LETTING DATE 12/19/17

WOODBURY Co. BRIDGE AND APPROACHES - PPCB BRFN-141-1(38)--39-97

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
A.2	Location Map Sheet
B Sheets	**Typical Cross Sections and Details**
B.1 - 7	Typical Cross Sections and Details
C Sheets	**Quantities and General Information**
C.1	Tabulations (beg. with tab. of incidentals if needed)
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	IA 141 Plan and Profile
DER	**Erosion Control Plan and Profile Sheets**
* DER.1	"Side Road Name"
G Sheets	**Survey Sheets**
G.1	Survey Information
G.2	Reference Ties and Benchmarks
G.3	Alignment Coordinates and Vertical Control
G.4	Circular Curve Data
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan
J.1	Staging Notes Stage
J.1	Tabulation of Coordinated Operations
J.2	Traffic Control & Staging Legend & Symbol Info. Sheet
* J.3 - 5	Typical Staging Cross-Sections
V Sheets	**Bridge and Culvert Situation Plans**
V.1 - 6	Bridge and Culvert Situation Plans
W Sheets	**Mainline Cross Sections**
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 16	Mainline Cross Sections
	* Color Plan Sheets

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

WOODBURY COUNTY

BRIDGE AND APPROACHES - PPCB

IA 141 BRIDGE OVER GARRETSON DITCH
6.4 MILES EAST OF I-29

SCALES: As Noted

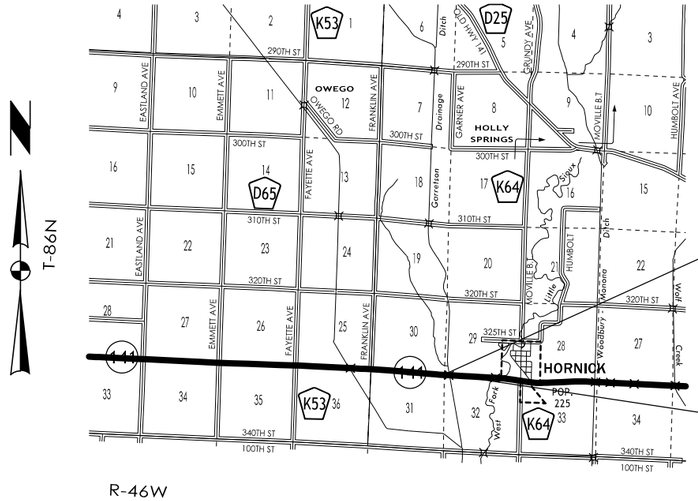
Refer to the Proposal Form for list of applicable specifications.

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

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

REVISIONS

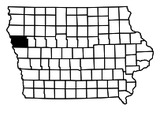
TOTAL 44
PROJECT IDENTIFICATION NUMBER
13-97-141-020
PROJECT NUMBER
BRFN-141-1(38)--39-97
R.O.W. PROJECT NUMBER
BRFN-141-1(39)--2J-97



STA. 494+00.00
BEGIN PROJECT
M.P. 6.40

For Project Location Map
Refer to Sheet A.2

STA. 504+25.00
END PROJECT



LOCATION MAP SCALE
0 1 2 3
Miles

DESIGN DATA RURAL		
2018 AADT	1800	V.P.D.
2038 AADT	2000	V.P.D.
2038 DHV	200	V.P.H.
TRUCKS	16	%
Total Design ESALs	--	

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	BRIAN T. HIGGINBOTHAM	Primary Signature Block
X	X	X

PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN – Date: 3/4/16

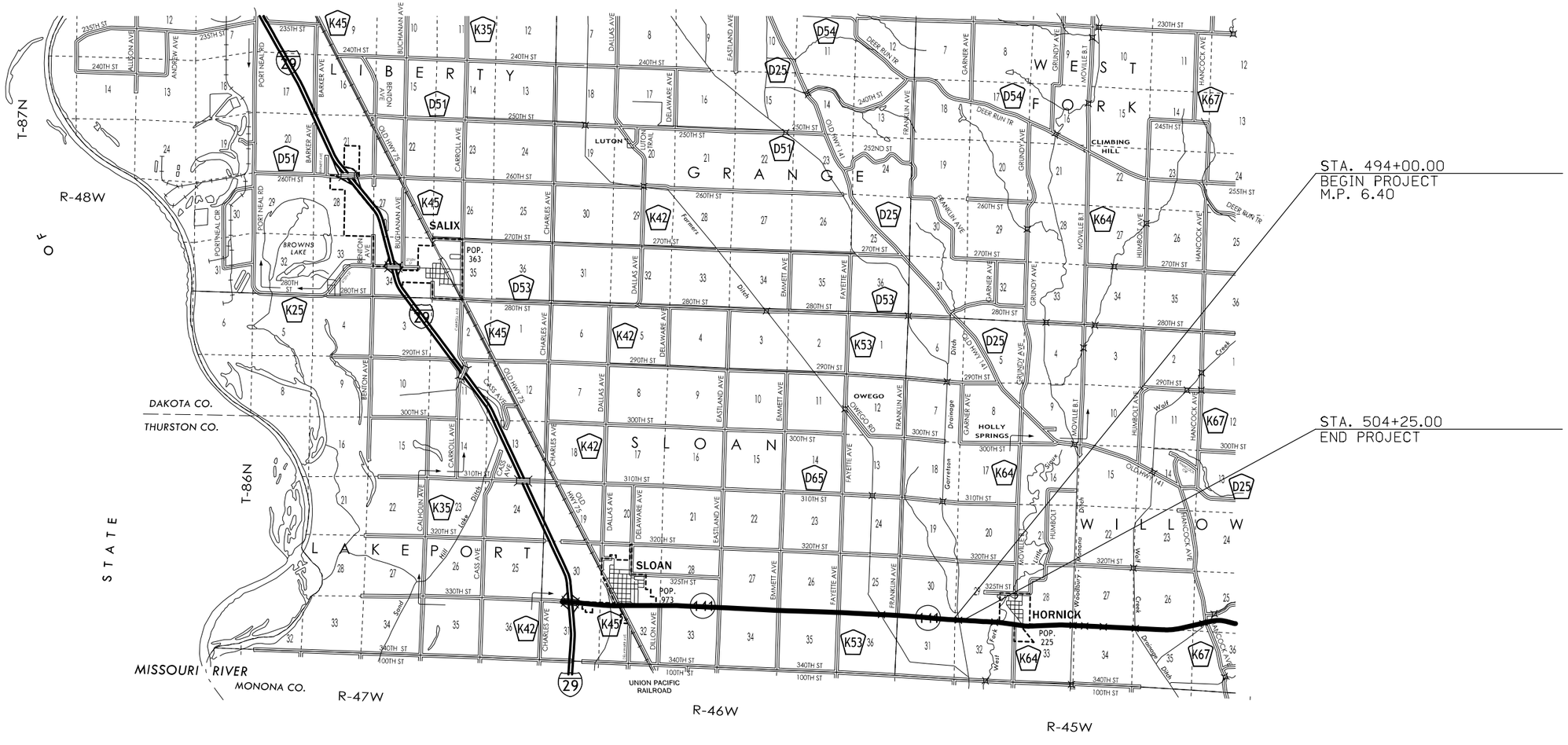
FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER A.1

3:59:47 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038a01.sht

MILEAGE SUMMARY

105-1
09-27-94

Div.	Location	Lin. Ft.	Miles
	Sta. 494+00.00 to 504+25.00	1025.00	0.194
	Deduct Bridge at Sta. 497+87.78	134.21	0.025
	Total Length of Rdwy in Project	890.79	0.169
	Total Length of Bridge in Project	134.21	0.025
	Total Length of Project	1025.00	0.194

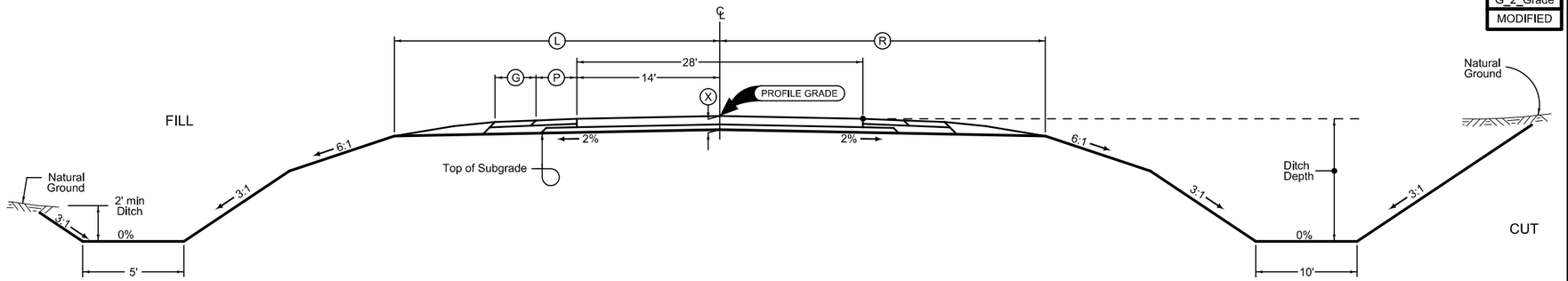


FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER A.2

3:59:48 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038a01.sht

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	FS
IA 141	494+00.00	497+82.46				
IA 141	499+19.54	504+25.00				

G_2_Grade
MODIFIED



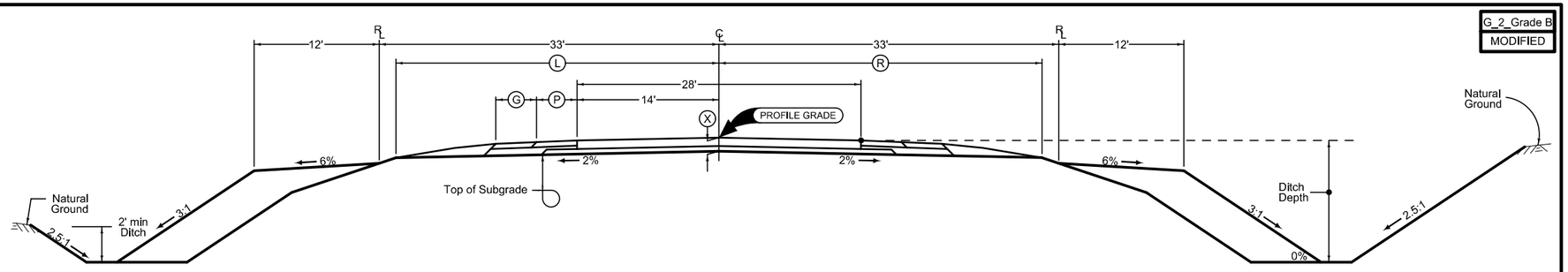
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

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

2 LANE GRADING

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	FS
SR SW	496+17.85	497+40.85				
SR NW	496+32.69	497+33.66				
SR NE	499+44.63	500+84.15				
SR SE	499+98.12	500+69.31				

G_2_Grade B
MODIFIED



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

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

LEVEE ACCESS ROAD GRADING

FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER B.1

2:10:13 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038b01.sht

Granular Shoulder with Safety Edge

2_G_L MODIFIED		
STATION TO STATION		Ⓖ Feet
494+00.00	496+00.69	8
496+0.69	496+08.69	8-4
496+08.69	496+47.69	4
500+69.15	501+08.15	4
501+08.15	501+16.15	4-8
501+16.15	502+75.00	8
502+75.00	502+83.00	8-4
502+83.00	503+43.00	4
503+43.00	503+51.00	4-8
503+51.00	504+25.00	8

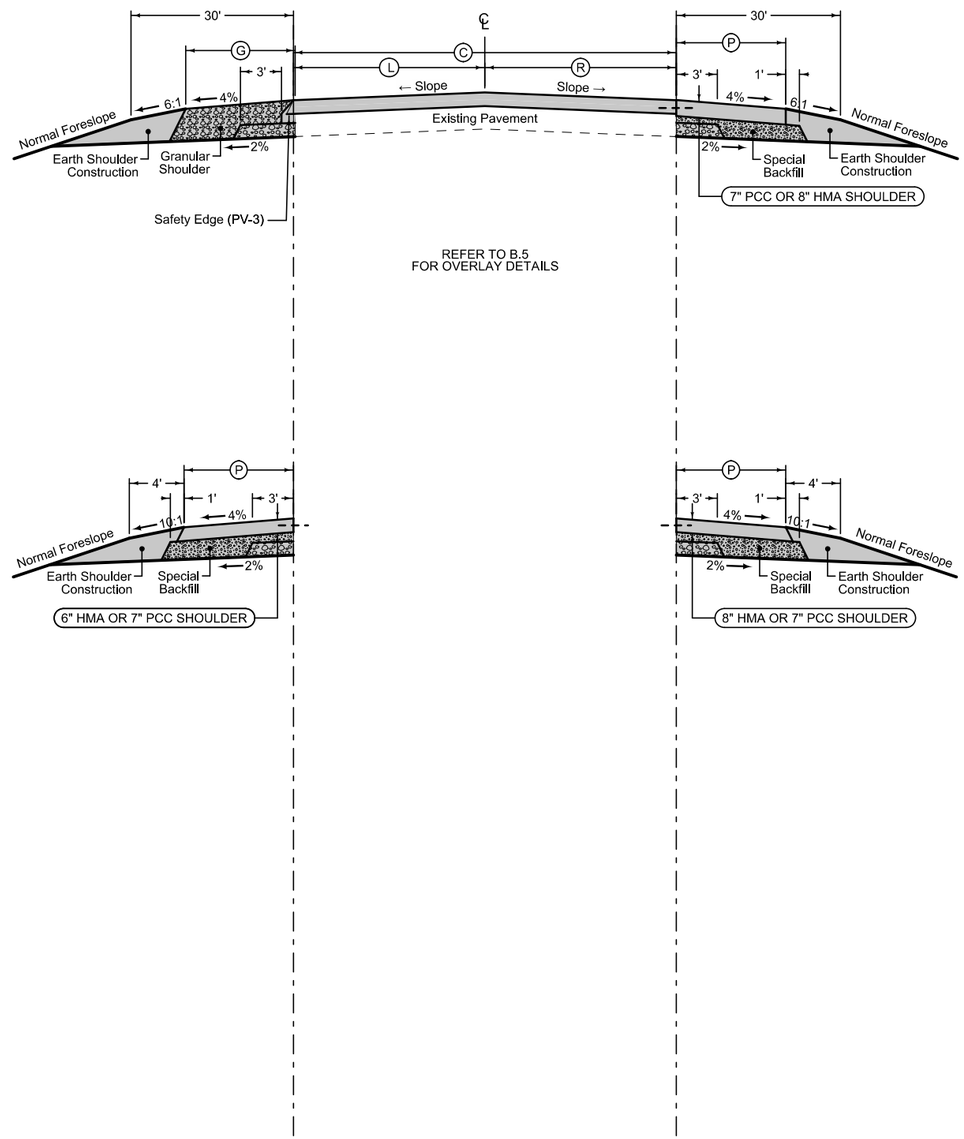
Paved Shoulder at Guardrail

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

2_P_Guard_L MODIFIED		
STATION TO STATION		Ⓟ Feet
496+47.69	496+79.39	11.13
496+79.39	497+17.62	11.13-9.63
497+17.62	497+62.38	9.63
499+39.62	499+99.22	9.63
499+99.22	500+36.62	9.63-11.13
500+36.62	500+69.15	11.13

Match LIne

Match LIne



Paved Shoulder Alternates

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

2_P_ALT_ 10-21-14		
STATION TO STATION		Ⓟ Feet
494+00.00	496+32.85	8
500+54.31	504+25.00	8

Paved Shoulder at Guardrail

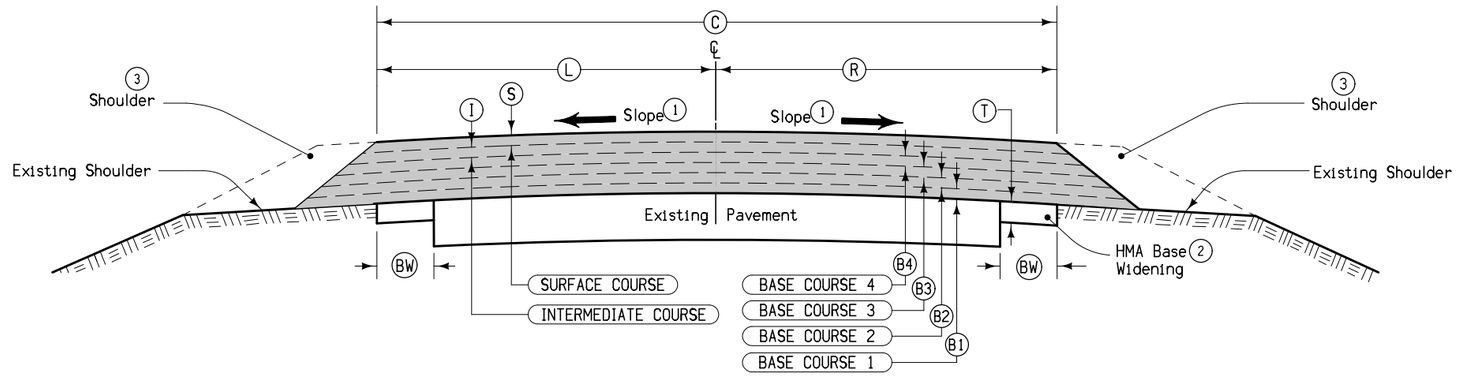
PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at 20' spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_R MODIFIED		
STATION TO STATION		Ⓟ Feet
496+32.85	496+65.38	11.13
496+65.38	497+02.78	11.13-9.63
497+02.78	497+62.38	9.63
499+39.62	499+84.38	9.63
499+84.38	500+21.78	9.63-11.13
500+21.78	500+54.31	11.13

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

IA 141 MAINLINE PAVING

2617
MODIFIED



1. Match finished slope to existing pavement, except that the maximum allowable slope is 3.0%, minimum allowable slope is 2.0%. Section may be modified as directed by the Engineer through areas of special shaping.

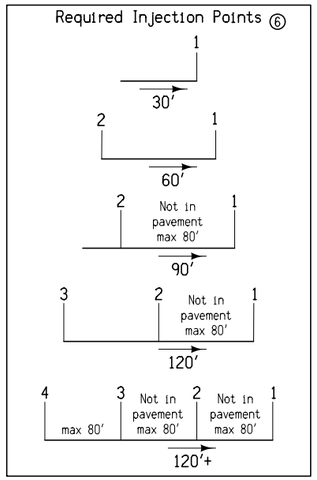
   Refer to tabulation listing of superelevated curves and Standard Road Plans for additional requirements through superelevated curves.

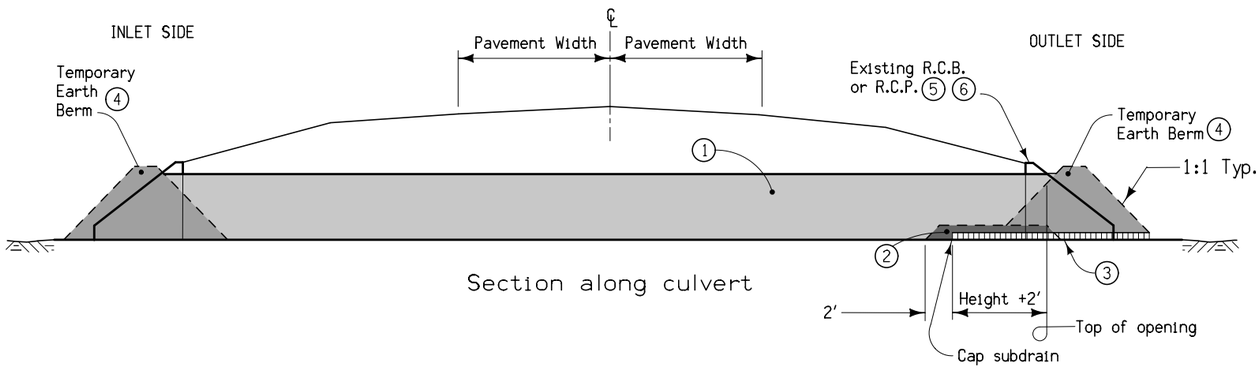
2. Base Widening quantities are not included with Resurfacing quantities, see Standard Road Plan PV-203.

3. Refer to B4 for shoulder typicals.

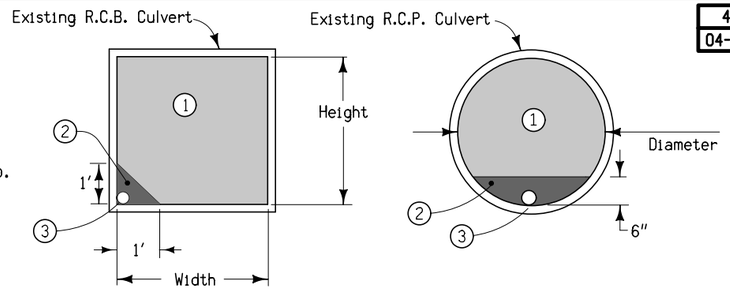
TYPICAL CROSS SECTION
HMA RESURFACING WITH BASE WIDENING

Location			B1	B2	B3	B4	S	I	C	L	R	T	BW	Remarks
Road Identification	Station To Station		Inches	Inches	Inches	Inches	Inches	Inches	Feet	Feet	Feet	Inches	Feet	
IA 141	496+45.06	497+12.38	0-3.1						28	14	14	8	2	
IA 141	499+89.62	501+86.69	3.4-0						28	14	14	8	2	
IA 141	495+19.27	496+45.06		0-3.1					28	14	14	8	2	
IA 141	496+45.06	497+12.38		3.1					28	14	14	8	2	
IA 141	499+89.62	501+86.69		3.4					28	14	14	8	2	
IA 141	501+86.69	502+49.86		3.4-0					28	14	14	8	2	
IA 141	499+89.62	502+49.86			3				28	14	14	8	2	
IA 141	502+49.86	502+99.23			3.0-0				28	14	14	8	2	
IA 141	499+89.62	502+99.23				3			28	14	14	8	2	
IA 141	502+99.23	503+47.69				3.0-0			28	14	14	8	2	
IA 141	494+45.00	495+19.27						0-3.0	28	14	14	8	2	
IA 141	495+19.27	497+12.38						3	28	14	14	8	2	
IA 141	499+89.62	503+47.69						3	28	14	14	8	2	
IA 141	503+47.69	503+88.12						3.0-0	28	14	14	8	2	
IA 141	494+00.00	497+12.38					3		28	14	14	8	2	
IA 141	499+89.62	504+25.00					3		28	14	14	8	2	





Section along culvert

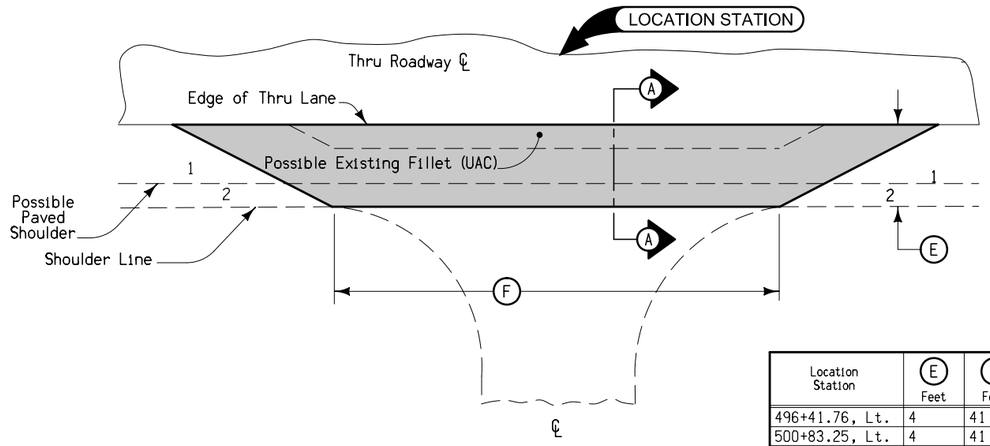


Section thru culvert

① Flowable Mortar.
② Granular Backfill.
③ 4″ subdrain at flowline elevation of culvert shall be extended into the culvert a distance of 2′ plus the height of the culvert. Granular Backfill covers subdrain and extends an additional 2′. Subdrain and granular backfill are incidental to flowable mortar.
④ Ends of culvert shall be plugged sufficiently to retain flowable mortar. Temporary earth berms are incidental to flowable mortar.
⑤ Removal of headwalls may be required.
⑥ Outlet shall be filled first. See injection point detail for additional information.

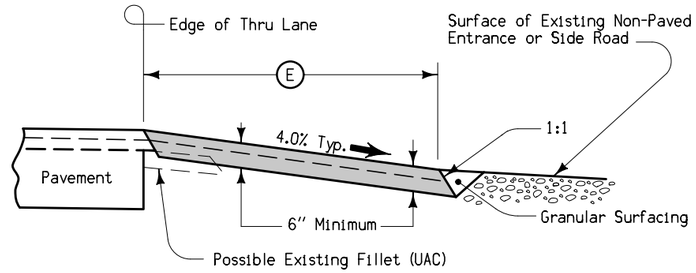
DETAILS OF CULVERT ABANDONMENT WITH FLOWABLE MORTAR
(Rectangular structures less than 8′ in either height or width. Circular structures less than 10′ Dia.)

7148
MODIFIED



PLAN

Location Station	E Feet	F Feet
496+41.76, Lt.	4	41
500+83.25, Lt.	4	41
503+12.82, Lt.	4	60

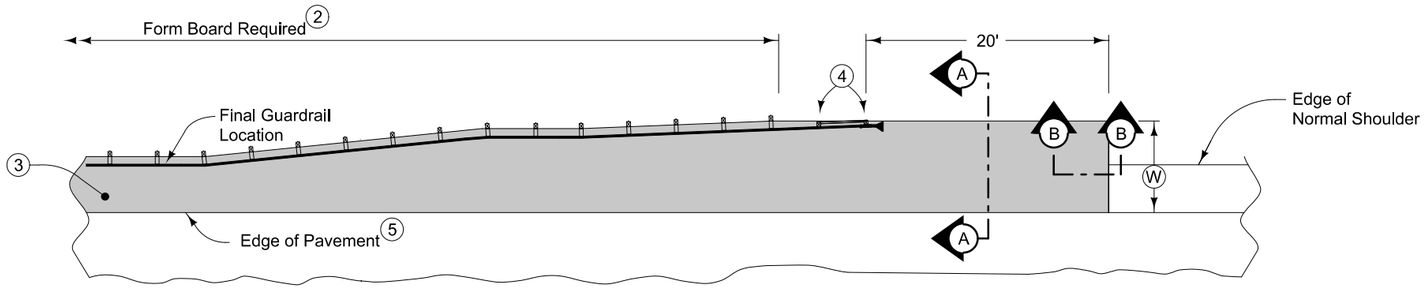


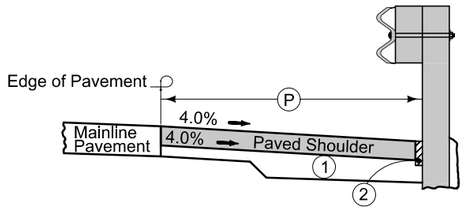
SECTION A-A

Special shaping of existing surface prior to placement of fillet may be required by the Engineer and is incidental to other work on the project.

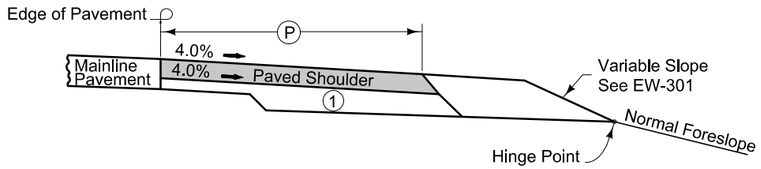
Quantites included with mainline quantities.

FILLET FOR NON-PAVED ENTRANCES OR SIDE ROADS

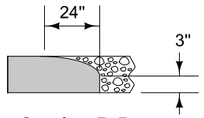




Typical Section with Form Board



Section A-A



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

6" HMA Paved Shoulder at guardrail. 7" PCC may be substituted with the following jointing layout:

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

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

Refer to Shoulder tabulation (112-9) for quantities.

(1) 6" subgrade treatment.

(2) When guardrail posts are installed prior to construction of paved shoulder, nail 1" x 6" untreated form boards along the face of guardrail posts for the length shown. This board is to prevent shoulder material from contacting the sides of the posts and altering the function of the guardrail. Form board not required for final 2 posts.

(3) Continue paved shoulder to existing paved shoulder or 20' beyond the end of guardrail.

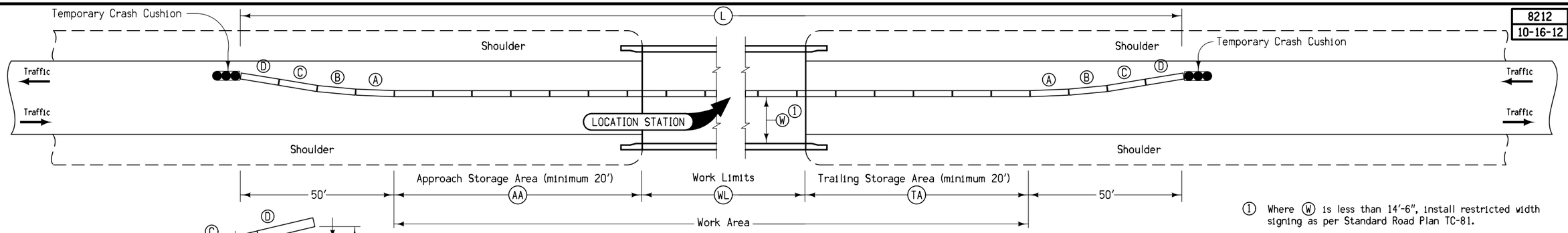
(4) Shoulder may be notched for final 2 posts or post sleeves may be installed through pavement.

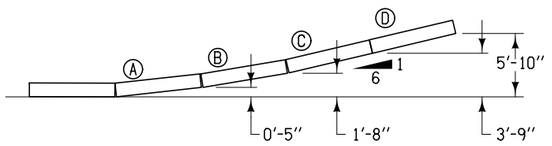
(5) 'KT-1' joint for PCC shoulder.
'B' joint for HMA shoulder.

PAVED SHOULDER AT GUARDRAIL

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

ROADWAY IDENTIFICATION





BARRIER OFFSETS FOR FLARE SECTIONS

Station	Side	AA	WL	TA	L	Anchored	W ①	Remarks
		Feet	Feet	Feet	Feet	X	Ft-Inches	
499+12.5	LT	20	1025	20	1165	X	15.3	STAGE 2
499+12.5	RT	20	1025	20	1165	X	11.3	STAGE 3

① Where W is less than 14'-6", install restricted width signing as per Standard Road Plan TC-81.

TEMPORARY CONCRETE BARRIER LAYOUT for Two-Way Traffic

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 FOR DITCH CHECKS	3620		
	SILT BASIN	1637		
	TOTAL	5257	2232	NW DITCH W/ STAGING
2	SILT FENCE FOR DITCH CHECKS	5924		
	SILT BASIN	1552		
	TOTAL	7476	2340	SW DITCH W/ STAGING
3	SILT FENCE FOR DITCH CHECKS	7082		
	SILT BASIN	728		
	TOTAL	7810	2916	NE DITCH W/ STAGING
4	SILT BASIN	1761		
	TOTAL	1761	1692	SE DITCH W/ STAGING
5	SILT FENCE FOR DITCH CHECKS	11494		
	TOTAL	11494	288	SE DTICH FLOWING EAST

100-34
04-19-16

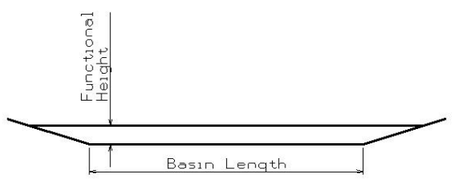
STORMWATER DRAINAGE BASIN

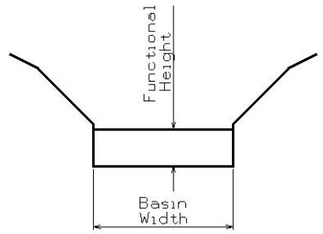
Basin No.	Station to Station		Side	Disturbed Area Acres	Discharge Point Station	Discharge Point Side	Required Storage Volume CF	Remarks
1	494+00.00	497+81.95	LT	0.5	495+86.43	LT	1944.0	NW DITCH
1	497+12.38	497+87.90	LT	0.1	497+87.90	LT	288.0	NW POSSIBLE STAGING AREA
				0.6			2232.0	TOTAL
2	494+00.00	497+92.11	RT	0.5	496+27.23	RT	1836.0	SW DITCH
2	497+24.96	498+12.00	RT	0.1	497+24.96	RT	504.0	SW POSSIBLE STAGING AREA
				0.7			2340.0	TOTAL
3	498+96.03	499+50.00	LT	0.1	499+50.00	LT	180.0	NE POSSIBLE STAGING AREA
3	499+18.06	504+25.00	LT	0.8	500+86.93	LT	2736.0	NE DITCH
				0.8			2916.0	TOTAL
4	499+21.89	500+37.51	RT	0.1	500+37.51	RT	288.0	SE POSSIBLE STAGING AREA
4	499+24.62	503+46.00	RT	0.4	500+50.00	RT	1404.0	SE DITCH FLOWING WEST
				0.5			1692.0	TOTAL
5	503+46.00	504+25.00	RT	0.1	504+25.00	RT	288.0	SE DITCH FLOWING EAST

100-14
04-19-16

SILT BASINS

Possible Standard: EW-403





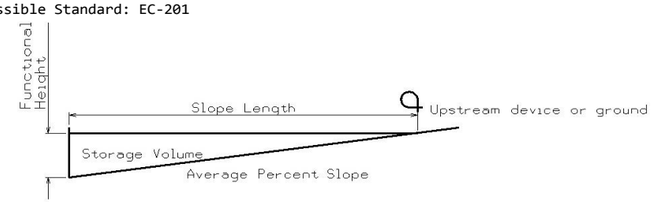
* The functional height used in the volume equation is 3 feet as shown on EW-403. A 15% reduction in storage volume per average % slope is
* Volume equation: (Width*Length*Height)-(Width*Length*Height*0.15*Avg.%Slope*100)

Basin No.	Location Station	Location Side	Bid Items Installation EACH	Bid Items Removal EACH	Stormwater Storage Volume Summary Basin Width FT	Basin Length FT	Height FT	Avg. % Slope	Volume* CF	Remarks
1	495+00.00	LT	1	1	5.0	75.0	4.50	0.2%	1636.88	NW DITCH
2	495+85.55	RT	1	1	10.0	40.0	4.00	0.2%	1552.00	SW DITCH
3	501+00.11	LT	1	1	5.0	50.0	3.00	0.2%	727.50	NE DITCH
4	500+50.00	RT	1	1	10.0	50.0	4.50	1.5%	1760.63	SE DITCH

100-18
04-19-16

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: [(FS*H^3)+(2*DW*H^2)+(BS*H^3)]/(4*Avg%Slope)

Basin No.	Location Station	Location Side	Bid Items Installation LF	Bid Items Maintenance LF	Bid Items Removal LF	Stormwater Storage Volume Summary Foreslope FS:1	Backslope BS:1	Ditch Width FT	Avg. % Slope	Volume* CF	Remarks
1	495+25.00	LT	11.0			1.0	3.0	5.0	0.2%	3482.92	NW DITCH
1	496+00.00	LT	12.0			3.0	3.0	0.0	2.7%	137.10	NW LEVEE
2	495+08.78	RT	16.0			1.0	3.0	10.0	0.2%	5747.00	SW DITCH
2	496+32.85	RT	12.0			3.0	3.0	0.0	2.1%	177.50	SW LEVEE
3	500+75.00	LT	8.0			3.0	3.0	0.0	3.1%	116.19	NE LEVEE
3	501+44.75	LT	11.0			1.0	3.0	5.0	0.2%	3482.92	NE DITCH
3	503+43.71	LT	11.0			1.0	3.0	5.0	0.2%	3482.92	NE DTICH
5	504+25.00	RT	16.0			1.0	3.0	10.0	0.1%	11494.00	SE DITCH EAST

SURVEY SYMBOLS

- BRG Bridge
- Midamerican Energy (QLA)
- TP TPD Telephone Pedestal
- GDL Guard Rail Steel
- MIS Miscellaneous
- PIP Pipe Culvert
- TEV Evergeen Tree
- SEP Septic Tank
- BLD Building or Foundation
- TDC Tree Deciduous
- LIN Miscellaneous Line
- BLS Bridge Low Steel
- TOP Top of Bridge Pier
- EP Edge of Paved Roads (ML or SR)
- SNP Unpaved Shoulder
- CON Concrete or A/C Slab
- DU Centerline Draw or Stream (Up)
- D Centerline Draw or Stream (Down)
- ENU Edge Unpaved Entrance & Parking
- ENT Centerline BL of Entrance
- BNK Stream Bank
- EW Edge of Water
- SP Stream Profile
- FO Western Iowa Telephone (QLD)
- T1 Western Iowa Telephone (QLD)
- BD Bridge Deck
- BCL Bridge Centerline
- SBR Size of Bridge
- TW Top of Water
- PRO Profile Shot
- SOP Size of Pipe or Culvert
- BL Topo Breakline

UTILITY LEGEND

Midamerican Energy (QLA)
Tony Bengford
712-233-4823
APBengford@midamerican.com

TP Western Iowa Telephone
Phil Robinson
712-944-5711
Phil.robinson@wiatel.com

FO Western Iowa Telephone
Phil Robinson
712-944-5711
Phil.robinson@wiatel.com

T1 Western Iowa Telephone
Phil Robinson
712-944-5711
Phil.robinson@wiatel.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 "In conjunction with a paving project"
Brown, Light	(236)	Grading Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Ground Line Profile
Blue	(1)	Proposed Profile and Annotation
Magenta	(5)	Existing Utilities
Blue, Light	(230)	Proposed Ditch Grades, Left
Black	(0)	Proposed Ditch Grades, Median
Rust	(14)	Proposed Ditch Grades, Right

- Reference Point — Survey Line
- Station — Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

RIGHT-OF-WAY LEGEND

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

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER D.1

8:41:37 AM 3/3/2016 mps W:\Projects\9714102013\Design\97141038lgd.sht

Curve Data
Δ = 1° 29' 17.18" (LT)
T = 300.00
L = 599.97
R = 23,100.21
E = 1.95

Sta. 494+00.00
Begin Project

Sect. No. 30

PT Sta 493+87.77

495

Sta. (10+50.00) 495+86.43, 79.19 LT
Build 36" X 122' C.M.P. DR-104
W/ 1 Apron LT
Skew = 85.4° Skew Lt. ,Ahd.
F.L. = Lt. 1056.06
Rt. 1055.15
Sta. (10+50.00) 497+13.28, 69.07 LT.
Jack 36" X 104' RCP 2000D
W/ 1 Flap Gate
Skew = 85.4° Skew Lt. ,Ahd.
F.L. = Lt. 1055.15
Rt. 1054.41

Sta. 498+55.12
120 X 26 Cont. I-Beam Brg.
DA= NA, F
(Remove)

Proposed Bridge
Sta. 498+51.00
134'-0 X 44'-0 PPCB
Skew 13° R.A.
Design No. 1917

497+15.32, 73.66 Lt.
36" X 96.8 C.M.P.
W/ Flapper Gate
(Plug and Abandon)

499+49.60, 77.95 Lt.
24" X 86.9 C.M.P.
W/ Flapper Gate
(Plug and Abandon)

500

Sta. (30+50.00) 500+86.93, 81.04 LT
Build 24" X 106 C.M.P DR-104
w/ 1 Apron
Skew = 96.8° Skew Lt. ,Ahd.
F.L. = Lt. 1055.40
Rt. 1056.19
Sta. (30+50.00) 499+78.19, 68.12 LT
Jack 24" X 114' RCP 3000D
w/ 1 Flap Gate
Skew = 96.8° Skew Lt. ,Ahd.
F.L. = Lt. 1054.57
Rt. 1055.40

Sta. 503+13.00 72.26 LT
Build 24" X 52 C.M.P DR-104
w/ 2 Aprons
Skew = 89.5° Skew Rt. ,Ahd.
F.L. = Lt. 1056.56
Rt. 1056.68

505

HSE.

Sta. 504+25.00
End Project

24" X 42.8 C.M.P.
(REMOVE)

Prop. Type "C" Ent.
STA. 503+13.00

IA 141 (ML 141)

PI Sta 490+87.81

ROW

Prop. Type "C" Ent.
STA. 495+45.00

Prop. Type "C" Ent.
STA. 503+56.00

497+44.42, 72.14 Rt.
24" X 95.7 C.M.P.
W/ Flapper Gate
(Plug and Abandon)

Ground Intercept

24" X 43.0 Conc Pipe
(REMOVE)

Sta. (20+50.00) 496+27.23, 79.58 RT
Build 24" X 92' C.M.P DR-104
W/ 1 Apron
Skew = 96.96° Skew Lt. ,Ahd.
F.L. = Lt. 1057.80
Rt. 1055.93
Sta. (20+50.00) 497+22.00, 68.00 RT
Jack 24" X 124' RCP 3000D
W/ 1 Flap Gate
Skew = 96.96° Skew Lt. ,Ahd.
F.L. = Lt. 1055.93
Rt. 1053.50

500+08.89, 150.63 Rt.
30" X 92.8 C.M.P.
W/ Flapper Gate
(U.A.C.)

GARRISON DITCH

Easement for Temp. Erosion Control
(Temp. Silt Basin)

Willow TWP.
T-86N R-45W
SEC. 29

Sta. 495+45.00 75.34 RT
Build 24" X 56' C.M.P DR-104
Skew = 87.4° Skew Lt. ,Ahd.
F.L. = Lt. 1058.00
Rt. 1057.90

Sect. No. 31

Sect. No. 32

0 50
FEET

IA 141

VPI +00.000
Elv 1,077.06
K = 179
Len 600.00 ft

+1.600%
-1.759%

Sta. 494+00.00
Begin Project
1,069.06

Sta. 504+25.00
End Project
1,067.82

Proposed Profile
Existing Groundline
Proposed Field Entrance
Proposed Residential Entrance

+25 RT.
1057.84
+25 RT
1059.90
+25 LT
1060.06
+50 LT
1060.91
+00 LT
1056.19
+25 LT
1056.84
+00 RT.
1058.29
+00 LT
1056.41
+75 LT
1056.06

-0.200%
-0.200%
+2.667%
+2.060%
-3.147%
+0.200%

Lt	U.A.C.		+00	Ditch Grade	+75	Ditch Grade	+25	U.A.C.	+76.9	Bridge	U.A.C. +19.1	+50	Ditch Grade	+00	Ditch Grade	+25	U.A.C.
Rt	U.A.C.		+00	Ditch Grade		Ditch Grade	+25	U.A.C.	+76.9	Bridge	+19.1				U.A.C.		+25	U.A.C.

1,069.06	1,069.46	1,069.86	1,070.26	1,070.66	1,071.06	1,071.46	1,071.86	1,072.26	1,072.64	1,072.99	1,073.30	1,073.58	1,073.82	1,074.03	1,074.20	1,074.34	1,074.44	1,074.51	1,074.54	1,074.54	1,074.50	1,074.43	1,074.32	1,074.18	1,074.00	1,073.79	1,073.54	1,073.26	1,072.94	1,072.59	1,072.20	1,071.78	1,071.34	1,070.90	1,070.46	1,070.02	1,069.58	1,069.14	1,068.70	1,068.26	1,067.82
492	493	494	495	496	497	498	499	500	501	502	503	504	505																												

FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER D.2

8:34:05 AM 3/4/2016 mps W:\Projects\9714102013\Design\97141038D2.dgn

Curve Data
Δ = 1° 29' 17.18" (LT)
T = 300.00
L = 599.97
R = 23,100.21
E = 1.95

Sta. 494+00.00
Begin Project

Sect. No. 30

PT Sta 493+87.77

PI Sta 490+87.81

IA 141 (ML 141)

ROW

Sta. (10+50.00) 495+86.43, 79.19 LT
Build 36" X 122' C.M.P. DR-104
W/ 1 Apron LT
Skew = 85.4° Skew Lt. ,Ahd.
F.L. = Lt. 1056.06
Rt. 1055.15
Sta. (10+50.00) 497+13.28, 69.07 LT.
Jack 36" X 104' RCP 2000D
W/ 1 Flap Gate
Skew = 85.4° Skew Lt. ,Ahd.
F.L. = Lt. 1055.15
Rt. 1054.41

Sta. 498+55.12
120 X 26 Cont. I-Beam Brg.
DA= NA, F
(Remove)

Proposed Bridge
Sta. 498+51.00
134'-0 X 44'-0 PPCB
Skew 13° R.A.
Design No. 1917

497+15.32, 73.66 Lt.
36" X 96.8 C.M.P.
W/ Flapper Gate
(Plug and Abandon)

499+49.60, 77.95 Lt.
24" X 86.9 C.M.P.
W/ Flapper Gate
(Plug and Abandon)

Sta. (30+50.00) 500+86.93, 81.04 LT
Build 24" X 106 C.M.P DR-104
w/ 1 Apron
Skew = 96.8° Skew Lt. ,Ahd.
F.L. = Lt. 1055.40
Rt. 1056.19
Sta. (30+50.00) 499+78.19, 68.12 LT
Jack 24" X 114' RCP 3000D
w/ 1 Flap Gate
Skew = 96.8° Skew Lt. ,Ahd.
F.L. = Lt. 1054.57
Rt. 1055.40

Sta. 503+13.00 72.26 LT
Build 24" X 52 C.M.P DR-104
w/ 2 Aprons
Skew = 89.5° Skew Rt. ,Ahd.
F.L. = Lt. 1056.56
Rt. 1056.68

HSE.

Sta. 504+25.00
End Project

24" X 42.8 C.M.P.
(REMOVE)

Prop. Type "C" Ent.
STA. 503+13.00

Prop. Type "C" Ent.
STA. 495+45.00

Prop. Type "C" Ent.
STA. 503+56.00

Ground Intercept

Easement for Temp. Erosion Control
(Temp. Silt Basin)

24" X 43.0 Conc Pipe
(REMOVE)

497+49.60, 72.14 Rt.
24" X 86.9 C.M.P.
W/ Flapper Gate
(Plug and Abandon)

500+08.89, 150.63 Rt.
30" X 92.8 C.M.P.
W/ Flapper Gate
(U.A.C.)

GARRISON DITCH

Sta. (20+50.00) 496+27.23, 79.58 RT
Build 24" X 92' C.M.P DR-104
W/ 1 Apron
Skew = 96.96° Skew Lt. ,Ahd.
F.L. = Lt. 1057.80
Rt. 1055.93
Sta. (20+50.00) 497+22.00, 68.00 RT
Jack 24" X 124' RCP 3000D
W/ 1 Flap Gate
Skew = 96.96° Skew Lt. ,Ahd.
F.L. = Lt. 1055.93
Rt. 1053.50

Sta. 495+45.00 75.34 RT
Build 24" X 56' C.M.P DR-104
Skew = 87.4° Skew Lt. ,Ahd.
F.L. = Lt. 1058.00
Rt. 1057.90

Sect. No. 32

Willow TWP.
T-86N R-45W
SEC. 29

0 FEET 50

Drainage Basin 1
Drainage Basin 2
Drainage Basin 3
Drainage Basin 4
Drainage Basin 5
Wattle
Silt Fence
Silt Basin
Floating Silt Curtain
Possible Staging Area

TEMPORARY
EROSION CONTROL

IA 141

VPI +00.000
Elv 1,077.06
K = 179
Len 600.00 ft

+1.600%
-1.759%

Proposed Profile
Existing Groundline
Proposed Field Entrance
Proposed Residential Entrance

1,069.06
1,067.82

+00 RT. 1058.29
-0.200%
+00 LT 1056.41
+25 RT. 1057.84
+25 RT. 1059.90
+25 LT 1060.06
+2.667%
+2.060%
+75 LT 1056.06
SILT BASIN
SILT BASIN
+50 LT 1060.91
-3.147%
+00 LT 1056.19
+0.200%
+25 LT 1056.84
SILT BASIN

Lt	U.A.C.	+00	Ditch Grade	+75	Ditch Grade	+25	U.A.C.	+76.9	Bridge	U.A.C. +19.1	+50	Ditch Grade	+00	Ditch Grade	+25	U.A.C.
Rt	U.A.C.	+00	Ditch Grade		Ditch Grade	+25	U.A.C.	+76.9	Bridge	+19.1		U.A.C.		Ditch Grade	+25	U.A.C.

492	493	494	495	496	497	498	499	500	501	502	503	504	505
		1,069.06	1,069.46	1,069.86	1,070.26	1,070.66	1,071.06	1,071.46	1,071.86	1,072.26	1,072.64	1,072.99	1,073.30	1,073.58	1,073.82	1,074.03	1,074.20	1,074.34	1,074.44	1,074.51	1,074.54	1,074.54	1,074.50	1,074.43	1,074.32	1,074.18	1,074.00	1,073.79	1,073.54	1,073.26	1,072.94	1,072.59	1,072.20	1,071.78	1,071.34	1,070.90	1,070.46	1,070.02	1,069.58	1,069.14	1,068.70	1,068.26	1,067.82	

FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER DER.1

8:41:35 AM 3/4/2016 mps W:\Projects\9714102013\Design\97141038DER01.dgn

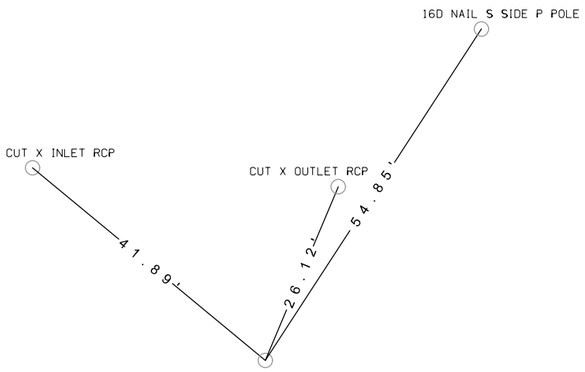
SURVEYED UTILITY OWNER SYMBOLS

FO – Western Iowa Telephone (QLD)
T1 – Western Iowa Telephone (QLD)
Midamerican Energy

VERTICAL CONTROL

Point	North	East	Elevation	Station	Offset	Feature	Description
500	3557034.246	4210095.754	1063.456	469+50.33	59.335	BM	500 CENTER BALL ROW RAIL
501	3556887.253	4212935.633	1075.793	497+93.10	-13.945	BM	501 IDOT BUTTON ON NW HANDRAIL BRG
502	3556700.755	4216192.143	1072.096	530+54.94	-16.389	BM	502 IDOT BUTTON ON NW HANDRAIL BRG
503	3557437.324	4203771.366	1064.564	Off Chain	Off Chain	BM	503 FND USC & GS DISK 97-117 ELEV.= 1064.07

CP 491+18.34, 40.38 Lt.
CP No. 3, Set Feno Monument Stamped 97001
N= 3556954.271, E= 4212264.106, Elev.= 1064.177



FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER	BRFN-141-1(38)--39-97	SHEET NUMBER G.2

3:40:08 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038g01.sht

ALIGNMENT COORDINATES

101-16
10-20-09

Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
20000		449+96.30	3,557,257.18	4,208,153.58															
ML_CRV1								487+87.81	3,556,939.34	4,211,931.74	490+87.81	3,556,914.19	4,212,230.68	493+87.77	3,556,896.81	4,212,530.18			
20004		535+99.03	3,556,652.88	4,216,734.37															
31500		9+85.30	3,556,874.79	4,212,909.77															
31501		11+00.00	3,556,989.30	4,212,916.41															
32500		20+00.00	3,556,763.39	4,212,915.78															
32501		21+10.86	3,556,874.06	4,212,922.20															
33500		29+89.25	3,556,866.21	4,213,057.63															
33501		31+00.00	3,556,976.77	4,213,064.04															

FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER G.3	

3:40:08 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038g01.sht

SPIRAL OR CIRCULAR CURVE DATA

101-17
04-19-11

Name	Location	Δ_{scs}	Horizontal Alignment Data												Remarks
			Spiral Data								Curve Data				
			θs	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	Δ_c	T	L	R	E	
ML_CRV1											1° 29′ 17.18″ LT	300.00′	599.97′	23,100.21′	1.95′	

FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER G.4

3:40:08 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038g01.sht

Woodbury	ROW: STPN-141-1(39)--2J-97				PIN	13-97-141-020													
	Garretson Ditch 6.4 miles E of I-29																		
		STATE			COUNTY			CITY				BORROW							
PARCEL NO.	OWNER NAME	FEE	EASE		FEE	EASE		FEE	EASE		EXCESS	FEE	T.E.	MITIGATION	OTHER	HOUSE	BUILDING(S)	A/C ONLY	TOTAL ACQ.
1	Darrell E. Carr Revocable Trust - Fee Carolyn L. Carr Revocable Trust - Fee	.13 AC																	
1D	Garretson Drainage District - Fee																		
3	Conservatorship of La Vonne M. Ray - Fee	.08 AC																	
3 Parcels	"TOTALS	0.21 AC	0 AC		0 AC	0 AC		0 AC	0 AC		0 AC	0 AC	0 AC	0 AC					
		0 SF		0 SF	0 SF		0 SF	0 SF		0 SF	0 SF								

Willow TWP.
T-86N R-45W
SEC. 30

Willow TWP.
T-86N R-45W
SEC. 29

N

3
CONSERVATORSHIP OF
LA VONNE M. RAY

ID
GARRETSON DRAINAGE DISTRICT

3
CONSERVATORSHIP OF
LA VONNE M. RAY

495

500

505

Sta. 494+00.00
Begin Project

493+50
℄90'±EX.R/W

496+00
℄105'

497+50
℄97'±EX.R/W

500+80
℄100'±Ex.R/W

501+00
℄105'

502+25
℄100'±Ex.R/W

Sta. 504+25.00
End Project

Prop. Type "C" Ent.
STA. 503+13.00

141 (ML 141)

ROW

Prop. Type "C" Ent.
STA. 495+45.00

FO

Prop. Type "C" Ent.
STA. 503+56.00

500+15.58(EX.R/W CORNER)
℄70'±EX.R/W

500+45
℄90'

500+20
℄135'

500+50
℄150'

500+85
℄80'

501+50
℄80'

Ground Intercept

503+20
℄70'

Easement for Temp. Erosion Control
(Temp. Silt Basin)

503+85
℄75'

504+30
℄70'

504+50
℄60'±EX.R/W

TEMPORARY EASEMENT FOR
TEMPORARY SILT BASIN

1
DARRELL E. CARR REVOCABLE TRUST
CAROLYN L. CARR REVOCABLE TRUST

ID
GARRETSON DRAINAGE DISTRICT

Willow TWP.
T-86N R-45W
SEC. 31

Willow TWP.
T-86N R-45W
SEC. 32

0 50
FEET

Right of Way Design Information
THIS SHEET INCLUDED FOR INFORMATION ONLY
ROW Team: LARSON / CUVA
ROW #: STPN-141-1(39)--2J-97
Plan Date: 06/06/2016
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER H.1

6:19:44 AM 6/7/2016 jlarso1 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9714102013\ROW\97141039_H.sht

108-23A
08-01-08

TRAFFIC CONTROL PLAN

One lane of traffic will be maintained during construction along IA 141 through staged construction.

Standard road plan TC-217 will be used and will extend beyond the bridge to the ends of construction. With approval from the Office of Traffic and Safety and the District Office, the extended distance beyond the recommended length between stop bars outlined in TC-217 is acceptable.

111-01
04-17-12

COORDINATED OPERATIONS

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

Project	Type of Work
None know at this time	

108-26A
08-01-08

STAGING NOTES

Stage 1 Traffic Control

-See TC-213.

Stage 1 Construction

-Construct 2 ft. base widing along north side of existing pavement in locations of proposed HMA overlay.

Stage 2 Traffic Control

-Maintain traffic on WB lane according to TC-217.

Stage 2 Construction

-Remove 8.4 ft. of the existing bridge with a cut at 4.6 ft. right of the centerline.
-15.3 ft. of the existing bridge will be used for the WB traffic lane.
-13.7 ft. of the proposed bridge will be constructed.
-Plug and abandon existing pipe in SW ditch.
-Jack new CMP pipe and place flap gates in SW ditch.
-Build abutting PCC bridge approaches according to BR-102.
-Pave HMA resurfacing wedge to achieve proposed roadway profile. A minimum of 3 in. at tie-in locations.
-An 8 ft. paved shoulder will be constructed on the EB shoulder to allow for Stage 2 traffic.
-Construct guardrail and guardrail blisters.
-Place Class 10 for new levee access roads.

Stage 3 Traffic Control

-Maintain traffic in EB lane according to TC-217.

Stage 3 Construction

-Remove remaining section of existing bridge.
-Consruct the remainder of proposed bridge with a cantilever of 2.33 ft. beyond the inner beam.
-Plug and abandon existing pipes in NW and NE ditches.
-Jack new CMP pipes and place flap gates in NW and NE ditches.
-Build abutting PCC bridge approaches according to BR-102.
-Pave HMA resurfacing wedge to achieve proposed roadway profile. A minimum of 3 in. at tie-in locations.
-Construct guardrail and guardrail blisters.
-Place 8 ft. granular shoulder.
-Place Class 10 for new levee access roads.
-Construct side road and entrance fillets.

Stage 4 Traffic Control

-Remove TC-217 and restore traffic to both lanes.

CROSS SECTION VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Med	(237)	Future Proposed Pavement Shading

CROSS SECTION VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

	Pavement Removal		Proposed Granular Shoulder
	Proposed Granular Subbase		Temporary Shoulder
	Proposed Special Backfill		Existing Shoulder Strengthening
	Temporary Barrier Rail		Permanent Barrier Rail
			Channelizing Device

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Magenta	(5)	Pavement Marking Call Outs
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)	Pavement Markings, Yellow
Off White	(254)	Pavement Markings, White
Violet	(15)	Temporary barrier rail, Unpinned
Flush Orange	(228)	Temporary barrier rail, Pinned
SHADING	**Design Color No.**	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Proposed Granular Surface Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Light	(236)	Proposed Grading Limits Shading
Pink, Dark	(13)	Proposed MSE or CIP Wall Shading
Red	(3)	Proposed Bridge Shading and Sign Trusses
Black w/Gray, Light Fill	(0,48)	Previously Constructed Structure

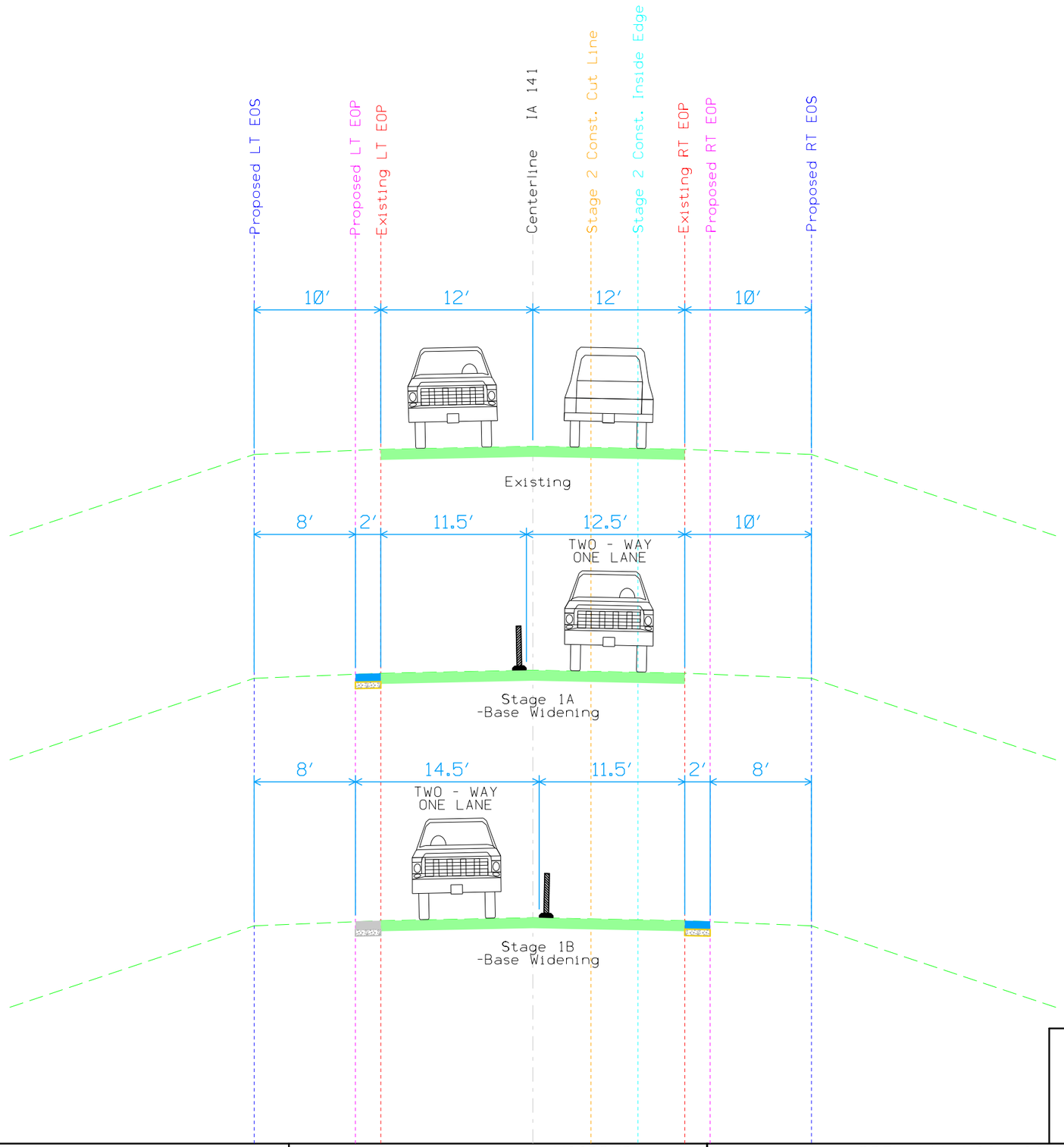
PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

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

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

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

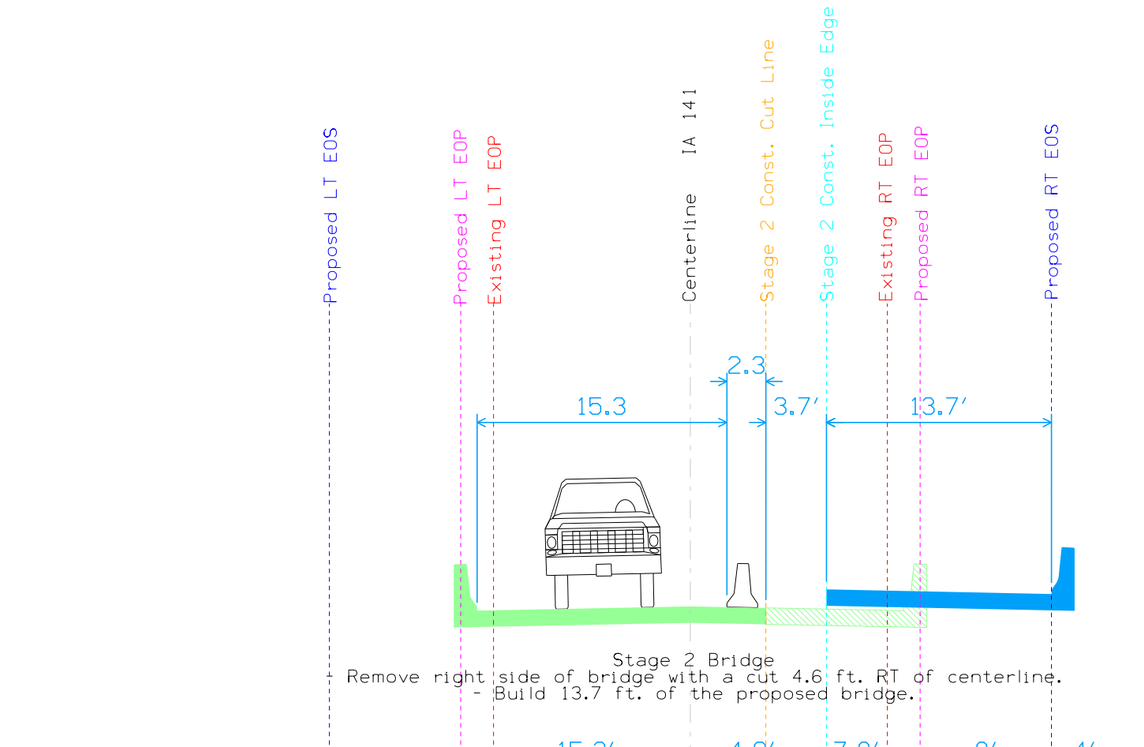
(COVERS SHEET SERIES J)



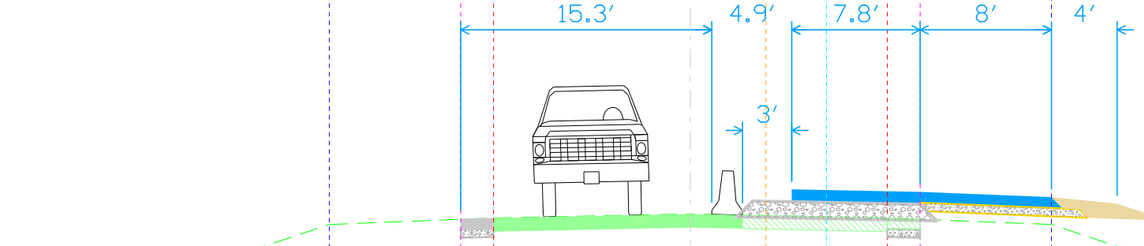
Typical Staging Section
Stage 1

FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER J.3

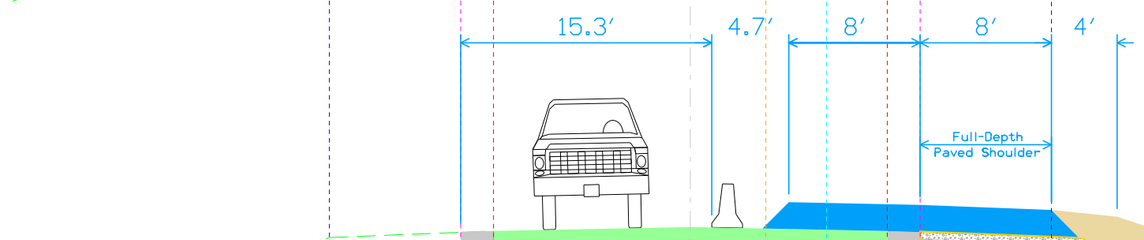
4:16:06 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038j03.sht



Stage 2 Bridge
- Remove right side of bridge with a cut 4.6 ft. RT of centerline.
- Build 13.7 ft. of the proposed bridge.



Stage 2 PCC Bridge Approach
-Remove existing bridge approach pavement.
-Build Bridge approach and paved shoulder at guardrail.

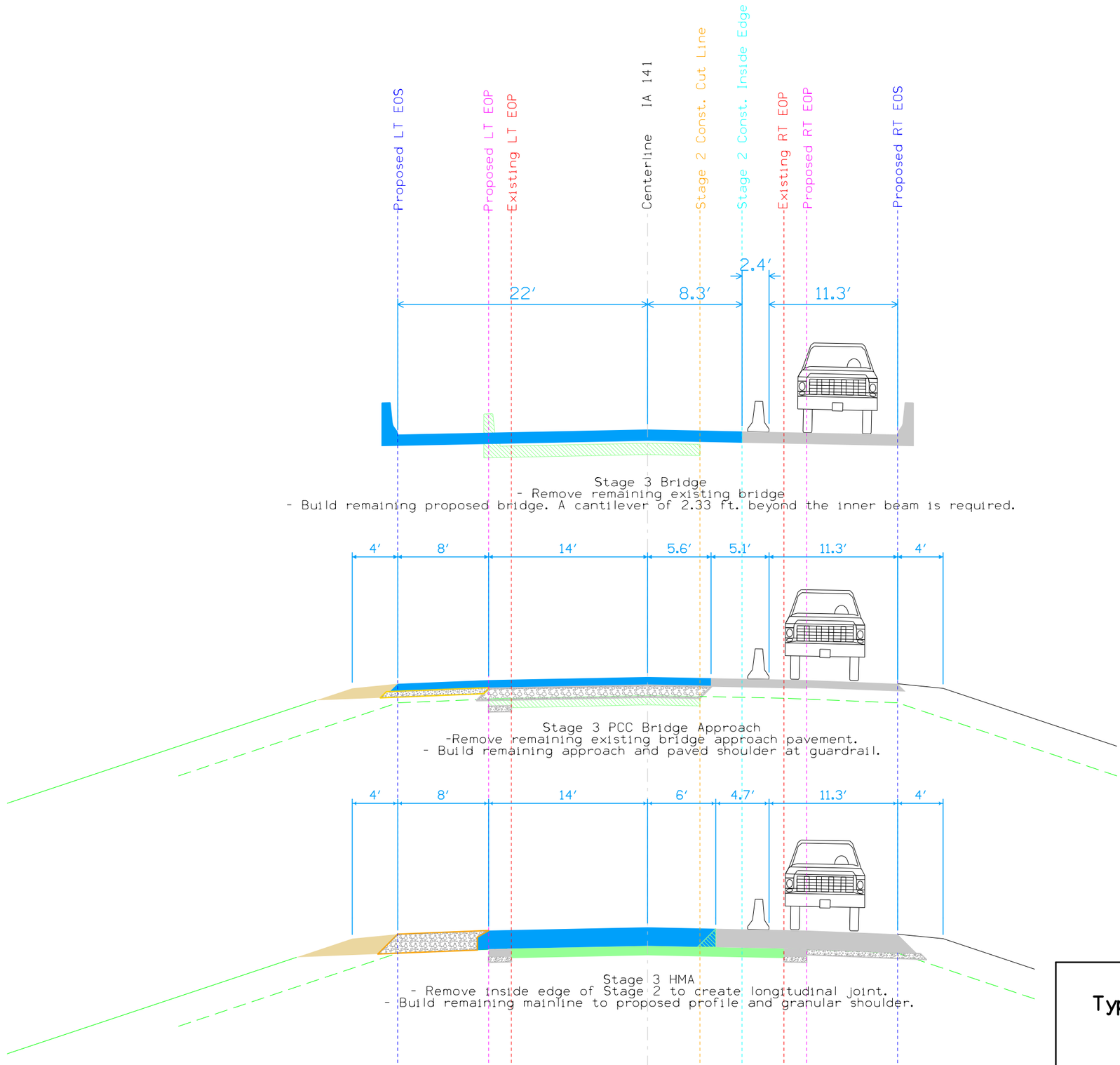


Stage 2 HMA
-Construct base widening
-Build mainline to proposed profile and paved shoulder.

Typical Staging Section Stage 2

FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER J.4

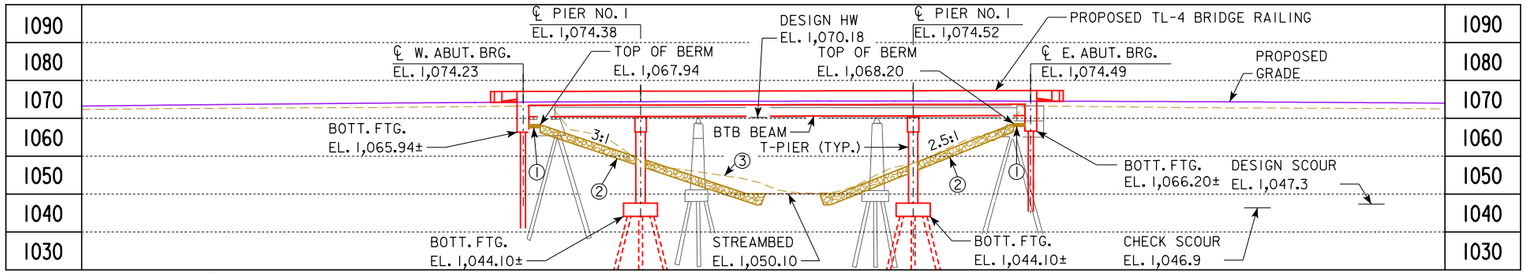
4:16:06 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038j03.sht



Typical Staging Section
Stage 3

FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER J.5

4:16:07 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038j03.sht



TOP OF BRIDGE DECK AT ℄ ROADWAY IS 0.03' BELOW THE PROFILE GRADE TO ACCOUNT FOR DECK CROSS SLOPE AND PARABOLIC CROWN.

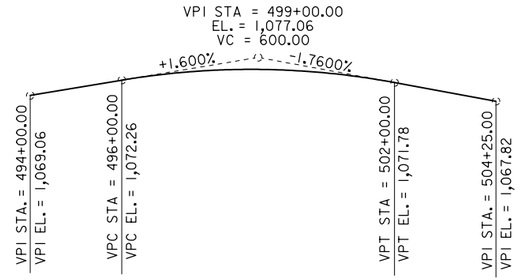
LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

① BERM PROTECTION
EROSION STONE (0-9 THICK. MIN.)
UNDERLAIN W/ ENGR. FABRIC

② BERM PROTECTION
CLASS E REVET. (2' THICK. MIN.)
UNDERLAIN W/ ENGR. FABRIC

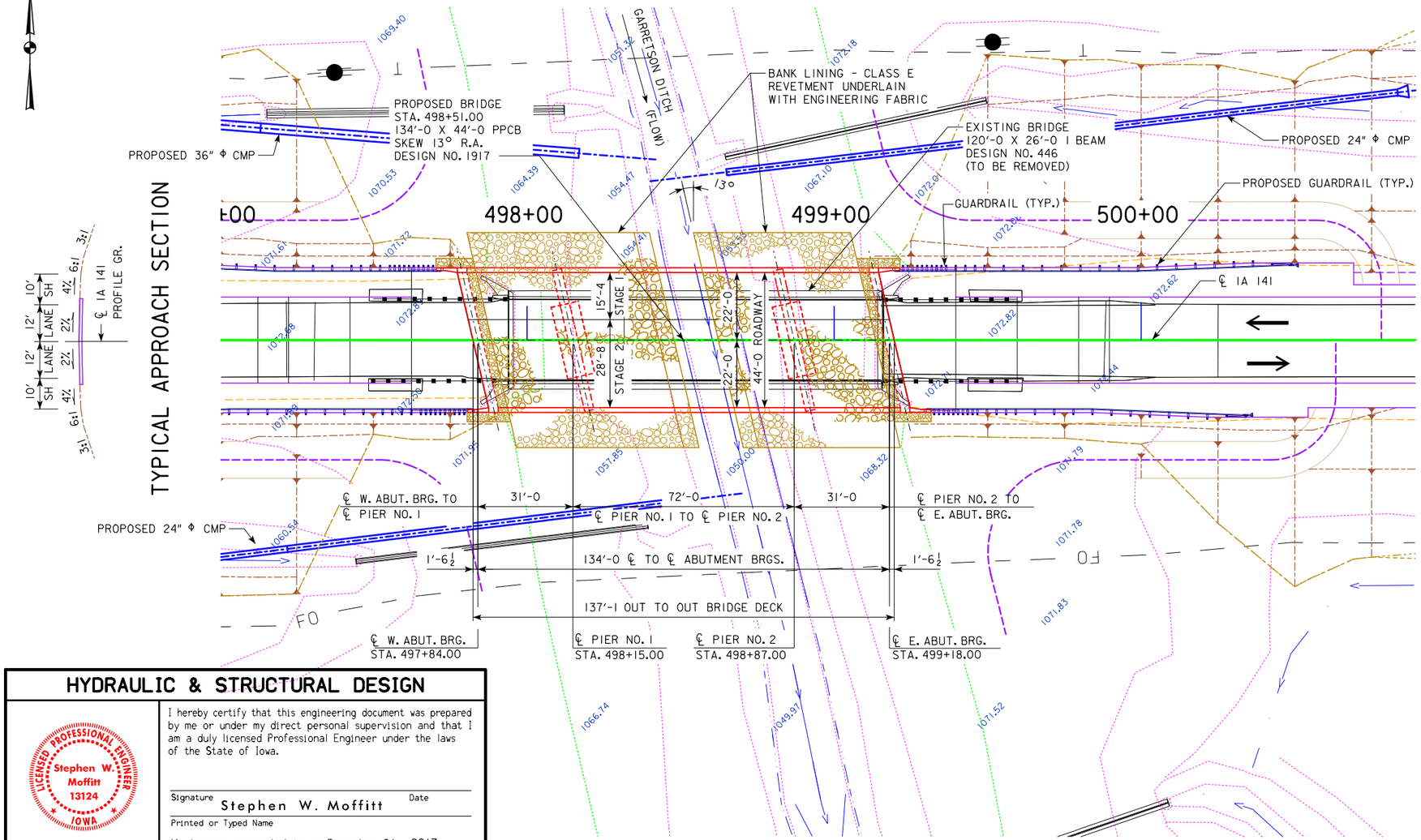
③ EXISTING GROUND

BENCH MARK NO. 500
500 CENTER BALL ROW RAIL
STA. 469+50.33, 59.33' RT.
N 3557034.246
E 4210095.754



PROPOSED PROFILE GRADE IA 141

N



TYPICAL APPROACH SECTION

SITUATION PLAN

DESIGNER NOTE:
TL-4 BARRIER RAIL
34" HEIGHT

DESIGNER NOTE:
PROVIDE VENT HOLE
IN BEAM.

0 ENGLISH 40
SCALE IN FEET

HYDRAULIC DATA

DRAINAGE AREA = 106 SQ. MI.
STREAM SLOPE = 3.0 FT./MI.
AVG. LOW WATER STAGE = 1,051.1

Q_{50} = 10,100 CFS
STAGE = 1,070.18
BACKWATER = 0.12 FT.
AVG. BRIDGE VELOCITY = 6.7 FPS

Q_{100} = 11,700 CFS
STAGE = 1,071.70
BACKWATER = 0.01 FT.
AVG. BRIDGE VELOCITY = 0.26 FPS

Q_{200} = 13,300 CFS
STAGE = 1,071.84

Q_{500} = 15,100 CFS
STAGE = 1,071.85
CALCULATED CHECK SCOUR = 1,046.9

$Q_{OVERTOPPING}$ = 10,800 CFS
CALCULATED DESIGN SCOUR = 1,047.3

ROADWAY OVERTOP = 1,064.84
STA. 484+00

UTILITIES LEGEND:

OVERHEAD POWER - MIDAMERICAN ENERGY
TI - TELEPHONE - WESTERN IOWA TEL. CO.
FO - FIBER OPTIC

LOCATION

IA 141 OVER GARRETSON DITCH
T-86N R-45W
SECTIONS 29 AND 32
WILLOW TOWNSHIP
WOODBURY COUNTY
FHWA NO. 53251
BRIDGE MAINT. NO. 9706.4S141
LATITUDE 42.227358
LONGITUDE -96.115422

TRAFFIC ESTIMATE

2018	AADT	1,800	V.P.D.
2038	AADT	2,000	V.P.D.
2038	DHV	-	V.P.H.
TRUCKS		16	%
Total Design ESALs		-	

HYDRAULIC & STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER
Stephen W. Moffitt
13124
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 Stephen W. Moffitt Date

Printed or Typed Name

My license renewal date is December 31, 2017

Pages or sheets covered by this seal: SHEETS V.1, V.2 AND V.3

DESIGN FOR 13° SKEW, R.A.

134'-0 X 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

31'-0 END SPANS 72'-0 CENTER SPAN

SITUATION PLAN

STATION 498+51.00 BTB BEAMS FEBRUARY 2016

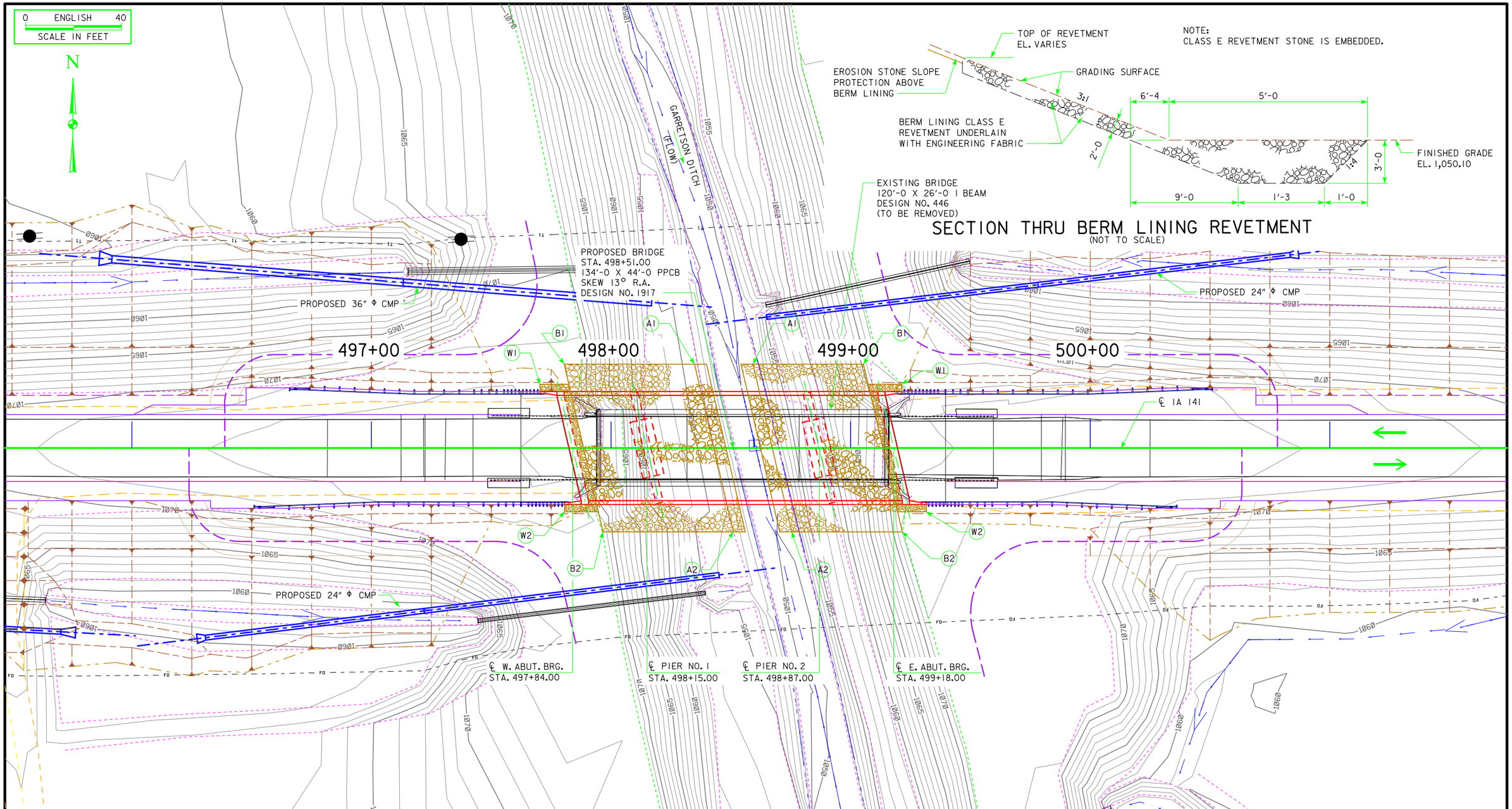
WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 3 FILE NO. 31315 DESIGN NO. 1917

DESIGN TEAM RM/ hgm | WOODBURY COUNTY | PROJECT NUMBER BRFN-141-1(38)--39-97 | SHEET NUMBER V.1

2/11/2016 10:23:59 AM jlk Z:\Projects\190415 IDOT - Woodbury Hwy 141 Hydraulics\CADD\dgn\Prelim\97141038.str TSL_97_1917_01 11x17_pdf.pltcfg



SITE PLAN

BERM SLOPE LOCATION TABLE

POINTS	WEST ABUTMENT			EAST ABUTMENT		
	STATION	OFFSET	ELEV.	STATION	OFFSET	ELEV.
A1	498+34.85	35.0'	1050.12	498+59.23	35.0'	1050.12
A2	498+51.01	35.0'	1050.12	498+75.39	35.0'	1050.12
B1	497+80.47	35.0'	1068.30	499+05.36	35.0'	1068.60
B2	497+96.63	35.0'	1068.30	499+21.52	35.0'	1068.60
W1	497+70.35	27.0'	1068.30	499+21.46	27.0'	1068.60
W2	497+80.54	27.0'	1068.30	499+31.61	27.0'	1068.60

BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE
W - END WING / END BRIDGE WING ARMORING

ESTIMATED EROSION CONTROL QUANTITIES

LOCATION	REVETMENT CL. E (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
BERM LINING - WEST ABUTMENT	481	9	446	238
BERM LINING - EAST ABUTMENT	412	9	382	211
TOTALS	893	18	828	449

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

DESIGN FOR 13° SKEW, R.A.

134'-0 X 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

31'-0 END SPANS 72'-0 CENTER SPAN

SITUATION PLAN - SITE

STATION 498+51.00 BTB BEAMS FEBRUARY 2016

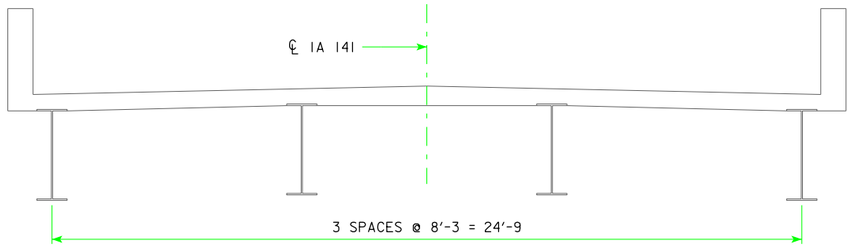
WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

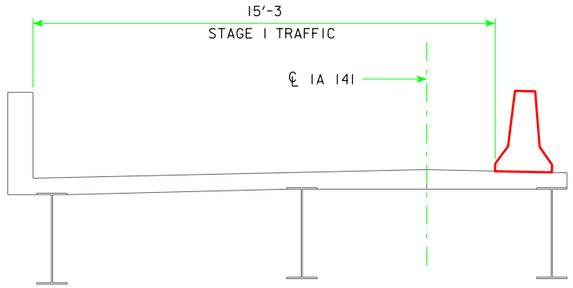
DESIGN SHEET NO. 2 OF 3 FILE NO. 31315 DESIGN NO. 1917

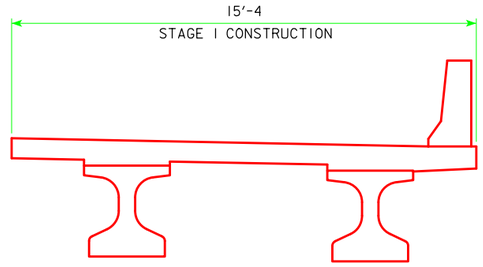
DESIGN TEAM RM/ hgm | WOODBURY COUNTY | PROJECT NUMBER BRFN-141-1(38)--39-97 | SHEET NUMBER V.2

2/9/2016 5:17:06 PM mps \\SRV22\Structural\Projects\190415 IDOT - Woodbury Hwy 141 Hydraulics\CADD\dgn\Prelim\97141038.str TSL_97_1917_02 11x17_pdf.pltcfg

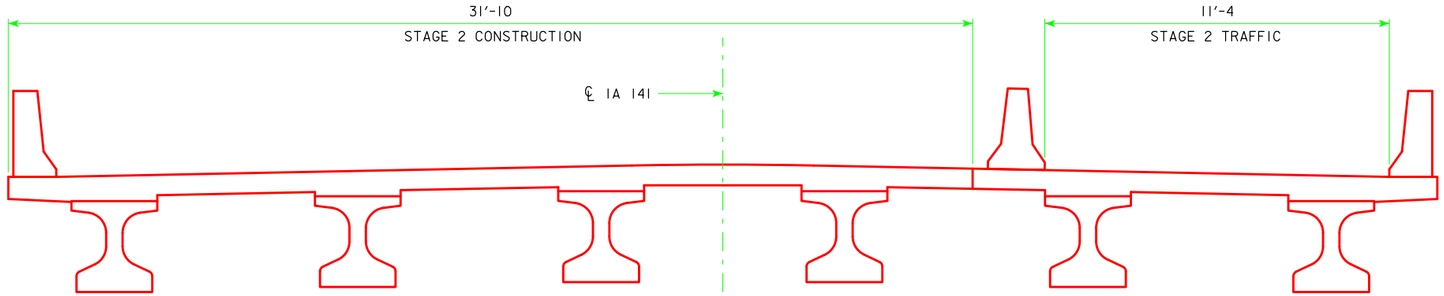


EXISTING STRUCTURE

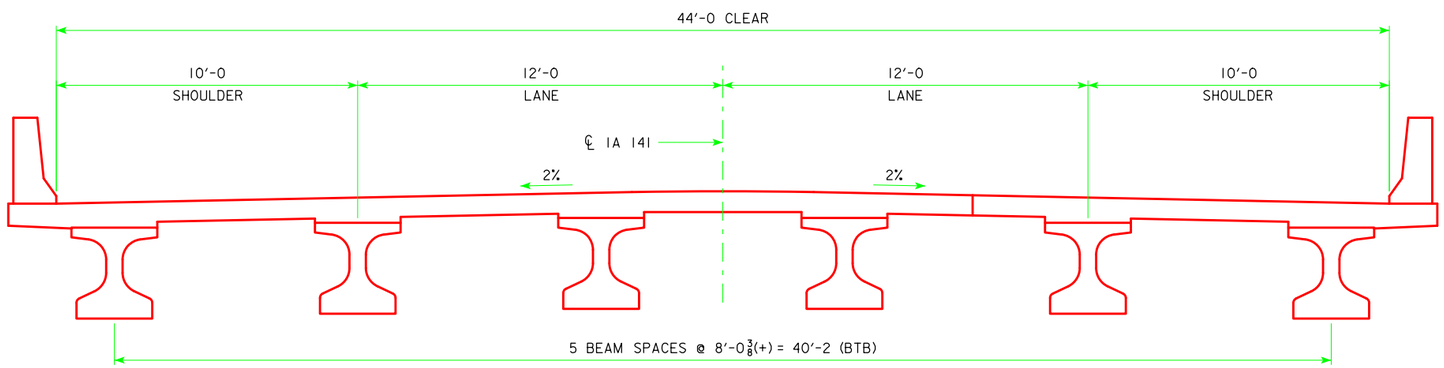




STAGE 1



STAGE 2



COMPLETED STRUCTURE

DESIGN FOR 13° SKEW, R.A.

134'-0 X 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

31'-0 END SPANS 72'-0 CENTER SPAN

STAGING PLAN

STATION 498+51.00 BTB BEAMS FEBRUARY 2016

WOODBURY COUNTY

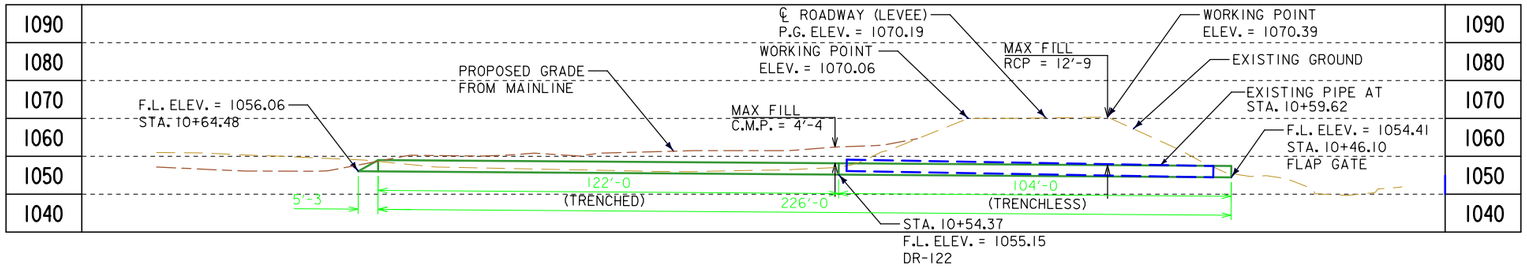
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 3 FILE NO. 31315 DESIGN NO. 1917

DESIGN TEAM RM/ hgm | WOODBURY COUNTY | PROJECT NUMBER BRFN-141-1(38)--39-97 | SHEET NUMBER V.3

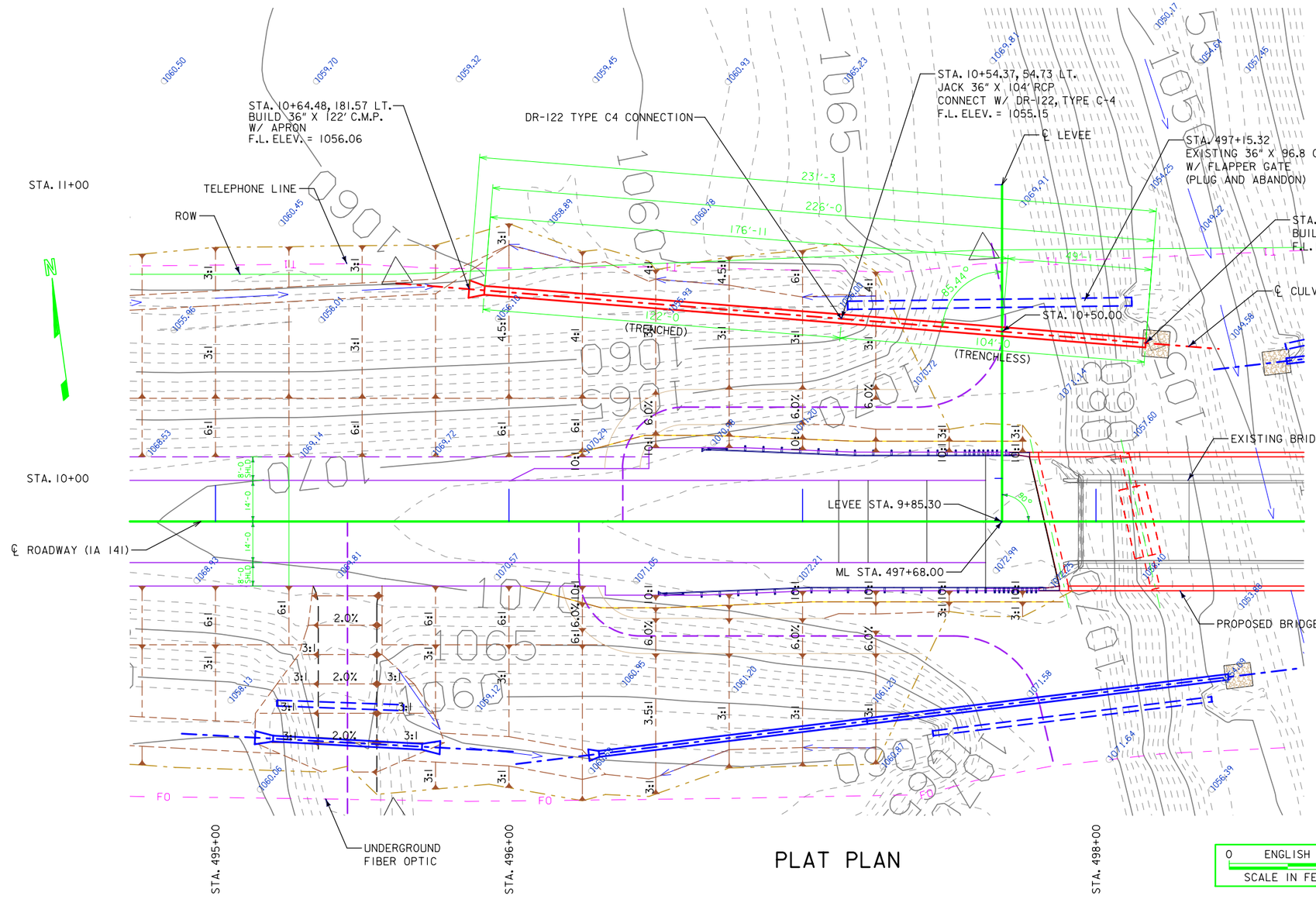
2/9/2016 5:29:14 PM mps \\SRV22\Structural\Projects\190415 IDOT - Woodbury Hwy 141 Hydraulics\CADD\dgn\Prelim\97141038.str TSL_97_1917_03 11x17_pdf.pltcfg

LONGITUDINAL SECTION ALONG ℄ CULVERT



* PROPOSED GRADE BASED ON
ML (IA 141) GRADING

BENCH MARK NO.
501 IDOT BUTTON ON NW HANDRAIL BRG
STA. 497+93.10, 13.95 RT.
ELEV. = 1075.793



PLAN NOTES:
1. JACK 36" X 104' CMP PIPE AT STA. 10+54.37 W/ FLAP GATE LT.
2. BUILD 36" X 122' CMP PIPE W/ APRON RT.
3. PLUG AND ABANDON EXISTING PIPE AT STA. 497+15.32

HYDRAULIC DATA

DRAINAGE AREA = (UAC) ACRES
Q_{50} = (UAC) CFS
HW ELEV. = (UAC)
STREAM SLOPE = (UAC) FT./MI.

UTILITIES LEGEND:

TELEPHONE LINE
UNDERGROUND FIBER OPTIC

LOCATION

IA 141
T-86N R-45W
SECTION 29
WILLOW TOWNSHIP
WOODBURY COUNTY
LATITUDE 42.22763°
LONGITUDE 96.11568°

TRAFFIC ESTIMATE

2018 AADT	1800	V.P.D.
2038 AADT	2000	V.P.D.
2038 DHV	200	V.P.H.
TRUCKS	16	%
TOTAL DESIGN ESALs	_	

PRELIMINARY

DESIGN FOR 4.56° SKEW L.A.

36" X 122' (TRENCHED) C.M.P CULVERT AND 36" X 104' RCP CULVERT (TRENCHLESS) PLAT PLAN

STATION 10+50.00 (497+68.00, 64.7' LT) D3 - FEBRUARY 2016

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

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

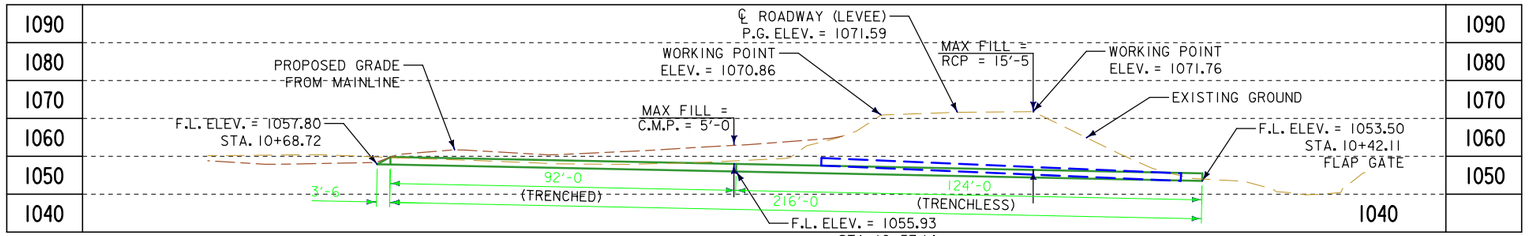
PLAT PLAN

0 ENGLISH 40
SCALE IN FEET

DESIGN TEAM	Tymkowicz\hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER V.4

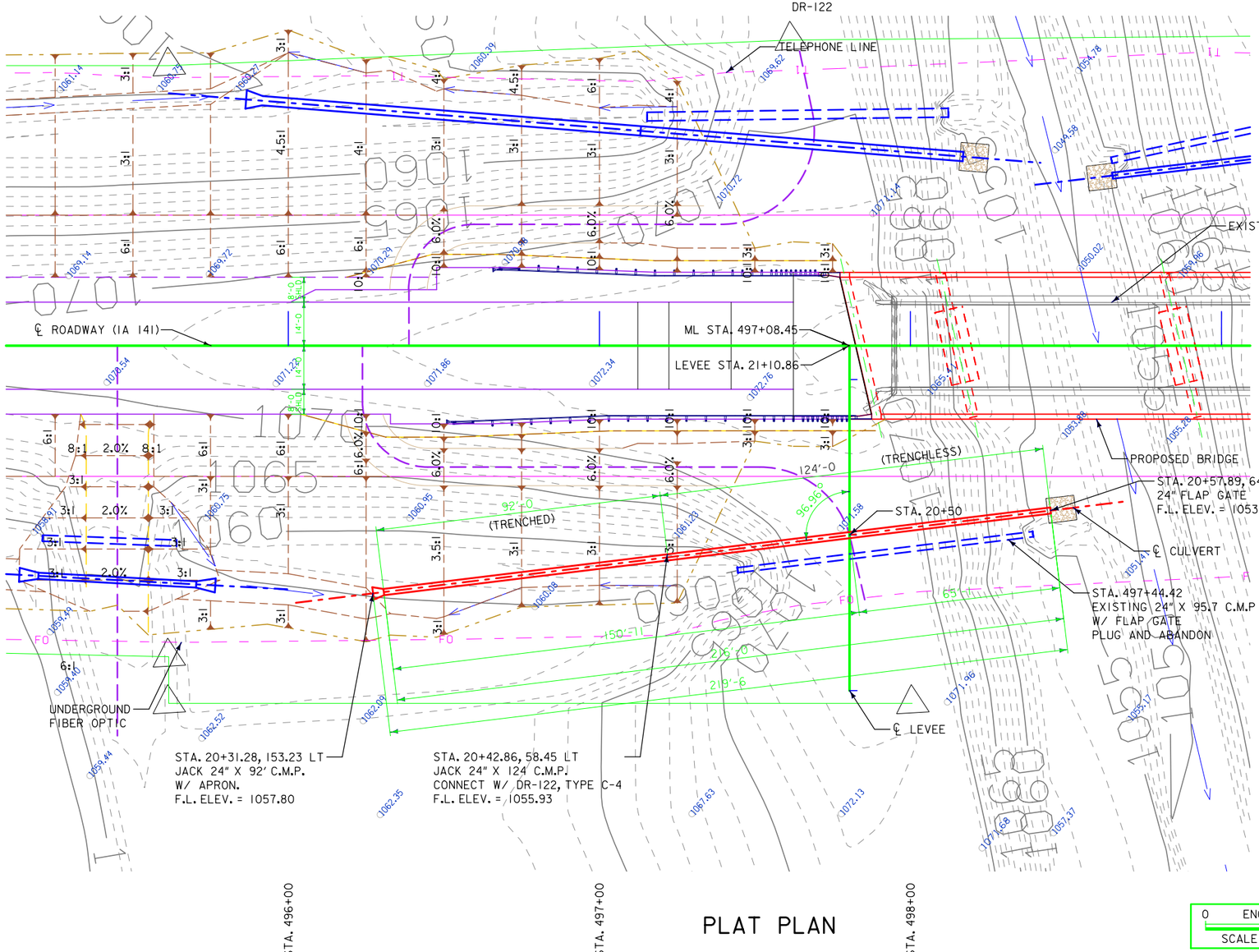
2/9/2016 9:47:13 AM mps W:\Projects\9714102013\BRPrelim\97141038_Culverts.str NW_LEVEE 11x17mixed_bw_clr_layered_pdf.plt

LONGITUDINAL SECTION ALONG ℄ CULVERT



* PROPOSED GRADE BASED ON MAINLINE (IA 141) GRADING

BENCH MARK NO.
501 IDOT BUTTON ON NW HANDRAIL BRG
STA. 497+93.10, 13.95 RT.
ELEV. 1075.793



PLAN NOTES:
1. JACK 24" X 124' CMP PIPE AT STA. 10+57.14 W/ FLAP GATE LT.
2. BUILD 24" X 92' CMP PIPE W/ APRON RT.
3. PLUG AND ABANDON EXISTING PIPE AT STA. 497+44.42

HYDRAULIC DATA

DRAINAGE AREA = (UAC) ACRES
Q_{50} = (UAC) CFS
HW ELEV. = (UAC)
STREAM SLOPE = (UAC) FT./MI.

UTILITIES LEGEND:

TELEPHONE
UNDERGROUND FIBER OPTIC

LOCATION

IA 141
T-86N R-45W
SECTION 32
WILLOW TOWNSHIP
WOODBURY COUNTY
LATITUDE 42.22725°
LONGITUDE 96.11543°

TRAFFIC ESTIMATE

2018 AADT	1800	V.P.D.
2038 AADT	2000	V.P.D.
2038 DHV	200	V.P.H.
TRUCKS	16	%
TOTAL DESIGN ESALs	-	

PRELIMINARY

DESIGN FOR 6.96° SKEW R.A.

24" X 92' C.M.P. (TRENCHED) CULVERT AND 24" X 124' RCP CULVERT (TRENCHLESS) PLAT PLAN

STATION 20+50.00 (497+80.45, 69.55' RT.) D3 - FEBRUARY 2016

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

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

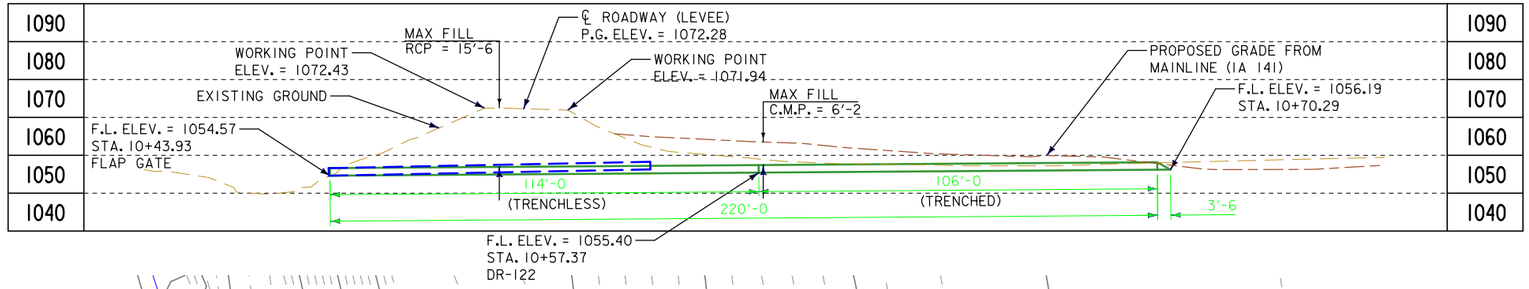
PLAT PLAN

0 ENGLISH 40
SCALE IN FEET

DESIGN TEAM	Tymkowicz\hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER V.5

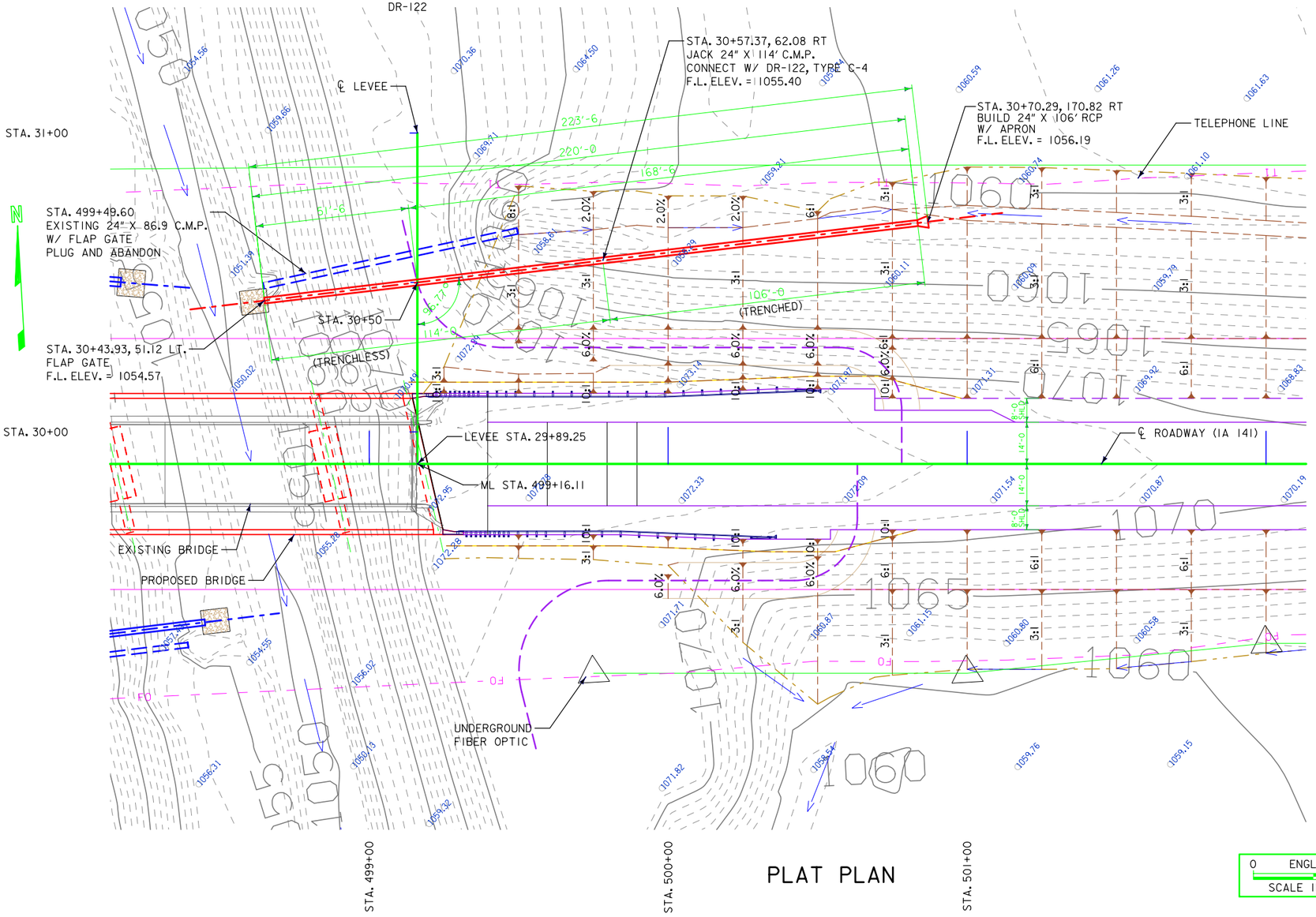
2/9/2016 1:49:49 PM mps W:\Projects\9714102013\BRPrelim\97141038_Culverts.str SW_LEVEE 11x17_pdf.pltcfg

LONGITUDINAL SECTION ALONG ℄ CULVERT



* PROPOSED GRADE BASED ON MAINLINE (IA 141) GRADING

BENCH MARK NO.
501 IDOT BUTTON ON NW HANDRAIL BRG
STA. 497+93.10, 13.95 RT.
ELEV. 1075.793



PLAN NOTES:
1. JACK 24" X 114' CMP PIPE AT STA. 10+57.37 W/ FLAP GATE LT.
2. BUILD 24" X 106' CMP PIPE W/ APRON RT.
3. PLUG AND ABANDON EXISTING PIPE AT STA. 499+49.60

HYDRAULIC DATA

DRAINAGE AREA = (UAC) ACRES
Q_{50} = (UAC) CFS
HW ELEV. = (UAC)
STREAM SLOPE = (UAC) FT./MI.

UTILITIES LEGEND:

TELEPHONE
UNDERGROUND FIBER OPTIC

LOCATION

IA 141
T-86N R-45W
SECTION 29
WILLOW TOWNSHIP
WOODBURY COUNTY
LATITUDE 42.22761°
LONGITUDE 96.11492°

TRAFFIC ESTIMATE

2018 AADT	1800	V.P.D.
2038 AADT	2000	V.P.D.
2038 DHV	200	V.P.H.
TRUCKS	16	%
TOTAL DESIGN ESALs	-	

PRELIMINARY

PLAT PLAN

0 ENGLISH 40
SCALE IN FEET

DESIGN FOR 6.77° SKEW R.A.

24" X 106' (TRENCHED) C.M.P. CULVERT AND 24" X 114' RCP CULVERT (TRECHLESS) PLAT PLAN

STATION 30+50.00 (499+16.11, 60.75' RT.) D3 - FEBRUARY 2016

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

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

DESIGN TEAM	Tymkowicz\hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER V.6

2/9/2016 2:01:11 PM mps W:\Projects\9714102013\BRPrelim\97141038_Culverts.str NE_LEVEE 11x17_pdf.pltcfg

LINE STYLE LEGEND OF CROSS SECTION SHEETS (ROAD)

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

LINE STYLE LEGEND OF CROSS SECTION SHEETS (SOILS)

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

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

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

SYMBOL LEGEND OF CROSS SECTION SHEETS

Existing ROW — Existing Right-of-Way Limit

Proposed ROW — Proposed Right-of-Way Limit

Temporary ROW — Temporary Right-of-Way Limit

CROSS SECTION LEGEND AND SYMBOL INFORMATION SHEET

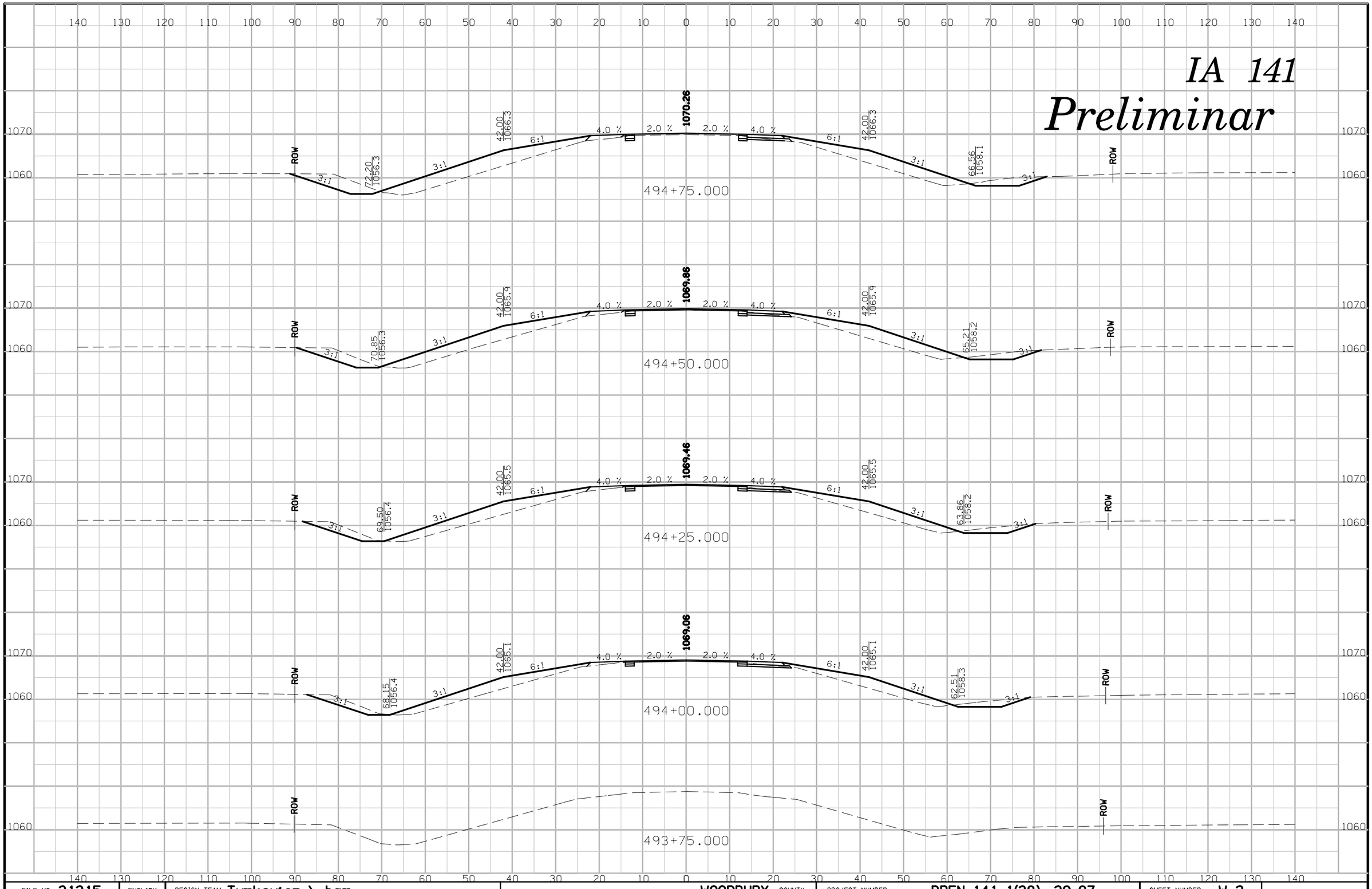
(COVERS SHEET SERIES W, X, Y, & Z)

FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.1

2:55:44 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038lgd.sht

IA 141

Preliminar

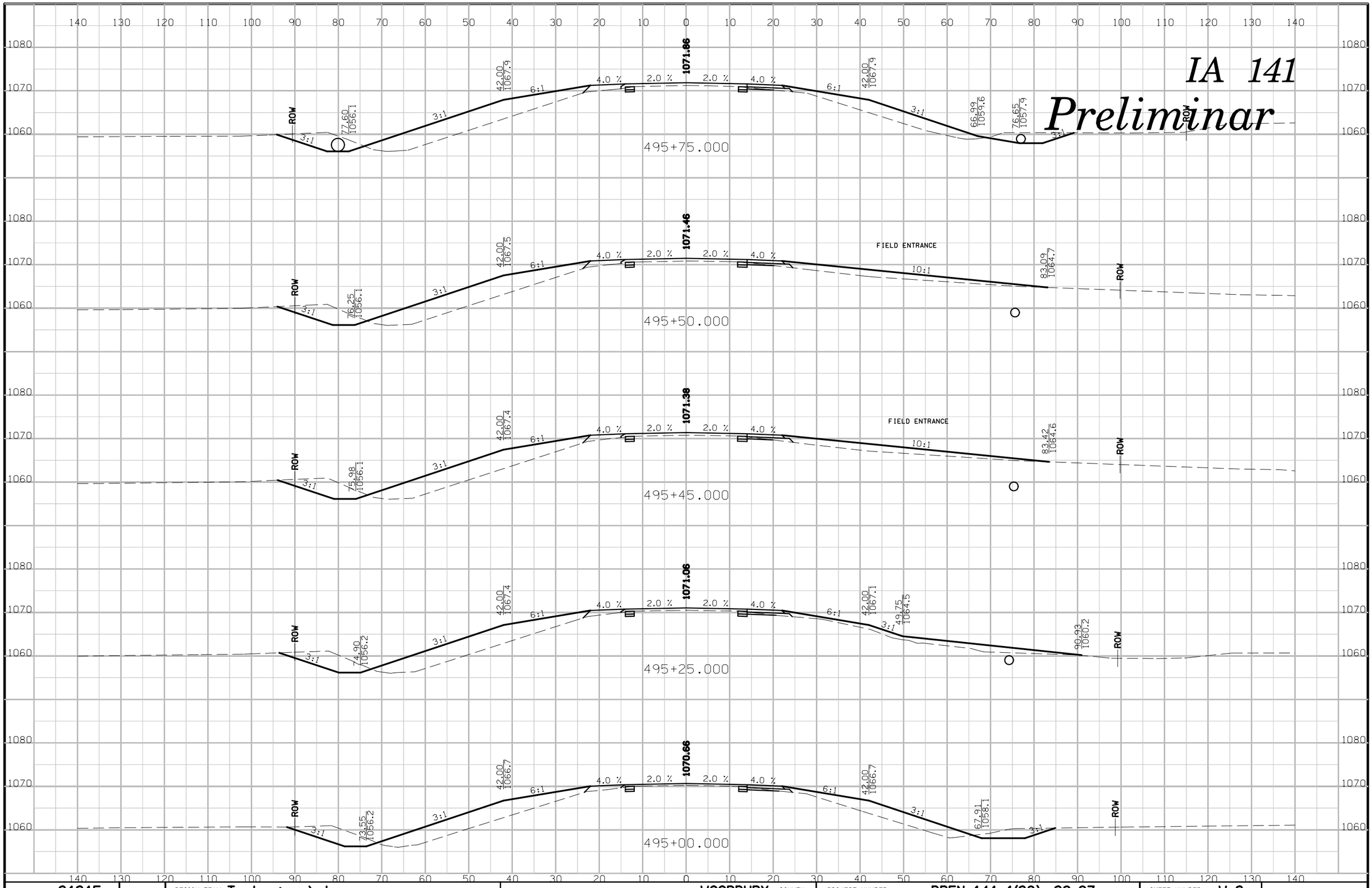


FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.2

5:46:23 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

IA 141

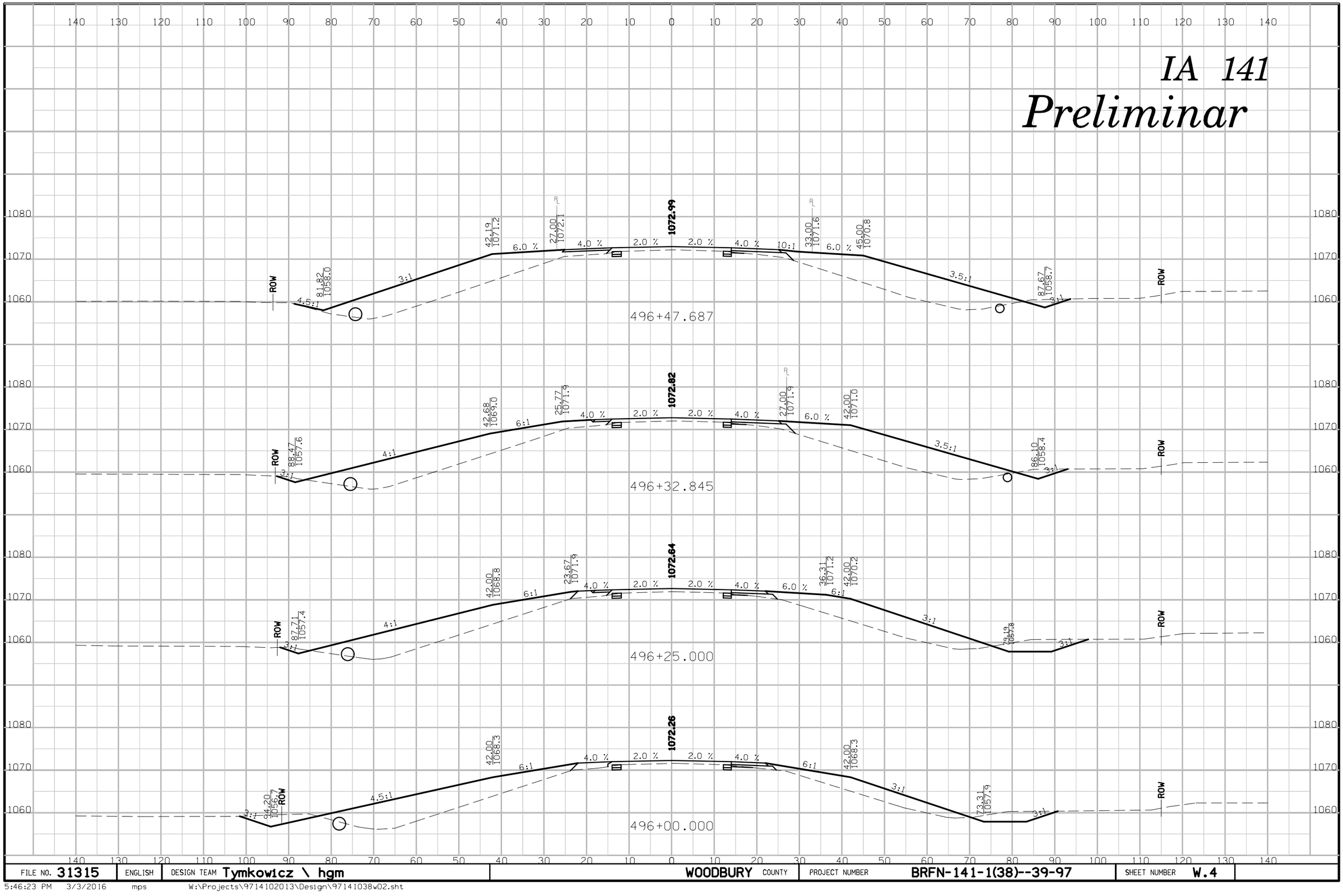
Preliminar



FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.3

5:46:23 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

IA 141
Preliminar

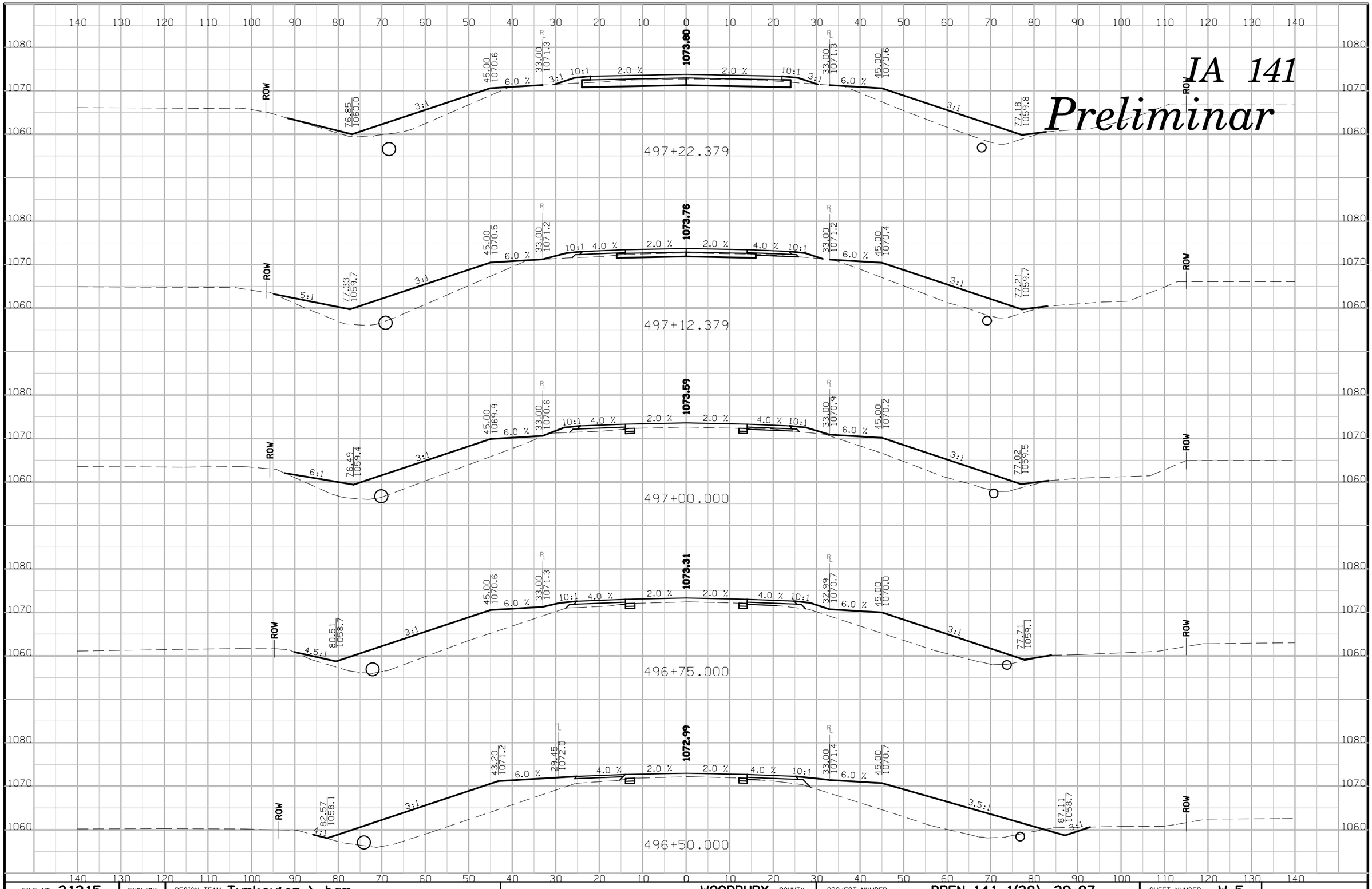


FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.4

5:46:23 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

IA 141

Preliminar

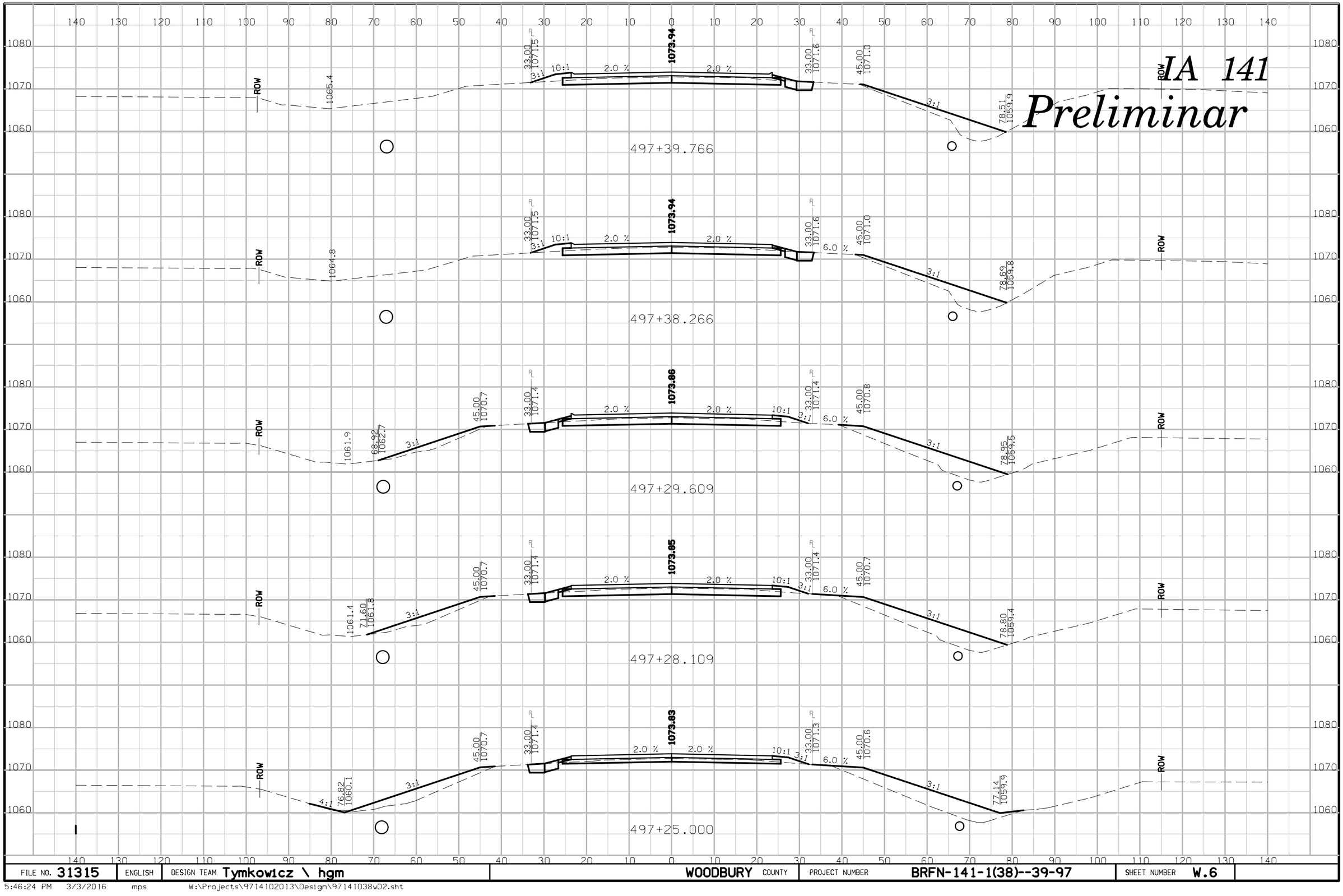


FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.5

5:46:23 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

IA 141

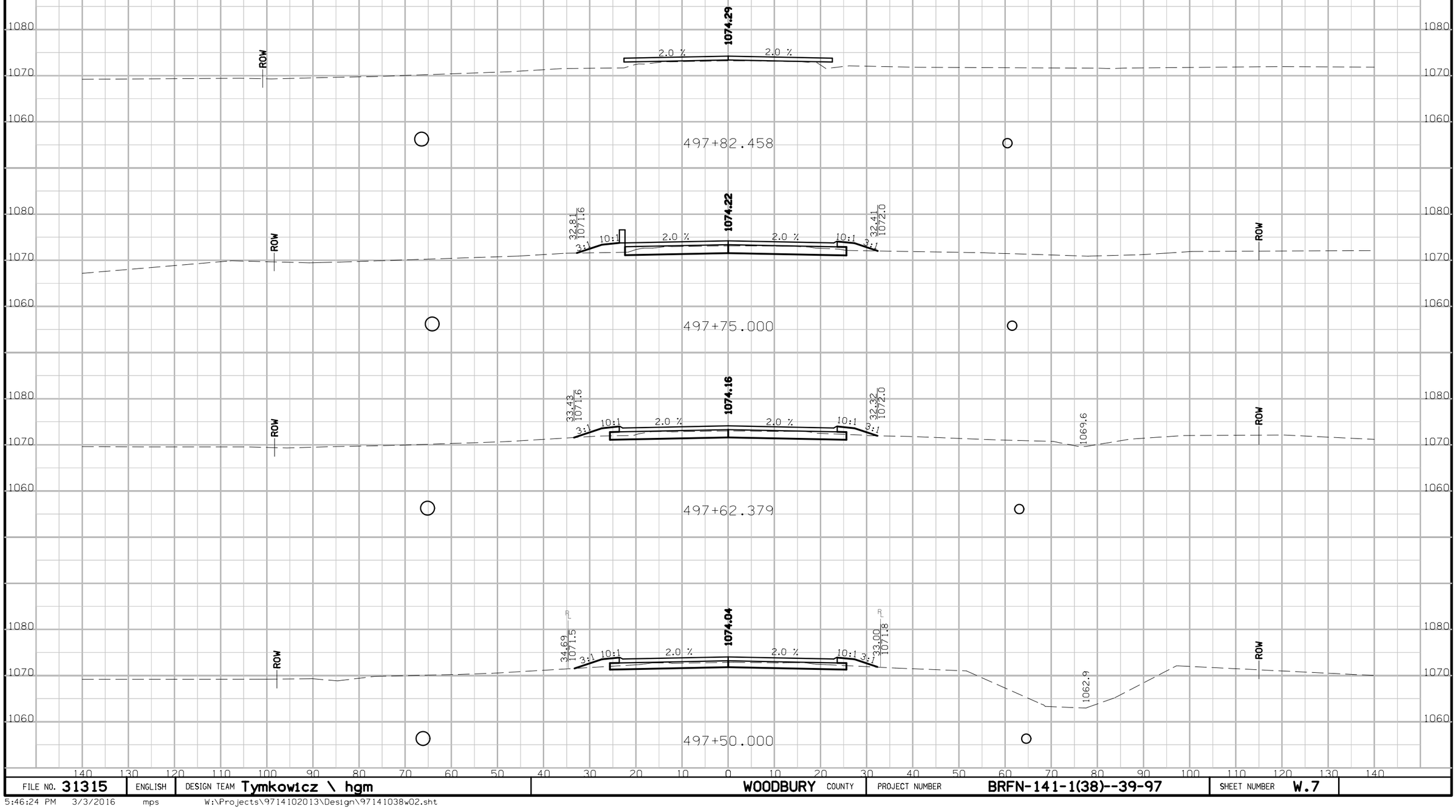
Preliminar



FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.6

5:46:24 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

IA 141
Preliminar



FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.7

5:46:24 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

IA 141

Preliminar

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

1080 1070 1060 1050

1074.54

ROW

498+75.000

1074.51

ROW

498+50.000

1074.44

ROW

498+25.000

1074.34

ROW

498+00.000

FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.8

5:46:24 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

IA 141
Preliminar

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

1080 / 1070 / 1060

ROW

1062.9

33.00
1072.2

3:1 10:1 2.0 % 1074.47 2.0 % 10:1 3:1

32.91
1072.1

499+39.615

ROW

32.48
1072.3

3:1 10:1 2.0 % 1074.52 2.0 % 10:1 3:1

31.69
1072.3

499+25.000

ROW

2.0 % 1074.53 2.0 %

499+19.536

ROW

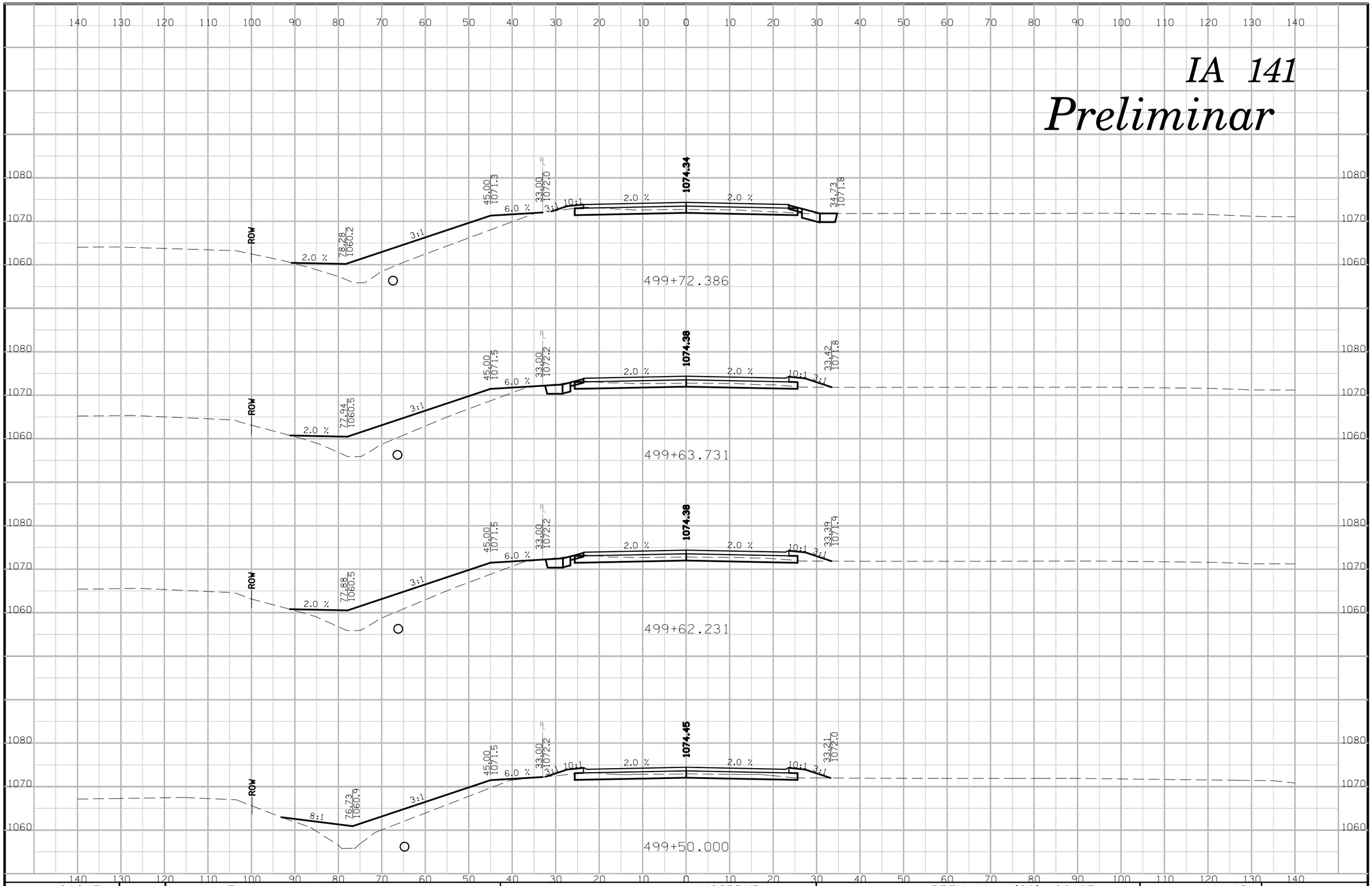
1074.54

499+00.000

FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.9

5:46:24 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

IA 141
Preliminar

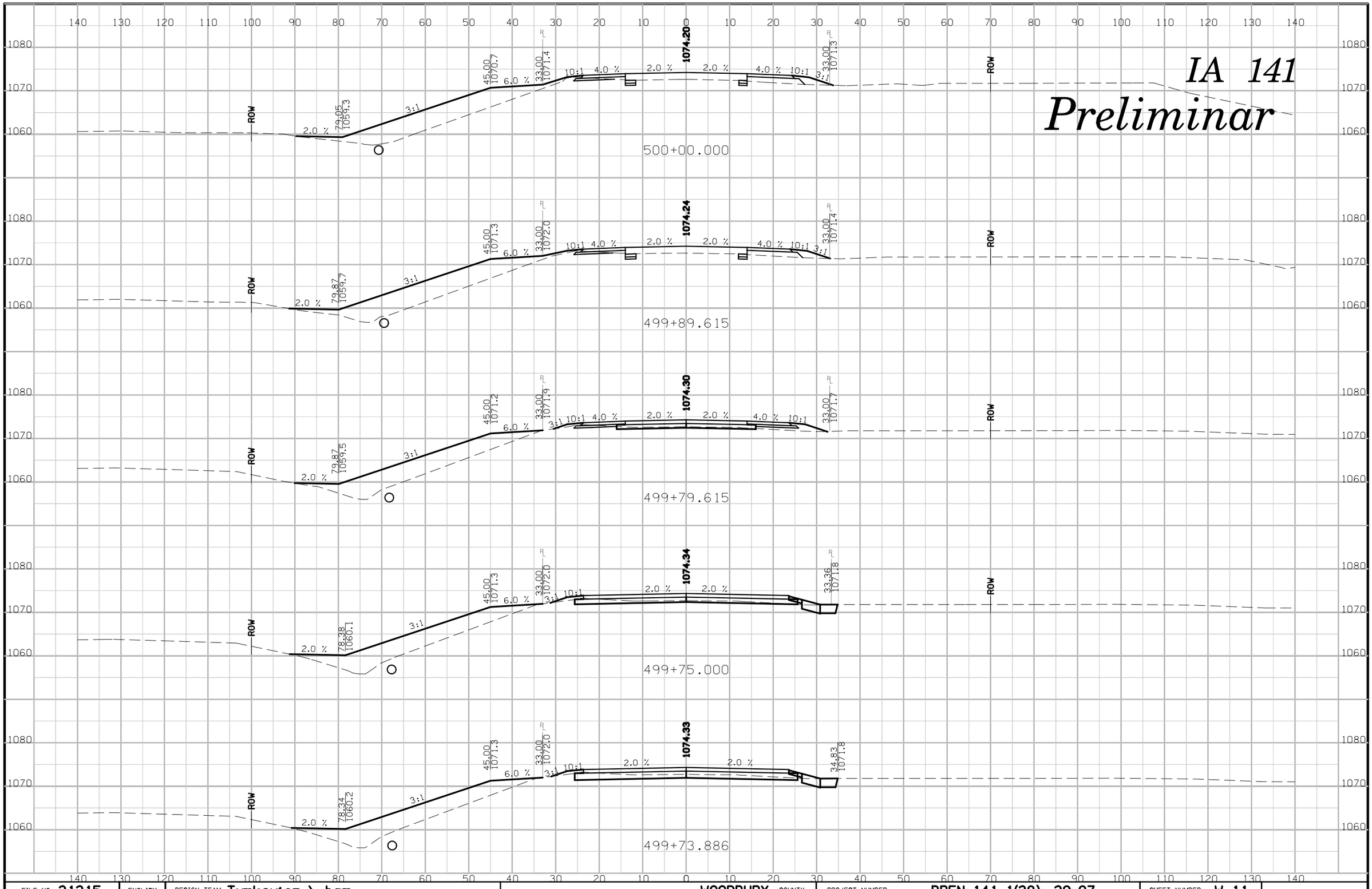


FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.10

5:46:25 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

IA 141

Preliminar

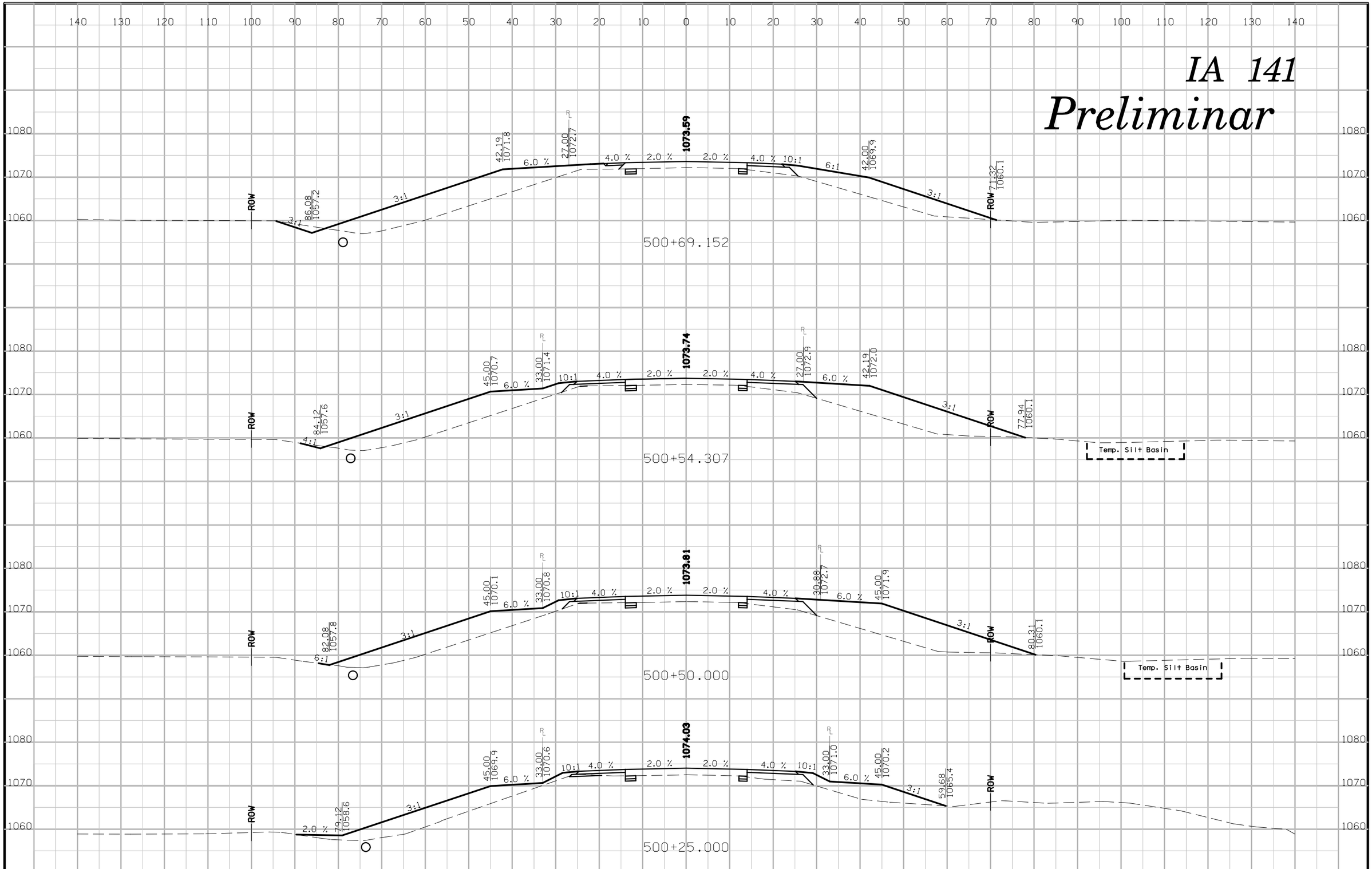


FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.11

5:46:25 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

IA 141

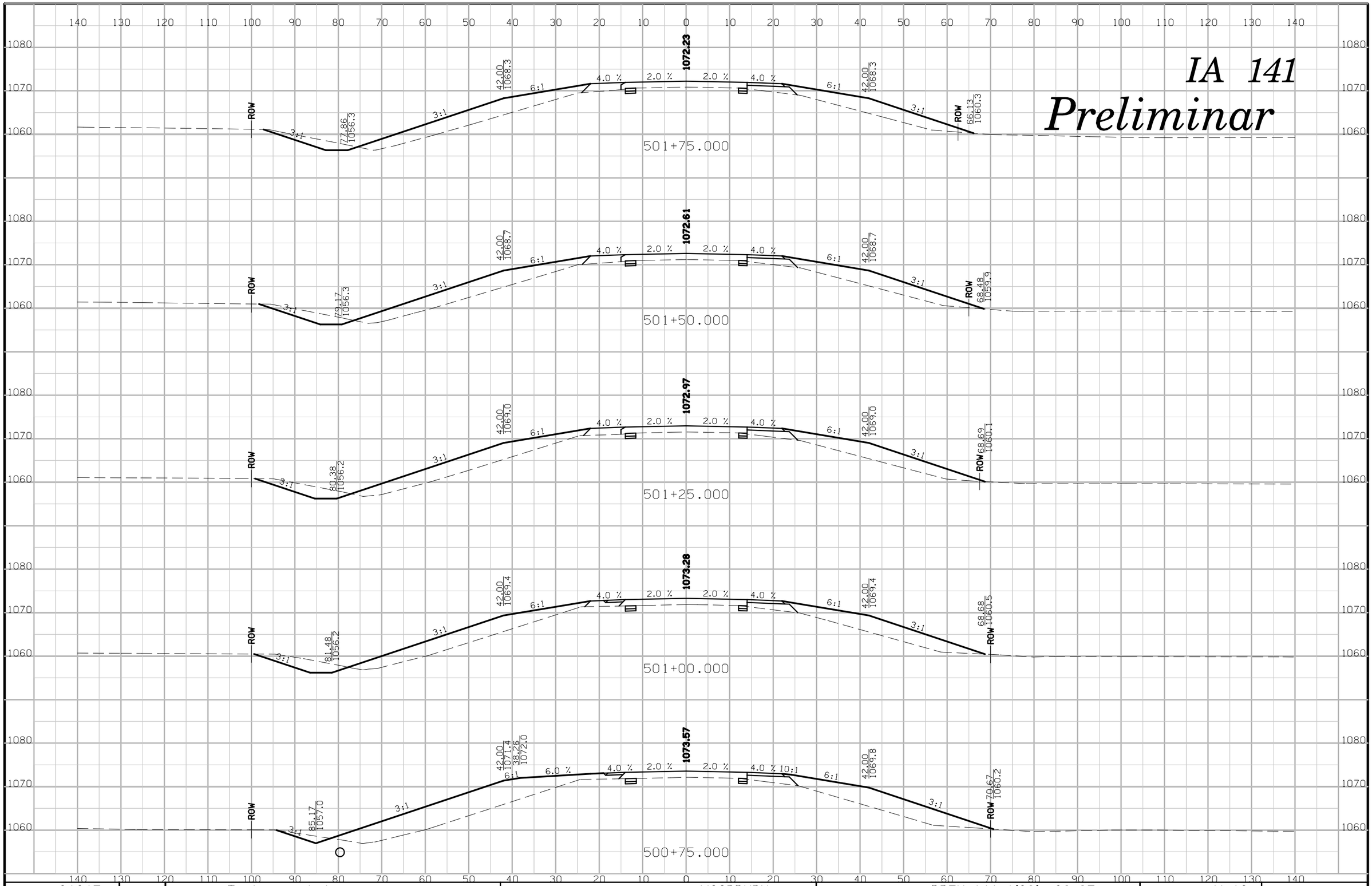
Preliminar



FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.12

5:46:25 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

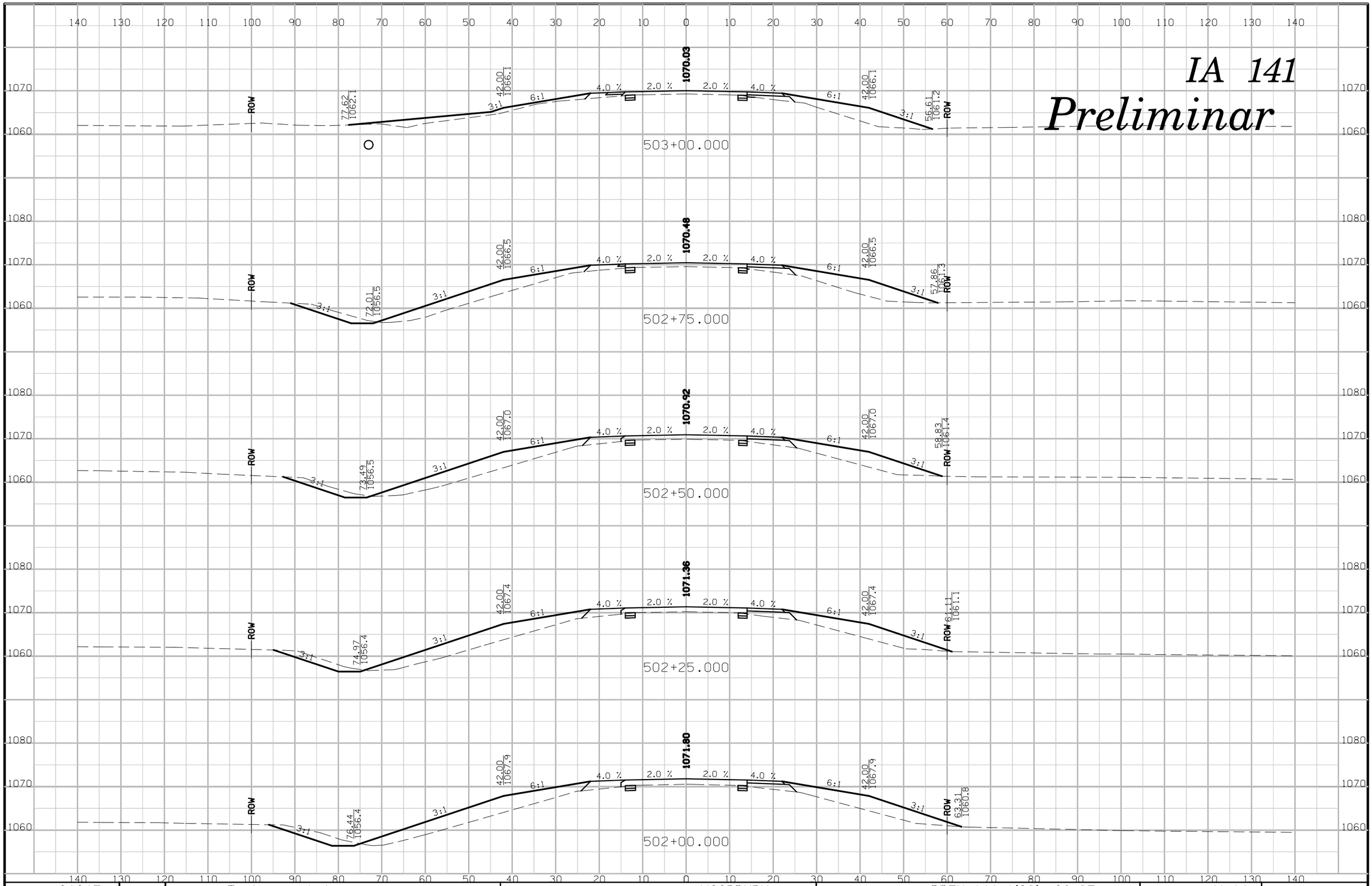
IA 141
Preliminar



FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.13

5:46:25 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

IA 141
Preliminar

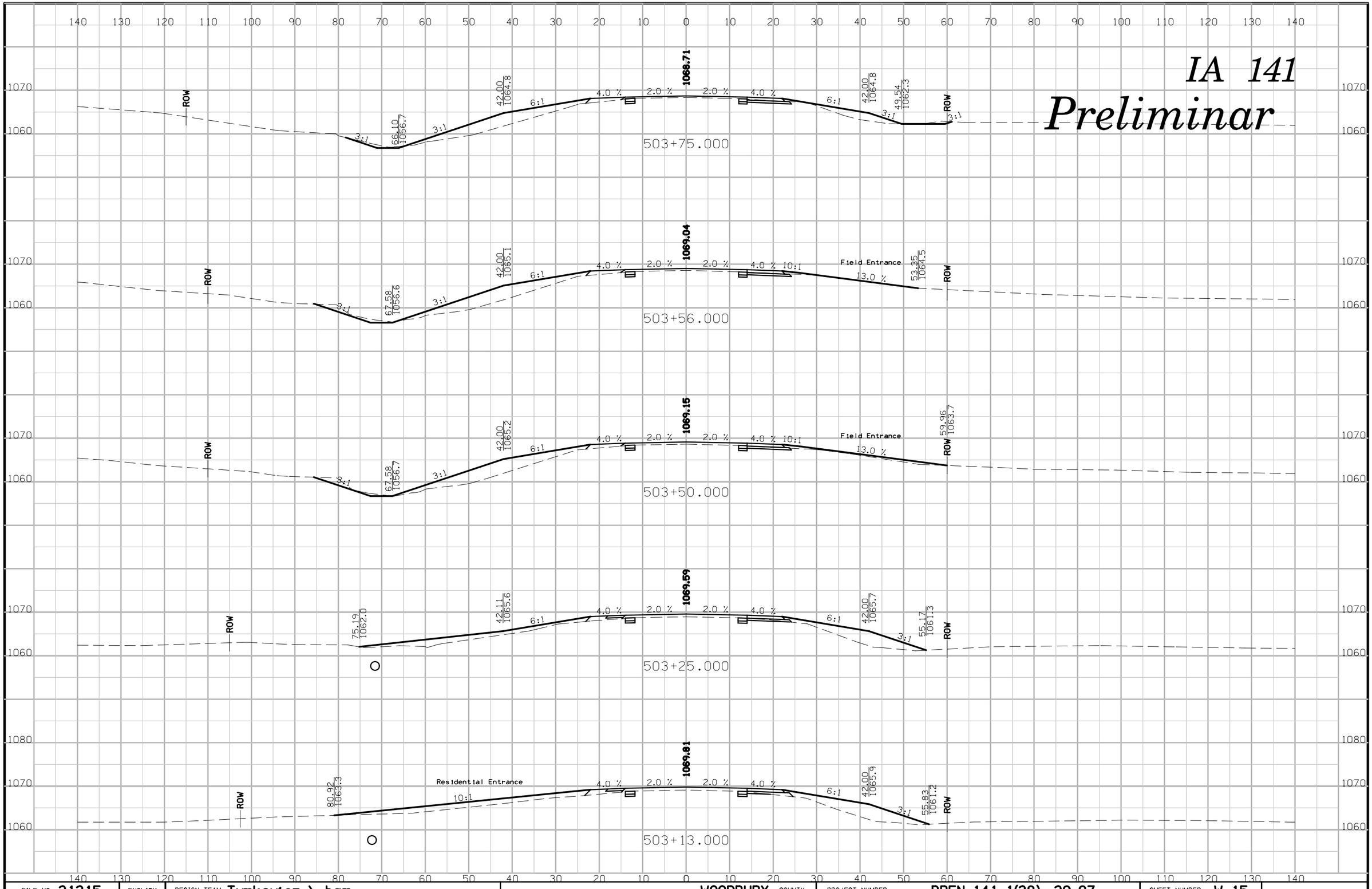


FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.14

5:46:25 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

IA 141

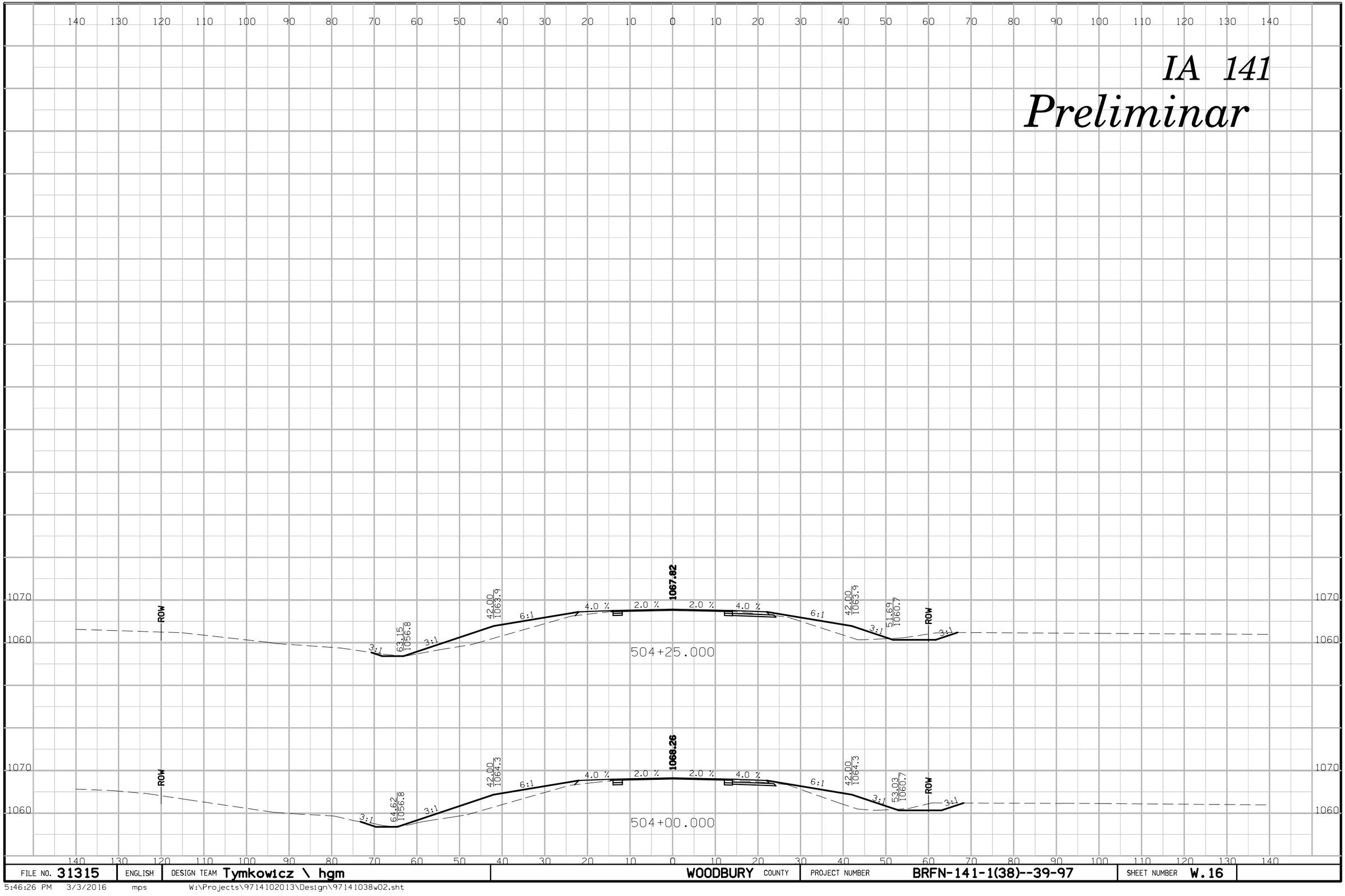
Preliminar



FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.15

5:46:26 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht

IA 141
Preliminar



FILE NO. 31315	ENGLISH	DESIGN TEAM Tymkowicz \ hgm	WOODBURY COUNTY	PROJECT NUMBER BRFN-141-1(38)--39-97	SHEET NUMBER W.16

5:46:26 PM 3/3/2016 mps W:\Projects\9714102013\Design\97141038w02.sht