IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District 3 **DATE:** August 22, 2011

ATTENTION: Tony G. Lazarowicz **PROJECT:** Woodbury County
BRF-376-1(6)--38-97

FROM: Kevin K. Patel PIN: 10-97-376-020

OFFICE: Design

SUBJECT: Project Concept Statement; (Final Approval, D0)

This project involves the IA 376 northbound bridge replacement (Maint. No. 9799.0R376) over the Burlington Northern Railroad, Union Pacific Railroad and Taft Street, 0.1 mile south of County Road D12.

A concept review was held on July 13, 2011. Those present included Tony Lazarowicz, Shane Tymkowicz, Darwin Bishop and Todd Huju from the District 3 Office; Chris King from the Office of Bridges and Structures; Marc Solberg and Brennan Dolan from the Office of Location and Environment; Jeff McCollough from Traffic and Safety and Kevin Patel and Jean Borton from the Office of Design.

The Draft Project Concept Statement was sent out for review and comment with concerns to be resolved by Monday, August 15, 2011. Comments received during the review period have been considered and resolved.

The approved project is estimated to cost $3,922,300. Traffic will be maintained by head to head traffic via the use of median crossovers. This project is recommended for construction in FY 2015. The Office of Bridges and Structures will coordinate plan preparation with assistance from the Office of Design.

KKP: jmb
Attach.
cc:

J. F. Adam	J. R. Selmer	M. J. Dillavou
M. J. Kennerly	K. D. Nicholson	D. E. Ohman
C. B. Brakke	R. L. Stanley	M. D. Masteller
D. L. Maifield	A. A. Welch	N. L. McDonald
G. A. Novey	B. L. Brakke	D. R. Claman
M. Grogg, FHWA	B. J. Dolan	N. M. Miller
E. C. Wright	T. D. Crouch	M. J. Sankey
M. A. Swenson	J. W. Smith	R. A. Younie
S. J. Gent	D. E. Sprengeler	J. Vortherms
C. C. Poole	S. P. Anderson	B. D. Hofer
J. P. Rost	S. C. Marler	L. C. Funnell
D. L. Newell	E. J. Ranney	D. R. Tebben
S. W. Tymkowicz	D. L. Bishop	T. E. Huju
D. S. Schultz	M. L. Wright	A. Wilson
S. Banks	T. L. Nicholson	J. Vortherms
D. E. Manley	M. E. Khoda	

FINAL PROJECT CONCEPT STATEMENT

Bridge over Burlington Northern Railroad
Union Pacific Railroad and Taft Street,
on IA 376, 0.1 mile south of County Road D12

Woodbury County
BRF-376-1(6)--38-97
PIN: 10-97-376-020
Maint. No. 9799.0R376
FHWA No. 53070

Highway Division
Office of Design

Kevin K. Patel, P.E.
515-239-1540

August 22, 2011

I. STUDY AREA

A. Project Description

This project involves the IA 376 northbound bridge replacement (Maint. No. 9799.0R376) over the Burlington Northern Railroad, Union Pacific Railroad and Taft Street, 0.1 mile south of County Road D12.

B. Need for Project

The bridge is functionally obsolete due to the deck geometry. The bridge width is 28' which is substandard. The bridge was designed for live loads below current standards. The current overlay is near the end of it useful life and the bottom of the deck has several hollow areas and spalls with exposed steel and leaching transverse cracks. The steel girders have several fatigue cracks in 3 girders of the 4 girder cross section and both exterior beams have already been strengthened; therefore this bridge should be replaced.

C. Present Facility

The existing structure is a 514' x 28' steel beam bridge constructed in 1956 and overlaid in 1984.

IA 376 in the project area is 24' wide PCC pavement with 10' wide partial paved shoulders and 3:1 foreslopes, constructed in 1957. HMA resurfacing was accomplished in 2007.

D. Traffic Estimates

The 2015 and 2035 average daily traffic estimates are 8,400 ADT with 10% trucks and 13,100 ADT with 11% trucks, respectively.

E. Sufficiency Ratings

IA 376 is classified as an "area development" route and is a maintenance service level "B" road with a sufficiency rating of 83. The federal bridge sufficiency rating is 47.

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2006 through December 31, 2010, there were three crashes involving the bridge including, one possible unknown personal injury crash, and two property damage only crashes.

II. PROJECT CONCEPT

A. Feasible Alternative-Replace with a Concrete Beam Bridge

Replace the existing 507' x 28' steel beam bridge with a 563' x 40' pretensioned prestressed concrete beam bridge, placed at a 52 degree right ahead skew. The typical cross section adjacent to the bridge will consist of a 24 ft. roadway (26 ft. pavement) with 6 ft. inside and 10 ft. outside, partial paved 4 ft. shoulders and 6:1/3.5:1 foreslopes. The overall cross section is two 24 ft. roadways and a 66 ft. median. The bridge will be built on the existing horizontal alignment. The vertical alignment will be raised in order to meet the minimum vertical clearance over the existing railroad below the bridge. This will require approximately 1,000 ft of new roadway

reconstruction. (See attached plan and profile sheets for the adjustments to the vertical alignment.) It should be noted that the preferred standard for the grade and the K value for the crest vertical curve are not met. However, they do meet the acceptable standards. Construct new bridge approaches. Replace the existing guardrail with new guardrail and pave the shoulders 20 ft. beyond the ends of the guardrail. Class 10 will be necessary to flatten the existing foreslopes and to construct the new guardrail blisters. Place macadam stone for slope protection under the bridges. Construct bridge end drains on each end of the bridge.

Apply erosion control and rural seeding and fertilizing to all disturbed areas.

It appears that no right of way will be required for this project.

Traffic will be maintained by one lane of traffic in each direction on the southbound lanes via the use of median crossovers. Prior to the placement of the crossover south of the bridge the existing median crossover should be removed.

Item	Estimated Cost
New Bridge	$ 2,077,000
Removal Existing Bridge	160,000
Mobilization @ 10%	223,700
M&C @ 15%	369,100
Bridge Total	**$ 2,829,800**

New Pavement	$129,000
Granular Subbase	16,700
Paved Shoulder	18,000
Granular Shoulder	3,900
Bridge Approaches	48,900
Pavement Removal	20,300
Class 10 Roadway and Borrow	151,800
Excavation Class 13 Waste	12,100
Guardrail (Removal and Install New)	15,300
Paved Shoulders for Guardrail	9,200
Class 10 for Guardrail Blisters	3,700
Bridge End Drains	10,900
Longitudinal Subdrains and Outlets	9,500
Milled Rumble Strips	1,100
Clearing and Grubbing	4,200
Seeding and Fertilizing	1,200
Wetland Mitigation	50,000
Removal of Existing Crossover	33,000
New Median Crossovers	225,200
Traffic Control@5%	38,200

Mobilization@ 5%	38,200
M&C @ 30%	252,100
Roadway Total	**$ 1,092,500**
Project Total	**$3,922,300**

B. Detour Analysis

Traffic will be maintained by the use of median crossovers. (See attached sheet 2 of the plan sheets attached.) Both crossovers are within mainline horizontal curves, therefore; the geometrics for the crossovers will need to accommodate the mainline superelevation. The speed limit will need to be lowered to 45 MPH during construction.

The northbound exit loop to Taft Street will be closed to traffic during construction.

C. Recommendations

It is recommended that the present structure be replaced, as described above.

D. Construction Sequence

It is anticipated that all work on this project will be awarded to one prime contractor. The Office of Bridges and Structures will coordinate the plan preparation with assistance from the Office of Design.

E. Special Considerations

The design criteria has been established and approved by the Office of Design Director. The preferred values in Chapter 1C-1 of the IDOT Design Manual were not met but in all cases the acceptable values were met or exceeded.

A steel beam bridge was considered but rejected due to increase in cost, possible construction issues over two live tracks and steel availability.

No bike path or sidewalk will be required as part of this project.

It appears Right of Way will not be required for this project.

The Office of Location and Environment has completed their review and have the following recommendations:

1. Federal and state laws require that impacts to wetlands and streams be avoided

and minimized. Project design should focus on the least environmentally damaging, practicable alternative.

Project specific recommendations include the following:

1. Based on the information provided in the Draft Concept and discussions at the D0 field exam, we have determined that a Section 404 Permit will NOT be required for this work, provided that the wetland area located adjacent to northbound IA 376 is avoided.

If the project concept changes, additional ROW becomes necessary, or extra work is identified during construction, further review by this office may be required.

The Office of Location and Environment Cultural Resource Section commented that this bridge was recently found eligible for nomination to the National Register of Historic Places as it meets the 95th percentile (over 400 feet) requirement for overall length of a Type 302 steel stringer bridge. As replacement of this bridge will constitute an adverse effect to a historic property, the DOT will be required to mitigate for the loss of this historic property.

A phase I archaeological investigation of any new easement or borrow areas may also be required.

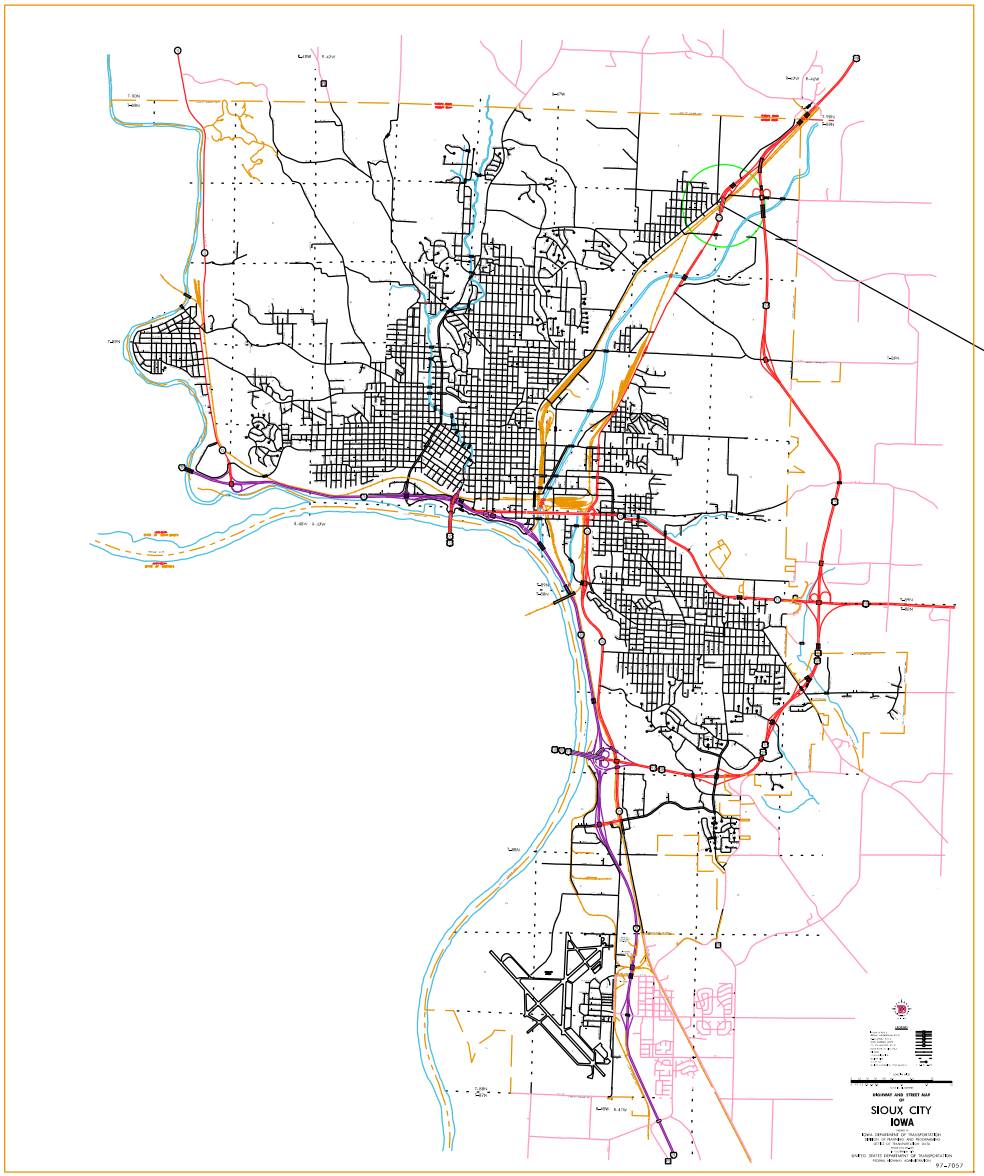
F. Program Status

Site data has been developed by the Office of Design. This project is listed in the 2012-2016 Iowa Transportation Improvement Program, with $3,312,000 programmed for replacement/repair in FY 2015. Costs for this project will be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.

KKP: jmb

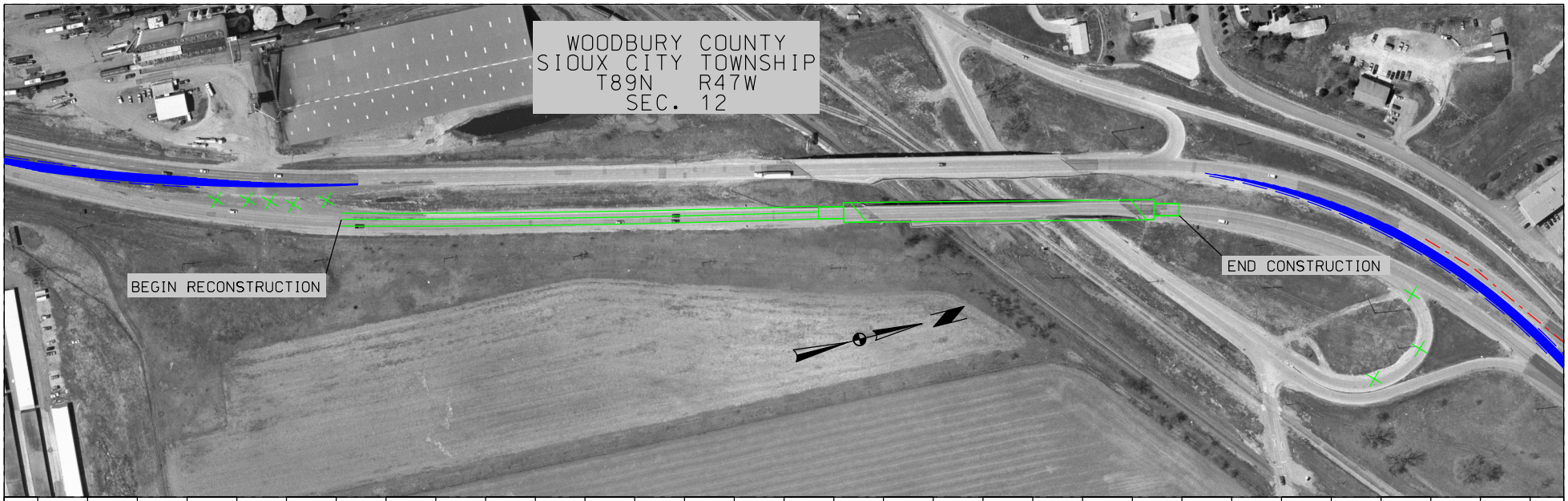
WOODBURY COUNTY

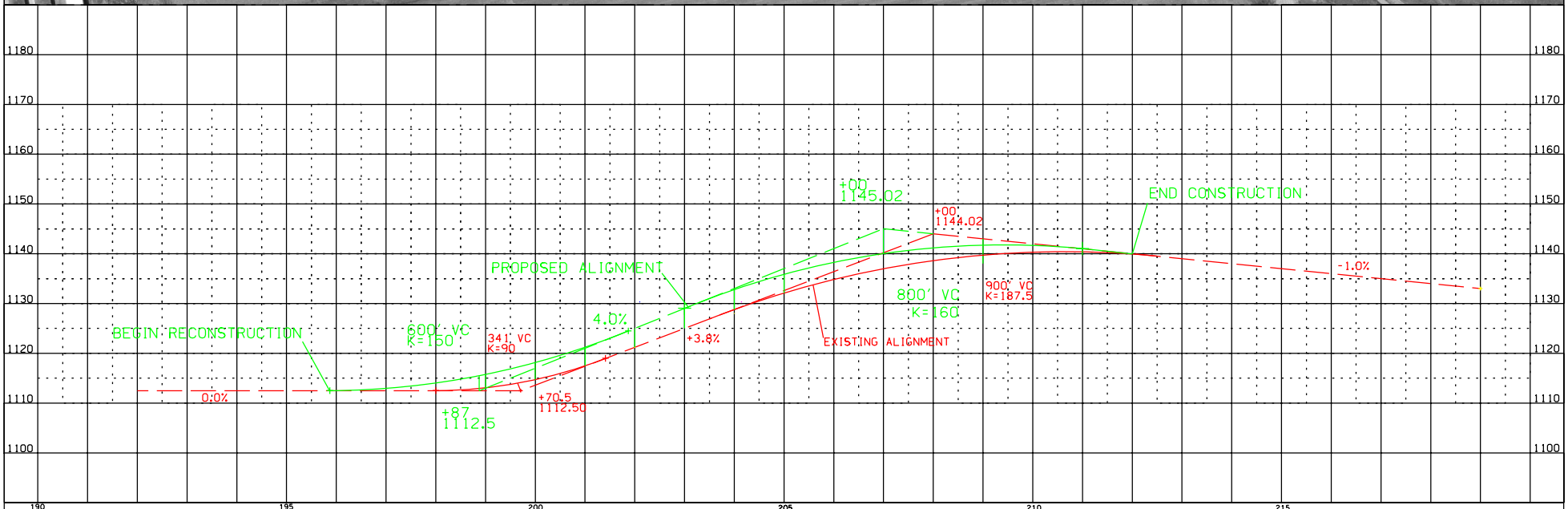
SIOUX CITY



STA 209+36.3
FHWA 53070
MAINT. NO. 9799.0R376
DESIGN 555

IN SIOUX CITY
OVER R.R. & TAFT STREET,
0.1 MILE SOUTH OF COUNTY ROAD D-12
(NBL)]
BRF-376-1(6)--38-97
PIN: 10-97-376-020





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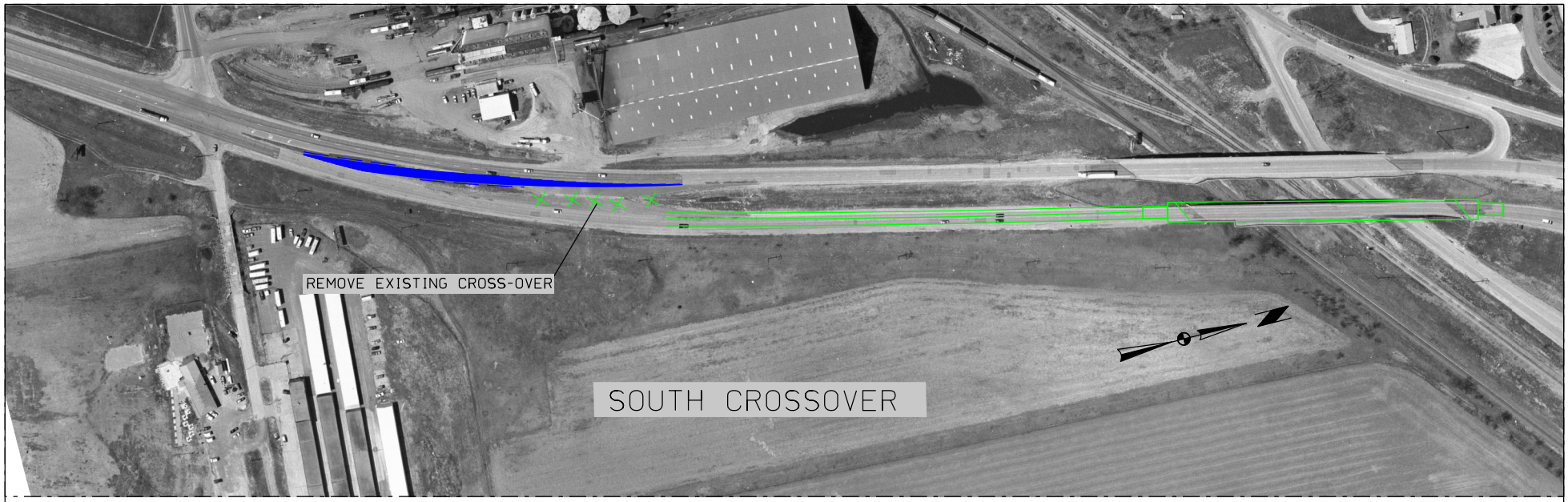
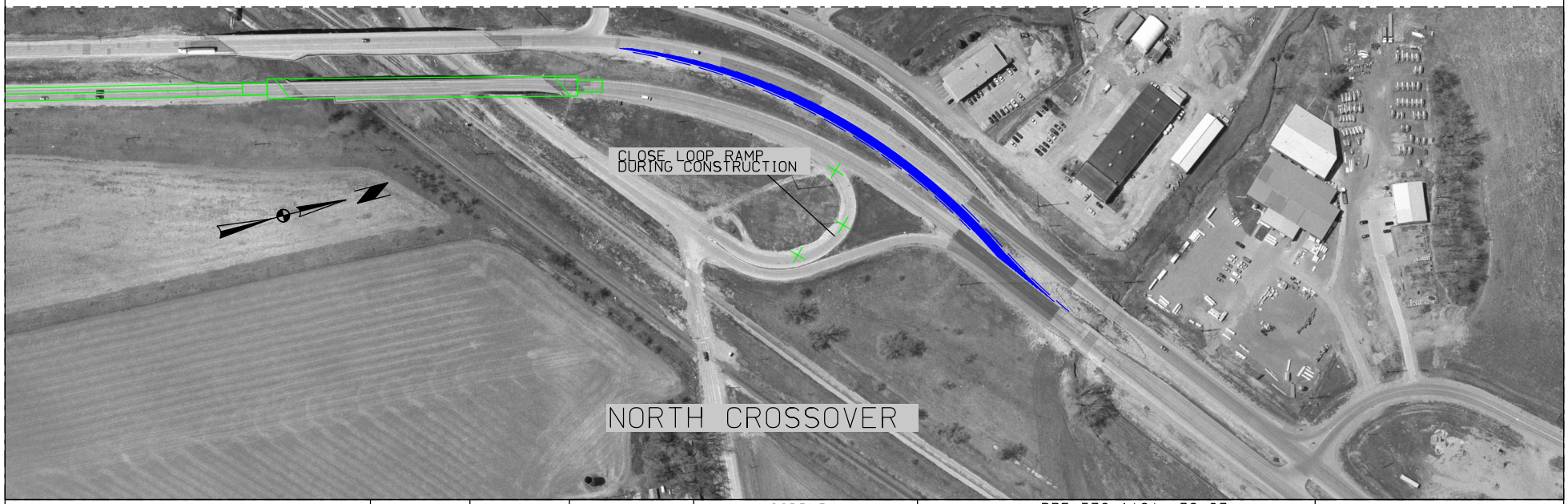




ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER 2

BRIDGE REPLACEMENT - PPCB
BRF-376-1(6)--38-97
WOODBURY CO.

LETTING DATE
DEC. 16, 2014

Iowa Department of Transportation

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

WOODBURY COUNTY

BRIDGE REPLACEMENT - PPCB

IN SIOUX CITY OVER R.R. AND TAFT STREET
0.1 MILES SOUTH OF CO. RD. D-12 (NBL)

SCALES: As Noted

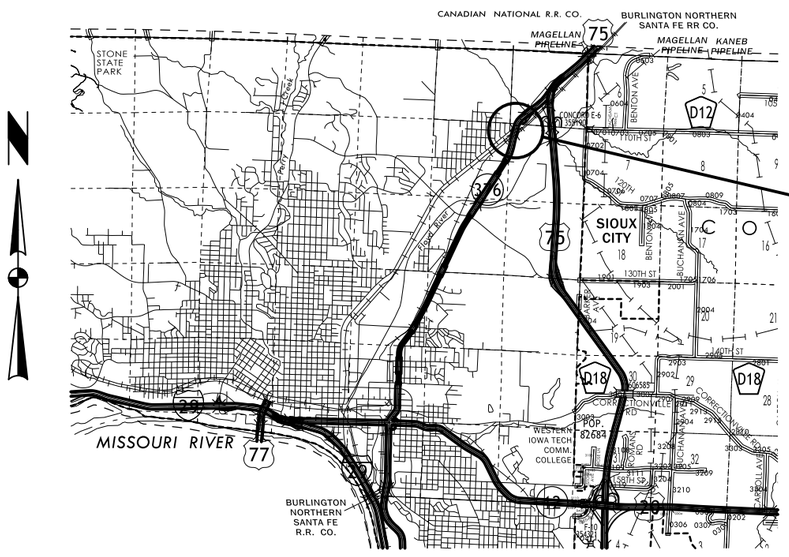
Refer to the Proposal Form for list of applicable specifications.

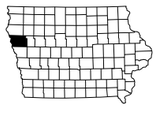
IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

NO MILEAGE SUMMARY

REVISIONS

TOTAL
PROJECT IDENTIFICATION NUMBER
10-97-376-020
PROJECT NUMBER
BRF-376-1(6)--38-97
R.O.W. PROJECT NUMBER
STPN-376-1(8)--2J-97





LOCATION MAP SCALE
0 1 2 3
Miles

Borrow = 43,000 CY
(Includes 30% Shrink)

For Project Location Map
Refer to Sheet A.3

PROJECT SCHEDULE	
EVENT	DATE
D3	11/01/12
S2	02/01/13
B1	02/01/13
D5	03/01/13
S4	03/15/13

DESIGN DATA URBAN		
2015 AADT	8,400	V.P.D.
2035 AADT	13,000	V.P.D.
2035 DHV	--	V.P.H.
TRUCKS	11	%
Total Design ESALs	--	

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

PRELIMINARY PLANS

Subject to change by final design.

D3 PLAN – Date: Nov. 1, 2012

ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER A.1

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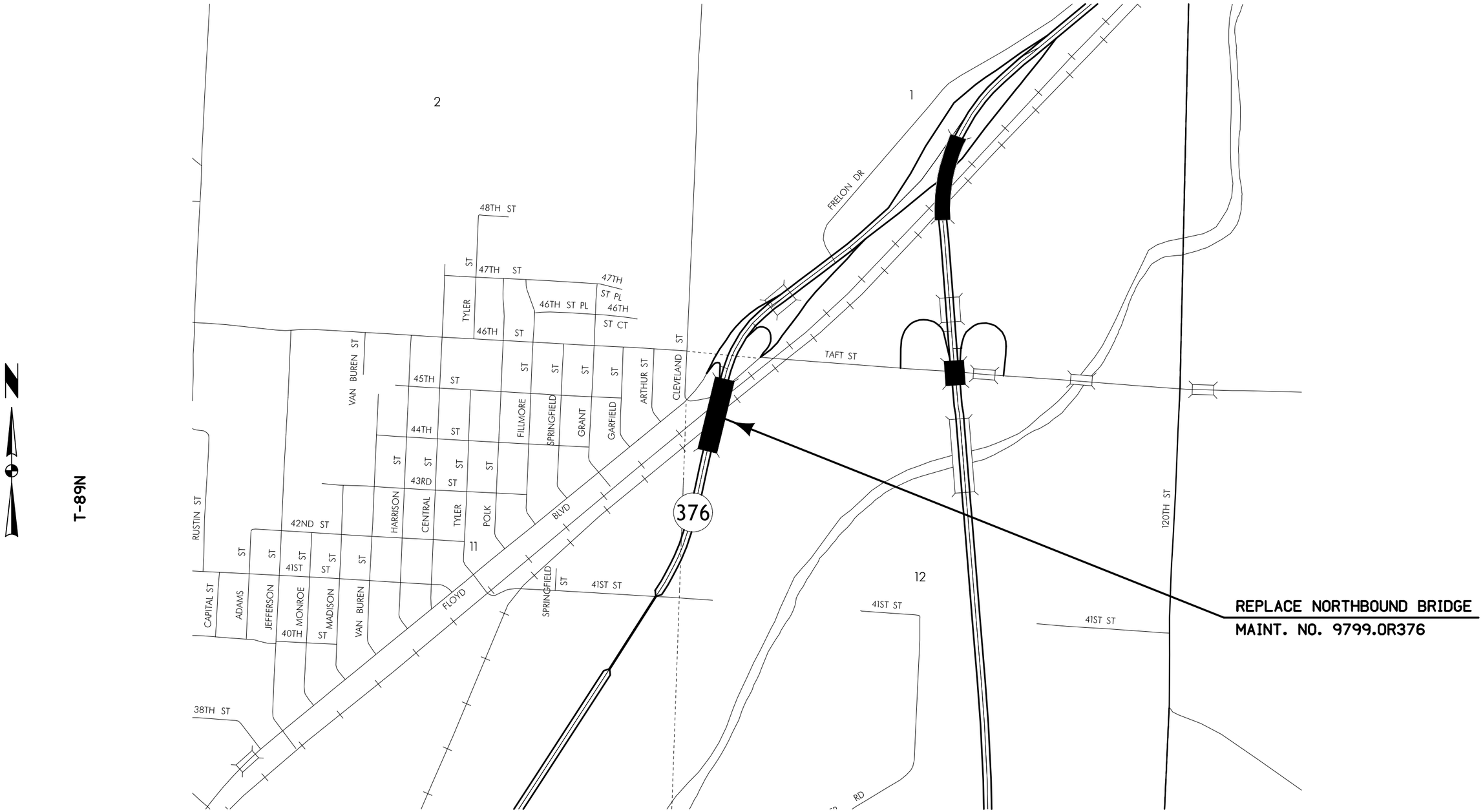

Location Map

C ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER	BRF-376-1(6)--38-97	SHEET NUMBER A.2

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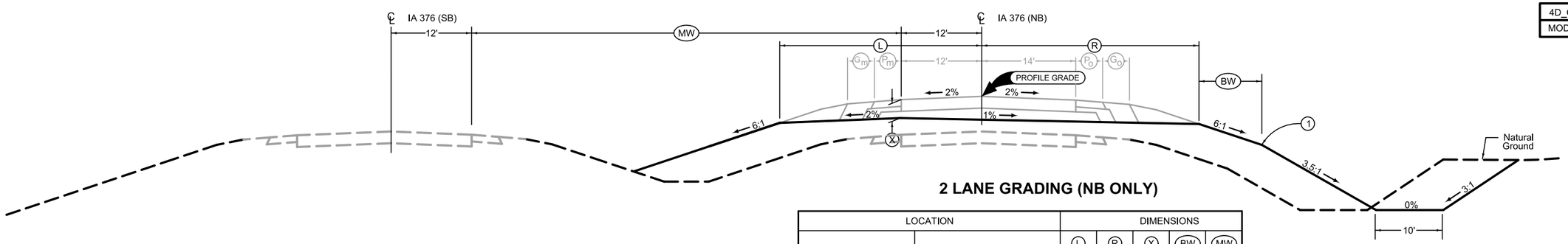
4D_Grade
MODIFIED



2 LANE GRADING (NB ONLY)

LOCATION			DIMENSIONS				
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(BW) Feet	(MW) Feet
IA 376	196+00.00	206+45.86	28	32	16	16	66
IA 376	212+19.37	213+31.10	28	32	16	16	66

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

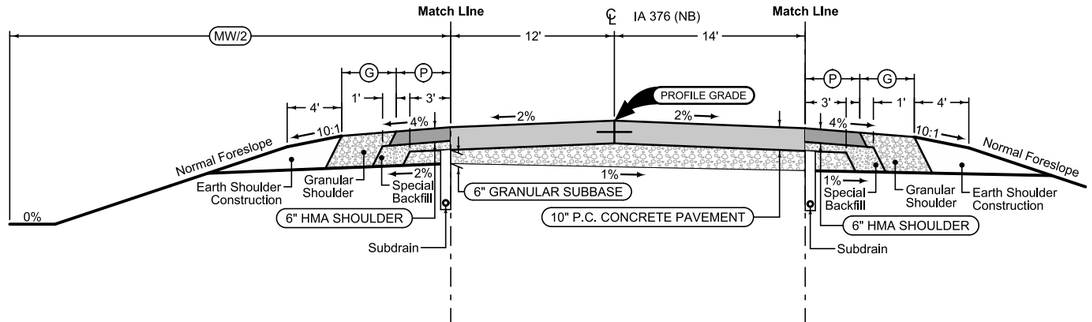
See Plan & Profile sheets and cross sections for additional details of ditches and backslopes.

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

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

		2_C_ 10-19-10	
STATION TO STATION		(P) Feet	(G) Feet
196+00.00	204+44.44	4	2
212+68.92	213+31.10	4	Varies



Section shown in the direction of traffic.

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

			4DP_ 10-19-10
Direction of Travel	BEGIN STATION	END STATION	(MW) Feet
NB	196+00.00	205+64.39	66

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

			4_C_ 10-19-10	
Direction of Travel	BEGIN STATION	END STATION	(P) Feet	(G) Feet
	196+00.00	205+10.18	4	4
	213+10.83	213+31.10	4	Varies

See Tab 100-24 for pavement quantities.

See Tab 112-9 for shoulder quantities.

IA 376 RECONSTRUCTION (NB LANES ONLY)

ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER B.1

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DATUM INFORMATION

THE DATUM PLANE FOR THIS SURVEY IS RELATIVE TO N.A.V.D. 88 DATUM. BENCHES WERE RAN FROM IADOT BM NO. ___ TO NO. ___ FOR A CHECK THEN A CLOSED LOOP WAS RAN FROM NO. ___ TO NO. ___.

ALL CONTROL POINT COORDINATES SHOWN ARE LOCAL PROJECT PLANE (GROUND) COORDINATES.
CONVERSION EQUATION GRID TO GROUND: GROUND COORD = (STATE PLANE - HOLD POINT) 1/GRID FACTOR + HOLD POINT
CONVERSION EQUATION GROUND TO GRID: GRID COORD = (GROUND - HOLD POINT) GRID FACTOR + HOLD POINT

HOLD POINT = GO21	NORTH	EAST	GRID FACTOR	1/GRID FACTOR
	580322.54	2455353.37	0.999936506	1.000063498

BENCH MARKS

IOWA BENCHMARKS:

				ELEVATION
No. 312	Sta. 177+05.18	24.02 RT	SET IRON PIN	1113.796
No. 313	Sta. 187+26.17	47.29 RT	FND 1/2 REBAR	1114.554
No. 314	Sta. 205+83.31	42.58 LT	FND 1/2 REBAR	1135.385
No. 315	Sta. 223+89.28	34.59 LT	FND 1/2 REBAR	1130.743
No. 316	Sta. 211+74.92	43.59 LT	FND 1/2 REBAR	1140.025
No. 317	Sta. 241+67.79	23.96 RT	SET IRON PIN	1122.514
No. 500	Sta. 176+05.06	32.52 RT	CUT X ON TOP BOLT OF FIRE HYDRANT	1114.503
No. 501	Sta. 186+46.07	46.53 RT	CUT X ON N BOLT OF FIRE HYDRANT	1114.341
No. 502	Sta. 205+64.52	71.46 LT	CUT SQUARE SE HANDRAIL OF SB BRIDGE	1142.188
No. 503	Sta. 211+75.19	18.43 LT	FND IHC BUTTON NW WHEELGUARD NB BRIDGE	1144.435
No. 504	Sta. 224+46.01	34.02 RT	FND IHC BUTTON NE HANDRAIL NB BRIDGE	1132.281
No. 505	Sta. 211+02.63	71.16 LT	FND CUT SQUARE	1146.007
No. 506	Sta. 239+99.42	44.60 LT	FND DOT BUTTON INLET HDWL RCB	1119.286

DETAILS OF REFERENCE INFORMATION

All References are Plumb Distances unless otherwise noted.

SURVEY SYMBOLS

- ENU edge of unpaved entrance&parking
- FW fence wire
- FLD Flowline of Ditch
- TOE toe of slope
- TB top of bank
- EP edge of paved roads
- C center of roadway
- OHE Overhead electric line
- PP power pole
- GW Guy Wire
- Default_Point Default Point Feature
- TPD telephone pedestal
- STA storm sewer 1st co.
- CMP corrugated metal pipes
- MB Mailbox
- SI sign
- RET retaining walls
- FWD wood fence
- MHE Electrical Manhole
- TLA buried telephone line 1st co.
- CPT Control Point Temporary
- CC control check
- CS concrete slab
- GR Ground Field Survey
- PIP pipes(cast iron,steel,tile,etc)
- MHSN Sanitary Manhole
- CPS Control Point Set
- CPF Control Point Found
- TDC tree deciduous
- TLN tree line
- RCP reinforced conc.pipe
- SCR section corner
- ROW right of way rails
- HDG hedge
- LC lot corner
- SHG granular shoulder
- REF reference tie points
- BD Bridge Deck
- BCL bridge centerline
- EG edge of gravel road
- SHR shrub
- SH shoulder
- CON concrete or a/c slab
- MIS miscellaneous
- SHP paved shoulder

UTILITY LEGEND

Where public utility fixtures are shown as existing on the plans or encountered within the construction area, it shall be the responsibility of the contractor to notify the owners of those utilities prior to the beginning of any construction. The Contractor shall afford access to these facilities for necessary modification of services. Underground facilities, structures and utilities have been plotted from available surveys and records, and therefore their locations must be considered approximate only. It is possible there may be others, the existence of which presently not known or shown. It is the Contractor's responsibility to determine their existence and exact location and to avoid damage thereto. No claims for additional compensation will be allowed to the Contractor for any interference or delay caused by such work.

The Contractor is required to utilize the utility One-Call service at (800) 292-8989 at least 48 hours prior to excavating anywhere on the project.

The following utility companies are known to have facilities on the project:

CITY OF SIOUX CITY — San. —
Timothy J. Higgins — St.S. —
712-279-6164 — W —
thiggins@sioux-city.org

MIDAMERICAN ENERGY — E1 -
Barb Parks — G -
712-233-4866
BTParks@midamerican.com

MCI
Janette Harris
972-729-6650
janette.l.harris@verizonbusiness.com

MAGELLAN MIDSTREAM PARTNERS
Tim Kassen
918-574-7351
tim.kassen@magellanlp.com

IOWA 1-CALL# 1-800-292-8989

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
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
- 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)

C	ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER	BRF-376-1(6)--38-97	SHEET NUMBER D.1

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SIOUX CITY TWP.
T-89N R-47W
SEC. 11

SIOUX CITY TWP.
T-89N R-47W
SEC. 12

41ST STREET

41ST STREET

PC Sta 186+16.87

PC Sta 187+67.02

PI Sta 191+20.26

Curve Data (NB)
Δ = 19° 56' 00.00" (LT)
T = 503.40
L = 996.62
R = 2,864.67
E = 43.89

PI Sta 192+70.42

STA. 193+45.51
18" x 85.25 Conc Pipe w/
18" CMP Extensions &
.15 X 136.4 Intake
DA= 3.2 AC R

18" x 107.67 CMP

15" x 68.78
METAL PIPE

EXISTING
CROSSOVER (U.A.C)

PI Sta 196+13.49

PI Sta 197+63.65

STA. 195+99.96
BEGIN CONSTRUCTION

GRADING
LIMITS

GRADING
LIMITS

APPROX. SEC. LINE

APPROX. SEC. LINE

APPROX. SEC. LINE

IA. 376 (SB)

IA. 376 (NB)

0 FEET 50

1,130
1,120
1,110
1,100

1,116.81

+0.000%

VPI +00.000
Elv 1,116.81
K = 150
Len 600.00 ft

+ 1.800%

Lt Med Rt

Vari. - See Cross Section
U.A.C. Ditch Grade

1,116.81 1,116.83 1,116.89 1,117.00 1,117.14 1,117.33 1,117.56 1,117.83 1,118.14 1,118.50 1,118.89 1,119.33 1,119.81 1,120.33 1,120.89 1,121.50 1,122.14

185 190 195 200

C	ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER D.2

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SIOUX CITY TWP.
T-89N R-47W
SEC. 11

SIOUX CITY TWP.
T-89N R-47W
SEC. 12

200 205 210 215

46TH STREET

APPROX. SEC. LINE

GRADING LIMITS

IA. 376 (SB)

IA. 376 (NB)

TS Sta 210+99.64

SC Sta 213+49.64

PI Sta 212+66.41

PI Sta 212+47.87

TS Sta 210+81.10

SC Sta 213+31.10

STA. 213+31.10
END CONSTRUCTION

FLOYD BLVD

Sta. 209+32.77
507 X 28 Multiple I-Beam
Span Bridge
REMOVE

Build 563 X 40 Pretensioned
Prestressed Concrete Bridge
Placed at 52° Skew
Design No.

SCS PI Sta 216+12.67 (NB)
Δ = 39° 00' 00.00" (RT)
Theta = 6° 14' 58.34"
Ls = 250.00
Ts = 531.57
Es = 72.14
P = 2.27
K = 124.95
Xc = 249.70
Yc = 9.08
LT = 166.77
ST = 83.43
LC = 249.87

Curve Data
Δ = 26° 30' 03.31" (RT)
T = 269.86
L = 530.06
R = 1,146.00
E = 31.34

Sta. 212+55.43, 94.81 Rt.
36" x 59.1 Conc Pipe
D.A. = 8 AC - R

FILL+30% = 41,500 CY
CUT = 100 CY
BORROW = 41,400 CY

FILL+30% = 1,500 CY
CUT = 0 CY
BORROW = 1,500 CY

0 FEET 50

-1.006%

+4.000%

+4.000%

+ 1.800%

VPI +00.000
Elv 1,148.81
K = 140
Len 700.00 ft

1,142.46

1,140
1,130
1,120
1,115
1,110
1,105

Lt Med Rt

Ditch Grade

Vari. - See Cross Section

U.A.C.

U.A.C.

U.A.C.

1,122.83 1,123.56 1,124.33 1,125.14 1,126.00 1,126.89 1,127.83 1,128.81 1,129.81 1,130.81 1,131.81 1,132.81 1,133.81 1,134.81 1,135.79 1,136.72 1,137.61 1,138.45 1,139.25 1,140.01 1,140.71 1,141.38 1,142.00 1,142.58 1,143.11 1,143.59 1,144.03 1,144.43 1,144.78 1,145.09 1,145.35 1,145.57 1,145.74 1,145.87 1,145.95 1,145.99 1,145.99 1,145.94 1,145.84 1,145.70 1,145.52 1,145.29 1,145.04 1,144.79 1,144.53 1,144.28 1,144.03 1,143.78 1,143.53 1,143.28 1,143.02 1,142.77 1,142.52

200 205 210 215

C	ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER D.3

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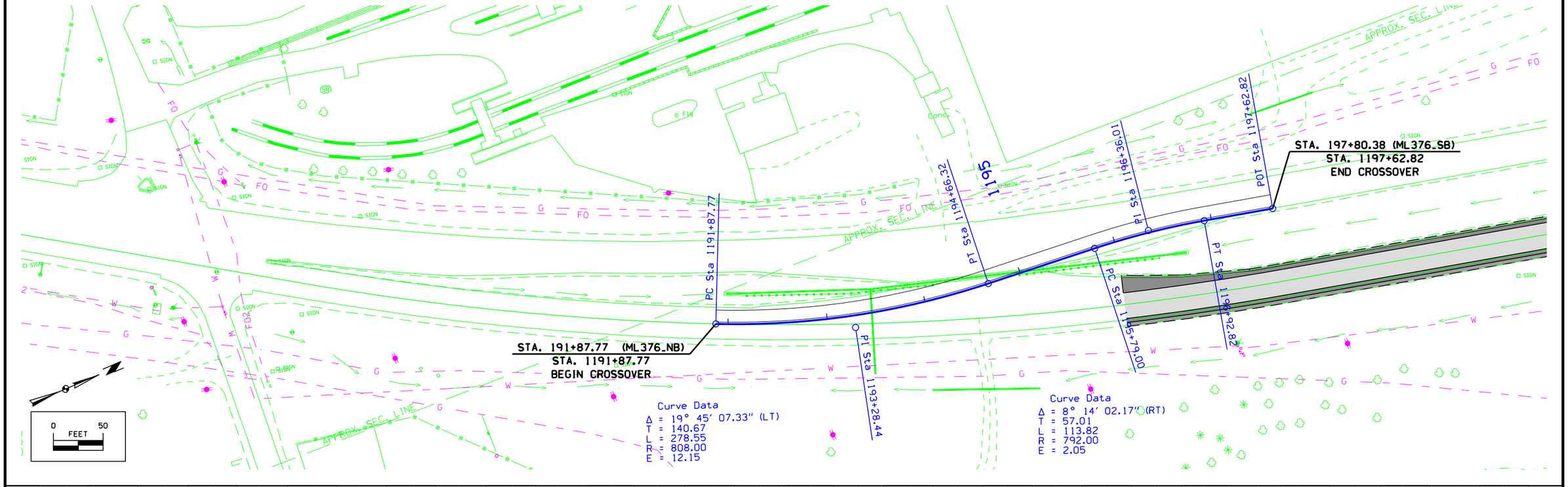

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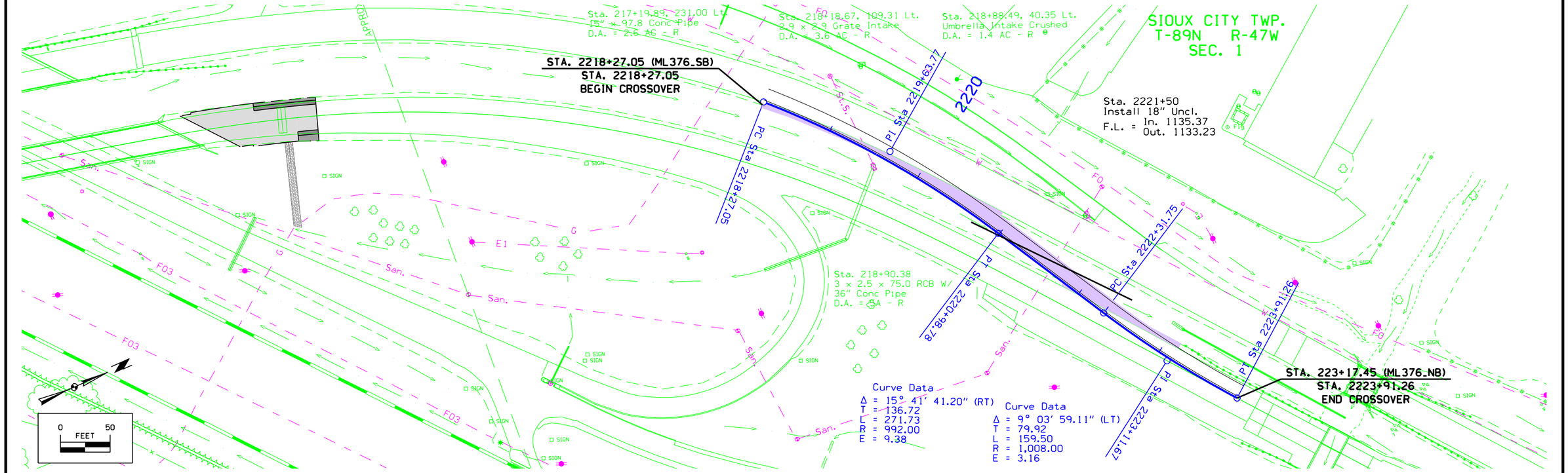

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108-26A
08-01-08

STAGING NOTES

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic on IA 376 will be maintained as two-lane, two-way traffic on the SB lanes via NB lane median crossovers. The existing exit loop from NB IA 376 to Floyd Blvd/Taft St will be closed for the duration of the project. Access to Floyd Blvd/Taft St will be detoured via Outer Drive.

Traffic control shall be in accordance with Standard Road Plan TC-61.

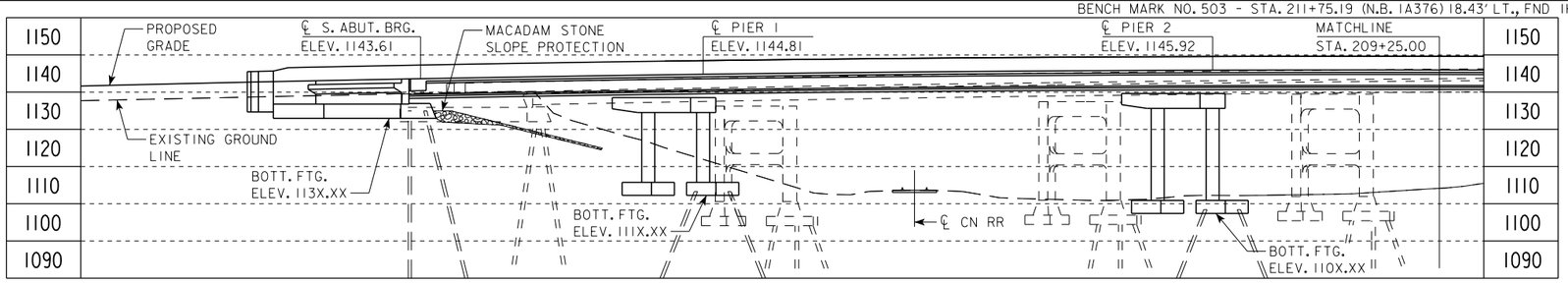
102-15
08-01-08

TABULATION OF SPECIAL EVENTS

Event	Location	Date

BENCH MARK NO. 503 - STA. 211+75.19 (N.B. IA376) 18.43' LT., FND IHC BUTTON NW WHEELGUARD NB BRIDGE - ELEV. 1144.44

NOTES TO FINAL DESIGNER:
1. TL-5 BRIDGE RAILING PROPOSED.
2. CONSTANT 2% CROSS SLOPE FOR FULL BRIDGE LENGTH.
3. PIER TYPE - FRAME.
4. BEAM TYPE - BTD.

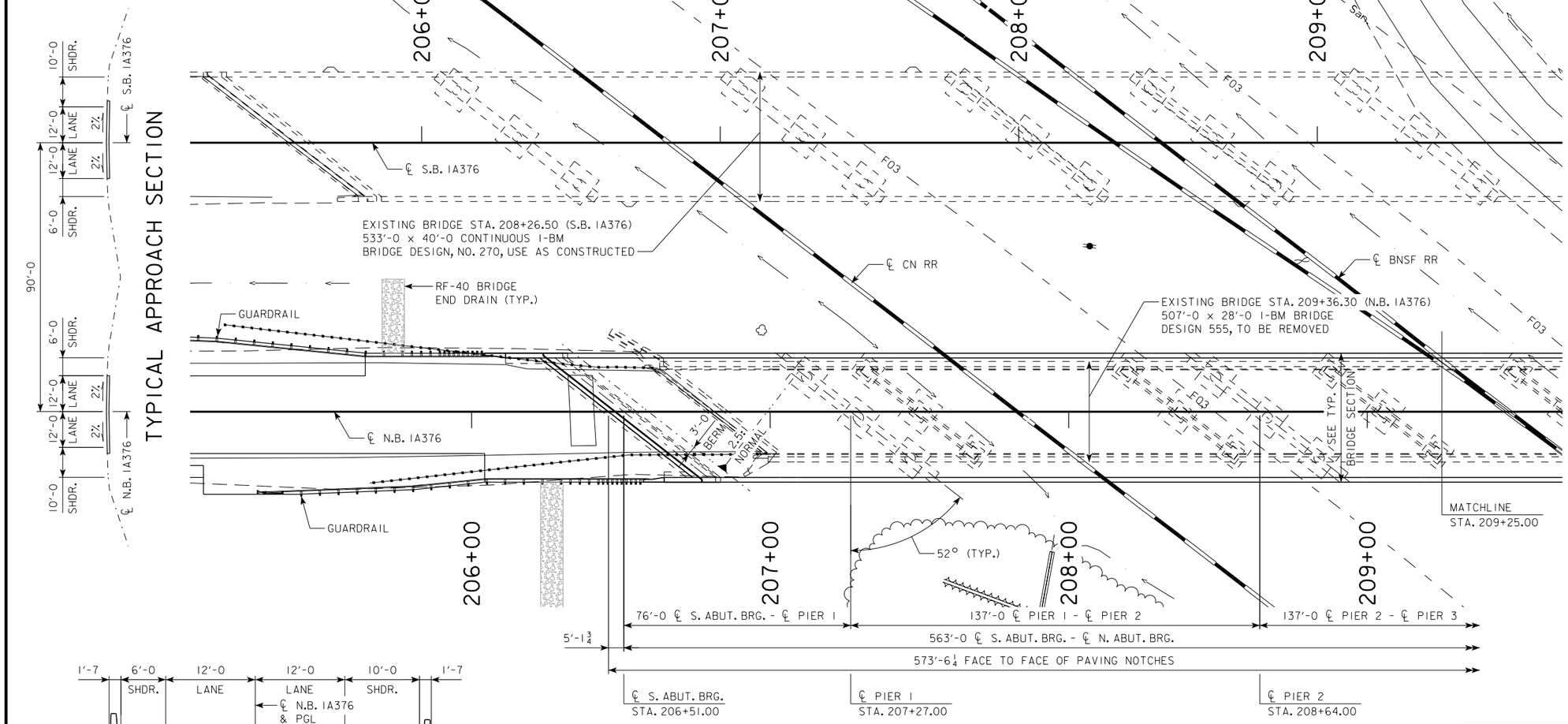


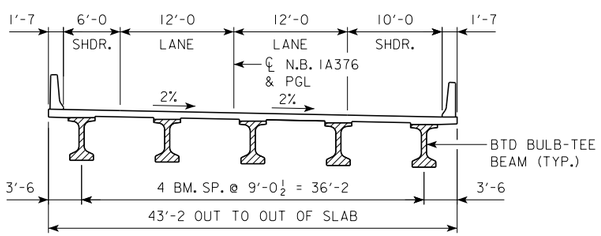
4.000% -1.006%

VPI STA = 207+00.00
VPI ELEV = 1148.81
VC = 700'

PROPOSED PROFILE GRADE ON N.B. IA376

LONGITUDINAL SECTION ALONG ℄ N.B. IA376





TYPICAL BRIDGE CROSS SECTION

SITUATION PLAN

TRAFFIC ESTIMATE

2015	AADT	8400	V.P.D.
2035	AADT	13,100	V.P.D.
2035	DHV	-	V.P.H.
TRUCKS		11	%

UTILITIES LEGEND:

TO BE DETERMINED

0 ENGLISH 40
SCALE IN FEET

PRELIMINARY

LOCATION

N.B IA376 OVER
BNSF RR, CN RR & TAFT ST.
T-89N R-47W
SECTION 12
SIOUX CITY TOWNSHIP
WOODBURY COUNTY
BRIDGE MAINT. NO. 9799.0R376
LATITUDE 42.546309°
LONGITUDE -96.350328°

DESIGN FOR 52° SKEW (R.A.)

563'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

76'-0 END SPANS (3) 137'-0 INTERIOR SPANS

SITUATION PLAN

STATION: 209+32.50 JAN. 2013

WOODBURY COUNTY

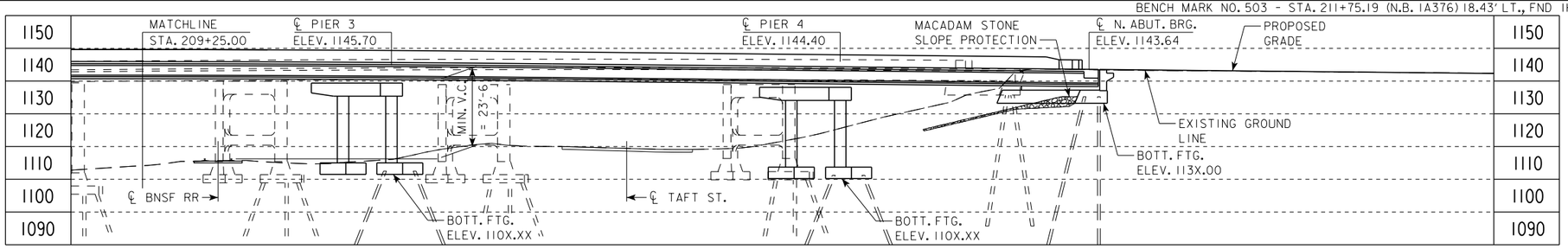
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. ###### DESIGN NO. ###

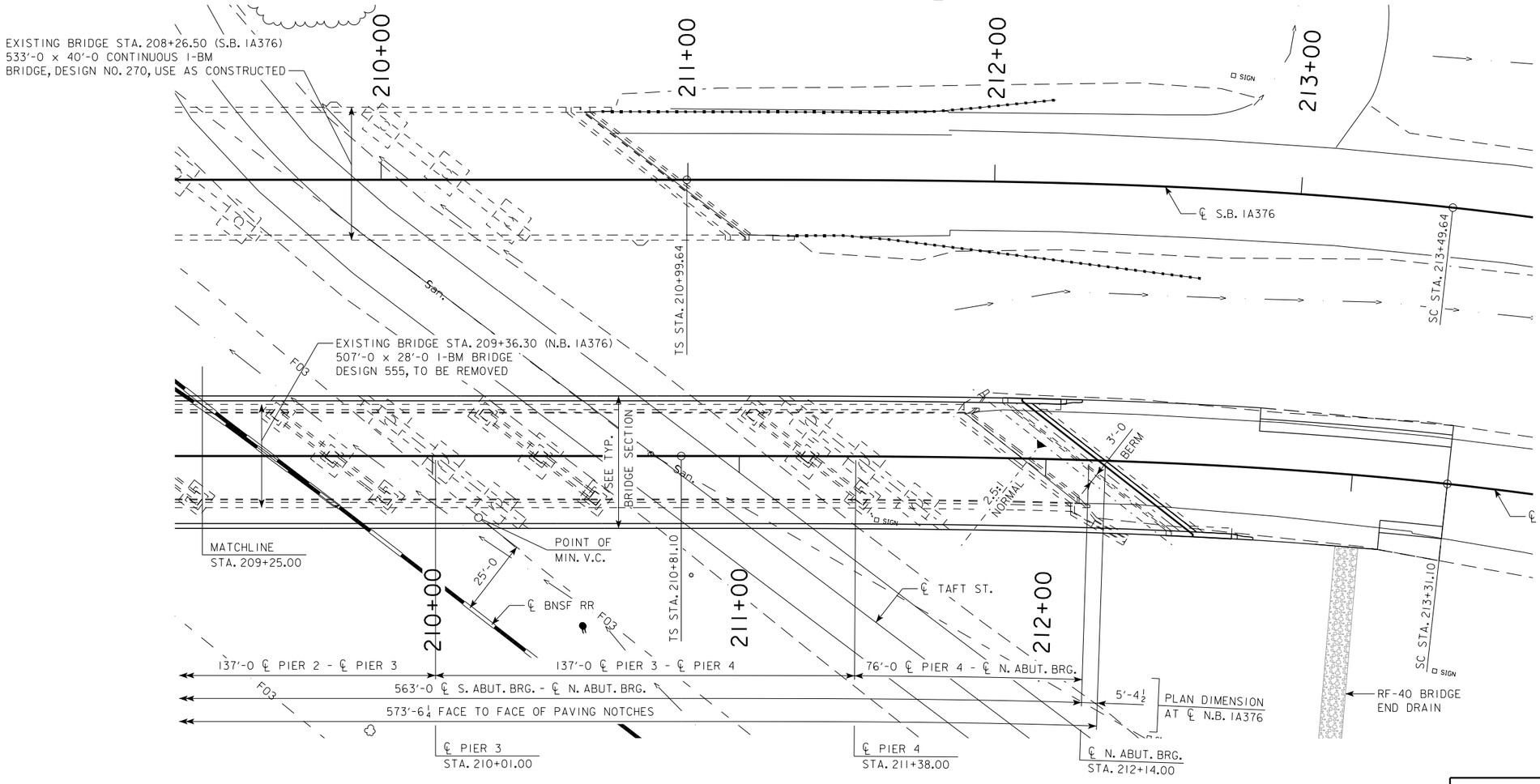
DESIGN TEAM J.S.I. / J.A.E. Foth | WOODBURY COUNTY | PROJECT NUMBER BRF-376-1(006)--38-97 | SHEET NUMBER V.01

11/1/2012 jsi X:\DM\IE\2012\121001-03\CAD\References\BrPrelim\97376006.str

BENCH MARK NO. 503 - STA. 211+75.19 (N.B. 1A376) 18.43' LT., FND IHC BUTTON NW WHEELGUARD NB BRIDGE - ELEV. 1144.44



LONGITUDINAL SECTION ALONG ℄ N.B. 1A376



CURVE DATA

PI STA. 216+00.95
Δ = 26°30'03.31" (RT)
D = 4°59'58.67"
T = 269.86
L = 530.06
E = 31.34
R = 1146.00
e = 6.00%
l = 250.00
x = 77.00

SPIRAL DATA

SCS PI STA. 216+12.67
Δ = 39°00'00.00" (RT)
θs = 6°14'58.34"
Ls = 250.00
Ts = 531.57
Es = 72.14
P = 2.27
K = 124.95
Xc = 249.70
Yc = 9.08
LT = 166.77
ST = 83.43
LC = 249.87
TS STA. 210+81.10
SC STA. 213+31.10

MINIMUM VERTICAL CLEARANCE

OVERHEAD STATION = 210+15.01, OFFSET 20.08' RT.
OVERHEAD ELEVATION = 1145.20
DEPTH OF SUPERSTRUCTURE = 5.38'
UNDERPASS STATION = NA, OFFSET 25.00' LT.
UNDERPASS ELEVATION = 1116.32'
MINIMUM VERTICAL CLEARANCE = 23.50'

SITUATION PLAN

0 ENGLISH 40
SCALE IN FEET

PRELIMINARY

DESIGN FOR 52° SKEW (R.A.)

563'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

76'-0 END SPANS (3) 137'-0 INTERIOR SPANS

SITUATION PLAN

STATION: 209+32.50 JAN. 2013

WOODBURY COUNTY

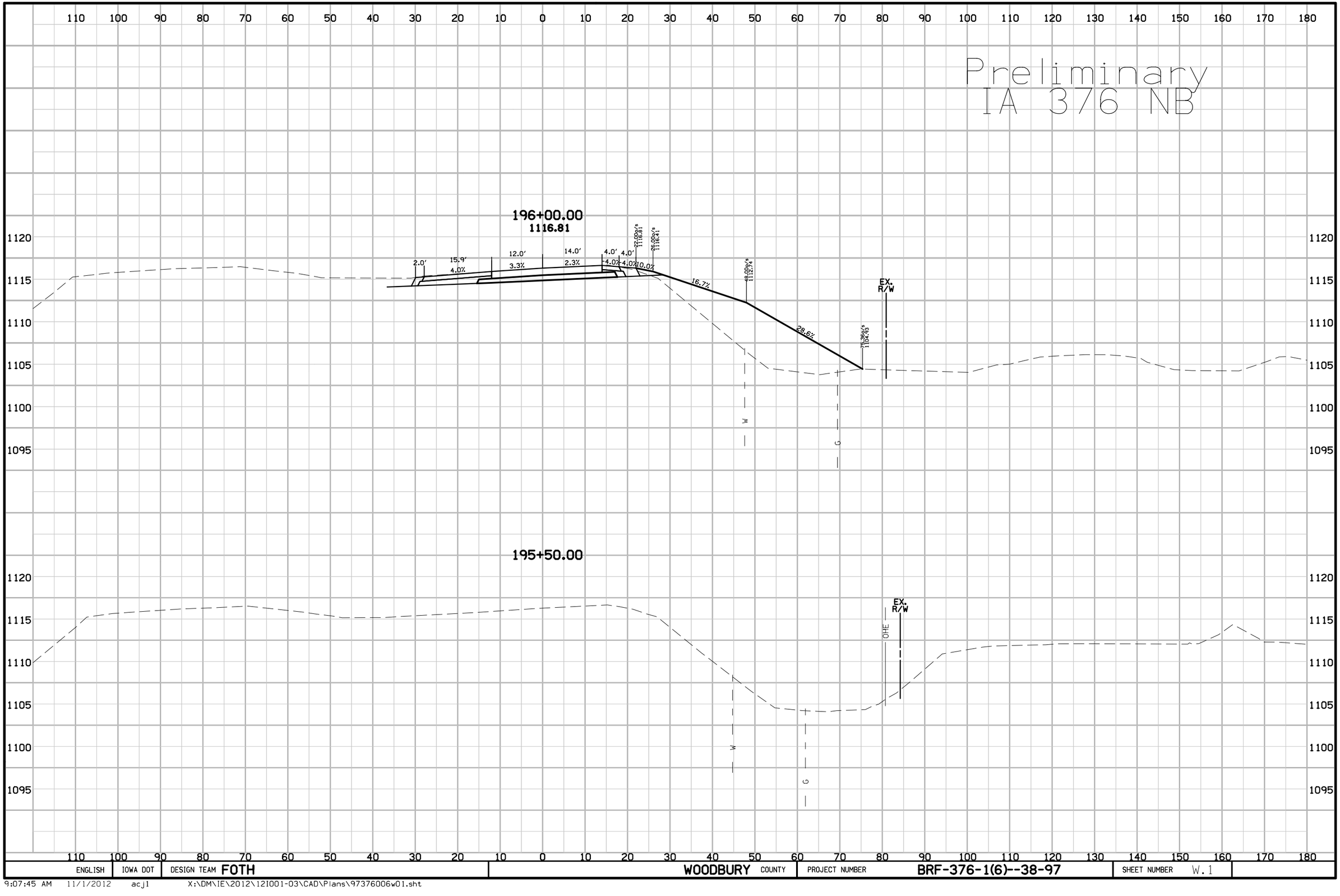
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. ###### DESIGN NO. ####

DESIGN TEAM J.S.I. / J.A.E. Foth | WOODBURY COUNTY | PROJECT NUMBER BRF-376-1(006)--38-97 | SHEET NUMBER V.01

11/1/2012 jsi X:\DM\IE\2012\121001-03\CAD\References\BrPrelim\97376006.str

Preliminary
IA 376 NB



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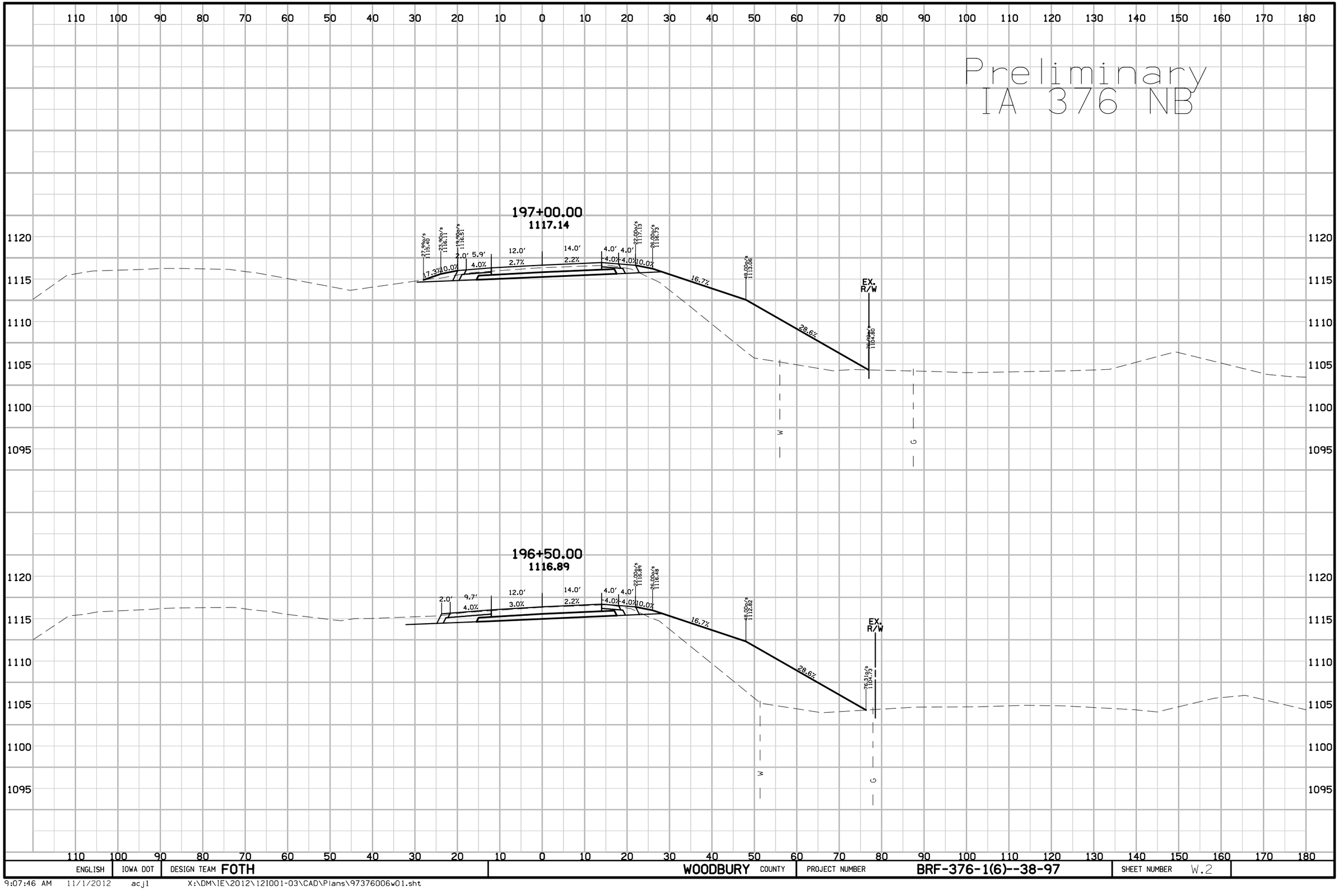

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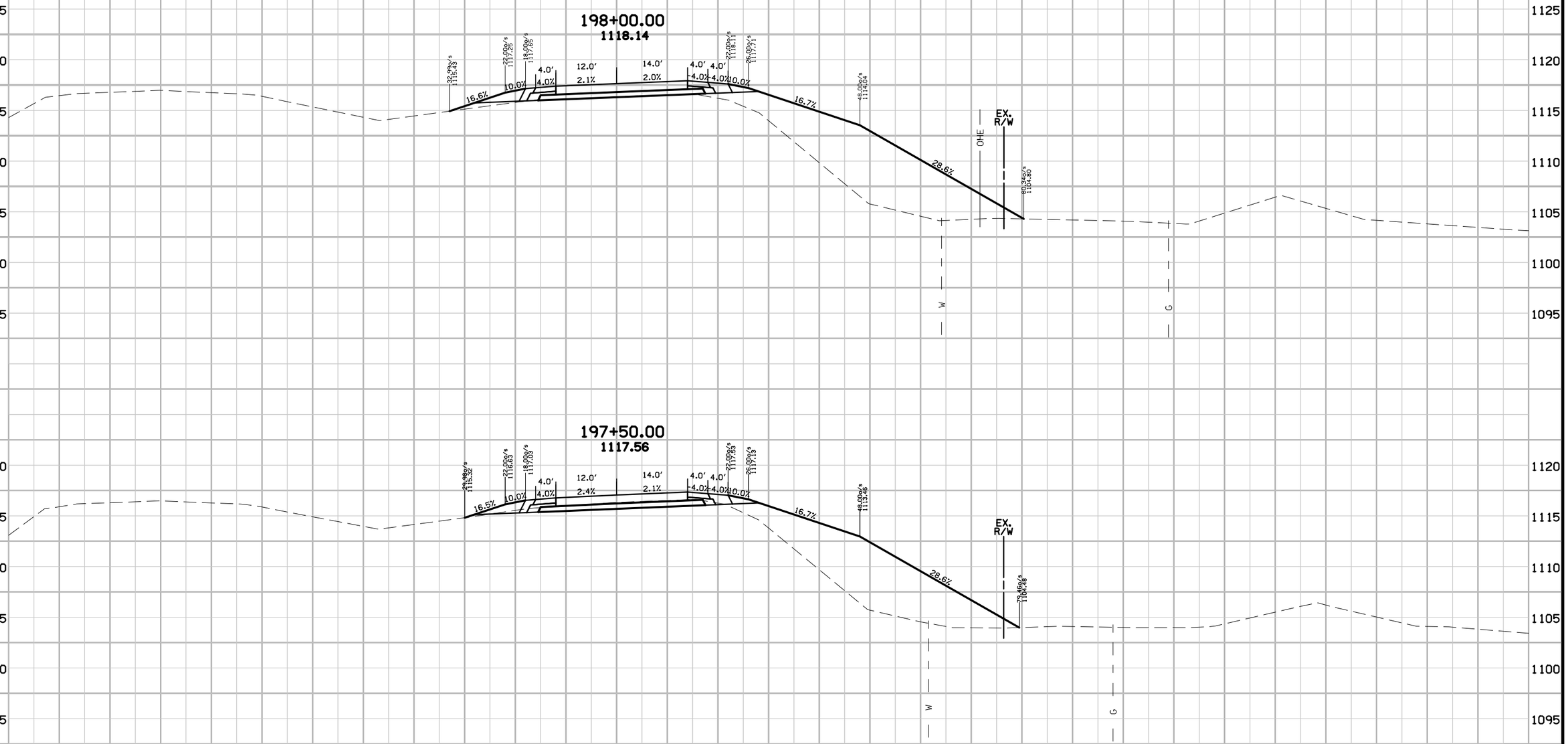
9:07:46 AM 11/1/2012 acj1 X:\DM\IE\2012\121001-03\CAD\Plans\97376006w01.sht

Preliminary
IA 376 NB

198+00.00
1118.14



197+50.00
1117.56

ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.3

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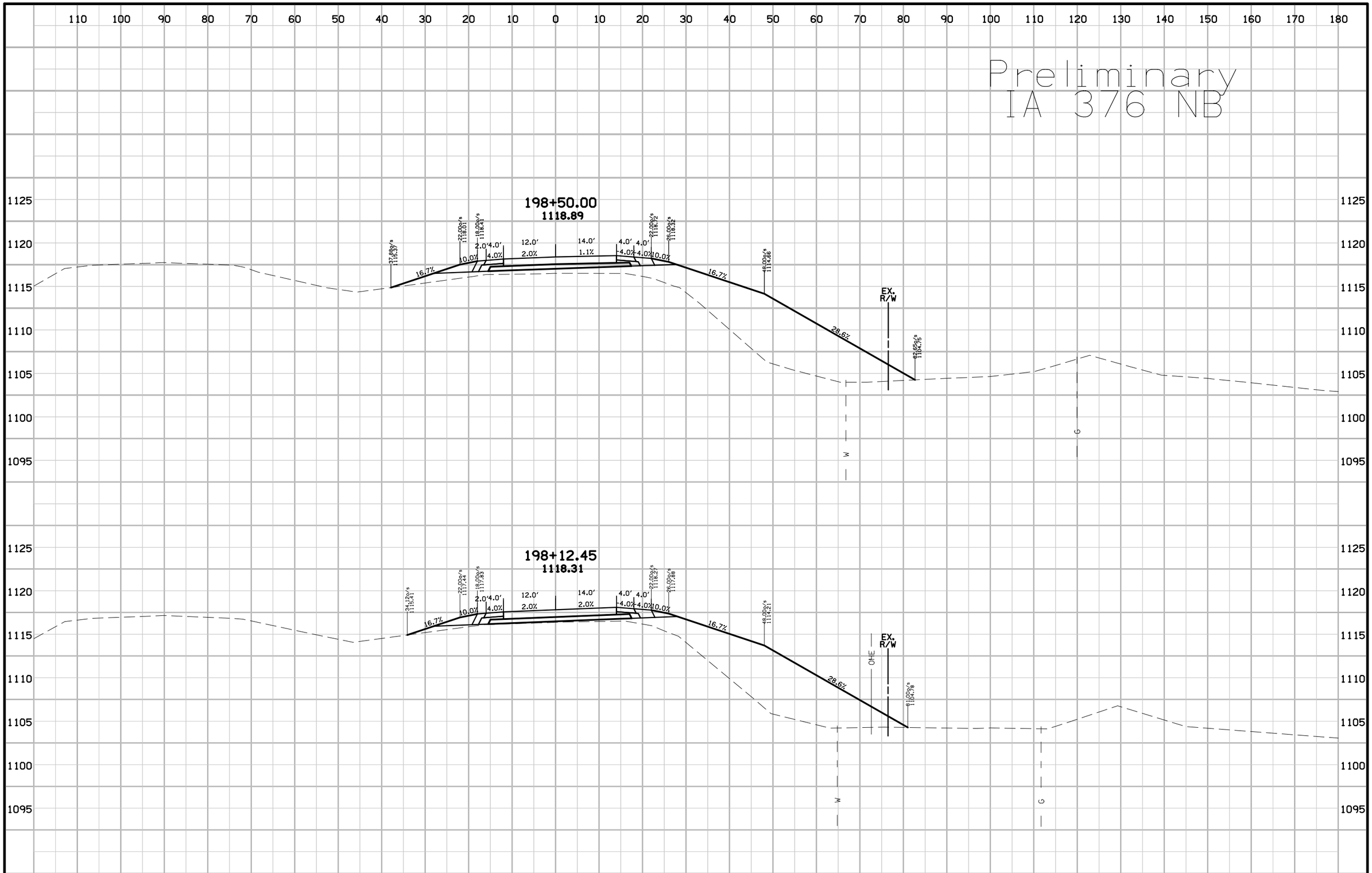
Preliminary
IA 376 NB



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Preliminary
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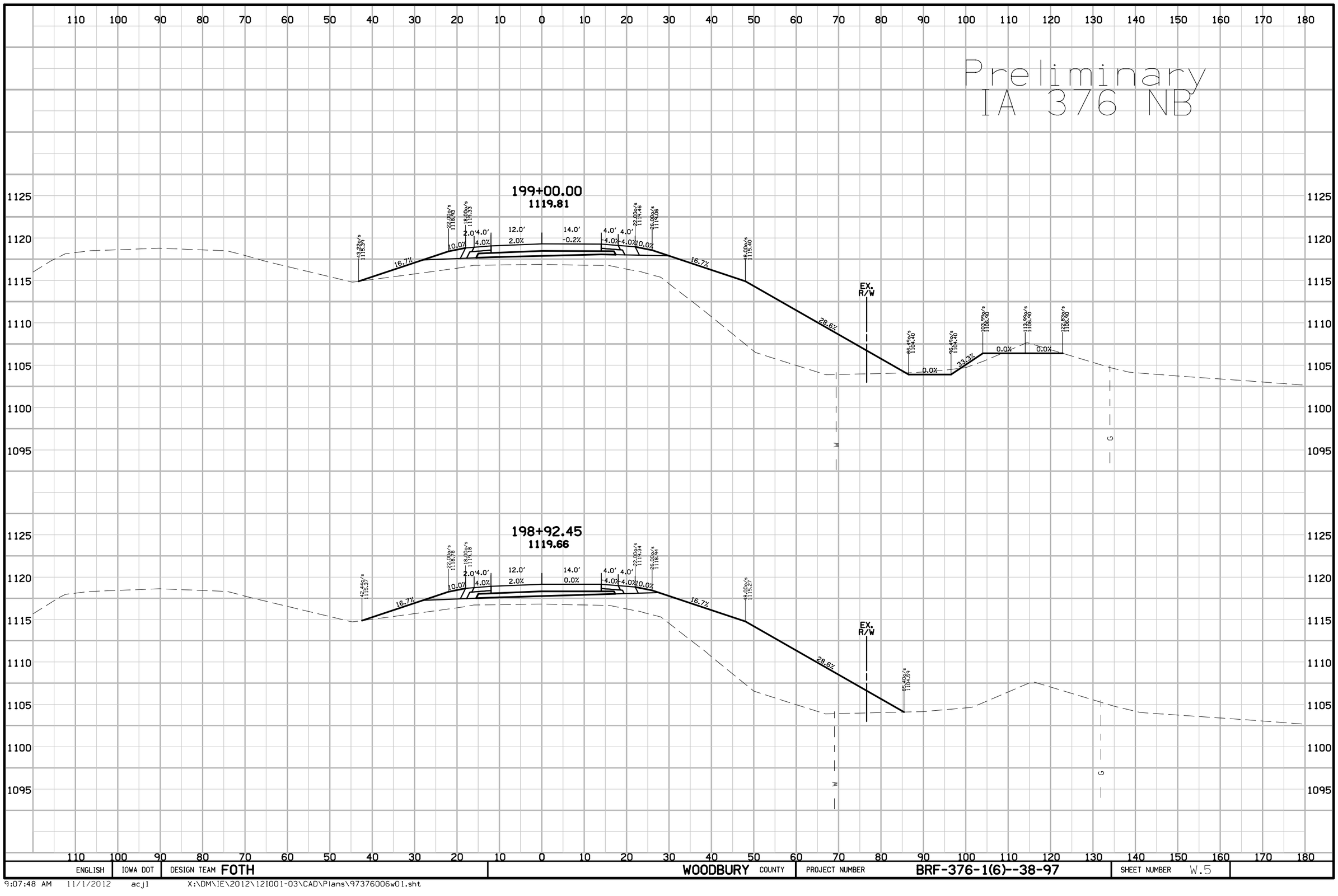

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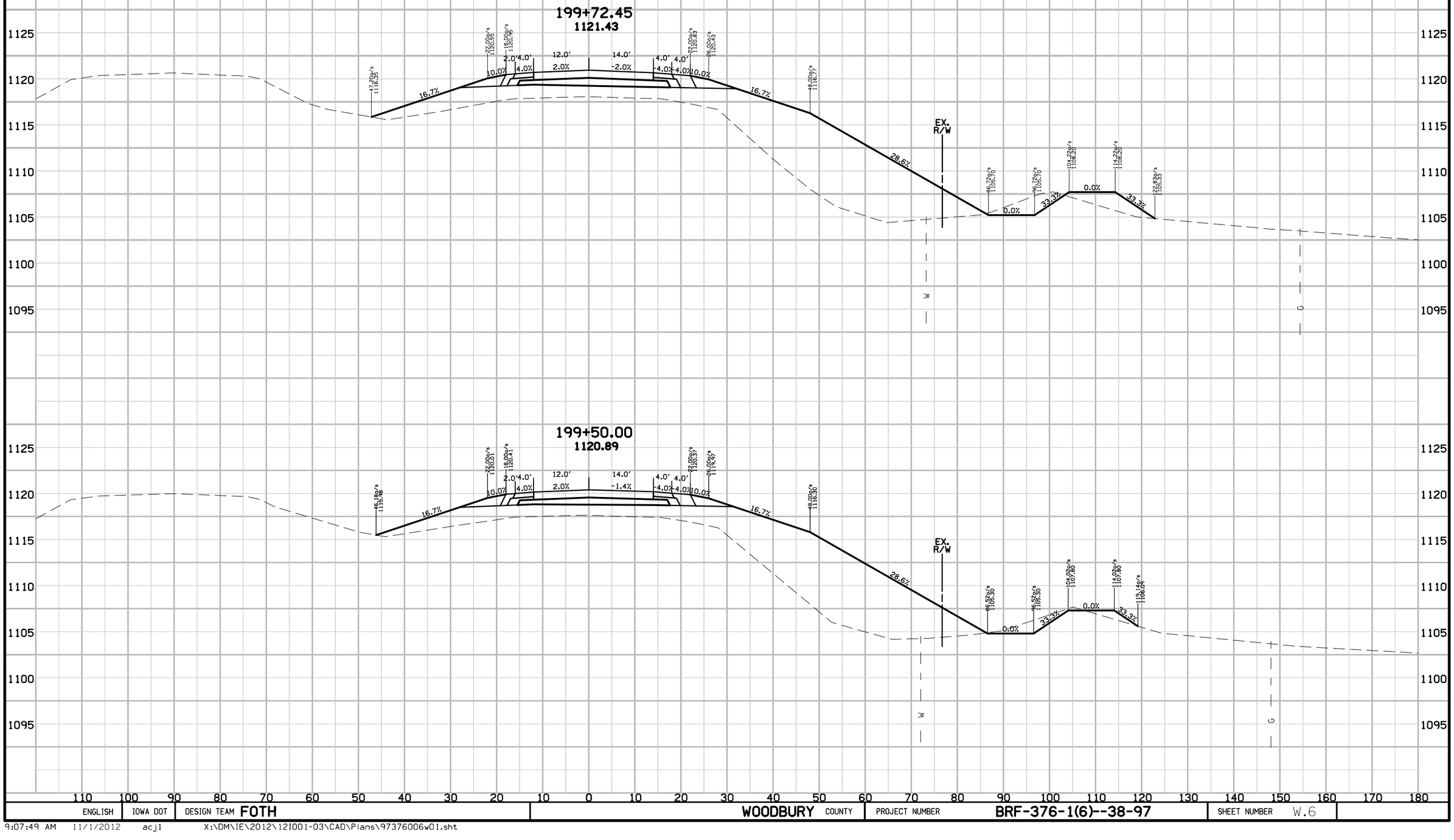
Preliminary
IA 376 NB



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Preliminary
IA 376 NB

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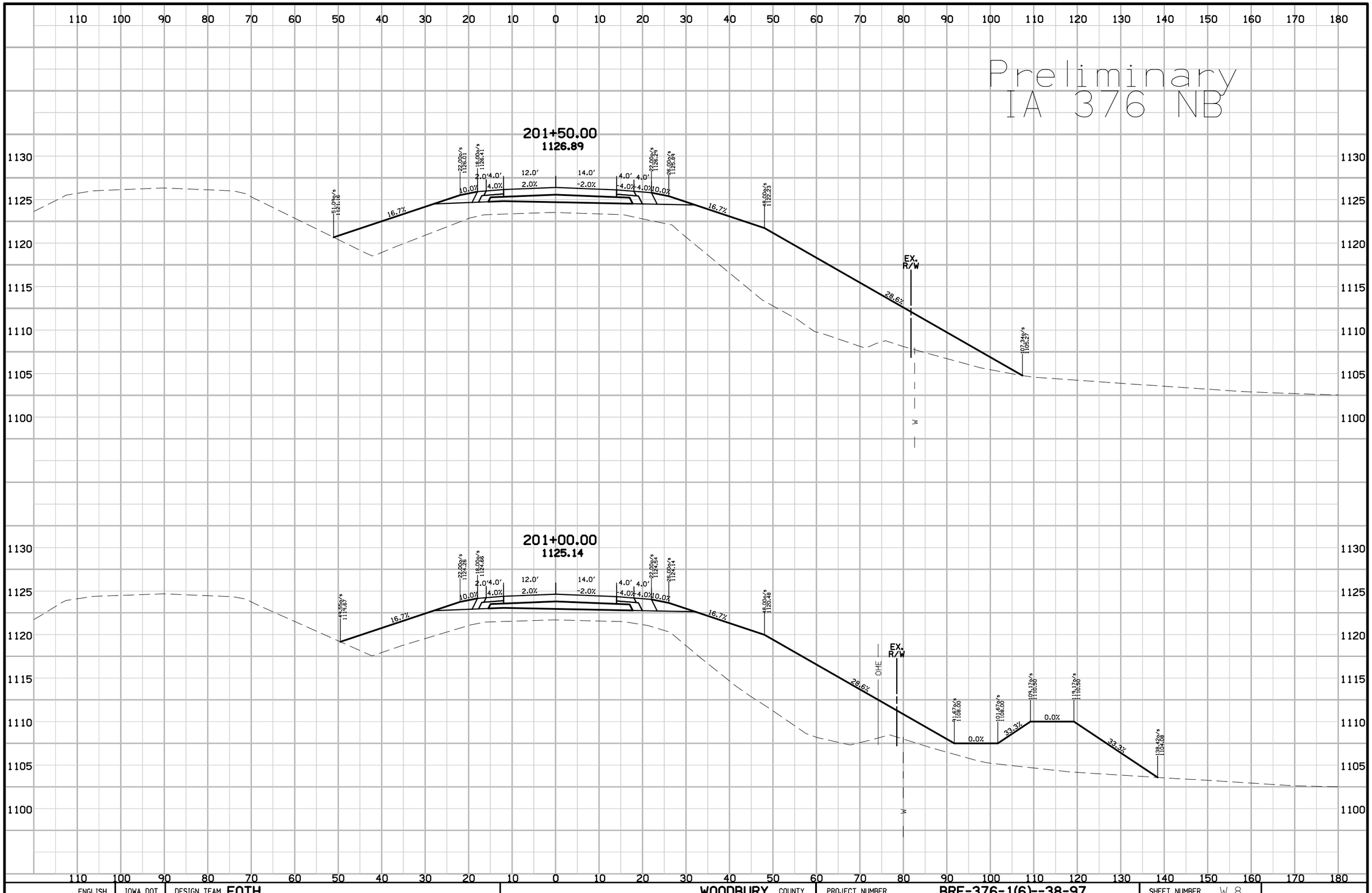
Preliminary
IA 376 NB



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Preliminary
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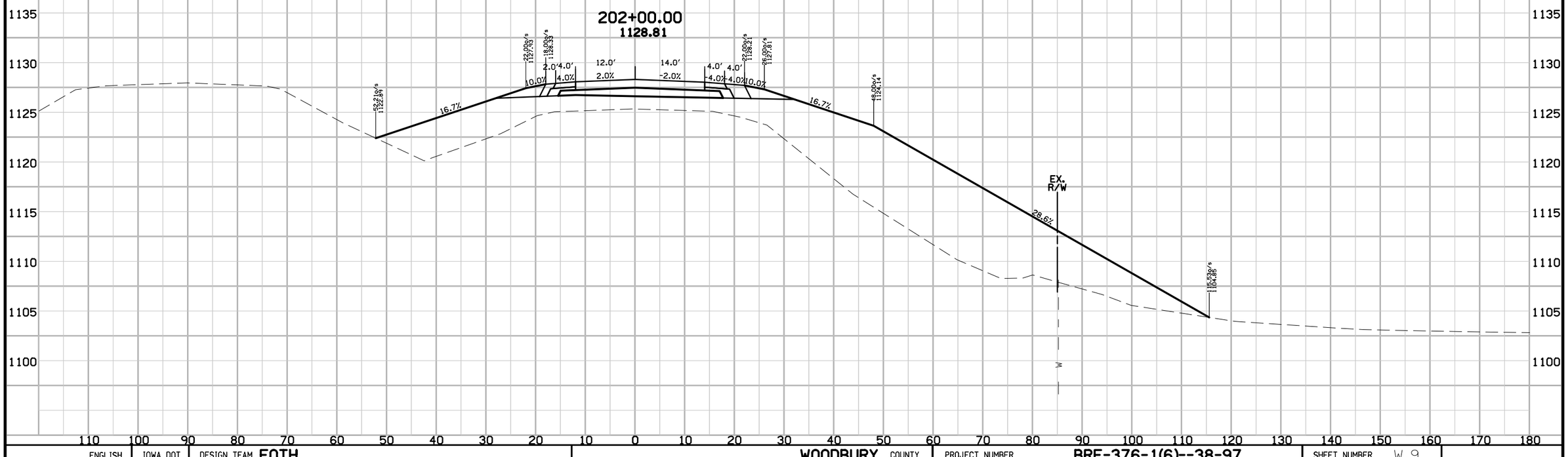

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Preliminary
IA 376 NB

202+50.00
1130.81

22.00c/s 1129.93
18.00c/s 1130.33
22.00c/s 1130.21
26.00c/s 1129.81
51.72c/s 1124.98
48.00c/s 1126.14
123.43c/s 1104.59

2.0' 4.0' 12.0' 14.0' 4.0' 4.0'
10.0% 4.0% 2.0% -2.0% -4.0% -4.0% 10.0%
16.7% 16.7% 28.6%

EX. R/W

1135 1130 1125 1120 1115 1110 1105 1100

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

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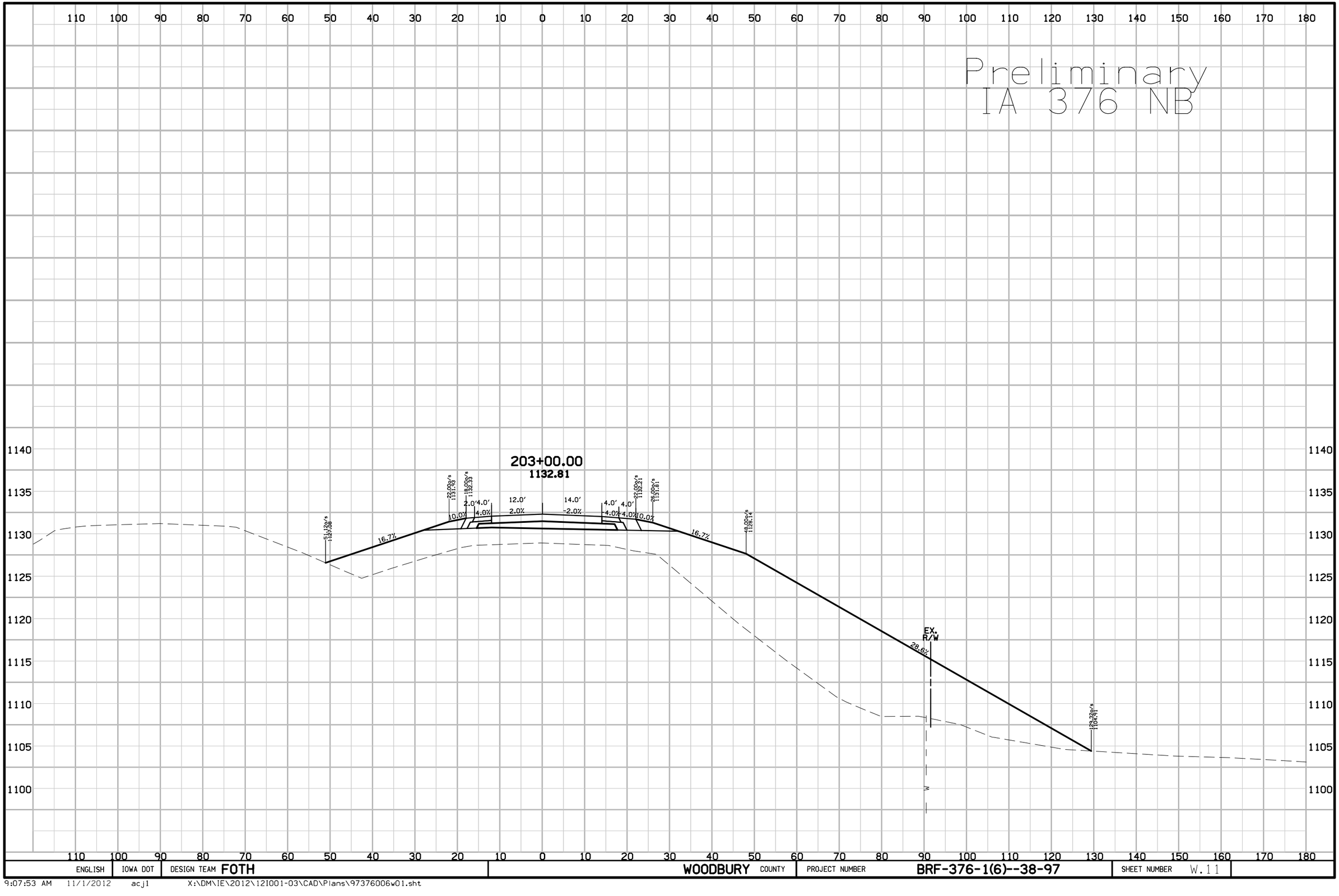

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Preliminary
IA 376 NB

203+50.00
1134.81

22.00%/s
1133.93
18.00%/s
1134.33
2.0%
4.0%
4.0%
10.0%
12.0'
2.0%
14.0'
-2.0%
4.0'
-4.0%
4.0'
-4.0%
22.00%/s
1134.21
26.00%/s
1133.81
10.0%
18.75%/s
1129.47
16.7%
16.7%
48.00%/s
1130.14
28.6%
EX.
R/W
OHP
136.63%/s
1104.82
W

1140 1135 1130 1125 1120 1115 1110 1105 1100

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

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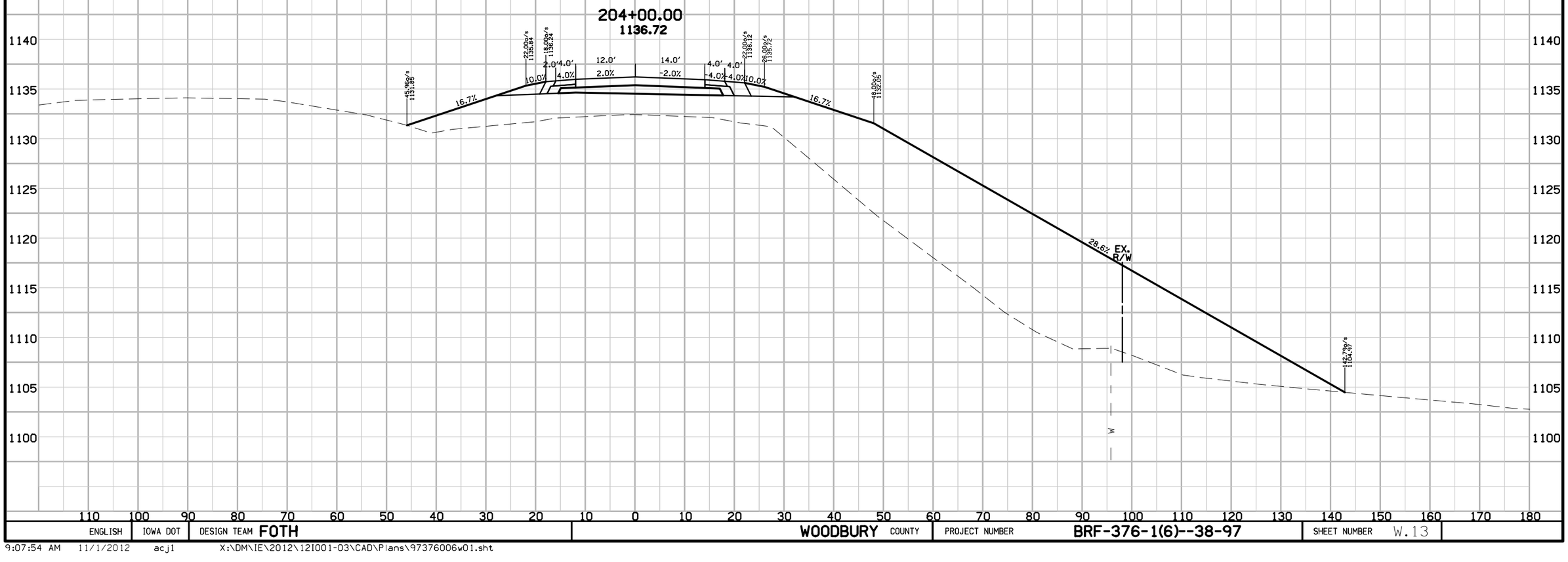

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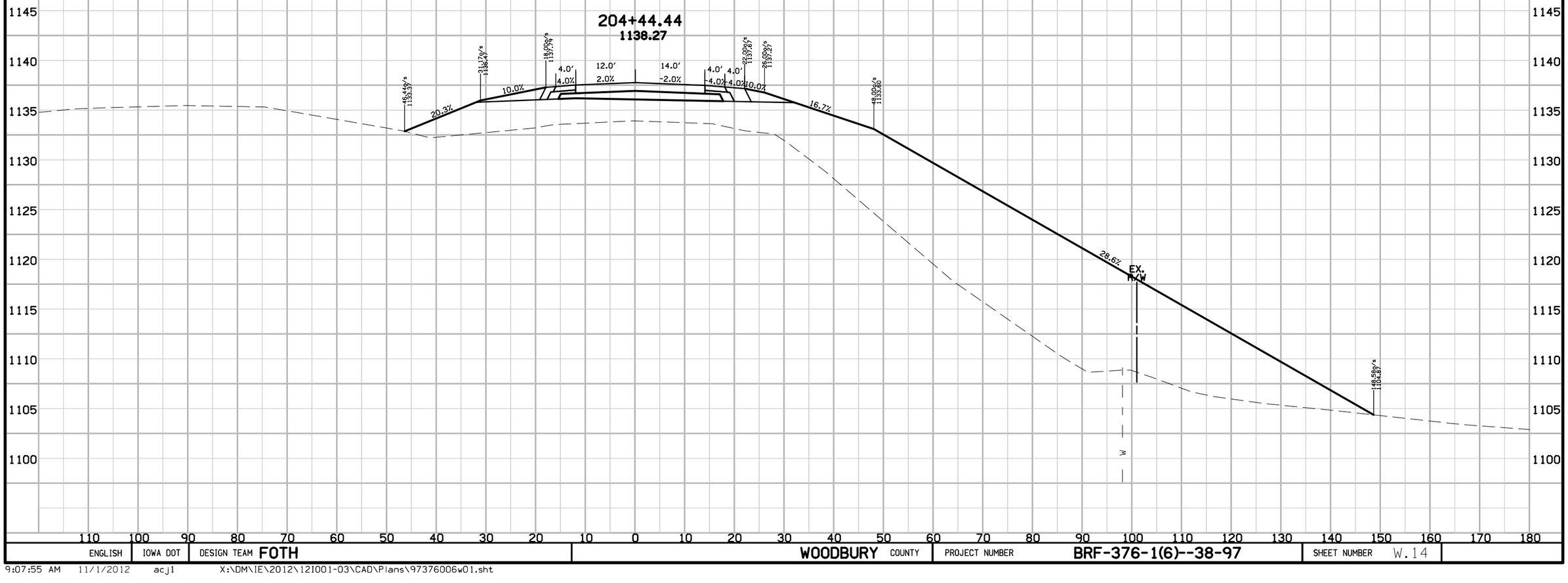

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Preliminary
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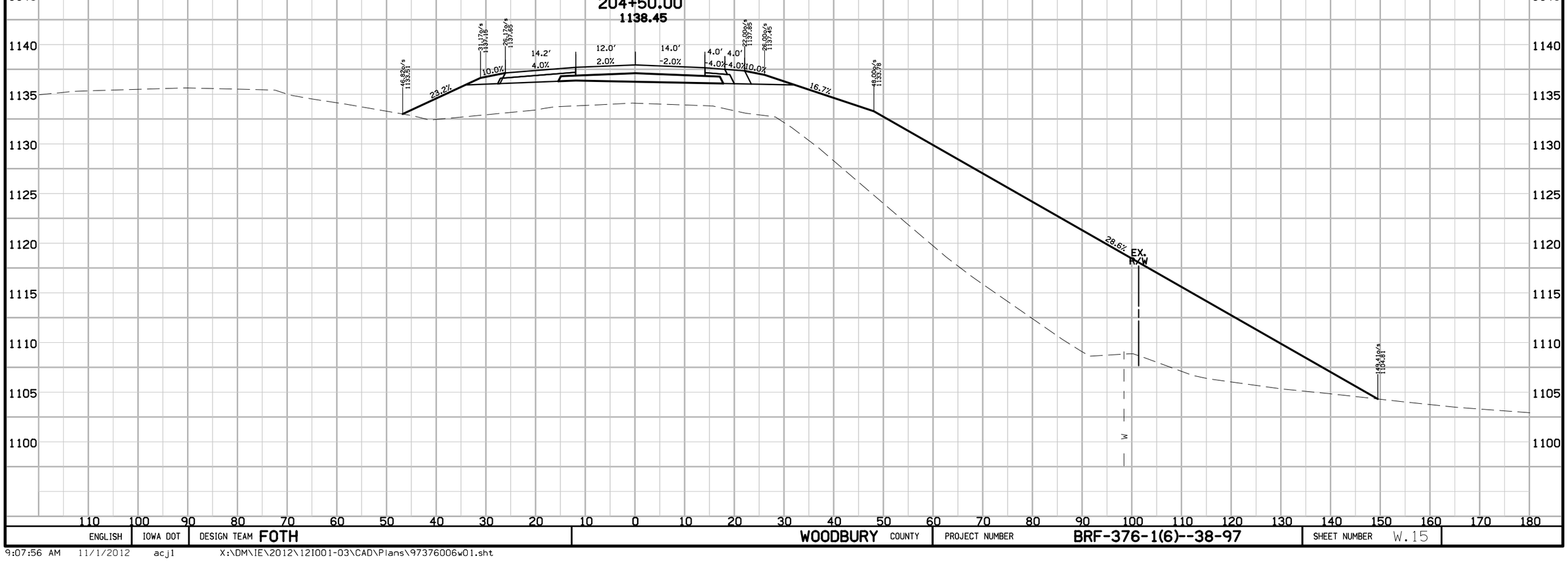

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Preliminary
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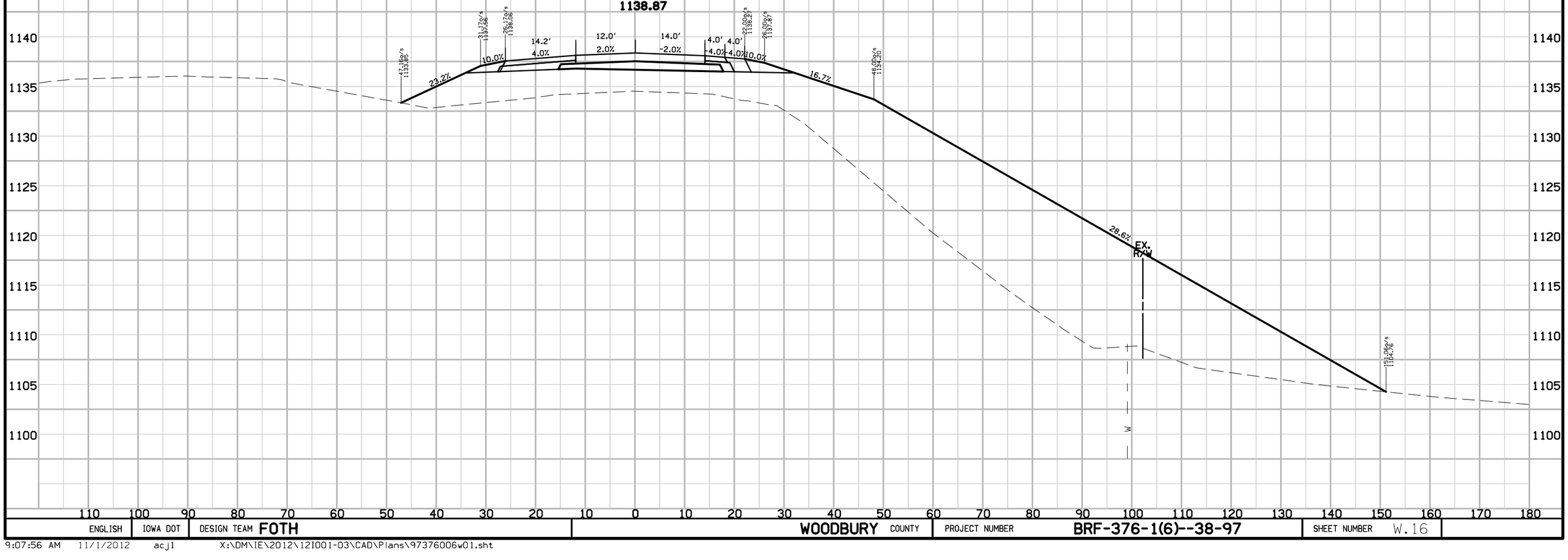

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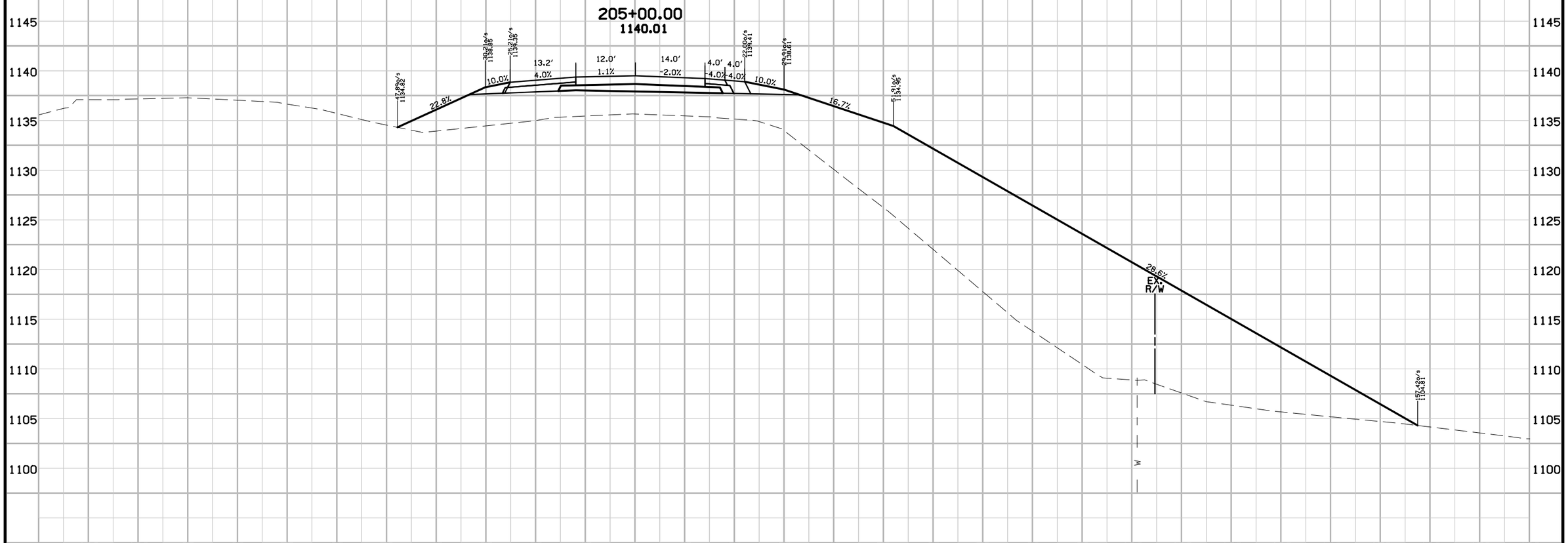
Preliminary
IA 376 NB



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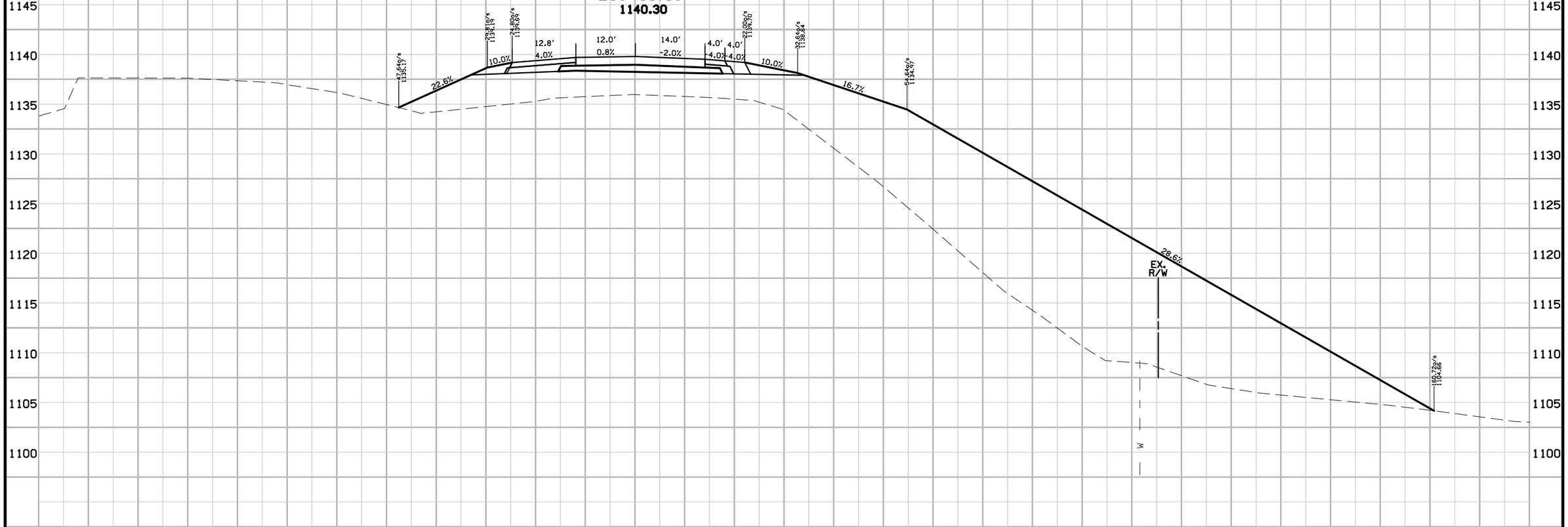
Preliminary
IA 376 NB

205+10.18
1140.30



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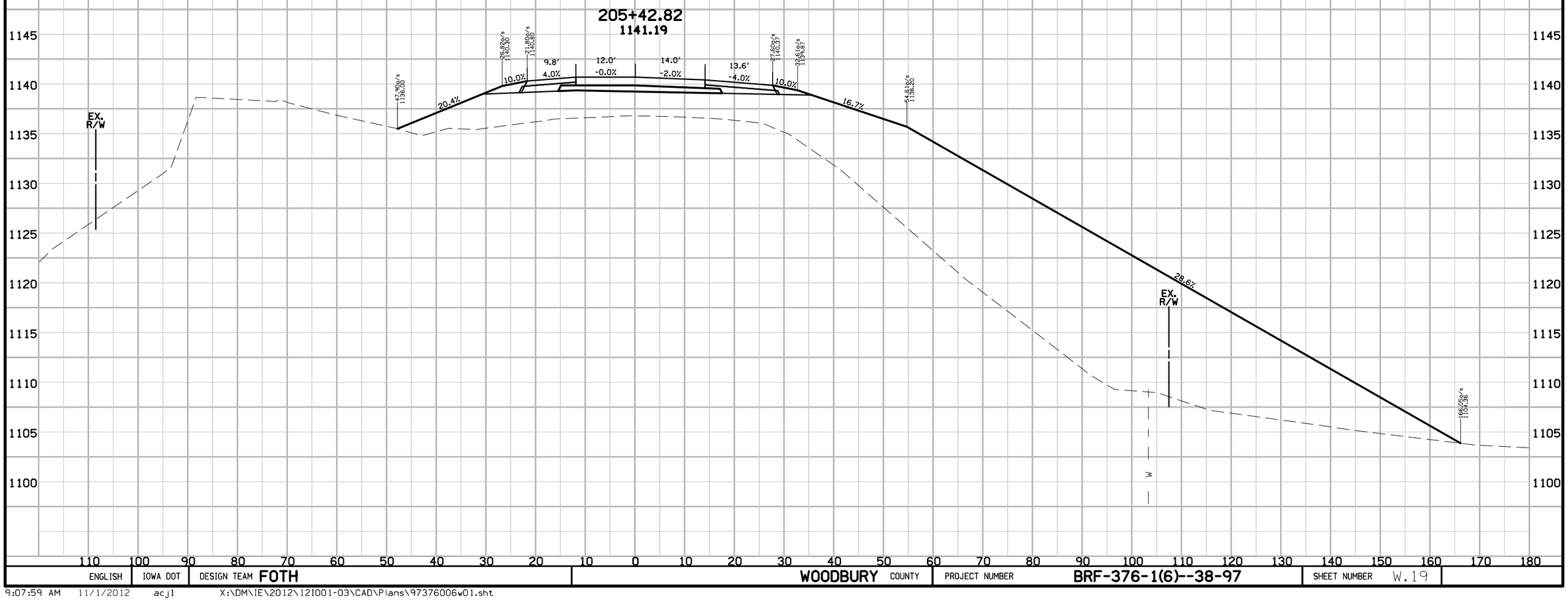
Preliminary
IA 376 NB



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Preliminary
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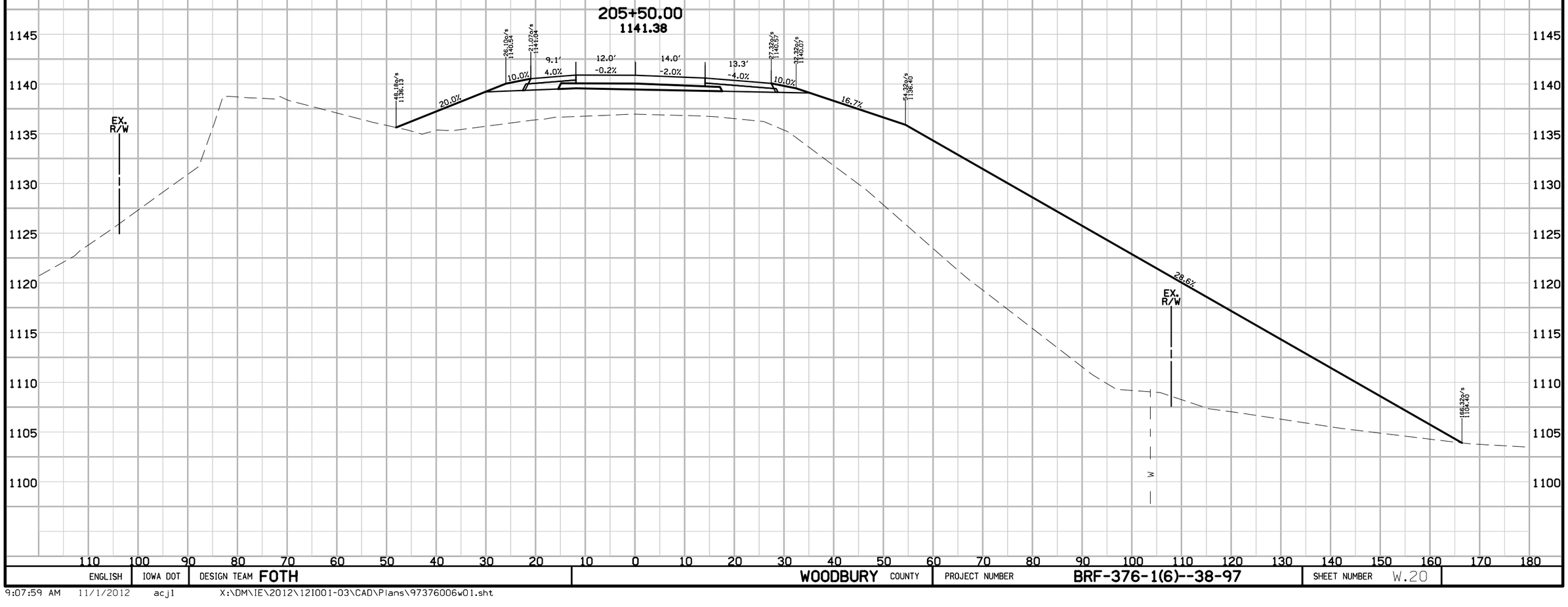

ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.20

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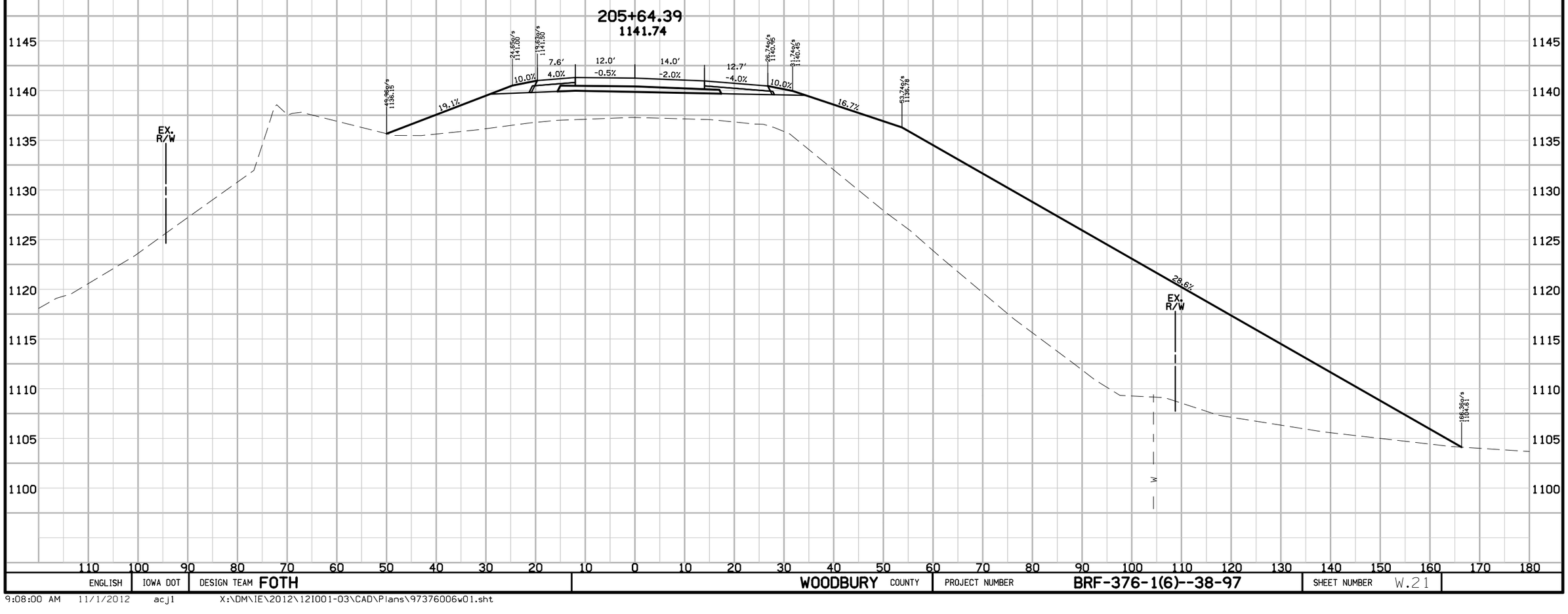
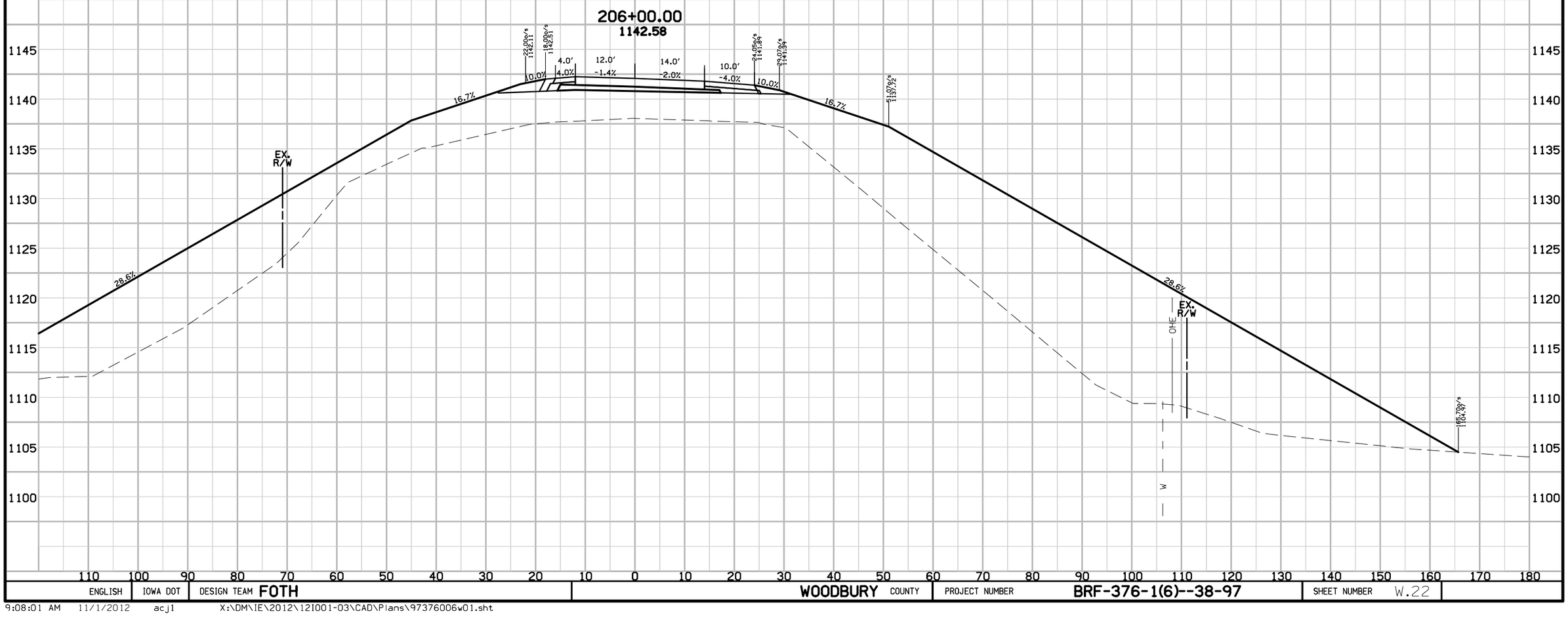
Preliminary
IA 376 NB



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.21

9:08:00 AM 11/1/2012 acj1 X:\DM\IE\2012\121001-03\CAD\Plans\97376006w01.sht

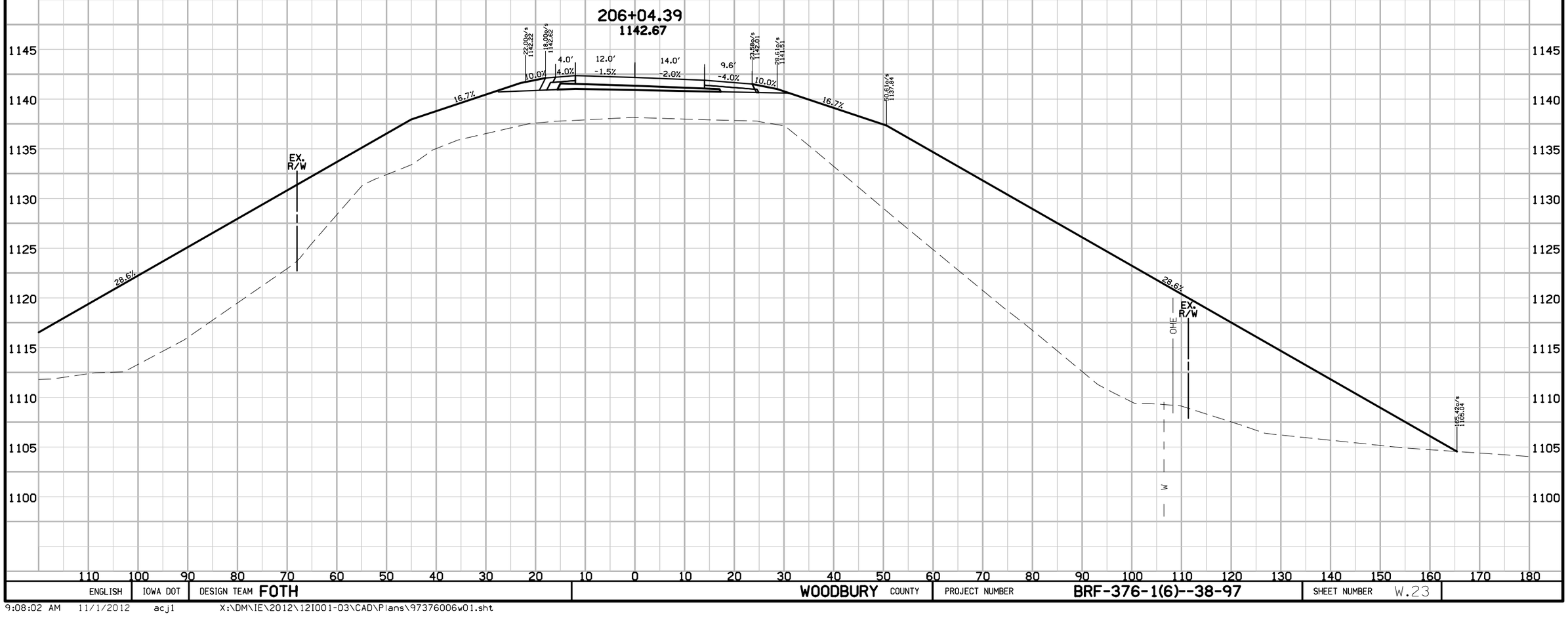
Preliminary
IA 376 NB



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.22

9:08:01 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

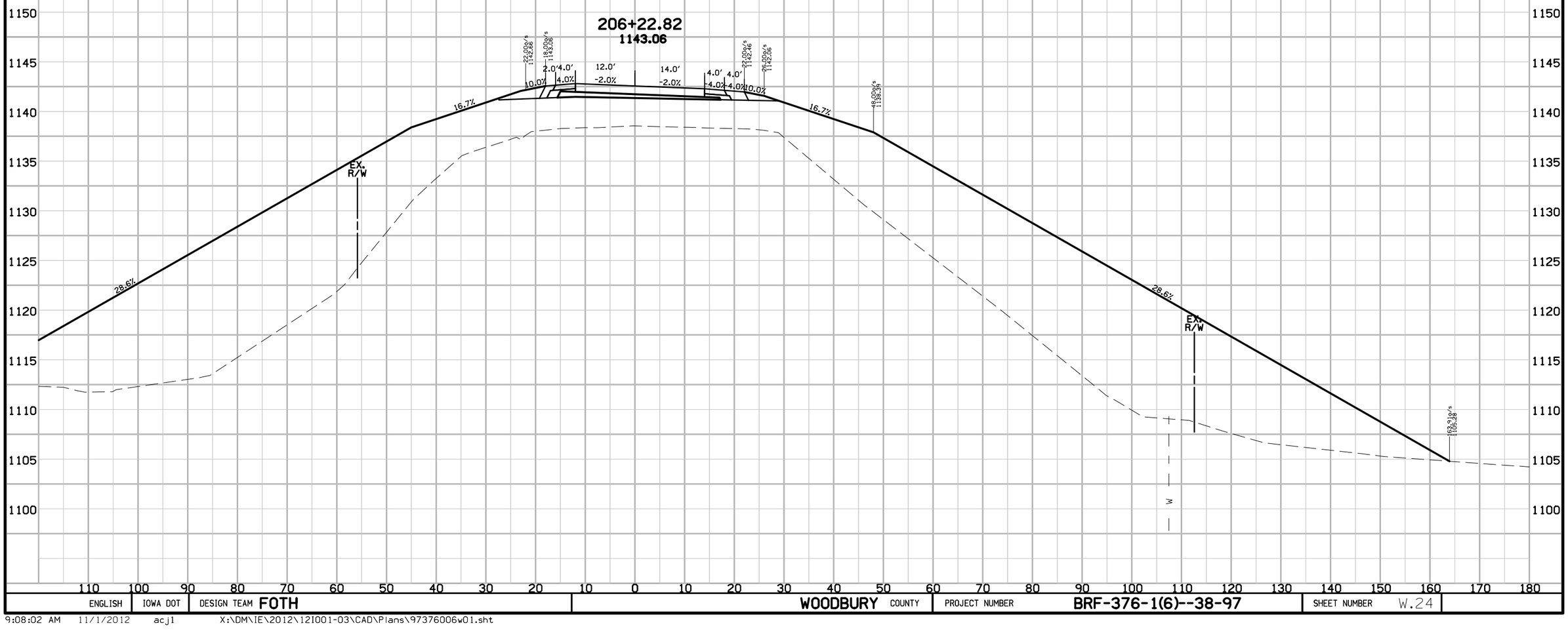
Preliminary
IA 376 NB



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.23

9:08:02 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

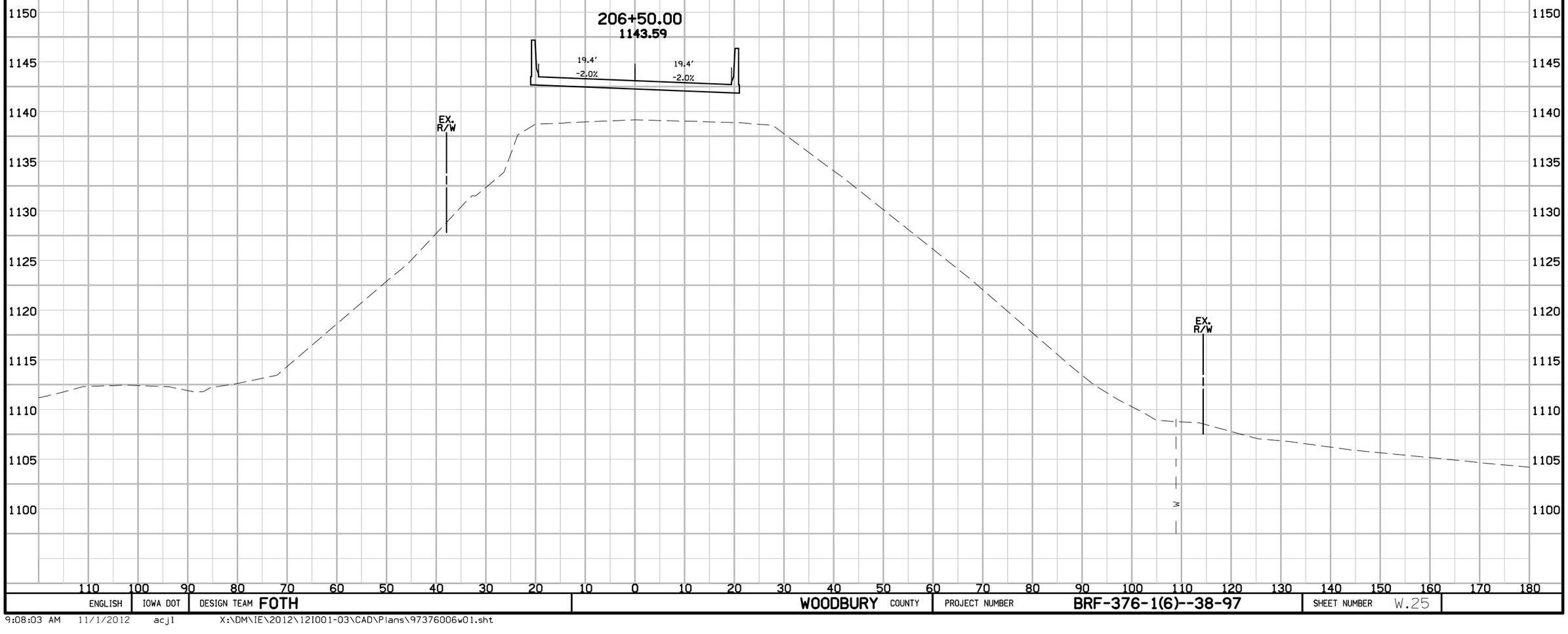
Preliminary
IA 376 NB



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.24

9:08:02 AM 11/1/2012 acj1 X:\DM\IE\2012\121001-03\CAD\Plans\97376006w01.sht

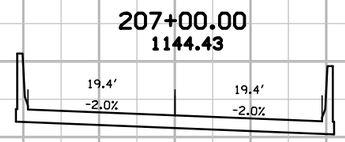
Preliminary
IA 376 NB

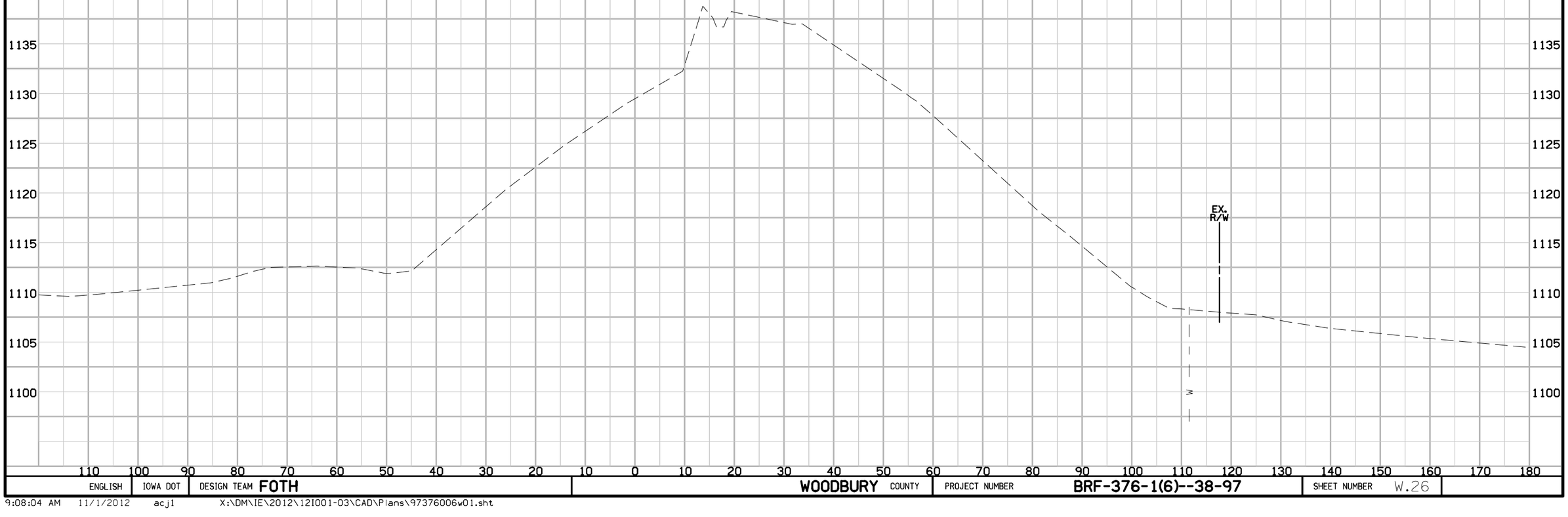


ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.25

9:08:03 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

Preliminary
IA 376 NB

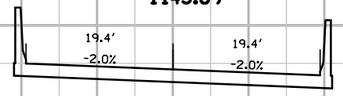




ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.26

9:08:04 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

Preliminary
IA 376 NB

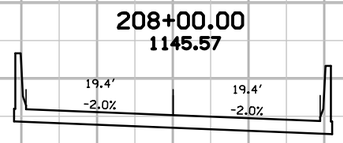


EX.
R/W

ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.27

9:08:04 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

Preliminary
IA 376 NB

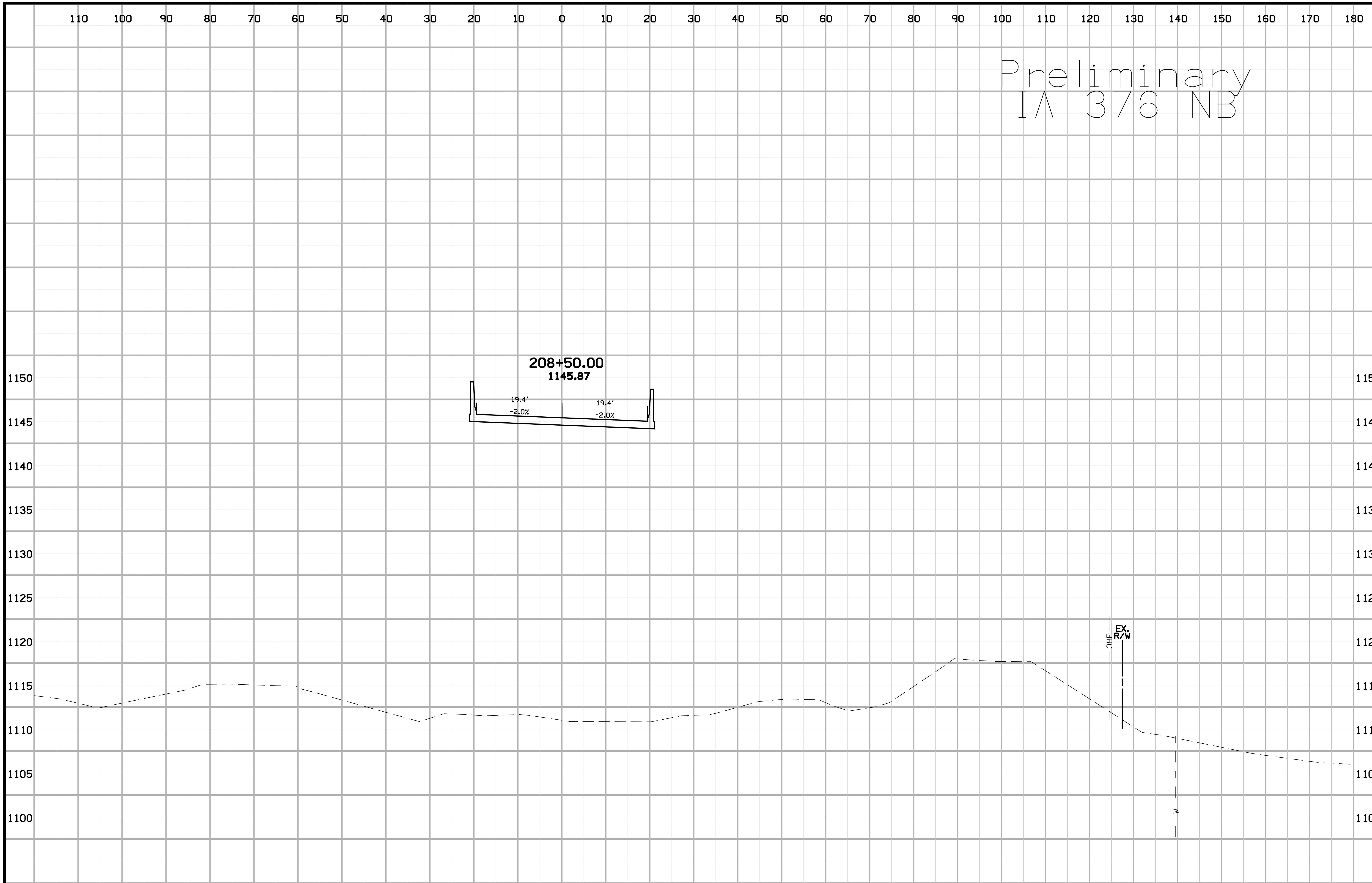


EX.
R/W

W

ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.28

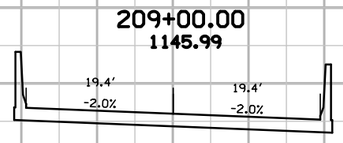
9:08:05 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.29

9:08:06 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

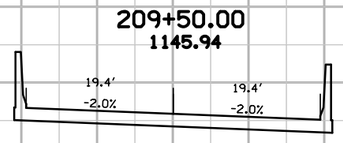
Preliminary
IA 376 NB



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.30

9:08:06 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

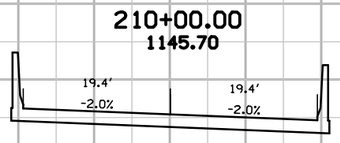
Preliminary
IA 376 NB



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.31

9:08:07 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

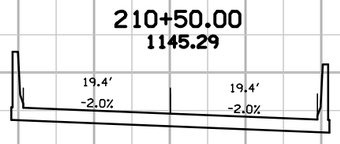
Preliminary
IA 376 NB



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.32

9:08:08 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

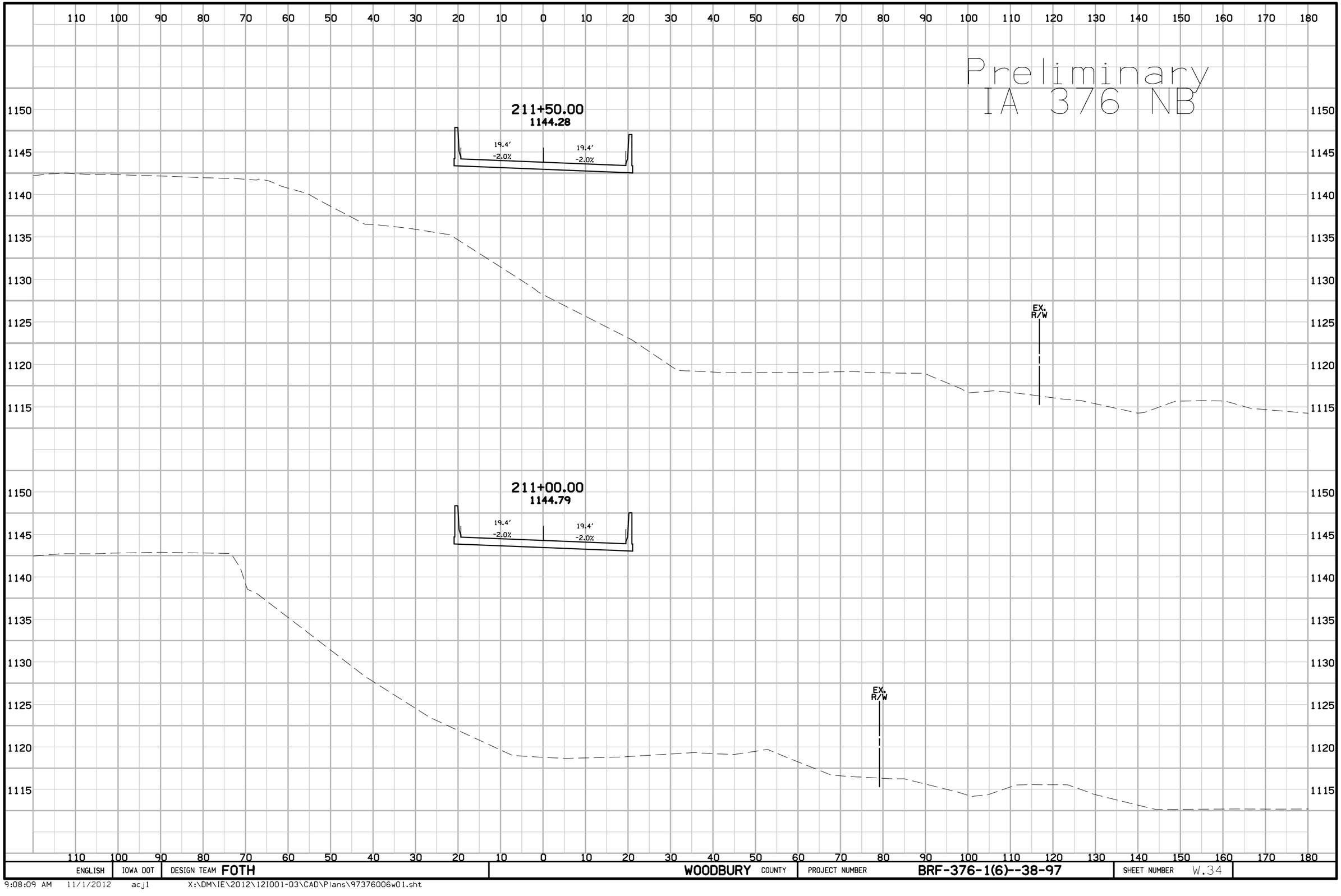
Preliminary
IA 376 NB



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.33

9:08:08 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

Preliminary
IA 376 NB



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.34

9:08:09 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

Preliminary
IA 376 NB

212+00.00
1143.78

19.4'
-2.0%

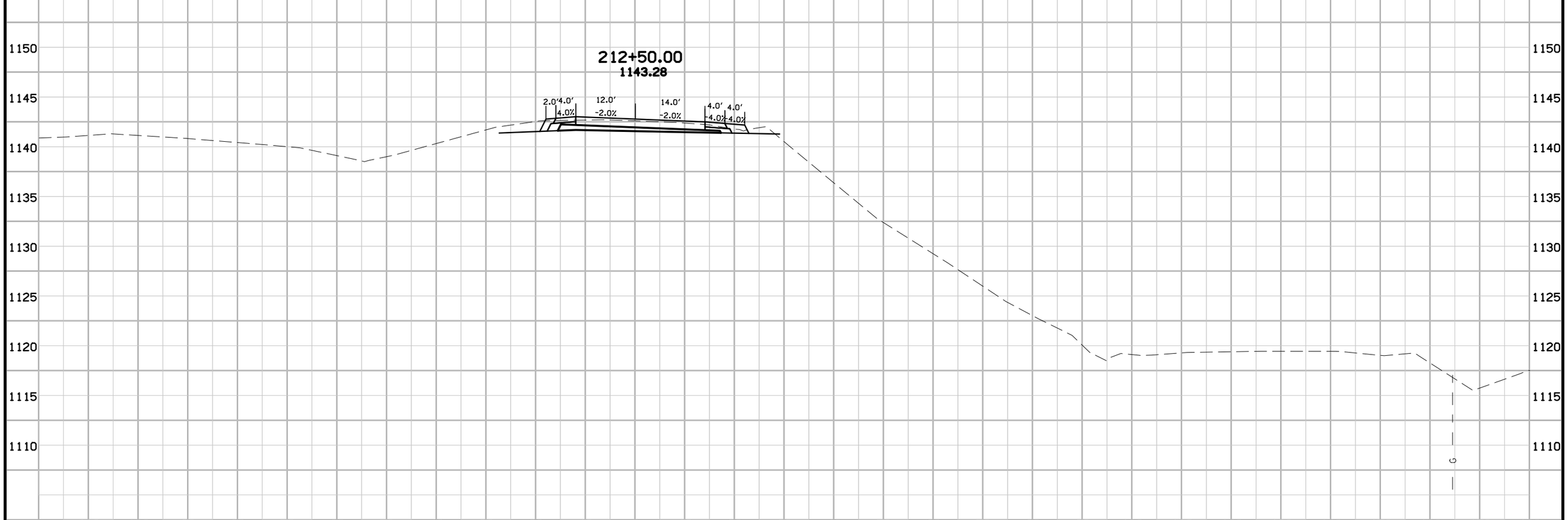
19.4'
-2.0%

EX.
R/W

ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.35

9:08:10 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

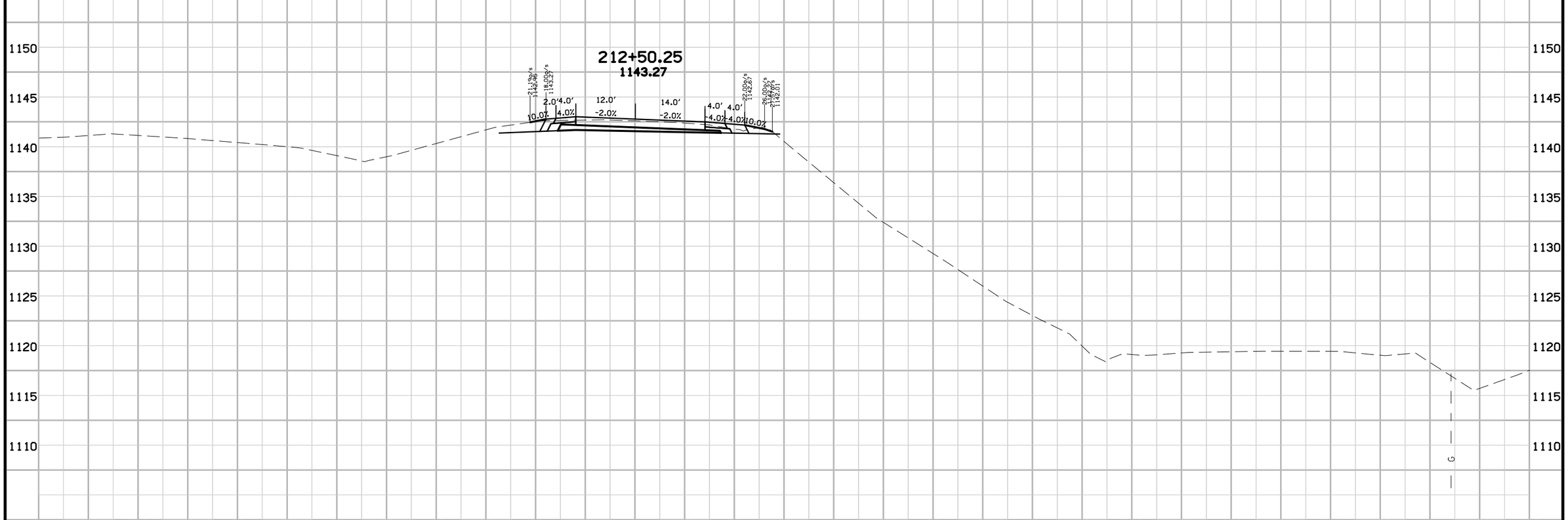
Preliminary
IA 376 NB



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.36

9:08:11 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

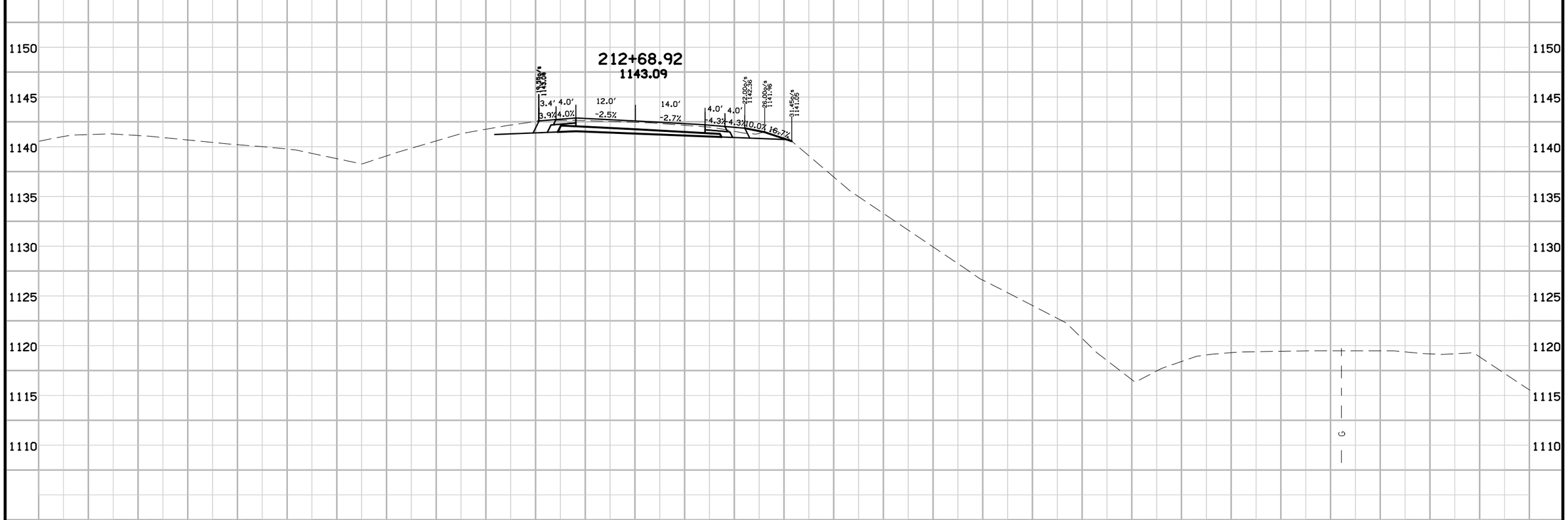
Preliminary
IA 376 NB



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.37

9:08:11 AM 11/1/2012 acj1 X:\DM\IE\2012\121001-03\CAD\Plans\97376006w01.sht

Preliminary
IA 376 NB



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.38

9:08:12 AM 11/1/2012 acj1 X:\DM\IE\2012\121001-03\CAD\Plans\97376006w01.sht

Preliminary
IA 376 NB

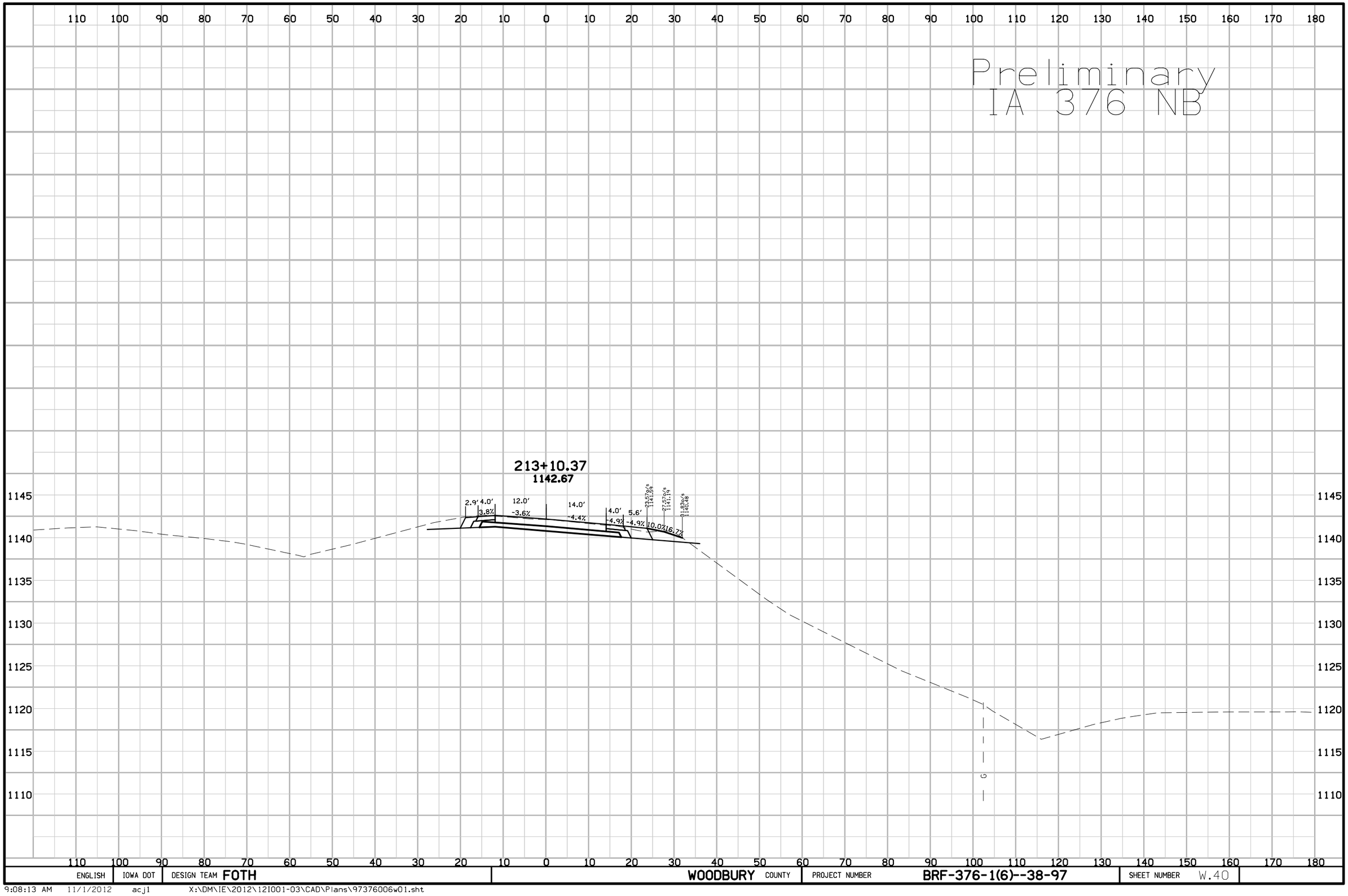
213+00.00
1142.77

3.0' 4.0' 12.0' 14.0' 9.6'
3.9% -3.3% -4.0% -4.7% 10.0%

ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.39

9:08:13 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

Preliminary
IA 376 NB



ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.40

9:08:13 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht

Preliminary
IA 376 NB

213+50.00

213+31.10
1142.46

2.0' 4.0' 12.0' 14.0' 4.0'
3.8% -4.2% -5.2% -5.2%

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

1145 1140 1135 1130 1125 1120 1115

ENGLISH	IOWA DOT	DESIGN TEAM FOTH	WOODBURY COUNTY	PROJECT NUMBER BRF-376-1(6)--38-97	SHEET NUMBER W.41

9:08:14 AM 11/1/2012 acj1 X:\DM\IE\2012\12I001-03\CAD\Plans\97376006w01.sht