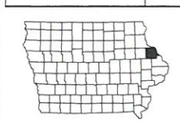
GRADING
NHSX-032-1(38)--3H-31
LETTING DATE
JULY 19, 2016

DUBUQUE COUNTY

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
B Sheets	**Typical Cross Sections and Details**
B.1 - 14	Grading Typical Cross Sections and Details
C Sheets	**Quantities and General Information**
C.1 - 23	Quantities and General Information
CS Sheets	**Soils Quantity Sheets**
CS.1	Soils Quantity Sheets
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Legend Sheet
* D.2 - 16	South West Arterial Plan and Profile Sheets
AECOM E.01	AECOM Sheet E.01 (For Information Only)
E Sheets	**Side Road Plan and Profile Sheets**
* E.1 - 3	US 20 Plan and Profile Sheets
* E.4 - 5	East Access Connector Road Plan and Profile Sheet
* E.6	Cousins Road Plan and Profile Sheet
* E.7	Seippel Road Plan and Profile Sheet
* E.8	Relocated Channel Plan and Profile Sheet
* E.9	Stone Valley Road Plan and Profile Sheet
G Sheets	**Geometric Layout Sheets**
* G.1 - 6	Geometric Layout Sheets
H Sheets	**Right of Way Plan Sheets**
* H.1 - 9	Right of Way Plan Sheets
J Sheets	**Traffic Control and Staging**
J.1	Traffic Control and Staging Notes
J.2 - 3	Detour Plans
J.4	Special Sign Details
K Sheets	**Interchange Sheets**
* K.1 - 2	Interchange Layout Sheets
* K.3	RAMP "A" Plan and Profile Sheet
* K.4	RAMP "B" Plan and Profile Sheet
* K.5	RAMP "C" Plan and Profile Sheet
* K.6	RAMP "D" Plan and Profile Sheet
L Sheets	**Intersection Detail Sheets**
L.1 - 17	Intersection Detail Sheets
M Sheets	**Sanitary, Water and Storm Sheets**
* M.1 - 9	Sanitary Sewer Sheets
* M.10 - 42	Water Main Sheets
* M.43 - 49	Storm Sewer Plan and Profile Sheets
* M.50	Culvert Detail
N Sheets	**Fiber Optic Plan Sheets**
* N.1 - 10	Fiber Optic Plan Sheets
Q Sheets	**Soils Sheets**
* Q.1 - 23	Soils Plan and Profile Sheets
S Sheets	**Recreational Trail Sheets**
* S.1 - 7	Reacreational Trail Sheets
SPS Sheets	**Soils Profile Sheets**
SPS.1 - 2	Soils Profile Sheets
T Sheets	**Earthwork Sheets**
T.1 - 15	Earthwork Tabulation
T.16 - 18	Earthwork Match Line Plan Sheets
U Sheets	**Design Detail Sheets**
U.1 - 11	Design Detail Sheets
* U.12 - 16	Culvert Design Details
U.17	Median Barricade Detail
V Sheets	**RCB Culvert Sheets**
* V.1 - 12	RCB Culvert Sheets
* V.13 - 16	Ramp Bridge Sheets
W Sheets	**Mainline Cross Section Sheets**
* W.1 - 68	Mainline Cross Section Sheets
X Sheets	**Sideroad Cross Section Sheets**
* X.1 - 130	Sideroad Cross Section Sheets
Y Sheets	**Ramp Cross Section Sheets**
* Y.1 - 67	Ramp Cross Section Sheets

* Color Plan Sheets



whks
engineers + planners + land surveyors

IOWA DOT
Highway Division
PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

DUBUQUE COUNTY

GRADING

US 20 AND SOUTHWEST ARTERIAL IA 32

From Existing US 20 / Seippel Road Intersection
3800' South, 1900' North, 2800' West and 2200' East on New Alignment

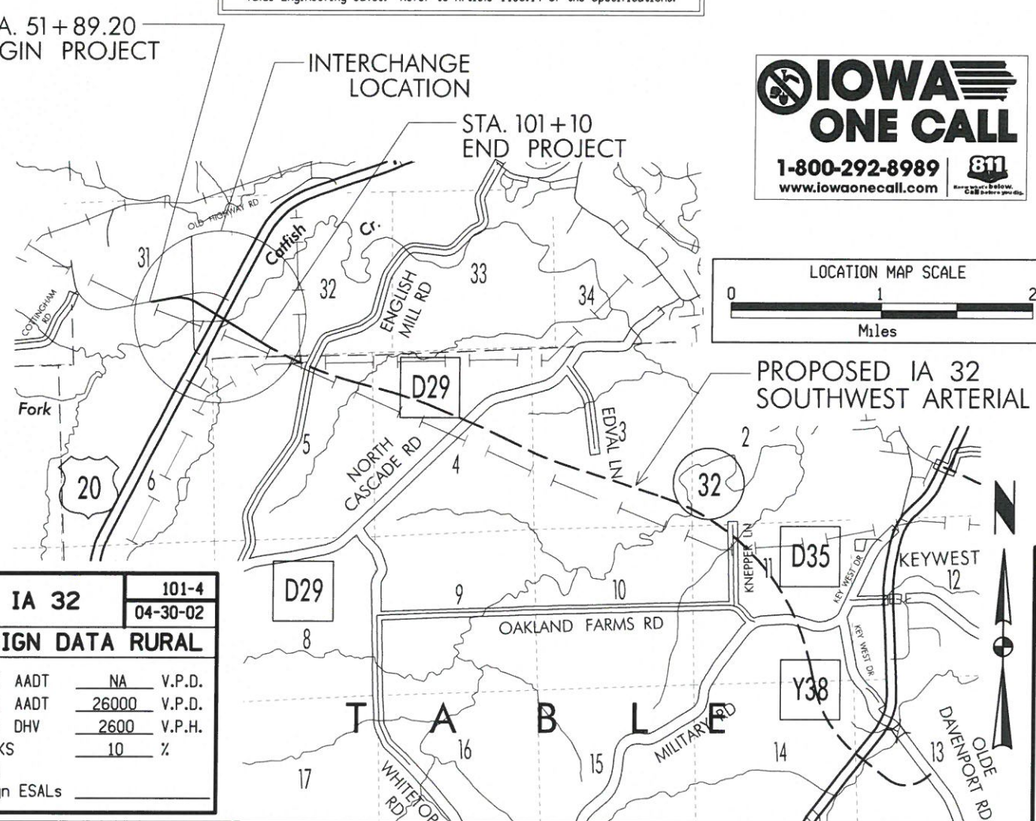
SCALES: As Noted

PROJECT NO. NHSX-032-1(38)--3H-31

TOTAL
514
PROJECT IDENTIFICATION NUMBER
97-31-032-010
PROJECT NUMBER
NHSX-032-1(38)--3H-31
R.O.W. PROJECT NUMBER
HDP-2100(643)--71-31

Refer to the Proposal Form for the list of applicable specifications.

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



LOCATION MAP SCALE
0 1 2
Miles

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

281-1
10-15-13

SECTION 404 PERMIT AND CONDITIONS

Construct this project according to the requirements of U.S. Army Corps of Engineers Regional Permit 7, Permit No. 2015-0154. A copy of this permit is available from the Iowa DOT website (http://envpermits.iowadot.gov/). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

APPROVED

Robert Schiesl — MAY 16, 2016
CITY ENGINEER — DATE
CITY OF DUBUQUE, IOWA

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Eric J. Tott	Primary Signature Block
CS.1	Theresa M. Stromberg-Murphy	Soils Design
SPS.1	Theresa M. Stromberg-Murphy	Soils Design
V.1	Derek J. Thomas	Structural Design

IA 32	101-4
	04-30-02

DESIGN DATA RURAL

2010 AADT	NA	V.P.D.
2030 AADT	26000	V.P.D.
2030 DHV	2600	V.P.H.
TRUCKS	10	%
Total Design ESALs		

LICENSED PROFESSIONAL ENGINEER
ERIC J. TOTT
19992
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Eric J. Tott, P.E. — 5/16/16 Date

License Number 19992

My license renewal date is December 31, 2017

Pages or sheets covered by this seal:
SHEETS A.1, B.1-B.14, C.1-C.23, D.1-D.16, E.1-E.9, G.1-G.6, H.1-H.9, J.1-J.4, K.1-K.6, L.1-L.17, M.1-M.50, N.1-N.10, S.1-S.7, T.1-T.18, U.1-U.17, W.1-W.68, X.1-X.130, Y.1-Y.67

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO. / AECOM	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	A.1

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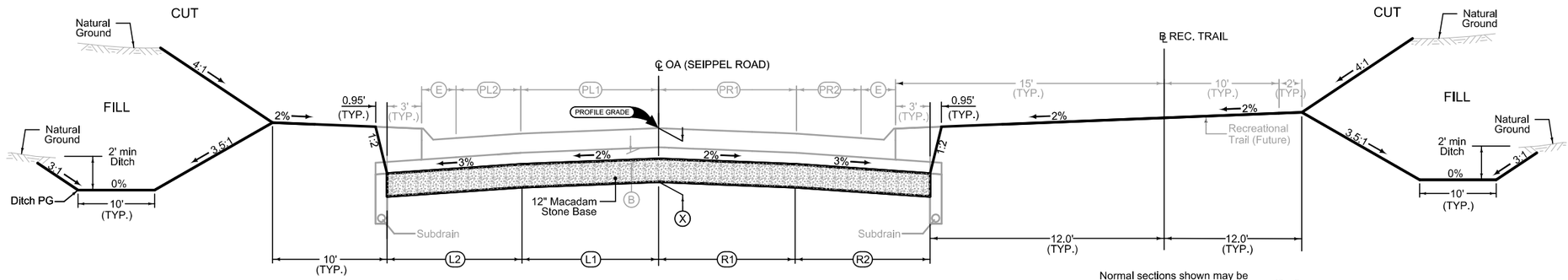
2 Lane GRADING with Trail

WHKS 1



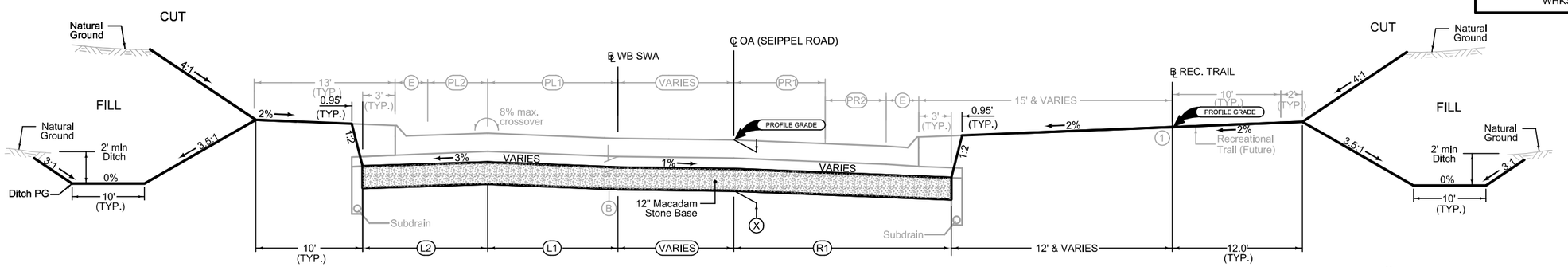
Normal sections shown may be appropriately modified for areas specifically designated by the Engineer such as intersections or superelevated curves.

SEIPPEL ROAD TYPICAL CROSS SECTION FOR GRADING - 2 LANE ROADWAY WITH TRAIL

LOCATION			DIMENSIONS				
ROAD IDENTIFICATION	STATION TO STATION		(L1) Feet	(L2) Feet	(R1) Feet	(R2) Feet	(X) Inches
℄ SWA O.A.	51+89.20	61+47.98	12.0	9.5	12.0	9.5	27

2 Lane Wide GRADING with Trail

WHKS 2



1 Refer to S sheets for Recreational Trail profile grade, ditch details, and baseline geometry.

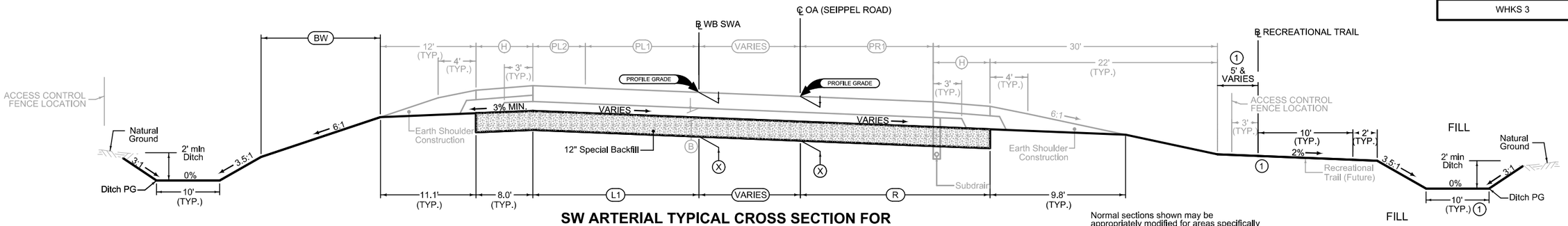
Normal sections shown may be appropriately modified for areas specifically designated by the Engineer such as intersections or superelevated curves.

SEIPPEL ROAD TYPICAL CROSS SECTION FOR GRADING - 2 LANE WIDE ROADWAY WITH TRAIL

LOCATION			DIMENSIONS				
ROAD IDENTIFICATION	STATION TO STATION		(L1) Feet	(L2) Feet	(R1) Feet	(X) Inches	Notes
℄ SWA O.A.	61+47.98	64+85.00	12	——	21.5	27	Rec. Trail offset varies Sta 63+43.00 to 64+85.00
℄ SWA O.A.	64+85.00	65+00.00	12	——	Varies 21.5 to 23.0	27	Rec. Trail offset varies Sta 64+85.00 to 65+00.00
℄ WB SWA	261+47.98	264+85.00	12	9.5	——	27	
	264+85.00	265+00.00	12	Varies 9.5 to 11.0	——	27	

2 Lane Wide GRADING with Trail

WHKS 3

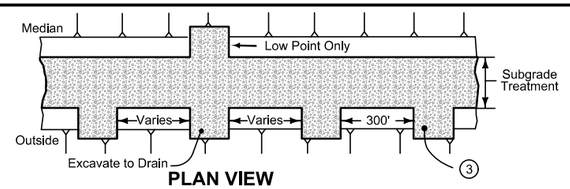


SW ARTERIAL TYPICAL CROSS SECTION FOR GRADING - 2 LANE WIDE ROADWAY WITH TRAIL GRADING

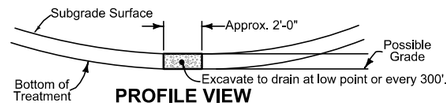
Normal sections shown may be appropriately modified for areas specifically designated by the Engineer such as intersections or superelevated curves.

LOCATION			DIMENSIONS				NOTES
ROAD IDENTIFICATION	STATION TO STATION		(L1) Feet	(R) Feet	(BW) Feet	(X) Inches	
℄ SWA O.A.	65+00.00	71+43.37	---	20.0	---	28	Rec. Trail Offset Varies Sta. 65+00.00 To 65+20.00
	71+43.37	71+75.32	---	Varies 20.0 to 20.8	---	28	Rec. Trail Offset Varies Sta. 71+70.00 To 72+83.37
	71+75.32	72+83.37	48.0	Varies 20.8 to 24.0	10.9	28	Rec. Trail Offset Varies Sta. 72+83.37 To 73+27.33
	72+83.37	73+29.73	48.0	24.0	10.9	28	
℄ WB SWA	265+00.00	271+00.00	Varies 12.0 to 24.0		10.9	28	
	271+00.00	271+79.50	24		10.9	28	
Equation: WB Sta. 271+79.50, 16.0' Lt = O.A. Sta. 71+75.32							

(1) Refer to S sheets for Recreational Trail profile grade, ditch details, and baseline geometry.



PLAN VIEW



PROFILE VIEW

DETAIL 'A' - DRAIN FOR SUBGRADE TREATMENT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	B.2

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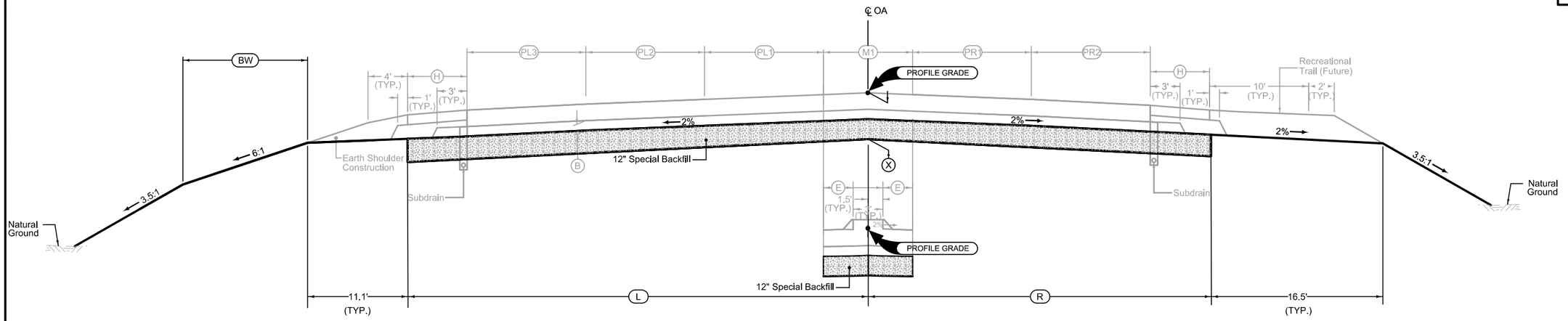


SW ARTERIAL TYPICAL CROSS SECTION FOR GRADING - 2 LANE DIVIDED ROADWAY WITH MEDIAN

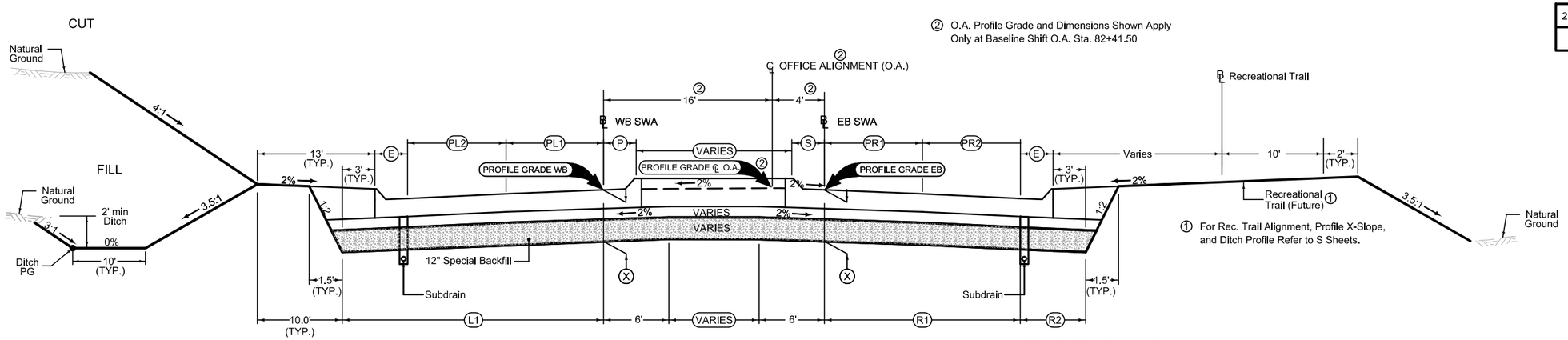
Normal sections shown may be appropriately modified for areas specifically designated by the Engineer such as intersections or superelevated curves.

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(BW) Feet	(X) Inches
℄ SWA O.A.	73+29.73	75+76.11 (1)	48.0	35.0	10.9	28

(1) Bridge Omission
Sta 75+76.11 to Sta 82+53.91

2 Lane Split GRADING w/ Median

WHKS 5



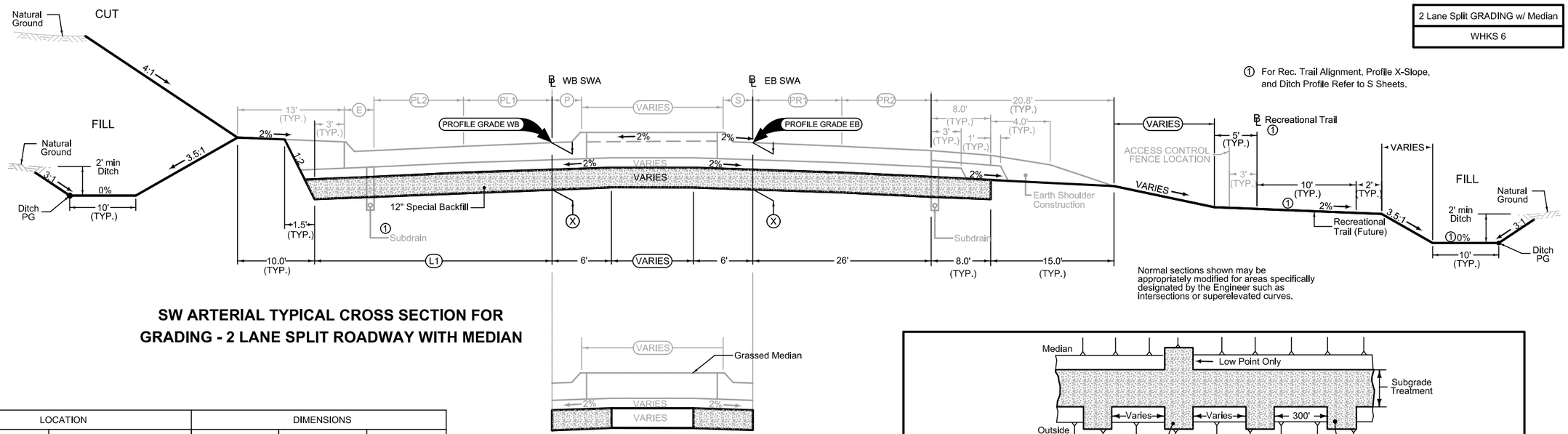
LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L1) Feet	(R1) Feet	(R2) Feet	(X) Inches
EAST BOUND						
℄ EB SWA	182+41.50	183+50.42		Varies 26.0 to 27.2	5.5	28
℄ EB SWA	183+50.42	186+70.68	Omission for Roundabout. Refer to L Sheets			
WEST BOUND						
℄ WB SWA	282+41.50	283+59.57	Varies 32.6 to 32.0			28
℄ WB SWA	283+59.57	286+41.34	Omission for Roundabout. Refer to L Sheets			

SW ARTERIAL TYPICAL CROSS SECTION FOR GRADING - 2 LANE SPLIT ROADWAY WITH MEDIAN

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

2 Lane Split GRADING w/ Median

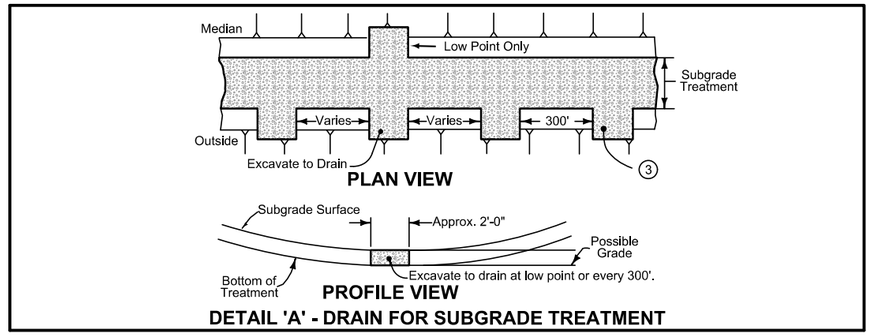
WHKS 6



LOCATION			DIMENSIONS		
ROAD IDENTIFICATION	STATION TO STATION		(L1) Feet	(X) Inches	REMARKS
EAST BOUND					
℄ EB SWA	186+70.68	189+00.00		28	Paved Median
℄ EB SWA	189+00.00	190+63.64		28	Grassed Median
WEST BOUND					
℄ WB SWA	286+41.34	286+73.42	Varies	28	Paved Median
℄ WB SWA	286+73.42	288+53.08	29.5 & Varies	28	Paved Median
℄ WB SWA	288+58.08	290+07.95	30.0	28	Grassed Median
℄ WB SWA	290+07.95	290+20.45	30.0 & Varies	28	Grassed Median

SW ARTERIAL TYPICAL CROSS SECTION FOR GRADING - 2 LANE SPLIT ROADWAY WITH MEDIAN

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



DETAIL 'A' - DRAIN FOR SUBGRADE TREATMENT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	B.4

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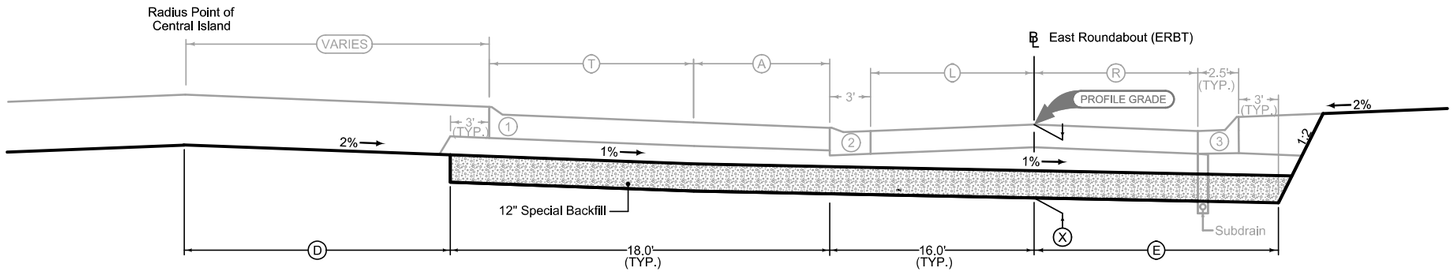
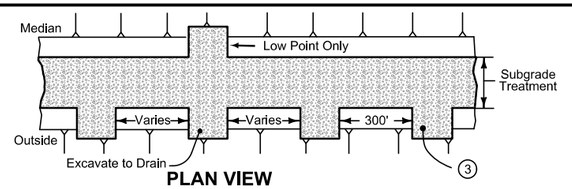


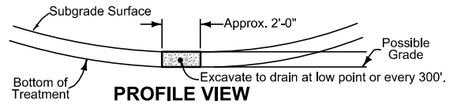
TYPICAL CROSS SECTION FOR GRADING - ROUNDABOUT

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

LOCATION			DIMENSIONS		
ROAD IDENTIFICATION	STATION TO STATION		Ⓓ Feet	Ⓔ Feet	Ⓧ Inches
EAST ROUNDABOUT					
℄ ERBT	0+00.00	5+53.93	Refer to L Sheets	Refer to L Sheets	33

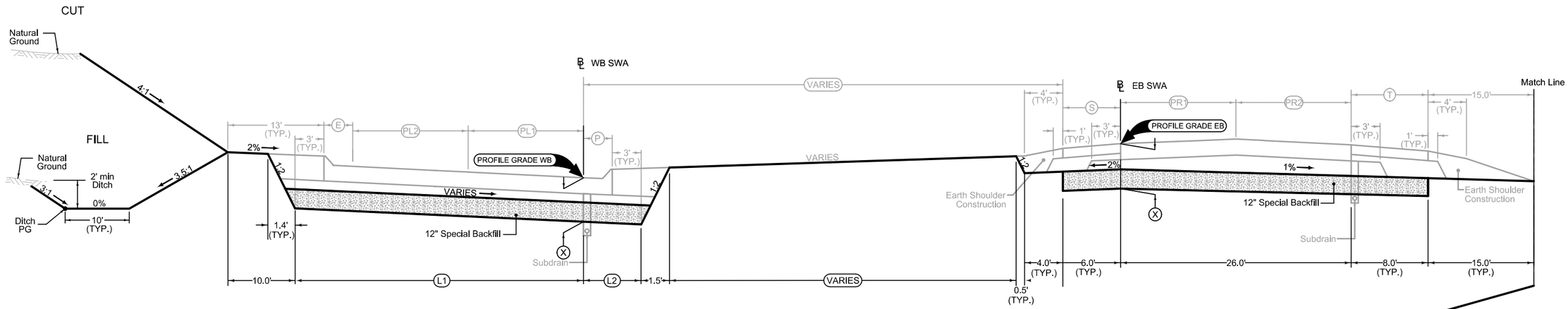


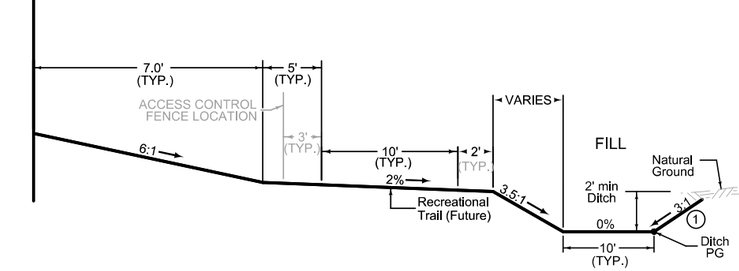
PLAN VIEW



PROFILE VIEW

DETAIL 'A' - DRAIN FOR SUBGRADE TREATMENT





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

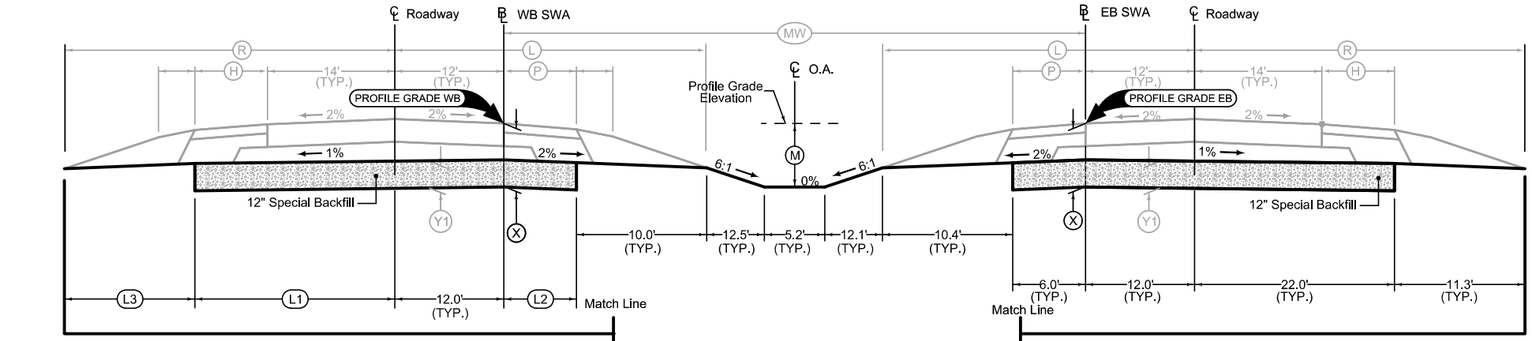
1 Ditch Backslope is 4.5:1 from Sta. 186+50 to 194+50

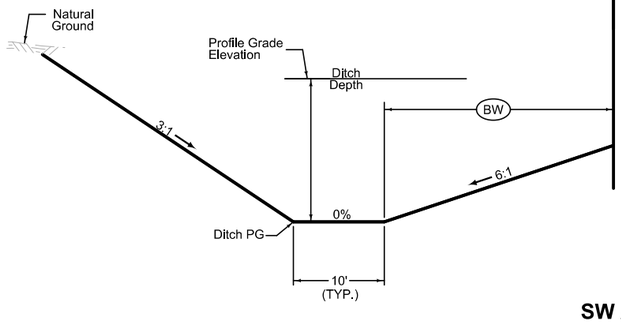
SW ARTERIAL TYPICAL CROSS SECTION FOR GRADING - 4 LANE DIVIDED ROADWAY WITH MEDIAN

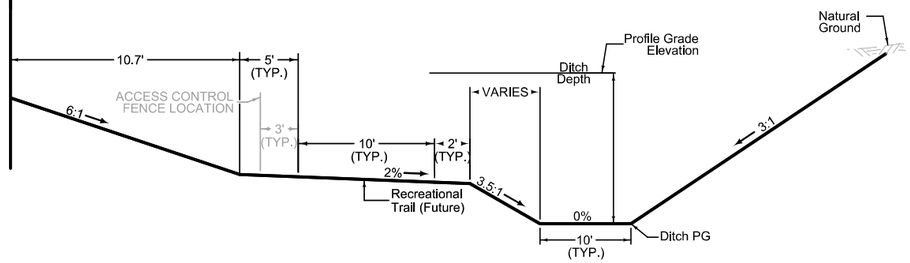
LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L1) Feet	(L2) Feet	(X) Inches	REMARKS
EAST BOUND						
℄ EB SWA	190+63.64	192+67.00			28	
WEST BOUND						
℄ WB SWA	290+20.45	290+87.35	Varies	6.0	28	Refer to U Sheets
℄ WB SWA	290+87.35	292+28.00	Varies	Varies 6.0 to 12.5	28	Refer to U Sheets

4 Lane Divided GRADING w/ Bike Trail

WHKS 9



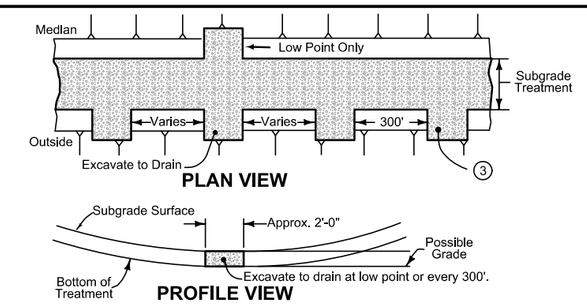




SW ARTERIAL TYPICAL CROSS SECTION FOR GRADING - 4 LANE DIVIDED ROADWAY

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

LOCATION			DIMENSIONS						
ROAD IDENTIFICATION	STATION TO STATION		(R) Feet	(L1) Feet	(L2) Feet	(L3) Feet	(M) Feet	(BW) Feet	(X) Inches
EAST BOUND									
℄ EB SWA	192+67.23	199+20.53	9.8				3.7		28.0
EQUATION: EB ℄ STA. 199+20.53, 32.0' RT. = O.A. ℄ STA. 98+52.53									
WEST BOUND									
℄ WB SWA	292+28.00	292+47.94		Varies 24.0 to 22.0			3.7	Varies 11.3 to 8.7	28.0
℄ WB SWA	292+47.94	298+74.70		22.0			3.7	Varies 11.3 to 8.7	28.0
℄ WB SWA	292+28.00	292+62.94			Varies 9.5 to 6.0		3.7	Varies 11.3 to 8.7	28.0
℄ WB SWA	292+62.94	298+74.70			6.0		3.7	Varies 11.3 to 8.7	28.0
℄ WB SWA	292+28.00	298+74.70				9.8	3.7	Varies 11.3 to 8.7	28.0
EQUATION: WB ℄ STA. 298+74.70, 32.0' LT. = O.A. ℄ STA. 98+52.53									
℄ OA SWA	98+52.53	101+10.00	9.8	22.0	6.0	9.8	3.7	Varies 8.7 to 9.9	28.0



DETAIL 'A' - DRAIN FOR SUBGRADE TREATMENT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	B.7

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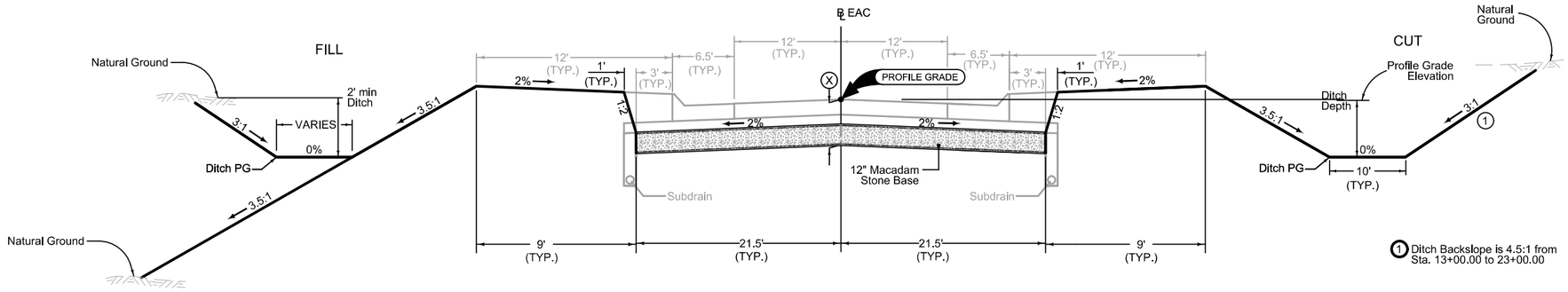
EAC

WHKS 10

LOCATION			DIMENSIONS	
ROAD IDENTIFICATION	STATION TO STATION		(X) Inches	
East Access Connector	0+00.00	17+49.64	27	



TYPICAL CROSS SECTION FOR GRADING - EAST ACCESS CONNECTOR (EAC)

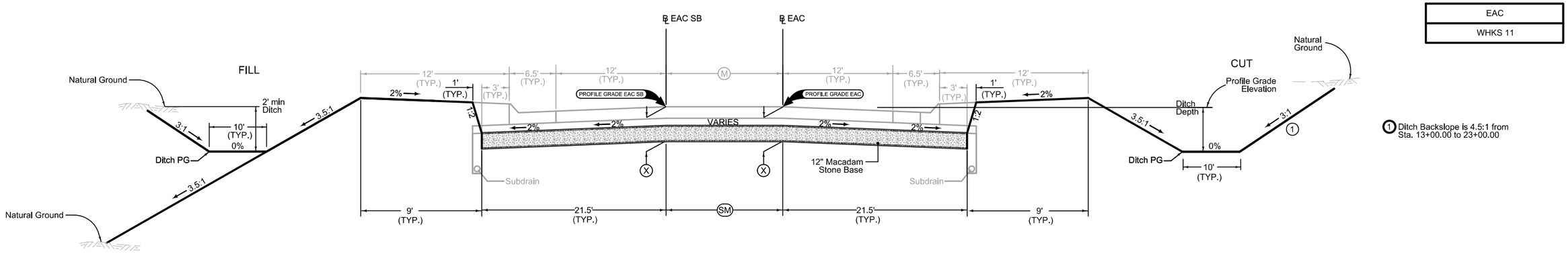
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

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

Drain stone base at low point. Refer to Detail - 'A' Sheet B-2

EAC

WHKS 11



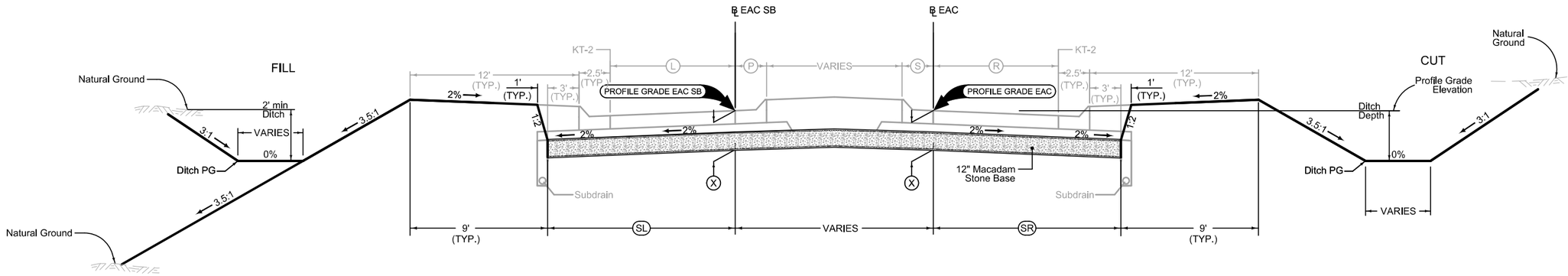
TYPICAL CROSS SECTION FOR GRADING - EAST ACCESS CONNECTOR (EAC)

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

LOCATION			DIMENSIONS	
ROAD IDENTIFICATION	STATION TO STATION		(SM) Feet	(X) Inches
East Access Connector	17+49.64	20+47.15	Varies 0 to 14	27
East Access Connector SB	217+49.64	220+43.29	Varies 0 to 14	27

EAC w/ Raised Median

WHKS 12

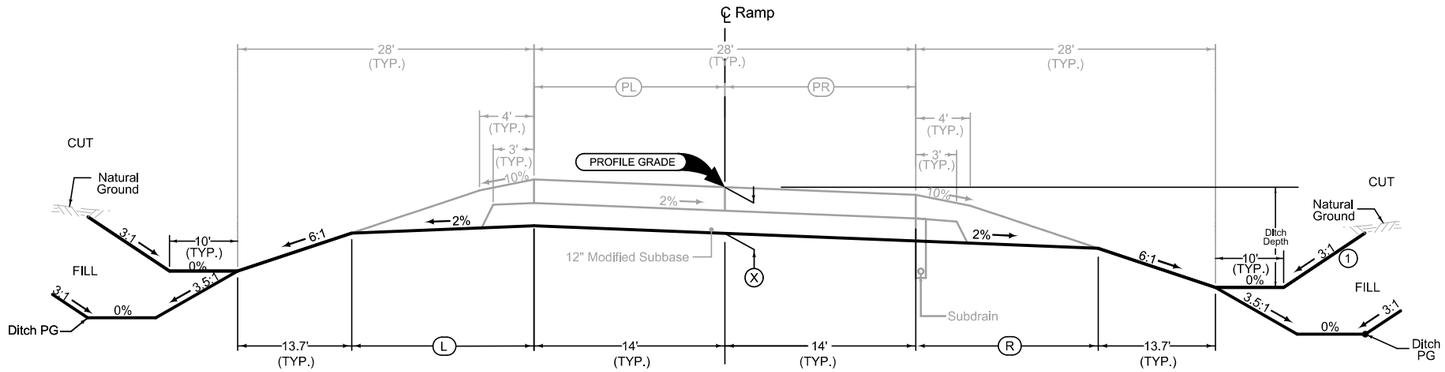


Normal sections shown may be appropriately modified for areas specifically designated by the Engineer such as intersections or superelevated curves.

EAST ACCESS CONNECTOR TYPICAL CROSS SECTION FOR GRADING - 2 LANE BARNROOF w/ RAISED MEDIAN

LOCATION			DIMENSIONS		
ROAD IDENTIFICATION	STATION TO STATION		(SL) Feet	(SR) Feet	(X) Inches
East Access Connector	20+47.15	23+25.55		18.5 & Varies	27
East Access Connector SB	217+49.64	222+73.42	18.5 & Varies		27

Ramp GRADING
WHKS 13



1 Ramp D Ditch Backslope is 4.5:1 from Sta. 4508+00.00 to 4512+00.00

TYPICAL CROSS SECTION FOR RAMP A AND RAMP D GRADING

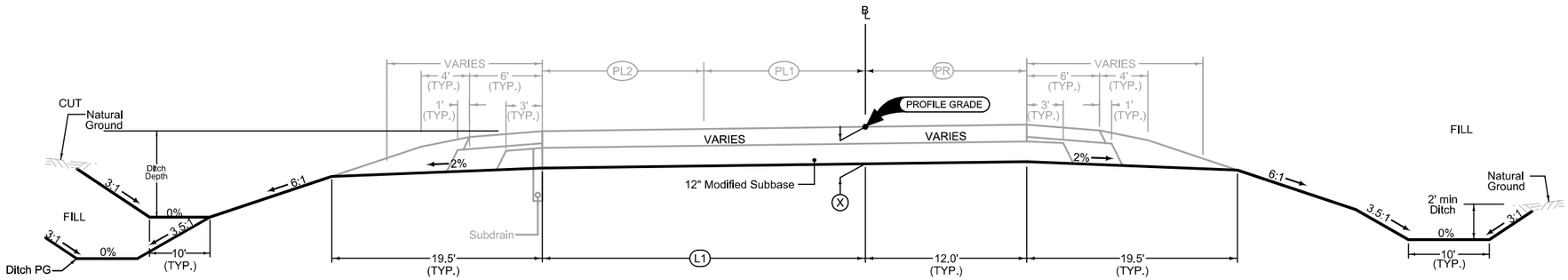
Section view is in direction of traffic.

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

LOCATION				DIMENSIONS		
INTERCHANGE	RAMP	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches
US 20 & SWA	A	1527+34.00	1538+21.00	14.3	14.3	22
US 20 & SWA	D	4507+28.93	4522+21.20 (2)	14.3	14.3	22

2 Bridge Omission
Sta 4517+64.61 to 4519+94.89

Ramp GRADING
WHKS 14



TYPICAL CROSS SECTION FOR RAMP A GRADING AT INTERSECTION

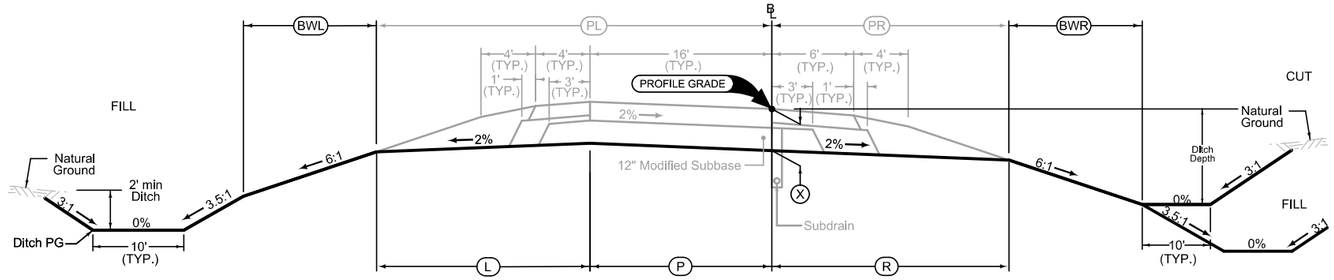
Section view is in direction of traffic.

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

LOCATION				DIMENSIONS	
INTERCHANGE	RAMP	STATION TO STATION		(L1) Feet	(X) Inches
US 20 & SWA	A	1521+16.21	1522+59.65	24.0	22
US 20 & SWA	A	1522+59.65	1525+62.87	Varies 24.0 to 12.0	22
US 20 & SWA	A	1525+62.87	1527+34.00	12.0	22

Ramp GRADING

WHKS 15



① Bridge Omission Ramp C
Sta 3522+33.75 to 3524+65.91

TYPICAL CROSS SECTION FOR RAMP B AND RAMP C GRADING

Section view is in direction of traffic.

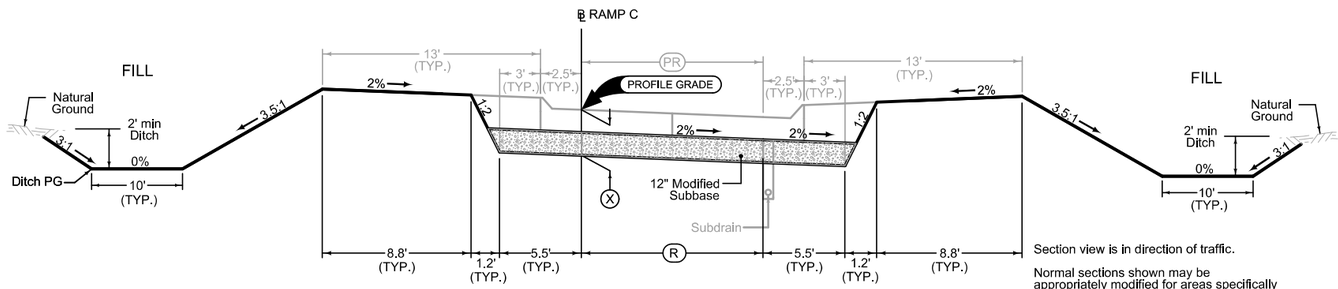
Normal sections shown may be appropriately modified for areas specifically designated by the Engineer such as intersections or superelevated curves.

Section view is in direction of traffic.

LOCATION				DIMENSIONS					
INTERCHANGE	RAMP	STATION TO STATION		(L) Feet	(P) Feet	(R) Feet	(BWL) Feet	(BWR) Feet	(X) Inches
US 20 & SWA	B	2508+40.00	2517+02.91	17.7'	16.0'	19.5'	12.3'	10.5'	22
US 20 & SWA	B	2517+02.91	2517+51.39	17.7'	VARIES	19.5'	12.3'	10.5'	22
US 20 & SWA	C	3524+65.91	3535+80.00 ①	17.7'	16.0'	19.5'	12.3'	10.5'	22

Ramp C Curb & Gutter

WHKS 16

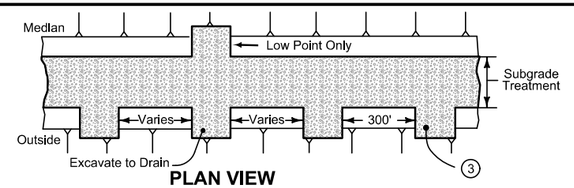


TYPICAL CROSS SECTION GRADING FOR RAMP C - ROUNDABOUT TO BRIDGE

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.

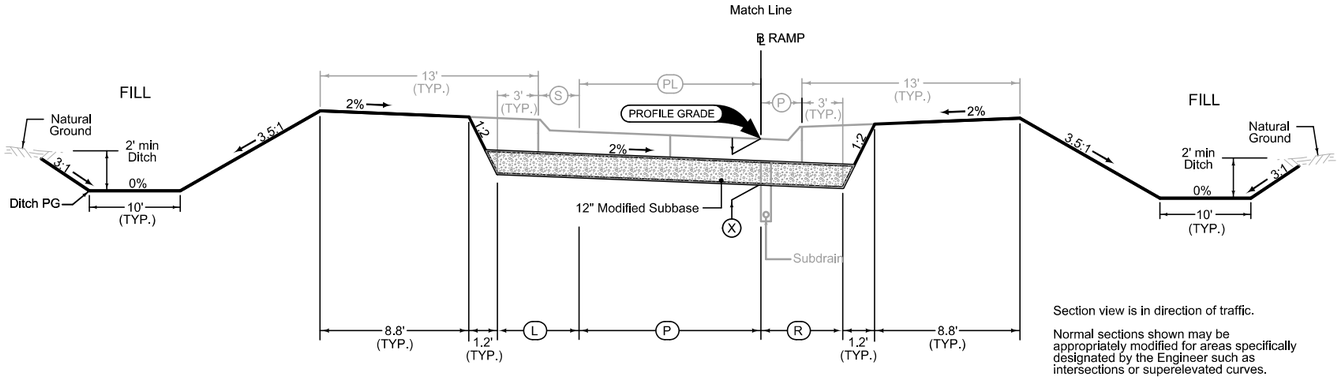
LOCATION				DIMENSIONS	
INTERCHANGE	RAMP	STATION TO STATION		(R) Feet	(X) Inches
US 20 & SWA	C	3520+57.00	3522+33.75	24.0 & VARIES	22.0



DETAIL 'A' - DRAIN FOR SUBGRADE TREATMENT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	B.11

9:26:08 AM 05/16/2016 etott K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038B01.sht



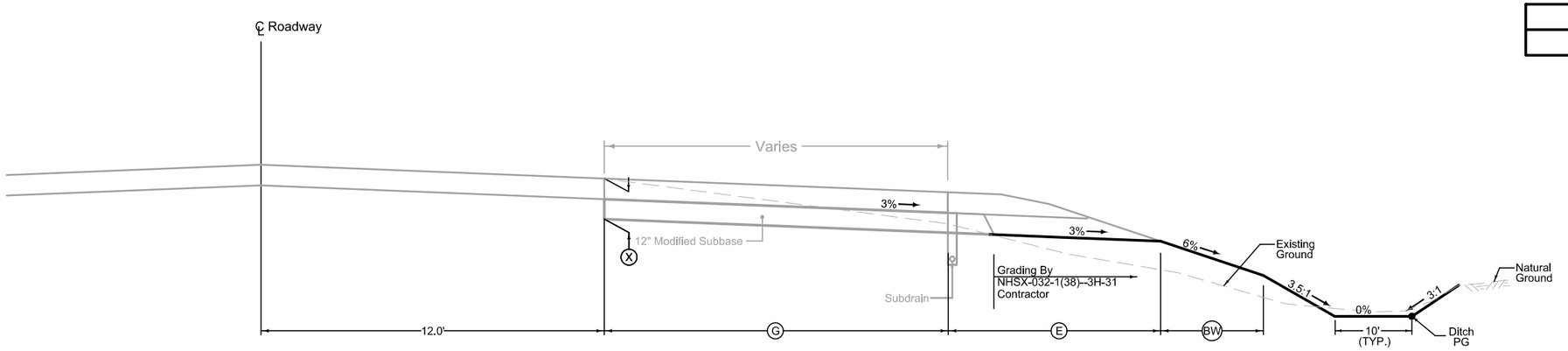
Section view is in direction of traffic.

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

TYPICAL CROSS SECTION GRADING FOR RAMP B

LOCATION				DIMENSIONS		
INTERCHANGE	RAMP	STATION TO STATION		(L) Feet	(P) Feet	(R) Feet
US 20 & SWA	B	2517+51.39	2518+99.27	VARIES 7.5 to 5.5	Varies 17.17 to 24.0	Varies 9.5 to 5.5

WHKS 18



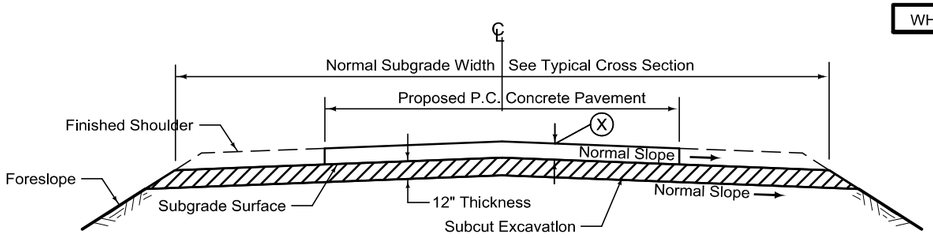
Section view is in direction of traffic.

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

TYPICAL CROSS SECTION GRADING FOR RAMP TAPERS

LOCATION				DIMENSIONS			
INTERCHANGE	RAMP	STATION TO STATION		(G) Feet	(E) Feet	(X) Inches	(BW) Feet
US 20 & SWA	A	1531+01.00	1538+21.00	Varies 2.0 to 50.0	15.3	22	12.7
US 20 & SWA	B	1202+40.00	1208+40.00	Varies 0.0 to 40.0	21.0	22	9.0
US 20 & SWA	C	1235+80.00	1245+80.00	Varies 2.0 to 22.0	21.0	22	9.0
US 20 & SWA	D	1192+00.00	1205+00.00	Varies 2.0 to 28.0	15.3	22	12.7

WHKS 19



Contractor shall excavate Class 12 area indicated, dispose of the material and replace with suitable backfill. If subcut excavation is in Shale, then backfill shall be with Cohesive Select Soil, meeting the requirements of Article 2102.02, D, 1,a.
If subcut excavation is in Limestone, then backfill may be with Select Soil (quantified within these plans), or the contractor may optionally use Special Backfill at no additional cost to the project.

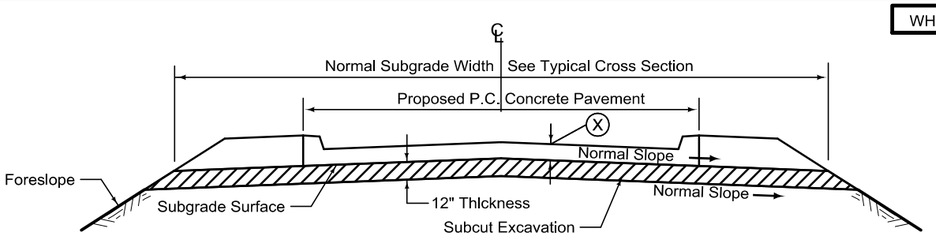
See T-Sheet quantities for additional information.

See typical cross sections for ditches and backslopes.

ROAD IDENTIFICATION	(X) Inches
SEIPPEL RD	27.0
SOUTHWEST ARTERIAL	28.0
EAST ACCESS CONNECTOR	27.0
RAMPS	22.0

TYPICAL CROSS SECTION SUBCUT EXCAVATION AND BACKFILL IN ROCK AND SHALE

WHKS 20



Contractor shall excavate Class 12 area indicated, dispose of the material and replace with suitable backfill. If subcut excavation is in Shale, then backfill shall be with Cohesive Select Soil, meeting the requirements of Article 2102.02, D, 1,a.
If subcut excavation is in Limestone, then backfill may be with Select Soil (quantified within these plans), or the contractor may optionally use Special Backfill at no additional cost to the project.

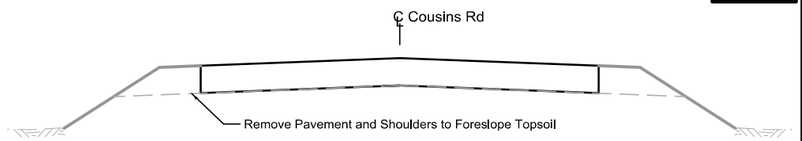
See T-Sheet quantities for additional information.

See typical cross sections for ditches and backslopes.

ROAD IDENTIFICATION	(X) Inches
SEIPPEL RD	27.0
SOUTHWEST ARTERIAL	28.0
EAST ACCESS CONNECTOR	27.0
RAMPS	22.0

TYPICAL CROSS SECTION SUBCUT EXCAVATION AND BACKFILL IN ROCK AND SHALE

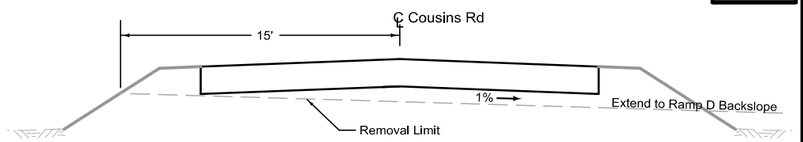
WHKS 21



COUSINS ROAD REMOVAL

LOCATION		
ROAD IDENTIFICATION	STATION TO STATION	
COUSINS ROAD	481+06	482+00
COUSINS ROAD	499+50	503+77

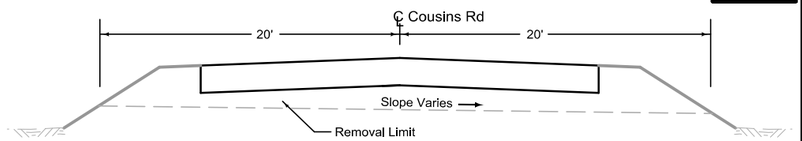
WHKS 22



COUSINS ROAD REMOVAL

LOCATION		
ROAD IDENTIFICATION	STATION TO STATION	
COUSINS ROAD	482+50	485+00

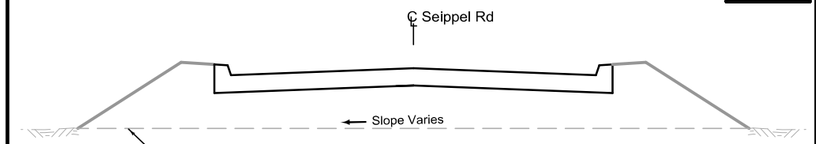
WHKS 23



COUSINS ROAD REMOVAL

LOCATION		
ROAD IDENTIFICATION	STATION TO STATION	
COUSINS ROAD	482+00	486+00
COUSINS ROAD	486+00	496+50

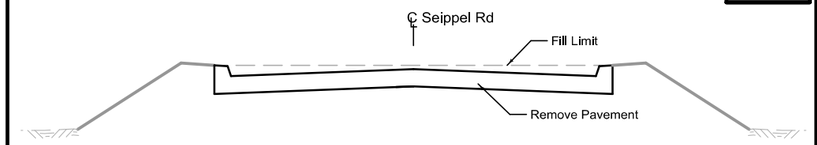
WHKS 24



SEIPPEL ROAD REMOVAL

LOCATION		
ROAD IDENTIFICATION	STATION TO STATION	
SEIPPEL ROAD	34+00	37+00

WHKS 25



SEIPPEL ROAD REMOVAL

LOCATION		
ROAD IDENTIFICATION	STATION TO STATION	
SEIPPEL ROAD	39+50	51+00

100-1D
10-18-05

PROJECT DESCRIPTION

This project is for grading for the SouthWest Arterial interchange with US 20 and Seippel Road in Dubuque in Dubuque County.
The project includes RCB Box culverts, storm sewers, culverts, culvert extensions, structure removal and pavement removal.

ESTIMATED PROJECT QUANTITIES
(UP TO A 5 DIVISION PROJECT)

Division 1: IOWA DOT COST (ROADWAY)
Division 2: CITY OF DUBUQUE COST (80% FEDERAL STP FUNDS AND 20% CITY FUNDS)
Division 7: FEDERAL NON PARTICIPATING (CITY COST)

Item No.	Item Code	Item	Unit	Quantities										
				Estimated						As Built				
				Division 1	Division 2	Division 7			Total	Division 1	Division 2	Division 7		
1	2101-0850001	CLEARING AND GRUBBING	ACRE	14.5					14.5					
2	2102-0425070	SPECIAL BACKFILL	TON	16450.2					16450.2					
3	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	731428					731428					
4	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	218159					218159					
5	2102-2712015	EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS	CY	50					50					
6	2102-2712070	EXCAVATION, CLASS 12, ROADWAY AND BORROW	CY	1362					1362					
7	2103-0000100	PRESPLITTING OF ROCK CUT	SY	1733					1733					
8	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	91712					91712					
9	2107-0875100	COMPACTION WITH MOISTURE CONTROL	CY	514581					514581					
10	2115-0100000	MODIFIED SUBBASE	CY	644.8					644.8					
11	2121-7425010	GRANULAR SHOULDERS, TYPE A	TON	221.5					221.5					
12	2210-0475290	MACADAM STONE BASE	TON	10719.7					10719.7					
13	2401-6745354	REMOVAL OF CONCRETE FOOTINGS, AS PER PLAN	EACH	1					1					
14	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1					1					
15	2401-6745650	REMOVAL OF EXISTING STRUCTURE	LS	1					1					
16	2401-6745910	REMOVAL OF SIGN	EACH	51					51					
17	2402-2720100	EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERT	CY	9004.1					9004.1					
18	2416-0100015	APRONS, CONCRETE, 15 IN. DIA.	EACH	2					2					
19	2416-0100018	APRONS, CONCRETE, 18 IN. DIA.	EACH	2					2					
20	2416-0100024	APRONS, CONCRETE, 24 IN. DIA.	EACH	4					4					
21	2416-0100030	APRONS, CONCRETE, 30 IN. DIA.	EACH	2					2					
22	2416-0100036	APRONS, CONCRETE, 36 IN. DIA.	EACH	2					2					
23	2416-0100048	APRONS, CONCRETE, 48 IN. DIA.	EACH	2					2					
24	2416-0100054	APRONS, CONCRETE, 54 IN. DIA.	EACH	2					2					
25	2416-0100072	APRONS, CONCRETE, 72 IN. DIA.	EACH	2					2					
26	2416-1160018	CULVERT, CONCRETE ENTRANCE PIPE, 18 IN. DIA.	LF	28					28					
27	2416-1180024	CULVERT, CONCRETE ROADWAY PIPE, 24 IN. DIA.	LF	211					211					
28	2416-1180030	CULVERT, CONCRETE ROADWAY PIPE, 30 IN. DIA.	LF	158					158					
29	2416-1180048	CULVERT, CONCRETE ROADWAY PIPE, 48 IN. DIA.	LF	410					410					
30	2416-1180054	CULVERT, CONCRETE ROADWAY PIPE, 54 IN. DIA.	LF	132					132					
31	2416-1180072	CULVERT, CONCRETE ROADWAY PIPE, 72 IN. DIA.	LF	178					178					
32	2417-0225030	APRONS, METAL, 30 IN. DIA.	EACH	1					1					
33	2417-1060030	CULVERT, CORRUGATED METAL ROADWAY PIPE, 30 IN. DIA.	LF	39					39					
34	2435-0130148	MANHOLE, SANITARY SEWER, SW-301, 48 IN.	EACH		5				5					
35	2435-0250100	INTAKE, SW-501	EACH	16					16					
36	2435-0250260	INTAKE, SW-502, 60 IN.	EACH	2					2					
37	2435-0250500	INTAKE, SW-505	EACH	3					3					
38	2503-0114215	STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 15 IN.	LF	1149					1149					
39	2503-0114236	STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 36 IN.	LF	146					146					
40	2503-0200036	REMOVE STORM SEWER PIPE LESS THAN OR EQUAL TO 36 IN.	LF	1446					1446					
41	2503-0200136	REMOVE STORM SEWER PIPE GREATER THAN 36 IN.	LF	544					544					
42	2504-0116012	SANITARY SEWER GRAVITY MAIN, TRENCHED, DUCTILE IRON PIPE (DIP), 12 IN.	LF		392				392					
43	2504-0116018	SANITARY SEWER GRAVITY MAIN, TRENCHED, DUCTILE IRON PIPE (DIP), 18 IN.	LF		82				82					
44	2504-0136012	SANITARY SEWER GRAVITY MAIN WITH CASING PIPE, TRENCHED, DUCTILE IRON PIPE (DIP), 12 IN.	LF		317				317					
45	2504-0146018	SANITARY SEWER GRAVITY MAIN WITH CASING PIPE, TRENCHLESS,DUCTILE IRON PIPE (DIP), 18 IN.	LF		337				337					
46	2506-4984000	FLOWABLE MORTAR	CY	383.8					383.8					
47	2507-3250005	ENGINEERING FABRIC	SY	444.3					444.3					
48	2507-6800061	REVETMENT, CLASS E	TON	358					358					
49	2510-6745850	REMOVAL OF PAVEMENT	SY	18921.4					18921.4					
50	2510-6750600	REMOVAL OF INTAKES AND UTILITY ACCESSES	EACH	16					16					
51	2515-2475006	DRIVEWAY, P.C. CONCRETE, 6 IN.	SY	121.4					121.4					
52	2518-0470005	CROSSOVER BARRICADE	EACH	2					2					
53	2518-6891810	PERMANENT ROAD CLOSURE, RURAL, SI-181	LF	26					26					
54	2518-6910000	SAFETY CLOSURE	EACH	4					4					
55	2524-6765010	REMOVE AND REINSTALL SIGN AS PER PLAN	EACH	4					4					
56	2524-6765014	REMOVE AND REINSTALL MILEPOST MARKER	EACH	2					2					
57	2524-6765015	REMOVE AND REINSTALL DELINEATOR POSTS	EACH	27					27					
58	2524-9275222	WOOD POSTS FOR TYPE A OR B SIGNS, 4" X 6"	LF	56					56					
59	2526-8285000	CONSTRUCTION SURVEY	LS	1					1					
60	2528-8445110	TRAFFIC CONTROL	LS	1					1					
61	2533-4980005	MOBILIZATION	LS	1					1					
62	2554-0112012	WATER MAIN, TRENCHED, DIP, 12"	LF		2740				2740					
63	2554-0112016	WATER MAIN, TRENCHED, DIP, 16"	LF		4495				4495					
64	2554-0132012	WATER MAIN WITH CASING PIPE, TRENCHED, DIP, 12"	LF		39				39					
65	2554-0132016	WATER MAIN WITH CASING PIPE, TRENCHED, DIP, 16"	LF		219				219					
66	2554-0203000	FITTINGS BY WEIGHT, DI	LBS		11303				11303					
67	2554-0206000	VALVE, BUTTERFLY, DIP, 16"	EACH		6				6					
68	2554-0207012	VALVE, GATE, DIP, 12"	EACH		4				4					
69	2554-0210201	FIRE HYDRANT ASSEMBLY, WM-201	EACH		12				12					
70	2555-0000010	DELIVER & STOCKPILE SALVAGED MATERIALS	LS			1			1					
71	2590-0000020	PROJECT MANAGEMENT	LS	1					1					
72	2599-9999001	SUBGRADE STABILIZATION	ACRE	5.7					5.7					
73	2599-9999005	CONNECT TO EXISTING VAULT OR HANDHOLE	EACH		1				1					
74	2599-9999005	CORE DRILL VAULT OR HANDHOLE	EACH	2	8				10					
75	2599-9999005	FIBER VAULT, SQUARE	EACH	1	4				5					
76	2599-9999009	BUNDLED MICRODUCT CONDUIT, TRENCHED	LF	2962	5878				8840					
77	2599-9999009	FIBER OPTIC CABLE	LF		3848				3848					
78	2599-9999009	WATER MAIN, REMOVAL	LF		2153				2153					

ESTIMATED PROJECT QUANTITIES
(UP TO A 5 DIVISION PROJECT)

Division 1: IOWA DOT COST (ROADWAY)
Division 2: CITY OF DUBUQUE COST (80% FEDERAL STP FUNDS AND 20% CITY FUNDS)
Division 7: FEDERAL NON PARTICIPATING (CITY COST)

Item No.	Item Code	Item	Unit	Quantities										
				Estimated						As Built				
				Division 1	Division 2	Division 7			Total	Division 1	Division 2	Division 7		
79	2601-2640350	SPECIAL DITCH CONTROL, WOOD EXCELSIOR MAT	SQ	308					308					
80	2601-2642100	STABILIZING CROP - SEEDING AND FERTILIZING	ACRE	60.6					60.6					
81	2602-0000020	SILT FENCE	LF	58572					58572					
82	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	9900					9900					
83	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	27389					27389					
84	2602-0000101	MAINT. OF SILT FENCE OR SILT FENCE DITCH CHECKS	LF	5478					5478					
85	2602-0000160	ROCK CHECK DAMS	LF	1220					1220					
86	2602-0000170	MAINT. OF ROCK CHECK DAMS	EACH	174					174					
87	2602-0000309	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 9 IN. DIA.	LF	420					420					
88	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	200					200					
89	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	200					200					
90	2602-0000350	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	LF	820					820					
91	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1					1					
92	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	1					1					

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	2101-0850001	CLEARING AND GRUBBING
		See Tab 110-17 on C Sheets for locations and details.
	-	-
2	2102-0425070	SPECIAL BACKFILL
		See Tab 103-3 on C Sheets. Includes area under Detour Pavement.
		Refer to Typicals and Details on B sheets for additional information.
		Recycled concrete used as Special Backfill must meet the requirements of the Standard Specifications.
	-	-
3	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW
		See Tab 107-28 on T Sheets for template quantities.
		CL 10 bid quantity of 731,428 CY includes: 731,428 CY suitable excavation.
		731,428 CY fill with shrinkage includes: 563,660 CY of suitable fill with shrinkage
		Additional material for fill shall be provided by the Contractor.
		Overhaul will not be measured or paid for, but shall be considered incidental to roadway excavation.
	-	-
4	2102-2710090	EXCAVATION, CLASS 10, WASTE
		See Tab 107-28 on T Sheets for template quantities.
	-	-
5	2102-2712015	EXCAVATION, CLASS 12, BOULDERS AND ROCK FRAGMENTS
		See Sheet CS.1 for locations and details.
	-	-
6	2102-2712070	EXCAVATION, CLASS 12, ROADWAY AND BORROW
		See Tab 107-28 on T Sheets. Item also includes 50 CY for sanitary excavation. Existing rip rap is not included.
		Overhaul will not be measured or paid for, but shall be considered incidental to roadway excavation.
	-	-
7	2103-0000100	PRESPLITTING OF ROCK CUT
		See Tab 107-25 on Sheet CS.1 for locations and details.
	-	-
8	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD
		See Tab 107-28 on T Sheets for locations and details. Proposed topsoil thickness was calculated at 8".
		Existing varies between 0" and 12". Refer to T Sheets and Cross Sections.
	-	-
9	2107-0875100	COMPACTION WITH MOISTURE CONTROL
		See Tab 103-6 on CS Sheets and Tab 107-28 on T Sheets. Includes 514,581 CY template fill.
	-	-
10	2115-0100000	MODIFIED SUBBASE
		Includes area under Ramp B and Ramp C with curb and gutter sections.
		Refer to Typicals on the B Sheets. See Tab 100-24 on C Sheets for locations and details.
		Recycled concrete used as Modified Subbase must meet the requirements of the Standard Specifications.
	-	-
11	2121-7425010	GRANULAR SHOULDERS, TYPE A
		See Tab 112-9 on C Sheets for locations and details.
	-	-
12	2210-0475290	MACADAM STONE BASE
		See Tab 100-24 on C Sheets for locations and details.
	-	-
13	2401-6745354	REMOVAL OF CONCRETE FOOTINGS, AS PER PLAN
		See Tab 110-16 and 190-62 on C Sheets for locations and details.
		Method of measurement: The Engineer will count the number of concrete footings removed.
		Basis of Payment: The contractor will be paid the contract unit price for the number of concrete footings removed.
	-	-
14	2401-6745625	REMOVAL OF EXISTING BRIDGE
		See E Sheets for Cousins Rd bridge information.
		The lump sum bid for "Removal of Existing Bridge" shall include 100' X 200' continuous concrete slab bridge.
		Removals shall be in accordance with Section 2401, of the Standard Specifications.
		Plans of the existing structure will be made available to the contractor. Contact The Office of Contracts - Highway Division - IOWA D.O.T. - Ames.
	-	-
15	2401-6745650	REMOVAL OF EXISTING STRUCTURE
		See Tab 110-2 on C Sheets for locations and details.
	-	-
16	2401-6745910	REMOVAL OF SIGN
		See Tab 190-62 on C Sheets for locations and details.
	-	-
17	2402-2720100	EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERT
		See Tab 104-3 on C Sheets and M Sheets for locations and details.
	-	-
18	2416-0100015	APRONS, CONCRETE, 15 IN. DIA.
		See M Sheets for locations and details.
	-	-
19	2416-0100018	APRONS, CONCRETE, 18 IN. DIA.
		See M Sheets for locations and details.
	-	-
20	2416-0100024	APRONS, CONCRETE, 24 IN. DIA.
		See M Sheets for locations and details.
	-	-
21	2416-0100030	APRONS, CONCRETE, 30 IN. DIA.
		See M Sheets and Tab 104-3 on C Sheets for locations and details.
	-	-
22	2416-0100036	APRONS, CONCRETE, 36 IN. DIA.
		See M Sheets and Tab 104-3 on C Sheets for locations and details.
	-	-
23	2416-0100048	APRONS, CONCRETE, 48 IN. DIA.

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
		See M Sheets for locations and details.
	-	-
24	2416-0100054	APRONS, CONCRETE, 54 IN. DIA.
		See M Sheets and Tab 104-3 on C Sheets for locations and details.
	-	-
25	2416-0100072	APRONS, CONCRETE, 72 IN. DIA.
		See M Sheets for locations and details.
	-	-
26	2416-1180018	CULVERT, CONCRETE ROADWAY PIPE, 18 IN. DIA.
		See M Sheets and Tab 104-3 on C Sheets for locations and details.
	-	-
27	2416-1180024	CULVERT, CONCRETE ROADWAY PIPE, 24 IN. DIA.
		See M Sheets and Tab 104-3 on C Sheets for locations and details.
	-	-
28	2416-1180030	CULVERT, CONCRETE ROADWAY PIPE, 30 IN. DIA.
		See M Sheets and Tab 104-3 on C Sheets for locations and details.
	-	-
29	2416-1180048	CULVERT, CONCRETE ROADWAY PIPE, 48 IN. DIA.
		See M Sheets and Tab 104-3 on C Sheets for locations and details.
	-	-
30	2416-1180054	CULVERT, CONCRETE ROADWAY PIPE, 54 IN. DIA.
		See M Sheets and Tab 104-3 on C Sheets for locations and details.
	-	-
31	2416-1180072	CULVERT, CONCRETE ROADWAY PIPE, 72 IN. DIA.
		See M Sheets and Tab 104-3 on C Sheets for locations and details.
	-	-
32	2417-0225030	APRONS, METAL, 30 IN. DIA.
		See M Sheets for locations and details.
	-	-
33	2417-1060030	CULVERT, CORRUGATED METAL ROADWAY PIPE, 30 IN. DIA.
		See M Sheets for locations and details.
	-	-
34	2417-0130148	MANHOLE, SANITARY SEWER, SW-301, 48 IN.
		See Tab 104-5B on M Sheets and M Sheets for locations and details. Removal, disposal, and capping of existing sanitary pipe shall be considered incidental to this item.
	-	-
35	2435-0250100	INTAKE, SW-501
		See Tab 104-5B on M Sheets and M Sheets for locations and details.
	-	-
36	2435-0250260	INTAKE, SW-502 60 IN.
		See Tab 104-5B on M Sheets and M Sheets for locations and details.
	-	-
37	2435-0250500	INTAKE, SW-505
		See Tab 104-5B on M Sheets and M Sheets for locations and details.
	-	-
38	2503-0114215	STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 15 IN.
		See Tab 104-5B on the M Sheets for locations and details.
	-	-
39	2503-0114236	STORM SEWER GRAVITY MAIN, TRENCHED, REINFORCED CONCRETE PIPE (RCP), 2000D (CLASS III), 36 IN.
		See Tab 104-5B on M Sheets and M Sheets for locations and details.
	-	-
40	2503-0200036	REMOVE STORM SEWER PIPE LESS THAN OR EQUAL TO 36 IN.
		See Tab 110-14 on C Sheets for locations and details.
	-	-
41	2503-0200136	REMOVE STORM SEWER PIPE GREATER THAN 36 IN.
		See Tab 110-14 on C Sheets for locations and details.
	-	-
42	2504-0116012	SANITARY SEWER GRAVITY MAIN, TRENCHED, DUCTILE IRON PIPE (DIP), 12 IN.
		See Tab 104-5B on M Sheets for locations and details.
		Where shown on the Plans, pipe insulation required for frost protection shall be high density extruded polystyrene meeting ASTM D2842, Minimum 60 psi, equivalent to R-20 per four-inch (4") thick insulation.
		Insulation will not be measured and shall be considered incidental.
	-	-
43	2504-0116018	SANITARY SEWER GRAVITY MAIN, TRENCHED, DUCTILE IRON PIPE (DIP), 18 IN.
		See Tab 104-5B on M Sheets for locations and details.
	-	-
44	2504-0136012	SANITARY SEWER GRAVITY MAIN WITH CASING PIPE, TRENCHED DUCTILE IRON PIPE (DIP), 12 IN.
		See Tab 104-5B on M Sheets for locations and details.
	-	-
45	2504-0136018	SANITARY SEWER GRAVITY MAIN WITH CASING PIPE, TRENCHED DUCTILE IRON PIPE (DIP), 18 IN.
		See Tab 104-5B on M Sheets for locations and details.
	-	-
46	2506-4984000	FLOWABLE MORTAR
		See Tab 110-9 on C Sheets for locations and details.
	-	-
47	2507-3250005	ENGINEERING FABRIC
		See Tab 100-23 on C Sheets for locations and details.
	-	-
48	2507-6800061	REVETMENT, CLASS E
		See Tab 100-23 on C Sheets for locations and details.
	-	-
49	2510-6745850	REMOVAL OF PAVEMENT
		See Tab 110-1 on C Sheets for locations and details.
		See the B Sheets and Tab 102-5 on the C Sheets for available existing pavement information.

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
		Includes approximately 849 LF of full depth sawcut.
		Concrete crushing onsite, within the project limits, needs to meet current specifications and the local
		jurisdictional codes and ordinances.
	-	-
50	2510-6750600	REMOVAL OF INTAKES AND UTILITY ACCESSES
		See Tab 104-5B on the M Sheets for locations and details.
	-	-
51	2515-2475006	DRIVEWAY, P.C. CONCRETE, 6 IN.
		This item is for proposed turnaround on Cousins Road at Sta. 504+24.
	-	-
52	2518-0470005	CROSSOVER BARRICADE
		Locations at US 20 WB Sta. 1206+65-1207+30 and US 20 WB Sta. 1226+00-1227+80.
	-	-
53	2518-6891810	PERMANENT ROAD CLOSURE, RURAL, SI-181
		See Tab 102-4 on C Sheets for locations and details.
	-	-
54	2518-6910000	SAFETY CLOSURE
		See Tab 108-13A on C Sheets for locations and details.
	-	-
55	2524-6765010	REMOVE AND REINSTALL SIGN AS PER PLAN
		See Tab 190-61 and 190-62 on C Sheets for locations and details.
		Method of measurement: The Engineer will count the number of signs removed and reinstalled.
		Basis of Payment: The Contractor will be paid the contract unit price for the number of signs removed and
		replaced. The contractor shall carefully remove and stockpile bid items for later installation. Any damaged
		items as determined by the Engineer shall be replaced by the contractor at no cost to the State. The signs
		shall be cleaned as directed by the Engineer before installation. The Contractor shall restore any area
		disturbed by the removal operation to an acceptable condition.
	-	-
56	2524-6765014	REMOVE AND REINSTALL MILEPOST MARKER
		See Tab 190-62 on C Sheets for locations and details.
		Method of measurement: The Engineer will count the number of milepost markers removed and reinstalled.
		Basis of Payment: The Contractor will be paid the contract unit price for the number of milepost markers
		removed and replaced. The contractor shall carefully remove and stockpile bid items for later installation.
		Any damaged items as determined by the Engineer shall be replaced by the contractor at no cost to the State.
		The milepost markers shall be cleaned as directed by the Engineer before installation. The Contractor shall
		restore any area disturbed by the removal operation to an acceptable condition.
	-	-
57	2524-6765015	REMOVE AND REINSTALL DELINEATOR POSTS
		See Tab 190-62 on C Sheets for locations and details.
		Method of measurement: The Engineer will count the number of delineator posts removed and reinstalled.
		Basis of Payment: The Contractor will be paid the contract unit price for the number of dilineator posts
		removed and replaced. The contractor shall carefully remove and stockpile bid items for later installation.
		Any damaged items as determined by the Engineer shall be replaced by the contractor at no cost to the State.
		The delineator posts shall be cleaned as directed by the Engineer before installation. The Contractor shall
		restore any area disturbed by the removal operation to an acceptable condition.
	-	-
58	2524-9275222	WOOD POSTS FOR TYPE A OR B SIGNS, 4" X 6"
		See Tab 190-61 on C Sheets for locations and details.
	-	-
59	2526-8285000	CONSTRUCTION SURVEY
	-	-
60	2528-8445110	TRAFFIC CONTROL
		See Traffic Control Plan on J Sheets for locations and details.
	-	-
61	2533-4980005	MOBILIZATION
	-	-
62	2554-0112012	WATER MAIN, TRENCHED, DIP, 12"
		Refer to M Sheets for locations and details.
	-	-
63	2554-0112016	WATER MAIN, TRENCHED, DIP, 16"
		Refer to M Sheets
	-	-
64	2554-0132012	WATER MAIN WITH CASING PIPE, TRENCHED, DIP, 12"
		Refer to M Sheets
	-	-
65	2554-0132016	WATER MAIN WITH CASING PIPE, TRENCHED, DIP, 16"
		Refer to M Sheets
	-	-
66	2554-0203000	FITTINGS BY WEIGHT, DI
		Refer to M Sheets. This item includes sanitary and water main fittings.
	-	-
67	2554-0206000	VALVE, BUTTERFLY, DIP, 16"
		Refer to M Sheets
	-	-
68	2554-0207012	VALVE, GATE, DIP, 12"
		Refer to M Sheets
	-	-
69	2554-0210201	FIRE HYDRANT ASSEMBLY, WM-201
		Refer to M Sheets
	-	-
70	2555-0000010	DELIVER AND STOCKPILE SALVAGED MATERIALS
		Fire hydrants, water valves, and other associated equipment shall be delivered to the City of Dubuque
		maintenance garage at 910 Kerper Blvd Dubuque, IA 52001
	-	-

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
71	2590-00000020	PROJECT MANAGEMENT
		Refer to Special Provision SS-15002.
	-	-
72	2599-9999001	SUBGRADE STABILIZATION
		Apply and distribute evenly and uniformly 1.5 tons per acre of dry cereal straw or native grass straw.
		Use Certified Noxious Weed Seed Free Mulch certified by the Iowa Crop Improvement Association or other state's
		Crop Improvement Associations.
		The general absence of straw longer than 6 inches after distribution will be considered excessive pulverization
		and will not be accepted.
		After the application of the dry cereal straw or native grass straw, apply a tackifier that will easily mix with
		water and shall be noncorrosive to hydraulic application equipment. The tackifier will be nonfoaming and
		contain mixture enhancers to prevent foaming and mixing problems during agitation in the application equipment.
		Application equipment will have both mechanical agitation and a slurry bypass.
		Application rate will be as indicated by the manufacturer product label for the site conditions and
		time of year.
		Tackifiers will be considered safe to the applicator, adjacent workers, and the environment when properly
		applied according to Environmental Protection Agency (EPA) and other regulatory agencies.
		Material Safety Data Sheets (MSDS) will be required to be submitted to the Engineer prior to application.
		The tackifier will be nontoxic to plants, fish and other wildlife and 100% biodegradable.
		The tackifier will be water soluble natural proteins, vegetable gums, guar gums, starch, psyllium, pitch, or
		rosen type blended with gelling and hardening agents, or a water soluble blend of hydrophilic polymers,
		viscosifiers, sticking aids and other gums.
		Guar gum based tackifiers will consist of a minimum of 95% guar gum, by weight. The remaining 5% will consist
		of dispersing and cross-link additives. Starch will be a non-ionic, cold-water soluble (pre-gelatinized)
		granular cornstarch. Psyllium will be a finely ground muciloid coating of plantago seeds that is applied
		in a wet slurry to the surface of the soil. Pitch and Rosen will be a non-ionic pitch and rosin emulsion that
		has a minimum solids content of 48 percent. The rosin will be a minimum of 26 percent of the total solids
		content. The tackifier will be a non-corrosive, water-dilutable emulsion that cures to water-insoluble
		binding and cementing agent upon application.
		Approved products include:
		Hyrdatack P by Innovative Turf Solutions, LLC
		HF5000 Tack by Rantec Corporation
		Second Nature Tacpac GTX by Central Fiber Corp.
		Startak 100 P by Chemstar
		Method of Measurement will be in acres to the nearest 0.1 acre of subgrade stabilized.
		Basis of Payment for Subgrade Stabilization will be the contract unit price per acre to the nearest 0.1 acre for
		Subgrade Stabilization. Payment is full compensation for preparing the area and all materials, labor, and
		equipment required to stabilized the subgrade.
	-	-
73	2599-9999005	CONNECT TO EXISTING VAULT OR HANDHOLE
		See N Sheets for locations and details.
	-	-
74	2599-9999005	CORE DRILL VAULT OR HANDHOLE
		See N Sheets for locations and details.
	-	-
75	2599-9999005	FIBER VAULT, SQUARE
		See N Sheets for locations and details.
	-	-
76	2599-9999009	BUNDLED MICRODUCT CONDUIT, TRENCHED
		See N Sheets for locations and details. Refer to special provision
	-	-
77	2599-9999009	FIBER OPTIC CABLE
		See N Sheets for locations and details. Refer to special provision
		-
78	2599-9999009	WATER MAIN, REMOVAL
		Refer to M Sheets for locations. Method of measurement: shall be the quantity removed measured by the
		Engineer. Basis of payment: for water main pipe removed, the Contractor will be paid the contract unit price
		per linear foot. This payment shall be full compensation for materials, equipment and removal of existing 16",
		12", and 8" pipe and fittings.
	-	-
79	2601-2640350	SPECIAL DITCH CONTROL, WOOD EXCELSIOR MAT
		See Tab 100-22 on C Sheets or locations and details.
	-	-
80	2601-2642100	STABILIZING CROP - SEEDING AND FERTILIZING
		Included for disturbed areas as directed by the Engineer.
		Prepare seedbed according to 2601.03, B, 4, a.
		Seed mixture shall be:
		Oats 50 lbs. per acre
		Grain rye 50 lbs. per acre
		*Canada wildrye (Elymus canadensis) 5 lbs. PLS per acre

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
		*Big bluestem (Andropogon geradii) 3 lbs. PLS per acre
		*Little bluestem (Schizachyrium scoparium) 3 lbs. PLS per acre
		*Indiangrass (Sorghastrum nutans) 3 lbs. PLS per acre
		Sideoats grama (Bouteloua curtipendula) 3 lbs. PLS per acre
		Switchgrass (Panicum virgatum) 1 lbs. PLS per acre
		Partridge Pea (Chamaecrita fasciculate) 2 lbs. PLS per acre
		Butterfly weed (Asclepias tuberosa) 3 oz. PLS per acre
		Swamp Milkweed (Asclepias incarnata) 3 oz. PLS per acre
		*Note: Canada wildrye, Big bluestem, Little bluestem and Indiangrass shall be debearded or equal to facilitate
		the application of seed.
		For stabilizing crop only, seed will not be required to be certified as Source Identified Class
		(Yellow Tag) Source G0-Iowa.
		Seed may be applied by broadcasting or with a Native Grass Drill.
		Broadcasted seed will require one complete rolling of the area seeded with a cultipacker within 24 hours after
		seeding and prior to mulching or hydromulching.
		Native Grass Drilled seed must meet Article 2601.03, A, 11 and be completed per Article 2601.03, C, 5.
		prior to mulching or hydromulching.
		All seed shall be mixed off-site by a seed conditioner approved by the Iowa Crop Improvement
		or other state's Crop Improvement Association. Bags shall arrive onsite from seed conditioner in
		sealed/unopened bags.
		All disturbed areas shall be fertilized per Article 2601.03, C, 1.
	-	-
81	2602-0000020	SILT FENCE
		Refer to Tab. 100-17 in C Sheets. The tabulation includes estimated locations for placement of Silt Fence to
		address possible erosion during construction. Verify the specific locations with the Engineer prior to beginning
		placement.Bid item includes 25% additional quantity for field adjustments and replacements.
	-	-
82	2602-0000030	SILT FENCE FOR DITCH CHECKS
		Refer to Tab. 100-18 in C Sheets. The tabulation includes estimated locations for placement of Silt Fence for
		Ditch Checksto address possible erosion during construction. Verify the specific locations with the Engineer
		prior to beginning placement. Bid item includes 50% additional quantity for field adjustments and replacements.
	-	-
83	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS
		Refer to Tab 100-17 and 100-18 in C Sheets. This item is included for silt fence and silt fence for ditch check
		removal required for staging reasons, for replacement (replacement to be paid separately), or for areas that
		have achieved 70% permanent growth.
	-	-
84	2602-0000101	MAINT OF SILT FENCE/SILT FENCE-DITCH CHECK
		Refer to Tab 100-17 and 100-18 in C Sheets.
		This item is included for cleanout and repair of the silt fence and silt fence for ditch checks during the
		project.
	-	-
85	2602-0000160	ROCK CHECK DAM
		Refer to Tab 100-32 in C Sheets.
		Method of measurement: The Engineer will measure installed rock check damns in linear feet to the nearest 0.1
		foot.
		Basis of Payment: The Contractor will be paid the contract unit price per linear foot. Payment is full
		compensation for all materials, labor, and equipment required to construct the rock check dam as shown. Class
		10 excavation required to cut trench and engineering fabric installed prior to placing revetment are incidental
		and will not be paid for separately.
	-	-
86	2602-0000170	MAINT OF ROCK CHECK DAM
		Refer to Tab 100-32 in C Sheets.
		Method of Measurement: The Engineer will count each occurrence.
		Basis of Payment: The Contractor will be paid the conctract unit price for each occurrence. Payment if full
		compensation for clean out and disposal of material when capacity reaches 50%, and for any repair that is needed
		during the project.
	-	-
87	2602-0000309	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 9 IN. DIA.
		See Tab 100-19 on C Sheets for locations and details. This item is for storm sewer inlet protection.
	-	-
88	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.
		This item is for as needed storm sewer erosion protection.
	-	-
89	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.
		This item is for as needed storm sewer erosion protection.
	-	-
90	2602-0000350	REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE
		See Tab 100-19 on C Sheets for locations and details.
	-	-
91	2602-0010010	MOBILIZATIONS, EROSION CONTROL
		Refer to Standard Sepcifications
	-	-
92	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL
		Refer to Standard Sepcifications
	-	-

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description

105-4
10-18-11

STANDARD ROAD PLANS

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

Number	Date	Title
DR-101	04-21-15	Pipe Culvert (Bedding and Backfill)
DR-102	04-21-15	Pipe Culvert (Cover and Camber)
DR-103	04-21-15	Pipe Culvert (Installation Details)
DR-104	04-21-15	Depth of Cover Tables for Concrete and Corrugated Pipe
DR-111	04-21-15	Box Culvert (Backfill)
DR-121	04-21-15	Connected Pipe Joints
DR-122	04-21-15	Construction of Type "C" Concrete Adaptors for Pipe Culvert Connections
DR-141	04-21-15	Pipe Bends and Half Pipe
DR-201	04-21-15	Concrete Aprons
DR-203	04-21-15	Metal Pipe Aprons and Beveled Ends
DR-213	04-21-15	Pipe Apron Guard
DR-601	04-21-15	Reinforced Concrete Pipe Culvert
DR-611	04-21-15	Reinforced Concrete Pipe Culvert Letdown Structure
DR-621	04-21-15	Pipe Extension
DR-622	04-21-15	Pipe Extension Horizontal Bend One or Both Ends
DR-625	04-21-15	Pipe Extension Letdown Structure with Metal Apron
EC-101	04-19-16	Wood Excelsior Mat for Ditch Protection
EC-103	04-21-15	Wood Excelsior Mat for Slope Protection
EC-104	04-21-15	Turf Reinforced Mat (TRM)
EC-201	04-21-15	Silt Fence
EC-204	04-21-15	Perimeter and Slope Sediment Control Devices
EC-301	04-21-15	Rock Erosion Control (REC)
EC-502	04-21-15	Seeding in Rural Areas
EW-101	04-19-11	Embankment and Rebuilding Embankments
EW-102	10-21-14	Allowable Placement of Unsuitable Soil in Embankments
EW-103	10-15-13	Embankment Subgrade Treatment, Moisture Density Control and Special Compaction
EW-105	04-21-15	Reshaping Slopes and Ditches
EW-110	10-20-15	Ditch Blocks and Dikes
EW-201	10-21-14	Bridge Berm Grading without Recoverable Slope (Barnroof Section)
EW-202	10-21-14	Bridge Berm Grading without Recoverable Slope (Non-Barnroof Section)
EW-301	04-19-11	Guardrail Grading
EW-403	10-15-13	Temporary Erosion Control Measures
EW-501	10-15-13	Rural Entrance
EW-503	04-15-14	Side Road Grading
PV-410	10-18-11	Deceleration Taper for 16' Exit Ramp
PV-411	10-18-11	Acceleration Taper for 16' Entrance Ramp
SI-172	04-19-16	Delineators
SI-181	10-18-11	Permanent Road Closure - Rural
SI-881	10-15-13	Special Signs for Workzones
SW-101	04-21-09	Trench Bedding and Backfill Zones
SW-102	04-21-09	Rigid Gravity Pipe Trench Bedding
SW-104	04-21-09	Pressure Pipe Trench Bedding
SW-211	10-16-12	Special Pipe Connections for Storm Sewer
SW-301	10-21-14	Circular Sanitary Sewer Manhole
SW-303	10-21-14	Sanitary Sewer Manhole over Existing Sewer
SW-306	04-21-15	Chimney Seals for Sanitary Sewer Manholes
SW-501	10-16-12	Single Grate Intake
SW-502	10-16-12	Circular Single Grate Intake
SW-505	10-16-12	Double Grate Intake
SW-601	04-21-15	Castings for Sanitary Sewer Manholes
SW-603	10-15-13	Castings for Grate Intakes
TC-1	04-16-13	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-202	04-21-15	Work Within 15 ft of Traveled Way
TC-252	04-21-15	Routes Closed to Traffic
TC-402	04-21-15	Work Within 15 ft of Traveled Way
TC-418	10-15-13	Lane Closure on Divided Highway
TC-419	04-19-16	Lane Closure on Undivided Highway
TC-423	04-15-14	Closure of Two Adjacent Lanes on Undivided Highway
WM-101	04-21-09	Thrust Blocks
WM-102	04-21-09	Tracer System
WM-201	04-19-11	Fire Hydrant Assembly

111-25
10-18-11

INDEX OF TABULATIONS

Tabulation	Tabulation Title	Sheet No.
100-1C	ESTIMATED PROJECT QUANTITIES (UP TO A 5 DIVISION PROJECT)	C.2
100-1D	PROJECT DESCRIPTION	C.1
100-4A	ESTIMATE REFERENCE INFORMATION	C.4
100-17	TABULATION OF SILT FENCES	C.12
100-18	TABULATION OF SILT FENCES FOR DITCH CHECKS	C.13
100-19	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	C.15
100-22	ROLLED EROSION CONTROL	C.16
100-23	ROCK DITCH CHECKS/DITCHES/FLUMES/SPLASH BASINS/SLOPE PROTECTION	C.16
100-24	PCC PAVEMENT	C.16
100-26	INCIDENTAL ITEMS	C.12
100-32	ROCK CHECK DAM	C.17
100-34	STORMWATER DRAINAGE BASIN	C.18
100-35	SUMMARY OF STORMWATER STORAGE	C.19
102-4	LOCATIONS OF ROAD CLOSURE BARRICADES	C.19
102-5	EXISTING PAVEMENT	C.20
103-3	PROPOSED SUBGRADE TREATMENT	C.20
103-6	EMBANKMENT WITH MOISTURE CONTROL	CS.1
103-7	SHRINKAGE DATA	CS.1
104-3	DRAINAGE STRUCTURE BY ROAD CONTRACTOR	C.20
104-5B	INTAKES AND UTILITY ACCESSES	M.1
105-4	STANDARD ROAD PLANS	C.7
107-28	TABULATION OF TEMPLATE QUANTITES AND ADJUSTMENTS	C.21
108-13A	SAFETY CLOSURES	T.1
110-1	REMOVAL OF PAVEMENT	C.21
110-2	REMOVAL OF EXISTING STRUCTURES	C.21
110-9	CULVERT ABANDONMENT	C.21
110-12A	POLLUTION PREVENTION PLAN	C.8
110-14	SANITARY OR STORM SEWER ABANDONMENT OR REMOVAL	C.21
110-16	REMOVAL OF LIGHT POLES AND CONCRETE FOOTINGS	C.21
110-17	CLEARING AND GRUBBING	C.22
111-25	INDEX OF TABULATIONS	C.7
112-9	SHOULDERS	C.22
190-61	EXISTING SIGNS TO BE REINSTALLED	C.23
190-62	EXISTING SIGNS TO BE REMOVED	C.23
190-66	SUMMARY OF TYPE 'A' SIGNS	C.23

POLLUTION PREVENTION PLAN

This project is regulated by the requirements of the Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) General Permit No. 2 OR an Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) individual storm water permit . The Contractor shall carry out the terms and conditions of this permit and the Pollution Prevention Plan (PPP).
This Base PPP includes information on Roles and Responsibilities, Project Site Description, Controls, Maintenance Procedures, Inspection Requirements, Non-Storm Water Controls, Potential Sources of Off Right-of-Way Pollution, and Definitions. This plan references other documents rather than repeating the information contained in the documents. A copy of this Base Pollution Prevention Plan, amended as needed per plan revisions or by contract modification, will be readily available for review.

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

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

II. PROJECT SITE DESCRIPTION
- A. This Pollution Prevention Plan (PPP) is for the grading of the US 20 / SW Arterial Interchange.
- B. This PPP covers approximately 142.6 acres with an estimated 80.9 acres being disturbed. The portion of the PPP covered by this contract has 80.9 acres disturbed.
- C. The PPP is located in an area of one soil association (Fayette).
  The estimated average SCS runoff curve number for this PPP after completion will be 62.
- D. Storm Water Site Map - Multiple sources of information comprise the base storm water site map including:
  1. Drainage patterns – Plan and Profile sheets and Situation plans.
  2. Proposed Slopes – Cross Sections.
  3. Areas of Soil Disturbance – construction limits shown on Plan and Profile sheets.
  4. Location of Structural Controls – Tabulations on C sheets.
  5. Locations of Non-structural Controls – Tabulations on C sheets.
  6. Locations of Stabilization Practices – generally within construction limits shown on Plan and Profile sheets.
  7. Surface Waters (including wetlands) – Project Location Map and Plan and Profile sheets.
  8. Locations where storm water is discharged – Plan and Profile sheets.
- E. The base site map is amended by contract modifications and progress payments (fieldbook entries) of completed erosion control work. Also, due to project phasing, erosion and sediment controls shown on project plans may not be installed until needed, based on site conditions. For example, silt fence ditch checks will typically not be installed until the ditch has been installed. Installed locations may also be modified from tabulation locations by field staff. Installed locations will be documented by fieldbook entries.
- F. Runoff from this work will flow into Catfish Creek, and ultimately to the Mississippi River.

III. CONTROLS
- A. The contractor's ECIP specified in Article 2602.03 for accomplishment of storm water controls should clearly describe the intended sequence of major activities and for each activity define the control measure and the timing during the construction process that the measure will be implemented.
- B. Preserve vegetation in areas not needed for construction.
- C. Sections 2601 and 2602 of the Standard Specifications define requirements to implement erosion and sediment control measures. Actual quantities used and installed locations may vary from the Base PPP and amendment of the plan will be documented via fieldbook entries or by contract modification. Additional erosion and sediment control items may be required as determined by the inspector and/or contractor during storm water monitoring inspections. If the work involved is not applicable to any contract items, the work will be paid for according to Article 1109.03 paragraph B.
  1. EROSION AND SEDIMENT CONTROLS
     a. Stabilization Practices
        1) Site plans will ensure that existing vegetation or natural buffers are preserved where attainable and disturbed portions of the site will be stabilized.
        2) Stabilization practices shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased.
        3) Temporary stabilizing seeding shall be completed as the disturbed areas are constructed. If construction activity is not planned to occur in a disturbed area for at least 21 days, the area shall be stabilized by temporary seeding or mulching within 14 days.
        4) Permanent and Temporary Stabilization practices to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation.
        5) Preservation of existing vegetation within right-of-way or easements will act as vegetative buffer strips.

110-12A
Modified

POLLUTION PREVENTION PLAN

        6) Preservation of topsoil: Bid items to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan. Additional information may be found in Tabulations in the C or T sheets of the plans or is referenced in Standard Specifications Section 2105.
     b. Structural Practices
        1) Structural practices will be implemented to divert flows from exposed soils and detain or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Additionally, structural practices may include: silt basins that provide 3600 cubic feet of storage per acre drained or equivalent sediment controls, outlet structures that withdraw water from surface when discharging basins, and controls to direct storm water to vegetated areas.
        2) Structural practices to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan, as well as all other item specific Tabulations. Typical drawings detailing construction of the devices to be used on this project can be found on the B sheets of the plans or are referenced in the Standard Road Plans Tabulation.
     c. Storm Water Management
        1) Measures shall be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. This may include velocity dissipation devices at discharge locations and along length of outfall channel as necessary to provide a non-erosion velocity flow from structure to water course. If included with this project, these items are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan, as well as all other item specific Tabulations. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation. The installation of these devices may be subject to Section 404 of the Clean Water Act.
  2. OTHER CONTROLS
     a. Contractor disposal of unused construction materials and construction material wastes shall comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations. In the event of a conflict with other governmental laws, rules and regulations, the more restrictive laws, rules or regulations shall apply.
        1) Vehicle Entrances and Exits - Construct and maintain entrances and exits to prevent tracking of sediments onto roadways.
        2) Material Delivery, Storage and Use - Implement practices to prevent discharge of construction materials during delivery, storage, and use.
        3) Stockpile Management - Install controls to reduce or eliminate pollution of storm water from stockpiles of soil and paving.
        4) Waste Disposal - Do not discharge any materials, including building materials, into waters of the state, except as authorized by a Section 404 permit.
        5) Spill Prevention and Control - Implement procedures to contain and clean-up spills and prevent material discharges to the storm drain system and waters of the state.
        6) Concrete Residuals and Washout Wastes - Designate temporary concrete washout facilities for rinsing out concrete trucks. Provide directions to truck drivers where designated washout facilities are located. Designated washout areas should be located at least 50 feet away from storm drains, streams or other water bodies. Care should be taken to ensure these facilities do not overflow during storm events.
        7) Concrete Grooving/Grinding Slurry – Do not discharge slurry to a waterbody or storm drain. Slurry may be applied on foreslopes or removed from the project.
        8) Vehicle and Equipment Storage and Maintenance Areas - Perform on site fueling and maintenance in accordance with all environment laws such as proper storage of onside fuels and proper disposal of used engine oil or other fluids on site. Employ washing practices that prevent contamination of surface and ground water from wash water.
        9) Litter Management - Ensure employees properly dispose of litter.
        10) Dewatering – Properly treat water to remove suspended sediment before it re-enters a waterbody or discharges off-site. Measures are also to be taken to prevent scour erosion at dewatering discharge point.
     3. APPROVED STATE OR LOCAL PLANS
        During the course of this construction, it is possible that situations will arise where unknown materials will be encountered. When such situations are encountered, they will be handled according to all federal, state, and local regulations in effect at the time.

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

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

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

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

VIII. DEFINITIONS
- A. Base PPP - Initial Pollution Prevention Plan.
- B. Amended PPP - May include Plan Revisions or Contract Modifications for new items, storm water monitoring inspection reports, and fieldbook entries made by the inspector.
- C. IDR - Inspector's Daily Report – this contains the inspector's daily diary and bid item postings.

110-12A
Modified

POLLUTION PREVENTION PLAN

D. Controls - Methods, practices, or measures to minimize or prevent erosion, control sedimentation, control storm water, or minimize contaminants from other types of waste or materials. Also called Best Management Practices (BMPs).
E. Signature Authority - Representative from Designer, Contractor/Subcontractor, or RCE/Inspector authorized to sign various storm water documents.

CERTIFICATION STATEMENT

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

Signature

Eric Tott
Printed or Typed Name

Signature

Printed or Typed Name

231-2
10-16-12

HERBICIDE

For all herbicide applications, the following provisions shall apply.

1. Follow all laws, rules and regulations related to the handling of pesticides, including but not limited to:
   a. Follow all herbicide label directions, restrictions, and precautions.
   b. The company responsible for the herbicide applicator must be licensed with Iowa Department of Agriculture and Land Stewardship (IDALS) as a commercial pesticide applicator company.
   c. The person applying the herbicide must be certified through IDALS as a pesticide applicator in Category 6, Right-of-Way. For herbicide applications that require an aquatic certification, the applicator must also be certified as a pesticide applicator in Category 5, Aquatics.
   d. Use herbicide and adjuvant products labeled for the application site:
      i. For applications on the primary highway right-of-way, use only products labeled for use on highway rights-of-way or roadsides.
      ii. For applications to or over water, use only products labeled for corresponding use in aquatic sites, unless intermittent pockets of standing water, such as tire ruts, and the product is labeled for such use.
      iii. For applications to areas in the water conveyance portion of the ditch that do not contain water at the time of application, use only products labeled for non-irrigation ditch banks or aquatic sites.
   e. Do not apply any herbicide to or over standing or flowing water unless required coverage is obtained under a National Pollutant Discharge and Elimination System (NPDES) Pesticide Discharge Permit through Iowa DNR. If standing or flowing water is encountered in areas when they need to be sprayed, notify Iowa DOT (Roadside Development) to determine if submittal of a Notice of Intent (NOI) is required.

2. Schedule work according to weather conditions and take measures to avoid off-target damage, such as runoff, leaching, drift and volatilization.
   a. Do not spray herbicide 24 hours prior to forecast precipitation that is expected to cause significant runoff conditions.
   b. For areas with saturated soil, such as ditch bottoms, do not spray herbicide 24 hours prior to forecast precipitation, unless using products labeled for aquatic sites.
   c. For conventional applications, avoid applications when wind speed exceeds 10 mph. For invert applications, avoid applications when wind speed exceeds 15 mph.
   d. For conventional foliar applications, use a drift retardant and maintain drift control throughout the application period by adding more to the tank as it breaks down from agitation.
   e. Avoid spraying volatile products when temperatures are forecast to exceed 85° F within 3 days.
   f. Check the IDALS Sensitive Crops Directory and do not spray adjacent to a listed operation when wind is blowing towards it.

3. Respond to allegations of any off-target damage attributed to handling and spraying of herbicide.

4. Provide the following documents to the Engineer for approval not less than 2 weeks prior to the application.
   a. A copy of the herbicide and adjuvant labels, including any applicable supplemental labels.
   b. A copy of the herbicide and adjuvant Material Safety Data Sheets (MSDS.)

5. Have copies of the herbicide and adjuvant labels and MSDSs on-hand and at locations of storage, transport, and application.

6. Schedule work to maximize efficiency of the herbicide application in relation to weather conditions and plant growth stage. Follow any label recommendations given as “for best results.”
   a. For weed applications:
      i. To determine if weeds are “actively growing,” use as a guideline that there needs to have been at least 1 hour of temperature above 65° F and 1 hour of sun in the day prior to, of, or forecast before a rain the day after the application.
      ii. For spring applications to thistles, apply after basal leaves of Canada thistles are fully extended, and after rosettes of musk thistle are at least 8 inches diameter, but before flower stage.
      iii. For fall applications to thistles, apply prior to the second hard freeze of 28° F, unless otherwise listed in the label directions.
   b. For tree and brush applications:
      i. For foliar applications and cut stump/surface

231-2
10-16-12

HERBICIDE

applications with water-soluble products, apply after leaves are fully opened in the spring and prior to leaf discoloration in the fall.
      ii. For cut stump applications with oil soluble products, do not apply during periods of heavy sap flow. Use as a guideline that heavy sap flow occurs in late winter to early spring when nighttime temperatures below 32° F are followed by daytime temperatures above 32° F with sunny conditions.
      iii. For cut stump and basal bark applications, add sufficient dye so that treated areas are visible to inspection 7 days after application.

7. Notify the Engineer prior to calibrating, mixing and applying herbicides, including incidental items.

8. Provide copies of daily spray logs to the RCE at the end of each week of spraying (form provided by Iowa DOT).

9. If Contractor does not complete spray item on schedule, the Engineer may adjust the schedule.

232-6
10-18-11

EROSION CONTROL (SELECTIVE CLEARING)

Selective clearing will be required on this project. Do not remove any trees outside of the construction limits without the Engineer’s approval.

232-10
10-21-14

EMERALD ASH BORER

Dispose of all wood material generated as a result of clearing and/or grubbing according to the Iowa Department of Agriculture and Land Stewardship's Emerald Ash Borer (EAB) Quarantine Order. For more information refer to http://www.iowatreepests.com/eab_regulations.html.

253-1
10-18-11

MEDIAN CROSSOVER

The Contractor is prohibited from using any established or other type median crossover on this project unless specifically designated for the Contractor’s use by this plan.

262-6
10-18-05

UTILITIES (NOT A POINT 25 PROJECT)

This is NOT a POINT 25 project and is not subject to the provisions of IAC 761-115.25.

281-1
10-15-13

SECTION 404 PERMIT AND CONDITIONS

Construct this project according to the requirements of U.S. Army Corps of Engineers Regional Permit 7, Permit No. 2015-0154. A copy of this permit is available from the Iowa DOT website (http://envpermits.iowadot.gov/). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

232-11
04-15-14

EROSION CONTROL (STABILIZING CROP SEEDING)

Following the completion of work in a disturbed area, place stabilizing crop, fertilizer, and mulch on the disturbed area as follows:

Use seed mix and fertilizer meeting the requirements of Section 2601.03,C,1 of the Standard Specifications.

Use mulch meeting the requirements of Sections 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed and furnishing and applying seed, fertilizer, and mulch is incidental to mobilization and will not be paid for separately.

213-3
04-15-14

SUBSOIL TILLAGE

All stockpile areas, haul roads, and areas used for equipment on this project require subsoil tillage to an average depth of 16 to 20 inches prior to placement of topsoil and/or stabilizing crop seeding. Complete this tillage at 3 foot maximum centers and at right angles to the finished slope.

Use tillage equipment equipped with an arrowhead type shoe that will provide lateral displacement and limit the movement of the subsoil to the surface. Obtain the Engineer’s approval for the equipment. This work is incidental to other work on the project.

Following the subsoil tillage, the area is to remain in a “loosened” condition. Additional compaction or the operation of heavy equipment, other than required for topsoil placement and shaping, will not be allowed on areas which have received subsoil tillage.

271-9
09-27-94

DEMOLITION (BRIDGE REMOVAL)

A scrape sample was taken from one area of this bridge to get an indication of the existence of the level of total Chromium and total Lead. Analysis of total Lead on this sample was 536 parts per million (PPM). Analysis of total Chromium on this sample was 349 PPM. These analyses show the existence of these two toxic constituents. Levels indicated by these tests could create conditions above regulatory limits for health and safety requirements. No other constituents were analyzed. The bidder should not rely on the Department’s testing and analysis for any purpose other than as an indication of the existence of these two toxic constituents.

213-4
04-15-14

TOPSOIL ON HAUL ROAD

Before placing a construction haul road, strip and stockpile 12 inches of topsoil from within the proposed haul road footprint. After the haul road has been removed, prepare the disturbed area according to Standard Note 213-3 and then place topsoil over the disturbed area to a minimum depth of 12 inches. If a sufficient quantity of topsoil is not available within the proposed haul road footprint, furnish additional topsoil. This work is incidental to Mobilization and will not be paid for separately.

252-1
10-16-12

TEMPORARY CROSSINGS AND DETOURS

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

254-1
10-02-01

INCIDENT MANAGEMENT

An incident management plan, provided by the District Office, will be discussed at the pre-construction conference.

SIGNING NOTES

The following tolerances will be allowed on all signs:

Accumulation error of not greater than +/-0.50" per line of copy, not greater than +/-0.50" for spacing between lines of copy, and the margin between lines of copy and the inside edge of the sign border.

The following tolerances will be allowed on each letter or numeral:

nominal height	variation in height	variation in width
4" thru 12"	-1/8" to +3/8"	-1/4" to +1/4"
over 12"	-1/8" to +3/8"	-3/8" to +3/8"

Type B signs can be separated into two categories:
- Major Guide Signs.
- Minor Guide Signs.

Major Guide Signs include the advance and exit direction guide signs for an interchange or intersection.

Minor Guide Signs include all other guide signs such as NEXT EXIT signs, supplemental guide signs, logo signs, exit gore signs, post-interchange mileage signs, ramp destination signs, and ramp logo signs for an interchange, as well as destination signs along sideroads.

Type A signs are not separated into categories, but special consideration should be given to regulatory signs.

Do not remove Type B signs until replacement signs have been installed. If construction activities require the removal of a sign, the existing sign may be relocated to temporary posts, or a temporary plywood sign may be installed to replace the existing sign.

Existing non-regulatory Type A signs are NOT required to remain in place until installation of replacement signs. Existing regulatory Type A signs, particularly Stop signs, should not be removed until replacement signs are installed. This guideline may not apply if the traffic control plans have sufficient temporary signing.

Apply the following during the replacement or modification of signs:
- No more than one of the major guide signs for each direction of travel at an interchange out of service at any one time.
- No major guide sign out of service for more than 8 hours.
- No minor guide out of service for more than 24 hours.

Remove existing signs and posts within 24 hours following the installation of a new replacement sign.

In any case where the plans call for a new sign and posts to be installed at the same station location and offset as an existing sign, install the new posts at a minimum of either 5 ft ahead or behind the existing sign installation. Whenever posts for a replacement sign are erected directly in front of an existing sign, install the new replacement sign and remove the existing sign installation within 24 hours of the time that the new posts are erected.

Where signs are located behind guardrail, locate the near edge of the sign a minimum of 3 ft behind the guardrail posts. The Engineer may approve reducing this distance to a minimum of 1 ft where field conditions warrant.

Unless noted otherwise, leave auxiliary panels, such as exit number panels, in place or reattach to the sign using the existing mounting hardware. Also, when replacing an existing logo sign with a new logo sign, remove the business logo panel(s) from the existing sign and attach to the new sign as directed by the Engineer. Do not damage the auxiliary or logo panels when removing and reattaching them. This work is incidental to other work and no separate payment will be made.

259-1
10-15-13

SIGNING NOTES

The following notes apply to the corresponding sign installations shown on the plan sheets and listed in the tabulations.

IB INSTALL NEW TYPE B SIGN
IA INSTALL NEW TYPE A SIGN

Install new signs at the location identified in the plans.

For installation of new signs on existing posts:

- if the new sign is taller than the existing sign, furnish the necessary hardware to extend the sign above the posts. Refer to Standard Road Plan SI-132.

- if the new sign is shorter that the existing sign:

  - for wood posts and perforated square tube posts, install the sign at the proper height and cut off the excess post length.

  - for steel posts, install the sign at the top of the posts.

For installation of new signs on an existing sign support structure, refer to note (L).

Payment for installing Type A signs or Type B signs includes furnishing hardware for mounting, extending signs above existing posts, and cutting off wood posts.

MS MODIFY EXISTING SIGN

Modify the copy on the existing sign as shown in the plans.

Deliver existing copy which is removed to a DOT storage area within 50 mi, as designated by the Engineer.

Install the new copy as needed to make sign modifications.

Payment for Modification of Existing Sign includes removal of existing copy and installation of new copy.

MB INSTALL SPECIAL MOUNTING BRACKET

Install special mounting brackets at the locations identified in the plans. Refer to Tabulations 190-10, 190-51, and/or 190-65.

PW INSTALL NEW WOOD POSTS
PB INSTALL NEW BREAKAWAY STEEL POSTS AND FOOTING
PP INSTALL NEW PERFORATED SQUARE TUBE POSTS AND ANCHORS

Install new wood posts, breakaway steel posts and footings, or perforated square tube posts and anchors at the locations indicated in the plans. Refer to Tabulations 190-51 and 190-50 for post size and footing information.

If note (RR) accompanies (PW), (PB), or (PP), install an existing sign on the new posts.

RR REMOVE AND REINSTALL SIGN:

Do not remove existing major Type B guide signs on posts until the new posts are installed. Promptly remove sign and install at the new location.

Existing major Type B guide signs on overhead support structures, minor Type B guide signs, plywood signs, and Type A signs may be removed and stored. Transport the signs to a DOT storage area within 50 mi, as designated by the Engineer. Transport the signs back to the job site when ready for installation at the new location.

Replace signs damaged by the Contractor's activities at no additional cost to the Contracting Authority.

Payment for Remove and Reinstall Sign includes sign removal, delivery to the DOT storage area (if applicable), and reinstallation.

RA REMOVE TYPE A SIGN ASSEMBLY
RB REMOVE TYPE B SIGN ASSEMBLY

Type A Sign Assembly consists of one or more signs installed on one or more wood posts, either directly mounted to the post or mounted to the post with special sign mounting brackets.

259-1
10-15-13

SIGNING NOTES

Type B Sign Assembly consists of the main sign, all auxiliary signs and brackets, and the wood or steel posts.

Unless stated otherwise in the plans, remove all posts with the signs and brackets.

Remove each sign assembly identified in the plans. Sign posts removed become the property of the Contractor. All other materials removed remain the property of the DOT.

Disassemble each sign assembly removed before delivering to the DOT. For Type A sign assemblies, unbolt all signs, special mounting brackets, and posts from each other. For Type B assemblies, unbolt all extruded aluminum panels, brackets, and posts from each other. Do not damage the disassembled materials.

Place backfill in holes remaining from the removal of wood posts and restore to the normal surrounding conditions.

Deliver the removed signs, special sign mounting brackets, and extruded aluminum panels to a DOT storage area within 50 mi, as designated by the Engineer.

The concrete footings for steel posts are not considered part of the sign assembly. Refer to note RF for concrete footing removal.

Payment for Removal of Type A Sign Assembly or Removal of Type B Sign Assembly includes sign assembly removal and disassembly, post removal (if applicable), delivery to the DOT storage area, placing backfill in holes, and restoration of the surrounding conditions.

RF REMOVE EXISTING CONCRETE FOOTING FOR STEEL POST

Remove existing concrete footings to a depth of 1 ft below ground. Place backfill in holes remaining from removal and restore to the normal surrounding conditions. This work is incidental to other work and no separate payment will be made.

RS REMOVE EXISTING TYPE B SIGN SUPPORT STRUCTURE

The following are considered Type B Sign Support Structures:
- Overhead sign truss and foundation,
- Cantilevered sign truss and foundation, or
- Bridge mounted brackets.

For removal purposes, wood and steel post are not considered Type B Support Structures.

Unless stated otherwise in the plans, existing overhead trusses, cantilevered trusses, and bridge brackets which are removed become the property of the Contractor. If stated in the plans, deliver overhead trusses, cantilevered trusses, and bridge brackets to a DOT storage area within 50 mi, as designated by the Engineer.

Payment for Removal of Sign Support Structure and Foundation includes sign support structure removal, delivery to the DOT storage area (if applicable), and restoration of the surrounding conditions.

L MODIFTY SIGN SUPPORT ANGLES NEEDED TO INSTALL SIGNS ON EXISTING SIGN SUPPORTS STRUCTURES

Refer to the sign support structure details for information on the required angle brackets.

Provided all specifications are met, the existing sign support angles may be reused. Install existing sign support angles to be reused only on the sign support structure from which they were removed.

Sign support angles removed and not reused become the property of the Contractor.

When reusing the existing sign support angles with a shorter replacement sign, the sign support angles may need to be trimmed. Refer to the sign support details to determine if and where to trim the sign support angles.

Do not use existing fasteners. Use new stainless steel bolts and nuts to install the existing or new sign support angles to the sign support structure.

259-1
10-15-13

SIGNING NOTES

Removal of existing sign support angles is incidental to removal of the sign.

Reinstalling and/or modifying existing sign support angles; furnishing and installing new sign support angles (if required); and furnishing and installing new fasteners is incidental to work associated with Type B signs.

SIGN INSTALLATION QUALITY CONTROL NOTES

Post lengths have been derived from the proposed grading cross sections. Field verify post lengths.

Slight differences between the design template and the actual conditions should be expected. These variations should be resolved by doing some localized shaping and grading. Obtain material needed to meet the site requirements of SI-113 from the footing excavation and/or the area immediately adjacent to the footing. Ensure reshaping work does not substantially change foreslopes or the drainage in the vicinity of the sign.

Significant differences between the design template and the actual field conditions need to be resolved in this manner:

Survey the location and draw the actual template on the cross section. Recalculate each post length and compare to the maximum allowable leg length. If all of the maximum leg lengths are less than or equal to the maximum allowable leg length, then the proposed post design will be sufficient. If any leg is greater than the maximum allowable leg length, then submit the cross section with the actual template drawn (including offsets and elevation from the survey shown) to the Engineer. The Engineer may forward this information on to the design Engineer in order to complete a new post design.

Install the footings, stub posts, and posts according to the following tolerances:

-elevation difference from the edge of pavement to the bottom of the sign within 6 inches of the dimension shown.

-elevation difference of less than 2 inches between the top of the highest post and the lowest post at a site.

Footing construction is the controlling activity that substantially affects the quality of the site installation. Verify the elevation difference between the stubs is exactly the same as the elevation difference between the post lengths. If the Engineer requests, submit documentation detailing the site field shots in order to verify site installation.

TABULATION OF SILT FENCES

Refer to EC-201

Location			Length	Remarks
Begin Station	End Station	Side	LF	
+89, 43.5' RT	+40, 43.5' RT	RT	1285.0	DA 1 STORAGE = 4133.5 CF
+89, 23.5' RT	+40, 23.5' RT	RT	1288.0	DA 1 STORAGE = 4592.0 CF
+89, 23.5' LT	+50, 23.5' LT	LT	1530.0	DA 2 STORAGE = 17673 CF
54+83, 77' LT	62+52, 77' LT	LT	879.0	DA 2 STORAGE = 2812.2 CF
6+81, 122' LT	1+66, 122' LT	LT	567.0	DA 2 STORAGE = 1758.1 CF
63+69, 29' RT	72+98, 30' RT	RT	1030.0	DA 3 STORAGE = 4923.1 CF
67+30, 85' RT	72+60, 89' RT	RT	592.0	DA 3 STORAGE = 1617.9 CF
67+04, 66' LT	2+76, 249' LT	LT	828.0	DA 4 STORAGE = 3938.5 CF
0+95, 111' LT	2+41, 252' LT	LT	343.0	DA 4 STORAGE = 894.3 CF
23+21, 57' LT	27+19, 42' LT	LT	454.0	DA 5 STORAGE = 2239.7 CF
30+94, 81' LT	5+19, 111' LT	LT	488.0	DA 6 STORAGE = 1105.7 CF
34+97, 36' LT	36+50, 36' LT	LT	170.0	DA 6 STORAGE = 811.5 CF
36+50, 36' LT	39+81, 73' LT	LT	385.0	DA 7 STORAGE = 1027.0 CF
9+02, 151' LT	42+50, 80' LT	LT	415.0	DA 7 STORAGE = 962.0 CF
0+31, 178' LT	4+38, 104' LT	LT	498.0	DA 7 STORAGE = 1132.8 CF
1+32, 190' LT	3+74, 140' LT	LT	306.0	DA 7 STORAGE = 666.7 CF
1+41, 183' RT	29+98, 40' RT	RT	1105.0	DA 9 STORAGE = 5328.9 CF
1+28, 271' RT	29+98, 72' RT	RT	1124.0	DA 9 STORAGE = 3172.6 CF
1+25, 317' RT	26+04, 99' RT	RT	745.0	DA 9 STORAGE = 2101.4 CF
34+58, 14' RT	35+27, 65' LT	BOTH	145.0	DA 10 STORAGE = 1410.2 CF
35+36, 77' RT	36+68, 68' LT	BOTH	236.0	DA 10 STORAGE = 2632.3 CF
39+54, 40' RT	40+04, 30' LT	BOTH	126.0	DA 11 STORAGE = 1155.0 CF
40+54, 40' RT	41+04, 30' LT	BOTH	126.0	DA 11 STORAGE = 1155.0 CF
41+54, 40' RT	42+04, 30' LT	BOTH	126.0	DA 11 STORAGE = 1155.0 CF
42+54, 40' RT	43+04, 30' LT	BOTH	126.0	DA 11 STORAGE = 1155.0 CF
43+54, 40' RT	44+04, 30' LT	BOTH	126.0	DA 11 STORAGE = 1155.0 CF
44+54, 40' RT	45+04, 30' LT	BOTH	126.0	DA 11 STORAGE = 1155.0 CF
45+54, 40' RT	46+04, 30' LT	BOTH	126.0	DA 11 STORAGE = 1155.0 CF
00+35, 35' LT	00+46, 35' RT	BOTH	111.0	DA 12 STORAGE = 800.2 CF
01+35, 35' LT	01+46, 35' RT	BOTH	111.0	DA 12 STORAGE = 800.2 CF
02+35, 35' LT	02+46, 35' RT	BOTH	111.0	DA 12 STORAGE = 800.2 CF
03+35, 35' LT	03+46, 35' RT	BOTH	111.0	DA 12 STORAGE = 800.2 CF
91+55, 30' LT	91+55, 25' RT	BOTH	95.0	DA 13 STORAGE = 225.5 CF
91+93, 30' LT	93+55, 30' LT	LT	203.0	DA 13 STORAGE = 2189.1 CF
92+76, 25' RT	95+57, 25' RT	RT	340.0	DA 13 STORAGE = 3760.4 CF
91+11, 30' LT	91+11, 25' RT	BOTH	95.0	DA 14 STORAGE = 753.5 CF
90+11, 30' LT	90+11, 25' RT	BOTH	95.0	DA 14 STORAGE = 753.5 CF
89+11, 30' LT	89+11, 25' RT	BOTH	95.0	DA 14 STORAGE = 753.5 CF
88+11, 30' LT	88+11, 25' RT	BOTH	95.0	DA 14 STORAGE = 753.5 CF
87+11, 30' LT	87+11, 43' RT	BOTH	113.0	DA 14 STORAGE = 1000.1 CF
86+11, 30' LT	86+11, 55' RT	BOTH	125.0	DA 14 STORAGE = 1164.5 CF
04+80, 91' LT	2+21, 189' LT	LT	815.0	DA 15 STORAGE = 2462.8 CF
07+47, 75' LT	2+29, 135' LT	LT	550.0	DA 15 STORAGE = 1796.1 CF
09+47, 75' LT	13+17, 86' LT	LT	430.0	DA 15 STORAGE = 1340.2 CF
6+37, 106' LT	16+67, 14' LT	LT	136.0	DA 15 STORAGE = 334.1 CF
7+00, 107' LT	17+30, 14' LT	LT	138.0	DA 15 STORAGE = 341.0 CF
7+61, 111' LT	517+97, 0' LT	LT	158.0	DA 15 STORAGE = 410.6 CF
8+26, 115' LT	518+55, 0' LT	LT	160.0	DA 15 STORAGE = 417.6 CF
05+75, 56' RT	18+56, 34' RT	RT	243.0	DA 16 STORAGE = 1018.8 CF
16+67, 99' RT	18+49, 84' RT	RT	220.0	DA 16 STORAGE = 648.0 CF
6+74, 148' RT	8+52, 133' RT	RT	220.0	DA 16 STORAGE = 648.0 CF
9+12, 112' LT	1+62, 126' LT	LT	325.0	DA 17 STORAGE = 837.4 CF
19+11, 67' LT	2+03, 108' LT	LT	385.0	DA 17 STORAGE = 1027.0 CF
19+07, 33' LT	22+24, 72' LT	LT	408.0	DA 17 STORAGE = 1882.7 CF
9+33, 143' RT	0+86, 368' RT	RT	403.0	DA 18 STORAGE = 1083.9 CF
9+30, 113' RT	1+05, 345' RT	RT	487.0	DA 18 STORAGE = 1286.1 CF
19+27, 83' RT	1+24, 321' RT	RT	555.0	DA 18 STORAGE = 1501 CF
19+15, 44' RT	1+43, 298' RT	RT	666.0	DA 18 STORAGE = 3062.1 CF
2+84, 159' RT	5+32, 133' RT	RT	310.0	DA 25 STORAGE = 790 CF
5+21, 169' RT	7+11, 154' RT	RT	230.0	DA 25 STORAGE = 1027.9 CF
7+15, 150' RT	15+70, 30' RT	RT	942.0	DA 25 STORAGE = 4555.2 CF
7+12, 200' RT	15+42, 77' RT	RT	876.0	DA 25 STORAGE = 2515.4 CF
11+71, 46' LT	16+50, 46' LT	LT	565.0	DA 27 STORAGE = 2623.9 CF
14+00, 86' LT	16+50, 86' LT	LT	307.0	DA 27 STORAGE = 780.5 CF
16+50, 59' LT	0+78, 148' LT	LT	575.0	DA 28 STORAGE = 2678.0 CF
6+50, 101' LT	1+22, 212' LT	LT	611.0	DA 28 STORAGE = 2872.7 CF
9+73, 139' LT	1+22, 251' LT	LT	243.0	DA 28 STORAGE = 1098.2 CF
9+29, 246' LT	1+22, 294' LT	LT	236.0	DA 28 STORAGE UNKOWN
9+50, 75' LT	11+10, 16' LT	LT	310.0	DA 29 STORAGE = 790.0 CF
0+12, 104' RT	5+10, 62' RT	RT	582.0	DA 31 STORAGE = 1586.3 CF
5+10, 79' RT	11+09, 39' RT	RT	652.0	DA 31 STORAGE = 1807.5 CF
8+87, 57' RT	11+01, 61' RT	RT	235.0	DA 31 STORAGE = 616.2 CF
0+16, 73' RT	3+06, 27' RT	RT	364.0	DA 31 STORAGE = 960.6 CF
2+80, 46' RT	5+07, 27' RT	RT	288.0	DA 31 STORAGE = 720.5 CF
4+98, 46' RT	6+98, 27' RT	RT	240.0	DA 31 STORAGE = 632.0 CF
6+88, 46' RT	8+92, 27' RT	RT	243.0	DA 31 STORAGE = 641.5 CF
12+39, 96' RT	2+24, 120' RT	RT	1219.0	DA 32 STORAGE = 4380.7 CF
2+83, 153' RT	1+79, 151' RT	RT	1170.0	DA 32 STORAGE = 4181.8 CF
4+01, 211' RT	1+15, 201' RT	RT	988.0	DA 32 STORAGE = 3524.1 CF
4+91, 265' RT	0+69, 257' RT	RT	840.0	DA 32 STORAGE = 3004.4 CF
5+76, 318' RT	9+98, 313' RT	RT	650.0	DA 32 STORAGE = 2314.2 CF
86+91,134' RT	3+00, 126' RT	RT	637.0	DA 33 STORAGE = 2261.4 CF
7+39, 168' RT	4+74, 126' RT	RT	772.0	DA 33 STORAGE = 2809.5 CF

100-17
04-20-10

TABULATION OF SILT FENCES

Refer to EC-201

Location			Length	Remarks
Begin Station	End Station	Side	LF	
8+33, 213' RT	98+00, 99' RT	RT	1068.0	DA 33 STORAGE = 3542.0 CF
9+34, 256' RT	95+63 171' RT	RT	723.0	DA 33 STORAGE = 2444.3 CF
8+83, 133' RT	1+14, 164' RT	RT	296.0	DA 34 STORAGE = 745.8 CF
8+81, 179' RT	1+13, 222' RT	RT	304.0	DA 34 STORAGE = 661.2 CF
90+42, 61' LT	5+66, 108' LT	LT	611.0	DA 36 STORAGE = 2872.7 CF
95+66 ,86' LT	96+32, 94' LT	LT	106.0	DA 36 STORAGE = 357.1 CF
96+41, 78' LT	297+57,94' LT	LT	156.0	DA 36 STORAGE = 627.6 CF
97+48, 75' LT	98+75, 94' LT	LT	166.0	DA 36 STORAGE = 681.7 CF
8+54, 109' LT	6+69, 126' LT	LT	155.0	DA 36 STORAGE = 622.2 CF
9+55, 106' LT	1+15, 130' LT	LT	200.0	DA 36 STORAGE = 865.6 CF
85+64, 36' LT	92+28, 41' LT	LT	751.0	DA 37 STORAGE NOT REQ.
82+43, 44' LT	283+51,63' LT	LT	273.0	DA 38 STORAGE = 1152.3 CF
282+21, 0' LT	4+42, 226' LT	LT	418.0	DA 38 STORAGE = 1131.3 CF
81+87, 58' LT	3+15, 164' LT	LT	212.0	DA 38 STORAGE = 543.5 CF
281+75, 0'LT	2+91, 189' LT	LT	315.0	DA 38 STORAGE = 802.6 CF
20+00, 86' RT	22+75, 46' RT	RT	353.0	DA 39 STORAGE = 925.9 CF
21+49, 83' RT	22+70, 70' RT	RT	168.0	DA 39 STORAGE = 404.5 CF
1+80, 103' RT	22+76, 94' RT	RT	140.0	DA 39 STORAGE = 316.0 CF
2+03, 125' RT	22+85, 35' RT	RT	238.0	DA 39 STORAGE = 562.5 CF
524+27, 85' T	29+48 ,70' LT	LT	610.0	DA 40 STORAGE = 1674.8 CF
524+31, 0' RT	30+48, 47' RT	RT	742.0	DA 41 STORAGE = 2028.7 CF
30+48, 37' RT	33+96, 60' RT	RT	400.0	DA 41 STORAGE = 1074.4 CF
33+97, 42' RT	6+56, 165' RT	RT	315.0	DA 41 STORAGE = 805.8 CF
4+02, 162' RT	6+08, 147' RT	RT	270.0	DA 41 STORAGE = 663.6 CF
4+82, 182' RT	5+42, 179' RT	RT	101.0	DA 41 STORAGE = 192.8 CF
183+52.00	183+52.00	LT	387.0	DA 42 STORAGE NOT REQ.
TOTAL INSTALLATION =			46857.0	
TOTAL INSTALLATION (ADJUSTED) =			58571.3	
TOTAL MAINTENANCE (ADJUSTED) =			4685.7	
TOTAL REMOVAL (ADJUSTED) =			23428.5	

INCIDENTAL ITEMS

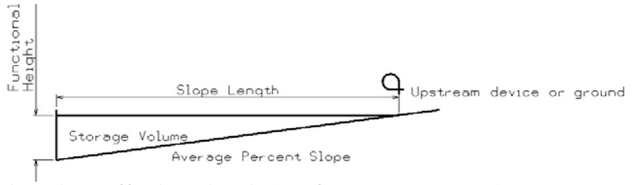
Special or unique items where method of measurement / basis of payment is not indicated in the specifications or other contract documents.

No.	Incidental Item	Unit	Quantity	Incidental To		Remarks
				Item Code	Item	
1	POLYSTYRENE INSULATION	SF	480	2504-0116012	SANITARY SEWER GRAVITY MAIN, TRENCHED, DUCTILE IRON PIPE (DIP), 12 IN.	Refer to Sheet M.4

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201





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

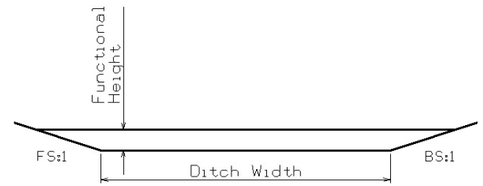
* Volume equation: $[0.5*Spacing*(0.5*H^2*FS+DW*H+0.5*H^2*BS)]$

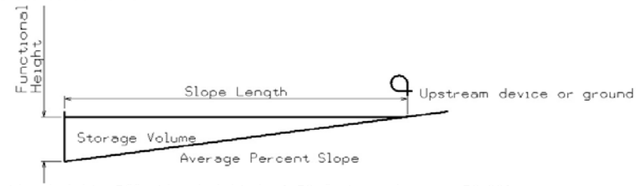
Basin No.	Location		Bid Items			Stormwater Storage Volume Summary					Remarks
	Station	Side	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Avg. % Slope	Volume*	
			LF	LF	LF	FS:1	BS:1	FT		CF	
3	72+66.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	72+52.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	72+07.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	71+57.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	71+07.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	70+58.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	70+05.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	69+50.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	68+95.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	68+40.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	67+86.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	67+31.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	66+78.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	66+24.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	65+71.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	65+18.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	64+65.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
3	64+13.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.0%	482.3	
4	72+16.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
4	71+71.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
4	71+15.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
4	70+44.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
4	65+75.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
4	69+07.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
4	68+38.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
4	67+69.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
4	67+00.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
4	66+31.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
4	65+61.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
5	1523+21.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.2%	578.8	
5	1523+78.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.2%	578.8	
5	1524+30.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.2%	578.8	
5	1524+83.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.2%	578.8	
5	1525+38.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.2%	578.8	
5	1525+98.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.2%	578.8	
5	1526+57.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.2%	578.8	
5	1527+17.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.2%	578.8	
5	1527+78.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.2%	578.8	
5	1528+36.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.2%	578.8	
5	1528+96.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.2%	578.8	
5	1529+56.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	2.5%	646.4	
5	1530+16.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	2.5%	646.4	
6	1536+48.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.0%	1495.1	
6	1534+86.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.0%	1495.1	
6	1533+25.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.0%	1495.1	
6	1531+68.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	1.0%	1669.8	
7	1536+56.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1537+09.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1537+61.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1538+11.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1238+65.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1239+15.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1239+64.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1240+14.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1240+64.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1241+13.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1241+63.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1242+13.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1242+62.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1243+12.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
7	1243+62.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
8	1245+20.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.0%	723.4	
8	1244+45.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.0%	723.4	
8	1245+26.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.7%	482.3	
8	1245+76.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.7%	482.3	
9	1530+00.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	1.6%	723.4	
9	1530+75.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	1.6%	723.4	
9	1531+50.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	1.6%	723.4	
9	1532+25.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	1.6%	723.4	

100-18
Modified

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201





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

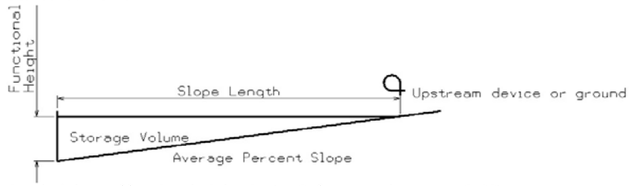
* Volume equation: $[0.5*Spacing*(0.5*H^2*FS+DW*H+0.5*H^2*BS)]$

Basin No.	Location		Bid Items			Stormwater Storage Volume Summary					Remarks
	Station	Side	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Avg. % Slope	Volume*	
			LF	LF	LF	FS:1	BS:1	FT		CF	
9	1532+99.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	1.6%	723.4	
9	1533+71.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	1.6%	723.4	
9	1534+42.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	1.6%	723.4	
9	1535+15.00	RT	18.0	18.0	18.0	6.0	3.0	0.0	1.6%	304.4	
9	1535+87.00	RT	18.0	18.0	18.0	6.0	3.0	0.0	1.6%	304.4	
9	1536+60.00	RT	18.0	18.0	18.0	6.0	3.0	0.0	1.6%	304.4	
9	1537+33.00	RT	18.0	18.0	18.0	6.0	3.0	0.0	1.6%	304.4	
9	1538+07.00	RT	18.0	18.0	18.0	6.0	3.0	0.0	1.6%	304.4	
10	1225+92.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
10	1226+67.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
10	1227+42.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
10	1228+17.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
10	1228+92.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
10	1229+67.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
10	1230+42.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.9%	723.4	
15	4513+75.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	4513+35.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	4512+95.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	4512+55.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	4512+15.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	4511+75.00	LT	31.0	31.0	31.0	6.0	4.5	10.0	3.6%	458.0	
15	4511+35.00	LT	31.0	31.0	31.0	6.0	4.5	10.0	3.6%	458.0	
15	4510+95.00	LT	31.0	31.0	31.0	6.0	4.5	10.0	3.6%	458.0	
15	4510+55.00	LT	31.0	31.0	31.0	6.0	4.5	10.0	3.6%	458.0	
15	4510+15.00	LT	31.0	31.0	31.0	6.0	4.5	10.0	3.6%	458.0	
15	4509+75.00	LT	31.0	31.0	31.0	6.0	4.5	10.0	3.6%	458.0	
15	4509+35.00	LT	31.0	31.0	31.0	6.0	4.5	10.0	3.6%	458.0	
15	4508+95.00	LT	31.0	31.0	31.0	6.0	4.5	10.0	3.6%	458.0	
15	4508+55.00	LT	31.0	31.0	31.0	6.0	4.5	10.0	3.6%	458.0	
15	4508+15.00	LT	31.0	31.0	31.0	6.0	4.5	10.0	3.6%	458.0	
15	4507+75.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1207+14.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1206+74.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1206+34.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1205+94.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1205+54.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1205+14.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1204+74.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1204+34.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1203+94.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1203+54.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1203+14.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1202+74.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1202+34.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1201+94.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1201+54.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1201+14.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1200+74.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1200+34.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1199+94.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1199+54.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1199+14.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1198+74.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1198+34.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1197+94.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1197+54.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1197+14.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1196+74.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1196+34.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1195+94.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1195+54.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1195+14.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1194+74.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1194+34.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1193+94.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
15	1193+54.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	3.6%	430.9	
16	4516+80.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4516+40.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4516+00.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201





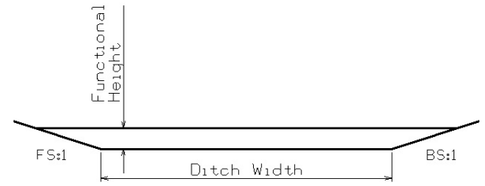
* The functional height used in the volume equation is 85% of effective height. Effective height is 1.58 feet as shown on EC-201.
* Volume equation: [0.5*Spacing*(0.5*H²*FS+DW*H+0.5*H²*BS)]

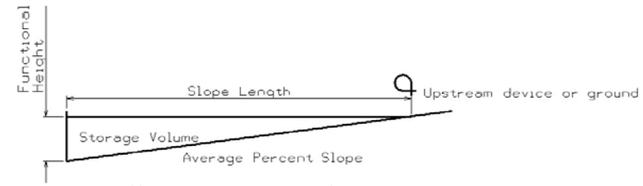
Basin No.	Location		Bid Items			Stormwater Storage Volume Summary					Remarks
	Station	Side	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Avg. % Slope	Volume*	
			LF	LF	LF	FS:1	BS:1	FT		CF	
16	4515+60.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4515+20.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4514+80.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4514+40.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4514+00.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4513+60.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4513+20.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4512+80.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4512+40.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4512+00.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4511+60.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4511+20.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4510+80.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4510+40.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4510+00.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4509+60.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4509+20.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4508+80.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4508+40.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4508+00.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
16	4507+60.00	RT	26.0	26.0	26.0	6.0	3.0	10.0	3.8%	430.9	
20	1190+67.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	3.1%	394.6	
20	1190+22.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	3.4%	394.6	
21	1207+58.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	2.9%	438.4	
21	1207+13.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	2.9%	438.4	
21	1206+68.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	2.9%	438.4	
22	1217+72.00	LT	26.0	26.0	26.0	3.5	3.0	10.0	2.6%	482.3	
22	1217+13.00	LT	26.0	26.0	26.0	3.5	3.0	10.0	2.6%	482.3	
23	1217+62.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	3.0%	438.4	
23	1217+12.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	3.0%	438.4	
24	1217+62.00	RT	26.0	26.0	26.0	3.5	3.0	10.0	4.2%	337.6	
24	1217+28.00	RT	26.0	26.0	26.0	3.5	3.0	10.0	4.2%	337.6	
24	1216+93.00	RT	26.0	26.0	26.0	3.5	3.0	10.0	4.2%	337.6	
25	2515+20.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	0.4%	3038.5	
25	2511+91.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	0.4%	3038.5	
25	2508+51.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	0.4%	3038.5	
26	2517+00.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.5%	434.1	
26	2517+60.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.5%	434.1	
26	2518+05.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.5%	434.1	
26	2518+50.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.5%	434.1	
26	2518+95.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.5%	434.1	
26	2519+34.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	3.5%	434.1	
27	2512+00.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2511+76.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2511+53.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2511+29.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2511+05.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2510+81.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2510+57.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2510+33.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2510+09.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2509+85.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2509+60.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2509+36.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2509+12.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2508+87.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2508+62.00	LT	17.0	17.0	17.0	6.0	3.5	0.0	5.8%	107.1	
27	2516+50.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	0.4%	3038.5	
29	9+50.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	9+04.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	8+58.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	8+09.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	7+59.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	7+09.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	6+59.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	6+09.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	5+59.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	5+09.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	4+59.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	

100-18
Modified

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201





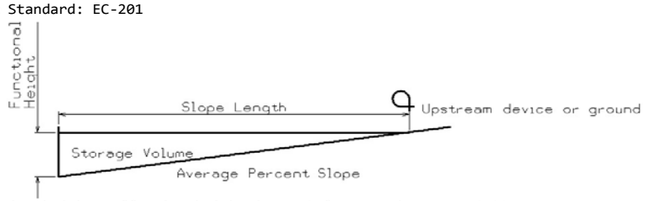
* The functional height used in the volume equation is 85% of effective height. Effective height is 1.58 feet as shown on EC-201.
* Volume equation: [0.5*Spacing*(0.5*H²*FS+DW*H+0.5*H²*BS)]

Basin No.	Location		Bid Items			Stormwater Storage Volume Summary					Remarks
	Station	Side	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Avg. % Slope	Volume*	
			LF	LF	LF	FS:1	BS:1	FT		CF	
29	4+09.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	3+59.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	3+09.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	2+59.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	2+09.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	1+59.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	1+09.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
29	+59.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	2.9%	482.3	
30	11+50.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	12+17.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	12+86.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	13+60.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	14+35.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	15+10.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	15+85.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	16+60.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	17+35.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	18+14.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	18+99.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	19+84.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	20+71.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	21+63.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
30	22+36.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	1.7%	723.4	
32	11+20.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	0.9%	1495.1	
32	13+12.00	RT	26.0	26.0	26.0	3.5	4.5	10.0	0.9%	1600.0	
32	14+67.00	RT	26.0	26.0	26.0	3.5	4.5	10.0	0.9%	1600.0	
32	16+22.00	RT	26.0	26.0	26.0	3.5	4.5	10.0	0.9%	1600.0	
32	17+76.00	RT	26.0	26.0	26.0	3.5	4.5	10.0	0.9%	1600.0	
32	19+14.00	RT	26.0	26.0	26.0	3.5	4.5	10.0	0.9%	1600.0	
32	20+52.00	RT	26.0	26.0	26.0	3.5	4.5	10.0	0.9%	1600.0	
32	21+88.00	RT	26.0	26.0	26.0	3.5	4.5	10.0	0.9%	1600.0	
33	185+89.00	RT	26.0	26.0	26.0	3.5	4.5	10.0	0.5%	3251.5	
33	189+53.00	RT	26.0	26.0	26.0	3.5	4.5	10.0	0.5%	3251.5	
33	192+77.00	RT	26.0	26.0	26.0	3.5	4.5	10.0	0.5%	3251.5	
33	193+12.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	4.2%	337.6	
33	193+46.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	4.2%	337.6	
33	193+80.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	4.2%	337.6	
33	194+15.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	4.2%	337.6	
33	194+49.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	4.2%	337.6	
33	194+83.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	4.2%	337.6	
33	195+18.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	4.2%	337.6	
33	195+52.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	4.2%	337.6	
33	195+87.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	4.2%	337.6	
33	196+21.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	4.2%	337.6	
33	196+56.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	4.2%	337.6	
33	196+90.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	4.2%	337.6	
33	198+28.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	4.2%	337.6	
34	98+94.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	0.4%	3038.5	
35	193+00.00	RT	24.0	24.0	24.0	6.0	6.0	0.0	4.0%	216.4	
35	193+40.00	RT	24.0	24.0	24.0	6.0	6.0	0.0	4.0%	216.4	
35	193+80.00	RT	24.0	24.0	24.0	6.0	6.0	0.0	4.0%	216.4	
35	194+20.00	RT	24.0	24.0	24.0	6.0	6.0	0.0	4.0%	216.4	
35	194+60.00	RT	24.0	24.0	24.0	6.0	6.0	0.0	4.0%	216.4	
35	195+00.00	RT	24.0	24.0	24.0	6.0	6.0	0.0	4.0%	216.4	
35	195+40.00	RT	24.0	24.0	24.0	6.0	6.0	0.0	4.0%	216.4	
35	195+80.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
35	196+20.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
35	196+60.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
35	197+00.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
35	197+40.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
35	197+80.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
35	198+20.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
35	198+60.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
35	199+00.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
35	98+76.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
35	99+16.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
35	99+56.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
35	99+96.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
35	100+36.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201





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

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

Basin No.	Location		Bid Items			Stormwater Storage Volume Summary					Remarks
	Station	Side	Installation LF	Maintenance LF	Removal LF	Foreslope FS:1	Backslope BS:1	Ditch Width FT	Avg. % Slope	Volume* CF	
35	100+76.00	RT	29.0	29.0	29.0	6.0	6.0	5.0	4.0%	350.7	
36	290+27.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	290+62.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	296+06.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	296+41.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	296+76.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	297+11.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	297+46.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	297+81.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	298+16.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	298+51.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	98+71.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	99+06.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	99+41.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	99+76.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	100+11.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	100+46.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
36	100+81.00	LT	28.0	28.0	28.0	6.0	3.0	10.0	4.2%	377.1	
40	3524+31.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	0.4%	3038.5	
40	3527+44.00	LT	23.0	23.0	23.0	3.5	3.0	10.0	0.4%	3038.5	
40	3528+65.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3528+97.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3529+30.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3529+63.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3529+97.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3530+30.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3530+63.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3530+95.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3531+28.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3531+61.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3531+94.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3532+28.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3532+62.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3532+97.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
40	3533+31.00	LT	13.0	13.0	13.0	3.5	3.0	0.0	4.8%	102.6	
41	3524+25.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	0.6%	1495.1	
41	3525+80.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	0.6%	1495.1	
41	3527+35.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	0.6%	1495.1	
41	3528+96.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	0.6%	1495.1	
41	3530+59.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	0.6%	1495.1	
41	3532+23.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	0.6%	1495.1	
41	3533+87.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	0.6%	1495.1	
41	3535+46.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	0.6%	1495.1	
41	1238+00.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	2.0%	723.4	
41	1238+75.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	2.0%	723.4	
41	1239+50.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	2.0%	723.4	
41	1240+24.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	2.0%	723.4	
41	1240+99.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	2.0%	723.4	
41	1241+74.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	2.0%	723.4	
41	1242+48.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	2.0%	723.4	
41	1243+22.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	2.0%	723.4	
41	1243+95.00	RT	23.0	23.0	23.0	3.5	3.0	10.0	2.0%	723.4	
	TOTAL =		7920.0	7920.0	7920.0						
	TOTAL (ADJUSTED) =		9900.0	792.0	3960.0						

PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE

Refer to EC-204

Location			Length of Installation				Remarks
Begin Station	End Station	Side	6 inch Dia LF	9 inch Dia LF	12 inch Dia LF	20 inch Dia LF	
283+61.00		RT		20.0			9.6' RT
283+45.00		LT		20.0			29.3' LT
282+85.00		LT		20.0			29.6' LT
182+85.00		RT		20.0			28.8' RT
183+28.00		RT		20.0			29.9' RT
184+47.00		RT		20.0			31.5' RT
2520+05.00		RT		20.0			30.1' RT
222+93.00		LT		20.0			21.8' LT
23+01.00		RT		20.0			26.5' RT
21+86.00		RT		20.0			20.2' RT
185+39.00		RT		20.0			31.3' RT
221+76.50		LT		20.0			18.5' LT
3520+75.50		RT		20.0			18.5' RT
284+75.50		LT		20.0			31.5' LT
285+35.00		RT		20.0			17.5' RT
285+54.00		RT		20.0			40.7' RT
186+16.00		LT		20.0			11.7' LT
186+66.50		RT		20.0			26.5' RT
185+64.00		LT		20.0			11.0' LT
14+00.00		RT		20.0			18.5' RT
13+72.00		LT		20.0			18.5' LT

100-22
04-21-15

ROLLED EROSION CONTROL

Refer to EC-101, EC-103 and EC-104

Location				L	W	Turf Reinforcement Mat (TRM) (EC-104)				Slope Protection (EC-103)	Special Ditch Control (EC-101)	Remarks
Road Identification	Begin Station	End Station	Side			Type 1	Type 2	Type 3	Type 4			
				FT	FT	Squares	Squares	Squares	Squares	Squares	Squares	
Relocated Channel	99+50.90	104+45.86	Both	495	17					84		
	107+09.86	113+71.43	Both	662	17					113		
	115+55.43	122+05.56	Both	650	17					111		

100-23
10-19-10

* Design shown for mandatory locations is the minimum allowed.

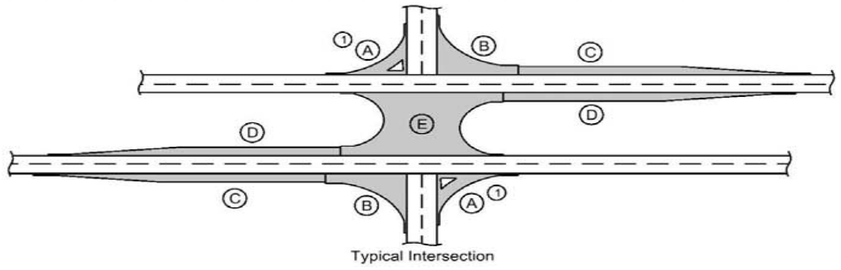
ROCK DITCH CHECKS/DITCHES/FLUMES/SPLASH BASINS/SLOPE PROTECTION

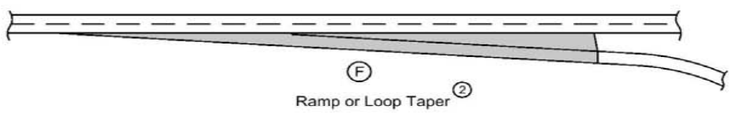
Refer to Typicals 4401, 4402, 4403, 4404, and 4405

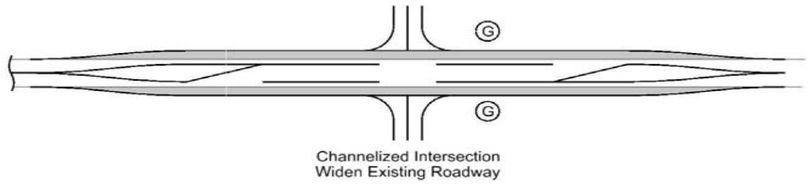
Location				Type						L	W	Material			Remarks
Road Identification	Station	Side	Mandatory* Location (yes or no)	Rock Ditch Check	Rock Ditch	Rock Flume	Rock Splash Basin	Rock Slope Protection				Erosion Stone	Class E Revetment	Eng. Fabric	
		Lt./Rt.								FT	FT	TON	TON	SY	
EAST ACCESS CONNECTOR	0+95	Rt.	Yes				X			22.5	20.0		67.5	73.7	
EAST ACCESS CONNECTOR	13+40	Lt.	Yes				X			17.0	9.0		18.4	28.6	
SOUTHWEST ARTERIAL WB	296+11	Lt.	Yes				X			24.0	13.5		78.0	72.2	
SOUTHWEST ARTERIAL EB	193+00	Rt.	Yes				X			20.0	11.0		26.4	38.2	
US 20 WB	1194+65	Lt.	Yes				X			21.0	11.0		27.7	39.9	
RAMP A	1236+11	Lt.	Yes				X			24.0	11.0		30.4	43.2	
US 20 WB	1235+32	Rt.	Yes				X			22.0	14.0		37.0	50.2	
US 20 WB	1245+05	Rt.	Yes				X			17.0	13.0		26.5	37.9	
RAMP A	1523+21	Rt.	Yes				X			24.0	16.0		46.1	60.4	

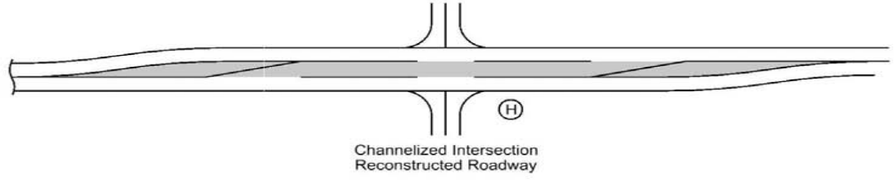
100-24
04-21-15

PCC PAVEMENT









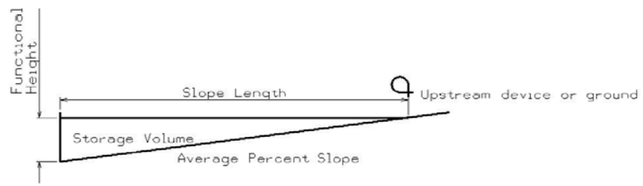
1. Does not include raised island area or curb. Refer to tabulation 112-4 for quantities.
2. Refer to PV-410, PV-411, PV-412, and PV-414.
3. Quantity includes Pavement Header.

Location				Mainline			Area 3								Total Area By Pavement Thickness		Macadam Stone Subbase	Modified Subbase	Granular Subbase	Remarks
Road Identification	Direction of Travel	Station to Station		Width	Length	Area	A 1	B	C	D	E	F 2	G	H	SY					
				FT	FT	SY	SY	SY	SY	SY	SY	SY	SY	SY	10 IN	10½ IN	TONS	CY	SY	
Ramp B	EB	2517+51.39	2520+39.17			1146.3												382.1		
Ramp C	EB	3520+53.00	3522+29.82			788.1												262.7		
Seippel Road	Both	51+89.20	64+99.39			6295.6											3682.9			
East Access Connector	Both	0+16.59	23+27.00			12028.8											7036.8			

ROCK CHECK DAM

Possible Detail: 570-2





* The functional height used in the volume equation is 90% of effective height. Effective height is 2 feet as shown in 570-2.

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

Basin No.	Location			Bid Items			Stormwater Storage Volume Summary					Remarks
	Station	Side	Offset	Installation	Maintenance	Removal	Foreslope	Backslope	Ditch Width	Avg. % Slope	Volume*	
			FT	LF	Each	Each	FS:1	BS:1	FT		CF	
15	4516+00.00	LT	95.0	23.0	3	-	3.5	3.0	10.0	8.0%	356.6	
15	4515+76.00	LT	89.0	23.0	3	-	3.5	3.0	10.0	8.0%	356.6	
15	4515+51.00	LT	83.0	23.0	3	-	3.5	3.0	10.0	8.0%	356.6	
15	4515+27.00	LT	77.0	23.0	3	-	3.5	3.0	10.0	8.0%	356.6	
15	4515+03.00	LT	71.0	23.0	3	-	3.5	3.0	10.0	8.0%	356.6	
15	4514+78.00	LT	66.0	23.0	3	-	3.5	3.0	10.0	8.0%	356.6	
15	4514+54.00	LT	60.0	23.0	3	-	3.5	3.0	10.0	8.0%	356.6	
15	4514+30.00	LT	54.0	23.0	3	-	3.5	3.0	10.0	8.0%	356.6	
15	4514+05.00	LT	48.0	23.0	3	-	3.5	3.0	10.0	8.0%	356.6	
19	1190+74.00	LT	52.0	26.0	3	-	3.5	3.0	10.0	6.3%	428.0	
19	1190+44.36	LT	47.0	26.0	3	-	3.5	3.0	10.0	6.3%	428.0	
19	1190+15.00	LT	43.0	26.0	3	-	3.5	3.0	10.0	6.3%	428.0	
19	1189+85.00	LT	38.0	26.0	3	-	3.5	3.0	10.0	6.3%	428.0	
25	1204+50.00	RT	238.0	23.0	3	-	3.5	3.0	10.0	14.0%	285.3	
25	1204+41.00	RT	233.0	23.0	3	-	3.5	3.0	10.0	14.0%	285.3	
25	1204+22.00	RT	226.0	23.0	3	-	3.5	3.0	10.0	14.0%	285.3	
25	1204+03.00	RT	219.0	23.0	3	-	3.5	3.0	10.0	14.0%	285.3	
25	1203+84.00	RT	212.0	23.0	3	-	3.5	3.0	10.0	14.0%	285.3	
25	1203+66.00	RT	205.0	23.0	3	-	3.5	3.0	10.0	14.0%	285.3	
25	1203+47.00	RT	197.0	23.0	3	-	3.5	3.0	10.0	14.0%	285.3	
25	1203+29.00	RT	189.0	23.0	3	-	3.5	3.0	10.0	14.0%	285.3	
25	1203+10.00	RT	182.0	23.0	3	-	3.5	3.0	10.0	14.0%	285.3	
26	2516+00.00	RT	75.0	23.0	3	-	3.5	3.0	10.0	8.5%	285.3	
26	2516+18.00	RT	67.0	23.0	3	-	3.5	3.0	10.0	8.5%	285.3	
26	2516+36.00	RT	63.0	23.0	3	-	3.5	3.0	10.0	8.5%	285.3	
26	2516+54.00	RT	57.0	23.0	3	-	3.5	3.0	10.0	8.5%	285.3	
26	2516+72.00	RT	52.0	23.0	3	-	3.5	3.0	10.0	8.5%	285.3	
26	2516+91.00	RT	47.0	23.0	3	-	3.5	3.0	10.0	8.5%	285.3	
26	2517+10.00	RT	42.0	23.0	3	-	3.5	3.0	10.0	8.5%	285.3	
27	2514+50.00	RT	114.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
27	2514+30.00	LT	111.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
27	2514+10.00	LT	109.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
27	2513+92.00	LT	102.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
27	2513+75.00	LT	95.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
27	2513+57.00	LT	89.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
27	2513+38.00	LT	86.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
27	2513+19.00	LT	85.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
27	2513+01.00	LT	84.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
27	2512+82.00	LT	80.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
27	2512+63.00	LT	76.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
27	2512+45.00	LT	73.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
27	2512+26.00	LT	69.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
27	2512+08.00	LT	65.0	14.0	3	-	3.5	3.5	0.0	8.4%	113.4	
34	98+88.00	RT	165.0	23.0	3	-	3.5	3.0	10.0	10.2%	285.3	
34	98+70.00	RT	156.0	23.0	3	-	3.5	3.0	10.0	10.2%	285.3	
34	98+52.00	RT	148.0	23.0	3	-	3.5	3.0	10.0	10.2%	285.3	
34	199+02.00	RT	109.0	23.0	3	-	3.5	3.0	10.0	10.2%	285.3	
34	198+84.00	RT	101.0	23.0	3	-	3.5	3.0	10.0	10.2%	285.3	
34	198+66.00	RT	92.0	23.0	3	-	3.5	3.0	10.0	10.2%	285.3	
41	1236+50.00	RT	194.0	23.0	3	-	3.5	3.0	10.0	10.0%	285.3	
41	1236+69.00	RT	194.0	23.0	3	-	3.5	3.0	10.0	10.0%	285.3	
41	1236+88.00	RT	194.0	23.0	3	-	3.5	3.0	10.0	10.0%	285.3	
41	1237+08.00	RT	194.0	23.0	3	-	3.5	3.0	10.0	10.0%	285.3	
41	1237+28.00	RT	194.0	23.0	3	-	3.5	3.0	10.0	10.0%	285.3	
41	1237+28.00	RT	194.0	23.0	3	-	3.5	3.0	10.0	10.0%	285.3	
41	1237+47.00	RT	194.0	23.0	3	-	3.5	3.0	10.0	10.0%	285.3	
41	1237+66.00	RT	194.0	23.0	3	-	3.5	3.0	10.0	10.0%	285.3	
41	1237+86.00	RT	194.0	23.0	3	-	3.5	3.0	10.0	10.0%	285.3	
	TOTAL =			1220.0	174	0						

STORMWATER DRAINAGE BASIN

Basin No.	Station to Station		Side	Disturbed Area Acres	Discharge Point Station	Discharge Point Side	Required Storage Volume CF	Remarks
1	51+89.00	63+40.00	RT	2.3		RT	8316.0	Sheet Flow To Road
2	51+89.00	65+50.00	LT	3.0		LT	10728.0	Sheet Flow To Road
3	63+40.00	73+26.00	RT	3.1	73+26.00	RT	11196.0	
4	65+50.00	73+18.00	LT	2.6	72+30.00	LT	9324.0	
5	1523+21.00	1530+50.00	LT	1.8	1523+21.00	LT	6444.0	
6	1530+50.00	1536+50.00	LT	1.6	1536+50.00	LT	5868.0	
7	1536+50.00	1244+00.00	LT	2.6	1536+50.00	LT	9180.0	
8	1244+00.00	1246+24.00	LT	0.3	1245+23.00	LT	936.0	
9	1520+76.00	1538+21.00	RT	3.9	1530+00.00	RT	14148.0	
10	34+03.00	37+21.00	BOTH	1.5	34+45.00	RT	5436.0	
11	39+61.00	46+00.00	BOTH	1.0		RT	3600.0	Sheet Flow Off-site
12	500+41.00	503+77.00	BOTH	0.5	45+75.00	RT	1944.0	Sheet Flow Off-site
13	491+50.00	496+34.00	BOTH	0.6		BOTH	2232.0	Sheet Flow Off-site
14	485+50.00	491+18.00	BOTH	0.8		BOTH	2988.0	Sheet Flow Off-site
15	1192+00.00	4518+84.00	LT	7.5	44518+53.00	LT	27108.0	
16	4507+28.00	4518+58.00	RT	2.1	4516+80.00	RT	7416.0	
17	4519+09.00	4522+52.00	LT	1.0		LT	3744.0	Sheet Flow Off-site
18	4519+10.00	4522+51.00	RT	1.6		RT	5580.0	Sheet Flow Off-site
19	1189+81.00	1190+83.00	LT	0.1	1190+83.00	LT	432.0	
20	1189+82.00	1190+67.00	RT	0.1	1190+67.00	RT	324.0	
21	1206+38.00	1207+58.00	RT	0.1	1207+58.00	RT	468.0	
22	1216+81.00	1217+72.00	LT	0.1	1217+72.00	LT	288.0	
23	1216+96.00	1217+62.00	RT	0.1	1217+62.00	RT	252.0	
24	1216+85.00	1217+62.00	RT	0.1	1217+62.00	RT	468.0	
25	1202+40.00	2515+87.00	RT	3.8			13680.0	
26	2515+87.00	2520+41.00	RT	0.9	2515+87.00	RT	3348.0	
27	2508+40.00	2516+50.00	LT	1.2	2516+50.00	LT	4320.0	
28	2516+50.00	2521+22.00	LT	1.7		LT	6192.0	Sheet Flow Off-site
29	+00.00	11+20.00	LT	1.7	11+20.00	LT	5976.0	
30	11+20.00	23+35.00	LT	2.7	11+20.00	LT	9720.0	
31	+00.00	11+20.00	RT	1.8		RT	6444.0	Sheet Flow Off-site
32	11+20.00	22+35.00	RT	7.7	11+20.00	RT	27720.0	
33	185+28.00	198+50.00	RT	6.4	185+28.00	RT	22860.0	
34	198+50.00	101+15.00	RT	1.3	199+56.00	RT	4788.0	
35	192+68.00	101+17.00	LT	1.9	193+00.00	LT	6696.0	
36	290+27.00	101+15.00	LT	2.5	296+06.00	LT	9072.0	
37	285+16.00	292+97.00	LT	0.9			0.0	Drains to Curb & Gutter
38	281+76.00	3522+50.00	LT	0.9		LT	3384.0	Sheet Flow Off-site
39	3520+07.00	3522+88.00	RT	0.6		RT	2124.0	Sheet Flow Off-site
40	3524+31.00	3533+52.00	LT	1.7	3524+31.00	LT	6228.0	
41	3524+31.00	1246+34.00	RT	4.7	3524+31.00	RT	16848.0	
42	183+52.00	186+07.00	LT	0.6			0.0	Drains to Curb & Gutter

100-35
04-19-16

SUMMARY OF STORMWATER STORAGE

Basin No.	Item	Total Storage Volume Provided CF	Total Storage Volume Required CF	Remarks
1	Silt Fence	8725.5	8316.0	
2	Silt Fence	22243.3	10728.0	
3	Silt Fence	6541.0		
	Silt Fence Ditch Checks	8681.3		
	Total =	15222.3	11196.0	
4	Silt Fence	4832.8		
	Silt Fence Ditch Checks	7957.9		
	Total =	12790.7	9324.0	
5	Silt Fence	2239.7		
	Silt Fence Ditch Checks	7659.1		
	Total =	9898.8	6444.0	
6	Silt Fence	1917.2		
	Silt Fence Ditch Chekcs	6155.2		
	Total =	8072.4	5868.0	
7	Silt Fence	3788.5		
	Silt Fence Ditch Checks	7234.4		
	Total =	11022.9	9180.0	
8	Silt Fence Ditch Checks	2411.5	936.0	
9	Silt Fence	10602.9		
	Silt Fence Ditch Checks	6585.9		
	Total =	17188.8	14148.0	
10	Silt Fence	4042.5		
	Silt Fence Ditch Checks	5064.1		
	Total =	9106.6	5436.0	
11	Silt Fence	8085.0	3600.0	
12	Silt Fence	3200.8	1944.0	
13	Silt Fence	6175.0	2232.0	
14	Silt Fence	5178.6	2988.0	
15	Silt Fence	7102.4		
	Silt Fence Ditch Checks	22247.9		
	Rock Ditch Chekcs	3209.6		
	Total =	32559.9	27108.0	
16	Silt Fence	2314.8		
	Silt Fence Ditch Checks	10342.3		
	Total =	12657.1	7416.0	
17	Silt Fence	3747.1	3744.0	
18	Silt Fence	6933.1	5580.0	
19	Rock Ditch Checks	1711.8	432.0	
20	Silt Fence Ditch Checks	789.2	324.0	
21	Silt Fence Ditch Checks	1315.3	468.0	
22	Silt Fence Ditch Checks	964.6	288.0	
23	Silt Fence Ditch Checks	876.8	252.0	
24	Silt Fence Ditch Checks	1012.8	468.0	
25	Silt Fence	8888.5		
	Silt Fence Ditch Checks	9115.4		
	Rock Ditch Checks	2567.7		
	Total =	20571.6	13680.0	
26	Silt Fence Ditch Checks	2604.4		
	Rock Ditch Checks	1997.1		
	Total =	4601.5	3348.0	
27	Silt Fence	3404.4		
	Silt Fence Ditch Checks	4644.8		
	Rock Ditch Checks	1587.6		
	Total =	9636.8	4320.0	

100-35
04-19-16

SUMMARY OF STORMWATER STORAGE

Basin No.	Item	Total Storage Volume Provided CF	Total Storage Volume Required CF	Remarks
28	Silt Fence	6648.9	6192.0	
29	Silt Fence Ditch Checks	790.0		
	Rock Ditch Checks	9163.6		
	Total =	9953.6	5976.0	
30	Silt Fence Ditch Checks	10851.7	9756.0	
31	Silt Fence	6964.6	6444.0	
32	Silt Fence	17405.2		
	Silt Fence Ditch Checks	12694.8		
	Total =	30100.0	27720.0	
33	Silt Fence	11057.2		
	Silt Fence Ditch Checks	14143.5		
	Total =	25200.7	22428.0	
34	Silt Fence	1407.0		
	Silt Fence Ditch Checks	3038.5		
	Rock Ditch Checks	1711.8		
	Total =	6157.3	4788.0	
35	Silt Fence Ditch Checks	6776.1	6696.0	
36	Silt Fence	6026.9		
	Silt Fence Ditch Checks	6410.1		
	Total =	12437.0	9072.0	
37	Silt Fence	0.0	0.0	Area Flows to Curb & Gutter
38	Silt Fence	3629.7	3384.0	
39	Silt Fence	2208.9	2124.0	
40	Silt Fence	1674.8		
	Silt Fence Ditch Checks	7615.7		
	Total =	9290.5	6228.0	
41	Silt Fence	4765.3		
	Silt Fence Ditch Checks	18472.0		
	Rock Ditch Checks	2567.7		
	Total =	25805.0	16848.0	
42	Silt Fence	0.0	0.0	Area Flows to Curb & Gutter

102-4
10-18-11

LOCATIONS OF ROAD CLOSURE BARRICADES

Refer to SI-181 and SI-182.

Location No.	Location Station	W LF	SI-181 LF	SI-182 No.	Remarks
	Cousins Rd	26.0	26		

102-5
10-16-12

EXISTING PAVEMENT

No.	Location					Year	Type	Project Number	Surface		Base		Subbase		Removal		Coarse Aggregate			Reinforcement	Remarks
	County	Route	Dir. of Travel	Begin Milepost	End Milepost				Type	Depth IN	Type	Depth IN	Type	Depth IN	Type	Depth IN	Source	Type	Durability Class	Type	
	Dubuque	US 20	Both				PCC/ACC		ACC	Unknown			Unknown	Unknown			Unknown	Unknown	Unknown		
	Dubuque	Cousins Rd	Both				ACC		ACC	Unknown			Unknown	Unknown			Unknown	Unknown	Unknown		
	Dubuque	Seippel Rd	Both				PCC		PCC	9			Special Backfill	12			Unknown	Unknown	Unknown		

103-3
10-16-12

PROPOSED SUBGRADE TREATMENT

(For Additional Details see Soils Survey Sheet No. to .)

No.	Location		Description					Type		Quantity		Polymer Grid	Available From		Remarks
	Begin Station	End Station	Side	Type	Depth FT	Width FT	Area SF	Material	Shrink %	CY	TON	SY	Quantity CY	Location or Station to Station	
	64+99.75	75+76.11	BOTH	Standard	1.0	Var.	69,746.1	SPECIAL BACKFILL (SEE ART. 4132)	0.00%	2,583.2	4,882.227				Southwest Arterial
	182+53.93	201+83.70	BOTH	Standard	1.0	Var.	81,862.7	SPECIAL BACKFILL (SEE ART. 4132)	0.00%	3,032.0	5,730.400				Southwest Arterial EB
	282+53.93	301+36.47	BOTH	Standard	1.0	Var.	83,393.2	SPECIAL BACKFILL (SEE ART. 4132)	0.00%	3,088.6	5,837.500				Southwest Arterial WB

104-3
04-21-15

DRAINAGE STRUCTURE BY ROAD CONTRACTOR

Length of unclassified pipe calculated is based on using Reinforced Concrete Pipe.

* Not a bid item

(1) Diameter or equivalent diameter

(2) UNCL = Unclassified Pipe CMP = Corrugated Metal Pipe RCP = Reinforced Concrete Pipe LCP = Arch or Elliptical Low Clearance Pipe SARC = Steel Arch Pipe

Drainage Area	Location	Type	Size (1)	Kind Of Pipe (2)	Length New Const.	Bedding Class	Design Cover (H)	Camber* (DR-102)	Apron No.		Apron Guard* (DR-213)	Elbow* (DR-141)	Diaphragm* (DR-501)	Tee Section* (DR-142)	"D" Section* (DR-141)	Reducer*	Type 'C' Connections* (DR-122)		Connected Pipe Joint* (DR-121)	4" Perforated Subdrain*	Flow Line Elevations				Dimensions Lin. Ft. Total		Dimensions Lin. Ft. Extensions		Skew Ahead Degrees		Dike				Class 20	Flowable Mortar	Floodable* Backfill (A)	Porous* Backfill (B)	Flooded Backfill (A+B)	Remarks
																														Rt. / Lt.	Location Station	Top Elevation	Type						
ACRE			IN		LF		FT	FT	IN	OUT	No.	No.	No.	No.	No.	No.	Type	No.	Type	FT	Lt.	Rt.	Other	Other	Lt.	Rt.	Lt.	Rt.	Lt.	Rt.					CY	CY	CY	CY	CY	
	SWA O.A.																																						
46.0	97+34.00	CONC	48	RCP	410		24.0		1	1					2						779.00	791.00		780.94	192.0	218.0				45					8677.8					
	EAST ACCESS CONN.																																						
28.0	0+95.05	CONC	30	RCP	138		14.5			1					1						780.38	779.72			56.7	78.3									64.0					
	US 20																																						
3.0	1194+65.00	CONC	24	RCP	10		1.8		1		1				1		C-1	1			853.00		853.09		10.0		10.0			15					3.9					
1.6	1236+01.00	CONC	24	RCP	101		5.3		1						1		C-1	1			769.28			776.08	53.8	47.2	101.0		5					13.2					
46.0	1236+21.12	CONC	54	RCP	132		10.8		1	1		1					C-2	2			769.05	758.50	767.12	762.06	72.0	60.0	72.0	60.0	25						27.4					
13.0	1245+23.00	CONC	30	RCP	20		5.5		1						2		C-1	1			788.44	780.79	788.16	781.30	8.0	12.0	8.0	12.0												
	1245+23.00	CMP	30	CMP	39		3.2			1							C-2	1				773.92		780.79		38.6		38.6			Lt	1244+72.55	792.76	M						
	EB SWA																																						
2.2	193+00.00	CONC	24	RCP	100		4.6		1	1	1										784.88	779.85			17.5	82.5									217.8					
	RAMP A																																						
131.0	1523+21.38	CONC	72	RCP	178		17.0		1	1											759.50	757.80																		

110-1
04-16-13

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5

* Not a Bid Item

Begin Station	End Station	Side	Pavement Type	Area SY	Saw Cut* LF	Remarks
US 20 WB						
1206+31.00	1209+11.70	LT	PCC/ACC	466.3	280.0	Paved Shoulder at Cousins Rd
1225+92.30	1231+02.60	LT	PCC	839.8	510.0	Seippel Rd Turning Lane
Cousins Rd						
479+85.00	490+96.00	Both	ACC	2921.7		Cousins Rd South of Bridge
491+96.70	499+81.00	Both	ACC	1899.1		Cousins Rd North of Bridge to Seippel Rd
500+19.00	503+77.00	Both	ACC	956.9	22.0	Cousins Rd North of Seippel Rd
Seippel Rd						
34+39.00	62+57.45	Both	PCC	11837.6	37.0	

110-9
10-18-11

CULVERT ABANDONMENT

Refer to Details 4315 and 4316

* Not a bid item

Location Station	Description	Fill Material: Flowable Mortar CY	Fill Material: Granular Backfill* TON	4" Perforated Subdrain* LF	Remarks
US 20 WB					
1194+33	2'X2'X180' RCB	26.4	0.1	6.0	
1195+02	5'X7'X128' STOCK PASS	156.9	0.3	16.0	
1202+77	2'X3'X205' RCB	44.8	0.2	8.0	
1206+95	24" CONC. PIPE	5.3	0.3	6.0	
1245+85	5'X7'X123' STOCK PASS	150.4	0.3	16.0	

110-16
04-16-13

REMOVAL OF LIGHT POLES AND CONCRETE FOOTINGS

Location No.	Location Station	Location Offset Left	Location Offset Right	Removal of Light Pole	Removal of Concrete Footing for Light Pole	Remarks
	SEIPPEL RD					
	34+69.00	35		1	1	

108-13A
08-01-08

SAFETY CLOSURES

Refer to Section 2518 of the Standard Specifications

Station	Closure Type: Road Qty.	Closure Type: Hazard Qty.	Remarks
Cousins Rd			
480+00	1		
504+00	1		
Seippel Rd			
34+50	1		
63+00	1		

110-2
04-16-13

REMOVAL OF EXISTING STRUCTURES

Location	Description	Remarks
WB US 20		
1194+34	2'X2' RCB	REMOVE 26' FLUME RT.
1195+00	5'X7' RCB	REMOVE HEADWALLS LT. & RT.
1236+01	CMP LETDOWN	REMOVE CMP LETDOWN & ADAPTOR LT.
1236+21	4'X4' RCB	REMOVE HEADWALLS LT. & RT.
1245+23	30" RCB	REMOVE 14' FLUME RT.
1245+85	5'X7' STOCKPASS	REMOVE HEADWALLS LT. & RT.

110-14
04-16-13

SANITARY OR STORM SEWER ABANDONMENT OR REMOVAL

* Not a bid item

Location/Description	Sanitary or Storm Sewer	Abandonment, Plug Only or Abandonment, Plug and Fill or Removal	Length of Pipe ≤ 36 inch diameter LF	Length of Pipe > 36 inch diameter LF	Fill Material* Flowable Mortar or CLSM CY	Remarks
SEIPPEL RD						
35+42.00 to 61+75.00	Storm Sewer	Removal	1446	544		

110-17
04-15-14

CLEARING AND GRUBBING

Location: Station to Station or Milepost to Milepost or Description	Location: Direction of Travel	Work and Material Type	Trees, Stumps, and Logs and Down Timber Material Diameters: 3"-6"	>6"-9"	>9"-12"	>12"-15"	>15"-18"	>18"-24"	>24"-30"	>30"-36"	>36"-42"	>42"-48"	>48"-60"	>60"-72"	>72"	All Other Materials: Length FT	Width FT	Estimated Quantities: Units Units	Area Acres	Herbicide Application Each	Remarks
EAC																					
0+28 TO 10+00	BOTH																		2.6		
10+83 TO 11+92	BOTH																		0.1		
16+50 TO 17+39	EB																		0.1		
RAMP D																					
1202+29 TO 4519+40	BOTH																		5.5		
SWA																					
67+95 TO 68+67	BOTH																		0.1		
80+63 TO 83+32	BOTH																		0.6		
95+07 TO 101+95	BOTH																		0.6		
RAMP C																					
3522+22 TO 3523+26	BOTH																		0.2		
US 20																					
1202+40 TO 1216+43	EB																		3.3		
1233+08 TO 1244+85	WB																		1.1		
1235+30 TO 1236+66	EB																		0.1		
1244+26 TO 1246+34	EB																		0.2		

112-9
10-15-13

SHOULDERS

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

Calculations assume a HMA unit weight (lbs/cf) of 0, a Special Backfill unit weight (lbs/cf) of 140, and a Granular Shoulder unit weight (lbs/cf) of 140.

Location: Road Identification	Direction Of Traffic (1)	Station to Station		Side	(P) Width	(G) Width	(L) Length	Quantities: Class 13 Excavation (3)	Hot Mix Asphalt		Binder	Paved Shoulder	Reinforced Paved Shoulder	Special Backfill: HMA Alternate		PCC Alternate		Modified Subbase	Granular Shoulder		Earth Shoulder Construction Alternates: STA	HMA	PCC	Remarks
					FT	FT	FT	CY (2)	TON	TON/STA	TONS	SY (2)	SY (2)	TON (2)	TON/STA	TON (2)	TON/STA	CY (2)	TON (2)	TON/STA	STA (2)	CY (4)	CY (4)	
US 20 WB	WB	1206+31.00	1209+11.70	LT		8.0	280.7												78.6	28.1	2.8			
	WB	1225+92.30	1231+02.60	LT		8.0	510.3												142.9	28.0	5.1			

190-62
10-15-13

EXISTING SIGNS TO BE REMOVED

SIGN NUMBER OR DESCRIPTION	LOCATION STATION	DIRECTION OF TRAVEL	TYPE 'A' SIGN ASSEMBLY (RA) EACH	TYPE 'B' SIGN ASSEMBLY (RB) EACH	REMOVE & REINSTALL EXISTING SIGNS: TYPE 'A' (RR) EACH	TYPE 'B' (RR) EACH	CONCRETE FOUNDATION (RF) EACH	SUPPORT STRUCTURE & FOUNDATION (RS) EACH	APPLICABLE SIGNING NOTES	REMARKS
SEIPPEL RD										
ONE WAY / STOP / DIV. HWY	34+47.00	EB	1							
SPEED LIMIT	37+70.00	WB	1							
STOP AHEAD	38+31.00	EB	1							
SPEED LIMIT / Y21	47+18.00	WB	1							
COUSINS RD										
ONE WAY / STOP / DIV. HWY	479+86.00	SB	1							
CURVE ARROW / 15 MPH	480+22.00	NB	1							
CHEVRON ARROW	481+06.00	SB	1							
CHEVRON ARROW	481+57.00	SB	1							
NO PASSING	482+04.00	SB	1							
LEFT ARROW	482+10.00	SB	1							
SPEED LIMIT	482+20.00	NB	1							
NARROW BRIDGE	483+14.00	NB	1							
T INTERSECTION	486+28.00	SB	1							
STOP AHEAD	487+44.00	SB	1							
LT. CURVE ARROW / 15 MPH	488+36.00	SB	1							
WEIGHT LIMIT	490+89.00	NB	1							
OBJECT MARKER	490+89.00	NB	1							
OBJECT MARKER	490+89.00	SB	1							
OBJECT MARKER	492+00.00	NB	1							
OBJECT MARKER	492+00.00	SB	1							
STOP AHEAD	493+56.00	NB	1							

190-62
10-15-13

EXISTING SIGNS TO BE REMOVED

SIGN NUMBER OR DESCRIPTION	LOCATION STATION	DIRECTION OF TRAVEL	TYPE 'A' SIGN ASSEMBLY (RA) EACH	TYPE 'B' SIGN ASSEMBLY (RB) EACH	REMOVE & REINSTALL EXISTING SIGNS TYPE 'A' (RR) EACH	REMOVE & REINSTALL EXISTING SIGNS TYPE 'B' (RR) EACH	CONCRETE FOUNDATION (RF) EACH	SUPPORT STRUCTURE & FOUNDATION (RS) EACH	APPLICABLE SIGNING NOTES	REMARKS
NARROW BRIDGE	498+42.00	SB	1							
STOP	499+64.00	NB	1							
STOP / STREET NAMES	500+29.00	SB	1							
NO PASSING ZONE	501+09.00	SB	1							
STOP AHEAD	504+25.00	SB	1							
US 20 EB										
ONE WAY	118997	EB	1							
YIELD / ONE WAY	118998	EB	1							
ONE WAY	119047	EB	1							
DELINEATOR	120280	EB			1					
DELINEATOR	120350	EB			1					
DO NOT ENTER	1205+74.00	EB	1							
DO NOT ENTER	1205+74.00	EB	1							
DELINEATOR	120595	EB			1					
ONE WAY	1206+68.00	EB	1							
YIELD	1206+70.00	EB	1							
ARROW	1206+95.00	EB	1							
ONE WAY	1207+19.00	EB	1							
MILE MARKER 314	120890	EB			1					
DELINEATOR	121130	EB			1					
DUBUQUE INDUSTRIAL PARK	121910	EB	1							
CAMPING	121560	EB	1							
EMERGENCY RESPONDER	1223+94.00	EB	1							
LITTER REMOVAL / DO NO ENTER	1225+95.00	EB	1							
DO NOT ENTER	1225+94.00	EB	1							
YIELD	1226+60.00	EB	1							
ONE WAY	1227+04.00	EB	1							
ARROW	1227+22.00	EB	1							
ONE WAY	1227+43.00	EB	1							
DELINEATOR	123115	EB			1					
DELINEATOR	133515	EB			1					
DELINEATOR	123765	EB			1					
DELINEATOR	124150	EB			1					
DELINEATOR	124300	EB			1					
DELINEATOR	124565	EB			1					
DELINEATOR	124505	EB			1					
US 20 WB										
YIELD / ONE WAY	119052	WB	1							
ONE WAY	119064	WB	1							
DO NOT ENTER	119139	WB	1							
DO NOT ENTER	119139	WB	1							
DELINEATOR	119315	WB			1					
DELINEATOR	119540	WB			1					
DELINEATOR	119565	WB			1					
DELINEATOR	119857	WB			1					
DELINEATOR	120105	WB			1					
DELINEATOR	120340	WB			1					
DELINEATOR	120630	WB			1					
ONE WAY / YIELD	1207+27.00	WB	1							
ONE WAY	1207+37.00	WB	1							
DO NOT ENTER	1208+26.00	WB	1							
DO NOT ENTER	1208+26.00	WB	1							
MILE MARKER 314	120891	WB			1					
DELINEATOR	121160	WB			1					
STREET NAMES	1226+75.00	WB	1							
ONE WAY / YIELD	1227+67.00	WB	1							
ONE WAY	1227+84.00	WB	1							
DO NOT ENTER	1228+45.00	WB	1							
DO NOT ENTER	1228+45.00	WB	1							
DELINEATOR	123020	WB			1					
DELINEATOR	123210	WB			1					
EMERGENCY RESPONDER	1232+75.00	WB	1							
INDUSTRIAL PARK	1235+29.00	WB	1							
DELINEATOR	123560	WB			1					
CAMPING	1238+29.00	WB	1							
DELINEATOR	1238+35	WB			1					
DELINEATOR	1240+90	WB			1					
DELINEATOR	1243+65	WB			1					
DELINEATOR	1245+90	WB			1					
DELINEATOR	1246+15	WB			1					

190-61
10-15-13

EXISTING SIGNS TO BE REINSTALLED

SIGN DESCRIPTION	DIRECTION OF TRAVEL	LOCATION STATION	NUMBER OF POSTS	SQUARE TUBE STEEL POSTS	WOOD POSTS 4" x 4" LF	WOOD POSTS 4" x 6" LF	INSTALLATION TYPE	INSTALLATION DIM 'X'	SEE SIGNING NOTES
WB US 20									
ONE WAY	WB	1197+34	1.0		14.0		1.0	MIN. 16'	
ONE WAY	WB	1197+76	1.0		14.0		1.0	MIN. 16'	
DO NOT ENTER	WB	1198+74	1.0		14.0		1.0	MIN. 16'	
STONE VALLEY DRIVE	WB	1204+97	2.0		14.0		1.0	MIN. 16'	

190-66
10-21-14

SUMMARY OF TYPE 'A' SIGNS

Sign Number	Quantity EACH	Size IN	Total Sign Area SF
W4-2		36 X 36	0.0
R3-7		30 X 30	0.0

103-6
04-19-11

EMBANKMENT WITH MOISTURE CONTROL

Moisture content shall be within the limits of minus 2 and plus 2 percentage points of Optimum Moisture Content for maximum density within the area described and listed below.

Moisture Control is required for all fill and Embankment in-place, Contractor Furnished fill placed at all locations and depths. Topsoil will not require Moisture Control.

103-7
08-01-08

SHRINKAGE DATA

Material	%	Remarks
Topsoil	40%	
Unsuitable Type A	35%	
Unsuitable Type B	35%	
Class 10	30%	
Select	20%	
Shale	0%	
Limestone	10%	Swelling Factor
Estimated Boulder Quantity		50 CY

107-25
08-01-08

TABULATION OF ROCK SPLITTING

Location				
No.	Station to Station		Side	Remarks
1	1533+00	1533+00	L/R	Limestone in ditch bottom
2	1534+50	1535+00	L	Limestone in ditch bottom
3	2509+57	2510+75	R	Limestone in ditch bottom
4	4512+25	4513+00	L/R	Limestone in ditch bottom

LICENSED PROFESSIONAL ENGINEER
THERESA STROMBERG-MURPHY
16934
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Theresa Stromberg Murphy 4/29/16
Signature Date

THERESA STROMBERG-MURPHY
Printed or Typed Name

My license renewal date is December 31, 2017

Pages or sheets covered by this seal: CS.1 & Q.1-Q.23

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER CS.1

SURVEY SYMBOLS

	Interstate Highway Symbol	C	Cistern
	U.S. Highway Symbol	LP	L.P. Gas Tank (No Footing)
	Iowa Highway Symbol	UST	Underground Storage Tank
	County Road Highway Symbol		Latrine
	Evergreen Tree		Luminaire
	Deciduous Tree		Traffic Signal
F	Fruit Tree		Traffic Signal with Luminaire
SB	Shrub (Bushes)	TP	Telephone Pedestal
	Timber	TVP	Television Pedestal
	Hedge		Telephone Pole
	Stump		Telephone Pole (Second Company)
	Swamp		Telephone Pole (Third Company)
	Rock Outcrop		Telephone Pole (Fourth Company)
	Broken Concrete		Telephone Pole (Fifth Company)
	Revetment (Rip Rap)		Power Pole
†	Cemetery		Power Pole (Second Company)
G	Grave		Power Pole (Third Company)
CV	Cave		Power Pole (Fourth Company)
SH	Sink Hole		Power Pole (Fifth Company)
	Board Fence		Electrical Highline Tower (Metal or Concrete)
# #	Chain Link or Security Fence		Telephone Riser Pole
×	Wire Fence		Power Riser Pole
	Terrace		Telegraph Pole
	Earth Dam or Dike (Existing)		Satellite TV Dish
	Earth Dam or Dike (Proposed)	WHU	Water Hook Up
	Tile Outlet	RT	Radio Tower
	Edge of Water	TA	Tower Anchor
	Existing Drainage		Guardrail (Beam or Cable)
	Proposed Drainage	GP	Guard Post (one or two)
	Right of Way Rail or Lot Corner		Guard Post (over two)
	Concrete Monument	FP	Filler Pipe
	Well	GV	Gas Valve
	Windmill	WV	Water Valve
	Beehive Intake	SL	Speed Limit Sign
	Existing Intake	MM	Mile Marker Post
	Proposed Intake	SIGN	Sign
	Existing Utility Access (Manhole)	TCB	Traffic Signal Control Box
	Proposed Utility Access (Manhole)	RRB	Rail Road Signal Control Box
	Fire Hydrant	TSB	Telephone Switch Box
WH	Water Hydrant (Rural)	EB	Electric Box

UTILITY LEGEND

San. / W	City of Dubuque Bob Schiesl 50 West 13th Street Dubuque, IA 52001 563-589-4270 bschiesl@cityofdubuque.org
FO	ICN Larry Klawitter 400 East 1st Street Grimes Office Building Des Moines, IA 50319 515-725-4741 larry.klawitter@iowa.gov
G3	BP US Pipelines David Sommerfeld 150 West Warrenville Road Naperville, IL 60563 630-536-2729 david.sommerfeld@bp.com
	Maquoketa Valley Electric Cooperative James Lauzon P.O. Box 370 Anamosa, IA 52205 319-462-3541 jlauzon@mvec.com

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
SHADING	**Design Color No.**	
Yellow	(4)	Highlight for Critical Notes or Features
Red	(3)	Delineates Restricted Areas
Lavender	(9)	Temporary Pavement Shading
Gray, Light	(48)	Proposed Pavement Shading
Gray, Med	(80)	Proposed Granular Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading
Gray, Dark	(112)	Proposed Sidewalk Shading
Brown, Light	(236)	Grading 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
Clearing & Grubbing Area
Pavement Removal

RIGHT-OF-WAY LEGEND

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

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.1

10:09:20 AM 05/16/2016 IA_7222_SWA K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038D01.sht

DUBUQUE TWP.
T-89N R-2E
SEC. 31

Temporary Easement
For Grading

CULT.

CULT. FIELD

EQUATION:
STA. 51+00.00 O.A. =
OLD PLAN STA 63+47±
SEIPPEL ROAD DIV. 1
DUBUQUE, IA
IA DOT PROJECT NO.
RC-0031(23)--9A-31
1998

50 55 60

℄ SEIPPEL ROAD

EXISTING ROW

9" P.C.C. Remove

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

37'

10'

15.5'

32

EXISTING ROW

PROPOSED FUTURE
RECREATIONAL TRAIL
(BY OTHERS)

BEGIN CONSTRUCTION
STA. 51+89.20 O.A.

PROPERTY LINE

TEMPORARY EASEMENT
FOR GRADING

CULT.

0 FEET 50

FOR WATER MAIN RECONSTRUCTION
DETAILS REFER TO M SHEETS

FOR STORM SEWER REMOVAL
REFER TO E SHEETS

PLAN & PROFILE
SOUTHWEST ARTERIAL
OFFICE ALIGNMENT

810

800

790

47'

Sawcut
Sta 51+89.20
Tie In Flush
Elev. 800.98

EXISTING CENTERLINE

-1.222%

EQUATION:
STA. 51+00.00 O.A. =
Elev. 802.03
OLD PLAN STA 63+47±
SEIPPEL ROAD DIV. 1
DUBUQUE, IA
IA DOT PROJECT NO.
RC-0031(23)--9A-31
1998
Elev. 802.03

PROPOSED ℄ OFFICE
ALIGNMENT PROFILE GRADE

Lt
Rt

No Ditch
No Ditch

800.85 800.24 799.63 799.02 798.40 797.79 797.18 796.57 795.96 795.35 794.74 794.13 793.52 792.91 792.30 791.68 791.07

52 55 60

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.2

10:09:21 AM 05/16/2016 IA_7222_SWA K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038D01.sht

FOR SIDEROAD DETAILS REFER TO E SHEETS

FOR STORM SEWER REMOVAL REFER TO E SHEETS

FOR WATER MAIN RECONSTRUCTION DETAILS REFER TO M SHEETS

DUBUQUE TWP.
T-89N R-2E
SEC. 31

TEMPORARY EASEMENT FOR GRADING

TEMPORARY EASEMENT FOR GRADING

CULT.

EXISTING ROW

℄ SEIPPEL RD.

32

38'

15'

10'

PC Sta 91+47.98

PROPOSED FUTURE RECREATIONAL TRAIL

EXISTING ROW

℄ RECREATIONAL TRAIL ALIGNMENT

℄ WEST BOUND SOUTHWEST ARTERIAL

65

℄ OFFICE ALIGNMENT (O.A.) SOUTH WEST ARTERIAL

RW & C/A

PI Sta 66+09.11

9" P.C.C. Remove

Remove

CULT.

SEIPPEL RD.

COUSINS ROAD

600 ft Taper 50:1 Ratio

RW & C/A

STA. 68+42 (O.A.)
D.A. = 87 Ac. H.
Remove
Carry Ahead in
Left Ditch

STA. 68+99 (O.A.)
D.A. = Side Ditch
No Existing Structure
Carry Ahead in
Left Ditch

Curve Data
PI Sta 66+09.11
Δ = 42° 02' 26.77" (RT)
T = 461.13
L = 880.50
R = 1,200.00
E = 85.55
e = 5.6%
l = 134'
x = 48'

70

PT Sta 70+28.48

FOR W.B. SOUTHWEST ARTERIAL DETAILS REFER TO W.B. D SHEETS

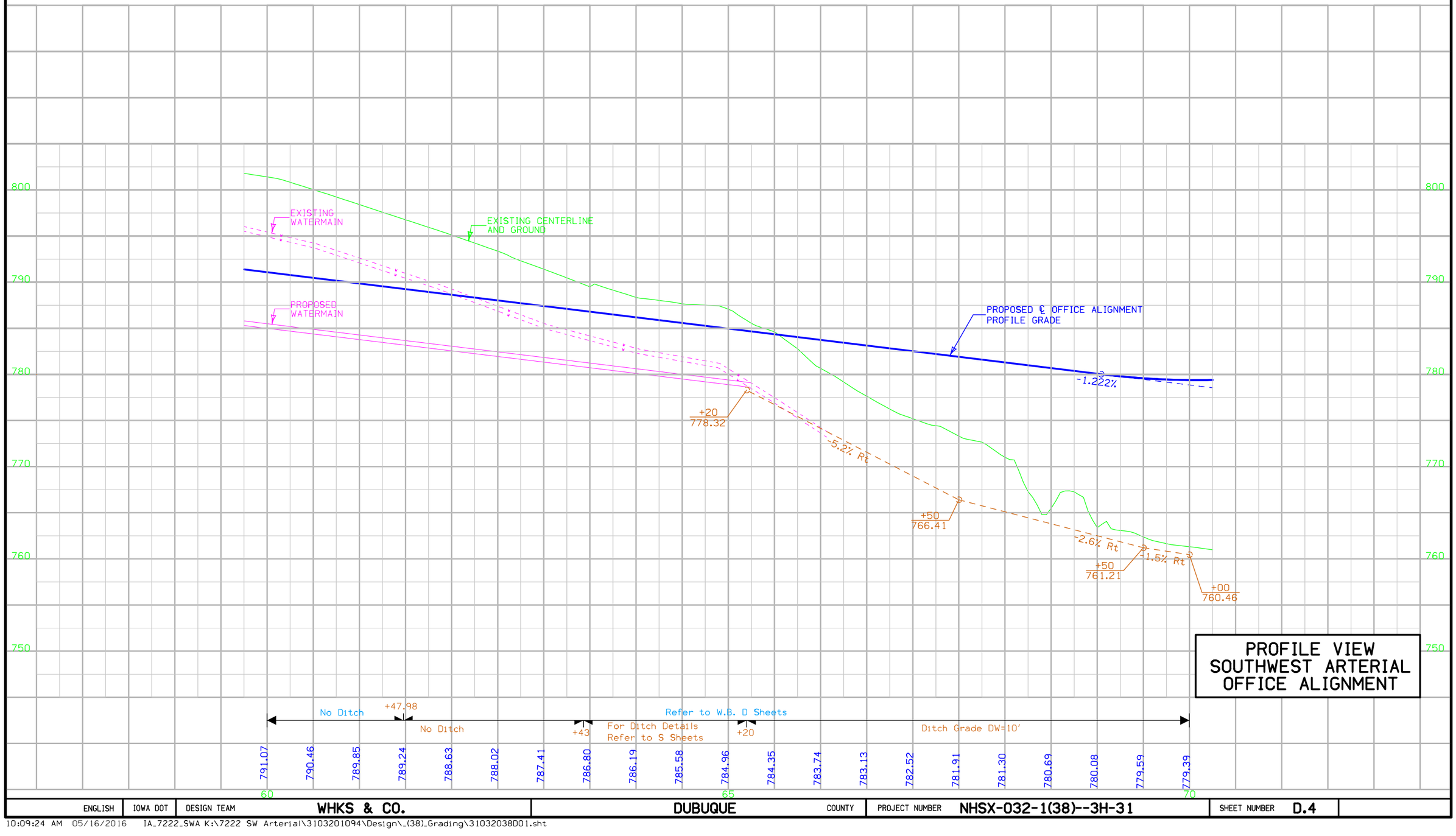
0 50 FEET

FOR RECREATIONAL TRAIL DETAILS REFER TO S SHEETS

PLAN VIEW SOUTHWEST ARTERIAL OFFICE ALIGNMENT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.3

10:09:23 AM 05/16/2016 IA_7222_SWA K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038D01.sht



PROFILE VIEW
SOUTHWEST ARTERIAL
OFFICE ALIGNMENT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.4

10:09:24 AM 05/16/2016 IA_7222_SWA K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038D01.sht

FOR SIDEROAD DETAILS REFER TO E SHEETS

FOR STORM SEWER REMOVAL REFER TO E SHEETS

FOR WATER MAIN RECONSTRUCTION DETAILS REFER TO M SHEETS

TEMPORARY EASEMENT FOR GRADING

BEGIN ACCESS CONTROL E.B. STA. 61+48 (O.A.)

DUBUQUE TWP.
T-89N R-2E
SEC. 31

CULT.

60

EQUATION:
SWA O.A.
PC Sta 61+47.98 Back
= SWA W.B.
PC Sta 261+47.98 Ahead

EXISTING ROW

℄ SEIPPEL RD.

32

38'

15'

10'

PC Sta 261+47.98

EXISTING ROW

PROPOSED FUTURE RECREATIONAL TRAIL (BY OTHERS)

TEMPORARY EASEMENT FOR GRADING

℄ RECREATIONAL TRAIL ALIGNMENT

65

265

PI Sta 266+33.00

9" P.C.C. Remove

SEIPPEL RD.

℄ WEST BOUND SOUTHWEST ARTERIAL

COUSINS ROAD

600 ft Taper 50:1 Ratio

℄ OFFICE ALIGNMENT (O.A.) SOUTH WEST ARTERIAL

RW & C/A

270

PI Sta 1523+94.36

W.B. Curve Data
PI Sta 266+33.00
Δ = 42° 02' 26.77" (RT)
T = 485.02
L = 926.12
R = 1,262.18
E = 89.98
e = 5.6% } P.C. ONLY
l = 134'
x = 48'
e = 5.6% } P.T. ONLY
l = 202'
x = 72'

STA. 68+42 (O.A.)
D.A. = 87 Ac. H.
48" RCP
Remove
Carry Ahead in
Left Ditch

STA. 68+99 (O.A.)
D.A. = Side Ditch
No Existing Structure
Carry Ahead in
Left Ditch

70

PI Sta 270+74.10

POT Sta 271+79.50

EQUATION:
SWA W.B.
POT Sta 271+79.50 Back 16.00' LT.
= SWA O.A.
POT Sta 71+75.32 Ahead

140 ft Taper 40:1 Ratio

Begin Taper
SWA O.A. Sta 71+43.37 12.0' Rt.

End Taper
SWA O.A. Sta 72+83.37 16.0' Rt.

POT/SWA O.A. Sta 73+40.42
= POT Ramp D Sta 4522+51.85

℄ RAMP A

PC Sta 1522+59.65

90°0'0"

POT SWA O.A. Sta 73+29.73
= POT Ramp A Sta 1520+76.21

66°0'0"

75

℄ RAMP D

N

0 FEET 50

PLAN VIEW SOUTHWEST ARTERIAL WEST BOUND ALIGNMENT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.5

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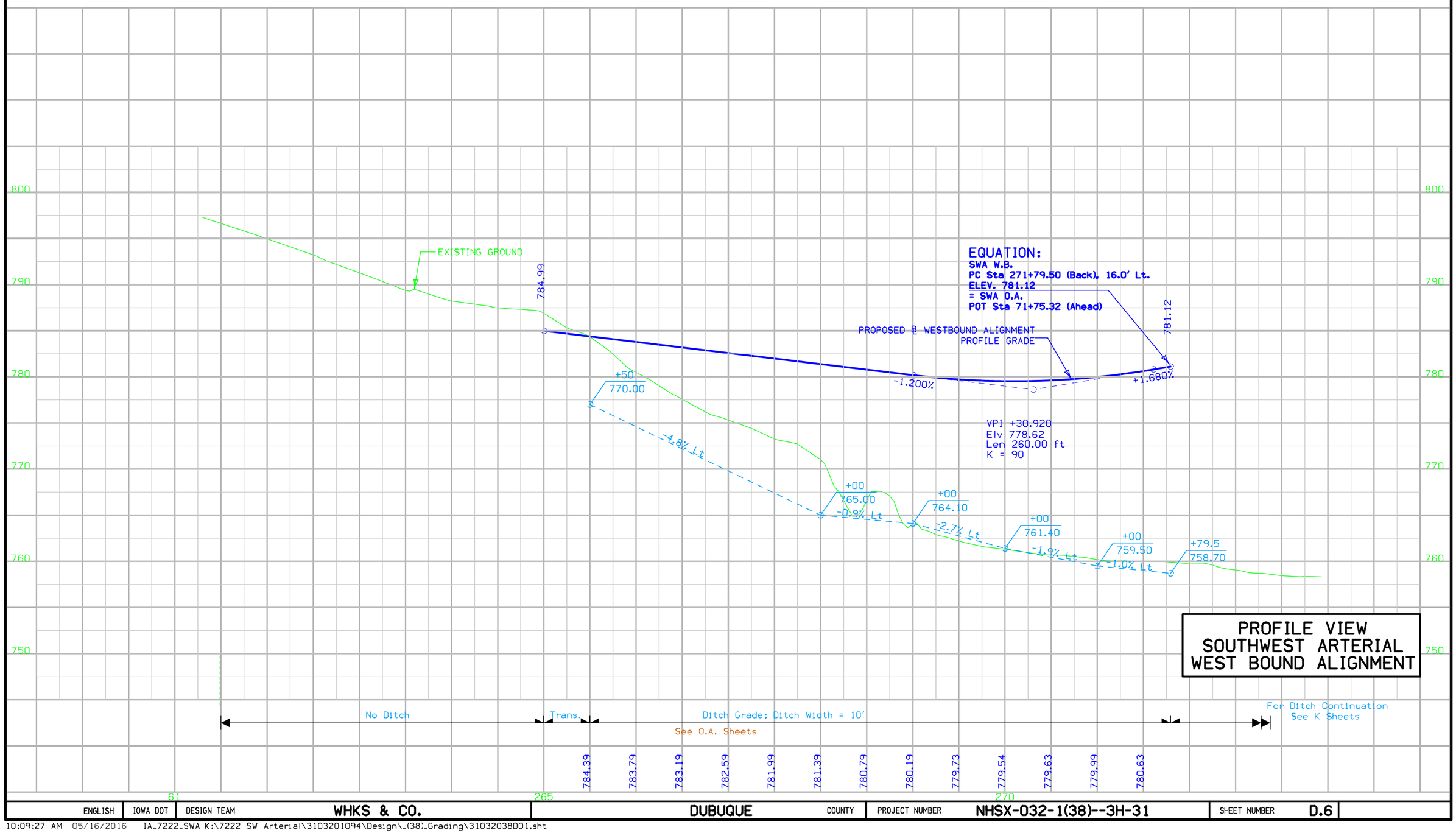

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.6

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FOR RAMP DETAILS
REFER TO K SHEETS

FOR WATER MAIN DETAILS
REFER TO M SHEETS

SEIPPEL ROAD

9" P.C.C. Remove

EXISTING ROW

PROPOSED UTILITY EASEMENT

RW & C/A

1525

DUBUQUE TWP.
T-89N R-2E
SEC. 31

CULT. FIELD

1225

EXISTING ROW

20

20

FUTURE SANITARY
SEWER RELOCATION
(BY OTHERS)

℄ US 20 SURVEY

PROPOSED BRIDGE
(BY OTHERS)

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

℄ WEST BOUND
SOUTHWEST ARTERIAL

RAMP A ℄

EQUATION:
SWA W.B.
POT Sta 271+79.50 Back, 16.00' LT.
= SWA O.A.
POT Sta 71+75.32 Ahead

POT Sta 271+79.50

270

75

POT SWA O.A. Sta 73+29.73
= POT Ramp A Sta 1520+76.21

Begin Taper
SWA O.A. Sta 71+43.37 12.0' Rt.

140 ft Taper 40:1 Ratio

℄ RECREATIONAL
TRAIL ALIGNMENT

PT Sta 70+28.48

PT Sta 270+74.10

End Taper
SWA O.A. Sta 72+83.37 16.0' Rt.

POT SWA O.A. Sta 73+40.42
= POT Ramp D Sta 4522+51.85

32

PROPOSED FUTURE
RECREATIONAL TRAIL

SWA OA POT Sta 78+78.52
= US 20 POT Sta 1221+31.56

1220

REMOVE

COUSINS ROAD

EXISTING ROW

EXISTING ROW

RW & C/A

PROPOSED UTILITY EASEMENT

FIELD ENT.

CULT. FIELD

CULT. FIELD

RAMP D ℄

4520

San.

San.

San.

SOUTH FORK
CATFISH CREEK

FO

FIELD ENT.

0 FEET 50

FOR RECREATIONAL TRAIL
DETAILS REFER TO S SHEETS

FOR WEST BOUND SWA
PLAN AND PROFILE
REFER TO D SHEETS

FOR INTERSECTION DETAILS
REFER TO L SHEETS

PLAN VIEW
SOUTHWEST ARTERIAL
OFFICE ALIGNMENT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.7

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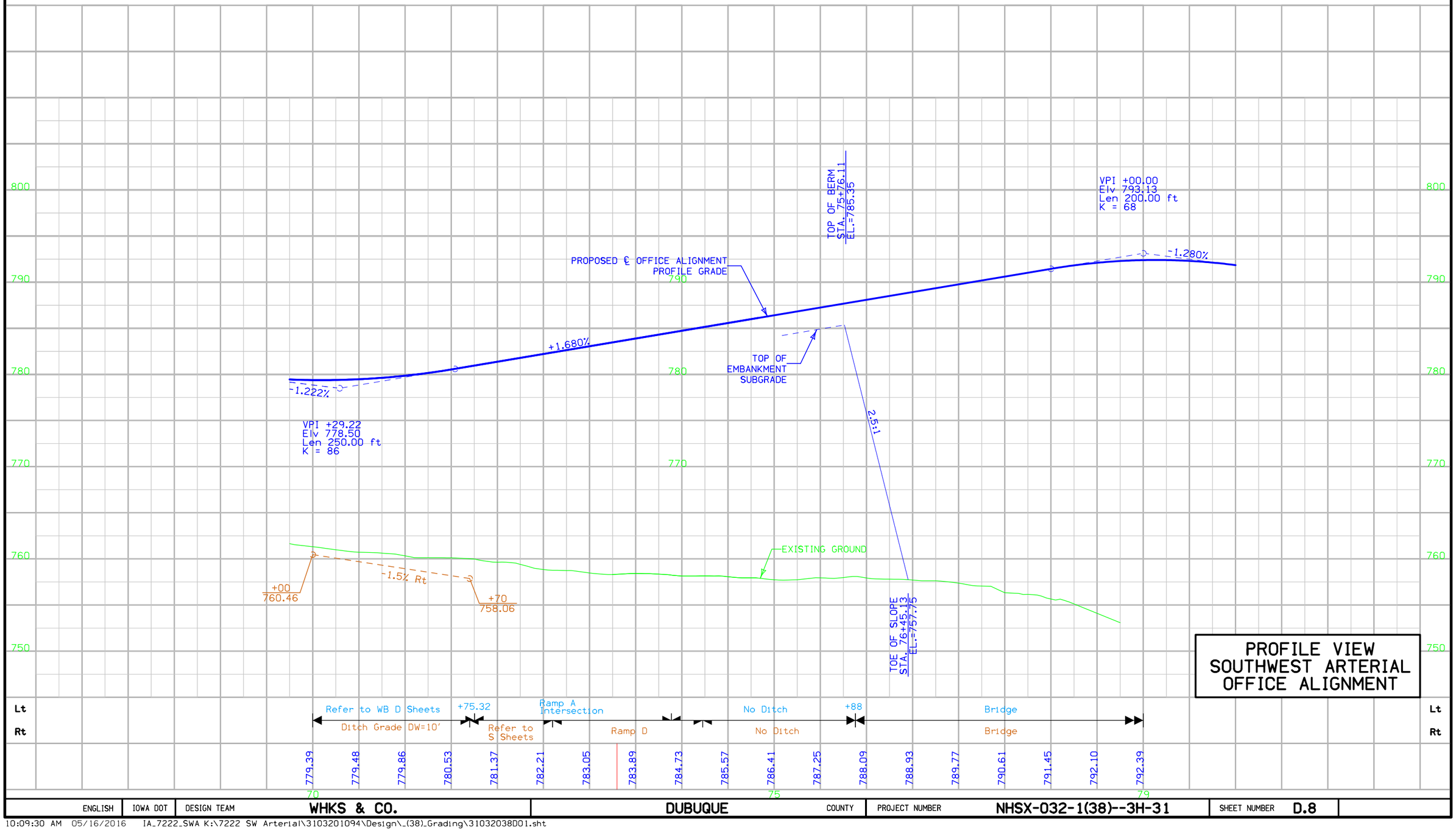

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.8

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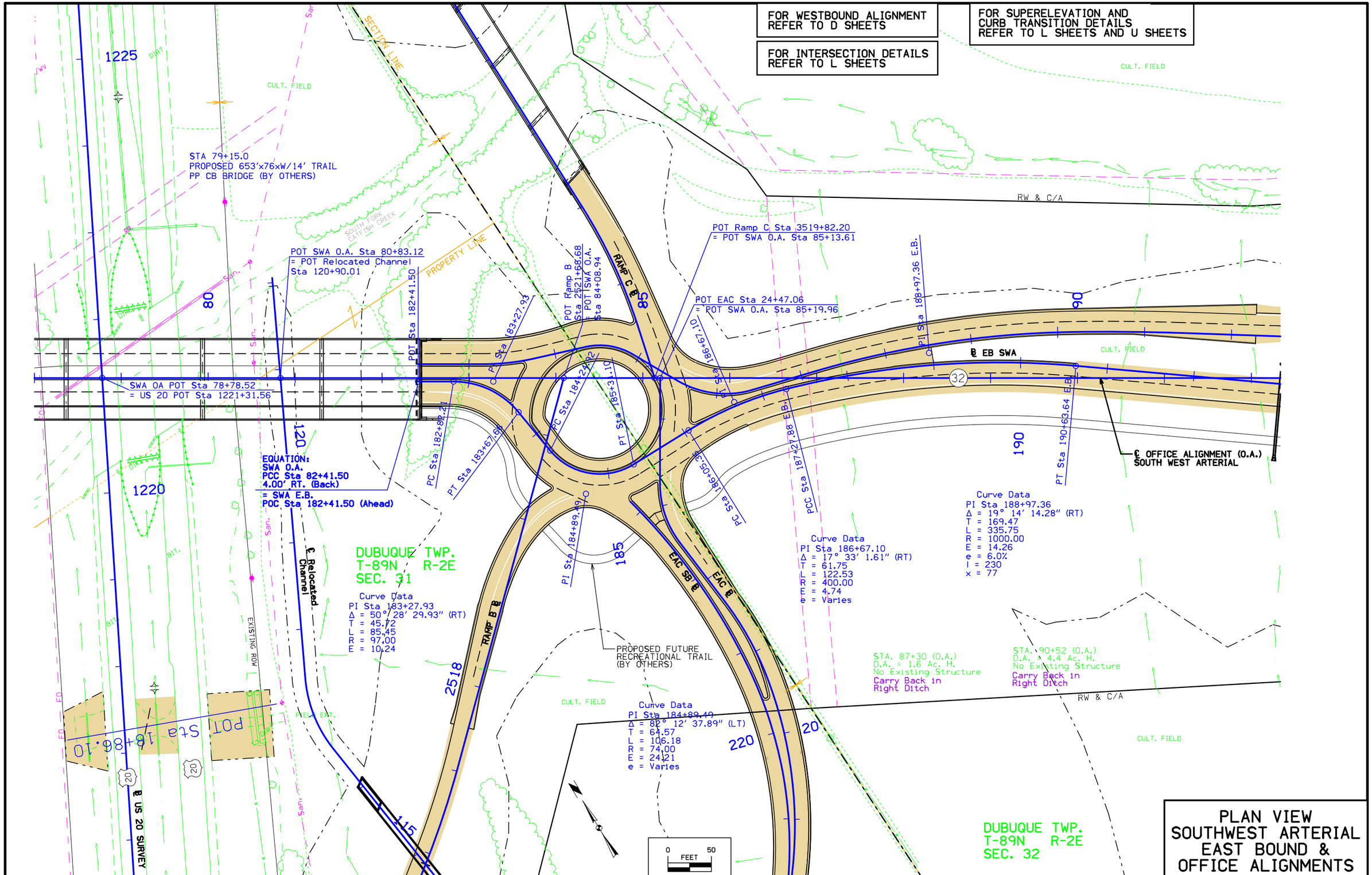

PLAN VIEW
SOUTHWEST ARTERIAL
EAST BOUND &
OFFICE ALIGNMENTS

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.9

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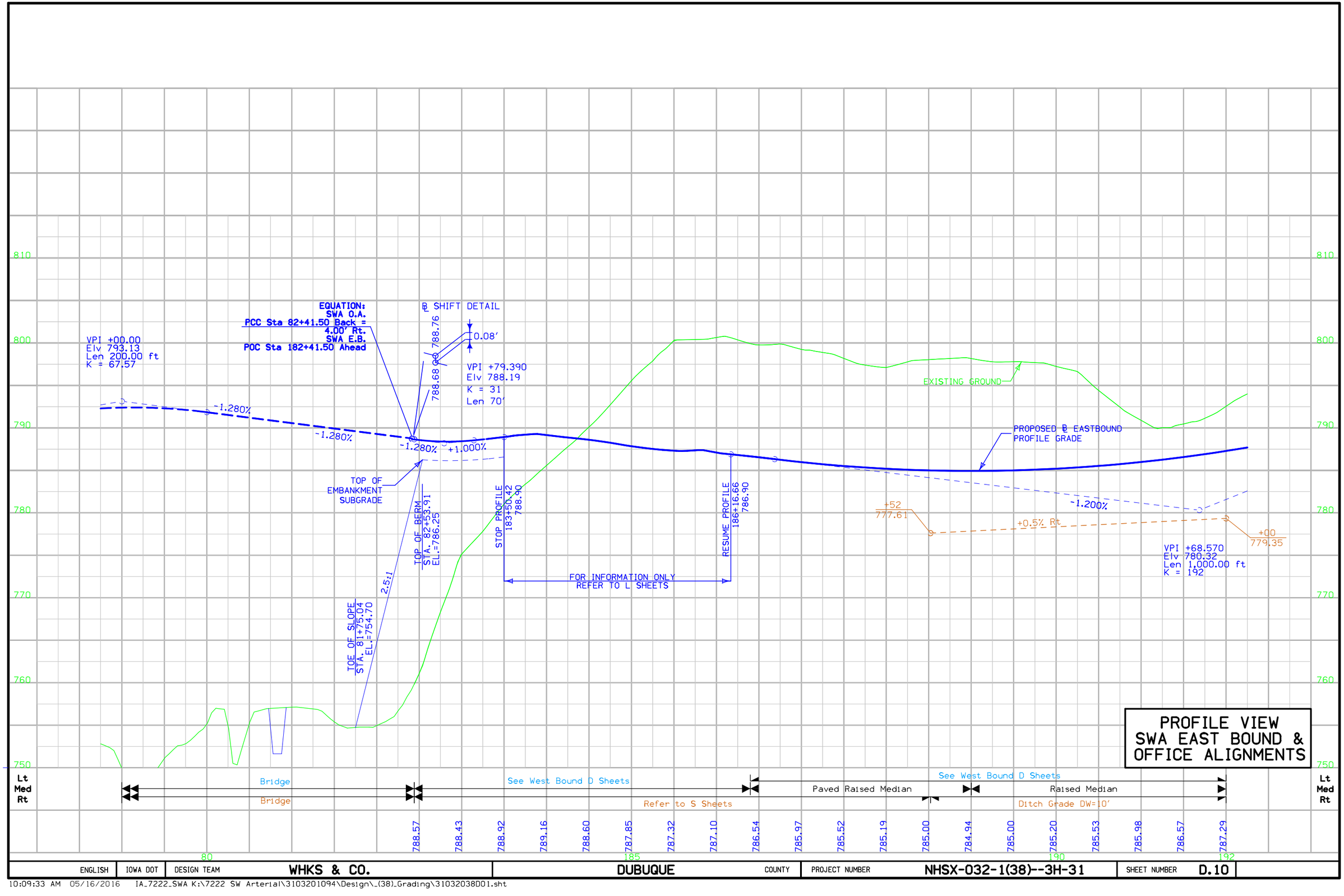

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.10

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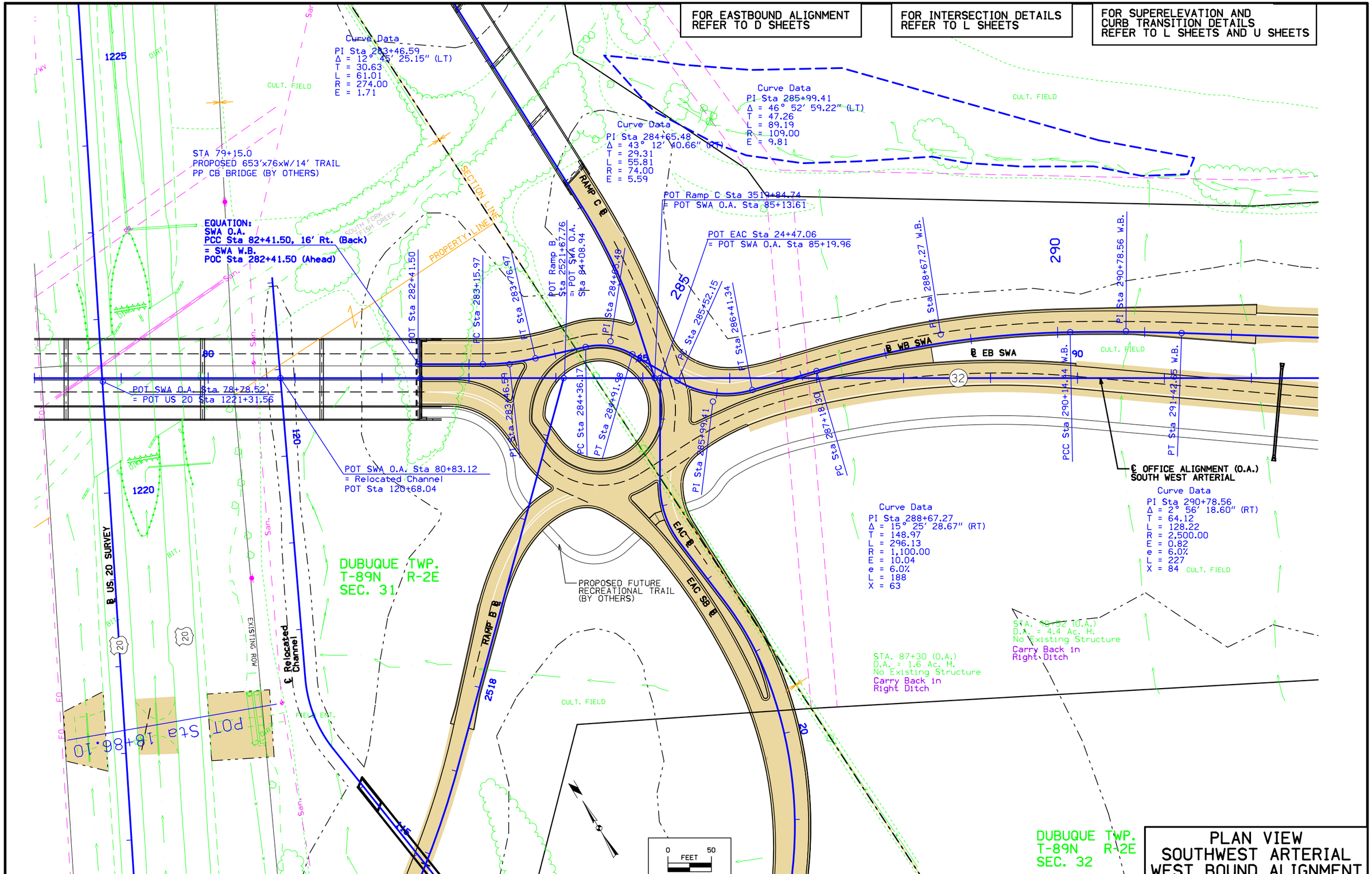

PLAN VIEW
SOUTHWEST ARTERIAL
WEST BOUND ALIGNMENT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.11

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EQUATION:
SWA O.A.
PCC Sta 82+41.50, 16' Rt. (Back)
= SWA W.B.
POC Sta 282+41.50 (Ahead)

℄ SHIFT DETAIL
788.76
788.44
0.32'

VPI +00.00
Elv 793.13
Len 200.00 ft
K = 68

PROPOSED ℄ OFFICE
ALIGNMENT PROFILE GRADE

-1.280%

VPI +82.720
Elv 787.91
Len 80.00 ft
K = 35

-1.280%

-1.280%

+1.000%

785.39

EXISTING GROUND

PROPOSED ℄ WESTBOUND
PROFILE GRADE

-1.200%

-1.200%

VPI +22.710
Elv 780.32
Len 700.00 ft
K = 135

TOP OF
EMBANKMENT
SUBGRADE

TOP OF BERM
STA. 82+53.91
EL.=786.25

2.5:1

TOE OF SLOPE
STA. 81+75.04
EL.=754.70

STOP PROFILE
283+59.57
788.68

RESUME PROFILE
285+70.86
786.94

FOR INFORMATION ONLY
REFER TO L. SHEETS

| | | |

DUBUQUE TWP.
T-89N R-2E
SEC. 32

CULT. FIELD

CULT. FIELD

CULT. FIELD

CULT. FIELD

℄ PROPERTY LINE
CORP. LINE

Curve Data
PI SWA EB Sta 196+26.27
Δ = 6° 39′ 01.36″ (LT)
T = 294.92
L = 589.18
R = 5,076.00
E = 8.56
e = 3.4%
l = 143
x = 84

Curve Data
PI SWA OA Sta 112+10.59
Δ = 16° 03′ 31.95″ (LT)
T = 1,692.78
L = 3,363.36
R = 12,000.00
E = 118.81
e = Normal Crown

PC Sta 198+31.36 E.B.

PC Sta 95+17.82 O.A.

℄ WB SWA

℄ EB SWA

26′

26′

95

100

32

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

STA. 101+10.00
END GRADING

195

PC Sta 196+26.27 E.B.

PROPOSED FUTURE
RECREATIONAL TRAIL
(BY OTHERS)

EQUATION:
SWA E.B.
PT Sta 199+20.53, 32.00′ RT. Back
= SWA O.A.
POC Sta 98+52.53 Ahead

Sta 193+00.00
D.A. = Median 2.2 Ac.
No Existing Structure
18″ x 100′ RCP w/ Aprons
and DR-213 Apron Guard Lt.
FL Lt. 784.88
FL Rt. 779.85

Sta. 97+34 (O.A.)
D.A. = 46 Ac. H.
No Existing Structure
Install
54″ X 410′ RCP w/ 2 Aprons
45° Skew to Local Tangent
FL Lt. 779.00
FL Rt. 791.00

CULT. FIELD

TWSP. & SECTION LINE
CORP. LINE

STA. 92+06 (O.A.)
D.A. = 4.3 Ac. H.
No Existing Structure
Carry Back In
Right Ditch

STA. 95+44 (O.A.)
D.A. = 2.9 Ac. H.
No Existing Structure
Carry Back In
Right Ditch

0 FEET 50

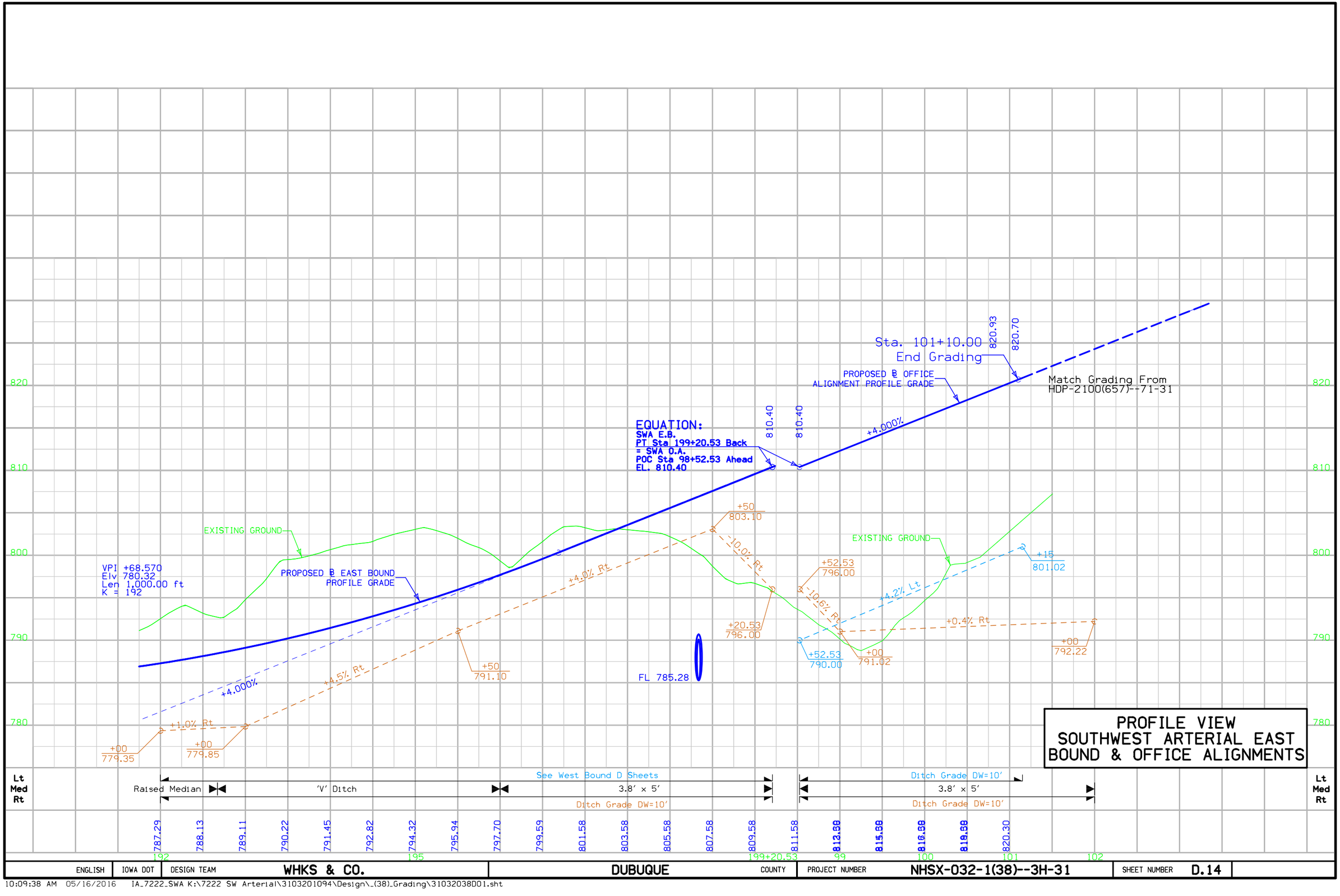
TABLE MOUND TWP.
T-88N R-2E
SEC. 5

STA. 99+25 (O.A.)
D.A. = 46 Ac. H.
No Existing Structure
Carry Back In
Right Ditch

FOR WESTBOUND ALIGNMENT
REFER TO D SHEETS

PLAN VIEW SOUTHWEST ARTERIAL EAST BOUND & OFFICE ALIGNMENTS

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.13



ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.14

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DUBUQUE TWP.
T-89N R-2E
SEC. 32

PROPERTY LINE
CORP. LINE

Curve Data
PI SWA WB Sta 297+20.24
Δ = 3° 31′ 57.01″ (LT)
T = 154.55
L = 309.01
R = 5,012.00
E = 2.38
e = 3.4%
l = 143
x = 84

EQUATION:
SWA W.B.
PT Sta 298+74.70, 32.00′ Rt. Back
= SWA O.A.
POC Sta 98+52.53 Ahead
For Continuation Refer
to Sheet D.13

CULT. FIELD

Curve Data
PI SWA OA Sta 112+10.59
Δ = 16° 03′ 31.95″ (LT)
T = 1,692.78
L = 3,363.36
R = 12,000.00
E = 118.81
e = Normal Crown

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

295
PC Sta 295+65.69 W.B.
PC Sta 95+17.82 O.A.
95
PT Sta 291+42.85 W.B.
℄ WB SWA
℄ EB SWA
26′
26′
32
100
PI Sta 297+20.24 W.B.

STA. 101+10.00
END GRADING
MATCH GRADING FOR
PROJECT HDP-2100(657)--71-31

PROPOSED FUTURE
RECREATIONAL TRAIL
(BY OTHERS)

Sta 193+00.00
D.A. = Median 2.2 Ac.
No Existing Structure
18″ x 100′ RCP w/ Aprons
and DR-213 Apron Guard Lt.
FL Lt. 784.88
FL Rt. 779.85

Sta. 97+34 (O.A.)
D.A. = 46 Ac. H.
No Existing Structure
Install
54″ X 410′ RCP w/ 2 Aprons
45° Skew to Local Tangent
FL Lt. 779.00
FL Rt. 791.00
Contractor to
Shape Outlet and
Place EC-301 Splash Basin

STA. 92+06 (O.A.)
D.A. = 4.3 Ac. H.
No Existing Structure
Carry Back In
Right Ditch

STA. 95+44 (O.A.)
D.A. = 2.9 Ac. H.
No Existing Structure
Carry Back In
Right Ditch

TWSP. & SECTION LINE
CORP. LINE

TABLE MOUND TWP.
T-88N R-2E
SEC. 5

STA. 99+25 (O.A.)
D.A. = 46 Ac. H.
No Existing Structure
Carry Back In
Right Ditch

0 50
FEET

FOR WESTBOUND ALIGNMENT
REFER TO D SHEETS

PLAN VIEW
SOUTHWEST ARTERIAL
WEST BOUND ALIGNMENT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.15

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For Continuation
Refer to Sheet D.14

EQUATION:
SWA W.B.
PT Sta 298+74.70 Back
= SWA O.A.
POC Sta 98+52.53 Ahead
EL. 810.40



PROFILE VIEW SOUTHWEST ARTERIAL WEST BOUND ALIGNMENT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	D.16

For Rec Trail Details
Refer to F.01 - F.02

Sta. 102+50
Install 24" RF-1 Letdown
Skew = 0°
F.L. = Lt. 808.00
Other 808.70
Rt. 822.30

Sta. 108+00
Install 30" RF-1
Skew = 32° Lt. Ahd.
F.L. = Lt. 837.00
Rt. 817.50

℄ English Mill Road

124 Bradley, Sharon L. Trust

130 Bradley, Robert W. Trust

124 Bradley, Sharon L. Trust

Note: Grading Only -
Pavement/Shoulders Shown
for Reference Purposes Only

POC Sta. 113+27.37 SWA
POT Sta. 1006+42.00 EMR

16'x12' Scour Protection Mat

Relocated 8" H.P. Gas Line (By others)

Erosion Stone

Proposed Field Fence

Rip-Rap

20' Wide Turf Reinforcement Mat

Gas main to be relocated by others

Gas main to be relocated by others

PC Sta 95+17.82

Sta. 101+10.00
Begin Grading

Recreational Trail

℄ Southwest Arterial

8'x8' Scour Protection Mat

Sta. 120+00
End Grading

20' Wide x 30' Long Turf Reinforcement Mat

20' Wide Turf Reinforcement Mat

Erosion Stone

PI Sta 112+10.59

Relocated 16" H.P. Gas Line (By others)

Rip-Rap

12' Wide Turf Reinforcement Mat
10' Wide Turf Reinforcement Mat

Curve Data
Δ = 16° 03' 31.94" (LT)
T = 1,692.78
L = 3,363.36
R = 12,000.00
E = 118.81

0 FEET 100

JQUE TWP.
9N R2E
SEC. 32

TABLE MOUND TWP.
T88N R2E
SEC. 5

129 Haupert, John C. & Carolyn S.

130

SOUTHWEST ARTERIAL

℄ English Mill Road
VPI +00.000
Elv 868.30
Len 1,940.00 ft
K = 248

NOTE:
Limits of Grading on Southwest Arterial will be adjusted, if necessary, to account for variations in the estimated earthwork shrinkage factor.

Proposed Profile Grade

Sta. 101+10
Begin Grading

Future Profile Grade

+0.510%

+4.000%

VPI +00.000
Elv 812.30
Len 650.00 ft
K=186

3:1 Grading Slope

0.50%

4.33%

6.50% Ditch Grade Lt.

7.20%

4.33% Future Ditch Grade Lt.

+50 780.7

+60 800.1

+20 801.0

+00 804.5

+00 824.0

+50 834.8

+97 Lt. 836.0

+80 Lt. 867.5

+00 Lt. 859.6

9.27%

+55 Rt. 840.9

+4.000%

Ditch Grade Lt. 8.00%

+00 Lt. 841.7

+50 Rt. 842.5

+85 844.1

Dike 821.8

5.48%

-1.11%

4.20%

3.41%

+80 Lt. 837.8

+00 Lt. 841.6

-1.00%

Core-out Drain Tile

+00 Rt. 840.4

+60 Lt. 837.0

+62 Lt. 837.0

+65 Lt. 837.0

+00 Rt. 839.3

+00 Lt. 838.5

+00 Rt. 838.8

+30 Lt. 838.8

+00 Rt. 834.6

+00 842.6

+00 Rt. 841.8

+00 Lt. 839.6

-1.45%

Ditch Grade Rt. 12.65%

-15.13%

+00 871.3

+00 864.2

+22 876.0

-3.835%

-8.80% Ditch Grade Lt.

Existing Ground at ℄ SWA

Sta. 120+00
End Grading

3:1 Grading Slope

Future Profile Grade

+00, 0.0' Lt. 836.2

Future Rt. Ditch Grade

+00 Rt. 826.2

-5.70%

+00 Rt. 820.5

+12 Rt. 833.0

Ditch Grade Rt. -7.80%

Core-out Drain Tile

Proposed Profile Grade

Ditch Grade
(from sideroad)

V- Ditch Grade
(from Rec. Trail)

Ditch Grade
See Sheet F.01 for Ditch Information

Std. Ditch | Ditch Grade | Ditch Dike | Ditch Grade | Std. Ditch | Ditch Grade | No Ditch | Standard Ditch | Ditch Grade

Lt Med Rt

FOR INFORMATION ONLY

ENGLISH	IOWA DOT	DESIGN TEAM AECOM	DUBUQUE COUNTY	PROJECT NUMBER HDP-2100(657)--71-31	SHEET NUMBER D.17	AECOM E.01

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FOR UTILITY RELOCATIONS
REFER TO M SHEETS

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

DUBUQUE TWP.
T-89N R-2E
SEC. 31

Sta. 1190+22 Median
D.A. = Median
18" X 36' Conc. Pipe
Remove
Carry Ahead in
Median Ditch

Sta. 1195+02
D.A. = Cattle Pass
5' x 7' x 128' RCB
Remove Head Walls
Plug, Fill, And Abandon
Conctractor to Re-Shape
Rt. Embankment

Sta. 1197+54 Median
D.A. = Median
24" X 182' Conc. Pipe
U.A.C.

Sta. 1202+77
D.A. = 9.2 Ac. H.
2' x 3' x 205' RCB
Remove Lt. Headwall
Remove Rt. Flume
Plug, Fill & Abandon

Sta. 1207+03 Lt.
D.A. = 5 Ac. R.
24" X 66' Conc. Pipe
Remove
Carry Ahead in
Left Ditch

Notes:
① Remove Entrance and Shape to Match Existing
② Remove Median Crossing and Shape Ditch to Match Existing

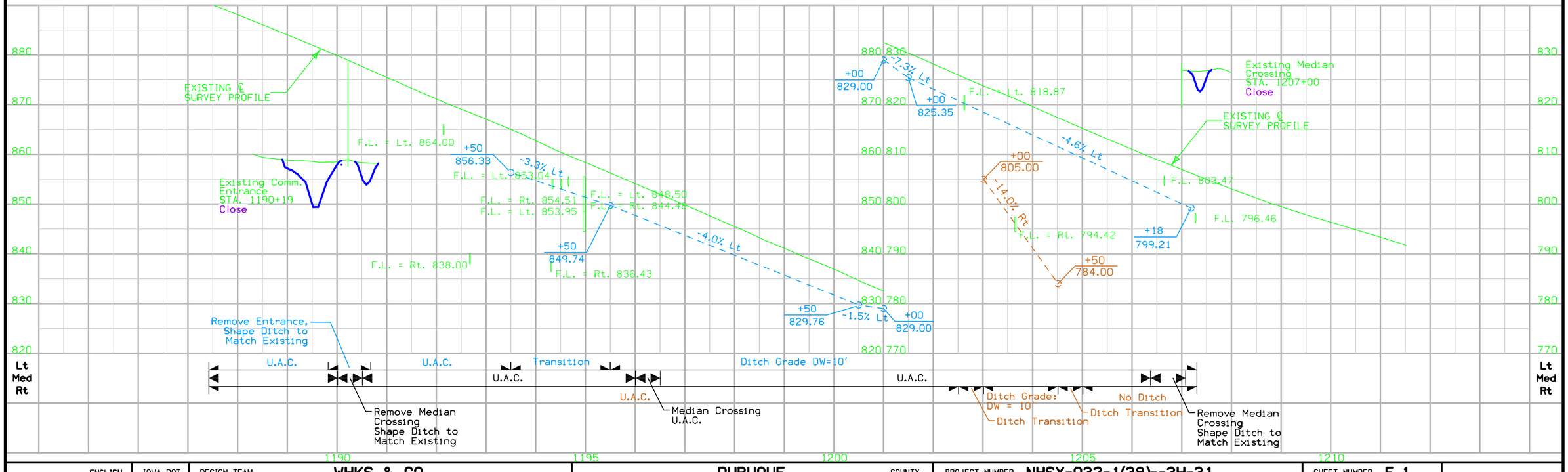
Sta. 1192+23
D.A. = 10.5 Ac. H.
2' x 2' x 215' RCB
U.A.C.

Sta. 1194+33
D.A. = 4.0 Ac. H.
2' x 2' x 180' RCB
Carry Ahead in Lt. Ditch
Remove Lt. Head Wall
Remove Rt. Flume
Plug, Fill, And Abandon
Contractor to Re-Shape
Rt. Embankment

Sta. 1194+65
D.A. = Median
24" x 59' Conc. Pipe
Extension
Left Side w/
24" X 10' RCP w/Apron
and DR-213 Apron Guard
FL Lt. 852.86
Refer to U Sheets

Sta. 1206+95
D.A. = Median
24" Conc. Pipe w/ 18"
CMP Inlet Extension
Carry Ahead in Median Ditch
Remove 30' Lt. & 36' Rt.
Plug, Fill & Abandon
Pipe Under US 20

PLAN & PROFILE
US-20



ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	E.1

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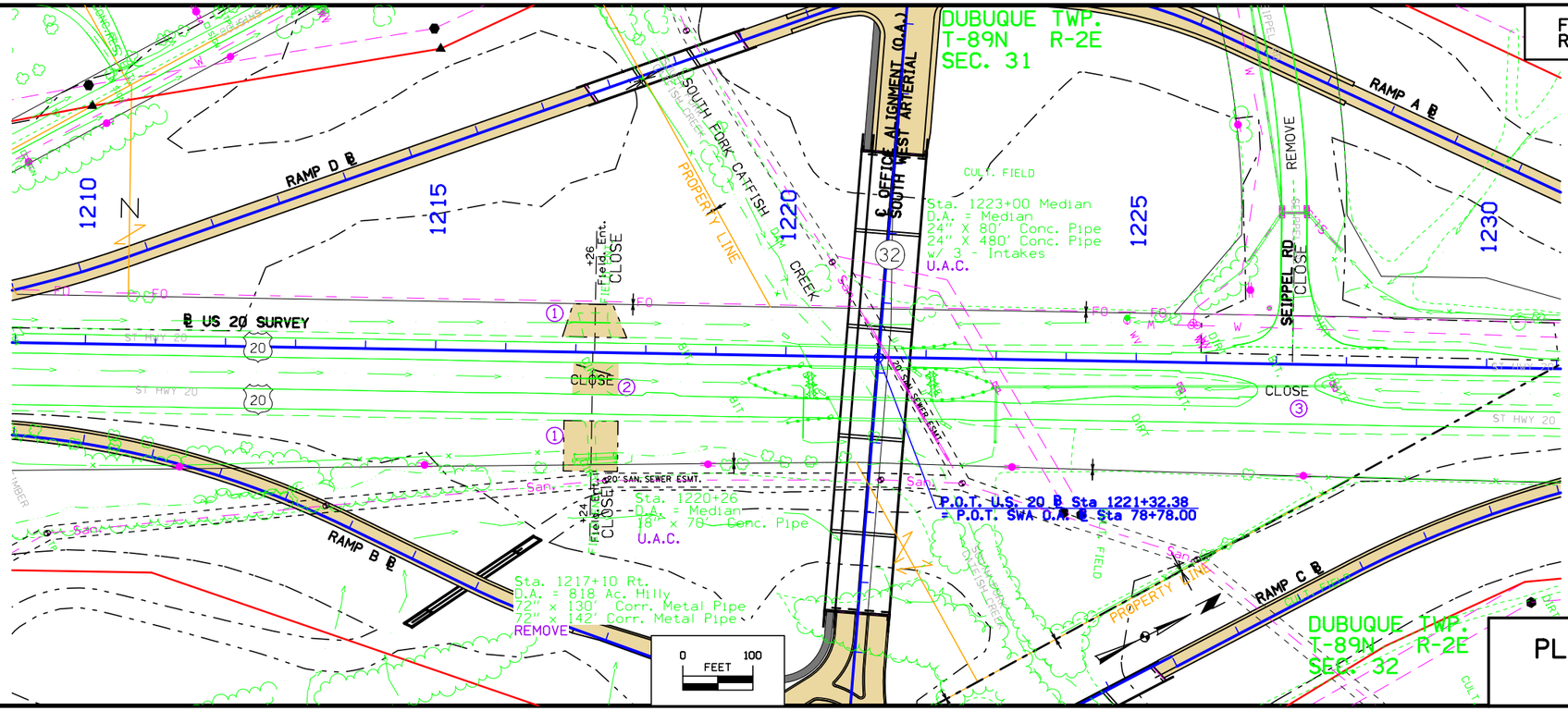
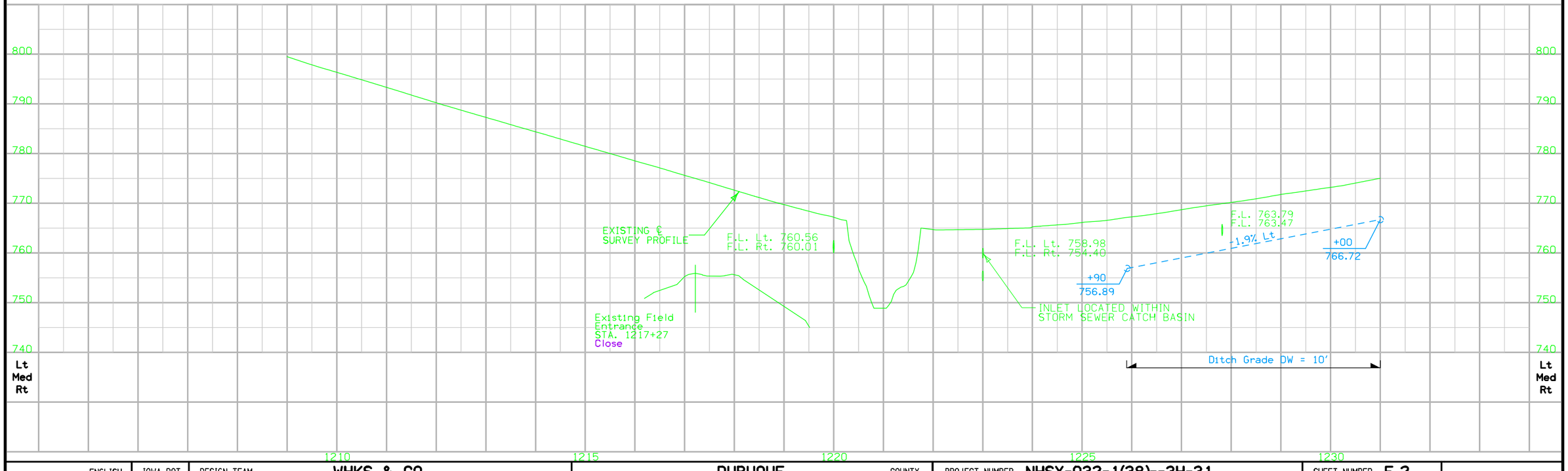
FOR UTILITY RELOCATIONS
REFER TO M SHEETS



Notes:

1. Remove Entrance and Shape Embankment to Match Existing
2. Remove Median Crossing and Shape Ditch to Match Existing
3. Install Crossover Barricade. Refer to U sheet.

PLAN & PROFILE US-20



ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	E.2

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Sta. 1236+01
D.A. = Median
24" X 78' RCP & CMP Letdown
Inlet W/ Apron
DR-621 Ext. Lt.
Remove CMP Letdown Left and
Extend w/ 24" x 101' RCP w/ Apron
FL Lt. 769.28
Refer to U Sheets

DUBUQUE TWP.
T-89N R-2E
SEC. 31

DUBUQUE TWP.
T-89N R-2E
SEC. 32

Sta. 1245+23
D.A. = 6 Ac. H. + 5 Ac. H.
30" X 162' Conc. Pipe W/
4'-4" X 4'-6" Flume Rt.
Remove Headwalls & Flume
Ext. Lt. w/ DR-623
30" x 8' RCP w/ Apron
F.L. Lt. 788.44
Ext. Rt. w/ 30" x 12' RCP
w/ 39' CMP Letdown DR-641
F.L. Rt. 773.92
Refer to U Sheets

Sta. 1245+85
D.A. = 5 Ac. H.
5' X 7.4' X 123.2 RCB (Cattle Pass)
Remove Headwalls
Plug, Fill and Abandon
Carry Back in Left Ditch

Sta. 1246+28
D.A. = Median
24" X 57' Conc. Pipe
U.A.C.

Sta. 1252+07
D.A. = Median
24" X 66' Conc. Pipe
U.A.C.

EQUATION:
PC Sta 1252+06.57 BK =
PC Sta 1252+10.74 AH

Sta. 1236+21
D.A. = 46.0 Ac. H.
4' X 4' X 194 RCB
DR-621 Ext. Rt.
54" X 60' RCP w/ Apron
F.L. 758.50
DR-621 Ext. Lt.
54" X 72' RCP w/ Apron
F.L. 769.05
Refer to U Sheets

RAMP A
RAMP C
ST HWY 20
US 20 SURVEY
EXISTING ROW
R/W & A/C
CORP. LINE
SECTION LINE
1/4 SECTION LINE
CULT. FIELD
DIRT
FENCE
FO
U.A.C.
CLOSED
Remove
24" X 26' CMP
Remove Existing
Field Culvert;
Re-Shape Area
Field Ent. +51 CLOSED
Field Ent. +75 CLOSED

WORK NORTH OF STA. 1250+00 BY
NHSX-032-1(37)--3H-31 CONTRACTOR.

FOR UTILITY RELOCATIONS
REFER TO M SHEETS

0 FEET 100

PLAN & PROFILE
US-20

EXISTING
US-20 PROFILE

F.L. Rt. 777.33
F.L. Lt. 767.35
F.L. Lt. 768.18
+50
760.00
+1.0% Rt
F.L. Rt. 761.83
+50
761.00
+10.0% Rt
+00
776.00
+2.0% Rt
+3.0% Lt
+20
773.47

F.L. Lt. 788.44
+2.0% Lt
+00
788.00
+00
790.87
+22
788.44
+2.7% Lt
+00
790.55
F.L. Lt. 791.04
F.L. Rt. 792.42
F.L. Lt. 787.29
F.L. Rt. 785.17
F.L. Rt. 777.17
+55
Existing Field
Entrance
Closed

Existing Field
Entrance
Closed By
NHSX-032-1(37)
Contractor
+12

Existing Field
Entrance
STA. 1252+12
Closed

+27
Transition
Ditch Grade DW=10'
U.A.C. Median Ditch
Ditch Grade DW=10'
U.A.C.
Transition
No
Ditch
+80
Transition

Lt
Med
Rt

810
800
790
780
770
760
750

1230 1235 1240 1245 1250 1255

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	E.3

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

DUBUQUE TWP.
T-89N R-2E
SEC. 31

TABLE MOUND TWP.
T-88N R-2E
SEC. 5

PROPERTY LINE
SECTION LINE
POT Sta 0+00.00
STONE VALLEY ROAD
20' SAN. SEWER ESMT.
Twin 78" x 121" RCP
D.A. = 661 Ac. H.
U.A.C.
EL = 776.57
EL = 775.76
EL 775.44
BFGR&I
BP C&S CO.
W 1/2 NW
Sta. 0+90
D.A. = 28 Ac.
30" X 32" RCP
W/APRON
Ext. Rt. w/ DR-621
30" x 138' RCP w/ Apron
F.L. Rt. 779.70
Sta. 5+66
D.A. = 719 Ac.
No Existing Structure
Carry Ahead in
Proposed Channel
Sta. 9+75
D.A. = 24 Ac.
No Existing Structure
Carry Ahead in
Right Ditch
Sta. 11+20.00
D.A. = 756 Ac. H.
No Existing Structure
Construct
10' x 10' x 78' RCB
15° Skew Lt. Ah.
FL Lt. 763.30
FL Rt. 764.07
Sta. 17+35
D.A. = 4 Ac. H.
No Existing Structure
Carry Back in
Right Ditch
PI Sta 10+65.49
PC Sta 8+48.63
PT Sta 12+57.87
248'
37' B TO B
EAC Sta 11+20.00 =
RELOCATED CHANNEL
Sta 106+06.86
℄ PROPOSED CHANNEL RELOCATION
℄ EAST ACCESS CONNECTOR
EQUATION:
POT EAC Sta 17+49.64 BK =
PC SB EAC Sta 217+49.64 AH
PC Sta 17+74.26
℄ SB EAST ACCESS CONNECTOR
PCC Sta 20+70.35
PT Sta 21+67.04
PI Sta 19+27.27
PI Sta 21+19.01
PC Sta 22+53.07
PT Sta 23+25.55
RAMP 5 ℄
EXISTING ROW
FIELD ENT.
℄ US 20 SURVEY
℄ OFFICE ALIGNMENT (O.A.) SOUTH WEST ARTERIAL
POT EAC Sta 22+90.65 =
POT O.A. SWA Sta 85+19.96
POT EAC Sta 24+47.06 =
POT O.A. SWA Sta 85+19.96
2515
2518
2520
220
15
10
TOWNSHIP LINE
PROPERTY LINE

Curve Data
PI Sta 10+65.49
Δ = 46° 53' 45.71" (RT)
T = 216.87
L = 409.25
R = 500.00
E = 45.01
e = Normal Crown

Curve Data
PI Sta 19+27.27
Δ = 35° 38' 25.42" (LT)
T = 153.01
L = 296.09
R = 476.00
E = 23.99
e = Normal Crown

Curve Data
PI Sta 21+19.01
Δ = 15° 49' 39.54" (LT)
T = 48.65
L = 96.69
R = 350.00
E = 3.37
e = Normal Crown

Curve Data
PI Sta 22+90.65
Δ = 37° 24' 48.97" (RT)
T = 37.59
L = 72.48
R = 111.00
E = 6.19
e = Normal Crown

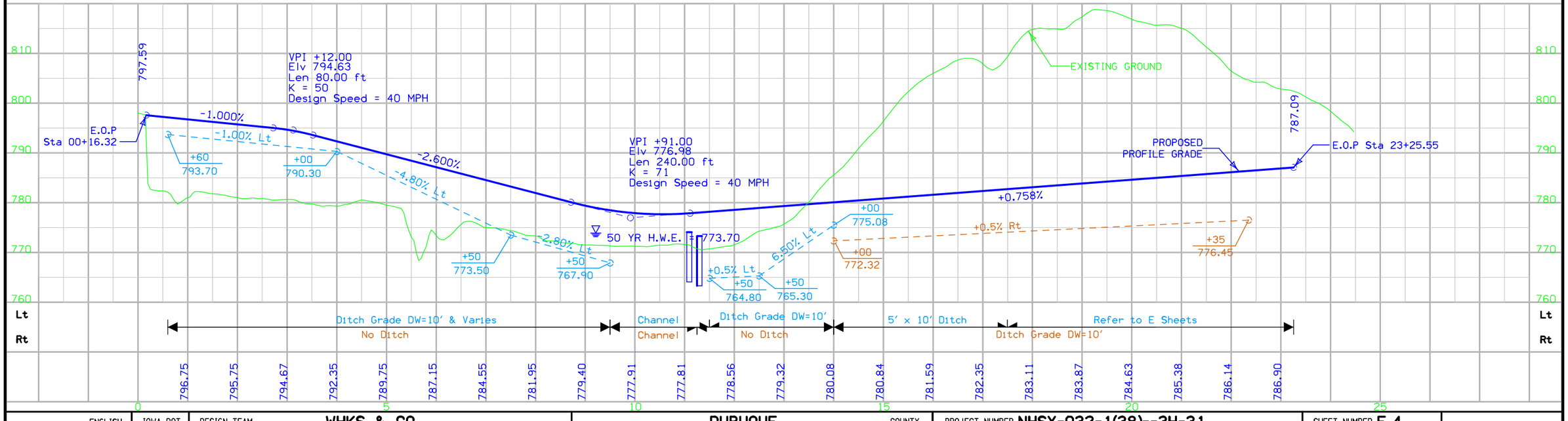
0 FEET 100

FOR SB EAST ACCESS CONNECTOR DETAILS SEE E AND U SHEETS

FOR INTERSECTION DETAILS SEE L SHEETS

FOR RELOCATED CHANNEL DETAILS SEE E SHEETS

PLAN & PROFILE EAST ACCESS CONNECTOR (EAC)



ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER E.4

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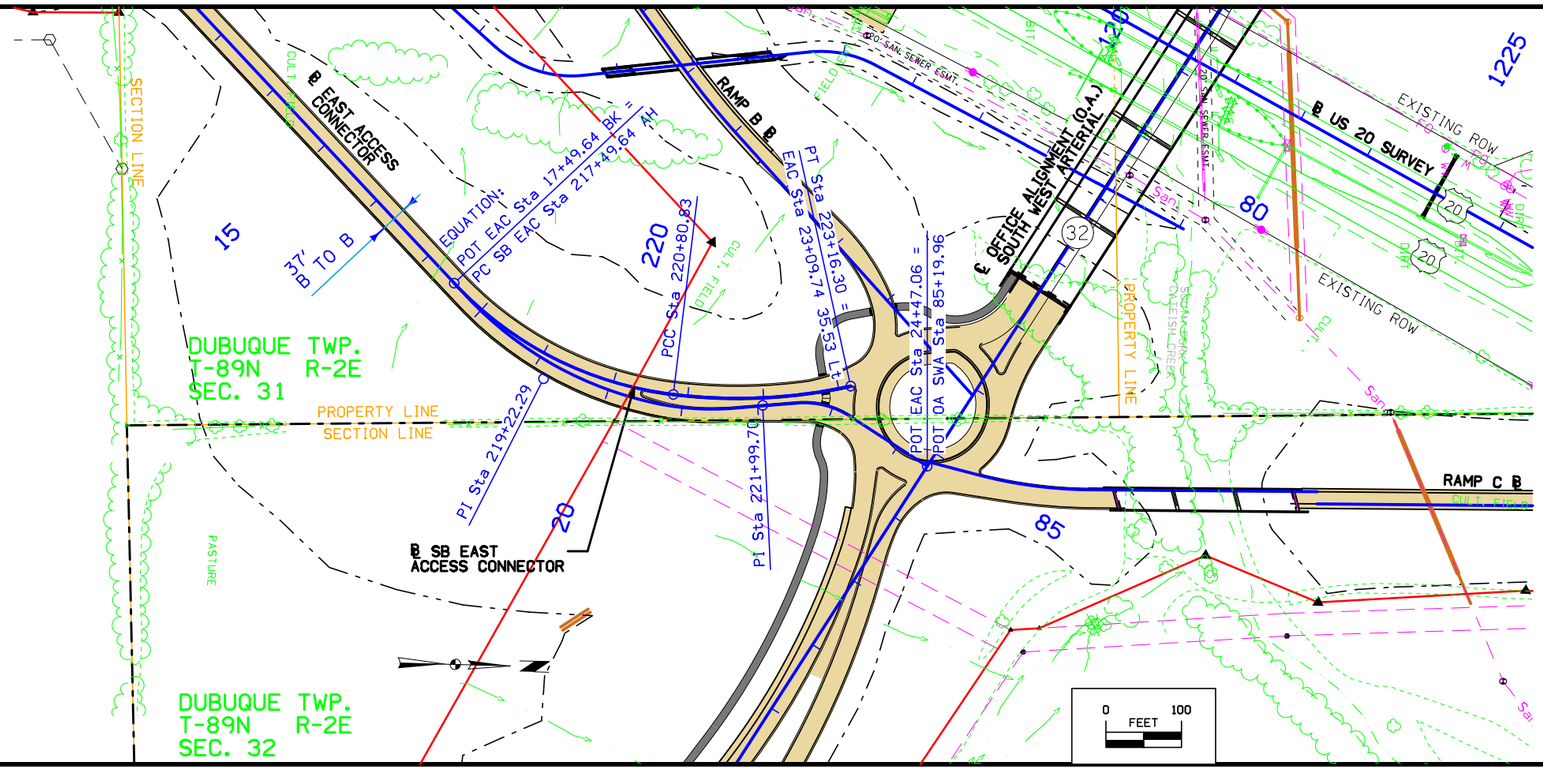
For Raised Median Details See U Sheets

For Relocated Channel Details See E Sheets

For East Connector Details See E Sheets

For Intersection Details See L Sheets

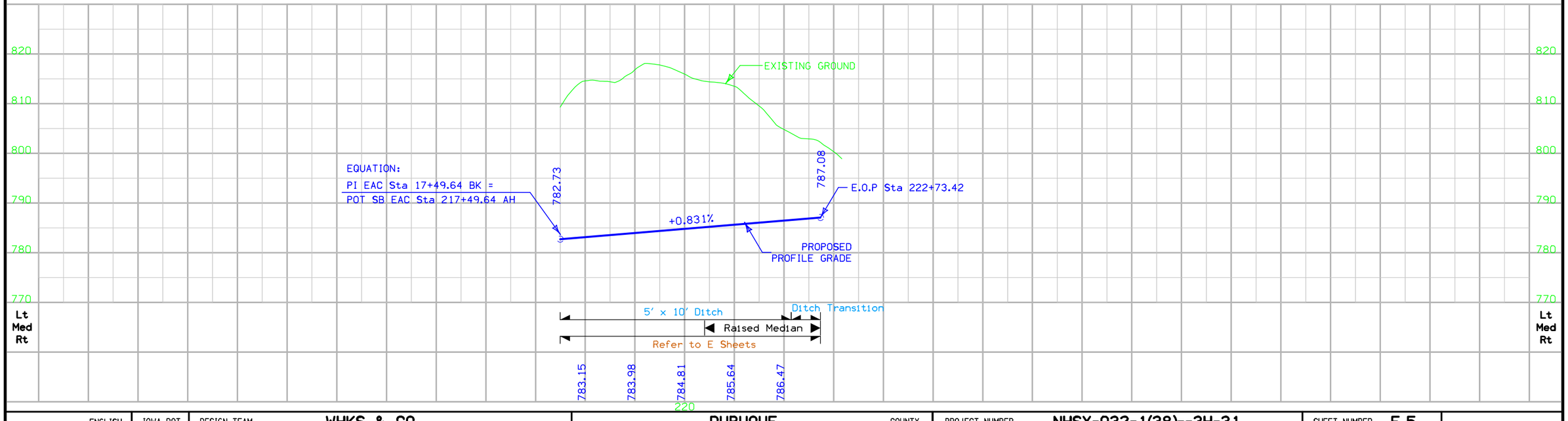


0 100 FEET

Curve Data
PI Sta 219+22.29
Δ = 39° 56′ 58.56″ (LT)
T = 172.65
L = 331.19
R = 475.00
E = 30.40
e = Normal Crown

Curve Data
PI Sta 221+99.70
Δ = 19° 19′ 43.05″ (LT)
T = 118.86
L = 235.47
R = 698.00
E = 10.05
e = Normal Crown

PLAN & PROFILE SOUTH BOUND EAST ACCESS CONNECTOR (SB EAC)



ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	E.5

DUBUQUE TWP.
T-89N R-2E
SEC. 31

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

℄ COUSINS RD

REMOVE PAVEMENT
& EMBANKMENT
SEE CROSS SECTIONS

POT Sta 497+84.23 ℄ Cousins Rd
=POT Sta 68+73.84 ℄ SW ARTERIAL

Sta. 495+94
30" X 54' CMP
Remove Carry Ahead

48" X 32' CMP
Remove

Sta. 500+63
24" X 83' RCP
Remove

STA. 503+77.00
ROAD CLOSURE
END PAVEMENT REMOVAL

+24 Prop. Paved
Type 'B' ENT.
W/ 18" X 28'
ENT. Pipe

POT Sta 505+13.39

SEE EW-501
SEC. B-B

TURNAROUND &
PROPOSED ENTRANCE

POT Sta 500+00.00 ℄ Cousins Rd
=POT Sta 45+81.27 ℄ SEIPPEL RD

PT Sta 482+14.56

POT Sta 481+34.65

POT Sta 479+34.23

PC Sta 480+43.49

POT Sta 479+24.86 ℄ Cousins Rd
POT Sta 1206+83.24 ℄ US 20 Survey

Curve Data
Δ = 49° 00' 30.27" (RT)
T = 91.16
L = 171.07
R = 200.00
E = 19.80

100'-0" X 200'-0"
Continuous Concrete
Slab Bridge
Remove

℄ US 20 SURVEY

RAMP D ℄

RAMP A ℄

CLOSE

REMOVE

20' SAN. SEWER ESMT.

30' SAN. SEWER ESMT.

0 FEET 100

PLAN & PROFILE
COUSINS ROAD

Proposed Type C
Entrance
STA. 504+24
5.0%

EXISTING GROUND
℄ COUSINS ROAD

F.L.=762.00

820
810
800
790
780
770
760

480 485 490 495 500 505

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	E.6

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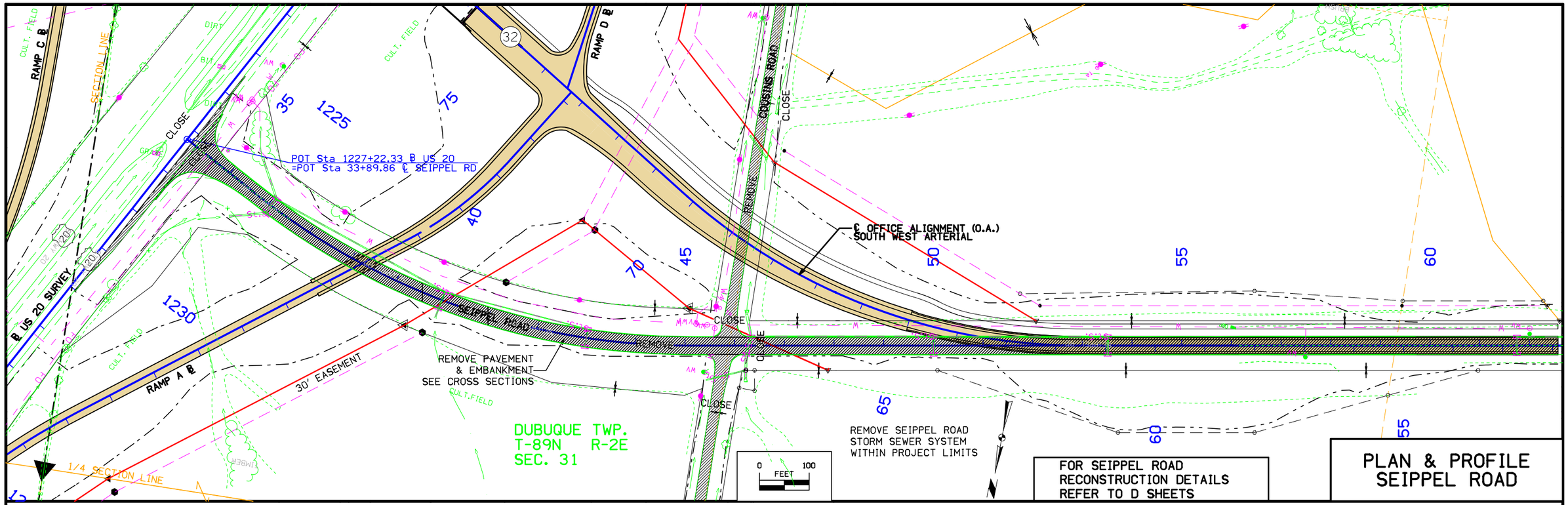

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	E.7

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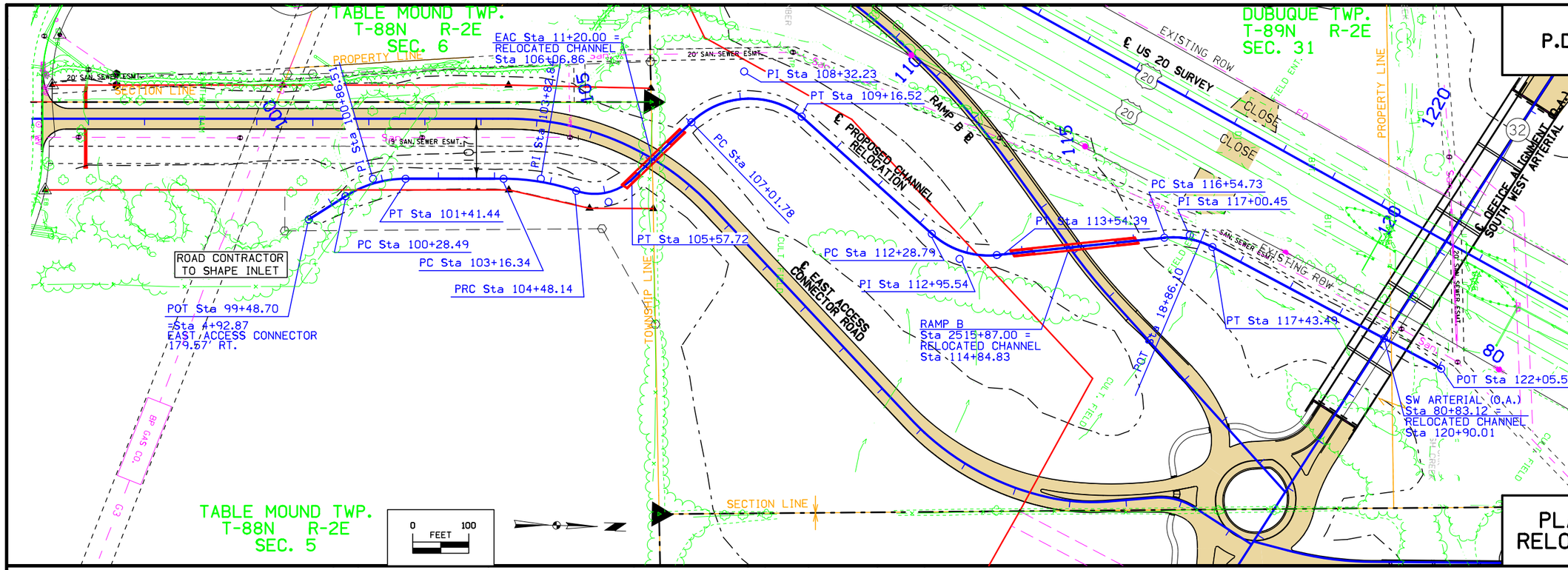


P.D.A. LOCATIONS

Curve Data

PI Sta 108+32.23
Δ = 82° 01' 17.94" (RT)
T = 130.44
L = 214.73
R = 150.00
E = 48.78

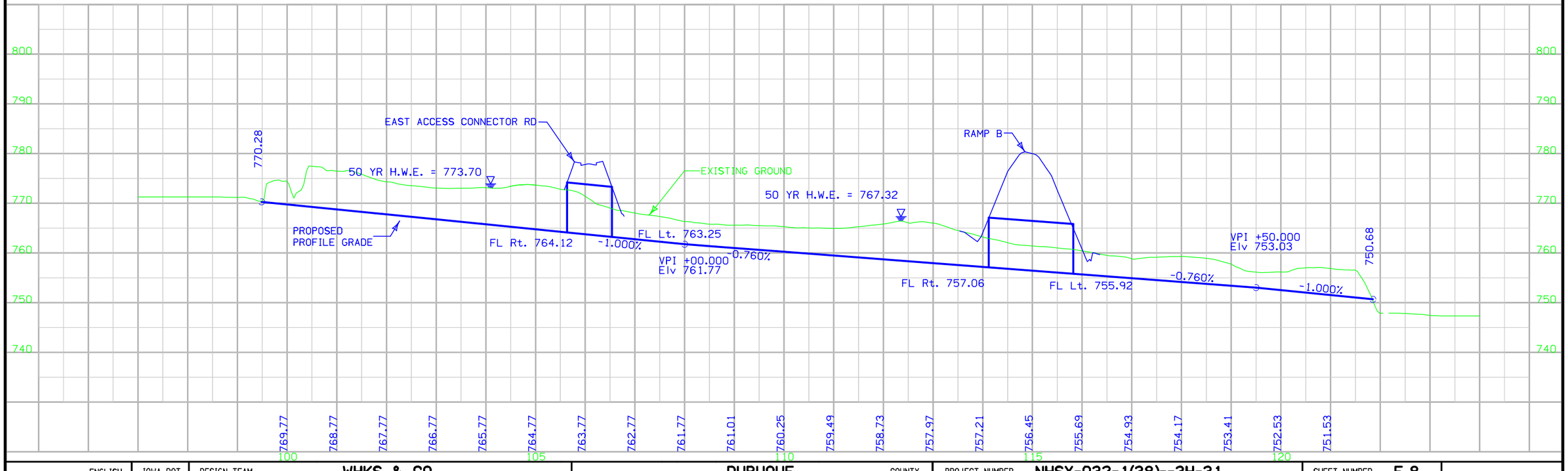
PI Sta 117+00.45
Δ = 33° 54' 11.30" (RT)
T = 45.72
L = 88.76
R = 150.00
E = 6.81

PI Sta 105+23.14
Δ = 43° 53' 59.89" (LT)
T = 30.23
L = 57.46
R = 75.00
E = 5.86

PI Sta 112+95.54
Δ = 47° 58' 36.08" (LT)
T = 66.75
L = 125.60
R = 150.00
E = 14.18

PI Sta 100+49.79
Δ = 32° 21' 22.47" (RT)
T = 58.02
L = 112.94
R = 200.00
E = 8.25

PLAN & PROFILE RELOCATED CHANNEL



ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	E.8

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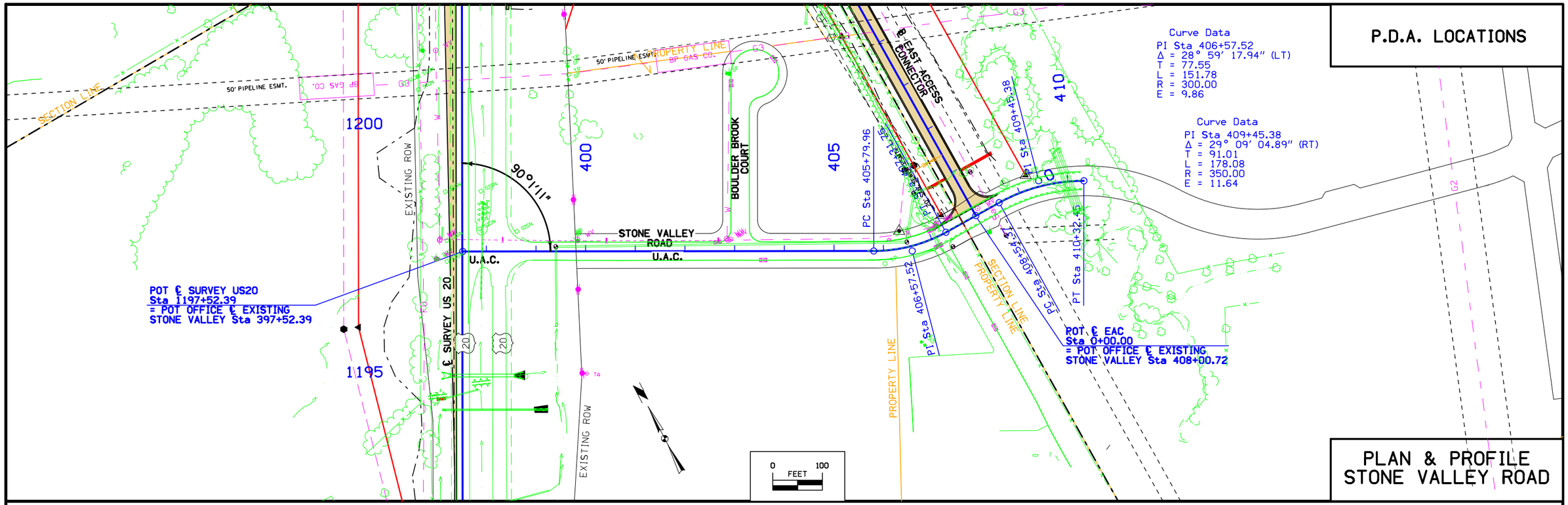
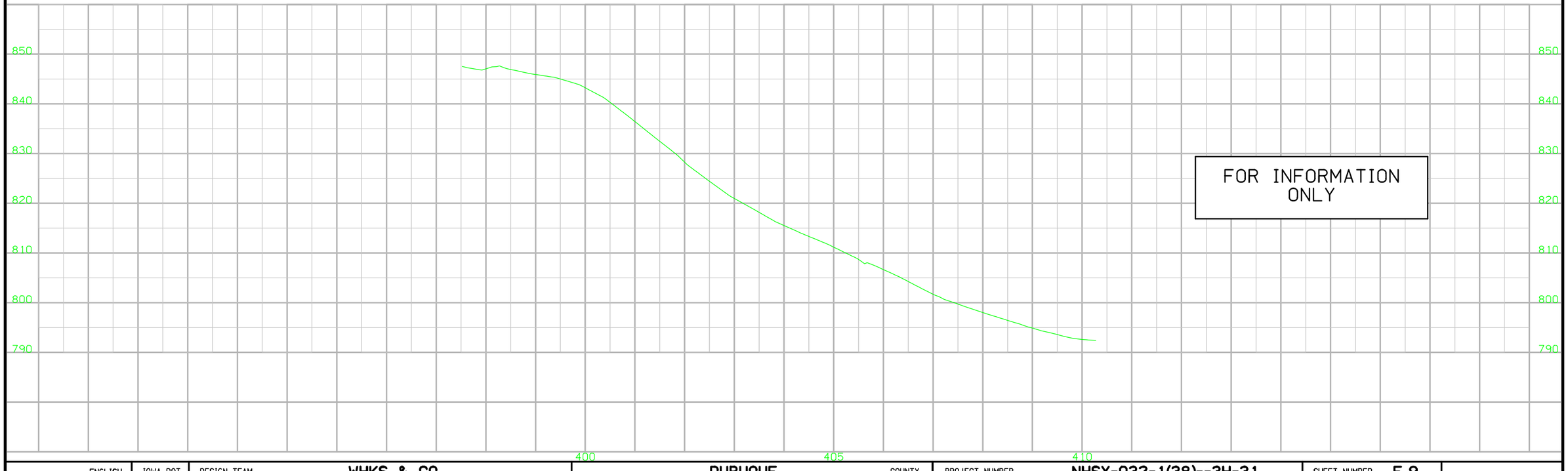
P.D.A. LOCATIONS



Curve Data
PI Sta 406+57.52
Δ = 28° 59' 17.94" (LT)
T = 77.55
L = 151.78
R = 300.00
E = 9.86

Curve Data
PI Sta 409+45.38
Δ = 29° 09' 04.89" (RT)
T = 91.01
L = 178.08
R = 350.00
E = 11.64

PLAN & PROFILE
STONE VALLEY ROAD



FOR INFORMATION ONLY

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	E.9

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Survey Information

Dubuque County
NHSX-032-1(38)--3H-31
US 20 and SW Arterial

General Information

Measurement units for this survey are US survey feet. This survey is a full field DTM survey. This survey is along US 20 for the Menards frontage road.

The IDOT observed three-wire level loops along US 20 from Peosta East to Devon Road. The IDOT surveys included Peosta East to Swiss Valley road in 2004, Swiss Valley Road east to Catfish Creek in 2001 and Catfish Creek east to Devon Road in 1994. All level runs were on the same datum.

VERTICAL DATUM

The Datum Plane for this survey is identical to a number of IDOT surveys in the area. The county vertical and leveled IDOT vertical bench marks were held fixed in the vertical calibration for this project. Equations were made to other datums falling along the corridor between Peosta and Devon Road in Dubuque.

BM 501	ELEV.=1066.396
=BM 118 1986 Paving Plans F-20-9(65)20-31	ELEV.=1066.41
=BM 501 1994 DOT Survey NHS-20-9(121)--19-31	ELEV.=1066.40 (325.038 meters)
BM 521	ELEV.=815.359
BM 521	ELEV.=815.359 (248.522 meters) 1993 Stensland Survey
BM 581	ELEV.=818.84 BRF-20-9(101)--38-31 SEPT. 1991 SURVEY.
BM 581	ELEV.=818.84 U-UG-305(13) DUBUQUE CO. 1966 AS-BUILT PLANS.
BM 1251+75	ELEV.=818.84 FA-305B(1) DUBUQUE CO. 1939 AS-BUILT PLANS.
BM 532	ELEV.= 766.26
=BM 100 F-20-9(79)--20-31	ELEV.= 766.26 DUBUQUE CO. 1988 SURVEY.
=BM 532	ELEV.= 766.26 1993 NHS-20-9(121)--19-31 Stensland Survey
BM 554	ELEV.=1122.02
=BM 54	ELEV.=1122.02 F-20-9(65)--20-31 DUBUQUE CO. 1986 PAVING PLANS.
=BM 553"B"	ELEV.=1125.25 FN-305 DUBUQUE CO. 1960 AS-BUILT PLANS.
BM 600	ELEV.=1001.10
=BM 106A	ELEV.=1012.55 1987 As-Built Plan F-20-9(72)20-31

Horizontal Control

The coordinate system for this survey is the same as the IDOT US 20 From Peosta East to Devon Drive in Dubuque GPS Coordinate Surveys. Dubuque SAP 0331 NHS-20-9(121)19-31.

Iowa State Plane North Zone coordinates found in the IDOT GPS Network in feet were transformed to project ground coordinated using a 1/combined scale factor broadcast about a held point (G022) near the center of the US 151, US 52, and US 61 GPS Network. The held State Plane coordinate and project coordinate at Control Point # 22 are N=3645801.61 E= 5662799.16

The horizontal standard deviation of these observations was less than 0.03 ft. at 95% confidence level (2 sigma).
1/Combined Scale Factor of project= 1.000091751

Alignment Information

The horizontal alignment for this survey is a retrace of FN-305; F-305(11) 1958 Revised AB Plans.

CP440 at AB PC Sta. 1252+10.74 This Survey (Found from Ref Ties)
= PC Sta. 1252+06.9 AB Plan FN-305; F-305(11) 1958 Revised Sheet 16

CP443 at AB POT Sta. 1286+15.8 This Survey
= POT Sta. 1286+15.80 AB Plan FN-305; F-305(11) 1958 Revised Sheet 17

Re-established PI Sta. 1133+93.5 FN-305; F-305(11) 1958 Revised AB Plans
= PI Sta. 1133+70.76 this survey.

VERTICAL CONTROL

BENCHMARKS

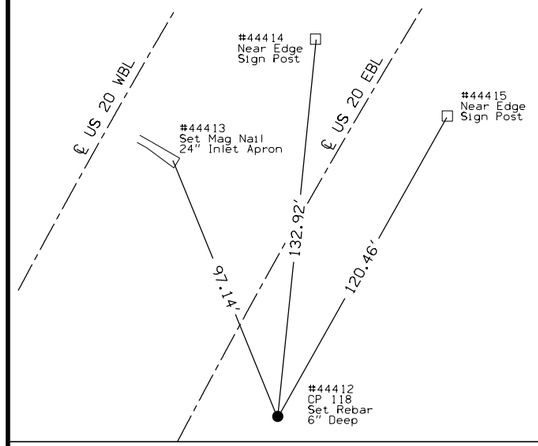
Stationed Rt & Lt of WBL2 alignment (℄ Survey WB US 20)

No. 533 Sta.	1253+80.282	154.492 Rt.	Y:3650916.991	X:5661500.899	Fd "X" on Out Hdwl of 3X4' RCB---------- 783.950
No. 512 Sta.	1254+58.399	52.835 Lt.	Y:3651091.229	X:5661364.866	FD.IHC.BM.LT.HDWL 3x3 RCB---------- 798.069
No. 534 Sta.	1258+01.733	203.501 Rt.	Y:3651211.663	X:5661768.097	CUT X NE CORNER CONC---------- 811.219
No. 513 Sta.	1265+53.685	38.719 Lt.	Y:3651884.734	X:5662135.468	FD."X" SW.COR.CONC.INTAKE---------- 821.531
No. 535 Sta.	1265+57.977	111.456 Rt.	Y:3651765.032	X:5662226.253	Fd IHC BM on outlet flume of 24" RCP--- 818.380
No. 541 Sta.	1268+45.431	151.665 Rt.	Y:3651879.090	X:5662478.751	Cut "X" on S BOLT FIRE---------- 827.272
No. 540 Sta.	1274+92.257	472.814 Lt.	Y:3652715.494	X:5662845.211	Cut "X" on ROW Rail---------- 848.592
No. 514 Sta.	1275+69.470	40.385 Lt.	Y:3652330.199	X:5663056.171	SET RR.SPK.S.SIDE PO.POLE---------- 834.326
No. 539 Sta.	1278+55.300	341.497 Lt.	Y:3652706.685	X:5663231.173	Set RR Spk S Side PP---------- 853.422
No. 538 Sta.	1282+40.033	185 Lt.	Y:3652680.917	X:5663645.718	SetRR Spk SW Side PP---------- 853.902
No. 515 Sta.	1283+17.951	57.925 Rt.	Y:3652475.475	X:5663796.970	CUT X NW. COR CONC LIGHT---------- 849.742
No. 536 Sta.	1285+26.714	100.409 Rt.	Y:3652501.717	X:5664008.390	Cut "X" on ROW Rail---------- 855.989
No. 537 Sta.	1295+44.215	89.412 Rt.	Y:3652620.928	X:5664328.310	Cut"X"N Bolt F Hyd---------- 858.396

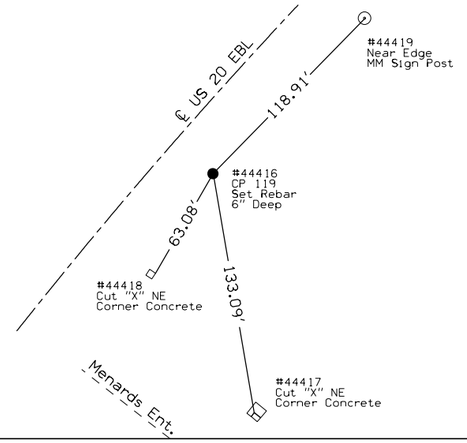
Stationed Rt & Lt of WBL3 alignment (℄ Survey WB US 20)

No. 516 Sta.	1299+90.279	72.866 Lt.	Y:3652921.458	X:5664695.902	SET RR SPK.S.SIDE PO.POLE---------- 862.347
No. 517 Sta.	1310+68.158	76.241 Rt.	Y:3653158.314	X:5665757.285	CUT X NW COR CONC LIGHT---------- 869.834
No. 518 Sta.	1321+69.919	118.602 Rt.	Y:3653529.751	X:5666798.670	SET RR SPK.N.SIDE PO.POLE---------- 870.910

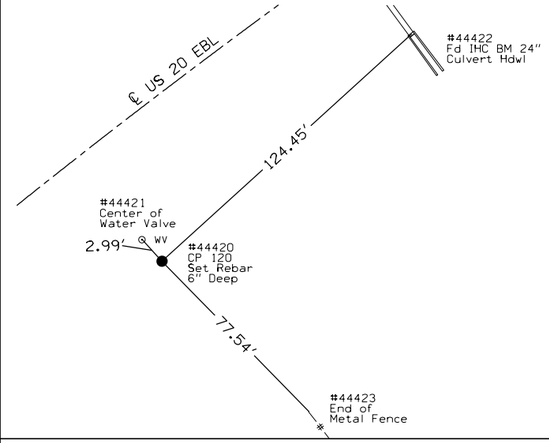
C.P. STA 1252+40.97 RIGHT 101.09
C.P. 118, Set 5/8" Rebar 6" Deep
N=3650827.514 E=5661388.842



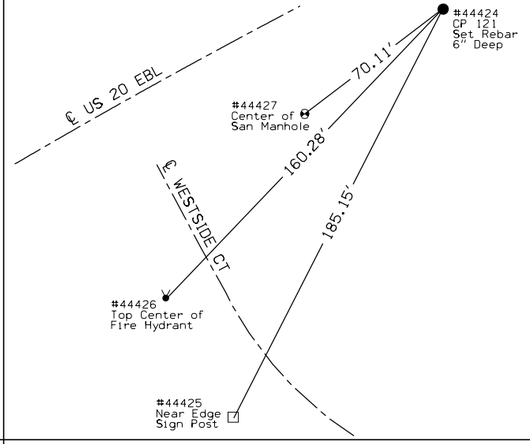
C.P. STA 1258+92.09 RIGHT 101.51
C.P. 119, Set 5/8" Rebar 6" Deep
N=3651342.845 E=5661745.557



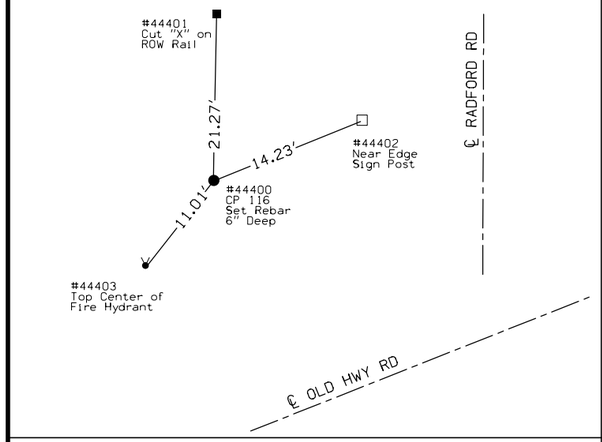
C.P. STA 1264+28.77 RIGHT 123.41
C.P. 120, Set 5/8" Rebar 6" Deep
N=3651681.223 E=5662134.214



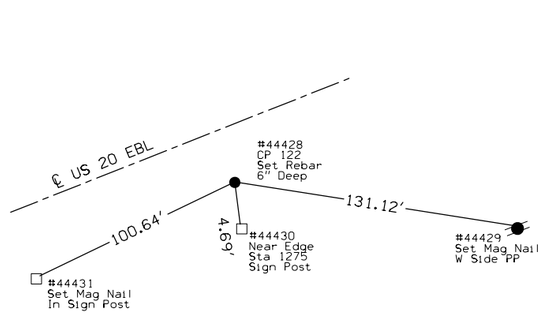
C.P. STA 1270+04.65 RIGHT 101.20
C.P. 121, Set 5/8" Rebar 6" Deep
N=3651995.411 E=5662589.074



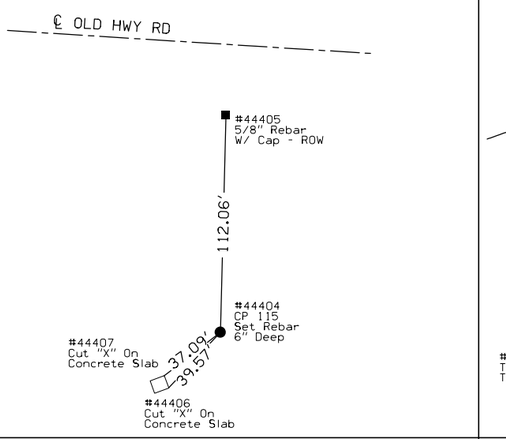
C.P. STA 1274+85.07 LEFT 452.79
C.P. 116, Set 5/8" Rebar 6" Deep
N=3652694.222 E=5662844.782



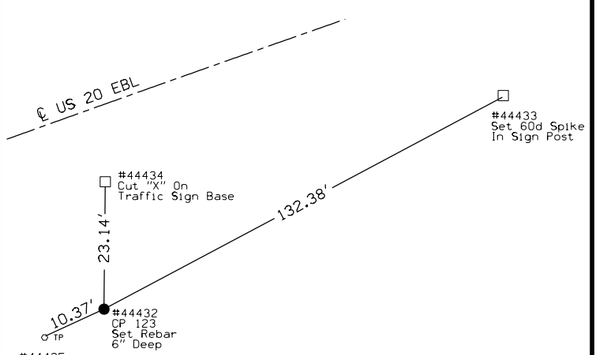
C.P. STA 1275+08.64 RIGHT 90.01
C.P. 122, Set 5/8" Rebar 6" Deep
N=3652187.216 E=5663040.057



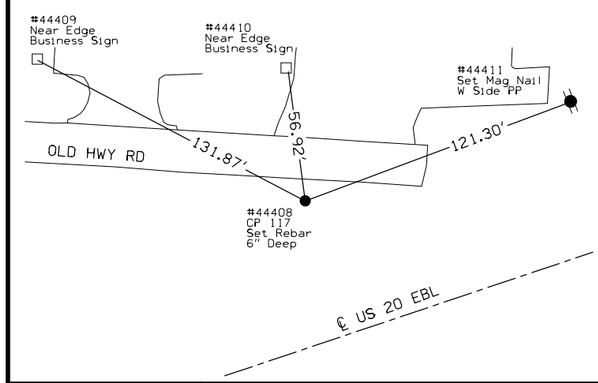
C.P. STA 1278+24.65 LEFT 156.90
C.P. 115, Set 5/8" Rebar 6" Deep
N=3652521.942 E=5663260.929



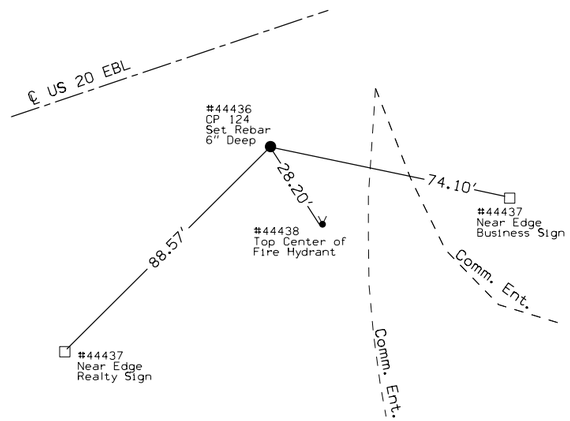
C.P. STA 1282+79.56 RIGHT 86.90
C.P. 123, Set 5/8" Rebar 6" Deep
N=3652435.784 E=5663769.812



C.P. STA 1284+14.98 LEFT 61.15
C.P. 117, Set 5/8" Rebar 6" Deep
N=3652619.258 E=5663851.010



C.P. STA 1295+37.50 RIGHT 62.34
C.P. 124, Set 5/8" Rebar 6" Deep
N=3652644.301 E=5664313.129



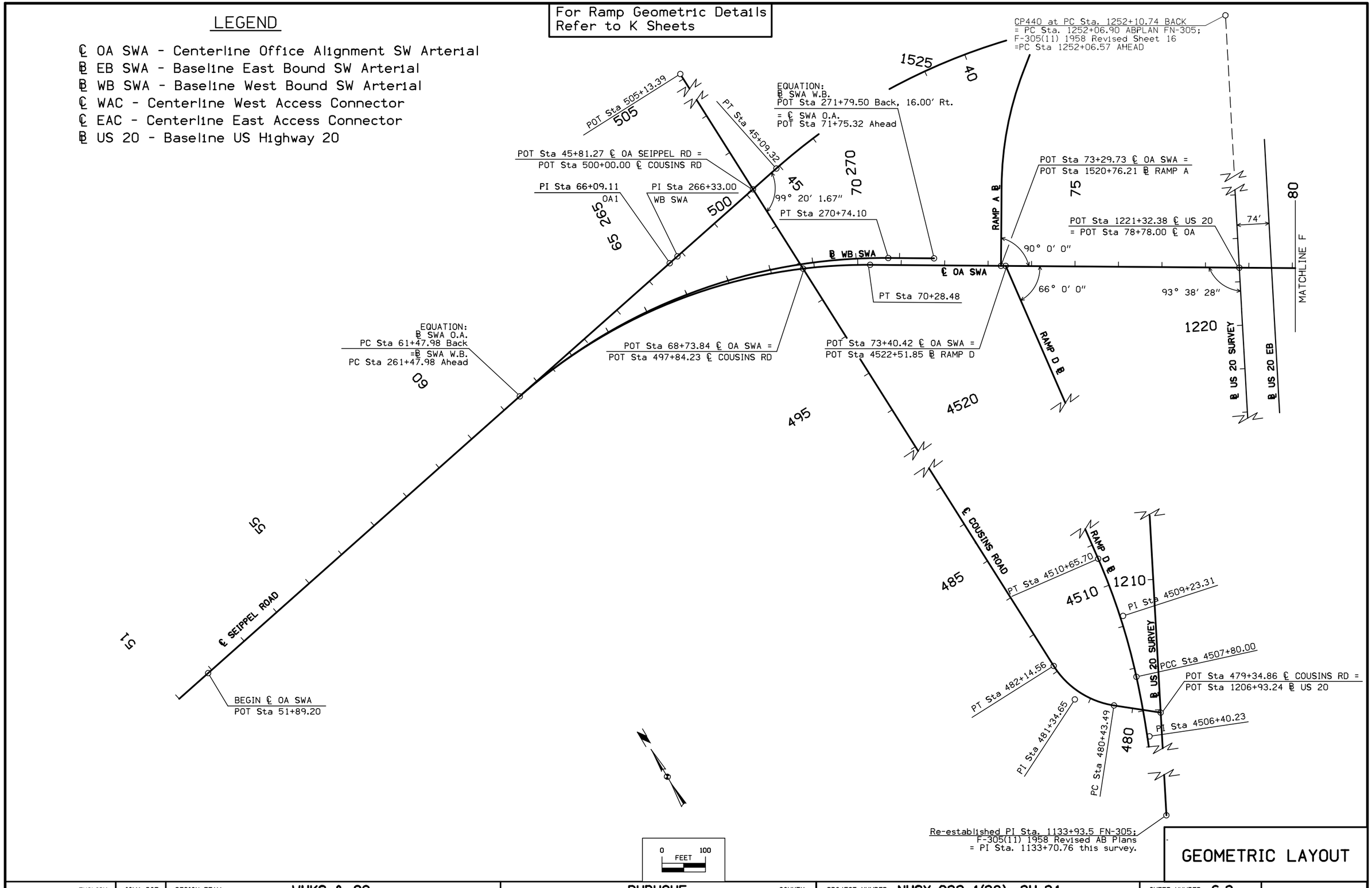
ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER G.2

8:25:01 PM 4/28/2016 cries K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038G01.sht

LEGEND

- ℄ OA SWA - Centerline Office Alignment SW Arterial
- ℬ EB SWA - Baseline East Bound SW Arterial
- ℬ WB SWA - Baseline West Bound SW Arterial
- ℄ WAC - Centerline West Access Connector
- ℄ EAC - Centerline East Access Connector
- ℬ US 20 - Baseline US Highway 20

For Ramp Geometric Details
Refer to K Sheets



GEOMETRIC LAYOUT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	G.3

8:25:01 PM 4/28/2016 cries K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038G01.sht

For Ramp Geometric Details
Refer to K.Sheets

LEGEND

℄ OA SWA - Centerline Office Alignment SW Arterial
℄ EB SWA - Baseline East Bound SW Arterial
℄ WB SWA - Baseline West Bound SW Arterial
℄ EAC - Centerline East Access Connector
℄ US 20 - Baseline US Highway 20
℄ WB RIGHT

EQUATION:
Relocated Channel Sta 122+05.56 =
℄ OA Sta 80+73.60115.16 Lt.

EQUATION:
Sta 82+14.15 ℄ OA
= ℄ EB POT Sta 182+44.15 4 ft Rt.
= ℄ WB POT Sta 282+44.15 16 ft Lt.

EQUATION:
Sta 98+52.53 ℄ OA
= PT Sta 298+74.70 ℄ WB, 32' RT
= PT Sta 199+20.53 ℄ EB, 32' LT

EQUATION:
Relocated Channel Sta 99+50.90 =
Sta 4+92.87 ℄ East Access Connector 179.57 Rt.

EQUATION:
Sta 82+41.50 ℄ OA, 16' Lt.
= POT Sta 282+41.50 ℄ WB

EQUATION:
Sta 82+41.50 ℄ OA, 4' Rt.
= POT Sta 182+41.50 ℄ EB

PI Sta 117+00.45
PI Sta 112+95.54
PI Sta 108+32.23
PI Sta 10+65.49
EAC1
POT Sta 0+00.00
MATCHLINE E
MATCHLINE F
RAMP C ℄
POT Sta 3524+62.63
POT Sta 282+44.15
WB100
POT Sta 182+44.15
EB100
PC Sta 287+18.30
PI Sta 188+97.36
EB13
PI Sta 288+67.27
WB13
PCC Sta 290+14.44
PT Sta 190+63.64
PI Sta 290+78.56
WB14
PT Sta 291+42.65
PCC Sta 187+27.88
PC Sta 193+31.36
PC Sta 295+65.69
PI Sta 297+20.24
WB15
PT Sta 298+74.70
PT Sta 199+20.53
PC Sta 95+17.81
PI Sta 196+26.27
EB14
PI Sta 112+10.59
OA2
PI Sta 221+99.70
EAC6
PI Sta 21+19.01
EAC3
PI Sta 22+90.65
EAC4
PI Sta 19+27.27
EAC2
PI Sta 219+22.29
EAC5
℄ EAST ACCESS CONNECTOR (EAC)
℄ RELOCATED CHANNEL
℄ EAST ACCESS CONNECTOR (EAC)
℄ WB SWA
℄ EB SWA
℄ OA SWA

SEE GEOMETRIC INSET

GEOMETRIC INSET (HALF SCALE)

PC Sta 283+15.97
PI Sta 283+46.59
WB10
PT Sta 283+76.97
Sta 84+08.94 ℄ OA SWA
= Sta 2521+68.68 RAMP B ℄
PC Sta 284+36.17
PI Sta 284+65.48
WB11
PT Sta 284+91.98
Sta 85+13.61 ℄ OA SWA
= Sta 3519+84.74 ℄ RAMP C
POT Sta 24+47.06 ℄ EAC
= POT Sta 85+19.96 ℄ OA SWA
PC Sta 285+52.15
PI Sta 285+99.41
WB12
PT Sta 286+41.34
PC Sta 287+18.30
PC Sta 182+82.21
PI Sta 183+27.93
EB10
PT Sta 183+67.66
PC Sta 184+24.92
PI Sta 184+89.49
EB11
PT Sta 185+31.10
PT Sta 223+16.30
PC Sta 186+05.36
PI Sta 186+67.10
EB12
PCC Sta 187+27.88
RAMP B ℄
℄ EAC SB
℄ EAC

0 FEET 100

GEOMETRIC LAYOUT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	G.4

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ALIGNMENT COORDINATES

101-16
10-20-09

Name	Location	Point on Tangent			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
ML032	Southwest Arterial												
SWA1		51+89.20	3648533.482	5657348.513									
OA1					61+47.98	3648714.168	5658290.114	66+09.11	3648801.069	5658742.978	70+28.48	3648562.343	5659137.501
OA2					95+17.81	3647273.612	5661267.277	112+10.59	3646397.258	5662715.552	128+81.18	3645955.731	5664349.734
EB SWA	East Bound SWA												
EB100		182+41.50	3647930.978	5660173.244									
EB10					182+82.21	3647909.862	5660208.074	183+27.93	3647886.191	5660247.192	183+67.66	3647840.953	5660253.829
EB11					184+24.92	3647784.304	5660262.140	184+89.49	3647720.422	5660271.512	185+31.10	3647721.049	5660336.075
EB12					186+05.36	3647721.771	5660410.331	186+67.10	3647722.371	5660472.074	187+27.88	3647704.325	5660531.124
EB13					187+27.88	3647704.325	5660531.124	188+97.36	3647654.794	5660693.197	190+63.64	3647554.630	5660829.900
EB14					193+31.36	3647396.404	5661045.858	196+26.27	3647222.096	5661283.753	199+20.53	3647076.513	5661540.235
WB SWA	West Bound SWA												
WB100		282+41.50	3647948.050	5660183.596									
WB10					283+15.97	3647909.499	5660247.306	283+46.59	3647893.642	5660273.511	283+76.97	3647883.962	5660302.571
WB11					284+36.17	3647865.254	5660358.741	284+65.48	3647855.992	5660386.546	284+91.98	3647830.204	5660400.470
WB12					285+52.15	3647777.266	5660429.055	285+99.41	3647735.679	5660451.510	286+41.34	3647723.646	5660497.215
WB13					287+18.30	3647704.053	5660571.646	288+67.27	3647666.128	5660715.704	290+14.44	3647591.253	5660844.486
WB14					290+14.44	3647591.253	5660844.486	290+78.56	3647559.023	5660899.920	291+42.65	3647523.994	5660953.628
WB15					295+65.69	3647292.895	5661307.964	297+20.24	3647208.465	5661437.418	298+74.70	3647132.171	5661571.828
EAC	East Access Connector												
EAC1					8+48.63	3646444.542	5659690.627	10+65.49	3646661.330	5659684.772	12+57.87	3646813.741	5659839.051
EAC2					17+74.26	3647176.652	5660206.412	19+27.27	3647284.187	5660315.265	20+70.35	3647435.008	5660341.069
EAC3					20+70.35	3647435.008	5660341.069	21+19.01	3647482.963	5660349.274	21+67.04	3647531.339	5660344.088
EAC4					22+53.07	3647616.873	5660334.918	22+90.65	3647654.245	5660330.912	23+25.55	3647686.363	5660350.435
EAC SB	EAC South Bound												
EAC5					217+49.64	3647159.347	5660188.895	219+22.29	3647280.683	5660311.718	220+80.83	3647452.566	5660327.964
EAC6					220+80.83	3647452.566	5660327.964	221+99.70	3647570.902	5660339.149	223+16.30	3647686.271	5660310.536
RELOCATED	CHANNEL												
WCH24		100+50.90	3646093.758	5659879.732									
WCH1					100+28.49	3646158.157	5659836.453	100+86.51	3646206.315	5659804.088	101+41.44	3646264.316	5659802.522
WCH2					103+16.34	3646439.157	5659797.800	103+82.84	3646505.638	5659796.005	104+48.14	3646569.123	5659815.818
WCH3					104+48.14	3646569.123	5659815.818	105+09.16	3646627.369	5659833.996	105+57.72	3646670.176	5659790.516
WCH4					107+01.78	3646771.248	5659687.854	108+32.22	3646862.763	5659594.901	109+16.51	3646967.519	5659672.628
WCH5					112+28.79	3647205.120	5659875.265	112+95.54	3647255.856	5659918.636	113+54.39	3647322.040	5659909.979
WCH6					116+54.73	3647619.843	5659871.025	117+00.45	3647665.178	5659865.095	117+43.49	3647706.113	5659885.461
WCH14		122+05.56	3648119.810	5660091.281									

CIRCULAR CURVE DATA AND SUPERELEVATION DATA

101-17
MODIFIED

Name	Location	$\triangle_c$	T	L	R	E		Remarks
ML032	Southwest Arterial							
OA1		42° 02' 26.80" RT	461.127	880.500	1200.00	85.550		
OA2		16° 03' 32.00" LT	1692.778	3363.363	12000.00	118.808		
EB SWA	East Bound SWA							
EB10		50° 28' 29.93" RT	45.72	85.45	97.00	10.24		
EB11		82° 12' 37.89" LT	64.57	106.18	74.00	24.21		
EB12		17° 33' 1.61" RT	61.75	122.53	400.00	4.74		
EB13		19° 14' 14.28" RT	169.47	335.75	1000.00	14.26		
EB14		6° 39' 1.36" LT	294.92	589.18	5076.00	8.56		
WB SWA	West Bound SWA							
WB10		12° 45' 25.15" LT	30.63	61.01	274.00	1.71		
WB11		43° 12' 40.66" RT	29.31	55.81	74.00	5.59		
WB12		46° 52' 59.22" LT	47.26	89.19	109.00	9.81		
WB13		15° 25' 28.67" RT	148.97	296.13	1100.00	10.04		
WB14		2° 56' 18.60" RT	64.12	128.22	2500.00	0.82		
WB15		3° 31' 57.01" LT	154.55	309.01	5012.00	2.38		
EAC	East Access Connector							
EAC1		46° 53' 45.71" RT	216.867	409.245	500.00	45.006		
EAC2		35° 38' 25.42" LT	153.012	296.092	476.00	23.989		
EAC3		15° 49' 39.54" LT	48.653	96.686	350.00	3.365		
EAC4		37° 24' 49.00" RT	37.586	72.482	111.00	6.191		
EAC SB	EAC South Bound							
EAC5		39° 56' 58.60" LT	172.649	331.195	475.00	30.404		
EAC6		19° 19' 43.00" LT	118.864	235.469	698.00	10.048		
RELOCATED	CHANNEL							
WCH1		32° 21' 22.47" RT	58.02	112.94	200.00	8.25		
WCH2		18° 52' 46.93" RT	66.51	131.81	400.00	5.49		
WCH3		62° 46' 46.82" LT	61.02	109.57	100.00	17.14		
WCH4		82° 01' 17.94" RT	130.44	214.73	150.00	48.78		
WCH5		47° 58' 36.08" LT	66.75	125.60	150.00	14.18		
WCH6		33° 54' 11.30" RT	45.72	88.76	150.00	6.81		

P.D.A. LOCATIONS

DUBUQUE TWP.
T-89N R-2E
SEC. 31

112
Plastic Center Inc.

Temporary Easement for Grading

106
City of Dubuque

Begin Access Control Sta. 61+48

58+00
℄ 175'

60+75
℄ 175'

55+31± 1/4 Sec. Line
℄ 100'

CULT. FIELD

EQUATION:
STA. 51+00.00 O.A. =
OLD PLAN STA 63+47±
SEIPPEL ROAD DIV. 1
DUBUQUE, IA
IA DOT PROJECT NO.
RC-0031(23)--9A-31
1998

50 55 60

53+50
℄ 50'± Ex. R/W

EXISTING ROW

City of Dubuque

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

9" P.C.C. Remove

℄ SEIPPEL ROAD

32

37'

10'

15.5'

PC Sta 61+47.98

EXISTING ROW

30' / CITY OF DUBUQUE UTILITY EASEMENT

PROPOSED FUTURE
RECREATIONAL TRAIL
(BY OTHERS)

BEGIN CONSTRUCTION
STA. 51+89.20 O.A.

51+90± Prop. Line
℄ 50'

52+11±℄
℄ 80'

52+20±℄
℄ 90'

55+03± 1/4 Sec. Line
℄ 80'

55+00± 1/4 Sec. Line
℄ 90'

58+00
℄ 110'

RW

CULT. FIELD

62+37.8
℄ 77.1'

62+43± Ex. R/W
℄ 46'

62+83.3± Pr. Ease.
℄ 97.5'

PROPERTY LINE

APPROXIMATE 1/4 SECTION LINE

Temporary Easement for Grading

PERMANENT EASEMENT
FOR WATER MAIN IN THE
NAME OF THE CITY OF
DUBUQUE

106
City of Dubuque

112
Plastic Center Inc.

N

0 50
FEET

ROW PLAN

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	H.1

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DUBUQUE TWP.
T-89N R-2E
SEC. 31

P.D.A. LOCATIONS
NONE

112
Plastic Center Inc.

113
Cate, Paul W.
& Jayne H.

Temporary Easement for Grading

Begin Access Control Sta. 61+48

60+75
℄ 175'

64+22
℄ 83'± Ex. R/W

66+13.5± Ex. R/W
℄ 150'

67+30± Ex. R/W
℄ 213'

67+39± Ex. R/W
℄ 258'

67+14
℄ 248'

Temporary Easement for Grading

CULT. FIELD

66+40.9± ℄
℄ 611'

66+53
℄ 547'

66+68.7± Ex. R/W
℄ 554'

Remove

60

65

EXISTING ROW

City of Dubuque

PI Sta 66+09.11

9" P.C.C. Remove

℄ SEIPPEL RD.

32

SEIPPEL RD.

68+82.5± Ex. R/W Corner
℄ 174.8'

38'

15'

10'

PC Sta 61+47.98

30' / CITY OF DUBUQUE
UTILITY EASEMENT

EXISTING ROW

PROPOSED FUTURE
RECREATIONAL TRAIL
(BY OTHERS)

RW

62+37.8
℄ 77.1'

62+43± Ex. R/W
℄ 46'

62+83.3± Pr. Ease.
℄ 97.5'

EQUATION:
SWA O.A.
PC Sta 61+47.98 Back
= SWA W.B.
PC Sta 261+47.98 Ahead

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

COUSINS ROAD

113

UNECONOMIC REMNANT

RW & C/A

70

30' / CITY OF DUBUQUE
UTILITY EASEMENT

Temporary Easement for Grading

RW & C/A 30' / CITY OF DUBUQUE UTILITY EASEMENT

PERMANENT UTILITY
EASEMENT

112
Plastic Center Inc.

Curve Data
PI Sta 66+09.11
Δ = 42° 02' 26.77" (RT)
T = 461.13
L = 880.50
R = 1,200.00
E = 85.55
e = 5.6%
l = 134'
x = 48'

PT Sta 70+28.48
84" RCP

69+14± Ex. R/W
℄ 164.14'

69+13.2
℄ 194.4'

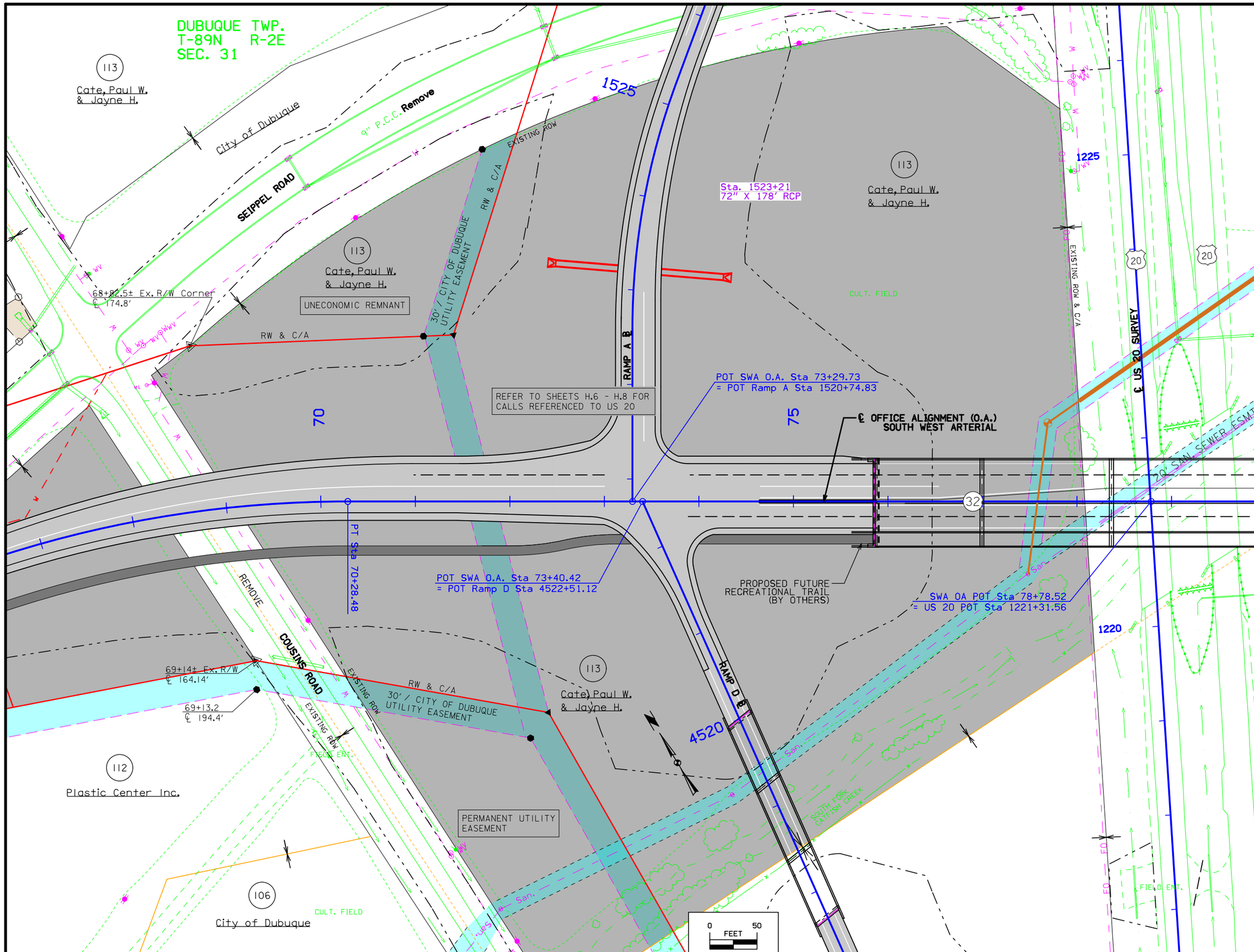
0 50
FEET

106

ROW PLAN

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	H.2

1:38:17 PM 5/4/2016 cries K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038H01.sht



P.D.A. LOCATIONS
INTERCHANGE WITH
US 20 Sta 73+29.73
& 73+40.42

ROW PLAN

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	H.3

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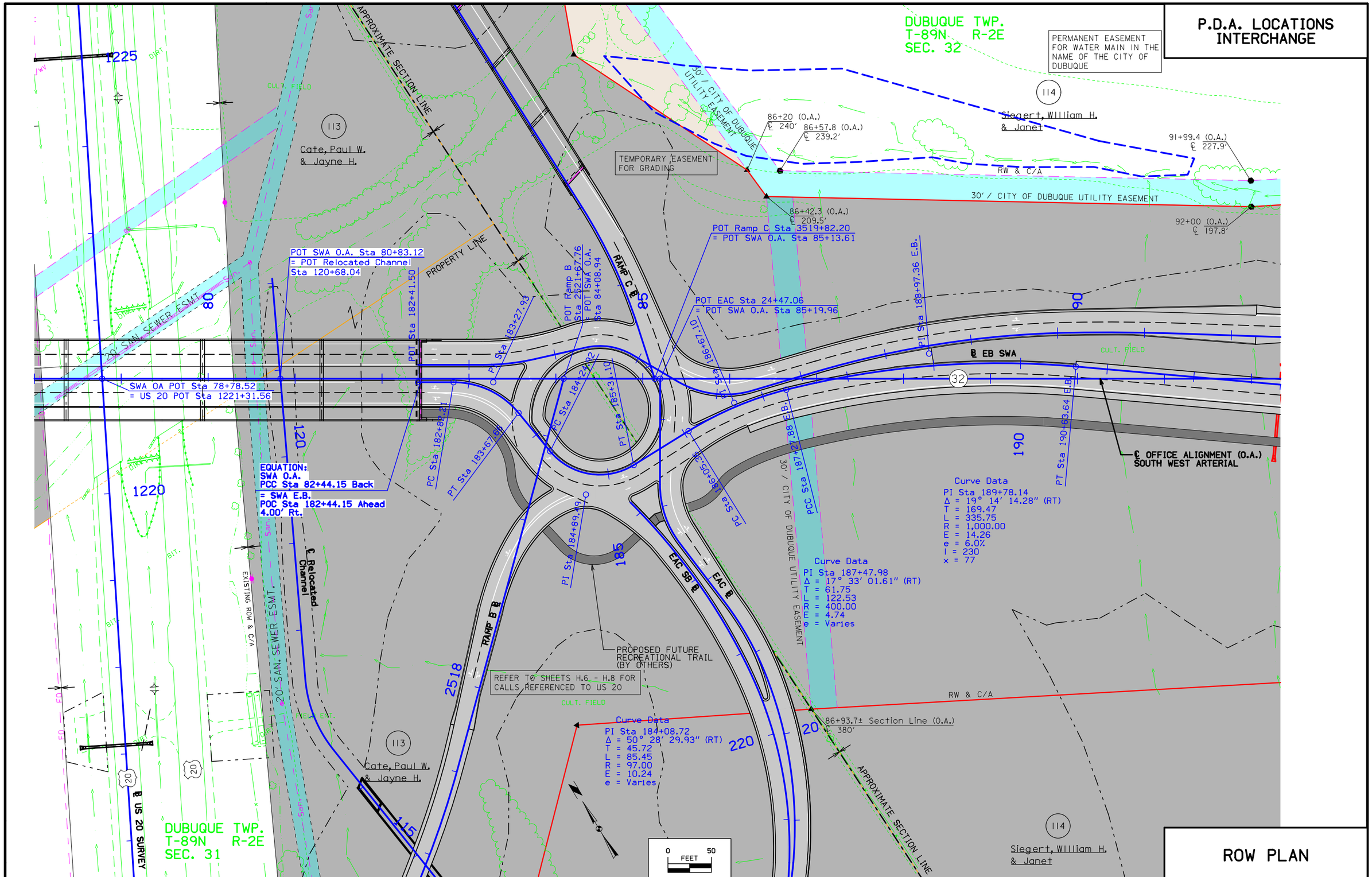
P.D.A. LOCATIONS INTERCHANGE



ROW PLAN

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	H.4

1:38:18 PM 5/4/2016 cries K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038H01.sht

P.D.A. LOCATIONS
NONE

Curve Data
PI SWA EB Sta 196+26.27
Δ = 6° 39′ 01.36″ (LT)
T = 294.92
L = 589.18
R = 5,076.00
E = 8.56
e = 3.4%
l = 143
x = 84

114
Siegert, William H & Janet

DUBUQUE TWP.
T-89N R-2E
SEC. 32

124
Bradley, Sharon L. Trust

PROPERTY LINE
CORP. LINE

Curve Data
PI SWA OA Sta 112+10.59
Δ = 16° 03′ 31.95″ (LT)
T = 1,692.78
L = 3,363.36
R = 12,000.00
E = 118.81
e = Normal Crown

PERMANENT EASEMENT FOR WATER MAIN IN THE NAME OF THE CITY OF DUBUQUE

91+99.4 (O.A.)
℄ 227.9′

95+68.5(O.A.)
℄ 250.1′

30′ / CITY OF DUBUQUE UTILITY EASEMENT
RW & C/A

95+70 (O.A.)
℄ 220′

98+83.3(O.A.)
℄ 226.8′

99+02.8± R
℄195′

99+07.3± R
℄187.5′

TY EASEMENT

92+00 (O.A.)
℄ 197.8′

EQUATION:
SWA O.A.
POC Sta 98+52.53 Back
= SWA (HDP-2100(657)--71-31)
POC Sta 98+52.53 Ahead

PC Sta 198+31.36 E.B.

PC Sta 95+17.82 O.A.

℄ WB SWA

26′

95

32

100

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

℄ EB SWA

26′

STA. 101+10.00
END GRADING

195

PI Sta 196+26.27 E.B.

PROPOSED FUTURE RECREATIONAL TRAIL (BY OTHERS)

Sta 193+00.00
D.A. = Median 2.2 Ac.
No Existing Structure
18″ x 100′ RCP w/ Aprons
and DR-213 Apron Guard Lt.
FL Lt. 784.88
FL Rt. 779.85

EQUATION:
SWA E.B.
PT Sta 199+20.53 Back
= SWA O.A.
POC Sta 98+52.53 Ahead
32.00′ Lt.

100+12.5± R
℄ 270′

Sta. 97+34 (O.A.)
D.A. = 46 Ac. H.
No Existing Structure
Install
54″ X 410′ RCP w/ 2 Aprons
45° Skew to Local Tangent
FL Lt. 779.00
FL Rt. 791.00

102+26.3
℄270′

Temporary Easement for Shaping

RW & C/A

94+00 (O.A.)
℄ 340′

TWSP. & SECTION LINE

CORP. LINE

129
Haupert, John C. & Carolyn S.

TABLE MOUND TWP.
T-88N R-2E
SEC. 5

114
Siegert, William H & Janet

0 50
FEET

For Westbound Alignment
Refer to Sheets D.15 & D.16

ROW PLAN

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	H.5

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P.D.A. LOCATIONS
NONE

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

DUBUQUE TWP.
T-89N R-2E
SEC. 31

Sta. 1190+22 Median
D.A. = Median
18" X 36' Conc. Pipe
Remove
Carry Ahead in
Median Ditch

Sta. 1195+02
D.A. = Cattle Pass
5' x 7' x 128' RCB
Remove Head Walls
Plug, Fill, And Abandon
Conctractor to Re-Shape
Rt. Embankment

Sta. 1197+54 Median
D.A. = Median
24" X 182' Conc. Pipe
U.A.C.

Sta. 1202+77
D.A. = 9.2 Ac. H.
2' x 3' x 205' RCB
Remove Lt. Headwall
Remove Rt. Flume
Plug, Fill & Abandon

Sta. 1207+03 Lt.
D.A. = 5 Ac. R.
24" X 66' Conc. Pipe
Remove
Carry Ahead in
Left Ditch

TOWNSHIP & SECTION LINE

50' PIPELINE ESMT.

CORP. LINE
PROPERTY LINE
CULT. FIELD
GRADED AREA
COMM.
DIRT
FOUNDATION

1188+77.2± EX.R/W
℄ 60'

1190+00± EX.R/W
℄ 60'

1195+96.3
℄ 239'

1196+00
℄ 209'

30' / CITY OF DUBUQUE UTILITY EASEMENT

RW & C/A

1203+72.7
℄ 239'

1203+76± R
℄ 209'

Sta. 1202+77
D.A. = 9.2 Ac. H.
2' x 3' x 205' RCB

1204+36± EX.R/W & Property Corner (US 20)
℄ 104.18

1209+98.5
℄ 369.4'

1210+04.3± R
℄ 340'

1214+90.
℄ 458.8

1215+00
℄ 430'

EXISTING ROW

1185 1190 1195 1200 1205 1210

CORP. LINE
R/W & A/C

EXISTING ROW

℄ US 20 SURVEY

50:1 TAPER

CLOSE

Cousins Rd

RAMP D B

ST HWY 20

CLOSE AND REMOVE MEDIAN
CROSSING AND TURN LANE PAVING

CLOSE

15:1 TAPER

RAMP B B

R/W & A/C

EXISTING ROW

1206+08± Ex. R/W & Property Corner (US 20)
℄ 189.7'

1202+00 (US 20)
℄ 208'±Ex. R/W

RW & C/A

1204+65.9± Lot Line (US 20)
℄ 295'

1211+00 (US 20)
℄ 325'

1208+00 (US 20)
℄ 325'

20' SAN. SEWER ESMT.

STONE VALLEY DR.

EXISTING ROW

EXISTING ROW

STONE VALLEY DRIVE

BOULDER BROOK COURT

STOCK PILE

STOCKPILE

CULT.

Sta. 1192+23
D.A. = 10.5 Ac. H.
2' x 2' x 215' RCB
U.A.C.

Sta. 1194+33
D.A. = 4.0 Ac. H.
2' x 2' x 180' RCB
Carry Ahead in Lt. Ditch
Remove Lt. Head Wall
Remove Rt. Flume
Plug, Fill, And Abandon
Contractor to Re-Shape
Rt. Embankment

Sta. 1194+65
D.A. = Median
24" x 59' Conc. Pipe
Extension
Left Side w/
24" X 10' RCP w/Apron
and DR-213 Apron Guard
FL Lt. 852.86
Refer to U Sheets

Sta. 1206+95
D.A. = Median
24" Conc. Pipe w/ 18"
CMP Inlet Extension
Carry Ahead in Median Ditch
Remove 30' Lt. & 36' Rt.
Plug, Fill & Abandon
Pipe Under US 20

0 FEET 100

DUBUQUE TWP.
T-89N R-2E
SEC. 32

ROW PLAN

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	H.6

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P.D.A. LOCATIONS INTERCHANGE WITH IA 32 STA.

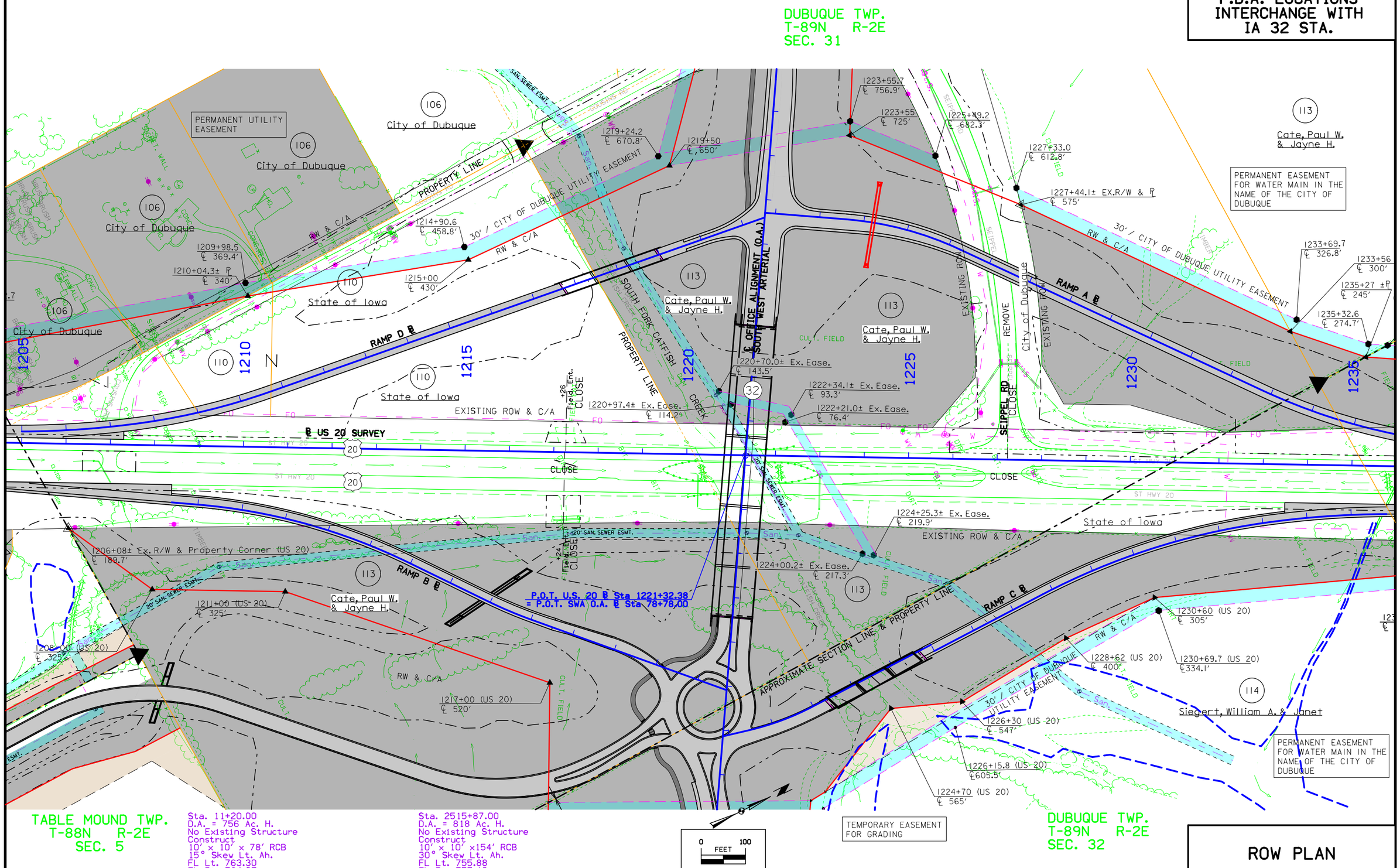

TABLE MOUND TWP.
T-88N R-2E
SEC. 5

Sta. 11+20.00
D.A. = 756 Ac. H.
No Existing Structure
Construct
10' x 10' x 78' RCB
15° Skew Lt. Ah.
FL Lt. 763.30
FL Rt. 764.07

Sta. 2515+87.00
D.A. = 818 Ac. H.
No Existing Structure
Construct
10' x 10' x154' RCB
30° Skew Lt. Ah.
FL Lt. 755.88
FL Rt. 757.10

DUBUQUE TWP.
T-89N R-2E
SEC. 32

ROW PLAN

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	H.7

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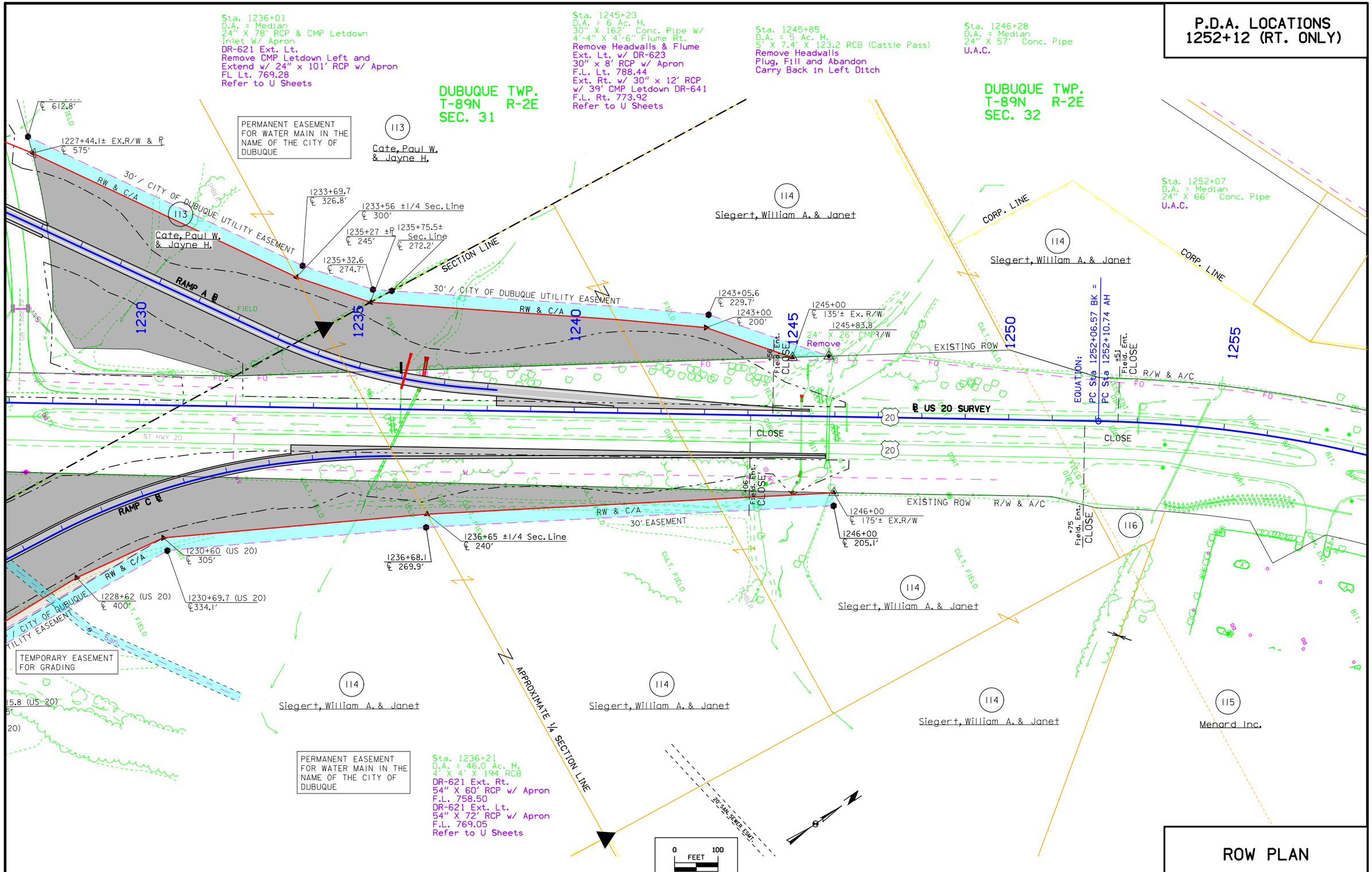

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	H.8

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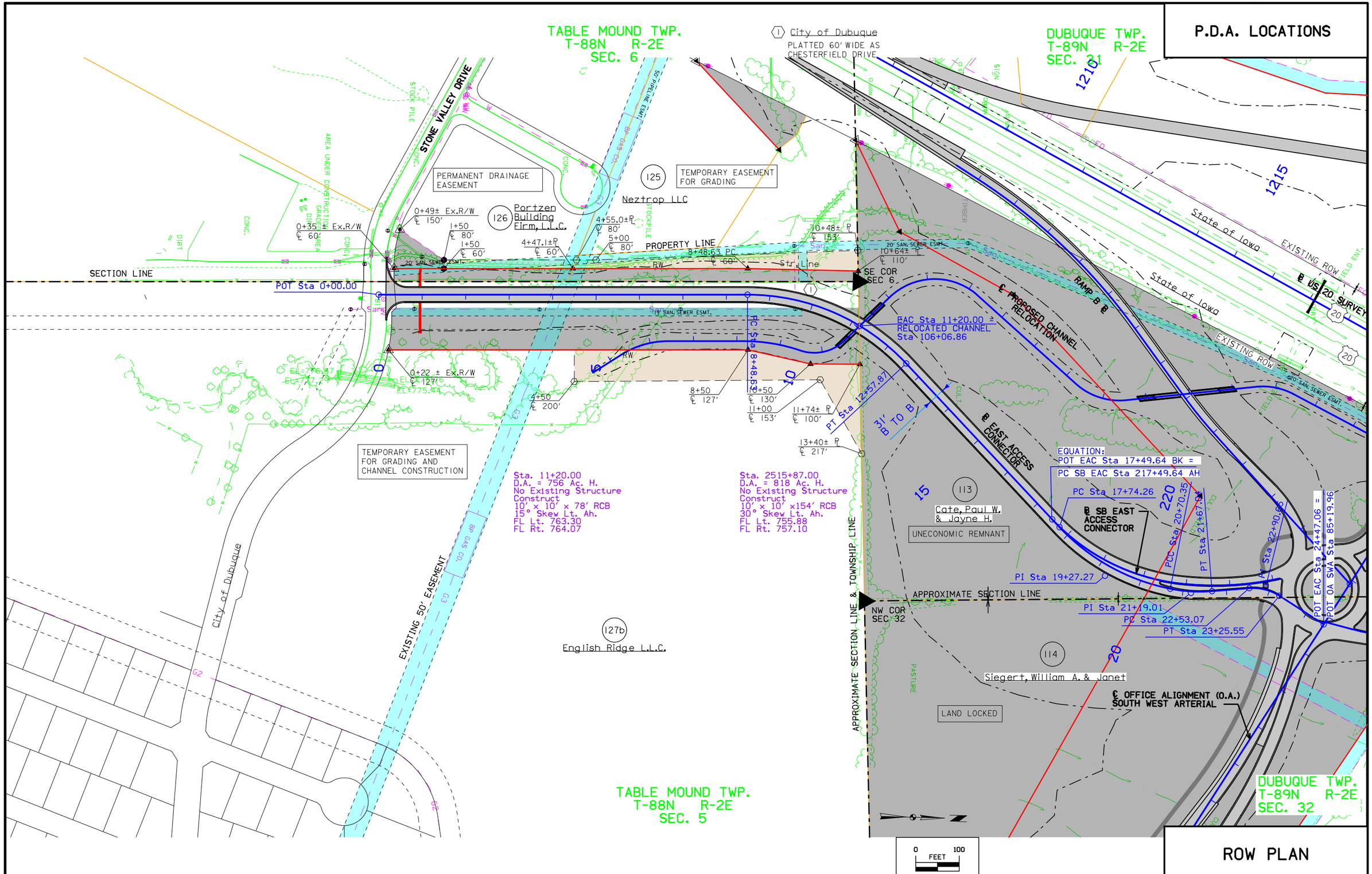

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER H.9

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511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
	No Travel Restrictions Expected											

TRAFFIC CONTROL PLAN

Refer to Tab. 108-26A for traffic control specifics.

Traffic control on this project shall be in accordance with Standard Road Plans listed on Tab 105-4.
For additional complementary information, refer to part 6 of the Manual on Uniform Traffic Control Devices and to the current Standard Specifications.

US 20
Maintain two lanes of traffic, both eastbound and westbound, at all times during construction, with the following exception:

Single lane closures, both eastbound and westbound, may be allowed between the hours of 9:00 pm. and 6:00 am, with the approval of the Engineer

The US 20 Intersection with Seippel Road shall be permanently closed.
Seippel Road traffic will be detoured to the Northwest Arterial.

Seippel Road
Seippel Road shall be permanently closed at US 20.
Seippel Road traffic will be detoured to the Northwest Arterial.

Cousins Road
Cousins Road shall be permanently closed to the limits shown on the plan.

Contractor shall furnish, maintain and remove detours shown on Sheet J.2.

STAGING NOTES

The grading for Ramp A and Ramp D shall be completed by December 19, 2016.

No other staging shall be required.

COORDINATED OPERATIONS

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

Project	Type of Work
NHSX-032-1(37)--3H-31	PCC Pavement - Grade and New
NHSX-032-1(25)--3H-31	Grading
NHSX-020-9(209)--3H-31	Bridge New - PPCB
NHSX-020-9(210)--3H-31	PCC Pavement - Grade and New
NHSX-020-9(211)--3H-31	Bridge New
NHSX-020-9(237)--3H-31	Bridge New - PPCB
NHSX-032-1(42)--3H-31	Bridge New - PPCB

TEMPORARY TRAFFIC CONTROL

Ⓐ EB US 20 - FOLLOW STANDARD ROAD PLAN TC-402

Ⓑ WB US 20 - FOLLOW STANDARD ROAD PLAN TC-402

Ⓒ COUSINS ROAD - FOLLOW STANDARD ROAD PLAN TC-252 SITUATION 1 (RURAL)

Ⓓ SEIPPEL ROAD - FOLLOW STANDARD ROAD PLAN TC-252 SITUATION 1 (RURAL)

US 20 MEDIAN - FOLLOW STANDARD ROAD PLAN TC-402

SEIPPEL RD.
END DETOUR
M4-8a
24" x 18"

SEIPPEL RD.
DETOUR
M4-9
48" x 36"

COUSINS RD.
M5-1
21" x 15"

M4-8
24" x 12"
DETOUR

COUSINS RD.
END DETOUR
M4-8a
24" x 18"

COUSINS RD.
DETOUR
M4-9
48" x 36"

DETOUR
M4-8
24" x 12"
SEIPPEL RD.
M5-1
21" x 15"

SEIPPEL RD.
DETOUR
M4-9
48" x 36"

COUSINS RD.
DETOUR
M4-9
48" x 36"

DETOUR
M4-8
24" x 12"
COUSINS RD.
M5-1
21" x 15"

SEIPPEL RD.
DETOUR
M4-9
48" x 36"

R3-2
36" x 36"

M3-2
24" x 15"

R3-1
36" x 36"

R3-1
36" x 36"

R3-2
36" x 36"

R3-2
36" x 36"

DETOUR
M4-8
24" x 12"
COUSINS RD.
M6-3
21" x 15"

DETOUR
M4-8
24" x 12"
SEIPPEL RD.
M6-3
21" x 15"

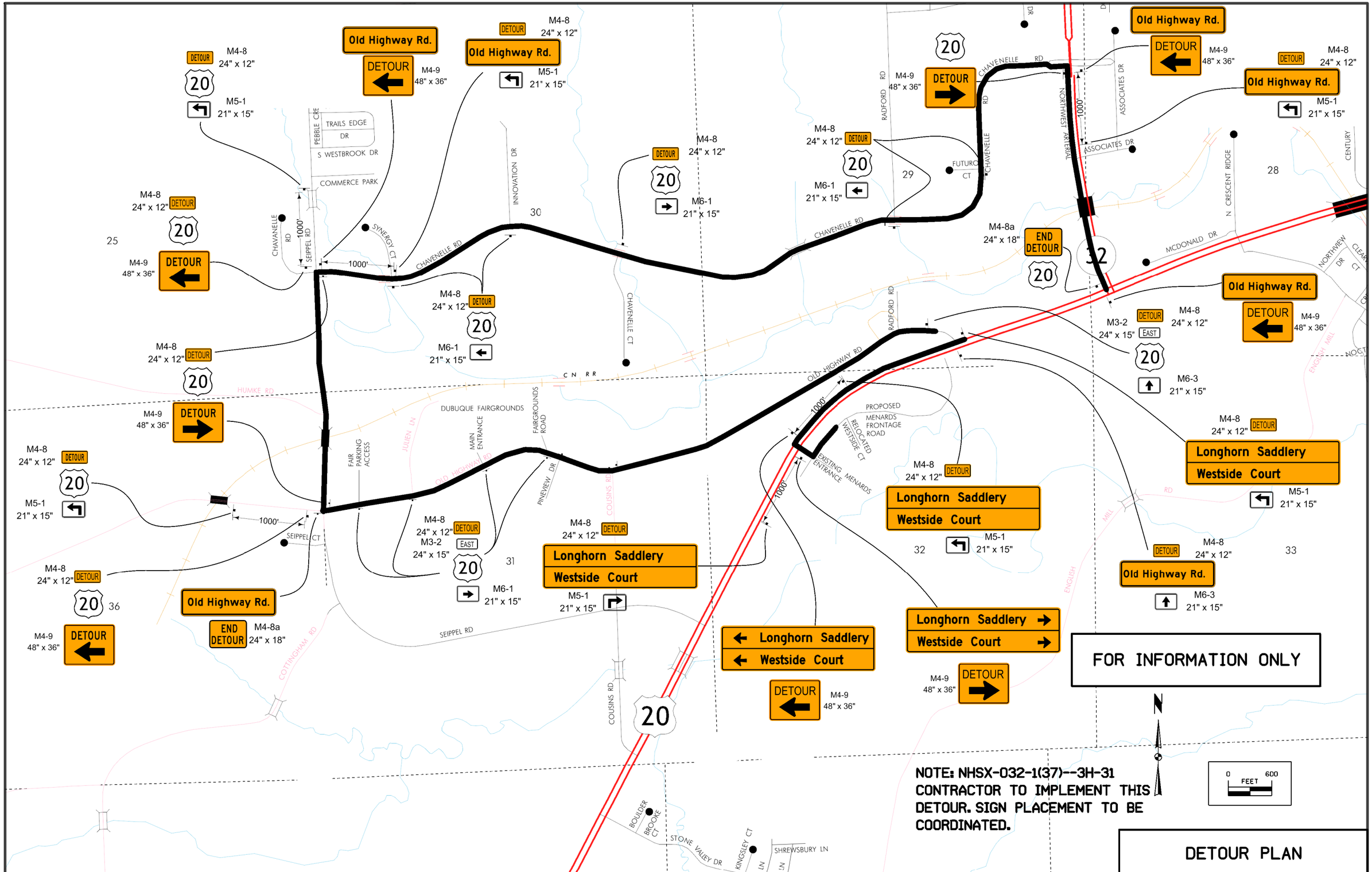
1000'

0 600 FEET

DETOUR PLAN

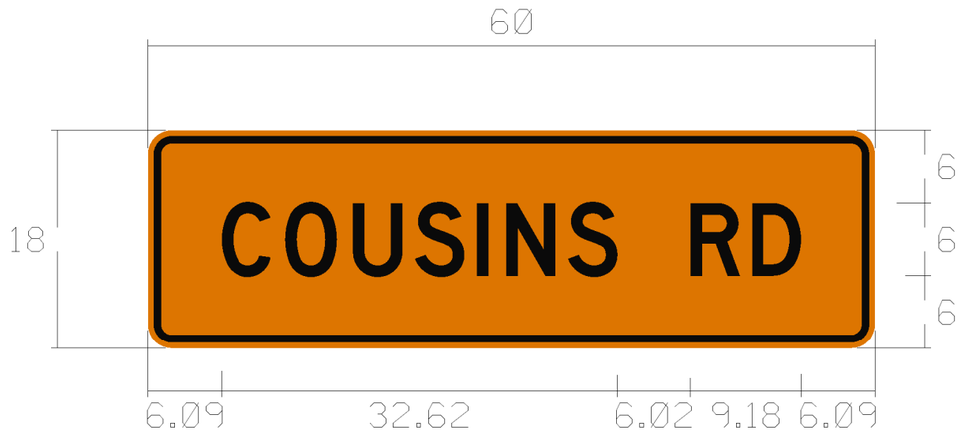
ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	J.2

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

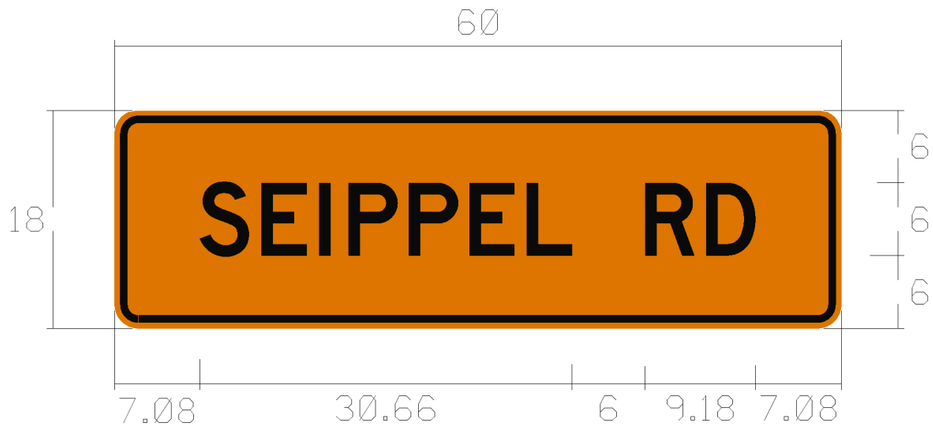


ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	J.3

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC



1.50" Radius, 0.63" Border, 0.50" Indent,
Black on Orange
[COUSINS RD>] D



1.50" Radius, 0.63" Border, 0.50" Indent,
Black on Orange
[SEIPPEL RD>] D

NOT TO SCALE

SIGN DETAILS

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	J.4

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

CURVE COORDINATES

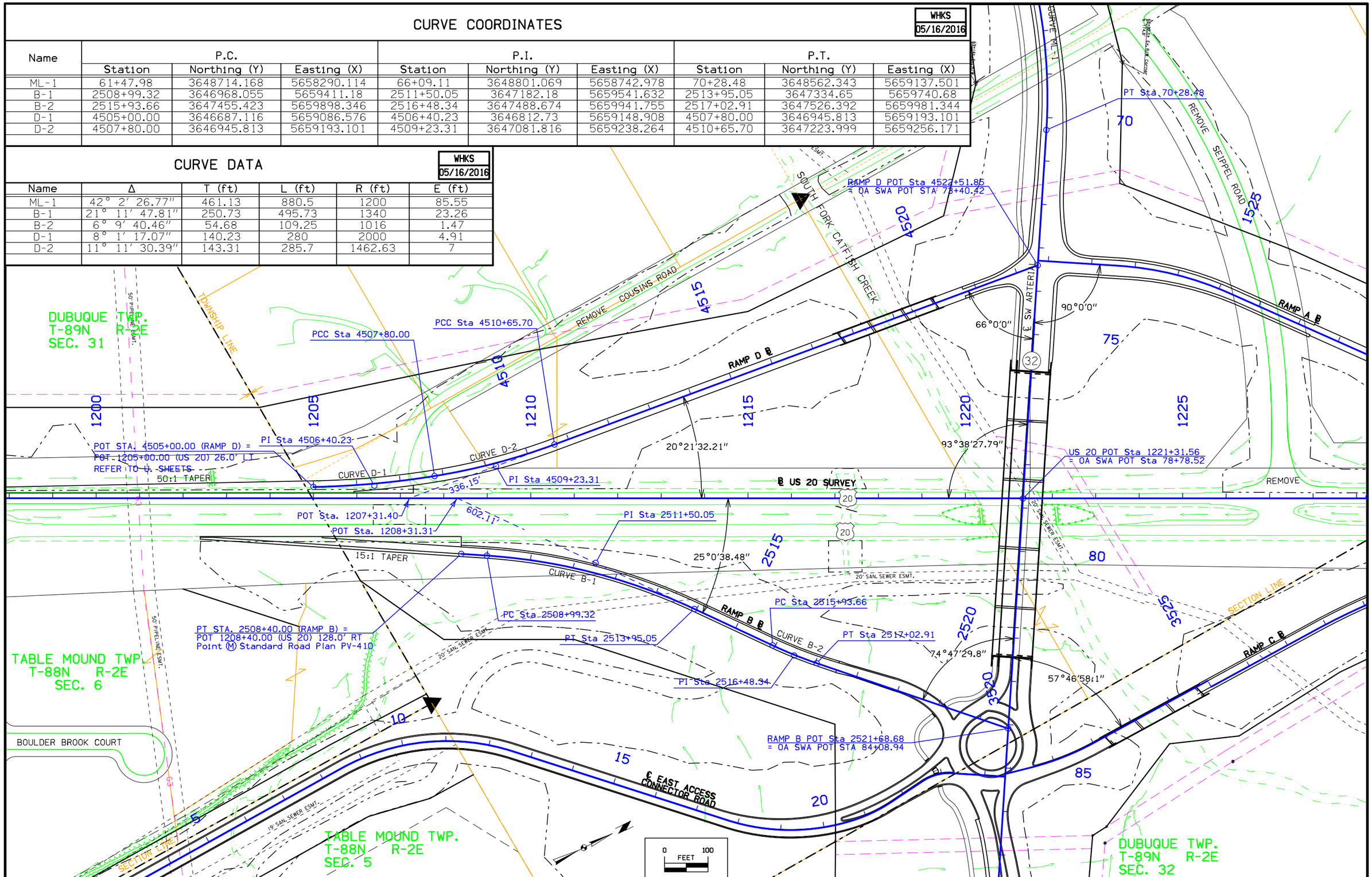
WHKS 05/16/2016

Name	P.C.			P.I.			P.T.		
	Station	Northing (Y)	Easting (X)	Station	Northing (Y)	Easting (X)	Station	Northing (Y)	Easting (X)
ML-1	61+47.98	3648714.168	5658290.114	66+09.11	3648801.069	5658742.978	70+28.48	3648562.343	5659137.501
B-1	2508+99.32	3646968.055	5659411.18	2511+50.05	3647182.18	5659541.632	2513+95.05	3647334.65	5659740.68
B-2	2515+93.66	3647455.423	5659898.346	2516+48.34	3647488.674	5659941.755	2517+02.91	3647526.392	5659981.344
D-1	4505+00.00	3646687.116	5659086.576	4506+40.23	3646812.73	5659148.908	4507+80.00	3646945.813	5659193.101
D-2	4507+80.00	3646945.813	5659193.101	4509+23.31	3647081.816	5659238.264	4510+65.70	3647223.999	5659256.171

CURVE DATA

WHKS 05/16/2016

Name	Δ	T (ft)	L (ft)	R (ft)	E (ft)
ML-1	42° 2′ 26.77″	461.13	880.5	1200	85.55
B-1	21° 11′ 47.81″	250.73	495.73	1340	23.26
B-2	6° 9′ 40.46″	54.68	109.25	1016	1.47
D-1	8° 1′ 17.07″	140.23	280	2000	4.91
D-2	11° 11′ 30.39″	143.31	285.7	1462.63	7



ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	K.1

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CURVE COORDINATES

WHKS 05/16/2016

Name	P.C.			P.I.			P.T.		
	Station	Northing (Y)	Easting (X)	Station	Northing (Y)	Easting (X)	Station	Northing (Y)	Easting (X)
A-1	1522+59.65	3648563.332	5659490.204	1523+94.36	3648678.589	5659559.945	1525+26.24	3648762.369	5659665.438
A-2	1532+78.49	3649230.208	5660254.517	1535+18.52	3649379.484	5660442.477	1537+53.56	3649584.465	5660567.359
C-1	3520+48.15	3647855.196	5660422.73	3521+23.75	3647928.762	5660440.154	3521+98.56	3648004.351	5660438.783
C-2	3533+00.00	3649097.537	5660522.826	3534+40.23	3649230.62	5660567.019	3535+80.00	3649356.234	5660629.351
C-3	3527+76.33	3648582.317	5660444.304	3530+40.70	3648846.641	5660439.51	3533+00.00	3649097.537	5660522.826

CURVE DATA

WHKS 05/16/2016

Name	Δ	T (ft)	L (ft)	R (ft)	E (ft)
A-1	20° 21′ 56.36″	134.71	266.59	750.00	12.00
A-2	20° 11′ 33.48″	240.03	475.07	1348.00	21.20
C-1	14° 21′ 47.15″	75.60	150.41	600.00	4.74
C-2	8° 1′ 17.07″	140.23	280.00	2000.00	4.91
C-3	19° 24′ 32.22″	264.37	523.67	1545.89	22.44

DUBUQUE TWP.
T-89N R-2E
SEC. 31

DUBUQUE TWP.
T-89N R-2E
SEC. 32

COUSINS ROAD
REMOVE
CURVE M-1
RAMP A POT Sta 1520+76.21
= OA SWA POT Sta 73+29.73
PI Sta 1523+94.36
CURVE A-1
PC Sta 1522+59.65
PT Sta 1525+26.24
RAMP A ℄
RAMP D ℄
66°0′0″
90°0′0″
86°21′32.21″
24°0′24.15″
28°34′34.03″
57°46′58.1″
SOUTH FORK CATFISH CREEK
℄ SW ARTERIAL
SEIPPEL ROAD
REMOVE
1/4 SECTION LINE
TIMBER
SECTION LINE
PC Sta 1532+78.49
PT Sta 1537+53.56
POT STA. 1538+21.00 (RAMP A) =
POT 1238+21.00 (US 20) 48.0′ LT
REFER TO U. SHEETS
15:1 TAPER
CURVE A-2
PI Sta 1535+18.52
402.24′
℄ US 20 SURVEY
PI Sta 3534+40.23
POT Sta. 1233+60.55
POT Sta. 1236+68.07
576.41′
CURVE C-3
50:1 TAPER
CURVE C-2
PI Sta 3530+40.70
POT Sta 3524+65.23
℄ SHIFT RIGHT 16′
PCC Sta 3533+00.00
PC Sta 3527+76.33
RAMP C ℄
PT STA. 3535+80.00 (RAMP C) =
POT 1235+80.00 (US 20) 108.0′ LT
Point Ⓒ REFER TO U. SHEETS
POT Sta 3525+00.00
℄ SHIFT RIGHT 16′
END TAPER
POT Sta 3524+65.23
240′ Taper
30:1 Ratio
RAMP C POT Sta 3519+84.74
= OA SWA POT Sta 85+13.61
CURVE C-1
BEGIN TAPER
PT Sta 3522+22.63
24′ Rt.
PI Sta 3521+98.56
PI Sta 3521+23.75
PC Sta 3520+48.15
0 FEET 100

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER K.2

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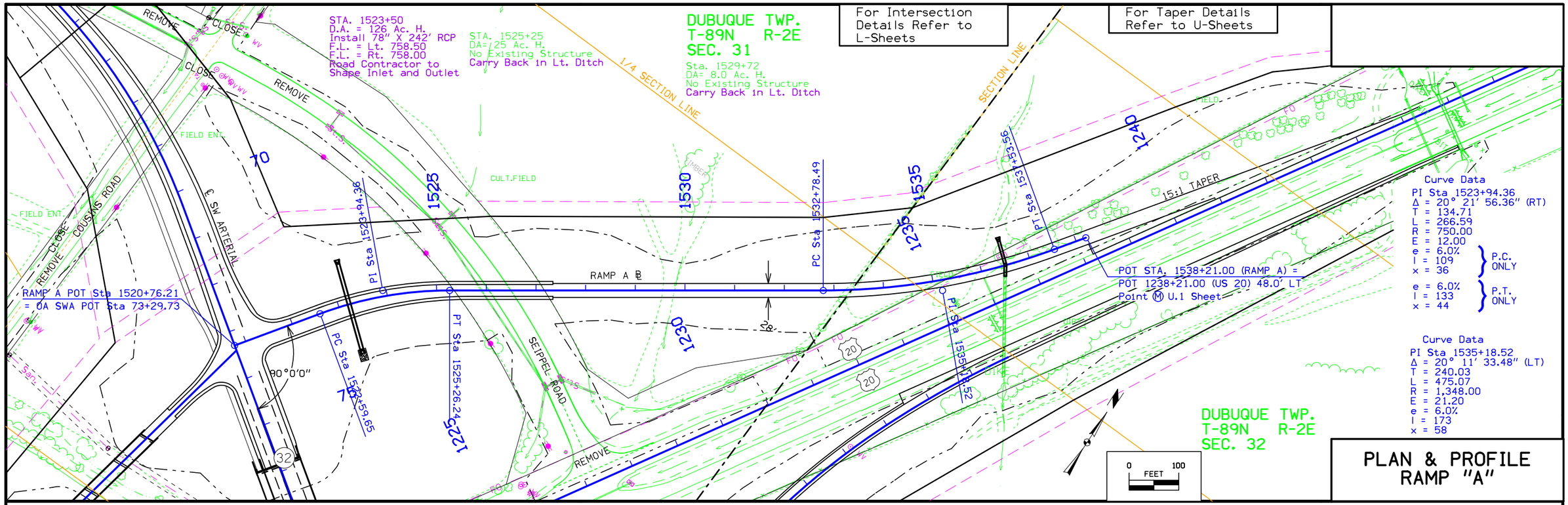

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	K.3

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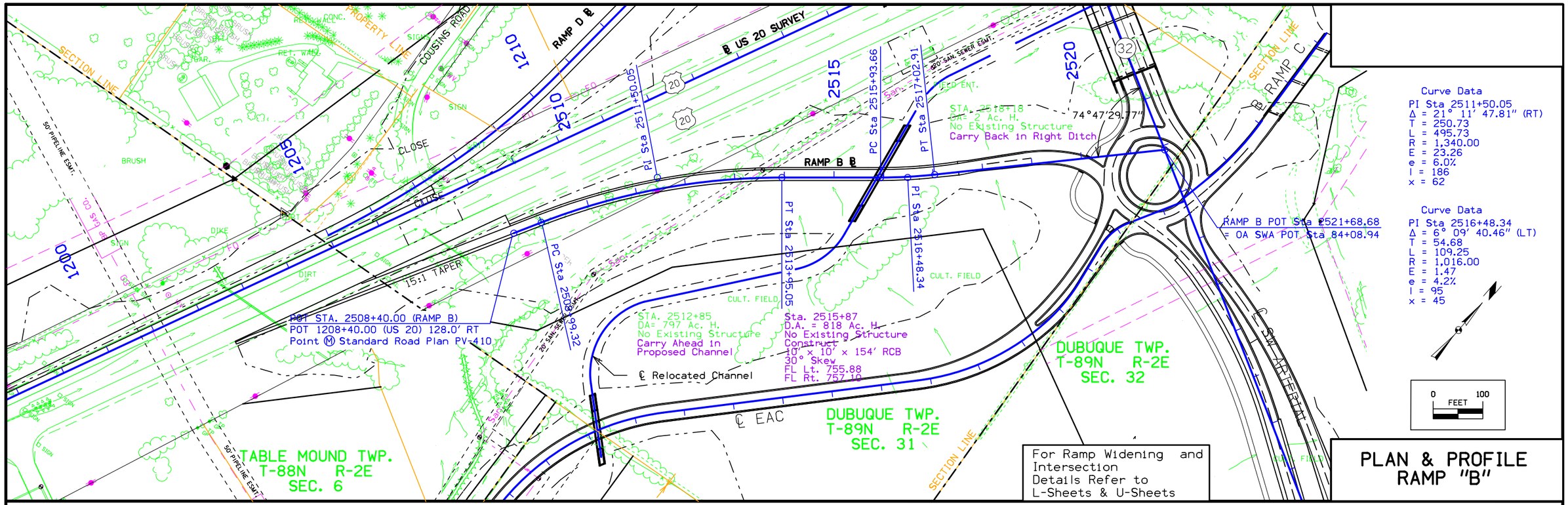

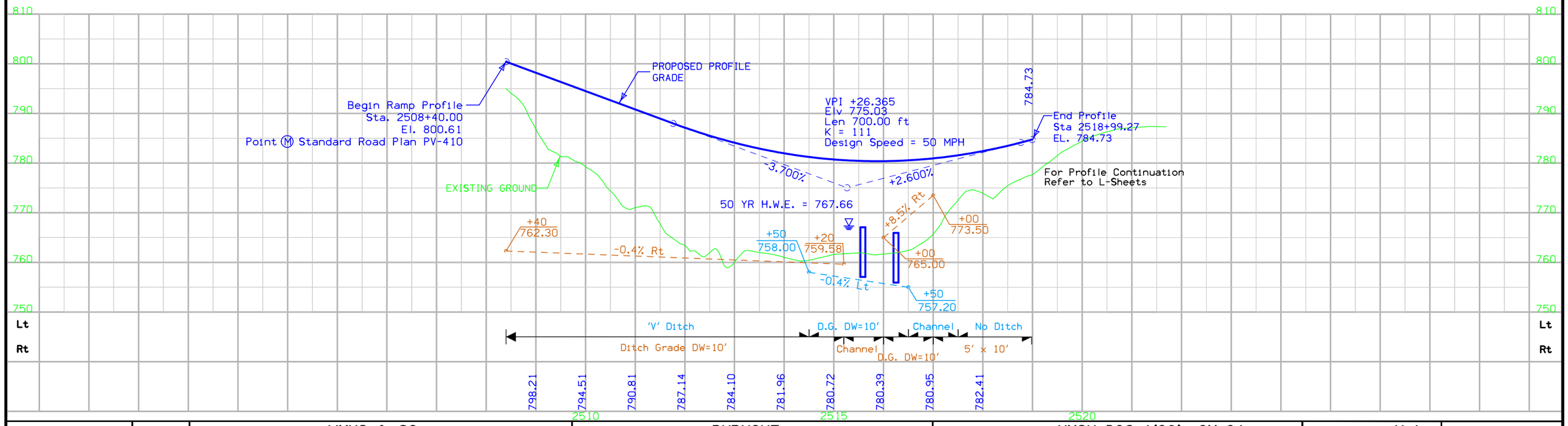

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	K.4

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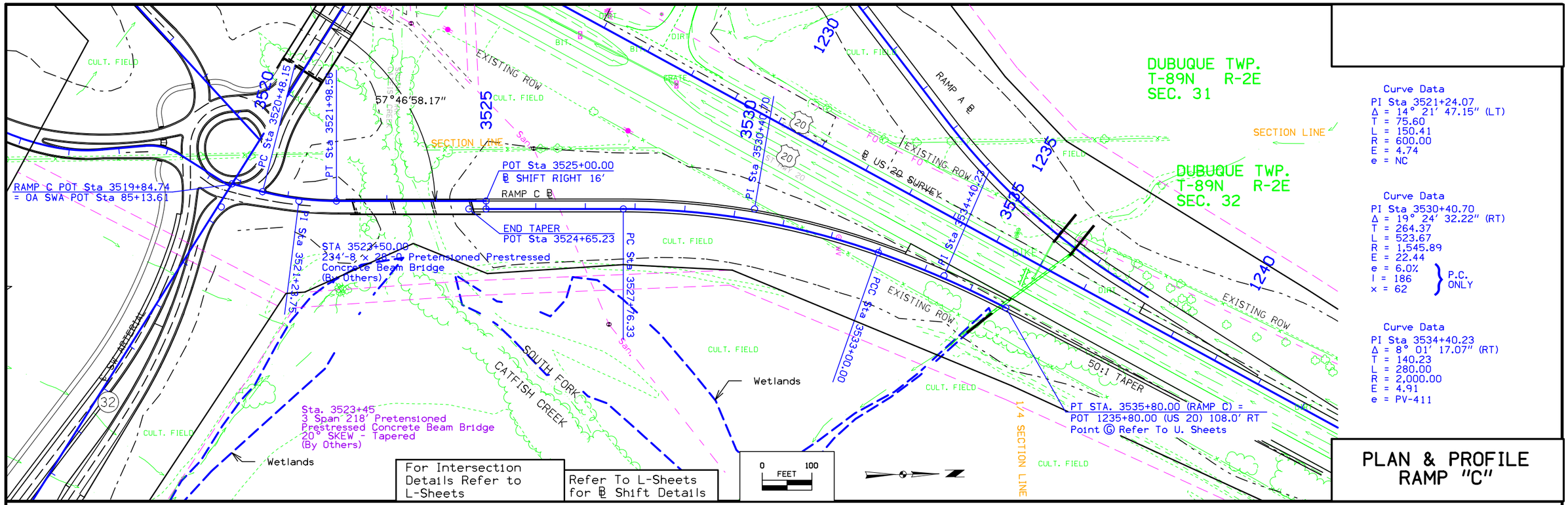

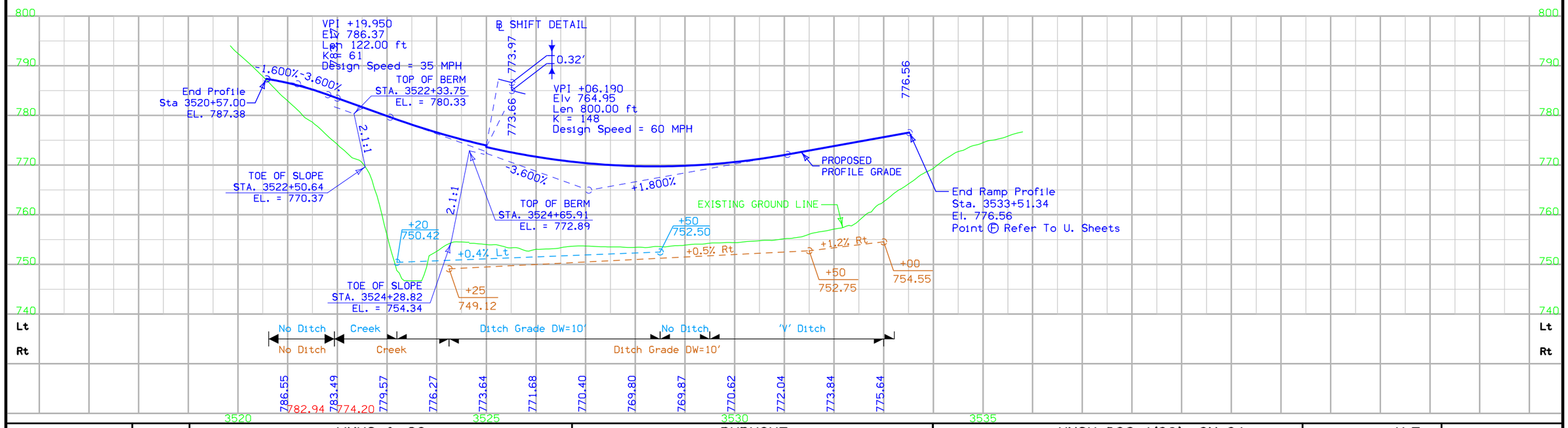

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	K.5

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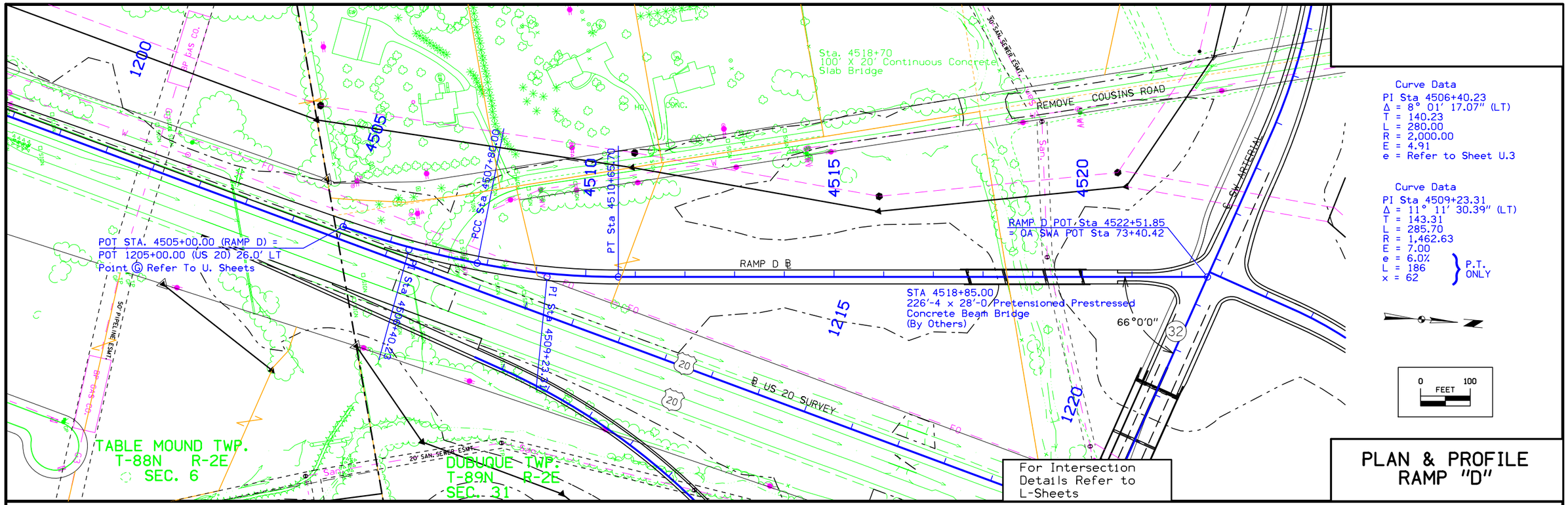

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	K.6

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See K.3 for Ramp 'A' Alignment Information

PC Sta 1522+59.65

℄ RAMP A

ONLY

ONLY

12.0' LT END LINE A
PT RAMP A ℄ Sta 1522+03.62

Curve A-3

1522

14.0' LT
PCC RAMP A ℄ Sta 1521+75.68

EQUATION:
SWA W.B.
POT Sta 271+79.50 Back, 16.00' LT.
= SWA O.A.
POT Sta 71+75.32 Ahead

LINE A

24.0' RT BEGIN LINE D
PC RAMP A ℄ Sta 1521+51.21

53.4' LT
PCC ℄ SWA O.A. Sta 72+72.86

Curve A-2

40.0' LT END LINE D
PT ℄ SWA O.A. Sta 73+88.73

40.0' LT BEGIN LINE A
PC ℄ SWA O.A. Sta 71+46.85

Curve D-1

LINE D

Curve A-1

POT Sta 271+79.50

271

8' PAVED SHOULDER

8' PAVED SHOULDER

1521

90°0'0"

℄ WB SWA

POT SWA O.A. Sta 73+29.73
= POT Ramp A Sta 1520+74.83

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

PT Sta 270+74.10

12'

+65

POT SWA O.A. Sta 73+40.42
= POT Ramp D Sta 4522+51.12

140 ft Taper 40:1 Ratio

66°0'0"

8' PAVED SHOULDER

BEGIN TAPER
12.0' RT
℄ SWA O.A. Sta 71+43.37

END TAPER
16.0' RT BEGIN LINE B
PC ℄ SWA O.A. Sta 72+83.37

7' PAVED SHOULDER

FUTURE REC. TRAIL

PT Sta 70+28.48

Curve B

28.0' RT END LINE C
PT ℄ SWA O.A. Sta 74+22.61

70 71 72 73 74 75 76

FUTURE REC. TRAIL

27.8' LT
PCC RAMP D ℄ Sta 4522+29.01

4522

LINE B

Curve C-2

Curve B-2

15.5' RT
PCC RAMP D ℄ Sta 4521+69.38

LINE C

Curve C-1

℄ RAMP D

8.0' LT END LINE B
PT RAMP D ℄ Sta 4521+31.20

8.0' RT BEGIN LINE C
PC RAMP D ℄ Sta 4521+08.22

4521

For Median Nose Shaping
Refer to PV-104

For Alignment and Profile Details
Refer to Sheets D.2 - D.4

See K.6 for Ramp 'D' Alignment Information

For Intersection Profiles
Refer to Sheet L.3

0 20
FEET

GEOMETRIC DETAILS
WEST INTERSECTION
SWA / Ramp A / Ramp D / Seippel Road

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER L.1

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CIRCULAR CURVE DATA

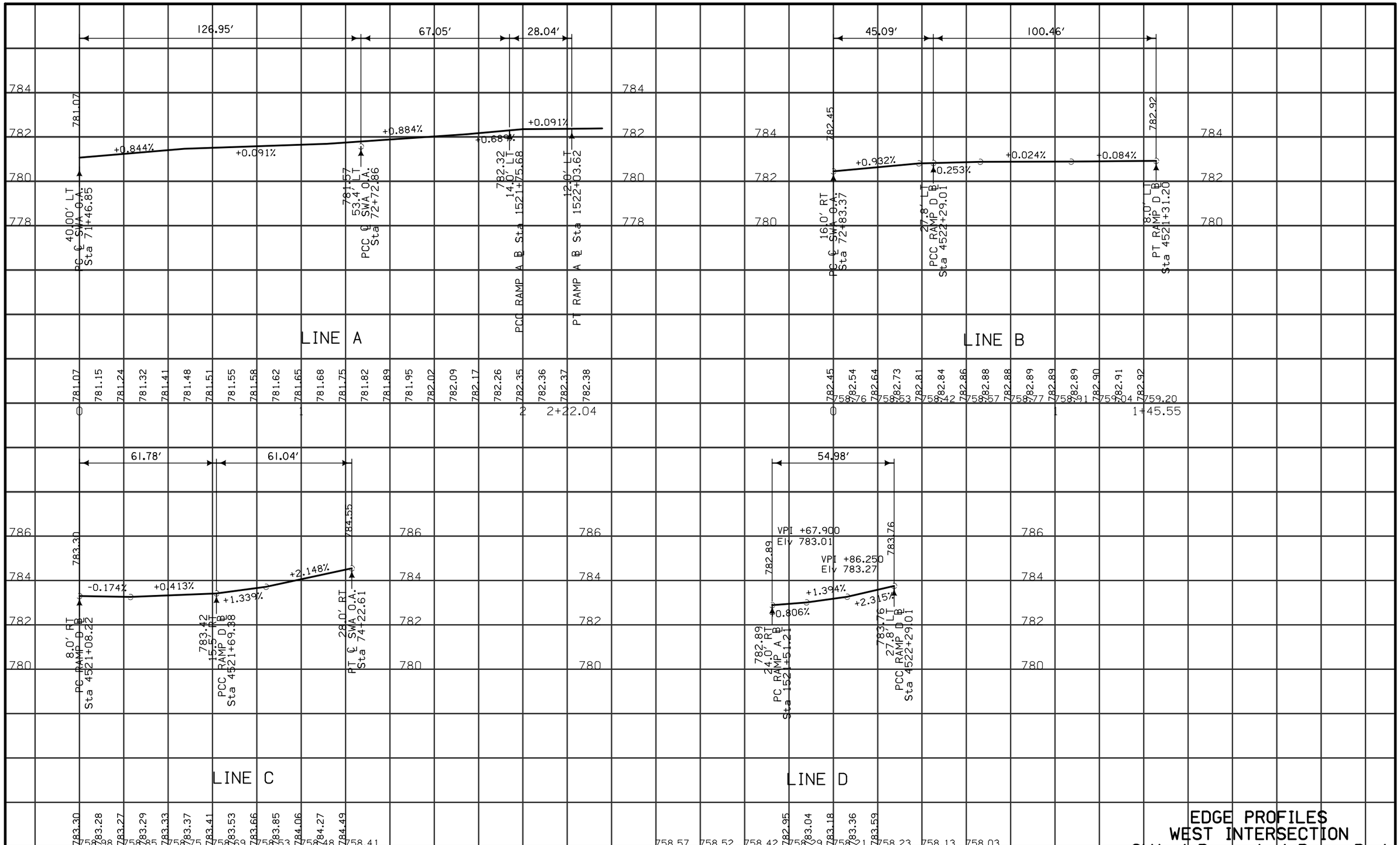
WHKS
9-27-11

Name	Δ	T (ft)	L (ft)	E (ft)	R (ft)
LINE A					
Curve A-1	12° 07′ 21.05″ (LT)	63.71	126.95	3.37	600.00
Curve A-2	69° 50′ 44.11″ (LT)	38.40	67.05	12.08	55.00
Curve A-3	8° 01′ 54.85″ (LT)	14.04	28.04	0.49	200.00
LINE B					
Curve B-1	43° 03′ 26.15″ (RT)	23.67	45.09	4.50	60.00
Curve B-2	23° 01′ 28.52″ (RT)	50.92	100.46	5.13	250.00
LINE C					
Curve C-1	14° 09′ 29.07″ (RT)	31.05	61.78	1.92	250.00
Curve C-2	99° 55′ 25.59″ (RT)	41.66	61.04	19.41	35.00
LINE D					
Curve D-1	90° 00′ 00.00″ (LT)	35.00	54.98	14.50	35.00

CIRCULAR CURVE COORDINATES

WHKS
11-22-11

Name	P.C.				Curve Centers				P.T.			
	Station	Offset (ft)	Coordinates		Station	Offset (ft)	Coordinates		Station	Offset (ft)	Coordinates	
			Northing (Y)	Easting (X)			Northing (Y)	Easting (X)			Northing (Y)	Easting (X)
LINE A												
Curve A-1	71+46.85	40.0 LT	3648535.284	5659259.484	71+46.85	640.0 LT	3649048.620	5659570.105	72+72.86	53.4 LT	3648481.499	5659374.213
Curve A-2	72+72.86	53.4 LT	3648481.499	5659374.213	72+61.31	107.2 LT	3648533.486	5659392.170	1521+75.68	14.0 LT	3648498.716	5659434.785
Curve A-3	1521+75.68	14.0 LT	3648498.716	5659434.785	71+17.73	127.4 LT	3648625.150	5659279.819	1522+03.62	12.0 LT	3648521.609	5659450.931
LINE B												
Curve B-1	72+83.37	16.0 RT	3648416.696	5659347.294	72+83.37	76.0 RT	3648365.362	5659316.232	4522+29.01	27.8 LT	3648381.663	5659373.975
Curve B-2	4522+29.01	27.8 LT	3648381.663	5659373.975	71+53.65	214.8 RT	3648313.742	5659133.378	4521+31.20	8.0 LT	3648282.149	5659381.374
LINE C												
Curve C-1	4521+08.22	8.0 RT	3648257.347	5659394.377	76+34.39	25.9 RT	3648226.462	5659642.462	4521+69.38	15.5 RT	3648317.090	5659409.467
Curve C-2	4521+69.38	15.5 RT	3648317.090	5659409.467	74+22.61	63.0 RT	3648304.402	5659442.086	74+22.61	28.0 RT	3648334.346	5659460.206
LINE D												
Curve D-1	1521+51.21	24.0 RT	3648458.129	5659454.597	73+88.73	75.0 LT	3648440.010	5659484.542	73+88.73	40.0 LT	3648410.065	5659466.422



EDGE PROFILES
WEST INTERSECTION
SWA / Ramp A / Ramp D / Seippel Road

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	L.3

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See K.3 for Ramp 'A' Alignment Information

PC Sta 1522+59.65

℄ RAMP A

1522

LINE A

LINE D

POT SWA O.A. Sta 73+29.73
= POT Ramp A Sta 1520+76.21

POT Sta 271+79.50

1521

℄ OFFICE ALIGNMENT (O.A.)
SOUTHWEST ARTERIAL

PT Sta 270+74.10

270 271 70 71 72 73 74 75 76

POT SWA O.A. Sta 73+40.42
= POT Ramp D Sta 4522+51.85

4522

LINE B

LINE C

℄ RAMP D

4521

For Median Nose Shaping Refer to PV-104

For Alignment and Profile Details Refer to Sheets D.2 - D.4

See K.6 for Ramp 'D' Alignment Information

For Intersection Profiles Refer to Sheet L.3

0 20 FEET

JOINTING DETAILS WEST INTERSECTION SWA / Ramp A / Ramp D / Seippel Road

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER L.4

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See K.3 for Ramp 'A' Alignment Information

℄ RAMP A

PC Sta 1522+59.65

UNIFORM TRANSITION

UNIFORM TRANSITION

CONSTANT SLOPE

+91.75 4.7%

4.7%

1.7%

+50.0 1.7%

1522

EQUATION:
SWA W.B.
POT Sta 271+79.50 Back, 16.00' LT.
= SWA O.A.
POT Sta 71+75.32 Ahead

LINE A

LINE D

SPECIAL SHAPING

POT SWA O.A. Sta 73+29.73
= POT Ramp A Sta 1520+76.21

SPECIAL SHAPING

POT Sta 271+79.50

271

+09.52 5.6%

UNIFORM TRANSITION

+70.12 3.9%

℄ WB SWA

+39.52 2%

2%

+11.52 0%

0%

+83.52 2%

2%

1521

1%

UNIFORM TRANSITION

2%

CONSTANT 2% SLOPE

+28.48 3.9%

PT Sta 270+74.10

+74.3

CONSTANT 2% SLOPE

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

CONSTANT 2% SLOPE

70

71

72

73

74

75

76

+28.7 2%

2%

+00.0 2%

SPECIAL SHAPING

UNIFORM TRANSITION

4522

LINE B

LINE C

POT SWA O.A. Sta 73+40.42
= POT Ramp D Sta 4522+51.85

SPECIAL SHAPING

℄ RAMP D

4521

For Median Nose Shaping
Refer to PV-104

For Alignment and Profile Details
Refer to Sheets D.2 - D.4

See K.6 for Ramp 'D' Alignment Information

For Intersection Profiles
Refer to Sheet L.3

0 FEET 20

STAKING DETAILS
WEST INTERSECTION
SWA / Ramp A / Ramp D / Seippel Road

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER L.5

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LEGEND

- ℄ EB SWA - Baseline East Bound SW Arterial
- ℄ WB SWA - Baseline West Bound SW Arterial
- ℄ WB RIGHT SWA - Baseline West Bound Right Lane SW Arterial
- ℄ EAC - Baseline East Access Connector
- ℄ EAC SB - Baseline East Access Connector South Bound

NOTES:
1. WHERE APPLICABLE, DIMENSIONS ARE 2'-6" FROM THE BACK OF CURB.
2. FOR DETAILS OF CURB AND GUTTER UNIT, REFER TO TYPICAL SECTION 6131.

BEGIN LINE A 27.08' LT
POT WB ℄ Sta 282+41.50

27.08' LT
PC WB ℄ Sta 283+17.84

29.00' LT
PCC WB ℄ Sta 284+76.96

29.00' LT
PCC WB ℄ Sta 284+43.33

28.15' LT
PCC WB ℄ Sta 284+21.36

LINE A

Curve A-1

Curve A-2

Curve A-3

Curve A-4

RAMP C ℄
3521

END LINE H 26.33' RT
POT RAMP C ℄ Sta 3520+72.60

LINE H

END LINE A
PCC RAMP C ℄
Sta 3520+57.00

PT WB ℄
Sta 283+15.97

END LINE B
PCC WB ℄
Sta 283+59.57

℄ WB SWA

PC EB ℄
Sta 182+82.21

LINE B

Curve B-2

Curve B-3

10.00' RT
PCC WB ℄
Sta 283+63.91

BEGIN LINE B
PCC EB ℄
Sta 183+50.42

6.01' LT
PCC EB ℄
Sta 183+53.71

Curve B-1

26.00' RT
PC EB ℄ Sta 182+76.45

29.37' RT
WB ℄ Sta 284+03.62
= RAMP B ℄ Sta 2521+68.68

POT WB ℄ Sta 285+15.90
= Ramp C ℄ Sta 3520+00.85

10.71' RT
WB ℄ Sta 285+27.93
= RAMP C ℄ Sta 3519+84.74

7.49' RT
WB ℄ Sta 285+33.41
= EAC ℄ Sta 24+47.06

39.46' LT
PT WB ℄ Sta 285+17.98

Curve H-3

28.21' LT
PCC WB ℄ Sta 285+63.99

Curve H-2

26.66' LT
PCC WB ℄ Sta 286+33.76

Curve H-1

BEGIN LINE H 24.00' LT
PC WB ℄ Sta 286+73.42

BEGIN LINE C 28.00' RT
POT EB ℄ Sta 182+41.50

Curve C-1

26.57' RT
PT EB ℄ Sta 183+76.88

POT EB ℄ Sta 184+16.40
= POT Ramp B ℄
Sta 2520+89.04

POT EB ℄ Sta 185+66.76
= POT ℄ EAC Sta 23+66.55

Curve G-5

6.18' RT
PCC WB ℄
Sta 285+67.65

END LINE G
PT WB ℄ Sta 286+41.34

℄ WB SWA

Curve G-3

LINE G

11.20' LT
PCC EB ℄
Sta 186+12.49

Curve G-2

LINE C

28.85' RT
PC EB ℄ Sta 184+19.39

Curve C-2

29.00' RT
PCC EB ℄ Sta 184+18.11

PC EAC ℄ Sta 23+21.88

PT EAC ℄ Sta 23+24.95

6.22' LT

1.68' LT
PC EB ℄
Sta 186+16.36

PT EB ℄
Sta 186+53.23

BEGIN LINE G
POC EB ℄ Sta 186+70.67

Curve G-1

END LINE F 24.00' RT
PT EB ℄ Sta 186+70.68

℄ EB SWA

Curve C-3

Curve C-4

LINE D

Curve E-3

29.00' RT
PCC EB ℄
Sta 185+17.42

Curve F-3

LINE F
26.96' RT
PCC EB ℄ Sta 185+99.79

10.02' LT
PCC RAMP B ℄ Sta 2519+89.78

Curve D-3

20.64' RT
PCC RAMP B ℄
Sta 2520+38.52

Curve D-4

Curve E-2

Curve F-2

END LINE E
PCC EAC ℄
Sta 23+25.55
24.00' RT
PCC EAC ℄ Sta 23+20.94

Curve E-4

LINE E

48.69' RT
PCC RAMP B ℄
Sta 2520+26.95

27.01' LT
PCC EAC SB ℄
Sta 223+16.30

PCC EAC SB ℄
Sta 223+16.30

PROPOSED FUTURE
RECREATIONAL TRAIL

Curve C-5

RAMP B ℄

22.88' RT
PCC RAMP B ℄
Sta 2519+98.63

Curve E-1

Curve F-1

4.63' RT
PCC RAMP B ℄
Sta 2519+49.60

Curve D-2

Curve D-5

BEGIN LINE F 24.00' RT
PC EAC ℄ Sta 22+63.29

PT EAC ⁎ STA 22+53.07

END LINE C 24.00' LT
PT RAMP B ℄ Sta 2518+99.27

Curve D-1

℄ EAC SB

℄ EAC

END LINE D 18.00' LT
POC EAC SB ℄ Sta 222+83.21

BEGIN LINE E
POC EAC SB ℄ Sta 222+73.42

BEGIN LINE D
PC RAMP B ℄ Sta 2518+99.27

0 20
FEET

For Curve Data
Refer to Sheet L.6

GEOMETRIC DETAILS
EAST ROUNDABOUT
Roundabout Intersection
SWA / Ramp B / Ramp C / East Access Connector

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	L.6

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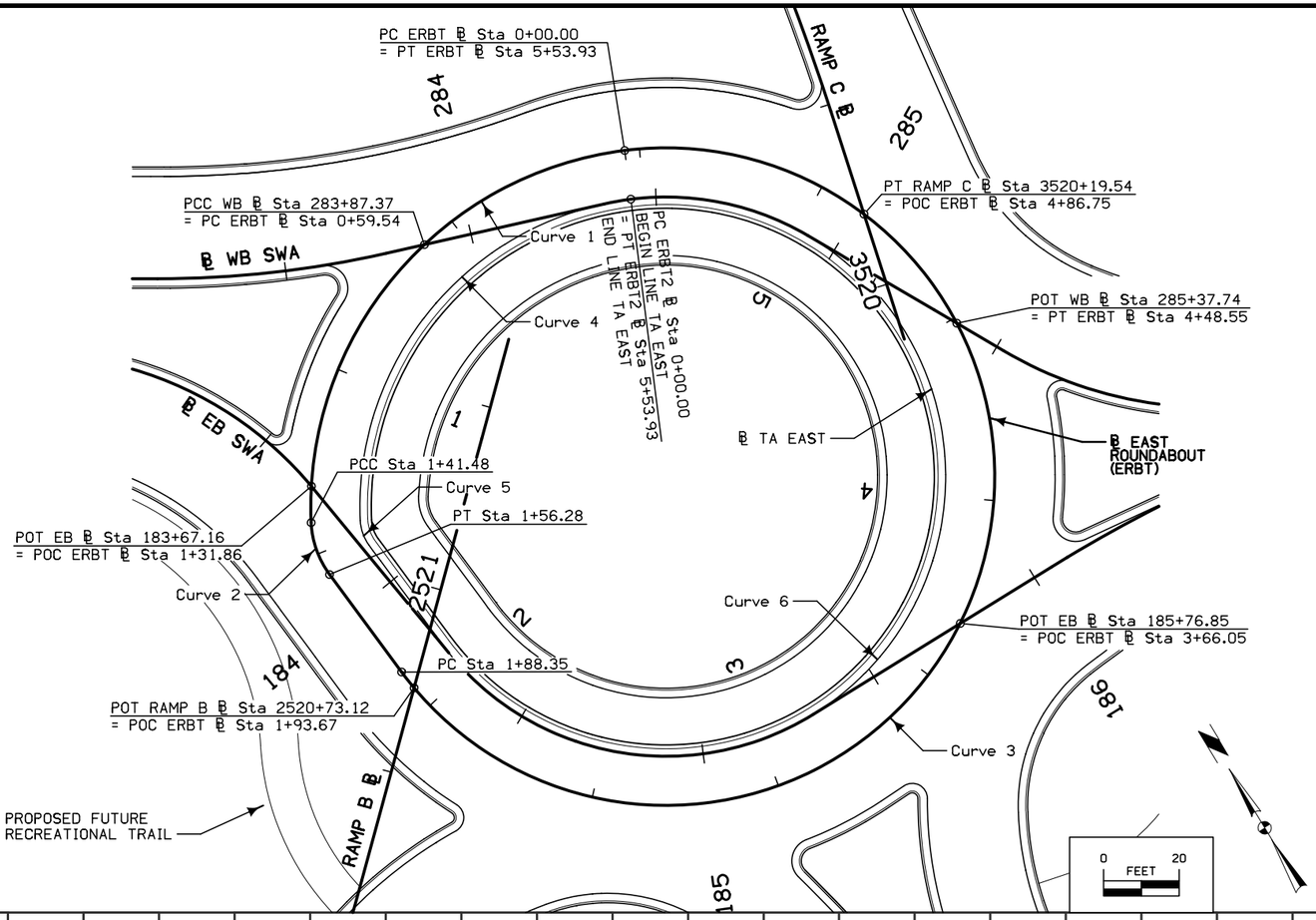
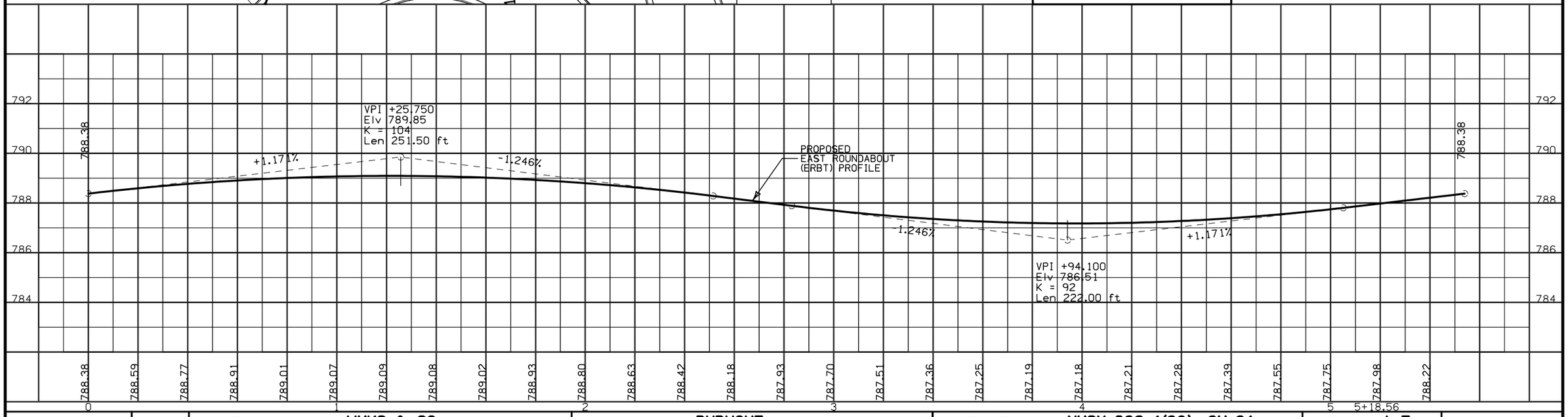


LEGEND

℄ ERBT - Baseline East Roundabout
℄ TA EAST - Baseline Truck Apron East Roundabout
℄ WB SWA - Baseline West Bound South West Arterial
℄ EB SWA - Baseline East Bound South West Arterial

GEOMETRIC DETAILS
EAST ROUNDABOUT
Roundabout Intersection
SWA / Ramp B / Ramp C / East Access Connector

For Curve Data
Refer to Sheet L.6



ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	L.7

CIRCULAR CURVE DATA

WHKS 9-27-11

Name	Δ	T (ft)	L (ft)	E (ft)	R (ft)
LINE ERBT					
Curve 1	85° 19′ 38.52″	87.55	141.48	34.19	95.00
Curve 2	33° 54′ 47.52″	7.62	14.80	1.14	25.00
Curve 3	240° 45′ 35.30″	148.41	365.58	259.03	87.00
LINE TA EAST					
Curve 4	85° 19′ 39.21″	75.57	122.12	29.51	82.00
Curve 5	33° 54′ 44.04″	3.66	7.10	0.55	12.00
Curve 6	240° 45′ 35.30″	126.23	310.95	220.32	74.00
LINE A					
Curve A-1	20° 1′ 37.33″	49.44	97.87	4.33	280.00
Curve A-2	12° 48′ 29.05″	12.46	24.81	0.70	111.00
Curve A-3	26° 2′ 3.80″	23.81	46.80	2.72	103.00
Curve A-4	127° 30′ 53.05″	12.17	13.35	7.57	6.00
LINE B					
Curve B-1	119° 14′ 14.70″	6.82	8.32	3.91	4.00
Curve B-2	21° 18′ 46.62″	19.19	37.94	1.79	102.00
Curve B-3	131° 28′ 48.75″	13.31	13.77	8.60	6.00
LINE C					
Curve C-1	53° 33′ 3.40″	41.38	76.64	9.85	82.00
Curve C-2	21° 1′ 57.47″	19.12	37.81	1.76	103.00
Curve C-3	118° 25′ 54.43″	6.71	8.27	3.82	4.00
Curve C-4	28° 10′ 54.08″	30.12	59.02	3.72	120.00
Curve C-5	17° 33′ 36.04″	46.34	91.94	3.56	300.00
LINE D					
Curve D-1	10° 30′ 29.22″	25.38	50.62	1.16	276.00
Curve D-2	19° 49′ 3.70″	26.55	52.57	2.30	152.00
Curve D-3	24° 2′ 8.75″	19.59	38.59	2.06	92.00
Curve D-4	48° 30′ 45.47″	21.18	39.80	4.55	47.00
Curve D-5	13° 6′ 6.28″	23.20	46.19	1.33	202.00
LINE E					
Curve E-1	3° 31′ 12.97″	21.45	42.89	0.33	698.00
Curve E-2	113° 58′ 0.13″	9.23	11.93	5.01	6.00
Curve E-3	12° 25′ 53.15″	11.22	22.35	0.61	103.00
Curve E-4	123° 41′ 18.63″	7.47	8.64	4.48	4.00
LINE F					
Curve F-1	29° 45′ 28.19″	23.11	45.19	3.02	87.00
Curve F-2	54° 39′ 50.02″	24.29	44.84	5.91	47.00
Curve F-3	15° 12′ 58.34″	33.66	66.92	2.24	252.00
LINE G					
Curve G-1	2° 29′ 57.94″	8.73	17.45	0.10	400.00
Curve G-2	120° 31′ 26.11″	10.50	12.62	6.10	6.00
Curve G-3	17° 28′ 14.53″	15.83	31.41	1.21	103.00
Curve G-4	122° 12′ 47.02″	7.25	8.53	4.28	4.00
Curve G-5	37° 3′ 1.95″	36.52	70.49	5.96	109.00
LINE H					
Curve H-1	8° 37′ 41.24″	19.01	37.95	0.72	252.00
Curve H-2	30° 41′ 35.28″	26.62	51.96	3.59	97.00
Curve H-3	43° 16′ 55.75″	23.81	45.32	4.55	60.00

CIRCULAR CURVE COORDINATES

WHKS 11-22-11

Name	P.C.				Curve Centers				P.T.			
	Station	Offset (ft)	Coordinates		Station	Offset (ft)	Coordinates		Station	Offset (ft)	Coordinates	
			Northing (Y)	Easting (X)			Northing (Y)	Easting (X)			Northing (Y)	Easting (X)
LINE ERBT												
Curve 1	0+00.00	0.00	3647874.551	5660370.685	0+00.00	95.0	3647787.736	5660332.109	1+41.48	0.00	3647833.256	5660248.725
Curve 2	1+41.48	0.00	3647833.256	5660248.725	1+41.48	25.0	3647821.277	5660270.668	1+56.28	0.00	3647818.976	5660245.774
Curve 3	1+88.35	0.00	3647787.037	5660248.727	1+88.35	87.0	3647795.047	5660335.357	5+53.93	0.00	3647874.551	5660370.685
LINE TA EAST												
Curve 4	0+00.00	0.00	3647862.671	5660365.406	0+00.00	82.0	3647787.736	5660332.109	1+22.12	0.00	3647827.027	5660260.135
Curve 5	1+22.12	0.00	3647827.027	5660260.135	1+22.12	12.0	3647821.277	5660270.668	1+29.22	0.00	3647820.173	5660258.719
Curve 6	1+61.30	0.00	3647788.234	5660261.672	1+61.30	74.0	3647795.047	5660335.357	4+72.25	0.00	3647862.671	5660365.406
LINE A												
Curve A-1	283+17.84	27.08 LT	3647931.80	5660262.77			3648171.35	5660407.73	284+21.36	28.15 LT	3647896.64	5660353.58
Curve A-2	284+21.36	28.15 LT	3647896.64	5660353.58			3647787.74	5660332.11	284+43.33	29.00 LT	3647889.17	5660377.18
Curve A-3	284+43.33	29.00 LT	3647889.17	5660377.18			3647795.05	5660335.36	284+76.96	29.00 LT	3647861.26	5660414.25
Curve A-4	284+76.96	29.00 LT	3647861.26	5660414.25			3647865.12	5660418.85	3520+57.00	0.00	3647863.82	5660424.71
LINE B												
Curve B-1	183+50.42	0.00	3647857.71	5660249.83			3647858.98	5660253.62	183+53.71	6.01 LT	3647856.29	5660256.58
Curve B-2	183+53.71	6.01 LT	3647856.29	5660256.58			3647787.74	5660332.11	283+63.91	10.00 RT	3647879.05	5660286.66
Curve B-3	283+63.91	10.00 RT	3647879.05	5660286.66			3647884.42	5660283.99	283+59.57	0.00	3647889.98	5660286.24
LINE C												
Curve C-1	182+76.45	26.00 RT	3647890.60	5660189.68			3647820.45	5660147.23	183+76.88	26.57 RT	3647827.98	5660228.88
Curve C-2	184+19.39	28.85 RT	3647785.59	5660232.79			3647795.05	5660335.36	184+48.11	29.00 RT	3647749.41	5660243.02
Curve C-3	184+48.11	29.00 RT	3647749.41	5660243.02			3647747.63	5660239.44	2520+39.52	20.64 RT	3647743.64	5660239.29
Curve C-4	2520+39.52	20.64 RT	3647743.64	5660239.29			3647623.72	5660234.83	2519+89.78	10.02 LT	3647731.52	5660182.13
Curve C-5	2519+89.78	10.02 LT	3647731.52	5660182.13			3647462.01	5660313.89	2518+99.27	24.00 LT	3647679.21	5660106.95
LINE D												
Curve D-1	2518+99.27	0.00	3647661.84	5660123.51			3647462.01	5660313.89	2519+49.60	4.63 RT	3647693.21	5660163.14
Curve D-2	2519+49.60	4.63 RT	3647693.21	5660163.14			3647565.88	5660246.16	2519+98.63	22.88 RT	3647713.81	5660211.23
Curve D-3	2519+98.63	22.88 RT	3647713.81	5660211.23			3647624.27	5660232.37	2520+26.95	48.69 RT	3647714.66	5660249.53
Curve D-4	2520+26.95	48.69 RT	3647714.66	5660249.53			3647668.48	5660240.76	223+16.30	27.01 LT	3647692.51	5660281.16
Curve D-5	223+16.30	27.01 LT	3647692.51	5660281.16			3647589.26	5660107.54	222+83.21	18.04 LT	3647650.46	5660300.05
LINE E												
Curve E-1	223+16.30	0.00	3647644.36	5660319.57			3647518.25	5659633.06	185+17.42	29.00 RT	3647686.27	5660310.54
Curve E-2	185+17.42	29.00 RT	3647686.27	5660310.54			3647687.72	5660316.36	23+24.95	12.21 LT	3647693.62	5660317.41
Curve E-3	23+24.95	12.21 LT	3647693.62	5660317.41			3647795.05	5660335.36	23+28.88	6.22 LT	3647692.14	5660339.66
Curve E-4	23+28.88	6.22 LT	3647692.44	5660346.85			3647688.44	5660347.02	23+25.55	0.00	3647686.36	5660350.44
LINE F												
Curve F-1	22+63.29	24.00 RT	3647627.43	5660358.30			3647628.71	5660445.29	23+20.94	24.00 RT	3647670.78	5660369.13
Curve F-2	23+20.94	24.00 RT	3647670.78	5660369.13			3647648.05	5660410.27	185+99.79	26.96 RT	3647694.75	5660405.02
Curve F-3	185+99.79	26.96 RT	3647694.75	5660405.02			3647444.33	5660433.19	186+70.68	24.00 RT	3647693.37	5660471.73
LINE G												
Curve G-1	186+70.67	0.00	3647717.09	5660475.40			3647321.79	5660414.22	186+53.23	0.00	3647719.38	5660458.11
Curve G-2	186+16.66	1.68 LT	3647723.40	5660421.66			3647729.36	5660422.34	186+12.49	11.20 LT	3647732.98	5660417.55
Curve G-3	186+12.49	11.20 LT	3647732.98	5660417.55			3647795.05	5660335.36	285+67.65	6.18 RT	3647760.52	5660432.40
Curve G-4	285+67.65	6.18 RT	3647760.52	5660432.40			3647759.18	5660436.17	285+70.86	0.00	3647761.65	5660439.31
Curve G-5	285+70.86	0.00	3647761.65	5660439.31			3647829.06	5660524.97	286+41.34	0.00	3647723.65	5660497.22
LINE H												
Curve H-1	286+73.42	24.00 LT	3647738.69	5660534.35			3647982.39	5660598.51	286+33.76	26.66 LT	3647751.07	5660498.51
Curve H-2	286+33.76	26.66 LT	3647751.07	5660498.51			3647840.11	5660537.00	285+63.99	28.21 LT	3647783.19	5660458.46
Curve H-3	285+63.99	28.21 LT	3647783.19	5660458.46			3647818.40	5660507.04	285+17.98	39.46 LT	3647826.08	5660447.54

GEOMETRIC DETAILS
EAST ROUNDABOUT
Roundabout Intersection
SWA / Ramp B / Ramp C / East Access Connector

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	L.8

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LEGEND

- ℄ EB SWA - Baseline East Bound SW Arterial
- ℄ WB SWA - Baseline West Bound SW Arterial
- ℄ WB RIGHT SWA - Baseline West Bound Right Lane SW Arterial
- ℄ EAC - Baseline East Access Connector
- ℄ EAC SB - Baseline East Access Connector South Bound
- 3" Sloped Curb

FOR CONTINUATION SEE SHEET U.7

STAKING DETAILS
EAST ROUNDABOUT
Roundabout Intersection
SWA / Ramp B / Ramp C / East Access Connector

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER L.9

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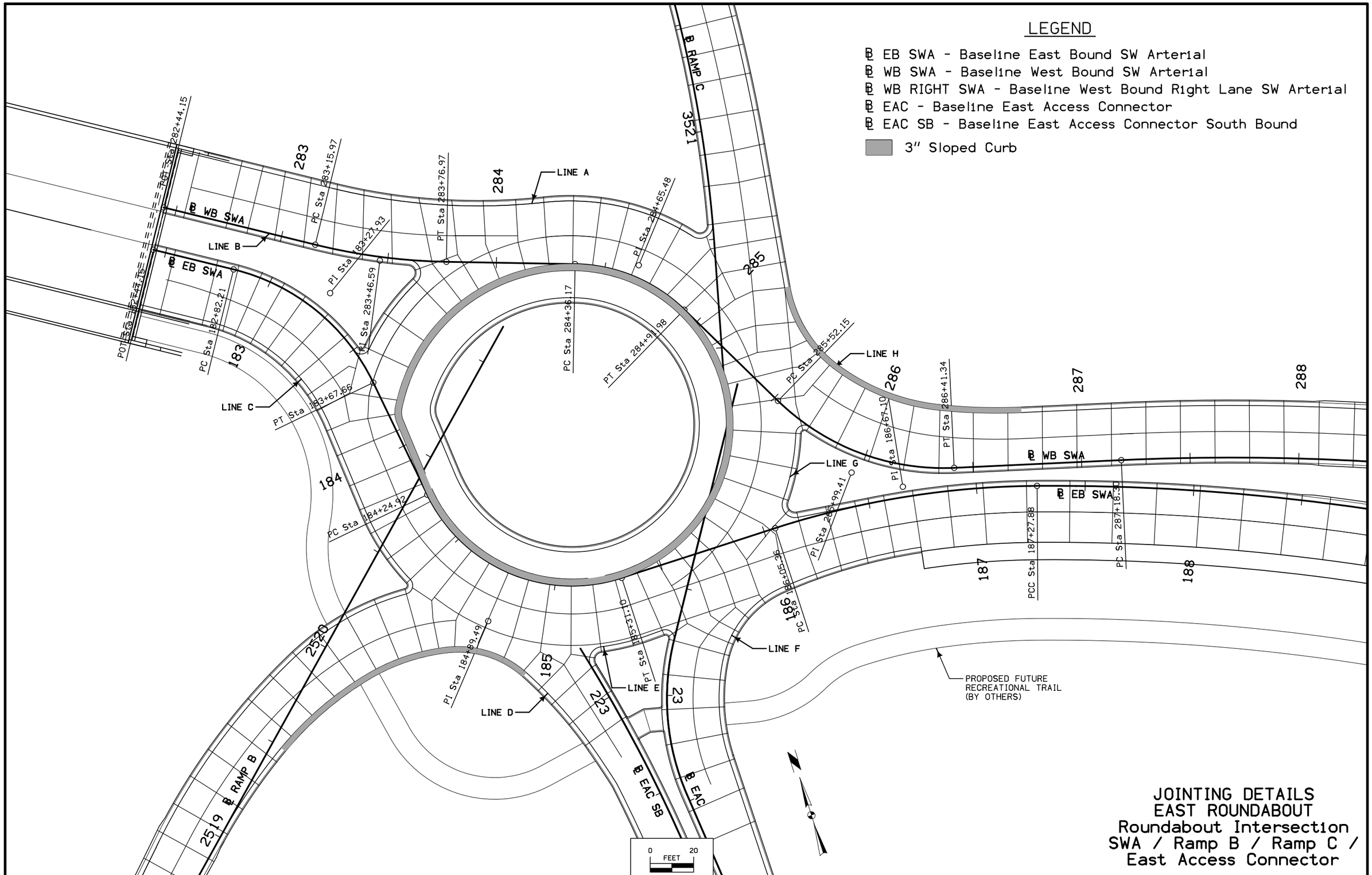

JOINTING DETAILS
EAST ROUNDABOUT
Roundabout Intersection
SWA / Ramp B / Ramp C /
East Access Connector

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	L.10

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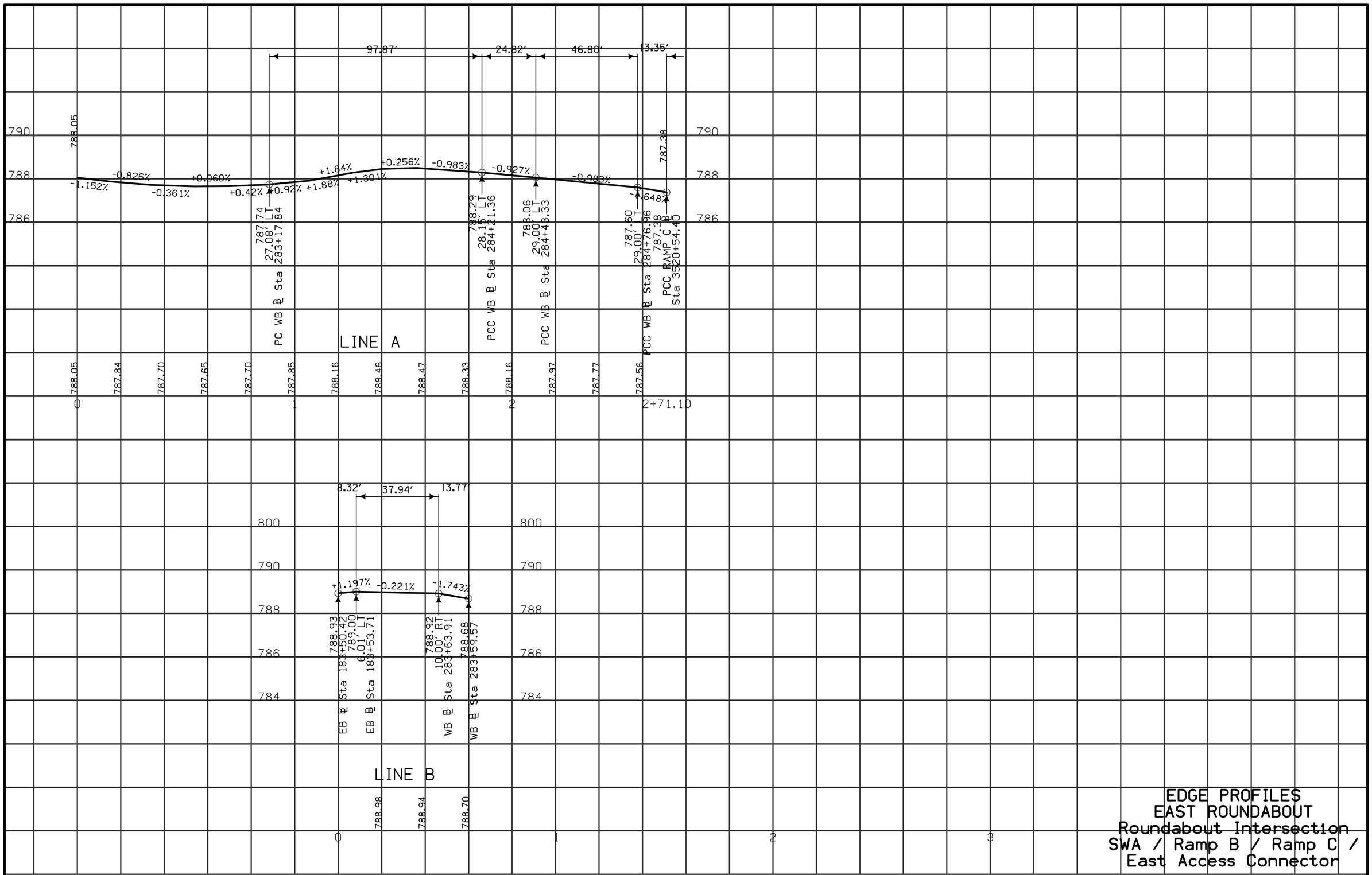

EDGE PROFILES
EAST ROUNDABOUT
Roundabout Intersection
SWA / Ramp B / Ramp C /
East Access Connector

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	L.11

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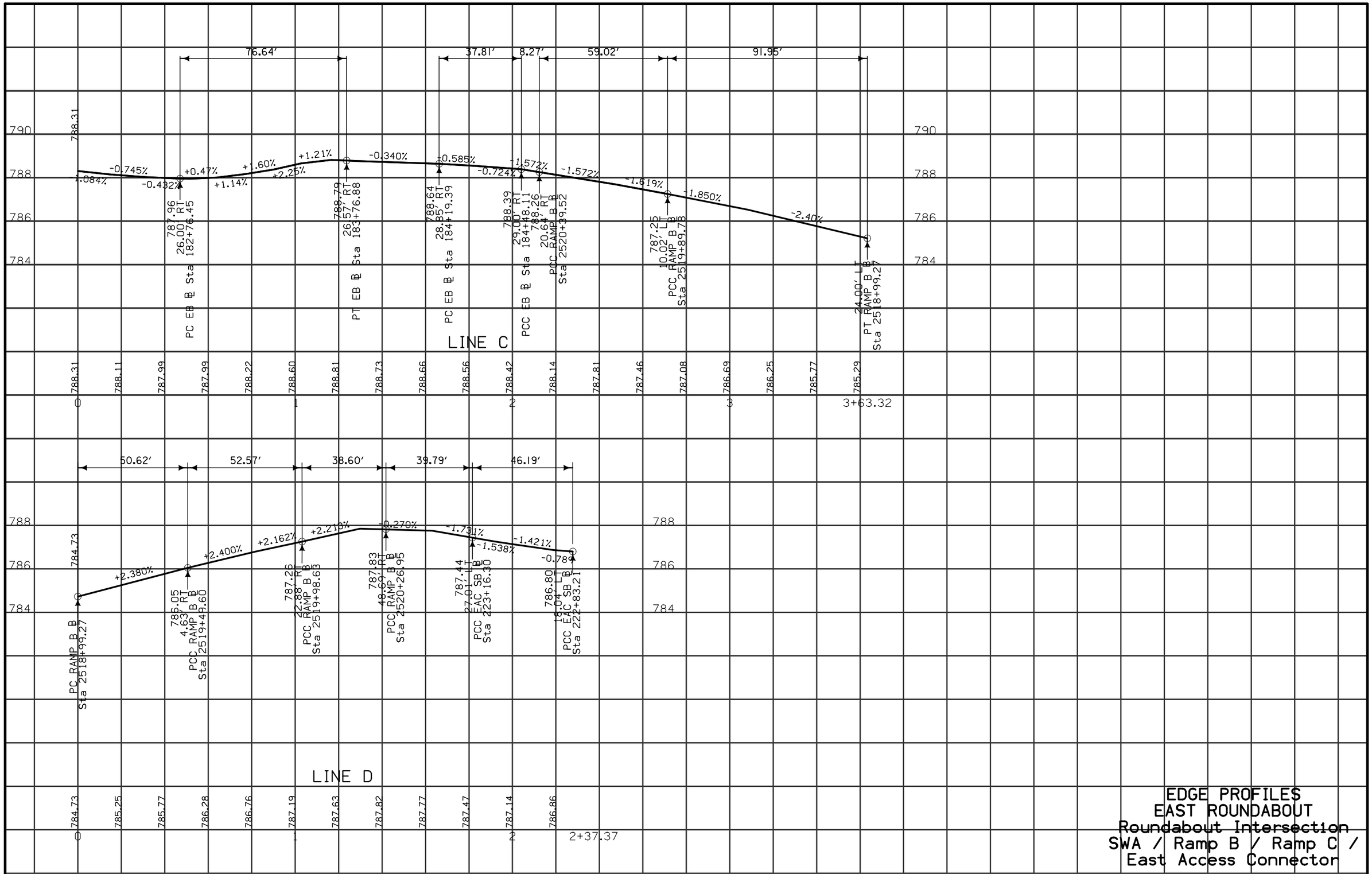

EDGE PROFILES
EAST ROUNDABOUT
Roundabout Intersection
SWA / Ramp B / Ramp C / East Access Connector

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	L.12

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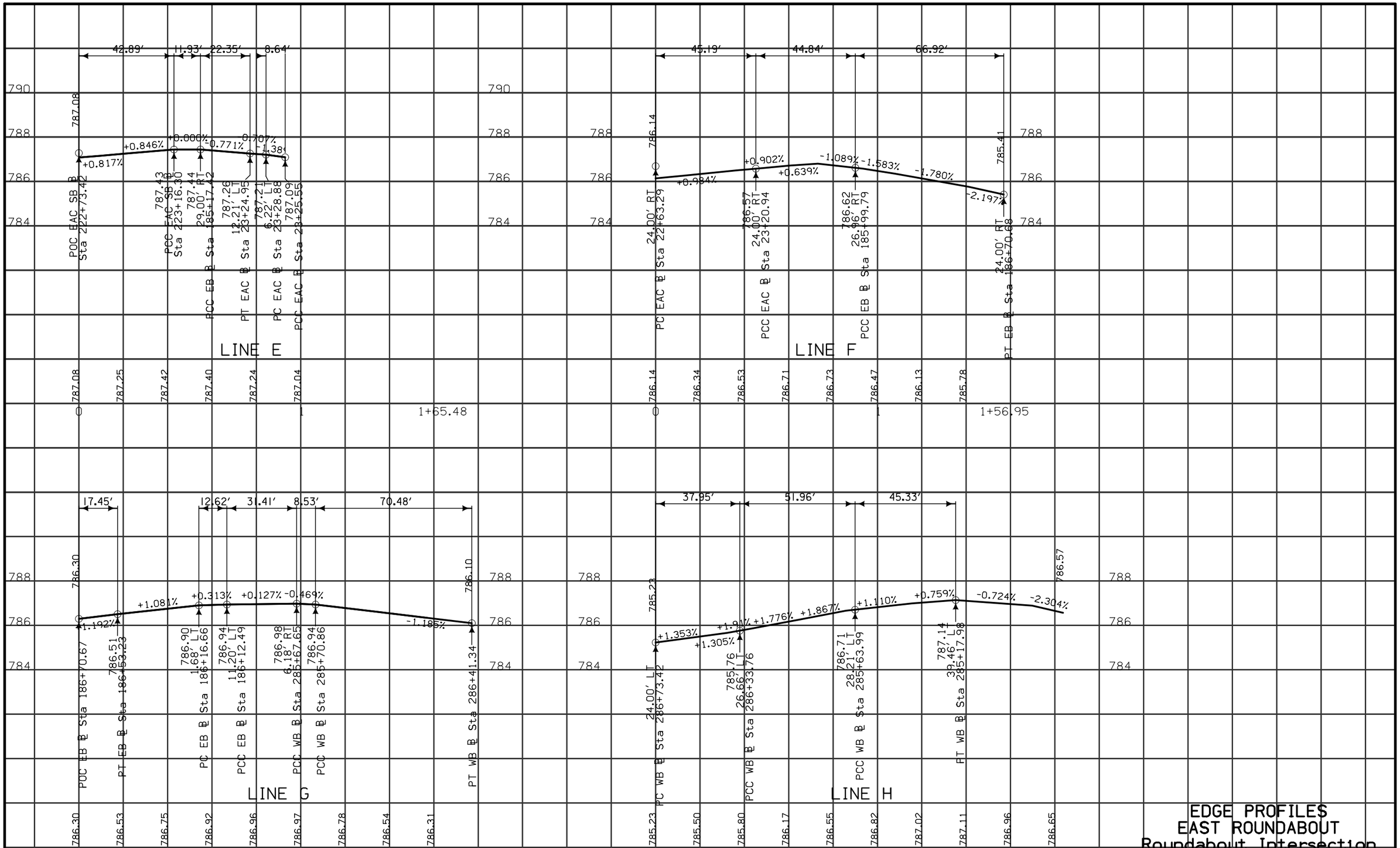

EDGE PROFILES
EAST ROUNDABOUT
Roundabout Intersection
SWA / Ramp B / Ramp C / East Access Connector

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	L.13

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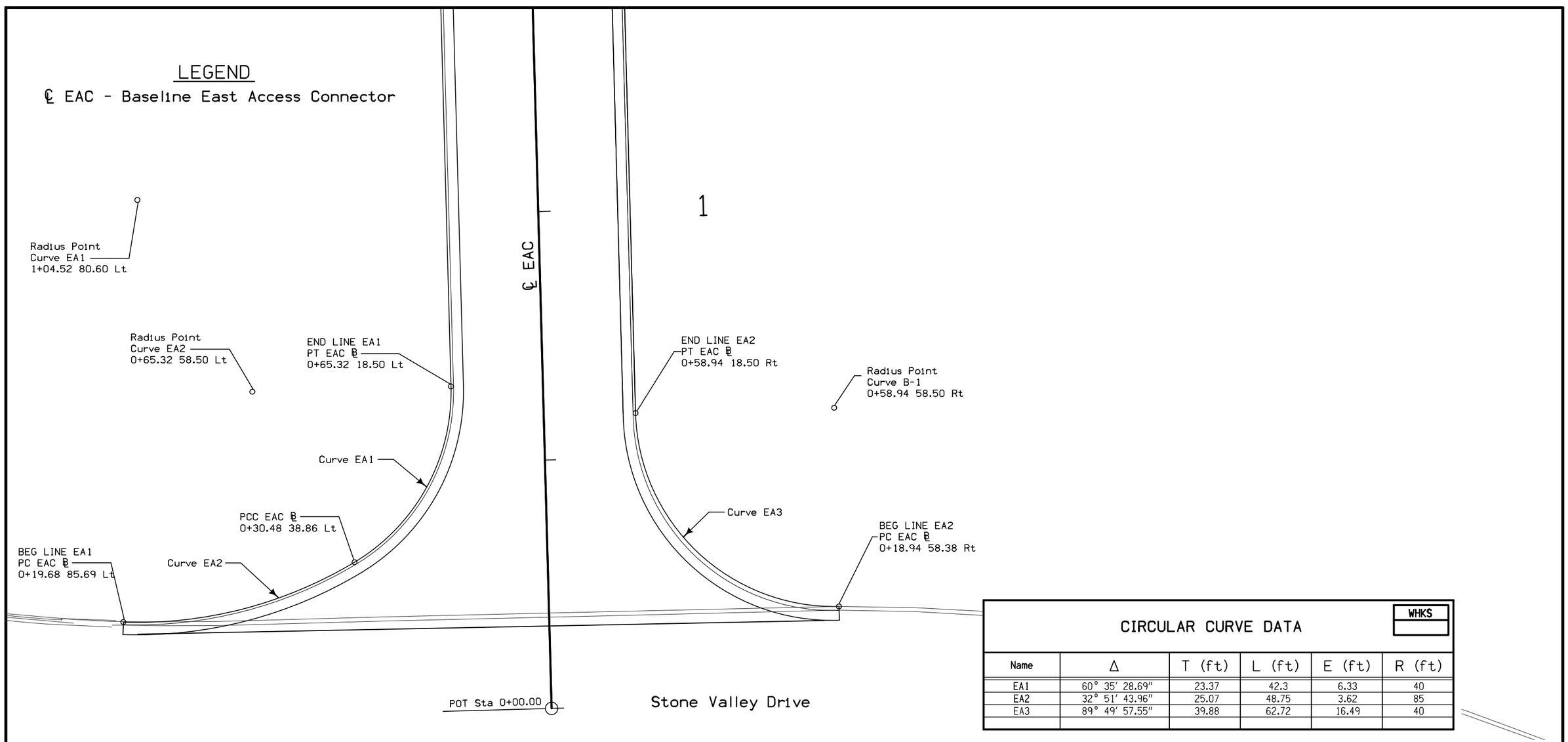
LEGEND

℄ EAC - Baseline East Access Connector



CIRCULAR CURVE DATA

WHKS

Name	Δ	T (ft)	L (ft)	E (ft)	R (ft)
EA1	60° 35′ 28.69″	23.37	42.3	6.33	40
EA2	32° 51′ 43.96″	25.07	48.75	3.62	85
EA3	89° 49′ 57.55″	39.88	62.72	16.49	40

CIRCULAR CURVE COORDINATES

WHKS

Name	P.C.				Curve Centers				P.T.			
	Station	Offset (ft)	Coordinates		Station	Offset (ft)	Coordinates		Station	Offset (ft)	Coordinates	
			Northing (Y)	Easting (X)			Northing (Y)	Easting (X)			Northing (Y)	Easting (X)
EA1	0+19.68	85.69	3645625.64	5659673.869	0+04.52	80.60	3645659.943	5659653.294	0+30.48	38.86	3645661.023	5659693.28
EA2	0+30.48	38.86	3645613.58	5659627.32	0+65.32	58.50	3645698.533	5659630.147	0+65.32	18.50	3645625.64	5659673.869
EA3	0+18.94	58.38	3645616.736	5659771.387	0+58.94	58.50	3645656.724	5659770.424	0+58.94	18.50	3645655.645	5659730.438

GEOMETRIC DETAILS
EAST ACCESS CONNECTOR
STONE VALLEY DR. INTERSECTION

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER L.14

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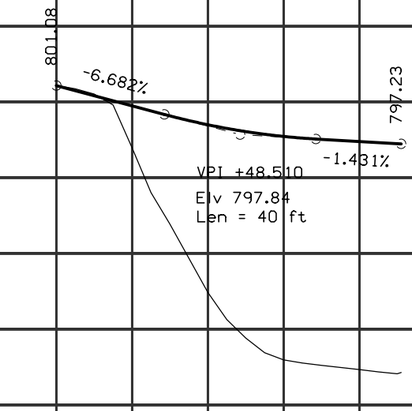
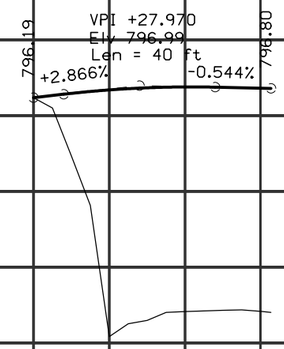


Elevations are to form grade.

801.08	800.41	799.74	799.08	798.49	798.04	797.72	797.53	797.39	797.24
0									1

LINE EA1



Elevations are to form grade.

796.19	796.47	796.70	796.84	796.90	796.87	796.81
0						1

LINE EA2

EDGE PROFILES
East Access Connector / Stone Valley Intersection

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	L.15

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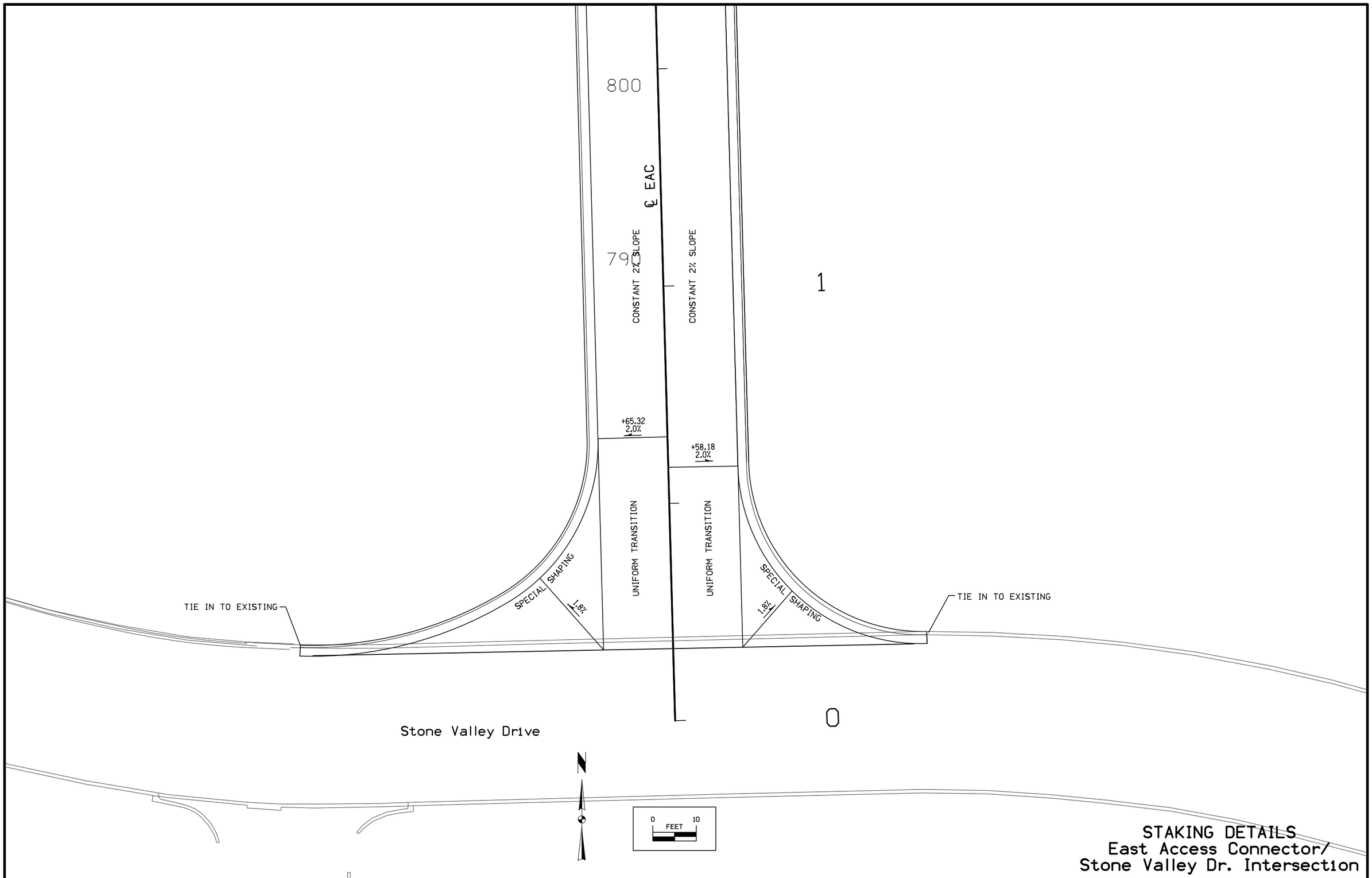

STAKING DETAILS
East Access Connector/ Stone Valley Dr. Intersection

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	L.16

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LEGEND

℄ EAC - Baseline East Access Connector

1

Sawcut

POT Sta 0+00.00

0

Stone Valley Drive

0 FEET 10

JOINTING DETAILS
East Access Connector/
Stone Valley Dr. Intersection

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	L.17

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SANITARY SEWER

(1) Diameter or equivalent diameter

* Bid Item
** For SW-545

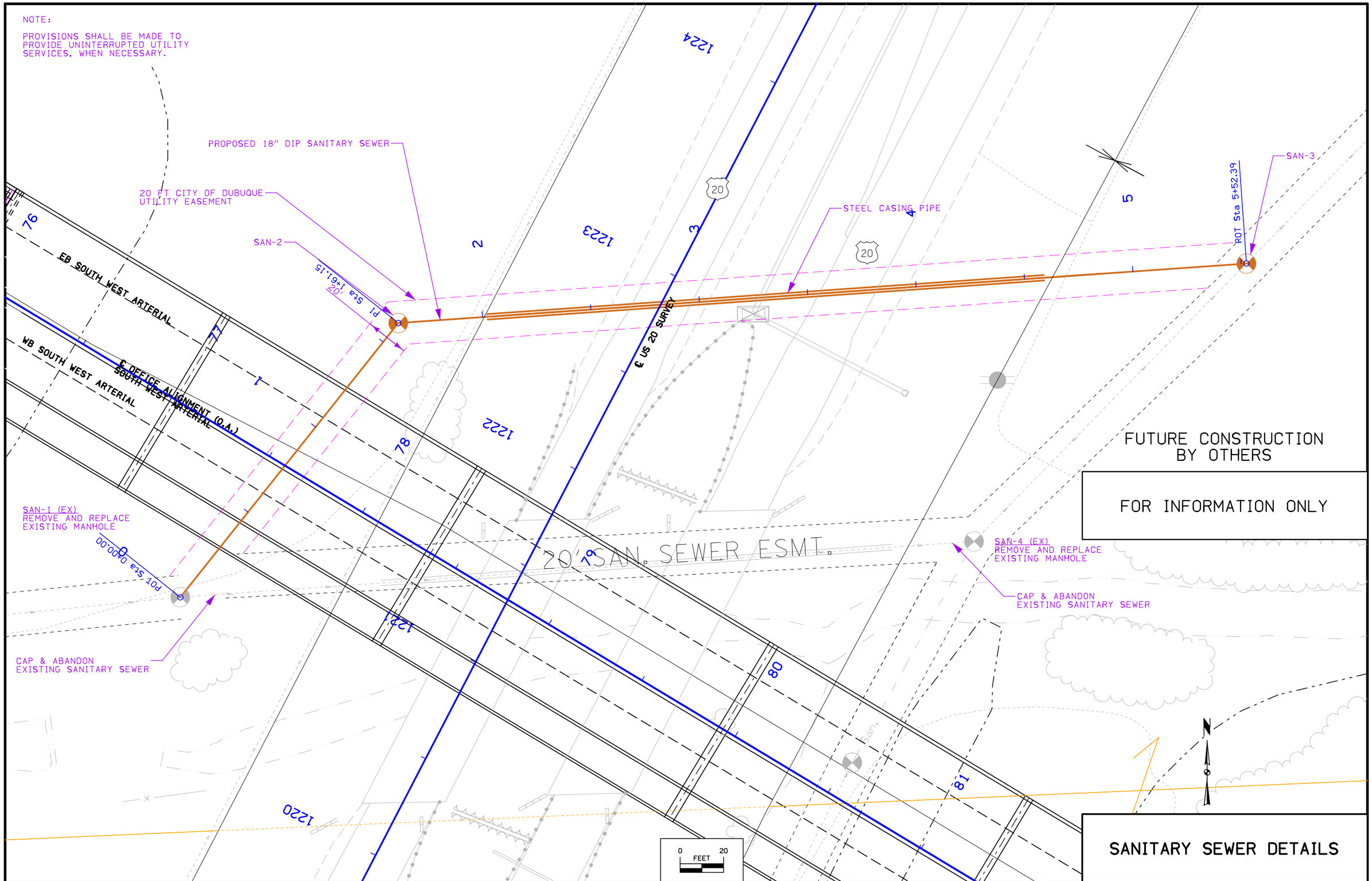
INTAKES AND UTILITY ACCESSES

No.	Location Station and Offset To ℄ Survey US 20	*Type or Standard Road Plan	Form Grade Elev.	Bottom Well Elev.	Extension Length** FT	Notes
Existing Structures (For Information Only)						
SAN-1	1220+64.07, 134.26' LT		756.64	743.67		REMOVE (BY OTHERS)
SAN-4	1222+54.86, 178.21' RT		753.48	741.92		REMOVE (BY OTHERS)
SAN-7	1213+47.62, 225.65' LT		761.8	755.88		REMOVE
SAN-9	1217+46.13, 182.70' RT		760.05	753.65		
SAN-10	1209+50.72, 271.45' RT		765.81	757.69		REMOVE
SAN-11	1225+92.05, 281.43' RT		754.93	740.75		
SAN-12	1228+94.37, 519.57' RT		751.54	738.9		
SAN-13	1206+03.79, 471.43' RT		774.57	760.17		
SAN-15	1217+45.57, 713.45' LT		761.36	746.82		
SAN-16	1218+50.55, 461.30' LT		759.56	745.44		REMOVE
Proposed Structures						
SAN-1	1220+64.07, 134.26' LT	SW-301 48"	756.64	743.67		FOR INFORMATION ONLY (FUTURE CONSTRUCTION BY OTHERS)
SAN-2	1222+22.21, 103.33' LT	SW-301 48"	757.50	742.91		FOR INFORMATION ONLY (FUTURE CONSTRUCTION BY OTHERS)
SAN-3	1224+26.04, 230.61' RT	SW-301 48"	756.50	741.25		FOR INFORMATION ONLY (FUTURE CONSTRUCTION BY OTHERS)
SAN-4	1222+54.86, 178.21' RT	SW-301 48"	753.48	741.92		FOR INFORMATION ONLY (FUTURE CONSTRUCTION BY OTHERS)
SAN-5	1208+96.87, 298.39' RT	SW-301 48"	768.50	757.98		
SAN-6	1211+88.41, 323.74' RT	SW-301 48"	764.00	756.51		
SAN-8	1215+91.94, 199.32' RT	SW-301 48"	761.00	754.52		
SAN-14	1218+30.92, 508.25' RT	SW-301 48"	759.04	745.62		
SAN-17	1219+22.41, 351.27' RT	SW-301 48"	758.05	744.90		

PIPES

Design Length, Slope, and Flowlines are calculated from inside wall to inside wall along CL of pipe. An additional 0.50 ft length is added to each end of the Design Length to account for estimated length to inside wall of structures.

Line Number	Intake/ Utility Access No. From	To	Class 'D'	Pipe Size (1) IN	Bid* Length FT	Design Length FT	Slope %	Flow Lines Inlet Elevation	Outlet Elevation	Other Elevation	Pipe Profile Sheet No.	Notes
5	SAN-11	SAN-12		18	245	245.0	0.48	740.68	739.5		M.8	
Proposed Pipes												
P-1	SAN-1	SAN-2		18	158	157.0	0.45	743.67	743.01		M.3	FOR INFORMATION ONLY (FUTURE CONSTRUCTION BY OTHERS)
P-2	SAN-2	SAN-3		18	389	388.0	0.44	742.91	741.35		M.3	FOR INFORMATION ONLY (FUTURE CONSTRUCTION BY OTHERS)
P-3	SAN-5	SAN-6		12	294	293.0	0.47	757.98	756.61		M.6	
P-4	SAN-6	SAN-8		12	415	414.0	0.46	756.51	754.42		M.7	
P-6	SAN-14	SAN-17		18	174	173.0	0.42	745.62	744.90		M.9	



ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.2

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℄ SURVEY US 20

PROPOSED US 20 EMBANKMENT

SAN-1
RIM EL. = 756.64
INV. EL. 743.67(NE)

SAN-2
RIM EL. = 757.50
INV. EL. 743.01 (E)
INV. EL. 742.91 (SW)

SAN-3
RIM EL. = 756.50
INV. EL. 741.35 (W)
INV. EL. 741.25 (E)

EXISTING GROUND

P-1

F&I 157 LF 18" DIP SAN. SEWER @ 0.42%

F&I 18" MJ SOLID SLEEVE

P-2

F&I 256 LF 18" DIP SAN. SEWER @ 0.40%
W/ 30" STEEL CASING STA 2+02 TO STA 4+58

F&I 39 LF 18" DIP SAN. SEWER @ 0.40%

F&I 92 LF 18" DIP SAN. SEWER @ 0.40%

FUTURE CONSTRUCTION
BY OTHERS

FOR INFORMATION ONLY

LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- EXISTING PIPE/STRUCTURE
- PROPOSED PIPE
- PROPOSED STRUCTURE

SANITARY SEWER PROFILES

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.3

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NOTE:

PROVISIONS SHALL BE MADE TO PROVIDE UNINTERRUPTED UTILITY SERVICES, WHEN NECESSARY.

CAP & ABANDON EXISTING SANITARY SEWER

POT Sta 10+00.00

SAN-5
F&I 48" SANITARY MH

SAN-10
REMOVE EXISTING SANITARY SEWER MANHOLE

20' SANITARY SEWER ESMT. (EX)

PROPOSED 12" DIP SANITARY SEWER

PI Sta 12+92.61

PROTECT PROPOSED PIPE WITH POLYSTYRENE INSULATION SEE DETAIL THIS SHEET.

SAN-6
F&I 48" SANITARY MH

STA. 13+21.12

STA. 13+51.12

SAN-7
REMOVE EXISTING SANITARY SEWER MANHOLE

STEEL CASING PIPE

CAP & ABANDON EXISTING SANITARY SEWER

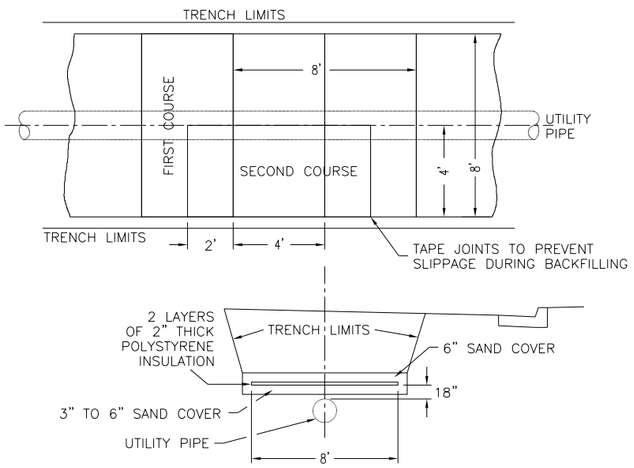
℄ US 20 SURVEY

20

B RAMP B

2511 2512 2513 2514 2515

10 11 12 13 14 15 16



EXTRUDED POLYSTYRENE INSULATION BOARD USED FOR CONSTRUCTION INSULATION APPLICATIONS SHALL CONFORM TO AASHTO M 230, EXCEPT THAT THE REQUIREMENT OF FLAMMABILITY SHALL NOT APPLY.

POLYSTYRENE INSULATION

FOR SANITARY MAIN

0 20 FEET

SANITARY SEWER DETAILS

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.4

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NOTE:

PROVISIONS SHALL BE MADE TO PROVIDE UNINTERRUPTED UTILITY SERVICES, WHEN NECESSARY.

2513

CAP & ABANDON EXISTING SANITARY SEWER

20

℄ US 20 SURVEY

1217

14

SAN-7
REMOVE EXISTING SANITARY SEWER MANHOLE

15

2514

16

CAP & ABANDON EXISTING SANITARY SEWER

PROPOSED 12" DIP SANITARY SEWER

17

STEEL CASING PIPE

SAN-8
F&I 48" SANITARY MH

STA. 16+67.33

2515

STA. 16+97.33

PROTECT PROPOSED PIPE WITH POLYSTYRENE INSULATION SEE DETAIL ON SHEET M.4.

SAN-9 (EX)

20' SAN. SEWER

RAMP B ℄

2516

2517

N

0 20
FEET

SANITARY SEWER DETAILS

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER M.5	

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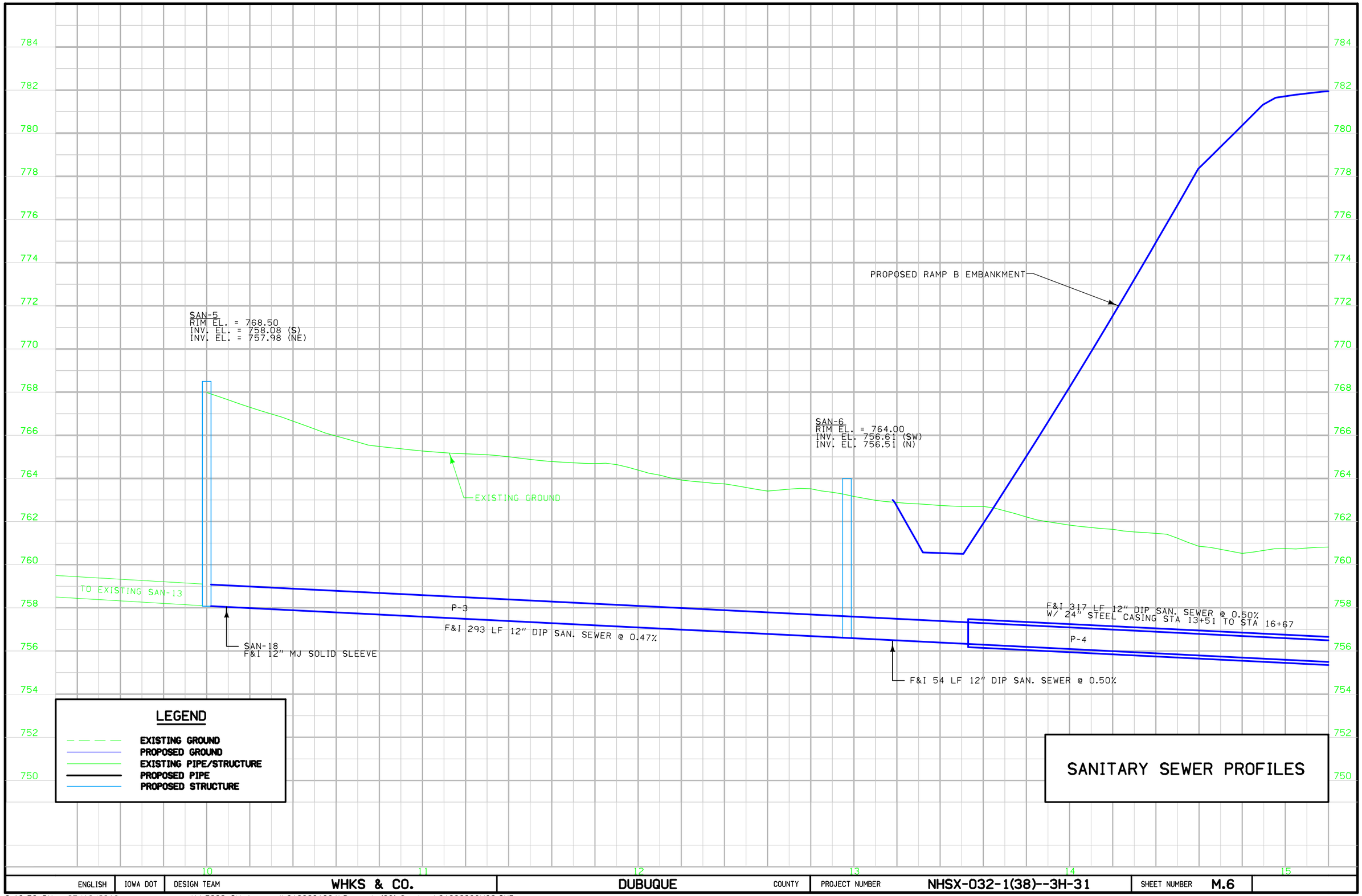

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.6

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PROPOSED RAMP B EMBANKMENT

SAN-6
RIM EL. = 764.00
INV. EL. 756.61 (SW)
INV. EL. 756.51 (N)

SAN-8
RIM EL. = 761.00
INV. EL. 754.42 (SE)
INV. EL. 754.52 (N)

EXISTING GROUND

P-4

F&I 54 LF 12" DIP SAN. SEWER @ 0.50%

F&I 317 LF 12" DIP SAN. SEWER @ 0.50%
W/ 24" STEEL CASING STA 13+51 TO STA 16+67

F&I 43 LF 12" DIP SAN. SEWER @ 0.50%

TO EXISTING SAN-9

LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- EXISTING PIPE/STRUCTURE
- PROPOSED PIPE
- PROPOSED STRUCTURE

SANITARY SEWER PROFILES

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.7

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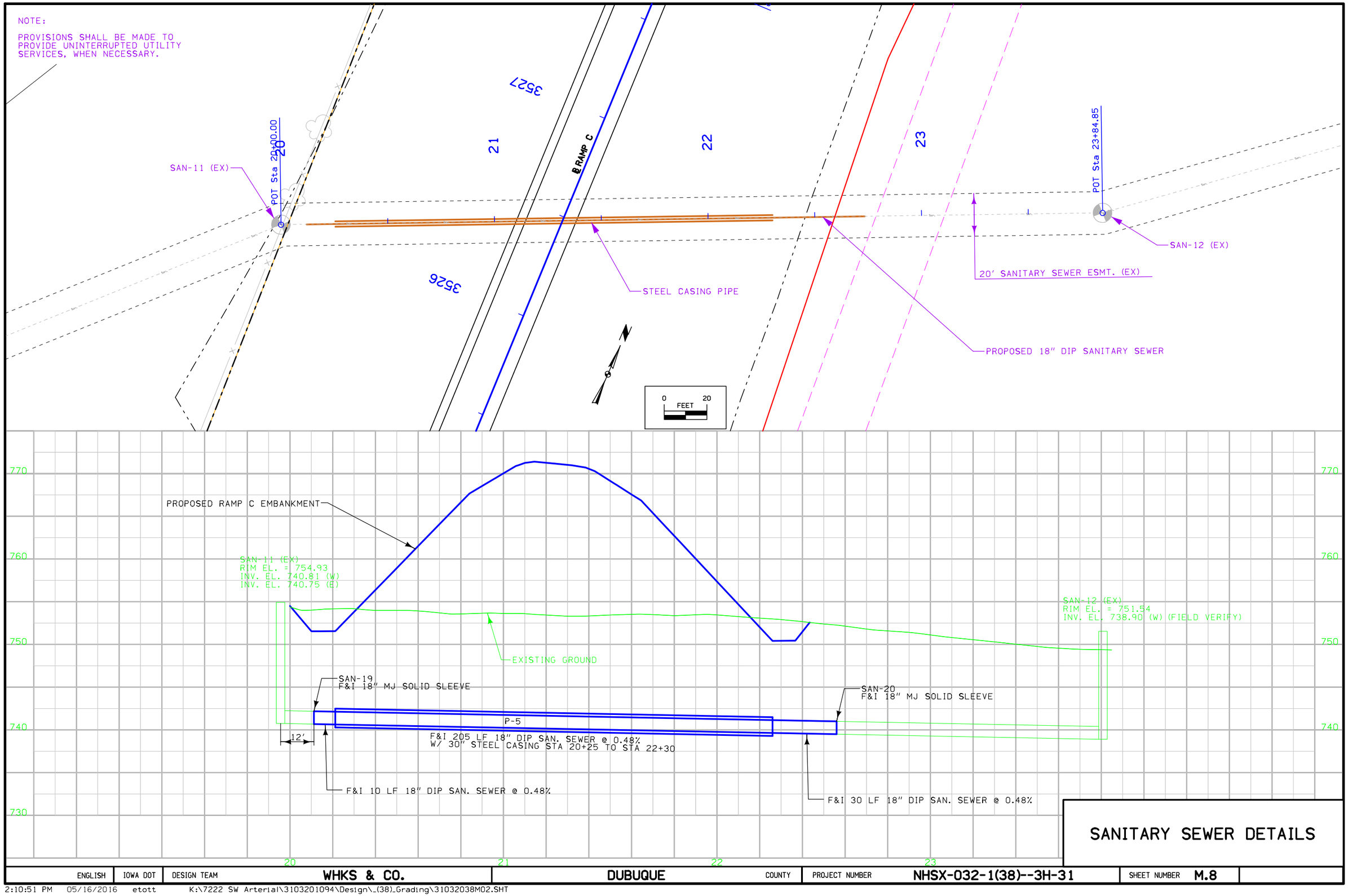
NOTE:

PROVISIONS SHALL BE MADE TO PROVIDE UNINTERRUPTED UTILITY SERVICES, WHEN NECESSARY.



SANITARY SEWER DETAILS

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.8

2:10:51 PM 05/16/2016 etott K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M02.SHT

NOTE:

PROVISIONS SHALL BE MADE TO PROVIDE UNINTERRUPTED UTILITY SERVICES, WHEN NECESSARY.

SAN-15 (EX)

POT Sta 30+00.00

CAP & ABANDON EXISTING SANITARY SEWER

POT Sta 31+81.63

SAN-14
F&I 48" SANITARY MH

SAN-16
REMOVE EXISTING SANITARY SEWER MANHOLE

CAP & ABANDON EXISTING SANITARY SEWER

SAN-17
F&I 48" SANITARY MH

20' SANITARY SEWER ESMT. (EX)

CAP & ABANDON EXISTING SANITARY SEWER

PROPOSED 18" DIP SANITARY SEWER

FUTURE BRIDGE BY OTHERS

SOUTH FORK CATFISH CREEK

0 FEET 20

SAN-14
RIM EL. = 759.04
INV. EL. = 745.72 (W) (FIELD VERIFY)
INV. EL. = 745.62 (E)

SAN-17
RIM EL. = 758.05
INV. EL. = 744.90 (W)
INV. EL. = 744.80 (E) (FIELD VERIFY)

SAN-21
F&I 18" MJ SOLID SLEEVE

EXISTING GROUND

F&I 132 LF 18" DIP SAN. SEWER @ 0.42%
W/ 30" STEEL CASING STA 30+26 TO STA 31+58

P-6

TO EXISTING SAN-15

TO EXISTING SAN-1

℄ @ RAMP C ℄ = 745.26

F&I 20 LF 18" DIP SAN. SEWER @ 0.53%

F&I 21 LF 18" DIP SAN. SEWER @ 0.53%

770 760 750 740 730

30 31 32

SANITARY SEWER DETAILS

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.9

2:10:51 PM 05/16/2016 etott K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M02.SHT

WATER MAIN COORDINATES

FITTING No.	NORTHING	EASTING
W-3	3646064.43	5658715.04
W-7	3646405.17	5658884.28
W-11	3646796.76	5659078.97
W-13	3646985.29	5659091.76
W-18	3648584.82	5657440.20
W-19	3648661.69	5657840.71
W-22	3648812.56	5658627.27
W-24	3648856.96	5658858.06
W-27	3648802.27	5659123.28
W-28	3648669.68	5659318.32
W-29	3648713.69	5659368.20
W-40	3649222.98	5659984.68
W-46	3649483.06	5660287.12
W-49	3649827.34	5660492.03
W-52	3650137.43	5660675.24
W-55	3650285.70	5660823.06
W-57	3650311.12	5660849.28
W-62	3645609.17	5659773.25
W-64	3645996.77	5659762.76
W-70	3646475.62	5659749.91
W-41	3646788.11	5659881.55
W-74	3646807.49	5659889.68
W-77	3647217.52	5660304.77
W-79	3647337.06	5660363.47
W-86	3647764.28	5660573.73
W-87	3647774.52	5660553.07
W-94	3647911.98	5660646.40
W-101	3648564.77	5660595.85
W-103	3648816.22	5660576.30
W-105	3649340.17	5660796.30
W-110	3650165.18	5661143.45
W-113	3650184.96	5661103.46
W-116	3650193.20	5661087.07

0 FEET 200

PLAN LAYOUT LEGEND
WATER MAIN

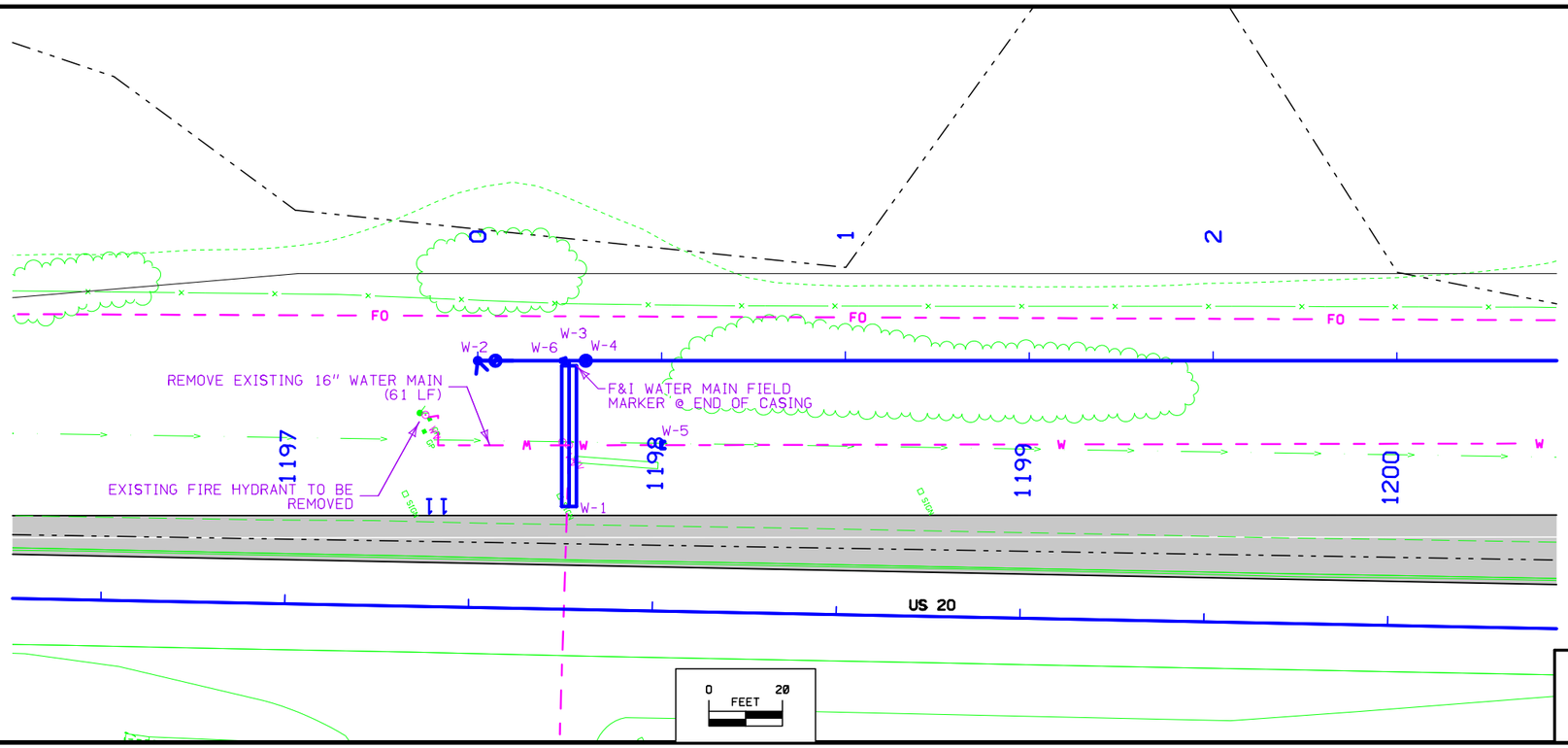
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.10

3:13:30 PM 5/18/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



W-1
STA. 0+24.80
F&I 39' 20" STEEL CASING & RESTRAINED JOINTS (TRENCHED CONSTRUCTION)
WELD TO EXISTING
F&I 12" MJ SOLID SLEEVE WITH RESTRAINED JOINTS

W-2
STA. 0+00.00
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 842.67

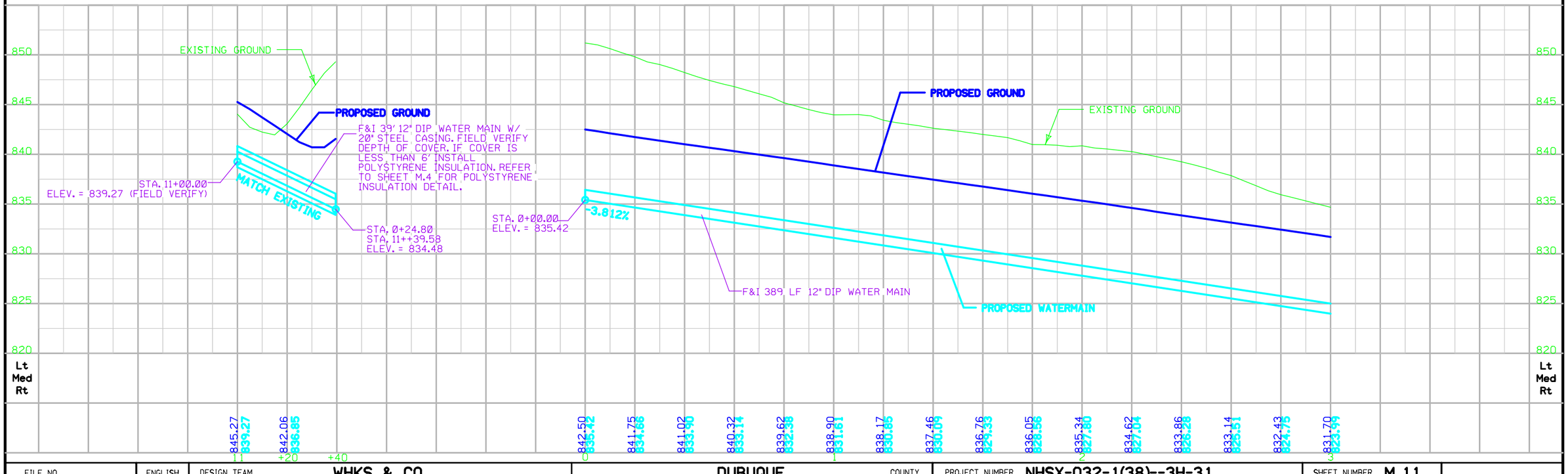
W-3
STA. 0+24.80
F&I 12"x12" MJ TEE

W-4
STA. 0+29.40
F&I 12" GATE VALVE AND BOX

W-5
STA. 0+49.80
F&I 16" MJ CAP

W-6
STA. 0+22.60
F&I 12" x 6" Reducer

PLAN & PROFILE WATER MAIN



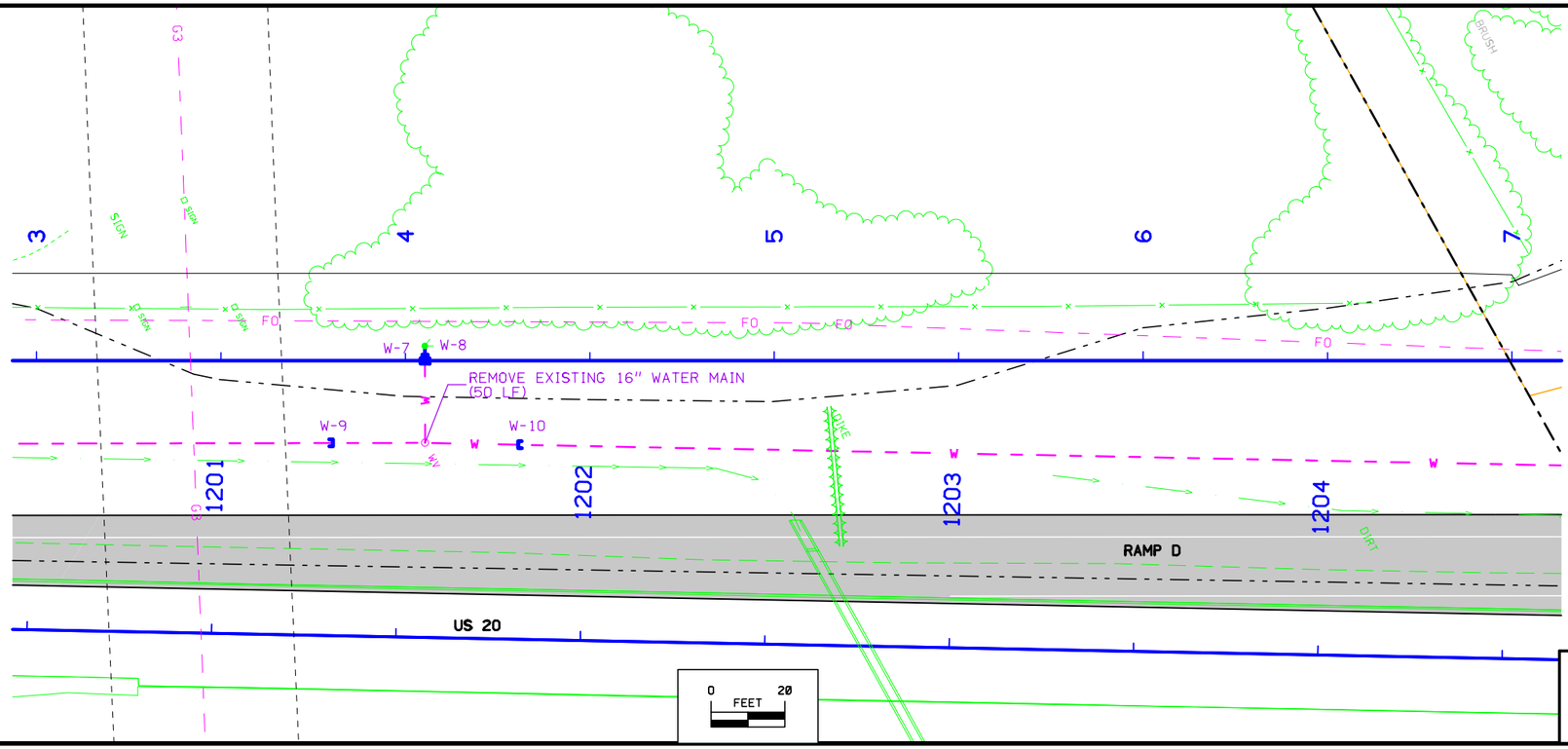
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.11

3:43:36 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



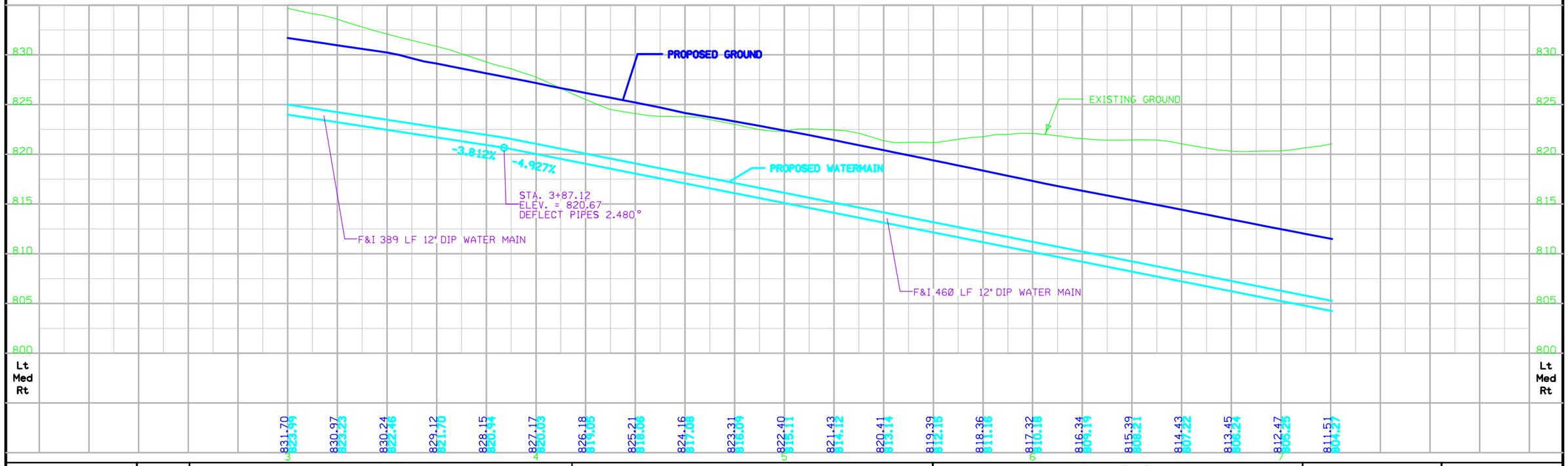
W-7
STA. 4+05.30
F&I 12" X 6" MJ TEE

W-8
STA. 4+05.30
REMOVE AND REPLACE EXISTING FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 828.60

W-9
STA. 3+80.30
F&I 16" MJ CAP

W-10
STA. 4+30.60
F&I 16" MJ CAP

PLAN & PROFILE WATER MAIN



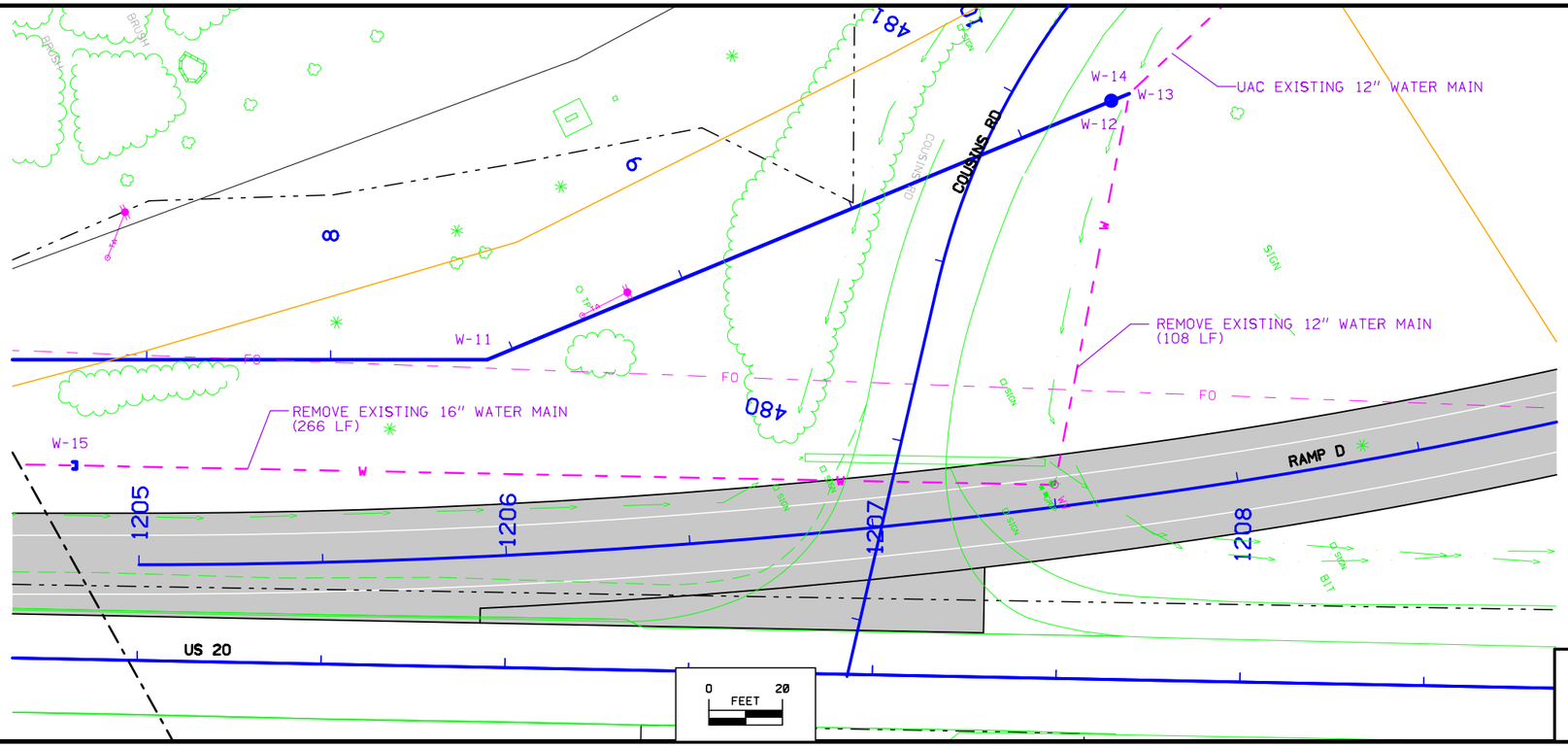
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.12

3:43:36 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



W-11
STA. 8+42.60
F&I 12" 22½° MJ BEND

W-12
STA. 10+26.30
F&I 12" GATE VALVE AND BOX

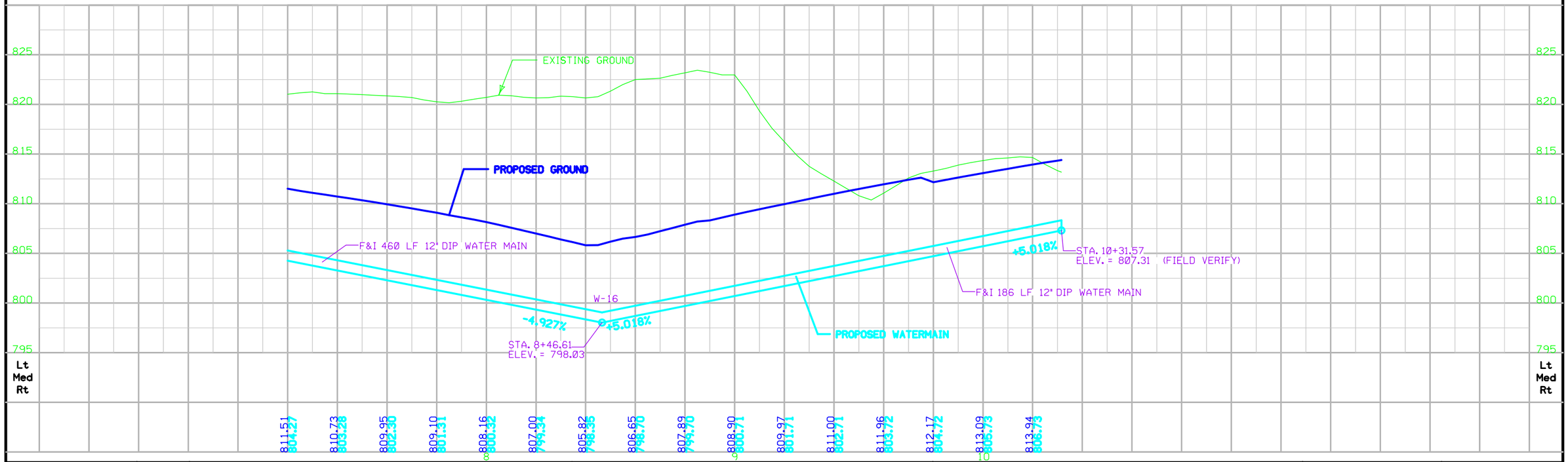
W-13
STA. 10+31.60
F&I 12" 22½° MJ BEND

W-14
STA. 10+30.10
F&I 12" MJ SOLID SLEEVE

W-15
STA. 7+30.90
F&I 16" MJ CAP

W-16
STA. 8+46.61
F&I 12" 22½°MJ BEND (VERT.)

PLAN & PROFILE WATER MAIN



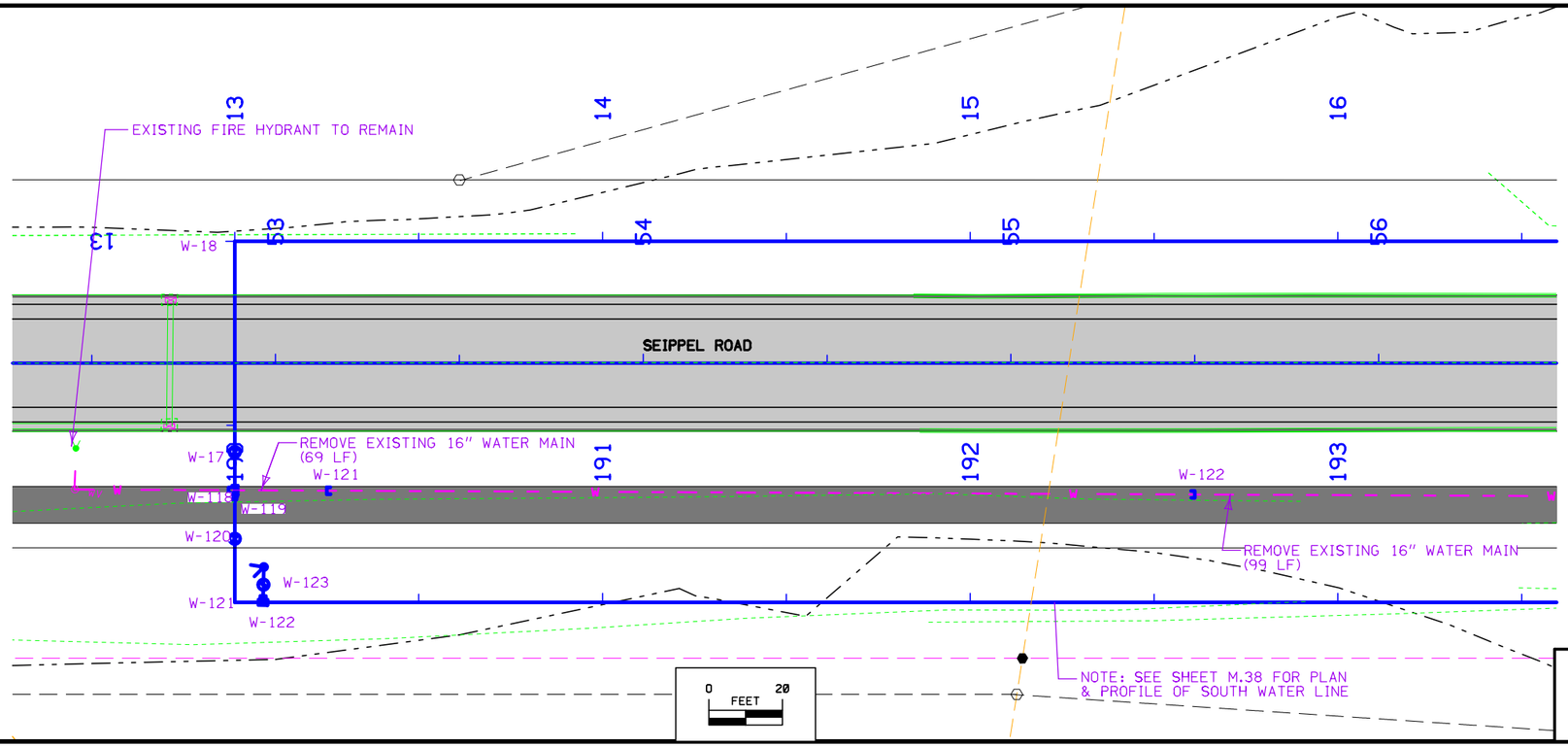
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.13

3:43:36 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



W-17
STA. 12+42.76
F&I 16" BUTTERFLY VALVE AND BOX

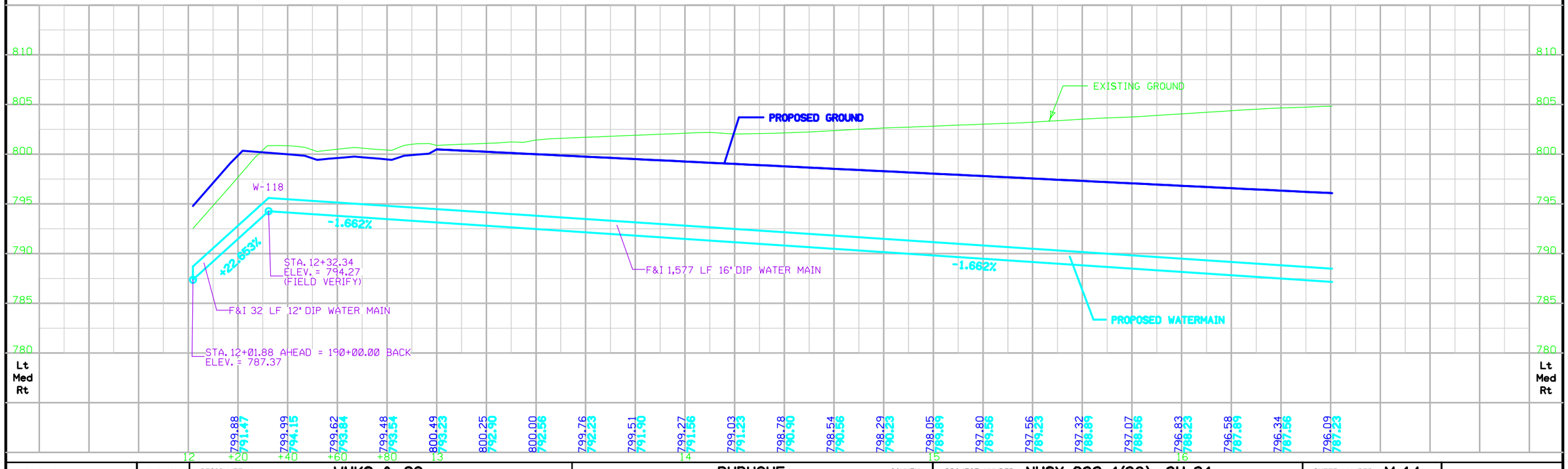
W-18
STA. 13+00.00
F&I 16" 90° MJ BEND

W-118
STA. 12+32.34
F&I 16" X 16" MJ TEE
F&I 16" 45° MJ BEND (VERT.)

W-119
STA. 12+31.34
F&I 16" X 12" MJ REDUCER

W-120
STA. 12+19.14
F&I 12" GATE VALVE AND BOX

PLAN & PROFILE WATER MAIN

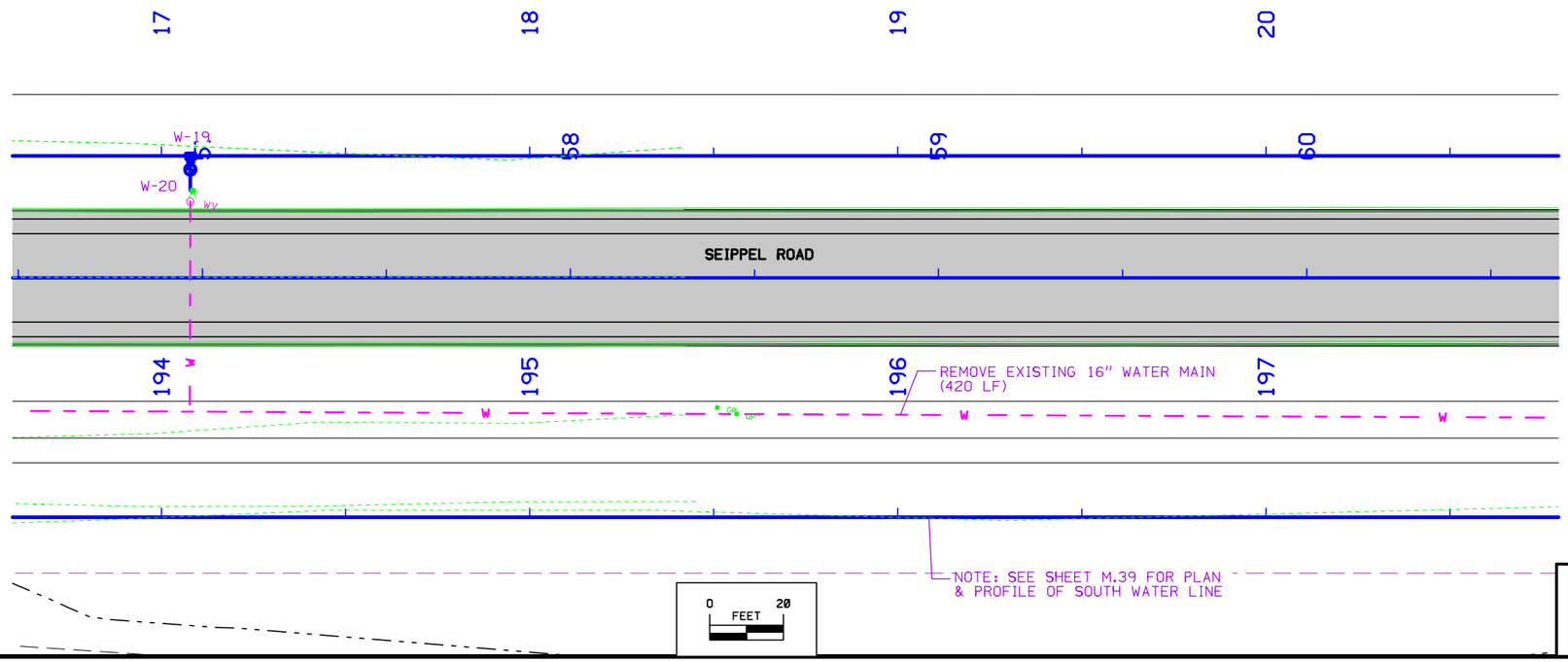


FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.14

3:43:37 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

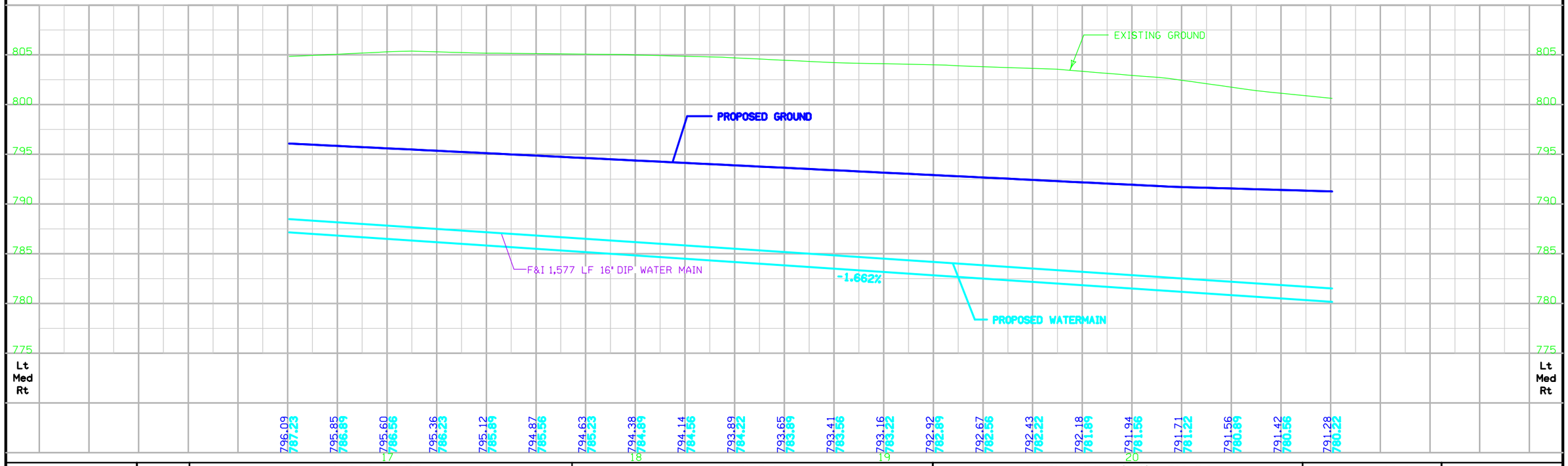
GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



W-19
STA. 17+07.80
F&I 16" X 6" MJ TEE

W-20
STA. 17+07.80
REMOVE AND REPLACE EXISTING FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 795.45

PLAN & PROFILE WATER MAIN



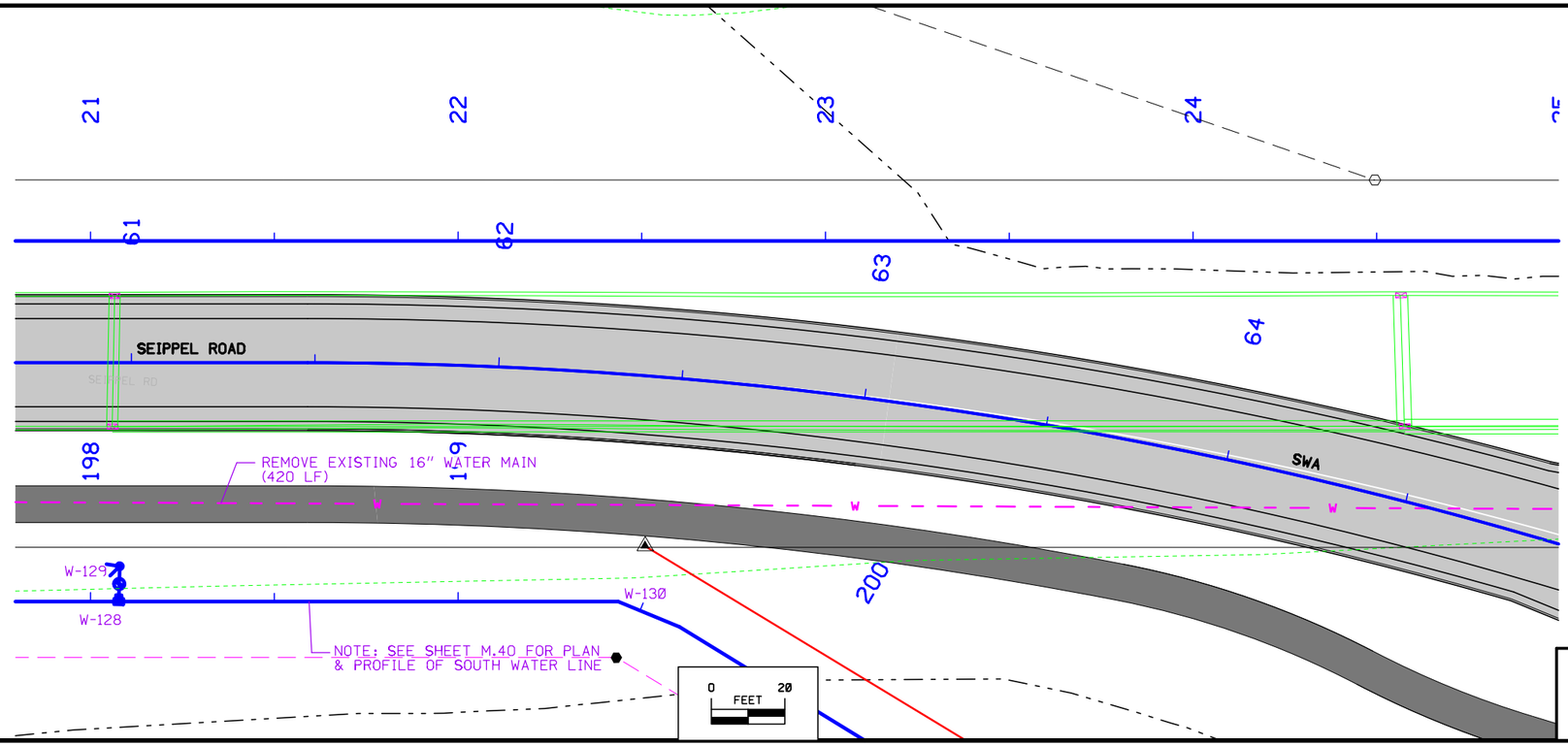
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.15

3:43:37 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

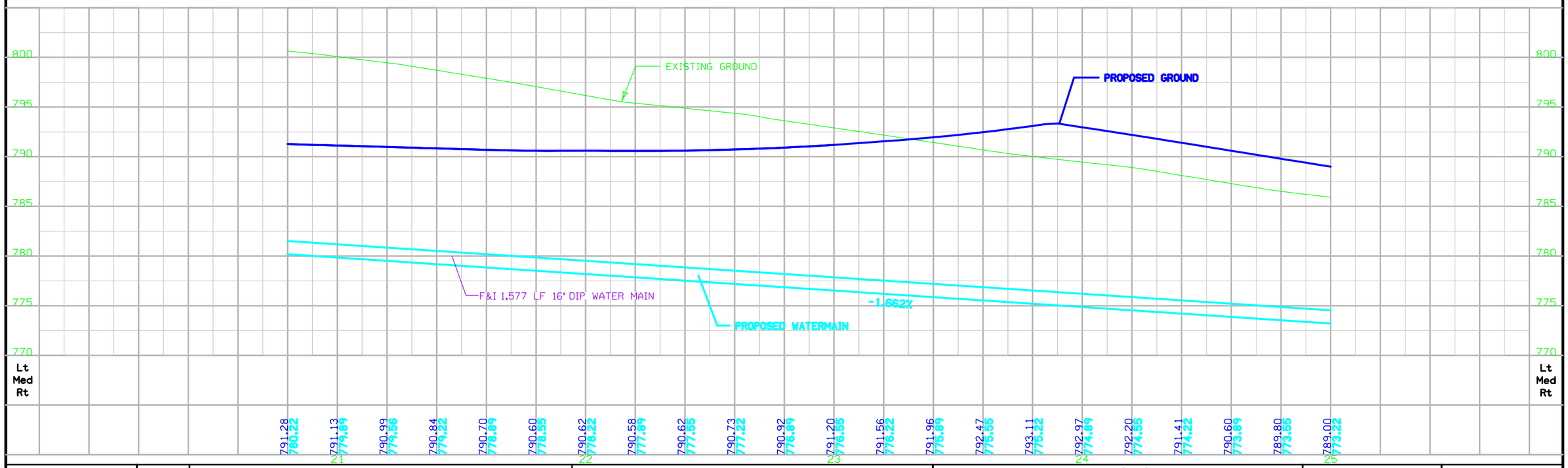
NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



PLAN & PROFILE WATER MAIN



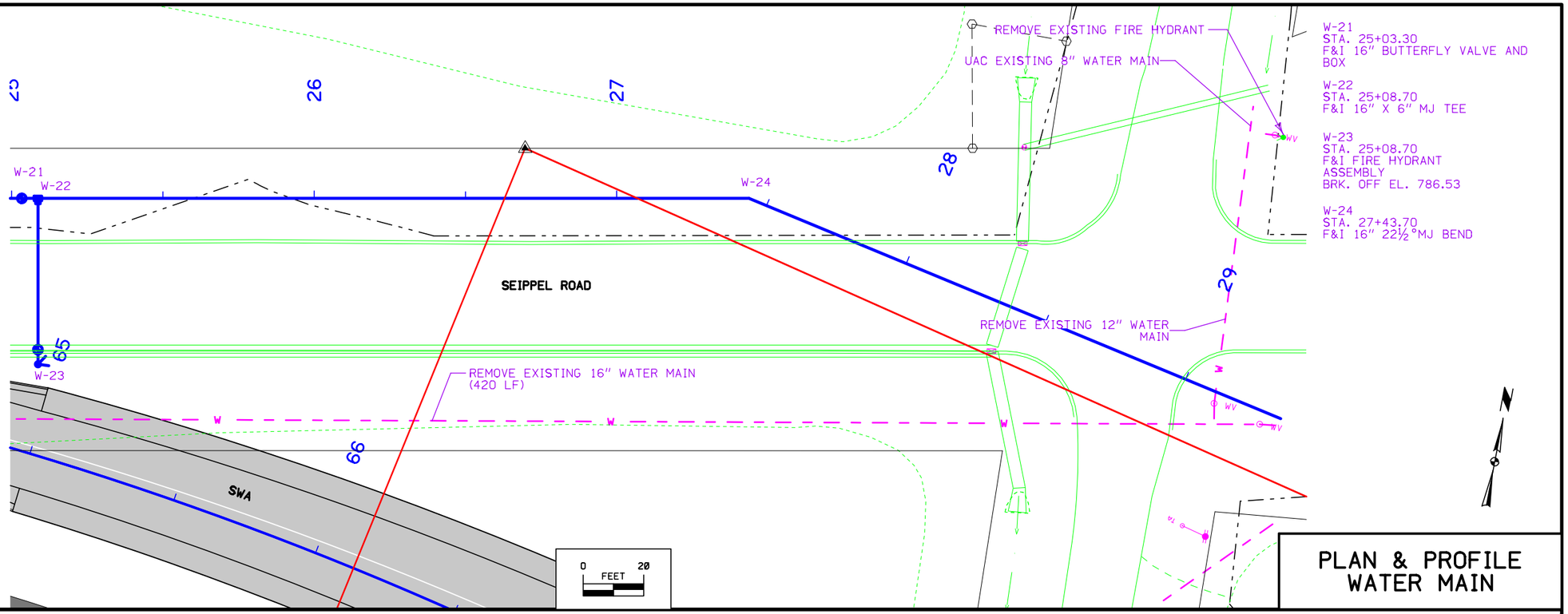
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.16

3:43:37 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



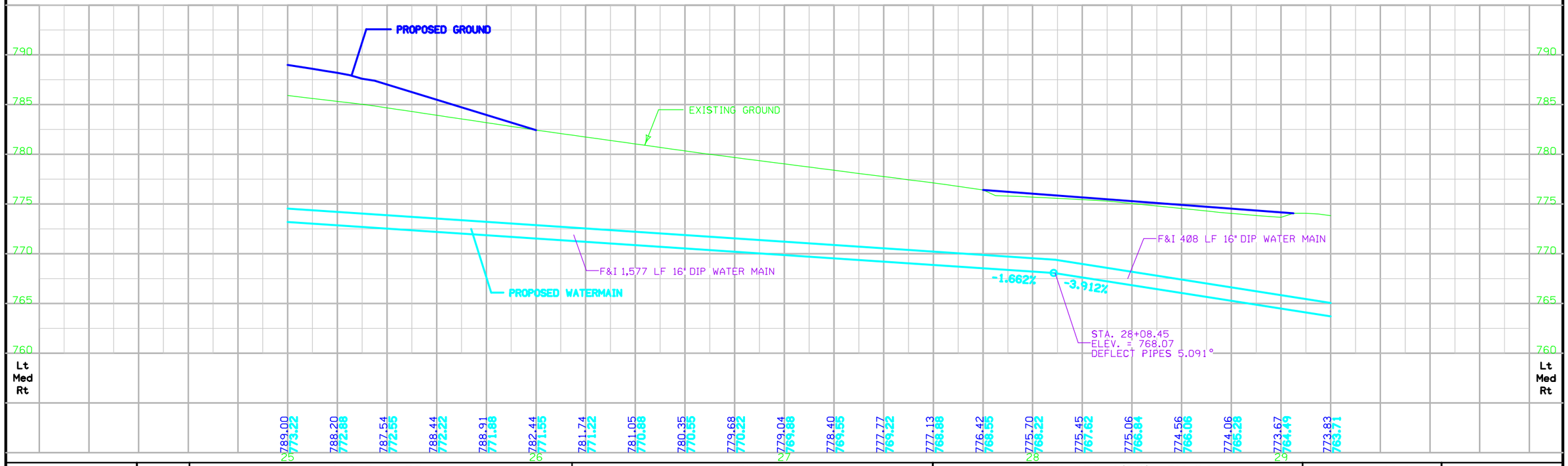
W-21
STA. 25+03.30
F&I 16" BUTTERFLY VALVE AND BOX

W-22
STA. 25+08.70
F&I 16" X 6" MJ TEE

W-23
STA. 25+08.70
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 786.53

W-24
STA. 27+43.70
F&I 16" 22½°MJ BEND

PLAN & PROFILE WATER MAIN



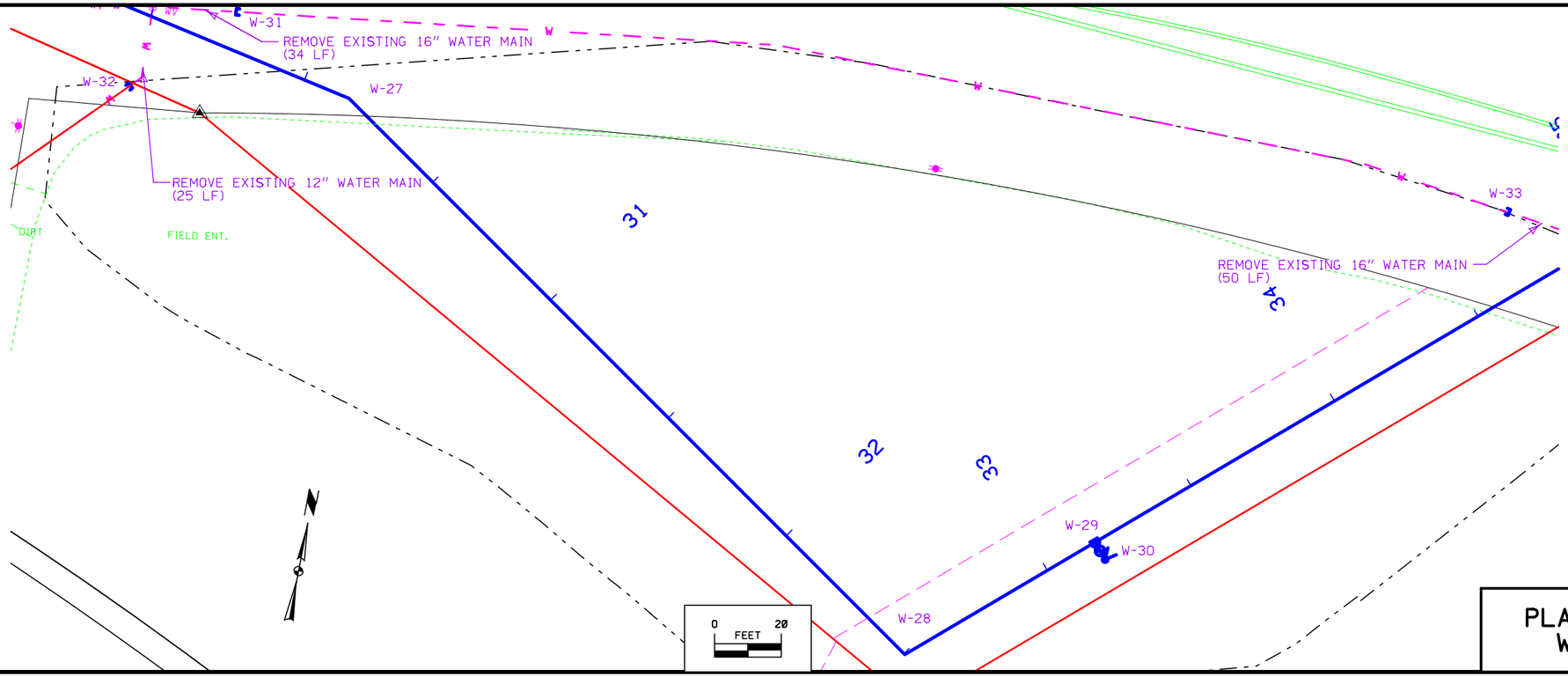
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.17

3:43:37 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



W-27
STA. 30+14.50
F&I 16" 22½°MJ BEND

W-28
STA. 32+50.30
F&I 16" 22½° MJ BEND
F&I 16" 45° MJ BEND
DEFLECT PIPES 8.0°

W-29
STA. 33+16.60
F&I 16" X 6" MJ TEE

W-30
STA. 33+16.60
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 760.93

W-31
STA. 29+73.20
F&I 16" MJ CAP

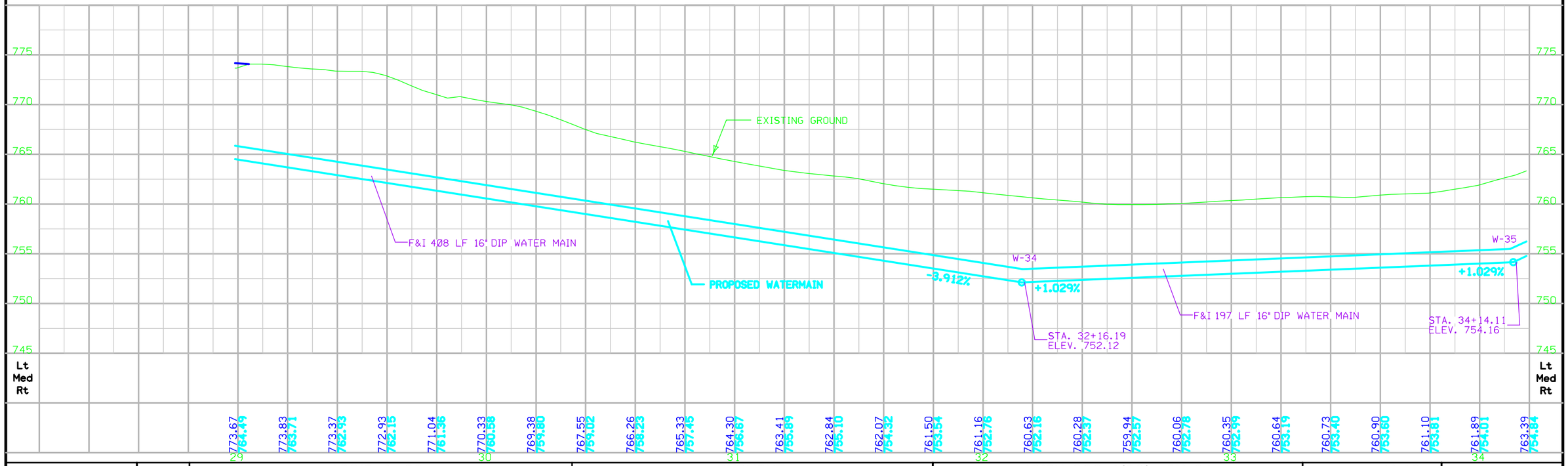
W-32
STA. 29+52.40
F&I 12" MJ CAP

W-33
STA. 34+73.10
F&I 16" MJ CAP

W-34
STA. 28+08.46
F&I 16" 11¼° MJ BEND
(VERT.)

W-35
STA. 32+16.19
F&I 16" 22½° MJ BEND
(VERT.)

PLAN & PROFILE WATER MAIN



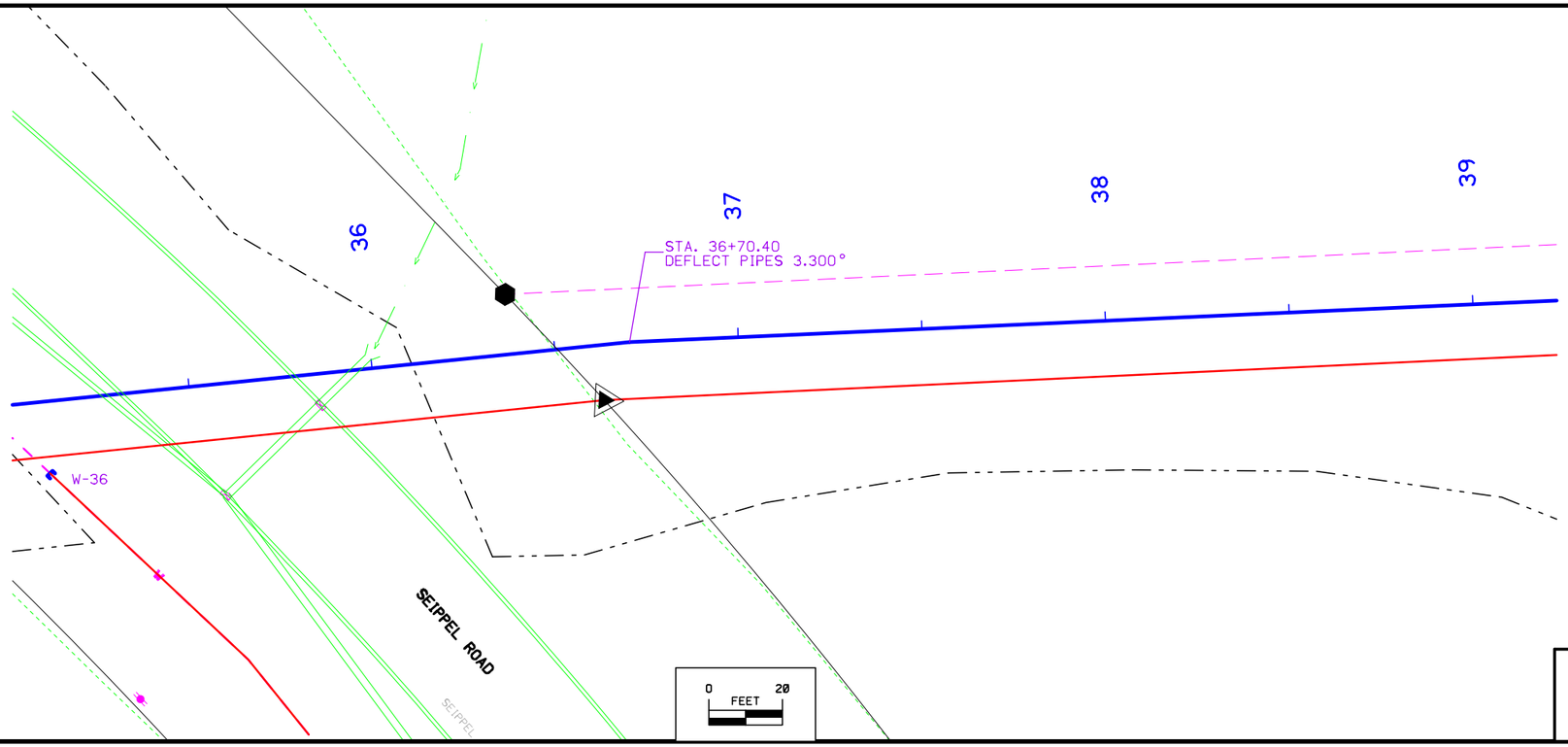
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.18

3:43:38 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



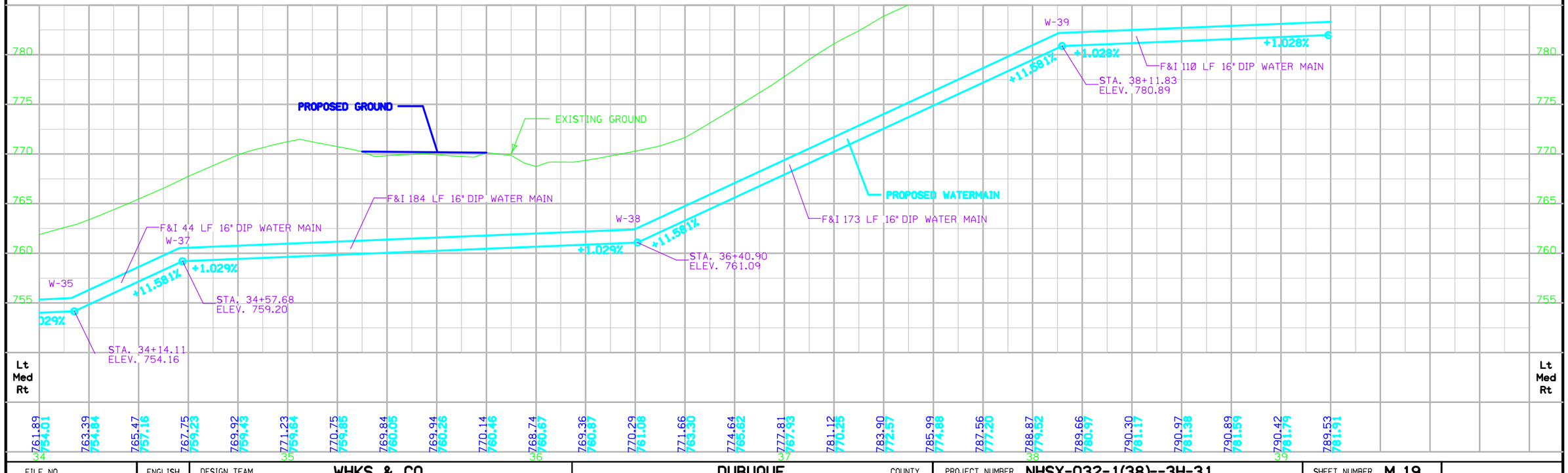
W-36
STA. 35+10.00
F&I 16" MJ CAP

W-37
STA. 34+57.68
F&I 16" 22½° MJ BEND (VERT)

W-38
STA. 36+40.90
F&I 16" 22½° MJ BEND (VERT)

W-39
STA. 38+11.83
F&I 16" 22½° MJ BEND (VERT)

PLAN & PROFILE WATER MAIN



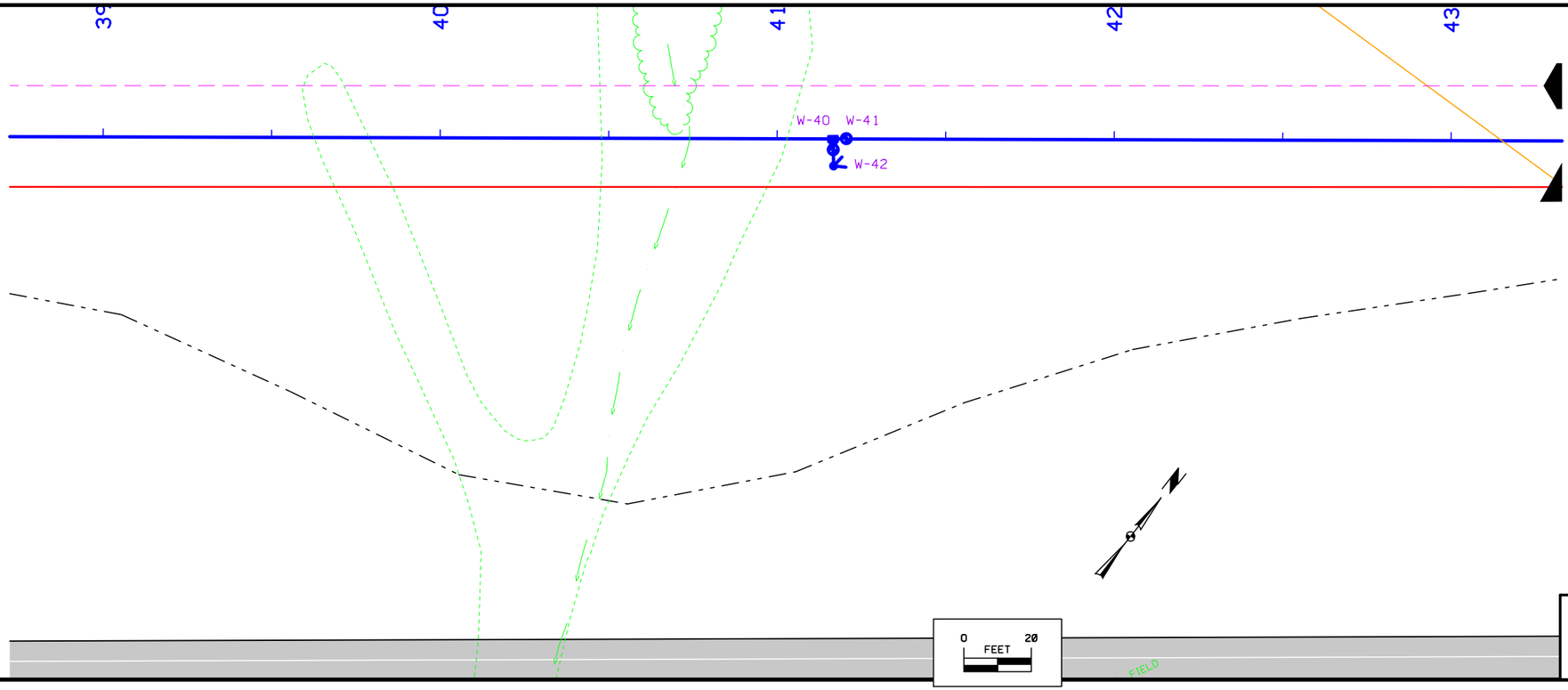
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.19

3:43:38 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



W-40
STA. 41+16.80
F&I 16" X 6" MJ TEE

W-41
STA. 41+20.50
F&I 16" BUTTERFLY VALVE AND BOX

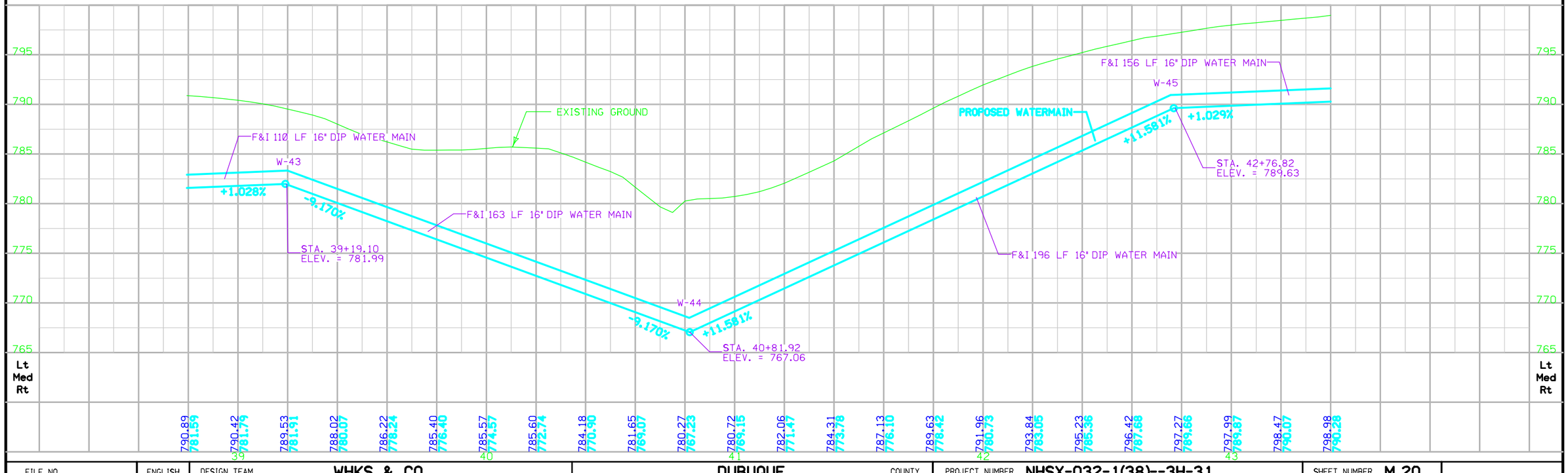
W-42
STA. 41+16.80
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 781.86

W-43
STA. 39+19.10
F&I 16" 22½° MJ BEND (VERT.)

W-44
STA. 40+81.92
F&I 16" 45° MJ BEND (VERT.)

W-45
STA. 42+76.82
F&I 16" 22½° MJ BEND (VERT.)

PLAN & PROFILE WATER MAIN



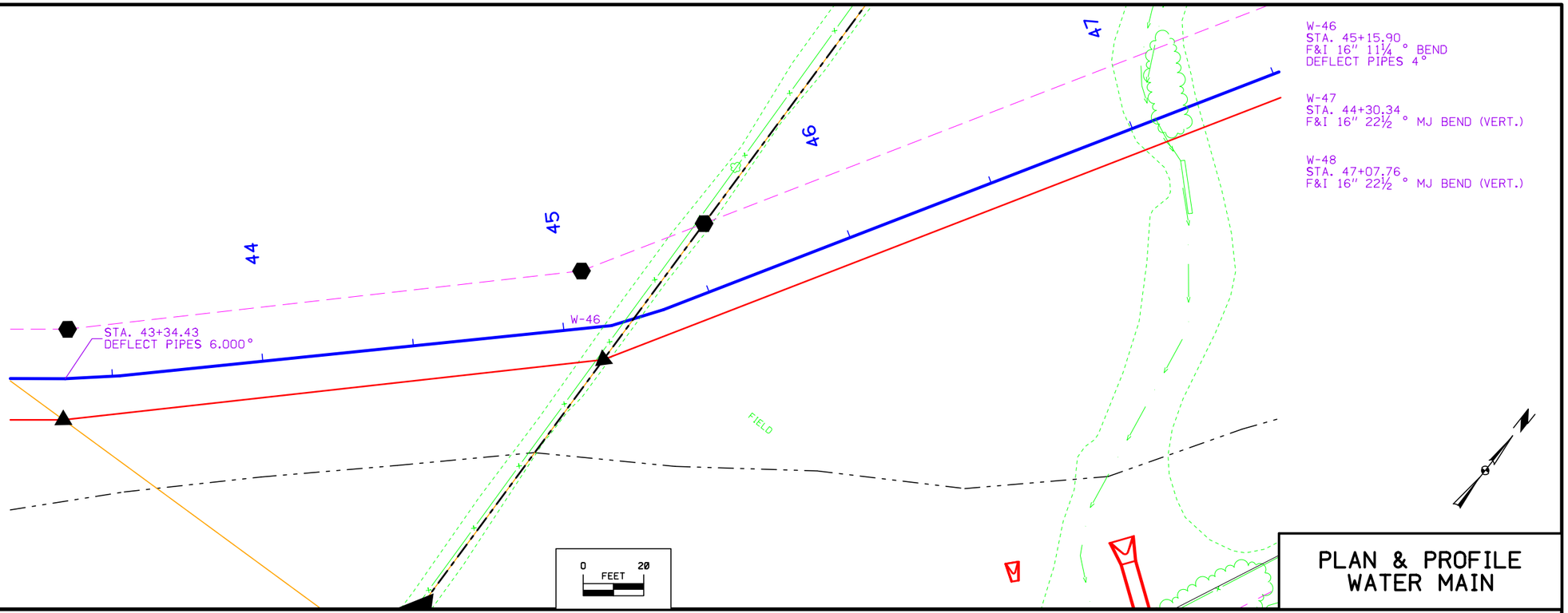
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.20

3:43:39 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.

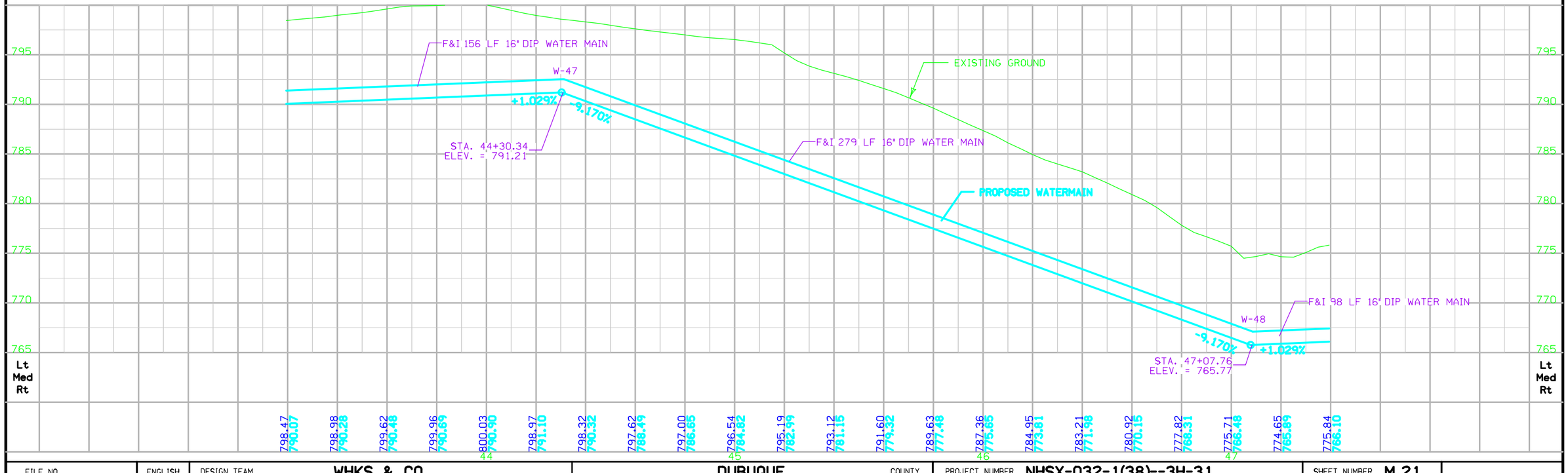


W-46
STA. 45+15.90
F&I 16" 11¼ ° BEND
DEFLECT PIPES 4°

W-47
STA. 44+30.34
F&I 16" 22½ ° MJ BEND (VERT.)

W-48
STA. 47+07.76
F&I 16" 22½ ° MJ BEND (VERT.)

PLAN & PROFILE WATER MAIN



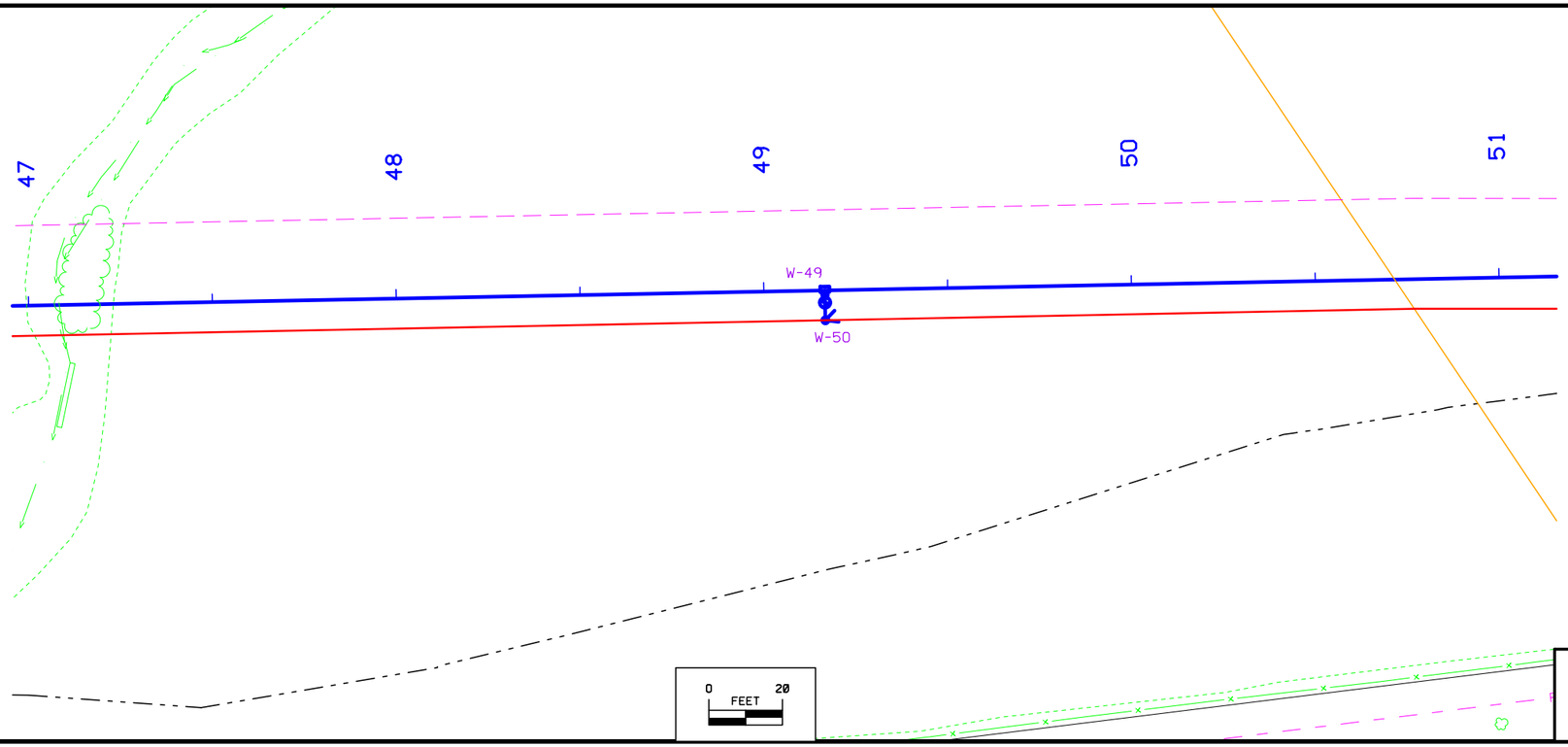
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.21

3:43:39 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

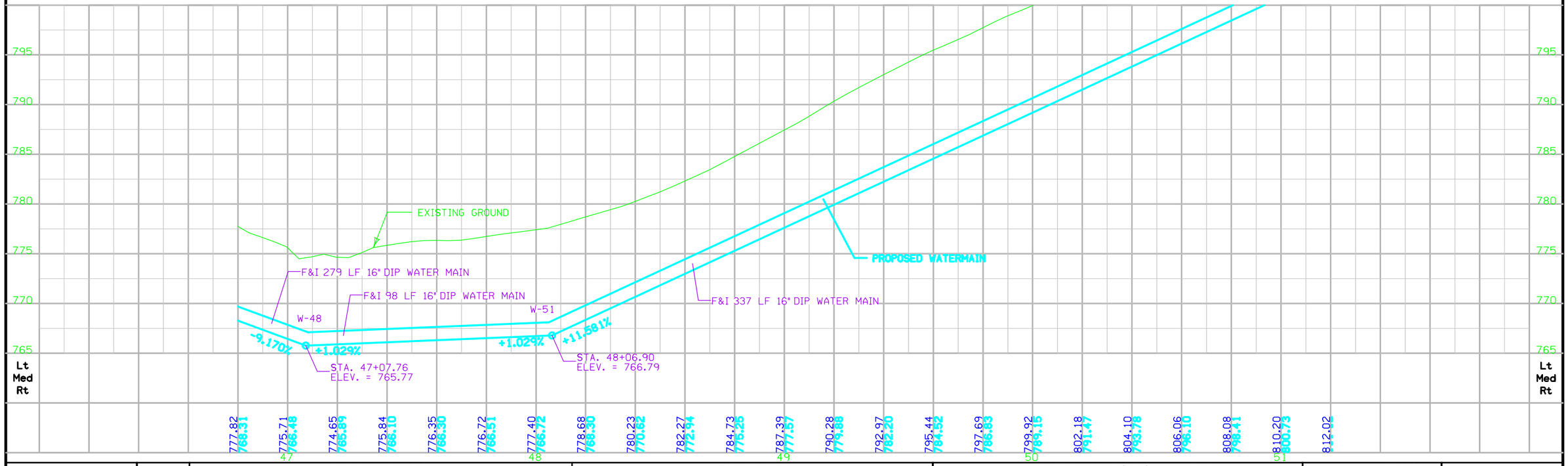
NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



PLAN & PROFILE WATER MAIN



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.22

3:43:39 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

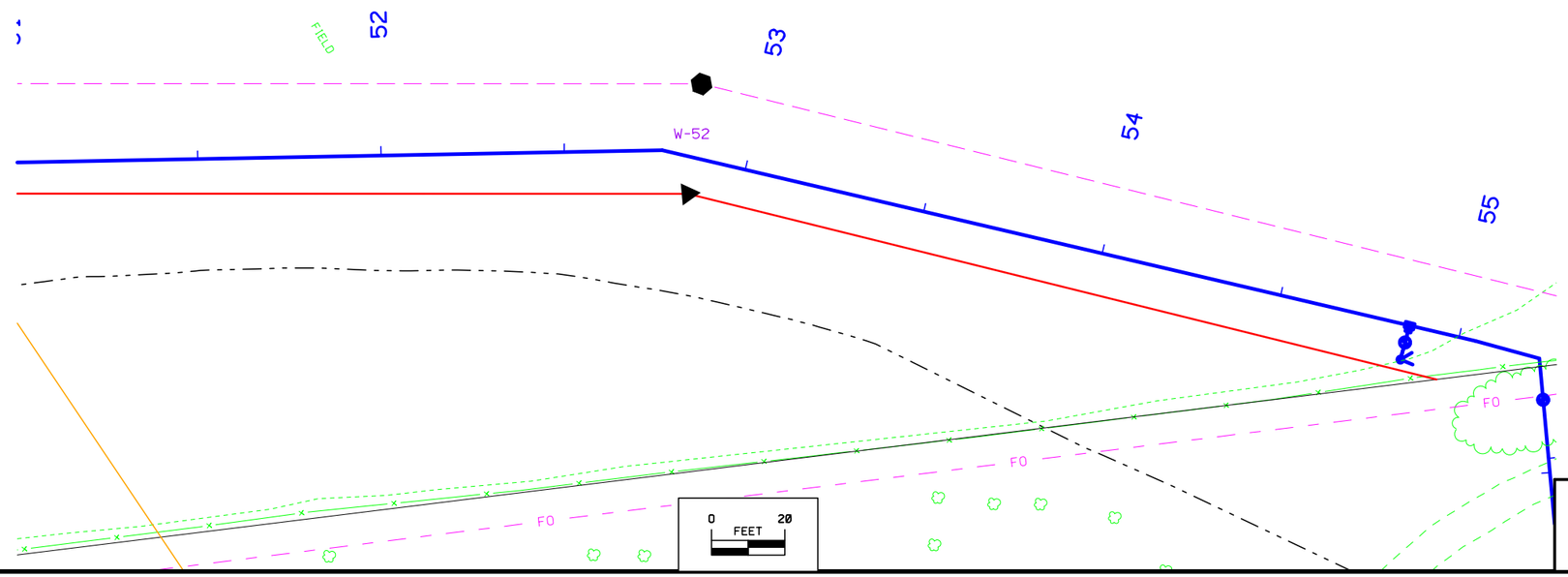
ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.

W-52
STA. 52+76.70
F&I 16" 11¼° BEND
DEFLECT PIPE 3°

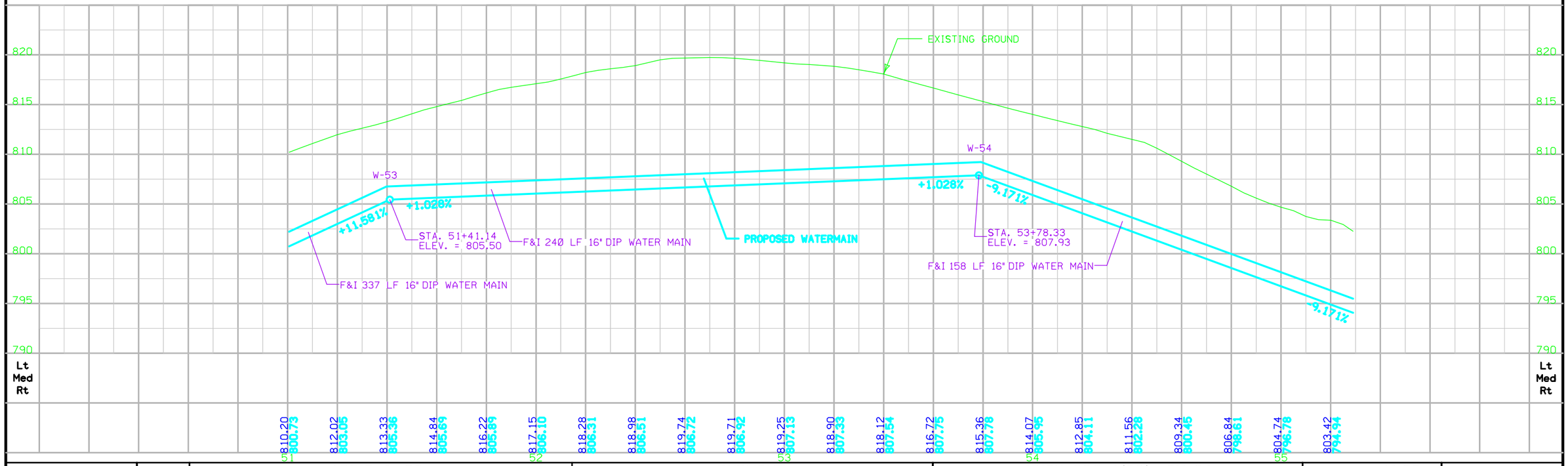
W-53
STA. 51+41.14
F&I 16" 22½° MJ BEND (VERT.)

W-54
STA. 53+78.33
F&I 16" 22½° MJ BEND (VERT.)



N

PLAN & PROFILE WATER MAIN



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.23

3:43:39 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.

NOTE: SEE SHEET M.36 FOR PLAN & PROFILE OF WATER LINE WEST OF US 20

W-55
STA. 54+85.80
F&I 16" X 6" MJ TEE

W-56
STA. 54+85.50
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 806.40

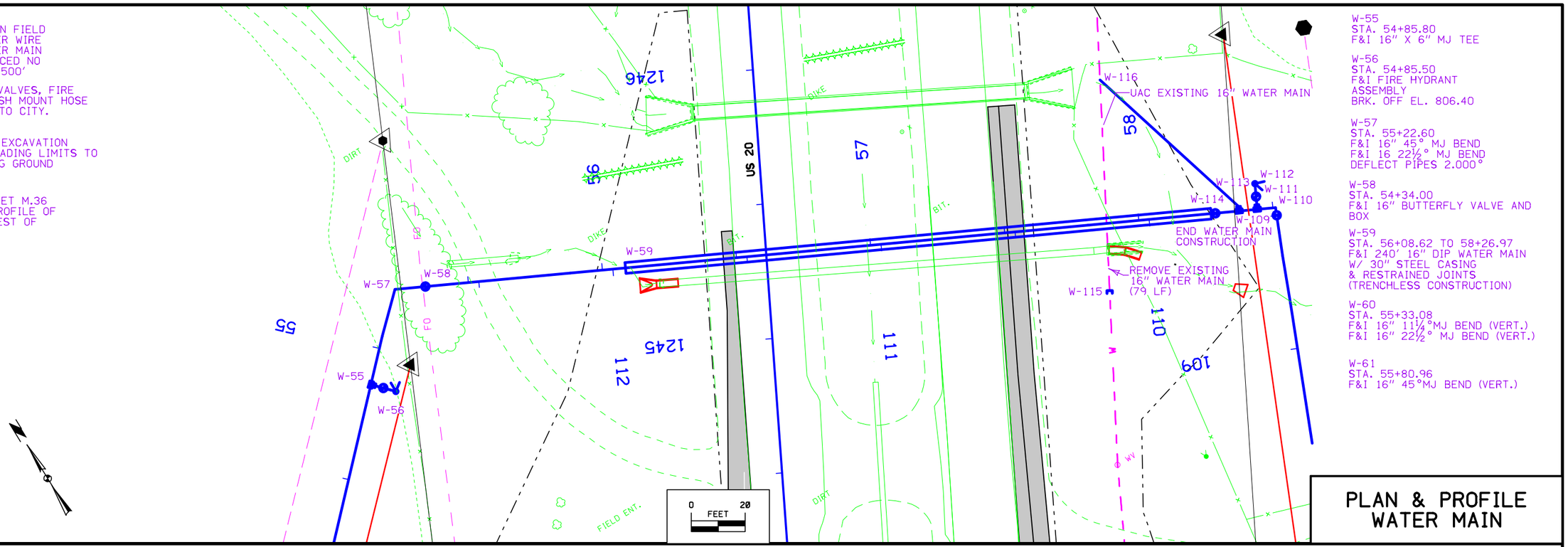
W-57
STA. 55+22.60
F&I 16" 45° MJ BEND
F&I 16 22½° MJ BEND
DEFLECT PIPES 2.000°

W-58
STA. 54+34.00
F&I 16" BUTTERFLY VALVE AND BOX

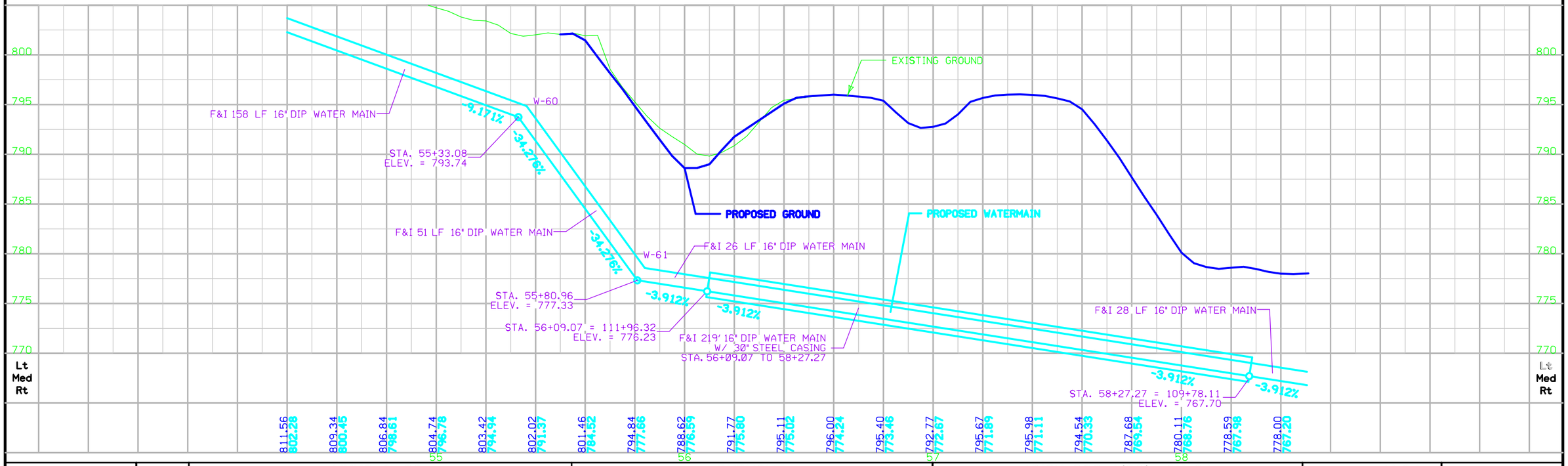
W-59
STA. 56+08.62 TO 58+26.97
F&I 240' 16" DIP WATER MAIN W/ 30" STEEL CASING & RESTRAINED JOINTS (TRENCHLESS CONSTRUCTION)

W-60
STA. 55+33.08
F&I 16" 11¼°MJ BEND (VERT.)
F&I 16" 22½° MJ BEND (VERT.)

W-61
STA. 55+80.96
F&I 16" 45°MJ BEND (VERT.)



PLAN & PROFILE WATER MAIN



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.24

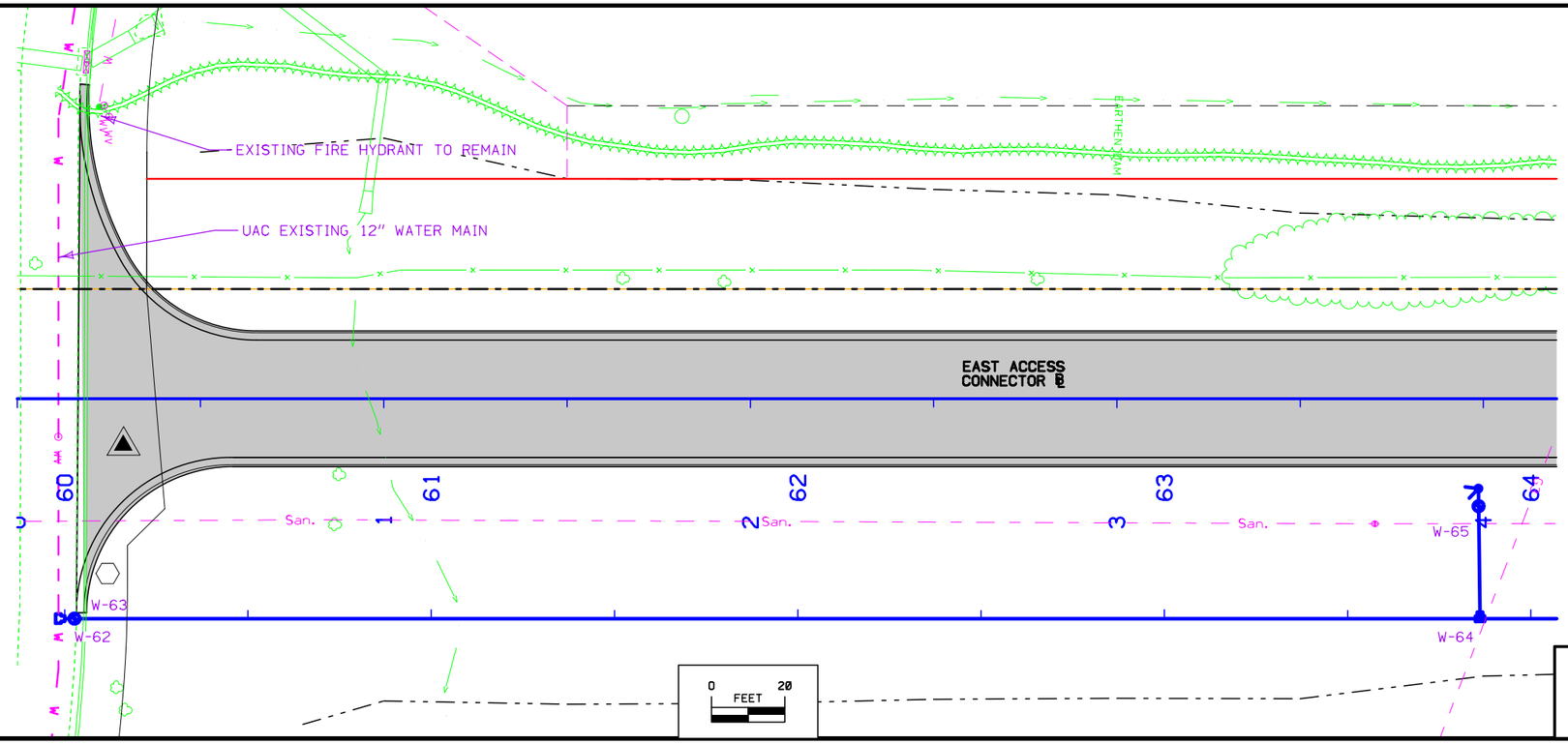
3:43:39 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.

FOR INFORMATION ONLY



W-62
STA. 60+00.00
F&I 12"x12" TEE

W-63
STA. 60+02.70
F&I 12" GATE VALVE AND BOX

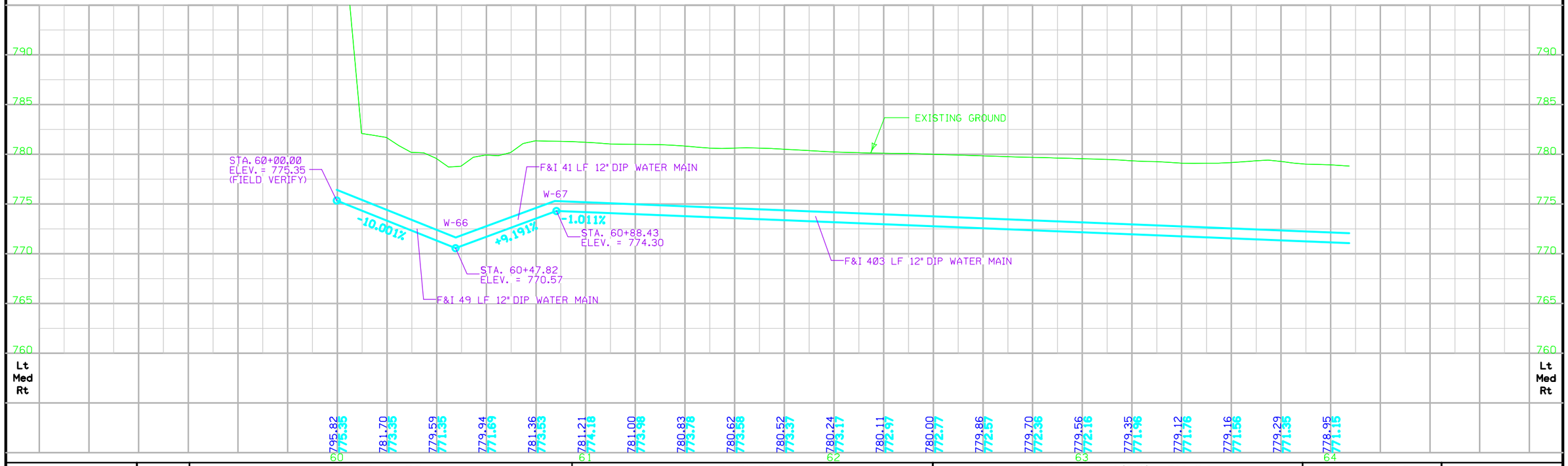
W-64
STA. 63+86.12
F&I 12" X 6" MJ TEE

W-65
STA. 63+86.12
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 792.80

W-66
STA. 60+47.82
F&I 12" 45° MJ BEND (VERT.)
DEFLECT PIPES 3.012°

W-67
STA. 60+88.43
F&I 12" 22½° MJ BEND (VERT.)

PLAN & PROFILE WATER MAIN



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.25

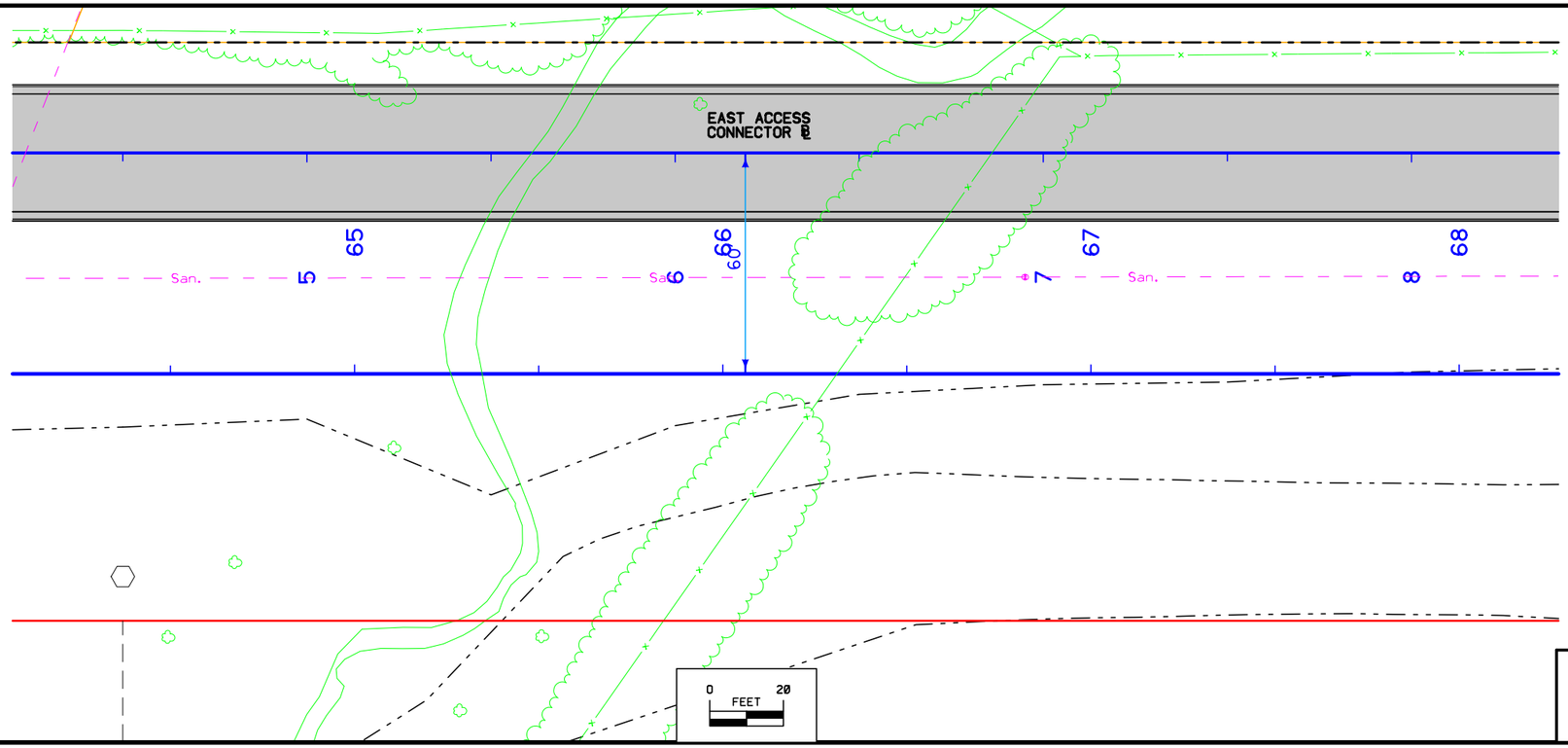
3:43:40 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.

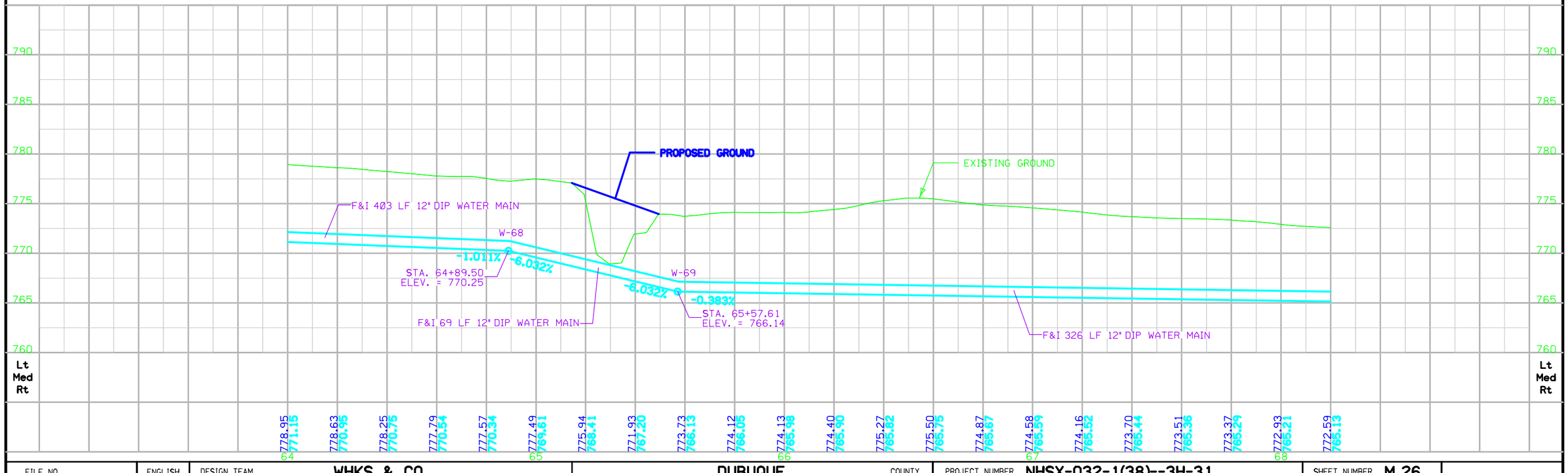
FOR INFORMATION ONLY



W-68
STA. 64+89.50
F&I 12" 11¼° MJ BEND (VERT.)

W-69
STA. 65+57.61
F&I 12" 11¼° MJ BEND (VERT.)
DEFLECT PIPES 1.438°

PLAN & PROFILE
WATER MAIN



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.26

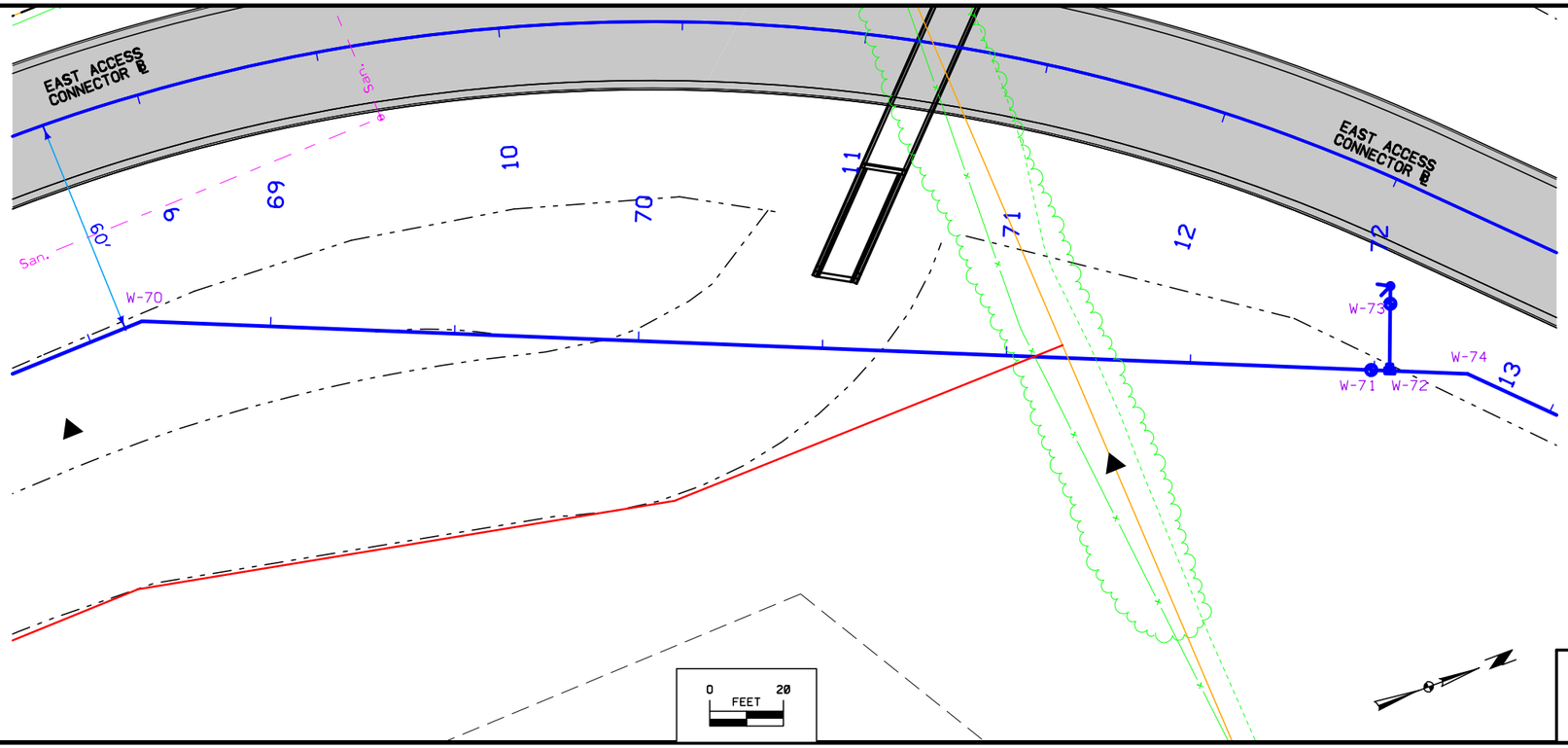
3:43:40 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.

FOR INFORMATION ONLY



W-70
STA. 66+65.00
F&I 12" 22½ ° BEND
DEFLECT PIPES 2.000°

W-71
STA. 71+99.20
F&I 12" GATE VALVE AND BOX

W-72
STA. 72+04.20
F&I 12" X 6" MJ TEE

W-73
STA. 72+04.20
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 779.50

W-74
STA. 72+25.40
F&I 12" 22½° BEND

W-75
STA. 71+97.65
F&I 12" 22½° MJ BEND (VERT.)
DEFLECT PIPES 1.910°

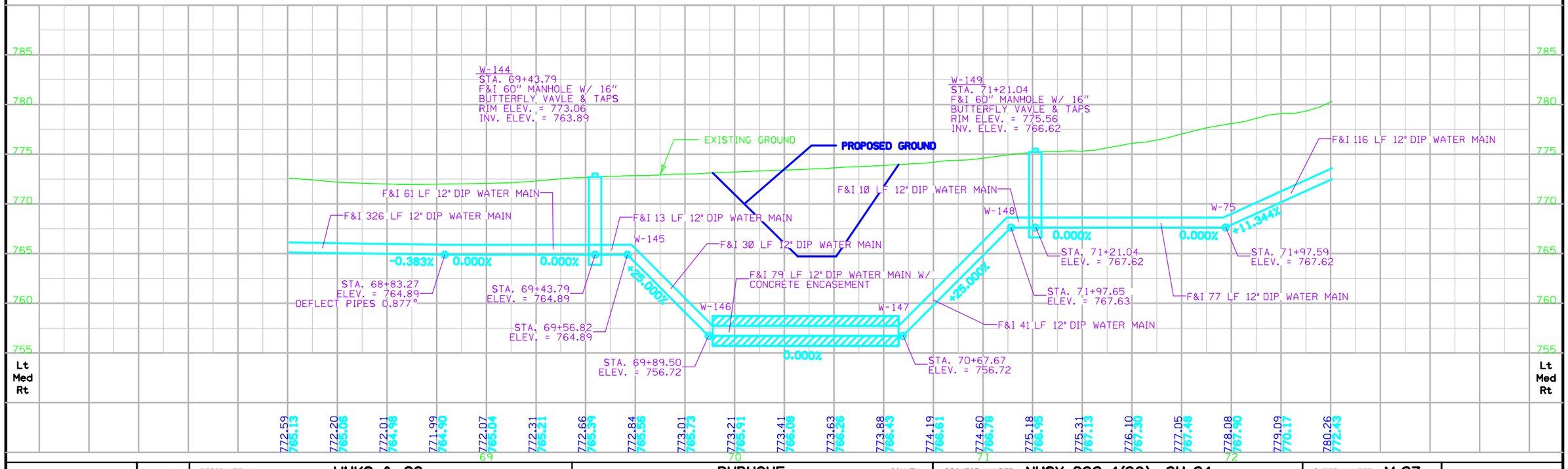
W-145
STA. 69+56.82
F&I 12" 45° MJ BEND (VERT.)

W-146
STA. 69+89.50
F&I 12" 45° MJ BEND (VERT.)

W-147
STA. 70+67.67
F&I 12" 45° MJ BEND (VERT.)

W-148
STA. 71+11.27
F&I 12" 45° MJ BEND (VERT.)

PLAN & PROFILE WATER MAIN



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.27

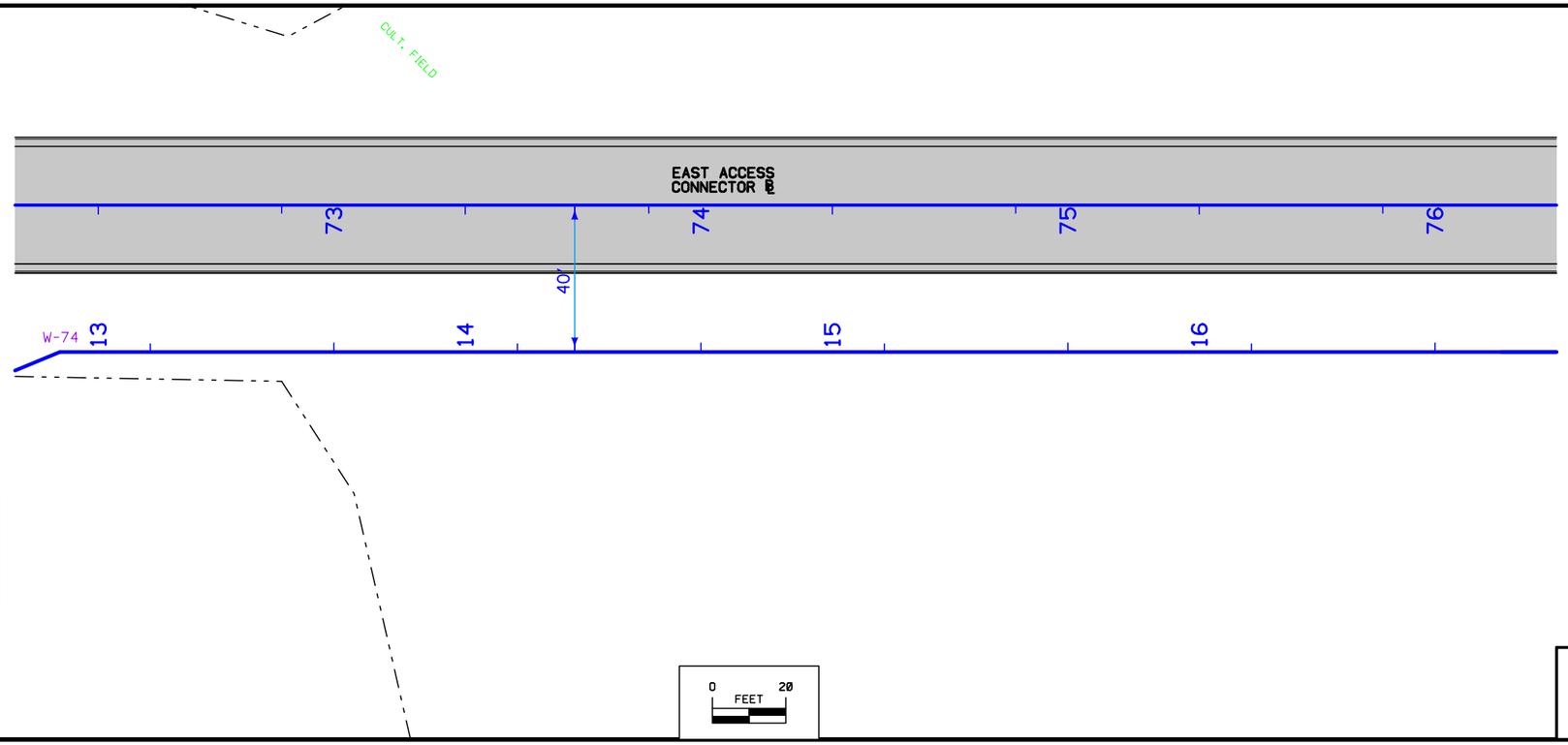
3:13:37 PM 5/18/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.

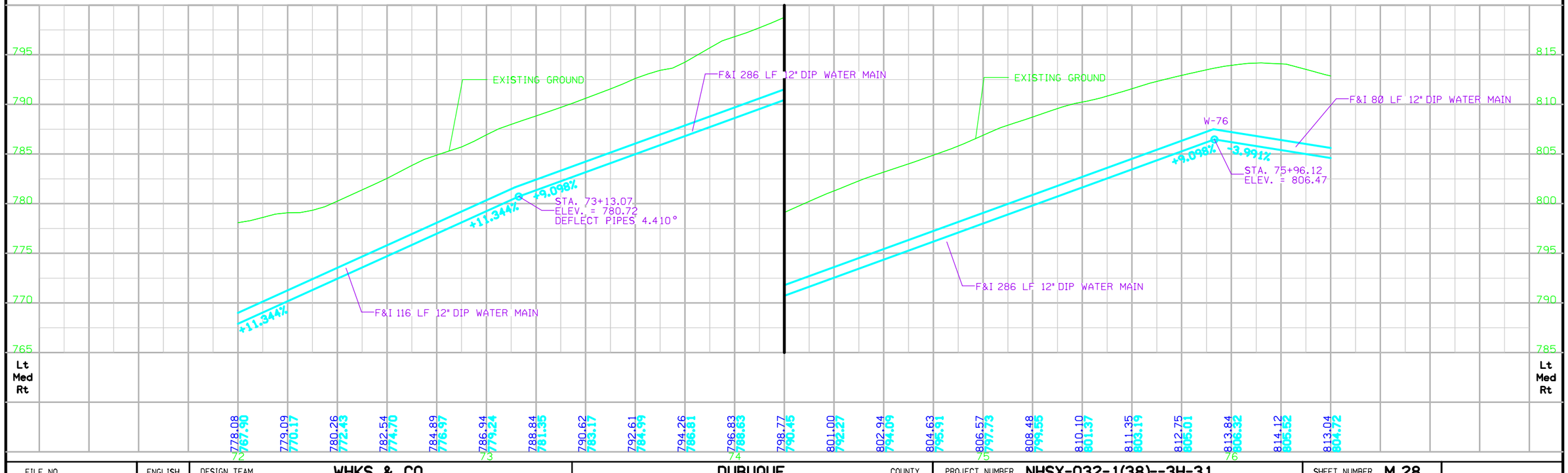
W-76
STA. 75+96.12
F&I 12" 22½° MJ BEND (VERT.)
DEFLECT PIPES 6.569°



FOR INFORMATION ONLY

0 20 FEET

PLAN & PROFILE
WATER MAIN



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.28

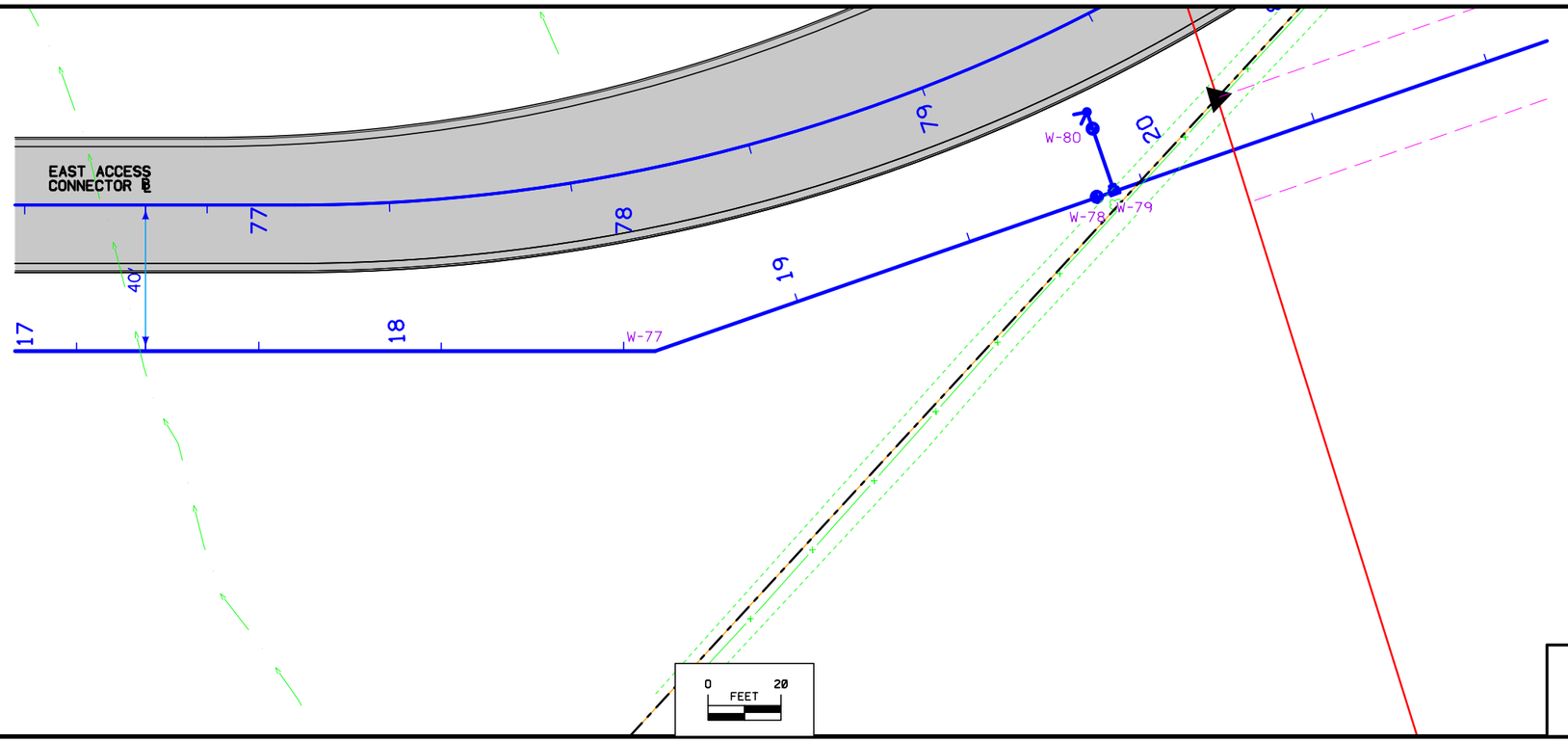
3:43:41 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.

FOR INFORMATION ONLY



W-77
STA. 78+08.70
F&I 12" 11¼° MJ BEND
DEFLECT PIPES 8.000°

W-78
STA. 79+36.90
F&I 12" GATE VALVE AND BOX

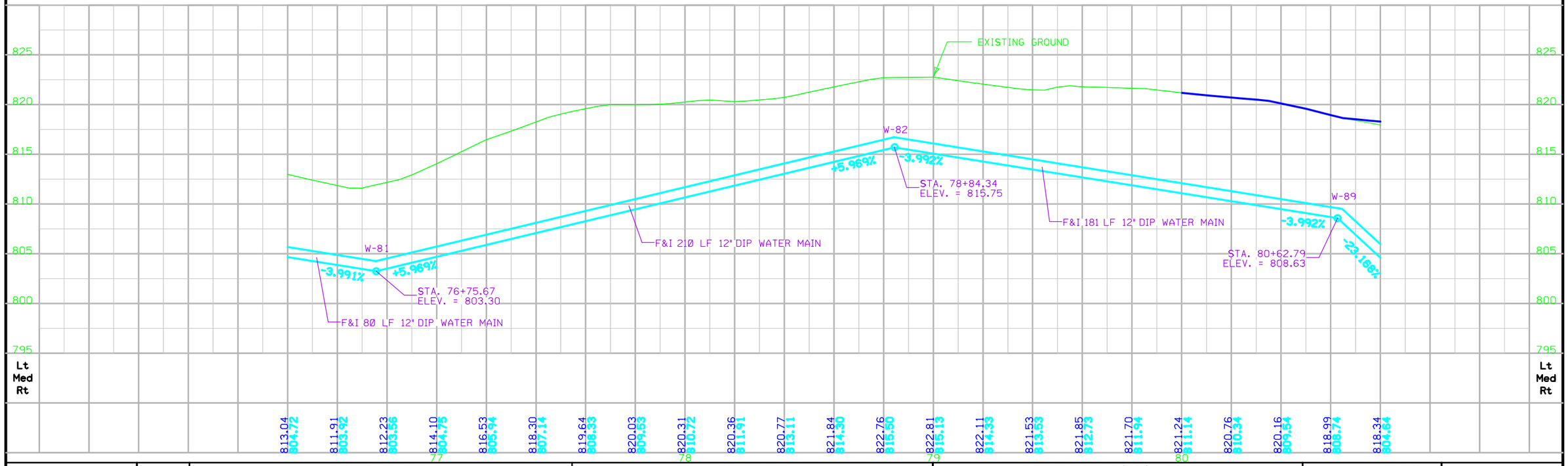
W-79
STA. 79+41.90
F&I 12" X 6" MJ TEE

W-80
STA. 79+41.90
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 784.95

W-81
STA. 76+75.67
F&I 12" 22½° MJ BEND (VERT.)

W-82
STA. 78+84.34
F&I 12" 22½° MJ BEND (VERT.)

PLAN & PROFILE WATER MAIN



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.29

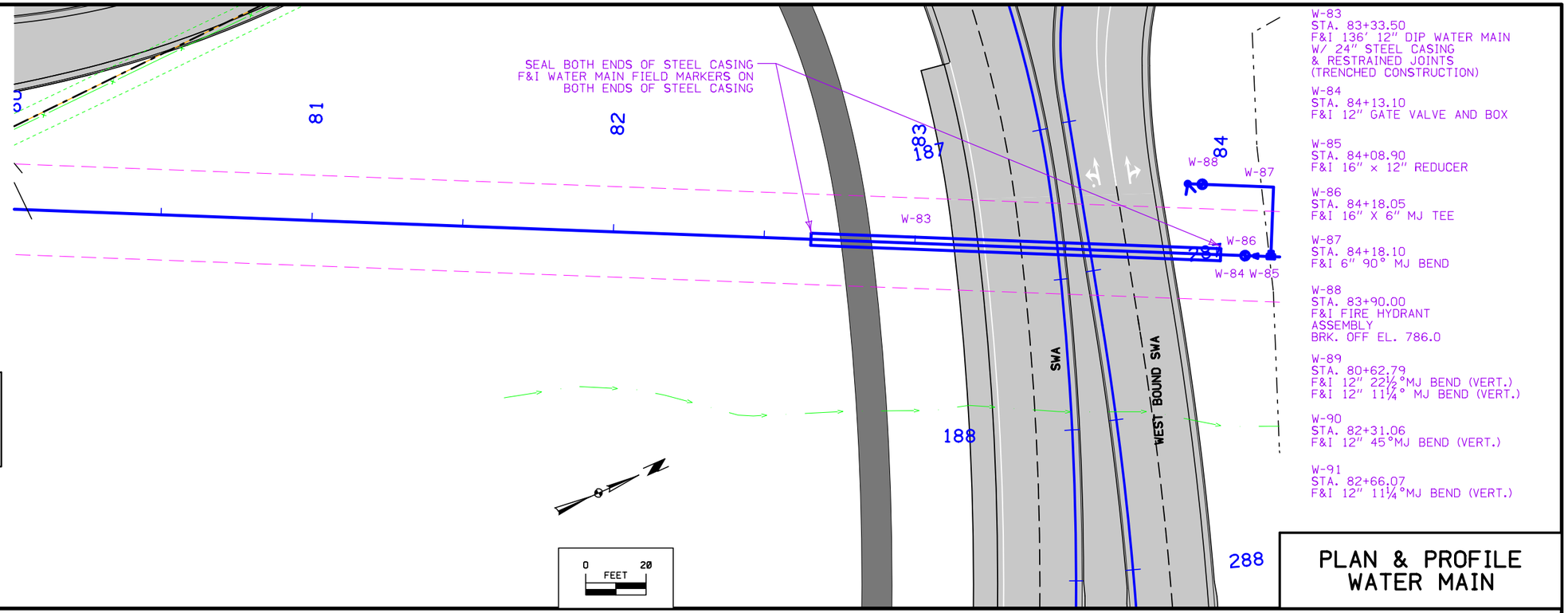
3:43:41 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.

FOR INFORMATION ONLY



W-83
STA. 83+33.50
F&I 136' 12" DIP WATER MAIN
W/ 24" STEEL CASING
& RESTRAINED JOINTS
(TRENCHED CONSTRUCTION)

W-84
STA. 84+13.10
F&I 12" GATE VALVE AND BOX

W-85
STA. 84+08.90
F&I 16" x 12" REDUCER

W-86
STA. 84+18.05
F&I 16" X 6" MJ TEE

W-87
STA. 84+18.10
F&I 6" 90° MJ BEND

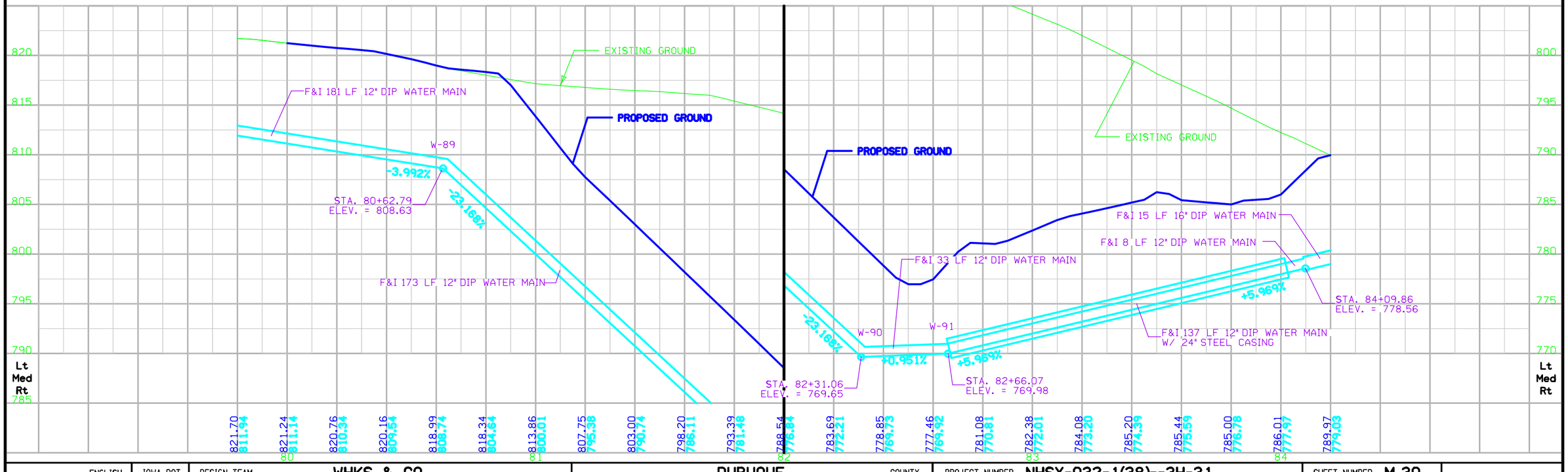
W-88
STA. 83+90.00
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 786.0

W-89
STA. 80+62.79
F&I 12" 22½°MJ BEND (VERT.)
F&I 12" 11¼° MJ BEND (VERT.)

W-90
STA. 82+31.06
F&I 12" 45°MJ BEND (VERT.)

W-91
STA. 82+66.07
F&I 12" 11¼°MJ BEND (VERT.)

PLAN & PROFILE WATER MAIN



ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.30

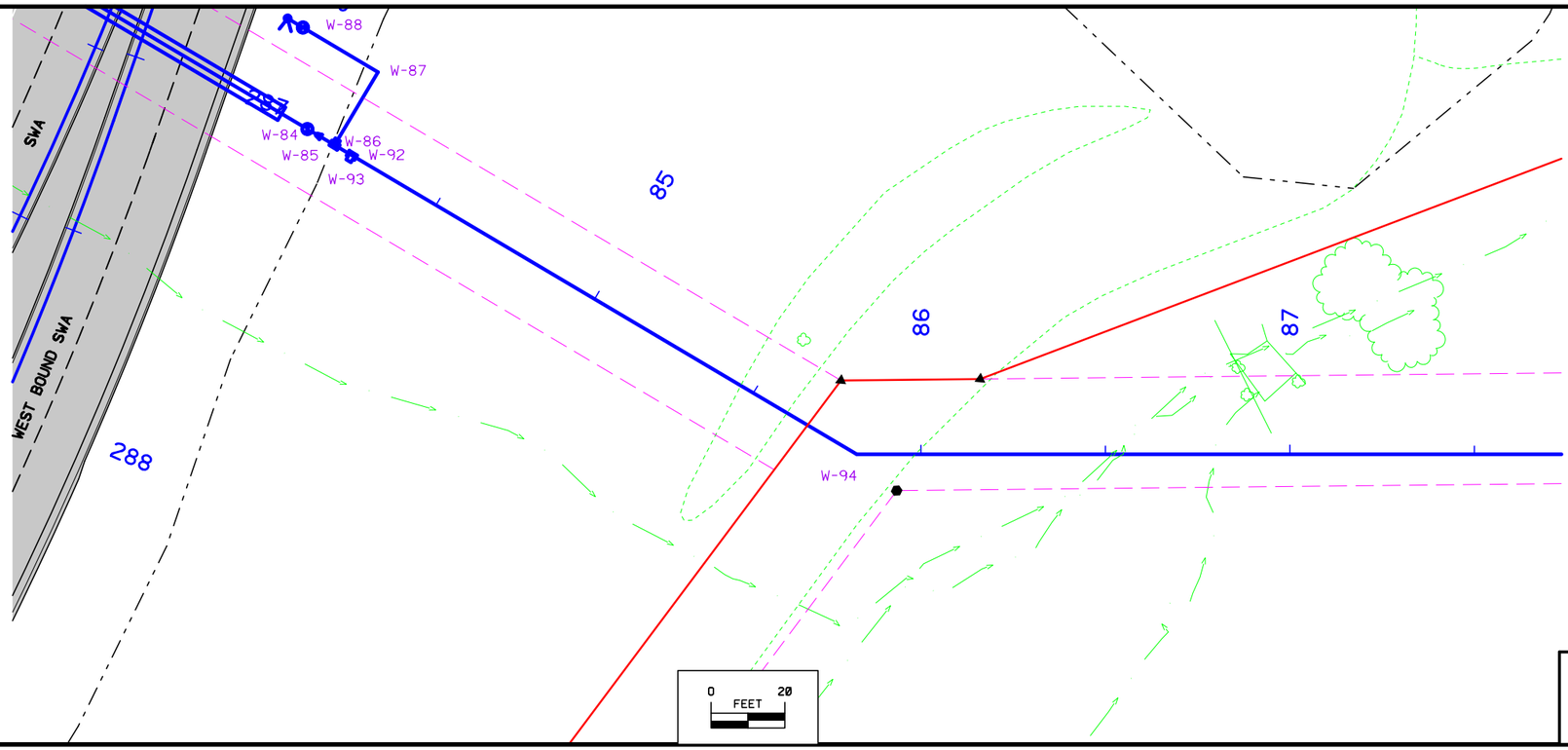
3:43:41 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.

FOR INFORMATION ONLY



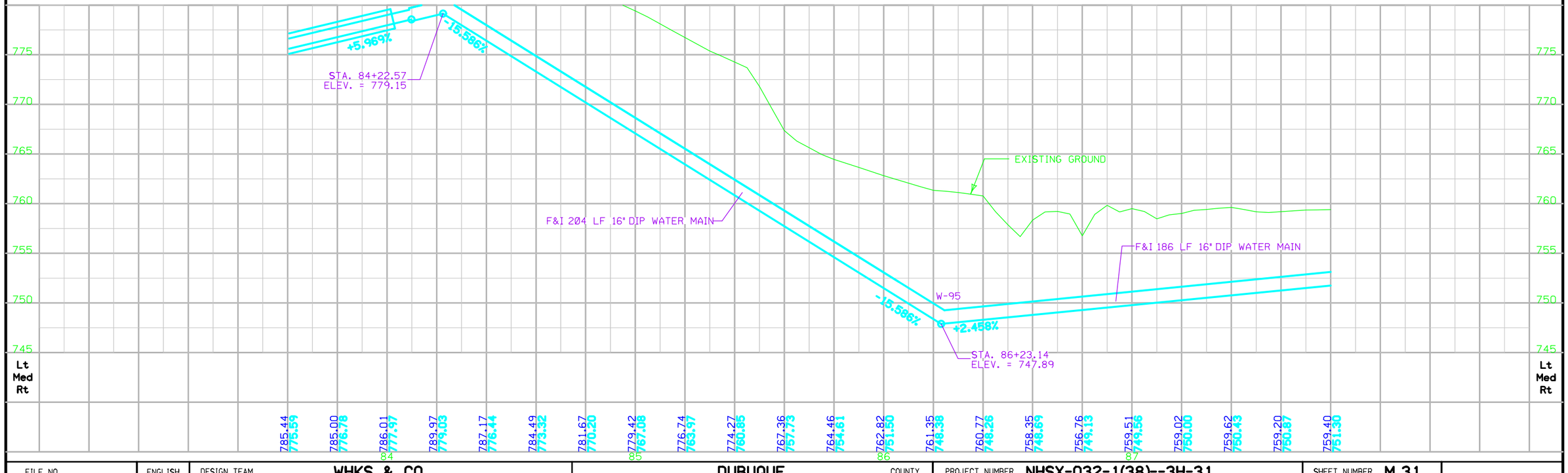
W-92
STA. 84+23.50
F&I 16" X 16" MJ TEE

W-93
STA. 84+23.50
F&I 16" MJ CAP

W-94
STA. 85+82.58
F&I 16" 22½° MJ BEND
DEFLECT PIPES @ 8.0°

W-95
STA. 86+23.14
F&I 16" 22½° MJ BEND (VERT.)
F&I 16" 11¼° MJ BEND (VERT.)
DEFLECT PIPES 3.807°

PLAN & PROFILE
WATER MAIN



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.31

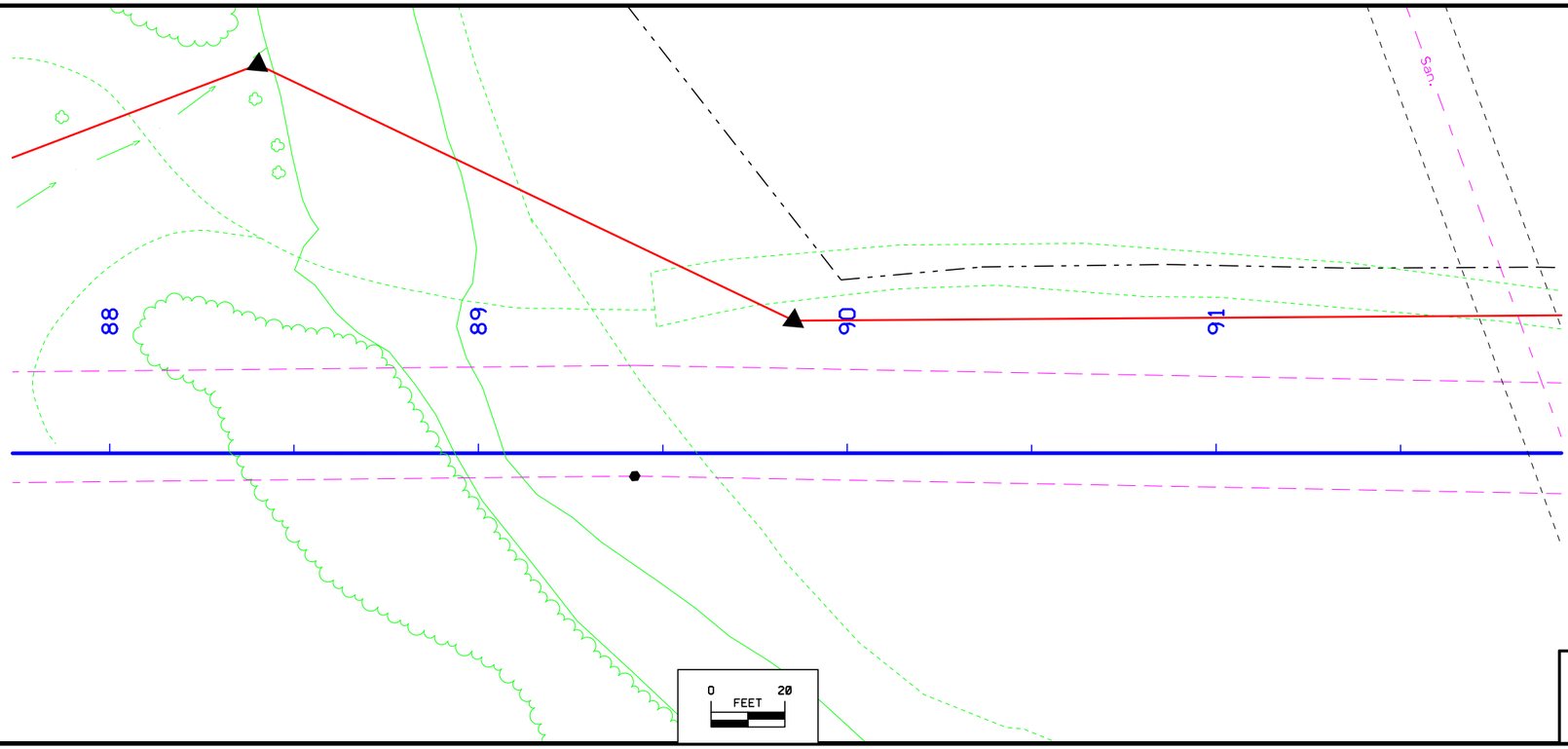
3:13:38 PM 5/18/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.

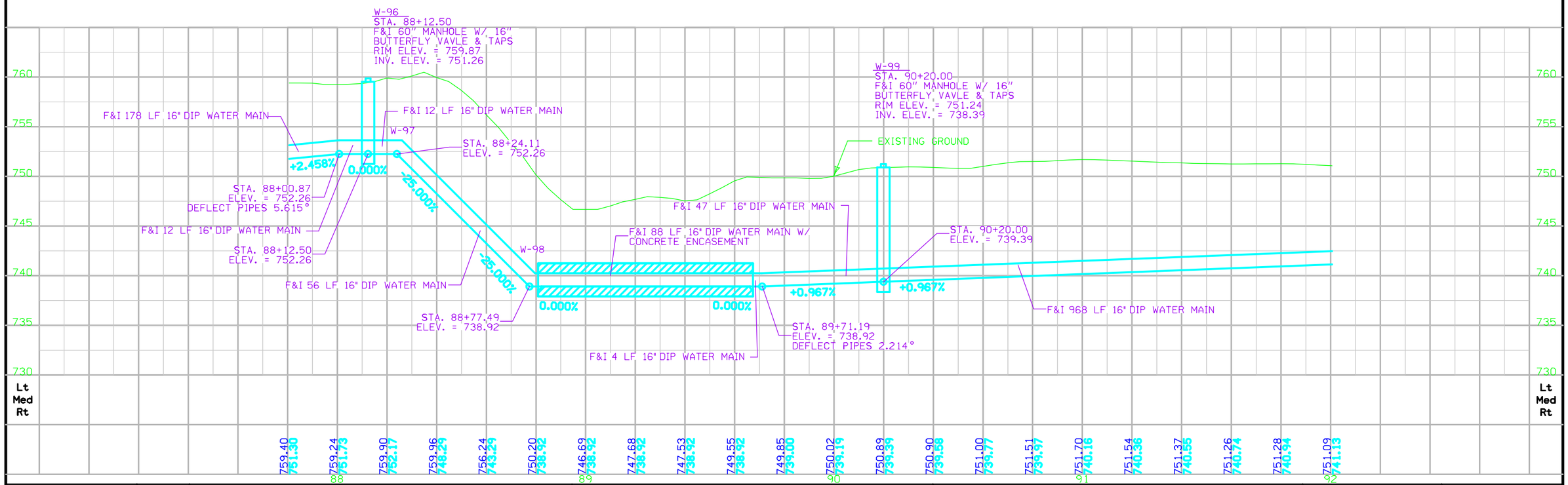
FOR INFORMATION ONLY



W-97
STA. 88+24.11
F&I 16" 45°MJ BEND (VERT.)
DEFLECT PIPES 4.970°

W-98
STA. 88+77.49
F&I 16" 45°MJ BEND (VERT.)

PLAN & PROFILE WATER MAIN



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.32

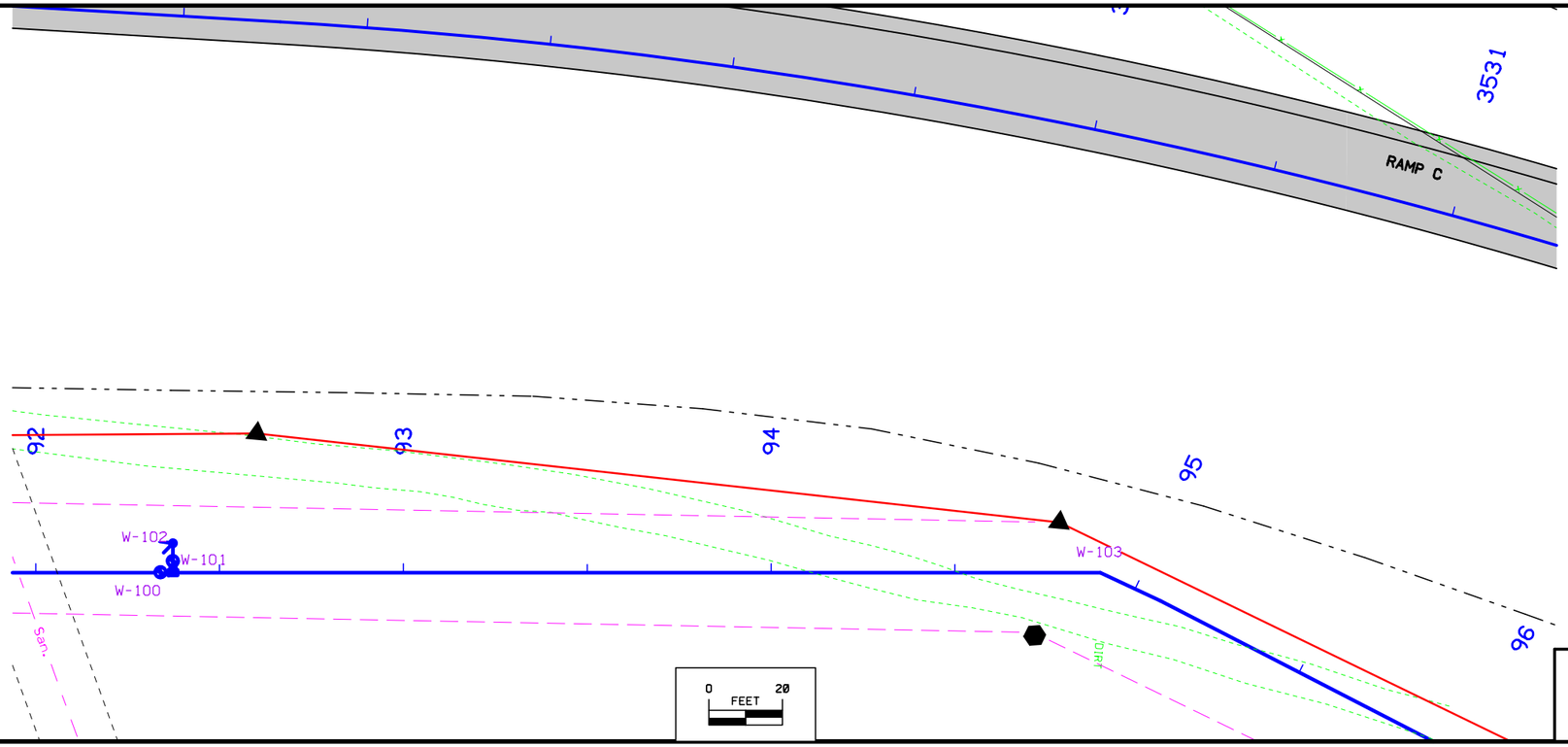
3:13:39 PM 5/18/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.

FOR INFORMATION ONLY



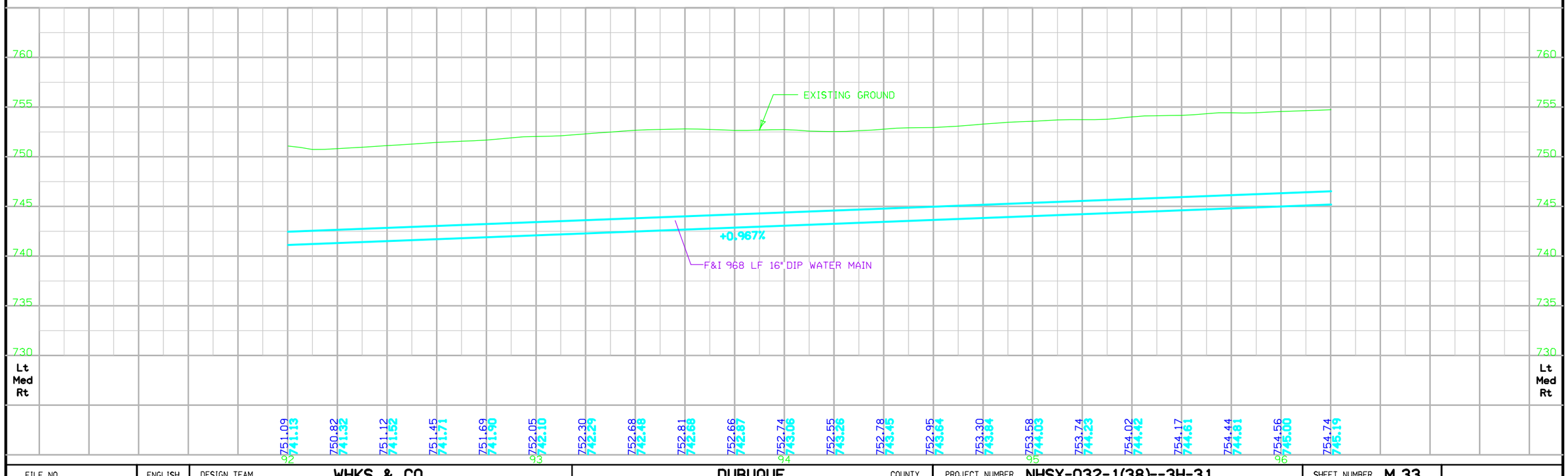
W-100
STA. 92+33.94
F&I 16" BUTTERFLY VALVE AND BOX

W-101
STA. 92+37.30
F&I 16"x6" TEE

W-102
STA. 92+37.30
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 751.47

W-103
STA. 92+37.30
F&I 16" 22½° BEND
DEFLECT PIPES @ 2.500°

PLAN & PROFILE
WATER MAIN



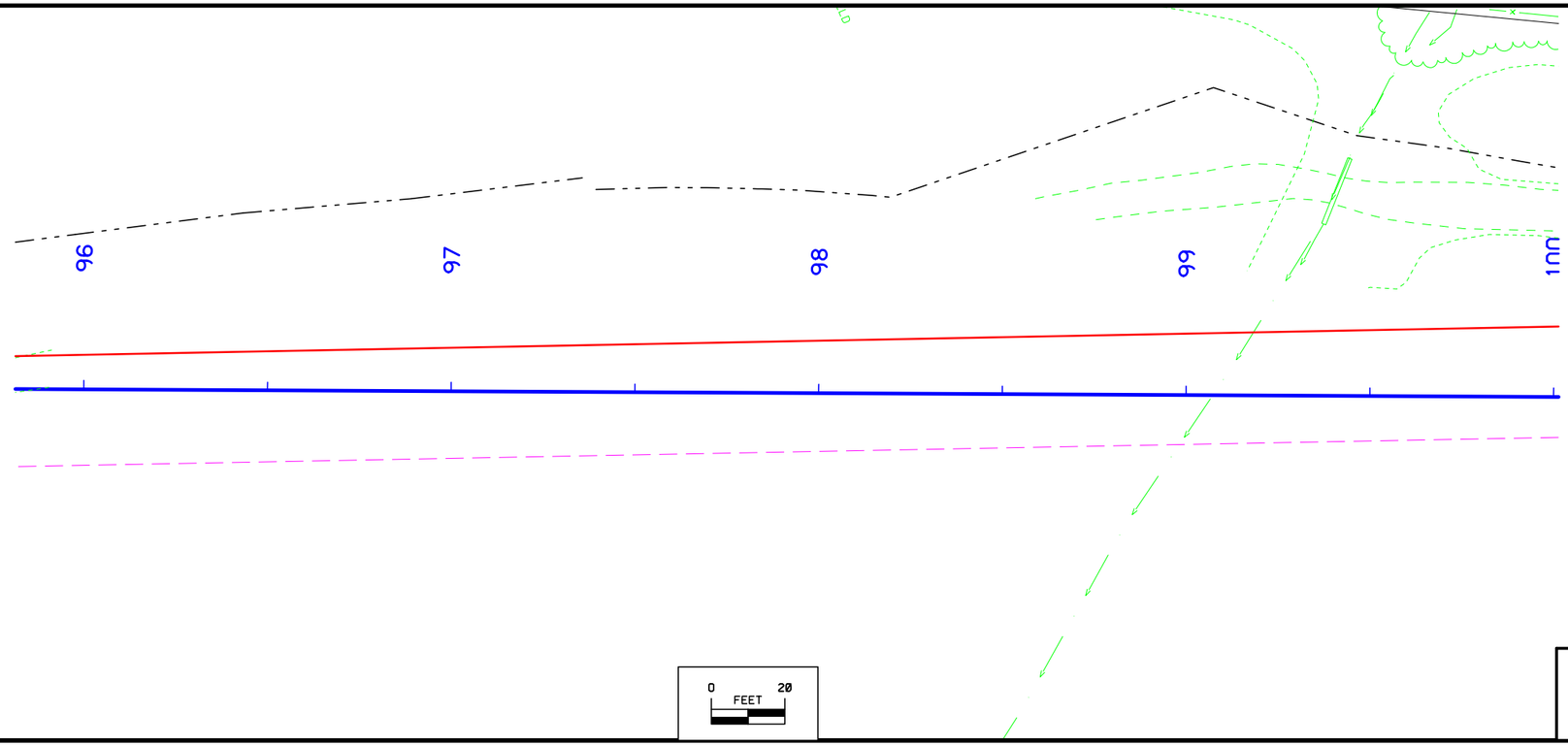
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.33

3:43:42 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

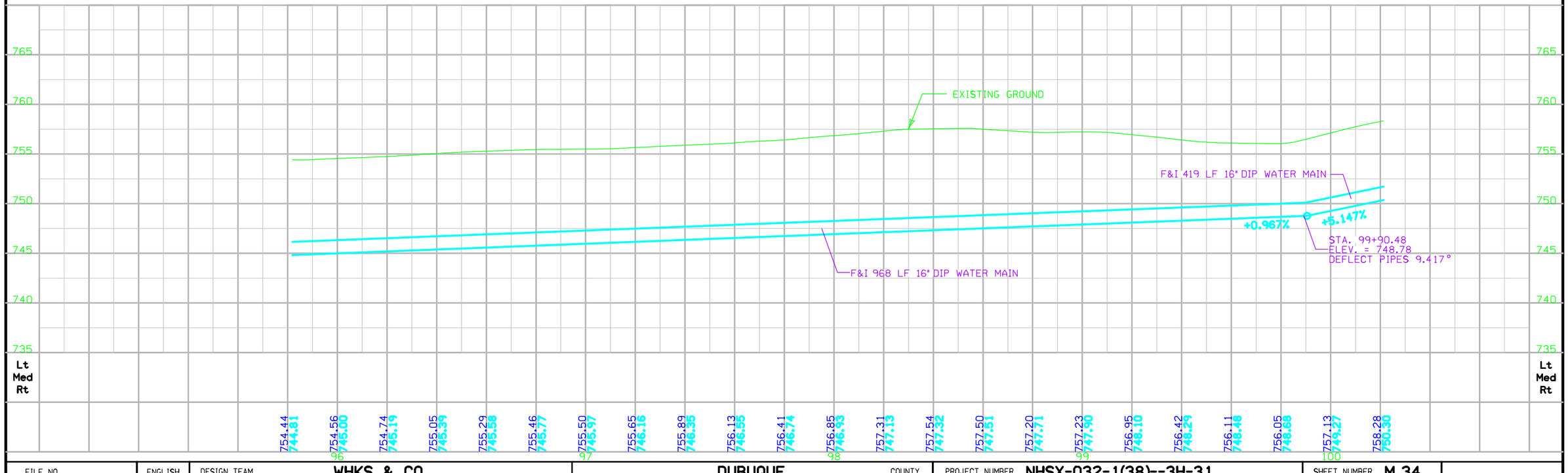
GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



FOR INFORMATION ONLY

0 20
FEET

PLAN & PROFILE WATER MAIN



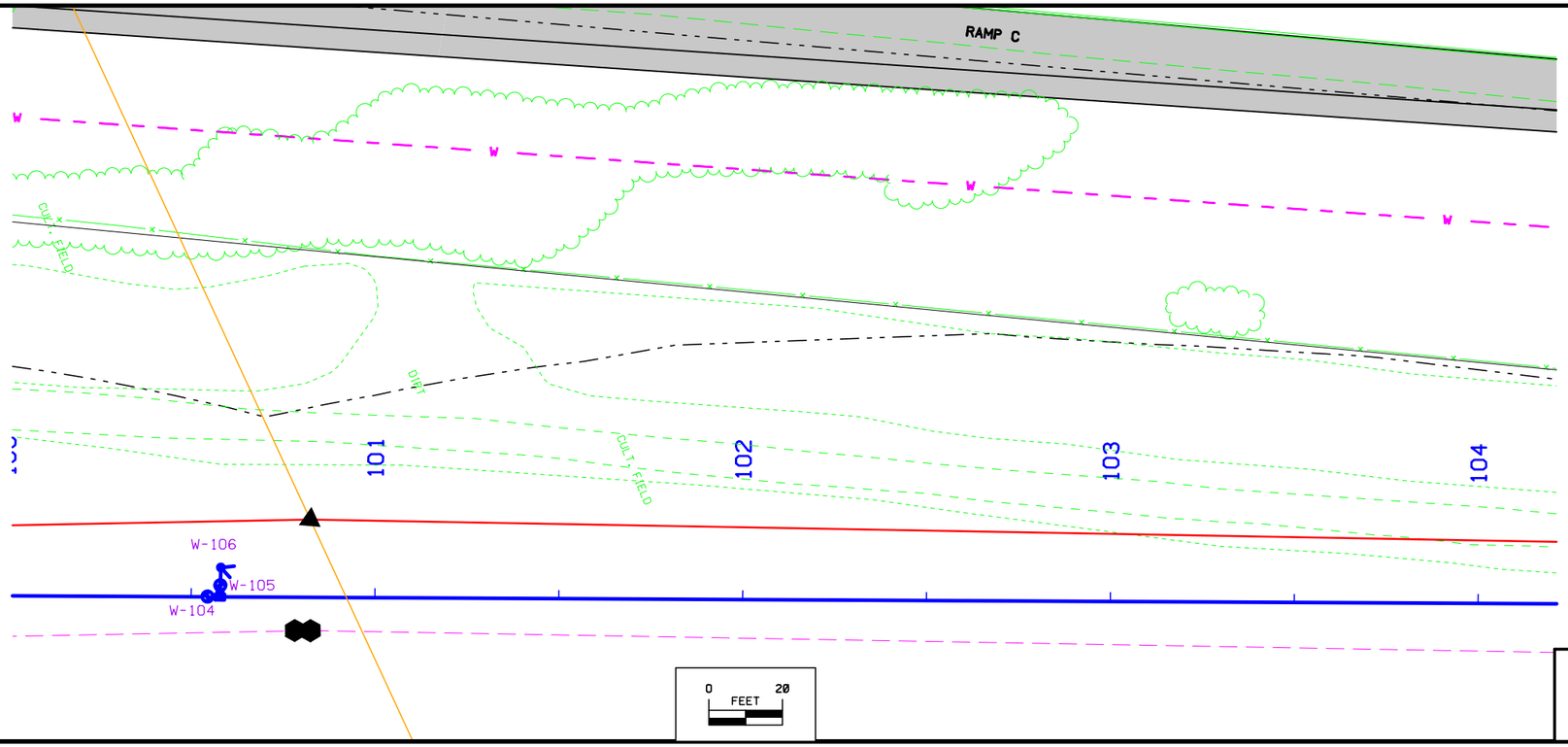
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.34

3:43:42 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



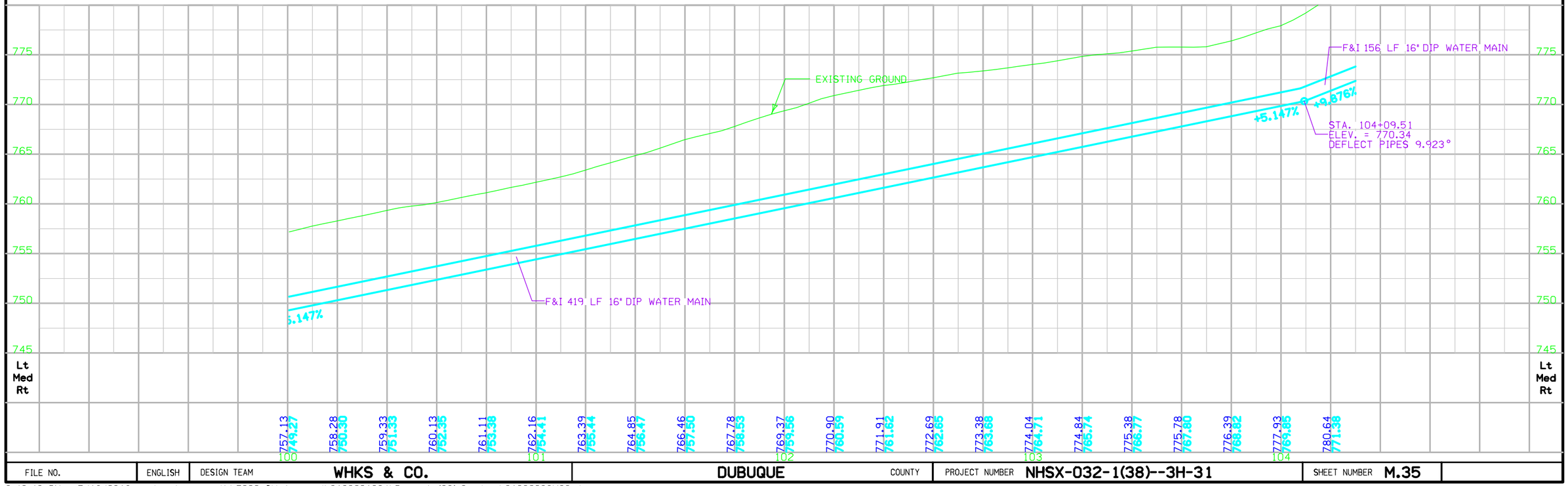
W-104
STA. 100+54.40
F&I 16" BUTTERFLY VALVE AND BOX

W-105
STA. 100+57.85
F&I 16"x6" TEE

W-106
STA. 100+57.85
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 760.93

FOR INFORMATION ONLY

PLAN & PROFILE WATER MAIN



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.35

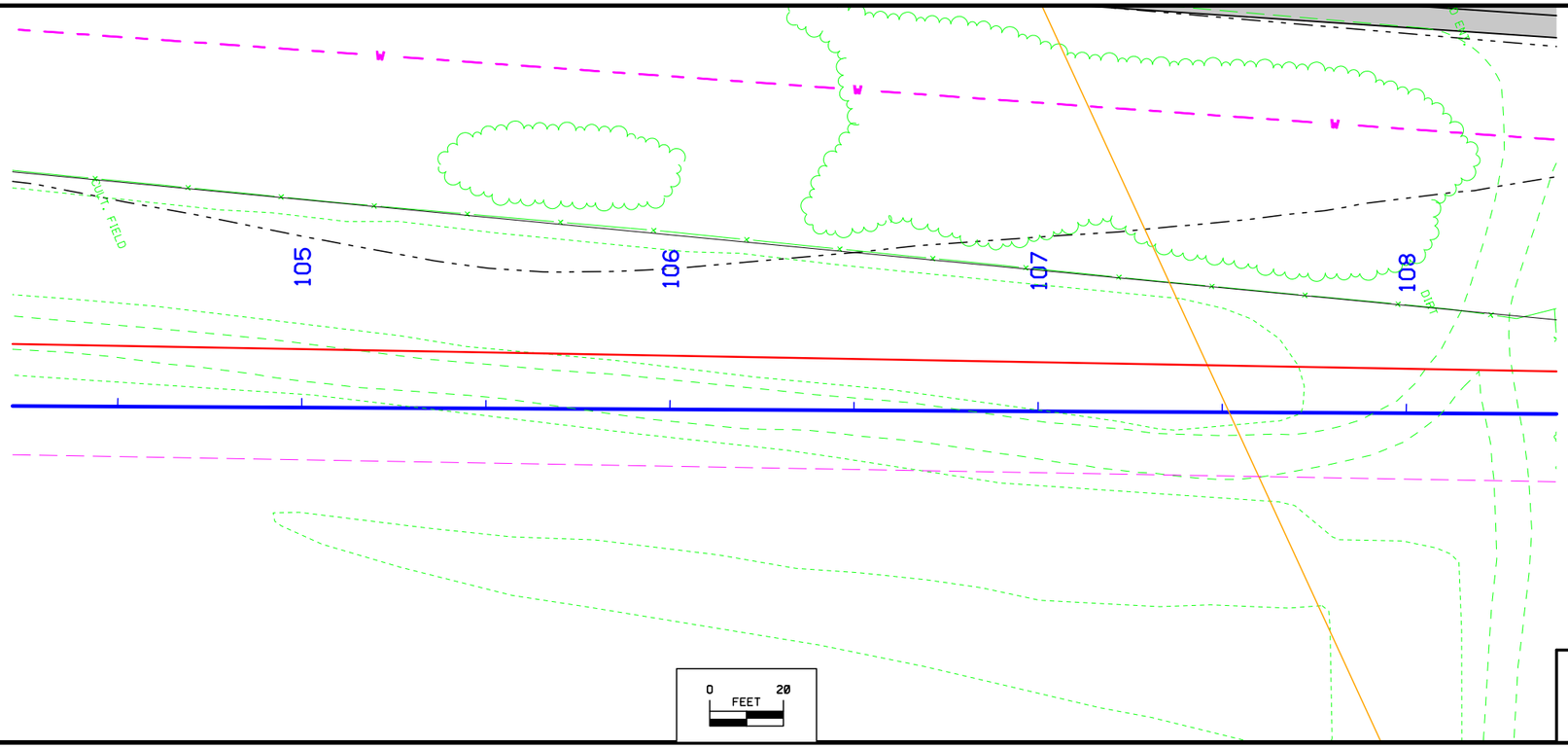
3:43:43 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.

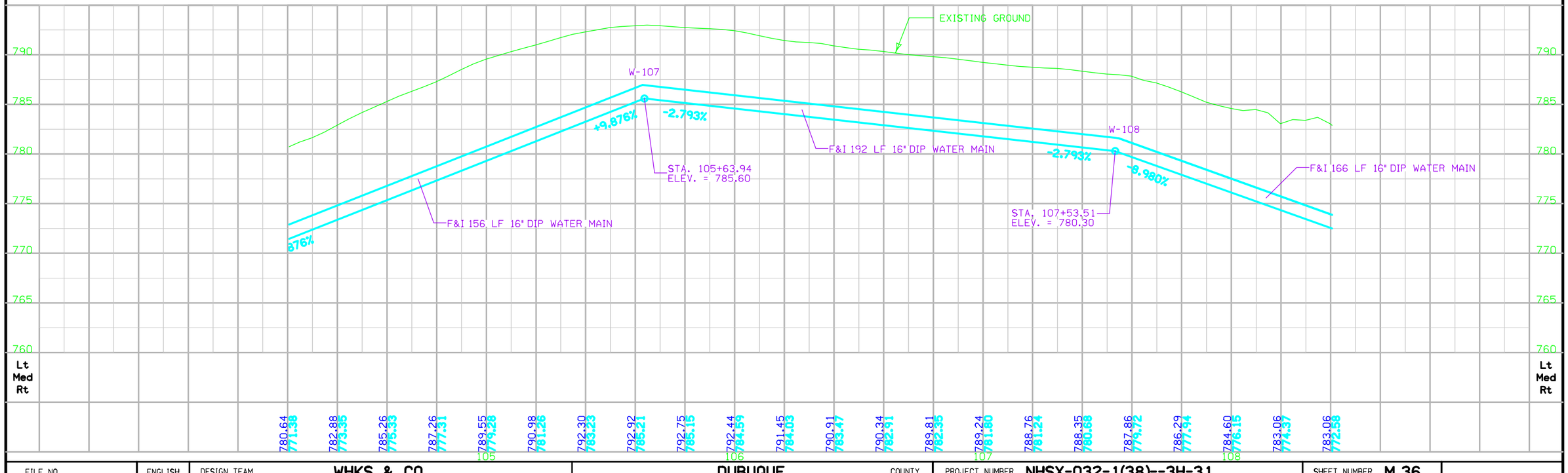
FOR INFORMATION ONLY



W-107
STA. 105+63.94
F&I 16" 22½° MJ BEND (VERT.)
DEFLECT PIPES 5.431°

W-108
STA. 107+53.51
F&I 16" 11¼° MJ BEND (VERT.)
DEFLECT PIPES 2.134°

PLAN & PROFILE WATER MAIN



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.36

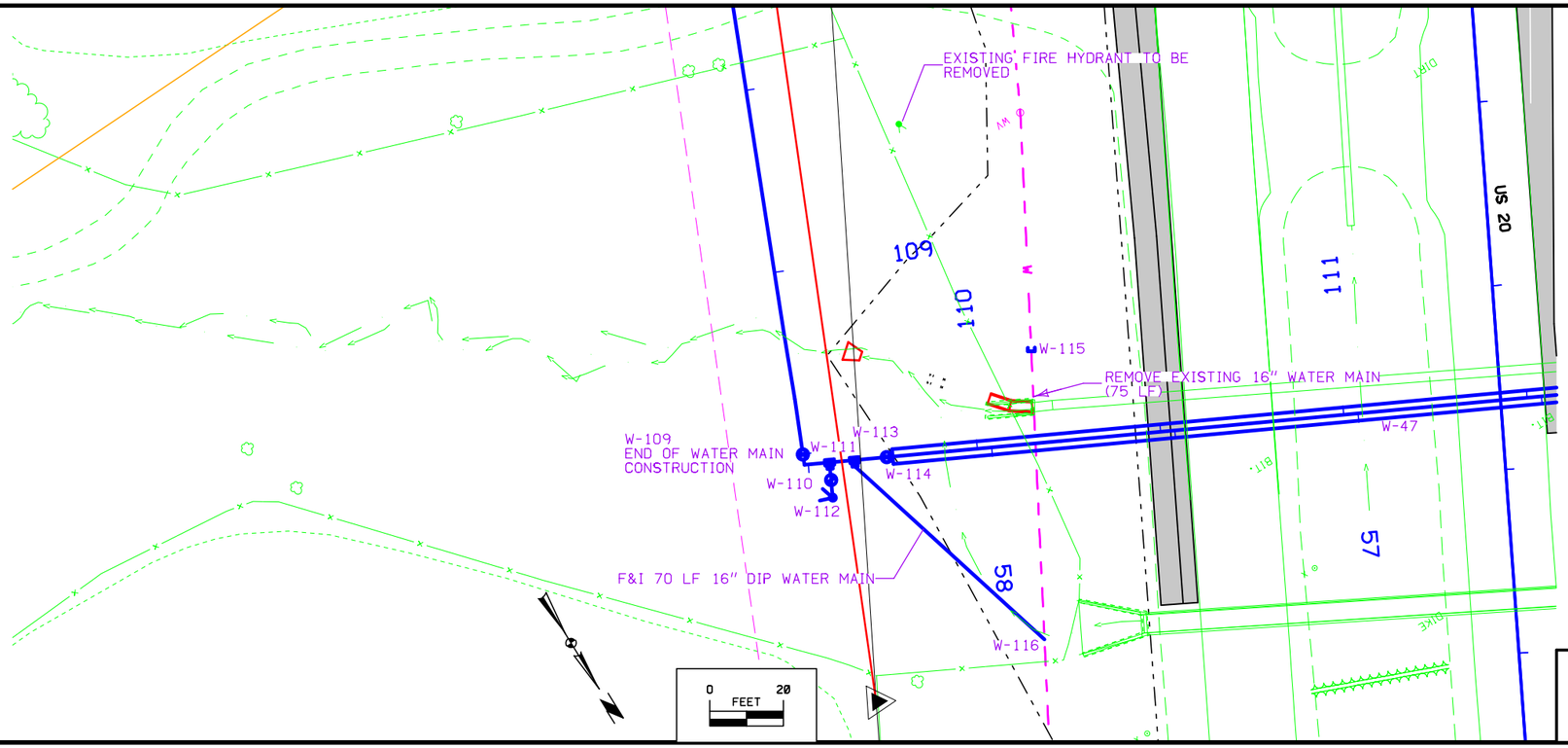
3:43:43 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

SEE SHEET M.23 FOR PLAN & PROFILE OF WATER LINE EAST OF US 20

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



W-109
STA. 109+50.00
F&I 16" BUTTERFLY VALVE AND BOX
END OF WATER MAIN CONSTRUCTION

W-110
STA. 109+52.90
F&I 16" 90° BEND
DEFLECT PIPES 3.000°

W-111
STA. 109+59.69
F&I 16" X 6" TEE

W-112
STA. 109+59.69, 10' LT
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 779.32

W-113
STA. 109+66.52
F&I 16" X 16" MJ TEE
F&I 16" 45°MJ BEND
DEFLECT PIPES 2.700°

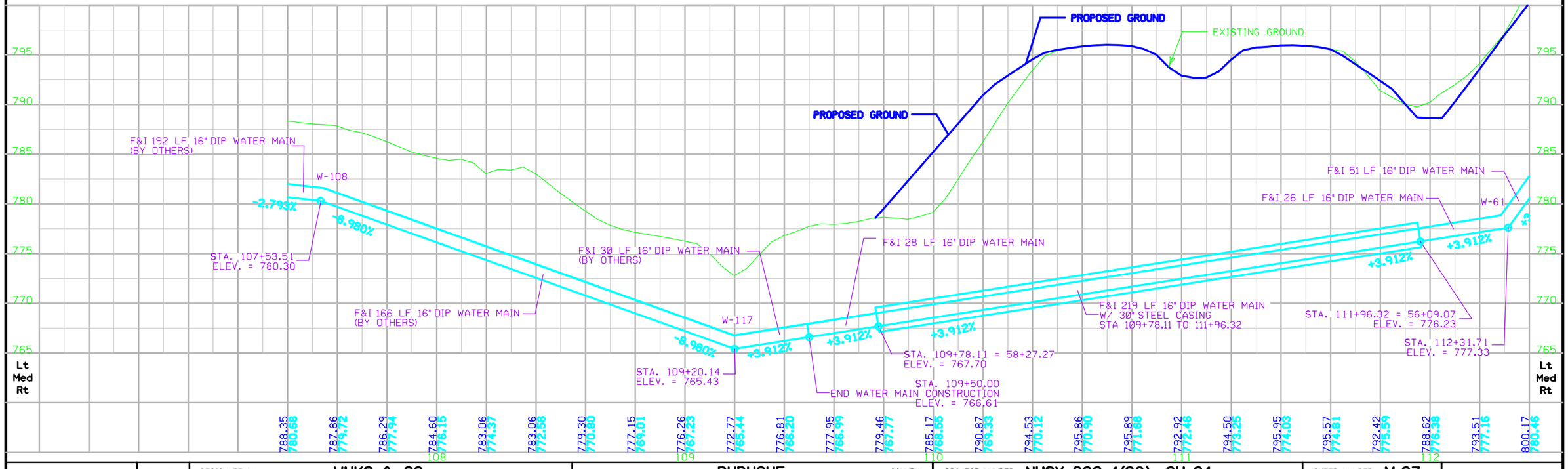
W-114
STA. 109+75.55
F&I 16" BUTTERFLY VALVE AND BOX

W-115
STA. 110+17.00, 25' LT
F&I 16" MJ CAP

W-116
STA. 110+13.40, 54' RT
F&I 16" 45°MJ BEND

W-117 (BY OTHERS)
STA. 109+20.14
F&I 16" 22½°MJ BEND (VERT.)
DEFLECT PIPES 6.153°

PLAN & PROFILE WATER MAIN



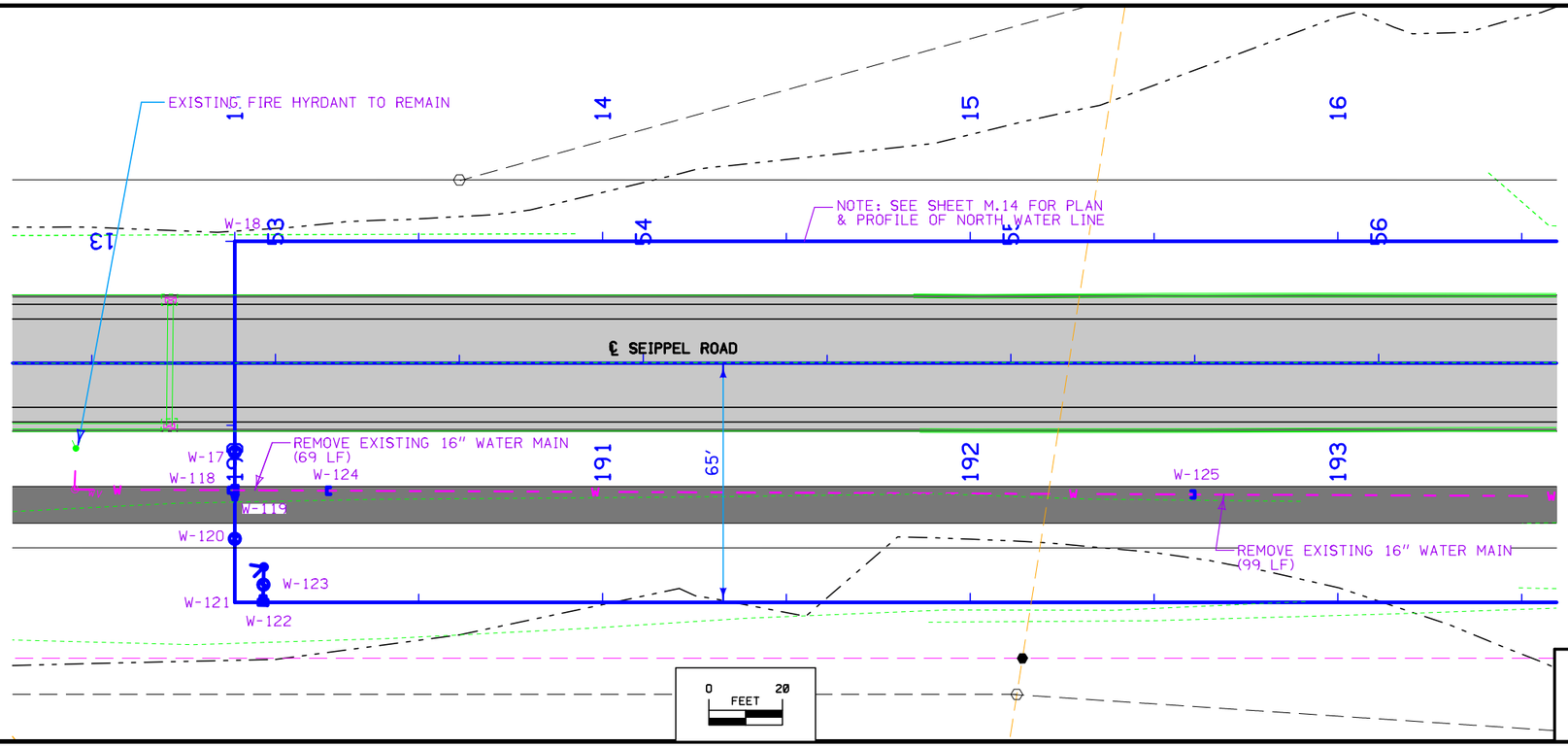
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.37

3:43:43 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



W-121
STA. 190+00.00
F&I 12" 90° BEND

W-122
STA. 190+07.70
F&I 12" X 6" MJ TEE

W-123
STA. 190+07.70
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 797.60

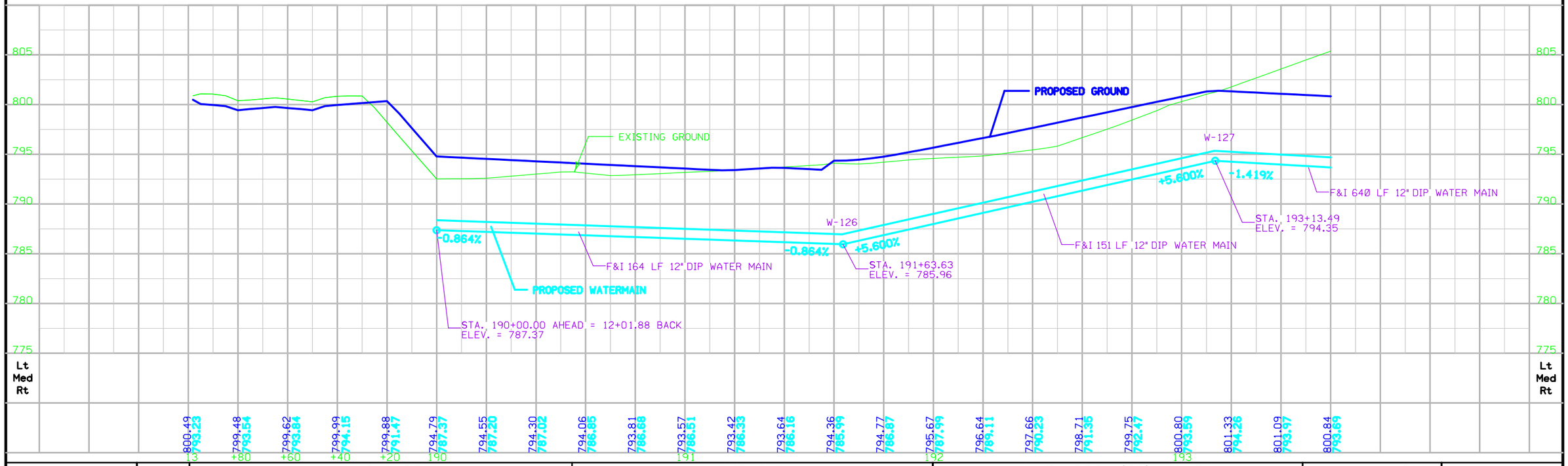
W-124
STA. 190+25.00
F&I 16" MJ CAP

W-125
STA. 192+61.08
F&I 16" MJ CAP

W-126
STA. 191+63.63
F&I 12" 11¼° MJ BEND (VERT.)
DEFLECT PIPES 3.356°

W-127
STA. 193+13.49
F&I 12" 11¼° MJ BEND (VERT.)
DEFLECT PIPES 4.626°

PLAN & PROFILE WATER MAIN



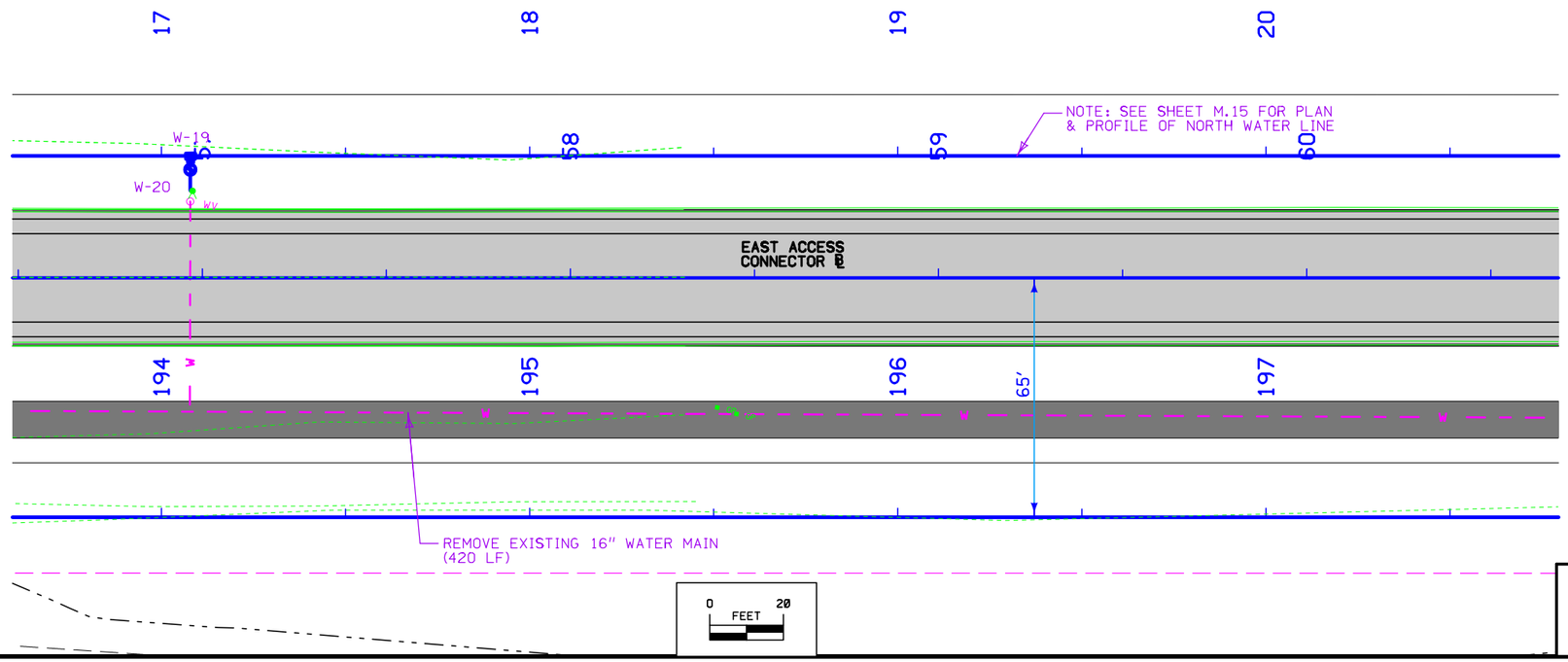
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.38

3:43:43 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

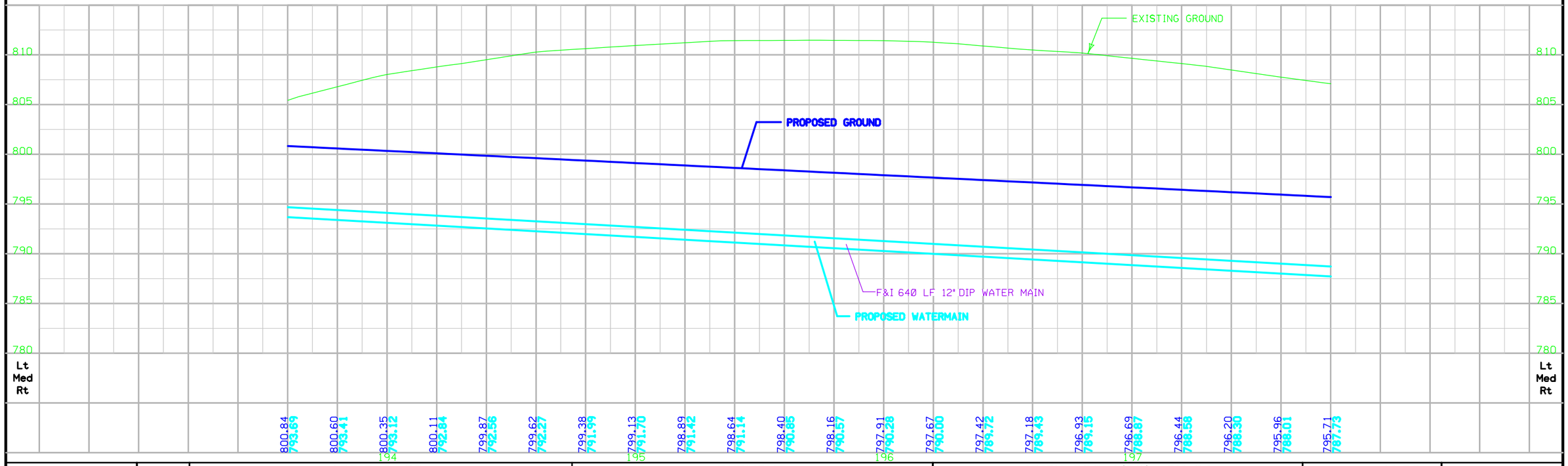
NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



PLAN & PROFILE WATER MAIN



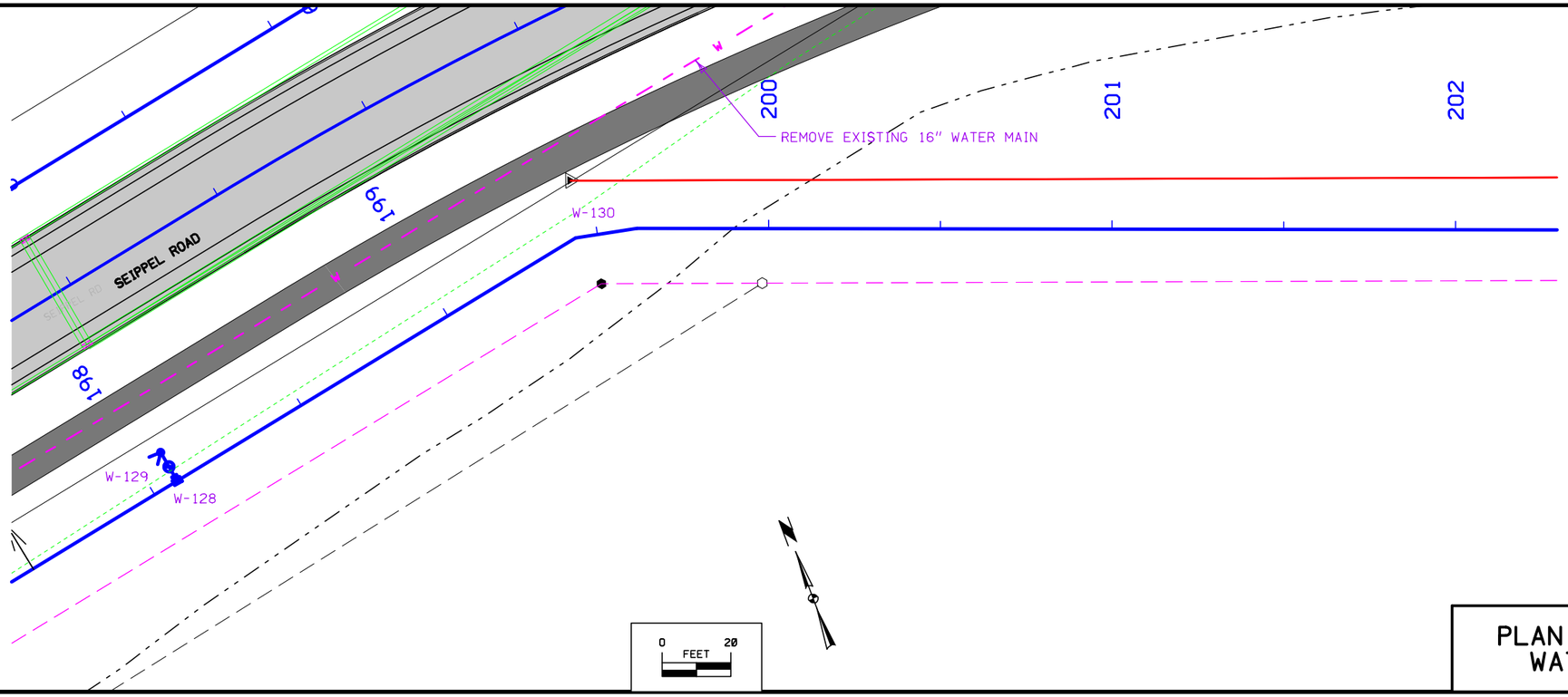
FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.38

3:43:44 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
F&I WATER MAIN FIELD MARKERS/TRACER WIRE BOXES ON WATER MAIN ALIGNMENT SPACED NO GREATER THAN 500'

ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



W-128
STA. 198+07.70
F&I 12" X 6" TEE

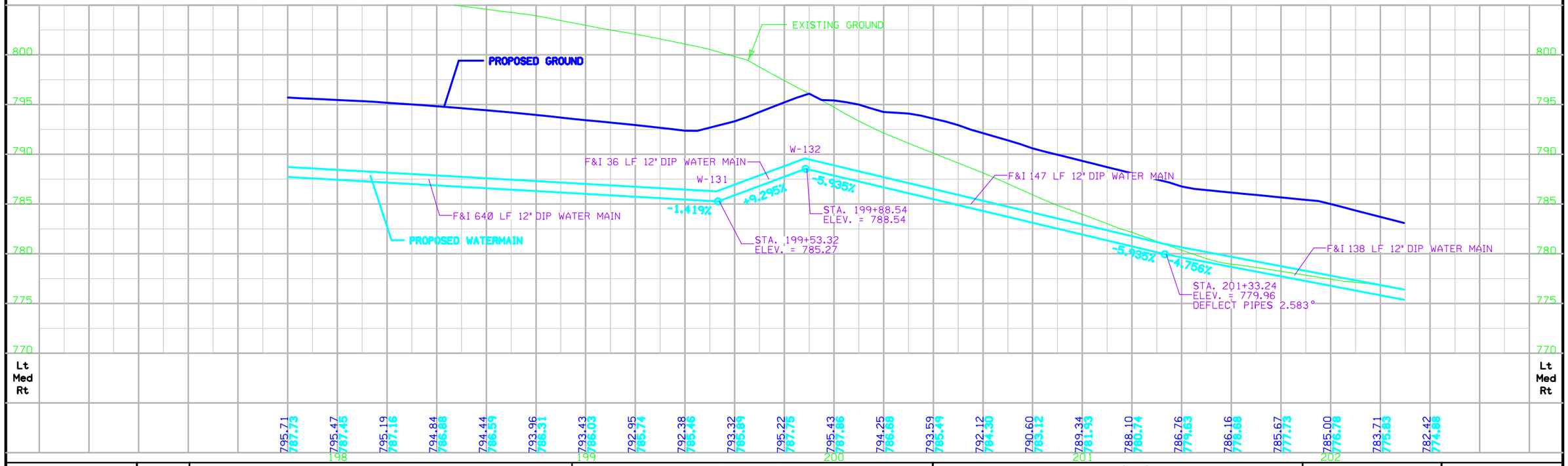
W-129
STA. 198+07.70
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 793.12

W-130
STA. 199+50.00
F&I 12" 22½ ° BEND
DEFLECT PIPES 9.000°

W-131
STA. 199+53.32
F&I 12" 22½ ° BEND (VERT.)
DEFLECT PIPES 1.144°

W-132
STA. 199+88.54
F&I 12" 22½ ° BEND (VERT.)
F&I 11¼° MJ BEND (VERT.)

PLAN & PROFILE WATER MAIN



FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.40

3:43:44 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

NOTE:
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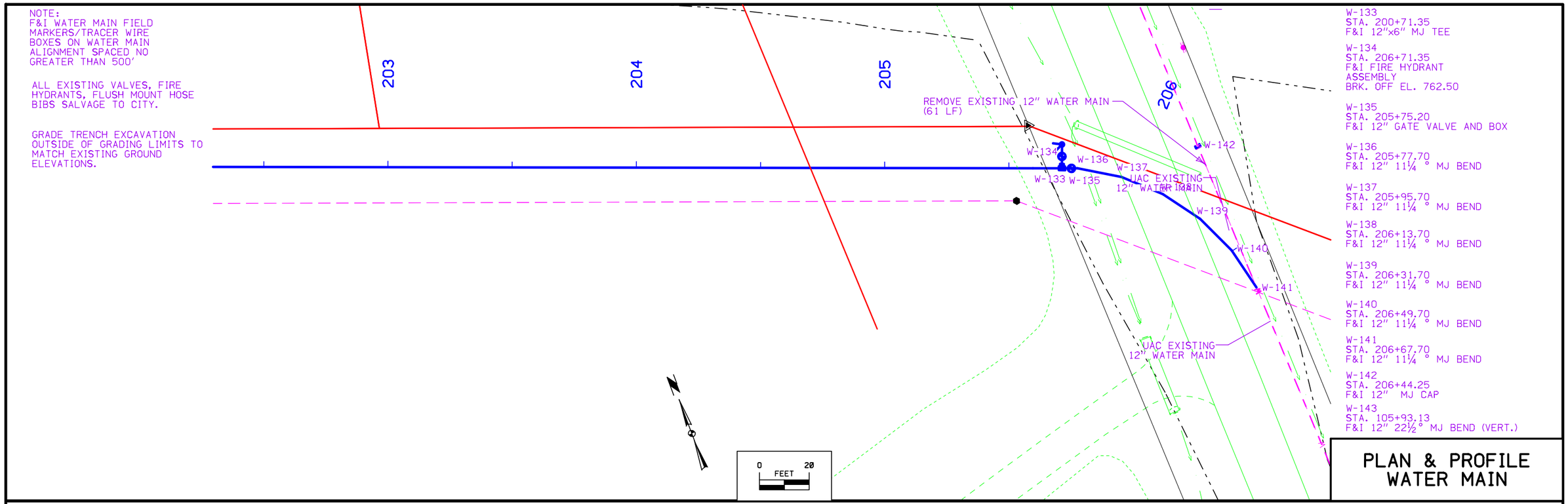
ALL EXISTING VALVES, FIRE HYDRANTS, FLUSH MOUNT HOSE BIBS SALVAGE TO CITY.

GRADE TRENCH EXCAVATION OUTSIDE OF GRADING LIMITS TO MATCH EXISTING GROUND ELEVATIONS.



W-133
STA. 200+71.35
F&I 12"x6" MJ TEE

W-134
STA. 206+71.35
F&I FIRE HYDRANT ASSEMBLY
BRK. OFF EL. 762.50

W-135
STA. 205+75.20
F&I 12" GATE VALVE AND BOX

W-136
STA. 205+77.70
F&I 12" 11¼ ° MJ BEND

W-137
STA. 205+95.70
F&I 12" 11¼ ° MJ BEND

W-138
STA. 206+13.70
F&I 12" 11¼ ° MJ BEND

W-139
STA. 206+31.70
F&I 12" 11¼ ° MJ BEND

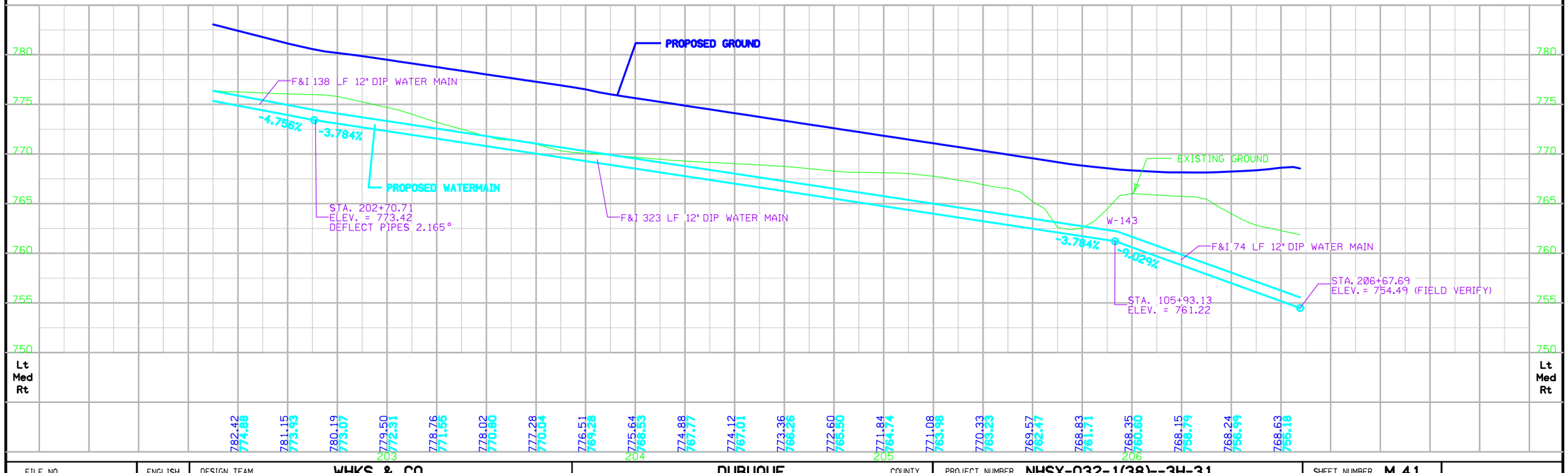
W-140
STA. 206+49.70
F&I 12" 11¼ ° MJ BEND

W-141
STA. 206+67.70
F&I 12" 11¼ ° MJ BEND

W-142
STA. 206+44.25
F&I 12" MJ CAP

W-143
STA. 105+93.13
F&I 12" 22½ ° MJ BEND (VERT.)

PLAN & PROFILE WATER MAIN

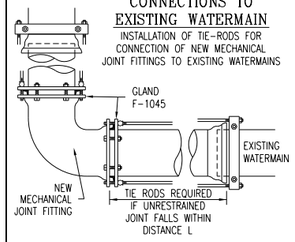


FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.41

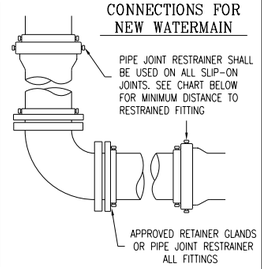
3:43:44 PM 5/16/2016 kpodstawa K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038M03.sht

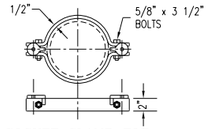
CONNECTIONS TO EXISTING WATERMAIN

INSTALLATION OF TIE-RODS FOR CONNECTION OF NEW MECHANICAL JOINT FITTINGS TO EXISTING WATERMAINS



CONNECTIONS FOR NEW WATERMAIN





SOCKET CLAMP FOR PIPE FITTINGS

NUMBER OF 3/4" RODS REQUIRED

PIPE SIZE INCHES	12" AND LESS	14" AND 16"	18" AND 20"	24"
NUMBER OF RODS	2	4	6	8

MINIMUM DISTANCE TO CLOSEST UNRESTRAINED JOINT (L IN FEET)

TYPE OF FITTING	PIPE SIZE							
	6"	8"	10"	12"	14"	16"	18"	20"
11 1/4° BEND	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
22 1/2° BEND	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
45° BEND	18.0	18.0	18.0	18.0	19.0	21.4	23.8	26.0
90° BEND	19.6	19.6	24.0	28.2	32.4	36.6	40.8	44.8
TEE	18.0	18.0	18.0	18.0	20.0	25.0	36.0	40.0
PLUG	18.0	18.0	18.0	18.0	20.0	25.0	36.0	40.0

NOTES

1. RODS TO BE GALVANIZED.

whks

RESTRAINED JOINT DETAIL

REVISED: 2/01/08
SHEET: 1 OF 1
PLATE NO. 6-05

RESTRAINED JOINT REQUIREMENTS

1. ALL WATER MAIN JOINTS SHALL BE RESTRAINED IN ACCORDANCE WITH THE STANDARD DETAIL ON THIS SHEET.
2. IN ADDITION TO THE REQUIREMENTS SHOWN IN THE STANDARD DETAIL THE FOLLOWING JOINTS SHALL ALSO BE RESTRAINED.
3. JOINT RESTRAINTS SHALL BE CONSIDERED INCIDENTAL TO WATER MAIN.

1	RESTRAIN ALL HYDRANT ASSEMBLIES IN ACCORDANCE WITH SUDAS FIGURE 5010.201
2	ALL NON-FLANGED VALVES SHALL BE FULLY RESTRAINED
3	ALL JOINTS LOCATED WITHIN STEEL CASING SHALL BE RESTRAINED
4	ALL JOINTS WITHIN 10' OF SEWER AND GAS MAIN CROSSINGS

WATER MAIN RESTRAINED JOINT REQUIREMENTS

FIELD MARKER REQUIREMENTS

	MARKER LOCATION	REQUIREMENTS	MARKER DESCRIPTION
1	FIRE HYDRANTS	PROVIDE MARKERS AT ALL HYDRANTS	TRIVIEW HYDRANT MARKER, RED WITH DECAL
2	WATER VALVE MANHOLES	PROVIDE MARKERS AT ALL VALVE MANHOLES EXCEPT MANHOLES WITH PRVS	TRIVIEW MARKER, BLUE, DECAL GD-5194K
3	WATER VALVES	ALL VALVES, EXCEPT NO BURIED VALVE MARKERS REQUIRED FROM STA. 72+00 TO 107+00 (ALONG ELMWOOD DRIVE)	TRIVIEW MARKER, BLUE, DECAL GD-5194K
4	ISOLATED TRACER WIRE BOXES	ALL ISOLATED TRACER BOXES	TRIVIEW MARKER, BLUE, DECAL GD-5194K
5	FIBER STRUCTURES	ALL FIBER STRUCTURES, EXCEPT FROM WATER STATION 72+00 TO 107+00 (ALONG ELMWOOD DRIVE)	TRIVIEW MARKER, ORANGE, DECAL GD-1324K
7	FIBER OPTIC CONDUIT	EVERY 500 FEET MINIMUM, AND AT ALL BENDS	TRIVIEW MARKER, ORANGE, DECAL GD-1324K
6	SANITARY MANHOLES	ALL SANITARY MANHOLES	TRIVIEW MARKER, GREEN, DECAL GD-5325K

GENERAL FIELD MARKER REQUIREMENTS

1. ALL FIELD MARKERS SHALL BE RHINOMARKER-TRIVIEW OR EQUAL.
2. ALL FILED MARKERS SHALL INCLUDE CUSTOM ARTWORK/TEXT ADDED TO THE BOTTOM OF THE SPECIFIED DECAL. THE CUSTOM ARTWORK SHALL INCLUDE THE FOLLOWING:

   "CITY OF DUBUQUE"
   "563-589-4100"

3. ALL MARKERS USED IN NON-AGRICULTURAL AREAS SHALL STAND 48-INCHES (MINIMUM) ABOVE THE GROUND SURFACE.
4. MARKERS IN AREAS CURRENTLY USED TO PRODUCE AN AGRICULTURAL COMMODITY SHALL STAND 90-INCHES ABOVE THE GROUND SURFACE.
5. ALL MARKERS SHALL HAVE BLACK CAPS.
6. MARKERS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS RECOMMENDATIONS.
7. ALL FIELD MARKERS SHALL BE CONSIDERED INCIDENTAL.

FIELD MARKER REQUIREMENTS

WATER MAIN RESTRAINED JOINT AND FIELD MARKER REQUIREMENTS

STORM SEWER

(1) Diameter or equivalent diameter

* Bid Item

** For SW-545

INTAKES AND UTILITY ACCESSES

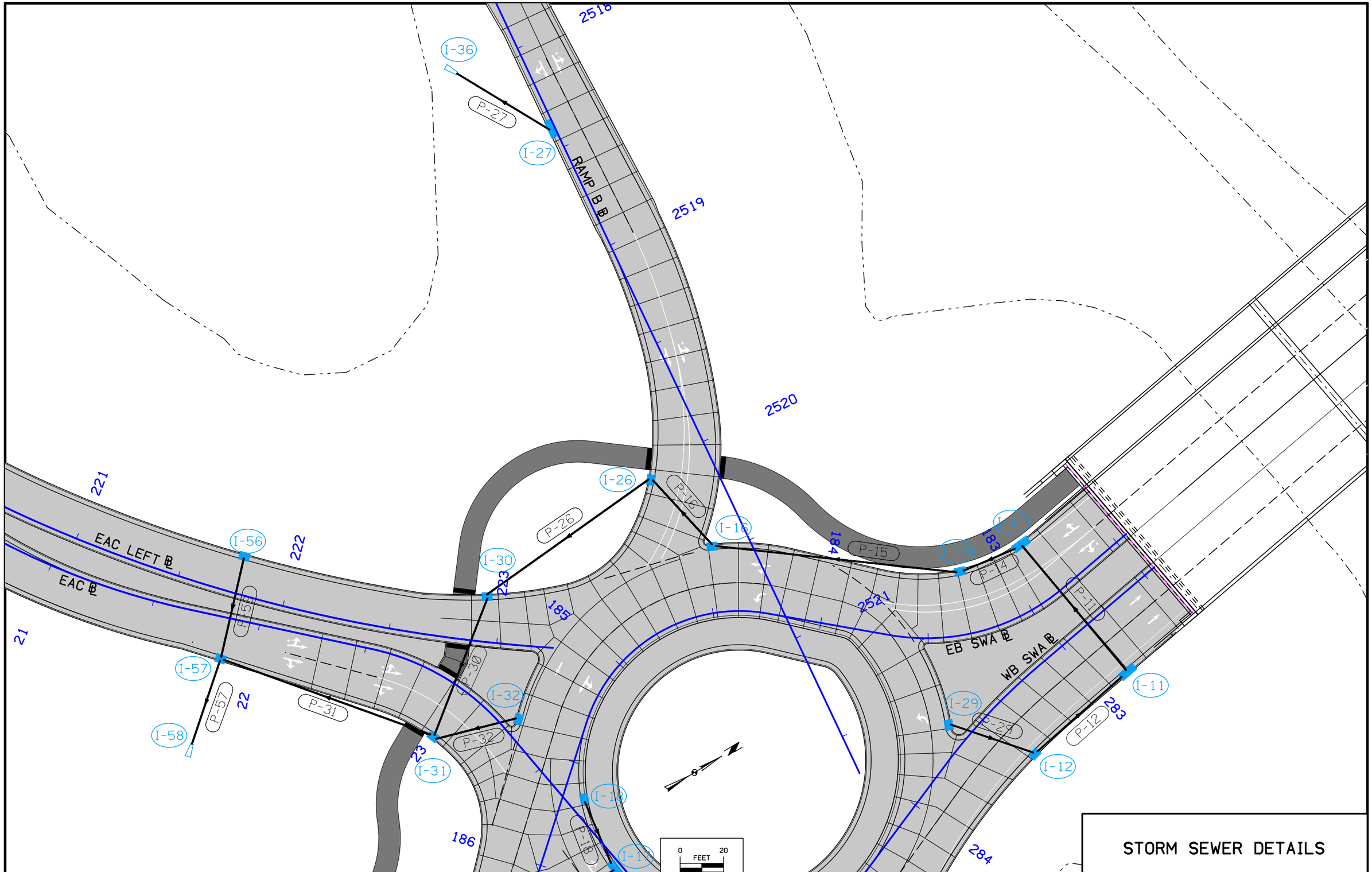
No.	Location Station and Offset	*Type or Standard Road Plan	Form Grade Elev.	Bottom Well Elev.	Extension Length** FT	Notes
I-29	283+61.00, 9.6' RT	SW-501	788.90	783.61		Note 1
I-12	283+45.00, 29.3' LT	SW-501	788.00	782.41		Note 1
I-11	282+85.00, 29.6' LT	SW-505	787.62	781.90		Note 1
I-14	182+85.00, 28.8' RT	SW-505	787.92	780.86		Note 1
I-15	183+28.50, 29.9' RT	SW-501	788.29	780.45		Note 1
I-16	184+47.00, 31.5' RT	SW-501	788.37	779.04		Note 1
I-26	2520+05.00, 30.1' RT	SW-501	787.43	778.34		Note 1
I-30	222+93.00, 21.8' LT	SW-501	786.73	777.67		Note 1
I-31	23+01.00, 26.5' RT	SW-501	786.39	777.10		Note 1
I-57	21+86.00, 20.2' RT	SW-501	785.65	776.39		Note 1
I-32	185+39.00, 31.3' RT	SW-501	787.20	781.91		Note 1
I-56	221+76.50, 18.5' LT	SW-501	785.92	780.42		Note 1
I-28	3520+75.50, 18.5' RT	SW-501	786.53	781.24		Note 1
I-13	284+75.50, 31.5' LT	SW-501	787.59	780.52		Note 1
I-19	285+35.00, 17.5' RT	SW-501	786.99	779.44		Note 1
I-17	285+54.00, 40.7' RT	SW-505	786.92	778.88		Note 1
I-20	186+16.00, 11.7' LT	SW-501	786.90	778.28		Note 1
I-21	186+66.50, 26.5' RT	SW-501	785.45	777.37		Note 1
I-18	185+64.00, 11.0' LT	SW-501	786.97	779.49		Note 1
I-50	14+00.00, 18.50' RT	SW-502	779.72	771.38		Note 1
I-51	13+72.00, 18.50' LT	SW-502	779.51	770.82		Note 1
	36+07.00, 18.50' RT	INTAKE				REMOVE
	36+07.00, 18.50' LT	INTAKE				REMOVE
	40+00.00, 18.50' LT	INTAKE				REMOVE
	40+00.00, 18.50' RT	INTAKE				REMOVE
	43+00.00, 18.50' LT	INTAKE				REMOVE
	43+00.00, 18.50' RT	INTAKE				REMOVE
	45+42.00, 69.50' RT	INTAKE				REMOVE
	46+24.00, 19.00' RT	INTAKE				REMOVE
	46+34.00, 18.50' LT	INTAKE				REMOVE
	50+00.00, 18.50' LT	INTAKE				REMOVE
	50+00.00, 18.50' RT	INTAKE				REMOVE
	53+52.00, 18.50' LT	INTAKE				REMOVE
	53+52.00, 18.50' RT	INTAKE				REMOVE

Note 1: Contractor to construct all intakes to drain the subgrade and place casting. Future construction by others to complete the intake construction to form grade.

PIPES

Design Length, Slope, and Flowlines are calculated from inside wall to inside wall along CL of pipe. An additional 3 ft length is added to each side of the Design Length to account for estimated length to center of structures.

Line Number	Intake/ Utility Access No. From	To	Class 'D'	Pipe Size (1) IN	Bid* Length FT	Design Length FT	Slope %	Flow Lines Inlet Elevation	Outlet Elevation	Other Elevation	Pipe Profile Sheet No.	Notes
P-29	I-29	I-12	2000	15	44.0	40.0	2.25	784.11	783.21			
P-12	I-12	I-11	2000	15	56.0	52.0	0.41	782.91	782.70			
P-11	I-11	I-14	2000	15	79.0	75.0	1.00	782.40	781.66			
P-14	I-14	I-15	2000	15	30.0	26.0	0.43	781.36	781.25			
P-15	I-15	I-16	2000	15	116.0	112.0	1.00	780.95	779.84			
P-16	I-16	I-26	2000	15	44.0	40.0	1.00	779.54	779.14			
P-26	I-26	I-30	2000	15	96.0	92.0	0.41	778.84	778.47			
P-30	I-30	I-31	2000	15	72.0	68.0	0.40	778.17	777.90			
P-31	I-31	I-57	2000	15	105.0	101.0	0.41	777.60	777.19			
P-57	I-57		2000	15	44.0	42.0	1.63	776.89	776.22			
P-32	I-32	I-31	2000	15	42.0	38.0	10.00	781.69	777.90			
P-56	I-56	I-57	2000	15	51.0	47.0	8.20	780.92	777.19			
P-28	I-28	I-13	2000	15	46.0	42.0	1.00	781.74	781.32			
P-13	I-13	I-19	2000	15	83.0	79.0	1.00	781.02	780.24			
P-19	I-19	I-17	2000	15	31.0	27.0	0.99	779.94	779.68			
P-17	I-17	I-20	2000	15	35.0	31.0	1.00	779.38	779.08			
P-20	I-20	I-21	2000	15	65.0	61.0	1.00	778.78	778.17			
P-21	I-21		2000	15	75.0	73.0	1.44	777.87	776.73			
P-18	I-18	I-17	2000	15	35.0	31.0	1.02	779.99	779.68			
P-79		I-50	2000	36	48.0	46.0	1.00	772.60	772.10			
P-50	I-50	I-51	2000	36	50.0	46.0	1.00	771.88	771.42			
P-51	I-51		2000	36	48.0	46.0	1.00	771.32	770.80			



STORM SEWER DETAILS

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.44

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806
804
802
800
798
796
794
792
790
788
786
784
782
780
778
776
774

I-29
SW-501
STA 283+61.00
OFFSET: 9.6
FG: 788.90

I-12
SW-501
STA 283+45.00
OFFSET: 29.3
FG: 788.00

I-11
SW-505
STA 282+85.00
OFFSET: 29.6
FG: 787.62

I-14
SW-505
STA 182+85.00
OFFSET: 28.8
FG: 787.92

I-15
SW-501
STA 183+28.50
OFFSET: 29.9
FG: 788.29

I-16
SW-501
STA 184+47.00
OFFSET: 31.5
FG: 788.37

I-26
SW-501
STA 2520+05.00
OFFSET: 30.1
FG: 787.43

I-30
SW-501
STA 222+93.00
OFFSET: 21.8
FG: 786.73

I-31
SW-501
STA 23+01.00
OFFSET: 26.5
FG: 786.39

P-29
40 LF
15" 2000D
2.25%

P-12
52 LF
15" 2000D
0.41%

P-11
75 LF
15" 2000D
1.00%

P-14
26 LF
15" 2000D
0.43%

P-15
112 LF
15" 2000D
1.00%

P-16
40 LF
15" 2000D
1.00%

P-26
92 LF
15" 2000D
0.41%

P-30
68 LF
15" 2000D
0.40%

FL 784.11
FL 783.21
FL 782.91
FL 782.70
FL 782.40
FL 781.66
FL 781.36
FL 781.25
FL 780.95
FL 779.84
FL 779.54
FL 779.14
FL 778.84
FL 778.47
FL 778.17
FL 777.90

LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- EXISTING PIPE/STRUCTURE
- PROPOSED PIPE
- PROPOSED STRUCTURE

STORM SEWER PROFILES

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.45

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I-31
SW-501
STA 23+01.00
OFFSET: 26.5
FG: 786.39

I-57
SW-501
STA 21+86.00
OFFSET: 20.2
FG: 785.65

P-31
101 LF
15" 2000D
0.41%

FL 777.60

FL 777.19

FL 776.89

FL 776.22

P-57
42 LF
15" 2000D
1.63%
1 DR-201 APRON

I-32
SW-501
STA 185+39.00
OFFSET: 31.3
FG: 787.20

I-31
SW-501
STA 23+01.00
OFFSET: 26.5
FG: 786.39

FL 781.69

FL 777.90

P-32
38 LF
15" 2000D
10.00%

I-56
SW-501
STA 221+76.50
OFFSET: 18.5
FG: 785.92

I-57
SW-501
STA 21+86.00
OFFSET: 20.2
FG: 785.65

FL 780.92

FL 777.19

P-56
47 LF
15" 2000D
8.20%

I-18
SW-501
STA 185+64.00
OFFSET: 11.0
FG: 786.97

I-17
SW-505
STA 285+54.00
OFFSET: 40.7
FG: 786.84

FL 779.99

FL 779.68

P-18
31 LF
15" 2000D
1.02%

LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- EXISTING PIPE/STRUCTURE
- PROPOSED PIPE
- PROPOSED STRUCTURE

STORM SEWER PROFILES

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.46

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EAC LEFT B

EAC B

EB SWA B

WB SWA B

RAMP C B

I-57 I-58 I-30 I-32 I-31 I-18 I-17 I-19 I-20 I-21 I-34 I-22 I-38 I-28 I-13 I-29 I-12 I-11

P-58 P-57 P-3 P-30 P-32 P-18 P-19 P-17 P-20 P-2 P-38 P-28 P-13 P-29 P-12 P-11

21 22 23 24 185 186 187 188 189 2521 3520 3521 3522 283 284 285 286 287 288

0 FEET 20

STORM SEWER DETAILS

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.47

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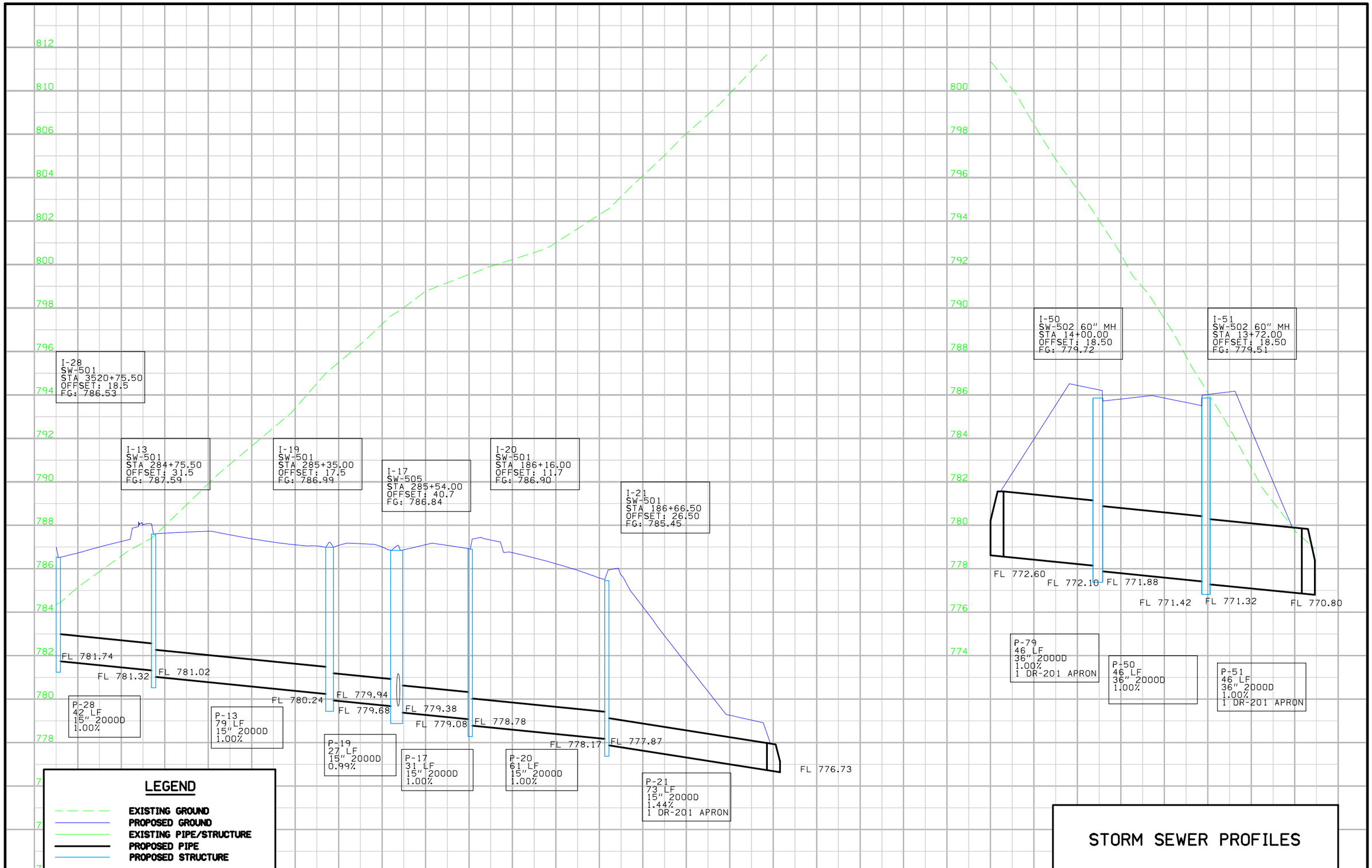

STORM SEWER PROFILES

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.48

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9'x17' EC-301
SPLASH BASIN

P-51

I-51

P-30

℄ EAC

I-50

P-79

12

13

14

15

16

17

11

0 FEET 20

STORM SEWER DETAILS

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(44)--3H-31	SHEET NUMBER	M.49

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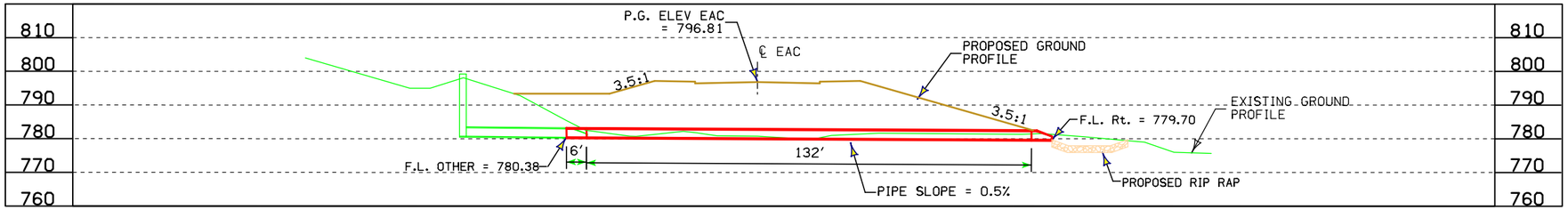
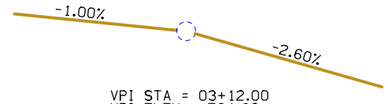
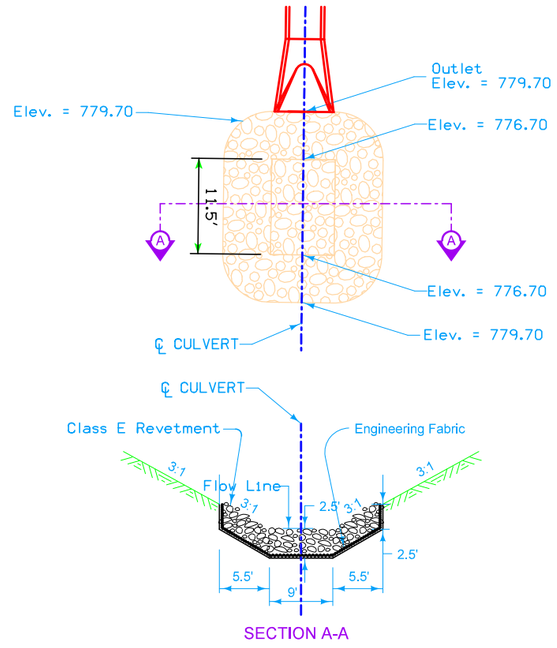


LONGITUDINAL SECTION ALONG ℄ PIPE

PROPOSED PROFILE GRADE ON EAST ACCESS CONNECTOR (EAC)



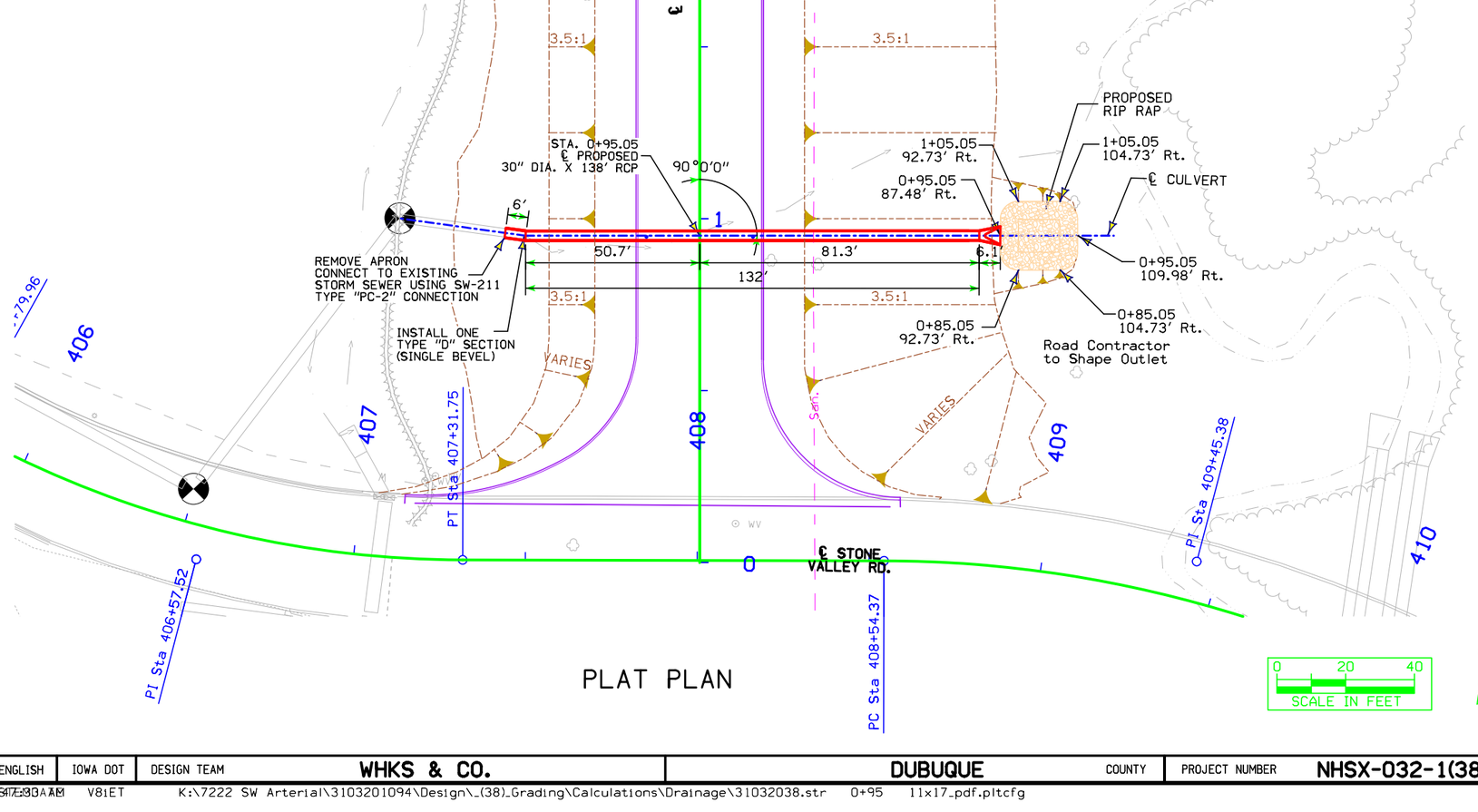
VPI STA = 03+12.00
VPI ELEV = 794.63
LENGTH = 300 FT.
K = 50
DESIGN SPEED = 40 MPH



SECTION A-A

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

TABLE MOUND TWP.
T-88N R-2E
SEC. 5



PLAT PLAN

UTILITIES LEGEND

— San. — — — SANITARY SEWER

HYDRAULIC DATA

DRAINAGE AREA = 28 ACRES
Q_{50} = 75 CFS

LOCATION

T-88 N R-2 E
SECTION 5
TABLE MOUND TOWNSHIP
DUBUQUE COUNTY
US 20 & S.W. ARTERIAL
INTERCHANGE

DESIGN FOR 0° SKEW

30" X 138' REINFORCED CONCRETE PIPE EXTENSION WITH APRON PLAT PLAN

STATION 0+95.05 FEBRUARY 2016

DUBUQUE COUNTY

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	M.50

5/16/2016 10:47:30 AM V8iET K:\7222 SW Arterial\3103201094\Design_(38)_Grading\Calculations\Drainage\31032038.str 0+95 11x17_pdf.pltcfg

U.A.C

FIBER CONDUIT LENGTHS		
Node ID	Node ID	Conduit Length
8001	8002	2962.0 LF
8002	8003	160.0 LF
8003	8004	2306.0 LF
8004	8000	1542.0 LF
8002	8005	1870.0 LF

0 FEET 200

PLAN LAYOUT LEGEND FIBER OPTIC

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	N.1

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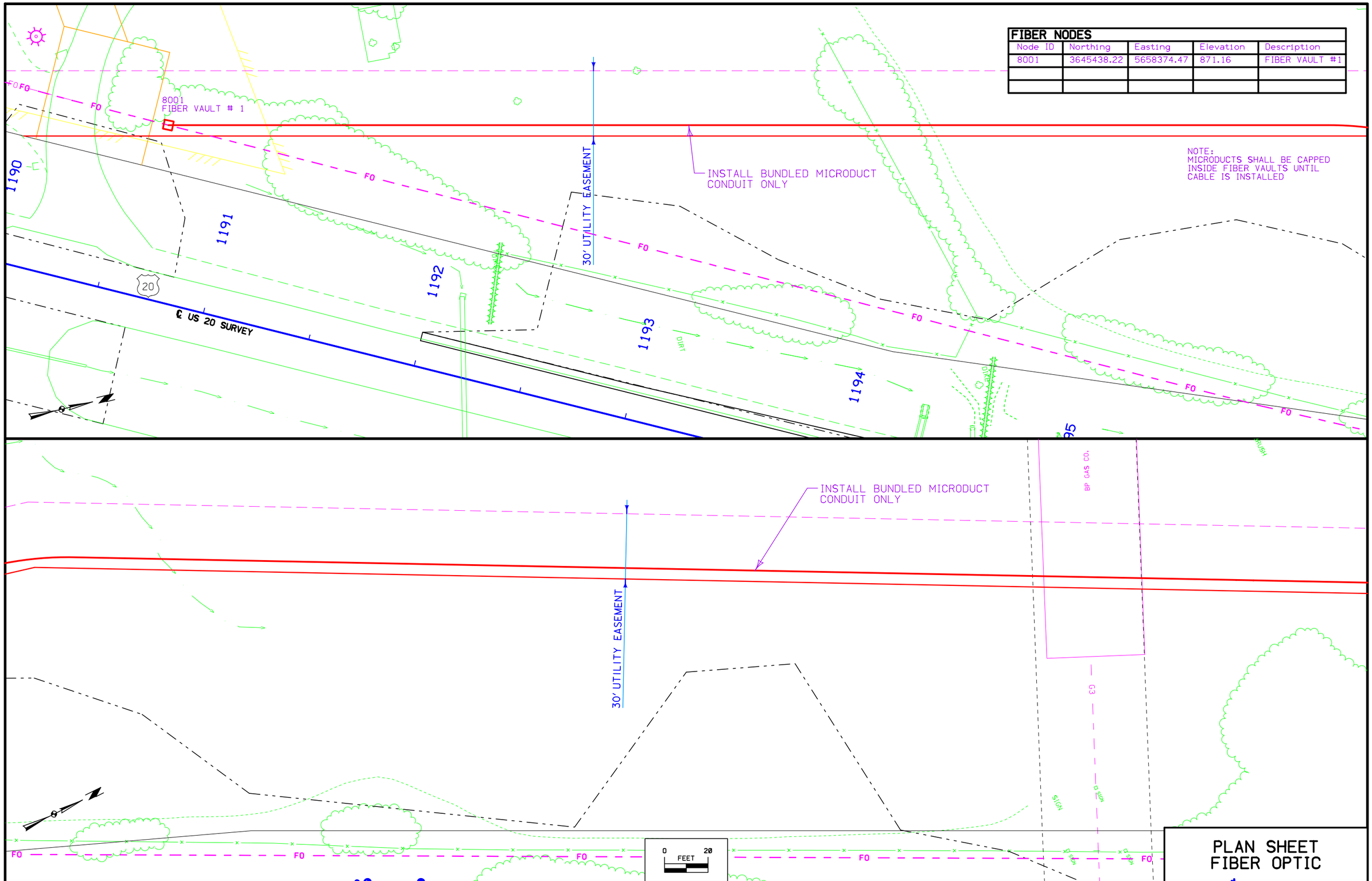
FIBER NODES				
Node ID	Northing	Easting	Elevation	Description
8001	3645438.22	5658374.47	871.16	FIBER VAULT #1



PLAN SHEET
FIBER OPTIC

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	N.2

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INSTALL BUNDLED MICRODUCT
CONDUIT ONLY

30' UTILITY EASEMENT

℄ COUSINS RD

485

484

483

482+14.56

INSTALL BUNDLED MICRODUCT
CONDUIT ONLY

30' UTILITY EASEMENT

0 FEET 20

PLAN SHEET
FIBER OPTIC

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	N.3

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INSTALL BUNDLED MICRODUCT CONDUIT ONLY

30' UTILITY EASEMENT

8002
FIBER VAULT # 2

INSTALL BUNDLED MICRODUCT CONDUIT ONLY

30' UTILITY EASEMENT

8003
FIBER VAULT # 3

8002
FIBER VAULT # 2

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

WB SOUTH WEST ARTERIAL

EB SOUTH WEST ARTERIAL

71

72

INSTALL BUNDLED MICRODUCT CONDUIT AND FIBER OPTIC CABLE

0 FEET 20

FIBER NODES				
Node ID	Northing	Easting	Elevation	Description
8002	3648250.69	5659198.63	760.22	FIBER VAULT #2
8003	3648404.83	5659242.40	771.27	FIBER VAULT #3

NOTE:
MICRODUCTS SHALL BE CAPPED INSIDE FIBER VAULTS UNTIL CABLE IS INSTALLED

PLAN SHEET FIBER OPTIC

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	N.4

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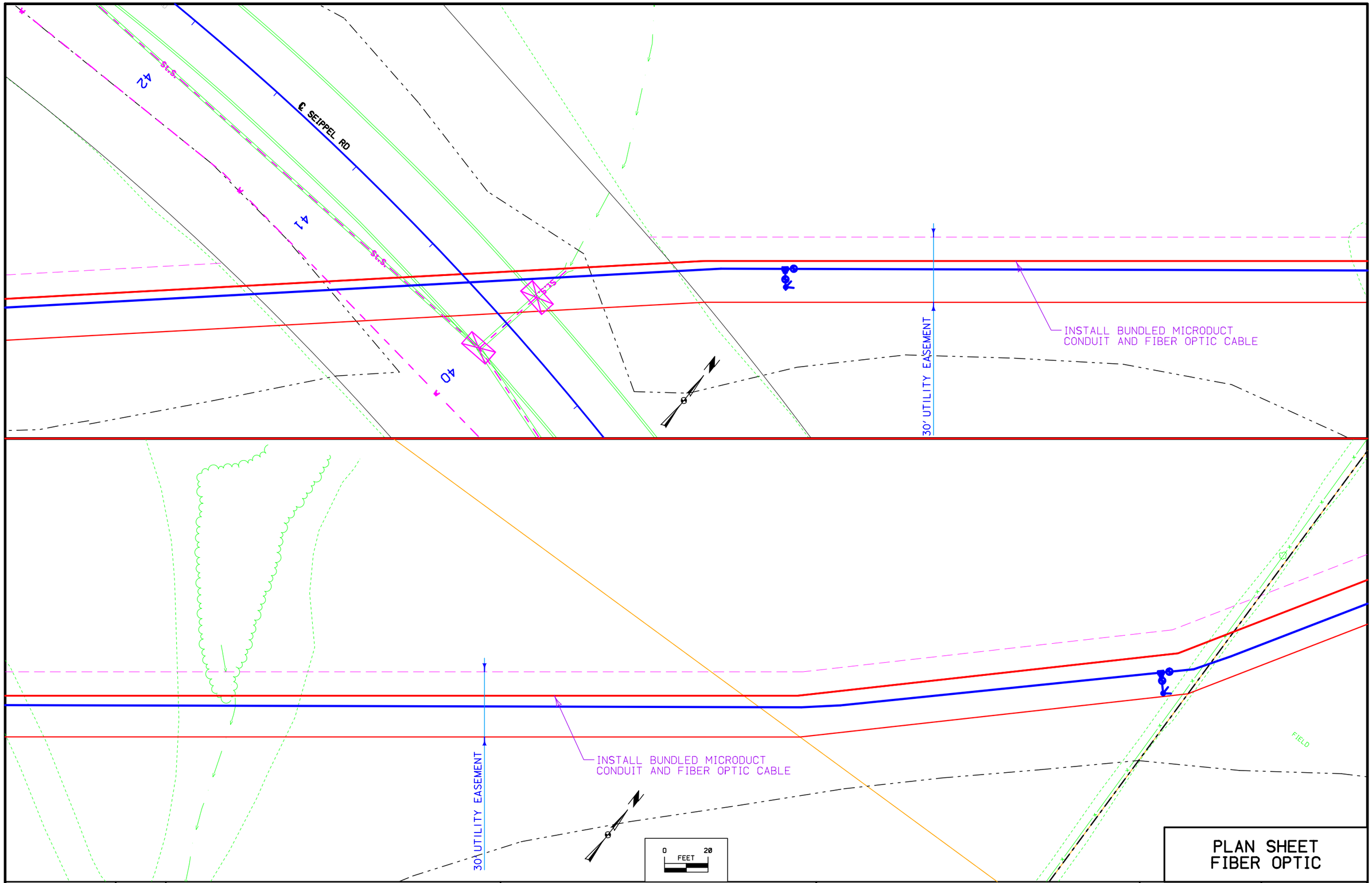

PLAN SHEET
FIBER OPTIC

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	N.5

9:49:10 AM 05/16/2016 etott K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038N01.sht

INSTALL BUNDLED MICRODUCT
CONDUIT AND FIBER OPTIC CABLE

30' UTILITY EASEMENT

FIELD

8004
FIBER VAULT # 4

INSTALL BUNDLED MICRODUCT
CONDUIT AND FIBER OPTIC CABLE

30' UTILITY EASEMENT

FO

DIRT

DIKE

FIELD ENT.

1246

1247

1248

20

℄ US 20 SURVEY

0 FEET 20

FIBER NODES				
Node ID	Northing	Easting	Elevation	Description
8004	3650149.02	5660674.17	819.35	FIBER VAULT #4

NOTE:
MICRODUCTS SHALL BE CAPPED
INSIDE FIBER VAULTS UNTIL
CABLE IS INSTALLED

PLAN SHEET
FIBER OPTIC

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	N.6

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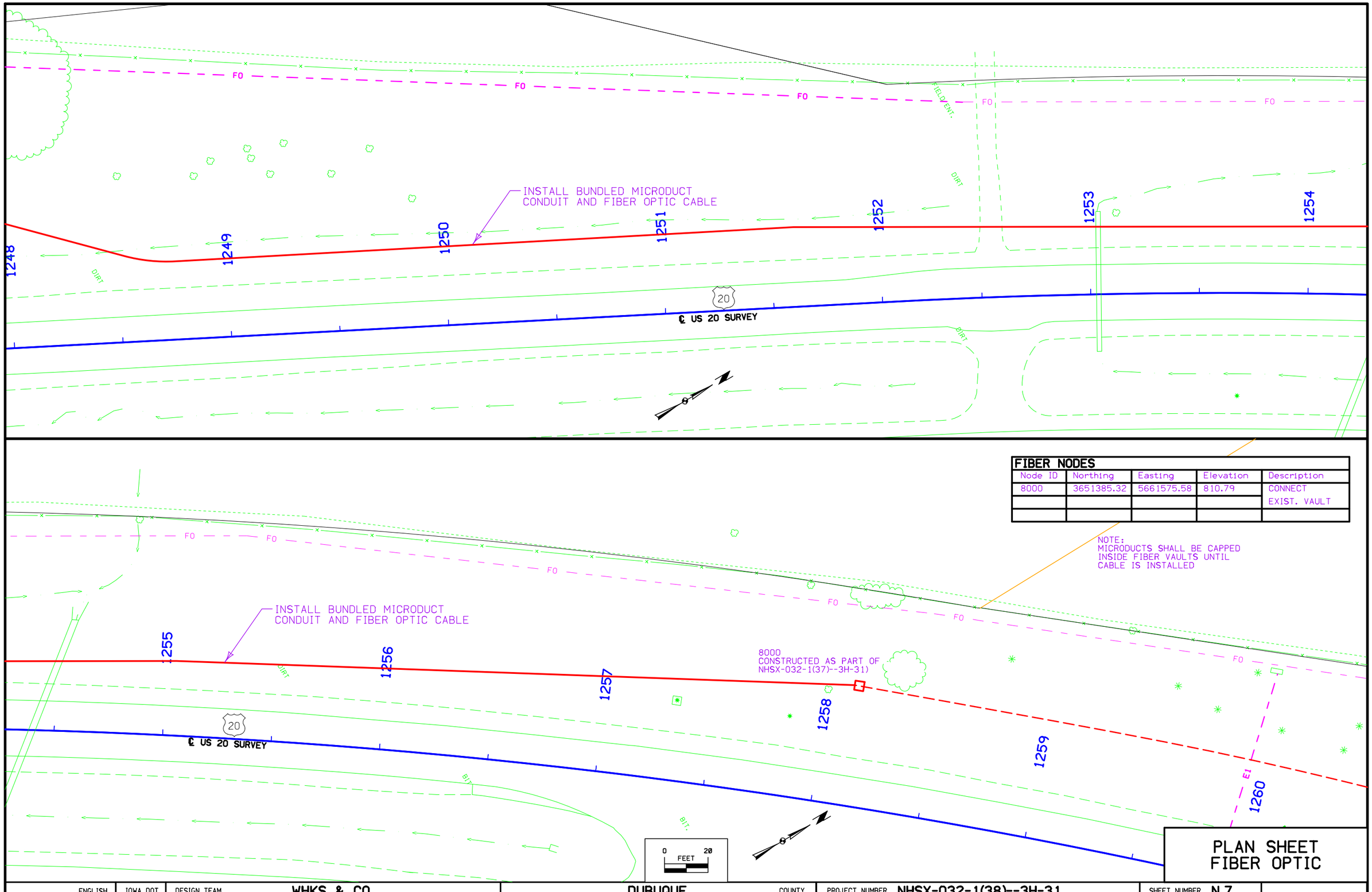

FIBER NODES				
Node ID	Northing	Easting	Elevation	Description
8000	3651385.32	5661575.58	810.79	CONNECT EXIST. VAULT

NOTE:
MICRODUCTS SHALL BE CAPPED
INSIDE FIBER VAULTS UNTIL
CABLE IS INSTALLED

PLAN SHEET
FIBER OPTIC

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	N.7

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8003
FIBER VAULT # 3

NOTE:
MICRODUCTS SHALL BE CAPPED
INSIDE FIBER VAULTS UNTIL
CABLE IS INSTALLED

FIBER NODES

Node ID	Northing	Easting	Elevation	Description
8002	3648250.69	5659198.63	760.22	FIBER VAULT #2
8003	3648404.83	5659242.40	771.27	FIBER VAULT #3

497

℄ COUSINS RD

30' UTILITY EASEMENT

496

INSTALL BUNDLED MICRODUCT
CONDUIT ONLY

INSTALL BUNDLED MICRODUCT
CONDUIT ONLY

8002
FIBER VAULT # 2

495

℄ SEIPPEL RD

55.5

52 W

53 W

54 W

INSTALL BUNDLED MICRODUCT
CONDUIT ONLY

30' UTILITY EASEMENT

0 FEET 20

PLAN SHEET
FIBER OPTIC

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	N.8

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℄ SEIPPEL RD

61 60 59 58 57 56 55

W W W W W W W

30' UTILITY EASEMENT

INSTALL BUNDLED MICRODUCT CONDUIT ONLY

St.S.

St.S.

FIBER NODES

Node ID	Northing	Easting	Elevation	Description
8005	3648483.76	5657455.52	793.69	FIBER VAULT #5

℄ SEIPPEL RD

67 66 65 64 63 62

W W W

8005
FIBER VAULT # 5

INSTALL BUNDLED MICRODUCT CONDUIT ONLY

0 FEET 20

NOTE:
MICRODUCTS SHALL BE CAPPED INSIDE FIBER VAULTS UNTIL CABLE IS INSTALLED

PLAN SHEET FIBER OPTIC

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	N.9

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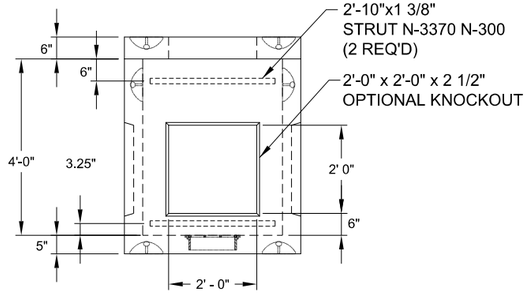
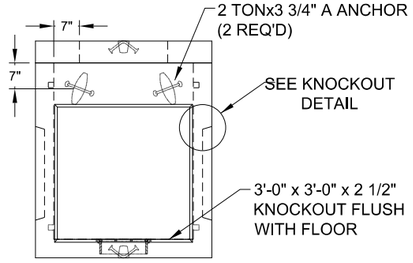
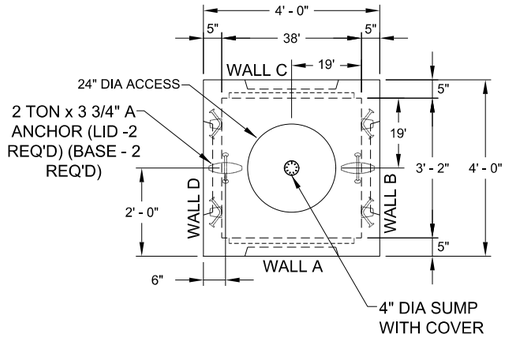


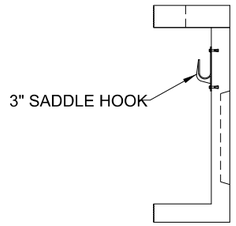
WALL A, C



WALL B, D



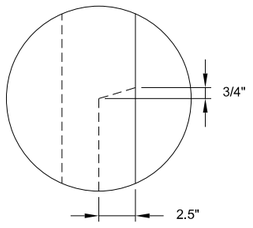
PLAN VIEW



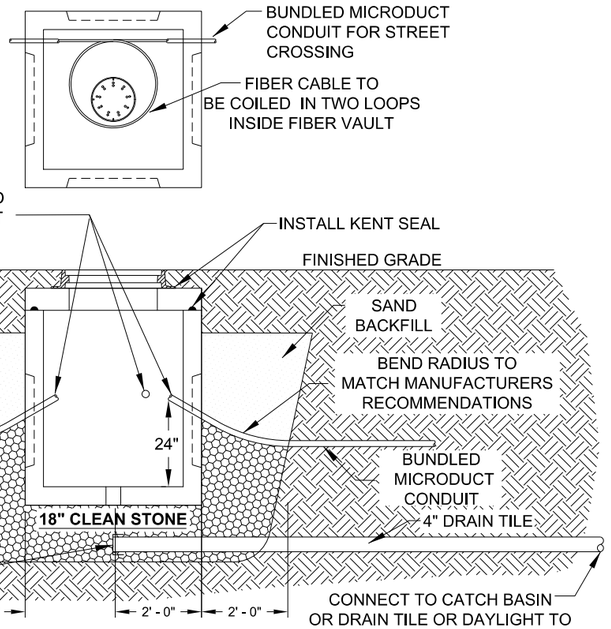
RACKING DETAIL

DESIGN NOTES:

1) DESIGN CRITERIA IS MINIMUM USED UNLESS OTHERWISE SPECIFIED
2) DESIGN LOADINGS:
   A. AASHTO HS - 20 - 44, W/ IMPACT.
   B. SOIL WEIGHT = 120 PCF.
   C. DEPTH OF OVERBURDEN 0.0' MIN, 5.0' MAX.
   D. ASSUMED WATER TABLE: BELOW BOTTOM OF SLAB
   E. EQUIV. FLUID PRESSURE = 40 PCF
   F. 80 PSF LATERAL LIVE LOAD SURCHARGE
3) CONCRETE 28 DAY COMPRESSIVE 6500 STRENGTH SHALL BE PSI (MIN.)
4) STEEL REINFORCEMENT: REBAR, ASTM A-615 GRADE 60
5) CEMENT: ASTM C-150 SPECIFICATIONS



REFERENCE INFORMATION
3838-48-HH



FIBER VAULT
NOT TO SCALE

NOTE:
ALL PENETRATIONS INTO FIBER VAULT SHALL BE CORE DRILLED FROM THE INSIDE OF THE FIBER VAULT (NO KNOCK OUTS ALLOWED)

ALL PENETRATIONS SHALL BE SEALED WITH BASF SONOLASTIC NP1 IN SIDE AND OUT SIDE OF VAULT SEE SPECIFICATION 7.11.

ALL CONDUITS TO ENTER FIBER VAULT A MINIMUM OF 18" FROM THE BOTTOM OF THE VAULT

FIBER CONDUIT TO BE BURIED A MINIMUM OF DEPTH OF 42" TO THE TOP OF CONDUIT

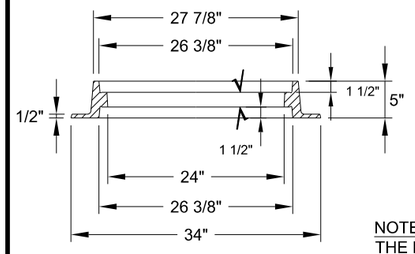
FIBER CONDUIT WILL NOT BE ALLOWED TO ENTER THE VAULT FROM THE BOTTOM.

ALL OF THE BUNDLED MICRODUCT PATHS SHALL BE CAPPED WITH MANUFACTURES RECOMMENDED CAP.

* IF GRADE PERMITS, ALL SUMP PITS SHALL HAVE A 4" DRAIN TILE RUN OUT TO A CATCH BASIN, DRAIN TILE OR DAYLIGHT WITH A PERFORATED RODENT SCREEN OR PLUG ATTACHED TO EACH END OF DRAIN TILE.

* INSTALL A MINIMUM OF FOUR SADDLE HOOKS ON THE INSIDE PERIMETER OF THE VAULT SPACE AN EQUAL DISTANCE APART.

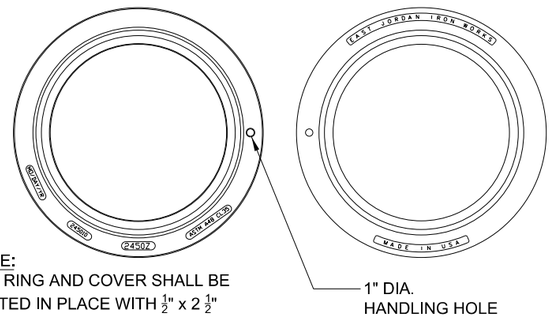
*THE INSTALLATION OF RISERS UNDER THE RIM AND COVER SHALL BE INCIDENTAL TO BID ITEM.



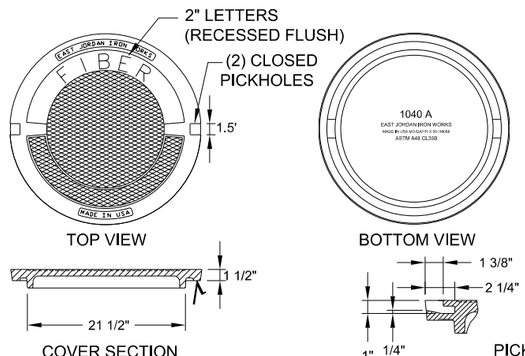
FRAME SECTION

√MACHINED SURFACE

REFERENCE INFORMATION
00245011



NOTE:
THE RING AND COVER SHALL BE BOLTED IN PLACE WITH $\frac{1}{2}$" x 2 $\frac{1}{2}$" STAINLESS STEEL BOLTS AND WASHERS IN ALL LANDSCAPED AREAS.
RING SHALL BE ADJUSTED TO MATCH FINAL PAVEMENT GRADE



√MACHINED SURFACE

NEENAH R1642 OR EQUIVALENT
WITH THE LEGEND "FIBER"

FIBER VAULT, SQUARE

F:\TRAFFIC\STANDARD_DETAILS\FIBER\VAULTS\DWG\2014\FVS 38-38-48.DWG

DESIGN TEAM:		DUBUQUE COUNTY	PROJECT NUMBER:		SHEET:	

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	N.10

9:49:11 AM 05/16/2016 etott K:\7222 SW Arterial\3103201094\Design_(38)_Grading\31032038N01.sht

- Interstate Highway Symbol
- U.S. Highway Symbol
- Iowa Highway Symbol
- County Road Highway Symbol
- Evergreen Tree
- Deciduous Tree
- Fruit Tree
- Shrub (Bushes)
- Timber
- Hedge
- Stump
- Swamp
- Rock Outcrop
- Broken Concrete
- Revetment (Rip Rap)
- Cemetery
- Grave
- Cave
- Sink Hole
- Board Fence
- Chain Link or Security Fence
- Wire Fence
- Terrace
- Earth Dam or Dike (Existing)
- Earth Dam or Dike (Proposed)
- Tile Outlet
- Edge of Water
- Existing Drainage
- Proposed Drainage
- Right of Way Rail or Lot Corner
- Concrete Monument
- Well
- Windmill
- Beehive Intake
- Existing Intake
- Proposed Intake
- Existing Utility Access (Manhole)
- Proposed Utility Access (Manhole)
- Fire Hydrant
- WH Water Hydrant (Rural)

- C Cistern
- LP L.P. Gas Tank (No Footing)
- UST Underground Storage Tank
- Latrine
- Luminaire
- Traffic Signal
- Traffic Signal with Luminaire
- TP Telephone Pedestal
- TVP Television Pedestal
- Telephone Pole
- Telephone Pole (Second Company)
- Telephone Pole (Third Company)
- Telephone Pole (Fourth Company)
- Telephone Pole (Fifth Company)
- Power Pole
- Power Pole (Second Company)
- Power Pole (Third Company)
- Power Pole (Fourth Company)
- Power Pole (Fifth Company)
- Electrical Highline Tower (Metal or Concrete)
- Telephone Riser Pole
- Power Riser Pole
- Telegraph Pole
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB Electric Box

- San. / W — City of Dubuque
Bob Schiesl
50 West 13th Street
Dubuque, IA 52001
563-589-4270
bschiesl@cityofdubuque.org

- FO — ICN
Larry Klawitter
400 East 1st Street
Grimes Office Building
Des Moines, IA 50319
515-725-4741
larry.klawitter@iowa.gov

- G3 — BP US Pipelines
David Sommerfeld
150 West Warrenville Road
Naperville, IL 60563
630-536-2729
david.sommerfeld@bp.com

Maquoketa Valley Electric Cooperative
James Lauzon
P.O. Box 370
Anamosa, IA 52205
319-462-3541
jlauzon@mvec.com

PLAN VIEW COLOR LEGEND OF SOILS SHEETS

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

PROFILE VIEW COLOR LEGEND OF SOILS SHEETS

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

PATTERN AND SYMBOL LEGEND OF SOILS SHEETS

- Drill
- Dig/Core
- Soils Book No. _____
- Date(s) Drilled _____
- $-H_2O-$ Water
- Treatment
- Sandstone
- DRY Dry
- Sand Blanket
- Unsuitable A
- S Sample
- Soil Remediation Area
- Unsuitable B
- Plugged
- Select Soil
- Unsuitable C
- M Moisture
- Select Sand
- Sandy Soil
- Shelby
- Slope Dressing Only
- Boulders
- Blow Count
- Broken and Weathered Rock
- Shale
- Dens. Core
- Rock

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

RIGHT-OF-WAY LEGEND

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

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

SOILS LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES Q)

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.1

3:31:37 PM 5/16/2016 ngday N:\Projects\2009\08099079\CAD\SHT\US20\31032038Q01.sht

DUBUQUE TWP.
T-89N R-2E
SEC. 31

CULT.

CULT. FIELD

B-57

B-59

50

55

60

EQUATION:
STA. 51+00.00 O.A. =
OLD PLAN STA 63+47±
SEIPPEL ROAD DIV. 1
DUBUQUE, IA
IA DOT PROJECT NO.
RC-0031(23)--9A-31
1998

℄ SEIPPEL ROAD

EXISTING ROW

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

B-55 B-56 B-58 B-60

9" P.C. to remove

32

WV

EXISTING ROW

BEGIN CONSTRUCTION
STA. 51+89.20 O.A.

PROPERTY LINE

CULT.

0 FEET 50

PLAN & PROFILE SOUTHWEST ARTERIAL OFFICE ALIGNMENT

CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

B-55	29, 98, ,

B-58	24, 106, ,

NOTE: SOILS WILL VARY BETWEEN BORINGS.
SEE STANDARD SPECIFICATION SECTION 1104.01

47'

EQUATION:
STA. 51+00.00 O.A. =
Elev. 802.03
OLD PLAN STA 63+47±
SEIPPEL ROAD DIV. 1
DUBUQUE, IA
IA DOT PROJECT NO.
RC-0031(23)--9A-31
1998
Elev. 802.03

PROPOSED ℄ OFFICE
ALIGNMENT PROFILE GRADE

BORING TO BORING
GROUNDLINE

TOPSOIL

$-H_2O-$

SILTY CLAY

SANDY LEAN CLAY

SILTY CLAY

TOPSOIL

SILTY CLAY

TOPSOIL

SILTY
CLAY

SHALE

LIMESTONE

815 810 805 800 795 790 785 780 775

49 50 51 52 53 54 55 56 57 58 59 60 61 62

B-55 0.0 B-56 0.0 B-58 0.0 B-60 0.0

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.2	REVISED

3:31:55 PM 5/16/2016 ngday N:\Projects\2009\08099079\CAD\SHT\US20\31032038001.sht

B-52
B-53
B-54
B-57
B-59
B-56
B-58
B-60
B-61
B-62
B-63
B-64
B-65
B-66

DUBUQUE TWP.
T-89N R-2E
SEC. 31

CULT.
CULT.
CULT.

60
65
70

EXISTING ROW
EXISTING ROW

℄ SEIPPEL RD.
32
SEIPPEL RD.
9" P.C.C.

COUSINS ROAD

WV

EQUATION:
SWA O.A.
PC Sta 61+47.98 Back
= SWA W.B.
PC Sta 261+47.98 Ahead

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

N

0 FEET 50

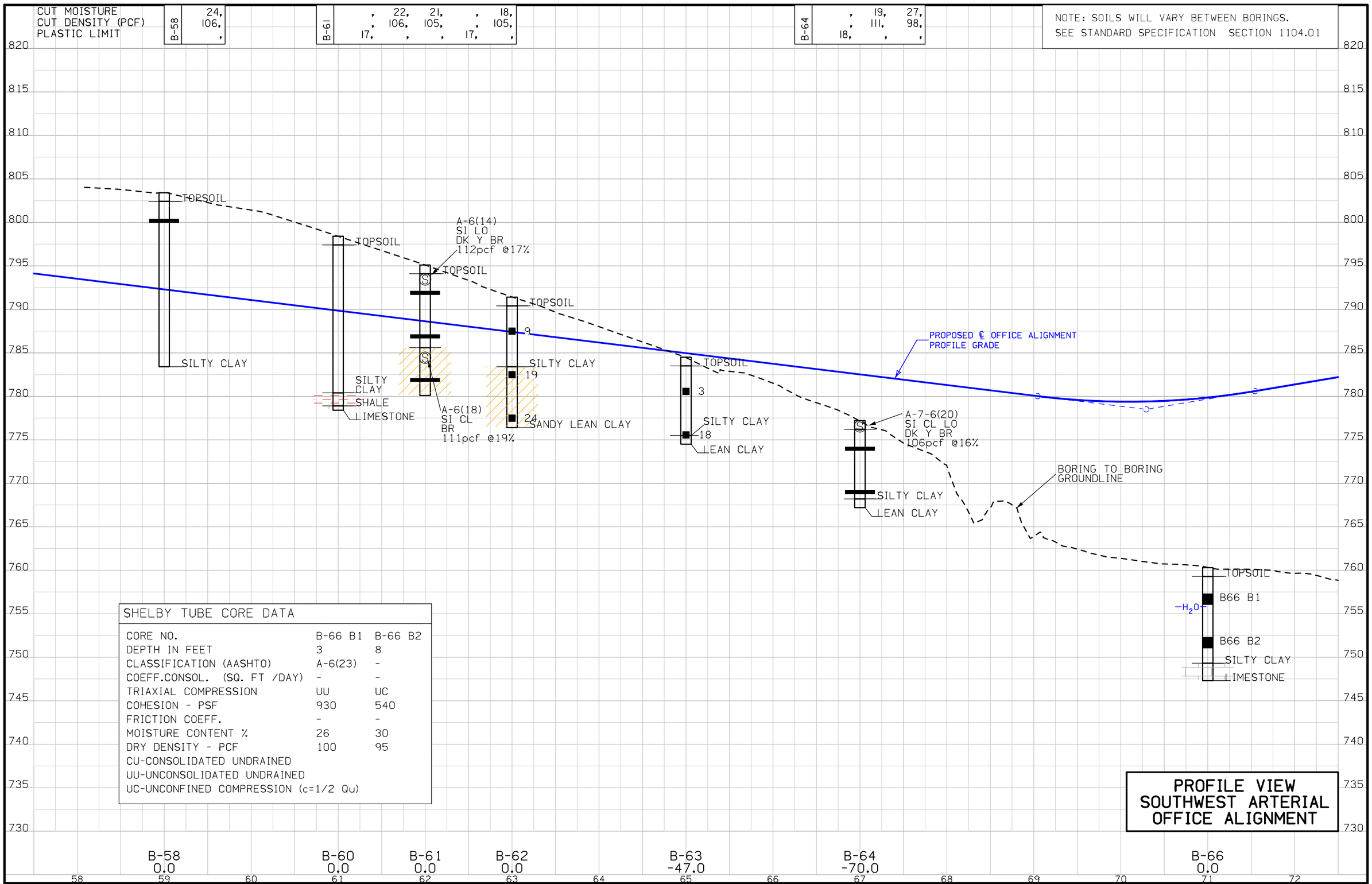
PLAN VIEW SOUTHWEST ARTERIAL OFFICE ALIGNMENT

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.3

3:31:57 PM 5/16/2016 ngday N:\Projects\2009\08099079\CAD\SHT\US20\31032038001.sht

	B-58	B-61	B-64
CUT MOISTURE	24,	, 22, 21, , 18,	, 19, 27,
CUT DENSITY (PCF)	106,	, 106, 105, , 105,	, 111, 98,
PLASTIC LIMIT	,	17, , , 17, ,	18, , ,

NOTE: SOILS WILL VARY BETWEEN BORINGS.
SEE STANDARD SPECIFICATION SECTION 1104.01



SHELBY TUBE CORE DATA

CORE NO.	B-66 B1	B-66 B2
DEPTH IN FEET	3	8
CLASSIFICATION (AASHTO)	A-6(23)	-
COEFF.CONSOL. (SQ. FT /DAY)	-	-
TRIAXIAL COMPRESSION	UU	UC
COHESION - PSF	930	540
FRICTION COEFF.	-	-
MOISTURE CONTENT %	26	30
DRY DENSITY - PCF	100	95

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

PROFILE VIEW SOUTHWEST ARTERIAL OFFICE ALIGNMENT

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.\TERRACON	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	Q.4

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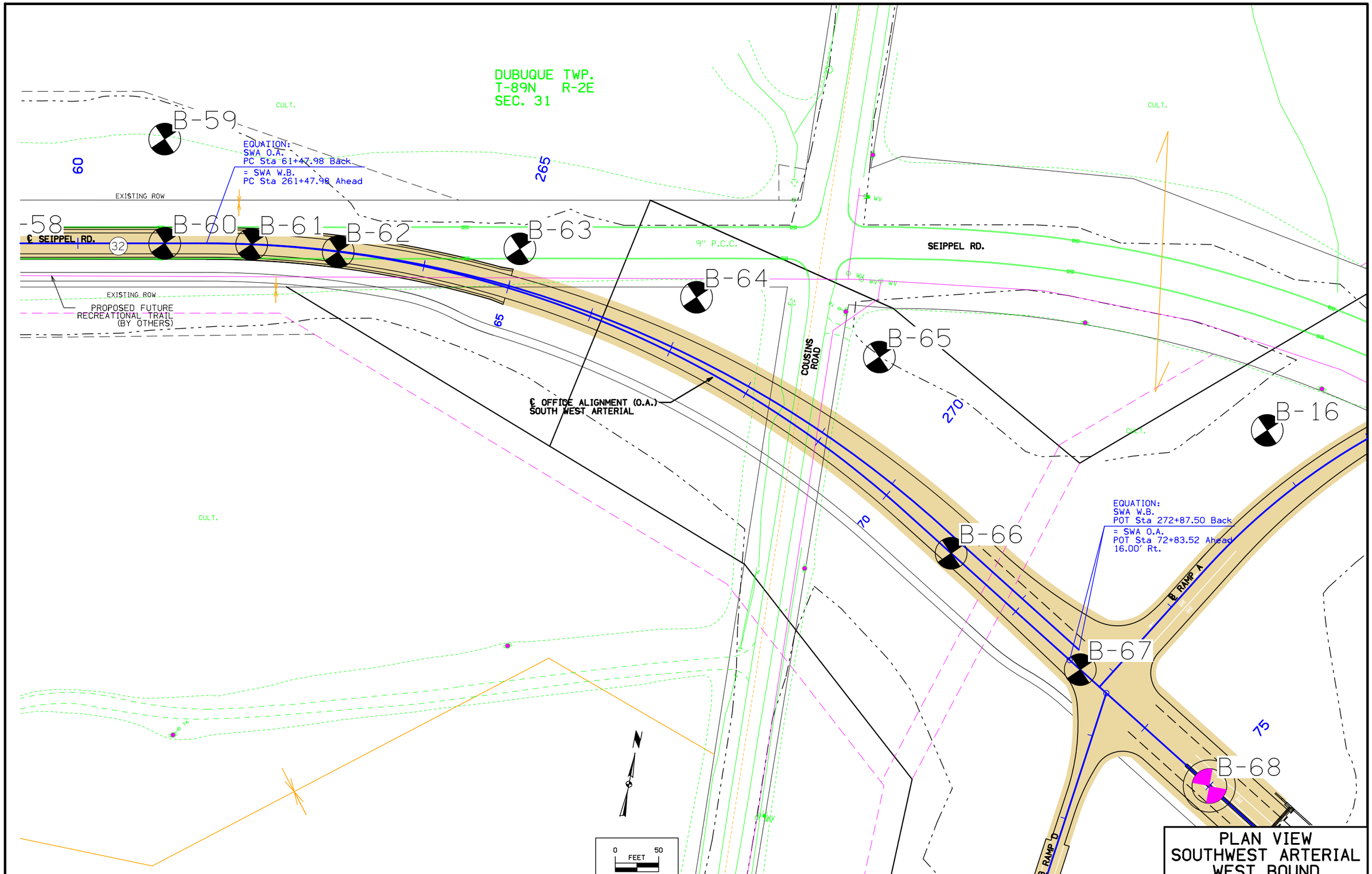

PLAN VIEW
SOUTHWEST ARTERIAL
WEST BOUND

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.5

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CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

B-64	,	19,	27,
	,	111,	98,
	18,	,	,

NOTE: SOILS WILL VARY BETWEEN BORINGS.
SEE STANDARD SPECIFICATION SECTION 1104.01

820 815 810 805 800 795 790 785 780 775 770 765 760 755 750 745 740 735 730

EQUATION:
SWA W.B.
PC Sta 272+87.50 (Back)
ELEV. 782.45
= SWA O.A.
POT Sta 72+83.52 (Ahead)

PROPOSED ℄ OFFICE ALIGNMENT
PROFILE GRADE

TOPSOIL
3
SILTY CLAY
18
LEAN CLAY

A-7-6(20)
SI CL LO
DK Y BR
106pcf @16%

SILTY CLAY
LEAN CLAY

BORING TO BORING
GROUNDLINE

TOPSOIL
B66 B1
$-H_2O-$
B66 B2
SILTY CLAY
LIMESTONE

TOPSOIL
B67 B1
$-H_2O-$
SILTY CLAY
50/1" SEAT
LIMESTONE

SHELBY TUBE CORE DATA			
CORE NO.	B-66 B1	B-66 B2	B-67 B1
DEPTH IN FEET	3	8	9
CLASSIFICATION (AASHTO)	A-6(23)	-	-
COEFF.CONSOL. (SQ. FT /DAY)	-	-	-
TRIAXIAL COMPRESSION	UU	UC	UC
COHESION - PSF	930	540	720
FRICTION COEFF.	-	-	-
MOISTURE CONTENT %	26	30	21
DRY DENSITY - PCF	100	95	117

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

B-63 -44.5 | B-64 -63.8 | B-66 16.0 | B-67 16.0

260 261 262 263 264 265 266 267 268 269 270 271 272 273 274

PROFILE VIEW SOUTHWEST ARTERIAL OFFICE ALIGNMENT

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.6

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SEIPPEL ROAD

9" P.C.C.

EXISTING ROW

1525

B-16

DUBUQUE TWP.
T-89N R-2E
SEC. 31

B-65

70

RAMP A

75

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

B-66 B-67 B-68 B-69 B-70 B-71 B-72

EXISTING ROW

℄ US 20 SURVEY

20

20

1225

PROPOSED FUTURE
RECREATIONAL TRAIL
(BY OTHERS)

REMOVE

COUSINS ROAD

EXISTING ROW

EXISTING ROW

RAMP D

4520

1220

SOUTH FORK
CATFISH CREEK

B-51

B-50

B-

0 50
FEET

PLAN VIEW
SOUTHWEST ARTERIAL
OFFICE ALIGNMENT

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.7

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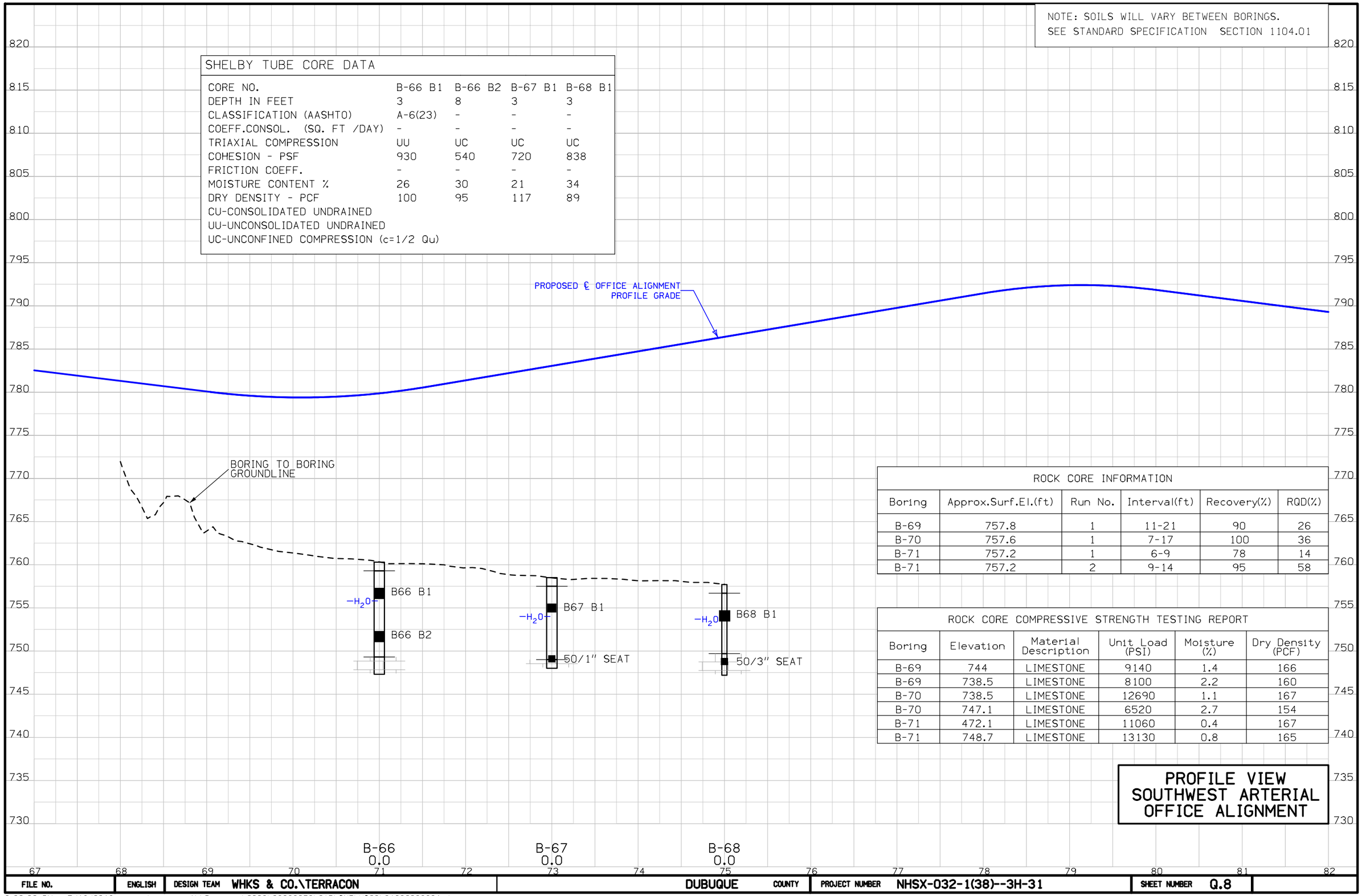
NOTE: SOILS WILL VARY BETWEEN BORINGS.
SEE STANDARD SPECIFICATION SECTION 1104.01

SHELBY TUBE CORE DATA

CORE NO.	B-66 B1	B-66 B2	B-67 B1	B-68 B1
DEPTH IN FEET	3	8	3	3
CLASSIFICATION (AASHTO)	A-6(23)	-	-	-
COEFF.CONSOL. (SQ. FT /DAY)	-	-	-	-
TRIAXIAL COMPRESSION	UU	UC	UC	UC
COHESION - PSF	930	540	720	838
FRICTION COEFF.	-	-	-	-
MOISTURE CONTENT %	26	30	21	34
DRY DENSITY - PCF	100	95	117	89

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



ROCK CORE INFORMATION

Boring	Approx.Surf.El.(ft)	Run No.	Interval(ft)	Recovery(%)	RQD(%)
B-69	757.8	1	11-21	90	26
B-70	757.6	1	7-17	100	36
B-71	757.2	1	6-9	78	14
B-71	757.2	2	9-14	95	58

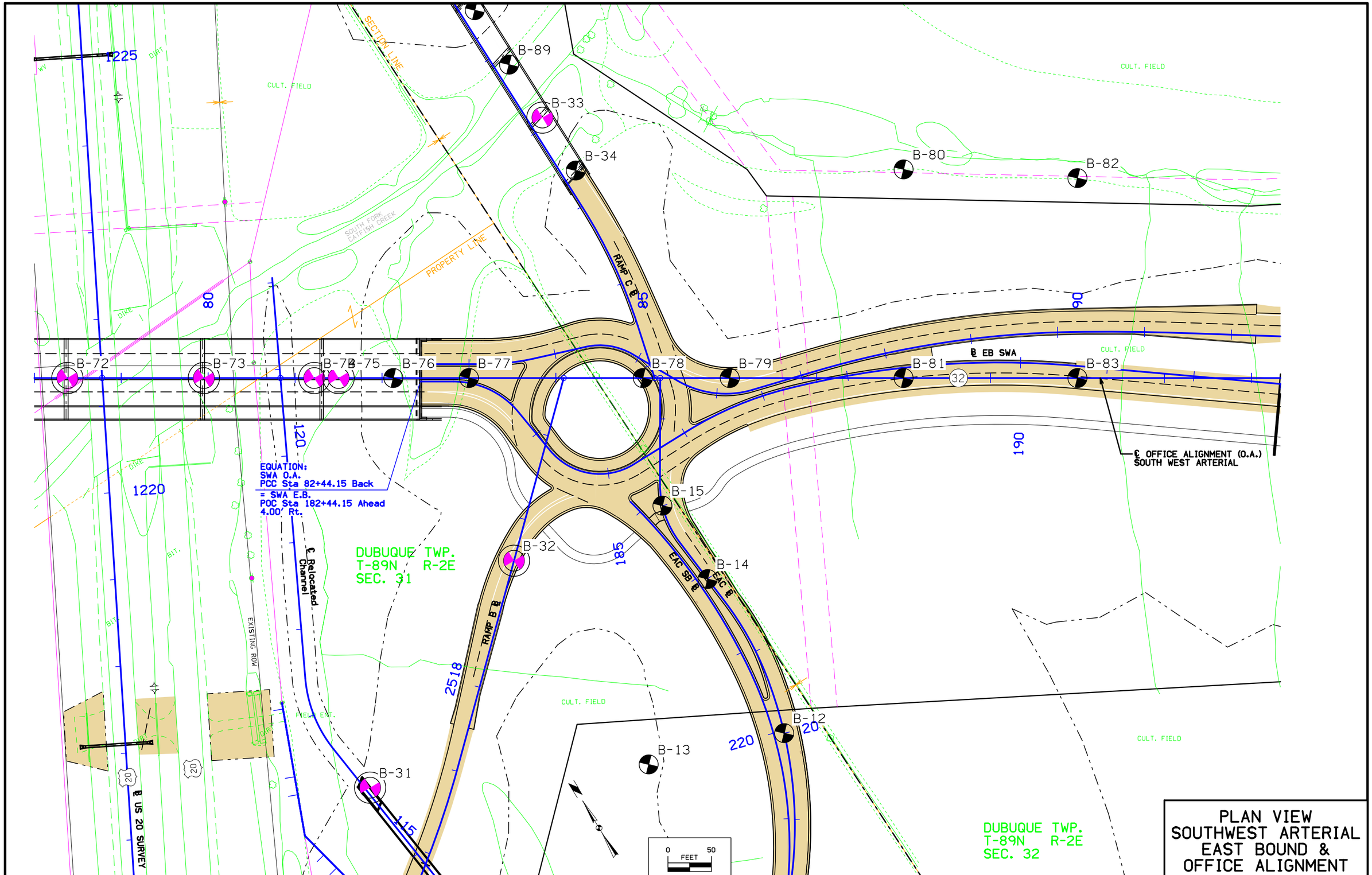
ROCK CORE COMPRESSIVE STRENGTH TESTING REPORT

Boring	Elevation	Material Description	Unit Load (PSI)	Moisture (%)	Dry Density (PCF)
B-69	744	LIMESTONE	9140	1.4	166
B-69	738.5	LIMESTONE	8100	2.2	160
B-70	738.5	LIMESTONE	12690	1.1	167
B-70	747.1	LIMESTONE	6520	2.7	154
B-71	472.1	LIMESTONE	11060	0.4	167
B-71	748.7	LIMESTONE	13130	0.8	165

PROFILE VIEW SOUTHWEST ARTERIAL OFFICE ALIGNMENT

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.\TERRACON	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	Q.8

3:32:02 PM 5/16/2016 ngday N:\Projects\2009\08099079\CAD\SHT\US20\31032038Q01.sht



PLAN VIEW
SOUTHWEST ARTERIAL
EAST BOUND &
OFFICE ALIGNMENT

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.9

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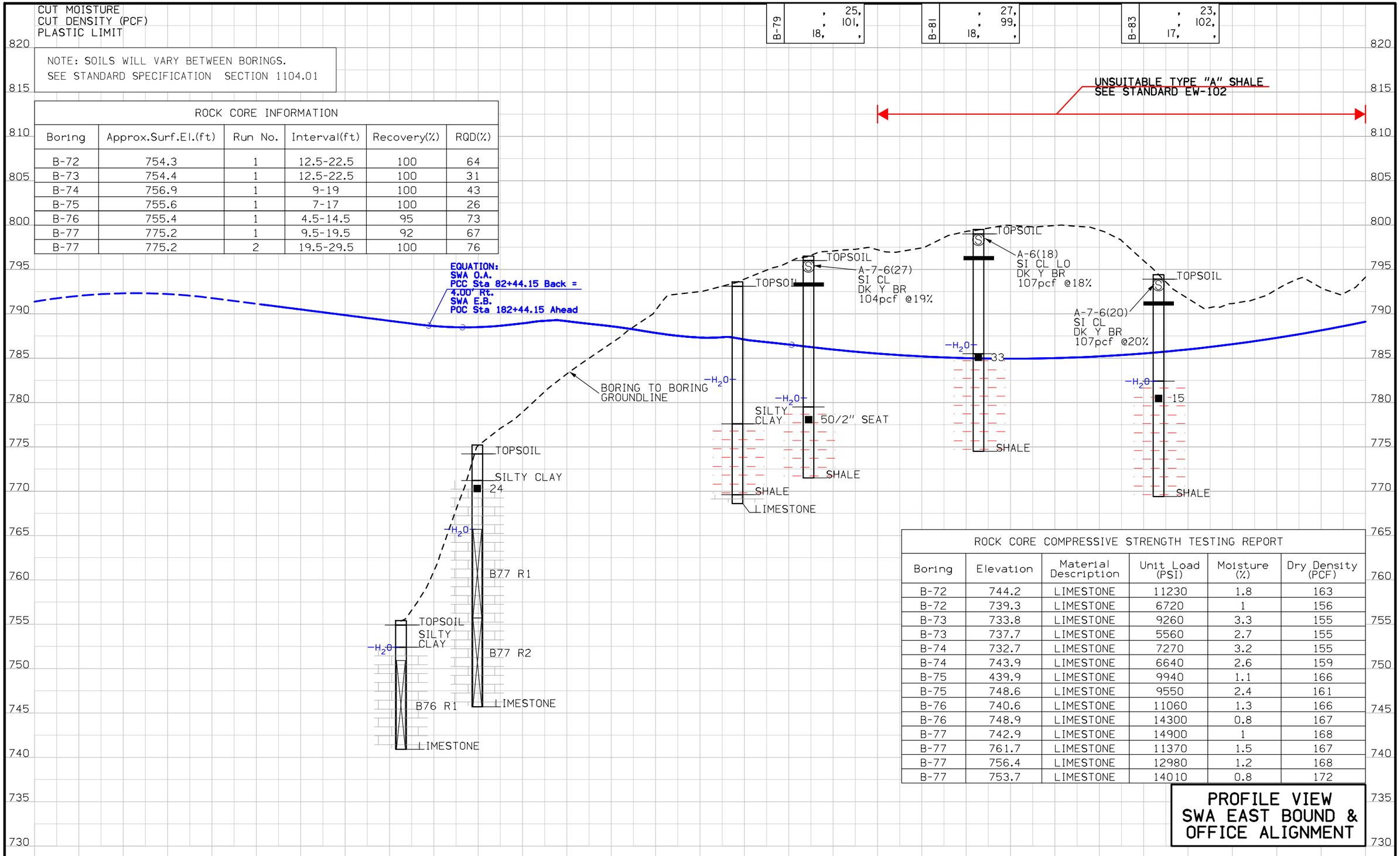
CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

B-79	,	25,	
	,	101,	
	18,	,	
B-81	,	27,	
	,	99,	
	18,	,	
B-83	,	23,	
	,	102,	
	17,	,	

NOTE: SOILS WILL VARY BETWEEN BORINGS.
SEE STANDARD SPECIFICATION SECTION 1104.01

ROCK CORE INFORMATION					
Boring	Approx.Surf.El.(ft)	Run No.	Interval(ft)	Recovery(%)	RQD(%)
B-72	754.3	1	12.5-22.5	100	64
B-73	754.4	1	12.5-22.5	100	31
B-74	756.9	1	9-19	100	43
B-75	755.6	1	7-17	100	26
B-76	755.4	1	4.5-14.5	95	73
B-77	775.2	1	9.5-19.5	92	67
B-77	775.2	2	19.5-29.5	100	76



ROCK CORE COMPRESSIVE STRENGTH TESTING REPORT					
Boring	Elevation	Material Description	Unit Load (PSI)	Moisture (%)	Dry Density (PCF)
B-72	744.2	LIMESTONE	11230	1.8	163
B-72	739.3	LIMESTONE	6720	1	156
B-73	733.8	LIMESTONE	9260	3.3	155
B-73	737.7	LIMESTONE	5560	2.7	155
B-74	732.7	LIMESTONE	7270	3.2	155
B-74	743.9	LIMESTONE	6640	2.6	159
B-75	439.9	LIMESTONE	9940	1.1	166
B-75	748.6	LIMESTONE	9550	2.4	161
B-76	740.6	LIMESTONE	11060	1.3	166
B-76	748.9	LIMESTONE	14300	0.8	167
B-77	742.9	LIMESTONE	14900	1	168
B-77	761.7	LIMESTONE	11370	1.5	167
B-77	756.4	LIMESTONE	12980	1.2	168
B-77	753.7	LIMESTONE	14010	0.8	172

PROFILE VIEW SWA EAST BOUND & OFFICE ALIGNMENT

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.\TERRACON	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	Q.10

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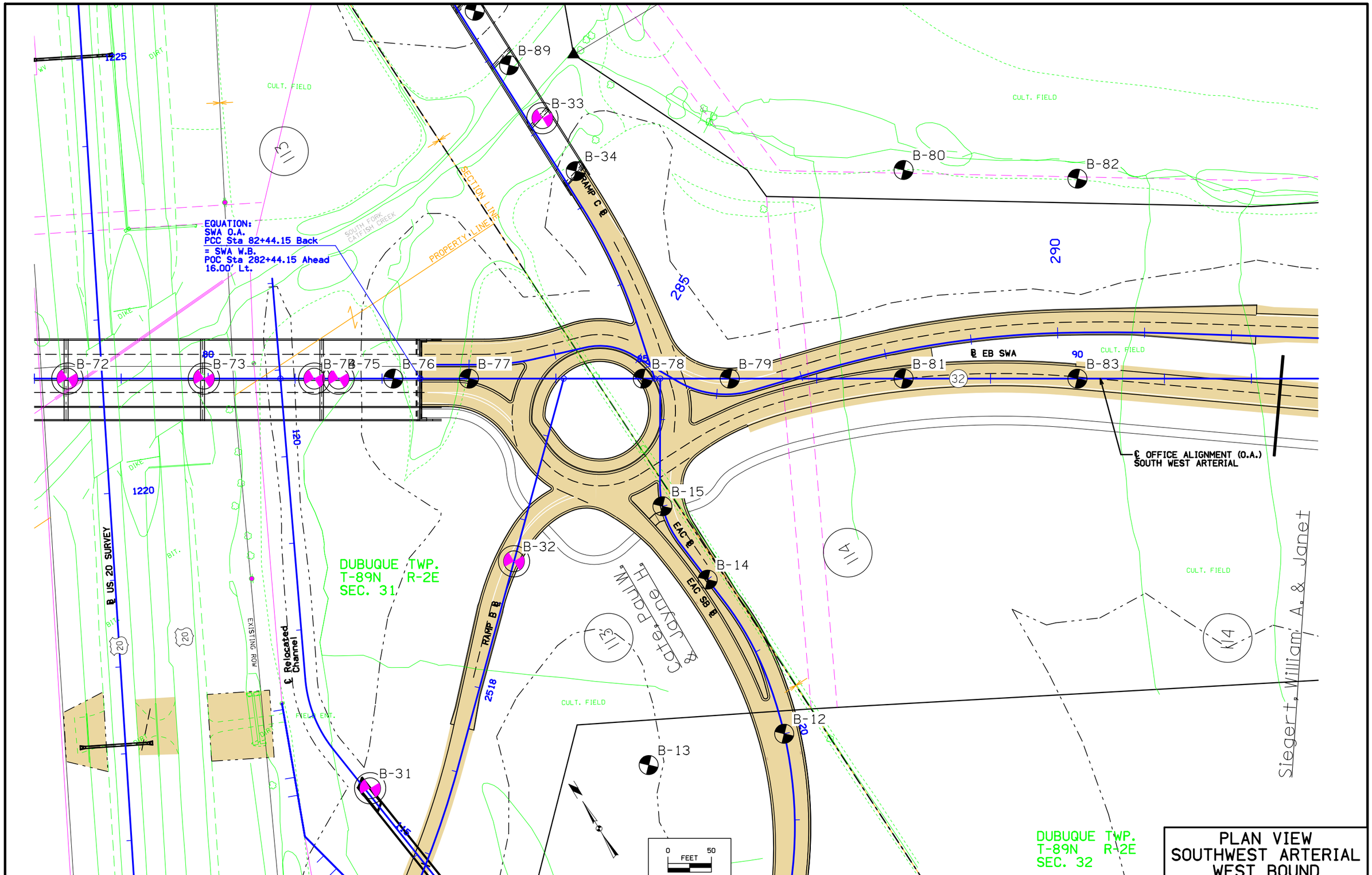

PLAN VIEW
SOUTHWEST ARTERIAL
WEST BOUND

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.11

3:32:06 PM 5/16/2016 ngday N:\Projects\2009\08099079\CAD\SHT\US20\31032038Q01.sht

CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

B-79	, 25,	
	, 101,	
	18, ,	

B-81	, 27,	
	, 99,	
	18, ,	

B-83	, 23,	
	, 102,	
	17, ,	

NOTE: SOILS WILL VARY BETWEEN BORINGS.
SEE STANDARD SPECIFICATION SECTION 1104.01

UNSUITABLE TYPE "A" SHALE
SEE STANDARD EW-102

EQUATION:
SWA O.A.
PCC Sta 82+44.15 Back
= SWA E.B.
POC Sta 282+44.15 Ahead
16.00' Lt.

BORING TO BORING GROUNDLINE

BORING TO BORING GROUNDLINE

B-76
TOPSOIL
SILTY CLAY
24
H_2O
B77 R1
B77 R2
LIMESTONE
TOPSOIL
SILTY CLAY
H_2O
B76 R1
LIMESTONE

B-77
TOPSOIL
H_2O
SILTY CLAY
SHALE
LIMESTONE

B-78
TOPSOIL
A-7-6(27)
SI CL
DK Y BR
104pcf @19%
H_2O
50/2" SEAT
SHALE

B-79
TOPSOIL
A-6(18)
SI CL LO
DK Y BR
107pcf @18%
H_2O
33
SHALE

B-81
TOPSOIL
A-7-6(20)
SI CL
DK Y BR
107pcf @20%
H_2O
15
SHALE

B-83

PROFILE VIEW
SWA WEST BOUND

| | | |

DUBUQUE TWP.
T-89N R-2E
SEC. 32

CULT. FIELD

CULT. FIELD

CULT. FIELD

PROPERTY LINE
CORP. LINE

B-84

WORKING
BLANKET #1

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

B-85 B-86 B-87

℄ WB SWA

95

32

100

℄ EB SWA

STA. 101+10.00
END GRADING

195

EQUATION:
SWA E.B.
PT Sta 199+20.53 Back
= SWA O.A.
POC Sta 98+52.53 Ahead
32.00' Lt.

CULT. FIELD

TWSP. & SECTION LINE

CORP. LINE

TABLE MOUND TWP.
T-88N R-2E
SEC. 5

0 FEET 50

Install 2-foot thick granular backfill working blanket in drainage way in the embankment fill areas. May be deleted if determined not necessary or expanded as needed at the time of construction. Granular backfill working blankets are shown on Q-Sheets and tabulated on CS.1.

PLAN VIEW SOUTHWEST ARTERIAL EAST BOUND & OFFICE ALIGNMENT

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.13

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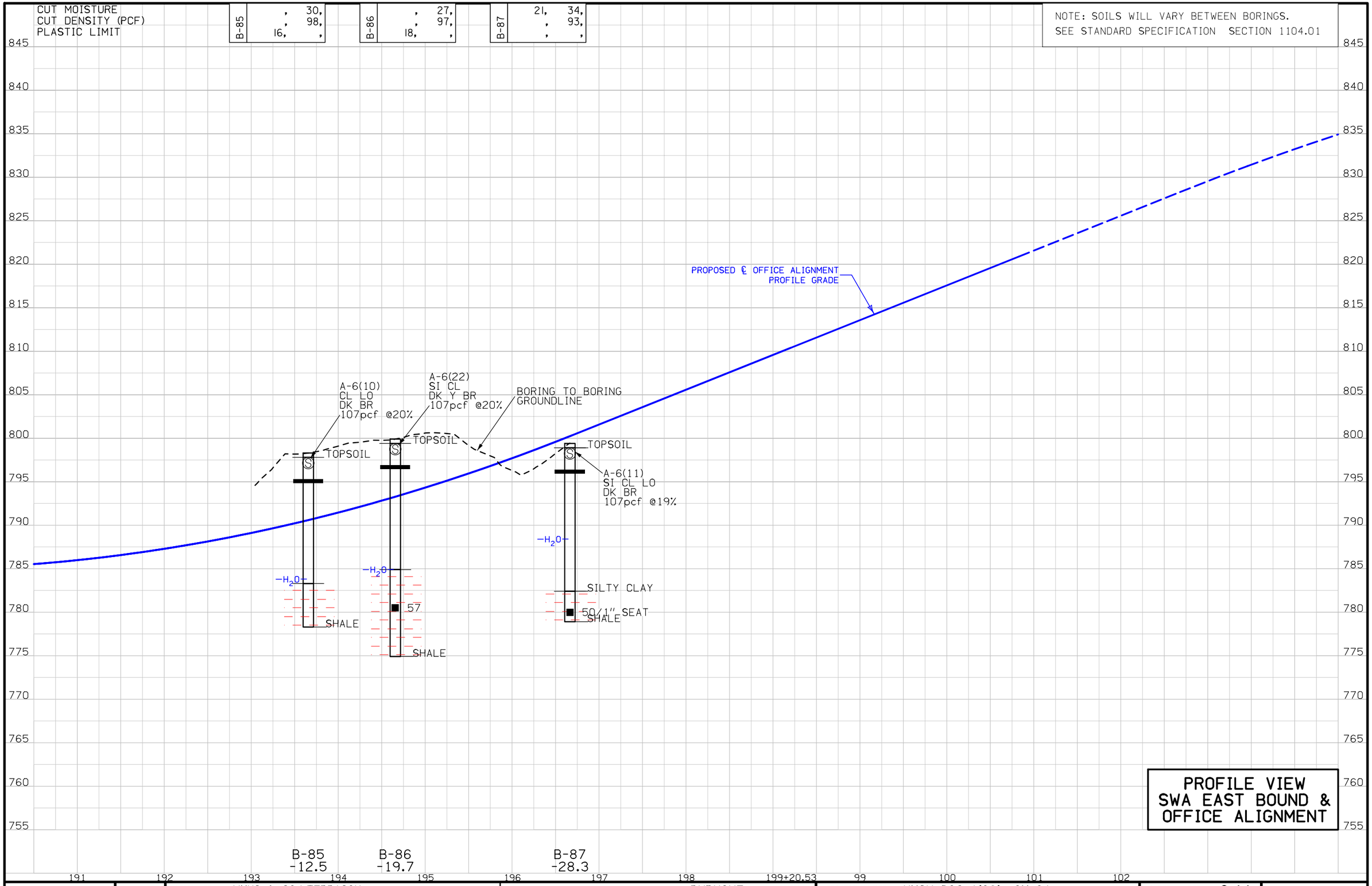
	B-85	B-86	B-87
CUT MOISTURE	, 30,	, 27,	21, 34,
CUT DENSITY (PCF)	, 98,	, 97,	, 93,
PLASTIC LIMIT	16, ,	18, ,	, ,

NOTE: SOILS WILL VARY BETWEEN BORINGS.
SEE STANDARD SPECIFICATION SECTION 1104.01



PROFILE VIEW
SWA EAST BOUND &
OFFICE ALIGNMENT

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.\TERRACON	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	Q.14

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DUBUQUE TWP.
T-89N R-2E
SEC. 32

PROPERTY LINE
CORP. LINE

CULT. FIELD

EQUATION:
SWA E.B.
PT Sta 298+74.70 Back
= SWA O.A.
POC Sta 98+52.53 Ahead
32.00' Rt.
For Continuation Refer
to Sheet D.13

B-84

295

WORKING
BLANKET #1

℄ OFFICE ALIGNMENT (O.A.)
SOUTH WEST ARTERIAL

B-85 B-86 B-87

95

℄ WB SWA

26'

100

32

℄ EB SWA

26'

STA. 101+10.00
END GRADING

TWSP. & SECTION LINE
CORP. LINE

TABLE MOUND TWP.
T-88N R-2E
SEC. 5

0 50
FEET

Install 2-foot thick granular backfill working blanket in drainage way in the embankment fill areas. May be deleted if determined not necessary or expanded as needed at the time of construction. Granular backfill working blankets are shown on Q-Sheets and tabulated on CS.1.

PLAN VIEW SOUTHWEST ARTERIAL WEST BOUND

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.15

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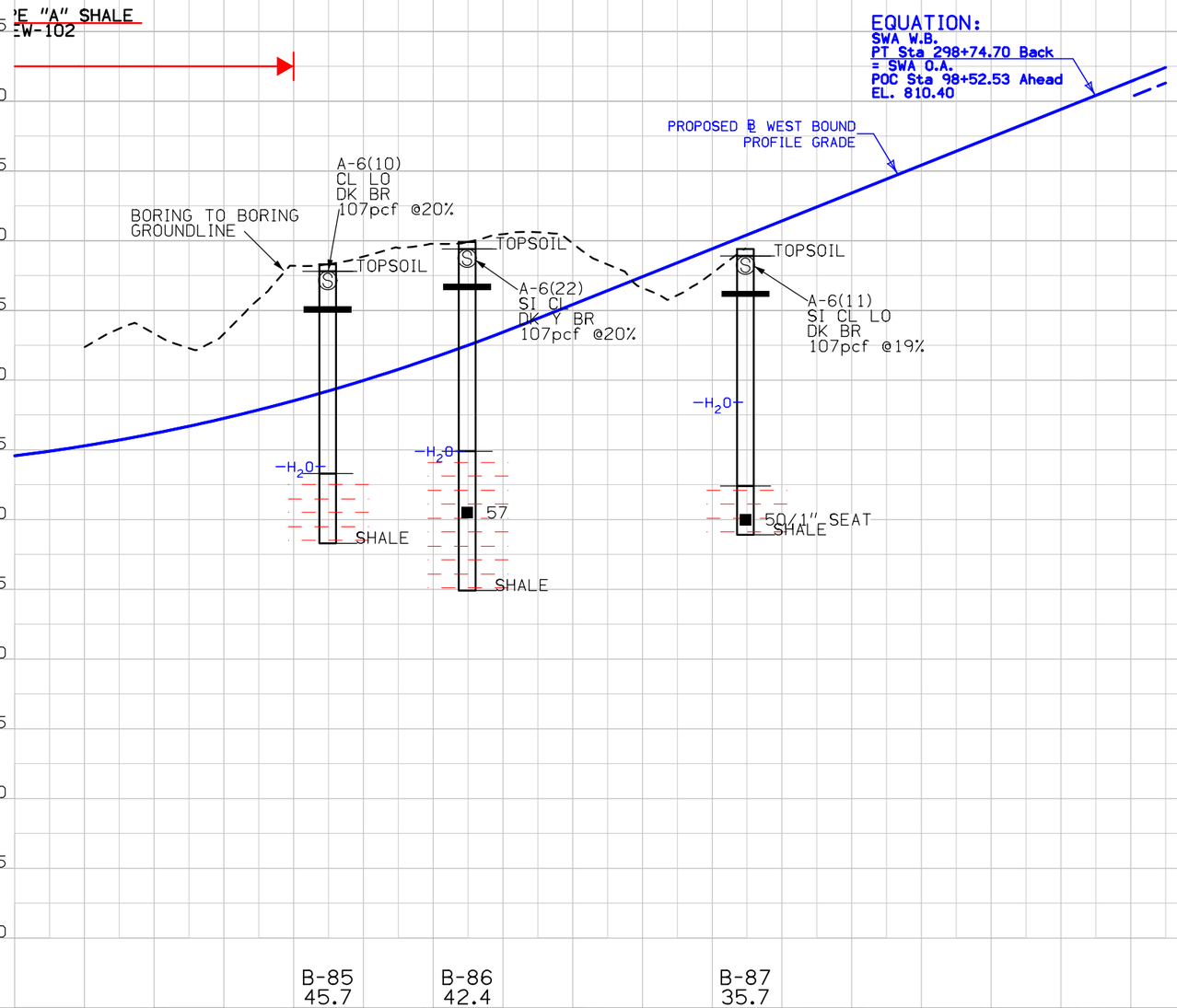
	B-85	B-86	B-87
CUT MOISTURE	, 30,	, 27,	21, 34,
CUT DENSITY (PCF)	, 98,	, 97,	, 93,
PLASTIC LIMIT	16, ,	18, ,	, ,

NOTE: SOILS WILL VARY BETWEEN BORINGS.
SEE STANDARD SPECIFICATION SECTION 1104.01



PROFILE VIEW
SWA WEST BOUND

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.16

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

TABLE MOUND TWP.
T-88N R-2E
SEC. 5

DUBUQUE TWP.
T-89N R-2E
SEC. 31

SECTION LINE

PROPERTY LINE

TOWNSHIP LINE

20' SAN. SEWER ESMT.

19' SAN. SEWER ESMT.

EXISTING ROW

B-1 B-2 B-3 B-4 B-5 B-6 B-7 B-8 B-9 B-10 B-11 B-12 B-13 B-14 B-15 B-28 B-29 B-30 B-31 B-32 B-75 B-76 B-77 B-78 B-90

0 FEET 100

PLAN & PROFILE
EAST ACCESS CONNECTOR (EAC)

CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

B-3: 24, 12,
B-5: 28, 24, 15,
B-8: 28, 98,
B-10: 31, 94, 25, 104,
B-12: 29, 92, 23, 107, 20,
B-14: 23, 102,

PROPOSED PROFILE GRADE

B-1: SAND AND GRAVEL; B1 B1; SILTY CLAY; B1 C1; LEAN CLAY; SANDY LEAN CLAY; 50/3" SHALE
B-2: TOPSOIL; B2 B1; SILTY CLAY; B2 C1; SANDY LEAN CLAY; SHALE; HIGHLY WEATHERED LIMESTONE
BORING TO BORING GROUNDLINE
B-3: TOPSOIL; B3 B1; FAT CLAY; LEAN CLAY; SHALE
B-4: TOPSOIL; B4 B1; LEAN CLAY; 50/6" SEAT; 50/4" SEAT; SHALE
B-5: TOPSOIL; LEAN CLAY; 50/1" SEAT; SHALE
B-6: TOPSOIL; LEAN CLAY; SHALE; INTERBEDDED SHALE AND LIMESTONE
B-8: TOPSOIL; 28 98; LEAN CLAY; 12; 29; SHALE; MODERATELY WEATHERED SHALE; INTERBEDDED SHALE AND SANDSTONE
B-10: TOPSOIL; SILTY CLAY; CLAYEY SILT; 12; 37; 50/44" SHALE; B10 R1; B10 R2; B10 R3; INTERBEDDED SHALE AND SANDSTONE
B-12: TOPSOIL; A-6(21) SI LO DK Y BR 107pcf @17%; LEAN CLAY; 28; 52; 50/2" SEAT; B12 R1; B12 R2; B12 R3; INTERBEDDED SHALE AND SANDSTONE
B-14: TOPSOIL; LEAN CLAY; 21; 50/3" SEAT; SHALE; SHALE WITH LIMESTONE STRINGERS

UNSUITABLE TYPE "A" SHALE
SEE STANDARD EW-102

SHELBY TUBE CORE DATA

CORE NO.	B-1 A1	B-1 B1	B-2 B1	B-2 C1	B-3 B1	B-4 B1
DEPTH IN FEET	4	19	4	9	4	4
CLASSIFICATION (AASHTO)	-	-	-	-	A-7-6(29)	-
COEFF.CONSOL. (SQ. FT /DAY)	-	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UC	UC	UU	UC
COHESION - PSF	2200	1960	1730	400	1040	580
FRICTION COEFF.	-	-	-	-	-	-
MOISTURE CONTENT %	22	25	25	32	30	28
DRY DENSITY - PCF	105	100	99	92	93	107

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

ROCK CORE INFORMATION

Boring	Approx.Surf.El.(ft)	Run No.	Interval(ft)	Recovery(%)	RQD(%)
B-7	799.6	1	13.5-21.5	92	56
B-7	799.6	2	21.5-31.5	93	82
B-7	799.6	3	31.5-40	100	74
B-8	806	1	18.5-26	99	57
B-8	806	2	26-36	100	92
B-8	806	3	36-45	100	90
B-10	814.8	1	24.5-31	100	86
B-10	814.8	2	31-41	98	81
B-10	814.8	3	41-50	100	94

ROCK CORE INFORMATION

Boring	Approx.Surf.El.(ft)	Run No.	Interval(ft)	Recovery(%)	RQD(%)
B-11	826.5	1	14-20.5	90	64
B-11	826.5	2	20.5-30.5	100	70
B-11	826.5	3	30.5-40.5	100	94
B-11	826.5	4	40.5-50.5	98	87
B-11	826.5	5	50.5-60	100	90
B-12	816.9	1	23.5-31	97	68
B-12	816.9	2	31-41	99	82
B-12	816.9	3	41-50	100	96
B-13	802.1	1	19.5-29.5	100	90
B-13	802.1	2	29.5-39.5	100	68

ROCK CORE COMPRESSIVE STRENGTH TESTING REPORT

Boring	Elevation	Material Description	Unit Load (PSI)	Moisture (%)	Dry Density (PCF)
B-7	786.1	SHALE	2470	5.8	145
B-7	779.8	SHALE	4640	4.6	142
B-7	775.7	SHALE	7470	4.6	150
B-7	770.9	SHALE	5890	6.4	139
B-7	764.6	SHALE	6380	5.2	160
B-7	760.1	SHALE	6420	3.8	158
B-7	783.9	SHALE	4180	4.1	140
B-8	781.5	SHALE	7230	3.6	148
B-8	799	SHALE	5800	3.7	147
B-8	774	SHALE	6530	4.1	151
B-8	768	SHALE	6600	7.1	143
B-8	763	SHALE	7310	2.8	165
B-8	789.3	SHALE	2420	6.1	141
B-10	783.3	SHALE	5190	3.4	157
B-10	776.9	SHALE	6690	2.7	156
B-10	771.8	SHALE	7310	4.2	154
B-10	771.3	SHALE	7390	4.5	157
B-10	765.5	SHALE	6440	6.5	157
B-10	808.5	SHALE	230	7.6	141
B-11	804	SHALE	920	7	144
B-11	798.9	SHALE	1950	5.2	150
B-11	796	SHALE	7590	2.9	161
B-11	788.6	SHALE	4370	3.7	151
B-11	784.5	SHALE	7270	4	144
B-11	777	SHALE	8050	4.9	150
B-11	776	SHALE	5090	4.9	147
B-11	770.6	SHALE	6690	6.4	140
B-11	792.2	SHALE	5100	3.2	157
B-12	788.4	SHALE	6340	3.1	149
B-12	783.9	SHALE	5320	4.8	142
B-12	778.9	SHALE	7120	4.1	151
B-12	773.9	SHALE	12980	5.4	146
B-12	811.3	SHALE	6830	5.6	150
B-12	781.8	SHALE	4940	5.2	141
B-13	774.8	SHALE	6640	6.1	138
B-13	770.6	SHALE	5450	5.1	153
B-13	763.2	SHALE	4840	4.7	149

B-1 0.0 | B-2 0.0 | B-3 0.0 | B-4 0.0 | B-5 50.0 | B-6 0.0 | B-8 0.0 | B-10 -0.0 | B-12 -0.0 | B-14 0.0

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.17

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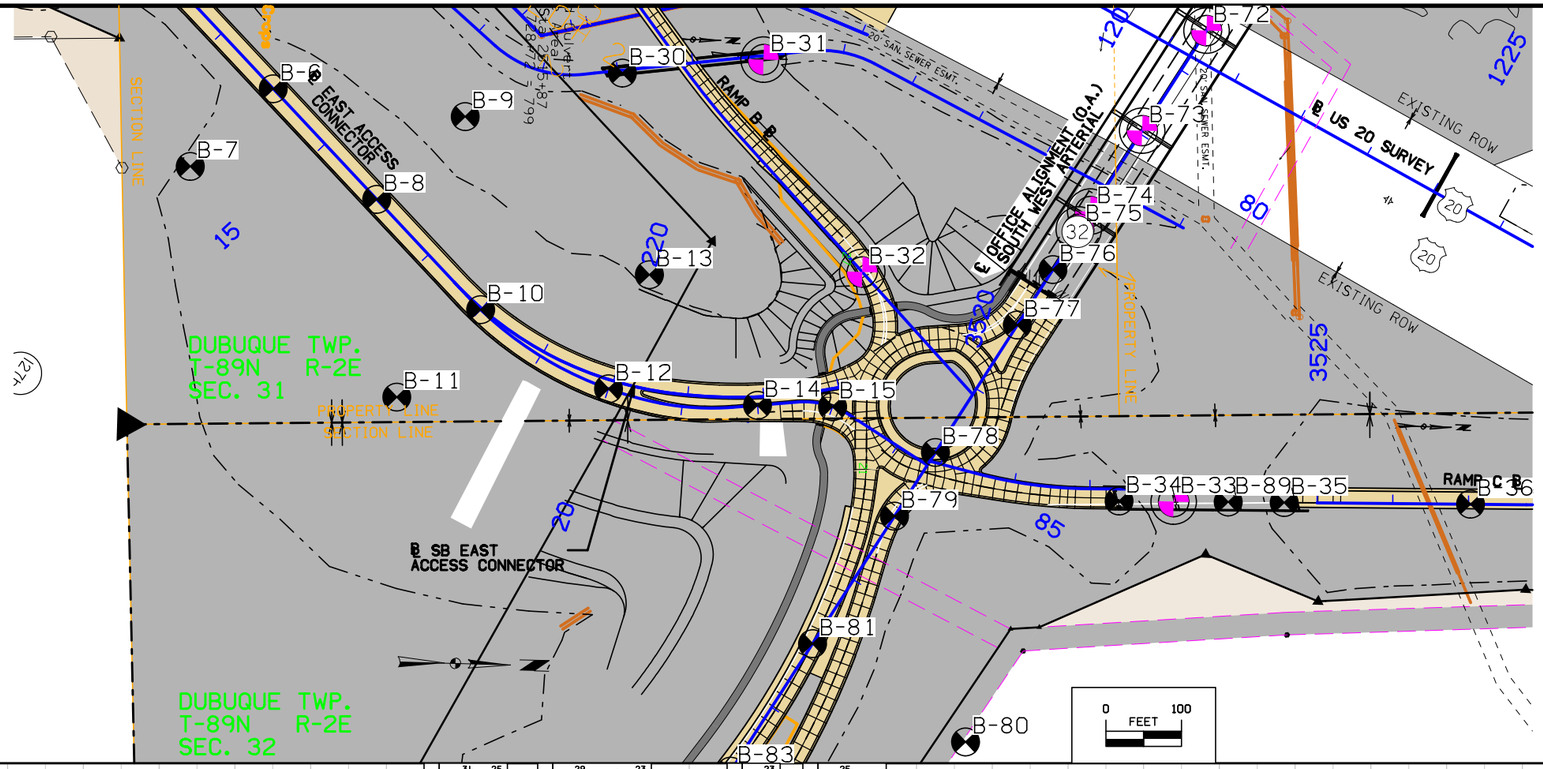
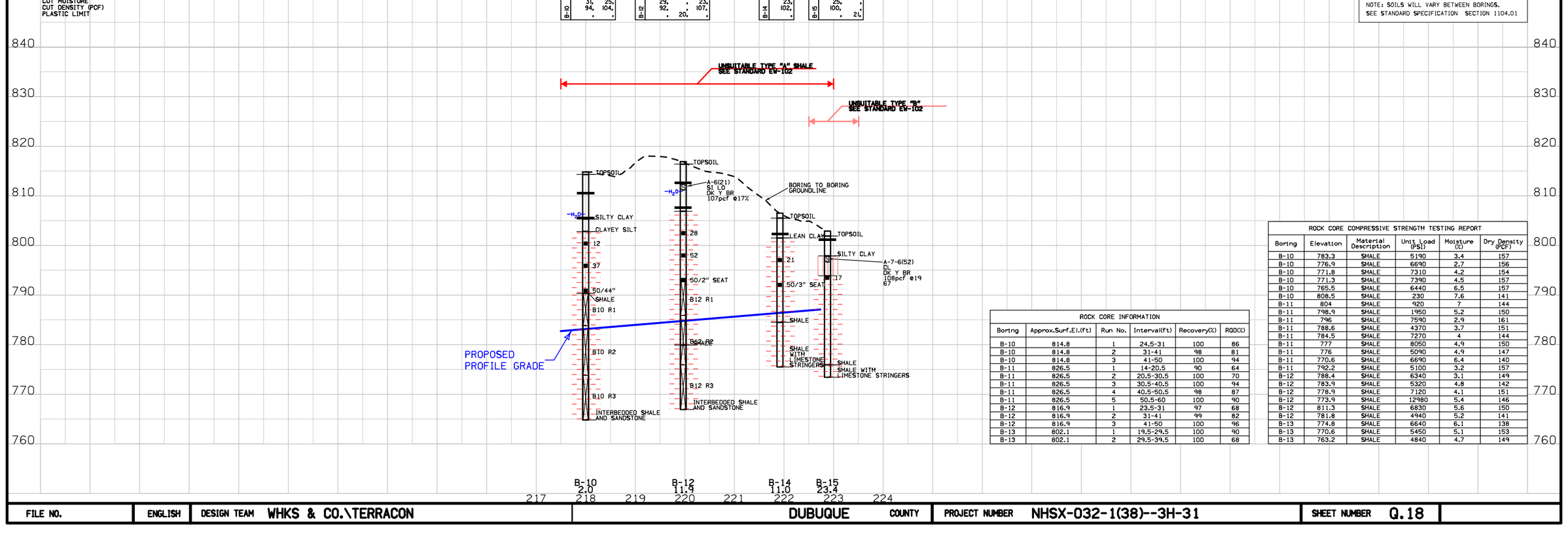


PLAN & PROFILE SOUTH BOUND EAST ACCESS CONNECTOR (SB EAC)

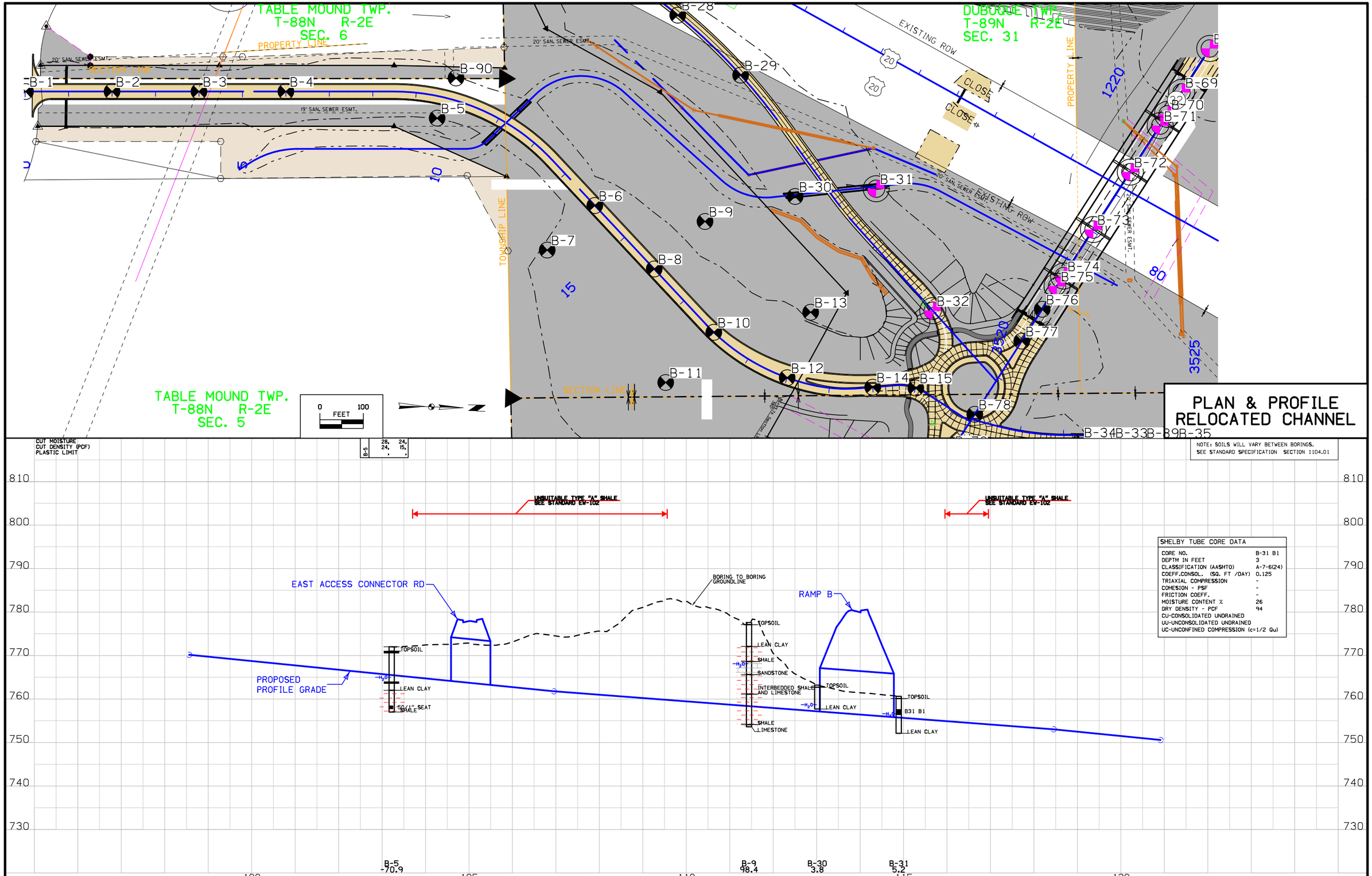
NOTE: SOILS WILL VARY BETWEEN BORINGS. SEE STANDARD SPECIFICATION SECTION 1104.01



ROCK CORE INFORMATION					
Boring	Approx.Surf.El.(ft)	Run No.	Interval(ft)	Recovery(%)	RQD(%)
B-10	814.8	1	24.5-31	100	86
B-10	814.8	2	31-41	98	81
B-10	814.8	3	41-50	100	94
B-11	826.5	1	14-20.5	90	64
B-11	826.5	2	20.5-30.5	100	70
B-11	826.5	3	30.5-40.5	100	94
B-11	826.5	4	40.5-50.5	98	87
B-11	826.5	5	50.5-60	100	90
B-12	816.9	1	23.5-31	97	68
B-12	816.9	2	31-41	99	82
B-12	816.9	3	41-50	100	96
B-13	802.1	1	19.5-29.5	100	90
B-13	802.1	2	29.5-39.5	100	68

ROCK CORE COMPRESSIVE STRENGTH TESTING REPORT					
Boring	Elevation	Material Description	Unit Load (PSI)	Moisture (%)	Dry Density (PCF)
B-10	783.3	SHALE	5190	3.4	157
B-10	776.9	SHALE	6690	2.7	156
B-10	771.8	SHALE	7310	4.2	154
B-10	771.3	SHALE	7390	4.5	157
B-10	765.5	SHALE	6440	6.5	157
B-10	808.5	SHALE	230	7.6	141
B-11	804	SHALE	920	7	144
B-11	798.9	SHALE	1950	5.2	150
B-11	796	SHALE	7590	2.9	161
B-11	788.6	SHALE	4370	3.7	151
B-11	784.5	SHALE	7270	4	144
B-11	777	SHALE	8050	4.9	150
B-11	776	SHALE	5090	4.9	147
B-11	770.6	SHALE	6690	6.4	140
B-11	792.2	SHALE	5100	3.2	157
B-12	788.4	SHALE	6340	3.1	149
B-12	783.9	SHALE	5320	4.8	142
B-12	778.9	SHALE	7120	4.1	151
B-12	773.9	SHALE	12980	5.4	146
B-12	811.3	SHALE	6830	5.6	150
B-12	781.8	SHALE	4940	5.2	141
B-13	774.8	SHALE	6640	6.1	138
B-13	770.6	SHALE	5450	5.1	153
B-13	763.2	SHALE	4840	4.7	149

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.\TERRACON	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	Q.18



PLAN & PROFILE RELOCATED CHANNEL

NOTE: SOILS WILL VARY BETWEEN BORINGS.
SEE STANDARD SPECIFICATION SECTION 1104.01

SHELBY TUBE CORE DATA

CORE NO.	B-31 B1
DEPTH IN FEET	3
CLASSIFICATION (AASHTO)	A-7-6(24)
COEFF.CONSOL. (SQ. FT /DAY)	0.125
TRIAXIAL COMPRESSION	-
COHESION - PSF	-
FRICTION COEFF.	-
MOISTURE CONTENT %	26
DRY DENSITY - PCF	94
CU-CONSOLIDATED UNDRAINED	
UU-UNCONSOLIDATED UNDRAINED	
UC-UNCONFINED COMPRESSION (c=1/2 Qu)	

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.19

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DUBUQUE TWP.
T-89N R-2E
SEC. 31

DUBUQUE TWP.
T-89N R-2E
SEC. 32

1/4 SECTION LINE

SECTION LINE

B-64 B-65 B-66 B-67 B-68 B-69 B-70 B-51 B-50 B-49 B-48 B-16 B-17 B-88 B-18 B-19 B-20 B-21 B-22 B-23 B-24 B-25 B-26 B-39 B-38

CLOSE

FIELD ENT.

PT Sta 70+28.48

COUSINS ROAD

REMOVE

℄ SWITERIAL

Sta 452+51.65

CULT.FIELD

FIELD

RAMP A

SEIPPEL ROAD

15:1 TAPER

DITCH

BIKE

70 1525 1530 1535 1240 1230 1225 1535 75 38

20

32

0 FEET 100

PLAN & PROFILE RAMP "A"

NOTE: SOILS WILL VARY BETWEEN BORINGS.
SEE STANDARD SPECIFICATION SECTION 1104.01

CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

B-18: 21, 103, .
B-24: 24, 103, 30, 96, 17, 20, .

820 810 800 790 780 770 760 750 740

UNSUITABLE TYPE "C" SEE STANDARD EW-102

UNSUITABLE TYPE "B" SEE STANDARD EW-102

LIMESTONE SEE STANDARD EW-102

LIMESTONE SEE STANDARD EW-102

PROPOSED PROFILE GRADE

BORING TO BORING GROUNDLINE

B-16 B1: TOPSOIL; B16 B1; FAT CLAY; B16 C1; LEAN CLAY; LIMESTONE
B-16 C1: TOPSOIL; LEAN CLAY; 50/3" SEAT; LIMESTONE
B-18: TOPSOIL; SILTY CLAY; SANDY LEAN CLAY; 50/1; LIMESTONE
B-19: TOPSOIL; SILTY CLAY; SANDY LEAN CLAY; LIMESTONE
B-21: TOPSOIL; LEAN CLAY; SANDY LEAN CLAY; LIMESTONE
B-22: TOPSOIL; LEAN CLAY; LEAN TO FAT CLAY; LIMESTONE
B-24: TOPSOIL; A-6(18) SI LO DK Y BR 109pcf @17%; LEAN CLAY; A-7-6(30) SI CL DK Y BR 103pcf @20% 53; LIMESTONE SHALE; LIMESTONE
B-25: TOPSOIL; LEAN CLAY; FAT CLAY; LIMESTONE
B-26: TOPSOIL; LEAN CLAY; FAT CLAY; LIMESTONE

B-16 -71.2 | B-17 -66.2 | 1525 | B-18 -29.0 | B-19 -15.0 | B-21 -8.5 | B-22 -7.7 | B-24 -7.1 | 1535 | B-25 -6.4 | B-26 -5.6

SHELBY TUBE CORE DATA

CORE NO.	B-16 B1	B-16 C1
DEPTH IN FEET	3	8
CLASSIFICATION (AASHTO)	-	A-6(14)
COEFF.CONSOL. (SQ. FT /DAY)	-	-
TRIAXIAL COMPRESSION	UC	UU
COHESION - PSF	1560	330
FRICTION COEFF.	-	-
MOISTURE CONTENT %	28	30
DRY DENSITY - PCF	95	95

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

ROCK CORE INFORMATION

Boring	Approx.Surf.El.(ft)	Run No.	Interval(ft)	Recovery(%)	RQD(%)
B-23	796.8	1	26-30	75	27
B-23	796.8	2	30-35	100	78

ROCK CORE COMPRESSIVE STRENGTH TESTING REPORT

Boring	Elevation	Material Description	Unit Load (PSI)	Moisture (%)	Dry Density (PCF)
B-23	767.5	LIMESTONE	10260	1.3	167
B-23	765.8	LIMESTONE	13270	1.3	168

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.20

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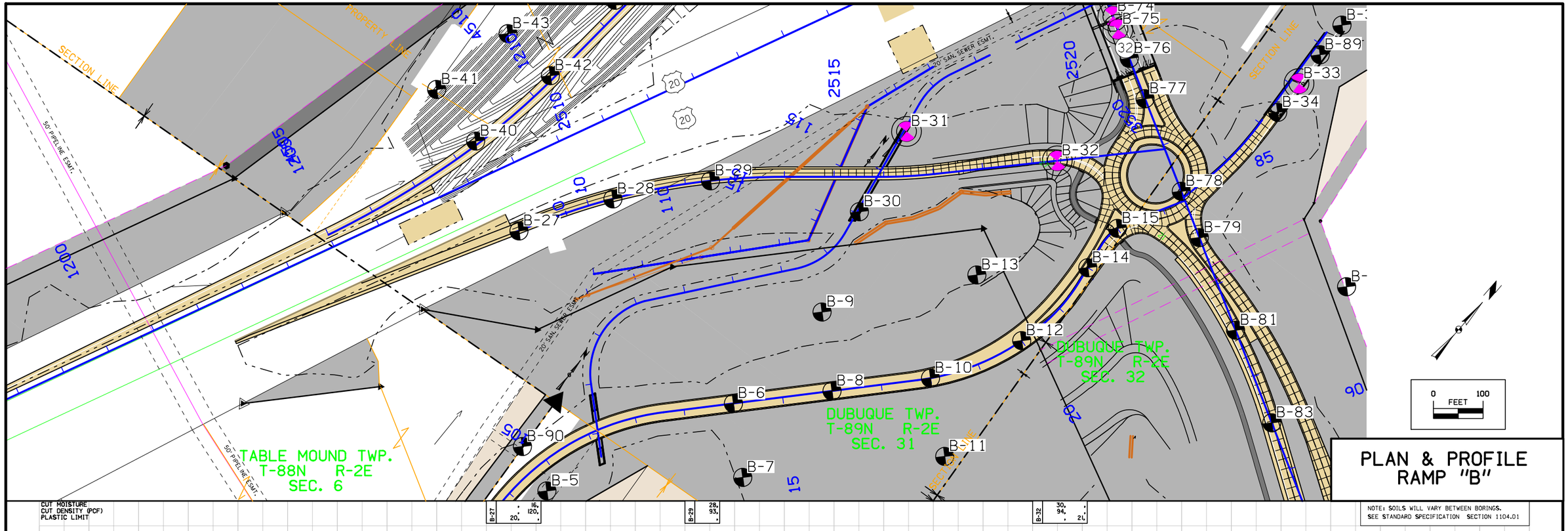

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.\TERRACON	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER Q.21

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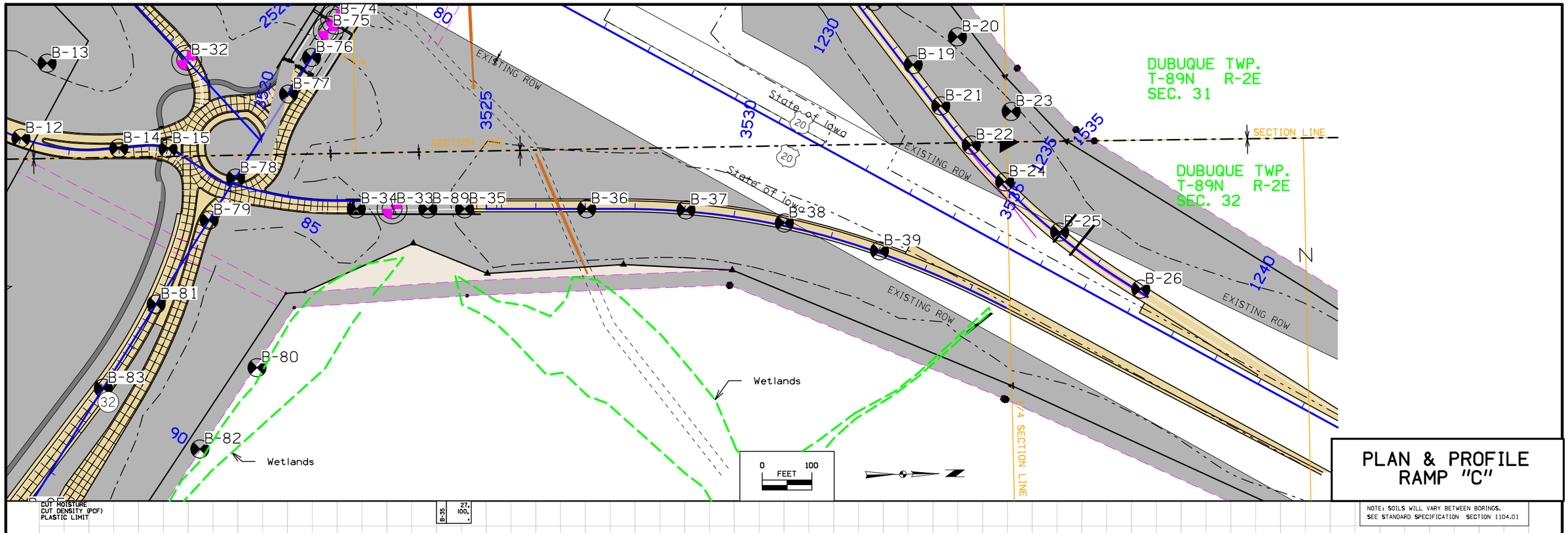

PLAN & PROFILE RAMP "C"

NOTE: SOILS WILL VARY BETWEEN BORINGS.
SEE STANDARD SPECIFICATION SECTION 1104.01

SHELBY TUBE CORE DATA

CORE NO.	B-34 B1	B-34 C1	B-37 B1	B-38 B1	B-38 C1	B-39 B1
DEPTH IN FEET	2	6.5	4	4	9	3
CLASSIFICATION (AASHTO)	A-7-6(20)	A-7-6(33)	-	-	-	-
COEFF.CONSOL. (SQ. FT /DAY)	-	0.042	-	-	-	-
TRIAXIAL COMPRESSION	UU	-	UC	UC	UC	UC
COHESION - PSF	4100	-	220	1280	460	990
FRICTION COEFF.	-	-	-	-	-	-
MOISTURE CONTENT %	23	32	30	23	32	25
DRY DENSITY - PCF	104	92	93	104	95	98

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

ROCK CORE INFORMATION

Boring	Approx.Surf.El.(ft)	Run No.	Interval(ft)	Recovery(%)	RQD(%)
B-33	753.8	1	6-16	83	25
B-34	769.9	1	11.5-21.5	100	75
B-35	754.3	1	9-19.5	98	71
B-89	749.2	1	5.5-15.5	98	56

ROCK CORE COMPRESSIVE STRENGTH TESTING REPORT

Boring	Elevation	Material Description	Unit Load (PSI)	Moisture (%)	Dry Density (PCF)
B-33	741.6	LIMESTONE	13520	1.9	166
B-33	738.4	LIMESTONE	9840	1.8	162
B-34	754.9	LIMESTONE	12230	1.7	166
B-34	752.9	LIMESTONE	7200	2.1	162
B-35	742.8	LIMESTONE	12820	1.5	167
B-35	736.7	LIMESTONE	11090	1.9	162
B-89	749.7	LIMESTONE	5290	2.3	154
B-89	739.5	LIMESTONE	8310	1.3	160

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.\TERRACON	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	Q.22

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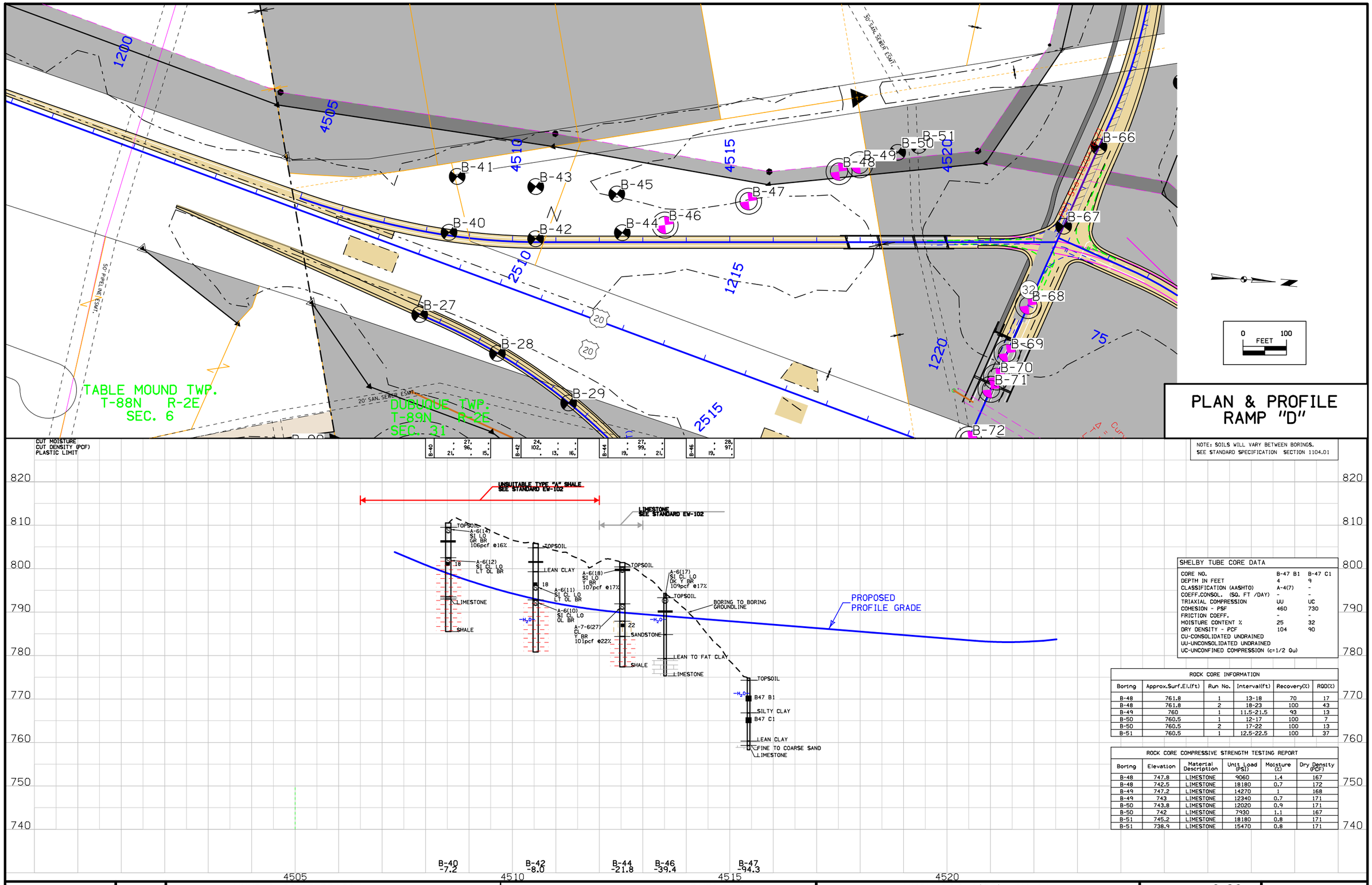

SHELBY TUBE CORE DATA		
CORE NO.	B-47 B1	B-47 C1
DEPTH IN FEET	4	9
CLASSIFICATION (AASHTO)	A-4(7)	-
COEFF.CONSOL. (SQ. FT /DAY)	-	-
TRIAXIAL COMPRESSION	UU	UC
COHESION - PSF	460	730
FRICTION COEFF.	-	-
MOISTURE CONTENT %	25	32
DRY DENSITY - PCF	104	90

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

ROCK CORE INFORMATION

Boring	Approx.Surf.El.(ft)	Run No.	Interval(ft)	Recovery(%)	RQD(%)
B-48	761.8	1	13-18	70	17
B-48	761.8	2	18-23	100	43
B-49	760	1	11.5-21.5	93	13
B-50	760.5	1	12-17	100	7
B-50	760.5	2	17-22	100	13
B-51	760.5	1	12.5-22.5	100	37

ROCK CORE COMPRESSIVE STRENGTH TESTING REPORT

Boring	Elevation	Material Description	Unit Load (PSI)	Moisture (%)	Dry Density (PCF)
B-48	747.8	LIMESTONE	9060	1.4	167
B-48	742.5	LIMESTONE	18180	0.7	172
B-49	747.2	LIMESTONE	14270	1	168
B-49	743	LIMESTONE	12340	0.7	171
B-50	743.8	LIMESTONE	12020	0.9	171
B-50	742	LIMESTONE	7930	1.1	167
B-51	745.2	LIMESTONE	18180	0.8	171
B-51	738.9	LIMESTONE	15470	0.8	171

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.\TERRACON	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	Q.23

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SURVEY SYMBOLS

U.S. Highway Symbol	Existing Water Line
Iowa Highway Symbol	Existing Water Line (Second Company)
County Road Highway Symbol	Existing Sanitary Sewer Line
Evergreen Tree	Existing Telephone Line
Deciduous Tree	Existing Telephone Line (Second Company)
Shrub (Bushes)	Existing Fiber Optics Telephone Line
Timber	Existing Storm Sewer Line
Hedge	Existing Gas Line
Swamp	Existing High Pressure Gas Line
Rock Outcrop	Existing Gas Line (Second Company)
Broken Concrete	Existing High Pressure Gas Line (Second Company)
Revetment (Rip Rap)	Existing Power Line
Board Fence	Existing Power Line (Second Company)
Chain Link or Security Fence	Cable Television Line
Wire Fence	Guardrail (Beam or Cable)
Terrace	GP Guard Post (one or two)
Earth Dam or Dike (Existing)	Guard Post (over two)
Earth Dam or Dike (Proposed)	FP Filler Pipe
Tile Outlet	GV Gas Valve
Edge of Water	WV Water Valve
Existing Drainage	SL Speed Limit Sign
Proposed Drainage	MM Mile Marker Post
Right of Way Rail or Lot Corner	SIGN Sign
Concrete Monument	TCB Traffic Signal Control Box
Well	RRB Rail Road Signal Control Box
Windmill	TSB Telephone Switch Box
Beehive Intake	EB Electric Box
Existing Intake	TP Telephone Pedestal
Proposed Intake	TVP Television Pedestal
Existing Utility Access (Manhole)	Telephone Pole
Proposed Utility Access (Manhole)	Telephone Pole (Second Company)
Fire Hydrant	Telephone Pole (Third Company)
WH Water Hydrant (Rural)	Telephone Pole (Fourth Company)
L.P. Gas Tank (No Footing)	Telephone Pole (Fifth Company)
Underground Storage Tank	Power Pole
Luminaire	Power Pole (Second Company)
Traffic Signal	Power Pole (Third Company)
Traffic Signal with Luminaire	Power Pole (Fourth Company)
Telegraph Pole	Power Pole (Fifth Company)
WHU Water Hook Up	Electrical Highline Tower (Metal or Concrete)
RT Radio Tower	Telephone Riser Pole
TA Tower Anchor	Power Riser Pole

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.	
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading
Yellow	(4)	Highlight for Critical Notes or Features
Red	(3)	Delineates Restricted Areas
Lavender	(9)	Temporary Pavement Shading
Gray, Light	(48)	Proposed Pavement Shading
Gray, Med	(80)	Proposed Granular Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading
Brown, Light	(236)	Grading Shading

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

RIGHT-OF-WAY LEGEND

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

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES S)

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	S.1

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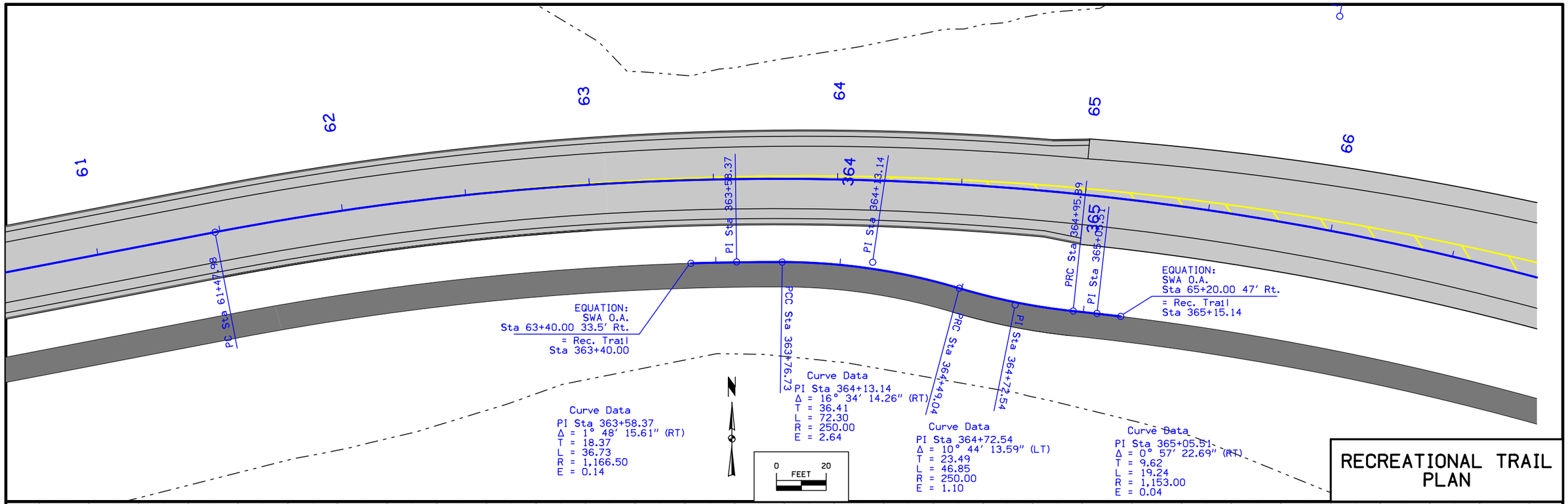

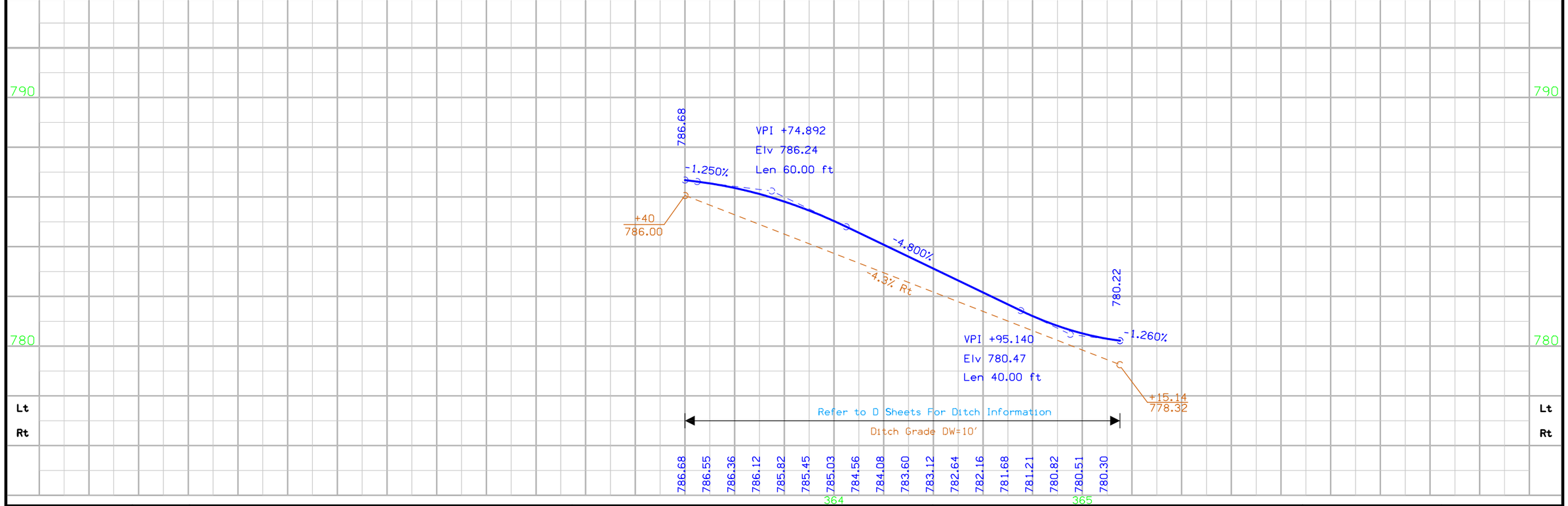

C	ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER S.2	REVISED

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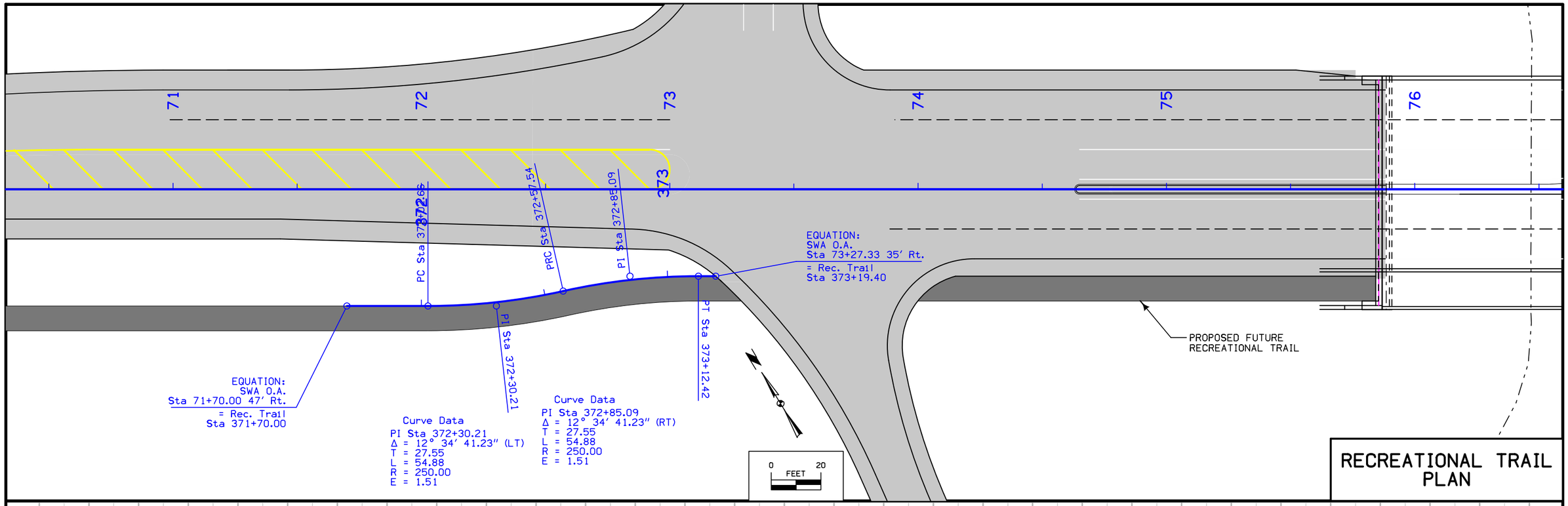

C	ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	S.3	REVISED

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EAC

EAC SB

OA SWA

℄ EB SWA

RAMP B

PROPOSED FUTURE
RECREATIONAL TRAIL

PI Sta 5083+48.92

PC Sta 5082+76.45

PRC Sta 5083+92.73

PT Sta 5084+14.23

PT Sta 5084+34.02

PC Sta 5084+95.22

PT Sta 5085+65.45

PI Sta 5085+39.76

PI Sta 5086+19.15

EAC SB BOC 21.04' Lt
Sta 222+87.35 =
Rec. Trail Sta 5085+87.22

Ramp B BOC 27.54' Rt
Sta 2520+01.40 =
Rec. Trail Sta 5084+66.92

EQUATION:
EB SWA Sta 182+45.75 31' Rt =
Rec. Trail Sta 5082+45.75

Curve Data
PI Sta 5083+48.92
Δ = 86° 31' 49.32" (RT)
T = 72.47
L = 116.29
R = 77.00
E = 28.74

Curve Data
PI Sta 5084+14.23
Δ = 39° 25' 32.48" (LT)
T = 21.50
L = 41.29
R = 60.00
E = 3.74

Curve Data
PI Sta 5085+39.76
Δ = 89° 24' 44.86" (LT)
T = 44.54
L = 70.22
R = 45.00
E = 18.32

0 FEET 20

RECREATIONAL TRAIL PLAN

ENGLISH	IOWA DOT	DESIGN TEAM WHKS & CO.	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER S.4

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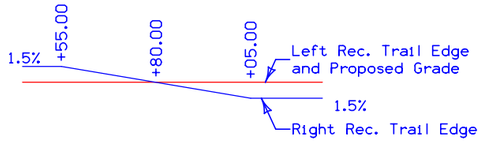
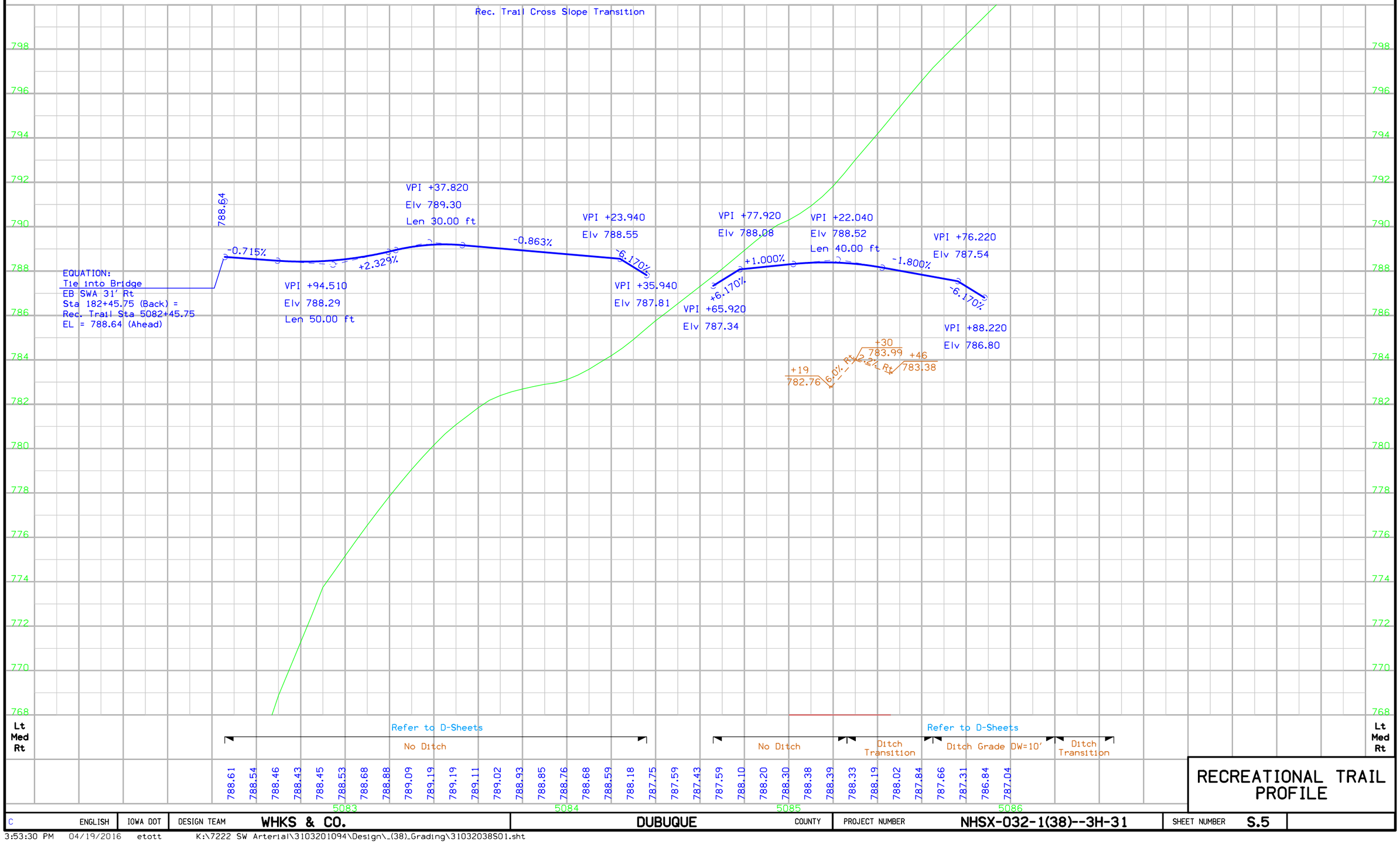


Rec. Trail Cross Slope Transition



RECREATIONAL TRAIL PROFILE

C	ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER S.5

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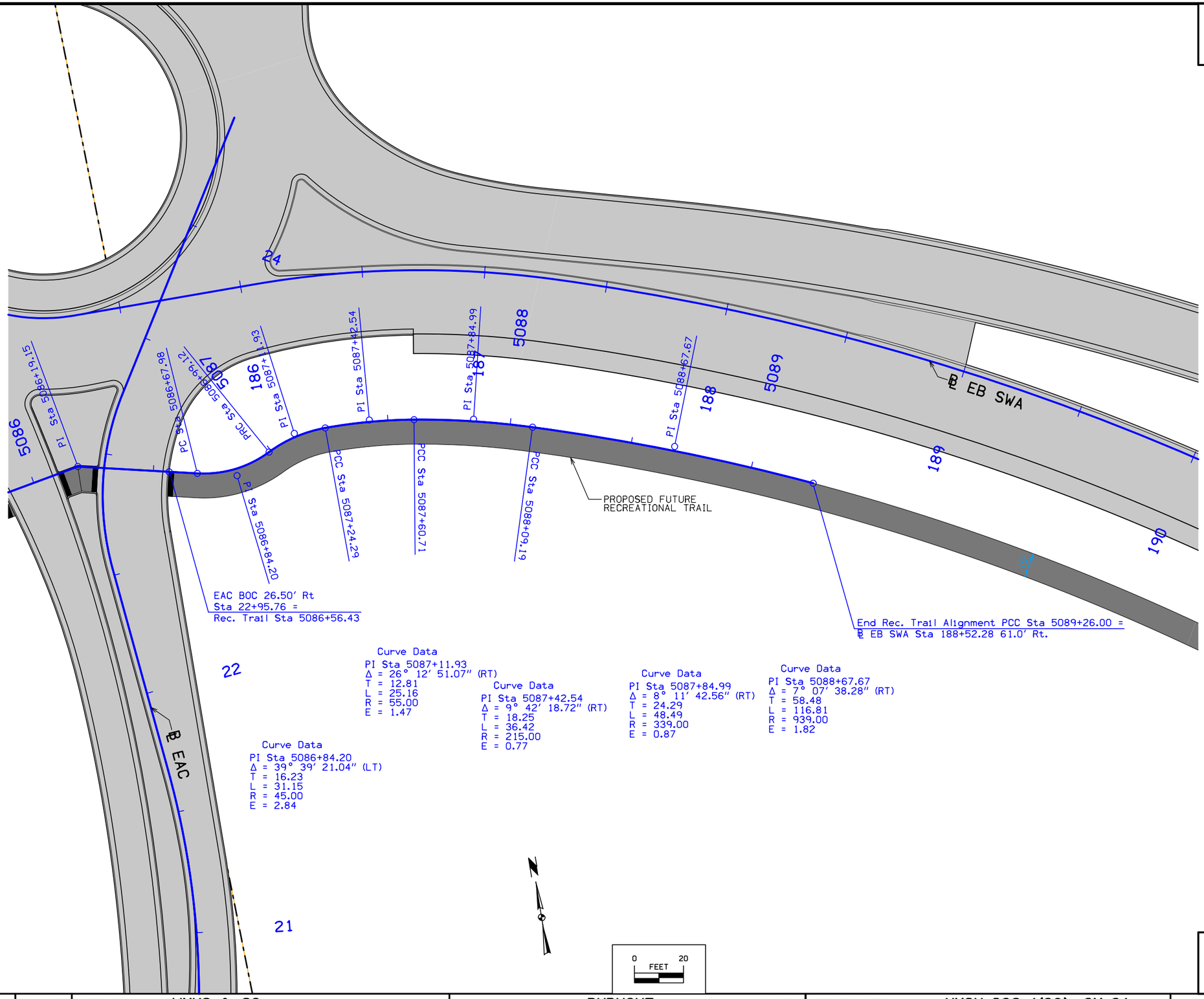

RECREATIONAL TRAIL PLAN

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	S.6

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790
788
786
784
782
780
778
776

VPI +72.980
Elv 787.16

VPI +67.980
Elv 787.09

+1.500%
+6.170%
-4.500%

EAC BOC 26.50' Rt
Sta 22+95.76=
Rec. Trail Sta 5086+55.98
EL = 786.35

VPI +55.980
Elv 786.35

779.45
-0.435%

VPI +35.677
Elv 779.84
Len 160.00 ft
+0.5% Rt

+90
776.45

+60
777.61

EQUATION:
Begin Rec. Trail Typical Section
Rec. Trail Sta 5089+26.00
EL = 779.45 =
EB SWA 61.00' Rt
Sta 188+52.34

Refer to D-Sheets

Refer to E-Sheets
+90
Ditch Grade DW=10'

Lt Med Rt

786.59	787.12	786.85	786.40	785.95	785.50	785.05	784.60	784.15	783.70	783.25	782.82	782.42	782.05	781.70	781.37	781.07	780.80	780.55	780.33	780.13	779.96	779.81	779.69	779.59	779.52	779.47
				5087										5088										5089		

RECREATIONAL TRAIL PROFILE

C	ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER S.7

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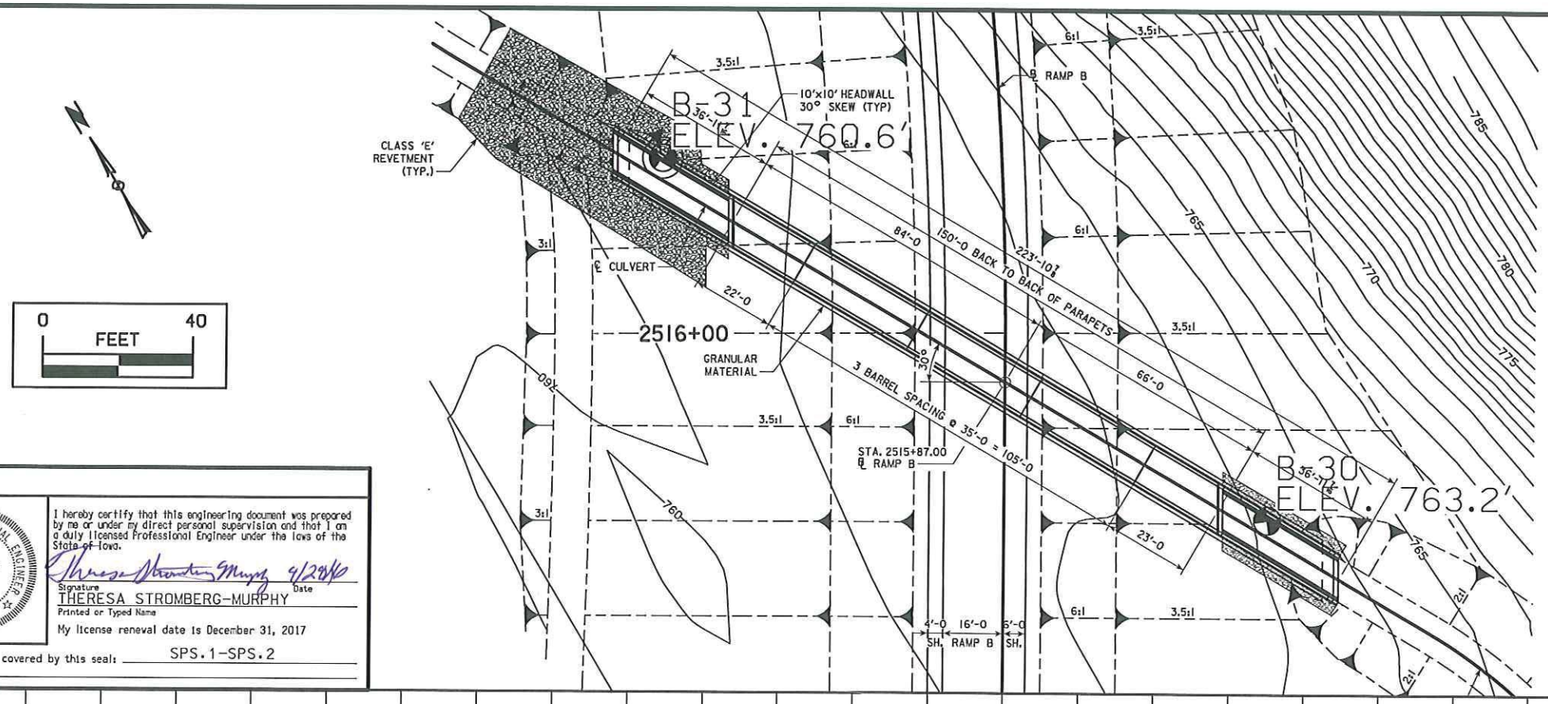


THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION. DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

NOTE: SOILS MAY VARY BETWEEN BORINGS. SEE STANDARD SPECIFICATION 1104.01

LICENSED PROFESSIONAL ENGINEER
THERESA STROMBERG-MURPHY
16934
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature Theresa Stromberg-Murphy Date 4/28/16

Printed or Typed Name THERESA STROMBERG-MURPHY

My license renewal date is December 31, 2017

Pages or sheets covered by this seal: SPS.1-SPS.2

DESIGN FOR A 30° SKEW (L.A.)

SINGLE 10'-0 x 10'-0 x 150'-0 REINFORCED CONCRETE BOX CULVERT

22'-0 & 23'-0 END BARRELS (3)-35'-0 CENTER BARRELS

SOILS PROFILE SHEET

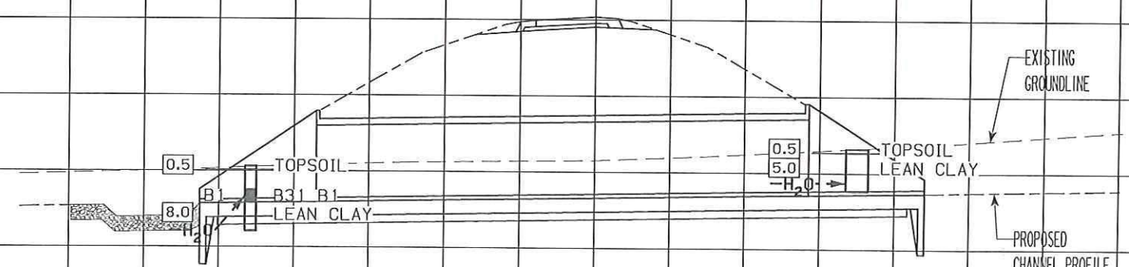
STA. 2515+87.00 MAY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

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

Water Level Observations (Ft.)				
Boring No.	Date Drilled	While Drilling	End of Drilling	Delayed Water Level
B-30	12/22/2011	-	-	4.5 ON 1/4/2012
B-31	12/22/2011	7	7	4 ON 1/4/2012



LEGEND

WATER	BLOW COUNT LAYER - NO. BLOWS B2 5		SOILS BOOK NO. _____
DRY			SOIL REMEDIATION AREA
PLUGGED			LIMESTONE (LS.)
MOISTURE		DIAMOND CORE	BROKEN & WEATHERED LS.
SHELBY		SAND	SANDSTONE
BLOW COUNT		GRAVELLY SAND	SHALE
DENS. CORE		BOULDERS	SANDY SOIL
SAMPLE			

LOCATION

US 20 RAMP 'B'
OVER DRAINAGE DITCH
T-89 N R-02 E
SECTION 31
DUBUQUE TOWNSHIP
DUBUQUE COUNTY
CITY OF DUBUQUE
LATITUDE: 42.473196°
LONGITUDE: -90.76608°

SHELBY TUBE CORE DATA	
CORE NO.	B-31 B1
DEPTH IN FEET	3
CLASSIFICATION (AASHTO)	A-7-6(24)
COEFF.CONSOL. (SQ. FT /DAY)	0.125
TRIAXIAL COMPRESSION	-
COHESION - PSF	-
FRICTION COEFF.	-
MOISTURE CONTENT %	26
DRY DENSITY - PCF	94
CU-CONSOLIDATED UNDRAINED	
UU-UNCONSOLIDATED UNDRAINED	
UC-UNCONFINED COMPRESSION (c=1/2 Qu)	

B-31 LT.70 B-30 RT.70

-200 -180 -160 -140 -120 -100 -80 -60 -40 -20 CL 20 40 60 80 100 120 140 160 180 200

FILE NO.	ENGLISH	DESIGN TEAM WHKS\Terracon	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER SPS.1

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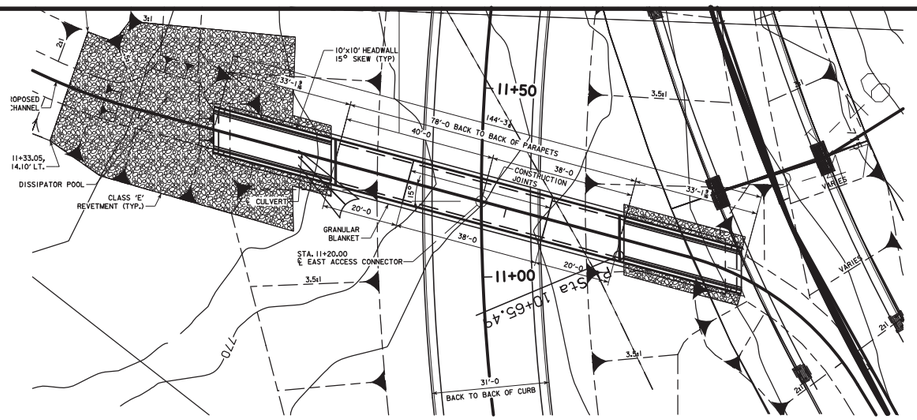




0 FEET 40

THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION. DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

NOTE: SOILS MAY VARY BETWEEN BORINGS. SEE STANDARD SPECIFICATION 1104.01

LOCATION

EAST ACCESS CONNECTOR
OVER DRAINAGE DITCH
T-88 N R-02 E
SECTION 5
TABLE MOUND TOWNSHIP
DUBUQUE COUNTY
CITY OF DUBUQUE
LATITUDE: 42.471160°
LONGITUDE: -90.762207°

Design No. _____ -
File No. _____ -

B-90
ELEV. 771.4'

B-5
ELEV. 771.2'

DESIGN FOR A 15° SKEW (L.A.)

SINGLE 10'-0 x 10'-0 x 78'-0 REINFORCED CONCRETE BOX CULVERT

(2)-20'-0 END BARRELS 38'-0 CENTER BARREL

SOILS PROFILE SHEET

STA. 11+20.00 MAY, 2016

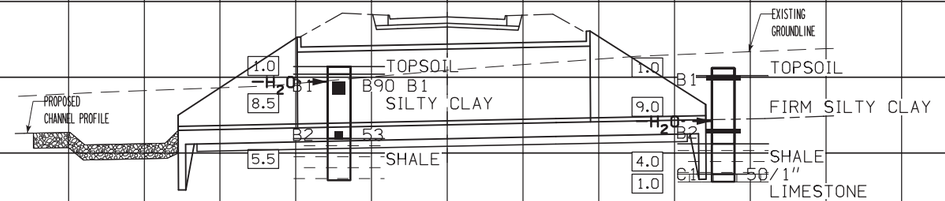
DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

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

CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

B-5: 28, 24, 93, 101, , ,



X.X -INDICATES LAYER THICKNESS (ft.)

LEGEND

$-H_2O-$	WATER	BLOW COUNT LAYER - NO. BLOWS (B2 ■ 5)	SOILS BOOK NO. _ _ _ _ _
— DRY	DRY		SOIL REMEDIATION AREA
-◁	PLUGGED		LIMESTONE (LS.)
M—	MOISTURE	DIAMOND CORE	BROKEN & WEATHERED LS.
■	SHELBY	SAND	SANDSTONE
■	BLOW COUNT	GRAVELLY SAND	SHALE
▬	DENS. CORE	BOULDERS	SANDY SOIL
Ⓢ	SAMPLE		

Water Level Observations (Ft.)

Boring No.	Date Drilled	While Drilling	End of Drilling	Delayed Water Level
B-90	12/21/2011	6	2	2 ON 1/4/2012
B-5	12/21/2011	8	7	7 ON 1/4/2012

SHELBY TUBE CORE DATA

CORE NO.	B-90 B1
DEPTH IN FEET	3
CLASSIFICATION (AASHTO)	A-7-6(28)
COEFF.CONSOL. (SQ. FT /DAY)	0.33
TRIAXIAL COMPRESSION	-
COHESION - PSF	-
FRICTION COEFF.	-
MOISTURE CONTENT %	24
DRY DENSITY - PCF	100

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

790 780 770 760 750 740 730 720

B-91 LT.50 B-5 RT.50

-200 -180 -160 -140 -120 -100 -80 -60 -40 -20 CL 20 40 60 80 100 120 140 160 180 200

FILE NO.	ENGLISH	DESIGN TEAM WHKS\Terracon	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER SPS.2

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Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
SWA																						
52+00.00	106	68	37	0	0	26	0	0	0	68	52	84	28		112	-60	0	0	37	50	27	-23
52+25.00	120	84	36	0	0	26	0	0	0	84	65	69	23		92	-27	0	68	36	48	26	-22
52+50.00	140	104	36	0	0	26	0	0	0	104	80	56	20		76	4	0	56	36	49	26	-23
52+75.00	164	128	36	0	0	26	0	0	0	128	98	50	19		69	29	0	50	36	49	26	-23
53+00.00	190	153	36	0	0	26	0	0	0	153	118	32	18		50	68	0	31	36	49	26	-23
53+25.00	212	177	35	0	0	26	0	0	0	177	136	20	16		36	100	0	19	35	48	25	-23
53+50.00	238	204	34	0	0	26	0	0	0	204	157	21	15		36	121	0	20	34	47	25	-22
53+75.00	274	240	34	0	0	26	0	0	0	240	185	20	13		33	152	0	19	34	46	25	-21
54+00.00	325	291	33	0	0	26	0	0	0	291	224	10	9		19	205	0	9	33	46	24	-22
54+25.00	382	351	30	0	0	26	0	0	0	351	270	1	3		4	266	0	1	30	41	22	-19
54+50.00	435	407	28	0	0	26	0	0	0	407	313	0			0	313	0	0	28	39	20	-19
54+75.00	490	459	31	0	0	26	0	0	0	459	353	0			0	353	0	0	31	43	23	-20
55+00.00	554	520	34	0	0	26	0	0	0	520	400	0			0	400	0	0	34	47	25	-22
55+25.00	628	590	38	0	0	26	0	0	0	590	454	0			0	454	0	0	38	52	28	-24
55+50.00	707	666	41	0	0	26	0	0	0	666	512	0			0	512	0	0	41	56	30	-26
55+75.00	804	385	47	0	0	26	372	0	0	757	582	0			0	582	0	0	47	65	34	-31
56+00.00	922	496	54	0	0	26	372	0	0	868	668	0			0	668	0	0	54	73	39	-34
56+25.00	1,079	1,019	60	0	0	25	0	0	0	1,019	784	0			0	784	0	0	60	81	43	-38
56+50.00	1,297	1,228	69	0	0	25	0	0	0	1,228	945	0			0	945	0	0	69	92	50	-42
56+75.00	1,533	1,456	77	0	0	26	0	0	0	1,456	1,120	0			0	1,120	0	0	77	103	55	-48
57+00.00	1,742	1,659	83	0	0	26	0	0	0	1,659	1,276	0			0	1,276	0	0	83	112	60	-52
57+25.00	1,936	1,846	90	0	0	26	0	0	0	1,846	1,420	0			0	1,420	0	0	90	120	65	-55
57+50.00	2,123	2,027	96	0	0	26	0	0	0	2,027	1,559	0			0	1,559	0	0	96	129	69	-60
57+75.00	2,281	2,180	101	0	0	26	0	0	0	2,180	1,677	0			0	1,677	0	0	101	136	73	-63
58+00.00	2,414	2,309	104	0	0	26	0	0	0	2,309	1,776	0			0	1,776	0	0	104	140	75	-65
58+25.00	2,524	2,417	107	0	0	26	0	0	0	2,417	1,859	0			0	1,859	0	0	107	143	77	-66
58+50.00	2,577	2,470	107	0	0	26	0	0	0	2,470	1,900	0			0	1,900	0	0	107	144	77	-67
58+75.00	2,584	2,478	106	0	0	26	0	0	0	2,478	1,906	0		1	1	1,905	0	0	106	143	76	-67
59+00.00	2,575	2,469	106	0	0	26	0	0	0	2,469	1,899	0		1	1	1,898	0	0	106	142	76	-66
59+25.00	2,545	2,440	105	0	0	26	0	0	0	2,440	1,877	0			0	1,877	0	0	105	141	75	-66
59+50.00	2,508	2,402	105	0	0	26	0	0	0	2,402	1,848	0			0	1,848	0	0	105	142	75	-67
59+75.00	2,467	2,362	105	0	0	26	0	0	0	2,362	1,817	0			0	1,817	0	0	105	141	75	-66
60+00.00	603	577	26	0	0	6	0	0	0	577	444	0			0	444	0	0	26	35	19	-16
60+06.18	1,822	1,743	80	0	0	19	0	0	0	1,743	1,341	0			0	1,341	0	0	80	107	58	-49
60+25.00	2,372	2,265	107	0	0	26	0	0	0	2,265	1,742	0			0	1,742	0	0	107	144	77	-67
60+50.00	2,285	2,179	106	0	0	26	0	0	0	2,179	1,676	0			0	1,676	0	0	106	143	76	-67
60+75.00	2,154	2,050	104	0	0	25	0	0	0	2,050	1,577	0			0	1,577	0	0	104	139	75	-64
61+00.00	180	171	9	0	0	2	0	0	0	171	132	0			0	132	0	0	9	12	7	-5
61+02.18	1,802	1,711	90	0	0	23	0	0	0	1,711	1,316	0			0	1,316	0	0	90	121	65	-56
61+25.00	1,668	1,581	87	0	0	24	0	0	0	1,581	1,216	0		1	1	1,215	0	0	87	116	63	-53
61+47.98	140	133	7	0	0	2	0	0	0	133	102	0			0	102	0	0	7	10	5	-5
61+50.00	1,638	1,549	89	0	0	26	0	0	0	1,549	1,192	0			0	1,192	0	0	89	119	64	-55
61+75.00	790	744	45	0	0	14	0	0	0	744	572	0		1	1	571	0	0	45	60	33	-27
61+88.18	664	623	39	0	0	12	2	0	0	625	481	0			0	481	0	0	39	52	28	-24
62+00.00	1,280	1,194	78	0	0	26	7	0	0	1,201	924	0			0	924	0	0	78	105	56	-49
62+25.00	1,130	1,052	75	0	0	26	3	0	0	1,055	812	0			0	812	0	0	75	100	54	-46
62+50.00	987	914	73	0	0	26	0	0	0	914	703	0			0	703	0	0	73	98	53	-45
62+75.00	827	756	71	0	0	26	0	0	0	756	582	0			0	582	0	0	71	96	51	-45
63+00.00	623	572	52	0	0	26	0	0	0	572	440	0			0	440	0	0	52	70	38	-32
63+25.00	497	464	34	0	0	26	0	0	0	464	357	0			0	357	0	0	34	46	25	-21
63+50.00	473	439	34	0	0	26	0	0	0	439	338	0		1	1	337	0	0	34	45	25	-20
63+75.00	447	411	36	0	0	26	0	0	0	411	316	0		5	5	311	0	0	36	43	26	-17
64+00.00	441	402	39	0	0	26	0	0	0	402	309	0		10	10	299	0	0	39	43	28	-15
64+25.00	440	398	42	0	0	27	0	0	0	398	306	0		14	14	292	0	0	42	48	30	-18
64+50.00	439	392	47	0	0	27	0	0	0	392	302	3	1	17	21	281	0	2	47	54	34	-20
64+75.00	176	156	20	0	0	11	0	0	0	156	120	2		10	12	108	0	6	20	21	15	-6
64+85.00	269	237	32	0	0	16	0	0	0	237	182	2	1	13	16	166	0	1	32	29	23	-6
65+00.00	461	404	57	0	0	27	0	0	0	404	311	0		12	12	299	0	0	57	53	41	-12
65+25.00	493	430	63	0	0	27	0	0	0	430	331	0	1	5	6	325	0	0	63	64	45	-19
65+50.00	477	408	69	0	0	27	0	0	0	408	314	2	4	3	9	305	0	2	69	73	50	-23
65+75.00	410	336	74	0	0	27	0	0	0	336	258	35	21	6	62	196	0	35	74	77	53	-24
66+00.00	379	300	80	0	0	28	0	0	0	300	231	108	40	11	159	72	0	107	80	81	58	-23
66+25.00	384	297	87	0	0	28	0	0	0	297	228	207	50	15	272	-44	0	206	87	85	63	-22
66+50.00	401	308	93	0	0	28	0	0	0	308	237	320	56	20	396	-159	0	319	93	89	67	-22
66+75.00	418	318	100	0	0	29	0	0	0	318	245	425	60	26	511	-266	0	424	100	93	72	-21
67+00.00	435	328	107	0	0	29	0	0	0	328	252	530	64	28	622	-370	0	530	107	98	77	-21
67+25.00	457	345	112	0	0	29	0	0	0	345	265	658	68	29	755	-490	0	657	112	104	80	-24
67+50.00	453	337	116	0	0	29	0	0	0	337	259	775	71	29	875	-616	0	774	116	109	83	-26
67+75.00	341	222	118	0	0	30	0	0	0	222	171	981	80	30	1,091	-920	0	981	118	111	85	-26
68+00.00																						

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER T.1

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Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
68+00.00	318	211	107	0	0	30	0	0	0	211	162	1,293	83	30	1,406	-1,244	0	1,293	107	112	77	-35
68+25.00	330	237	93	0	0	30	0	0	0	237	182	1,486	68	30	1,584	-1,402	0	1,485	93	111	67	-44
68+50.00	211	120	91	0	0	31	0	0	0	120	92	1,615	62	31	1,708	-1,616	0	1,614	91	106	65	-41
68+75.00	128	40	88	0	0	15	0	0	0	40	31	1,753	69	15	1,837	-1,806	0	1,753	88	100	63	-37
69+00.00	155	66	89	0	0	0	0	0	0	66	51	1,903	78		1,981	-1,930	0	1,902	89	99	64	-35
69+25.00	202	100	103	0	0	0	0	0	0	100	77	2,083	91		2,174	-2,097	0	2,082	103	105	74	-31
69+50.00	177	62	115	0	0	0	0	0	0	62	48	2,216	98		2,314	-2,266	0	2,216	115	106	83	-23
69+75.00	87	24	63	0	0	0	0	0	0	24	18	1,223	53		1,276	-1,258	0	2,301	63	56	45	-11
69+88.28	83	26	57	0	0	0	0	0	0	26	20	1,108	47		1,155	-1,135	0	1,254	57	51	41	-10
70+00.00	70	23	47	0	0	0	0	0	0	23	18	917	39		956	-938	0	1,128	47	42	34	-8
70+09.52	112	35	77	0	0	0	0	0	0	35	27	1,521	64		1,585	-1,558	0	935	77	69	55	-14
70+25.00	24	8	17	0	0	0	0	0	0	8	6	347	14		361	-355	0	1,544	17	16	13	-3
70+28.48	153	45	108	0	0	0	0	0	0	45	35	2,192	91		2,283	-2,248	0	354	108	97	78	-19
70+50.00	141	40	102	0	0	0	0	0	0	40	31	2,113	86		2,199	-2,168	0	2,259	102	92	73	-19
70+70.12	29	8	21	0	0	0	0	0	0	8	6	444	18		462	-456	0	2,148	21	19	15	-4
70+74.28	5	1	4	0	0	0	0	0	0	1	1	77	3		80	-79	0	446	4	3	3	0
70+75.00	174	45	130	0	0	0	0	0	0	45	35	2,763	110		2,873	-2,838	0	79	130	117	93	-24
71+00.00	158	38	120	0	0	0	0	0	0	38	29	2,631	103		2,734	-2,705	0	2,993	120	110	86	-24
71+21.97	24	5	18	0	0	0	0	0	0	5	4	383	16		399	-395	0	2,777	18	16	13	-3
71+25.00	196	41	156	0	0	0	0	0	0	41	32	3,224	132		3,356	-3,324	0	390	156	136	112	-24
71+50.00	203	35	168	0	0	0	0	0	0	35	27	3,350	142		3,492	-3,465	0	3,349	168	138	120	-18
71+75.00	196	28	168	0	0	0	0	0	0	28	22	3,490	143		3,633	-3,611	0	3,490	168	129	120	-9
72+00.00	185	31	155	0	0	0	0	0	0	31	24	3,508	131		3,639	-3,615	0	3,508	155	110	111	1
72+25.00	178	39	139	0	0	0	0	0	0	39	30	3,309	113		3,422	-3,392	0	3,308	139	93	100	7
72+50.00	125	21	103	0	0	0	0	0	0	21	16	2,930	90		3,020	-3,004	0	2,930	103	69	74	5
72+75.00	29	0	29	0	0	0	0	0	0	0	0	1,091	29		1,120	-1,120	0	2,658	29	17	21	4
72+85.26	32	0	32	0	0	0	0	0	0	0	0	1,293	32		1,325	-1,325	0	1,047	32	15	23	8
72+97.93	5	0	5	0	0	0	0	0	0	0	0	205	5		210	-210	0	1,256	5	2	4	2
73+00.00	59	0	59	0	0	0	0	0	0	0	0	2,435	59		2,494	-2,494	0	201	59	14	43	29
73+25.00	55	0	55	0	0	0	0	0	0	0	0	2,307	55		2,362	-2,362	0	2,306	55	2	40	38
73+50.00	49	0	49	0	0	0	0	0	0	0	0	2,116	49		2,165	-2,165	0	2,115	49	0	35	35
73+75.00	6	0	6	0	0	0	0	0	0	0	0	253	6		259	-259	0	2,015	6	1	5	4
73+78.14	42	0	42	0	0	0	0	0	0	0	0	1,907	42		1,949	-1,949	0	273	42	5	30	25
74+00.00	35	0	35	0	0	0	0	0	0	0	0	1,613	35		1,648	-1,648	0	2,341	35	10	25	15
74+15.06	30	0	30	0	0	0	0	0	0	0	0	1,265	30		1,295	-1,295	0	1,916	30	12	22	10
74+25.00	110	0	110	0	0	0	0	0	0	0	0	3,720	110		3,830	-3,830	0	1,479	110	44	79	35
74+50.00	153	0	153	0	0	0	0	0	0	0	0	4,280	153		4,433	-4,433	0	4,279	153	74	110	36
74+75.00	24	0	24	0	0	0	0	0	0	0	0	720	24		744	-744	0	4,502	24	14	18	4
74+79.00	132	0	132	0	0	0	0	0	0	0	0	3,896	131		4,027	-4,027	0	742	132	81	95	14
75+00.00	206	0	206	0	0	0	0	0	0	0	0	4,836	205		5,041	-5,041	0	4,062	206	109	148	39
75+25.00	218	0	218	0	0	0	0	0	0	0	0	4,985	217		5,202	-5,202	0	4,984	218	117	156	39
75+50.00	222	0	222	0	0	0	0	0	0	0	0	5,108	221		5,329	-5,329	0	5,107	222	119	159	40
75+75.00	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	2,582	0	0	0	0
SWA BRIDGE BERMS																						
WEST BERM																						
EAST BERM	292	0	292	0	0	0	0	0	0	0	0	6,730	292		7,022	-7,022	0	0	292	0	209	209
	330	0	330	0	0	0	0	0	0	0	0	7,950	330		8,280	-8,280	0	0	330	0	236	236
EB SWA																						
182+44.15																						
182+50.00	56	0	56	0	0	0	0	0	0	0	0	513	56		569	-569	0	0	56	0	40	40
182+75.00	243	0	243	0	0	0	0	0	0	0	0	1,691	243		1,934	-1,934	0	395	243	0	174	174
183+00.00	115	0	115	0	0	0	0	0	0	0	0	1,124	115		1,239	-1,239	0	1,124	115	0	83	83
183+25.00	118	0	118	0	0	0	0	0	0	0	0	895	118		1,013	-1,013	0	895	118	0	85	85
183+50.00	109	0	109	0	0	0	0	0	0	0	0	743	109		852	-852	0	742	109	0	78	78
	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	322	0	0	0	0
WB SWA																						
282+50.00																						
282+75.00	170	0	170	0	0	0	0	0	0	0	0	2,554	170		2,724	-2,724	0	0	170	0	122	122
283+00.00	137	0	137	0	0	0	0	0	0	0	0	1,537	137		1,674	-1,674	0	1,537	137	0	98	98
283+25.00	102	0	102	0	0	0	0	0	0	0	0	872	102		974	-974	0	872	102	0	73	73
283+50.00	89	0	89	0	0	0	0	0	0	0	0	591	89		680	-680	0	591	89	0	64	64
	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	224	0	0	0	0
ROUNDABOUT																						
+00.00																						
+25.00	223	99	124	0	0	0	0	0	0	99	76	54	34		88	-12	0	0	124	52	89	37
+50.00	167	29	138	0	0	0	0	0	0	29	22	150	74		224	-202	0	150	138	59	99	40
+75.00	141	10	131	0	0	0	0	0	0	10	8	218	100		318	-310	0	218	131	49	94	45
1+00.00	113	7	105	0	0	0	0	0	0	7	5	383	85		468	-463	0	383	105	37	75	38

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
1+00.00	89	3	86	0	0	0	0	0	0	3	2	367	76		443	-441	0	366	86	30	62	32
1+25.00	83	0	83	0	0	0	0	0	0	0	0	574	83		657	-657	0	574	83	25	60	35
1+50.00	117	0	117	0	0	0	0	0	0	0	0	631	108		739	-739	0	631	117	46	84	38
1+75.00	178	32	146	0	0	0	0	0	0	32	25	137			137	-112	0	136	146	67	105	38
2+00.00	308	166	142	0	0	0	0	0	0	166	128	0			0	128	0	0	142	50	102	52
2+25.00	530	403	128	0	0	0	0	0	0	403	310	0			0	310	0	0	128	38	92	54
2+50.00	778	661	117	0	0	0	0	0	0	661	508	0			0	508	0	0	117	40	84	44
2+75.00	1,019	908	111	0	0	0	0	0	0	908	698	0			0	698	0	0	111	33	80	47
3+00.00	1,339	1,224	115	0	0	0	0	0	0	1,224	942	0			0	942	0	0	115	33	83	50
3+25.00	1,822	1,690	132	0	0	0	0	0	0	1,690	1,300	0			0	1,300	0	0	132	45	95	50
3+50.00	2,709	2,575	134	0	0	0	0	0	0	2,575	1,981	0			0	1,981	0	0	134	46	96	50
3+75.00	2,192	2,082	110	0	0	0	0	0	0	2,082	1,602	0			0	1,602	0	0	110	35	79	44
4+00.00	991	896	95	0	0	0	0	0	0	896	689	0			0	689	0	0	95	32	68	36
4+25.00	1,439	1,330	108	0	0	0	0	0	0	1,330	1,023	0			0	1,023	0	0	108	36	78	42
4+50.00	1,340	1,218	123	0	0	0	0	0	0	1,218	937	0			0	937	0	0	123	42	88	46
4+75.00	873	756	117	0	0	0	0	0	0	756	582	0	1		1	581	0	0	117	37	84	47
5+00.00	887	780	106	0	0	0	0	0	0	780	600	4	3		7	593	0	3	106	34	76	42
5+25.00	514	402	112	0	0	0	0	0	0	402	309	28	17		45	264	0	27	112	44	80	36
5+53.00	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	26	0	0	0	0
EB SWA																						
186+16.68	110	104	6	0	0	0	0	0	0	104	80	0			0	80	0	0	6	0	5	5
186+18.41	488	461	25	0	0	0	0	0	1	462	355	0			0	355	0	0	25	0	18	18
186+25.00	2,396	2,259	111	0	0	0	0	0	26	2,285	1,758	0			0	1,758	0	0	111	0	80	80
186+50.00	354	331	15	0	0	0	0	0	8	339	261	0			0	261	0	0	15	0	11	11
186+53.22	2,091	1,941	86	0	0	0	0	0	65	2,006	1,543	0			0	1,543	0	0	86	0	62	62
186+70.67	559	518	22	0	0	0	0	0	18	536	412	0			0	412	0	0	22	0	16	16
186+75.00	3,456	1,556	129	0	0	0	0	0	1,771	3,327	2,559	0			0	2,559	0	0	129	0	93	93
187+00.00	3,811	86	136	0	0	0	0	0	3,590	3,676	2,828	0			0	2,828	0	0	136	0	98	98
187+25.00	459	10	17	0	0	0	0	0	433	443	341	0			0	341	0	0	17	0	13	13
187+27.88	2,536	48	91	0	0	0	0	0	2,396	2,444	1,880	0			0	1,880	0	0	91	0	65	65
187+43.38	1,116	19	40	0	0	0	0	0	1,057	1,076	828	0			0	828	0	0	40	0	29	29
187+50.00	4,347	53	153	0	0	0	0	0	4,142	4,195	3,227	0			0	3,227	0	0	153	0	110	110
187+75.00	4,528	17	157	0	0	0	0	0	4,354	4,371	3,362	0			0	3,362	0	0	157	0	113	113
188+00.00	4,691	0	172	0	0	0	0	0	4,520	4,520	3,477	0			0	3,477	0	0	172	0	123	123
188+25.00	4,833	2,347	191	0	0	0	0	0	2,295	4,642	3,571	0			0	3,571	0	0	191	0	137	137
188+50.00	4,935	2,347	220	0	0	0	0	0	2,368	4,715	3,627	0			0	3,627	0	0	220	0	158	158
188+75.00	5,019	2,161	252	0	0	0	0	0	2,606	4,767	3,667	0			0	3,667	0	0	252	0	180	180
189+00.00	5,069	4,352	265	0	0	0	0	0	453	4,805	3,696	0			0	3,696	0	0	265	0	190	190
189+25.00	5,069	4,387	275	0	0	0	0	0	407	4,794	3,688	0			0	3,688	0	0	275	0	197	197
189+50.00	5,023	4,449	292	0	0	0	0	0	281	4,730	3,638	0			0	3,638	0	0	292	0	209	209
189+75.00	1,590	1,449	98	0	0	0	0	0	44	1,493	1,148	0			0	1,148	0	0	98	0	70	70
189+83.00	2,284	2,115	142	0	0	0	0	0	27	2,142	1,648	0	2		2	1,646	0	0	142	0	102	102
189+94.64	1,037	969	65	0	0	0	0	0	3	972	748	0	1		1	747	0	0	65	0	47	47
190+00.00	4,674	4,359	311	0	0	0	0	0	3	4,362	3,355	0	4		4	3,351	0	0	311	0	223	223
190+25.00	4,313	3,974	301	0	0	0	0	0	38	4,012	3,086	0	3		3	3,083	0	0	301	0	215	215
190+50.00	2,163	1,946	159	0	0	0	0	0	58	2,004	1,542	0	3		3	1,539	0	0	159	0	114	114
190+63.64	1,678	1,493	129	0	0	0	0	0	56	1,549	1,192	0	1		1	1,191	0	0	129	1	93	92
190+75.00	3,265	2,875	284	0	0	0	0	0	106	2,981	2,293	0	5		5	2,288	0	0	284	3	203	200
191+00.00	2,754	2,381	276	0	0	0	0	0	98	2,479	1,907	0	6		6	1,901	0	0	276	2	198	196
191+25.00	2,540	1,140	245	0	0	0	0	0	1,154	2,294	1,765	0	4		4	1,761	0	0	245	2	175	173
191+50.00	2,719	96	236	0	0	0	0	0	2,387	2,483	1,910	0	2		2	1,908	0	0	236	2	169	167
191+75.00	3,117	1,541	258	0	0	0	0	0	1,317	2,858	2,198	0	2		2	2,196	0	0	258	0	185	185
192+00.00	3,546	3,171	300	0	0	0	0	0	74	3,245	2,496	0	4		4	2,492	0	0	300	1	215	214
192+25.00	3,813	3,411	330	0	0	0	0	0	73	3,484	2,680	0	4		4	2,676	0	0	330	1	236	235
192+50.00	3,731	3,342	317	0	0	0	0	0	71	3,413	2,625	0	7		7	2,618	0	0	317	0	227	227
192+75.00	3,486	3,142	275	0	0	0	0	0	69	3,211	2,470	0	4		4	2,466	0	0	275	0	197	197
193+00.00	3,403	3,099	251	0	0	0	0	0	53	3,152	2,425	0	2		2	2,423	0	0	251	0	180	180
193+25.00	881	806	66	0	0	0	0	0	9	815	627	0			0	627	0	0	66	0	48	48
193+31.36	2,720	2,499	203	0	0	0	0	0	17	2,516	1,935	0	2		2	1,933	0	0	203	0	145	145
193+50.00	3,843	3,569	267	0	0	0	0	0	8	3,577	2,752	0	2		2	2,750	0	0	267	0	191	191
193+74.26	122	114	8	0	0	0	0	0	0	114	88	0			0	88	0	0	8	0	6	6
193+75.00	4,259	3,957	302	0	0	0	0	0	0	3,957	3,044	0	4		4	3,040	0	0	302	0	216	216
194+00.00	4,361	4,049	312	0	0	0	0	0	0	4,049	3,115	0	3		3	3,112	0	0	312	0	223	223
194+25.00	4,295	3,993	301	0	0	0	0	0	0	3,993	3,072	0	3		3	3,069	0	0	301	0	215	215
194+50.00	4,183	3,877	306	0	0	0	0	0	0	3,877	2,982	0	3		3	2,979	0	0	306	0	219	219
194+75.00	3,987	3,673	314	0	0	0	0	0	0	3,673	2,825	0	4		4	2,821	0	0	314	0	225	225
195+00.00	3,508	3,211	297	0	0	0	0	0	0	3,211	2,470	0	4		4	2,466	0	0	297	0	213	213
195+25.00	2,724	2,475	249	0	0	0	0	0	0	2,475	1,904	0	3		3	1,901	0	0	249	0	178	178
195+50.00	1,961	1,757	204	0	0	0	0	0	0	1,757	1,352	0	3		3	1,349	0	0	204	0	146	146
195+75.00																						

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
195+75.00	1,406	1,240	167	0	0	0	0	0	0	1,240	954	0	2		2	952	0	0	167	0	120	120
196+00.00	1,149	997	153	0	0	0	0	0	0	997	767	0	4		4	763	0	0	153	0	110	110
196+25.00	1,235	1,058	177	0	0	0	0	0	0	1,058	814	0	4		4	810	0	0	177	0	127	127
196+50.00	1,404	1,196	208	0	0	0	0	0	0	1,196	920	0	2		2	918	0	0	208	0	149	149
196+75.00	1,370	1,170	200	0	0	0	0	0	0	1,170	900	0	3		3	897	0	0	200	0	143	143
197+00.00	1,176	1,003	173	0	0	0	0	0	0	1,003	772	6	15		21	751	0	5	173	0	124	124
197+25.00	994	825	169	0	0	0	0	0	0	825	635	21	28		49	586	0	20	169	0	121	121
197+50.00	811	641	170	0	0	0	0	0	0	641	493	45	33		78	415	0	44	170	0	122	122
197+75.00	595	435	160	0	0	0	0	0	0	435	335	91	51		142	193	0	91	160	0	115	115
198+00.00	397	253	143	0	0	0	0	0	0	253	195	204	73		277	-82	0	204	143	0	103	103
198+25.00	260	127	133	0	0	0	0	0	0	127	98	396	84		480	-382	0	396	133	0	95	95
198+50.00	288	152	136	0	0	0	0	0	0	152	117	615	86		701	-584	0	614	136	0	98	98
198+75.00	40	25	15	0	0	0	0	0	0	25	19	77	9		86	-67	0	730	15	0	11	11
198+77.63	455	305	149	0	0	0	0	0	0	305	235	706	87		793	-558	0	83	149	0	107	107
199+00.00	609	443	166	0	0	0	0	0	0	443	341	746	94		840	-499	0	812	166	0	119	119
199+20.53	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	400	0	0	0	0
WB SWA																						
285+70.86																						
285+75.00	262	227	35	0	0	0	0	0	0	227	175	0	14		14	161	0	0	35	0	25	25
286+00.00	649	498	151	0	0	0	0	0	0	498	383	0	88		88	295	0	0	151	0	108	108
286+25.00	638	570	69	0	0	0	0	0	0	570	438	0	1		1	437	0	0	69	0	50	50
286+33.76	222	198	24	0	0	0	0	0	0	198	152	0	1		1	151	0	0	24	0	18	18
286+41.34	190	169	20	0	0	0	0	0	0	169	130	0	1		1	129	0	0	20	0	15	15
286+50.00	213	191	22	0	0	0	0	0	0	191	147	0	1		1	146	0	0	22	0	16	16
286+73.42	559	501	58	0	0	0	0	0	0	501	385	0	1		1	384	0	0	58	0	42	42
286+75.00	37	33	4	0	0	0	0	0	0	33	25	0			0	25	0	0	4	0	3	3
287+00.00	567	506	61	0	0	0	0	0	0	506	389	0	1		1	388	0	0	61	0	44	44
287+18.31	396	351	45	0	0	0	0	0	0	351	270	0	1		1	269	0	0	45	0	33	33
287+25.00	141	124	16	0	0	0	0	0	0	124	95	0			0	95	0	0	16	0	12	12
287+50.00	513	405	56	0	0	0	0	0	52	457	352	0	1		1	351	0	0	56	0	40	40
287+64.85	305	104	31	0	0	0	0	0	171	275	212	0	1		1	211	0	0	31	0	23	23
287+75.00	216	0	22	0	0	0	0	0	194	194	149	0			0	149	0	0	22	0	16	16
288+00.00	568	0	59	0	0	0	0	0	509	509	392	0	1		1	391	0	0	59	0	43	43
288+25.00	616	0	63	0	0	0	0	0	552	552	425	0	2		2	423	0	0	63	0	45	45
288+50.00	640	0	65	0	0	0	0	0	575	575	442	0	2		2	440	0	0	65	0	47	47
288+75.00	641	0	65	0	0	0	0	0	576	576	443	0	1		1	442	0	0	65	0	47	47
289+00.00	619	0	64	0	0	0	0	0	554	554	426	0	2		2	424	0	0	64	0	46	46
289+25.00	592	0	63	0	0	0	0	0	529	529	407	0	1		1	406	0	0	63	0	45	45
289+50.00	572	246	64	0	0	0	0	0	262	508	391	0	1		1	390	0	0	64	0	46	46
289+75.00	549	483	66	0	0	0	0	0	0	483	372	0	2		2	370	0	0	66	0	48	48
290+00.00	497	433	65	0	0	0	0	0	0	433	333	0	1		1	332	0	0	65	0	47	47
290+14.44	241	205	37	0	0	0	0	0	0	205	158	0	1		1	157	0	0	37	0	27	27
290+25.00	153	68	26	0	0	0	0	0	60	128	98	0	1		1	97	0	0	26	0	19	19
290+50.00	288	38	58	0	0	0	0	0	192	230	177	5	7		12	165	0	2	58	0	42	42
290+74.85	192	58	65	0	0	0	0	0	68	126	97	30	20		50	47	0	29	65	0	47	47
290+75.00	1	0	0	0	0	0	0	0	0	0	0	0			0	0	0	48	0	0	0	0
290+87.35	72	28	35	0	0	0	0	0	9	37	28	28	15		43	-15	0	0	35	0	25	25
291+00.00	68	31	38	0	0	0	0	0	0	31	24	38	18		56	-32	0	37	38	0	28	28
291+25.00	138	55	83	0	0	0	0	0	0	55	42	96	43		139	-97	0	48	83	0	60	60
291+50.00	157	68	89	0	0	0	0	0	0	68	52	106	46		152	-100	0	106	89	0	64	64
291+75.00	193	98	96	0	0	0	0	0	0	98	75	120	47		167	-92	0	120	96	0	69	69
292+00.00	199	103	95	0	0	0	0	0	0	103	79	163	50		213	-134	0	163	95	0	68	68
292+25.00	176	78	98	0	0	0	0	0	0	78	60	188	58		246	-186	0	187	98	0	70	70
292+28.00	22	10	12	0	0	0	0	0	0	10	8	17	8		25	-17	0	141	12	0	9	9
292+50.00	195	110	85	0	0	0	0	0	0	110	85	76	44		120	-35	0	10	85	0	61	61
292+75.00	300	199	101	0	0	0	0	0	0	199	153	86	40		126	27	0	75	101	0	73	73
293+00.00	327	228	99	0	0	0	0	0	0	228	175	105	43		148	27	0	104	99	0	71	71
293+25.00	316	220	96	0	0	0	0	0	0	220	169	106	47		153	16	0	105	96	0	69	69
293+50.00	331	232	99	0	0	0	0	0	0	232	178	94	44		138	40	0	93	99	0	71	71
293+75.00	341	243	98	0	0	0	0	0	0	243	187	82	40		122	65	0	81	98	0	70	70
293+84.85	134	96	38	0	0	0	0	0	0	96	74	30	15		45	29	0	77	38	0	28	28
294+00.00	203	142	61	0	0	0	0	0	0	142	109	50	26		76	33	0	32	61	0	44	44
294+25.00	312	211	101	0	0	0	0	0	0	211	162	96	46		142	20	0	58	101	0	73	73
294+50.00	278	174	103	0	0	0	0	0	0	174	134	110	50		160	-26	0	110	103	0	74	74
294+75.00	256	148	108	0	0	0	0	0	0	148	114	123	56		179	-65	0	122	108	0	78	78
295+00.00	223	112	111	0	0	0	0	0	0	112	86	157	64		221	-135	0	156	111	0	80	80
295+25.00	167	55	112	0	0	0	0	0	0	55	42	242	81		323	-281	0	242	112	0	80	80
295+49.69	131	15	116	0	0	0	0	0	0	15	12	366	103		469	-457	0	370	116	0	83	83
295+50.00	2	0	2	0	0	0	0	0	0	0	0	5	2		7	-7	0	435	2	0	2	2
295+75.00	148	16	133	0	0	0	0	0	0	16	12	532	118		650	-638	0	6	133	0	95	95

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
295+75.00	162	18	144	0	0	0	0	0	0	18	14	632	121		753	-739	0	632	144	0	103	103
296+00.00	53	2	51	0	0	0	0	0	0	2	2	224	43		267	-265	0	645	51	0	37	37
296+08.69	97	2	95	0	0	0	0	0	0	2	2	445	83		528	-526	0	237	95	0	68	68
296+25.00	148	6	142	0	0	0	0	0	0	6	5	787	124		911	-906	0	513	142	0	102	102
296+50.00	159	13	146	0	0	0	0	0	0	13	10	926	125		1,051	-1,041	0	926	146	0	105	105
296+75.00	169	20	149	0	0	0	0	0	0	20	15	1,051	127		1,178	-1,163	0	1,051	149	0	107	107
297+00.00	166	19	147	0	0	0	0	0	0	19	15	1,173	126		1,299	-1,284	0	1,173	147	0	105	105
297+25.00	166	17	148	0	0	0	0	0	0	17	13	1,296	127		1,423	-1,410	0	1,296	148	0	106	106
297+50.00	168	19	149	0	0	0	0	0	0	19	15	1,403	128		1,531	-1,516	0	1,403	149	0	107	107
297+75.00	168	19	149	0	0	0	0	0	0	19	15	1,518	127		1,645	-1,630	0	1,517	149	0	107	107
298+00.00	161	17	144	0	0	0	0	0	0	17	13	1,661	123		1,784	-1,771	0	1,661	144	0	103	103
298+25.00	40	4	37	0	0	0	0	0	0	4	3	471	32		503	-500	0	1,756	37	0	27	27
298+31.70	111	9	102	0	0	0	0	0	0	9	7	1,333	90		1,423	-1,416	0	487	102	0	73	73
298+50.00	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	682	0	0	0	0
SWA																						
98+52.53	1,039	797	243	0	0	0	0	0	0	797	613	2,680	156		2,836	-2,223	0	0	243	154	174	20
98+75.00	1,482	1,104	378	0	0	0	0	0	0	1,104	849	3,278	236		3,514	-2,665	0	2,946	378	187	270	83
99+00.00	1,464	1,073	391	0	0	0	0	0	0	1,073	825	3,569	242		3,811	-2,986	0	3,568	391	196	280	84
99+25.00	1,267	876	391	0	0	0	0	0	0	876	674	3,809	247		4,056	-3,382	0	3,809	391	196	280	84
99+50.00	1,100	714	386	0	0	0	0	0	0	714	549	3,969	253		4,222	-3,673	0	3,968	386	193	276	83
99+75.00	905	523	381	0	0	0	0	0	0	523	402	4,039	261		4,300	-3,898	0	4,038	381	190	273	83
100+00.00	812	431	381	0	0	0	0	0	0	431	332	4,051	267		4,318	-3,986	0	4,050	381	191	273	82
100+25.00	773	390	382	0	0	0	0	0	0	390	300	4,036	273		4,309	-4,009	0	4,036	382	192	273	81
100+50.00	694	318	376	0	0	0	0	0	0	318	245	4,023	279		4,302	-4,057	0	4,022	376	188	269	81
100+75.00	622	253	369	0	0	0	0	0	0	253	195	4,007	284		4,291	-4,096	0	4,007	369	184	264	80
101+00.00	224	71	154	0	0	0	0	0	0	71	55	2,404	129		2,533	-2,478	0	4,006	154	92	110	18
101+15.00	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	1,204	0	0	0	0
RAMP A																						
1521+29.59																						
1521+51.21	103	0	103	0	0	0	0	0	0	0	0	2,371	103		2,474	-2,474	0	0	103	40	74	34
1521+75.00	155	0	155	0	0	0	0	0	0	0	0	3,046	155		3,201	-3,201	0	2,767	155	69	111	42
1521+75.68	5	0	5	0	0	0	0	0	0	0	0	93	5		98	-98	0	3,247	5	2	4	2
1522+00.00	196	0	196	0	0	0	0	0	0	0	0	3,272	196		3,468	-3,468	0	91	196	100	140	40
1522+25.00	231	0	230	0	0	0	0	0	0	0	0	3,324	230		3,554	-3,554	0	3,233	230	115	165	50
1522+50.00	244	0	244	0	0	0	0	0	0	0	0	3,326	244		3,570	-3,570	0	3,325	244	118	175	57
1522+59.65	101	0	101	0	0	0	0	0	0	0	0	1,354	101		1,455	-1,455	0	3,508	101	57	73	16
1522+75.00	161	0	161	0	0	0	0	0	0	0	0	2,143	160		2,303	-2,303	0	1,346	161	89	115	26
1522+90.80	158	1	157	0	0	0	0	0	0	1	1	2,038	152		2,190	-2,189	0	1,979	157	75	113	38
1522+91.75	10	0	10	0	0	0	0	0	0	0	0	128	9		137	-137	0	2,131	10	5	8	3
1523+00.00	88	1	87	0	0	0	0	0	0	1	1	1,136	82		1,218	-1,217	0	130	87	45	63	18
1523+21.00	179	1	177	0	0	0	0	0	0	1	1	2,520	171		2,691	-2,690	0	990	177	80	127	47
1523+25.00	33	0	32	0	0	0	0	0	0	0	0	453	31		484	-484	0	2,378	32	14	23	9
1523+50.00	230	4	226	0	0	0	0	0	0	4	3	2,829	211		3,040	-3,037	0	452	226	106	162	56
1523+75.00	217	2	214	0	1	0	0	0	0	3	2	2,631	200		2,831	-2,829	0	2,631	214	99	153	54
1524+00.00	212	0	211	0	1	0	0	0	0	1	1	2,556	198		2,754	-2,753	0	2,556	211	97	151	54
1524+25.00	219	0	209	0	10	0	0	0	0	10	8	2,480	202		2,682	-2,674	0	2,479	209	96	150	54
1524+50.00	227	0	208	0	19	0	0	0	0	19	15	2,388	198		2,586	-2,571	0	2,388	208	95	149	54
1524+75.00	243	0	210	0	33	0	0	0	0	33	25	2,295	186		2,481	-2,456	0	2,295	210	98	150	52
1524+94.00	185	40	128	0	17	0	0	0	0	57	44	1,661	107		1,768	-1,724	0	2,185	128	74	92	18
1525+00.00	55	13	27	0	15	0	0	0	0	28	22	503	21		524	-502	0	1,592	27	23	20	-3
1525+25.00	230	64	102	0	64	0	0	0	0	128	98	1,945	83		2,028	-1,930	0	466	102	96	73	-23
1525+26.24	11	6	5	0	0	0	0	0	0	6	5	90	4		94	-89	0	1,813	5	5	4	-1
1525+50.00	191	59	93	0	0	0	0	38	0	97	75	1,608	75		1,683	-1,608	0	83	93	87	67	-20
1525+62.87	86	0	48	0	0	0	0	38	0	38	29	784	39		823	-794	0	1,448	48	46	35	-11
1525+75.00	75	13	45	0	0	0	0	16	0	29	22	683	38		721	-699	0	724	45	44	33	-11
1526+00.00	145	53	92	0	0	0	0	0	0	53	41	1,210	78		1,288	-1,247	0	586	92	90	66	-24
1526+25.00	190	102	88	0	0	0	0	0	0	102	78	978	69		1,047	-969	0	977	88	83	63	-20
1526+50.00	326	241	84	0	0	0	0	0	0	241	185	833	58		891	-706	0	832	84	78	60	-18
1526+75.00	437	353	84	0	0	0	0	0	0	353	272	705	52		757	-485	0	705	84	78	60	-18
1527+00.00	463	379	84	0	0	0	0	0	0	379	292	569	49		618	-326	0	568	84	78	60	-18
1527+09.64	178	145	33	0	0	0	0	0	0	145	112	193	19		212	-100	0	499	33	29	24	-5
1527+25.00	286	233	53	0	0	0	0	0	0	233	179	281	31		312	-133	0	176	53	53	38	-15
1527+50.00	458	209	83	0	0	0	166	0	0	375	288	381	46		427	-139	0	233	83	97	60	-37
1527+75.00	444	35	80	0	0	0	328	0	0	363	279	292	44		336	-57	0	292	80	92	58	-34
1528+00.00	439	40	77	0	0	0	322	0	0	362	278	220	40		260	18	0	219	77	88	55	-33
1528+25.00	438	203	75	0	0	0	160	0	0	363	279	171	36		207	72	0	170	75	86	54	-32
1528+50.00	429	355	74	0	0	0	0	0	0	355	273	152	35		187	86	0	152	74	84	53	-31
1528+75.00	385	312	73	0	0	0	0	0	0	312	240	166	37		203	37	0	165	73	83	53	-30
1529+00.00	296	225	71	0	0	0	0	0	0	225	173	227	42		269	-96	0	227	71	80	51	-29

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
1529+00.00	182	116	66	0	0	0	0	0	0	116	89	328	46		374	-285	0	328	66	73	48	-25
1529+25.00	94	34	60	0	0	0	0	0	0	34	26	423	48		471	-445	0	423	60	66	43	-23
1529+50.00	62	6	56	0	0	0	0	0	0	6	5	443	49		492	-487	0	443	56	59	40	-19
1529+75.00	65	9	56	0	0	0	0	0	0	9	7	351	46		397	-390	0	351	56	59	40	-19
1530+00.00	124	66	59	0	0	0	0	0	0	66	51	172	37		209	-158	0	172	59	65	43	-22
1530+25.00	299	236	64	0	0	0	0	0	0	236	182	32	16		48	134	0	32	64	71	46	-25
1530+50.00	593	524	69	0	0	0	0	0	0	524	403	0			0	403	0	0	69	78	50	-28
1530+75.00	896	822	74	0	0	0	0	0	0	822	632	0			0	632	0	0	74	85	53	-32
1531+00.00	1,136	1,017	120	0	0	0	0	0	0	1,017	782	0			0	782	0	0	120	91	86	-5
1531+25.00	1,347	1,180	167	0	0	0	0	0	0	1,180	908	0			0	908	0	0	167	97	120	23
1531+50.00	1,538	1,363	175	0	0	0	0	0	0	1,363	1,048	0			0	1,048	0	0	175	102	125	23
1531+75.00	1,720	1,524	182	0	0	0	14	0	0	1,538	1,183	0			0	1,183	0	0	182	107	130	23
1532+00.00	1,153	1,021	117	0	0	0	16	0	0	1,037	798	0			0	798	0	0	117	68	84	16
1532+15.39	757	673	74	0	0	0	10	0	0	683	525	0			0	525	0	0	74	43	53	10
1532+25.00	2,078	1,838	192	0	0	0	48	0	0	1,886	1,451	0	1		1	1,450	0	0	192	113	138	25
1532+50.00	2,205	1,938	197	0	0	0	69	0	0	2,007	1,544	0	1		1	1,543	0	0	197	117	141	24
1532+75.00	315	278	26	0	0	0	10	0	0	288	222	0			0	222	0	0	26	17	19	2
1532+78.49	2,006	1,779	165	0	0	0	62	0	0	1,841	1,416	0			0	1,416	0	0	165	104	118	14
1533+00.00	2,478	2,220	206	0	0	0	37	15	0	2,272	1,748	0	1		1	1,747	0	0	206	123	148	25
1533+25.00	550	501	44	0	0	0	0	5	0	506	389	0			0	389	0	0	44	27	32	5
1533+30.39	2,031	1,862	161	0	0	0	0	8	0	1,870	1,438	0			0	1,438	0	0	161	96	115	19
1533+50.00	2,596	2,392	203	0	0	0	0	1	0	2,393	1,841	0			0	1,841	0	0	203	121	145	24
1533+75.00	2,513	2,309	200	0	0	0	0	4	0	2,313	1,779	0			0	1,779	0	0	200	119	143	24
1534+00.00	2,357	2,079	198	74	0	0	0	5	0	2,158	1,660	0			0	1,660	0	0	198	118	142	24
1534+25.00	2,117	1,008	195	908	0	0	0	7	0	1,923	1,479	0	1		1	1,478	0	0	195	115	140	25
1534+50.00	1,798	99	185	1,504	0	0	0	10	0	1,613	1,241	0			0	1,241	0	0	185	104	133	29
1534+75.00	1,452	63	173	1,201	0	0	0	15	0	1,279	984	0	1		1	983	0	0	173	91	124	33
1535+00.00	1,133	50	163	911	0	0	0	9	0	970	746	16	18		34	712	0	16	163	89	117	28
1535+25.00	843	54	155	634	0	0	0	0	0	688	529	67	40		107	422	0	67	155	89	111	22
1535+50.00	573	35	145	394	0	0	0	0	0	429	330	179	59		238	92	0	179	145	83	104	21
1535+75.00	358	26	134	197	0	0	0	0	0	223	172	353	77		430	-258	0	352	134	75	96	21
1536+00.00	51	3	24	24	0	0	0	0	0	27	21	95	16		111	-90	0	459	24	14	18	4
1536+05.14	153	0	87	66	0	0	0	0	0	66	51	399	62		461	-410	0	103	87	52	63	11
1536+25.00	142	0	104	38	0	0	0	0	0	38	29	533	80		613	-584	0	436	104	58	75	17
1536+49.22	4	0	3	1	0	0	0	0	0	1	1	18	2		20	-19	0	548	3	2	3	1
1536+50.00	142	20	108	14	0	0	0	0	0	34	26	545	84		629	-603	0	16	108	58	78	20
1536+75.00	145	39	107	0	0	0	0	0	0	39	30	512	81		593	-563	0	511	107	56	77	21
1537+00.00	9	2	7	0	0	0	0	0	0	2	2	33	5		38	-36	0	497	7	4	5	1
1537+01.66	126	31	96	0	0	0	0	0	0	31	24	449	73		522	-498	0	31	96	51	69	18
1537+25.00	130	15	101	14	0	0	0	0	0	29	22	447	78		525	-503	0	417	101	53	73	20
1537+50.00	131	0	99	32	0	0	0	0	0	32	25	381	76		457	-432	0	381	99	51	71	20
1537+75.00	77	0	51	24	0	0	0	2	0	26	20	158	37		195	-175	0	299	51	27	37	10
1537+88.16	85	0	47	33	0	0	0	5	0	38	29	110	31		141	-112	0	122	47	26	34	8
1538+00.00	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	47	0	0	0	0
RAMP B																						
2508+50.00	74	23	45	0	0	0	0	0	6	29	22	375	40		415	-393	0	0	45	53	33	-20
2508+63.42	81	21	39	0	0	0	0	0	21	42	32	421	35		456	-424	0	488	39	46	28	-18
2508+75.00	207	4	94	0	0	0	0	0	109	113	87	1,210	78		1,288	-1,201	0	560	94	101	68	-33
2509+00.00	4	0	2	0	0	0	0	0	2	2	2	24	2		26	-24	0	1,415	2	2	2	0
2509+00.43	5	0	2	0	0	0	0	0	3	3	2	31	2		33	-31	0	24	2	2	2	0
2509+00.97	218	3	87	0	0	0	0	0	127	130	100	1,459	70		1,529	-1,429	0	32	87	91	63	-28
2509+25.00	222	2	91	0	0	0	0	60	69	131	101	1,660	73		1,733	-1,632	0	1,595	91	96	65	-31
2509+50.00	55	1	23	0	0	0	0	31	0	32	25	466	18		484	-459	0	1,701	23	26	17	-9
2509+56.84	137	6	61	0	0	0	0	71	0	77	59	1,194	48		1,242	-1,183	0	449	61	64	44	-20
2509+75.00	181	3	89	0	0	0	0	88	0	91	70	1,568	72		1,640	-1,570	0	1,139	89	80	64	-16
2510+00.00	174	2	88	0	0	0	0	83	0	85	65	1,554	71		1,625	-1,560	0	1,554	88	79	63	-16
2510+25.00	168	4	87	0	0	0	0	76	0	80	62	1,659	71		1,730	-1,668	0	1,659	87	78	63	-15
2510+50.00	162	9	87	0	0	0	0	66	0	75	58	1,804	71		1,875	-1,817	0	1,804	87	78	63	-15
2510+75.00	160	7	87	0	0	0	0	66	0	73	56	1,862	71		1,933	-1,877	0	1,862	87	78	63	-15
2511+00.00	157	35	87	0	0	0	0	35	0	70	54	1,787	71		1,858	-1,804	0	1,787	87	78	63	-15
2511+25.00	160	72	88	0	0	0	0	0	0	72	55	1,764	72		1,836	-1,781	0	1,763	88	79	63	-16
2511+50.00	159	71	88	0	0	0	0	0	0	71	55	1,959	72		2,031	-1,976	0	1,958	88	79	63	-16
2511+75.00	149	62	87	0	0	0	0	0	0	62	48	2,145	72		2,217	-2,169	0	2,145	87	79	63	-16
2512+00.00	139	51	88	0	0	0	0	0	0	51	39	2,159	74		2,233	-2,194	0	2,158	88	80	63	-17
2512+25.00	130	41	89	0	0	0	0	0	0	41	32	2,133	76		2,209	-2,177	0	2,132	89	81	64	-17
2512+50.00	126	36	90	0	0	0	0	0	0	36	28	2,165	78		2,243	-2,215	0	2,164	90	82	65	-17
2512+75.00	134	41	92	0	0	0	0	0	0	41	32	2,190	80		2,270	-2,238	0	2,190	92	85	66	-19
2513+00.00	136	43	93	0	0	0	0	0	0	43	33	2,177	80		2,257	-2,224	0	2,177	93	85	67	-18
2513+25.00	83	26	57	0	0	0	0	0	0	26	20	1,318	49		1,367	-1,347	0	2,149	57	53	41	-12
2513+40.33																						

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
2513+40.33	53	17	36	0	0	0	0	0	0	17	13	824	31		855	-842	0	1,307	36	33	26	-7
2513+50.00	141	48	93	0	0	0	0	0	0	48	37	2,139	80		2,219	-2,182	0	827	93	87	67	-20
2513+75.00	120	45	75	0	0	0	0	0	0	45	35	1,877	46		1,923	-1,888	0	2,200	75	79	54	-25
2513+96.33	21	8	13	0	0	0	0	0	0	8	6	329	8		337	-331	0	1,915	13	14	10	-4
2514+00.00	93	32	61	0	0	0	0	0	0	32	25	1,284	52		1,336	-1,311	0	324	61	58	44	-14
2514+14.52	70	24	45	0	0	0	0	0	0	24	18	904	39		943	-925	0	1,252	45	43	33	-10
2514+25.00	221	110	111	0	0	0	0	0	0	110	85	2,085	89		2,174	-2,089	0	874	111	113	80	-33
2514+50.00	154	80	73	0	0	0	0	0	0	80	62	1,314	57		1,371	-1,309	0	2,011	73	78	53	-25
2514+66.33	66	29	36	0	0	0	0	0	0	29	22	685	30		715	-693	0	1,289	36	38	26	-12
2514+75.00	55	26	30	0	0	0	0	0	0	26	20	559	24		583	-563	0	678	30	31	22	-9
2514+82.15	152	75	77	0	0	0	0	0	0	75	58	1,375	59		1,434	-1,376	0	550	77	80	55	-25
2515+00.00	183	81	102	0	0	0	0	0	0	81	62	1,876	82		1,958	-1,896	0	1,339	102	103	73	-30
2515+25.00	25	16	9	0	0	0	0	0	0	16	12	263	7		270	-258	0	3,059	9	10	7	-3
2515+27.15	92	58	34	0	0	0	0	0	0	58	45	957	25		982	-937	0	262	34	40	25	-15
2515+35.00	87	30	57	0	0	0	0	0	0	30	23	1,086	49		1,135	-1,112	0	568	57	63	41	-22
2515+50.00	127	43	84	0	0	0	0	0	0	43	33	1,575	72		1,647	-1,614	0	1,066	84	84	60	-24
2515+72.15	16	5	11	0	0	0	0	0	0	5	4	200	9		209	-205	0	1,557	11	11	8	-3
2515+75.00	83	28	55	0	0	0	0	0	0	28	22	1,057	47		1,104	-1,082	0	198	55	57	40	-17
2515+90.16	18	6	12	0	0	0	0	0	0	6	5	241	10		251	-246	0	1,045	12	13	9	-4
2515+93.65	37	12	24	0	0	0	0	0	0	12	9	435	20		455	-446	0	238	24	24	18	-6
2516+00.00	131	46	85	0	0	0	0	0	0	46	35	1,481	69		1,550	-1,515	0	424	85	87	61	-26
2516+22.15	15	6	10	0	0	0	0	0	0	6	5	186	8		194	-189	0	1,450	10	11	8	-3
2516+25.00	140	51	88	0	0	0	0	0	0	51	39	1,598	74		1,672	-1,633	0	182	88	87	63	-24
2516+50.00	26	7	19	0	0	0	0	0	0	7	5	372	17		389	-384	0	1,551	19	21	14	-7
2516+56.00	52	0	52	0	0	0	0	0	0	0	0	1,106	51		1,157	-1,157	0	360	52	58	38	-20
2516+74.41	2	0	2	0	0	0	0	0	0	0	0	34	2		36	-36	0	1,073	2	2	2	0
2516+75.00	69	0	69	0	0	0	0	0	0	0	0	1,372	68		1,440	-1,440	0	32	69	61	50	-11
2517+00.00	7	0	7	0	0	0	0	0	0	0	0	149	7		156	-156	0	1,281	7	7	5	-2
2517+02.91	54	0	54	0	0	0	0	0	0	0	0	1,033	53		1,086	-1,086	0	139	54	49	39	-10
2517+24.41	2	0	2	0	0	0	0	0	0	0	0	26	2		28	-28	0	969	2	1	2	1
2517+25.00	100	28	72	0	0	0	0	0	0	28	22	973	59		1,032	-1,010	0	25	72	63	52	-11
2517+47.92	9	3	6	0	0	0	0	0	0	3	2	83	5		88	-86	0	910	6	6	5	-1
2517+50.00	87	23	64	0	0	0	0	0	0	23	18	790	54		844	-826	0	84	64	60	46	-14
2517+69.41	28	10	19	0	0	0	0	0	0	10	8	234	15		249	-241	0	811	19	20	14	-6
2517+75.00	65	20	44	0	0	0	0	0	0	20	15	548	37		585	-570	0	237	44	47	32	-15
2517+87.92	14	4	10	0	0	0	0	0	0	4	3	130	8		138	-135	0	560	10	11	8	-3
2517+90.92	41	12	30	0	0	0	0	0	0	12	9	403	25		428	-419	0	133	30	33	22	-11
2518+00.00	53	13	39	0	0	0	0	0	0	13	10	675	32		707	-697	0	425	39	52	28	-24
2518+14.41	33	5	29	0	0	0	0	0	0	5	4	513	24		537	-533	0	698	29	38	21	-17
2518+25.00	103	22	81	0	0	0	0	0	0	22	17	1,160	71		1,231	-1,214	0	491	81	91	58	-33
2518+50.00	130	46	84	0	0	0	0	0	0	46	35	1,045	70		1,115	-1,080	0	1,045	84	94	60	-34
2518+75.00	133	49	83	0	0	0	0	0	0	49	38	905	69		974	-936	0	932	83	94	60	-34
2518+99.26	3	1	2	0	0	0	0	0	0	1	1	26	2		28	-27	0	845	2	3	2	-1
2519+00.00	73	0	73	0	0	0	0	0	0	0	0	778	72		850	-850	0	23	73	80	53	-27
2519+25.00	71	0	71	0	0	0	0	0	0	0	0	597	69		666	-666	0	596	71	76	51	-25
2519+50.00	72	8	65	0	0	0	0	0	0	8	6	397	57		454	-448	0	397	65	68	47	-21
2519+75.00	72	22	50	0	0	0	0	0	0	22	17	146	34		180	-163	0	247	50	48	36	-12
2519+89.78	88	36	51	0	0	0	0	0	0	36	28	74	27		101	-73	0	106	51	35	37	2
2520+00.00	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	33	0	0	0	0
RAMP C																						
3520+56.00	175	48	127	0	0	0	0	0	0	48	37	182	83		265	-228	0	0	127	46	91	45
3521+00.00	88	0	88	0	0	0	0	0	0	0	0	267	87		354	-354	0	470	88	40	63	23
3521+25.00	100	0	100	0	0	0	0	0	0	0	0	421	98		519	-519	0	421	100	48	72	24
3521+50.00	122	0	122	0	0	0	0	0	0	0	0	631	120		751	-751	0	630	122	63	88	25
3521+75.00	123	0	122	0	0	0	0	0	0	0	0	737	121		858	-858	0	878	122	66	88	22
3521+98.56	242	0	242	0	0	0	0	0	0	0	0	1,771	240		2,011	-2,011	0	1,085	242	134	173	39
3522+37.00	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	1,003	0	0	0	0
RAMP C BRIDGE BERMS																						
SOUTH BERM	57	0	57	0	0	0	0	0	0	0	0	350	57		407	-407	0	0	57	0	41	41
NORTH BERM	87	0	87	0	0	0	0	0	0	0	0	1,170	87		1,257	-1,257	0	0	87	0	63	63
RAMP C																						
3524+65.23	1,006	281	725	0	0	0	0	0	0	281	216	6,630	581		7,211	-6,995	0	0	725	378	518	140
3525+50.00	207	19	188	0	0	0	0	0	0	19	15	1,871	168		2,039	-2,024	0	6,345	188	97	135	38
3525+75.00	206	19	187	0	0	0	0	0	0	19	15	1,833	167		2,000	-1,985	0	1,833	187	96	134	38
3526+00.00	214	30	185	0	0	0	0	0	0	30	23	1,740	161		1,901	-1,878	0	1,739	185	95	133	38
3526+25.00	220	37	183	0	0	0	0	0	0	37	28	1,641	157		1,798	-1,770	0	1,640	183	93	131	38
3526+50.00																						

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER T.7	

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
3526+50.00	215	34	181	0	0	0	0	0	0	34	26	1,569	155		1,724	-1,698	0	1,568	181	92	130	38
3526+75.00	213	33	179	0	0	0	0	0	0	33	25	1,520	154		1,674	-1,649	0	1,519	179	90	128	38
3527+00.00	77	16	61	0	0	0	0	0	0	16	12	481	49		530	-518	0	1,480	61	31	44	13
3527+08.13	159	33	126	0	0	0	0	0	0	33	25	989	101		1,090	-1,065	0	476	126	63	90	27
3527+25.00	208	34	174	0	0	0	0	0	0	34	26	1,462	149		1,611	-1,585	0	986	174	87	125	38
3527+50.00	204	31	173	0	0	0	0	0	0	31	24	1,456	149		1,605	-1,581	0	1,456	173	87	124	37
3527+75.00	12	2	10	0	0	0	0	0	0	2	2	77	8		85	-83	0	1,446	10	5	8	3
3527+76.33	214	40	174	0	0	0	0	0	0	40	31	1,368	141		1,509	-1,478	0	76	174	87	125	38
3528+00.00	196	25	171	0	0	0	0	0	0	25	19	1,460	148		1,608	-1,589	0	1,382	171	86	123	37
3528+25.00	63	11	52	0	0	0	0	0	0	11	8	413	43		456	-448	0	1,446	52	26	38	12
3528+32.13	156	26	130	0	0	0	0	0	0	26	20	1,031	107		1,138	-1,118	0	411	130	64	93	29
3528+50.00	189	20	169	0	0	0	0	0	0	20	15	1,444	148		1,592	-1,577	0	1,032	169	84	121	37
3528+75.00	187	18	169	0	0	0	0	0	0	18	14	1,431	148		1,579	-1,565	0	1,430	169	84	121	37
3529+00.00	185	17	168	0	0	0	0	0	0	17	13	1,422	148		1,570	-1,557	0	1,421	168	83	120	37
3529+25.00	182	15	167	0	0	0	0	0	0	15	12	1,418	148		1,566	-1,554	0	1,418	167	83	120	37
3529+50.00	177	13	165	0	0	0	0	0	0	13	10	1,423	146		1,569	-1,559	0	1,422	165	81	118	37
3529+75.00	177	14	163	0	0	0	0	0	0	14	11	1,430	144		1,574	-1,563	0	1,429	163	80	117	37
3530+00.00	179	18	161	0	0	0	0	0	0	18	14	1,426	141		1,567	-1,553	0	1,426	161	79	115	36
3530+25.00	178	21	157	0	0	0	0	0	0	21	16	1,410	136		1,546	-1,530	0	1,409	157	76	113	37
3530+50.00	177	23	154	0	0	0	0	0	0	23	18	1,389	132		1,521	-1,503	0	1,389	154	74	110	36
3530+75.00	176	25	151	0	0	0	0	0	0	25	19	1,360	129		1,489	-1,470	0	1,360	151	75	108	33
3531+00.00	175	27	149	0	0	0	0	0	0	27	21	1,322	126		1,448	-1,427	0	1,322	149	77	107	30
3531+25.00	175	28	147	0	0	0	0	0	0	28	22	1,276	124		1,400	-1,378	0	1,275	147	76	105	29
3531+50.00	174	30	144	0	0	0	0	0	0	30	23	1,215	120		1,335	-1,312	0	1,214	144	74	103	29
3531+75.00	169	29	140	0	0	0	0	0	0	29	22	1,152	116		1,268	-1,246	0	1,151	140	71	100	29
3532+00.00	165	29	136	0	0	0	0	0	0	29	22	1,092	113		1,205	-1,183	0	1,092	136	69	98	29
3532+25.00	162	29	133	0	0	0	0	0	0	29	22	1,022	110		1,132	-1,110	0	1,022	133	67	95	28
3532+50.00	158	28	130	0	0	0	0	0	0	28	22	946	107		1,053	-1,031	0	946	130	65	93	28
3532+75.00	40	7	33	0	0	0	0	0	0	7	5	228	27		255	-250	0	892	33	16	24	8
3532+81.40	97	10	87	0	0	0	0	0	0	10	8	644	78		722	-714	0	221	87	42	63	21
3533+00.00	103	0	103	0	0	0	0	0	0	0	0	818	102		920	-920	0	608	103	46	74	28
3533+25.00	129	16	113	0	0	0	0	0	0	16	12	751	100		851	-839	0	750	113	53	81	28
3533+50.00	11	2	9	0	0	0	0	0	0	2	2	53	7		60	-58	0	708	9	5	7	2
3533+51.87	157	41	116	0	0	0	0	0	0	41	32	621	91		712	-680	0	50	116	59	83	24
3533+75.00	151	38	112	0	0	0	0	0	0	38	29	632	96		728	-699	0	585	112	46	80	34
3534+00.00	116	20	96	0	0	0	0	0	0	20	15	608	92		700	-685	0	607	96	37	69	32
3534+25.00	113	21	93	0	0	0	0	0	0	21	16	584	89		673	-657	0	584	93	36	67	31
3534+50.00	110	21	90	0	0	0	0	0	0	21	16	560	86		646	-630	0	560	90	36	65	29
3534+75.00	108	20	89	0	0	0	0	0	0	20	15	537	85		622	-607	0	537	89	36	64	28
3535+00.00	110	19	91	0	0	0	0	0	0	19	15	532	88		620	-605	0	531	91	39	65	26
3535+25.00	114	19	95	0	0	0	0	0	0	19	15	565	89		654	-639	0	564	95	42	68	26
3535+50.00	112	19	93	0	0	0	0	0	0	19	15	564	86		650	-635	0	563	93	42	67	25
3535+75.00	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	268	0	0	0	0
RAMP D																						
4505+00.00																						
4505+25.00	494	403	91	0	0	0	0	0	0	403	310	10	16		26	284	0	0	91	40	65	25
4505+50.00	534	442	92	0	0	0	0	0	0	442	340	5	14		19	321	0	4	92	40	66	26
4505+75.00	593	498	95	0	0	0	0	0	0	498	383	1	10		11	372	0	1	95	40	68	28
4506+00.00	685	586	99	0	0	0	0	0	0	586	451	0	7		7	444	0	0	99	42	71	29
4506+25.00	809	704	105	0	0	0	0	0	0	704	542	0	4		4	538	0	0	105	46	75	29
4506+50.00	883	767	111	0	0	0	0	0	5	772	594	0	3		3	591	0	0	111	49	80	31
4506+75.00	710	577	112	0	0	0	0	0	22	599	461	0	4		4	457	0	0	112	50	80	30
4507+00.00	506	239	98	0	0	0	0	0	169	408	314	0	4		4	310	0	0	98	40	70	30
4507+25.00	544	57	92	0	0	0	0	0	394	451	347	0	2		2	345	0	0	92	34	66	32
4507+28.26	78	32	14	0	0	0	0	0	32	64	49	0			0	49	0	0	14	6	10	4
4507+50.00	500	212	105	0	0	0	0	0	184	396	305	0	2		2	303	0	0	105	44	75	31
4507+75.00	627	22	117	0	0	0	0	0	488	510	392	0	1		1	391	0	0	117	48	84	36
4507+80.00	148	70	22	0	0	0	0	0	55	125	96	0	1		1	95	0	0	22	11	16	5
4508+00.00	781	283	95	0	0	0	0	0	403	686	528	0	7		7	521	0	0	95	45	68	23
4508+25.00	1,477	31	150	0	0	0	0	0	1,297	1,328	1,022	0	14		14	1,008	0	0	150	64	108	44
4508+35.80	967	521	103	0	0	0	0	0	343	864	665	0	3		3	662	0	0	103	47	74	27
4508+50.00	1,308	686	138	0	0	0	0	0	484	1,170	900	0	3		3	897	0	0	138	65	99	34
4508+75.00	1,919	43	175	0	0	0	0	0	1,701	1,744	1,342	0	13		13	1,329	0	0	175	89	125	36
4509+00.00	1,965	51	184	0	0	0	0	0	1,730	1,781	1,370	0	14		14	1,356	0	0	184	97	132	35
4509+25.00	2,073	47	193	0	0	0	0	0	1,833	1,880	1,446	0	12		12	1,434	0	0	193	97	138	41
4509+50.00	2,180	38	201	0	0	0	0	0	1,941	1,979	1,522	0	4		4	1,518	0	0	201	97	144	47
4509+75.00	2,219	37	196	0	0	0	0	0	1,986	2,023	1,556	0			0	1,556	0	0	196	101	140	39
4510+00.00	2,227	40	186	0	0	0	0	0	2,001	2,041	1,570	0	1		1	1,569	0	0	186	99	133	34
4510+09.90	1,032	553	82	0	0	0	0	0	398	951	732	0			0	732	0	0	82	47	59	12
4510+25.00	1,604	841	124	0	0	0	0	0	639	1,480	1,138	0			0	1,138	0	0	124	71	89	18

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
4510+25.00	2,380	34	187	0	0	0	0	0	2,158	2,192	1,686	0	1		1	1,685	0	0	187	100	134	34
4510+50.00	2,408	29	189	0	0	0	0	0	2,191	2,220	1,708	0			0	1,708	0	0	189	96	135	39
4510+75.00	2,369	27	188	0	0	0	0	0	2,154	2,181	1,678	0			0	1,678	0	0	188	90	135	45
4511+00.00	2,316	32	188	0	0	0	0	0	2,095	2,127	1,636	0			0	1,636	0	0	188	90	135	45
4511+25.00	889	445	77	0	0	0	0	0	367	812	625	0			0	625	0	0	77	43	55	12
4511+33.90	1,599	805	140	0	0	0	0	0	654	1,459	1,122	0	1		1	1,121	0	0	140	78	100	22
4511+50.00	2,219	38	189	0	0	0	0	0	1,993	2,031	1,562	0			0	1,562	0	0	189	91	135	44
4511+75.00	2,130	930	186	0	0	0	0	0	1,014	1,944	1,495	0			0	1,495	0	0	186	99	133	34
4512+00.00	1,992	1,730	180	0	0	0	0	45	37	1,812	1,394	0	1		1	1,393	0	0	180	105	129	24
4512+25.00	1,788	1,522	170	0	0	0	0	96	0	1,618	1,245	0			0	1,245	0	0	170	99	122	23
4512+50.00	1,535	1,264	162	0	0	0	0	108	0	1,372	1,055	0	1		1	1,054	0	0	162	94	116	22
4512+75.00	1,267	992	155	0	0	0	0	119	0	1,111	855	0	1		1	854	0	0	155	89	111	22
4513+00.00	1,025	816	147	0	0	0	0	62	0	878	675	0			0	675	0	0	147	83	105	22
4513+25.00	835	695	139	0	0	0	0	0	0	695	535	0			0	535	0	0	139	79	100	21
4513+50.00	668	533	135	0	0	0	0	0	0	533	410	0	3		3	407	0	0	135	74	97	23
4513+75.00	499	370	129	0	0	0	0	0	0	370	285	3	18		21	264	0	3	129	68	93	25
4514+00.00	418	287	131	0	0	0	0	0	0	287	221	31	42		73	148	0	31	131	71	94	23
4514+25.00	395	190	141	0	0	0	0	64	0	254	195	96	60		156	39	0	95	141	79	101	22
4514+50.00	369	154	151	0	0	0	0	64	0	218	168	190	73		263	-95	0	189	151	86	108	22
4514+75.00	353	193	160	0	0	0	0	0	0	193	148	318	87		405	-257	0	317	160	92	115	23
4515+00.00	324	157	167	0	0	0	0	0	0	157	121	487	99		586	-465	0	486	167	97	120	23
4515+25.00	319	143	176	0	0	0	0	0	0	143	110	639	110		749	-639	0	638	176	103	126	23
4515+50.00	395	209	186	0	0	0	0	0	0	209	161	638	108		746	-585	0	638	186	110	133	23
4515+75.00	438	245	193	0	0	0	0	0	0	245	188	291	69		360	-172	0	291	193	114	138	24
4516+00.00	605	405	200	0	0	0	0	0	0	405	312	455	80		535	-223	0	454	200	119	143	24
4516+25.00	637	425	212	0	0	0	0	0	0	425	327	1,399	146		1,545	-1,218	0	1,399	212	127	152	25
4516+50.00	354	140	214	0	0	0	0	0	0	140	108	2,191	177		2,368	-2,260	0	2,191	214	128	153	25
4516+75.00	219	12	206	0	0	0	0	0	0	12	9	2,569	195		2,764	-2,755	0	2,569	206	123	148	25
4517+00.00	202	0	202	0	0	0	0	0	0	0	0	2,683	200		2,883	-2,883	0	2,683	202	120	145	25
4517+25.00	204	0	204	0	0	0	0	0	0	0	0	2,780	202		2,982	-2,982	0	2,780	204	122	146	24
4517+50.00	207	0	207	0	0	0	0	0	0	0	0	2,895	206		3,101	-3,101	0	2,895	207	123	148	25
4517+75.00	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	1,476	0	0	0	0
RAMP D BRIDGE BERMS																						
SOUTH BERM																						
NORTH BERM	135	0	135	0	0	0	0	0	0	0	0	2,220	135		2,355	-2,355	0	0	135	0	97	97
	135	0	135	0	0	0	0	0	0	0	0	2,250	135		2,385	-2,385	0	0	135	0	97	97
RAMP D																						
4520+25.00	209	0	209	0	0	0	0	0	0	0	0	2,952	208		3,160	-3,160	0	0	209	126	150	24
4520+50.00	100	0	100	0	0	0	0	0	0	0	0	1,398	99		1,497	-1,497	0	3,001	100	55	72	17
4520+61.65	115	0	115	0	0	0	0	0	0	0	0	1,654	114		1,768	-1,768	0	1,443	115	57	83	26
4520+75.00	218	0	218	0	0	0	0	0	0	0	0	3,131	217		3,348	-3,348	0	1,671	218	107	156	49
4521+00.00	65	0	65	0	0	0	0	0	0	0	0	956	65		1,021	-1,021	0	2,907	65	33	47	14
4521+08.22	113	0	113	0	0	0	0	0	0	0	0	1,788	113		1,901	-1,901	0	876	113	55	81	26
4521+25.00	40	0	40	0	0	0	0	0	0	0	0	650	40		690	-690	0	1,761	40	19	29	10
4521+31.20	133	0	133	0	0	0	0	0	0	0	0	2,055	132		2,187	-2,187	0	677	133	66	95	29
4521+50.00	125	0	125	0	0	0	0	0	0	0	0	2,155	125		2,280	-2,280	0	2,090	125	69	90	21
4521+69.38	27	0	27	0	0	0	0	0	0	0	0	598	27		625	-625	0	2,061	27	16	20	4
4521+75.00	79	0	79	0	0	0	0	0	0	0	0	2,342	79		2,421	-2,421	0	526	79	43	57	14
4522+00.00	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	1,031	0	0	0	0
US 20 TAPERS																						
1192+14.67	24	9	15	0	0	0	0	0	0	9	7	22	11		33	-26	0	0	15	10	11	1
1192+25.00	8	3	5	0	0	0	0	0	0	3	2	5	3		8	-6	0	19	5	3	4	1
1192+27.79	65	28	37	0	0	0	0	0	0	28	22	35	22		57	-35	0	4	37	21	27	6
1192+50.00	89	53	36	0	0	0	0	0	0	53	41	26	19		45	-4	0	29	36	20	26	6
1192+69.88	23	14	9	0	0	0	0	0	0	14	11	6	5		11	0	0	24	9	5	7	2
1192+75.00	123	80	43	0	0	0	0	0	0	80	62	31	21		52	10	0	6	43	26	31	5
1192+99.86	1	0	0	0	0	0	0	0	0	0	0	0			0	0	0	30	0	0	0	0
1193+00.00	22	0	22	0	0	0	0	0	0	0	0	30	21		51	-51	0	0	22	12	16	4
1193+25.00	67	31	36	0	0	0	0	0	0	31	24	28	21		49	-25	0	28	36	21	26	5
1193+50.00	94	46	48	0	0	0	0	0	0	46	35	27	22		49	-14	0	26	48	29	35	6
1193+75.00	78	33	45	0	0	0	0	0	0	33	25	26	22		48	-23	0	25	45	26	33	7
1194+00.00	85	40	45	0	0	0	0	0	0	40	31	22	20		42	-11	0	22	45	26	33	7
1194+25.00	30	15	15	0	0	0	0	0	0	15	12	7	6		13	-1	0	21	15	9	11	2
1194+33.30	67	36	31	0	0	0	0	0	0	36	28	15	11		26	2	0	7	31	19	23	4
1194+50.00	29	15	14	0	0	0	0	0	0	15	12	6	5		11	1	0	14	14	8	10	2
1194+56.52	66	30	36	0	0	0	0	0	0	30	23	14	12		26	-3	0	5	36	20	26	6
1194+72.48	10	4	6	0	0	0	0	0	0	4	3	2	2		4	-1	0	14	6	3	5	2
1194+75.00																						

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
1194+75.00	48	18	30	0	0	0	0	0	0	18	14	11	15		26	-12	0	2	30	17	22	5
1194+86.79	172	33	139	0	0	0	0	0	0	33	25	35	113		148	-123	0	31	139	26	100	74
1195+00.00	174	174	0	0	0	0	0	0	0	174	134	63			63	71	0	33	0	66	0	-66
1195+25.00	429	315	115	0	0	0	0	0	0	315	242	19	19		38	204	0	18	115	72	83	11
1195+50.00	546	427	119	0	0	0	0	0	0	427	328	17	17		34	294	0	17	119	74	85	11
1195+75.00	634	515	119	0	0	0	0	0	0	515	396	14	16		30	366	0	13	119	74	85	11
1196+00.00	679	560	119	0	0	0	0	0	0	560	431	14	17		31	400	0	13	119	74	85	11
1196+25.00	649	537	112	0	0	0	0	0	0	537	413	16	17		33	380	0	16	112	68	80	12
1196+50.00	537	442	96	0	0	0	0	0	0	442	340	14	15		29	311	0	14	96	58	69	11
1196+75.00	422	343	79	0	0	0	0	0	0	343	264	8	13		21	243	0	8	79	48	57	9
1197+00.00	347	279	68	0	0	0	0	0	0	279	215	6	14		20	195	0	5	68	40	49	9
1197+25.00	287	227	60	0	0	0	0	0	0	227	175	6	13		19	156	0	5	60	36	43	7
1197+50.00	249	190	59	0	0	0	0	0	0	190	146	8	14		22	124	0	7	59	33	43	10
1197+75.00	225	167	58	0	0	0	0	0	0	167	128	7	12		19	109	0	6	58	32	42	10
1198+00.00	207	150	57	0	0	0	0	0	0	150	115	4	10		14	101	0	3	57	32	41	9
1198+25.00	322	229	93	0	0	0	0	0	0	229	176	4	10		14	162	0	3	93	56	67	11
1198+50.00	514	381	133	0	0	0	0	0	0	381	293	4	11		15	278	0	4	133	82	95	13
1198+75.00	623	485	137	0	0	0	0	0	0	485	373	5	11		16	357	0	4	137	85	98	13
1199+00.00	636	500	137	0	0	0	0	0	0	500	385	5	11		16	369	0	5	137	84	98	14
1199+25.00	556	423	133	0	0	0	0	0	0	423	325	6	12		18	307	0	5	133	81	95	14
1199+50.00	415	290	125	0	0	0	0	0	0	290	223	4	13		17	206	0	4	125	75	90	15
1199+75.00	276	182	94	0	0	0	0	0	0	182	140	3	13		16	124	0	3	94	55	68	13
1200+00.00	194	129	65	0	0	0	0	0	0	129	99	6	14		20	79	0	6	65	34	47	13
1200+25.00	148	89	59	0	0	0	0	0	0	89	68	10	16		26	42	0	10	59	29	43	14
1200+50.00	112	58	54	0	0	0	0	0	0	58	45	12	17		29	16	0	11	54	26	39	13
1200+75.00	66	29	37	0	0	0	0	0	0	29	22	10	15		25	-3	0	12	37	17	27	10
1200+93.79	19	7	12	0	0	0	0	0	0	7	5	3	5		8	-3	0	10	12	5	9	4
1201+00.00	71	24	47	0	0	0	0	0	0	24	18	17	21		38	-20	0	4	47	20	34	14
1201+25.00	58	14	44	0	0	0	0	0	0	14	11	20	24		44	-33	0	19	44	18	32	14
1201+50.00	47	6	41	0	0	0	0	0	0	6	5	19	24		43	-38	0	18	41	15	30	15
1201+75.00	44	6	39	0	0	0	0	0	0	6	5	17	22		39	-34	0	17	39	14	28	14
1202+00.00	47	7	40	0	0	0	0	0	0	7	5	21	24		45	-40	0	21	40	14	29	15
1202+25.00	39	4	35	0	0	0	0	0	0	4	3	31	26		57	-54	0	51	35	14	25	11
1202+40.00	32	3	30	0	0	0	0	0	0	3	2	34	23		57	-55	0	50	30	13	22	9
1202+50.00	30	3	27	0	0	0	0	0	0	3	2	33	20		53	-51	0	38	27	12	20	8
1202+58.55	45	7	38	0	0	0	0	0	0	7	5	44	27		71	-66	0	33	38	17	28	11
1202+69.79	23	5	18	0	0	0	0	0	0	5	4	20	13		33	-29	0	43	18	9	13	4
1202+75.00	155	52	103	0	0	0	0	0	0	52	40	132	63		195	-155	0	27	103	55	74	19
1203+00.00	229	97	132	0	0	0	0	0	0	97	75	214	73		287	-212	0	213	132	73	95	22
1203+25.00	298	144	154	0	0	0	0	0	0	144	111	334	88		422	-311	0	333	154	83	110	27
1203+50.00	354	188	167	0	0	0	0	0	0	188	145	478	95		573	-428	0	486	167	91	120	29
1203+74.56	7	4	3	0	0	0	0	0	0	4	3	10	2		12	-9	0	558	3	2	3	1
1203+75.00	319	180	139	0	0	0	0	0	0	180	138	451	76		527	-389	0	10	139	76	100	24
1203+93.79	118	70	48	0	0	0	0	0	0	70	54	158	26		184	-130	0	478	48	26	35	9
1204+00.00	521	315	206	0	0	0	0	0	0	315	242	645	115		760	-518	0	160	206	112	148	36
1204+25.00	534	316	218	0	0	0	0	0	0	316	243	587	125		712	-469	0	586	218	118	156	38
1204+50.00	530	314	217	0	0	0	0	0	0	314	242	485	138		623	-381	0	484	217	117	155	38
1204+75.00	537	344	194	0	0	0	0	0	0	344	265	379	124		503	-238	0	383	194	100	139	39
1204+99.72	6	4	2	0	0	0	0	0	0	4	3	4	1		5	-2	0	349	2	1	2	1
1205+00.00	582	385	197	0	0	0	0	0	0	385	296	333	122		455	-159	0	3	197	97	141	44
1205+25.00	582	426	156	0	0	0	0	0	0	426	328	250	80		330	-2	0	250	156	71	112	41
1205+50.00	639	489	150	0	0	0	0	0	0	489	376	212	69		281	95	0	212	150	67	108	41
1205+75.00	730	583	147	0	0	0	0	0	0	583	448	206	62		268	180	0	205	147	65	105	40
1206+00.00	856	707	148	0	0	0	0	0	0	707	544	200	59		259	285	0	199	148	67	106	39
1206+25.00	874	715	151	0	0	0	0	0	8	723	556	191	58		249	307	0	191	151	69	108	39
1206+50.00	364	273	80	0	0	0	0	0	11	284	218	93	31		124	94	0	181	80	35	58	23
1206+62.79	236	147	73	0	0	0	0	0	16	163	125	81	29		110	15	0	84	73	32	53	21
1206+75.00	445	103	101	0	0	0	0	0	241	344	265	153	59		212	53	0	74	101	57	73	16
1207+00.00	146	4	17	0	0	0	0	0	125	129	99	41	16		57	42	0	151	17	14	13	-1
1207+06.79	225	7	44	0	0	0	0	0	174	181	139	109	43		152	-13	0	40	44	26	32	6
1207+25.00	27	1	6	0	0	0	0	0	20	21	16	11	6		17	-1	0	103	6	3	5	2
1207+26.92	79	3	13	0	0	0	0	0	63	66	51	9	9		18	33	0	5	13	8	10	2
1207+30.00	284	10	70	0	0	0	0	0	204	214	165	49	46		95	70	0	7	70	34	50	16
1207+50.00	62	0	62	0	0	0	0	0	0	0	0	115	61		176	-176	0	91	62	18	45	27
1207+75.00	48	0	48	0	0	0	0	0	0	0	0	139	46		185	-185	0	138	48	20	35	15
1208+00.00	56	0	56	0	0	0	0	0	0	0	0	228	54		282	-282	0	227	56	50	40	-10
1208+25.00	663	12	101	0	0	0	0	0	550	562	432	237	50		287	145	0	395	101	77	73	-4
1208+40.00	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	149	0	0	0	0
US 20 TAPERS																						
1226+00.00	233	189	44	0	0	0	0	0	0	189	145	12	9		21	124	0	0	44	75	32	-43
1226+50.00																						

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER T.10

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
1226+50.00	565	538	28	0	0	0	0	0	0	538	414	0			0	414	0	0	28	89	20	-69
1227+00.00	777	726	51	0	0	0	0	0	0	726	558	0	43		43	515	0	0	51	99	37	-62
1227+50.00	560	560	0	0	0	0	0	0	0	560	431	0			0	431	0	0	0	87	0	-87
1228+00.00	427	321	105	0	0	0	0	0	0	321	247	80	51		131	116	0	80	105	146	75	-71
1228+50.00	385	195	189	0	0	0	0	0	0	195	150	184	114		298	-148	0	184	189	211	135	-76
1229+00.00	367	167	199	0	0	0	0	0	0	167	128	167	122		289	-161	0	166	199	180	143	-37
1229+50.00	302	129	174	0	0	0	0	0	0	129	99	100	101		201	-102	0	100	174	134	125	-9
1230+00.00	204	62	141	0	0	0	0	0	0	62	48	42	93		135	-87	0	41	141	109	101	-8
1230+50.00	133	26	108	0	0	0	0	0	0	26	20	24	72		96	-76	0	24	108	83	78	-5
1231+00.00	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	19	0	0	0	0
US 20 TAPERS																						
1235+82.79	68	1	67	0	0	0	0	0	0	1	1	362	59		421	-420	0	0	67	33	48	15
1236+00.00	106	8	99	0	0	0	0	0	0	8	6	499	83		582	-576	0	343	99	49	71	22
1236+25.00	112	24	88	0	0	0	0	0	0	24	18	380	69		449	-431	0	436	88	45	63	18
1236+46.79	18	6	13	0	0	0	0	0	0	6	5	50	9		59	-54	0	341	13	7	10	3
1236+50.00	153	53	100	0	0	0	0	0	0	53	41	342	69		411	-370	0	43	100	51	72	21
1236+75.00	171	77	94	0	0	0	0	0	0	77	59	250	59		309	-250	0	250	94	47	68	21
1237+00.00	192	104	88	0	0	0	0	0	0	104	80	162	50		212	-132	0	161	88	43	63	20
1237+25.00	205	123	82	0	0	0	0	0	0	123	95	97	41		138	-43	0	97	82	39	59	20
1237+50.00	204	130	74	0	0	0	0	0	0	130	100	54	32		86	14	0	54	74	36	53	17
1237+75.00	182	117	65	0	0	0	0	0	0	117	90	24	25		49	41	0	24	65	31	47	16
1238+00.00	257	166	92	0	0	0	0	0	0	166	128	49	36		85	43	0	58	92	40	66	26
1238+21.00	73	47	25	0	0	0	0	0	0	47	36	14	10		24	12	0	72	25	11	18	7
1238+25.00	570	411	158	0	0	0	0	0	0	411	316	49	47		96	220	0	7	158	69	113	44
1238+50.00	765	607	158	0	0	0	0	0	0	607	467	20	29		49	418	0	20	158	73	113	40
1238+75.00	938	782	156	0	0	0	0	0	0	782	602	11	19		30	572	0	10	156	77	112	35
1239+00.00	1,142	978	164	0	0	0	0	0	0	978	752	10	17		27	725	0	9	164	81	118	37
1239+25.00	1,332	1,157	174	0	0	0	0	0	0	1,157	890	8	18		26	864	0	7	174	84	125	41
1239+50.00	1,460	1,283	178	0	0	0	0	0	0	1,283	987	7	16		23	964	0	6	178	87	128	41
1239+75.00	1,567	1,386	182	0	0	0	0	0	0	1,386	1,066	7	15		22	1,044	0	6	182	91	130	39
1240+00.00	1,656	1,470	186	0	0	0	0	0	0	1,470	1,131	7	16		23	1,108	0	6	186	95	133	38
1240+25.00	1,717	1,527	190	0	0	0	0	0	0	1,527	1,175	7	16		23	1,152	0	7	190	98	136	38
1240+50.00	1,789	1,588	201	0	0	0	0	0	0	1,588	1,222	7	15		22	1,200	0	6	201	107	144	37
1240+75.00	1,889	1,675	214	0	0	0	0	0	0	1,675	1,288	8	15		23	1,265	0	7	214	116	153	37
1241+00.00	1,937	1,718	219	0	0	0	0	0	0	1,718	1,322	9	16		25	1,297	0	8	219	120	157	37
1241+25.00	1,892	1,671	220	0	0	0	0	0	0	1,671	1,285	9	15		24	1,261	0	8	220	122	158	36
1241+50.00	1,794	1,575	219	0	0	0	0	0	0	1,575	1,212	8	15		23	1,189	0	7	219	123	157	34
1241+75.00	1,670	1,457	213	0	0	0	0	0	0	1,457	1,121	9	16		25	1,096	0	9	213	124	153	29
1242+00.00	1,527	1,323	204	0	0	0	0	0	0	1,323	1,018	10	16		26	992	0	10	204	124	146	22
1242+25.00	1,377	1,181	196	0	0	0	0	0	0	1,181	908	10	15		25	883	0	10	196	120	140	20
1242+50.00	1,217	1,029	189	0	0	0	0	0	0	1,029	792	9	15		24	768	0	9	189	116	135	19
1242+75.00	1,050	869	181	0	0	0	0	0	0	869	668	8	15		23	645	0	7	181	112	130	18
1243+00.00	858	688	170	0	0	0	0	0	0	688	529	6	14		20	509	0	6	170	105	122	17
1243+25.00	621	475	146	0	0	0	0	0	0	475	365	4	12		16	349	0	4	146	91	105	14
1243+50.00	400	280	120	0	0	0	0	0	0	280	215	3	10		13	202	0	2	120	75	86	11
1243+75.00	229	131	98	0	0	0	0	0	0	131	101	1	8		9	92	0	1	98	62	70	8
1244+00.00	49	23	25	0	0	0	0	0	0	23	18	0	1		1	17	0	0	25	17	18	1
1244+08.79	63	35	28	0	0	0	0	0	0	35	27	0	3		3	24	0	0	28	18	20	2
1244+19.79	38	21	17	0	0	0	0	0	0	21	16	0	3		3	13	0	0	17	11	13	2
1244+25.00	255	162	93	0	0	0	0	0	0	162	125	8	20		28	97	0	1	93	60	67	7
1244+50.00	71	49	22	0	0	0	0	0	0	49	38	4	6		10	28	0	16	22	14	16	2
1244+55.79	234	153	81	0	0	0	0	0	0	153	118	16	26		42	76	0	4	81	54	58	4
1244+75.00	60	36	24	0	0	0	0	0	0	36	28	6	9		15	13	0	23	24	16	18	2
1244+80.00	10	5	4	0	0	0	0	0	0	5	4	1	2		3	1	0	7	4	3	3	0
1244+80.79	9	5	4	0	0	0	0	0	0	5	4	1	2		3	1	0	1	4	2	3	1
1244+81.50	198	103	95	0	0	0	0	0	0	103	79	59	44		103	-24	0	2	95	62	68	6
1245+00.00	197	82	115	0	0	0	0	0	0	82	63	169	65		234	-171	0	134	115	81	83	2
1245+23.32	13	4	8	0	0	0	0	0	0	4	3	16	5		21	-18	0	227	8	6	6	0
1245+25.00	114	37	77	0	0	0	0	0	0	37	28	129	49		178	-150	0	13	77	49	55	6
1245+41.00	66	26	40	0	0	0	0	0	0	26	20	55	26		81	-61	0	97	40	26	29	3
1245+50.00	126	48	78	0	0	0	0	0	0	48	37	88	42		130	-93	0	50	78	42	56	14
1245+65.79	64	24	40	0	0	0	0	0	0	24	18	51	22		73	-55	0	87	40	20	29	9
1245+75.00	16	6	10	0	0	0	0	0	0	6	5	17	4		21	-16	0	30	10	8	8	0
1245+80.00	23	1	22	0	0	0	0	0	0	1	1	40	19		59	-58	0	34	22	9	16	7
1245+85.71	1	1	0	0	0	0	0	0	0	1	1	103			103	-102	0	41	0	19	0	-19
1246+00.00	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	10	0	0	0	0
S 20 ENTRANCE REMOVAL																						
1190+00																						
1217+26	71	0	11	0	0	0	0	0	0	0	0	0	11		11	-11	0	0	11	0	8	8
+00.00	132	0	12	0	0	0	0	0	0	0	0	0	12		12	-12	0	0	12	0	9	9

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
EAST ACCESS																						
+18.42	103	79	24	0	0	0	0	0	0	79	61	183	11		194	-133	0	0	24	16	18	2
+25.00	165	76	89	0	0	0	0	0	0	76	58	1,420	77		1,497	-1,439	0	373	89	78	64	-14
+50.00	26	0	26	0	0	0	0	0	0	0	0	488	25		513	-513	0	1,448	26	26	19	-7
+58.42	49	0	49	0	0	0	0	0	0	0	0	962	48		1,010	-1,010	0	488	49	50	35	-15
+75.00	56	0	56	0	0	0	0	0	0	0	0	1,127	55		1,182	-1,182	0	983	56	57	40	-17
+94.01	6	0	6	0	0	0	0	0	0	0	0	114	6		120	-120	0	1,140	6	6	5	-1
+95.91	12	0	12	0	0	0	0	0	0	0	0	238	12		250	-250	0	110	12	12	9	-3
1+00.00	112	0	112	0	0	0	0	0	0	0	0	1,325	111		1,436	-1,436	0	216	112	72	80	8
1+25.00	110	0	110	0	0	0	0	0	0	0	0	1,227	109		1,336	-1,336	0	1,226	110	69	79	10
1+50.00	75	0	75	0	0	0	0	0	0	0	0	1,214	74		1,288	-1,288	0	1,213	75	67	54	-13
1+75.00	75	0	75	0	0	0	0	0	0	0	0	1,213	74		1,287	-1,287	0	1,212	75	67	54	-13
2+00.00	66	0	66	0	0	0	0	0	0	0	0	1,208	65		1,273	-1,273	0	1,207	66	67	48	-19
2+25.00	66	0	66	0	0	0	0	0	0	0	0	1,183	65		1,248	-1,248	0	1,183	66	66	48	-18
2+50.00	60	0	59	0	0	0	0	0	0	0	0	1,165	58		1,223	-1,223	0	1,164	59	66	43	-23
2+75.00	59	0	59	0	0	0	0	0	0	0	0	1,139	57		1,196	-1,196	0	1,138	59	65	43	-22
3+00.00	66	0	66	0	0	0	0	0	0	0	0	1,107	64		1,171	-1,171	0	1,107	66	64	48	-16
3+25.00	65	0	65	0	0	0	0	0	0	0	0	1,076	64		1,140	-1,140	0	1,075	65	62	47	-15
3+50.00	65	0	65	0	0	0	0	0	0	0	0	1,020	64		1,084	-1,084	0	1,020	65	59	47	-12
3+75.00	63	0	63	0	0	0	0	0	0	0	0	956	62		1,018	-1,018	0	956	63	57	45	-12
4+00.00	51	0	51	0	0	0	0	0	0	0	0	891	50		941	-941	0	890	51	56	37	-19
4+25.00	52	0	51	0	0	0	0	0	0	0	0	807	50		857	-857	0	806	51	55	37	-18
4+50.00	55	0	54	0	0	0	0	0	0	0	0	759	53		812	-812	0	758	54	55	39	-16
4+75.00	55	0	54	0	0	0	0	0	0	0	0	752	53		805	-805	0	751	54	55	39	-16
5+00.00	237	0	237	0	0	0	0	0	0	0	0	769	235		1,004	-1,004	0	768	237	57	170	113
5+25.00	244	0	244	0	0	0	0	0	0	0	0	1,203	243		1,446	-1,446	0	1,203	244	68	175	107
5+50.00	69	0	69	0	0	0	0	0	0	0	0	1,545	68		1,613	-1,613	0	1,545	69	70	50	-20
5+75.00	65	0	65	0	0	0	0	0	0	0	0	1,409	64		1,473	-1,473	0	1,408	65	64	47	-17
6+00.00	65	0	65	0	0	0	0	0	0	0	0	1,280	64		1,344	-1,344	0	1,279	65	64	47	-17
6+25.00	63	0	63	0	0	0	0	0	0	0	0	1,104	62		1,166	-1,166	0	1,104	63	61	45	-16
6+50.00	61	0	61	0	0	0	0	0	0	0	0	961	60		1,021	-1,021	0	961	61	59	44	-15
6+75.00	63	0	63	0	0	0	0	0	0	0	0	938	62		1,000	-1,000	0	938	63	62	45	-17
7+00.00	66	0	66	0	0	0	0	0	0	0	0	922	65		987	-987	0	921	66	65	48	-17
7+25.00	66	0	66	0	0	0	0	0	0	0	0	874	65		939	-939	0	874	66	65	48	-17
7+50.00	64	0	64	0	0	0	0	0	0	0	0	837	63		900	-900	0	837	64	65	46	-19
7+75.00	63	0	63	0	0	0	0	0	0	0	0	814	62		876	-876	0	814	63	64	45	-19
8+00.00	62	0	62	0	0	0	0	0	0	0	0	787	61		848	-848	0	786	62	62	45	-17
8+25.00	57	0	57	0	0	0	0	0	0	0	0	714	56		770	-770	0	754	57	58	41	-17
8+48.63	3	0	3	0	0	0	0	0	0	0	0	40	3		43	-43	0	695	3	3	3	0
8+50.00	63	0	63	0	0	0	0	0	0	0	0	712	62		774	-774	0	38	63	60	45	-15
8+75.00	63	0	63	0	0	0	0	0	0	0	0	668	62		730	-730	0	668	63	60	45	-15
9+00.00	65	0	65	0	0	0	0	0	0	0	0	613	64		677	-677	0	612	65	61	47	-14
9+25.00	64	0	64	0	0	0	0	0	0	0	0	544	63		607	-607	0	544	64	60	46	-14
9+50.00	60	0	60	0	0	0	0	0	0	0	0	459	59		518	-518	0	459	60	52	43	-9
9+75.00	56	0	55	0	0	0	0	0	0	0	0	395	54		449	-449	0	395	55	44	40	-4
10+00.00	45	0	45	0	0	0	0	0	0	0	0	377	44		421	-421	0	377	45	43	33	-10
10+25.00	44	0	44	0	0	0	0	0	0	0	0	361	43		404	-404	0	361	44	42	32	-10
10+50.00	60	0	60	0	0	0	0	0	0	0	0	348	59		407	-407	0	348	60	42	43	1
10+75.00	63	0	62	0	0	0	0	0	0	0	0	368	61		429	-429	0	367	62	44	45	1
11+00.00	5	0	5	0	0	0	0	0	0	0	0	42	5		47	-47	0	393	5	5	4	-1
11+02.66	3	0	3	0	0	0	0	0	0	0	0	21	3		24	-24	0	42	3	2	3	1
11+04.00	32	0	32	0	0	0	0	0	0	0	0	273	31		304	-304	0	22	32	30	23	-7
11+20.00	11	0	11	0	0	0	0	0	0	0	0	92	11		103	-103	0	295	11	10	8	-2
11+25.00	62	3	19	0	0	0	0	0	0	3	2	172	14		186	-184	0	95	19	17	14	-3
11+34.00	195	11	39	0	0	0	0	0	21	32	25	313	17		330	-305	0	175	39	37	28	-9
11+50.00	285	17	64	0	0	0	0	0	63	80	62	481	28		509	-447	0	308	64	68	46	-22
11+75.00	226	13	63	0	0	0	0	0	63	76	58	456	31		487	-429	0	456	63	67	45	-22
12+00.00	238	13	67	0	0	0	0	0	70	83	64	390	33		423	-359	0	389	67	66	48	-18
12+25.00	326	20	65	0	0	0	0	0	85	105	81	297	21		318	-237	0	296	65	64	47	-17
12+50.00	125	8	20	0	0	0	0	0	28	36	28	76	2		78	-50	0	242	20	20	15	-5
12+57.87	314	23	36	0	0	0	0	0	50	73	56	153			153	-97	0	70	36	40	26	-14
12+75.00	653	274	48	0	0	0	0	0	49	323	248	191			191	57	0	130	48	53	35	-18
13+00.00	924	600	54	0	0	0	0	0	30	630	485	131			131	354	0	130	54	49	39	-10
13+25.00	1,225	383	55	0	0	0	0	0	93	476	366	66			66	300	0	66	55	50	40	-10
13+50.00	1,733	68	58	0	0	0	0	0	322	390	300	19			19	281	0	18	58	55	42	-13
13+75.00	2,444	63	97	0	0	0	0	0	1,553	1,616	1,243	0			0	1,243	0	0	97	106	70	-36
14+00.00	3,202	67	137	0	0	0	0	0	2,998	3,065	2,358	0			0	2,358	0	0	137	160	98	-62
14+25.00	3,982	72	146	0	0	0	0	0	3,764	3,836	2,951	0			0	2,951	0	0	146	171	105	-66
14+50.00																						

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
14+50.00	4,782	77	155	0	0	0	0	0	4,550	4,627	3,559	0			0	3,559	0	0	155	184	111	-73
14+75.00	5,589	81	164	0	0	0	0	0	5,344	5,425	4,173	0			0	4,173	0	0	164	195	118	-77
15+00.00	6,413	87	173	0	0	0	0	0	6,153	6,240	4,800	0			0	4,800	0	0	173	208	124	-84
15+25.00	7,230	93	183	0	0	0	0	0	6,954	7,047	5,421	0			0	5,421	0	0	183	220	131	-89
15+50.00	8,038	98	242	0	0	0	0	0	7,699	7,797	5,998	0			0	5,998	0	0	242	231	173	-58
15+75.00	8,772	103	249	0	0	0	0	0	8,421	8,524	6,557	0			0	6,557	0	0	249	241	178	-63
16+00.00	9,442	108	220	0	0	0	0	0	9,113	9,221	7,093	0			0	7,093	0	0	220	251	158	-93
16+25.00	10,118	116	228	0	0	0	0	0	9,774	9,890	7,608	0			0	7,608	0	0	228	261	163	-98
16+50.00	10,743	126	223	0	0	0	0	0	10,395	10,521	8,093	0			0	8,093	0	0	223	274	160	-114
16+75.00	11,243	136	232	0	0	0	0	0	10,875	11,011	8,470	0			0	8,470	0	0	232	286	166	-120
17+00.00	11,542	139	238	0	0	0	0	0	11,166	11,305	8,696	0			0	8,696	0	0	238	294	170	-124
17+25.00	11,514	134	237	0	0	0	0	0	11,144	11,278	8,675	0			0	8,675	0	0	237	292	170	-122
17+49.64	169	2	3	0	0	0	0	0	164	166	128	0			0	128	0	0	3	4	3	-1
17+50.00	11,483	128	233	0	0	0	0	0	11,122	11,250	8,654	0			0	8,654	0	0	233	288	167	-121
17+74.26	353	4	7	0	0	0	0	0	342	346	266	0			0	266	0	0	7	9	5	-4
17+75.00	12,191	129	239	0	0	0	0	0	11,823	11,952	9,194	0			0	9,194	0	0	239	295	171	-124
18+00.00	12,745	129	236	0	0	0	0	0	12,380	12,509	9,622	0			0	9,622	0	0	236	297	169	-128
18+25.00	13,173	131	239	0	0	0	0	0	12,803	12,934	9,949	0			0	9,949	0	0	239	300	171	-129
18+50.00	13,348	125	243	0	0	0	0	0	12,980	13,105	10,081	0			0	10,081	0	0	243	297	174	-123
18+75.00	13,523	113	238	0	0	0	0	0	13,171	13,284	10,218	0			0	10,218	0	0	238	290	170	-120
19+00.00	13,697	102	313	0	0	0	0	0	13,282	13,384	10,295	0			0	10,295	0	0	313	282	224	-58
19+25.00	13,632	93	308	0	0	0	0	0	13,231	13,324	10,249	0			0	10,249	0	0	308	274	220	-54
19+50.00	13,233	86	254	0	0	0	0	0	12,893	12,979	9,984	0			0	9,984	0	0	254	266	182	-84
19+75.00	12,613	78	248	0	0	0	0	0	12,288	12,366	9,512	0			0	9,512	0	0	248	257	178	-79
20+00.00	11,944	71	203	0	0	0	0	0	11,670	11,741	9,032	0			0	9,032	0	0	203	247	145	-102
20+25.00	10,189	57	171	0	0	0	0	0	9,962	10,019	7,707	0			0	7,707	0	0	171	210	123	-87
20+47.53	1,083	6	19	0	0	0	0	0	1,059	1,065	819	0			0	819	0	0	19	22	14	-8
20+50.00	10,493	48	184	0	0	0	0	0	10,261	10,309	7,930	0			0	7,930	0	0	184	210	132	-78
20+75.00	9,539	32	159	0	0	0	0	0	9,348	9,380	7,215	0			0	7,215	0	0	159	185	114	-71
21+00.00	8,497	21	141	0	0	0	0	0	8,335	8,356	6,428	0			0	6,428	0	0	141	164	101	-63
21+25.00	1,688	3	139	0	0	0	0	0	1,546	1,549	1,192	0	112		112	1,080	0	0	139	30	100	70
21+30.00	5,808	14	0	0	0	0	0	0	5,794	5,808	4,468	0			0	4,468	0	0	0	116	0	-116
21+50.00	4,607	12	136	0	0	0	0	0	4,459	4,471	3,439	0	42		42	3,397	0	0	136	92	98	6
21+67.04	1,948	6	0	0	0	0	0	0	1,942	1,948	1,498	0			0	1,498	0	0	0	41	0	-41
21+75.00	5,707	22	124	0	0	0	0	0	5,562	5,584	4,295	0			0	4,295	0	0	124	122	89	-33
22+00.00	5,036	31	104	0	0	0	0	0	4,900	4,931	3,793	0			0	3,793	0	0	104	119	75	-44
22+25.00	4,526	71	93	0	0	0	0	0	4,361	4,432	3,409	0			0	3,409	0	0	93	143	67	-76
22+50.00	514	9	11	0	0	0	0	0	494	503	387	0			0	387	0	0	11	17	8	-9
22+53.07	3,396	39	85	0	0	0	0	0	3,272	3,311	2,547	0			0	2,547	0	0	85	84	61	-23
22+75.00	3,372	1,524	104	0	0	0	0	0	1,745	3,269	2,515	0			0	2,515	0	0	104	83	75	-8
23+00.00																						
COUSINS RD																						
481+50.00	37	1	37	0	0	22	0	0	0	1	1	18	30	7	55	-54	0	0	37	0	27	27
482+00.00	93	34	60	0	0	22	0	0	0	34	26	28	39	7	74	-48	0	28	60	0	43	43
482+50.00	154	73	81	0	0	22	0	0	0	73	56	26	40		66	-10	0	25	81	0	58	58
483+00.00	212	107	105	0	0	23	0	0	0	107	82	36	49	1	86	-4	0	35	105	0	75	75
483+50.00	282	151	131	0	0	22	0	0	0	151	116	46	60		106	10	0	46	131	0	94	94
484+00.00	323	163	160	0	0	22	0	0	0	163	125	71	80		151	-26	0	71	160	0	115	115
484+50.00	339	149	191	0	0	22	0	0	0	149	115	118	111	11	240	-125	0	117	191	0	137	137
485+00.00	476	247	229	0	0	22	0	0	0	247	190	85	83	11	179	11	0	85	229	0	164	164
485+50.00	343	203	139	0	0	22	0	0	0	203	156	13	24		37	119	0	12	139	0	100	100
486+00.00	77	49	27	0	0	22	0	0	0	49	38	0	11		11	27	0	0	27	0	20	20
486+50.00	66	39	27	0	0	22	0	0	0	39	30	0	13		13	17	0	0	27	0	20	20
487+00.00	58	33	26	0	0	22	0	0	0	33	25	0	15		15	10	0	0	26	0	19	19
487+50.00	81	55	26	0	0	22	0	0	0	55	42	0	13		13	29	0	0	26	0	19	19
488+00.00	105	77	27	0	0	22	0	0	0	77	59	0	10		10	49	0	0	27	0	20	20
488+50.00	118	92	27	0	0	21	0	0	0	92	71	0	8		8	63	0	0	27	0	20	20
489+00.00	134	106	28	0	0	21	0	0	0	106	82	0	7		7	75	0	0	28	0	20	20
489+50.00	138	109	29	0	0	20	0	0	0	109	84	0	6		6	78	0	0	29	0	21	21
490+00.00	176	145	31	0	0	19	0	0	0	145	112	0	4		4	108	0	0	31	0	23	23
490+50.00	150	115	35	0	0	17	0	0	0	115	88	0	7		7	81	0	0	35	0	25	25
491+00.00	62	25	37	0	0	17	0	0	0	25	19	7	23	9	39	-20	0	6	37	0	27	27
491+50.00	156	118	38	0	0	16	0	0	0	118	91	7	21	8	36	55	0	6	38	0	28	28
492+00.00	252	215	37	0	0	17	0	0	0	215	165	0	5		5	160	0	0	37	0	27	27
492+50.00	227	195	32	0	0	18	0	0	0	195	150	0	3		3	147	0	0	32	0	23	23
493+00.00	216	191	26	0	0	19	0	0	0	191	147	0	3		3	144	0	0	26	0	19	19
493+50.00	202	182	20	0	0	19	0	0	0	182	140	0	2		2	138	0	0	20	0	15	15
494+00.00	188	172	16	0	0	19	0	0	0	172	132	0	1		1	131	0	0	16	0	12	12
494+50.00	136	121	16	0	0	19	0	0	0	121	93	0	2		2	91	0	0	16	0	12	12
495+00.00																						

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
495+00.00	118	102	16	0	0	19	0	0	0	102	78	0	3		3	75	0	0	16	0	12	12
495+50.00	146	130	16	0	0	19	0	0	0	130	100	0	2		2	98	0	0	16	0	12	12
496+00.00	140	123	16	0	0	20	0	0	0	123	95	0	2		2	93	0	0	16	0	12	12
496+50.00																						
COUSINS RD																						
500+00.00																						
501+00.00	1	1	0	0	0	24	0	0	0	1	1	0		4	4	-3	0	0	0	0	0	0
501+50.00	10	1	9	0	0	21	0	0	0	1	1	0	4	1	5	-4	0	0	9	0	7	7
502+00.00	9	2	7	0	0	21	0	0	0	2	2	0	3	1	4	-2	0	0	7	0	5	5
502+50.00	14	6	8	0	0	20	0	0	0	6	5	0	4		4	1	0	0	8	0	6	6
503+00.00	17	6	11	0	0	20	0	0	0	6	5	0	7		7	-2	0	0	11	0	8	8
503+50.00	46	3	43	0	0	21	0	0	0	3	2	14	41		55	-53	0	13	43	0	31	31
	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	13	0	0	0	0
COUSINS RD ENTRANCE																						
504+24	30	0	10	0	0	0	0	0	0	0	0	18	10		28	-28	0	0	10	0	8	8
SEIPPEL RD																						
34+50.00	1,801	1,661	140	0	0	57	0	0	0	1,661	1,278	0		57	57	1,221	0	0	140	214	100	-114
35+00.00	1,840	1,741	99	0	0	58	0	0	0	1,741	1,339	0		58	58	1,281	0	0	99	184	71	-113
35+50.00	1,649	1,552	97	0	0	54	0	0	0	1,552	1,194	0		54	54	1,140	0	0	97	177	70	-107
36+00.00	1,472	1,378	93	0	0	53	0	0	0	1,378	1,060	0		53	53	1,007	0	0	93	172	67	-105
36+50.00	872	798	75	0	0	53	0	0	0	798	614	0		53	53	561	0	0	75	147	54	-93
37+00.00																						
SEIPPEL RD																						
39+50.00																						
40+00.00	18	18	0	0	0	53	0	0	0	18	14	0		53	53	-39	0	0	0	31	0	-31
40+50.00	27	27	0	0	0	53	0	0	0	27	21	0		53	53	-32	0	0	0	22	0	-22
41+00.00	26	26	0	0	0	53	0	0	0	26	20	0		53	53	-33	0	0	0	0	0	0
41+50.00	24	24	0	0	0	53	0	0	0	24	18	0		53	53	-35	0	0	0	22	0	-22
42+00.00	23	23	0	0	0	53	0	0	0	23	18	0		53	53	-35	0	0	0	44	0	-44
42+50.00	24	24	0	0	0	53	0	0	0	24	18	0		53	53	-35	0	0	0	44	0	-44
43+00.00	27	27	0	0	0	53	0	0	0	27	21	0		53	53	-32	0	0	0	44	0	-44
43+50.00	27	27	0	0	0	53	0	0	0	27	21	0		53	53	-32	0	0	0	44	0	-44
44+00.00	25	25	0	0	0	53	0	0	0	25	19	0		53	53	-34	0	0	0	45	0	-45
44+50.00	24	24	0	0	0	54	0	0	0	24	18	0		54	54	-36	0	0	0	45	0	-45
45+00.00	24	24	0	0	0	53	0	0	0	24	18	0		53	53	-35	0	0	0	45	0	-45
45+50.00	21	21	0	0	0	53	0	0	0	21	16	0		53	53	-37	0	0	0	48	0	-48
46+00.00	32	32	0	0	0	52	0	0	0	32	25	0		52	52	-27	0	0	0	53	0	-53
46+50.00	34	34	0	0	0	52	0	0	0	34	26	0		52	52	-26	0	0	0	51	0	-51
47+00.00	24	24	0	0	0	53	0	0	0	24	18	0		53	53	-35	0	0	0	45	0	-45
47+50.00	24	24	0	0	0	53	0	0	0	24	18	0		53	53	-35	0	0	0	38	0	-38
CHANNEL																						
99+75.00																						
100+00.00	98	85	13	0	0	0	0	0	0	85	65	0	13		13	52	0	0	13	0	10	10
100+25.00	107	93	14	0	0	0	0	0	0	93	72	0	14		14	58	0	0	14	0	10	10
100+26.29	6	5	1	0	0	0	0	0	0	5	4	0	1		1	3	0	0	1	0	1	1
100+50.00	148	132	16	0	0	0	0	0	0	132	102	0	16		16	86	0	0	16	0	12	12
100+75.00	218	200	18	0	0	0	0	0	0	200	154	0	18		18	136	0	0	18	0	13	13
101+00.00	238	218	20	0	0	0	0	0	0	218	168	0	20		20	148	0	0	20	0	15	15
101+25.00	236	216	20	0	0	0	0	0	0	216	166	0	20		20	146	0	0	20	0	15	15
101+39.24	126	114	12	0	0	0	0	0	0	114	88	0	12		12	76	0	0	12	0	9	9
101+50.00	90	81	9	0	0	0	0	0	0	81	62	0	9		9	53	0	0	9	0	7	7
101+75.00	202	183	19	0	0	0	0	0	0	183	141	0	19		19	122	0	0	19	0	14	14
102+00.00	187	169	18	0	0	0	0	0	0	169	130	0	18		18	112	0	0	18	0	13	13
102+25.00	177	160	17	0	0	0	0	0	0	160	123	0	17		17	106	0	0	17	0	13	13
102+50.00	171	154	17	0	0	0	0	0	0	154	118	0	17		17	101	0	0	17	0	13	13
102+75.00	169	152	17	0	0	0	0	0	0	152	117	0	17		17	100	0	0	17	0	13	13
103+00.00	171	154	17	0	0	0	0	0	0	154	118	0	17		17	101	0	0	17	0	13	13
103+25.00	183	165	18	0	0	0	0	0	0	165	127	0	18		18	109	0	0	18	0	13	13
103+50.00	196	178	18	0	0	0	0	0	0	178	137	0	18		18	119	0	0	18	0	13	13
103+75.00	208	189	19	0	0	0	0	0	0	189	145	0	19		19	126	0	0	19	0	14	14
104+00.00	223	203	20	0	0	0	0	0	0	203	156	0	20		20	136	0	0	20	0	15	15
104+05.06	43	39	4	0	0	0	0	0	0	39	30	0	4		4	26	0	0	4	0	3	3
104+25.00	171	155	16	0	0	0	0	0	0	155	119	0	16		16	103	0	0	16	0	12	12
104+48.99	220	201	19	0	0	0	0	0	0	201	155	0	19		19	136	0	0	19	0	14	14
104+50.00	10	9	1	0	0	0	0	0	0	9	7	0	1		1	6	0	0	1	0	1	1
104+75.00	246	225	21	0	0	0	0	0	0	225	173	0	21		21	152	0	0	21	0	15	15
105+00.00	249	113	21	0	0	0	0	0	115	228	175	0	21		21	154	0	0	21	0	15	15
105+25.00	249	0	21	0	0	0	0	0	228	228	175	0	21		21	154	0	0	21	0	15	15

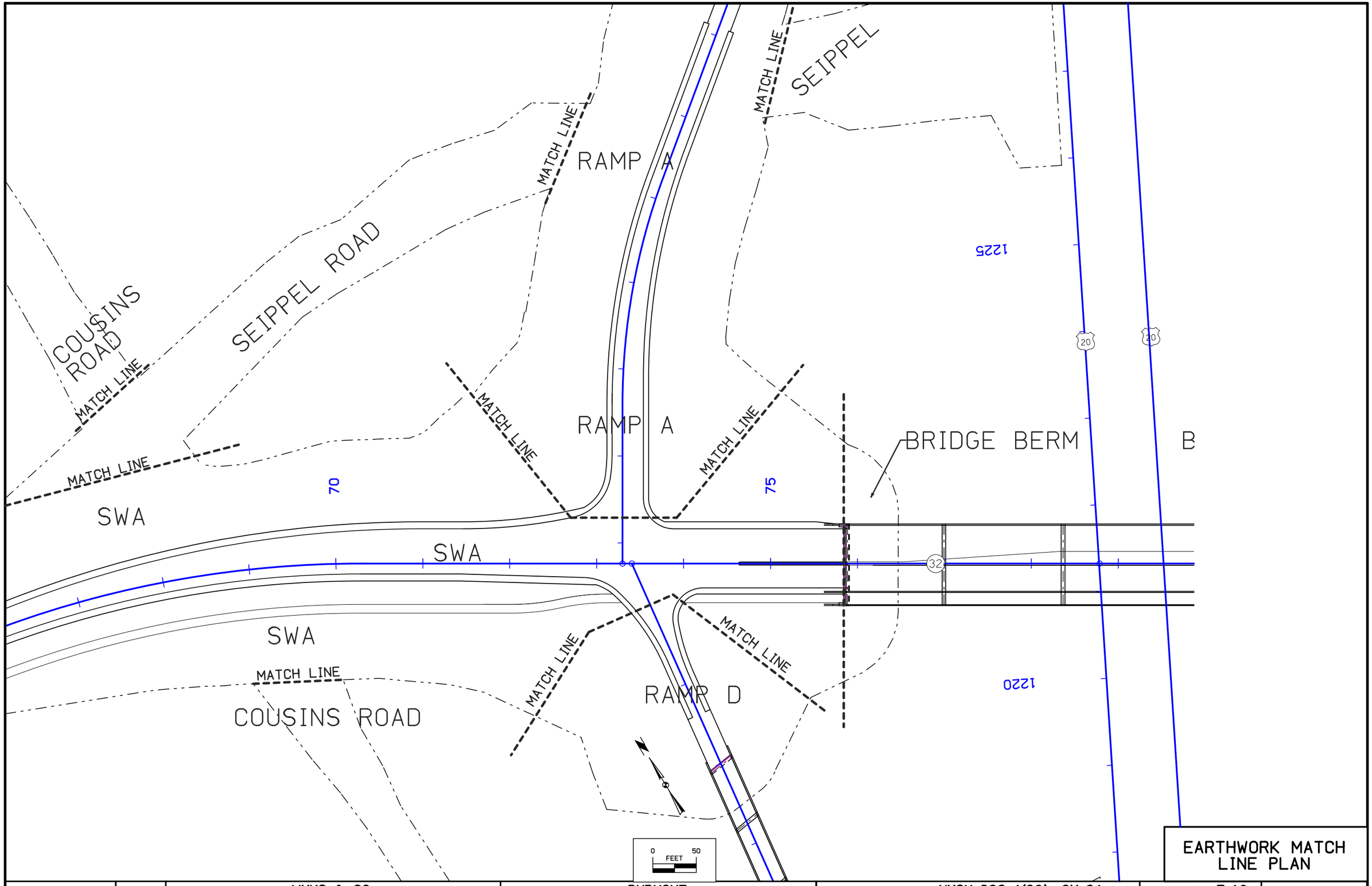
Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut											Fill					Checks (EW-102)		Topsoil			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Template Cut Volume	Template Class 10 Volume	Template Topsoil Cut Volume	Template Unsuitable Type B Volume	Template Unsuitable Type C Volume	Template Pavement Removal Volume	Template Select Loam Volume	Template Rock Volume	Template Shale Volume	Total Cut Adjusted	Total Cut Adjusted w/ Weighted Average 1.3 Shrink Factor	Template Fill Volume	Topsoil Stripping + Fill	Non-Template Existing Pavement Removal +Fill	Total Fill Adjusted	Total Cut Adjusted w/ 1.3 Shrink Factor Minus Fill	Approx. Fill Volume Below 5' And Above 20' Cu. Yds.	Approx. Fill Volume Below 3' Cu. Yds.	Total Topsoil Cut Volume	Template Topsoil Replacement Volume	Topsoil Cut With 1.4 Shrink Factor	Topsoil Cut With Shrink Minus Topsoil Replacement
105+25.00																						
105+50.00	242	0	20	0	0	0	0	0	222	222	171	0	20		20	151	0	0	20	0	15	15
CHANNEL																						
107+00.00																						
107+01.78	8	2	1	0	0	0	0	0	5	7	5	0	1		1	4	0	0	1	0	1	1
107+25.00	104	23	13	0	0	0	0	0	68	91	70	0	13		13	57	0	0	13	0	10	10
107+50.00	109	0	14	0	0	0	0	0	95	95	73	0	14		14	59	0	0	14	0	10	10
107+75.00	105	0	13	0	0	0	0	0	92	92	71	0	13		13	58	0	0	13	0	10	10
108+00.00	99	0	13	0	0	0	0	0	86	86	66	0	13		13	53	0	0	13	0	10	10
108+25.00	95	0	13	0	0	0	0	0	82	82	63	0	13		13	50	0	0	13	0	10	10
108+50.00	92	0	13	0	0	0	0	0	79	79	61	0	13		13	48	0	0	13	0	10	10
108+75.00	91	0	13	0	0	0	0	0	78	78	60	0	13		13	47	0	0	13	0	10	10
109+00.00	93	0	13	0	0	0	0	0	80	80	62	0	13		13	49	0	0	13	0	10	10
109+16.52	63	0	8	0	0	0	0	0	55	55	42	0	8		8	34	0	0	8	0	6	6
109+25.00	33	0	4	0	0	0	0	0	29	29	22	0	4		4	18	0	0	4	0	3	3
109+50.00	102	0	13	0	0	0	0	0	89	89	68	0	13		13	55	0	0	13	0	10	10
109+75.00	104	46	13	0	0	0	0	0	45	91	70	0	13		13	57	0	0	13	0	10	10
110+00.00	106	93	13	0	0	0	0	0	0	93	72	0	13		13	59	0	0	13	0	10	10
110+25.00	107	93	14	0	0	0	0	0	0	93	72	0	14		14	58	0	0	14	0	10	10
110+50.00	109	95	14	0	0	0	0	0	0	95	73	0	14		14	59	0	0	14	0	10	10
110+75.00	114	100	14	0	0	0	0	0	0	100	77	0	14		14	63	0	0	14	0	10	10
111+00.00	119	105	14	0	0	0	0	0	0	105	81	0	14		14	67	0	0	14	0	10	10
111+25.00	126	111	15	0	0	0	0	0	0	111	85	0	15		15	70	0	0	15	0	11	11
111+50.00	136	121	15	0	0	0	0	0	0	121	93	0	15		15	78	0	0	15	0	11	11
111+75.00	152	136	16	0	0	0	0	0	0	136	105	0	16		16	89	0	0	16	0	12	12
112+00.00	170	153	17	0	0	0	0	0	0	153	118	0	17		17	101	0	0	17	0	13	13
112+25.00	196	177	19	0	0	0	0	0	0	177	136	0	19		19	117	0	0	19	0	14	14
112+28.79	32	29	3	0	0	0	0	0	0	29	22	0	3		3	19	0	0	3	0	3	3
112+50.00	178	160	18	0	0	0	0	0	0	160	123	0	18		18	105	0	0	18	0	13	13
112+75.00	213	194	19	0	0	0	0	0	0	194	149	0	19		19	130	0	0	19	0	14	14
113+00.00	224	204	20	0	0	0	0	0	0	204	157	0	20		20	137	0	0	20	0	15	15
113+25.00	210	191	19	0	0	0	0	0	0	191	147	0	19		19	128	0	0	19	0	14	14
113+50.00	187	169	18	0	0	0	0	0	0	169	130	0	18		18	112	0	0	18	0	13	13
113+54.39	31	28	3	0	0	0	0	0	0	28	22	0	3		3	19	0	0	3	0	3	3
113+75.00	136	122	14	0	0	0	0	0	0	122	94	0	14		14	80	0	0	14	0	10	10
CHANNEL																						
116+00.00																						
116+25.00	95	82	13	0	0	0	0	0	0	82	63	0	13		13	50	0	0	13	0	10	10
116+50.00	88	76	12	0	0	0	0	0	0	76	58	0	12		12	46	0	0	12	0	9	9
116+54.73	16	14	2	0	0	0	0	0	0	14	11	0	2		2	9	0	0	2	0	2	2
116+75.00	68	58	10	0	0	0	0	0	0	58	45	0	10		10	35	0	0	10	0	8	8
117+00.00	81	36	12	0	0	0	0	0	34	70	54	0	12		12	42	0	0	12	0	9	9
117+25.00	83	38	12	0	0	0	0	0	34	72	55	0	12		12	43	0	0	12	0	9	9
117+43.49	68	58	10	0	0	0	0	0	0	58	45	0	10		10	35	0	0	10	0	8	8
117+50.00	24	21	3	0	0	0	0	0	0	21	16	0	3		3	13	0	0	3	0	3	3
117+75.00	99	86	13	0	0	0	0	0	0	86	66	0	13		13	53	0	0	13	0	10	10
118+00.00	105	45	13	0	0	0	0	0	47	92	71	0	13		13	58	0	0	13	0	10	10
118+25.00	108	47	13	0	0	0	0	0	47	94	72	0	13		13	59	0	0	13	0	10	10
118+50.00	108	95	13	0	0	0	0	0	0	95	73	0	13		13	60	0	0	13	0	10	10
118+75.00	104	91	13	0	0	0	0	0	0	91	70	0	13		13	57	0	0	13	0	10	10
119+00.00	93	81	12	0	0	0	0	0	0	81	62	0	12		12	50	0	0	12	0	9	9
119+25.00	79	63	16	0	0	0	0	0	0	63	48	0	16		16	32	0	0	16	0	12	12
119+50.00	68	49	19	0	0	0	0	0	0	49	38	0	19		19	19	0	0	19	0	14	14
119+75.00	67	48	19	0	0	0	0	0	0	48	37	0	19		19	18	0	0	19	0	14	14
120+00.00	74	54	20	0	0	0	0	0	0	54	42	0	20		20	22	0	0	20	0	15	15
120+25.00	87	66	21	0	0	0	0	0	0	66	51	0	21		21	30	0	0	21	0	15	15
120+50.00	105	83	22	0	0	0	0	0	0	83	64	0	22		22	42	0	0	22	0	16	16
120+75.00	119	97	22	0	0	0	0	0	0	97	75	0	22		22	53	0	0	22	0	16	16
121+00.00	124	102	22	0	0	0	0	0	0	102	78	0	22		22	56	0	0	22	0	16	16
121+25.00	125	103	22	0	0	0	0	0	0	103	79	0	22		22	57	0	0	22	0	16	16
121+50.00	127	105	22	0	0	0	0	0	0	105	81	0	22		22	59	0	0	22	0	16	16
121+75.00	82	66	16	0	0	0	0	0	0	66	51	0	16		16	35	0	0	16	0	12	12
TOTAL	828,800	328,349	91,712	6,069	160	3,652	1,998	1,312	394,852	732,740	563,660	472,210	40,795	1,576	514,581	49,079	0	446,130	91,712	50,824	65,923	15,099

FILE NO.	ENGLISH	DESIGN TEAM	WHKS & CO.	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER T.15



EARTHWORK MATCH LINE PLAN

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	T.16

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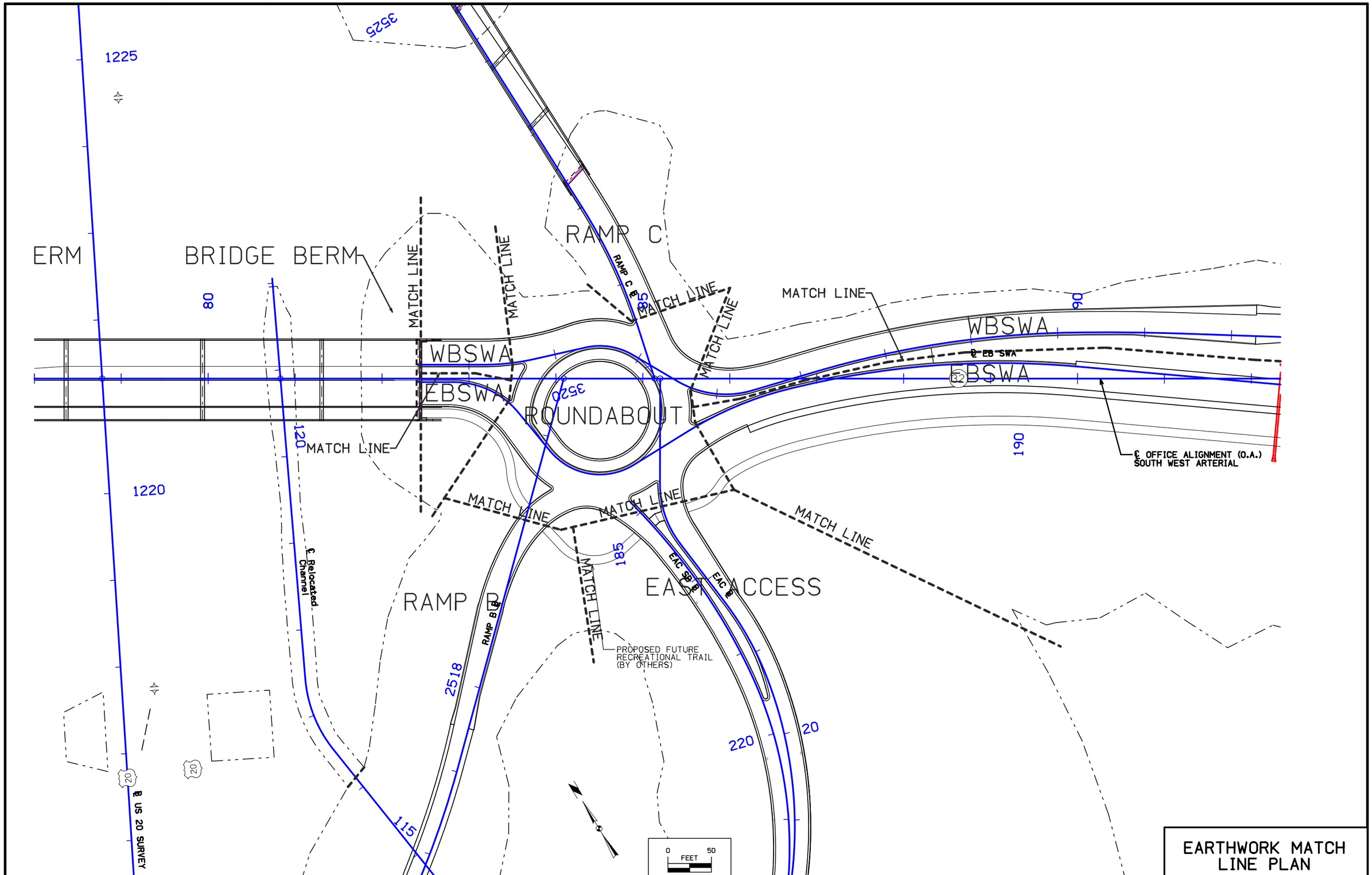

EARTHWORK MATCH LINE PLAN

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	T.17

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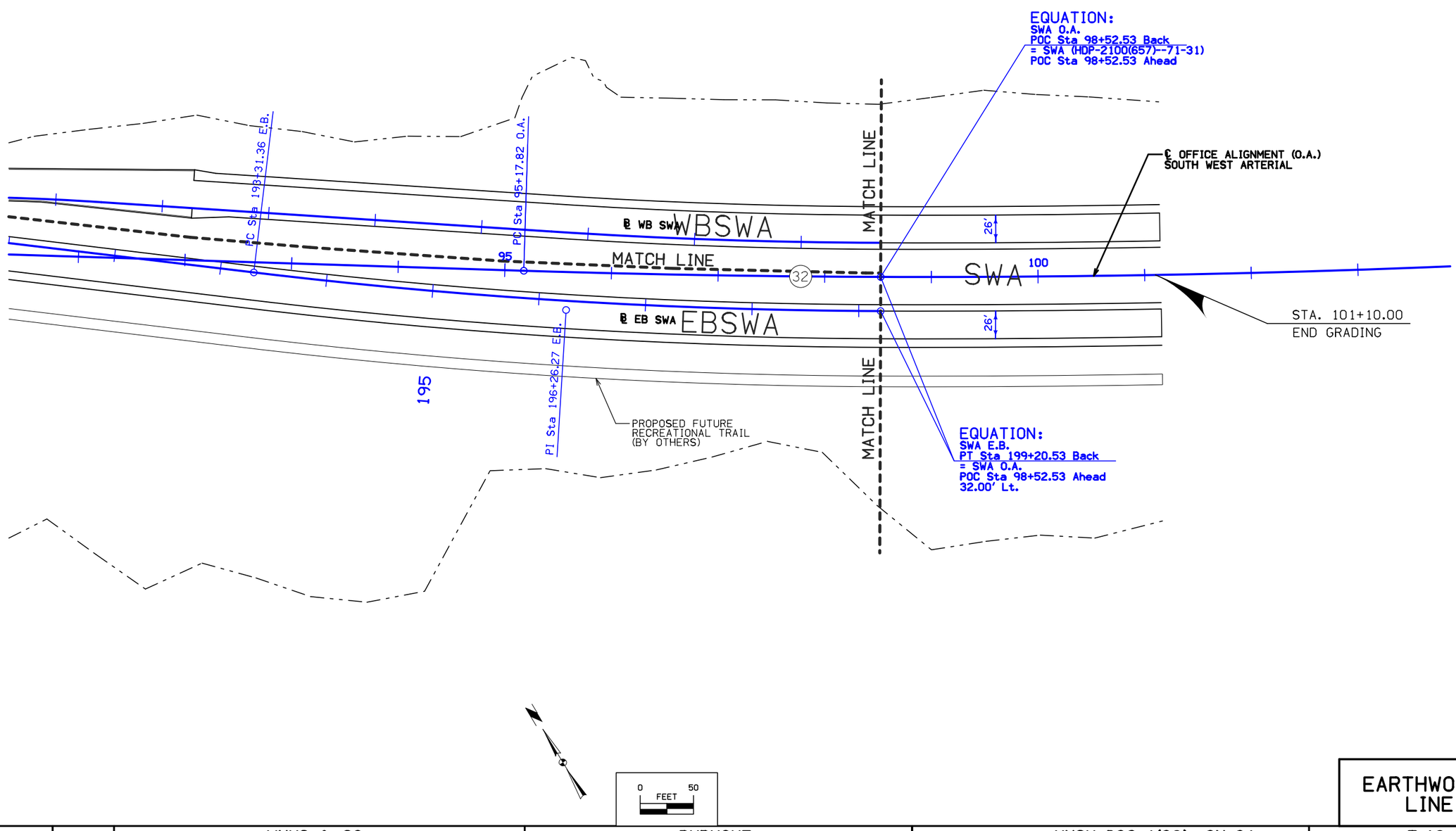

EARTHWORK MATCH LINE PLAN

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	T.18

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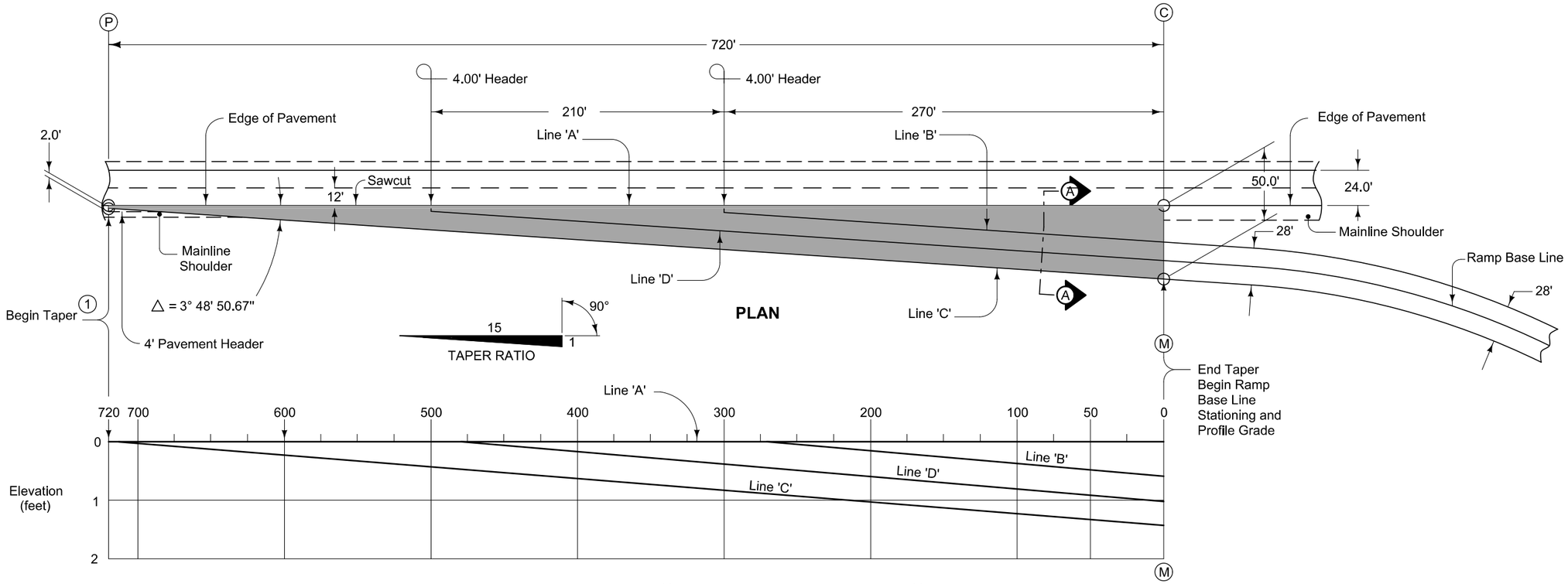


NOTE: The algebraic difference between profile grade for Ramp Base Line at Ⓜ and relative profile grade of Mainline at Ⓒ is 0.29%.

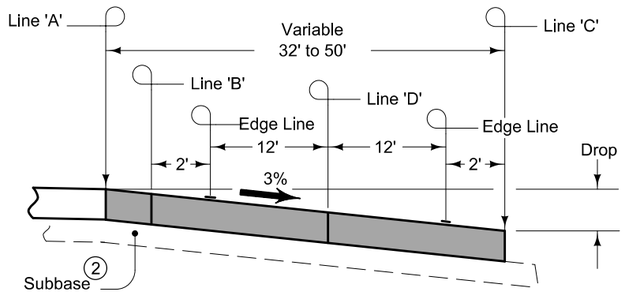
PROFILE

Ⓒ

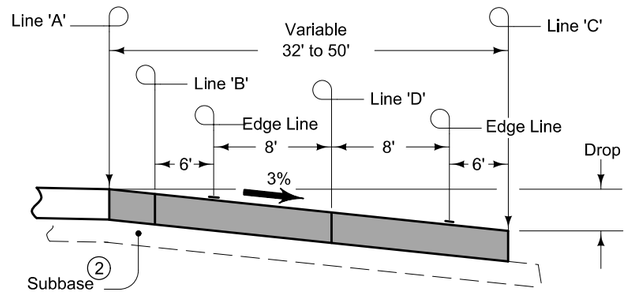
TABLE OF OFFSETS AND DROPS FOR 28' RAMP TAPER																															
DISTANCE (Ft.)	720	700	675	650	625	600	575	550	525	500	475	450	425	400	375	350	325	300	275	250	225	200	175	150	125	100	75	50	25	0
OFFSET (Ft.)	2.00	3.31	4.98	6.65	8.31	9.98	11.65	13.32	14.98	16.65	18.32	19.99	21.65	23.32	24.99	26.66	28.32	29.99	31.66	33.33	34.99	36.66	38.33	40.00	41.66	43.33	45.00	46.67	48.33	50.00
DROP (Ft.)	0.06	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50

Ⓜ

NOTE: The elevations at edge of taper from BEGIN TAPER to POINT 'M' are established by a constant 3% slope across the appropriate taper widths based on the Taper Ratio of 15:1. Drop = (0.03) x (Offset).



SECTION A-A
(DETOUR LANE LAYOUT)



SECTION A-A
(FUTURE LANE LAYOUT)

Construct ramp exit pavement the same thickness as ramp pavement.

Ramp exit pavement shown by shaded area is 2096 square yards.

For joint details, see PV-101.

(1) For header construction details at the beginning of taper, see Typical 7101.

(2) Construct subbase for ramp exit pavement the same thickness as ramp subbase.

MODIFIED
STANDARD ROAD PLAN

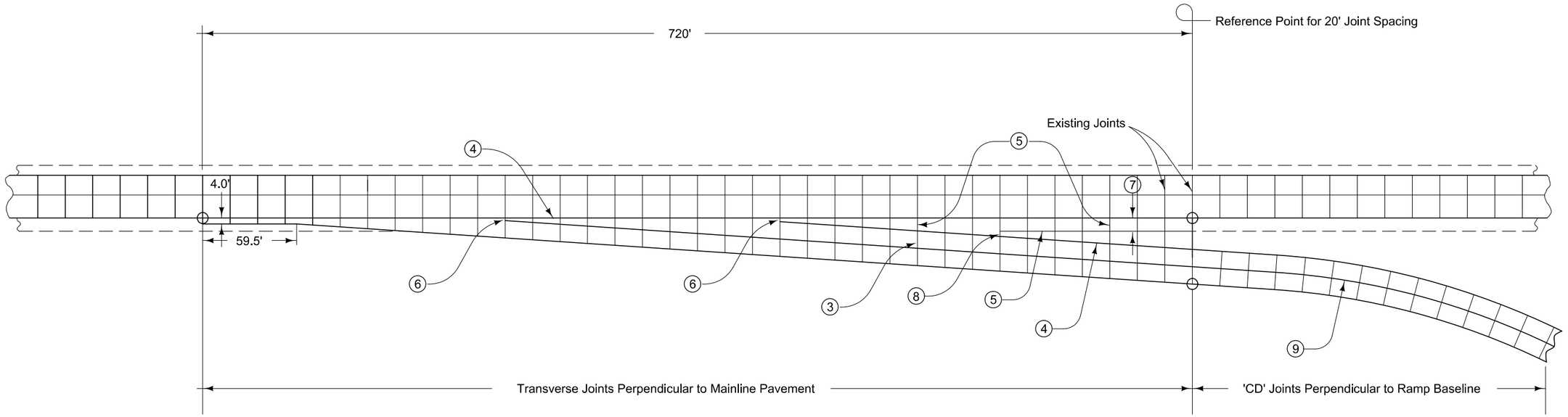
REVISION

SHEET 1 of 2

APPROVED BY DESIGN METHODS ENGINEER

RAMP A - DECELERATION TAPER
FOR 28' EXIT RAMP
WITH CENTERLINE JOINT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	U.1



RAMP A - 28' EXIT RAMP PAVED WITH TWO 14' SECTIONS FOR A TWO LANE DETOUR ROUTE

Note:
Contractor to adjust taper joints to match existing US 20 joints.

③ 'CD' Joints at 20' spacing.

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

⑤ 'C' Joint.

⑥ 4' - 'B' Joint.

⑦ 10' minimum or equal to mainline shoulder width.

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

⑨ KT-2 or L-2 Joint.

MODIFIED
STANDARD ROAD PLAN

REVISION

SHEET 2 of 2

APPROVED BY DESIGN METHODS ENGINEER

RAMP A - DECELERATION TAPER FOR 28' EXIT RAMP WITH CENTERLINE JOINT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	U.2

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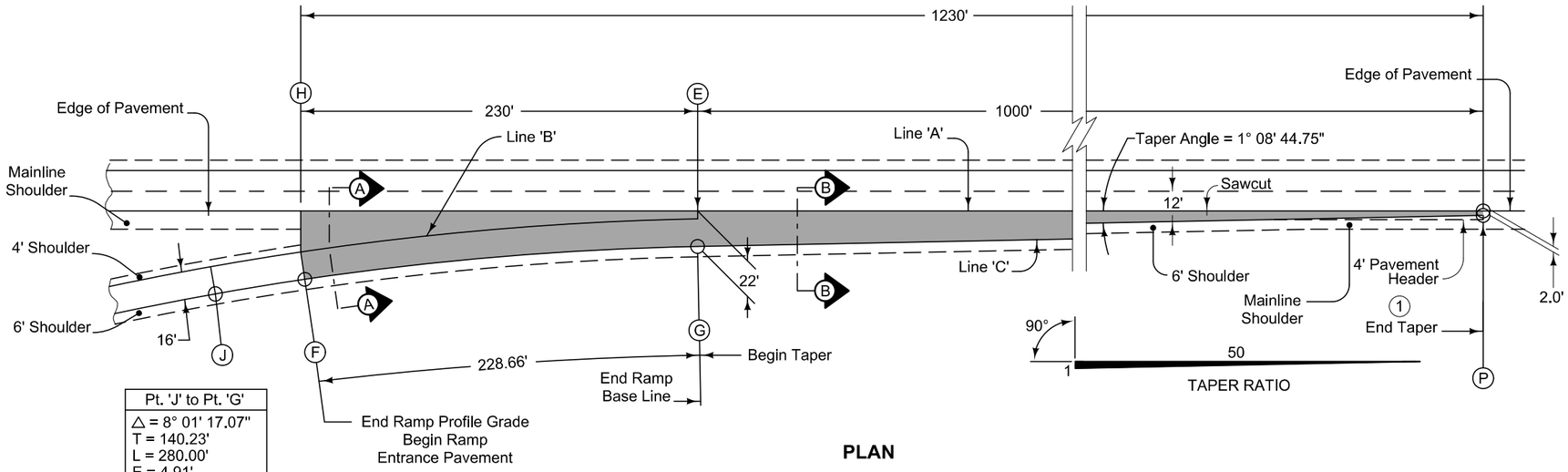
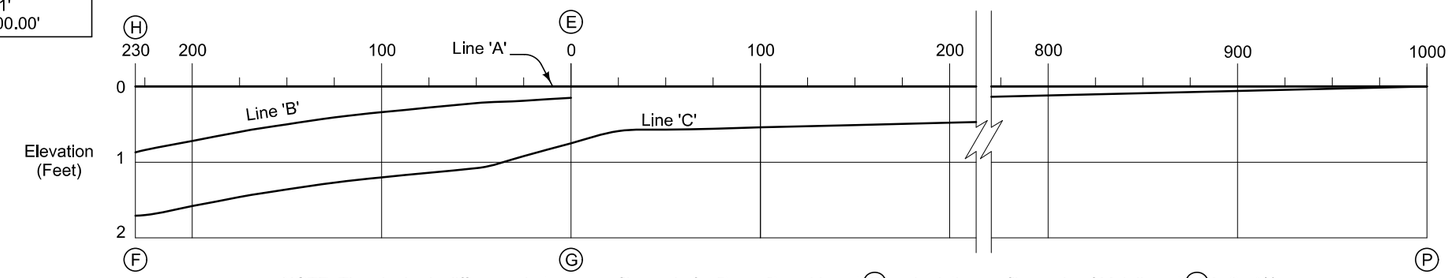


Pt. 'J' to Pt. 'G'
△ = 8° 01' 17.07"
T = 140.23'
L = 280.00'
E = 4.91'
R = 2000.00'

PLAN

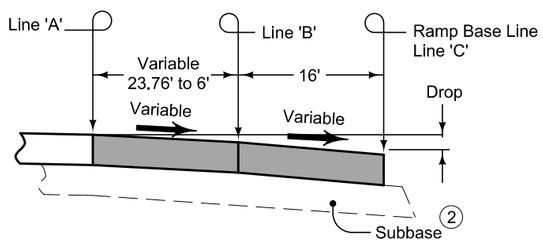


NOTE: The algebraic difference between profile grade for Ramp Base Line at (F) and relative profile grade of Mainline at (H) is 0.51%.

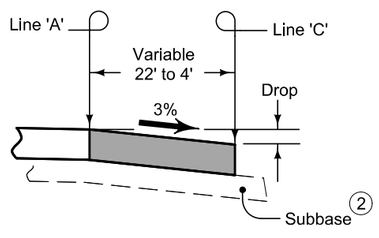
PROFILE

TABLE OF OFFSETS AND DROPS FOR 16' RAMP TAPER																									
Distance From Point E Along Line 'A' (Ft.)		230	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.)	23.76	23.10	19.95	17.11	14.59	12.38	10.48	8.90	7.62	6.66	6.00													
	Slope (%)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.78													
	Drop (Ft.)	0.95	0.92	0.80	0.68	0.58	0.50	0.42	0.36	0.30	0.27	0.23													
From Line 'B' To Line 'C'	Offset (Ft.)	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00													
	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.)												21.50	21.00	20.50	20.00	18.00	16.00	14.00	12.00	10.00	8.00	6.00	4.00	2.00
	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
	Drop (Ft.)	1.81	1.79	1.66	1.55	1.45	1.36	1.28	1.22	1.17	1.00	0.83	0.65	0.63	0.62	0.60	0.54	0.48	0.42	0.36	0.30	0.24	0.18	0.12	0.06
Distance From Point G Along Line 'C' (Ft.)		228.66	223.66	198.66	173.70	148.77	123.87	119.44	74.15	49.31	24.49	0.00													

H E F G P



SECTION A-A



SECTION B-B

Construct ramp entrance pavement the same thickness as ramp pavement.

Ramp entrance pavement shown by shaded area is 2906 square yards.

For joint details, see PV-101

(1) For header construction details at the end of taper, see Typical 7101.

(2) Construct subbase for ramp entrance pavement the same thickness as ramp subbase.

MODIFIED

STANDARD ROAD PLAN

REVISION

SHEET 1 of 2

APPROVED BY DESIGN METHODS ENGINEER

RAMP C - ACCELERATION TAPER FOR 16' ENTRANCE RAMP

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	U.3

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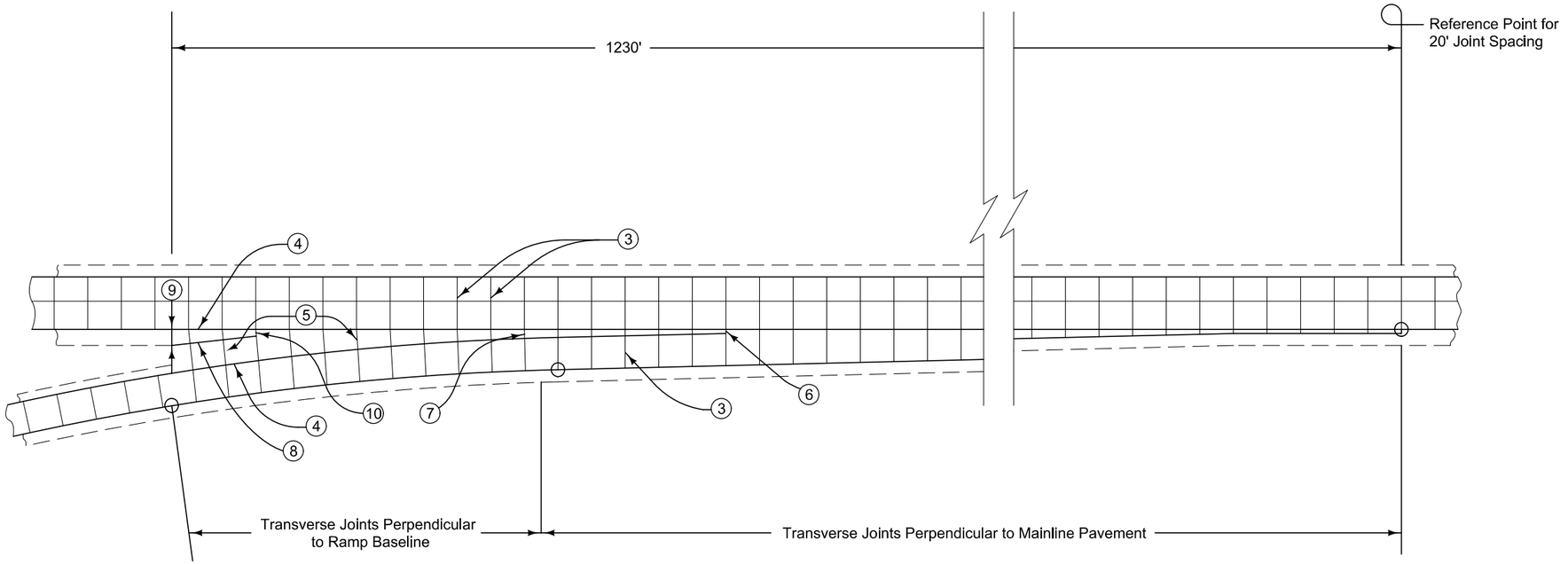

3 'CD' Joints at 20' spacing.

4 'BT-2' or 'KT-2' Joint.

5 'C' Joint.

6 4' 'B' Joint.

7 Construct transverse joints on the exit ramp taper perpendicular to the tapered edge where the gore area is greater than 4 feet.

8 'C' Joint parallel to ramp baseline.

9 10' minimum, or equal to mainline shoulder width.

10 4' 'B' or 'C' Joint.

16' ENTRANCE RAMP

Note:
Contractor to adjust taper joints
to match existing US 20 joints.

MODIFIED

STANDARD ROAD PLAN

REVISION

SHEET 2 of 2

APPROVED BY DESIGN METHODS ENGINEER

RAMP C - ACCELERATION TAPER FOR 16' ENTRANCE RAMP

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	U.4

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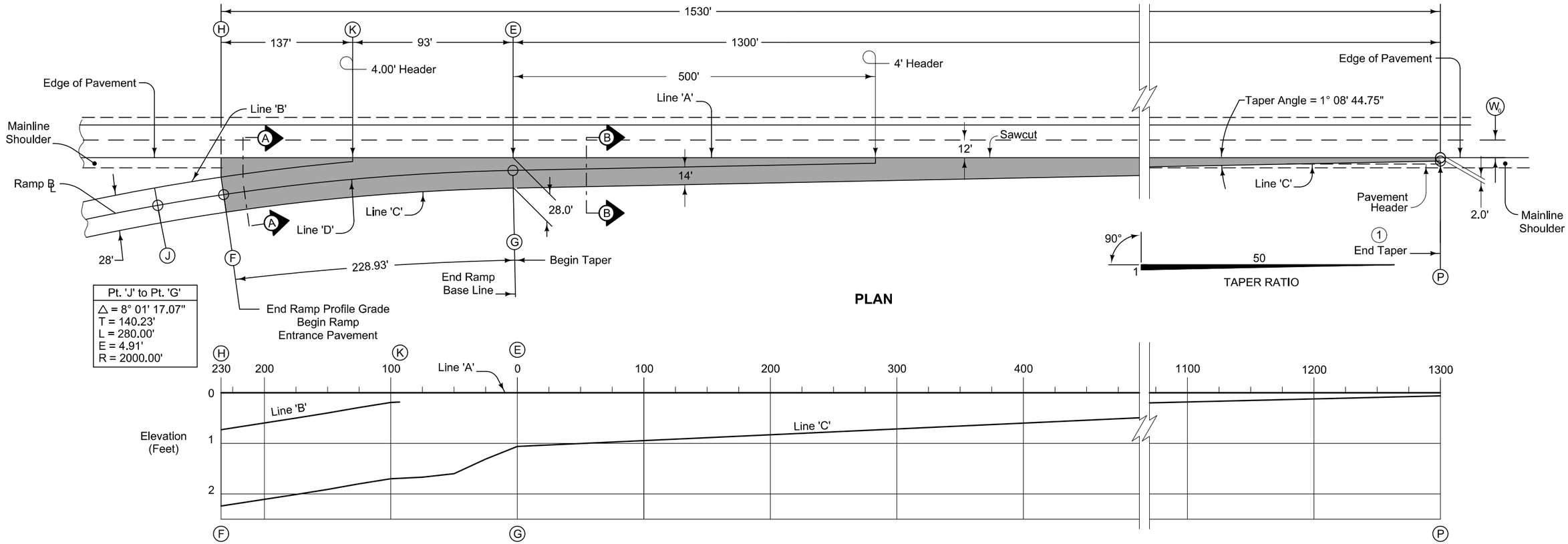
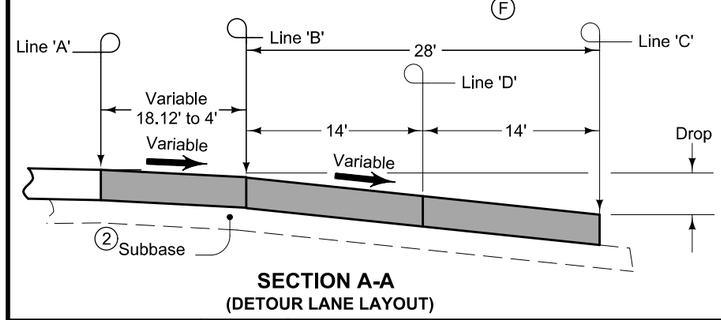


NOTE: The algebraic difference between profile grade for Ramp Base Line at (F) and relative profile grade of Mainline at (H) is 0.29%.

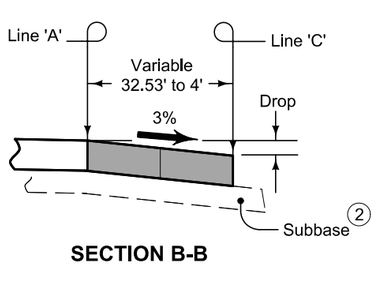
PROFILE

TABLE OF OFFSETS AND DROPS FOR 28' RAMP TAPER

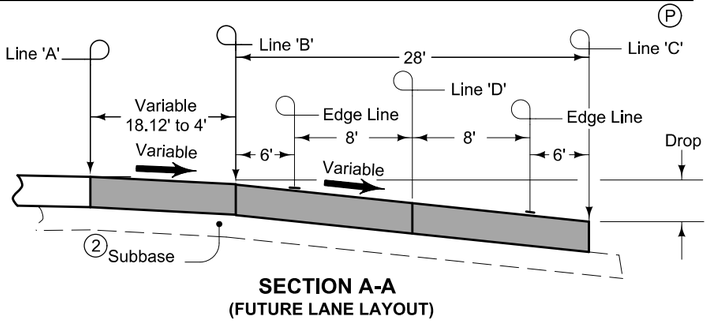
Distance From Point E Along Line 'A' (Ft.)		(H) 230	225	200	175	150	125	100	(K) 93	75	50	25	(E) 0	25	50	75	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300
From Line 'A' To Line 'B'	Offset (Ft.)	18.12	17.60	15.02	12.45	9.87	7.30	4.72	4.00																				
	Slope (%)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00																				
	Drop (Ft.)	0.72	0.70	0.60	0.50	0.39	0.29	0.19	0.16																				
From Line 'B' To Line 'C'	Offset (Ft.)	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00																				
	Slope (%)	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40																				
	Drop (Ft.)	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51																				
From Line 'A' To Line 'C'	Offset (Ft.)									30.93	29.64	28.66	28.00	27.50	27.00	26.50	26.00	24.00	22.00	20.00	18.00	16.00	14.00	12.00	10.00	8.00	6.00	4.00	2.00
	Slope (%)									5.40	5.40	4.58	3.78	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
	Drop (Ft.)	2.23	2.21	2.11	2.01	1.90	1.80	1.70	1.67	1.67	1.60	1.31	1.06	0.83	0.81	0.80	0.78	0.72	0.66	0.60	0.54	0.48	0.42	0.36	0.30	0.24	0.18	0.12	0.06
Distance From Point G Along Line 'D' (Ft.)		(F) 228.93	225.78	200.58	175.41	150.28	125.19	100.11	93.10	75.06	50.03	25.01	(G) 0.00																



SECTION A-A
(DETOUR LANE LAYOUT)



SECTION B-B



SECTION A-A
(FUTURE LANE LAYOUT)

Construct ramp entrance pavement the same thickness as ramp pavement.

Ramp entrance pavement shown by shaded area is 3071 square yards.

For joint details, see PV-101

(1) For header construction details at the end of taper, see Typical 7101.

(2) Construct subbase for ramp entrance pavement the same thickness as ramp subbase.

MODIFIED
STANDARD ROAD PLAN

REVISION

SHEET 1 of 2

APPROVED BY DESIGN METHODS ENGINEER

RAMP D - ACCELERATION TAPER FOR 28' ENTRANCE RAMP WITH CENTERLINE JOINT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	U.5

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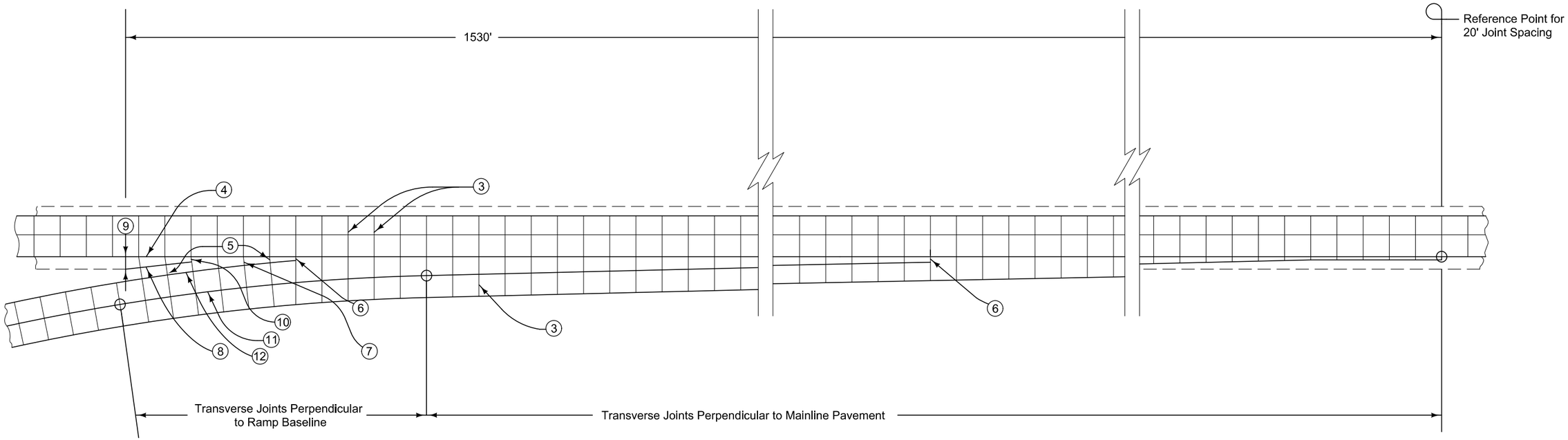

RAMP D - 28' EXIT RAMP PAVED WITH TWO 14' SECTIONS FOR A TWO LANE DETOUR ROUTE

③ Existing Transverse Joints.

④ 'BT-2' Joint.

⑤ 'C' Joint.

⑥ 4' 'B' Joint.

⑦ Construct transverse joints on the entrance ramp taper perpendicular to the tapered edge where the gore area is greater than 4 feet.

⑧ 'C' Joint parallel to ramp baseline.

⑨ 10' minimum, or equal to mainline shoulder width.

⑩ 'B' or 'C' Joint. 2' minimum. 4' maximum.

⑪ 'KT-2' or 'L-2' Joint.

⑫ 'BT-2' or 'KT-2' Joint.

Note:
Contractor to adjust taper joints
to match existing US 20 joints.

MODIFIED
STANDARD ROAD PLAN

REVISION

SHEET 2 of 2

APPROVED BY DESIGN METHODS ENGINEER

RAMP D - ACCELERATION TAPER FOR 28' ENTRANCE RAMP WITH CENTERLINE JOINT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	U.6

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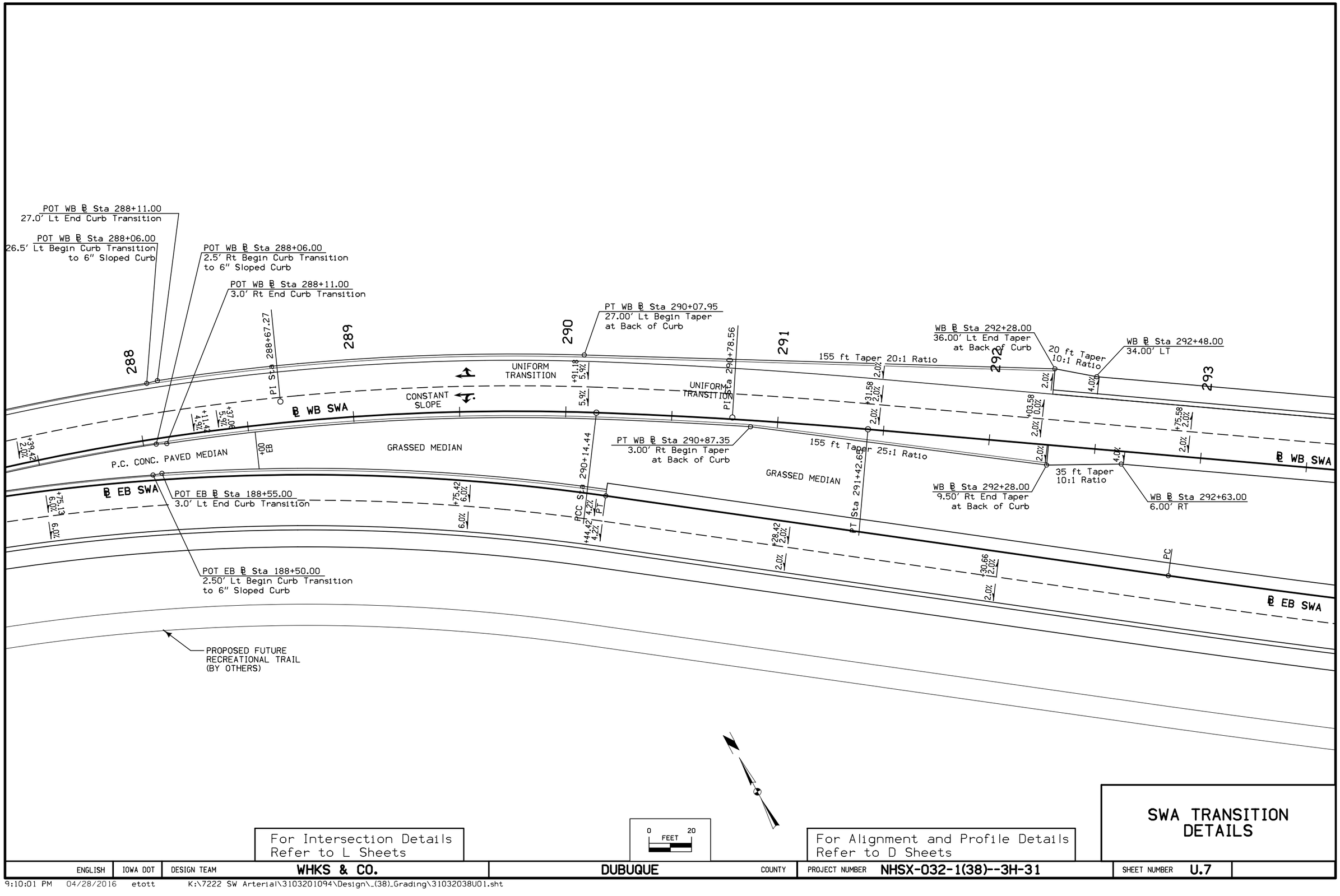

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CURVE DATA

WHKS 9-27-11

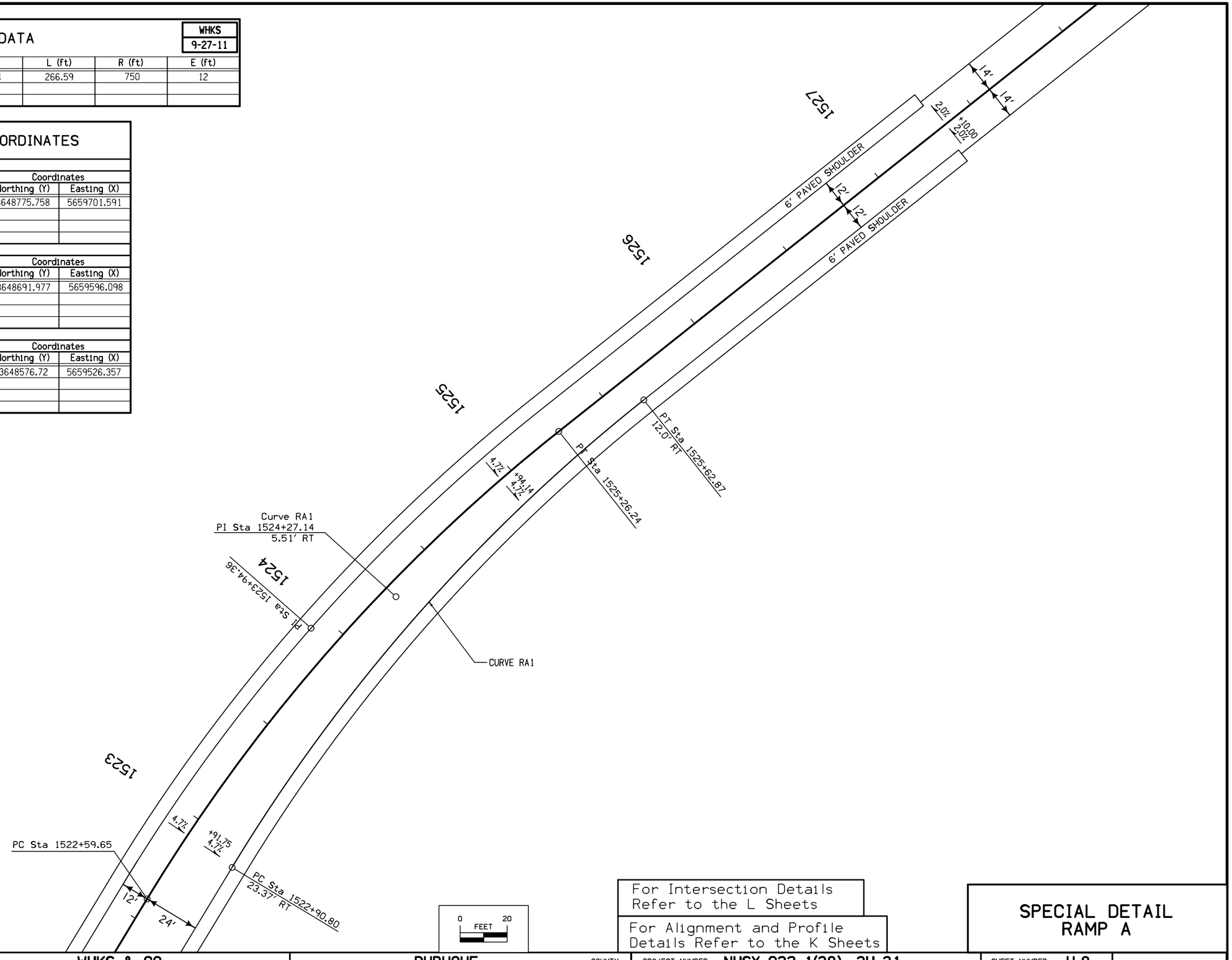
Name	Δ	T (ft)	L (ft)	R (ft)	E (ft)
RA1	20° 21′ 56.36″	134.71	266.59	750	12

CIRCULAR CURVE COORDINATES

Name	P.C.			
	Station	Offset (ft)	Coordinates	
			Northing (Y)	Easting (X)
RA1	1522+90.80	23.37	3648775.758	5659701.591

Name	P.I.			
	Station	Offset (ft)	Coordinates	
			Northing (Y)	Easting (X)
RA1	1524+27.14	5.51	3648691.977	5659596.098

Name	P.T.			
	Station	Offset (ft)	Coordinates	
			Northing (Y)	Easting (X)
RA1	1525+62.87	12.00	3648576.72	5659526.357



For Intersection Details Refer to the L Sheets

For Alignment and Profile Details Refer to the K Sheets

SPECIAL DETAIL RAMP A

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	U.8

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CURVE DATA

WHKS 9-27-11

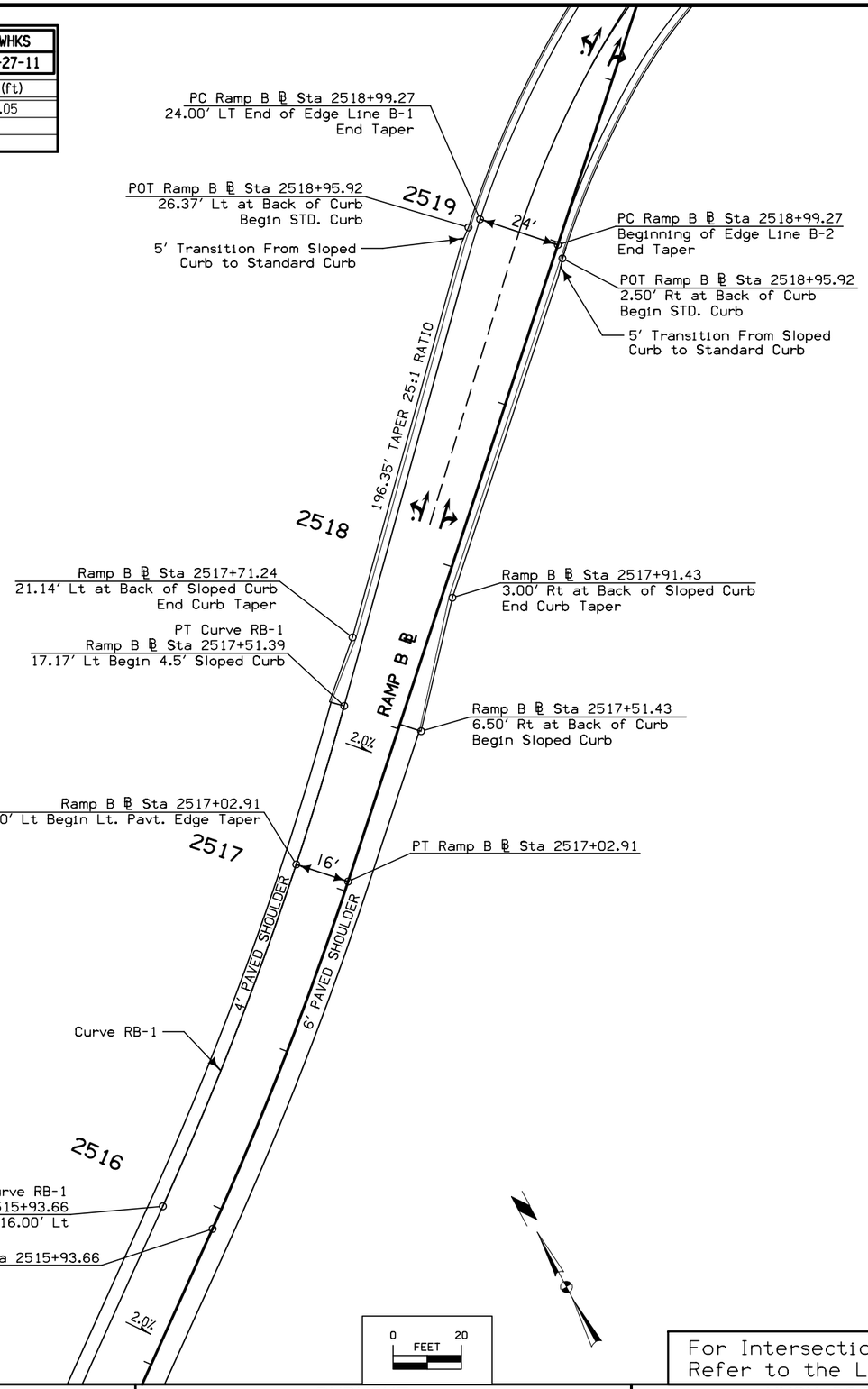
Name	Δ	T (ft)	L (ft)	R (ft)	E (ft)
RB1	8° 56′ 23.92″	78.17	156.03	1000	3.05

CIRCULAR CURVE COORDINATES

Name	P.C. Station	P.C. Offset (ft)	P.C. Coordinates Northing (Y)	P.C. Coordinates Easting (X)
RB1	2515+93.66	16.0′	3647468.125	5659888.617

Name	P.I. Station	P.I. Offset (ft)	P.I. Coordinates Northing (Y)	P.I. Coordinates Easting (X)
RB1	2516+72.92	12.95′	3647515.663	5659950.677

Name	P.T. Station	P.T. Offset (ft)	P.T. Coordinates Northing (Y)	P.T. Coordinates Easting (X)
RB1	2517+51.39	17.18′	3647572.268	5660004.595



For Intersection Details
Refer to the L Sheets

SPECIAL DETAIL FOR RAMP B CURBED SECTIONS

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	U.9

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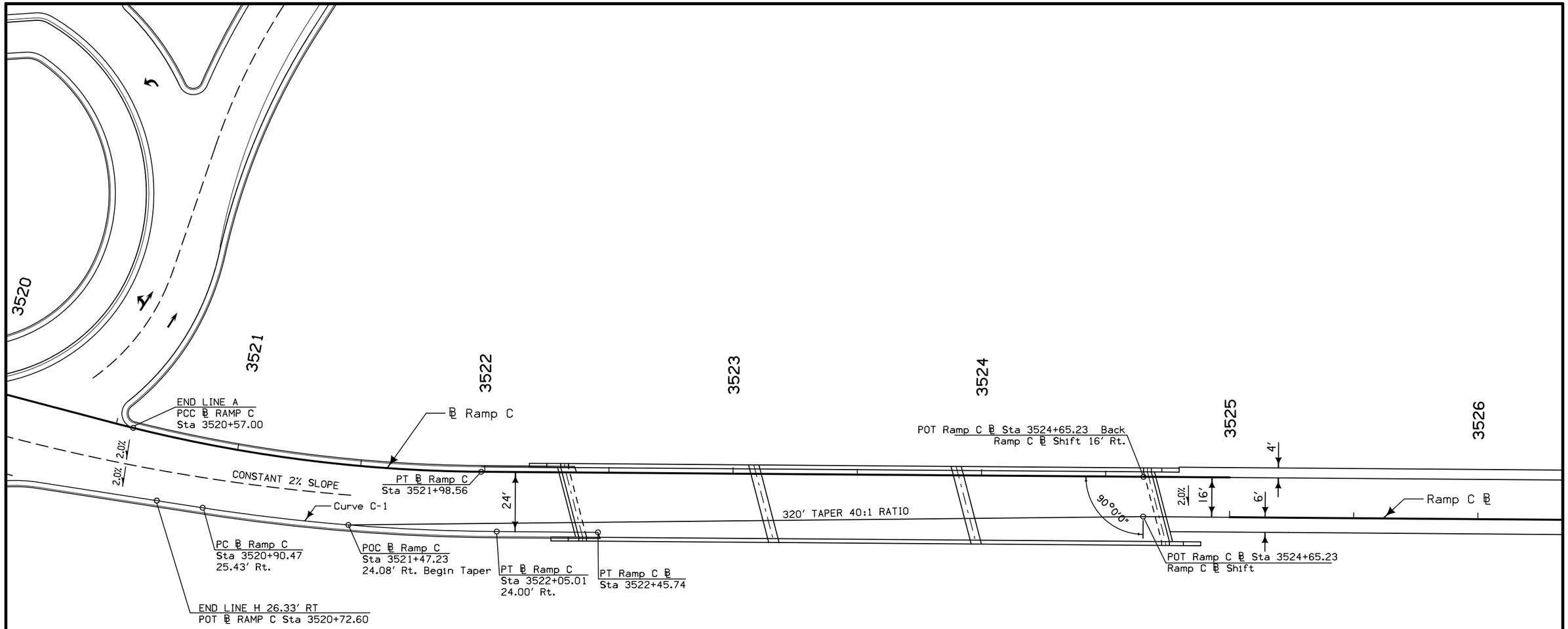

CIRCULAR CURVE COORDINATES

Name	P.C. Station	P.C. Offset (ft)	P.C. Coordinates Northing (Y)	P.C. Coordinates Easting (X)
C-1	3520+90.47	25.43	3648011.231	5660462.662

Name	P.I. Station	P.I. Offset (ft)	P.I. Coordinates Northing (Y)	P.I. Coordinates Easting (X)
C-1	3521+47.60	26.26	3647951.67	5660463.742

Name	P.T. Station	P.T. Offset (ft)	P.T. Coordinates Northing (Y)	P.T. Coordinates Easting (X)
C-1	3522+05.01	24.00	3647892.589	5660456.118

CURVE DATA

WHKS

Name	Δ	T (ft)	L (ft)	R (ft)	E (ft)
C-1	8° 23' 30.39"	59.57	118.93	812	2.18

0 FEET 20

For Edge Profile Details
Refer to the L Sheets

For Alignment and Profile Details
Refer to the K Sheets

SPECIAL DETAIL FOR RAMP C LANE TRANSITION AND BASELINE SHIFT

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	U.10

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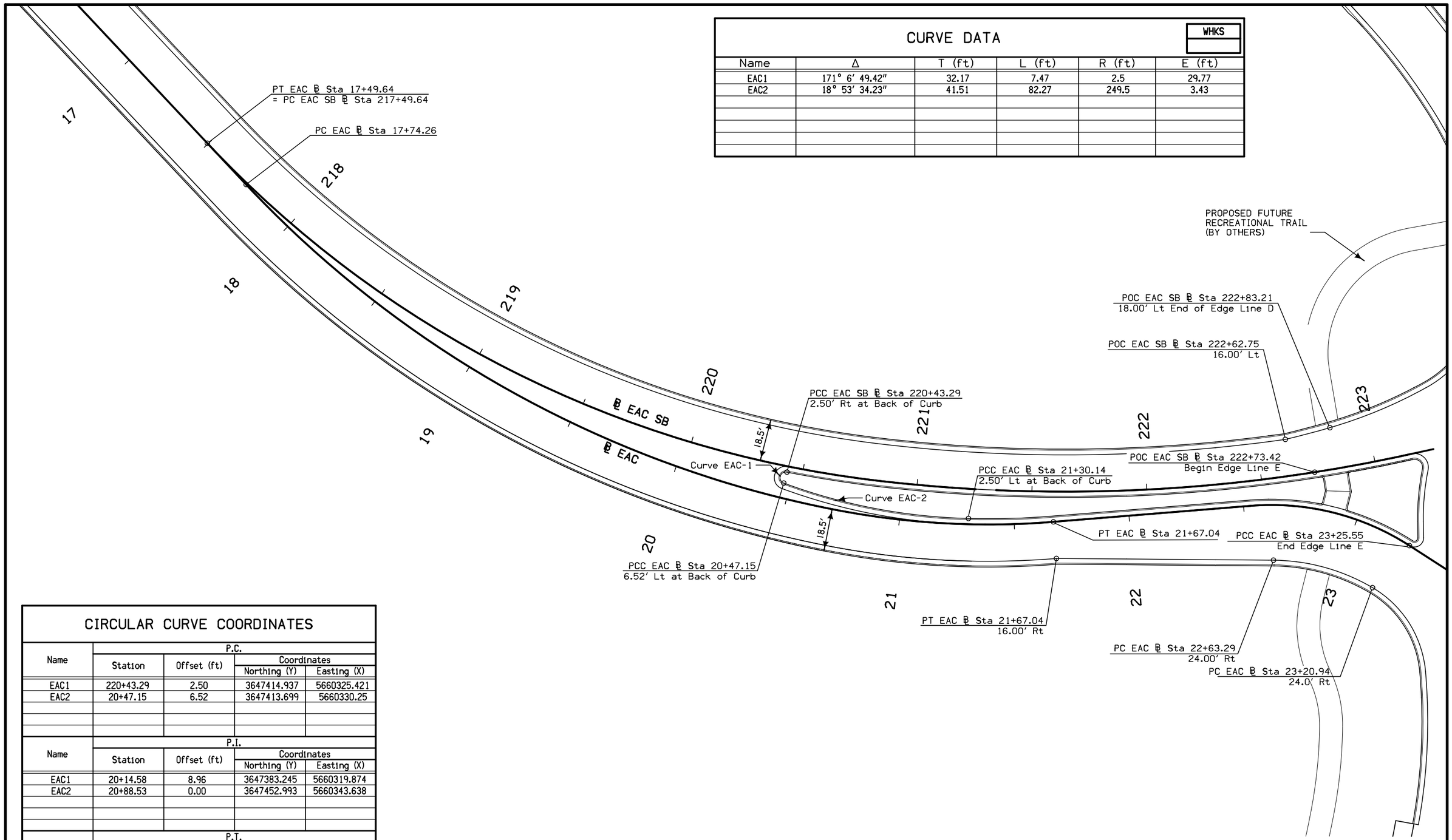
CURVE DATA

WHKS

Name	Δ	T (ft)	L (ft)	R (ft)	E (ft)
EAC1	171° 6′ 49.42″	32.17	7.47	2.5	29.77
EAC2	18° 53′ 34.23″	41.51	82.27	249.5	3.43



CIRCULAR CURVE COORDINATES

Name	P.C. Station	P.C. Offset (ft)	P.C. Coordinates Northing (Y)	P.C. Coordinates Easting (X)
EAC1	220+43.29	2.50	3647414.937	5660325.421
EAC2	20+47.15	6.52	3647413.699	5660330.25

Name	P.I. Station	P.I. Offset (ft)	P.I. Coordinates Northing (Y)	P.I. Coordinates Easting (X)
EAC1	20+14.58	8.96	3647383.245	5660319.874
EAC2	20+88.53	0.00	3647452.993	5660343.638

Name	P.T. Station	P.T. Offset (ft)	P.T. Coordinates Northing (Y)	P.T. Coordinates Easting (X)
EAC1	20+47.15	6.52	3647413.699	5660330.25
EAC2	21+30.14	2.50	3647494.505	5660343.581

0 20 FEET

For Edge Profile Details
Refer to the L Sheets

For Alignment and Profile Details
Refer to the E Sheets

SPECIAL DETAIL FOR EAST ACCESS CONNECTOR ROADWAY

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	U.11

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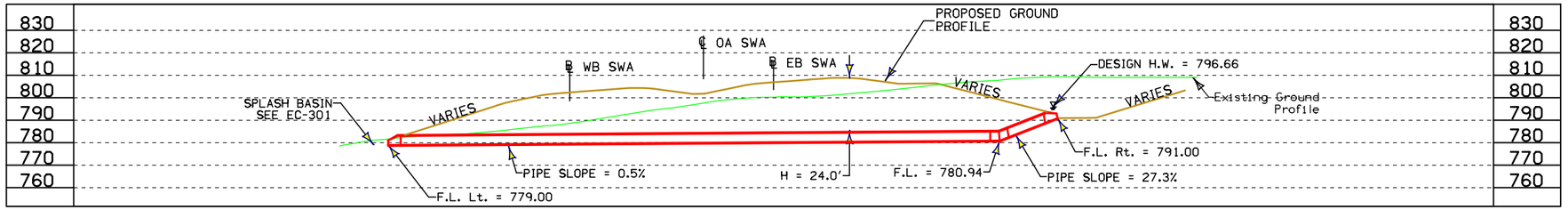
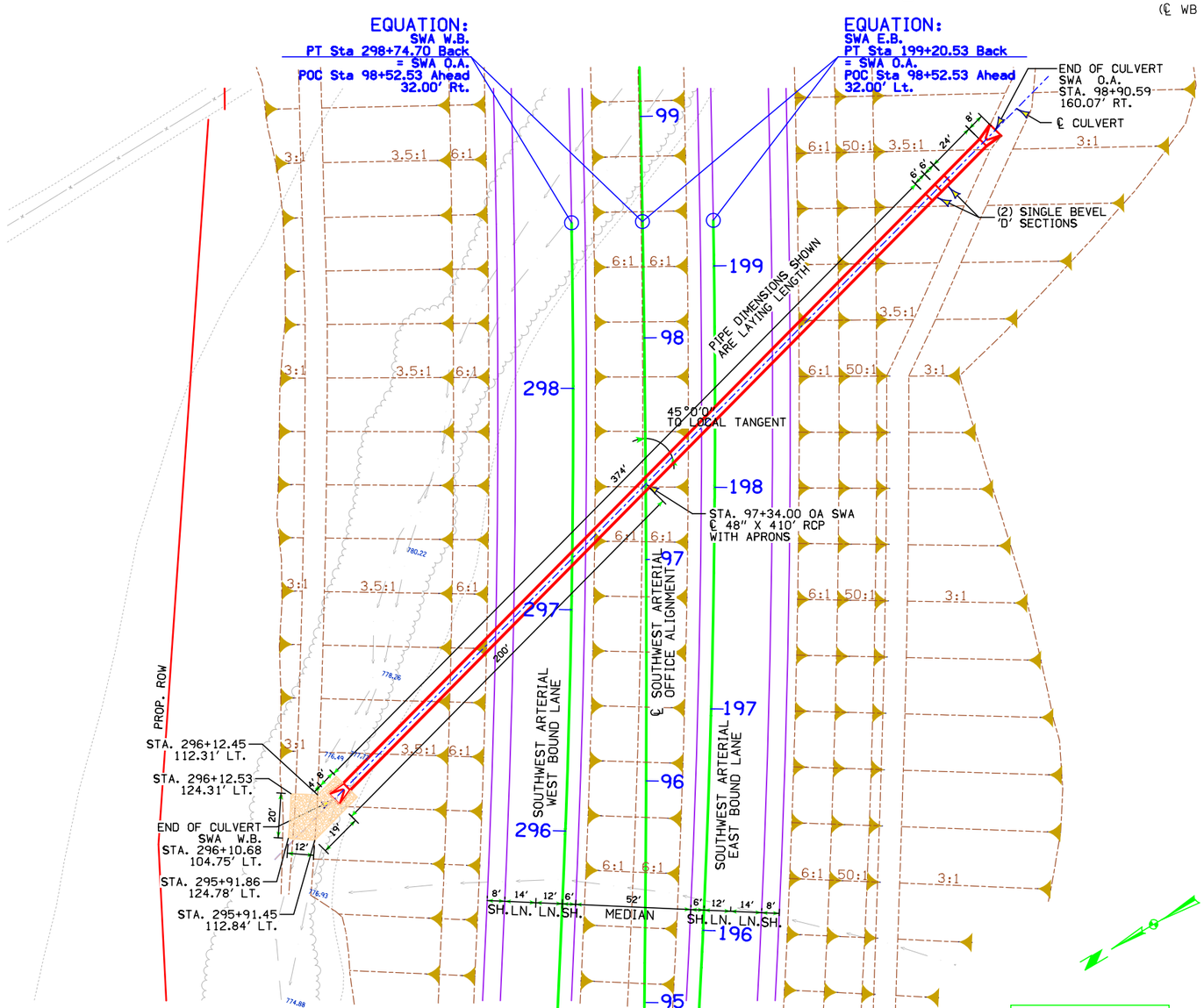


LONGITUDINAL SECTION ALONG ℄ PIPE

BENCH MARK NO. 535 = ELEV. 818.380, STA. 1265+57.977 111.456 RT.
(℄ WB US-20), FD. IHC BM. ON OUTLET FLUME OF 24" RCP



PLAT PLAN

HYDRAULIC DATA

DRAINAGE AREA = 46 ACRES HILLY
Q_{25} = 132 CFS
DESIGN HIGH WATER = 796.66 FT.

LOCATION

T-89 N R-2 E
SECTION 32
DUBUQUE TOWNSHIP
DUBUQUE COUNTY

DESIGN FOR 45° SKEW AH RT TO OA SWA

48" X 410' REINFORCED CONCRETE PIPE WITH APRONS

PLAT PLAN

STATION 97+34.00 FILE #30467 MARCH, 2016

DUBUQUE COUNTY

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER U.12

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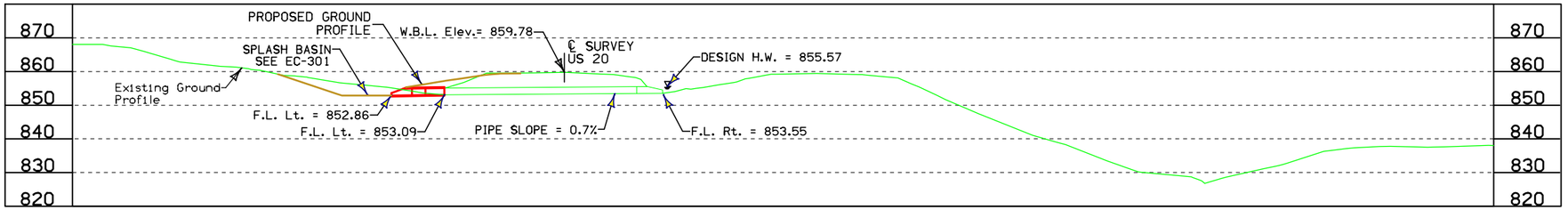
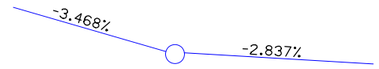
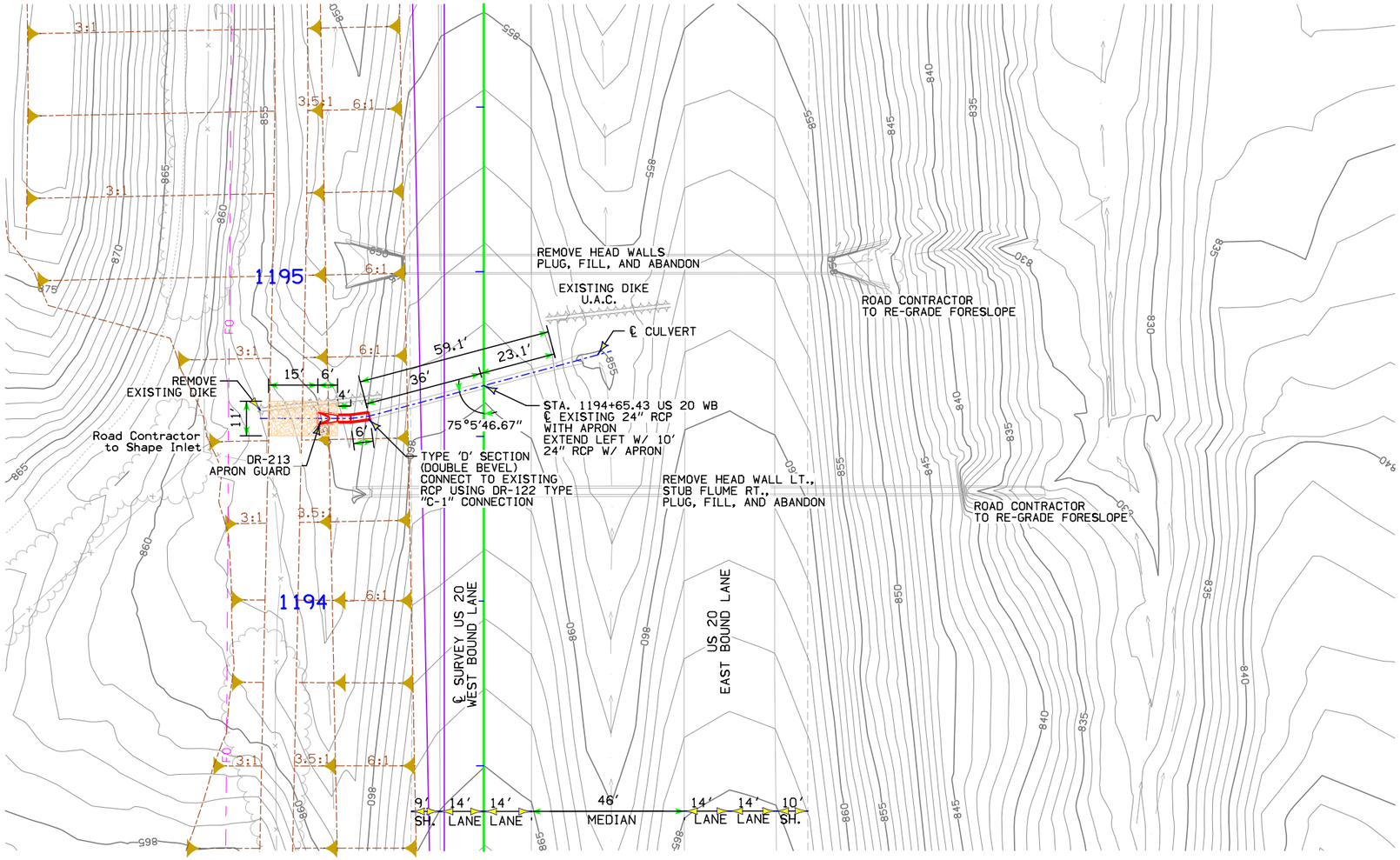


LONGITUDINAL SECTION ALONG ℄ PIPE



VPI STA = 1211+00.00
VPI ELEV = 792.00
LENGTH = 350 FT.

PROPOSED PROFILE GRADE ON US 20



PLAT PLAN

UTILITIES LEGEND

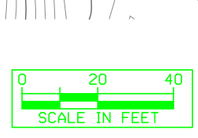
— FO — — — FIBER OPTIC

HYDRAULIC DATA

DRAINAGE AREA = 3 ACRE
Q_{25} = 13 CFS
DESIGN HIGH WATER = 855.57 FT.

LOCATION

T-88 N R-2 E
SECTION 6
TABLE MOUND TOWNSHIP
DUBUQUE COUNTY



DESIGN FOR 14°54'13.32" LEFT BACK SKEW

24" X 10' REINFORCED CONCRETE PIPE EXTENSION WITH APRON

PLAN PLAN

STATION 1194+65 MARCH, 2016

DUBUQUE COUNTY

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER U.13

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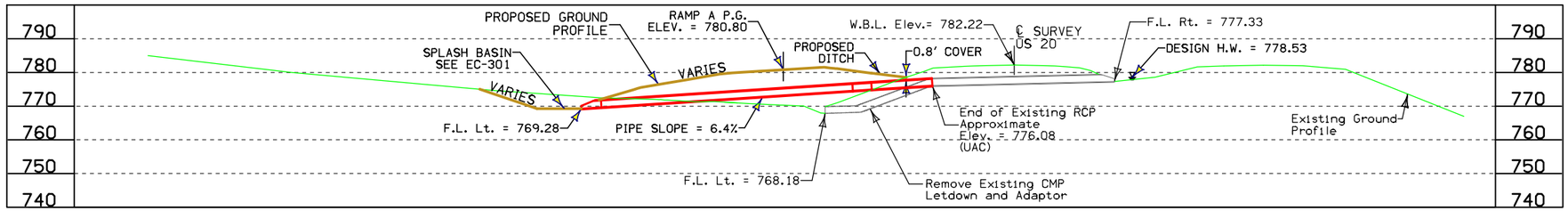
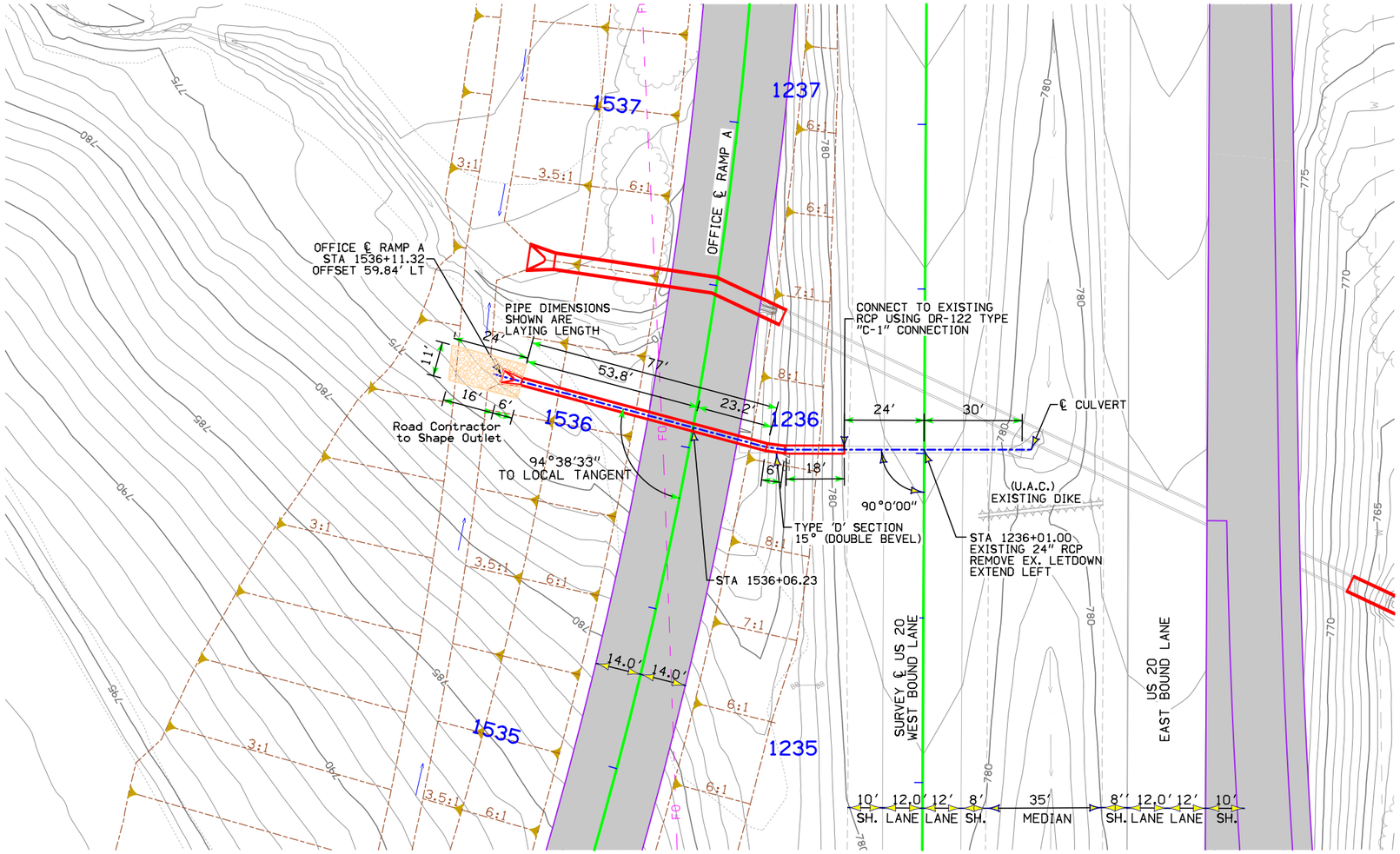
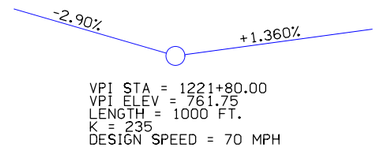


LONGITUDINAL SECTION ALONG ℄ PIPE



PLAT PLAN

0 20 40
SCALE IN FEET



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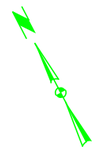


UTILITIES LEGEND

FO — — — FIBER OPTIC

HYDRAULIC DATA

DRAINAGE AREA = MEDIAN
Q_{25} = 6 CFS
DESIGN HIGH WATER = 778.53 FT.

LOCATION

T-89 N R-2 E
SECTION 32
DUBUQUE TOWNSHIP
DUBUQUE COUNTY
US 20 & S.W. ARTERIAL INTERCHANGE

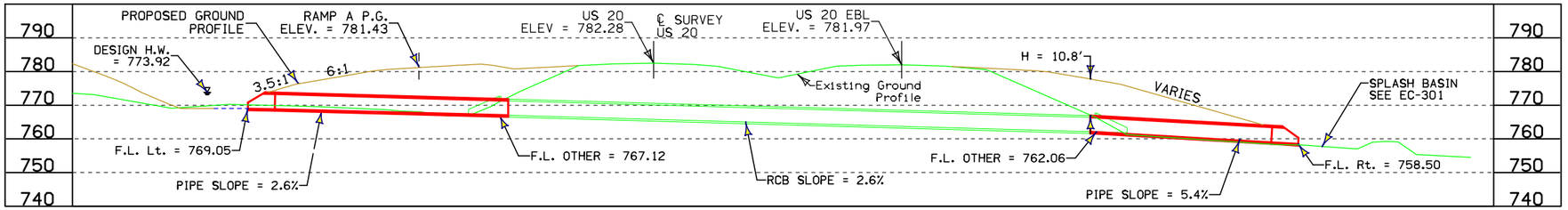
DESIGN FOR 4°38'33" SKEW LT. AH. TO RAMP A

24" X 101' REINFORCED CONCRETE PIPE EXTENSION WITH APRON PLAT PLAN

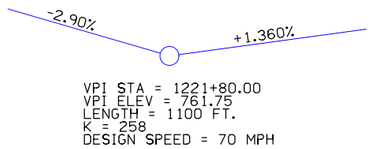
STATION 1236+01.00 FILE #30467 FEBRUARY, 2016

DUBUQUE COUNTY

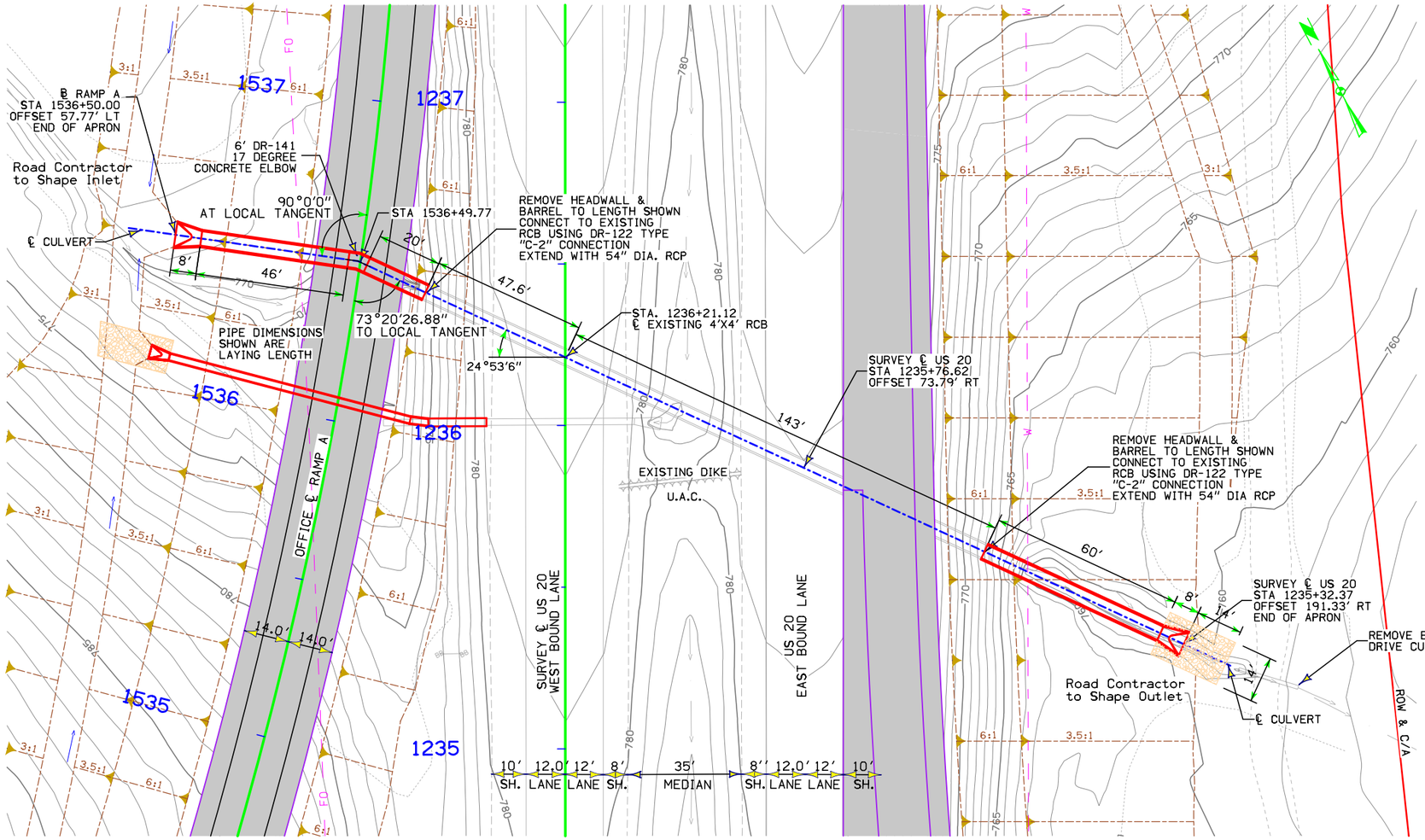
ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER U.14	



LONGITUDINAL SECTION ALONG ℄ PIPE



PROPOSED PROFILE GRADE ON US 20



PLAT PLAN

0 20 40
SCALE IN FEET

UTILITIES LEGEND

— FO — — — FIBER OPTIC
— — W — — WATER

HYDRAULIC DATA

DRAINAGE AREA = 46 ACRES HILLY
Q_{25} = 110 CFS
DESIGN HIGH WATER = 773.92 FT.

LOCATION

T-89 N R-2 E
SECTION 32
DUBUQUE TOWNSHIP
DUBUQUE COUNTY
US 20 & S.W. ARTERIAL INTERCHANGE

DESIGN FOR 24°53'6" LT AH SKEW US 20

54" X 132' REINFORCED CONCRETE PIPE EXTENSION WITH APRONS

PLAT PLAN

STATION 1236+21.12 FILE #30467 FEBRUARY, 2016

DUBUQUE COUNTY

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	U.15

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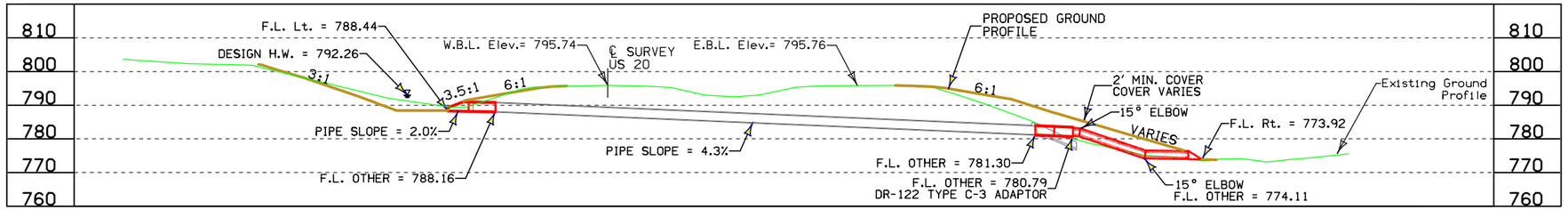
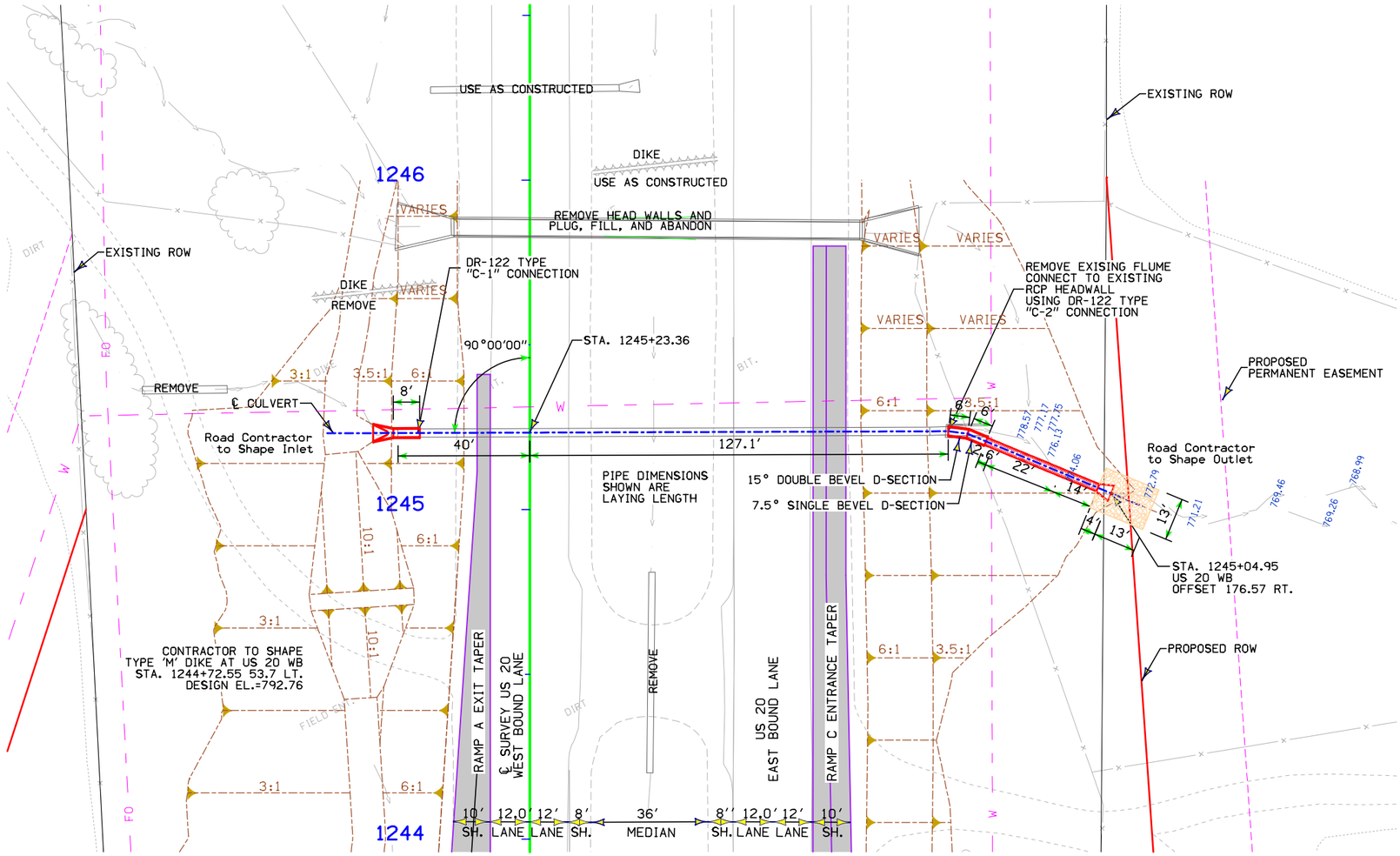


LONGITUDINAL SECTION ALONG ℄ PIPE

PROPOSED PROFILE GRADE ON US 20

-2.90% +1.360%

VPI STA = 1221+80.00
VPI ELEV = 761.75
LENGTH = 1100 FT.
K = 258.216
DESIGN SPEED = 70 MPH



PLAT PLAN

UTILITIES LEGEND

FO — FIBER OPTIC
W — WATER

HYDRAULIC DATA

DRAINAGE AREA = 13 ACRES HILLY
Q_{25} = 42 CFS
DESIGN HIGH WATER = 792.26 FT.

LOCATION

T-89 N R-2 E
SECTION 32
DUBUQUE TOWNSHIP
DUBUQUE COUNTY
US 20 & S.W. ARTERIAL
INTERCHANGE

DESIGN FOR 0° SKEW

30" X 8' REINFORCED CONCRETE PIPE EXTENSION WITH APRON LT. 30" X 12' REINFORCED CONCRETE PIPE EXTENSION WITH 30" X 39' CMP LETDOWN WITH APRON RT.

PLAT PLAN

STATION 1245+23 FILE #30467 FEBRUARY, 2016

DUBUQUE COUNTY

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	U.16

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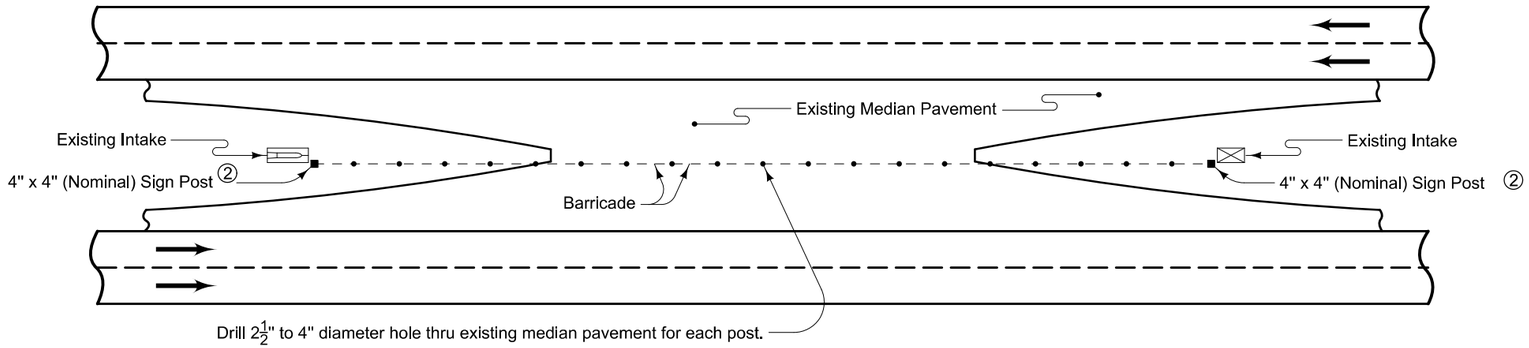
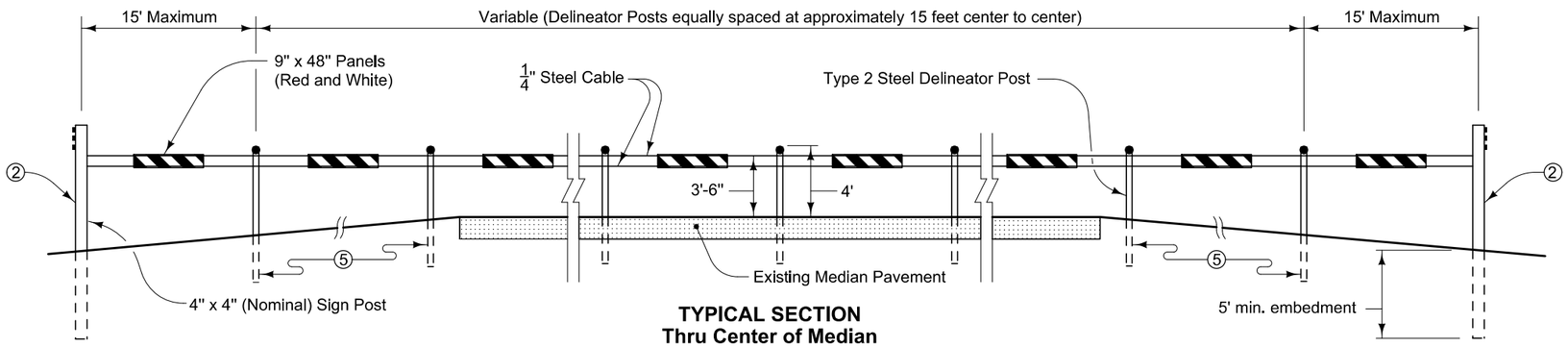


PLAN VIEW



TYPICAL SECTION
Thru Center of Median

The price bid for "Crossover Barricade", each, is considered full compensation for furnishing all materials and work necessary to construct the barricade as detailed hereon.

① 3 1/4" center mount yellow reflector, attached to sign post with 0.190 x 1.25 slotted pan head screws.

② Extend the barricade to within 5 feet from top of existing drainage structures.

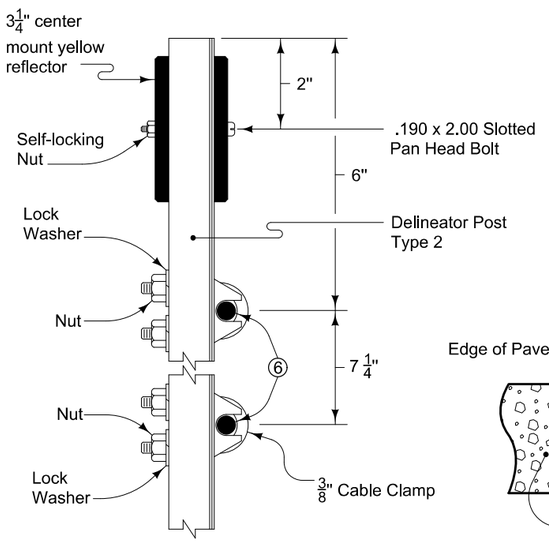
③ 0.125 inch aluminum panel with Type III or IV retroreflective sheeting on both sides.

④ Reflectorized red stripes on both sides shall slope from upper left to lower right of panel.

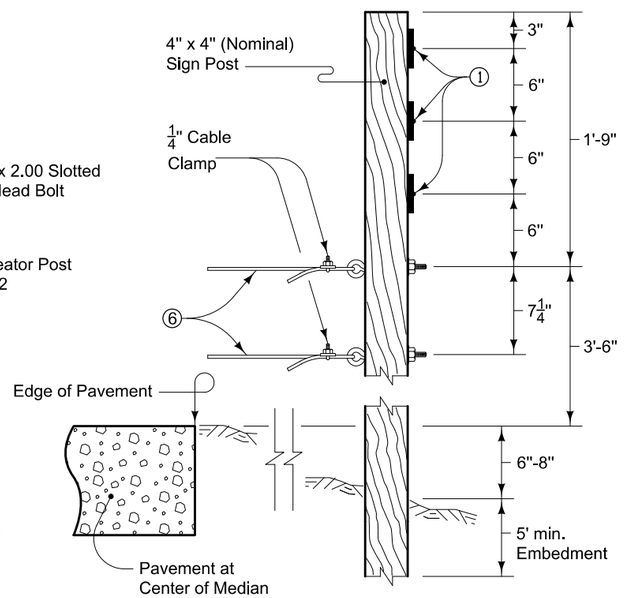
⑤ Embed all delineator posts a minimum of 2'-6".

⑥ 1/4" inch diameter steel cable.

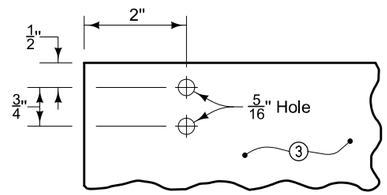
List Of Materials For Barricading Median	
Quantities	Items
12	Type 2 Steel Delineator Posts
2	4" x 4" (Nominal) Sign Post
17	3 ¼" Yellow Reflectors, center mounted
12	0.190 x 2.00 slotted pan head bolts and self-locking nuts
6	0.190 x 1.25 slotted pan head screws
13	9" x 48" Aluminum panels (red on white)
24	⅜" Cable clamps, lock washers and nuts
52	¼" Cable clamps, neoprene washers and self-locking nuts
4	⅜" x 6" Eye bolts, washers and nuts
4	¼" Cable clamps
410'	Approximate length of ¼" diameter Steel Cable
200'	Distance from Sign Post to Sign Post based on Note ②



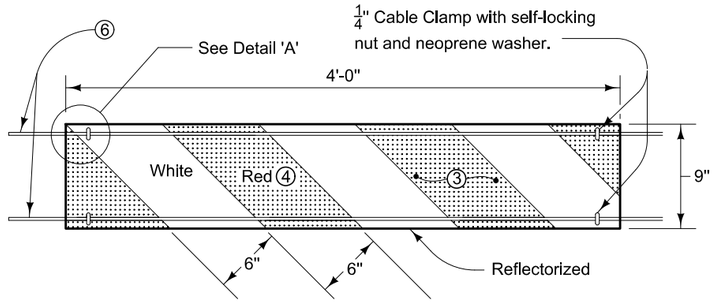
DELINEATOR POST ATTACHMENT DETAILS



SIGN POST ATTACHMENT DETAILS



TYPICAL HOLE LOCATION
DETAIL 'A'



PANEL ATTACHMENT DETAILS

DETAIL SHEET 540-13
MODIFIED

REVISION NO.	REVISION DATE

DETAILS OF BARRICADE AT SEIPPEL ROAD/US 20 INTERSECTION

ENGLISH	IOWA DOT	DESIGN TEAM	WHKS & CO.	DUBUQUE	COUNTY	PROJECT NUMBER	NHSX-032-1(38)--3H-31	SHEET NUMBER	U.17

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

GENERAL NOTES:

IT IS THE INTENT OF THIS DESIGN TO CONSTRUCT A SINGLE 10'x 10'x 150'-0 REINFORCED CONCRETE BOX CULVERT SKEWED 30° LEFT AHEAD AT STATION 2515+87.00 (℄ US 20 RAMP 'B').

THE RCB CULVERT SECTIONS ARE DESIGNED FOR EARTH FILLS OF 13 FEET.

UTILITY COMPANIES AND MUNICIPALITIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

WHEN DE-WATERING PRESENTS A PROBLEM FOR PLACING THE CURTAIN WALLS AS DETAILED, ALTERNATE METHODS SUCH AS STEEL SHEET PILE AND PRECAST CONCRETE WALLS MAY BE APPROVED BUT AT NO ADDITIONAL COST. THE CULVERT CONTRACTOR IS TO SUBMIT TO THE ENGINEER FOR APPROVAL COMPLETE DRAWINGS OF THE PROPOSED CURTAIN WALL ALTERNATE BEFORE BEGINNING CONSTRUCTION.

EXCESS CLASS 20 EXCAVATION MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED AT THE CONSTRUCTION SITE, AS DIRECTED BY THE ENGINEER.

THE CLASS 20 EXCAVATION QUANTITY IS BASED ON THE ASSUMPTION THAT AT THE START OF CULVERT CONSTRUCTION, THE EXISTING GROUNDLINE SHOWN ON THE "SITUATION PLAN" ON DESIGN HAS REMAINED UNDISTURBED AND NO ROADWAY FILL HAS BEEN PLACED.

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

SUMMARY OF REINFORCING STEEL

LOCATION	QUANTITY	TOTAL
HEADWALL 30° SKEW	2 @ 6,875	13,750
22' BARREL SECTION	6,198	6,198
35' BARREL SECTION	3 @ 9860	29,580
23' BARREL SECTION	6,479	6,479
5RI x 3'-6 DOWEL BAR SET	4 @ 40	160
	TOTAL (LB)	56,167

CONCRETE PLACEMENT QUANTITIES

LOCATION	FLOOR	WALLS	SLAB	TOTAL
HEADWALL 30° SKEW	2 @ 21.9	2 @ 15.2	2 @ 1.6	77.4
22' BARREL SECTION	9.9	13.1	7.9	30.9
35' BARREL SECTION	3 @ 15.8	3 @ 20.8	3 @ 12.6	147.6
23' BARREL SECTION	10.4	13.7	8.3	32.4
TOTAL (CY)	111.5	119.6	57.2	288.3

STANDARDS:
FOR DETAILS AND NOTES NOT SHOWN REFER TO THE FOLLOWING IOWA D.O.T. - HIGHWAY STANDARDS:

STANDARD	ISSUED	REVISED
RCB G1-12	04-12	1-16
RCB G2-12	04-12	07-14
RCB 10-10-12	04-12	
PWH 30-1-12	04-12	
PWH 30-2-12	04-12	
PWH 30-3-12	04-12	
PWH 30-4-12	04-12	
PWH 30-6-12	04-12	

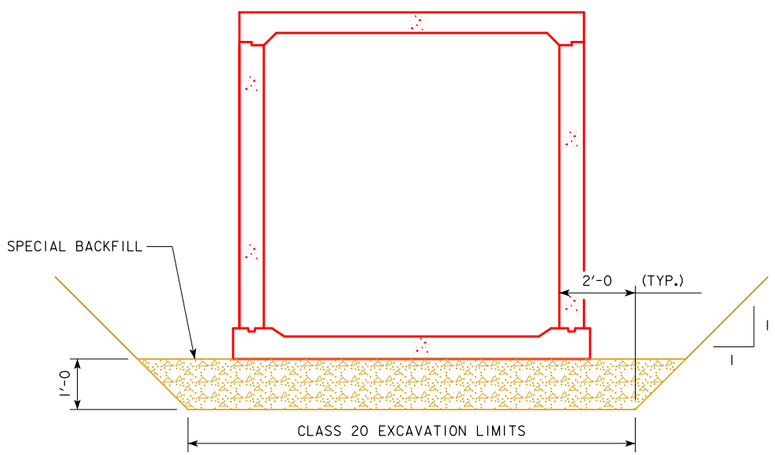
ESTIMATED CAST IN PLACE CULVERT QUANTITIES - ALTERNATE

ITEM NO.	ITEM CODE	ITEM	UNITS	TOTAL	AS BUILT QUANTITY
1	2102-0425070	SPECIAL BACKFILL	TON	227.4	
2	2402-2720000	EXCAVATION, CLASS 20	CY	1,314.2	
3	2403-0100020	STRUCTURAL CONCRETE (RCB CULVERT)	CY	288.3	
4	2404-7775000	REINFORCING STEEL	LB	56,167	
5	2507-3250005	ENGINEERING FABRIC	SY	365.6	
6	2507-6800061	REVETMENT, CLASS E	TON	283.8	

ESTIMATE REFERENCE INFORMATION

DATA LISTED BELOW IS FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT CONSTITUTE A BASIS FOR ANY EXTRA WORK ORDERS.

ITEM NO.	DESCRIPTION
1	ESTIMATED AT 1.9 TON/CY. INCLUDES 12" GRANULAR BEDDING MATERIAL. RECLAIMED ASPHALT PAVEMENT (RAP) AND RECLAIMED HMA SHALL NOT BE USED FOR THE SPECIAL BACKFILL.
5	ENGINEERING FABRIC SHALL BE MATERIAL AS SPECIFIED FOR EMBANKMENT EROSION CONTROL IN ACCORDANCE WITH ARTICLE 4196.01, B, 3 OF THE STANDARD SPECIFICATIONS.
6	ESTIMATED AT 1.6 TON/CY.



GRANULAR BLANKET DETAIL

GRANULAR MATERIAL SHALL TERMINATE 3'-0 SHORT OF THE CURTAIN WALL.

TRAFFIC CONTROL PLAN

NOTE: THIS STRUCTURE IS BEING CONSTRUCTED ON A NEW ALIGNMENT AND THE ROAD WILL NOT BE OPEN UNTIL AFTER COMPLETION OF CONSTRUCTION.

NOTE:
POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

NOTE:
ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER
Derek J. Thomas
18437
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature 5-3-16 Date

Derek J. Thomas
Printed or Typed Name

My license renewal date is December 31, 2016

Pages or sheets covered by this seal: V.1-V.16

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DESIGN FOR A 30° SKEW (L.A.)

SINGLE 10'-0 x 10'-0 x 150'-0 REINFORCED CONCRETE BOX CULVERT

22'-0 & 23'-0 END BARRELS (3)-35'-0 CENTER BARRELS

ESTIMATED QUANTITIES & NOTES

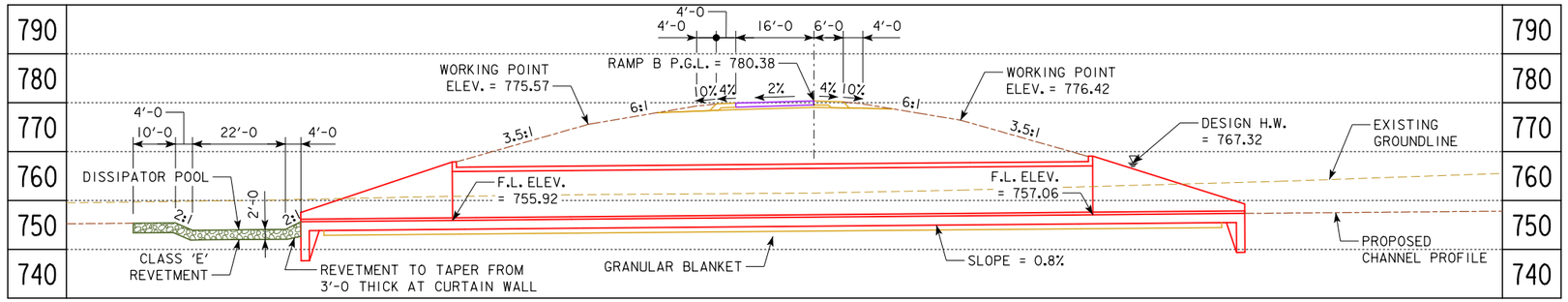
STA. 2515+87.00 MAY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

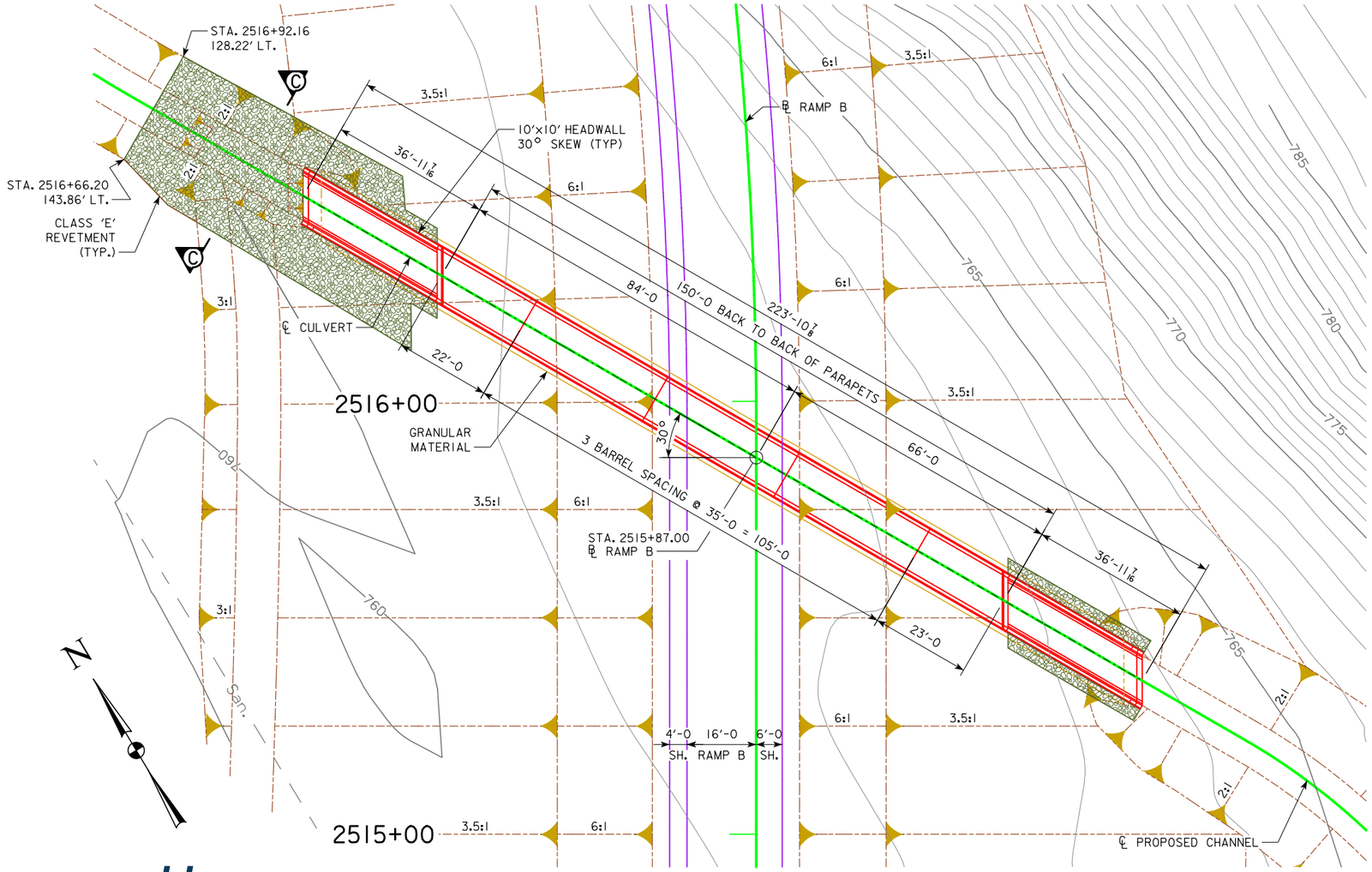
DESIGN SHEET NO. 1 OF 6 FILE NO. 30467 DESIGN NO. 516

DESIGN TEAM DT/MS/WB | DUBUQUE COUNTY | PROJECT NUMBER NHSX-032-1(38)--3H-31 | SHEET NUMBER V.1



LONGITUDINAL SECTION ALONG ℄ CULVERT

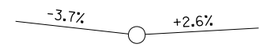
DESIGN FILL HEIGHT = 13' ANTICIPATED SETTLEMENT = 0.75"



SITUATION PLAN

BENCH MARK NO. 4: 7" SPIKE IN POWER POLE EAST SIDE US HIGHWAY 20 AT SOUTHEAST CORNER INTERSECTION WITH COUSINS ROAD, ELEV. 800.88

BENCH MARK NO. 5: 7" SPIKE IN POWER POLE - EAST SIDE OF US HIGHWAY 20 - 3RD POWER POLE NORTH OF COUSINS ROAD INTERSECTION AND SOUTH OF FIELD ENTRANCE, ELEV. 765.17



V.P.I. STA. 2515+26.365
V.P.I. ELEV.=775.03
V.C.=700 FT.

PROPOSED GRADE US 20 RAMP 'B'

CURVE DATA US 20 RAMP 'B'

ENTERING CURVE DATA	EXITING CURVE DATA
P.I. STA. 2511+50.05	P.I. STA. 2516+48.34
Δ=21°11'47.81" RT	Δ=6°09'40.46" LT
T=250.73'	T=54.68'
L=495.73'	L=109.25'
R=1,340.00'	R=1,016.00'
E=23.26'	E=1.47'
e=6%	e=4.2%
I=186	I=95
x=62	x=45
P.C. STA. 2508+99.32	P.C. STA. 2515+93.66
P.T. STA. 2513+95.05	P.T. STA. 2517+02.91

HYDRAULIC DATA

DRAINAGE AREA = 818 ACRES
Q_{50} = 846 CFS
HW ELEV. = 767.32
STREAM SLOPE = 0.0076 FT./FT.

TRAFFIC ESTIMATE

2030 AADT 3,000 V.P.D.

LOCATION

US 20 RAMP 'B'
OVER DRAINAGE DITCH
T-89 N R-02 E
SECTION 31
DUBUQUE TOWNSHIP
DUBUQUE COUNTY
CITY OF DUBUQUE
LATITUDE: 42.473196°
LONGITUDE: -90.761608°

UTILITIES LEGEND:

SANITARY SEWER — San. —

SEE DESIGN SHEET 3 FOR SECTION C-C.

DESIGN FOR A 30° SKEW (L.A.)

SINGLE 10'-0 x 10'-0 x 150'-0 REINFORCED CONCRETE BOX CULVERT

22'-0 & 23'-0 END BARRELS (3)-35'-0 CENTER BARRELS

SITUATION PLAN

STA. 2515+87.00 MAY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 6 FILE NO. 30467 DESIGN NO. 516

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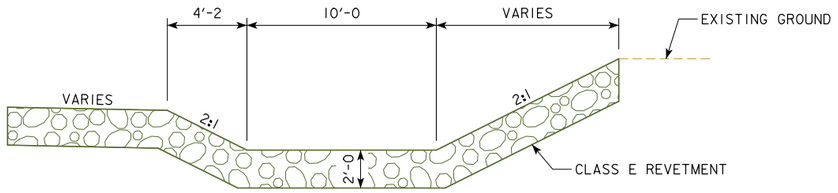
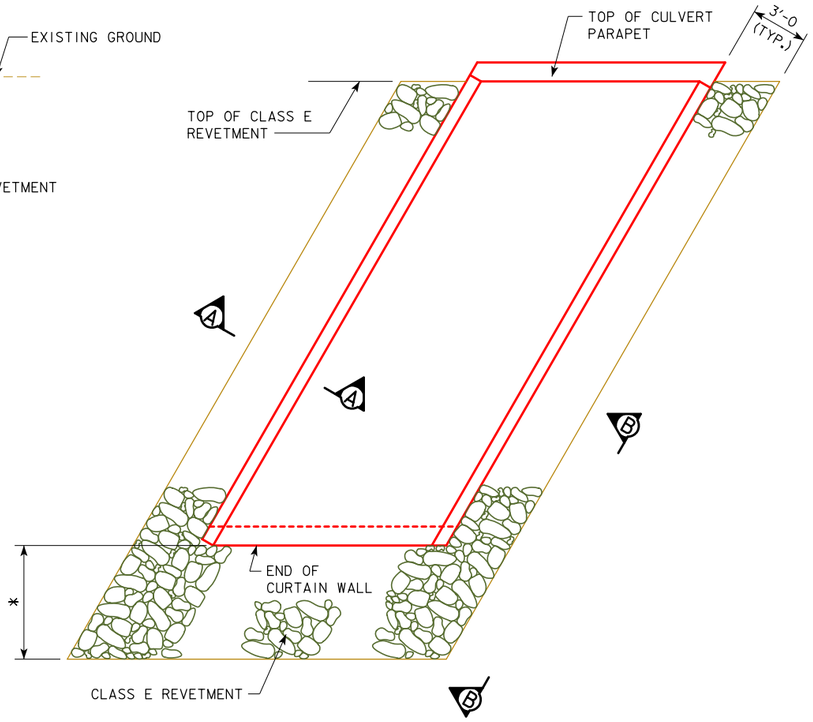
* = SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.

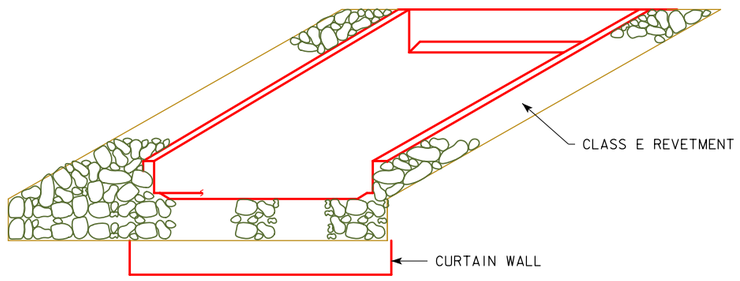


SECTION C-C

SEE DESIGN SHEET 2 FOR SECTION C-C LOCATION.



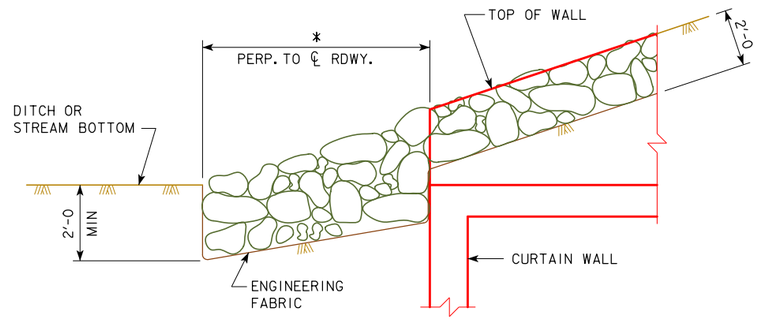
PLAN VIEW



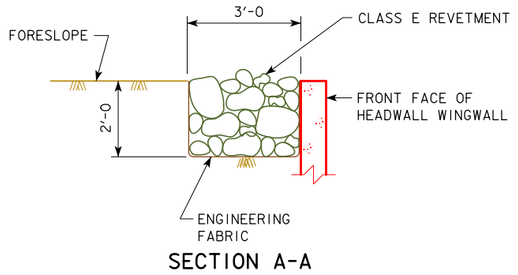
ELEVATION VIEW

30° SKEWED HEADWALL

* = SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.



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.

DESIGN FOR A 30° SKEW (L.A.)

SINGLE 10'-0 x 10'-0 x 150'-0 REINFORCED CONCRETE BOX CULVERT

22'-0 & 23'-0 END BARRELS (3)-35'-0 CENTER BARRELS

REVETMENT PROTECTION DETAILS

STA. 2515+87.00 MAY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 6 FILE NO. 30467 DESIGN NO. 516

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REVISED I-16 - ADDED NOTE "SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC."
ENGLISHSINGLECULVERTS.DGN - 1092 - THIS SHEET ISSUED 04-12.

DESIGN TEAM DT/MS/WB	CAST-IN-PLACE CULVERT REVETMENT PROTECTION DETAILS	STANDARD SHEET 1092	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER V.3

4/28/2016 1:50:43 PM wb L:\DEPT\6\7222.1\14 US20Culverts\Drawings\Working\31020038.brg 310516S003 11x17_pdf.pltcfg

GENERAL NOTES:

IT IS THE INTENT OF THIS DESIGN TO CONSTRUCT A SINGLE 10' x 10' x 154'-0 PRECAST REINFORCED CONCRETE BOX CULVERT SKEWED 30° LEFT AHEAD AT STATION 2515+87.00 (℄ US 20 RAMP 'B').

THE PRECAST RCB CULVERT SECTIONS ARE DESIGNED FOR EARTH FILLS OF 13 FEET.

UTILITY COMPANIES AND MUNICIPALITIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THE PRECAST R.C.B. BARREL AND END SECTIONS SHALL CONFORM TO IOWA D.O.T. SINGLE PRECAST R.C.B. CULVERT STANDARDS. AT THE CONTRACTOR'S OPTION, PRECAST BARREL SECTIONS MAY CONFORM TO ASTM C1577.

EXCESS CLASS 20 EXCAVATION MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED AT THE CONSTRUCTION SITE, AS DIRECTED BY THE ENGINEER.

THE LENGTH IN LINEAR FEET OF PRECAST REINFORCED CONCRETE BOX CULVERT WILL BE BASED ON THE PLAN QUANTITY. FOR THE NUMBER OF LINEAR FEET GIVEN ON THE PLAN, THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE PER LINEAR FOOT. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR BID ITEMS "PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION", "CLASS 20 EXCAVATION", "CLASS E REVETMENT", AND "SPECIAL BACKFILL".

FOR EACH PRECAST BOX CULVERT STRAIGHT END SECTION INSTALLED THE CONTRACTOR WILL BE PAID THE CONTRACT PRICE PER EACH. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL (INCLUDING LINTEL BEAMS AND CURTAIN WALLS), LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR BID ITEMS "PRECAST CONCRETE BOX CULVERT", "CLASS 20 EXCAVATION", "CLASS E REVETMENT", AND "SPECIAL BACKFILL".

THE CURTAIN WALL AND THE TYPE 3 LINTEL BEAM OR TYPE I PARAPET SHALL BE PRECAST.

THE CONTRACTOR SHALL FURNISH AND INSTALL CULVERT TIES FOR ALL JOINTS. THE MAIN SECTION JOINTS WILL HAVE ONE TIE ON EACH SIDE OF THE BARREL AND THE LAST BARREL SECTION WILL BE ATTACHED TO THE END SECTIONS WITH TWO TIES PER SIDE. THE END SECTION JOINTS WILL HAVE TWO TIES PER SIDE.

CULVERT TIES SHALL BE INCLUDED IN THE COST FOR PRECAST CONCRETE BOX CULVERT. TIE RODS WILL BE 1 INCH DIAMETER STEEL AND SHALL MEET REQUIREMENTS OF ASTM A709 GRADE 36 OR EQUAL.

CULVERT TIE ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION.

THE LIMITS FOR EXCAVATION FOR THE PRECAST CONCRETE BOX CULVERT SHALL BE AS SHOWN ON THE "GRANULAR BEDDING DETAIL".

A MINIMUM OF 12 INCHES OF SPECIAL BACKFILL SHALL BE USED AS BEDDING FOR THE PRECAST BOX CULVERT AND SHALL NOT INCLUDE RECLAIMED HMA MATERIALS. THE BEDDING SHALL BE SHAPED TO A FLAT BASE USING A TEMPLATE. THE 12 INCH GRANULAR BEDDING SHALL BE BID AS SPECIAL BACKFILL.

THE CONTRACTOR SHALL SUBMIT DETAILS OF THE PROPOSED PRECAST BOX SECTIONS TO THE OFFICE OF BRIDGES AND STRUCTURES FOR ALL PROJECTS. THE DETAILS SHALL INCLUDE THE FOLLOWING INFORMATION AS FOUND ON THE "SUBMITTAL SHOP DRAWINGS" STANDARD SHEET:

A. A SITUATION PLAN DRAWING SHOWING THE BACK TO BACK PARAPET DIMENSION FOR THE LINE OF THE CULVERT SECTIONS.

B. DIMENSION THE NUMBER OF PRECAST SECTIONS AND SECTION LENGTHS.

C. A DETAIL OF THE PRECAST BARREL SECTIONS SHOWING A CROSS SECTION VIEW OF THE SECTION, STEEL LOCATIONS, DIMENSIONS, ETC.

D. A DETAIL OF THE PRECAST CULVERT END SECTION SHOWING A CROSS SECTION VIEW OF THE SECTIONS, STEEL LOCATIONS, DIMENSIONS, ETC. SIMILAR TO THE END SECTION DETAILS SHOWN IN THE IDOT STANDARDS.

THE CONTRACTOR SHALL PROVIDE ALL INFORMATION SHOWN ON THE SUBMITTAL SHOP DRAWING SHEET REGARDLESS OF WHICH PRECAST BOX OPTION IS SELECTED.

APPROVAL OF DETAILS IS NOT REQUIRED FOR PROJECTS CONFORMING TO "ASTM C1577" AND "IDOT STANDARDS" PRECAST BOX OPTIONS WITH END SECTIONS CONFORMING TO "IDOT STANDARDS." HOWEVER, THE DETAILS SHALL BE RECEIVED BY THE OFFICE OF BRIDGES AND STRUCTURES PRIOR TO THE START OF FABRICATION.

APPROVAL OF DETAILS IS REQUIRED FOR "NONSTANDARD" PRECAST BOX OPTIONS AND "NONSTANDARD" END SECTION OPTIONS. BOXES AND END SECTIONS REQUIRING OPENINGS OR ATTACHMENTS SHALL BE CONSIDERED NONSTANDARD. THE CONTRACTOR SHALL ALLOW THIRTY WORKING DAYS FOR THE ENGINEER'S REVIEW PRIOR TO THE START OF FABRICATION.

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DETAILS REQUIRING APPROVAL SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN THE STATE OF IOWA. BOXCAR SOFTWARE VERSION 3.1 OR LATER OR OTHER EQUIVALENT SOFTWARE CAN BE USED TO DESIGN THE PRECAST BOX CULVERT BARREL SECTIONS, PROVIDING THE ANALYSIS MEETS THE MINIMUM REQUIREMENTS ESTABLISHED FOR THE IDOT STANDARDS AS FOUND IN THE IDOT BRIDGE DESIGN MANUAL. THE MINIMUM REQUIREMENTS INCLUDE REINFORCEMENT CLEARANCE REQUIREMENTS USED IN THE "IDOT STANDARDS".

INSTALLATION NOTES:

PRECAST CONCRETE BOX CULVERT SECTIONS SHALL BE LAID WITH THE GROOVE END OF EACH SECTION UP-GRADE, AND THE SECTIONS SHALL BE TIGHTLY JOINED. CONCRETE TIES TO BE USED ONLY TO HOLD BOX SECTIONS TOGETHER, NOT FOR PULLING SECTIONS TIGHT. JOINT OPENINGS BETWEEN SECTIONS SHOULD BE AS TIGHT AS PRACTICABLE AND LIMITED TO A MAXIMUM OF $\frac{3}{4}$ INCH OPENINGS. THE JOINT ON THE BOTTOM OF THE CULVERT SHALL BE SEALED WITH A FLEXIBLE WATER TIGHT 1 INCH BUTYL ROPE GASKET AS PER MATERIALS I.M. 491.09.

BUTYL ROPE GASKET SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER AND SHALL EXTEND VERTICALLY 6 INCHES ABOVE THE BOTTOM FILLET. ALL JOINTS SHALL BE TRIMMED CLEAN ON THE INSIDE AFTER SEALING.

THE CONTRACTOR SHALL PLACE A 2 FOOT WIDE PIECE OF ENGINEERING FABRIC AROUND THE TOP AND SIDES OF EACH PRECAST JOINT. THE FABRIC SHALL BE CENTERED WITH 1 FOOT ON EACH SIDE OF THE JOINT, THE FABRIC SHALL BE ATTACHED TO THE WALLS AND TOP OF EACH SECTION TO PREVENT THE FABRIC FROM SLIPPING OFF THE JOINT DURING BACKFILLING OPERATIONS. ATTACHMENT METHODS SHALL BE APPROVED BY THE ENGINEER. ALL COSTS INCLUDING MATERIAL AND LABOR ASSOCIATED WITH PROVIDING THE ENGINEERING FABRIC AND INSTALLING IT AS REQUIRED SHALL BE INCLUDED IN THE BID ITEMS "PRECAST CONCRETE BOX CULVERT" AND "PRECAST BOX CULVERT STRAIGHT END SECTION". THE ENGINEERING FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

CLASS E REVETMENT WILL BE PLACED AROUND BOTH PRECAST BOX CULVERT END SECTIONS, AS SHOWN IN THESE PLANS.

DURING BACKFILLING THE COMPACTION ADJACENT TO THE BOTTOM CORNER RADII OR CHAMFER SHALL BE ACCOMPLISHED WITH A MECHANICAL HAND COMPACTOR.

THE CONTRACTOR SHALL FURNISH AND INSTALL LIFTING HOLE PLUGS FOR EACH SECTION. LIFTING HOLES SHALL BE PLUGGED WITH A PRECAST CONCRETE PLUG OR PLASTIC PLUG APPROVED BY THE ENGINEER, SEALED AND COVERED WITH A 2'-0 x 2'-0 PIECE OF ENGINEERING FABRIC CENTERED OVER THE HOLE AND ATTACHED TO THE SECTION TO PREVENT THE FABRIC FROM SLIPPING.

SINCE PRECAST CONCRETE CULVERT END SECTIONS HAVE THE FORESLOPE LOCATED AT THE BOTTOM OF THE PARAPET INSTEAD OF THE TOP (AS IN THE CASE OF CAST IN PLACE RCB CULVERTS) THE MAIN BARREL SECTION HAS BEEN LENGTHENED.

ESTIMATED PRECAST CULVERT QUANTITIES - ALTERNATE

ITEM NO.	ITEM CODE	ITEM	UNITS	TOTAL	AS BUILT QUANTITY
1	2102-0425070	SPECIAL BACKFILL	TON	226.3	
2	2402-2720000	EXCAVATION, CLASS 20	CY	1,301.8	
3	2415-2111010	PRECAST CONC. BOX CULV., 10'X10'	LF	154.0	
4	2415-2201010	PRECAST CONC. BOX CULV. END SECTION, 10'X10'	EACH	2.0	
5	2507-3250005	ENGINEERING FABRIC	SY	392.2	
6	2507-6800061	REVETMENT, CLASS E	TON	305.7	

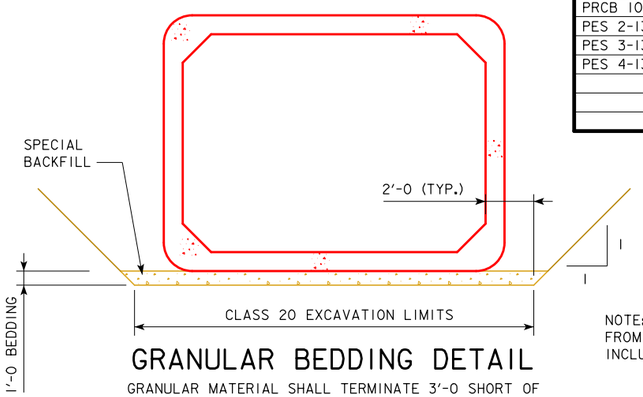
ESTIMATE REFERENCE INFORMATION

DATA LISTED BELOW IS FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT CONSTITUTE A BASIS FOR ANY EXTRA WORK ORDERS.

ITEM NO.	DESCRIPTION
1	ESTIMATED AT 1.9 TON/CY. INCLUDES 12" GRANULAR BEDDING MATERIAL. RECLAIMED ASPHALT PAVEMENT (RAP) AND RECLAIMED HMA SHALL NOT BE USED FOR THE SPECIAL BACKFILL.
3	INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, AND GROUT AS REQUIRED.
4	INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, AND GROUT AS REQUIRED.
5	ENGINEERING FABRIC SHALL BE MATERIAL AS SPECIFIED FOR EMBANKMENT EROSION CONTROL IN ACCORDANCE WITH ARTICLE 4196.01, B, 3 OF THE STANDARD SPECIFICATIONS.
6	ESTIMATED AT 1.6 TON/CY.

STANDARDS:
FOR DETAILS AND NOTES NOT SHOWN REFER TO THE FOLLOWING IOWA D.O.T. - HIGHWAY STANDARDS:

STANDARD	ISSUED	REVISED
PRCB G1-13	01-13	
PRCB G2-13	01-13	
PRCB 10-13	01-13	
PES 2-13-T3	01-13	05-13
PES 3-13-T3	01-13	
PES 4-13	01-13	



GRANULAR BEDDING DETAIL

GRANULAR MATERIAL SHALL TERMINATE 3'-0 SHORT OF THE PRECAST CURTAIN WALL.

NOTE: GRANULAR BEDDING TO BE MADE FROM SPECIAL BACKFILL AND SHALL NOT INCLUDE RECLAIMED HMA MATERIAL.

TRAFFIC CONTROL PLAN

NOTE: THIS STRUCTURE IS BEING CONSTRUCTED ON A NEW ALIGNMENT AND THE ROAD WILL NOT BE OPEN UNTIL AFTER COMPLETION OF CONSTRUCTION.

NOTE:
POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

NOTE:
ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

DESIGN FOR A 30° SKEW (L.A.)

PRECAST 10'-0 x 10'-0 x 154'-0 PRECAST REINFORCED CONCRETE BOX CULVERT

154'-0 BARREL

ESTIMATED QUANTITIES & NOTES

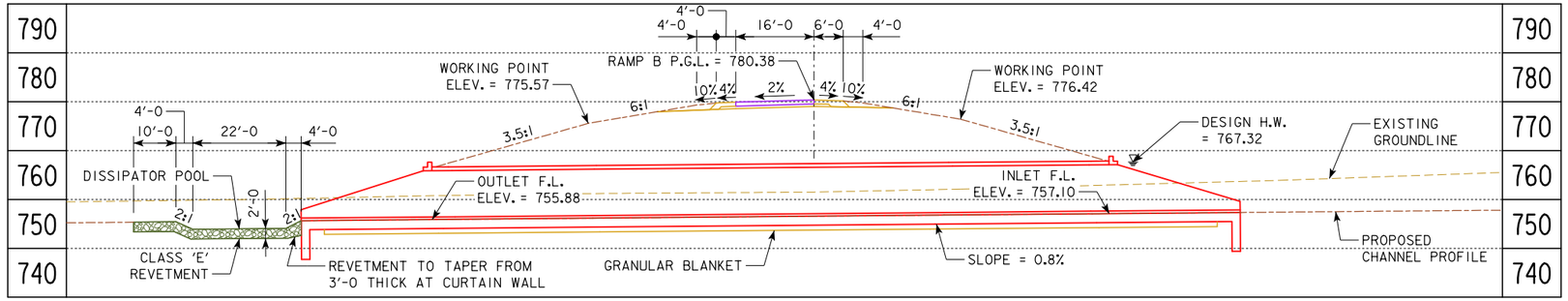
STA. 2515+87.00 MAY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

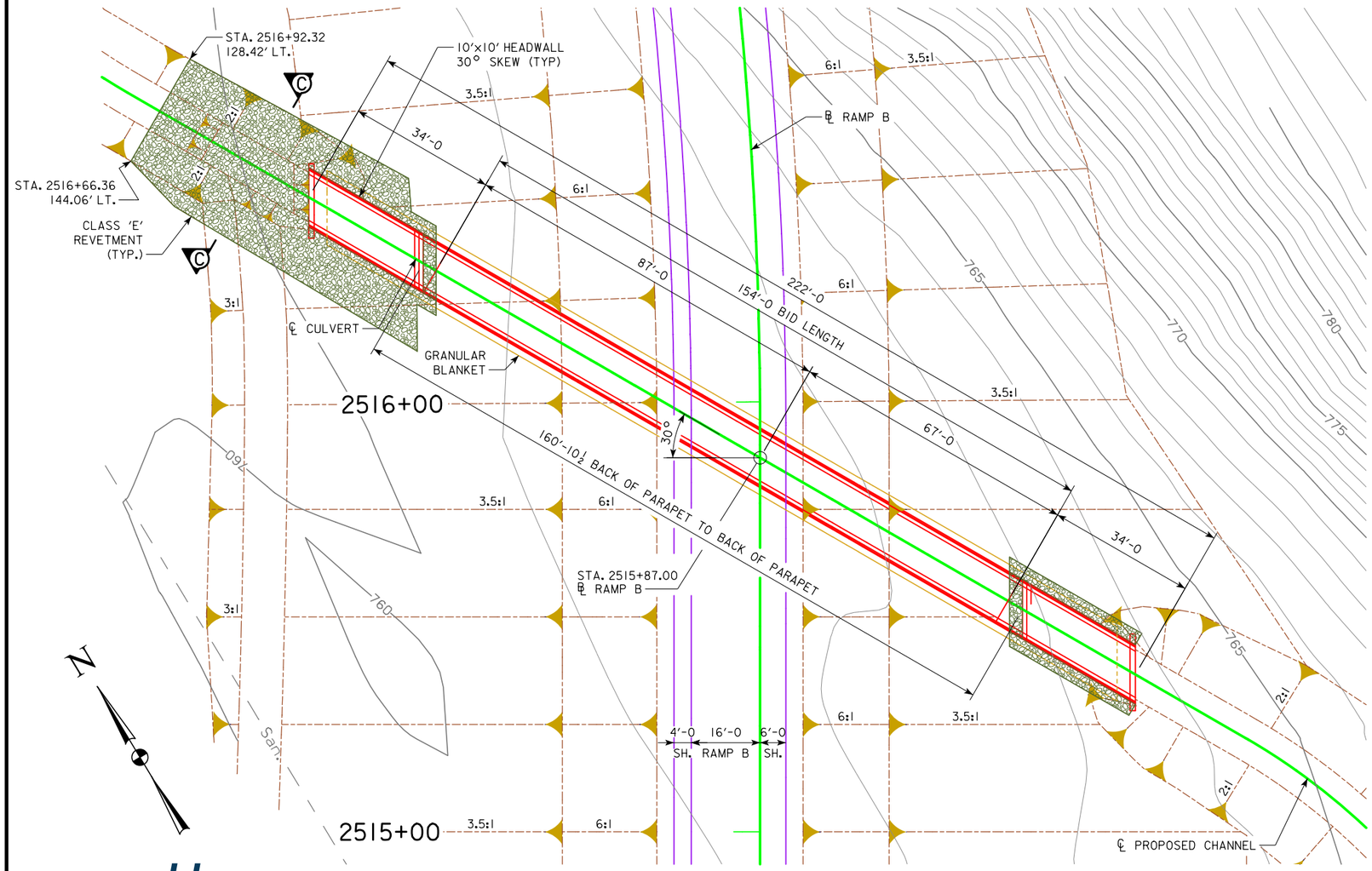
DESIGN SHEET NO. 4 OF 6 FILE NO. 30467 DESIGN NO. 516

REVISED 12-15 - MODIFIED CLASS 20 EXCAVATION LIMIT FROM 1'-0 OUTSIDE FACE OF BARREL TO 2'-0 FROM INSIDE FACE OF BARREL.
ENGLISHPRECASTCULVERTS.DGN - 108IP - THIS SHEET ISSUED 01-13.



LONGITUDINAL SECTION ALONG ℄ CULVERT

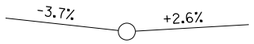
DESIGN FILL HEIGHT = 13′ ANTICIPATED SETTLEMENT = 0.75″



SITUATION PLAN

BENCH MARK NO. 4: 7″ SPIKE IN POWER POLE EAST SIDE US HIGHWAY 20 AT SOUTHEAST CORNER INTERSECTION WITH COUSINS ROAD, ELEV. 800.88.

BENCH MARK NO. 5: 7″ SPIKE IN POWER POLE - EAST SIDE OF US HIGHWAY 20 - 3RD POWER POLE NORTH OF COUSINS ROAD INTERSECTION AND SOUTH OF FIELD ENTRANCE, ELEV. 765.17.



V.P.I. STA. 2515+26.365
V.P.I. ELEV.=775.03
V.C.=700 FT.

PROPOSED GRADE US 20 RAMP 'B'

CURVE DATA US 20 RAMP 'B'

ENTERING CURVE DATA	EXITING CURVE DATA
P.I. STA. 2511+50.05	P.I. STA. 2516+48.34
Δ=21°11′47.81″ RT	Δ=6°09′40.46″ LT
T=250.73′	T=54.68′
L=495.73′	L=109.25′
R=1,340.00′	R=1,016.00′
E=23.26′	E=1.47′
e=6%	e=4.2%
I=186	I=95
x=62	x=45
P.C. STA. 2508+99.32	P.C. STA. 2515+93.66
P.T. STA. 2513+95.05	P.T. STA. 2517+02.91

HYDRAULIC DATA

DRAINAGE AREA = 818 ACRES
Q_{50} = 846 CFS
HW ELEV. = 767.32
STREAM SLOPE = 0.0076 FT./FT.

TRAFFIC ESTIMATE

2030 AADT 3,000 V.P.D.

LOCATION

US 20 RAMP 'B'
OVER DRAINAGE DITCH
T-89 N R-02 E
SECTION 31
DUBUQUE TOWNSHIP
DUBUQUE COUNTY
CITY OF DUBUQUE
LATITUDE: 42.473196°
LONGITUDE: -90.761608°

UTILITIES LEGEND:

SANITARY SEWER — San. —

SEE DESIGN SHEET 6 FOR SECTION C-C.

DESIGN FOR A 30° SKEW (L.A.)

PRECAST 10′-0 x 10′-0 x 154′-0 PRECAST REINFORCED CONCRETE BOX CULVERT

154′-0 BARREL

SITUATION PLAN

STA. 2515+87.00 MAY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

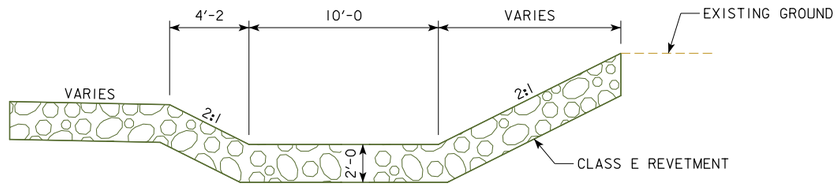
DESIGN SHEET NO. 5 OF 6 FILE NO. 30467 DESIGN NO. 516

whks engineers + planners + land surveyors

DESIGN TEAM DT/MS/WB	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER V.5

4/28/2016 1:50:45 PM wb L:\DEPT\6\7222.1\14 US20Culverts\Drawings\Working\31020038.brg 310516S005 11x17_pdf.pltcfg

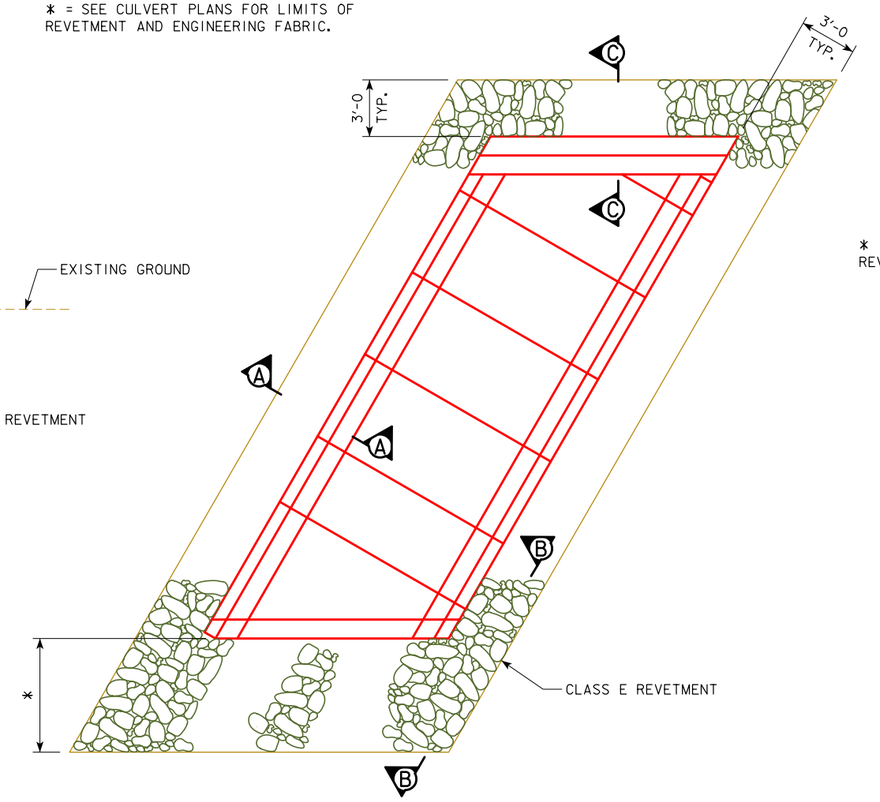
REVISED 10-14 - CHANGED THE AREA OF THE REVETMENT TO INCLUDE THE AREA IN FRONT OF THE APRON. CHANGED THE DEPTH OF REVETMENT TO 2'-0.
REVISED 12-15 - ADDED NOTE "SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC."
ENGLISH\SIGNED\PRECASTCULVERTS.DGN - PEP 1-13 - THIS SHEET ISSUED 01-13.



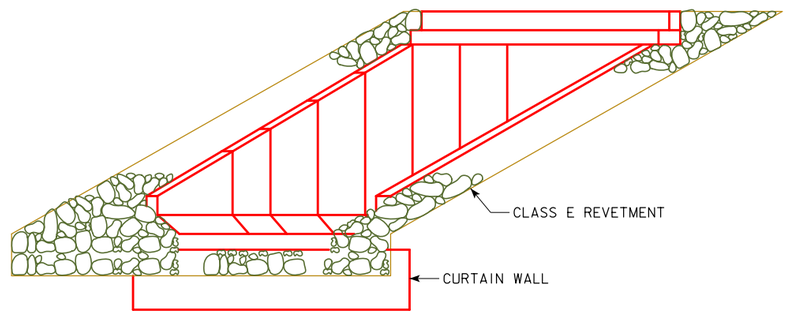
SECTION C-C

SEE DESIGN SHEET 5 FOR SECTION C-C LOCATION.

* = SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.

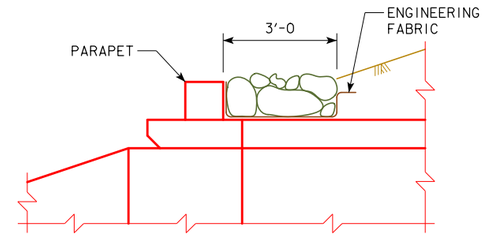


PLAN VIEW



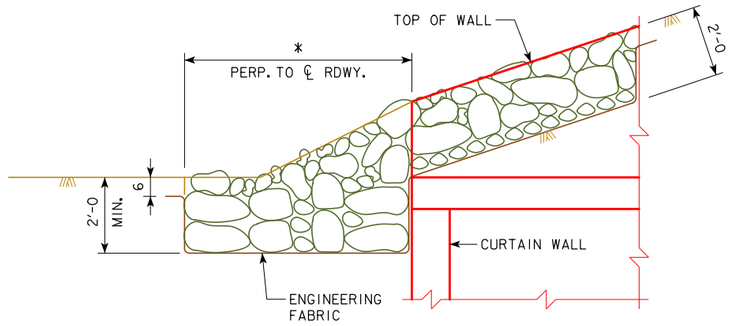
ELEVATION VIEW

15° SKEWED END SECTIONS

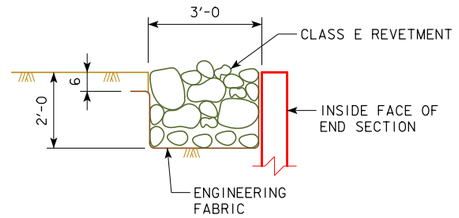


SECTION C-C

* = SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.



SECTION B-B



SECTION A-A

TYPICAL DETAILS

CONSTRUCTION NOTES:

CLASS E REVETMENT SHOULD 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.

DESIGN FOR A 30° SKEW (L.A.)

PRECAST 10'-0 x 10'-0 x 154'-0 PRECAST REINFORCED CONCRETE BOX CULVERT

154'-0 BARREL

REVETMENT PROTECTION DETAILS

STA. 2515+87.00 MAY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 6 FILE NO. 30467 DESIGN NO. 516

whks engineers + planners + land surveyors

DESIGN TEAM DT/MS/WB	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER V.6

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GENERAL NOTES:

IT IS THE INTENT OF THIS DESIGN TO CONSTRUCT A SINGLE 10'x 10'x 84'-0 REINFORCED CONCRETE BOX CULVERT SKEWED 15° LEFT AHEAD AT STATION 11+20.00 (℄ EAST ACCESS CONNECTOR).

THE RCB CULVERT SECTIONS ARE DESIGNED FOR EARTH FILLS OF 5 FEET.

UTILITY COMPANIES AND MUNICIPALITIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

WHEN DE-WATERING PRESENTS A PROBLEM FOR PLACING THE CURTAIN WALLS AS DETAILED, ALTERNATE METHODS SUCH AS STEEL SHEET PILE AND PRECAST CONCRETE WALLS MAY BE APPROVED BUT AT NO ADDITIONAL COST. THE CULVERT CONTRACTOR IS TO SUBMIT TO THE ENGINEER FOR APPROVAL COMPLETE DRAWINGS OF THE PROPOSED CURTAIN WALL ALTERNATE BEFORE BEGINNING CONSTRUCTION.

EXCESS CLASS 20 EXCAVATION MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED AT THE CONSTRUCTION SITE, AS DIRECTED BY THE ENGINEER.

THE CLASS 20 EXCAVATION QUANTITY IS BASED ON THE ASSUMPTION THAT AT THE START OF CULVERT CONSTRUCTION, THE EXISTING GROUNDLINE SHOWN ON THE "SITUATION PLAN" ON DESIGN HAS REMAINED UNDISTURBED AND NO ROADWAY FILL HAS BEEN PLACED.

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

SUMMARY OF REINFORCING STEEL

LOCATION	QUANTITY	TOTAL
HEADWALL 15° SKEW	2 @ 6,098	12,196
23' BARREL SECTION	2 @ 5,267	10,534
38' BARREL SECTION	1 @ 8,702	8,702
5RI x 3'-6 DOWEL BAR SET	2 @ 40	80
	TOTAL (LB)	31,512

CONCRETE PLACEMENT QUANTITIES

LOCATION	FLOOR	WALLS	SLAB	TOTAL
HEADWALL 15° SKEW	2 @ 19.6	2 @ 13.6	2 @ 1.4	69.2
23' BARREL SECTION	2 @ 9.5	2 @ 13.7	2 @ 7.4	61.2
38' BARREL SECTION	1 @ 15.7	1 @ 22.6	1 @ 12.3	50.6
TOTAL (CY)	73.9	77.2	29.9	181.0

STANDARDS:
FOR DETAILS AND NOTES NOT SHOWN REFER TO THE FOLLOWING IOWA D.O.T. - HIGHWAY STANDARDS:

STANDARD	ISSUED	REVISED
RCB G1-12	04-12	1-16
RCB G2-12	04-12	07-14
RCB 10-10-12	04-12	
PWH 15-1-12	04-12	
PWH 15-2-12	04-12	
PWH 15-3-12	04-12	
PWH 15-4-12	04-12	
PWH 15-6-12	04-12	

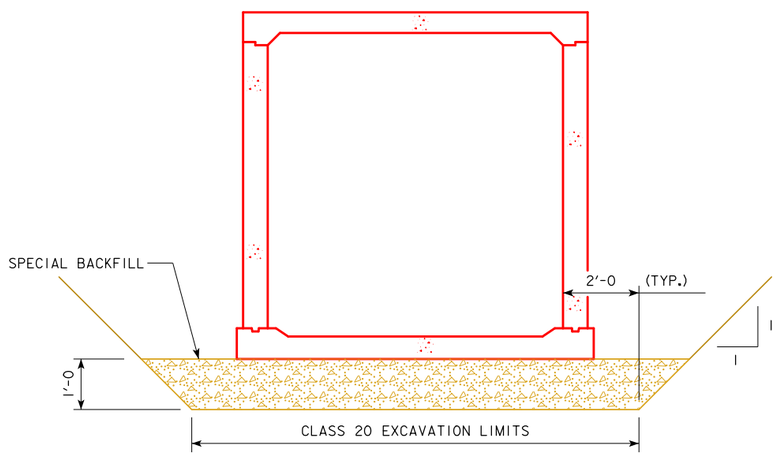
ESTIMATED CAST IN PLACE CULVERT QUANTITIES - ALTERNATE

ITEM NO.	ITEM CODE	ITEM	UNITS	TOTAL	AS BUILT QUANTITY
1	2102-0425070	SPECIAL BACKFILL	TON	149.6	
2	2402-2720000	EXCAVATION, CLASS 20	CY	1153.7	
3	2403-0100020	STRUCTURAL CONCRETE (RCB CULVERT)	CY	181.0	
4	2404-7775000	REINFORCING STEEL	LB	31,512	
5	2507-3250005	ENGINEERING FABRIC	SY	424.5	
6	2507-6800061	REVETMENT, CLASS E	TON	348.5	

ESTIMATE REFERENCE INFORMATION

DATA LISTED BELOW IS FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT CONSTITUTE A BASIS FOR ANY EXTRA WORK ORDERS.

ITEM NO.	DESCRIPTION
1	ESTIMATED AT 1.9 TON/CY. INCLUDES 12" GRANULAR BEDDING MATERIAL. RECLAIMED ASPHALT PAVEMENT (RAP) AND RECLAIMED HMA SHALL NOT BE USED FOR THE SPECIAL BACKFILL.
5	ENGINEERING FABRIC SHALL BE MATERIAL AS SPECIFIED FOR EMBANKMENT EROSION CONTROL IN ACCORDANCE WITH ARTICLE 4196.01, B, 3 OF THE STANDARD SPECIFICATIONS.
6	ESTIMATED AT 1.6 TON/CY.



GRANULAR BLANKET DETAIL

GRANULAR MATERIAL SHALL TERMINATE 3'-0 SHORT OF THE CURTAIN WALL.

TRAFFIC CONTROL PLAN

NOTE: THIS STRUCTURE IS BEING CONSTRUCTED ON A NEW ALIGNMENT AND THE ROAD WILL NOT BE OPEN UNTIL AFTER COMPLETION OF CONSTRUCTION.

NOTE:
POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

NOTE:
ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

DESIGN FOR A 15° SKEW (L.A.)

SINGLE 10'-0 x 10'-0 x 84'-0 REINFORCED CONCRETE BOX CULVERT

(2)-23'-0 END BARRELS — 38'-0 CENTER BARREL

ESTIMATED QUANTITIES & NOTES

STA. 11+20.00 — MAY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 6 FILE NO. 30467 DESIGN NO. 616

whks engineers + planners + land surveyors

DESIGN TEAM DT/MS/WB | DUBUQUE COUNTY | PROJECT NUMBER NHSX-032-1(38)--3H-31 | SHEET NUMBER V.7

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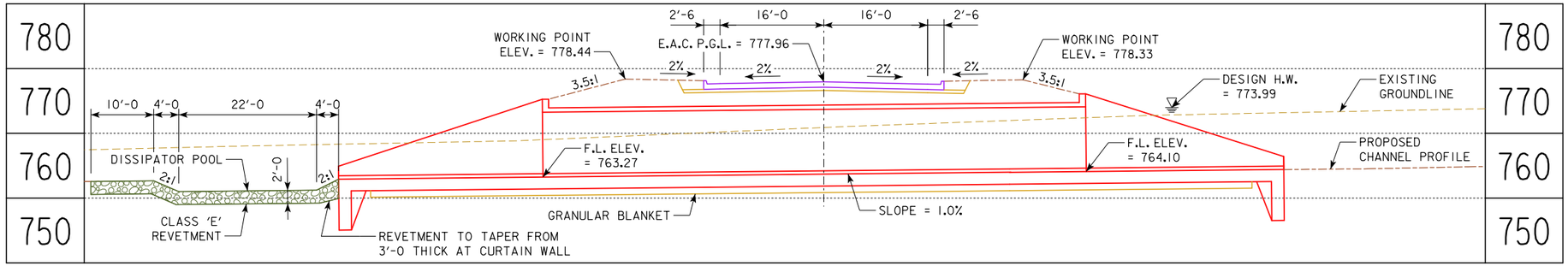
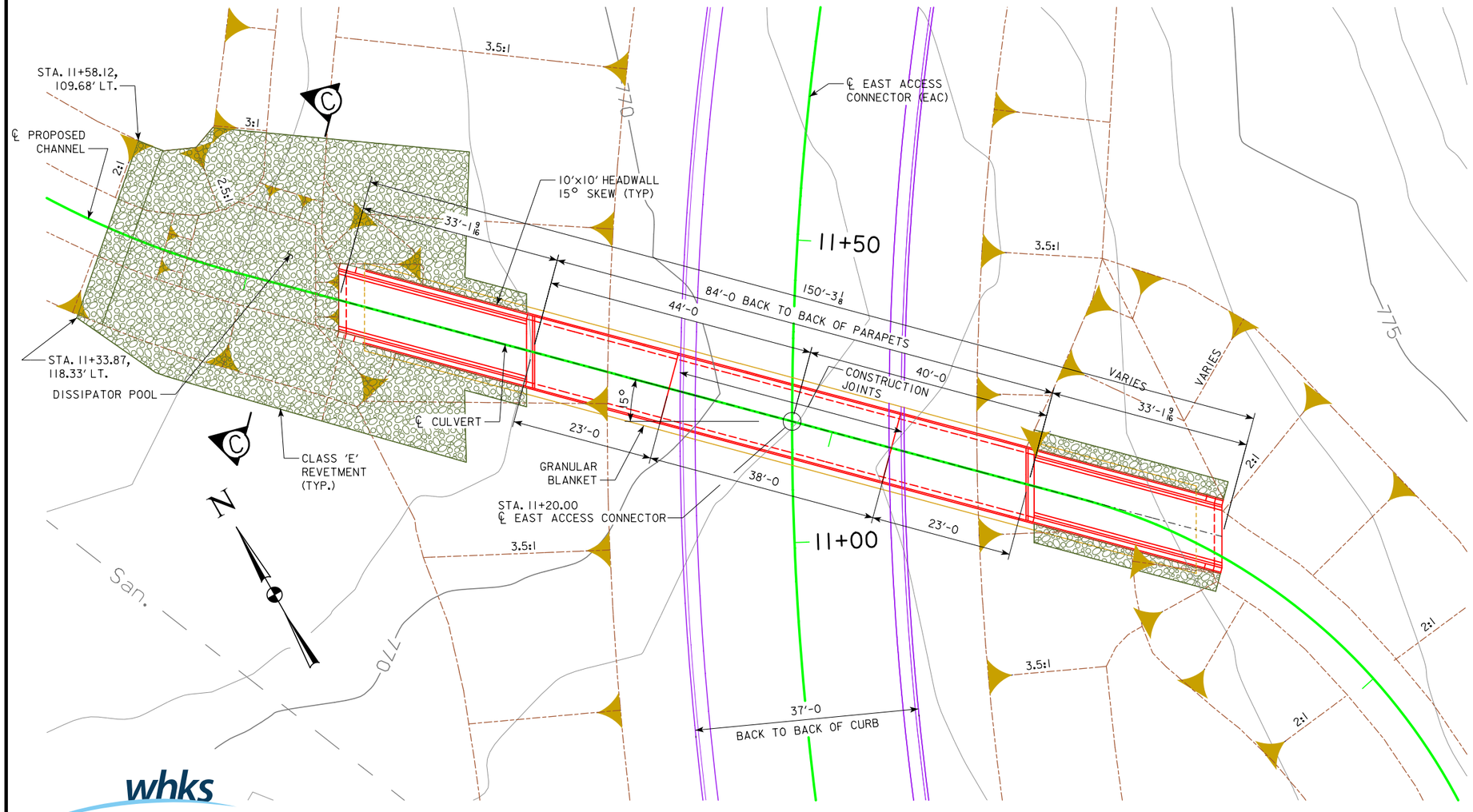


LONGITUDINAL SECTION ALONG ℄ CULVERT

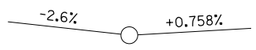
DESIGN FILL HEIGHT = 5′ ANTICIPATED SETTLEMENT = 0.25"



SITUATION PLAN

BENCH MARK NO. 4: 7" SPIKE IN POWER POLE EAST SIDE US HIGHWAY 20 AT SOUTHEAST CORNER INTERSECTION WITH COUSINS ROAD, ELEV. 800.88

BENCH MARK NO. 5: 7" SPIKE IN POWER POLE - EAST SIDE OF US HIGHWAY 20 - 3RD POWER POLE NORTH OF COUSINS ROAD INTERSECTION AND SOUTH OF FIELD ENTRANCE, ELEV. 765.17



V.P.I. STA. 9+91.00
V.P.I. ELEV.=776.98
V.C.=240 FT.

PROPOSED GRADE EAST ACCESS CONNECTOR

CURVE DATA EAST ACCESS CONNECTOR

ENTERING CURVE DATA
P.I. STA. 10+65.49
Δ=46°53′45.71" RT
T=216.87′
L=409.25′
R=500.00′
E=45.01′
e=NORMAL CROWN

HYDRAULIC DATA

DRAINAGE AREA = 756 ACRES
Q_{50} = 804 CFS
HW ELEV. = 773.99
STREAM SLOPE = 0.01 FT./FT.

TRAFFIC ESTIMATE

2030 AADT 7,900 V.P.D.

UTILITIES LEGEND

— San. — SANITARY SEWER

LOCATION

EAST ACCESS CONNECTOR
OVER DRAINAGE DITCH
T-88 N R-02 E
SECTION 5
TABLE MOUND TOWNSHIP
DUBUQUE COUNTY
CITY OF DUBUQUE
LATITUDE: 42.471160°
LONGITUDE: -90.762207°

SEE DESIGN SHEET 3 FOR SECTION C-C.

DESIGN FOR A 15° SKEW (L.A.)

SINGLE 10′-0 x 10′-0 x 84′-0 REINFORCED CONCRETE BOX CULVERT

(2)-23′-0 END BARRELS 38′-0 CENTER BARREL

SITUATION PLAN

STA. 11+20.00 MAY, 2016

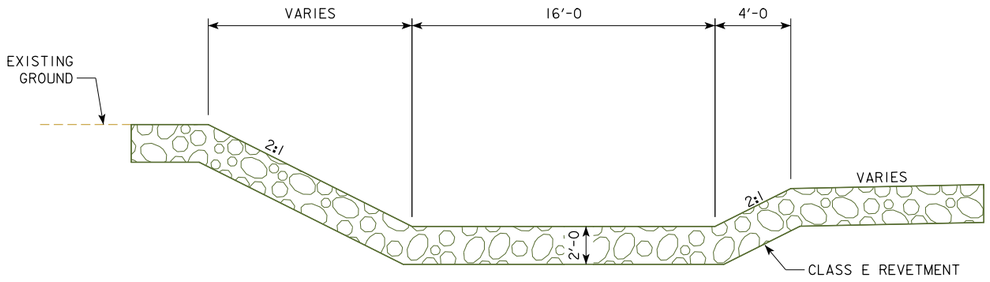
DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 6 FILE NO. 30467 DESIGN NO. 616

whks
engineers + planners + land surveyors

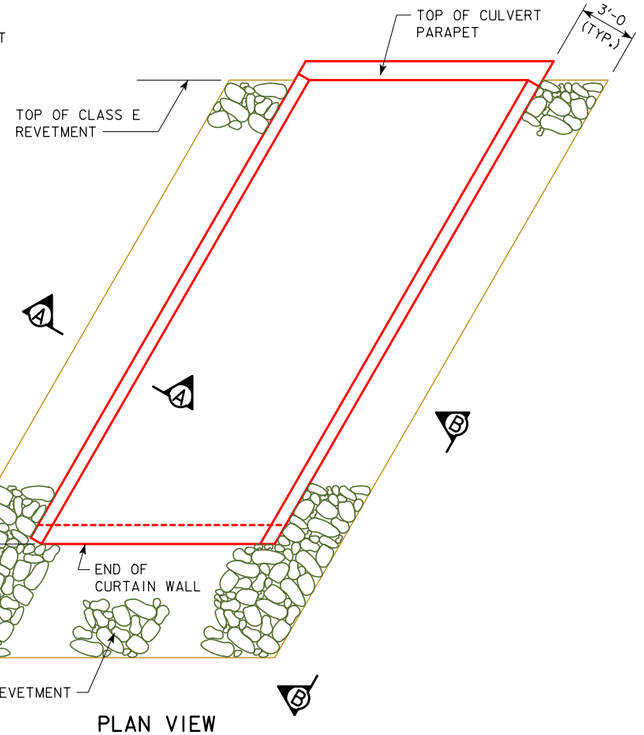
DESIGN TEAM DT/MS/WB	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER V.8



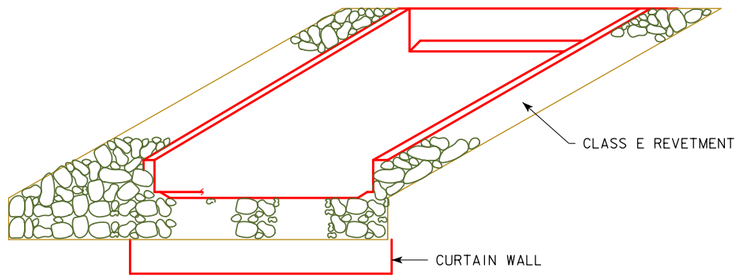
SECTION C-C

SEE DESIGN SHEET 2 FOR SECTION C-C LOCATION.

* = SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.



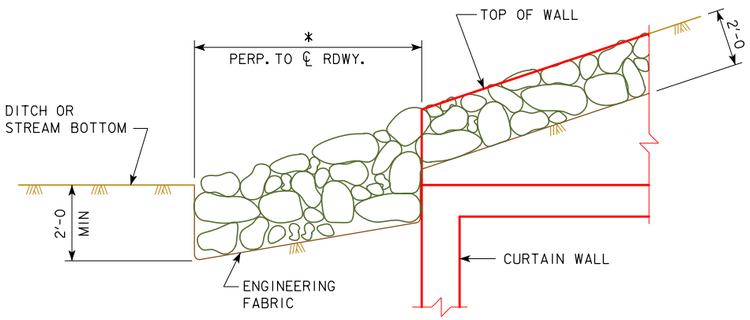
PLAN VIEW



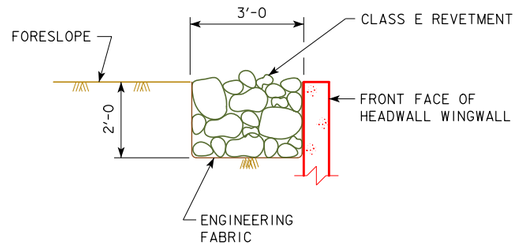
ELEVATION VIEW

15° SKEWED HEADWALL

* = SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.



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.

DESIGN FOR A 15° SKEW (L.A.)

SINGLE 10'-0 x 10'-0 x 84'-0 REINFORCED CONCRETE BOX CULVERT

(2)-23'-0 END BARRELS 38'-0 CENTER BARREL

REVETMENT PROTECTION DETAILS

STA. 11+20.00 MAY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 6 FILE NO. 30467 DESIGN NO. 616

whks engineers + planners + land surveyors

REVISED 1-16 - ADDED NOTE "SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC."
ENGLISHSINGLECULVERTS.DGN - 1092 - THIS SHEET ISSUED 04-12.

DESIGN TEAM DT/MS/WB	CAST-IN-PLACE CULVERT REVETMENT PROTECTION DETAILS	STANDARD SHEET 1092 (MOD.)	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER V.9

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GENERAL NOTES:

IT IS THE INTENT OF THIS DESIGN TO CONSTRUCT A SINGLE 10' x 10' x 92'-0 PRECAST REINFORCED CONCRETE BOX CULVERT SKEWED 15° LEFT AHEAD AT STATION 11+20.00 (℄ EAST ACCESS CONNECTOR).

THE PRECAST RCB CULVERT SECTIONS ARE DESIGNED FOR EARTH FILLS OF 5 FEET.

UTILITY COMPANIES AND MUNICIPALITIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THE PRECAST R.C.B. BARREL AND END SECTIONS SHALL CONFORM TO IOWA D.O.T. SINGLE PRECAST R.C.B. CULVERT STANDARDS. AT THE CONTRACTOR'S OPTION, PRECAST BARREL SECTIONS MAY CONFORM TO ASTM C1577.

EXCESS CLASS 20 EXCAVATION MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED AT THE CONSTRUCTION SITE, AS DIRECTED BY THE ENGINEER.

THE LENGTH IN LINEAR FEET OF PRECAST REINFORCED CONCRETE BOX CULVERT WILL BE BASED ON THE PLAN QUANTITY. FOR THE NUMBER OF LINEAR FEET GIVEN ON THE PLAN, THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE PER LINEAR FOOT. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR BID ITEMS "PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION", "CLASS 20 EXCAVATION", "CLASS E REVETMENT", AND "SPECIAL BACKFILL".

FOR EACH PRECAST BOX CULVERT STRAIGHT END SECTION INSTALLED THE CONTRACTOR WILL BE PAID THE CONTRACT PRICE PER EACH. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL (INCLUDING LINTEL BEAMS AND CURTAIN WALLS), LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR BID ITEMS "PRECAST CONCRETE BOX CULVERT", "CLASS 20 EXCAVATION", "CLASS E REVETMENT", AND "SPECIAL BACKFILL".

THE CURTAIN WALL AND THE TYPE 3 LINTEL BEAM OR TYPE I PARAPET SHALL BE PRECAST.

THE CONTRACTOR SHALL FURNISH AND INSTALL CULVERT TIES FOR ALL JOINTS. THE MAIN SECTION JOINTS WILL HAVE ONE TIE ON EACH SIDE OF THE BARREL AND THE LAST BARREL SECTION WILL BE ATTACHED TO THE END SECTIONS WITH TWO TIES PER SIDE. THE END SECTION JOINTS WILL HAVE TWO TIES PER SIDE.

CULVERT TIES SHALL BE INCLUDED IN THE COST FOR PRECAST CONCRETE BOX CULVERT. TIE RODS WILL BE 1 INCH DIAMETER STEEL AND SHALL MEET REQUIREMENTS OF ASTM A709 GRADE 36 OR EQUAL.

CULVERT TIE ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION.

THE LIMITS FOR EXCAVATION FOR THE PRECAST CONCRETE BOX CULVERT SHALL BE AS SHOWN ON THE "GRANULAR BEDDING DETAIL".

A MINIMUM OF 12 INCHES OF SPECIAL BACKFILL SHALL BE USED AS BEDDING FOR THE PRECAST BOX CULVERT AND SHALL NOT INCLUDE RECLAIMED HMA MATERIALS. THE BEDDING SHALL BE SHAPED TO A FLAT BASE USING A TEMPLATE. THE 12 INCH GRANULAR BEDDING SHALL BE BID AS SPECIAL BACKFILL.

THE CONTRACTOR SHALL SUBMIT DETAILS OF THE PROPOSED PRECAST BOX SECTIONS TO THE OFFICE OF BRIDGES AND STRUCTURES FOR ALL PROJECTS. THE DETAILS SHALL INCLUDE THE FOLLOWING INFORMATION AS FOUND ON THE "SUBMITTAL SHOP DRAWINGS" STANDARD SHEET:

A. A SITUATION PLAN DRAWING SHOWING THE BACK TO BACK PARAPET DIMENSION FOR THE LINE OF THE CULVERT SECTIONS.

B. DIMENSION THE NUMBER OF PRECAST SECTIONS AND SECTION LENGTHS.

C. A DETAIL OF THE PRECAST BARREL SECTIONS SHOWING A CROSS SECTION VIEW OF THE SECTION, STEEL LOCATIONS, DIMENSIONS, ETC.

D. A DETAIL OF THE PRECAST CULVERT END SECTION SHOWING A CROSS SECTION VIEW OF THE SECTIONS, STEEL LOCATIONS, DIMENSIONS, ETC. SIMILAR TO THE END SECTION DETAILS SHOWN IN THE IDOT STANDARDS.

THE CONTRACTOR SHALL PROVIDE ALL INFORMATION SHOWN ON THE SUBMITTAL SHOP DRAWING SHEET REGARDLESS OF WHICH PRECAST BOX OPTION IS SELECTED.

APPROVAL OF DETAILS IS NOT REQUIRED FOR PROJECTS CONFORMING TO "ASTM C1577" AND "IDOT STANDARDS" PRECAST BOX OPTIONS WITH END SECTIONS CONFORMING TO "IDOT STANDARDS." HOWEVER, THE DETAILS SHALL BE RECEIVED BY THE OFFICE OF BRIDGES AND STRUCTURES PRIOR TO THE START OF FABRICATION.

APPROVAL OF DETAILS IS REQUIRED FOR "NONSTANDARD" PRECAST BOX OPTIONS AND "NONSTANDARD" END SECTION OPTIONS. BOXES AND END SECTIONS REQUIRING OPENINGS OR ATTACHMENTS SHALL BE CONSIDERED NONSTANDARD. THE CONTRACTOR SHALL ALLOW THIRTY WORKING DAYS FOR THE ENGINEER'S REVIEW PRIOR TO THE START OF FABRICATION.

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DETAILS REQUIRING APPROVAL SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN THE STATE OF IOWA. BOXCAR SOFTWARE VERSION 3.1 OR LATER OR OTHER EQUIVALENT SOFTWARE CAN BE USED TO DESIGN THE PRECAST BOX CULVERT BARREL SECTIONS, PROVIDING THE ANALYSIS MEETS THE MINIMUM REQUIREMENTS ESTABLISHED FOR THE IDOT STANDARDS AS FOUND IN THE IDOT BRIDGE DESIGN MANUAL. THE MINIMUM REQUIREMENTS INCLUDE REINFORCEMENT CLEARANCE REQUIREMENTS USED IN THE "IDOT STANDARDS".

INSTALLATION NOTES:

PRECAST CONCRETE BOX CULVERT SECTIONS SHALL BE LAID WITH THE GROOVE END OF EACH SECTION UP-GRADE, AND THE SECTIONS SHALL BE TIGHTLY JOINED. CONCRETE TIES TO BE USED ONLY TO HOLD BOX SECTIONS TOGETHER, NOT FOR PULLING SECTIONS TIGHT. JOINT OPENINGS BETWEEN SECTIONS SHOULD BE AS TIGHT AS PRACTICABLE AND LIMITED TO A MAXIMUM OF $\frac{3}{4}$ INCH OPENINGS. THE JOINT ON THE BOTTOM OF THE CULVERT SHALL BE SEALED WITH A FLEXIBLE WATER TIGHT 1 INCH BUTYL ROPE GASKET AS PER MATERIALS I.M. 491.09.

BUTYL ROPE GASKET SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER AND SHALL EXTEND VERTICALLY 6 INCHES ABOVE THE BOTTOM FILLET. ALL JOINTS SHALL BE TRIMMED CLEAN ON THE INSIDE AFTER SEALING.

THE CONTRACTOR SHALL PLACE A 2 FOOT WIDE PIECE OF ENGINEERING FABRIC AROUND THE TOP AND SIDES OF EACH PRECAST JOINT. THE FABRIC SHALL BE CENTERED WITH 1 FOOT ON EACH SIDE OF THE JOINT, THE FABRIC SHALL BE ATTACHED TO THE WALLS AND TOP OF EACH SECTION TO PREVENT THE FABRIC FROM SLIPPING OFF THE JOINT DURING BACKFILLING OPERATIONS. ATTACHMENT METHODS SHALL BE APPROVED BY THE ENGINEER. ALL COSTS INCLUDING MATERIAL AND LABOR ASSOCIATED WITH PROVIDING THE ENGINEERING FABRIC AND INSTALLING IT AS REQUIRED SHALL BE INCLUDED IN THE BID ITEMS "PRECAST CONCRETE BOX CULVERT" AND "PRECAST BOX CULVERT STRAIGHT END SECTION". THE ENGINEERING FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

CLASS E REVETMENT WILL BE PLACED AROUND BOTH PRECAST BOX CULVERT END SECTIONS, AS SHOWN IN THESE PLANS.

DURING BACKFILLING THE COMPACTION ADJACENT TO THE BOTTOM CORNER RADII OR CHAMFER SHALL BE ACCOMPLISHED WITH A MECHANICAL HAND COMPACTOR.

THE CONTRACTOR SHALL FURNISH AND INSTALL LIFTING HOLE PLUGS FOR EACH SECTION. LIFTING HOLES SHALL BE PLUGGED WITH A PRECAST CONCRETE PLUG OR PLASTIC PLUG APPROVED BY THE ENGINEER, SEALED AND COVERED WITH A 2'-0 x 2'-0 PIECE OF ENGINEERING FABRIC CENTERED OVER THE HOLE AND ATTACHED TO THE SECTION TO PREVENT THE FABRIC FROM SLIPPING.

SINCE PRECAST CONCRETE CULVERT END SECTIONS HAVE THE FORESLOPE LOCATED AT THE BOTTOM OF THE PARAPET INSTEAD OF THE TOP (AS IN THE CASE OF CAST IN PLACE RCB CULVERTS) THE MAIN BARREL SECTION HAS BEEN LENGTHENED.

ESTIMATED PRECAST CULVERT QUANTITIES - ALTERNATE

ITEM NO.	ITEM CODE	ITEM	UNITS	TOTAL	AS BUILT QUANTITY
1	2102-0425070	SPECIAL BACKFILL	TON	150.6	
2	2402-2720000	EXCAVATION, CLASS 20	CY	1,153.1	
3	2415-2111010	PRECAST CONC. BOX CULV., 10'X10'	LF	92.0	
4	2415-2201010	PRECAST CONC. BOX CULV. END SECTION, 10'X10'	EACH	2.0	
5	2507-3250005	ENGINEERING FABRIC	SY	433.3	
6	2507-6800061	REVETMENT, CLASS E	TON	356.4	

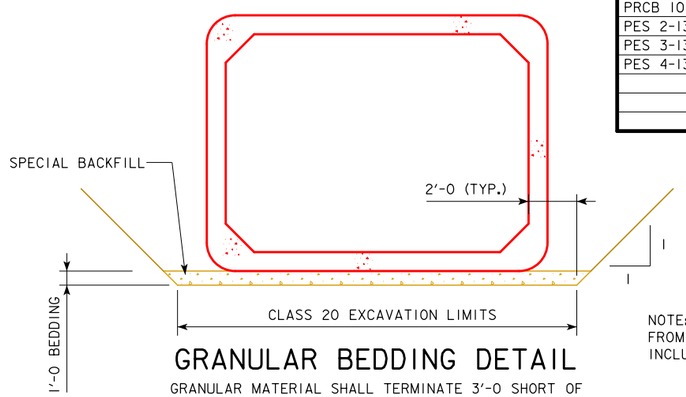
ESTIMATE REFERENCE INFORMATION

DATA LISTED BELOW IS FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT CONSTITUTE A BASIS FOR ANY EXTRA WORK ORDERS.

ITEM NO.	DESCRIPTION
1	ESTIMATED AT 1.9 TON/CY. INCLUDES 12" GRANULAR BEDDING MATERIAL. RECLAIMED ASPHALT PAVEMENT (RAP) AND RECLAIMED HMA SHALL NOT BE USED FOR THE SPECIAL BACKFILL.
3	INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, AND GROUT AS REQUIRED.
4	INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, AND GROUT AS REQUIRED.
5	ENGINEERING FABRIC SHALL BE MATERIAL AS SPECIFIED FOR EMBANKMENT EROSION CONTROL IN ACCORDANCE WITH ARTICLE 4196.01, B, 3 OF THE STANDARD SPECIFICATIONS.
6	ESTIMATED AT 1.6 TON/CY.

STANDARDS:
FOR DETAILS AND NOTES NOT SHOWN REFER TO THE FOLLOWING IOWA D.O.T. - HIGHWAY STANDARDS:

STANDARD	ISSUED	REVISED
PRCB G1-13	01-13	
PRCB G2-13	01-13	
PRCB 10-13	01-13	
PES 2-13-T3	01-13	05-13
PES 3-13-T3	01-13	
PES 4-13	01-13	



GRANULAR BEDDING DETAIL

GRANULAR MATERIAL SHALL TERMINATE 3'-0 SHORT OF THE PRECAST CURTAIN WALL.

NOTE: GRANULAR BEDDING TO BE MADE FROM SPECIAL BACKFILL AND SHALL NOT INCLUDE RECLAIMED HMA MATERIAL.

TRAFFIC CONTROL PLAN

NOTE: THIS STRUCTURE IS BEING CONSTRUCTED ON A NEW ALIGNMENT AND THE ROAD WILL NOT BE OPEN UNTIL AFTER COMPLETION OF CONSTRUCTION.

NOTE:
POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

NOTE:
ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

DESIGN FOR A 15° SKEW (L.A.)

SINGLE 10'-0 x 10'-0 x 92'-0 PRECAST REINFORCED CONCRETE BOX CULVERT

92'-0 BARREL

ESTIMATED QUANTITIES & NOTES

STA. 11+20.00 MAY, 2016

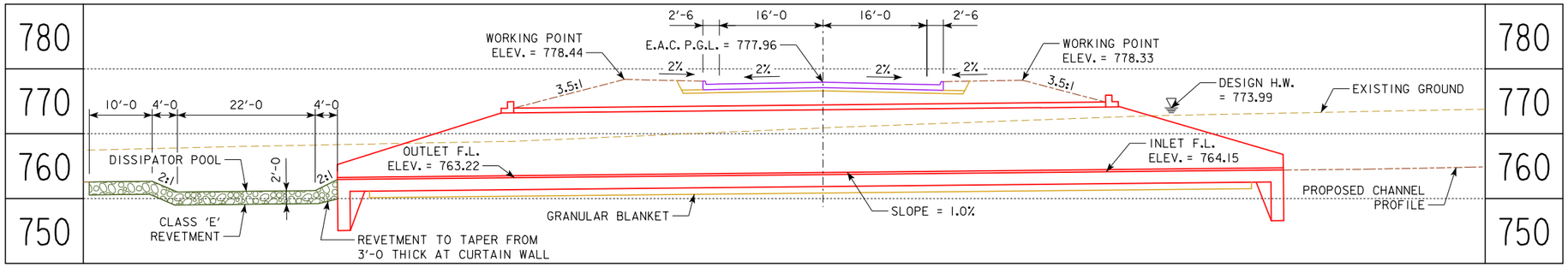
DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 6 FILE NO. 30467 DESIGN NO. 616

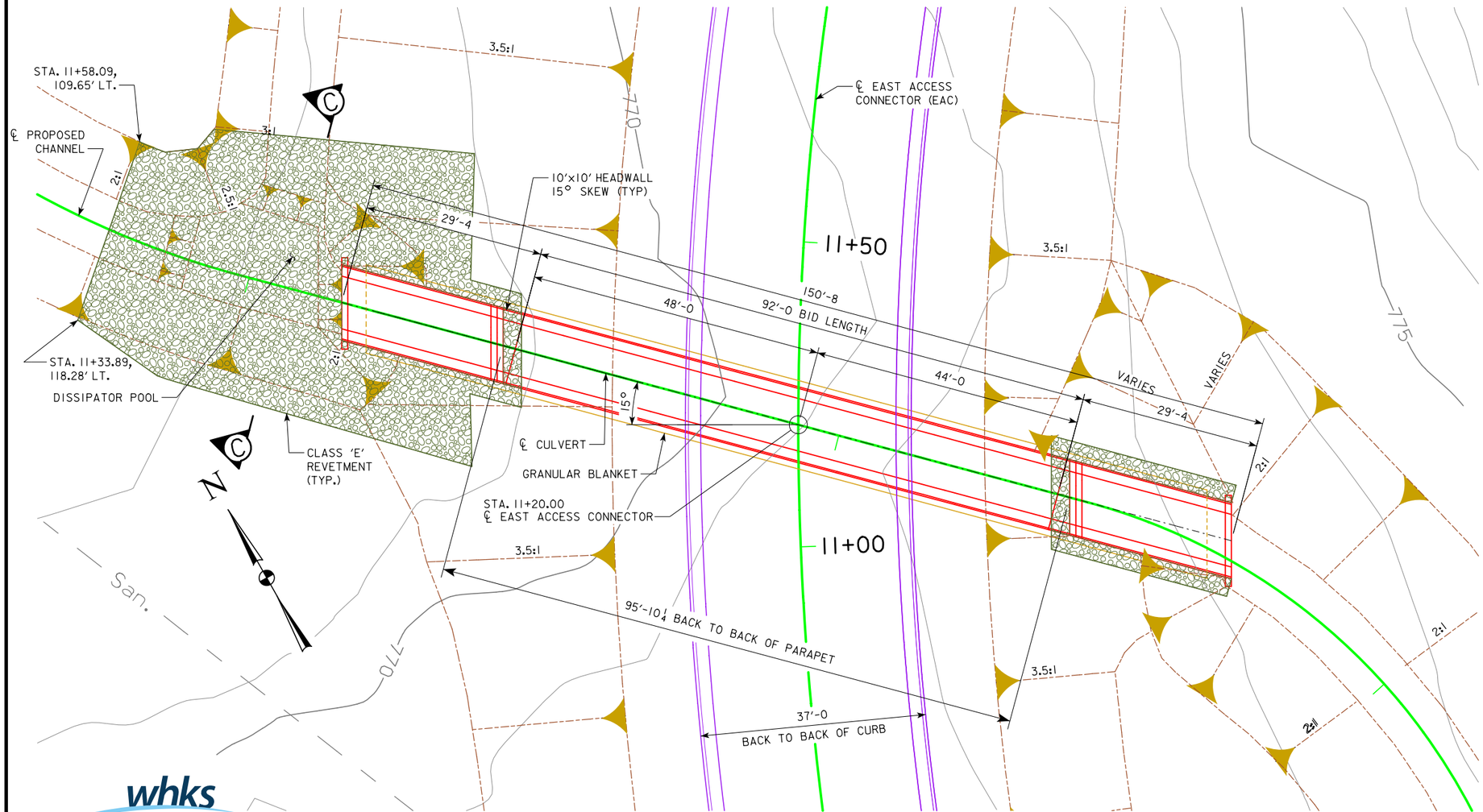
REVISED 12-15 - MODIFIED CLASS 20 EXCAVATION LIMIT FROM 1'-0 OUTSIDE FACE OF BARREL TO 2'-0 FROM INSIDE FACE OF BARREL.
ENGLISHPRECASTCULVERTS.DGN - 108IP - THIS SHEET ISSUED 01-13.

DESIGN TEAM DT/MS/WB	PRECAST CULVERT GENERAL NOTES	STANDARD SHEET 108IP	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(38)--3H-31	SHEET NUMBER V.10



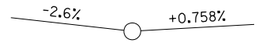
LONGITUDINAL SECTION ALONG ℄ CULVERT

DESIGN FILL HEIGHT = 5′ ANTICIPATED SETTLEMENT = 0.25″



BENCH MARK NO. 4: 7″ SPIKE IN POWER POLE EAST SIDE US HIGHWAY 20 AT SOUTHEAST CORNER INTERSECTION WITH COUSINS ROAD, ELEV. 800.88.

BENCH MARK NO. 5: 7″ SPIKE IN POWER POLE - EAST SIDE OF US HIGHWAY 20 - 3RD POWER POLE NORTH OF COUSINS ROAD INTERSECTION AND SOUTH OF FIELD ENTRANCE, ELEV. 765.17.



V.P.I. STA. 9+91.00
V.P.I. ELEV.=776.98
V.C.=240 FT.

PROPOSED GRADE EAST ACCESS CONNECTOR

CURVE DATA EAST ACCESS CONNECTOR

ENTERING CURVE DATA
P.I. STA. 10+65.49
Δ=46°53′45.71″ RT
T=216.87′
L=409.25′
R=500.00′
E=45.01′
e=NORMAL CROWN

HYDRAULIC DATA

DRAINAGE AREA = 756 ACRES
Q_{50} = 804 CFS
HW ELEV. = 773.99
STREAM SLOPE = 0.01 FT./FT.

TRAFFIC ESTIMATE

2030 AADT 7,900 V.P.D.

UTILITIES LEGEND

— San. — - SANITARY SEWER

LOCATION

EAST ACCESS CONNECTOR
OVER DRAINAGE DITCH
T-88 N R-02 E
SECTION 5
TABLE MOUND TOWNSHIP
DUBUQUE COUNTY
CITY OF DUBUQUE
LATITUDE: 42.471160°
LONGITUDE: -90.762207°

SEE DESIGN SHEET 6 FOR SECTION C-C.

DESIGN FOR A 15° SKEW (L.A.)

SINGLE 10′-0 × 10′-0 × 92′-0 PRECAST REINFORCED CONCRETE BOX CULVERT

92′-0 BARREL

SITUATION PLAN

STA. 11+20.00 MAY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 6 FILE NO. 30467 DESIGN NO. 616

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DESIGN TEAM DT/MS/WB | DUBUQUE COUNTY | PROJECT NUMBER NHSX-032-1(38)--3H-31 | SHEET NUMBER V.11

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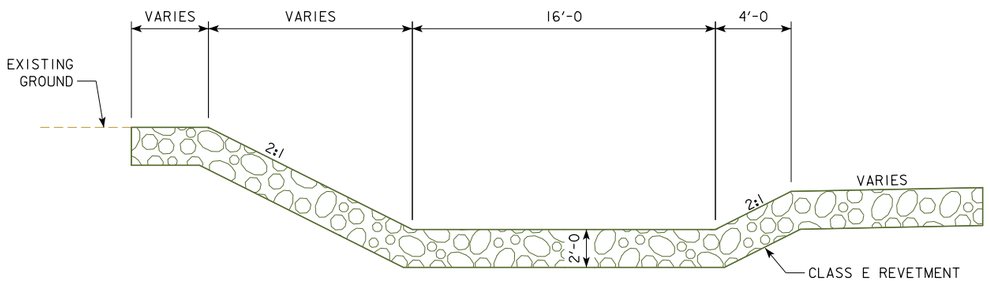
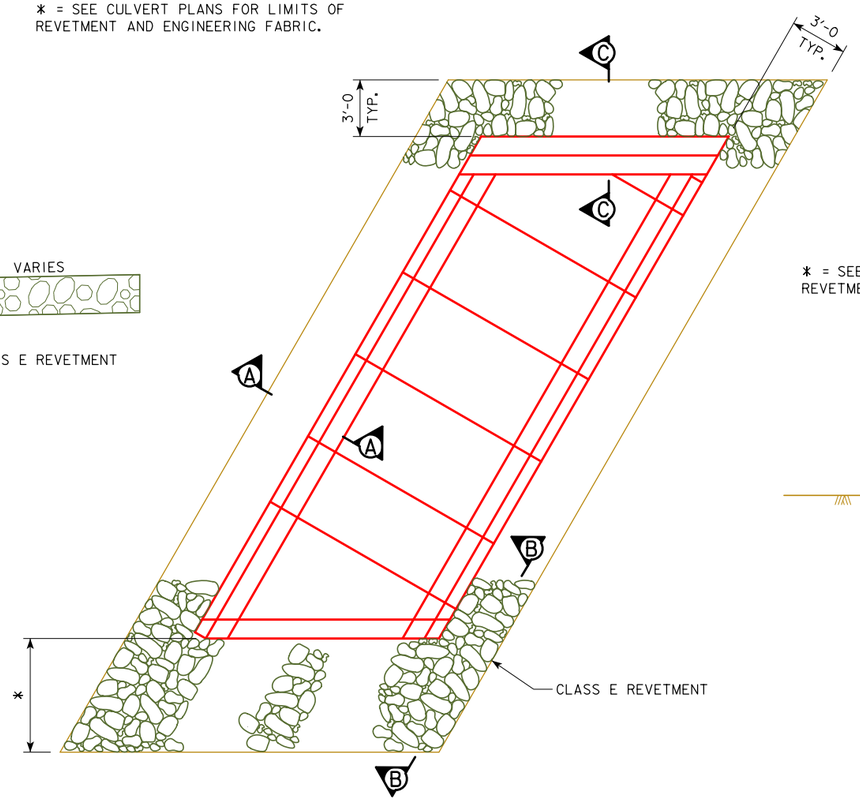


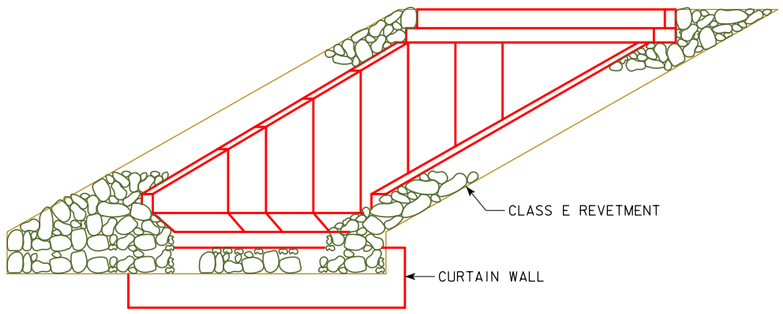
SECTION C-C

SEE DESIGN SHEET 5 FOR SECTION C-C LOCATION.

* = SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.

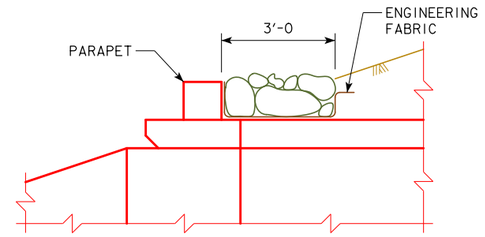


PLAN VIEW



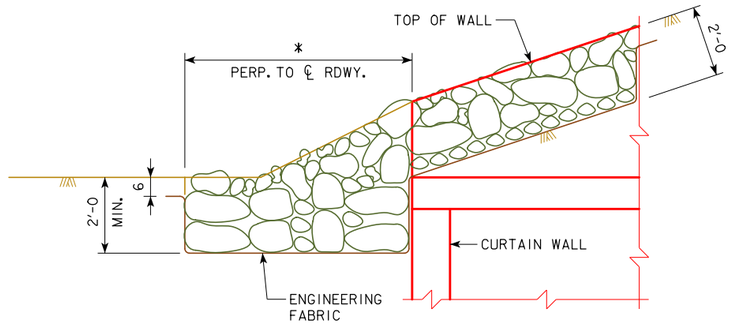
ELEVATION VIEW

15° SKEWED END SECTIONS

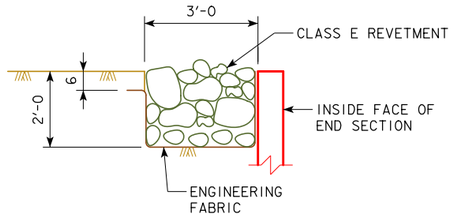


SECTION C-C

* = SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.



SECTION B-B



SECTION A-A

TYPICAL DETAILS

CONSTRUCTION NOTES:

CLASS E REVETMENT SHOULD 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.

DESIGN FOR A 15° SKEW (L.A.)

SINGLE 10'-0 x 10'-0 x 92'-0 PRECAST REINFORCED CONCRETE BOX CULVERT

92'-0 BARREL

REVETMENT PROTECTION DETAILS

STA. 11+20.00 MAY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 6 FILE NO. 30467 DESIGN NO. 616

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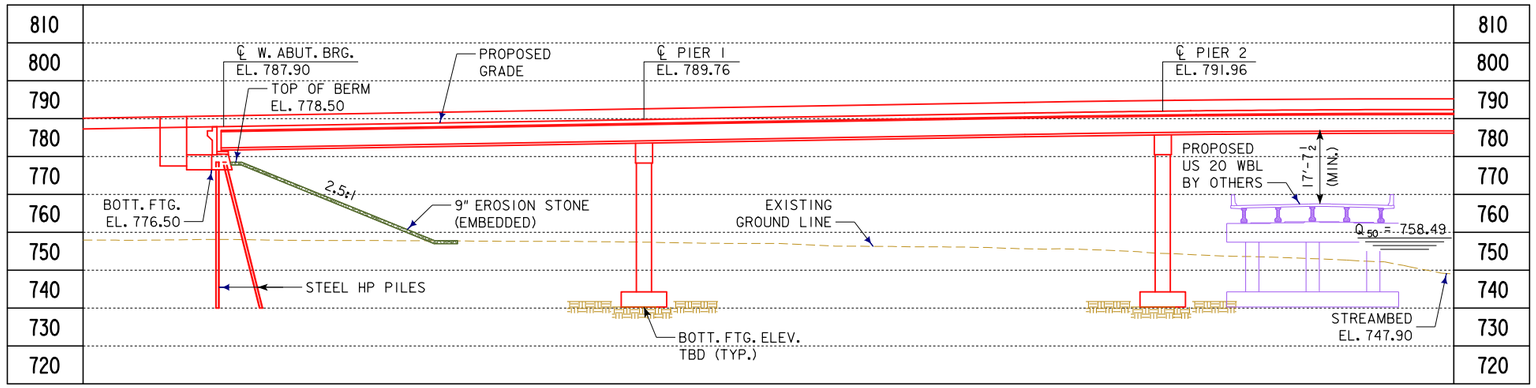
REVISED 10-14 - CHANGED THE AREA OF THE REVETMENT TO INCLUDE THE AREA IN FRONT OF THE APRON. CHANGED THE DEPTH OF REVETMENT TO 2'-0.
REVISED 12-15 - ADDED NOTE "SEE CULVERT PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC."
ENGLISHSIGNEDPRECASTCULVERTS.DGN - PEP 1-13 - THIS SHEET ISSUED 01-13.



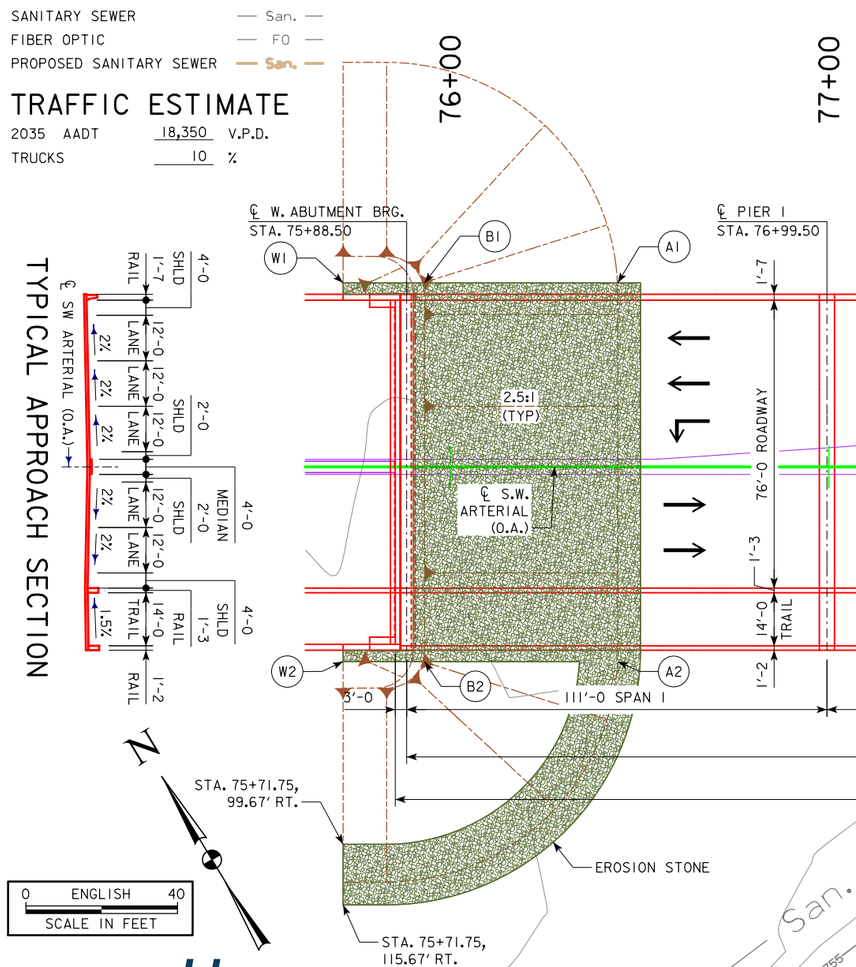
LONGITUDINAL SECTION ALONG ℄ SOUTHWEST ARTERIAL (SWA)

UTILITIES LEGEND:

SANITARY SEWER — San. —
FIBER OPTIC — FO —
PROPOSED SANITARY SEWER — San. —

TRAFFIC ESTIMATE

2035 AADT 18,350 V.P.D.
TRUCKS 10 %



SITUATION PLAN

BENCH MARK NO. 5: 7" SPIKE IN POWER POLE - EAST SIDE OF US HIGHWAY 20 - 3RD POWER POLE NORTH OF COUSINS ROAD INTERSECTION AND SOUTH OF FIELD ENTRANCE, ELEV. 765.17.

BENCH MARK NO. 6: "X" CUT ON NORTH END CONCRETE BARRIER RAIL AT BRIDGE ON EAST BOUND LANE US HIGHWAY 20 - 300' SOUTH OF SEIPPEL ROAD, ELEV. 766.73.

BENCH MARK NO. 7: 7" SPIKE IN CORNER POST - RIGHT OF WAY FENCE WEST SIDE OF US HIGHWAY 20 - 400' NORTH OF SEIPPEL ROAD, ELEV. 777.09.

V.P.I. STA. = 79+00.00
V.P.I. ELEV. = 793.13
V.C. = 200'



PROPOSED GRADE ℄ SOUTHWEST ARTERIAL (SWA) OFFICE ALIGNMENT (O.A.)

BERM SLOPE LOCATION TABLE

	WEST ABUTMENT			EAST ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV
A1	76+45.13	48.58' LT	757.75	81+75.04	48.58' LT	754.70
A2	76+45.13	51.42' RT	757.75	81+75.04	51.42' RT	754.70
B1	75+93.25	48.58' LT	778.50	82+36.75	48.58' LT	779.38
B2	75+93.25	51.42' RT	778.50	82+36.75	51.42' RT	779.38
W1	75+71.75	48.58' LT	786.59	82+58.25	48.58' LT	787.52
W2	75+71.75	51.42' RT	787.06	82+58.25	51.42' RT	787.99

SEE DESIGN SHEET 2 FOR NOTES.

HYDRAULIC DATA

DRAINAGE AREA = 10.9 SQ. MI.
STREAM SLOPE = 19 FT./MI.

Q_{50} = 4,750 CFS
NATURAL STAGE = 758.49
BACKWATER = 0.71 FT.
AVE. BRIDGE VELOCITY = 4.8 FT./S
BRIDGE WATERWAY AREA = 995 SQ. FT.

Q_{100} = 6,080 CFS
NATURAL STAGE = 759.09
BACKWATER = 0.99 FT.
AVE. BRIDGE VELOCITY = 5.2 FT./S
BRIDGE WATERWAY AREA = 1,169 SQ. FT.

Q_{500} = 10,520 CFS
NATURAL STAGE = 760.55
BACKWATER = 1.98 FT.
AVE. BRIDGE VELOCITY = 6.5 FT./S
BRIDGE WATERWAY AREA = 1,622 SQ. FT.

AVERAGE LOW WATER STAGE APPROX. 750
NO OVERTOPPING
200 YR, 500 YR SCOUR = TOP OF COMPETENT ROCK

50, 100 AND 500 YEAR DISCHARGES FROM DUBUQUE COUNTY FIS DATED AUGUST 19, 2013.

LOCATION

SOUTHWEST ARTERIAL OVER
US 20 AND SOUTH FORK
CATFISH CREEK
T-89N R-2E
SECTION 31
CITY OF DUBUQUE
DUBUQUE TOWNSHIP
DUBUQUE COUNTY
FHWA NO. 700835
LATITUDE 42.474983°
LONGITUDE -90.761519°

DESIGN FOR 0° SKEW

653'-0 x 76'-0 W/14'-0 TRAIL PPCB BRIDGE

111'-0 END SPANS 137'-0, 157'-0, 137'-0 INTERIOR SPANS

SITUATION PLAN

79+15.00 FEBRUARY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 3 FILE NO. 30467 DESIGN NO. 617

FOR INFORMATION ONLY

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DESIGN TEAM DT/MS/WB | DUBUQUE COUNTY | PROJECT NUMBER NHSX-032-1(42)--3H-31 | SHEET NUMBER V.13

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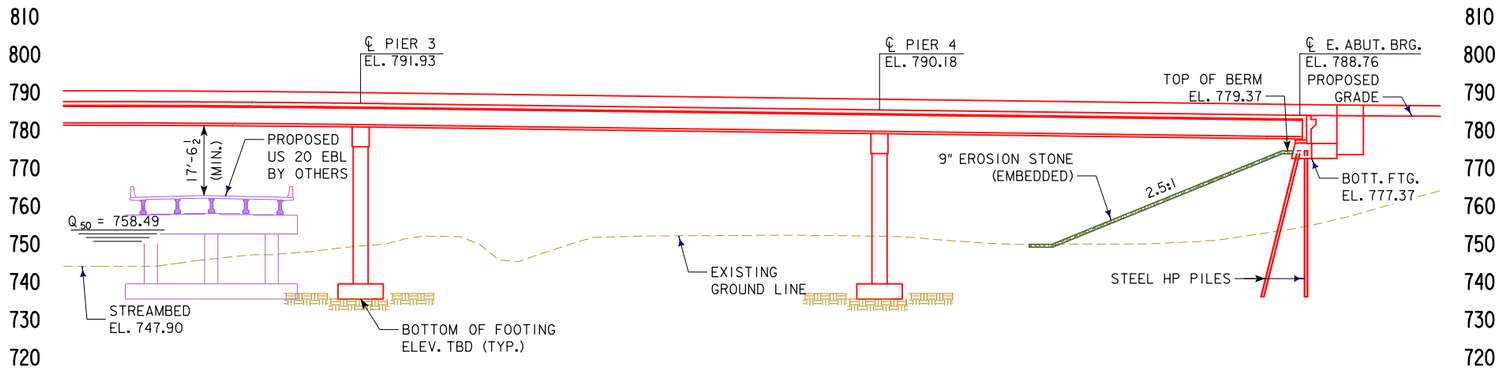
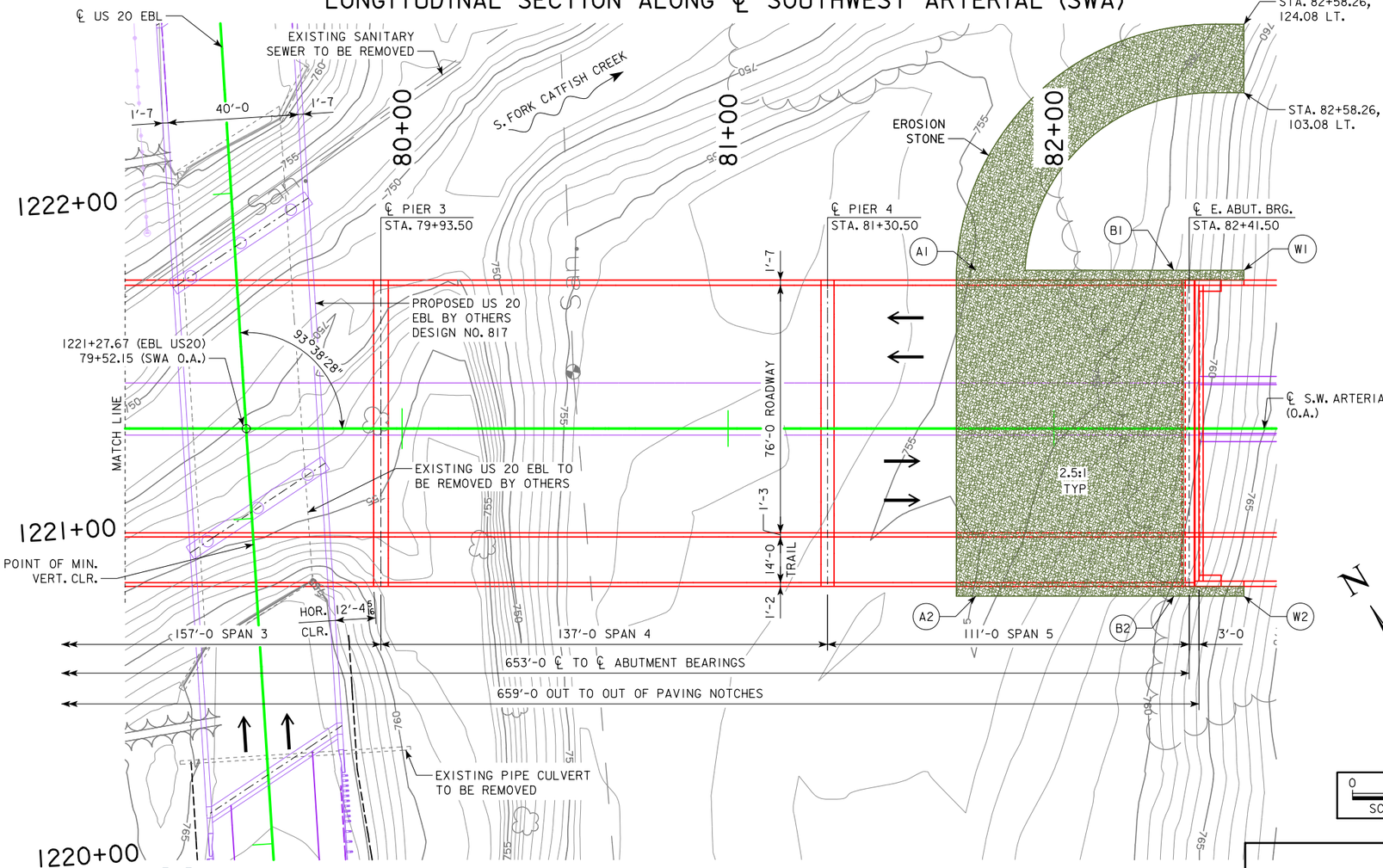
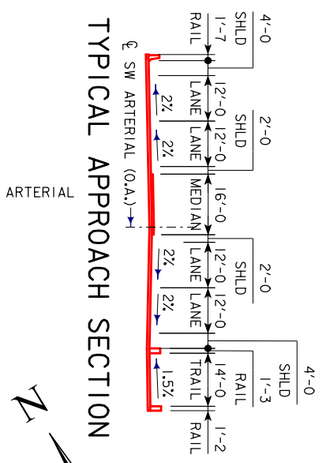
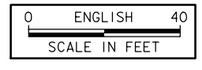


LONGITUDINAL SECTION ALONG ℄ SOUTHWEST ARTERIAL (SWA)



TYPICAL APPROACH SECTION





BENCH MARK NO. 5: 7" SPIKE IN POWER POLE - EAST SIDE OF US HIGHWAY 20 - 3RD POWER POLE NORTH OF COUSINS ROAD INTERSECTION AND SOUTH OF FIELD ENTRANCE, ELEV. 765.17.

BENCH MARK NO. 6: "X" CUT ON NORTH END CONCRETE BARRIER RAIL AT BRIDGE ON EAST BOUND LANE US HIGHWAY 20 - 300' SOUTH OF SEIPPEL ROAD, ELEV. 766.73.

BENCH MARK NO. 7: 7" SPIKE IN CORNER POST - RIGHT OF WAY FENCE WEST SIDE OF US HIGHWAY 20 - 400' NORTH OF SEIPPEL ROAD, ELEV. 777.09.

ESTIMATED REVETMENT QUANTITIES

LOCATION	CLASS E REVETMENT (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
WEST ABUTMENT BERM	0	374	924	231
EAST ABUTMENT BERM	0	459	1132	283
TOTALS	0	833	2056	514

NOTES:
ALL UNITS ARE IN FEET UNLESS OTHERWISE NOTED.

TL-5 BRIDGE RAILING PROPOSED.

PIER TYPE - FRAME

BEAM TYPE - BTE

EROSION STONE IS EMBEDDED. SEE DETAIL ON DESIGN SHEET 3.

NOTE TO FINAL DESIGN: BID ITEM REFERENCE NOTES SHALL RESTRICT BROKEN CONCRETE AS A SUBSTITUTE FOR REVETMENT.

BRIDGE AESTHETICS TO BE INCORPORATED DURING FINAL DESIGN.

POINT OF MINIMUM VERTICAL CLEARANCE - US 20 WBL

SWA STA. 78+80.45, OFFSET 38.43' RT., ELEV. 791.78
SUPERSTRUCTURE DEPTH (DECK, HAUNCH, BEAM) 6.25'
US 20 WBL STA. 1220+93.87, OFFSET 0', ELEV. 767.90
MINIMUM VERTICAL CLEARANCE = 17.63' (PROVIDED)
MINIMUM VERTICAL CLEARANCE = 16.50' (REQUIRED)

POINT OF MINIMUM VERTICAL CLEARANCE - US 20 EBL

SWA STA. 79+54.60, OFFSET 38.43' RT., ELEV. 791.74
SUPERSTRUCTURE DEPTH (DECK, HAUNCH, BEAM) 6.25'
US 20 EBL STA. 1220+89.16, OFFSET 0', ELEV. 767.95
MINIMUM VERTICAL CLEARANCE = 17.54' (PROVIDED)
MINIMUM VERTICAL CLEARANCE = 16.50' (REQUIRED)

SITUATION PLAN

FOR INFORMATION ONLY

DESIGN FOR 0° SKEW

653'-0 x 76'-0 W/14'-0 TRAIL PPCB BRIDGE

111'-0 END SPANS 137'-0, 157'-0, 137'-0 INTERIOR SPANS

SITUATION PLAN

79+15.00 FEBRUARY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 3 FILE NO. 30467 DESIGN NO. 617

whks engineers + planners + land surveyors

DESIGN TEAM DT/MS/WB	DUBUQUE COUNTY	PROJECT NUMBER NHSX-032-1(42)--3H-31	SHEET NUMBER V.14

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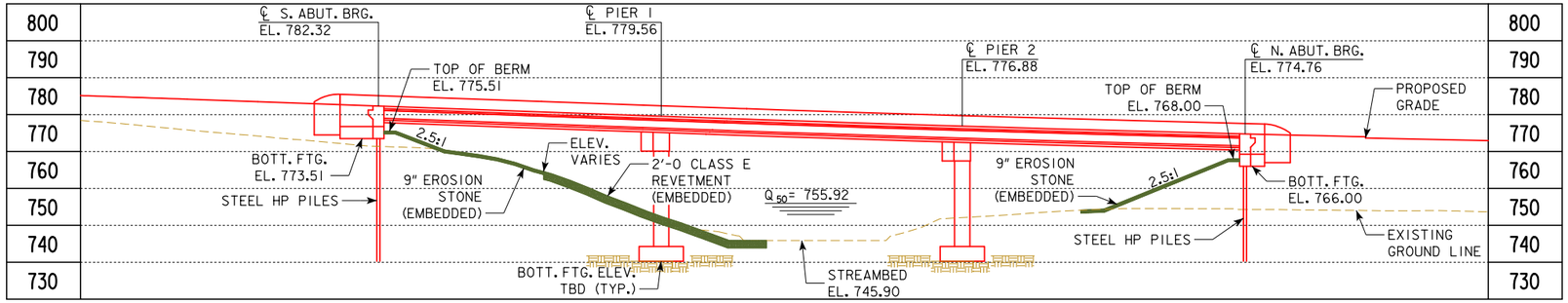
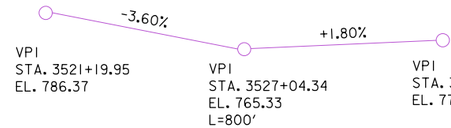


LONGITUDINAL SECTION ALONG ℄ U.S. 20 RAMP C

BENCH MARK NO. 5: 7" SPIKE IN POWER POLE - EAST SIDE OF US HIGHWAY 20 - 3RD POWER POLE NORTH OF COUSINS ROAD INTERSECTION AND SOUTH OF FIELD ENTRANCE, ELEV. 765.17.

BENCH MARK NO. 6: "X" CUT ON NORTH END CONCRETE BARRIER RAIL AT BRIDGE ON EAST BOUND LANE US HIGHWAY 20 - 300' SOUTH OF SEIPPEL ROAD, ELEV. 766.73.

BENCH MARK NO. 7: 7" SPIKE IN CORNER POST - RIGHT OF WAY FENCE WEST SIDE OF US HIGHWAY 20 - 400' NORTH OF SEIPPEL ROAD, ELEV. 777.09.



PROPOSED PROFILE GRADE ON ℄ U.S. 20 RAMP C

UTILITIES LEGEND:

NO KNOWN UTILITIES

TRAFFIC ESTIMATE

2035 AADT	6,930	V.P.D.
TRUCKS	10	%

ESTIMATED REVETMENT QUANTITIES

LOCATION	CLASS E REVETMENT (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
SOUTH ABUTMENT BERM	307	88	500	244
NORTH ABUTMENT BERM	0	88	216	54
TOTALS	307	176	716	298

HYDRAULIC DATA

DRAINAGE AREA = 10.9 SQ. MI.
STREAM SLOPE = 19 FT./MI.

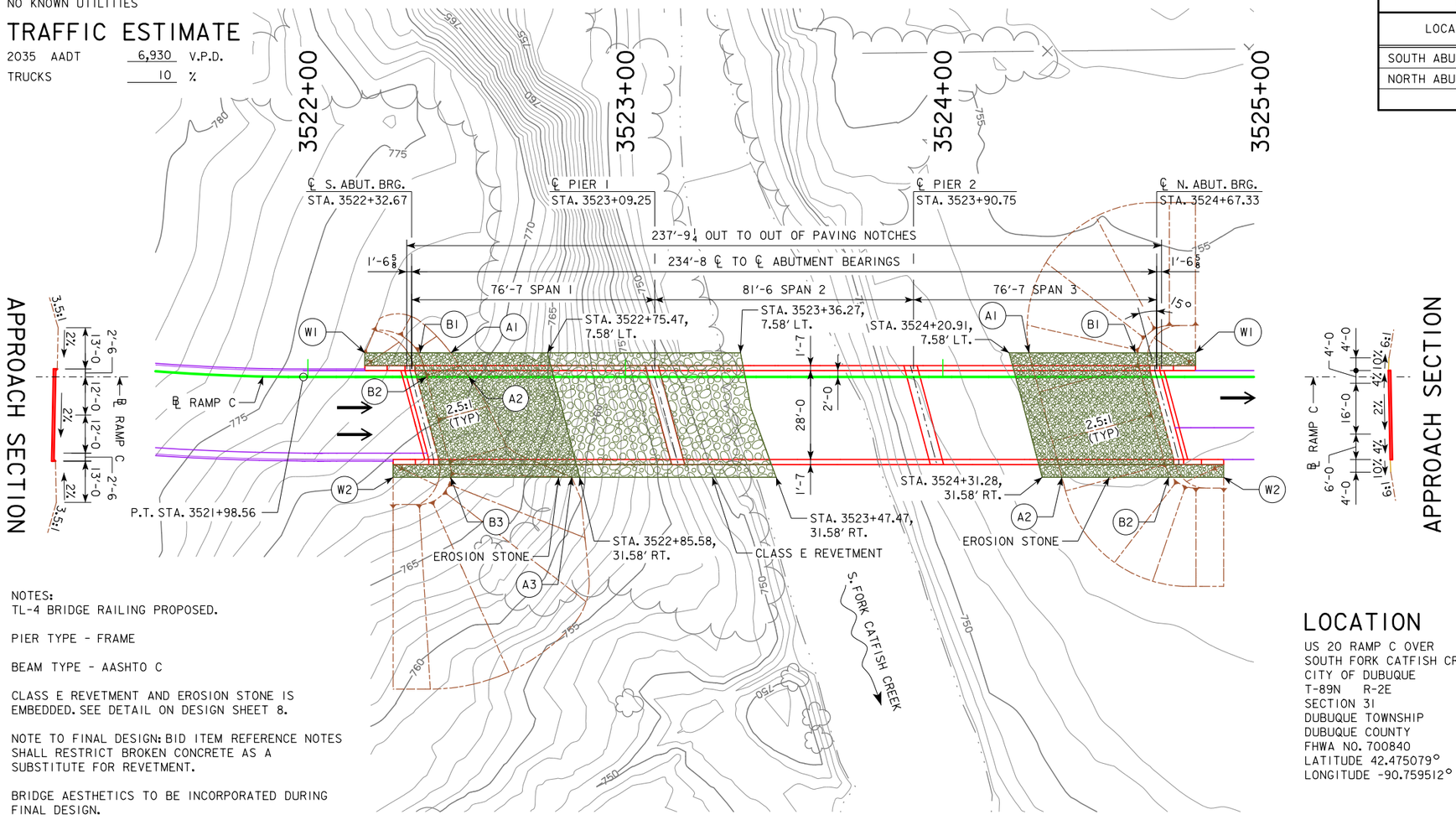
Q_{50} = 4,750 CFS
NATURAL STAGE = 755.92
BACKWATER = 0.62 FT.
AVE. BRIDGE VELOCITY = 6.2 FT./S
BRIDGE WATERWAY AREA = 763 SQ. FT.

Q_{100} = 6,080 CFS
NATURAL STAGE = 756.54
BACKWATER = 0.92 FT.
AVE. BRIDGE VELOCITY = 7.1 FT./S
BRIDGE WATERWAY AREA = 855 SQ. FT.

Q_{500} = 10,520 CFS
NATURAL STAGE = 758.15
BACKWATER = 2.12 FT.
AVE. BRIDGE VELOCITY = 9.3 FT./S
BRIDGE WATERWAY AREA = 1,132 SQ. FT.

AVERAGE LOW WATER STAGE APPROX. 749
NO OVERTOPPING
200 YR, 500 YR SCOUR = TOP OF COMPETENT ROCK

50, 100 AND 500 YEAR DISCHARGES FROM DUBUQUE COUNTY FIS DATED AUGUST 19, 2013.



SITUATION PLAN

LOCATION

US 20 RAMP C OVER
SOUTH FORK CATFISH CREEK
CITY OF DUBUQUE
T-89N R-2E
SECTION 31
DUBUQUE TOWNSHIP
DUBUQUE COUNTY
FHWA NO. 700840
LATITUDE 42.475079°
LONGITUDE -90.759512°

BERM SLOPE LOCATION TABLE

	SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV
A1	3522+46.26	6.58' LT	771.27	3524+27.12	6.58' LT	755.00
A2	3522+50.64	0	770.37	---	---	---
A3	3522+83.05	30.58' RT	761.00	3524+34.90	30.58' RT	754.00
B1	3522+36.52	6.58' LT	775.51	3524+61.87	6.58' LT	768.00
B2	3522+37.33	0	775.51	---	---	---
B3	3522+44.56	30.58' RT	775.51	3524+69.91	30.58' RT	768.00
W1	3522+17.94	6.58' LT	783.23	3524+79.61	6.58' LT	774.35
W2	3522+26.83	30.58' RT	782.35	3524+88.49	30.58' RT	773.57

NOTES:
TL-4 BRIDGE RAILING PROPOSED.

PIER TYPE - FRAME

BEAM TYPE - AASHTO C

CLASS E REVETMENT AND EROSION STONE IS EMBEDDED. SEE DETAIL ON DESIGN SHEET 8.

NOTE TO FINAL DESIGN: BID ITEM REFERENCE NOTES SHALL RESTRICT BROKEN CONCRETE AS A SUBSTITUTE FOR REVETMENT.

BRIDGE AESTHETICS TO BE INCORPORATED DURING FINAL DESIGN.

whks
engineers + planners + land surveyors

N

0 ENGLISH 40
SCALE IN FEET

FOR INFORMATION ONLY

DESIGN FOR 15° SKEW R.A.

234'-8 x 28'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

76'-7 END SPANS 81'-6 CENTER SPAN

SITUATION PLAN - RAMP C

STA. 3523+50.00 FEBRUARY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 2 FILE NO. 30467 DESIGN NO. 216

DESIGN TEAM DT/MS/WB | DUBUQUE COUNTY | PROJECT NUMBER NHSX-020-9(209)--3H-31 | SHEET NUMBER V.15

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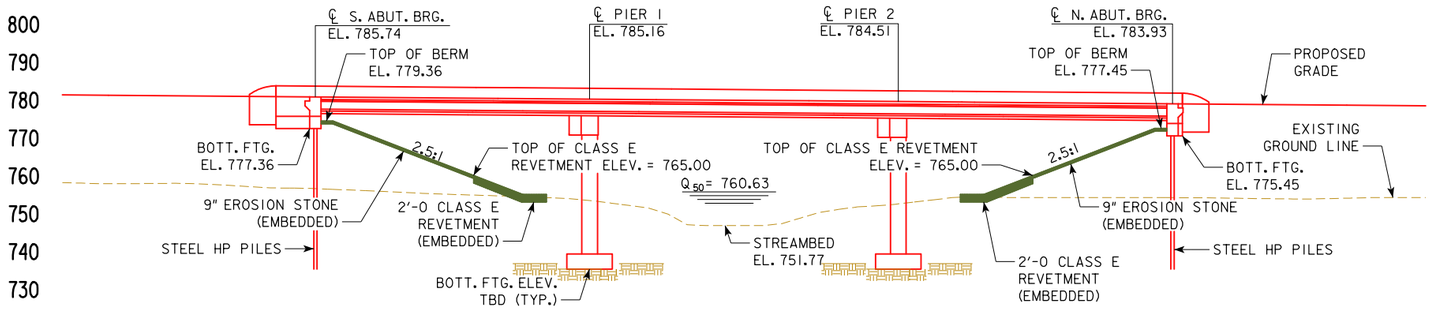
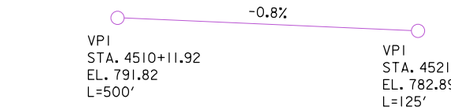


LONGITUDINAL SECTION ALONG ℄ U.S. 20 RAMP D

BENCH MARK NO. 5: 7" SPIKE IN POWER POLE - EAST SIDE OF US HIGHWAY 20 - 3RD POWER POLE NORTH OF COUSINS ROAD INTERSECTION AND SOUTH OF FIELD ENTRANCE, ELEV. 765.17.

BENCH MARK NO. 6: "X" CUT ON NORTH END CONCRETE BARRIER RAIL AT BRIDGE ON EAST BOUND LANE US HIGHWAY 20 - 300' SOUTH OF SEIPPEL ROAD, ELEV. 766.73.

BENCH MARK NO. 7: 7" SPIKE IN CORNER POST - RIGHT OF WAY FENCE WEST SIDE OF US HIGHWAY 20 - 400' NORTH OF SEIPPEL ROAD, ELEV. 777.09.



PROPOSED PROFILE GRADE ON ℄ U.S. 20 RAMP D

BERM SLOPE LOCATION TABLE

	SOUTH ABUTMENT			NORTH ABUTMENT		
	STATION	OFFSET	ELEV	STATION	OFFSET	ELEV
A1	4518+21.89	18.58' LT	759.95	4519+43.63	18.58' LT	759.95
A2	4518+31.34	18.58' RT	759.95	4519+53.05	18.58' RT	759.95
B1	4517+71.51	18.58' LT	779.36	4519+88.52	18.58' LT	777.45
B2	4517+81.47	18.58' RT	779.36	4519+98.49	18.58' RT	777.45
W1	4517+54.43	18.58' LT	785.45	4520+07.76	18.58' LT	783.42
W2	4517+62.24	18.58' RT	785.94	4520+15.57	18.58' RT	783.92

ESTIMATED REVETMENT QUANTITIES

LOCATION	CLASS E REVETMENT (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
SOUTH ABUTMENT BERM	437	73	585	315
NORTH ABUTMENT BERM	396	65	526	284
TOTALS	833	138	1111	599

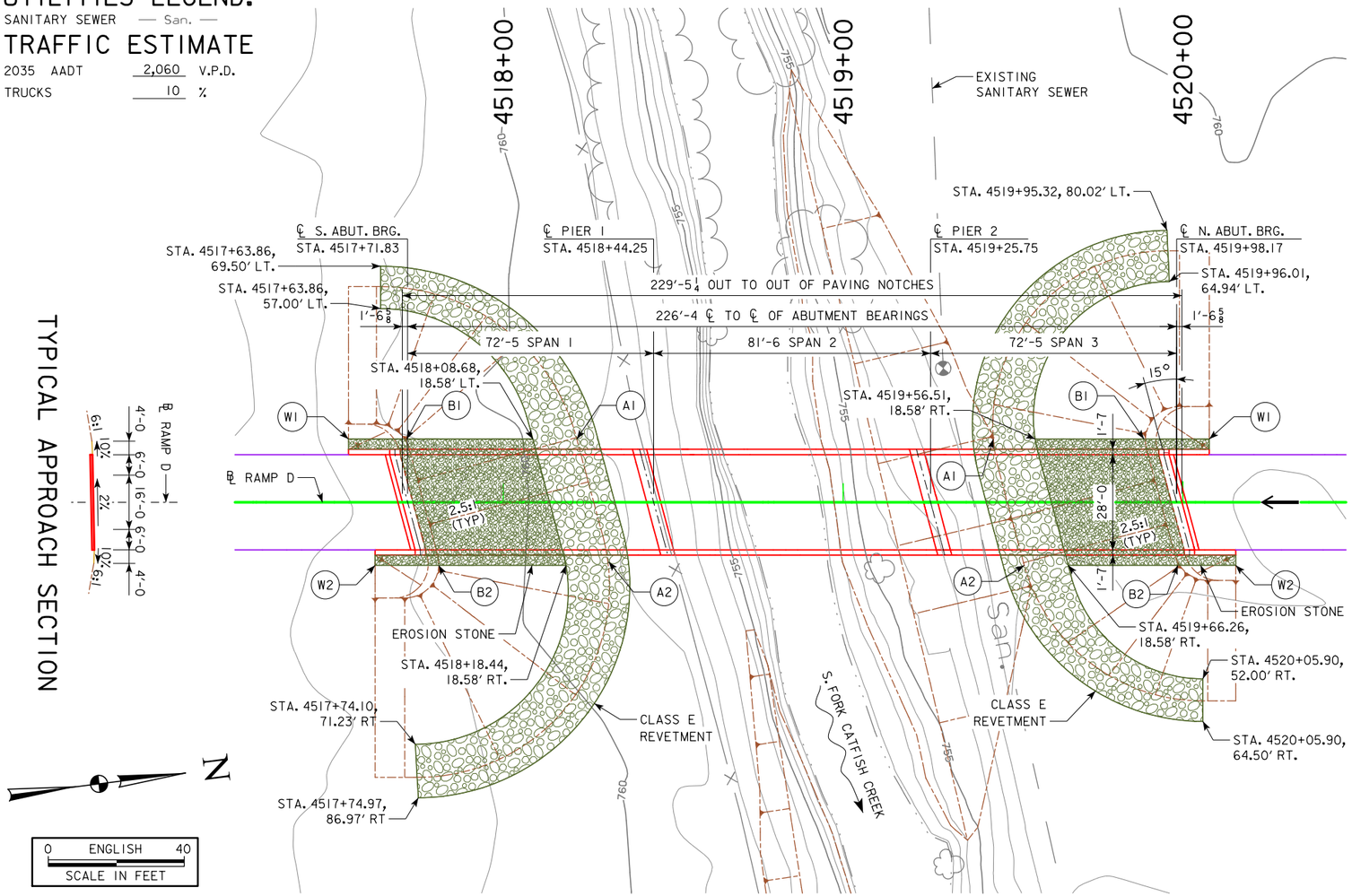
UTILITIES LEGEND:

SANITARY SEWER — San. —

TRAFFIC ESTIMATE

2035 AADT 2,060 V.P.D.

TRUCKS 10 %



TYPICAL APPROACH SECTION

N

0 ENGLISH 40
SCALE IN FEET

SITUATION PLAN

NOTES:
TL-4 BRIDGE RAILING PROPOSED.

PIER TYPE - FRAME

BEAM TYPE - AASHTO C

CLASS E REVETMENT AND EROSION STONE IS EMBEDDED. SEE DESIGN SHEET 8.

NOTE TO FINAL DESIGN: BID ITEM REFERENCE NOTES SHALL RESTRICT BROKEN CONCRETE AS A SUBSTITUTE FOR REVETMENT.

BRIDGE AESTHETICS TO BE INCORPORATED DURING FINAL DESIGN.

HYDRAULIC DATA

DRAINAGE AREA = 10.9 SQ. MI.
STREAM SLOPE = 19 FT./MI.

Q_{50} = 4,750 CFS
NATURAL STAGE = 760.59
BACKWATER = 0.82 FT.
AVE. BRIDGE VELOCITY = 7.4 FT./S
BRIDGE WATERWAY AREA = 639 SQ. FT.

Q_{100} = 6,080 CFS
NATURAL STAGE = 761.03
BACKWATER = 1.39 FT.
AVE. BRIDGE VELOCITY = 8.5 FT./S
BRIDGE WATERWAY AREA = 719 SQ. FT.

Q_{500} = 10,520 CFS
NATURAL STAGE = 762.20
BACKWATER = 3.32 FT.
AVE. BRIDGE VELOCITY = 10.0 FT./S
BRIDGE WATERWAY AREA = 1,054 SQ. FT.

AVERAGE LOW WATER STAGE APPROX. 752
NO OVERTOPPING
200 YR, 500 YR SCOUR = TOP OF COMPETENT ROCK

50, 100 AND 500 YEAR DISCHARGES FROM DUBUQUE COUNTY FIS DATED AUGUST 19, 2013.

LOCATION

US 20 RAMP D OVER
SOUTH FORK CATFISH CREEK
CITY OF DUBUQUE
T-89N R-2E
SECTION 31
DUBUQUE TOWNSHIP
DUBUQUE COUNTY
FHWA NO. 700845
LATITUDE 42.474849°
LONGITUDE -90.763518°

FOR INFORMATION ONLY

DESIGN FOR 15° SKEW R.A.

226'-4 x 28'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

72'-5 END SPANS 81'-6 CENTER SPAN

SITUATION PLAN - RAMP D

STA. 4518+85.00 FEBRUARY, 2016

DUBUQUE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 2 FILE NO. 30467 DESIGN NO. 116

whks
engineers + planners + land surveyors

DESIGN TEAM DT/MS/WB | DUBUQUE COUNTY | PROJECT NUMBER NHSX-020-9(209)--3H-31 | SHEET NUMBER V.16

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