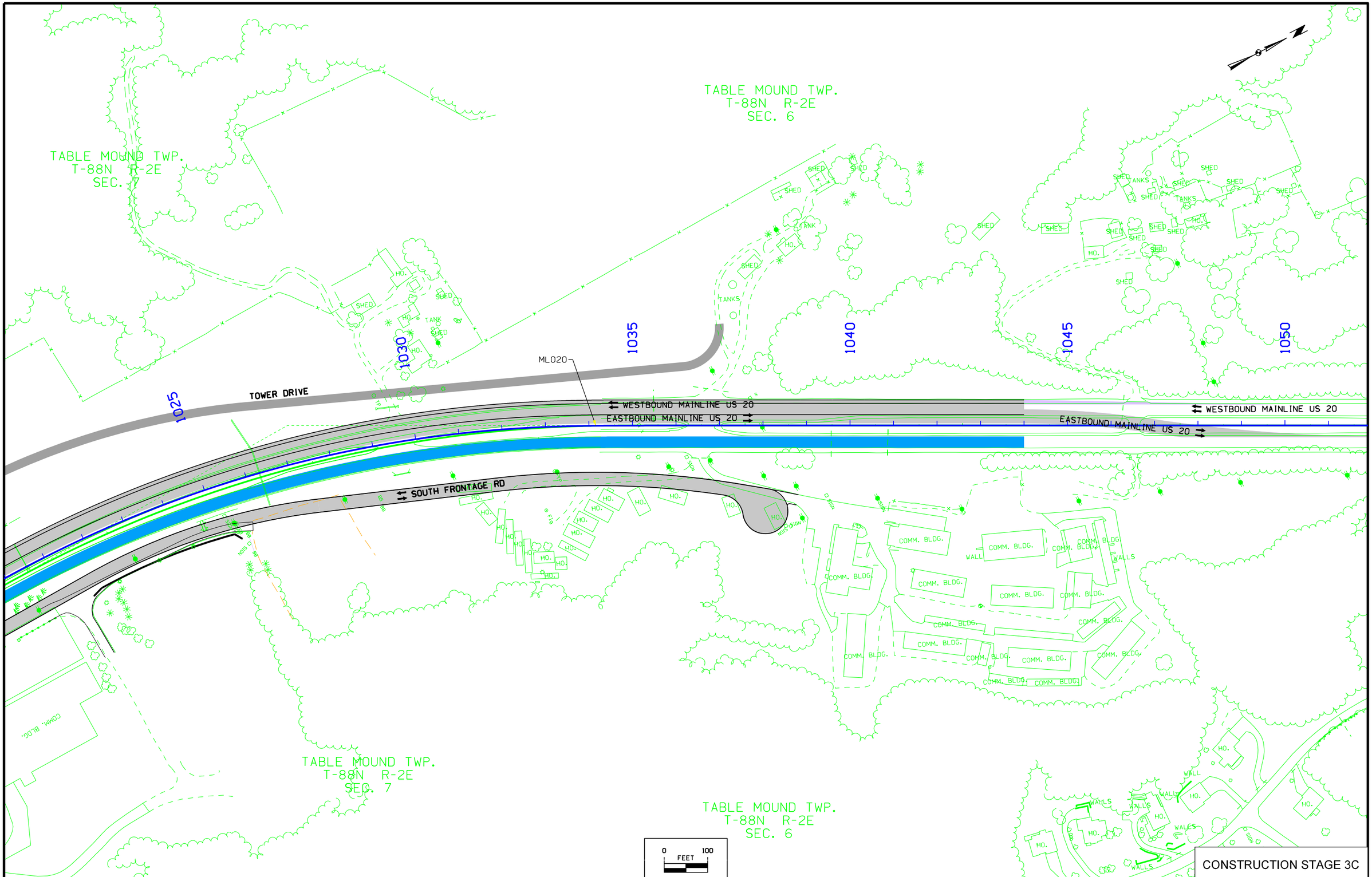
TABLE MOUND TWP.
T-88N R-2E
SEC. 7

0 FEET 100

CONSTRUCTION STAGE 3C

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.51

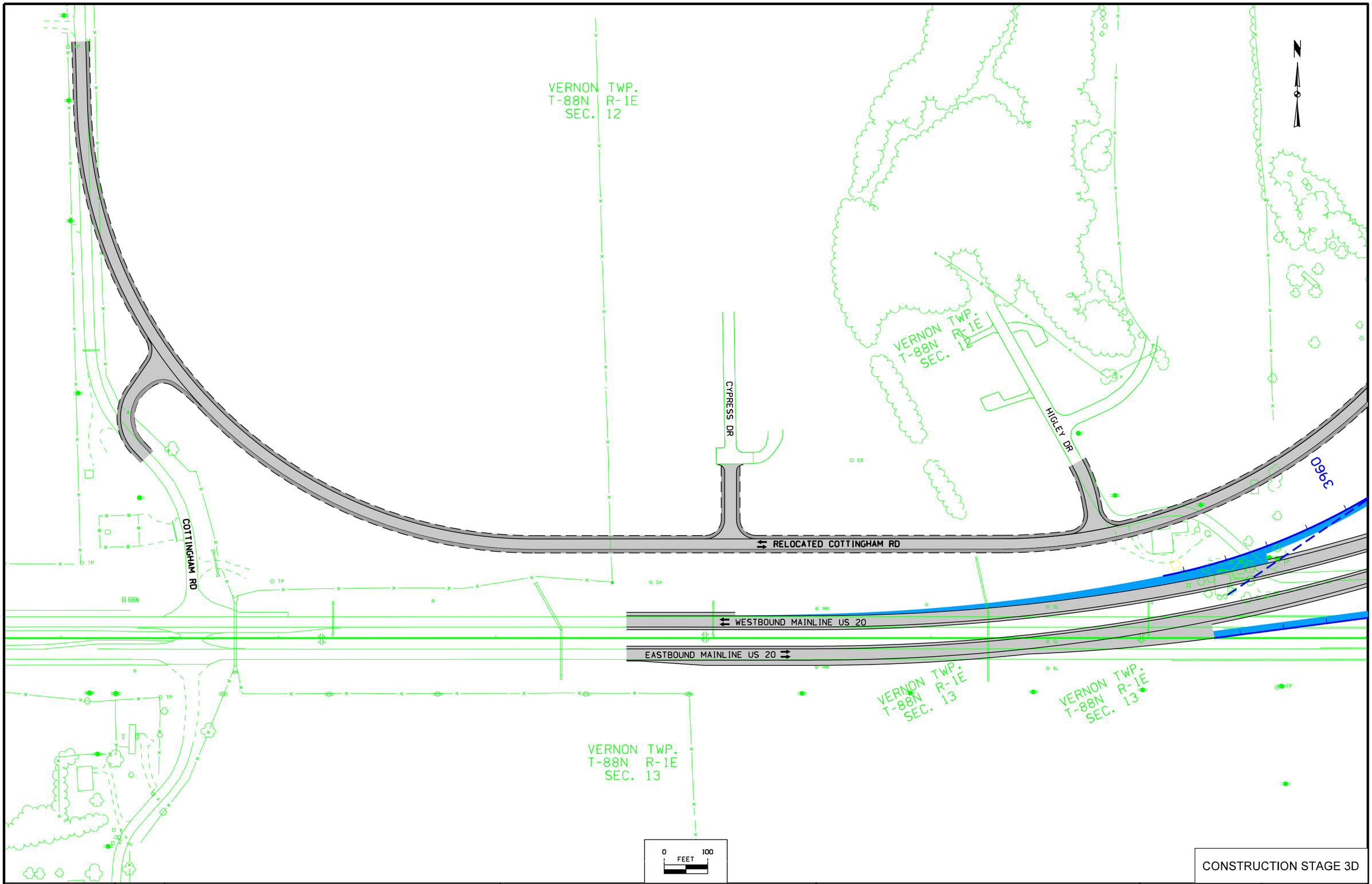
7:26:35 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 3C

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.52

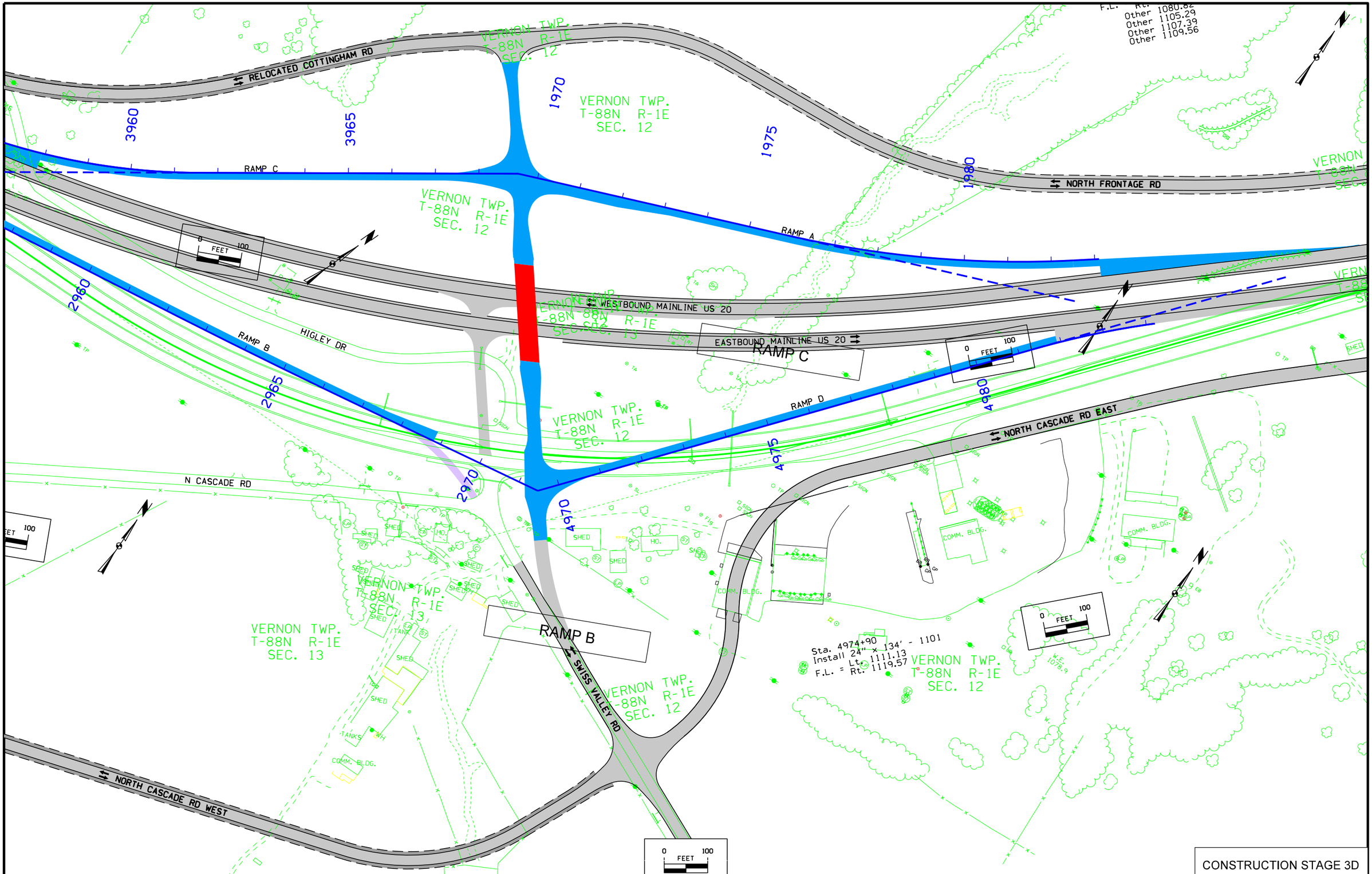
7:26:36 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 3D

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.53

7:26:37 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



CONSTRUCTION STAGE 3D

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.54

7:26:38 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht

RELOCATED COTTINGHAM RD

VERNON TWP.
T-88N R-1E
SEC. 12

RAMP C

NORTH FRONTAGE RD

VERNON TWP.
T-88N R-1E
SEC. 12

RAMP A

WESTBOUND MAINLINE US 20

EASTBOUND MAINLINE US 20

2960

RAMP B

HIGLEY DR

2965

RAMP D

NORTH CASCADE RD EAST

2970

N CASCADE RD

100

SHED

HO.

SHED

SHED

COMM. BLDG.

COMM. BLDG.

COMM. BLDG.

VERNON TWP.
T-88N R-1E
SEC. 13

VERNON TWP.
T-88N R-1E
SEC. 13

RAMP B

SWISS VALLEY RD

VERNON TWP.
T-88N R-1E
SEC. 12

W.E. 1081.9

TANKS

COMM. BLDG.

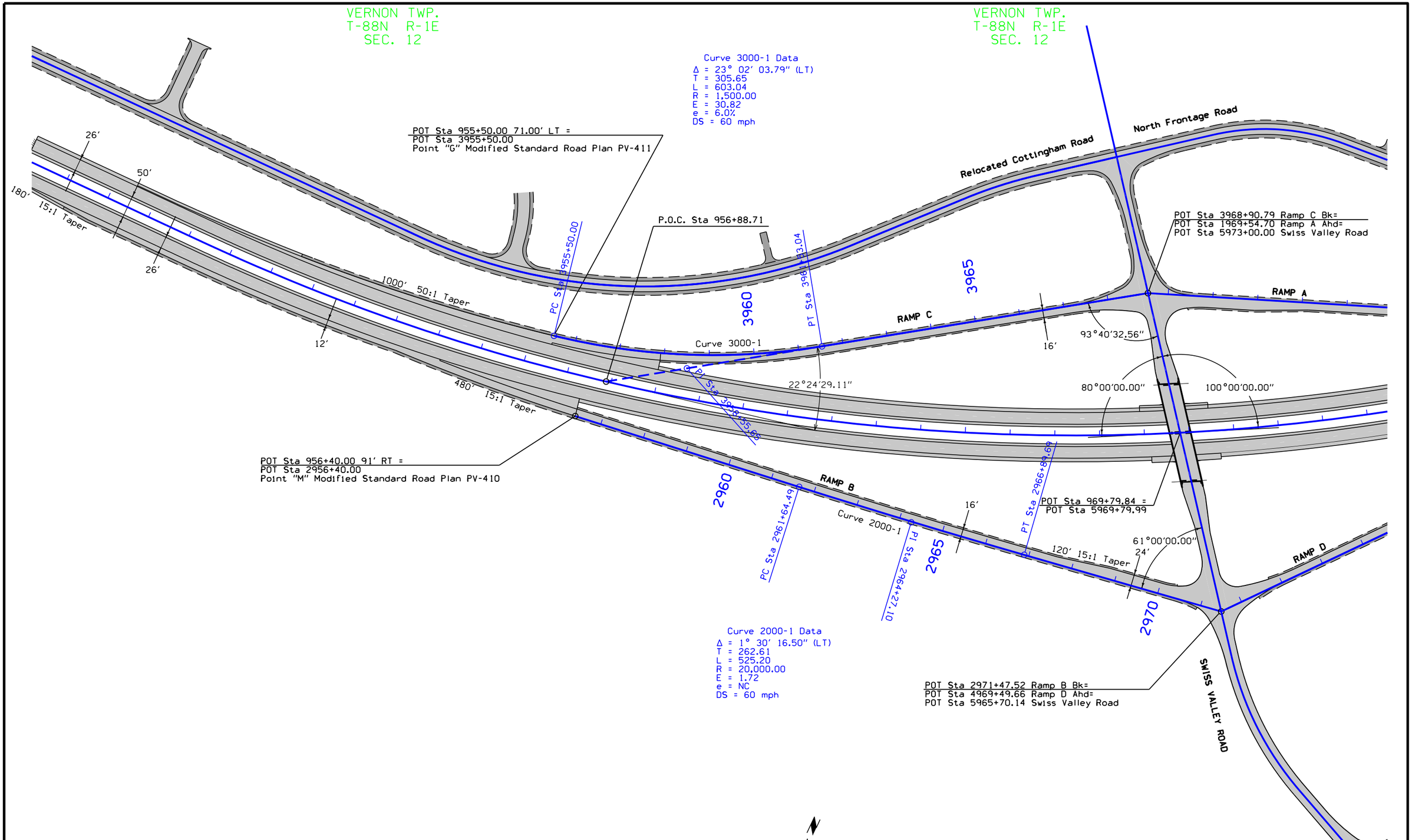
NORTH CASCADE RD WEST

0 100
FEET

CONSTRUCTION STAGE 3E

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER J.55

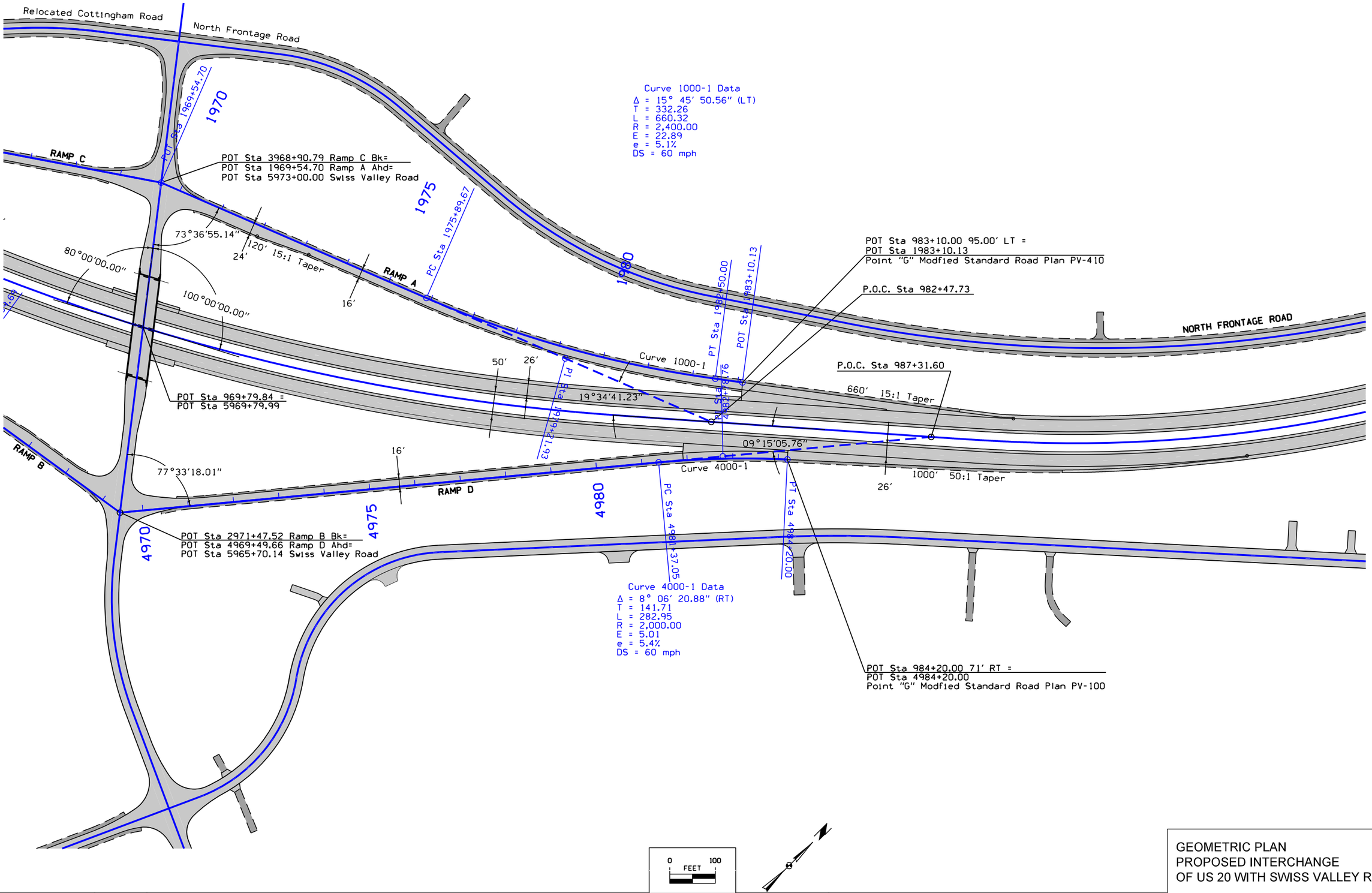
7:26:39 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121J04.sht



GEOMETRIC PLAN
PROPOSED INTERCHANGE
OF US 20 WITH SWISS VALLEY ROAD

C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER	NHS-020-9(121)--19-31	SHEET NUMBER K.1

7:28:06 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121K01.sht

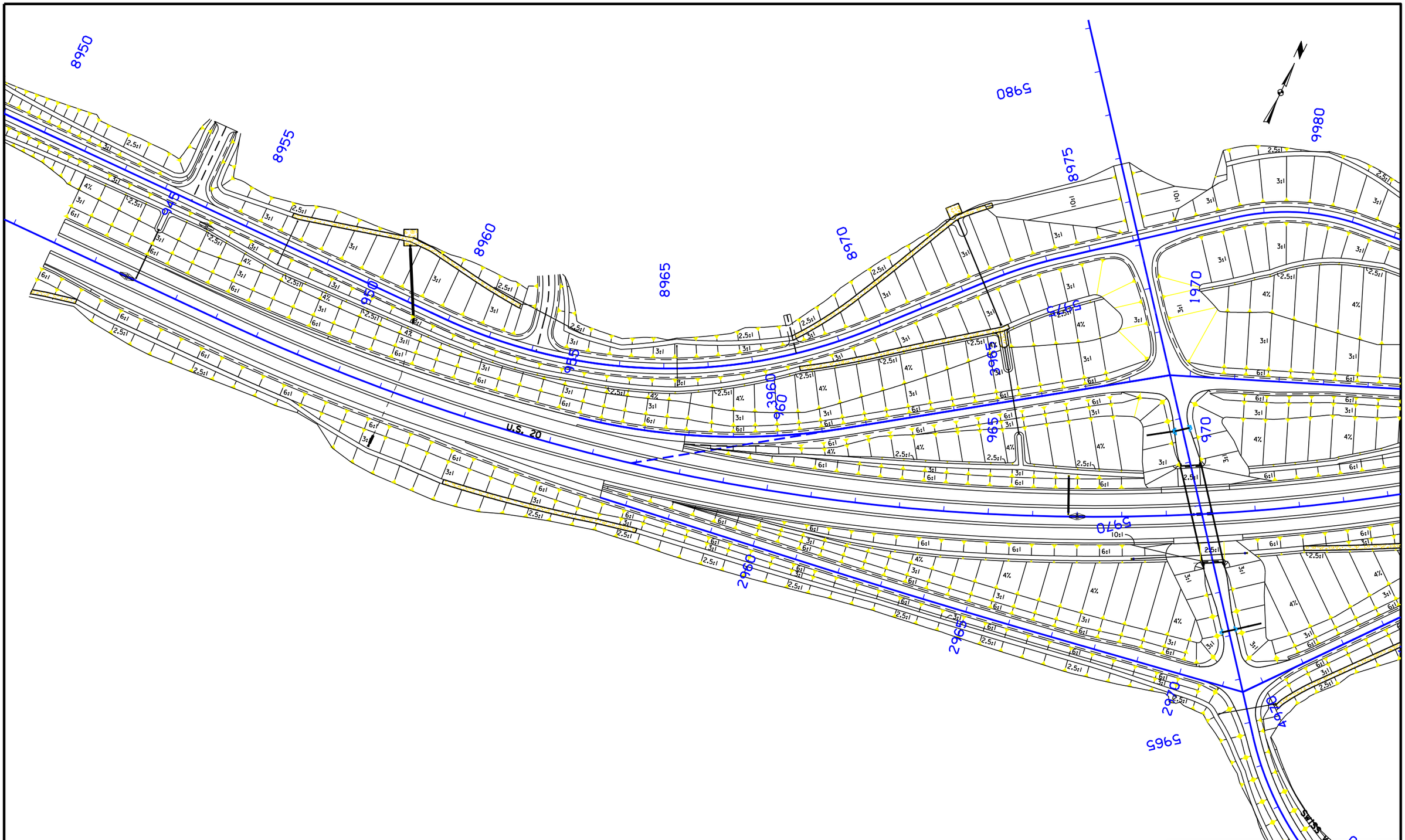


Curve 1000-1 Data
Δ = 15° 45' 50.56" (LT)
T = 332.26
L = 660.32
R = 2,400.00
E = 22.89
e = 5.1%
DS = 60 mph

GEOMETRIC PLAN
PROPOSED INTERCHANGE
OF US 20 WITH SWISS VALLEY ROAD

C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER	NHS-020-9(121)--19-31	SHEET NUMBER K.2

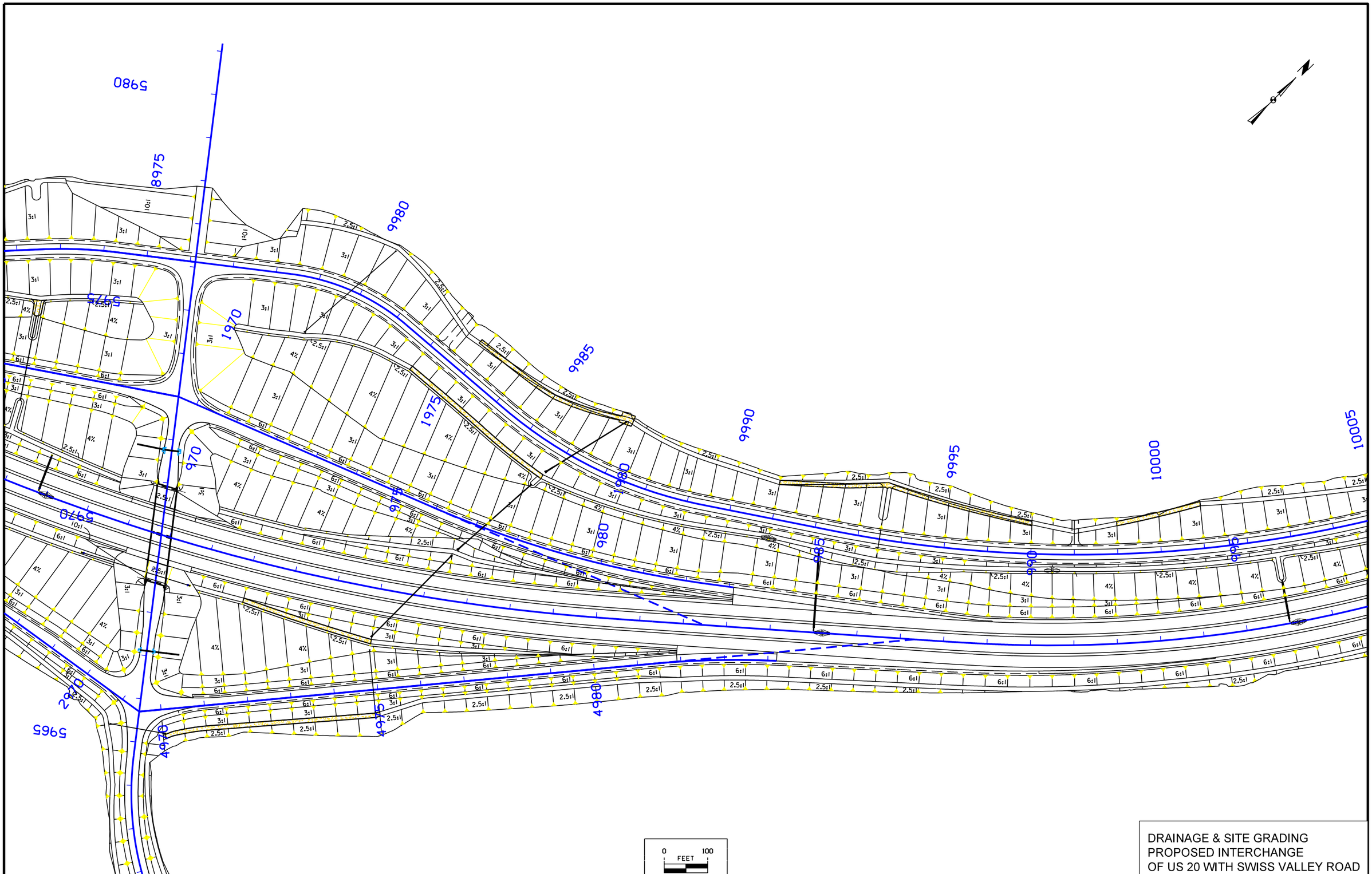
7:28:07 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121K01.sht



DRAINAGE & SITE GRADING
PROPOSED INTERCHANGE
OF US 20 WITH SWISS VALLEY ROAD

ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER K.3

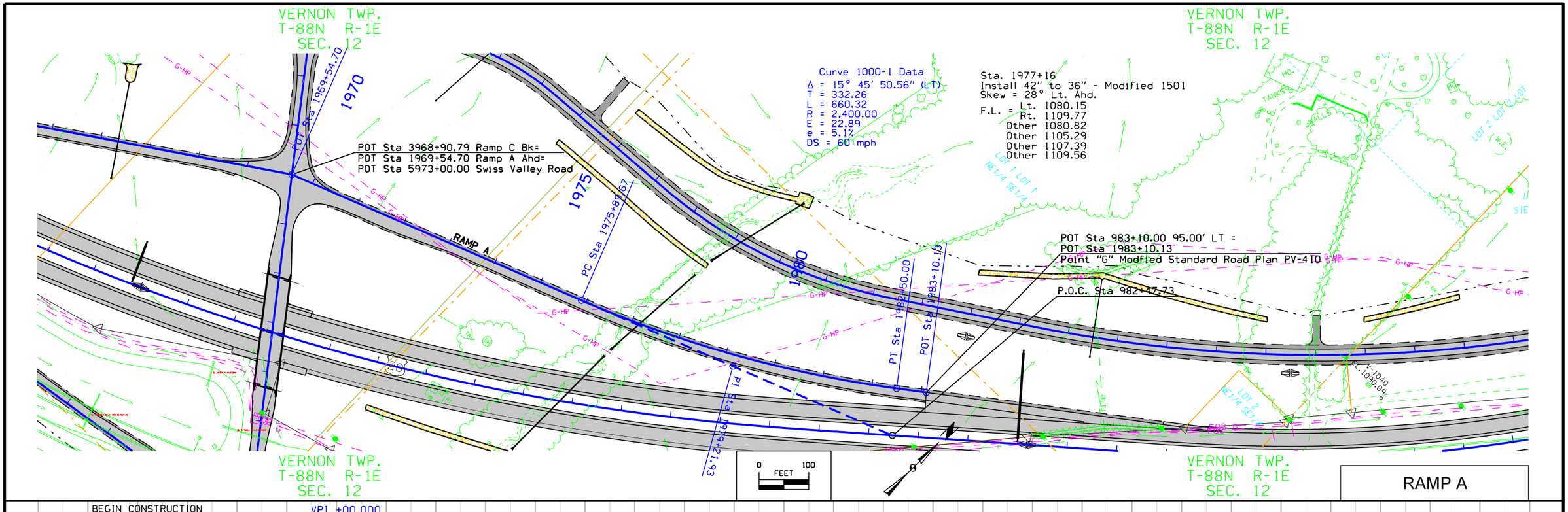
7:28:14 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121K01.sht

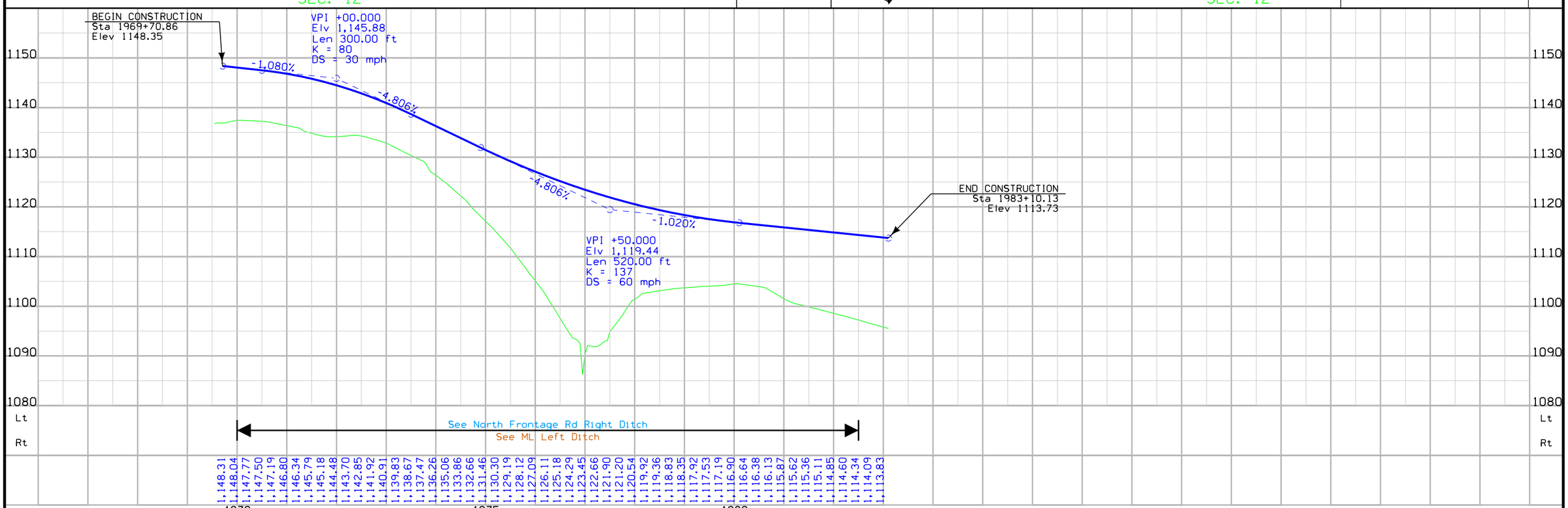


DRAINAGE & SITE GRADING
PROPOSED INTERCHANGE
OF US 20 WITH SWISS VALLEY ROAD

ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER K.4

7:28:15 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121K01.sht





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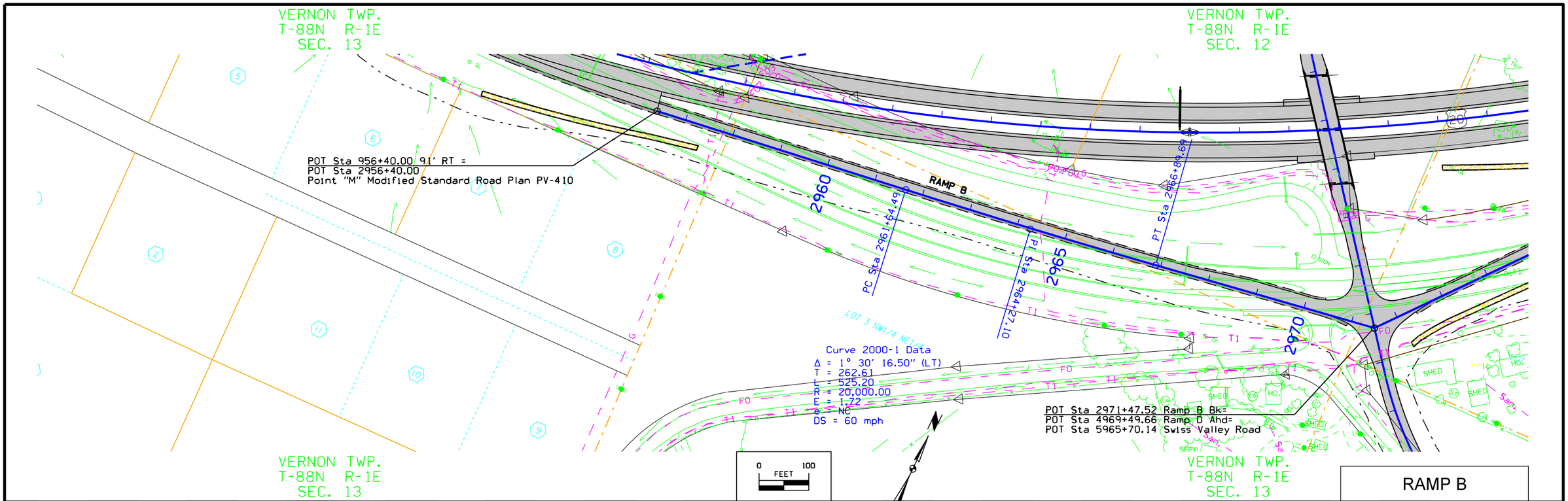
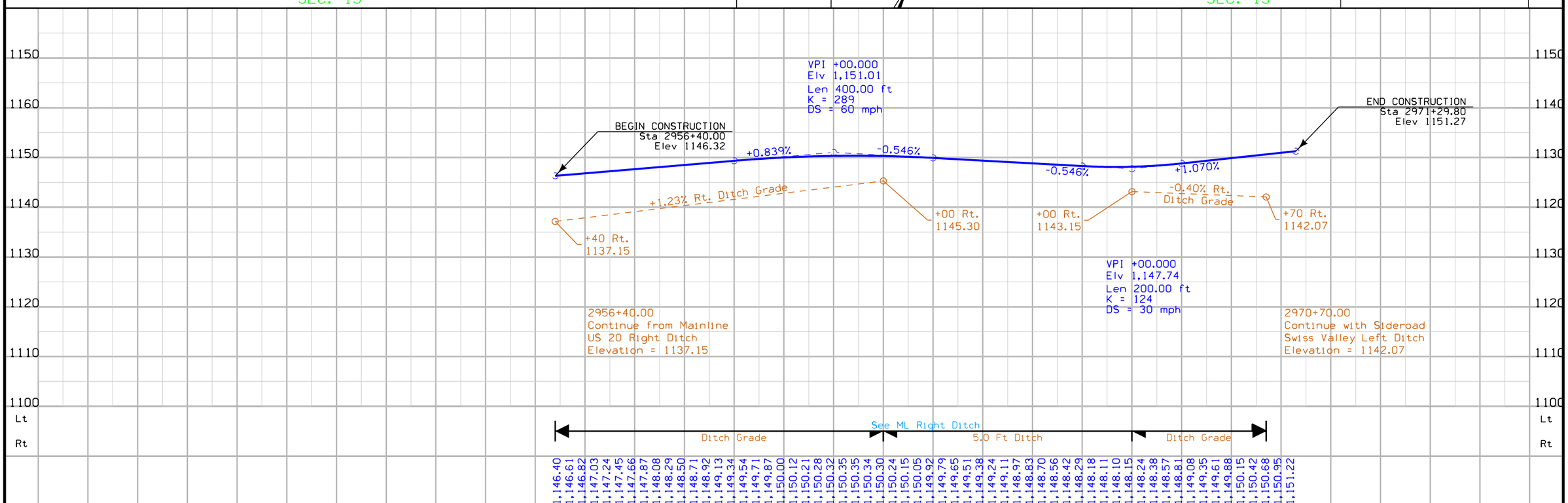
7:28:08 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121K01.sht





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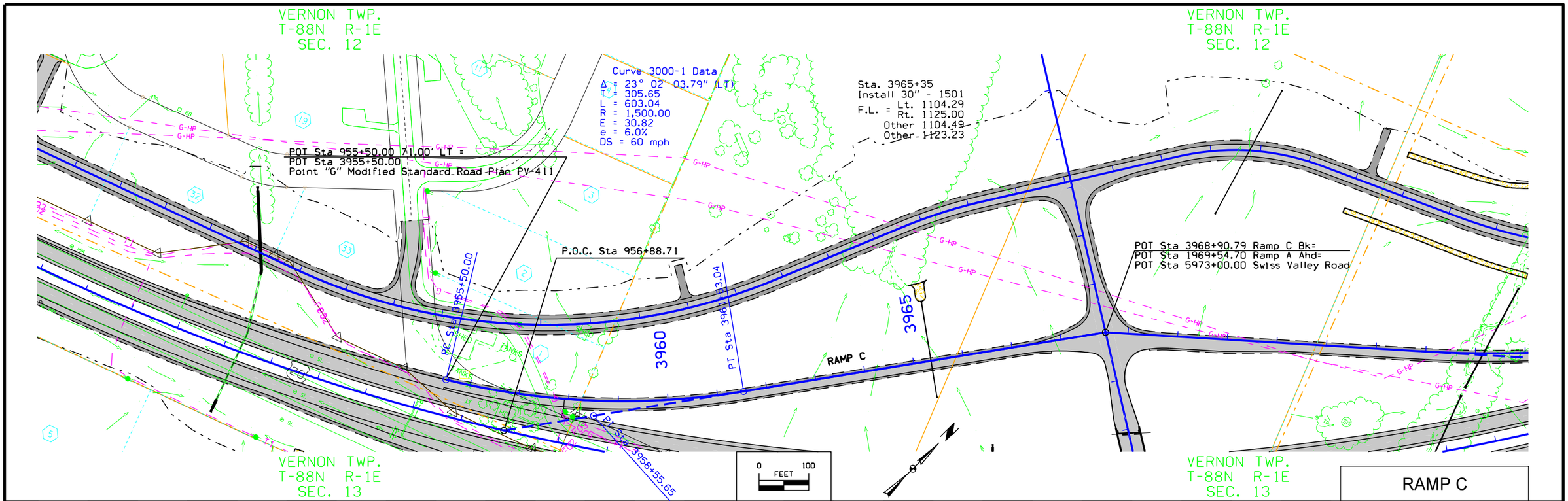
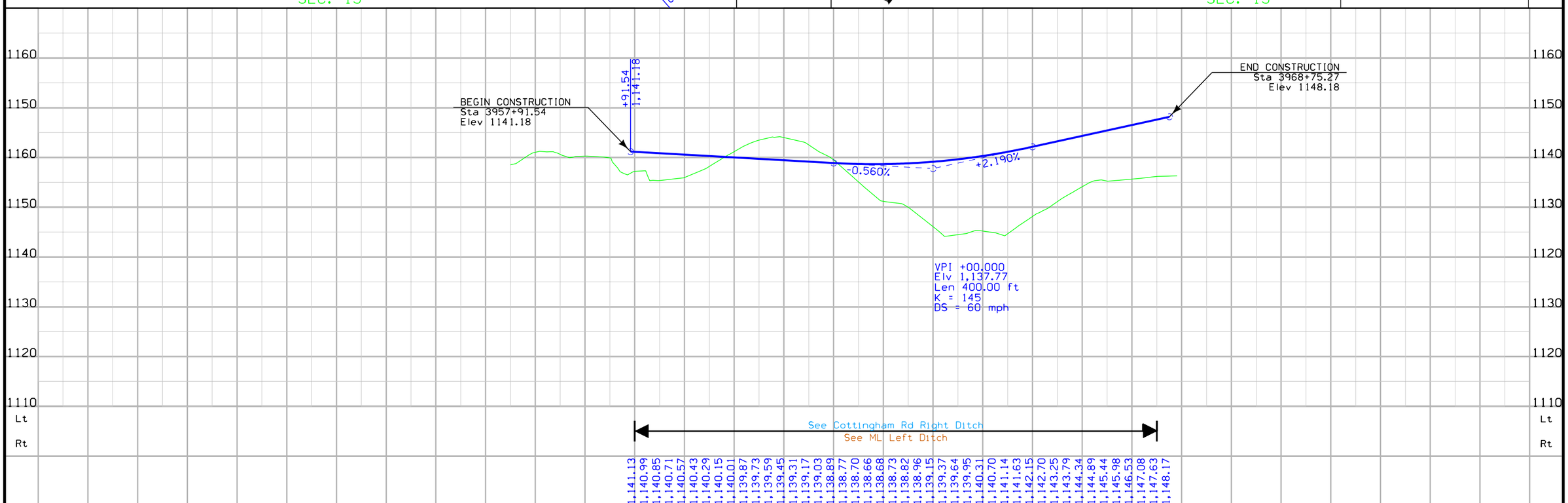
7:28:09 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121K01.sht





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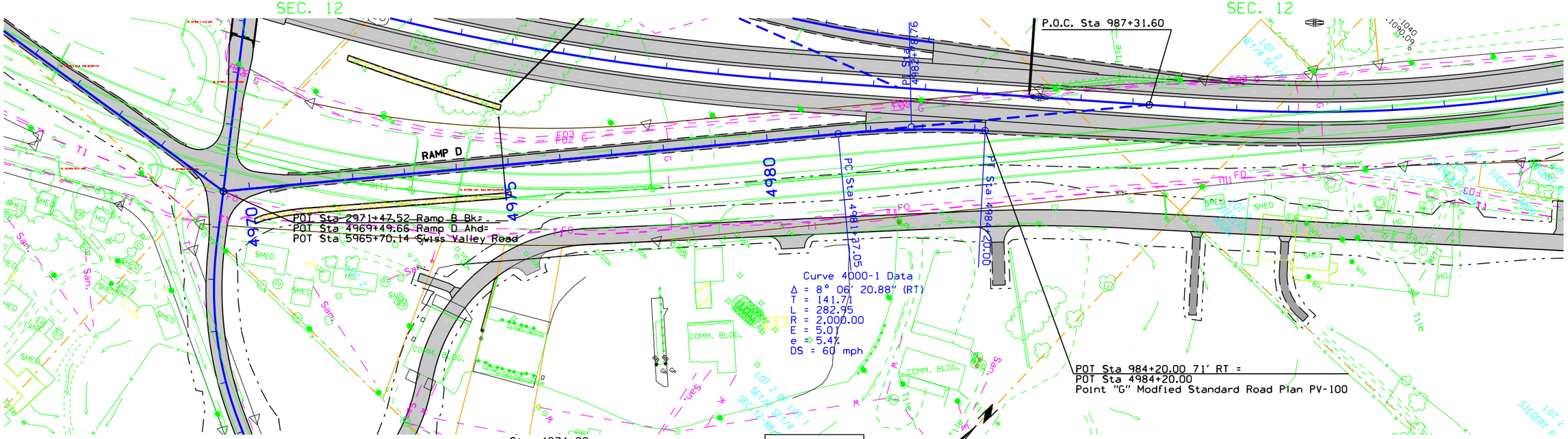
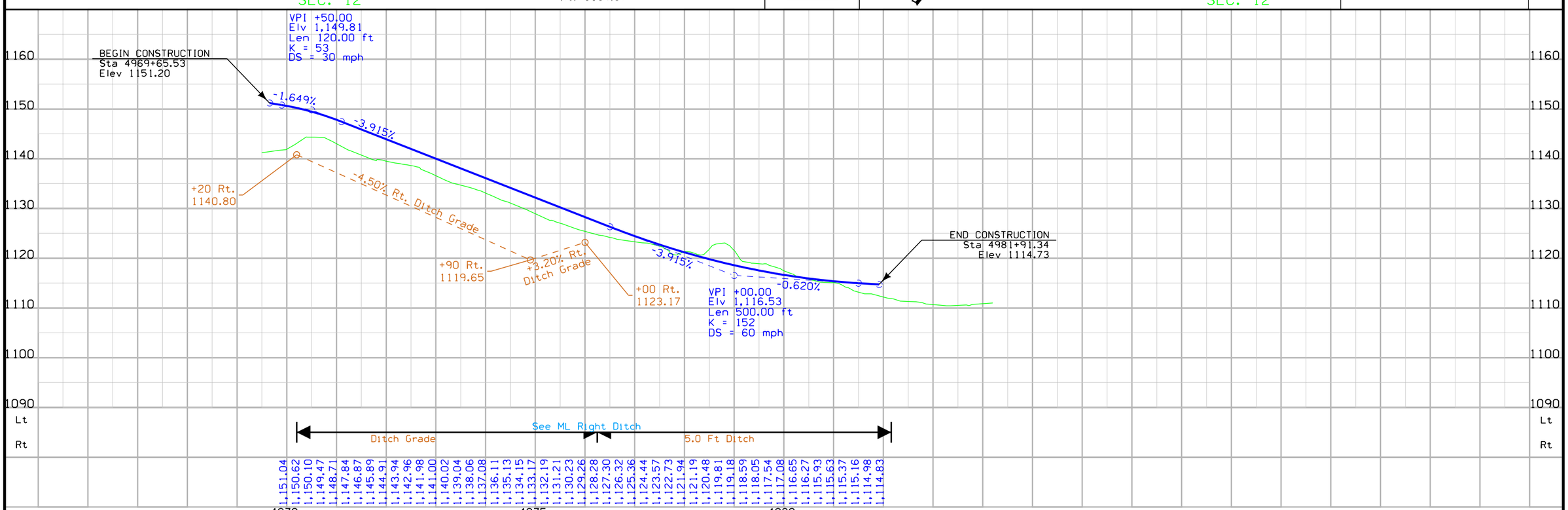
7:28:11 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\000000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121K01.sht



RAMP D



C	ENGLISH	IOWA DOT	DESIGN TEAM	COUNTY	PROJECT NUMBER	SHEET NUMBER K.8

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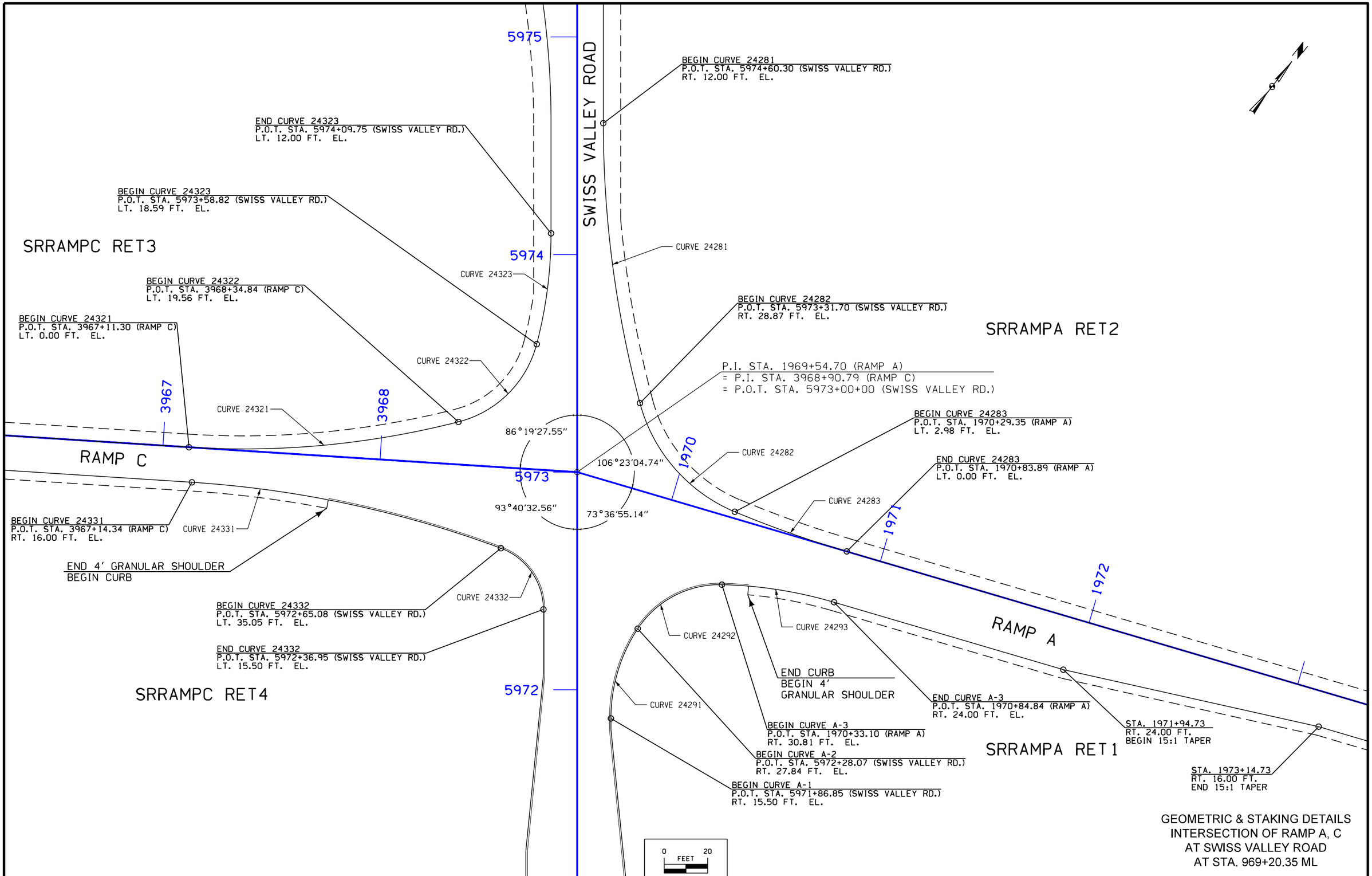
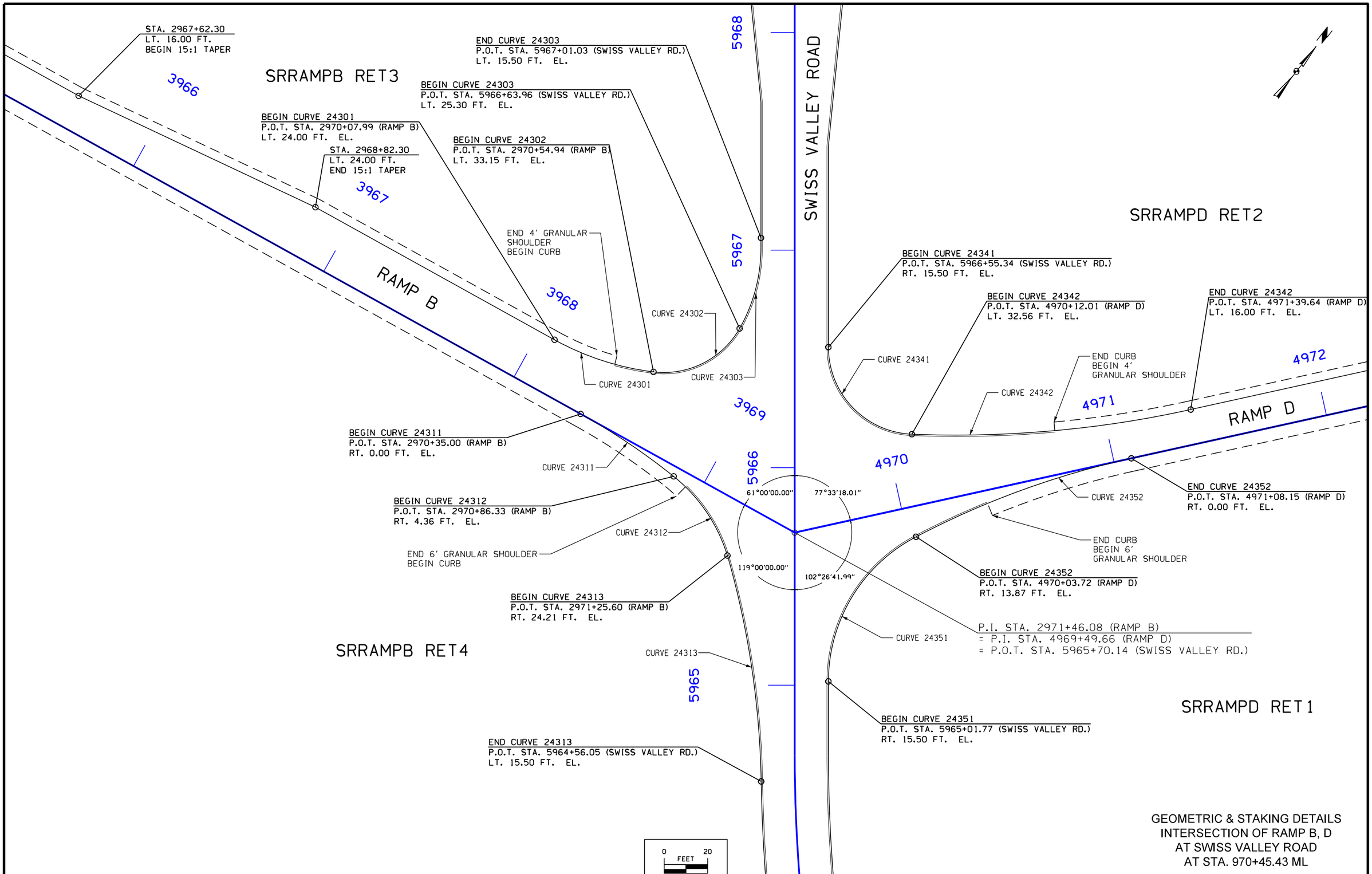


GEOMETRIC & STAKING DETAILS
INTERSECTION OF RAMP A, C
AT SWISS VALLEY ROAD
AT STA. 969+20.35 ML

ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER K.9

7:28:13 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121K01.sht

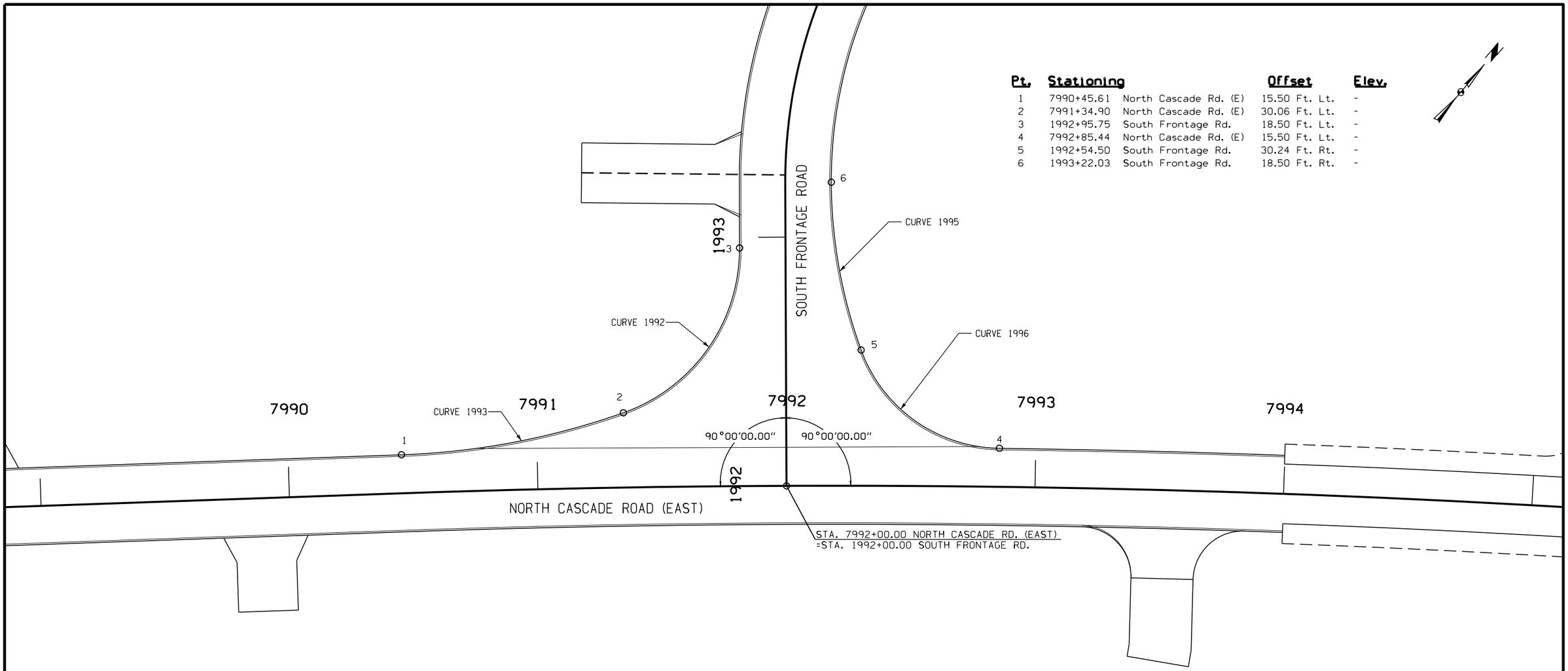


GEOMETRIC & STAKING DETAILS
INTERSECTION OF RAMP B, D
AT SWISS VALLEY ROAD
AT STA. 970+45.43 ML

ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER K.10

7:28:13 AM 1/19/2016 cpodany pw:\\PWAPPOMA001:NorthCentral_Omaha\Documents\001210\00000000224516\13.00_CAD\13.02_Roadway\13.02.01_(121)_Full_Build\31020121K01.sht

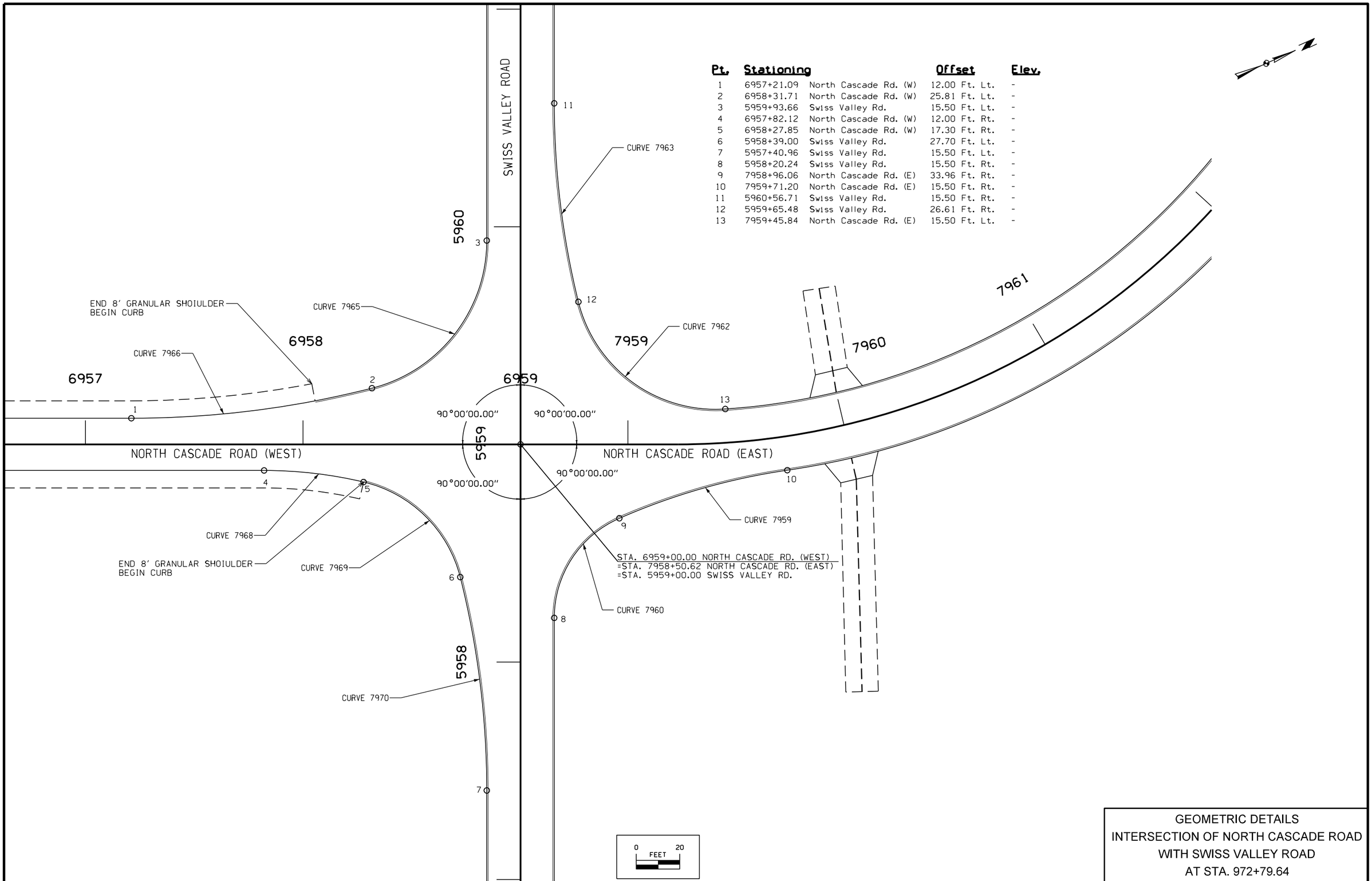
Pt.	Stationing		Offset	Elev.
1	7990+45.61	North Cascade Rd. (E)	15.50 Ft. Lt.	-
2	7991+34.90	North Cascade Rd. (E)	30.06 Ft. Lt.	-
3	1992+95.75	South Frontage Rd.	18.50 Ft. Lt.	-
4	7992+85.44	North Cascade Rd. (E)	15.50 Ft. Lt.	-
5	1992+54.50	South Frontage Rd.	30.24 Ft. Rt.	-
6	1993+22.03	South Frontage Rd.	18.50 Ft. Rt.	-



0 20 FEET

GEOMETRIC DETAILS
INTERSECTION OF NORTH CASCADE ROAD
WITH SOUTH FRONTAGE ROAD
AT STA. 999+96.47

Pt.	Stationing		Offset	Elev.
1	6957+21.09	North Cascade Rd. (W)	12.00 Ft. Lt.	-
2	6958+31.71	North Cascade Rd. (W)	25.81 Ft. Lt.	-
3	5959+93.66	Swiss Valley Rd.	15.50 Ft. Lt.	-
4	6957+82.12	North Cascade Rd. (W)	12.00 Ft. Rt.	-
5	6958+27.85	North Cascade Rd. (W)	17.30 Ft. Rt.	-
6	5958+39.00	Swiss Valley Rd.	27.70 Ft. Lt.	-
7	5957+40.96	Swiss Valley Rd.	15.50 Ft. Lt.	-
8	5958+20.24	Swiss Valley Rd.	15.50 Ft. Rt.	-
9	7958+96.06	North Cascade Rd. (E)	33.96 Ft. Rt.	-
10	7959+71.20	North Cascade Rd. (E)	15.50 Ft. Rt.	-
11	5960+56.71	Swiss Valley Rd.	15.50 Ft. Rt.	-
12	5959+65.48	Swiss Valley Rd.	26.61 Ft. Rt.	-
13	7959+45.84	North Cascade Rd. (E)	15.50 Ft. Lt.	-

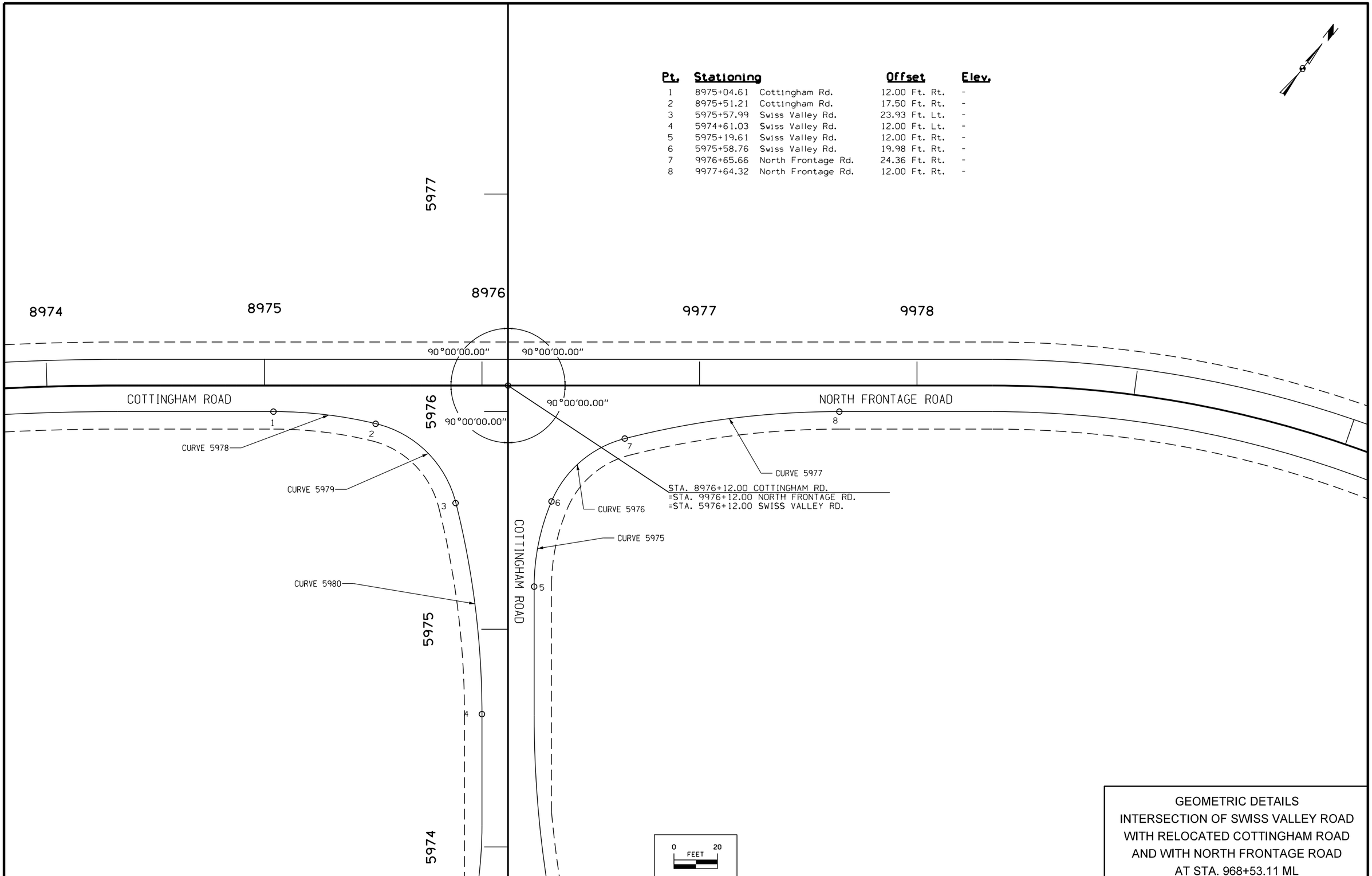


GEOMETRIC DETAILS
INTERSECTION OF NORTH CASCADE ROAD
WITH SWISS VALLEY ROAD
AT STA. 972+79.64

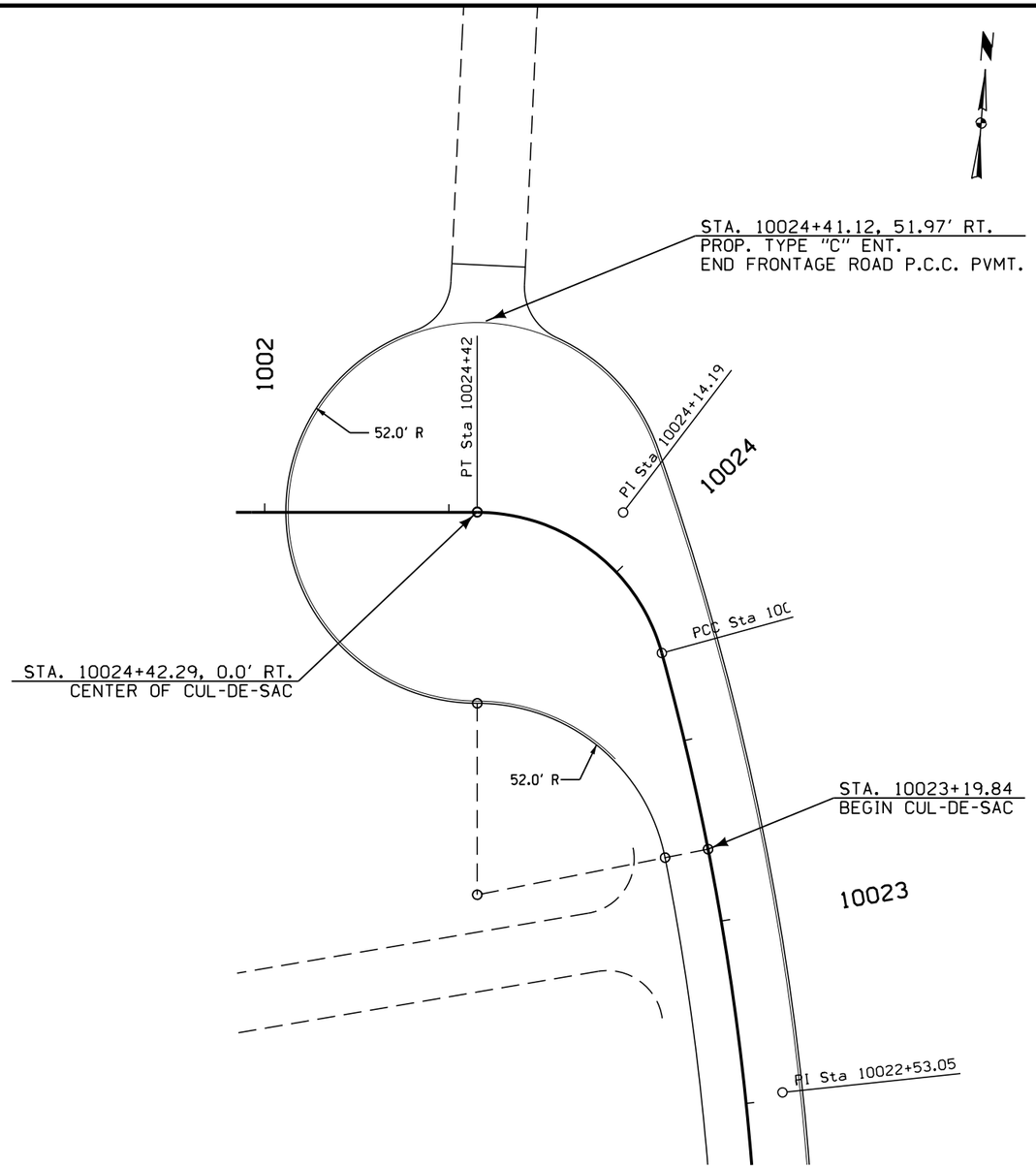
C	ENGLISH	IOWA DOT	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER L.2

7:28:24 AM 1/19/2016 cpodany c:\pwworking\oma\d1308983\31020121L01.sht

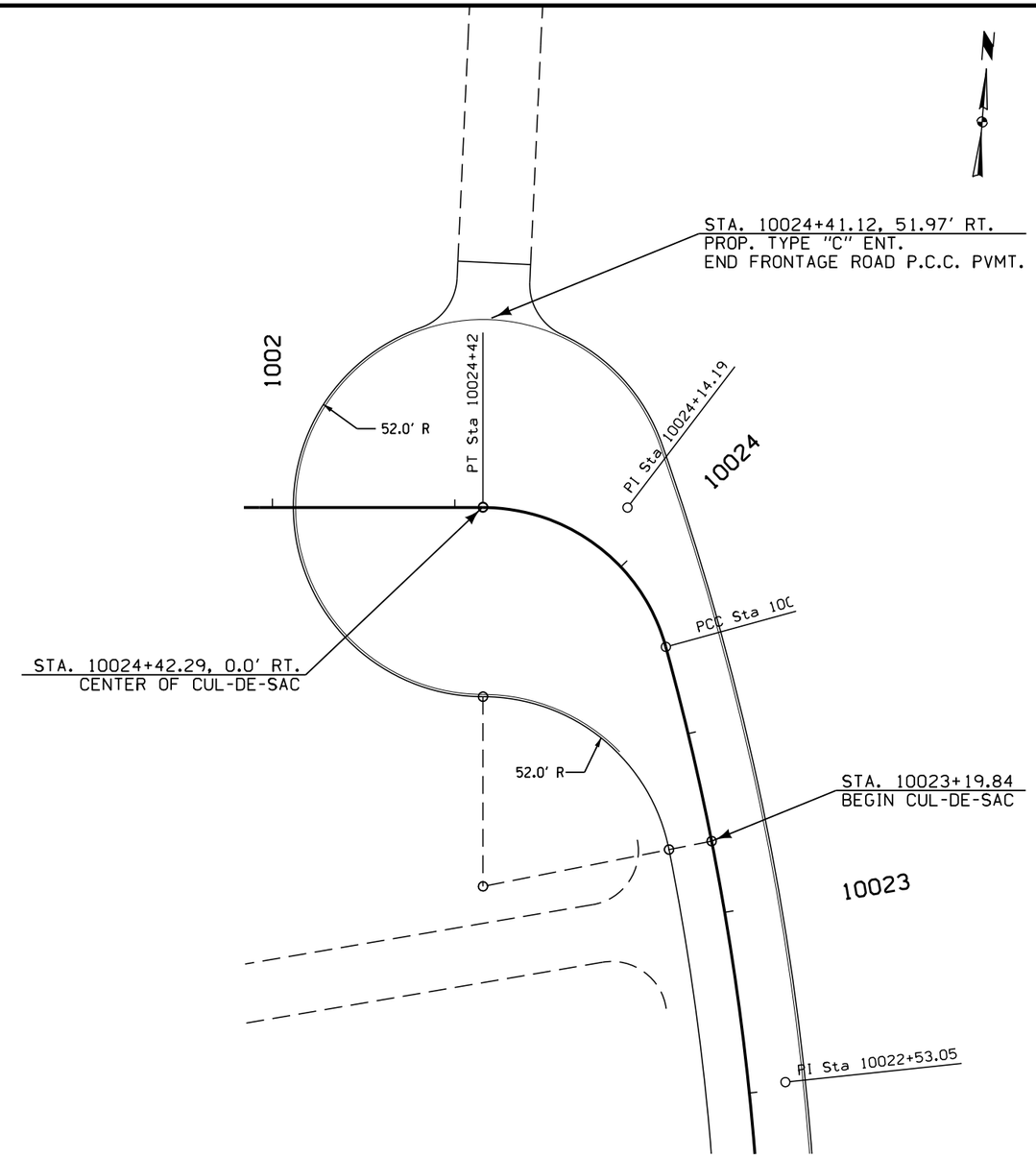
Pt.	Stationing		Offset	Elev.
1	8975+04.61	Cottingham Rd.	12.00 Ft. Rt.	-
2	8975+51.21	Cottingham Rd.	17.50 Ft. Rt.	-
3	5975+57.99	Swiss Valley Rd.	23.93 Ft. Lt.	-
4	5974+61.03	Swiss Valley Rd.	12.00 Ft. Lt.	-
5	5975+19.61	Swiss Valley Rd.	12.00 Ft. Rt.	-
6	5975+58.76	Swiss Valley Rd.	19.98 Ft. Rt.	-
7	9976+65.66	North Frontage Rd.	24.36 Ft. Rt.	-
8	9977+64.32	North Frontage Rd.	12.00 Ft. Rt.	-



GEOMETRIC DETAILS
INTERSECTION OF SWISS VALLEY ROAD
WITH RELOCATED COTTINGHAM ROAD
AND WITH NORTH FRONTAGE ROAD
AT STA. 968+53.11 ML



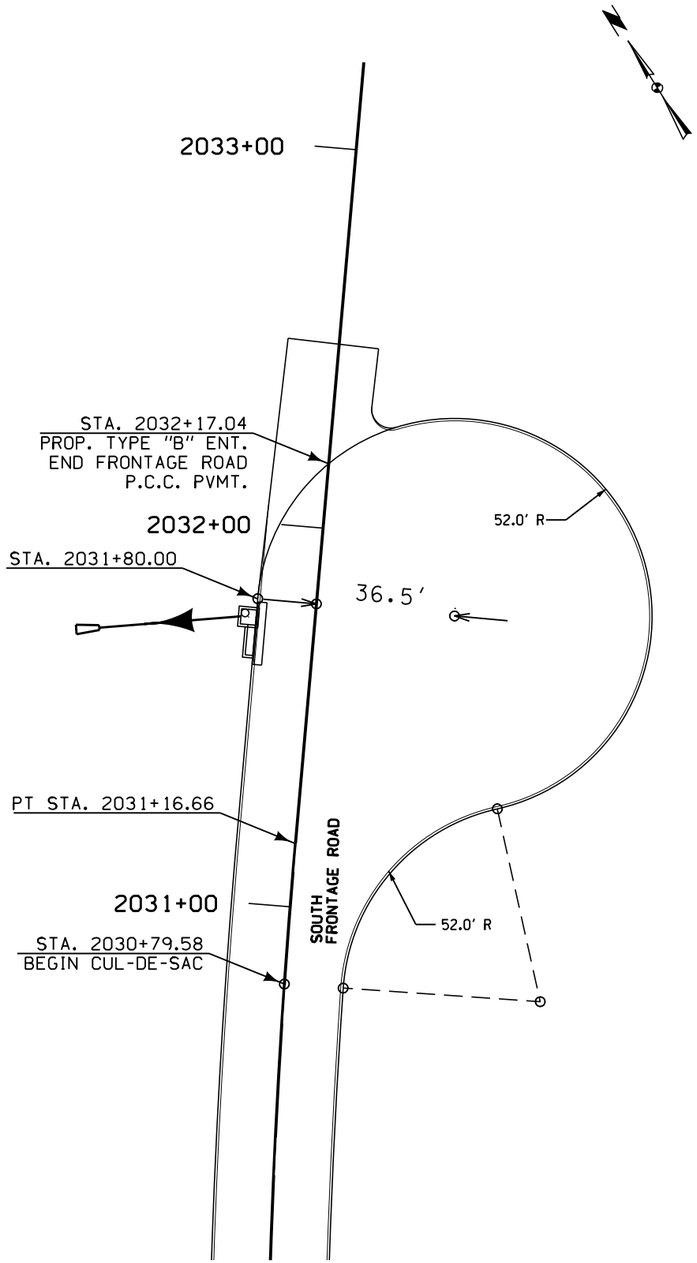
NORTH FRONTAGE ROAD CUL-DE-SAC JOINTS



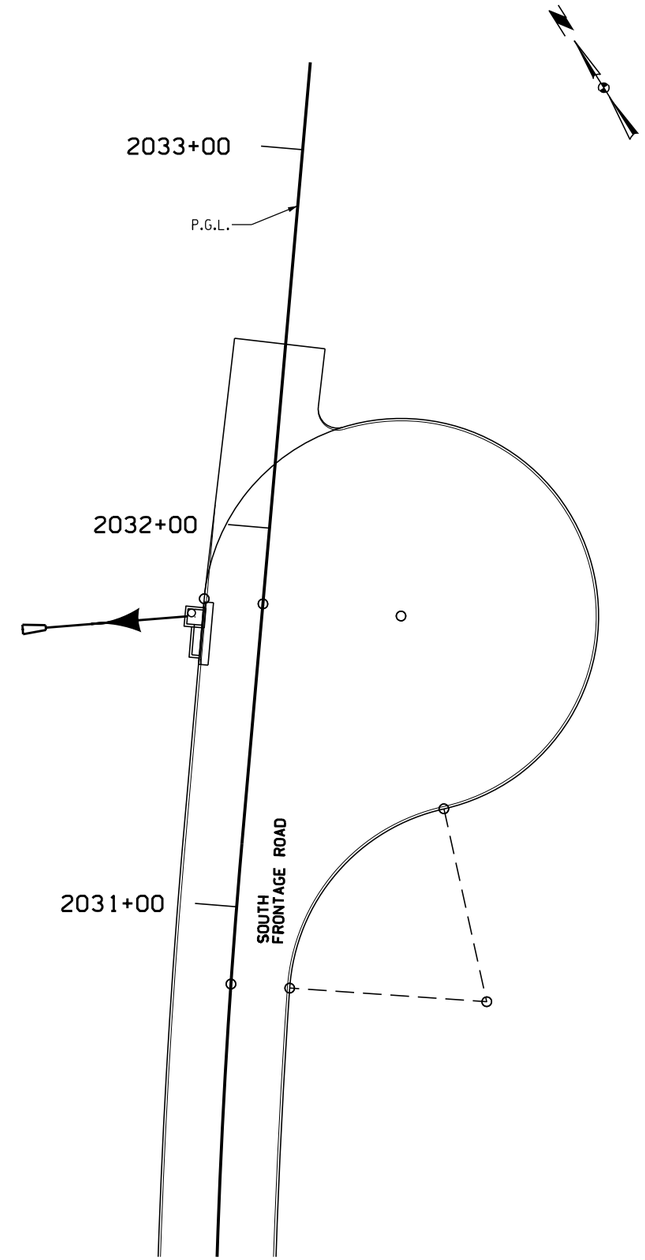
NORTH FRONTAGE ROAD CUL-DE-SAC - ELEVATIONS

0 FEET 20

GEOMETRIC DETAILS
CUL-DE-SAC ON
NORTH FRONTAGE ROAD
AT STA. 1018+48.99 ML



SOUTH FRONTAGE ROAD CUL-DE-SAC - JOINTS



SOUTH FRONTAGE ROAD CUL-DE-SAC - ELEVATIONS

0 20
FEET

GEOMETRIC DETAILS
CUL-DE-SAC ON
SOUTH FRONTAGE ROAD
AT STA. 1038+05.44 ML

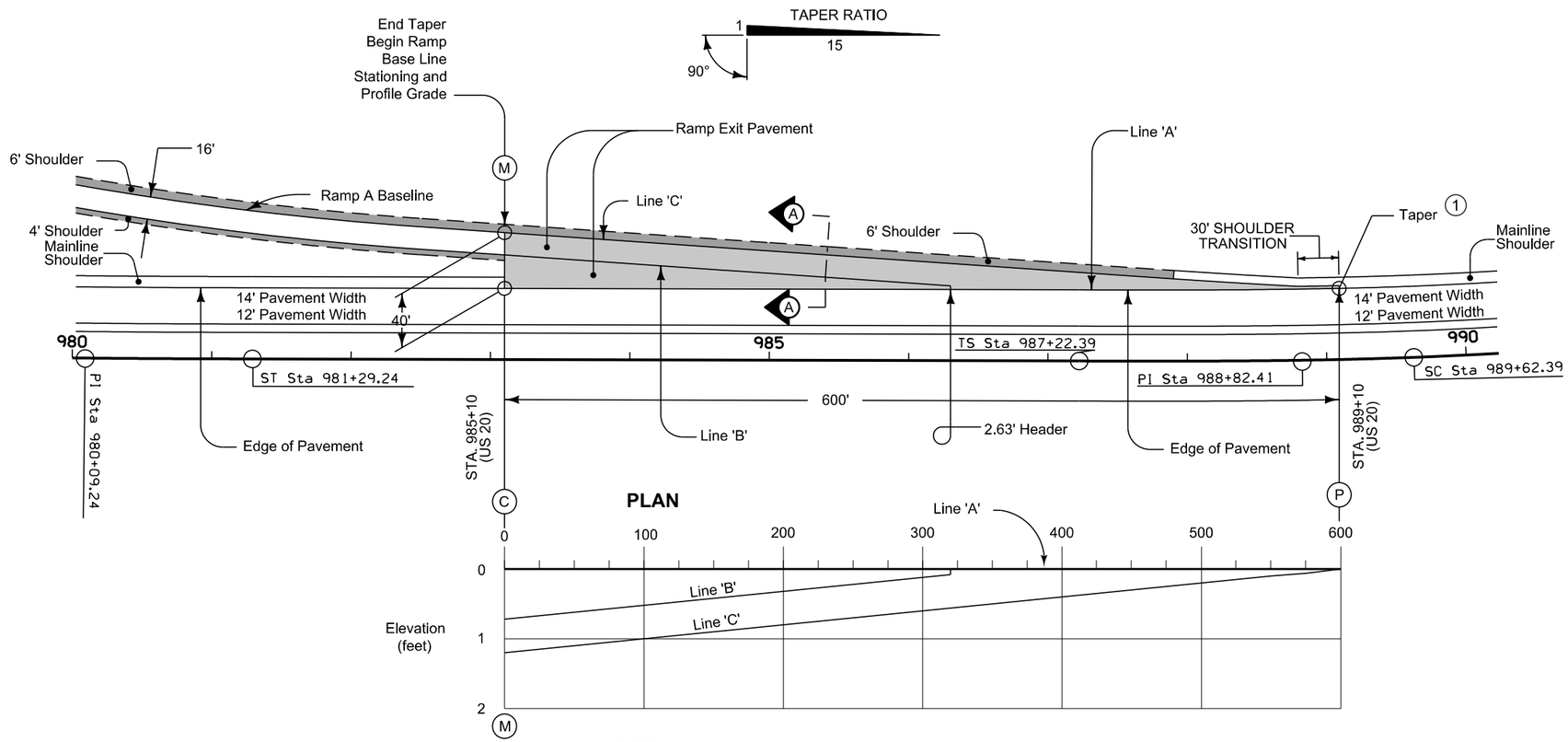
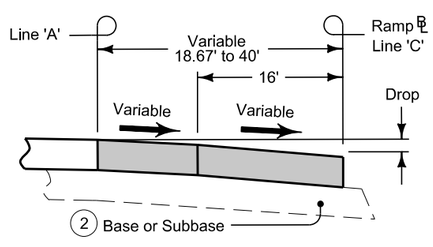


TABLE OF OFFSETS AND DROPS FOR 16' RAMP TAPER																										
DISTANCE (Ft.)	0	25	50	75	100	125	150	160	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
OFFSET (Ft.)	40	38.33	36.67	35.00	33.33	31.67	30.00	29.40	28.33	26.67	25.00	23.33	21.67	20.00	18.33	16.67	15.00	13.33	11.67	10.00	8.33	6.66	5.00	3.33	1.66	0
SLOPE (%)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.06	3.61	0
DROP (Ft.)	1.20	1.15	1.10	1.05	1.00	0.95	0.90	0.88	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.06	0



SECTION A-A

Construct ramp exit pavement the same thickness as mainline pavement.

Ramp exit pavement shown by shaded area is 1336 square yards.

For jointing layout, see Standard Road Plan PV-410, Sheet 2 of 2.

This design is based on 60 mph design speed at e max = 6%.

For location equivalent stations, see Tabulation 101-15.
Equate Point 'M' (Ramp Stationing) to Point 'C' (Mainline Stationing).

1. For header construction details at the beginning of taper, see Typical 7101 or Typical 7102.
2. Construct subbasde for ramp exit pavement the same thickness as mainline subbase.

MODIFIED STANDARD ROAD PLAN

REVISION
2 10-18-11

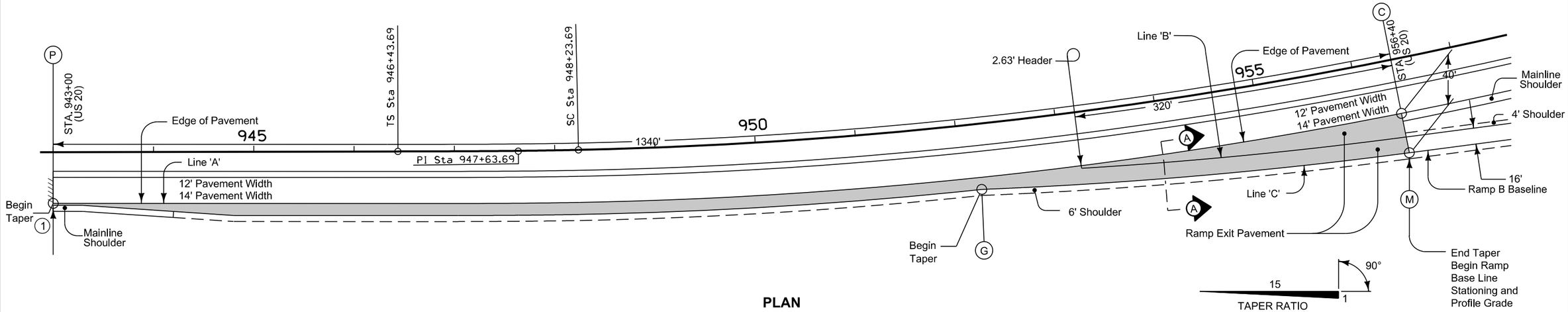
PV-410

SHEET 1

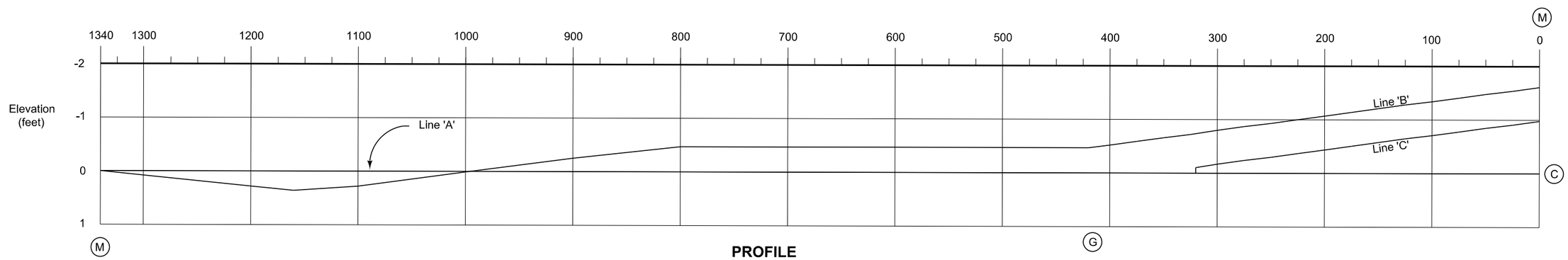
REVISIONS: Revised to accommodate the curvature of mainline lanes.

APPROVED BY DESIGN METHODS ENGINEER

DECELERATION TAPER FOR 16' EXIT RAMP



PLAN

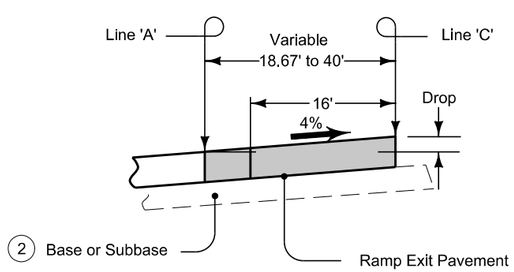


PROFILE

C

TABLE OF OFFSETS AND DROPS FOR 16' RAMP TAPER																															
DISTANCE (Ft.)	1340	1300	1200	1160	1100	1000	900	800	700	600	500	450	425	420	400	375	350	325	300	275	250	225	200	175	150	125	100	75	50	25	0
OFFSET (Ft.)	0	2.67	9.33	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	13.33	15.00	16.67	18.33	20.00	21.67	23.33	25.00	26.67	28.33	30.00	31.67	33.33	35.00	36.67	38.33	40
SLOPE (%)	3.0	3.00	3.00	3.00	2.30	0.00	2.14	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
DROP (Ft.)	0	0.08	0.28	0.36	0.28	0.01	-0.26	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.53	-0.60	-0.67	-0.73	-0.80	-0.87	-0.93	-1.00	-1.07	-1.13	-1.20	-1.27	-1.33	-1.40	-1.47	-1.53	-1.60

M G M



SECTION A-A

Construct ramp exit pavement the same thickness as mainline pavement.

Ramp exit pavement shown by shaded area is 2350 square yards.

For jointing layout, see Modified Road Plan PV-410. See Sheet U.3.

This design is based on 60 mph design speed at e max = 6%.

For location equivalent stations, see Tabulation 101-15.
Equate Point 'M' (Ramp Stationing) to Point 'C' (Mainline Stationing).

1 Ramp exit subbase shall be the same thickness as mainline subbase.

2 Refer to detail project plans for mainline and ramp alignment and grade data.

MODIFIED STANDARD ROAD PLAN

REVISION	
2	10-18-11

PV-410

SHEET 1 of 2

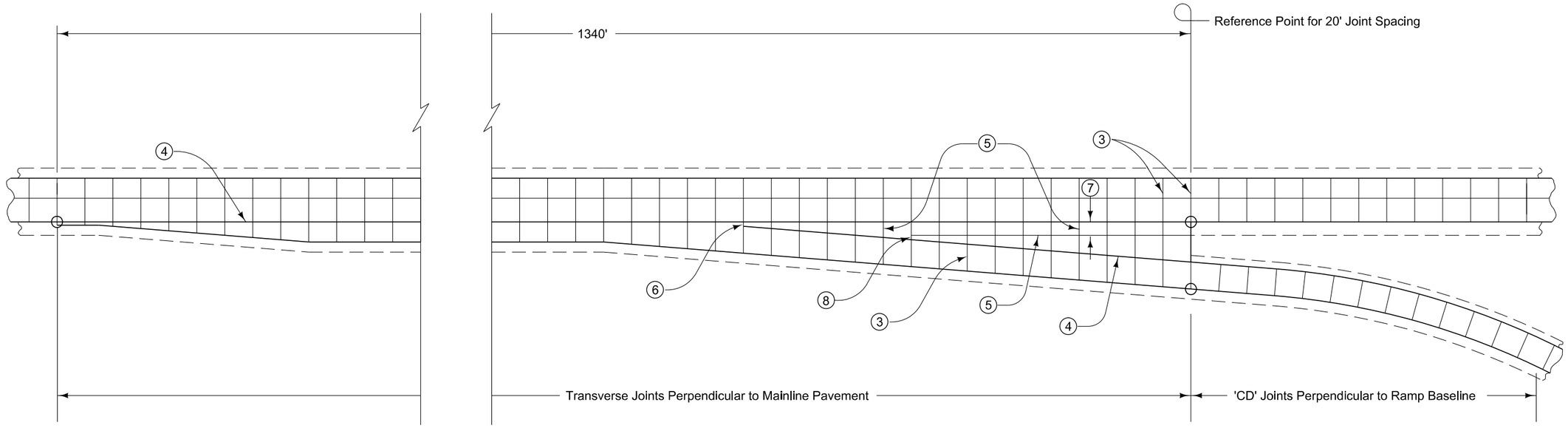
REVISIONS: Revised to accommodate the curvature of mainline lanes.

APPROVED BY DESIGN METHODS ENGINEER

DECELERATION TAPER FOR 16' EXIT RAMP

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER U.2

7:28:38 AM 1/19/2016 cpodany c:\pwworking\oma\d1308983\31020121U01.sht



16' EXIT RAMP

③ 'CD' Joints at 20' spacing.

④ 'BT-2' joint for existing pavement or 'KT-2' for new pavement .

⑤ 'C' Joint.

⑥ 'B' Joint. 2' minimum. 4' maximum.

⑦ 10' minimum or equal to mainline shoulder width.

⑧ 'B' or 'C' Joint. 2' minimum. 4' maximum.

MODIFIED	REVISION 2 10-18-11
STANDARD ROAD PLAN	**PV-410** SHEET 2 of 2

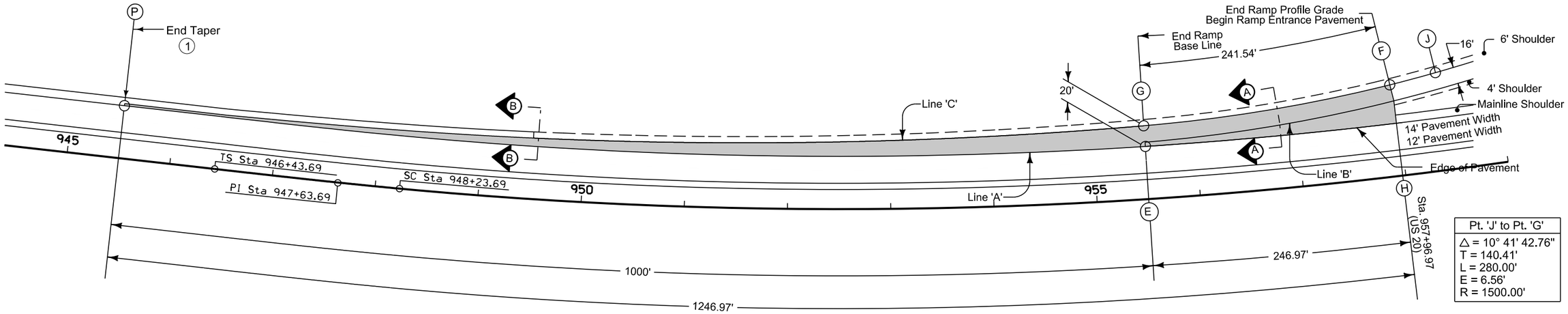
REVISIONS: Revised to accommodate the curvature of mainline lanes.

APPROVED BY DESIGN METHODS ENGINEER

DECELERATION TAPER FOR 16' EXIT RAMP

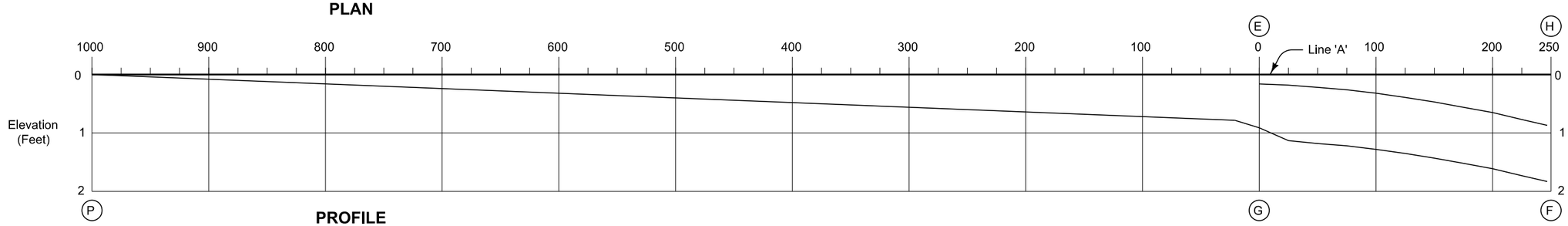
FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER U.3

7:28:39 AM 1/19/2016 cpodany c:\pwworking\oma\d1308983\31020121U01.sht



Pt. 'J' to Pt. 'G'
△ = 10° 41' 42.76"
T = 140.41'
L = 280.00'
E = 6.56'
R = 1500.00'

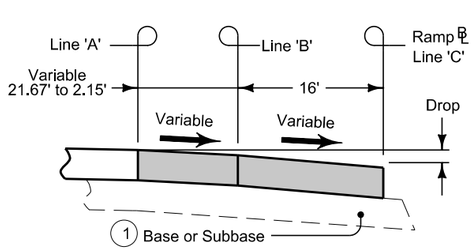
PLAN



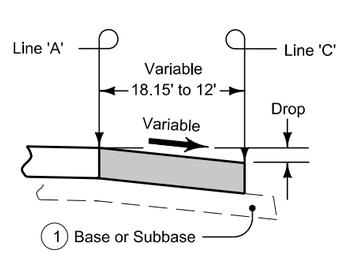
PROFILE

TABLE OF OFFSETS AND DROPS FOR 16' RAMP TAPER

1000	900	800	700	600	500	400	300	200	100	75	50	25	0	25	50	75	100	125	150	175	200	225	246.97	Dist. From Pt. E Along I-29 NB B (Ft.)	
													4.00	4.61	5.48	6.62	8.03	9.71	11.66	13.88	16.37	19.13	21.76	Offset (Ft.)	From Line 'A' To Line 'B'
													4.13	4.90	5.67	← Constant 5.9% Slope →								Slope (%)	
													0.17	0.23	0.31	0.39	0.47	0.57	0.69	0.82	0.97	1.13	1.28	Drop (Ft.)	
													← Constant 16.0' Offset →											Offset (Ft.)	From Line 'B' To Line 'C'
													4.13	4.90	5.67	← Constant 5.9% Slope →								Slope (%)	
													0.66	0.78	0.91	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	Drop (Ft.)	
0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	18.50	19.00	19.50												Offset (Ft.)	From Line 'A' To Line 'C'
3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00												Slope (%)	
0.00	0.06	0.12	0.24	0.32	0.40	0.48	0.56	0.64	0.72	0.74	0.76	0.78	0.83	1.01	1.22	1.33	1.42	1.52	1.63	1.76	1.91	2.07	2.23	Drop (Ft.)	
													0.00	24.62	49.24	73.87	98.51	123.16	147.81	172.48	197.16	221.86	241.38	Distance From Point G Along Line 'C' (Ft.)	



SECTION A-A



SECTION B-B

Construct ramp entrance pavement the same thickness as mainline pavement.

Ramp entrance pavement shown by shaded area is 1824 square yards.

For jointing layout, see Standard Road Plan PV-411. See Sheet 2 of 2.

This design is based on 60 mph design speed at e max = 6%.

For location equivalent stations, see Tabulation 101-15.

1. Ramp entrance subbase shall be the same thickness as mainline subbase.
2. Refer to detail project plans for mainline and ramp alignment and grade data.

MODIFIED STANDARD ROAD PLAN

REVISION	
2	10-18-11

PV-411

SHEET 1

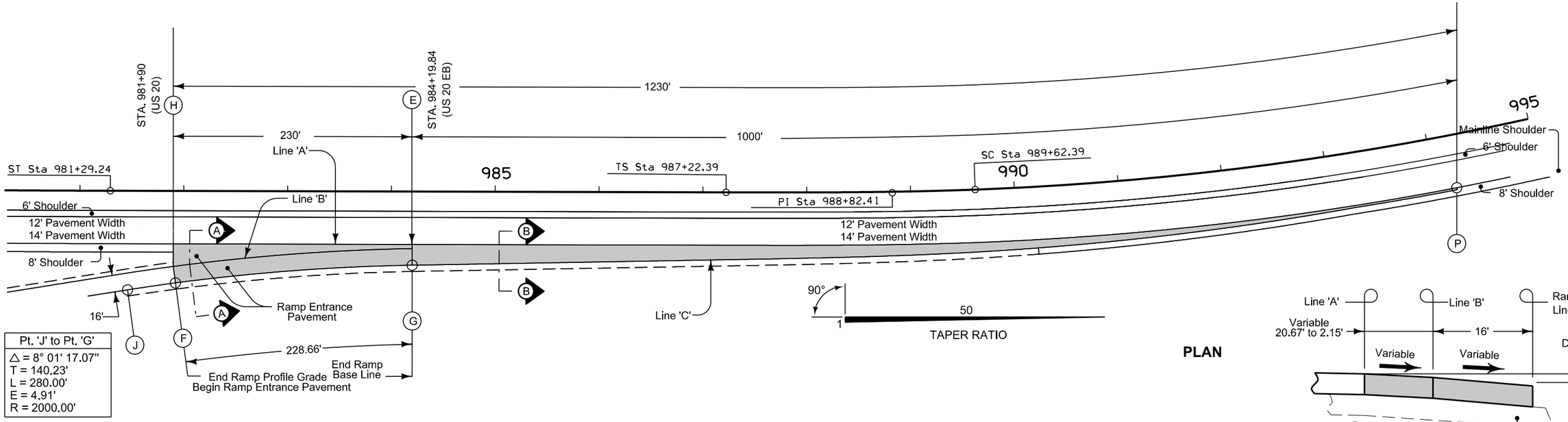
REVISIONS: Revised to accommodate the curvature of mainline lanes.

APPROVED BY DESIGN METHODS ENGINEER

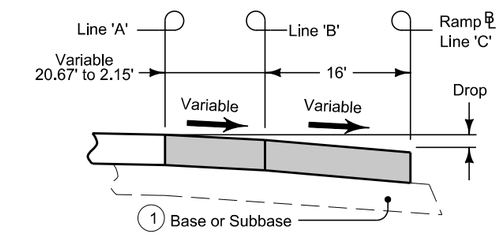
ACCELERATION TAPER FOR 16' ENTRANCE RAMP

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER U.4

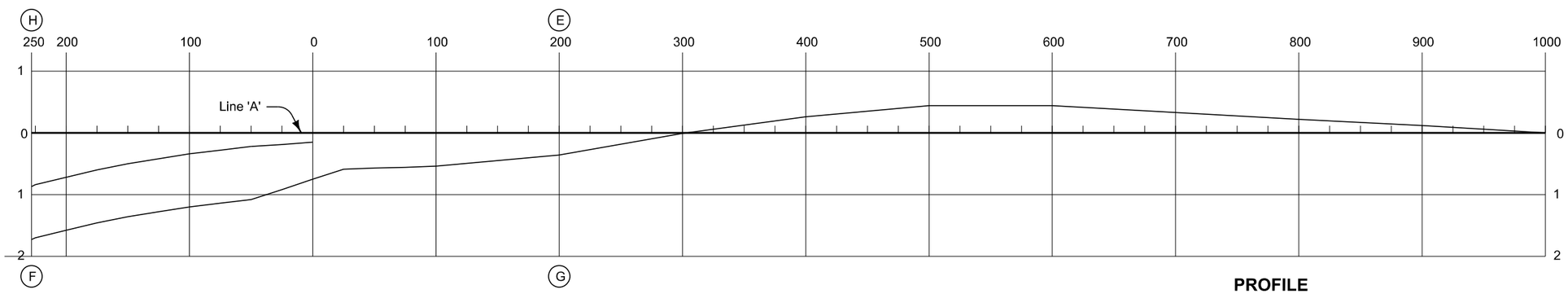
7:28:39 AM 1/19/2016 cpodany c:\pwworking\oma\d1308983\31020121U01.sht



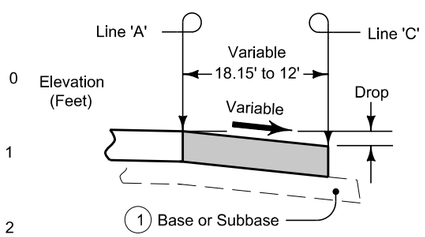
Pt. 'J' to Pt. 'G'
△ = 8° 01' 17.07"
T = 140.23'
L = 280.00'
E = 4.91'
R = 2000.00'



SECTION A-A



PROFILE



SECTION B-B

TABLE OF OFFSETS AND DROPS FOR 16' RAMP TAPER

		H										E													
Dist. From Pt. E Along I-29 NB ℄ (Ft.)		229.83	225	200	175	150	125	100	75	50	25	0	25	50	75	100	200	300	400	500	600	700	800	900	1000
From Line 'A' To Line 'B'	Offset (Ft.)	21.76	21.11	17.96	15.11	12.59	10.38	8.48	6.89	5.62	4.65	4.00													
	Slope (%)	← Constant 4.0% Slope →										3.78													
	Drop (Ft.)	0.87	0.84	0.72	0.60	0.50	0.42	0.34	0.28	0.22	0.19	0.15													
From Line 'B' To Line 'C'	Offset (Ft.)	← Constant 16.0' Offset →																							
	Slope (%)	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	4.58	3.78													
	Drop (Ft.)	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.73	0.60													
From Line 'A' To Line 'C'	Offset (Ft.)												19.50	19.00	18.50	18.00	16.00	14.00	12.01	10.03	8.06	6.10	4.13	2.16	0
	Slope (%)												3.00	3.00	3.00	3.00	2.28	0.06	2.16	4.36	5.30	5.30	5.30	5.30	5.30
	Drop (Ft.)	1.73	1.70	1.58	1.46	1.36	1.28	1.20	1.14	1.08	0.92	0.75	0.59	0.57	0.56	0.54	0.36	0.01	0.26	0.44	0.44	0.32	0.22	0.11	0
Distance From Point Ⓖ Along Line 'C' (Ft.)		228.66	223.66	198.66	173.70	148.77	123.87	99.00	74.15	49.31	24.49	0.00													
		J										G													

Construct ramp entrance pavement the same thickness as mainline pavement.

Ramp entrance pavement shown by shaded area is 1813 square yards.

For jointing layout, see Standard Road Plan PV-411. See Sheet 2 OF 2.

This design is based on 60 mph design speed at e max = 6%.

For location equivalent stations, see Tabulation 101-15.

(1) Ramp entrance subbase shall be the same thickness as mainline subbase.

(2) Refer to detail project plans for mainline and ramp alignment and grade data.

MODIFIED STANDARD ROAD PLAN

REVISION	
2	10-18-11

PV-411

SHEET 1

REVISIONS: Revised to accommodate the curvature of mainline lanes.

APPROVED BY DESIGN METHODS ENGINEER

ACCELERATION TAPER FOR 16' ENTRANCE RAMP

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER U.5

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Furnish Precast Stock Pass complying with Section 2415 of the Standard Specifications. Install according to Section 2416 of the Standard Specifications.

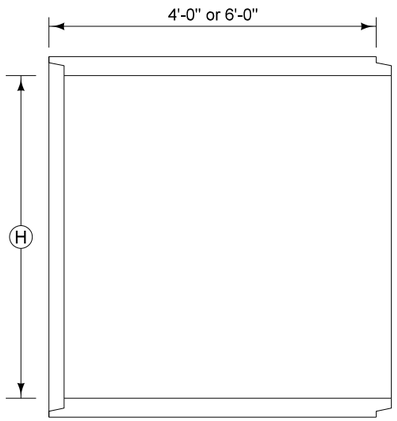
Seal joints and install joint ties according to the manufacturer's recommendations.

Details indicated are typical. Alternate designs or methods may be submitted to the Engineer for approval.

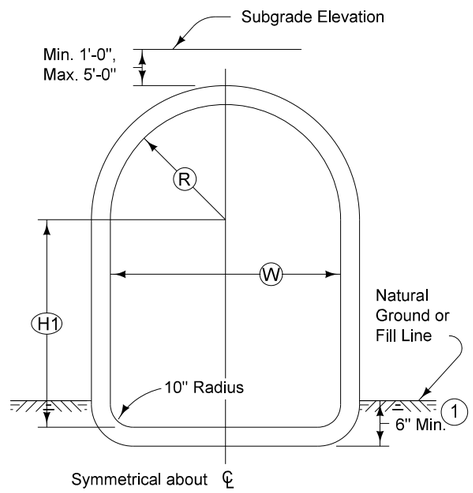
Payment is full compensation for furnishing and installating stockpass and apron.

(1) Perform excavation below ground line using a template conforming to the shape of the stockpass.

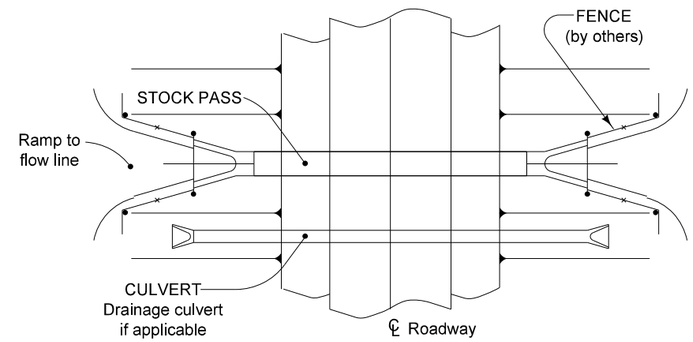
Possible Contract Items:
- Stockpass Apron, 4' x 6' Precast Concrete
- Stockpass Apron, 5' x 7' Precast Concrete
- Stockpass, 4' x 6' Precast Concrete
- Stockpass, 5' x 7' Precast Concrete



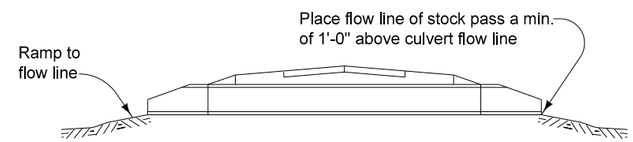
DETAIL OF INTERMEDIATE UNIT



END VIEW OF INTERMEDIATE UNIT



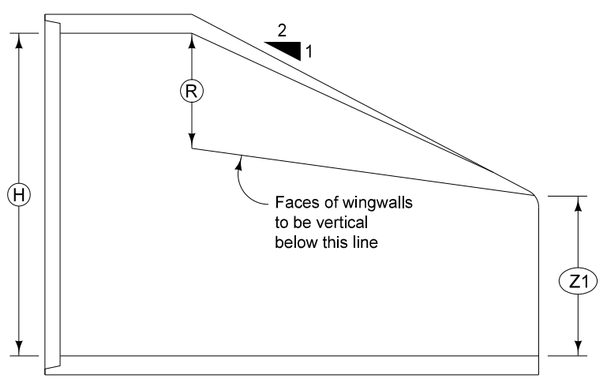
PLAN



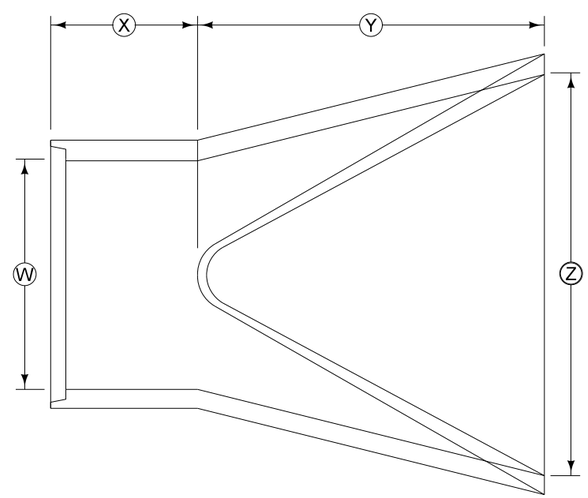
LONGITUDINAL SECTION

Structure	DIMENSIONS FOR APRON						
	W	H	R	X	Y	Z	Z1
4' x 6'	4'	6'	2'	3'-2"	7'	7'	2'-11"
5' x 7'	5'	7'	2'-6"	1'-9"	7'-5½"	7'	3'-6"

Structure	DIMENSIONS FOR INTERMEDIATE UNIT			
	W	H	R	H1
4' x 6'	4'	6'	2'	4'
5' x 7'	5'	7'	2'-6"	4'-6"



APRON LONGITUDINAL SECTION



PLAN OF APRON

REVISION	
5	04-15-14

STANDARD ROAD PLAN

RF-8

SHEET 1 of 1

REVISIONS: Added note to seal joints and install joint ties.

APPROVED BY DESIGN METHODS ENGINEER

PRECAST STOCK PASS

FILE NO.	ENGLISH	DESIGN TEAM HDR\Iowa DOT	DUBUQUE COUNTY	PROJECT NUMBER NHS-020-9(121)--19-31	SHEET NUMBER U.6

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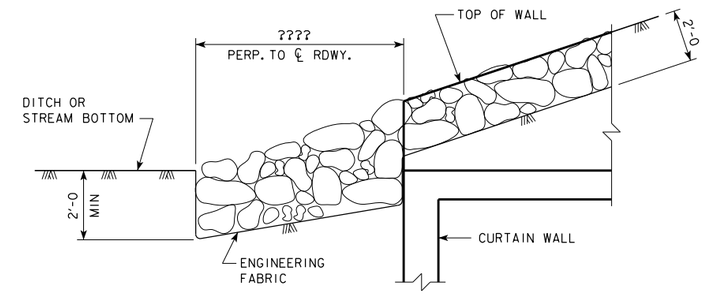
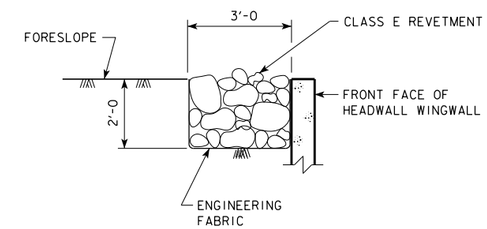


VIEW B-B



SECTION A-A

TYPICAL DETAILS

CONSTRUCTION NOTES:

CLASS E REVETMENT SHALL BE USED AND PLACED ACCORDING TO ARTICLE 2507.03, OF THE STANDARD SPECIFICATIONS.
THE ENGINEERING FABRIC SHALL MEET THE MATERIAL REQUIREMENTS IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

REVETMENT PROTECTION DETAILS