LETTING DATE 12/18/2018

GRADING

NHSX--14-5(75)--3H-64

MARSHALL/GRUNDY COUNTY

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

MARSHALL/GRUNDY COUNTY

GRADING

Co Rd E18 to W Jct IA 175

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 811 www.iowaonecall.com

REVISIONS

TOTAL
XX
PROJECT IDENTIFICATION NUMBER
14-64-014-020
PROJECT NUMBER
NHSX--14-5(75)--3H-64
R.O.W. PROJECT NUMBER

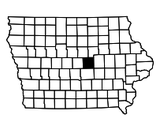
DESIGN EVENTS

D2 PLAN – Date: 08/24/2016

D3 PLAN – Date: 10/03/2016

D5 PLAN – Date: 03/03/2017

For Project Location Map
Refer to Sheet No. A.02



DESIGN DATA RURAL		
2016 AADT	2,800	V.P.D.
2036 AADT	3,100	V.P.D.
20-- DHV	--	V.P.H.
TRUCKS	20	%
Total Design ESALs	--	

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Tony J. Gustafson	Primary Signature Block

PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN – Date: 03/03/2017

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER A.1

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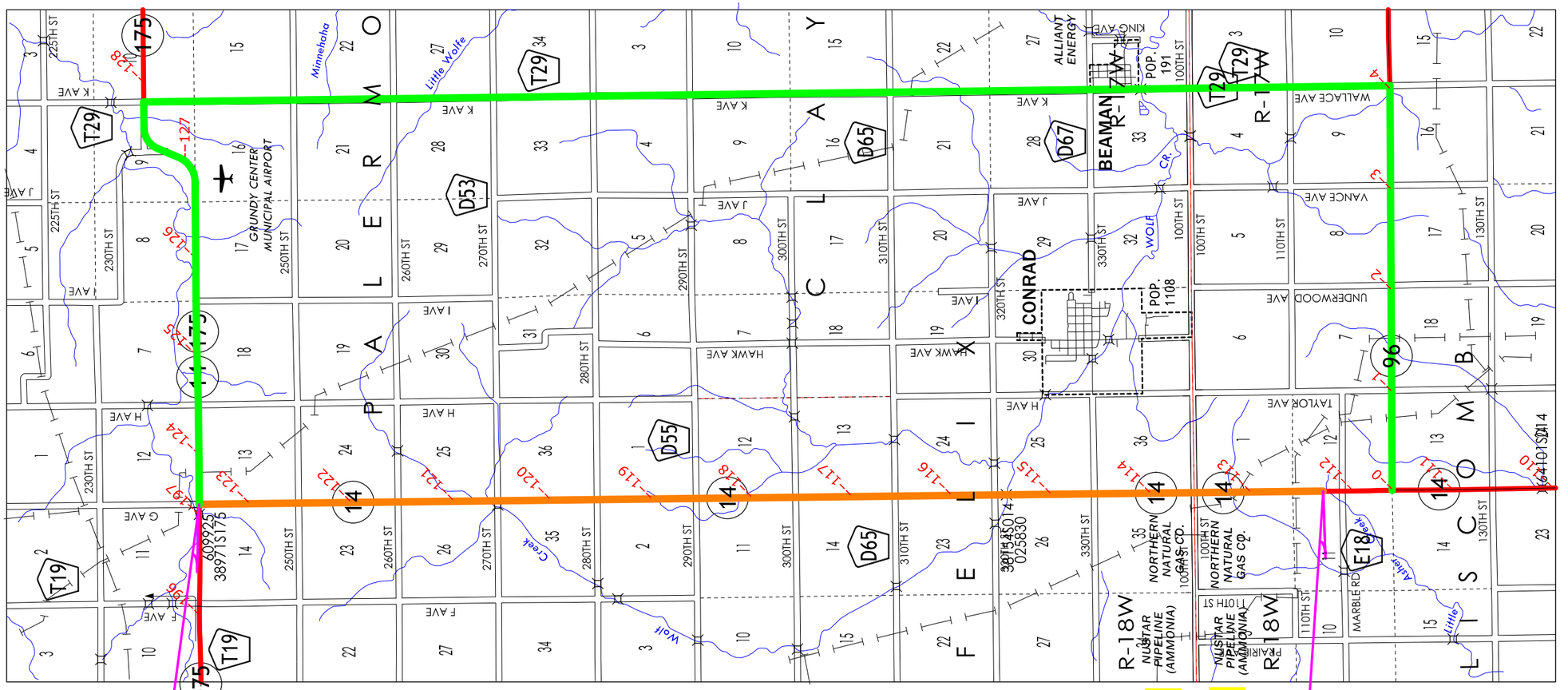
County Border

Detour Route

Construction Area or



LOCATION MAP SCALE

0 1 2

IOWADOT

Marshall/Grundy Counties Project Location Map Proposed Detour Map for NHSX-14-5(75)-3H-64

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER A.2

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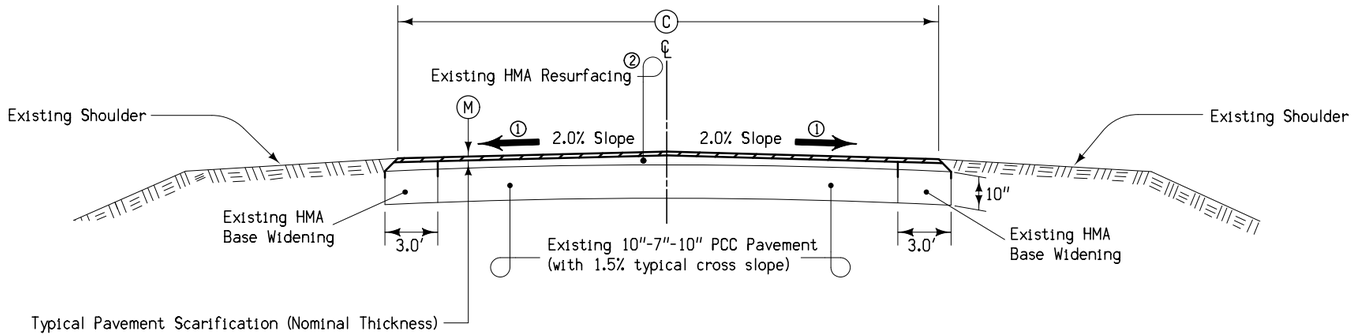
MILL-1
Special



(1) Typical section shown may be modified appropriately in areas of super elevated curves or other locations specifically designated by the engineer.

(2) The remaining HMA resurfacing will bel Used As Constructed. The remaining HMA will be used as the Stress Relief Course.

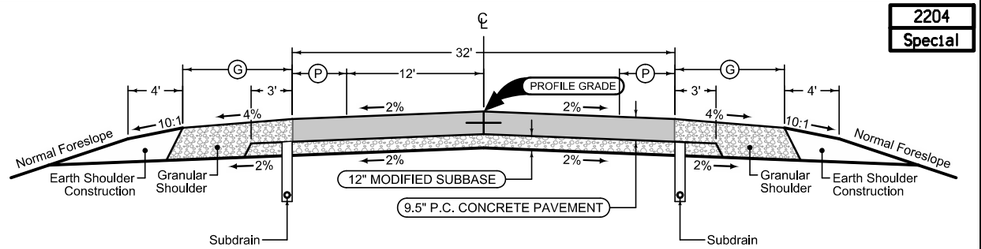
(3) Refer to sheets X.X and X.X for details of the existing pavement.

Location			(1) M	C	Pav't. Scarification	Remarks
Road Identification	Station To Station		Inches	Feet	Sq. Yds.	
IA 14	371+50	442+79.63	1	24.0	19012	
	3+33.40	50+00.00	1	24.0	12807	Includes Rt. Turnlane
	50+00.00	95+55.4	1	24.0	12148	
	102+57.4	520+00	1	24.0	111314	
				Total	155281	

TYPICAL CROSS SECTION PAVEMENT SCARIFICATION

2204
Special

(1) Typical section shown may be modified appropriately in areas of super elevated curves or other locations specifically designated by the engineer. Refer to sheets L.7 and L.8.



LOCATION INFORMATION			LEFT SHOULDER		AUXILIARY LANES		MAINLINE PAVEMENT		RIGHT SHOULDER		DESIGN QUANTITIES (PER LOCATION)			DESIGN QUANTITIES (Sta. 721+50 - Sta. 730+00)	
ROAD ID	STATION TO STATION		(G) Feet	(P) Feet	(AL) Feet	(AL2) Feet	(L) Feet	(R) Feet	(P) Feet	(G) Feet	PCC Pavement Sq. Yds.	Modified Subbase Cu. Yds.	Earth Shldr. Finishing Sta.	Class 10 Excavation Cu. Yds.	Class 13 Excavation Cu. Yds.
IA 14	369+00	371+50	6	4	0	0	12	12	4	6	176	68	0.89		
IA 14	95+55.4	98+06	6	4	0	0	12	12	4	6	503	213	2.47		
IA 14	100+07	102+57	6	4	0	0	12	12	4	6	467	195	2.09		
IA 14	520+00	522+50	6	4	0	0	12	12	4	6	509	170	0.30		

Mainline & Auxiliary Lane Jointing:
Longitudinal joint: L-2 or KT-2
Transverse joints: CD at 20' spacing

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

IA 14 RECONSTRUCTION

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.1

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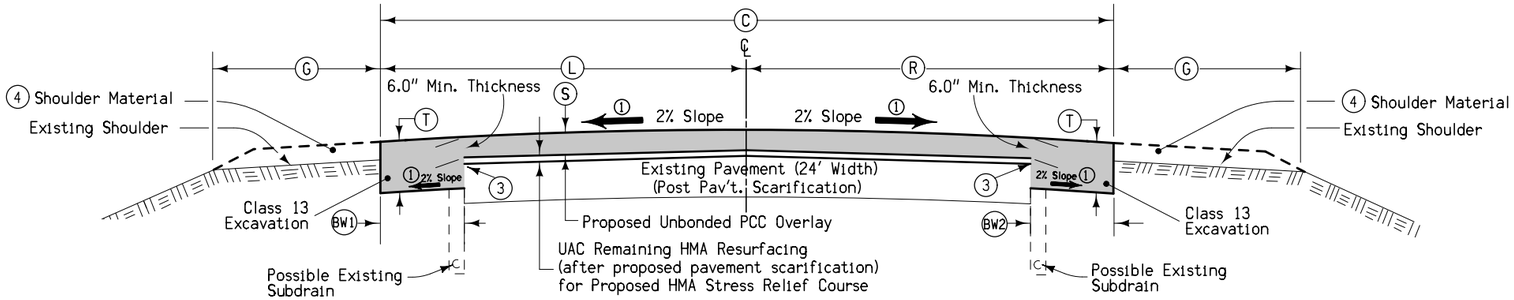


(1) Typical section shown may be modified appropriately in areas of super elevated curves or other locations specifically designated by the engineer. At existing super elevated areas match existing cross slopes and transition rates.

(2) Class 13 quantities include trench width (BW) minus 2.25' plus 1' x both Lt. & Rt. sides.

(3) Provide a vertical clean edge similar to milling machine results. Incidental to Class 13 Excavation.

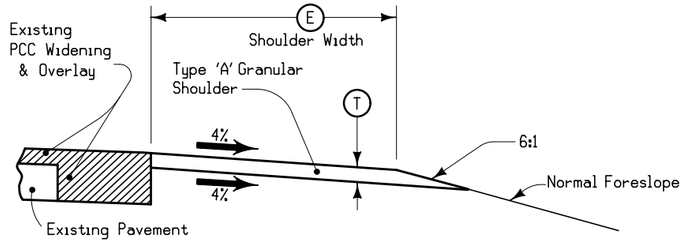
(4) Shoulder material as specified elsewhere in these plans; refer to Typical 7135 on sheet B.xx for Type 'B' shoulder adjacent to PCC overlay. Or Typical 7137 on sheet B.xx for PCC Shoulder with Sloped Curb.

Location			(S)	(C) (2)	(L)	(R)	Overlay Quantities (Per Location)			(T)	(BW1)	(BW2)	(G)	Remarks
Road	Station To Station						Class 13	PCC Overlay	PCC Overlay					
			Inches	Feet	Feet	Feet	Cu. Yds.	Cu. Yds.	Sq. Yds.	Inches	Feet	Feet	Feet	
IA 14	371+50	442+79.63	6.0	32.0	16.0	16.0	550	**4313**	25350	9.5	4.0	4.0	Vari.	Sta. Equ. 442+79.63 BK = 3+33.40 AH
IA 14	3+33.40	47+31.50	6.0	32.0	16.0	16.0	339	**2661**	15638	9.5	4.0	4.0	Vari.	
IA 14	52+52	95+55.4	6.0	32.0	16.0	16.0	332	**2604**	13388	9.5	4.0	4.0	Vari.	(Sta. Equ. 98+75.56 BK = 98+76.50 AH
IA 14	102+57.4	520+00	6.0	32.0	16.0	16.0	3221	**25255**	111314	9.5	4.0	4.0	Vari.	
					Totals		4442	**34833**	165689					
														Note: Stop/Resume at Reconstruction Areas

*** The contractor shall pave proposed shoulders thru all unpaved side road, paved side roads, and entrance intersections. At the existing paved intersections, the existing pavement will removed.

TYPICAL CROSS SECTION
PCC OVERLAY WITH BASE WIDENING
(AFTER PAVEMENT SCARIFICATION)

7135
Modified



Notes:

Quantities have been determined on the basis of a design weight of 140 lbs. per cubic foot.

① Tons per side per location.

② Refer to Typicals GRADE-1 and GRADE-2

LOCATION				TONS	T	E
ROAD IDENTIFICATION	STATION TO STATION		SIDE	①	Inches	Feet
IA 14	367+00.0	369+00.0	Rt	49	6	(A)
IA 14	369+00.0	390+00.0	Rt	441	6	6
IA 14	394+00.0	442+79.6	Rt	1025	6	6
IA 14	3+33.4	47+00.0	Rt	1070	6	(B)
IA 14	51+50.0	96+50.0	Rt	945	6	6
IA 14	101+00.0	118+75.0	Rt	373	6	6
IA 14	121+50.0	418+40.0	Rt	6235	6	6
IA 14	420+25.0	462+00.0	Rt	877	6	6
IA 14	465+00.0	519+00.0	Rt	1134	6	6
IA 14	519+00.0	522+50.0	Rt	142	6	(C)
IA 14	367+00.0	369+00.0	Lt	49	6	(A)
IA 14	369+00.0	424+25.0	Lt	1160	6	6
IA 14	428+75.0	442+79.6	Lt	295	6	6
IA 14	3+33.4	93+70.0	Lt	1898	6	6
IA 14	96+25.0	97+50.0	Lt	26	6	6
IA 14	101+50.0	204+00.0	Lt	2153	6	6
IA 14	207+50.0	519+00.0	Lt	6542	6	6
IA 14	519+00.0	520+00.0	Lt	47	6	(C)
IA 14	520+00.0	522+50.0	Lt	44	6	5

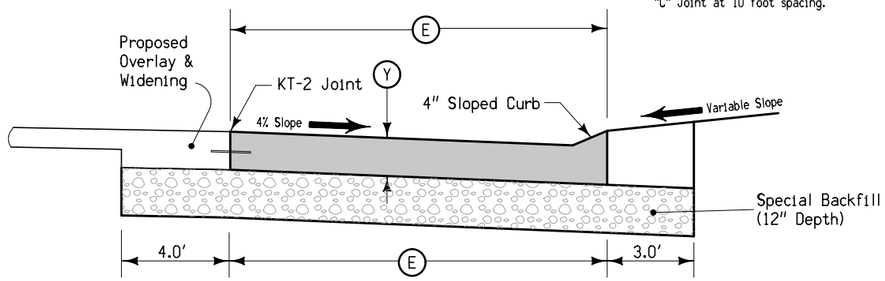
(A) Variable width (4′ to 6′)
(B) Variable width (6′ to 2′)
(C) Variable width (6′ to 15′) tie to existing shoulder

TYPICAL SECTION FOR TYPE 'A' GRANULAR SHOULDER

ADJACENT TO PCC WIDENING & OVERLAY

7137
Modified

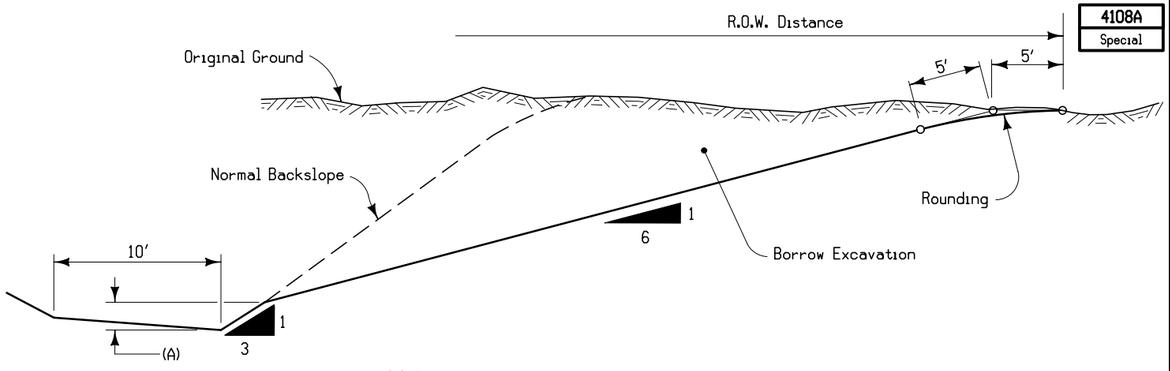
Note:
The paved shoulder transverse joints shall be a "C" Joint at 10 foot spacing.



STATION TO STATION		DIRECTION OF TRAVEL	SIDE	Y	E	PCC PAVED SHOULDER	SLOPED CURB	SPECIAL BACKFILL	EARTH SHOULDER FINISHING
				Inches	Feet	Sq. Yds.	Lin. Feet	Cu. YDs.	Stations
390+00	394+00	NB	Rt.	9.5	7.0	311.1	400	207.41	4
424+25	428+75	NB	Lt.	9.5	7.0	350.0	450	233.33	5
50+00	51+50	NB	Rt.	9.5	3.5	58.3	150	58.33	2
93+70	96+25	NB	Lt.	9.5	7.0	198.3	255	132.22	3
118+75	121+50	NB	Rt.	9.5	7.0	213.9	275	142.59	3
204+00	207+00	NB	Lt.	9.5	7.0	233.3	300	155.56	3
462+00	464+50	NB	Rt.	9.5	7.0	194.4	250	129.63	3

PCC SHOULDER WITH SLOPED CURB

4108A
Special



(A) Depth varies, refer to the cross sections.

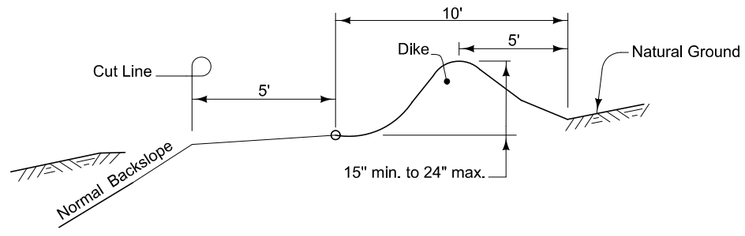
Notes:

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

Where intercepting ditches are required they shall be as shown on 4101.

TYPICAL CROSS SECTION POSSIBLE BORROW IN R. O. W.

4101
04-20-10



Refer to plans for locations of intercepting ditches. Dike for intercepting ditch shall be made by taking earth from roadway side. Do not excavate back of dike.

TYPICAL CROSS SECTION INTERCEPTING DITCH

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.3

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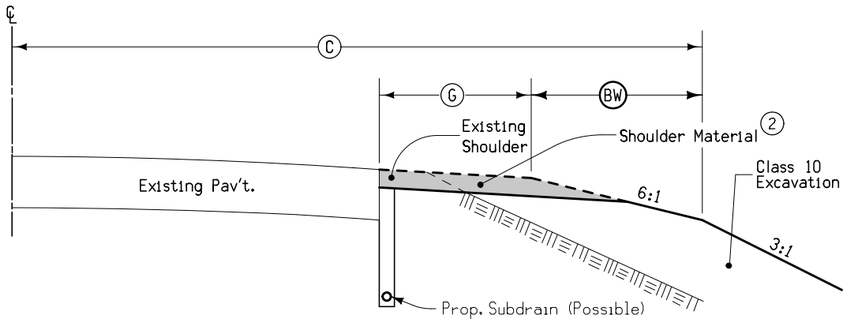
Grade-1
Special

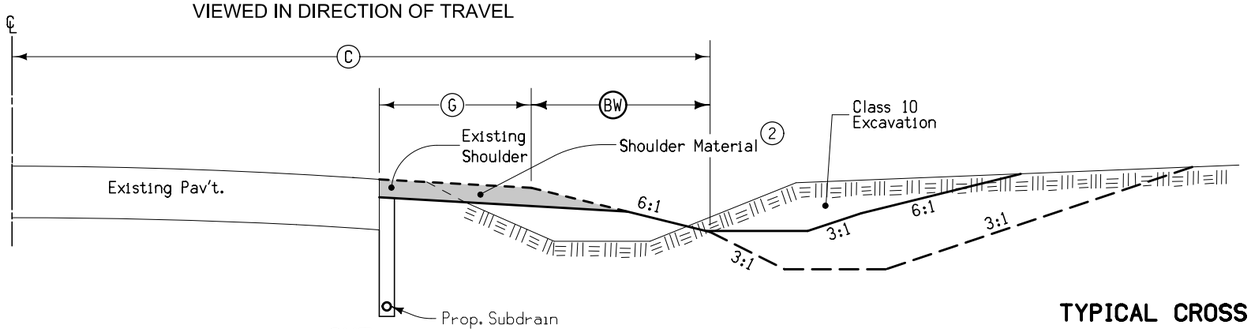
(1) Typical sections shown is for a cut and fill situation and may be on either side, left or right. Refer to the cross sections.

(2) Shoulder material as specified elsewhere in these plans; refer to Typical 7135 for Type 'A' shoulder adjacent to PCC Pavement.



FILL

VIEWED IN DIRECTION OF TRAVEL



CUT

TYPICAL CROSS SECTION GRADING

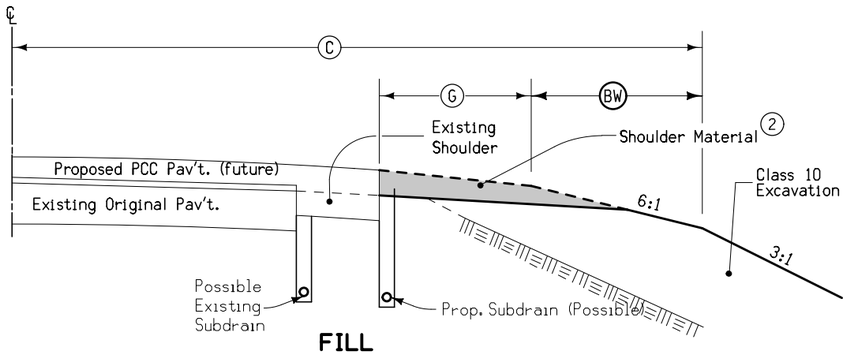
* Transition from Existing Foreslope.

Grading Location				C	G	BW	Remarks
Road	Station To Station		Side	Feet	Feet	Feet	
IA 14	367+00	369+00	Rt.	*38.0	(A)	16.0	(A) Variable width (4' to 6')
IA 14	367+00	369+00	Lt.	*38.0	(A)	16.0	(A) Variable width (4' to 6')
IA 14	520+00.00	522+50.00	Rt.	*38.0	(A)	16.0	(A) Variable width
IA 14	520+00.00	522+50.00	Lt.	*38.0	(A)	16.0	(A) Variable width

Grade-1
Special

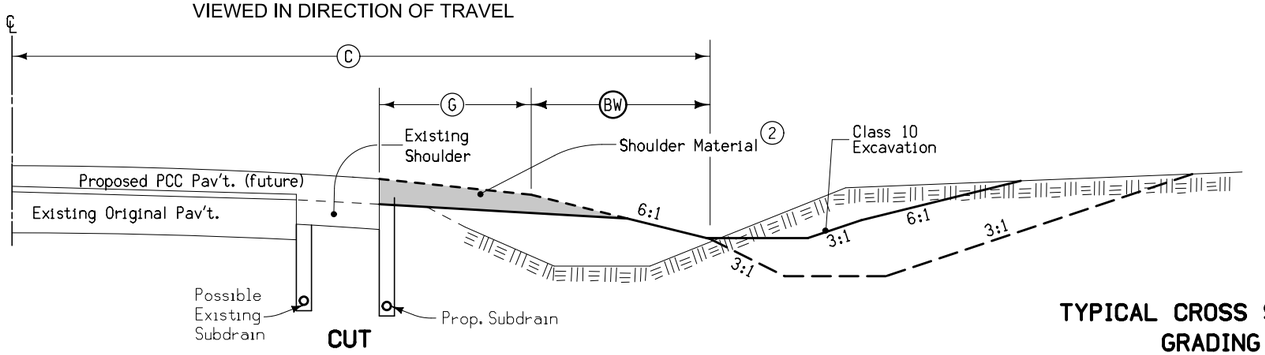
(1) Typical sections shown is for a cut and fill situation and may be on either side, left or right. Refer to the cross sections.

(2) Shoulder material as specified elsewhere in these plans; refer to Typical 7135 for Type 'A' shoulder adjacent to PCC Pavement.



FILL

VIEWED IN DIRECTION OF TRAVEL



CUT

TYPICAL CROSS SECTION GRADING

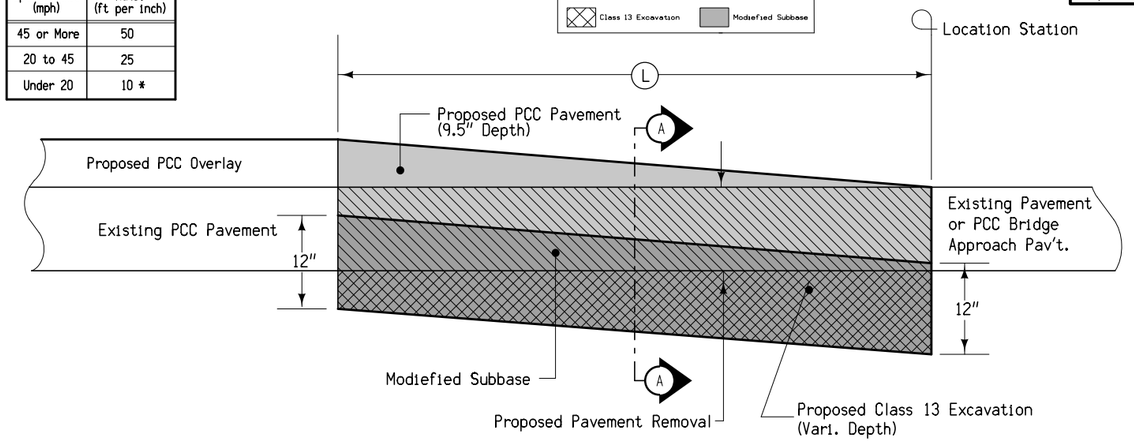
Grading Location				C	G	BW	Remarks
Road	Station To Station		Side	Feet	Feet	Feet	
IA 14	369+00.00	390+00.00	Rt.	38.0	6	16.0	
IA 14	394+00.00	442+79.63	Rt.	38.0	6	16.0	Sta. Equ. 442+79.63 BK = 3+33.40 AH
IA 14	3+33.40	50+00.00	Rt.	38.0	6	16.0	
IA 14	51+50.00	98+50.00±	Rt.	38.0	6	16.0	To Bridge
IA 14	99+50.00±	118+75.00	Rt.	38.0	6	16.0	
IA 14	121+50.00	418+40.00	Rt.	38.0	6	16.0	
IA 14	420+25.00	462+00.00	Rt.	38.0	6	16.0	
IA 14	465+00.00	520+00.00	Rt.	38.0	6	16.0	
IA 14	369+00.00	424+25.00	Lt.	38.0	6	16.0	
IA 14	428+75.00	442+79.63	Lt.	38.0	6	16.0	Sta. Equ. 442+79.63 BK = 3+33.40 AH
IA 14	3+33.40	93+70.00	Lt.	38.0	6	16.0	
IA 14	96+25.00	98+50.00	Lt.	38.0	6	16.0	To Bridge
IA 14	99+50.00	204+00.00	Lt.	38.0	6	16.0	
IA 14	207+00.00	520+00.00	Lt.	38.0	6	16.0	

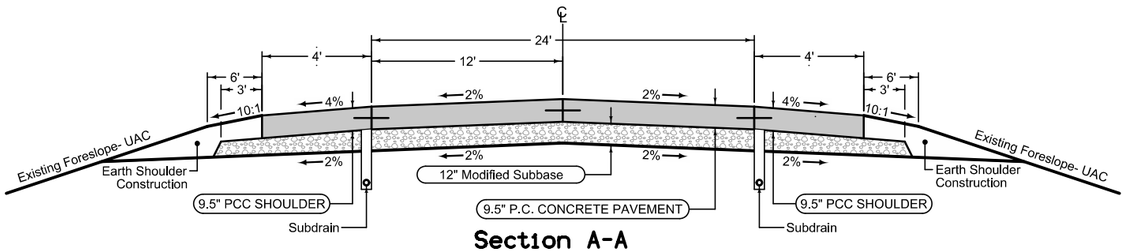
Posted Speed Limit (mph)	Runout Ratio (ft per inch)
45 or More	50
20 to 45	25
Under 20	10 *

* Based on turning maneuvers at side roads and intersections.

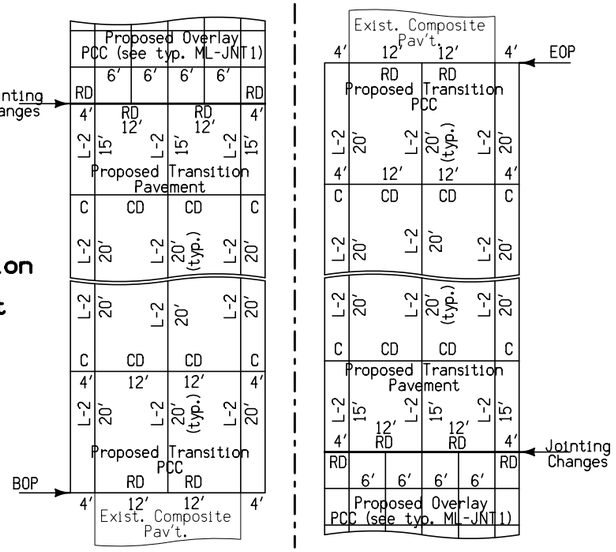
PATTERN KEY: Pavement Removal; PCC Pavement; Class 13 Excavation; Modified Subbase

7308B
Special





Section A-A

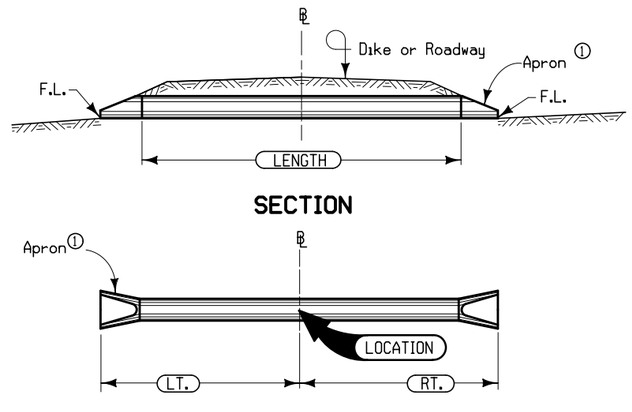


Proposed Transition PCC Jointing Layout

Location	Ⓛ Feet	PCC Pavement Sq. Yds.	Modified Subbase Cu. Yds.	Class 13 Excavation Cu. Yds.	Pavement Removal Sq. Yds.	Remarks
369+00	250	889	296	210	889	BOP
98+06	250	889	296	210	889	To Bridge Approach
100+07	250	889	296	210	889	From Bridge Approach
522+50	250	1430	477	338	1430	EOP
TOTALS		4097	1366	967	4097	

PCC PAVEMENT TRANSITION FROM UNBONDED OVERLAY TO EXISTING PAVEMENT

1101
04-30-02



SECTION

PLAN

Notes:

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

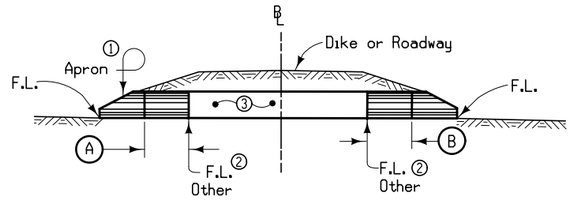
Skew angle is the angle which one end of the pipe is ahead (by stationing) of line perpendicular to the ℄ (example skew Rt. ahead 30°).

Refer to tabular listing and other plans for additional information.

① See Standard Road Plan RF-3 For Conc. or RF-5 for Metal.

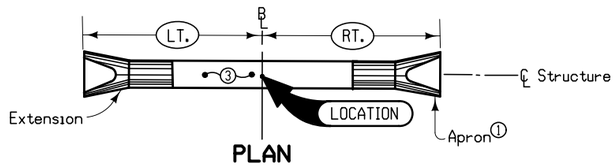
PIPE CULVERT

1301
10-03-00



SECTION

A+B =Length



PLAN

Notes:

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

Extension shall be on line of existing structure to Lt., Rt. or both as specified. Adaptors may be required, see Standard Road Plan RF-2.

Refer to tabular listing and other plans for additional information.

① See Standard Road Plan RF-3 for concrete, RF-5 for metal.

② Optional type "D" section only when specified in tabulation.

③ Existing structure.

PIPE EXTENSION

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.5

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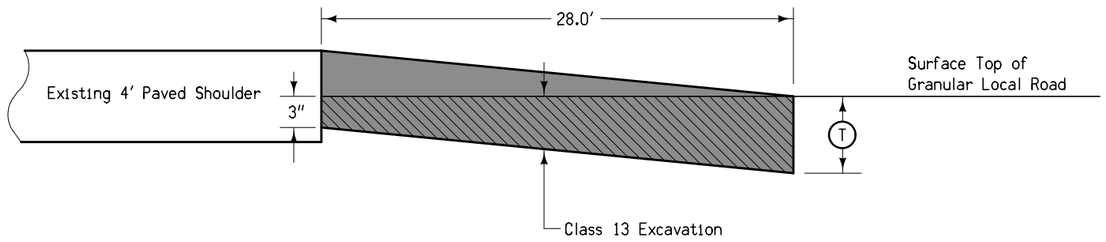
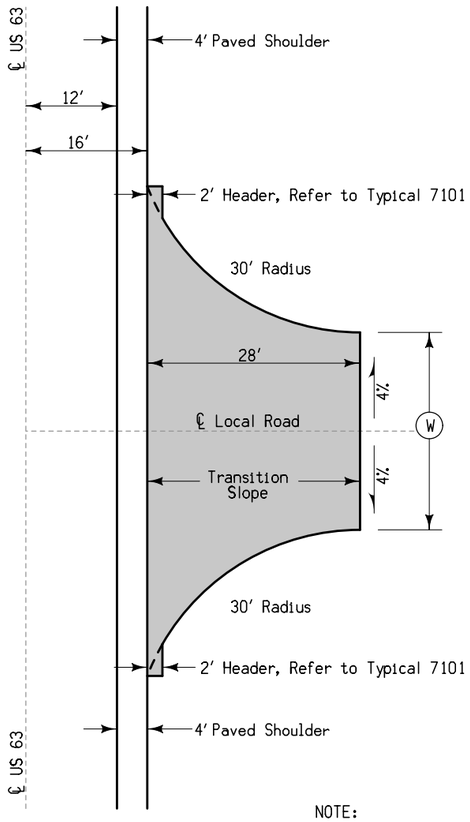
NOTE: Drawing is not to Scale

SRA Special





LOCATION STATION	SIDE	T Inches	W Feet	PCC PAVEMENT Sq. Yds.	CLASS 13 EXCAVATION Cu. Yds.	REMARKS

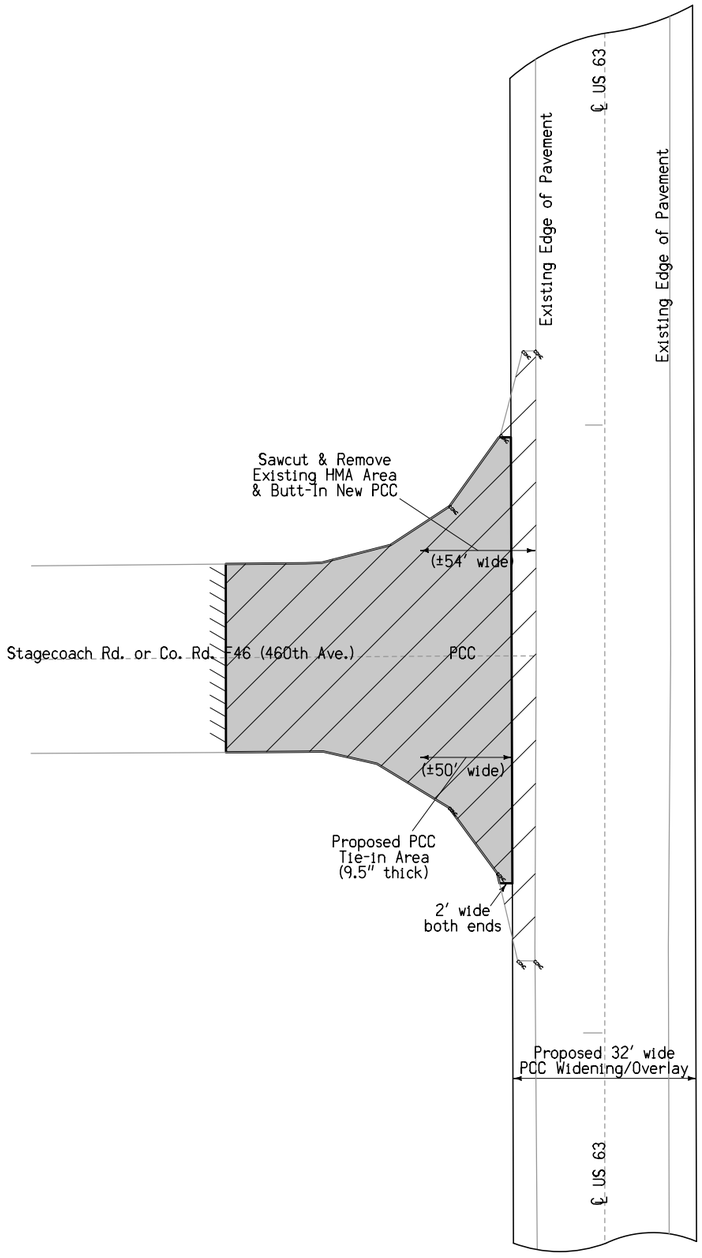
NOTE:
Refer to sheets L.1 - L.6 for Geometric and jointing Details.

FUNDED BY COUNTY
POWESHIEK COUNTY PARTICIPATION

TYPICAL CROSS SECTION
PCC APPROACHES AT LOCAL GRANULAR ROADS

NOTE: Drawing is not to Scale

PSA-1 Special



NOTE:
Refer to sheets L.3 and L.4 for Geometric and jointing Details.

(A) Refer to Tabulation 110-1 for additional information.

LOCATION STATION	SIDE	T Inches	PCC PAVEMENT Sq. Yds.	PAVEMENT REMOVAL Sy. Yds.	REMARKS

TYPICAL CROSS SECTION
PCC APPROACHES (Transition Pavement)

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.6

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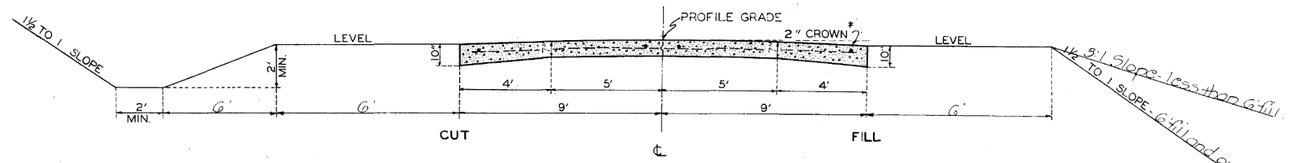
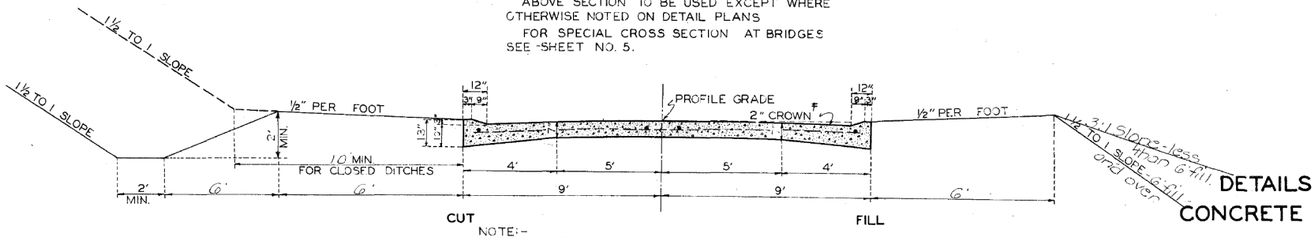
FED. ROAD DIST. NO.	STATE	F.A. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	332"A"		3	63

1932 PAVING

TYPICAL CROSS SECTIONS

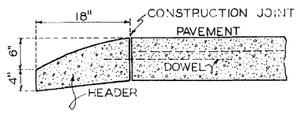


NOTE:-
ABOVE SECTION TO BE USED EXCEPT WHERE OTHERWISE NOTED ON DETAIL PLANS
FOR SPECIAL CROSS SECTION AT BRIDGES SEE SHEET NO. 5.

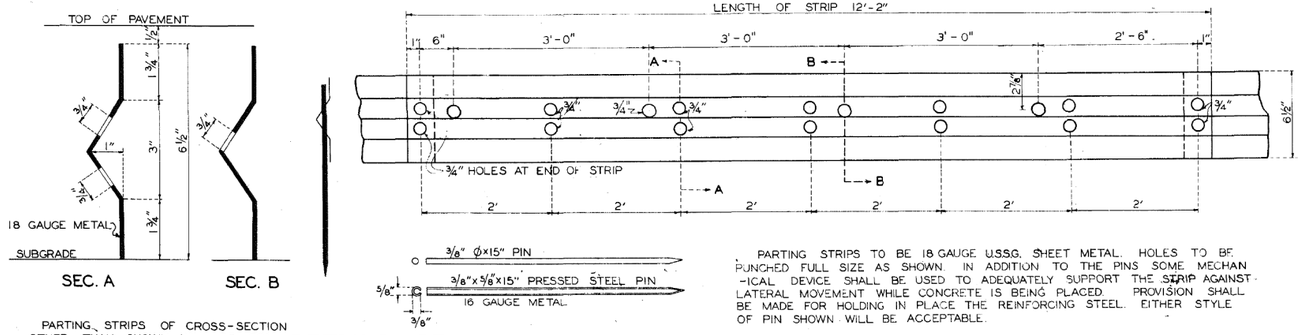


NOTE:-
CURB SECTION TO BE USED WHERE NOTED ON DETAIL PLANS.
CLOSED DITCHES TO BE USED WHERE NOTED ON DETAIL PLANS.

DETAILS OF CONCRETE HEADER



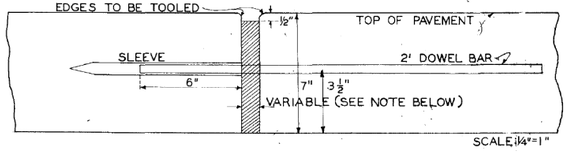
DETAILS FOR CENTER PARTING STRIP



PARTING STRIPS OF CROSS-SECTION OTHER THAN SHOWN WILL BE CONSIDERED AS ALTERNATES.

PARTING STRIPS TO BE 18 GAUGE U.S.S.G. SHEET METAL. HOLES TO BE PUNCHED FULL SIZE AS SHOWN. IN ADDITION TO THE PINS SOME MECHANICAL DEVICE SHALL BE USED TO ADEQUATELY SUPPORT THE STRIP AGAINST LATERAL MOVEMENT WHILE CONCRETE IS BEING PLACED. PROVISION SHALL BE MADE FOR HOLDING IN PLACE THE REINFORCING STEEL. EITHER STYLE OF PIN SHOWN WILL BE ACCEPTABLE.

DETAILS OF EXPANSION JOINTS



JOINTS MAY BE EITHER POURED OR PREMOULDED. IN EITHER CASE. INSTALLATION DEVICES ARE TO BE APPROVED BEFORE BEING USED. SUGGESTED DESIGNS FOR INSTALLATION DEVICES WILL BE FURNISHED ON APPLICATION.

* 1" EXPANSION JOINTS AT 80' CENTERS, SHALL BE USED ON WORK CONSTRUCTED WITH LIME STONE AGGREGATE.

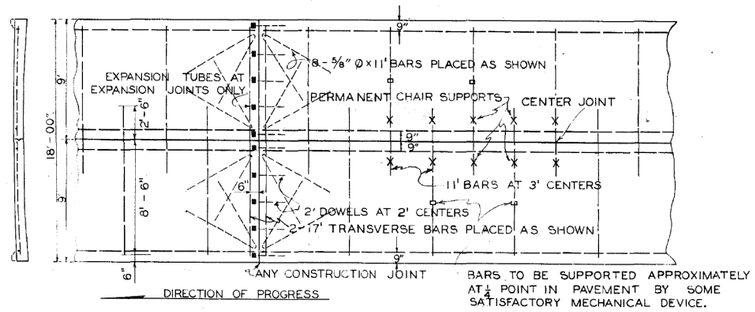
¾" EXPANSION JOINTS AT 60' CENTERS, SHALL BE USED ON WORK CONSTRUCTED WITH GRAVEL AGGREGATE.

½" EXPANSION JOINTS AT 40' CENTERS, SHALL BE USED ON WORK CONSTRUCTED WITH CLASS 5 AGGREGATE.

REGARDLESS OF THE WIDTH AND SPACING OF JOINTS THE REINFORCING DIAGRAM WILL REMAIN UNCHANGED.

This Sheet
For Information Only

PAVEMENT REINFORCING PLAN



BARS TO BE SUPPORTED APPROXIMATELY AT ¼ POINT IN PAVEMENT BY SOME SATISFACTORY MECHANICAL DEVICE.

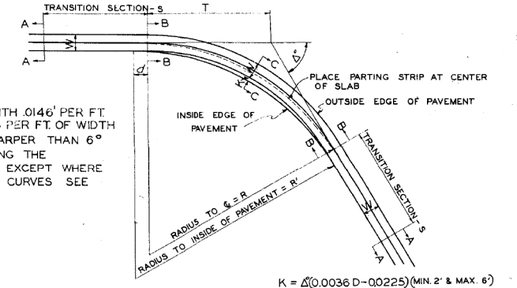
ALL REINFORCING STEEL TO BE PLAIN ⅝" Ø BARS. FOUR LONGITUDINAL BARS TO BE PLACED AS SHOWN, 2½" BELOW TOP SURFACE, 2' LAP TO BE USED AT ALL SPLICES. ALL DOWEL BARS TO BE PLACED IN CENTER OF SECTION. DOWELS AT TRANSVERSE JOINTS TO PROJECT 6" INTO NEW WORK, AND TO BE FITTED WITH EXPANSION TUBES AT EXPANSION JOINTS. LONGITUDINAL REINFORCING STEEL TO END 2" FROM TRANSVERSE JOINTS.

ALL REINFORCING STEEL, INCLUDING DOWELS AT TRANSVERSE JOINTS, TO BE HELD RIGIDLY IN CORRECT POSITION.

MINIMUM CONSTRUCTION REQUIREMENTS AS FOLLOWS:-

1. ALL TRANSVERSE BARS TO BE PLACED UNDER LONGITUDINAL BARS, AND TO BE SUPPORTED BY TWO PERMANENT CHAIRS AND ONE REMOVABLE DEVICE AT QUARTER POINT. (SEE PLAN ABOVE. ALSO SEE NOTE NO. 5 BELOW.)
2. SIDE LONGITUDINAL BARS TO BE SUPPORTED BY REMOVABLE BRACKETS FROM SIDE FORMS.
3. ALL LAPS AND INTERSECTIONS OF BARS TO BE SECURELY WIRED EXCEPT AS NOTED BELOW.
4. EIGHT BENT BARS TO BE PLACED 2½ INCHES BELOW TOP SURFACE, ADJACENT TO ALL TRANSVERSE JOINTS. (SEE PLAN ABOVE.) (NO WIRES REQUIRED FOR BENT BARS.)
5. PERMANENT CHAIRS TO BE U-SHAPED PRESSED METAL PINS, WITH NOT LESS THAN 4" PENETRATION INTO SUBGRADE, DISTANCE FROM SUBGRADE LUG TO BOTTOM OF DOWEL HOLE TO BE 3¼". METAL TO BE 18 GAUGE.

DETAILS FOR SUPERELEVATION



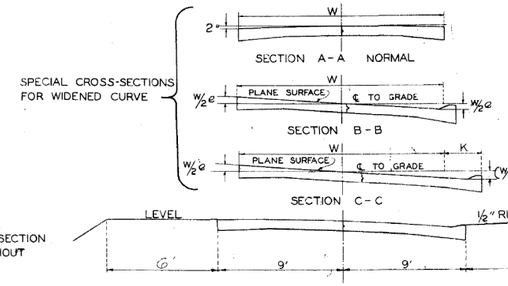
SUPERELEVATION BEGINS AT 0°30' CURVE WITH .0146' PER FT. OF WIDTH AND INCREASES UNIFORMLY TO .0833 PER FT. OF WIDTH AT 6° WITH NO CHANGE IN RATE FOR CURVES SHARPER THAN 6°. SUPERELEVATION IS ACCOMPLISHED BY ROTATING THE STANDARD SECTION ABOUT THE CENTER LINE EXCEPT WHERE CURVES ARE TO BE WIDENED. FOR WIDENED CURVES SEE TYPICAL CROSS SECTIONS BELOW.

$K = \Delta(0.0036D - 0.0225)$ (MIN. 2' & MAX. 6')

$R' = R\frac{E+K}{E} - \frac{W}{2}$ $\quad d = \frac{KT}{E}$

AREA OF ADDED WIDTH (SHADED PORTION)
$(R' - R + \frac{W}{2})(R' + R - \frac{W}{2})(\tan\frac{\Delta}{2} - 0.0087267\Delta^{\circ})$ SQ. FT.
(CARRY TO 3 PLACES) (CARRY TO 5 PLACES)

SPECIAL CROSS-SECTIONS FOR WIDENED CURVE



D = DEGREE OF ℄ CURVE
Δ = INTERSECTION ANGLE
R = RADIUS TO ℄
R' = RADIUS TO INSIDE EDGE
E = EXTERNAL DISTANCE TO ℄
T = TANGENT
W = NORMAL WIDTH OF PAVEMENT
K = ADDED WIDTH AT MIDDLE OF CURVE
e = SUPERELEVATION IN INCHES PER FT. OF WIDTH
S = 80' WHEN e = ½" OR LESS; 125' WHEN e = ⅝" OR MORE

SPECIAL CROSS-SECTION FOR CURVE WITHOUT WIDEN K

REVISED FEB. 1931
" MAR. 1931
* REVISED JUNE 1-1930
\# " " NOV. 1930
REVISED MAY 1929

Marshall Co. FA 332"A" Sht #3 1932 PAVING

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.7

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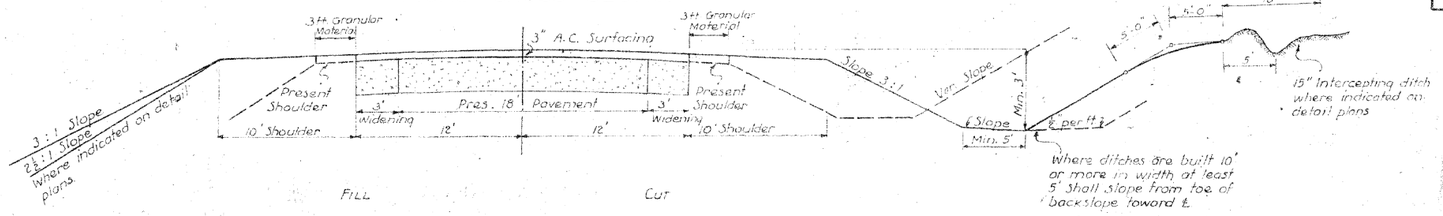
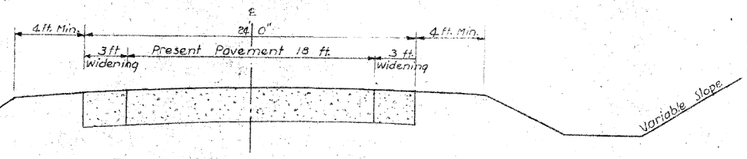
FED. ROAD DIST. NO.	STATE	P PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	1081		3	685

TYPICAL CROSS SECTION

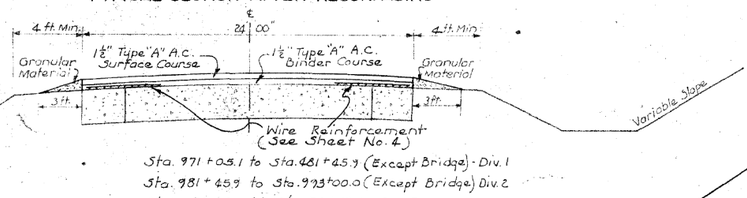


Note:
Improvement is being made by stage construction. Ultimate improvement is represented by typical section above.

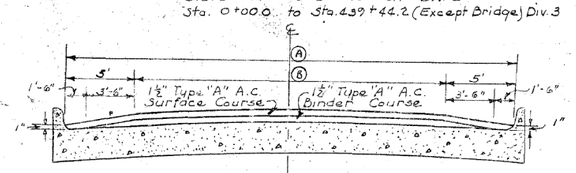
TYPICAL SECTION AFTER WIDENING



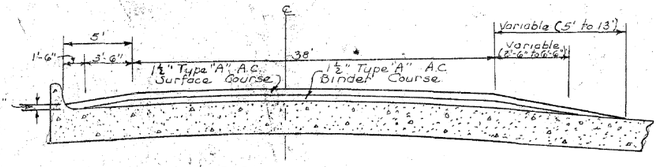
TYPICAL SECTION AFTER RESURFACING



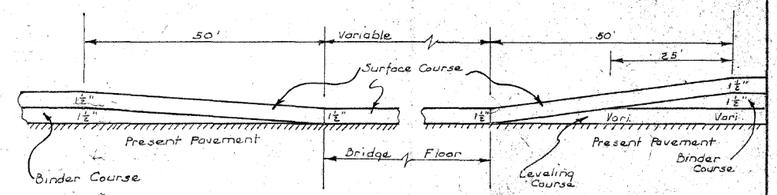
Sta. 971+05.1 to Sta. 981+45.9 (Except Bridge) - Div. 1
Sta. 981+45.9 to Sta. 993+00.0 (Except Bridge) Div. 2
Sta. 0+00.0 to Sta. 70+12.4 - Div. 2.
Sta. 0+00.0 to Sta. 439+44.2 (Except Bridge) Div. 3



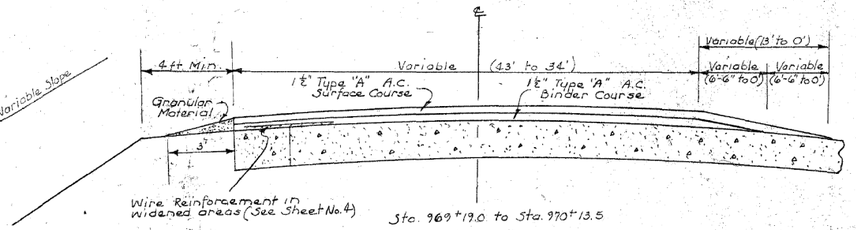
Sta. 952+95.2 to Sta. 954+88.2 { (A) = 44' to 34', (B) = 34' to 24'
Sta. 954+88.2 to Sta. 967+08.2 { (A) = 34', (B) = 24'
Sta. 967+08.2 to Sta. 968+63.2 { (A) = 34' to 48', (B) = 24' to 38'



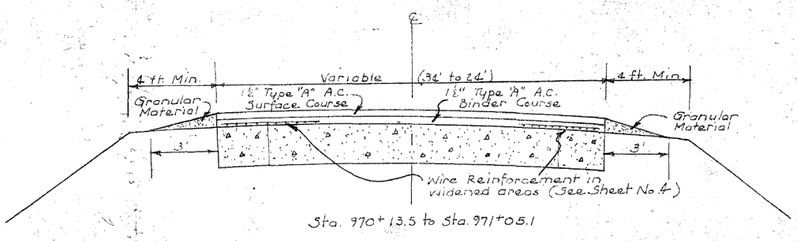
Sta. 968+63.2 to Sta. 969+19.0



DETAILS OF BRIDGE AND BRIDGE APPROACH RESURFACING



Sta. 969+19.0 to Sta. 970+13.5



Sta. 970+13.5 to Sta. 971+05.1

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Revised Jan. 22, 1957

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.8

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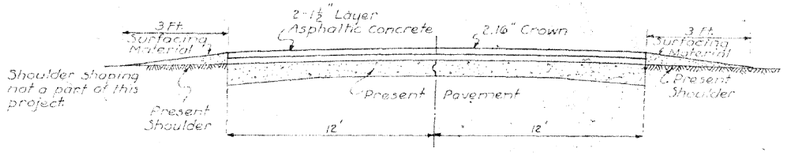
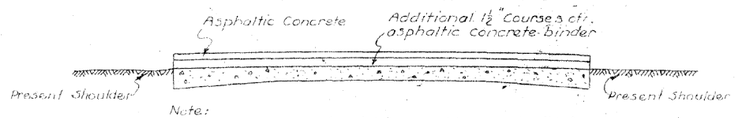
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	1081		4	625

TYPICAL CROSS SECTION

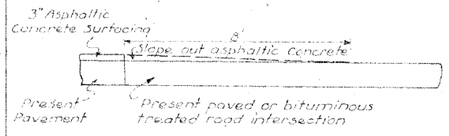


SECTION TO VOID EXCESS PATCHING

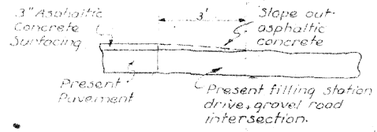


Note:
Where the area of patching would exceed 14% of the area in any 100 Ft. station, no full depth patching will be required, but additional courses of asphaltic concrete will be placed as shown above. Where area of patching (full depth) is less than 14% in any station (100') patching will be required. use min. 50' runouts.

SECTION FOR PAVED OR BITUMINOUS TREATED ROAD INTERSECTION



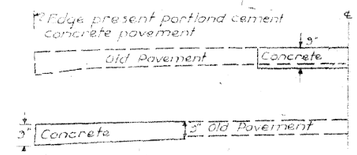
SECTION FOR COMMERCIAL DRIVES AND GRAVEL ROAD INTERSECTION



Note:
The area for sloping out asphaltic concrete is to be swept clean of any loose material and primed prior to placing of asphaltic concrete.

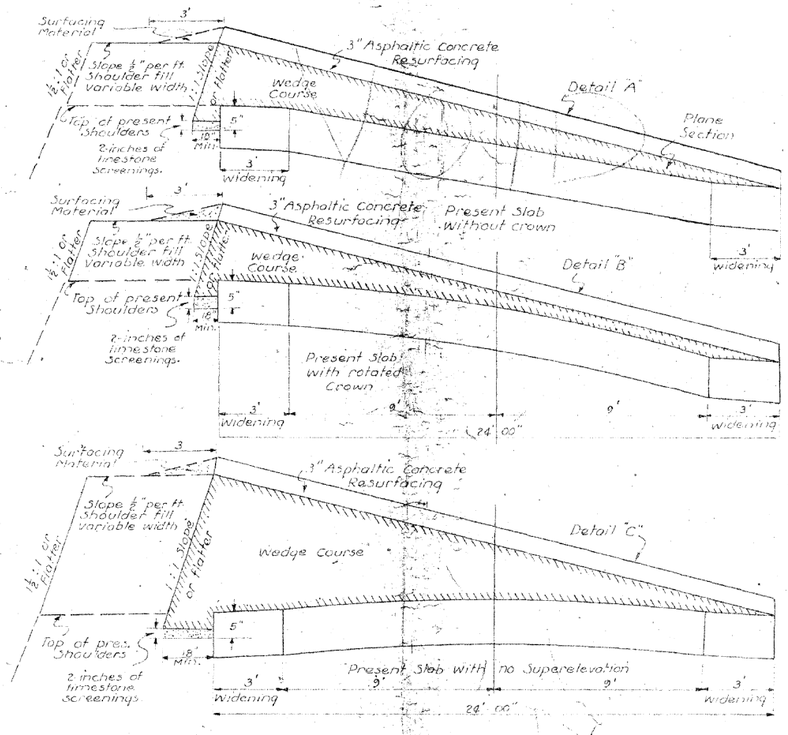
BASE REPAIR
FULL DEPTH PATCHING

PORTLAND CEMENT CONCRETE PATCH

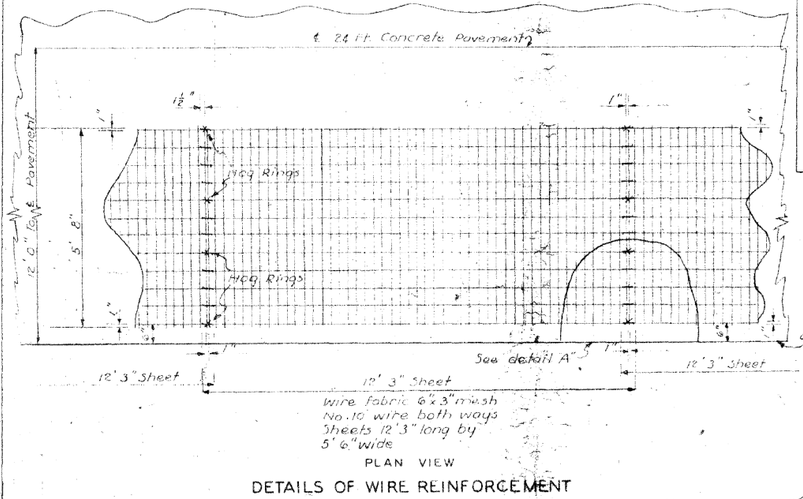


Note:
Length width and shape of patch will vary as necessary to repair present pavement. Payment will be made on the square yard area of patch measured entirely within the neat lines of the present portland cement concrete pavement. See typical section and note where patching exceeds 14% of the area of any 100 ft. station. Old concrete removed shall be wasted or stockpiled within 1½ mile haul as directed by the Engineer.

DETAILS FOR PLACING WEDGE COURSE ON CURVES



Note:
Trench cut 3 inches below present pavement to required width. Trench excavation included in shoulder excavation. Base widening shall be constructed in accordance with article 2206-1956 Standard specifications with the exception that a trenching machine will not be required.

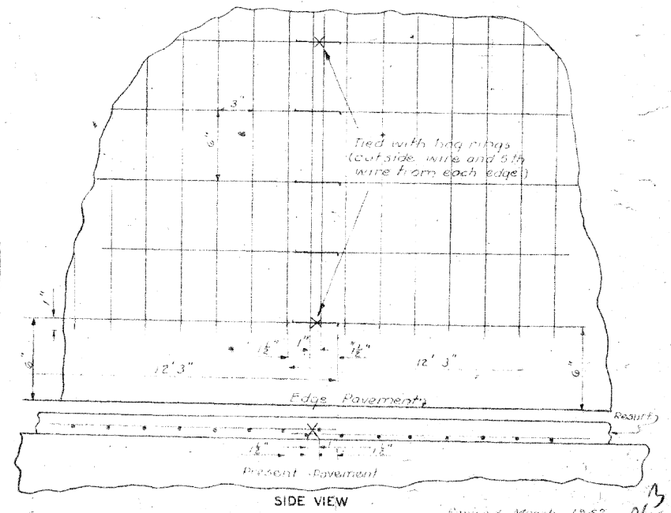


Wire fabric 6"x3" mesh No. 10 wire both ways Sheets 12'3" long by 5'6" wide

PLAN VIEW

DETAILS OF WIRE REINFORCEMENT

DETAIL "A"



SIDE VIEW

This Sheet
For Information Only

Revised March 1957
Revised May 1956
Revised April 1956

Marshall Co. P. Proj. No. 1081 A.C. Resurfacing Sheet No. 4.

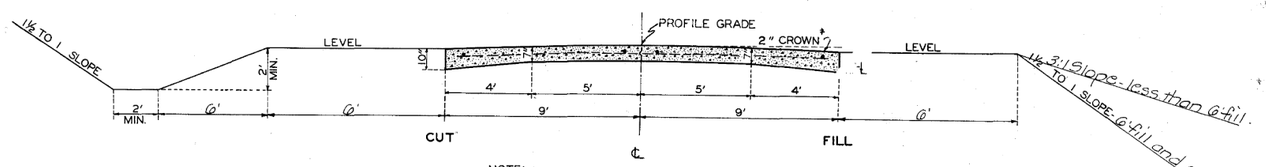
FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.9

7:24:28 AM 2/14/2017 rringge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\DistrictDesign\64014075_B01.sht

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	332"B"		3	76

1932 PAVING

TYPICAL CROSS SECTIONS



NOTE:-
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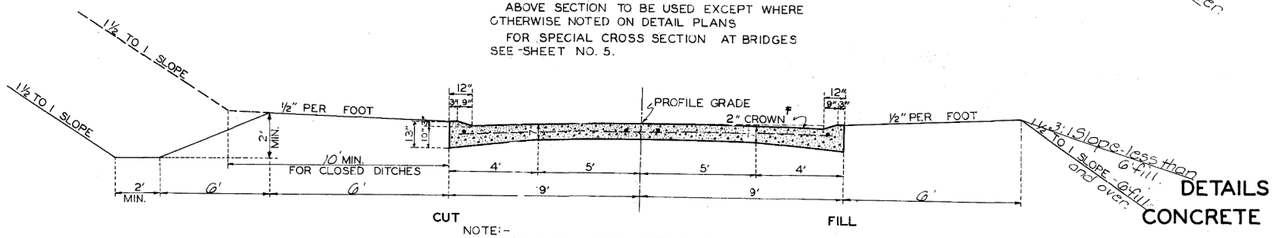

NOTE:-
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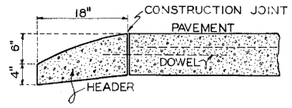
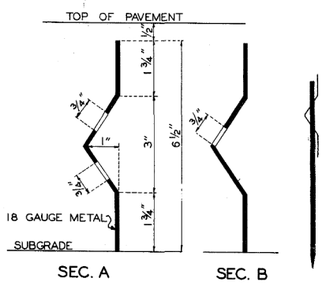
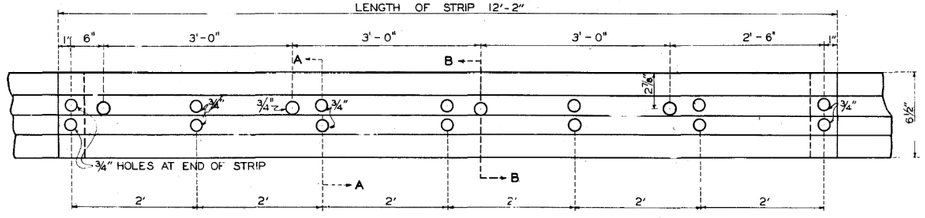
CLOSED DITCHES TO BE USED WHERE NOTED ON DETAIL PLANS.

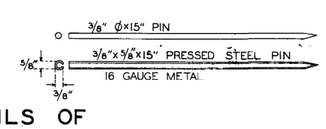
DETAILS OF CONCRETE HEADER



DETAILS FOR CENTER PARTING STRIP







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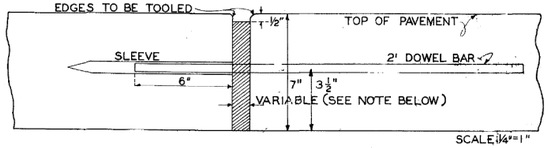
PARTING STRIPS OF CROSS-SECTION OTHER THAN SHOWN WILL BE CONSIDERED AS ALTERNATES.

DETAILS OF EXPANSION JOINTS



JOINTS MAY BE EITHER POURED OR PREMOULDED. IN EITHER CASE, INSTALLATION DEVICES ARE TO BE APPROVED BEFORE BEING USED. SUGGESTED DESIGNS FOR INSTALLATION DEVICES WILL BE FURNISHED ON APPLICATION.

* 1" EXPANSION JOINTS AT 80' CENTERS, SHALL BE USED ON WORK CONSTRUCTED WITH LIME STONE AGGREGATE

¾" EXPANSION JOINTS AT 60' CENTERS, SHALL BE USED ON WORK CONSTRUCTED WITH GRAVEL AGGREGATE

½" EXPANSION JOINTS AT 40' CENTERS, SHALL BE USED ON WORK CONSTRUCTED WITH CLASS 5 AGGREGATE.

REGARDLESS OF THE WIDTH AND SPACING OF JOINTS THE REINFORCING DIAGRAM WILL REMAIN UNCHANGED.

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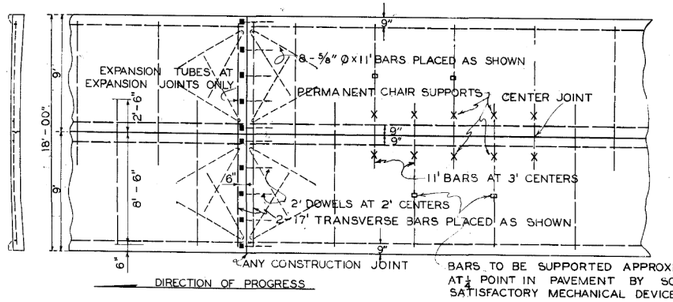
For Information Only

PAVEMENT REINFORCING PLAN



BARS TO BE SUPPORTED APPROXIMATELY AT ¼ POINT IN PAVEMENT BY SOMF SATISFACTORY MECHANICAL DEVICE.

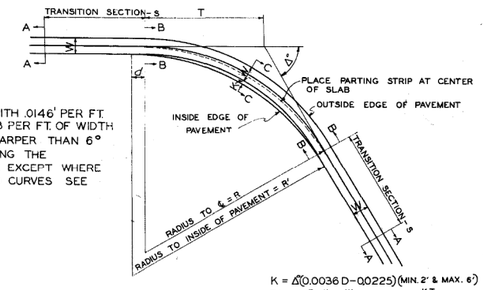
ALL REINFORCING STEEL TO BE PLAIN ⅝" ϕ BARS. FOUR LONGITUDINAL BARS TO BE PLACED AS SHOWN, 2½" BELOW TOP SURFACE, 2' LAP TO BE USED AT ALL SPLICES. ALL DOWEL BARS TO BE PLACED IN CENTER OF SECTION. DOWELS AT TRANSVERSE JOINTS TO PROJECT 6" INTO NEW WORK, AND TO BE FITTED WITH EXPANSION TUBES AT EXPANSION JOINTS. LONGITUDINAL REINFORCING STEEL TO END 2" FROM TRANSVERSE JOINTS.

ALL REINFORCING STEEL, INCLUDING DOWELS AT TRANSVERSE JOINTS, TO BE HELD RIGIDLY IN CORRECT POSITION.

MINIMUM CONSTRUCTION REQUIREMENTS AS FOLLOWS:-

1. ALL TRANSVERSE BARS TO BE PLACED UNDER LONGITUDINAL BARS, AND TO BE SUPPORTED BY TWO PERMANENT CHAIRS AND ONE REMOVABLE DEVICE AT QUARTER POINT. (SEE PLAN ABOVE. ALSO SEE NOTE NO. 5 BELOW.)
2. SIDE LONGITUDINAL BARS TO BE SUPPORTED BY REMOVABLE BRACKETS FROM SIDE FORMS.
3. ALL LAPS AND INTERSECTIONS OF BARS TO BE SECURELY WIRED EXCEPT AS NOTED BELOW.
4. EIGHT BENT BARS TO BE PLACED 2½ INCHES BELOW TOP SURFACE, ADJACENT TO ALL TRANSVERSE JOINTS. (SEE PLAN ABOVE.) (NO WIRES REQUIRED FOR BENT BARS.)
5* PERMANENT CHAIRS TO BE U-SHAPED PRESSED METAL PINS, WITH NOT LESS THAN 4" PENETRATION INTO SUBGRADE, DISTANCE FROM SUBGRADE LUG TO BOTTOM OF DOWEL HOLE TO BE 3½". METAL TO BE 18 GAUGE.

DETAILS FOR SUPERELEVATION



SUPERELEVATION BEGINS AT 0°30' CURVE WITH .0146' PER FT. OF WIDTH, AND INCREASES UNIFORMLY TO .0833 PER FT. OF WIDTH AT 6° WITH NO CHANGE IN RATE FOR CURVES SHARPER THAN 6° SUPERELEVATION IS ACCOMPLISHED BY ROTATING THE STANDARD SECTION ABOUT THE CENTER LINE EXCEPT WHERE CURVES ARE TO BE WIDENED. FOR WIDENED CURVES SEE TYPICAL CROSS SECTIONS BELOW.

$K = \Delta(0.0036D - 0.0225)$ (MIN. 2' & MAX. 6')

$R' = R\frac{E+K}{E} - \frac{W}{2}$ $\qquad d = \frac{KT}{E}$

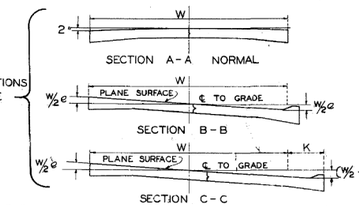
AREA OF ADDED WIDTH (SHADED PORTION)

$(R' - R + \frac{W}{2})(R' + R - \frac{W}{2})(\tan\frac{\Delta}{2} - 0.0087267\Delta)$ SQ. FT.

(CARRY TO 3 PLACES) (CARRY TO 5 PLACES)

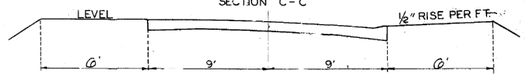
D = DEGREE OF ℄ CURVE
Δ = INTERSECTION ANGLE
R = RADIUS TO ℄
R' = RADIUS TO INSIDE EDGE
E = EXTERNAL DISTANCE TO ℄
T = TANGENT
W = NORMAL WIDTH OF PAVEMENT
K = ADDED WIDTH AT MIDDLE OF CURVE
e = SUPERELEVATION IN INCHES PER FT. OF WIDTH

SPECIAL CROSS-SECTIONS FOR WIDENED CURVE



$S = \begin{cases} 80' \text{ WHEN } e = \frac{1}{2}" \text{ OR LESS} \\ 125' \text{ WHEN } e = \frac{5}{8}" \text{ OR MORE} \end{cases}$

SPECIAL CROSS-SECTION FOR CURVE WITHOUT WIDENING



REVISED FEB. 1931
" MAR. 1931
* REVISED JUNE 1-1930
\# " NOV. 1930
REVISED MAY 1929

Grundy Co. FA. 332"B" Sh. #3 1932 Paving

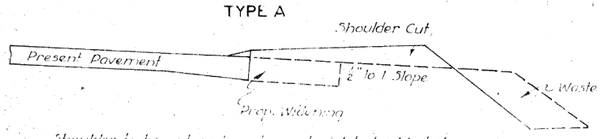
FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.10

7:24:45 AM 2/14/2017 rringge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\DistrictDesign\64014075_B01.sht

FED. ROAD DIST. NO.	STATE	P PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	48 W		3	5

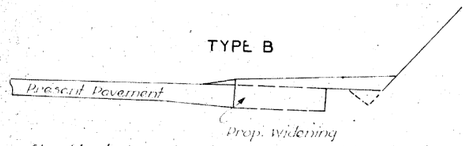
SHOULDER

TYPE A



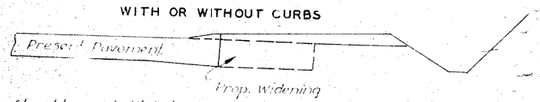
Shoulder to be cut and waste material to be bladed over shoulder and shaped. 55,280 ft. of shoulder one side of pavement.

TYPE B



Shoulder to be cut and material placed to widen shoulders in type A and type B shoulder areas. 12,413 ft. of shoulder one side of pavement.
Maximum haul 1 mile.

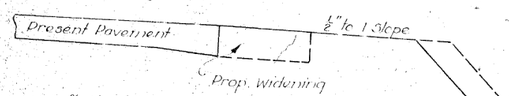
TYPE C
WITH OR WITHOUT CURBS



Shoulder and ditch to be cut and material placed to widen shoulders. 2,130 ft. of shoulder one side of pavement.
Maximum haul 1 mile.

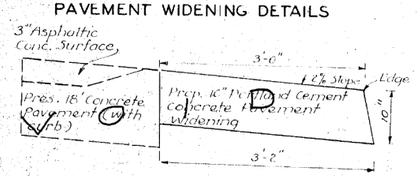
Note:
Additional dirt will be needed adjacent to culverts and bridges.

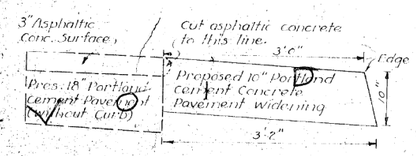
TYPE D



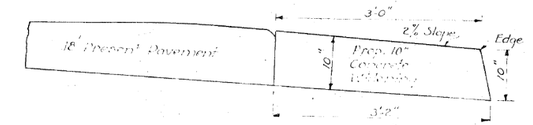
104,734 ft. shoulders, on one side of pavement equals 383.67 stations centerline measurement do not require excavation except for trench. Material excavated from trench shall be spread over shoulder after widening is built. Excess material can be bladed on the foreslopes.
Asphaltic material, rock and gravel now on shoulder that is considered worth salvaging will be done by the Highway Maintenance Department.

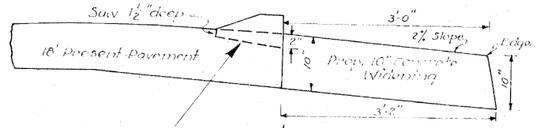
PAVEMENT WIDENING DETAILS





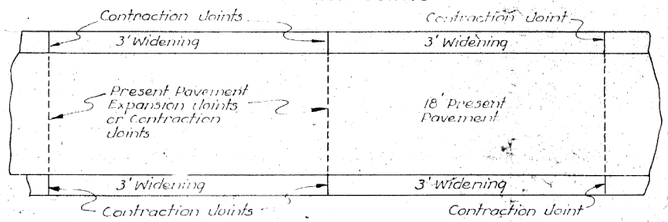
PAVEMENT WIDENING

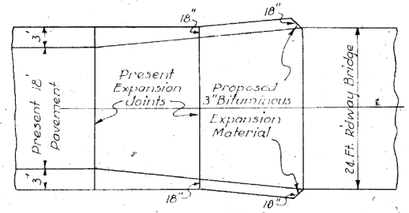




Remove curb and pavement to this line and fill with Portland Cement Concrete.

CONTRACTION JOINTS

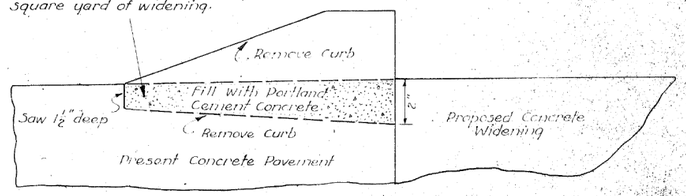




Detail for widening of bridge.
(Details for other width bridges will be be similar to detail shown.)

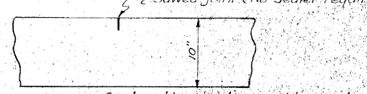
DETAIL OF CURB REMOVAL

Estimated 0.54 Cu. Yds. of concrete per station (one side) for filler. Not a Bid item, but incidental to price per square yard of widening.



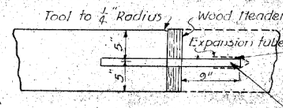
JOINTS IN WIDENING

CONTRACTION JOINT



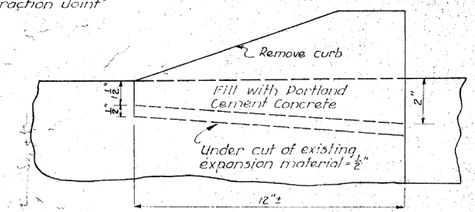
Contraction joints on widening to match expansion and contraction joints in present pavement.

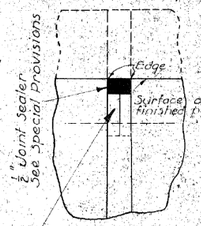
DAYS WORK OR EMERGENCY JOINT



¾"ø-18" dowels required for each foot of widening.
Treat end of dowel to eliminate bond. Use 400 W or heavy grease and expansion tube.

DETAIL OF EXPANSION JOINTS





Place premoulded bit. material. (Min. ½" thick

Revised Oct. 17, 1955 - New sheet made
Revised Nov. 18, 1955 - Maximum haul one mile.

This Sheet
For Information Only

Oct. 10, 1955

Grundy Co. P Proj No 48 W (Pavement Widening) Sheet No. 3

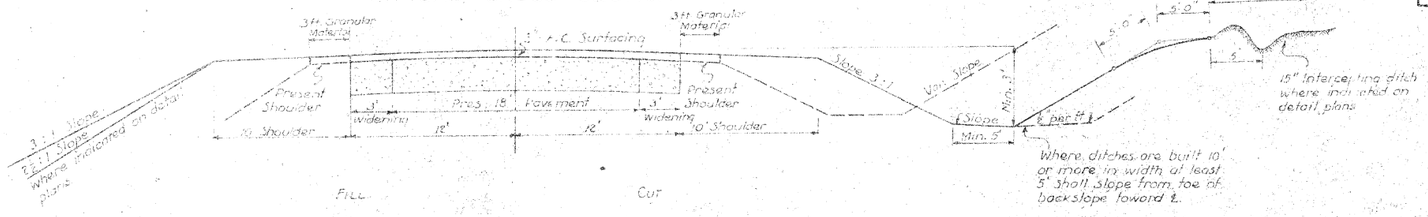
FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.11

7:25:03 AM 2/14/2017 rringge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\DistrictDesign\64014075_B01.sht

FED. ROAD DIST. NO.	STATE	P. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
8	IOWA	48		3	5

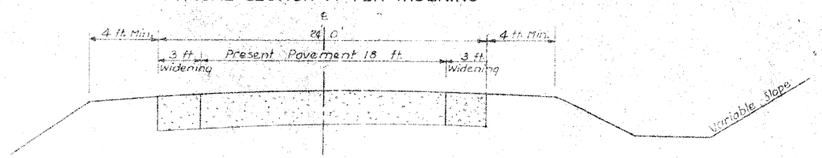
16

TYPICAL CROSS SECTION

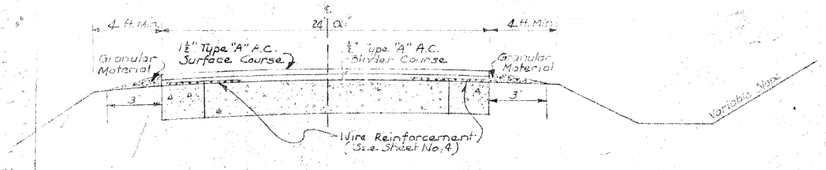


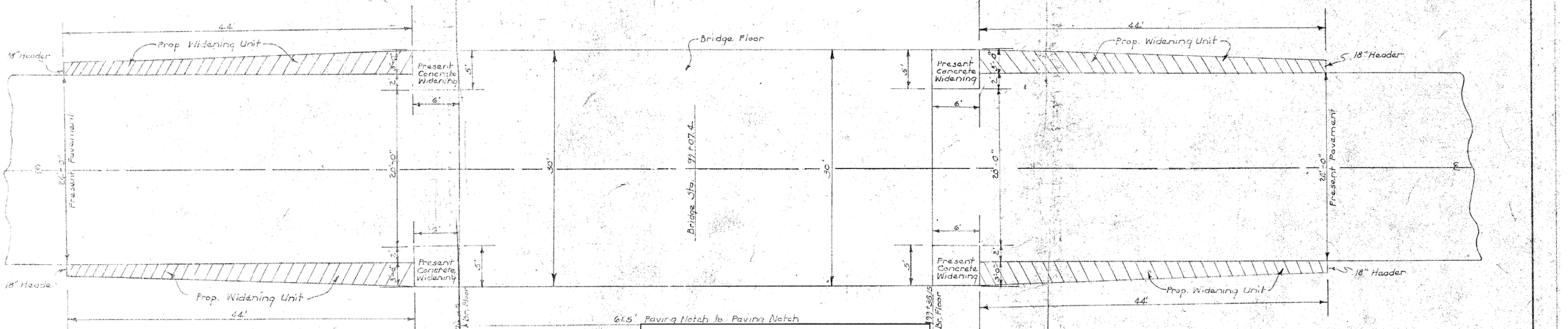
Note:
Improvement is being made by stage construction. Ultimate improvement is represented by typical section above.

TYPICAL SECTION AFTER WIDENING



TYPICAL SECTION AFTER RESURFACING





FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.12

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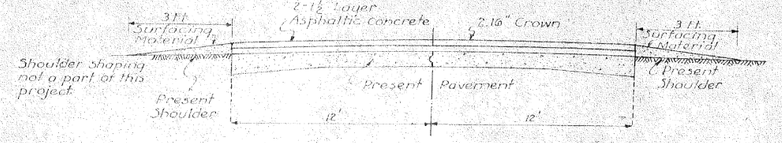
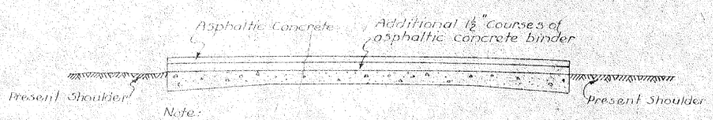
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	NO.	SHEETS
5	IOWA	48		4	5

16

TYPICAL CROSS SECTION

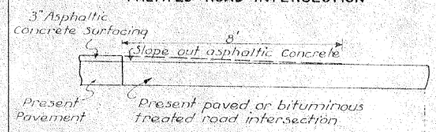


SECTION TO VOID EXCESS PATCHING

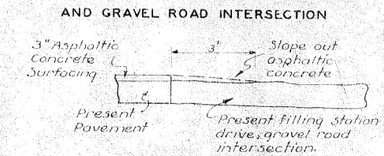


Note:
Where the area of patching would exceed 14% of the area in any 100 ft. station, no full depth patching will be required, but additional courses of asphaltic concrete will be placed as shown above. Where area of patching (full depth) is less than 14% in any station (100') patching will be required. use min. 50' runouts.

SECTION FOR PAVED OR BITUMINOUS TREATED ROAD INTERSECTION



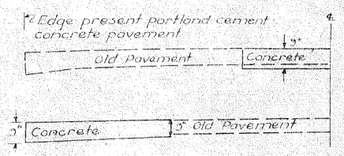
SECTION FOR COMMERCIAL DRIVES AND GRAVEL ROAD INTERSECTION



Note:
The area for sloping out asphaltic concrete is to be swept clean of any loose material and primed prior to placing of asphaltic concrete.

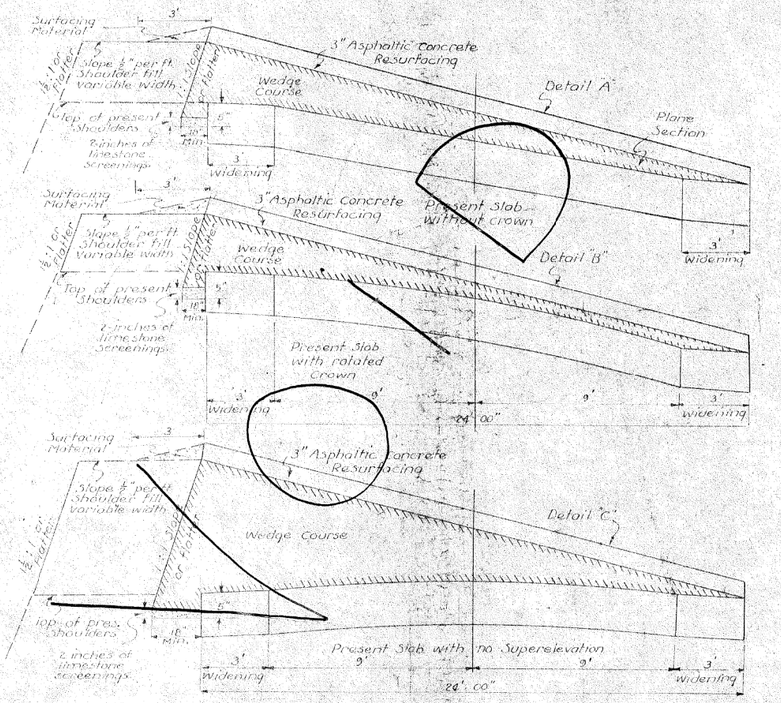
BASE REPAIR
FULL DEPTH PATCHING

PORTLAND CEMENT CONCRETE PATCH

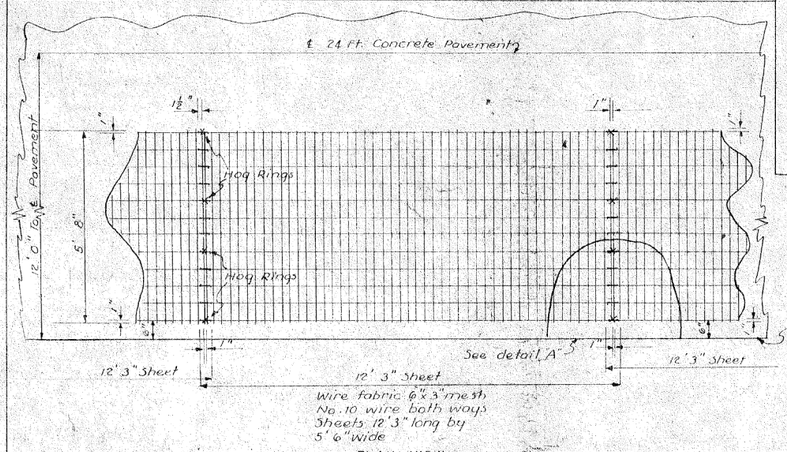


Note:
Length width and shape of patch will vary as necessary to repair present pavement. Payment will be made on the square yard area of patch measured entirely within the neat lines of the present portland cement concrete pavement. See typical section and note where patching exceeds 14% of the area of any 100 ft. station. Old concrete removed shall be wasted or stockpiled within 1½ mile haul as directed by the Engineer.

DETAILS FOR PLACING WEDGE COURSE ON CURVES

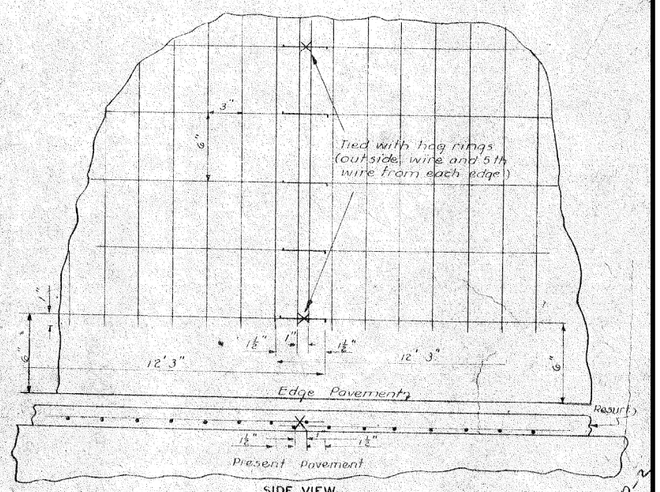


Note:
Trench out 5 inches below present pavement to required width. Trench excavation included in shoulder excavation. Base widening shall be constructed in accordance with article 2206-1956 Standard Specifications with the exception that a trenching machine will not be required.



DETAILS OF WIRE REINFORCEMENT

DETAIL "A"



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For Information Only

Revised March 1957
Revised May 1956
Revised April 1956

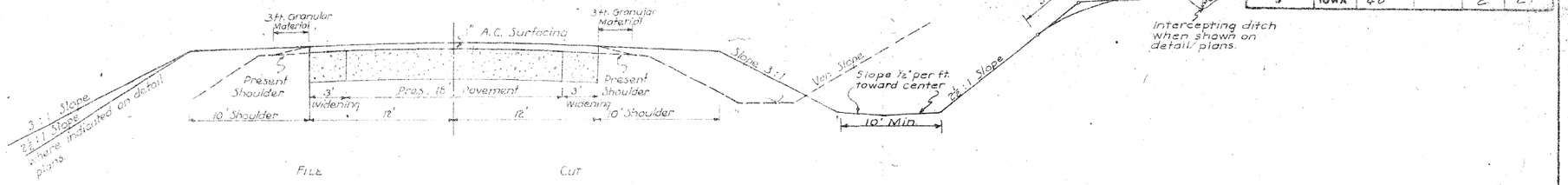
Grundy Co. F. Proj. No. 48 Sheet No. 4

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.13

7:25:40 AM 2/14/2017 rringge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\DistrictDesign\64014075_B01.sht

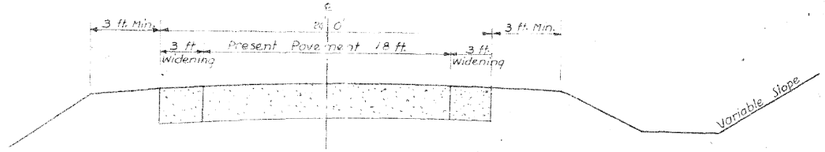
FED. ROAD DIST. NO.	STATE	PROJ. NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	IOWA	48		2	27

TYPICAL CROSS SECTION (ULTIMATE)

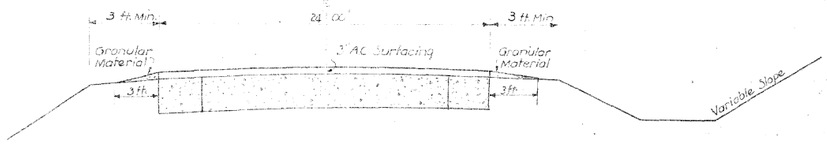


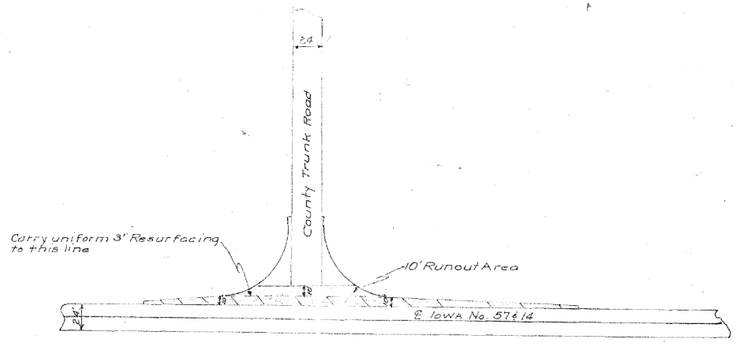
Note:
Improvement is being made by stage construction. Ultimate improvement is represented by typical section above.

TYPICAL SECTION AFTER WIDENING (EXISTING)



TYPICAL SECTION AFTER RESURFACING (THIS IMPROVEMENT)





DETAILS OF RUNOUT AT STA. 488+24.0

This Sheet
For Information Only

IOWA STATE HIGHWAY COMMISSION
STANDARD DESIGN NO. RD - 32
TYPICAL IMPROVEMENT SECTIONS
SCALE - NONE | DECEMBER 1958

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.14

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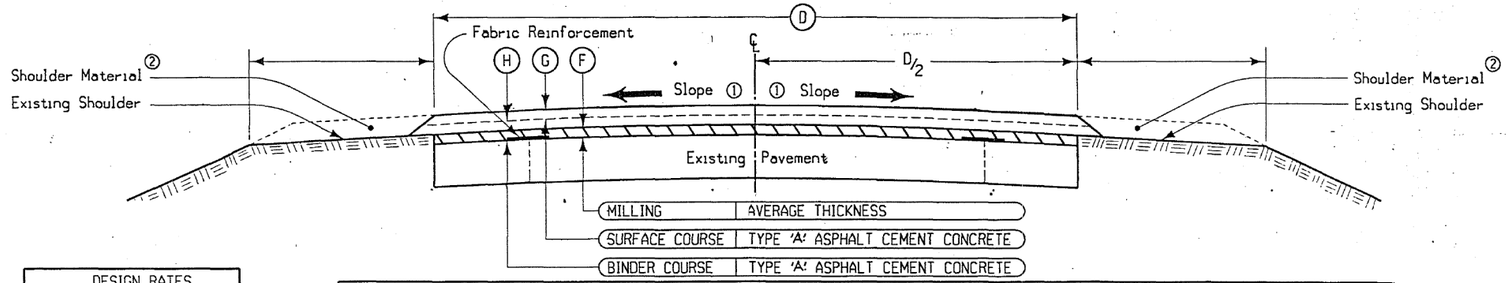
2602
MODIFIED



DESIGN RATES	
ITEM	RATE
Surface Course	140 lbs./cu.ft
Binder Course	140 lbs./cu.ft
Tack Coat	0.05 gal./sq.yd.
Milling	140 lbs./cu.ft

TABLE OF DESIGN QUANTITIES — Per Station

LOCATION		DIMENSIONS				PRIME AND TACK COAT	ASPHALT CEMENT	ASPHALT CEMENT CONCRETE Tons		MILLING
ROAD IDENTIFICATION	STATION TO STATION	(D)	(F)	(G)	(H)	Gallons	Tons	SURFACE (S)	BINDER (B)	TONS
IOWA 14	356+75.00 - 439+44.20	24'	1.0"	1.5"	2.0"	27.13	2.80	21.11	28.48	14.0
IOWA 14	0+00.00 - 70+50.00	24'	1.0"	1.5"	2.0"	27.13	2.80	21.11	28.48	14.0
IOWA 14	98+75.00 - 519+50.00	24'	1.0"	1.5"	2.0"	27.13	2.80	21.11	28.48	14.0

Notes:

① Finished slope shall match 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.

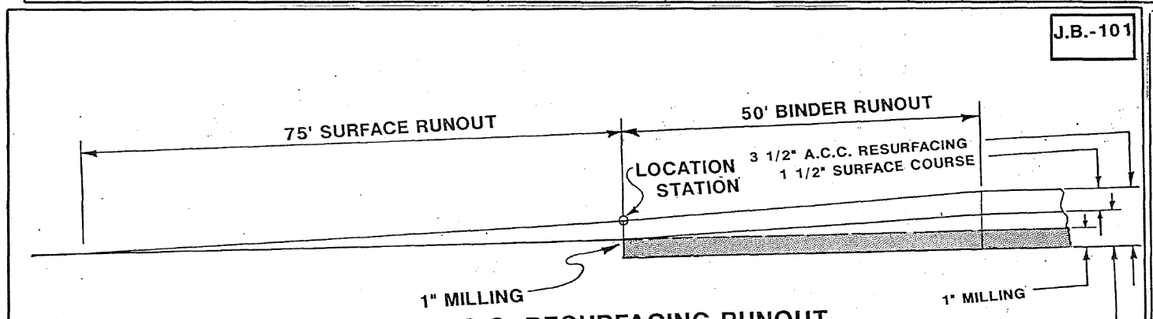
Refer to tabulation listing of superelevated curves and Standard Road Plans for additional requirements through superelevated curves.

② Shoulder material as specified elsewhere in these plans; refer to Typical 7124 for "Type 'A' Granular Surfaced Shoulders".

③ To be placed in one lift.

TYPICAL CROSS SECTION ASPHALT CEMENT CONCRETE RESURFACING

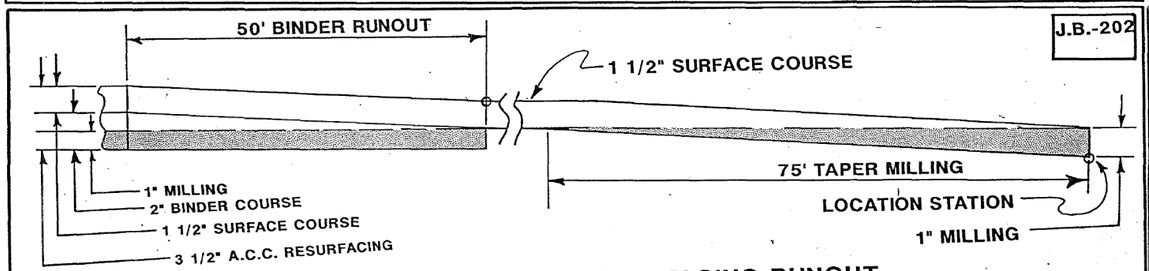
J.B.-101



DETAIL OF A.C.C. RESURFACING RUNOUT

LOCATION STATION
STA. 356+75.00(BACK)
STA. 519+50.00(AHEAD)

J.B.-202



DETAIL OF A.C.C. RESURFACING RUNOUT

LOCATION STATION
STA. 80+75.00(BACK)
STA. 98+76.00(AHEAD)

This Sheet
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2305
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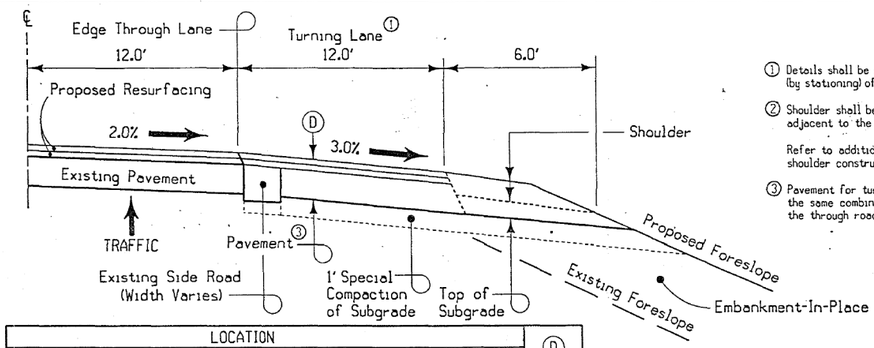


LOCATION			(D)
ROAD IDENT.	STATION TO STATION	SIDE	
Iowa 14	46+71.50	52+00.00	RT.	11.0"

① Details shall be similar for construction for either side (by stationing) of roadway.

② Shoulder shall be constructed 6 ft. wide only when adjacent to the turning lane pavement.

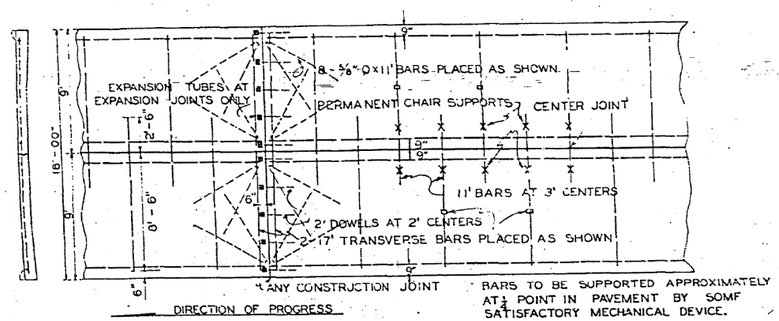
Refer to additional other plan drawings for details of shoulder construction.

③ Pavement for turning lane shall be constructed of the same combination of requirements specified for the through roadway pavement.

TYPICAL HALF SECTION ACC TURNING LANE

J.B.-303

1932 PAVING



EXISTING PAVEMENT REINFORCING PLAN

ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	MARSHALL/GRUNDY COUNTY	PROJECT NUMBER FN-14-5(53)--21-64	SHEET NUMBER 2A	TOTAL SHEETS 17

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.15

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① Refer to Standard Road Plan RF-19C.
② Refer to Soils Sheets

TABULATION OF LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

(104-9)
07-21-87

LOCATION						LONGITUDINAL SUBDRAIN				CMP SUBDRAIN OUTLET RF-19D, RF-19E or RF-22			POROUS BACKFILL	Class "A" Crushed Stone	REMARKS
Line No.	Road or Lane Ident.	MARSHALL COUNTY Station	to Station	Side	Depth (D) Inch.	Shoulder ① Size	Shoulder ① Lin. Ft.	Backslope ② Size	Backslope ② Lin. Ft.	Station	Size	Type	Cu. Yds.	Cu. Yds.	
1	14	367+93	373+00	RT	40	4	537			367+93	6"	E	41	0.2	
										373+00	6"	E			
2	14	385+00	388+18	RT	40	4"	345			385+00	6"	E	58	0.2	
										388+18	6"	E			
3	14	388+43	394+70	RT	40	4"	653			388+43	6"	E	50	0.2	
										394+70	6"	E			
4	14	394+84	400+53	RT	40	4"	591			394+84	6"	E	33	0.2	
										400+53	6"	E			
5	14	400+90	403+30	RT	40	4"	263			400+90	6"	E	59	0.2	
										403+30	6"	E			
6	14	403+49	408+85	RT	40	4"	566			403+49	6"	E	56	0.2	
										408+85	6"	E			
7	14	413+00	419+09	RT	40	4"	618			419+09	6"	E	34	0.2	
8	14	409+09	413+00	RT	40	4"	631			419+28	6"	E	65	0.2	
8A	14	425+50	432+93	RT	40"	4"	760			432+93	6"	E		0.2	
9	14	433+11	438+65	RT	40	4	575			433+11	6"	E	116	0.2	
										438+65	6"	E			
		GRUNDY	COUNTY												
10	14	30+00	34+55	RT	40	4"	476			30+00	6"	E	157	0.2	
										34+55	6"	E			
11	14	34+68	39+34	RT	40	4"	486			34+68	6"	E	67	0.2	
										39+34	6"	E			
12	14	59+55	61+66	RT	40	4"	232			59+55	6"	E	45	0.2	
										61+66	6"	E			
13	14	62+02	64+00	RT	40	4"	221			62+02	6"	E	52	0.2	
										64+00	6"	E			
14	14	124+34	130+00	LT	40	4"	587			130+00	6"	E	25	0.2	
										124+34	6"	E			
15	14	168+55	170+53	LT	40	4"	216			170+53	6"	E	22	0.2	
										168+55	6"	E			
16	14	170+53	177+58	LT	40	4"	723			177+58	6"	E	55	0.2	
										170+53	6"	E			
17	14	177+77	180+00	LT	40	4"	251			177+67	6"	E	22	0.2	
										180+00	6"	E			
18	14	195+00	198+58	LT	40	4"	382			195+00	6"	E	67	0.2	
										198+58	6"	E			
19	14	198+65	201+00	LT	40	4"	255			198+65	6"	E	25	0.2	
										201+00	6"	E			
20	14	199+90	211+40	RT	40	4"	1164			199+90	6"	E	36	0.2	
										211+40	6"	E			
21	14	211+40	216+70	RT	40	4"	550			211+40	6"	E	24	0.2	
										216+70	6"	E			
22	14	216+70	226+00	RT	40	4"	945			216+70	6"	E	94	0.2	
										226+00	6"	E			
23	14	233+97	239+18	LT	40	4"	539			233+97	6"	E	55	0.2	
										239+18	6"	E			
24	14	239+50	240+94	LT	40	4"	164			239+50	6"	E	87	0.2	
										240+94	6"	E			
25	14	264+00	269+41	LT	40	4"	563			264+00	6"	E	52	0.2	
										269+41	6"	E			
26	14	269+58	275+00	RT	40	4"	564			269+58	6"	E	18	0.2	
										275+00	6"	E			
27	14	275+00	282+16	RT	40	4"	734			275+00	6"	E	53	0.2	
										282+16	6"	E			
28	14	282+30	287+00	RT	40	4"	489			282+30	6"	E	52	0.2	
										287+00	6"	E			
29	14	310+00	314+80	RT	40	4"	500			310+00	6"	E	69	0.2	
										314+80	6"	E			
30	14	315+50	329+50	RT	40	4"	1420			315+50	6"	E	46	0.2	
										329+50	6"	E			
31	14	329+58	335+00	RT	40	4"	562			329+58	6"	E	47	0.2	
										335+00	6"	E			
32	14	371+10	375+00	RT	40	4"	406			371+10	6"	E	130	0.2	
										375+00	6"	E			
33	14	375+00	380+00	RT	40	4"	520			375+00	6"	E	53	0.2	
										380+00	6"	E			
34	14	395+49	398+50	LT	40	4"	323			395+49	6"	E	40	0.2	
										398+50	6"	E			
35	14	411+13	415+00	RT	40	4"	407			411+13	6"	E	49	0.2	
										415+00	6"	E			
36	14	421+17	425+50	RT	40	4"	451			421+17	6"	E	37	0.2	
										425+50	6"	E			
37	14	425+50	430+50	RT	40	4"	519			425+50	6"	E	39	0.2	
										430+50	6"	E			
38	14	430+55	435+00	RT	40	4"	469			430+55	6"	E	44	0.2	
										435+00	6"	E			
39	14	435+00	440+00	RT	40	4"	517			435+00	6"	E	49	0.2	
										440+00	6"	E			
40	14	440+00	445+00	RT	40	4"	517			440+00	6"	E	44	0.2	
										445+00	6"	E			
41	14	445+00	450+00	RT	40	4"	519			445+00	6"	E	49	0.2	
										450+00	6"	E			
42	14	450+00	455+50	RT	40	4"	570			455+50	6"	E	49	0.2	
										450+00	6"	E			
43	14	455+60	469+00	RT	40	4"	1354			455+60	6"	E	49	0.2	
										469+00	6"	E			
44	14	469+00	480+00	LT	40	4"	1116			469+00	6"	E	53	0.2	
										480+00	6"	E			
45	14	480+00	488+04	LT	40	4"	824			480+00	6'	E	39	0.2	
										488+04	6"	E			
46	14	488+27	493+07	LT	40	4"	506			488+27	6"	E	89	0.2	
										493+07	6"	E			
47	14	493+18	498+50	LT	40	4"	551			493+18	6"	E	67	0.2	
										498+50	6"	E			
48	14	498+50	505+00	LT	40	4"	669			498+50	6"	E	58	0.2	
										505+00	6"	E			
49	14	505+00	509+63	LT	40	4"	486			505+00	6"	E	59	0.2	
										509+63	6"	E			
50	14	509+77	519+00	LT	40	4"	948			509+77	6"	E	48	0.2	
										519+00	6"	E			

NOTE: IN GRUNDY CO CUT SIDE ROAD FILLETS AT STA 210+35 AND STA 472+75.
CUT DRIVEWAY FILLETS AT STA 170+50 AND STA 462+00
NOTE: SPREAD CRUSHED FILLET MATERIAL ON SHOULDER AS DIRECTED BY ENGINEER OR DISPOSE OF FILLET MATERIAL IN A METHOD APPROVED BY IOWA DNR.

31740

EXTRA WORK ORDERS

NO.	DESCRIPTION	UNIT	TOTAL
8001	15" CONC. APRONS	ONLY	2
8002	18" CONC. APRONS	ONLY	2
8003	REMOVE AND REPLACE INTAKE	ONLY	1
8004	PAVEMENT REMOVAL	S.Y.	317.23
8005	FLAGGERS	DAYS	15
8006	PILOT CAR	DAYS	4
8007	ASPHALT FILLETS	TONS	566.02
8008	CLASS A STONE	TONS	0
8009	REMOVE AND HAUL DIRT	L.S.	8943.77
8010	RELOCATE MAIL BOXES	L.S.	307.52
8011	PAY OUT OF DISTANCE HAUL	TONS/MILE	11,431.29
8012	PATCHES FULL DEPTH BY AREA	S.Y.	1209.40
8013	E.F. JOINT ASSEMBLY	ONLY	2
8014	SILT FENCE	L.S.	200.00
8015	CLASS 13 FOR TAPERS	C.Y.	116.31
8016	ASPHALT CONC. FOR TAPERS	TONS	259.57
8017	DROP INLET	L.S.	200.00
8018	GRANULAR FILL	TONS	19.63
8019	FURNISH AND PLACE CONC.	L.S.	85.00
8020	SMOOTHNESS INCENTIVE	L.S.	12460.51
8021	FURNISH AND PLACE RF-37 POSTS	ONLY	6

GEOTECHNICAL DESIGN

I hereby certify that this plan was prepared under my supervision and that geotechnical decisions with regard to the design were made by me or by other duly Qualified Professional Geologists under the laws of the State of Iowa.

Name Gustafson Date 2/15/90

This Sheet For Information Only

ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	MARSHALL/GRUNDY COUNTY	PROJECT NUMBER FN-14-5(53)--21-64	SHEET NUMBER 3F	TOTAL SHEETS 17

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER B.16

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ACCESS POINTS AND SAFETY RAMPS

Refer to Cross-Sections

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

Location		Type	Length of Opening (1)			(1)(2)		(2)	Pipe Culvert (3)					Aprons	Driveway Surface Area		Driveway Surfacing Material	Remarks
Station	Side	A, B, C, Safety Ramp, or Predetermined*	Case	1½" Dropped Curb	3" Dropped Curb	W	PR	SR	H	Size	Pipe Length	Lt.	Rt.		HMA	PCC		
			1 or 2	LF	LF	FT	FT	FT	FT	IN	LF	LF	LF	No.	SY	SY	TON	
MARSHALL CO.																		
380+98.49	RT	C				24.0		15.0			No Pipe							
380+99.43	LT	C				24.0		15.0			No Pipe							
387+58.91	LT	C				24.0		15.0	3.2	24.0	50.4	22.7	27.7	2				
391+96.94	RT	C				24.0		15.0			No Pipe							
395+74.53	LT	C				24.0		15.0	1.5	24.0	42.3	25.1	24.2	2				
404+31.96	RT	C				24.0		15.0	1.7	24.0	46.5	24.2	29.3	2				
414+00.36	LT	C				24.0		15.0	3.7	24.0	79.6	36.9	49.7	2				
424+04.85	LT	C				24.0		15.0	1.7	24.0	51.8	37.8	21.0	2				
426+04.07	LT	C				24.0		15.0			No Pipe							
426+17.31	RT	C				24.0		15.0	2.7	24.0	62.4	30.9	38.5	2				
427+84.46	LT	C				24.0		15.0			No Pipe							
434+99.04	RT	C				24.0		15.0			No Pipe							
GRUNDY CO.																		
25+75.56	RT	C				24.0		15.0	1.4	24.0	40.9	25.4	22.4	2				
42+92.07	LT	C				24.0		15.0	3.0	24.0	42.2	24.6	24.6	2				
49+37.91	LT	C				24.0		15.0	1.5	24.0	42.4	23.6	25.8	2				
58+80.87	LT	C				24.0		15.0	3.7	24.0	78.8	37.5	44.8	2				
58+95.20	RT	C				24.0		15.0	2.1	24.0	51.5	31.5	27.0	2				
65+67.49	LT	C				24.0		15.0	2.7	24.0	63.9	41.1	29.8	2				
65+96.55	RT	C				24.0		15.0			No Pipe							
78+87.26	LT	C				24.0		15.0			No Pipe							
78+97.99	RT	C				24.0		15.0			No Pipe							
95+57.76	LT	C				24.0		15.0			No Pipe							
96+38.00						24.0		15.0	1.3	24.0	40.4	27.2	20.2	2				
118+35.36	RT	C				24.0		15.0	1.6	24.0	44.5	25.4	26.3	2				
120+27.14	LT	C				24.0		15.0			No Pipe							
120+58.25	RT	C				24.0		15.0			No Pipe							
131+47.05	RT	C				24.0		15.0	1.0	24.0	34.5	19.3	22.2	2				
135+36.60	RT	C				24.0		15.0			No Pipe							
144+29.82	LT	C				24.0		15.0	1.1	24.0	36.9	19.1	24.8	2				
147+17.14	RT	C				24.0		15.0	1.3	24.0	39.3	23.3	23.0	2				
147+37.72	LT	C				24.0		15.0	1.0	24.0	35.4	18.1	24.3	2				
171+63.43	LT	C				24.0		15.0			No Pipe							
184+22.12	LT	C				24.0		15.0			No Pipe							
197+27.23	RT	C				24.0		15.0	1.3	24.0	38.9	25.3	20.6	2				
197+27.30	LT	C				24.0		15.0	2.8	24.0	62.8	33.0	36.8	2				
203+57.96	RT	C				24.0		15.0	3.1	24.0	69.8	33.5	43.3	2				
203+88.63	LT	C				24.0		15.0			No Pipe							
204+03.44	LT	C				24.0		15.0			No Pipe							
236+53.55	LT	C				24.0		15.0	3.0	24.0	66.3	36.6	36.7	2				
246+27.23	LT	C				24.0		15.0			No Pipe							
247+59.31	LT	C				24.0		15.0			No Pipe							
294+68.26	LT	C				24.0		15.0	1.5	24.0	43.8	29.4	21.4	2				
323+29.54	LT	C				24.0		15.0			No Pipe							
328+19.12	RT	C				24.0		15.0	1.5	24.0	41.7	25.9	22.8	2				
337+01.87	LT	C				24.0		15.0	1.1	24.0	36.6	14.7	18.9	2				
337+15.46	RT	C				24.0		15.0	2.2	24.0	54.4	26.4	34.9	2				
341+52.51	LT	C				24.0		15.0	1.4	24.0	41.3	23.2	25.2	2				
349+46.20	LT	C				24.0		15.0	1.2	24.0	39.1	19.0	27.3	2				
352+82.56	RT	C				24.0		15.0	1.0	24.0	34.5	21.5	20.0	2				
358+41.54	LT	C				24.0		15.0			No Pipe							
380+79.92	RT	C				24.0		15.0	1.3	24.0	39.3	22.2	24.2	2				
380+80.54	LT	C				24.0		15.0	3.6	24.0	76.6	43.0	40.6	2				
402+23.22	LT	C				24.0		15.0	1.8	24.0	47.9	30.1	24.8	2				
404+64.29	LT	C				24.0		15.0	3.8	24.0	80.3	47.3	40.0	2				
414+14.42	RT	C				24.0		15.0	1.7	24.0	46.1	24.3	28.8	2				
418+47.09	RT	C				24.0		15.0			No Pipe							
425+08.24	LT	C				24.0		15.0	1.1	24.0	35.5	20.8	21.8	2				
433+78.59	LT	C				24.0		15.0	1.1	24.0	36.4	22.2	21.3	2				
434+10.46	RT	C				24.0		15.0	1.4	24.0	40.4	23.2	24.3	2				
452+99.02	LT	C				24.0		15.0	1.0	24.0	44.5	26.0	25.7	2				
460+21.19	RT	C				24.0		15.0	1.0	24.0	35.7	18.4	24.3	2				
462+08.56	RT	C				24.0		15.0			No Pipe							
463+45.12	LT	C				24.0		15.0			No Pipe							
498+97.99	RT	C				24.0		15.0	4.6	24.0	92.6	44.2	55.5	2				
503+26.79	LT	C				24.0		15.0			No Pipe							

SURVEY SYMBOLS

UTILITY LEGEND

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
SHADING	**Design Color No.**	
Yellow	(4)	Highlight for Critical Notes or Features
Red	(3)	Delineates Restricted Areas
Lavender	(9)	Temporary Pavement Shading
Gray, Light	(48)	Proposed Pavement Shading
Gray, Med	(80)	Proposed Granular Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Grading Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

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

RIGHT-OF-WAY LEGEND

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

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.1

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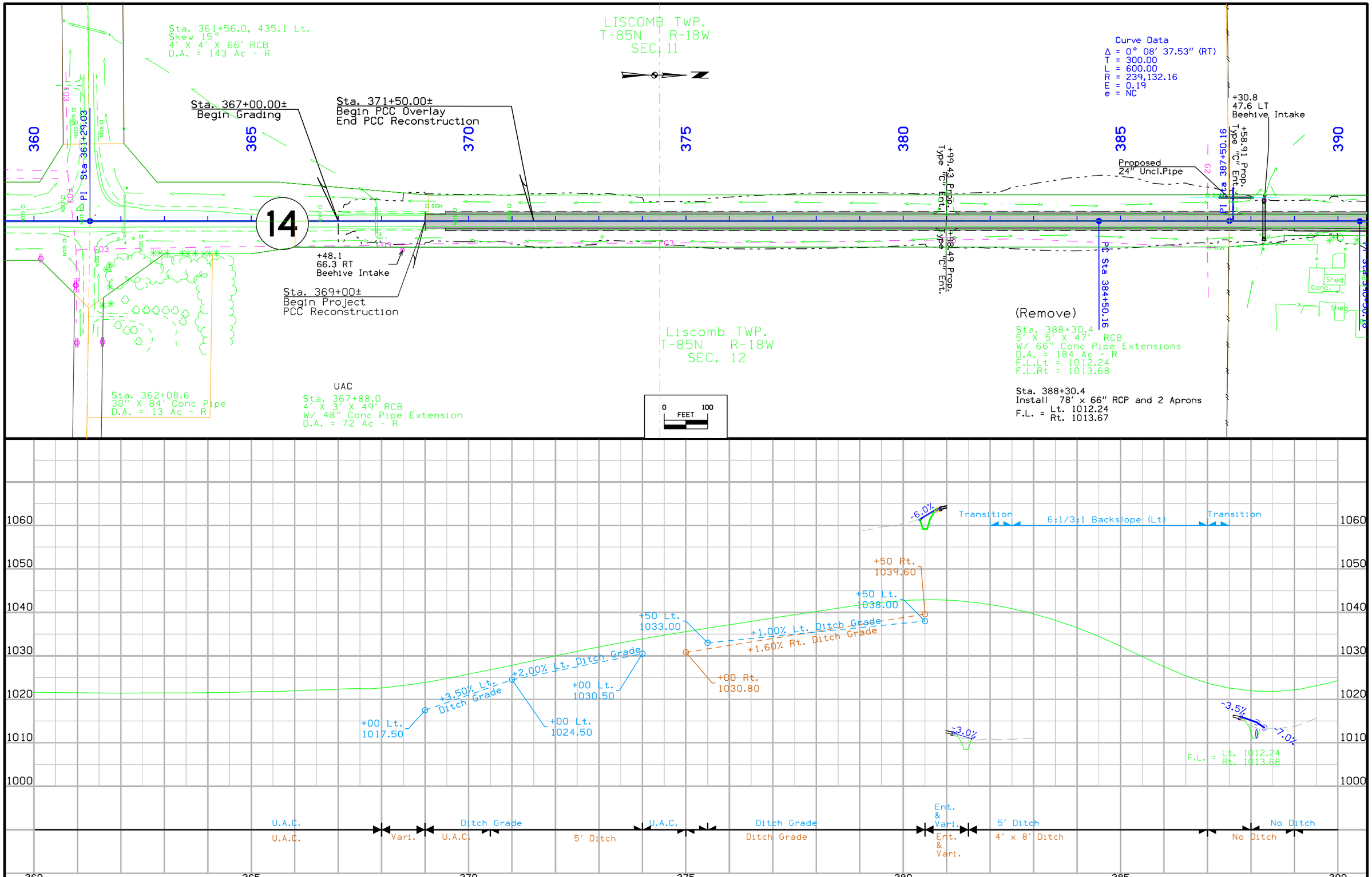

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.2

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LISCOMB TWP.
T-85N R-18W
SEC. 2

LISCOMB TWP.
T-85N R-18W
SEC. 1

Curve Data
Δ = 0° 11' 40.97" (LT)
T = 314.30
L = 628.60
R = 184,969.36
E = 0.27
e = NC

390 395 400 405 410 415 420

PC Sta 410+77.84
PT Sta 417+06.44
PT Sta 390+50.16
PI Sta 413+92.14

(Remove) 12" X 21' C.M.P.
+74.53 Prop. Type "C" Ent.
Proposed 24" Uncl.Pipe
+96.94 Prop. Type "C" Ent.
(Remove) 18" X 60' C.M.P.
+31.96 Prop. Type "C" Ent.
Proposed 24" Uncl.Pipe
Proposed 24" Uncl.Pipe
+00.36 Prop. Type "C" Ent.
(Remove) 18" X 24' C.M.P.

Barn, Shed, Barn, Shed, Conc., Shed, Ho.

(Fill & Abandon)
Sta. 400+84.5
Skew 30°
4' X 4' X 59' RCB
W/ 54' Conc Pipe Extension
D.A. = 46 Ac - R

(Fill & Abandon)
Sta. 403+38.5
3' X 2' X 53' RCB
D.A. = 30 Ac - R

Sta. 394+71.6
24" X 35' Vit Tile (Encased)
W/ 24" Conc Pipe Extensions
D.A. = 2 Ac - R

REMOVE HDWL TO FACE OF PARAPET ON OUTLET END AND EXTEND 14' + APRON. ON INLET REMOVE APRON AND EXTEND 14' + APRON

PLUG AND ABANDON EXISTING. COMBINE THE 2 DRAINAGE AREAS AND INSTALL 82' OF 54" RCP + 2 APRONS.

0 100 FEET

Sta. 408+91.5
3' X 2' X 47' RCB
W/ 36" Conc Pipe Extension
D.A. = 4 Ac - R

REMOVE HEADWALL TO FACE OF PARAPET AND EXTEND WITH 36" RCP 14' LT + APRON. REMOVE APRON AND EXTEND 10' RT + APRON. CLEAN OUT REQUIRED

Sta. 419+14.7
6' X 6' X 51' RCB
D.A. = 531 Ac - R

REMOVE EXIST. HDWL'S TO FACE OF PARAPET AND EXTEND 20' LT AND 16' RT WITH 78" RCP + APRONS. DITCH OUTLET

1060 1050 1040 1030 1020 1010 1000

3:1 Backslope (Lt) | Transition | 6:1/3:1 Backslope (Lt) | Transition | 3:1 Backslope (Lt)
3:1 Backslope (Lt) | Transition | 6:1/3:1 Backslope (Lt) | Transition | 3:1 Backslope (Lt)

+50 Lt. 1025.30
+00 Lt. 1027.80
+71 Lt. 1028.10
+71 Rt. 1030.50
+74 Rt. 1031.33
+00 Rt. 1030.20
+50 Lt. 1030.79
+30 Rt. 1021.50
+29 Rt. 1019.01
+03 Rt. 1023.34
+00 Lt. 1029.50
+50 Lt. 1025.00
+00 Rt. 1015.10
+00 Rt. 1022.30
+50 Lt. 1015.00

+1.00% Lt. Ditch Grade
+3.40% Lt. Ditch Grade
+0.80% Rt. Ditch Grade
-0.50% Rt. Ditch Grade
-1.25% Rt. Ditch Grade
+2.50% Rt. Ditch Grade
+1.80% Lt. Ditch Grade
-3.60% Rt. Ditch Grade

Lt. 1028.09 Rt. 1030.05
F.L. Lt. = 1016.43 F.L. Rt. = 1019.51
F.L. Lt = 1018.66 F.L. Rt = 1020.56
F.L. Lt. = 1030.97 F.L.Rt. = 1033.85
F.L.Lt. = 1010.23 F.L.Rt. = 1012.57

-3.360% -5.500% +4.0% +0.5% -8.0% +4.5%

ND Vari. Ditch Grade | ND Ditch Grade | 5' Ditch | 4'x8'+25 | No Ditch Vari. | No Ditch | Ditch Grade | No Ditch | 4'x8' Ditch | 5' Ditch | No Ditch | Ditch Grade Vari.
Curb & Gutter | Transition | Ditch Grade

390 395 400 405 410 415 420

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.3

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LISCOMB TWP.
T-85N R-18W
SEC. 2

Curve Data
Δ = 0° 21' 56.16" (RT)
T = 333.35
L = 666.70
R = 104,483.02
E = 0.53
e = NC

(Remove)
12" X 21' C.M.P.

(Remove)
18" X 30' C.M.P.

+04.85 Prop. Type "C" Ent.

+04.07 Prop. Type "C" Ent.

+84.46 Prop. Type "C" Ent.

Proposed
24" Uncl.Pipe

Sta. 439+72.4, 38.5 Lt.
24" X 43' Conc Pipe
D.A. = 15 Ac - R
F.L.Lt.(Inlet) = 1030.29
F.L.Rt.(Outlet) = 1029.14

100th St.

Sta. 439+63.6, 380.9 Lt.
24" X 37' Cast Iron Pipe
D.A. = 47 Ac - R
F.L.Lt.(Inlet) = 1029.76
F.L.Rt.(Outlet) = 1026.54
(UAC)

FELIX TWP.
T-86N R-18W
SEC. 35

EQUATION:
Sta 442+79.63 BK =
Sta 3+33.40 AH

PC Sta 436+12.93

PT Sta 442+79.63

Sta. 433+06.9
24" X 29' Vit Tile (Encased)
W/ 24" Conc Pipe Extensions
D.A. = 6 Ac - R

REMOVE APRON ON INLET AND HDWL
TO FACE OF PARAPET ON OUTLET END
AND EXTEND 14' LT AND 8' RT WITH 24" RCP.
DITCH OUTLET. CLEAN OUT REQUIRED

Sta. 438+76.8
4' X 2' X 55' RCB
W/ 52" X 32" Concarch Pipe Extension
D.A. = 81 Ac - R

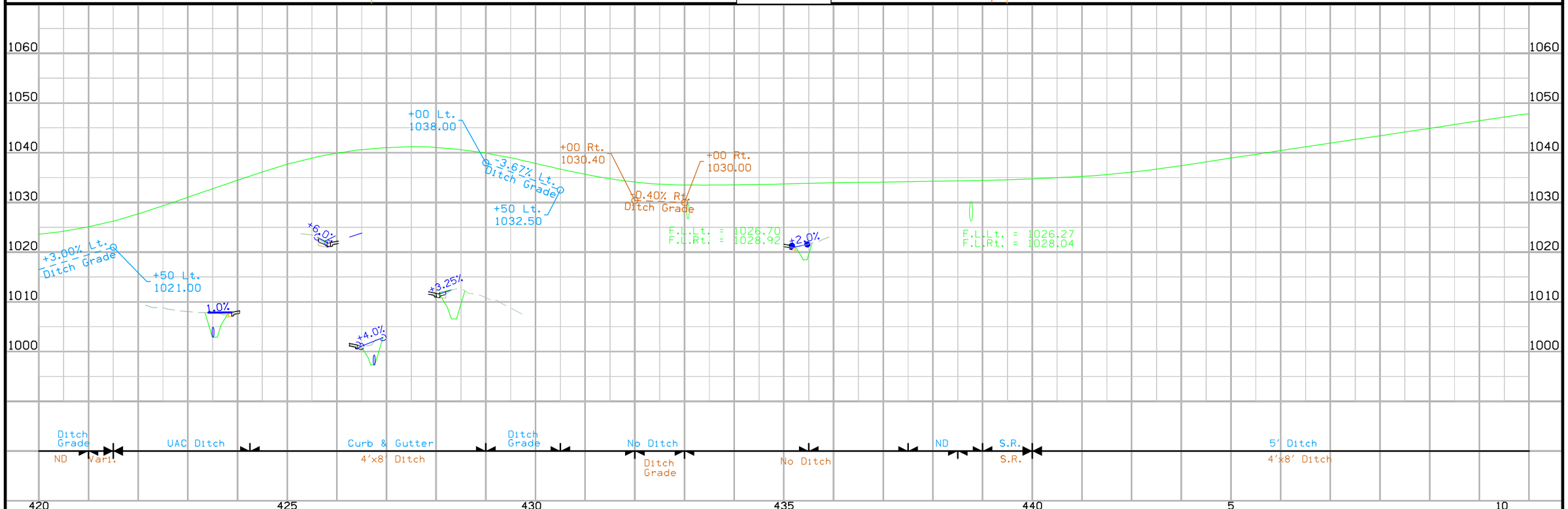
PATCH SOUTH WALL ON INLET END
WHERE REBAR IS SHOWING.
REMOVE HDWL ON OUTLET END TO
FACE OF PARAPET AND EXTEND.
REMOVE APRON ON INLET END AND
EXTEND WITH 52"X32" LOW CLEARANCE PIPE

Sta. 439+60.3, 64.0' Rt.
2' X 2' X 28' RCB
D.A. = Ac - 54 R

LISCOMB TWP.
T-85N R-18W
SEC. 1

FELIX TWP.
T-86N R-18W
SEC. 36

0 100 FEET



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.4

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T-86N R-18W
SEC. 35

N

10 15 20 25 30 35 40

Sta. 26+32.40

+39.7 R 2
35.4 LT
Beehive Intake

+43.1 R 2
28.5 RT
Beehive Intake

Proposed
24" Uncl.Pipe

+75.56 R 2 Prop.
Type "C" Ent.

+51.3 R 2
50.2 LT
Beehive Intake

+57.4 R 2
36.3 LT
Beehive Intake

+41.8 R 2
39.2 RT
Beehive Intake

8" Tile

FELIX TWP.
T-86N R-18W
SEC. 36

0 100
FEET

Sta. 34+62.9
2' X 2' X 32' RCB
W/ 24" Conc Pipe Extensions
D.A. = 48 Ac. - R

PIPE EXTENSIONS HAVE SEPARATED.
REMOVE 24"RCP EXTENSIONS AND EXTEND
WITH 30" RCP. 16' LT + APRON & 22' RT + APRON.

1060 1050 1040 1030 1020 1010 1000

+46 Lt.
1046.50

-0.40% Lt. Ditch Grade

+09 Lt.
1043.85

+50 Lt.
1044.00

+0.20% Lt. Ditch Grade

F.L.Lt. = 1043.88
F.L.Rt. = 1043.36

+0.21% Rt. Ditch Grade

+46 Rt.
1043.50

-3.2%

5' Ditch
4'x8' Ditch

5' Ditch
4'x8' Ditch

Ditch Grade
Vari.

5' Ditch

Vari.
ND

Ditch Grade
Ditch Grade

10 15 20 25 30 35

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.5

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FELIX TWP.
T-86N R-18W
SEC. 35

FELIX TWP.
T-86N R-18W
SEC. 36

GRUNDY D67 COUNTY

New Poles from 54± to 235±
(avoid when possiable)

Proposed
24" Uncl.Pipe
+92.09 R 2 Prop.
Type "C" Ent.

Proposed
24" Uncl.Pipe
+37.91 R 2 Prop.
Type "C" Ent.

18" X 45' C.M.P.
(Remove)

+65.9 R 2
37.7 LT
Beehive Intake

Sta. 52+64.38

18" X 79' C.M.P.
(Remove)

(CLOSE)

+20.2 R 2
36.5 RT
Beehive Intake

(UAC)

+28.3 R 2
97.9 RT
Beehive Intake

15" X 31' C.M.P.
(UAC)

12" X 24' C.M.P.
(Remove)

+80.87 R 2 Prop.
Type "C" Ent.

Proposed
24" Uncl.Pipe

Proposed
24" Uncl.Pipe

+95.20 R 2 Prop.
Type "C" Ent.

+76.8 R 2
74.6 RT
Beehive Intake

+04.5 R 2
74.7 RT
Beehive Intake

+67.49 R 2 Prop.
Type "C" Ent.

Proposed
24" Uncl.Pipe

+96.55 R 2 Prop.
Type "C" Ent.

Barn
Ho.
Gar.
Shed
Shed
Shed
Shed

Sta. 61+91.2
3' X 5' X 53' RCB
D.A. = 141 Ac - R

FLOOR IS BAD. REMOVE
EXISTING 5X3X53 RCB
AND REPLACE WITH
60" RCP + 2 APRONS

0 100
FEET

+0.20% Lt. Ditch Grade
+0.21% Rt. Ditch Grade
+50 Lt. 1046.00
+46 Rt. 1045.60
-0.35% Lt. Ditch Grade
-0.22% Rt. Ditch Grade
+46 Rt. 1044.50
+50 Rt. 1044.50
+1.50% Rt. Ditch Grade
+00 Rt. 1046.75
+50 Lt. 1043.90
-8.0%
4.0%
0.7%
+2.1%
+50 Rt. 1034.50
+1.40% Rt. Ditch Grade
+50 Rt. 1040.00
+00 Rt. 1038.00
F.L.Lt. = 1027.68
F.L.Rt. = 1025.64
+0.8%
+0.75%
+1.4%
+2.0%

Ditch Grade
Ditch Grade
Ditch Grade
Ditch Grade
Vari.
Vari.
Ditch Grade
S.R.
S.R.
5' Ditch
4'x8' Ditch
No Ditch
No Ditch
5' Ditch
Ditch Grade
Ent.
Ditch Grade

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.6

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FELIX TWP.
T-86N R-18W
SEC. 26

Curve Data
Δ = 1° 07′ 21.11″ (RT)
T = 335.01
L = 670.00
R = 34,197.88
E = 1.64
e = NC

Curve Data
Δ = 2° 03′ 14.45″ (LT)
T = 409.31
L = 818.53
R = 22,832.53
E = 3.67
e = NC

Curve Data
Δ = 0° 50′ 37.05″ (RT)
T = 220.16
L = 440.31
R = 29,904.21
E = 0.81
e = NC

70 75 80 85 90 95 100

PC Sta 71+86.16
PI Sta 75+21.17
PC Sta 80+83.01
PT Sta 84+92.32
PT Sta 89+01.54
PI Sta 94+35.25
PI Sta 96+55.41
EQUATION Sta 98+75.56 BK = Sta 98+76.50 AH
PT Sta 98+75.56

+87.26 R 2 Prop. Type "C" Ent.
PT Sta 78+56.16
+97.99 R 2 Prop. Type "C" Ent.
+57.76 R 2 Prop. Type "C" Ent.
+38.00 R 2 Prop. Type "C" Ent.

Foundation
Gar.
Ho.
F03
SIGN
W
Proposed 24" Uncl.Pipe

Sta. 77+44.1
2′ X 2′ X 55′ RCB
W/ 30" Conc Pipe Extensions
D.A. = 13 Ac - R

REMOVE APRON ON OUTLET END AND EXTEND 2′ + 1 APRON

FELIX TWP.
T-86N R-18W
SEC. 25

0 100 FEET

Sta. 93+49.4
24′ X 76′ Conc Pipe
D.A. = 16 Ac - R

REMOVE APRON ON OUTLET END AND EXTEND 2′ + 1 APRON

Sta. 99+07.4
57.2′x30′ Conc.Slab Bridge
D.A. = 10,500 Ac - R
(Use As Constructed)

1050 1040 1030 1020 1010 1000

-0.50% Rt. Ditch Grade
+50 Rt. 1034.50
F.L.Lt. = 1037.04
F.L.Rt. = 1033.79
-8.0%
-10.0%
+50 Rt. 1015.60
-2.30% Rt. Ditch Grade
F.L.Lt. = 1008.04
F.L.Rt. = 1007.31
+50 Rt. 997.20
-1.0%
-1.0%

5′ Ditch Ditch Grade
No Ditch
U.A.C. Ditch 4′x8′ Ditch
U.A.C. Ditch
U.A.C. Ditch
C & G Review in Field Ditch Grade
Ent.
U.A.C.
bridge bridge

70 75 80 85 90 95 100

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.7

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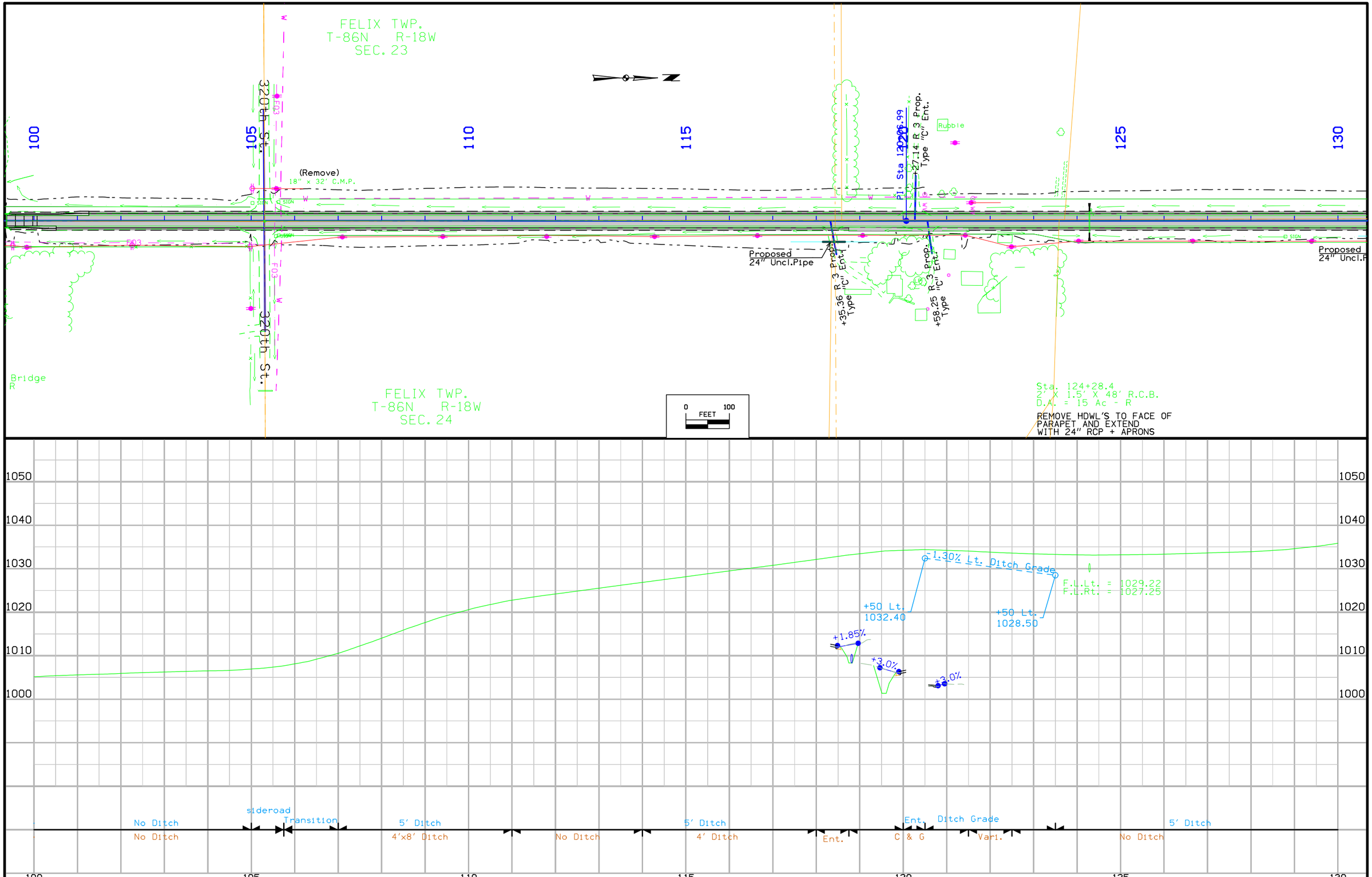

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.8

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FELIX TWP.
T-86N R-18W
SEC. 23

GRUNDY
D65
COUNTY

130 135 140 145 150 155 160

Proposed
24" Uncl.Pipe

(Remove)
9" X 22' C.M.P.

+47.05 R 3 Prop.
Type "C" Ent.

+36.60 R 3 Prop.
Type "C" Ent.

Proposed
24" Uncl.Pipe

(Remove)
18" X 52' C.M.P.

+29.82 R 3 Prop.
Type "C" Ent.

+37.72 R 3 Prop.
Type "C" Ent.

Proposed
24" Uncl.Pipe

(Remove)
18" X 52' C.M.P.

Proposed
24" Uncl.Pipe

+17.14 R 3 Prop.
Type "C" Ent.

Sta. 158+04.3
15" X 33' C.M.
D.A. = 2 Ac -
F.L.Lt. (Inlet)
F.L.Rt. (Outlet
(UAC)

W. PECK

0 100
FEET

Sta. 149+33.7
3' X 2' x 56' R.C.B
D.A. = 118 Ac - G.R.

REMOVE EXISTING 3X2 RCB
AND REPLACE WITH 74' OF 60"
RCP + 2 APRONS.

FELIX TWP.
T-86N R-18W
SEC. 24

1050
1040
1030
1020
1010
1000

+50 Rt.
1043.00

1.00% Rt. Ditch Grade

+00 Rt.
1031.50

+00 Lt.
1035.00

0.33% Lt. Ditch Grade

1.60% Lt. Ditch Grade

+00 Lt.
1034.00

F.L.Lt. = 1024.21
F.L.Rt. = 1022.46

+00 Lt.
1029.20

0.0% 6.0%

+0.85%

+4.5%

-0.5% +0.6%

5' Ditch
UAC Ditch

Ent.

Ditch Grade

Ditch Grade

Ent.

No Ditch
No Ditch

5' Ditch
4'x8' Ditch

130 135 140 145 150 155 160

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.9

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FELIX TWP.
T-86N R-18W
SEC. 14

Barn
Barn
Shed
Ho.

+55.43 R 3 Prop. Type "C" Ent.

+22.12 R 3 Prop. Type "C" Ent.

PC Sta 183+43.27

PT Sta 189+43.27

160 165 170 175 180 185 190

158+04.3, 111.5 Rt.
X 33' C.M.P
= 2 Ac - G.R.
t. (Inlet) = 1042.45
t. (Outlet) = 1042.09

+51.5 R 3
50.2 RT
Beehive Intake

Curve Data
Δ = 0° 21' 49.99" (LT)
T = 300.00
L = 600.00
R = 94,473.35
E = 0.48
e = NC

Sta. 168+48.4
2' X 1.6' X 51' RCB
D.A. = 10 Ac - G.R.

REMOVE HDWLS TO FACE OF
PARAPET AND EXTEND 14' LT
AND 16' RT WITH 24" RCP + 2 APRONS

FELIX TWP.
T-86N R-18W
SEC. 13

0 100
FEET

Sta. 177+64.3
2' X 1.5' X 48' RCB
D.A. = 25 Ac - G.R.

REMOVE HDWLS TO FACE OF
PARAPET AND EXTEND 16' Lt
AND 14' RTWITH 24" RCP + 2 APRONS

1060 1050 1040 1030 1020 1010 1000

+50 Lt. 1047.00
-0.40% Lt. Ditch Grade
+50 Rt. 1044.80
-0.40% Rt. Ditch Grade
+00 Rt. 1043.40
F.L.Lt. = 1044.77
F.L.Rt. = 1042.48
+50 Lt. 1045.00
+00 Rt. 1043.80
+0.60% Lt. Ditch Grade
+0.60% Rt. Ditch Grade
+50 Rt. 1046.05
+00 Lt. 1046.50
+50 Rt. 1047.50
+00 Lt. 1049.00
-0.40% Lt. Ditch Grade
-0.40% Rt. Ditch Grade
+50 Rt. 1045.10
+00 Lt. 1047.00
F.L.Lt. = 1046.54
F.L.Rt. = 1045.68
+2.0%
+3.50%

5' Ditch | Ditch Grade | Ditch Grade | No Ditch | Ent. | Ditch Grade | Vari. | ND | 5' Ditch | 4'x8' Ditch

160 165 170 175 180 185 190

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.10

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FELIX TWP.
T-86N R-18W
SEC. 14

FELIX TWP.
T-86N R-18W
SEC. 11

FELIX TWP.
T-86N R-18W
SEC. 13

FELIX TWP.
T-86N R-18W
SEC. 12

190 195 200 205 210 215 220

300th St.

Proposed
24" Uncl.Pipe

Proposed
24" Uncl.Pipe

Proposed
24" Uncl.Pipe

+27.30 R 3 Prop.
Type "C" Ent.

+27.23 R 3 Prop.
Type "C" Ent.

+88.63 R 3 Prop.
Type "C" Ent.

+57.96 R 3 Prop.
Type "C" Ent.

+03.44 R 3 Prop.
Type "C" Ent.

+16.5 R 3
49.3 LT
Beehive Intake

PC Sta 202+32.15

PT Sta 205+32.15

PC Sta 205+32.15

PT Sta 208+32.15

Barn Barn Barn Shed Shed Ho.

Curve Data
Δ = 0° 16' 19.35" (RT)
T = 300.00
L = 600.00
R = 126,368.42
E = 0.36
e = NC

Sta. 198+65.1
2' x 1.6' x 50' RCB
W/ 30" Conc Pipe Extension
D.A. = 31 Ac - G.R.

REMOVE HDWL ON OUTLET OR
RIGHT SIDE AND EXTEND 14'.
REMOVE EXISTING APRON ON INLET
OR LEFT SIDE AND EXTEND 12' + APRON.
USING 30" RCP.

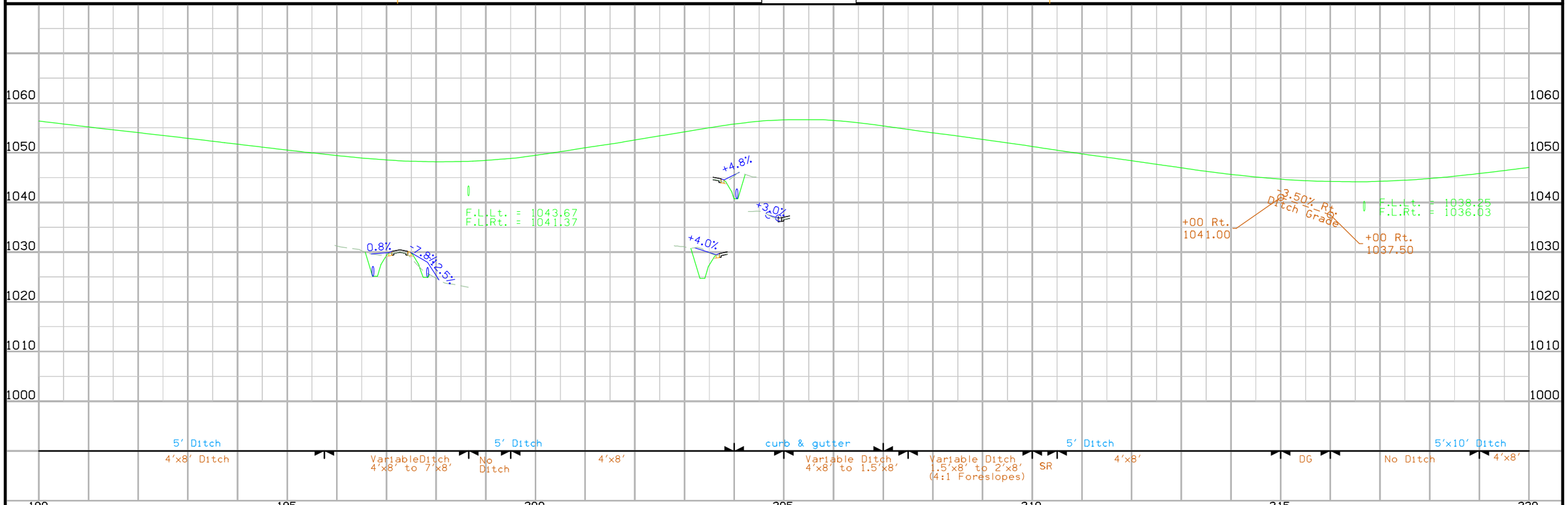
Sta. 210+13.2, 75.7 Lt.
18" x 38' C.M.P.
D.A. = 11 Ac - G.R.
F.L.Lt.(Outlet) = 1048.12
F.L.Rt.(Inlet) = 1048.42

Sta. 210+15.9, 35.2 Rt.
18" x 40' C.M.P.
D.A. = 3 Ac - G.R.
F.L.Lt.(Outlet) = 1046.91
F.L.Rt.(Inlet) = 1047.78

Sta. 216+68.2
2' x 2' x 48' RCB
D.A. = 30 Ac - G.R.

REMOVE HDWLS TO FACE OF
PARAPET AND EXTEND 14' LT
+ APRON AND 20' RT + APRON
WITH 30" RCP.

0 100
FEET



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.11

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FELIX TWP.
T-86N R-18W
SEC. 11

220 225 230 235 240 245 250

Old Poles (Lt)

+53.55 R 3 Prop. Type "C" Ent.

Proposed 24" Uncl.Pipe

+27.23 R 3 Prop. Type "C" Ent.

+59.31 R 3 Prop. Type "C" Ent.

Machine Shed

Ho.

F03

New Poles End (RT)

Sta. 239+39.6
10' x 4' x 44' RCB
D.A. = 674 Ac - G.R.

REMOVE EXISTING 10'X4' RCB AND REPLACE WITH 72' OF TWIN 88"X54" CONC RDWY ARCH PIPE + 4 APRONS

FELIX TWP.
T-86N R-18W
SEC. 12

0 100 FEET

1060 1050 1040 1030 1020 1010 1000

-2.70% Rt. Ditch Grade
-0.77% Rt. Ditch Grade
+50 Rt. 1039.20
+50 Rt. 1036.50
+00 Rt. 1033.80

F.L.Lt. = 1028.93
F.L.Rt. = 1028.82
-1.23% Lt. Ditch Grade
+1.70% Lt. Ditch Grade
+00 Lt. 1031.40
+50 Lt. 1029.55
+00 Lt. 1032.10

+2.0%
+2.0%
-1.9%

5' Ditch 4'x8' | No Ditch | 4'x8' | Ditch Grade | No Ditch | Ditch Grade Vari. see x-sec. | 5' Ditch 4'x8' Ditch

220 225 230 235 240 245 250

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.12

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FELIX TWP.
T-86N R-18W
SEC. 11

FELIX TWP.
T-86N R-18W
SEC. 2

GRUNDY
D55
COUNTY

250 255 260 265 270 275 280

18" X 30' C.M.P.
(UAC)

18" X 24' C.M.P.
(UAC)

+56.9 R 3
28.2 LT
Beehive Intake

(UAC)
Sta. 263+23.6, 65.3 Rt.
24" X 67' Conc Pipe
D.A. = 4 Ac - G.R.
F.L.Lt. = 1053.57
F.L.Rt. = 1053.43

Sta. 260+71.9
2' X 1.5' X 47' RCB
W/ 30" Conc Pipe Extension
D.A. = Ac - 9 G.R.

REMOVE EXIST HDWL ON LEFT SIDE TO FACE OF PARAPET AND EXTEND 12' + APRON. ON RT SIDE REMOVE APRON AND EXTEND 6' + APRON.

Sta. 269+58.2
4' X 1.5' X 52' RCB
D.A. = 16 Ac - G.R.

REMOVE EXISTING 4' X 1.5' RCB AND REPLACE WITH 80' OF 30" RCP + 2 APRONS

FELIX TWP.
T-86N R-18W
SEC. 12

FELIX TWP.
T-86N R-18W
SEC. 1

0 100
FEET

F.L.Lt. = 1051.70
F.L.Rt. = 1054.25

-0.87% Lt. Ditch Grade

+0.80% Lt. Ditch Grade

+00 Lt.
1053.90

+50 Lt.
1052.60

+50 Lt.
1053.20

+00 Lt.
1056.80

F.L.Lt. = 1049.33
F.L.Rt. = 1051.52

1060 1050 1040 1030 1020 1010 1000

5' Ditch
4'x8'

U.A.C.
sideroad

DG

5' Ditch
4'x8'

DG

ND

Ditch Grade

5' Ditch
4'x8'

No Ditch

250 255 260 265 270 275 280

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.13

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FELIX TWP.
T-86N R-18W
SEC. 2

+68.26 R 3 Prop. Type "C" Ent.

Barn

Proposed
24" Uncl.Pipe

(REMOVE)
12" X 40' C.M.P.

280 285 290 295 300 305 310

+23.1 R 3
29.4 LT
Beehive Intake

PC Sta 294+84.47

PI Sta 297+84.47

+98.3 R 3
33.5 LT
Beehive Intake

+98.9 R 3
40.0 RT
Beehive Intake

PT Sta 300+84.47

Curve Data
Δ = 0° 12' 34.12" (RT)
T = 300.00
L = 600.00
R = 164,110.35
E = 0.27
e = NC

Sta. 282+24.0
3' X 3' X 46' RCB
D.A. = 58 Ac - G.R.

REMOVE EXISTING HDWL ON RIGHT
AND LEFT SIDE TO FACE OF PARAPET
AND EXTEND WITH 42" RCP 14'
BOTH DIRECTIONS + 2 APRONS

FELIX TWP.
T-86N R-18W
SEC. 1

0 100
FEET

+00 Lt. 1075.30
+00 Lt. 1077.60
+2.30% Lt. Ditch Grade
+0.40% Lt. Ditch Grade
+0.39% Rt. Ditch Grade
+00 Rt. 1076.70
+00 Lt. 1080.00
+00 Rt. 1079.40
-0.40% Rt. Ditch Grade
-0.70% Lt. Ditch Grade
+00 Rt. 1078.20
+00 Lt. 1077.20

F.L.Lt. = 1058.49
F.L.Rt. = 1058.60

+1.9%

1080 1070 1060 1050 1040 1030 1020

No Ditch
4'x8'
5' Ditch
Transition
4'x8'
Ditch Grade
Ditch Grade
Ditch Grade
Ditch Grade
5' Ditch
4'x8'

280 285 290 295 300 305 310

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.14

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(UAC)
Sta. 314+99.9, 317.6' Lt.
18" x 30' C.M.P.
D.A. = Part of 24 Ac -G.R.
F.L.Lt.(Outlet) = 1062.12
F.L.Rt.(Inlet) = 1062.97

(UAC)
Sta. 314+97.2, 308.9' Lt.
18" x 31' C.M.P.
D.A. = Part of 24 Ac -G.R.
F.L.Lt.(Outlet) = 1062.81
F.L.Rt.(Inlet) = 1062.97

FELIX TWP.
T-87N R-18W
SEC. 35

310 315 320 325 330 335 340

Proposed
24" Uncl.Pipe

+19.12 R 3 Prop.
Type "C" Ent.

(REMOVE)
12" X 20' C.M.P.

+01.87 R 3 Prop.
Type "C" Ent.

Proposed
24" Uncl.Pipe

(REMOVE)
18" X C.M.P.

+52.51 R 3 Prop.
Type "C" Ent.

Proposed
24" Uncl.Pipe

PI Sta 340+28.22

Sta. 314+80.3
2' X 1.5' X 51' RCB
D.A. = 51 Ac - G.R.

REMOVE EXISTING 2' X 1.5' RCB AND REPLACE WITH 72' of 52" x 32" CONCRETE ARCH PIPE. USE MODIFIED DR-205 END ALL ON INLET END.

Sta. 315+43.8
2' X 2' X 48' RCB
D.A. = 16 Ac - G.R.

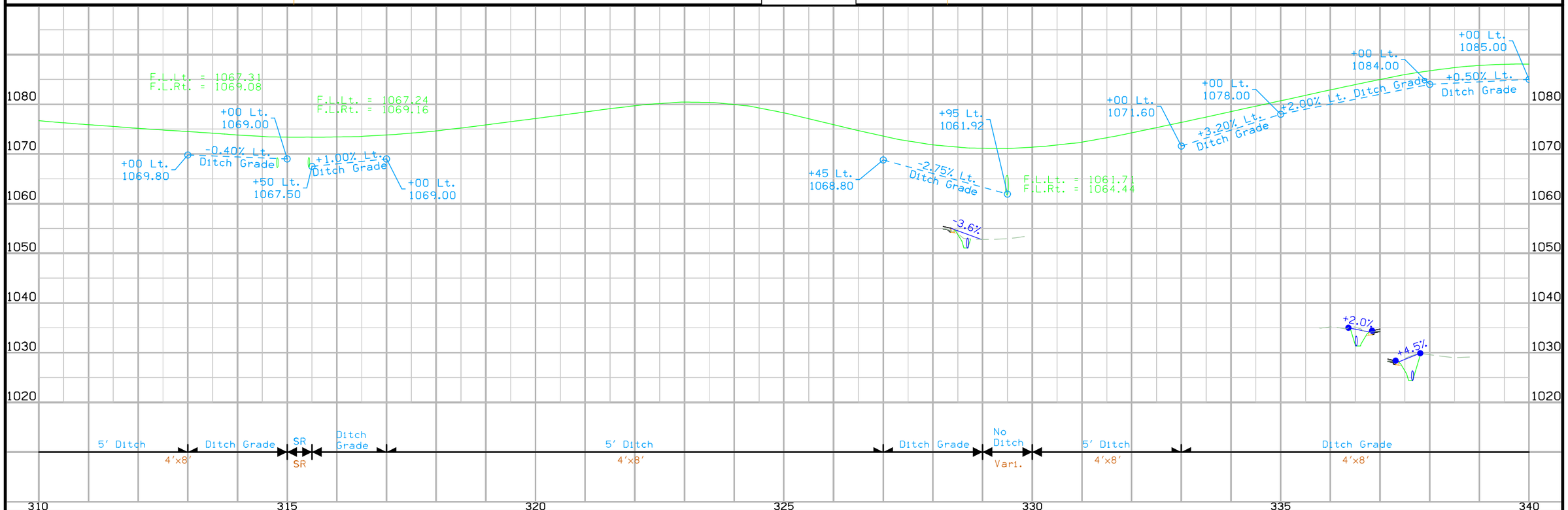
REMOVE HEADWALL TO FACE OF PARAPET AND EXTEND 2'X2' RCB WITH 30" RCP

FELIX TWP.
T-87N R-18W
SEC. 36

0 FEET 100

Sta. 329+49.1
4' X 4' X 53' RCB
W/ 54" Conc Pipe Extension
D.A. = 171 Ac - G.R.

EXIST 4'X4' RCB REMOVE EXISTING HDWL ON OUTLET END TO FACE OF PARAPET AND EXTEND 12' + APRON. ON INLET END REMOVE APRON AND EXTEND 8' + APRON WITH 54" RCP



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.15

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FELIX TWP.
T-87N R-18W
SEC. 35

FELIX TWP.
T-87N R-18W
SEC. 36

PI Sta 340+28.22

+52.51 R 3 Prop. Type "C" Ent.

+46.20 R 3 Prop. Type "C" Ent.

Proposed 24" Uncl.Pipe

Proposed 24" Uncl.Pipe

(REMOVE) 15" X 34' C.M.P.

+82.56 R 3 Prop. Type "C" Ent.

+29.7 R 3
73.0 LT
Beehive Intake

Tile

+41.54 R 3 Prop. Type "C" Ent.

Curve Data
Δ = 0° 14' 34.40" (LT)
T = 300.00
L = 600.00
R = 141,535.08
E = 0.32
e = NC

PC Sta 364+66.54

PT Sta 370+66.54

(UAC)
Sta. 367+84.5, 260.3' Lt.
Triple 12' x 8' x 36' RCB
D.A. = 5386 Ac - F - G.R.
F.L.Lt.(Inlet) = 1042.67
F.L.Rt.(Outlet) = 1042.66

18" X 26' Conc Pipe

PI Sta 367+66.54

Sta. 367+44.3, 46.8' Rt.
18" x 41' Conc Pipe
D.A. = 11 Ac - G.R.
F.L.Lt.(Outlet) = 1049.89
F.L.Rt.(Inlet) = 1050.07

Sta. 356+33.0
3' X 3' X 46' RCB
W/ 42" Conc Pipe Extension
D.A. = 43 Ac - G.R. to R

FLOOR BAD. REMOVE EXISTING 3'X3'X46' RCB AND REPLACE WITH 82' OF 42" RCP + 2 APRONS

0 100 FEET

-2.00% Lt.
+00 Lt.
1083.00

-12.5% -5.7%

-7.1%

-2.0%

F.L.Lt. = 1049.81
F.L.Rt. = 1053.77

-11.850%

-1.50% Rt.
+00 Rt.
1050.40
Ditch Grade

5' Ditch
4'x8'

No Ditch

Ent.

5' Ditch
4'x8'

UAC
Ditch Grade

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.16

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FELIX TWP.
T-87N R-18W
SEC. 26

370 375 380 385 390 395 400

RT Sta 370+66.54

Proposed
24" Uncl.Pipe

+80.54 R 3 Prop.
Type "C" Ent.

(REMOVE)
24" X 25' Conc Pipe

(REMOVE)
18" X 40' C.M.P.

Proposed
24" Uncl.Pipe

+79.92 R 3 Prop.
Type "C" Ent.

Sta. 370+92.5
Twin 8' x 5' x 46' RCB
D.A. = 3842 Ac - F- G.R.

REMOVE EXISTING TWIN
8' X 5' X 46' RCB. INSTALL
NEW PRECAST
TWIN 12' X 6' X 100' RCB

FELIX TWP.
T-87N R-18W
SEC. 25

0 100
FEET

Sta. 395+35.9
3' X 2' X 49' RCB
D.A. = 58 Ac - G.R. to R

EXISTING 3'X2'X49' RCB REMOVE
HEADWALLS TO FACE OF
PARAPET AND EXTEND
WITH 36" RCP + 2 APRONS.

1090 1080 1070 1060 1050 1040 1030 1020

+00 Rt.
1045.90

+95 Lt.
1046.00

+45 Lt.
1049.30

+0.60% Lt. Ditch Grade

+5.00% Lt.
Ditch
Grade

F.L.Lt. = 1043.95
F.L.Rt. = 1044.92

+45 Lt.
1043.50

+00 Rt.
1062.90

+00 Rt.
1061.40

-0.50% Rt. Ditch Grade

F.L.Lt. = 1049.81
F.L.Rt. = 1053.77

UAC
Ditch
Grade

Ditch Grade
Special Ditch - See Cross Sections

4'x8' Ditch

5' Ditch

Ditch Grade

No Ditch

4'x8' Ditch

370 375 380 385 390 395 400

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.17

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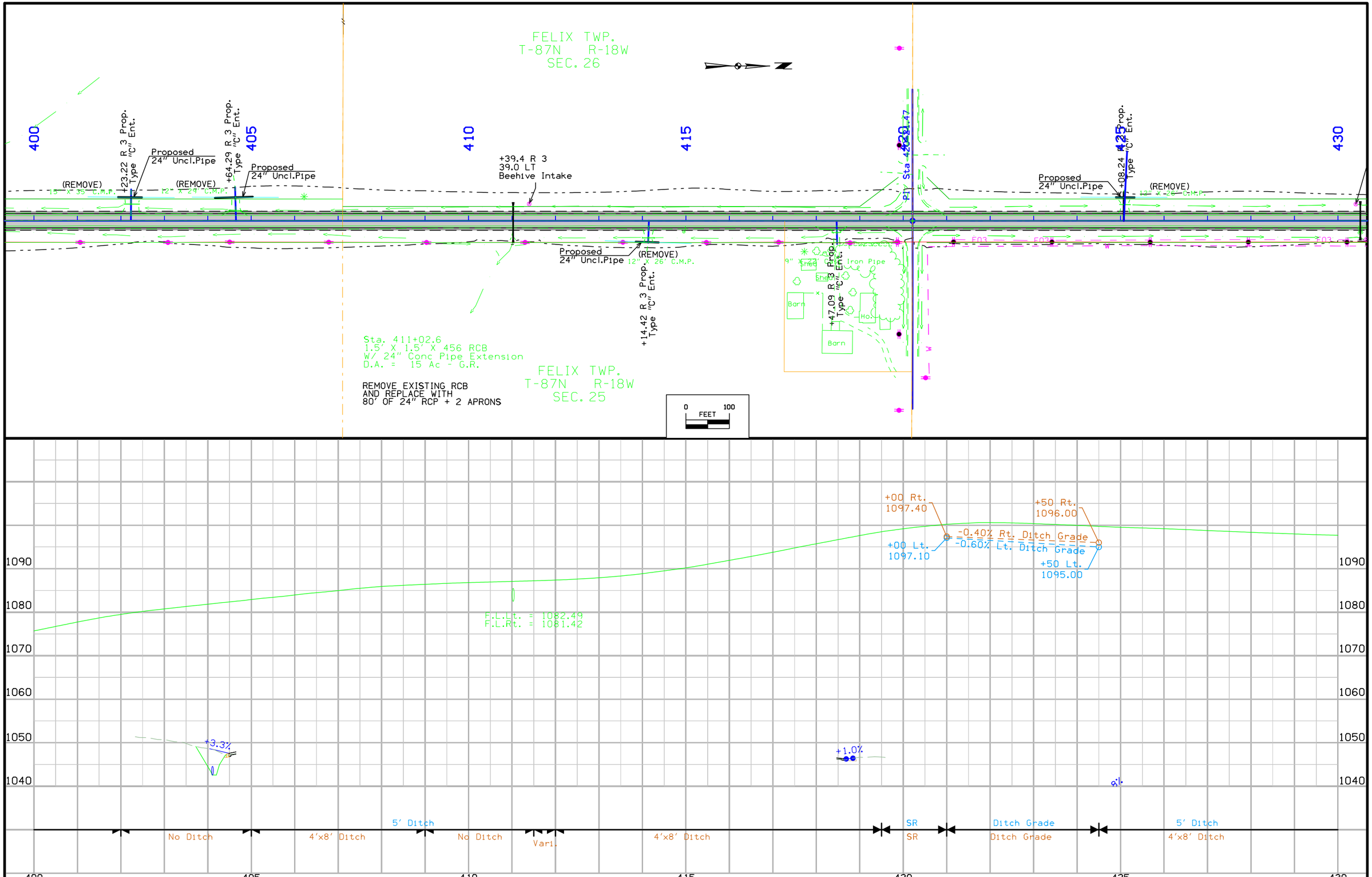

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.18

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FELIX TWP.
T-87N R-18W
SEC. 23

430 435 440 445 450 455 460

+41.2 R 3
38.2 LT
Beehive Intake

Proposed
24" Uncl.Pipe

+78.59 R 3 Prop.
Type "C" Ent.

(REMOVE)
18" X 61' C.M.P.

(REMOVE)
18" X 30' C.M.P.

+65.1 R 3
43.1 RT
Beehive Intake

+10.46 R 3 Prop.
Type "C" Ent.

Proposed
24" Uncl.Pipe

+20.8 R 3
37.8 LT
Beehive Intake

+96.5 R 3
40.3 RT
Beehive Intake

(REMOVE)
15" X 54' C.M.P.

+99.02 R 3 Prop.
Type "C" Ent.

Proposed
24" Uncl.Pipe

Proposed
24" Uncl.Pipe

+21.19 R 3 Prop.
Type "C" Ent.

Sta. 430+51.5
24" X 55' Conc Pipe
D.A. = Equalizer

JOINTS ARE BAD. REMOVE 24"
AND REPLACE WITH
76' OF 24" RCP + 2 APRONS

FELIX TWP.
T-87N R-18W
SEC. 24

0 100
FEET

Sta. 455+48.6
2' X 2' X 41' RCB
W/ 30" Conc Pipe Extension
D.A. = 39 Ac - G.R.

EXISTING 2'X2'X41' RCB EXTEND
WITH 30" RCP. REMOVE HEADWALL
TO FACE OF PARAPET AND EXTEND
14' LEFT + 1 APRON. REMOVE
APRON AND EXTEND 18' RT + 1 APRONS

1100 1090 1080 1070 1060 1050 1040

F.L.Lt. = 1092.40
F.L.Rt. = 1092.02

+00 Lt.
1092.50

+00 Lt.
1090.00

+1.25%

+2.10%

+00 Rt.
1089.70

F.L.Lt. = 1086.27
F.L.Rt. = 1087.36

6.7%

6.0%

12.5%

7.1%

5' Ditch
4'x8' Ditch

No Ditch

5' Ditch

No Ditch
4'x8' Ditch

Ditch Grade
Ditch Grade

430 435 440 445 450 455 460

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.19

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FELIX TWP.
T-87N R-18W
SEC. 23

FELIX TWP.
T-87N R-18W
SEC. 14

460 465 470 475 480 485 490

Silo
Barn
Foundation
Ho.
+45.12 R 3 Prop. Type "C" Ent.
+89.4 R 3
29.0 LT
Beehive Intake
PI Sta 472+69.83
(REMOVE)
18" X 60' C.M.P.
+84.9 R 3
40.8 RT
Beehive Intake
+21.19 R 3 Prop. Type "C" Ent.
+08.56 R 3 Prop. Type "C" Ent.
Barn
Conc.
Barn
Silo
Conc.
Ho.
Barn
Gar.
Ho.
Gar.
Shed
FO3
FO4
FO5
FO6
FO7
FO8
FO9
FO10
FO11
FO12
FO13
FO14
FO15
FO16
FO17
FO18
FO19
FO20
FO21
FO22
FO23
FO24
FO25
FO26
FO27
FO28
FO29
FO30
FO31
FO32
FO33
FO34
FO35
FO36
FO37
FO38
FO39
FO40
FO41
FO42

FELIX TWP.
T-87N R-18W
SEC. 14

490 495 500 505 510 515 520

+26.79 R 3 Prop. Type "C" Ent.

Sta. 520+00.00 R 3
End PCC Overlay
Begin PCC Reconstruction

(REMOVE)
18" X 60' C.M.P.

+97.99 R 3 Prop. Type "C" Ent.

Proposed
24" Uncl.Pipe

Sta. 522+50
End PCC Rec

Sta. 493+03
2' X 2' X 47' RCB
W/ 30" Conc Pipe Extension
D.A. = 12 Ac - R

EXISTING 2'X2'X47' RCB
EXTEND WITH 30" RCP.
REMOVE HEADWALL TO FACE
OF PARAPET AND EXTEND
16' LT + APRON. REMOVE APRON
AND EXTEND 12' RT + APRON.

FELIX TWP.
T-87N R-18W
SEC. 13

0 100
FEET

Sta. 509+77.40
4' X 2' X 42' RCB
W/ 52" X 32" Conc Arch Pipe Extension
D.A. = Ac - R

EXISTING 4'X2'X42' RCB.
REMOVE HEADWALL TO FACE
OF PARAPET AND EXTEND
LT WITH 14' OF 52"X32" LCP LT
+ 1 APRON. REMOVE APRON
AND EXTEND 12' RT WITH
52"X32" LCP + 1 APRON.

Sta. 524+61.98, 42.8 Lt.
18" X 74' Conc Pipe
D.A. = Ac -
(UAC)

1090 1080 1070 1060 1050 1040 1030 1020

F.L.Lt. = 1060.60
F.L.Rt. = 1062.98

+1.0% +10.0% +2.0%

F.L.Lt. = 1056.10
F.L.Rt. = 1057.65

+00 Rt. 1058.60
+50 Rt. 1060.00
+00 Rt. 1052.35
+0.56% Rt.
-1.70% Rt. Ditch Grade
+0.40% Lt.
-1.60% Lt. Ditch Grade
+50 Lt. 1058.00
+00 Lt. 1057.00
+00 Lt. 1050.80

No Ditch
UAC Ditch
4'x8' Ditch
5' Ditch
Vari.
Vari.
Ditch Grade
Ditch Grade
Widen Ditch
UAC to EOP

490 495 500 505 510 515 520

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.21

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515

520

Sta. 520+00.00 R 3
End PCC Overlay
Begin PCC Reconstruction

POT Sta 522+51.17

Sta. 522+50.00 R 3
End PCC Reconstruction

Sta. 524+61.98, 42.8 Lt.
18" X 74' Conc Pipe
D.A. = Ac -
(UAC)

Sta. 524+67.84, 37.6' Rt.
18" X 65' Conc Pipe
D.A. = Ac -
(UAC)

0 100
FEET

+00 Rt.
1052.35

rade

de

+00 Lt.
1050.80

Grade

Grade

Widen Ditch

UAC to EOP

UAC
to EOP

515 520 525

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER D.22

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Marshall ROW: NHSN-014-5(77)--2R-64 PIN 14-64-014-020
Co Rd E18 to W Jct IA 175

		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	Rolston Family Farm LTD. - Fee		0.41 AC													
2	Michael J. McCann - Fee		0.37 AC													
	Betsy M. Lair - Fee															
	Dennis R. McCann - Fee															
3	Emma Arline Nichol - Fee		1.12 AC													
4	Ann S. McAllister-Thomas - Fee		0.33 AC													
	SW JR. McAllister - Fee															
5	Henry Joe Sandve - Fee		0.72 AC													
6	Dejong Unlimited LLC - Fee		0.03 AC													
7	Connie S. Stanley - Fee		0.05 AC													
8	Bert F. Holland - Fee		0.42 AC													
9	Dean R Messerly - Fee															
	Michele M. Zeller - Fee															
10	William B. Heckel - Fee		0.25 AC													
	Tammy J. Tichy - Fee															
10 Parcels	"TOTALS	0 AC	3.7 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	0 SF						

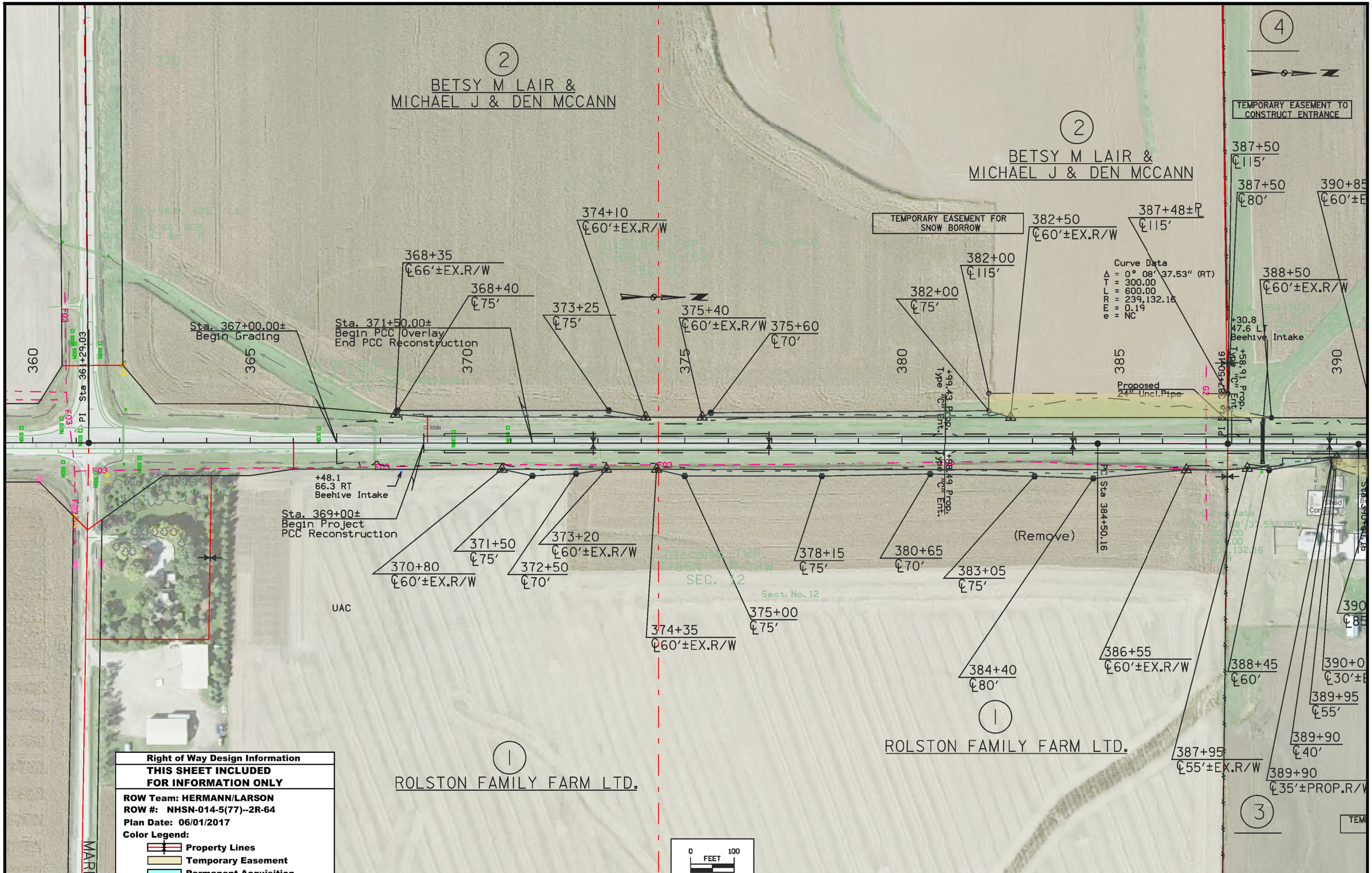
Grundy ROW: NHSN-014-6(39)--2R-38
Co Rd E18 to W Jct IA 175

PIN 14-64-014-020

PARCEL NO.	OWNER NAME	STATE FEE	STATE EASE	COUNTY FEE	COUNTY EASE	CITY FEE	CITY EASE	EXCESS	BORROW FEE	BORROW T.E.	MITIGATION	OTHER	HOUSE	BUILDING(S)	A/C ONLY	TOTAL ACQ.
11	Barbara Tranbarger - Fee		1.28 AC													
12	Gallentine Land Co. - Fee		1.94 AC													
13	Prosser Farms, Inc. - Fee		0.95 AC													
14	Walter H. Miller - Fee		0.75 AC													
15	That Place, Inc. - Fee		0.11 AC													
17	David L. Stone - Fee		0.07 AC													
18	David L. Stone - Fee		0.14 AC													
19	Don A. Vosburg - Fee		0.5 AC													
20	Trevor Schibel - Fee		0.87 AC													
21	Leonard J. Tranbarger - Fee		0.24 AC													
22	Busch Farm Properties, LLC. - Fee		1.14 AC													
22A	J. Patrick Neuroth - Fee		0.02 AC													
	Patricia A. Means - Fee															
23	Shirley J. Vosburg - Fee		0.62 AC													
	Ted Vosburg Residuary Trust Fbo. - Fee															
24	Joann R. Klein - Fee		0.2 AC													
	Mary L. Chadwick - Fee															
25	Donald L. Nason - Fee		1.04 AC													
26	Merl F. Stewart Revocable Trust - Fee		3.06 AC												X	
27	Donald L. Nason - Fee		0.11 AC													
28	Sabrina M. Russell - Fee		0.33 AC													
29	Kenneth E. Nason - Fee		0.07 AC													
	Betty J. Nason Revocable Living Trust - Fee															
30	Talsma Land Holdings, LLLP - Fee		1.97 AC													
31	Dorothy Ann Beeghly - Fee		1.1 AC													
31A	Kevin R. Beeghly - Fee		0.35 AC													
32	Patricia Jackley - Fee		1.06 AC													
33	Bette L. Hammond - Fee		1.89 AC													
34	Schleisman Family Rev Living Trust - Fee		0.59 AC													
35	ITC Midwest LLC - Fee		0.03 AC													
36	Steven Coulter - Fee		0.94 AC													
37	Kent R. Adams - Fee		2.34 AC													
	Kathleen C. Blaemire - Fee															
38	Grannis Family Trust - Fee		1.36 AC													
39	Jordan Hoy - Fee		0.27 AC													
	Aalfs Family Trust - Fee															
41	C&G HOG Company, Inc. - Fee		1.13 AC													
42	Lymar Inc. - Fee		1.3 AC													
43	Donna Mincks - Fee		1.27 AC													
44	Larry Don Hughes - Fee		0.9 AC													
45	Alan M. Hughes - Fee		2.05 AC													
46	Steven E. Simms - Fee		1.73 AC													

PARCEL NO.	OWNER NAME	STATE FEE	STATE EASE	COUNTY FEE	COUNTY EASE	CITY FEE	CITY EASE	EXCESS	BORROW FEE	BORROW T.E.	MITIGATION	OTHER	HOUSE	BUILDING(S)	A/C ONLY	TOTAL ACQ.
47	Dores J. Ross - Fee		0.83 AC													
48	Homer H. Ross - Fee		0.76 AC													
49	Pisney Farms, LLC. - Fee		1.72 AC													
50	Jane Slifer Gallentine - Fee		1.37 AC													
51	Trustee of Vanheukelom Revocable Trust - Fee		1.78 AC													
52	Roger A. Davidson - Fee		1.53 AC													
53	Jacob T. Pelham - Fee		0.16 AC													
54	Douglas R. Hess - Fee		1.1 AC													
55	David R. Hommel - Fee		0.96 AC													
56	Micahel R. Mortensen - Fee		0.04 AC													
57	Ferdinand E. Henze - Fee		0.72 AC													
58	Rebecca R. Peterson - Fee		1.02 AC													
59	Theone Andreessen - Fee		0.81 AC													
60	Judith Hess - Fee		1.02 AC													
61	Cuson Properties Partnership - Fee		0.34 AC													
62	Mary Ascher - Fee		0.6 AC													
63	Carla S. Draper - Fee		0.25 AC													
64	Brent Ascher - Fee		0.05 AC													
65	Lloyd E. Draper - Fee		0.63 AC													
66	Mary Ascher - Fee		0.3 AC													
67	Litchfield Reality Company - Fee		1.41 AC													
68	Dina Kay Dewey et al - Fee		1.47 AC													
69	Rod Thompson Revocable Trust - Fee		0.71 AC													
	Wells Fargo Bank Iowa, Trustee - Fee															
59 Parcels	"TOTALS	0 AC 0 SF	53.3 AC	0 SF	0 AC 0 SF	0 AC 0 SF	0 AC 0 SF	0 SF	0 AC 0 SF	0 AC 0 SF	0 SF	0 AC	0 AC	0 AC		0 AC

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.

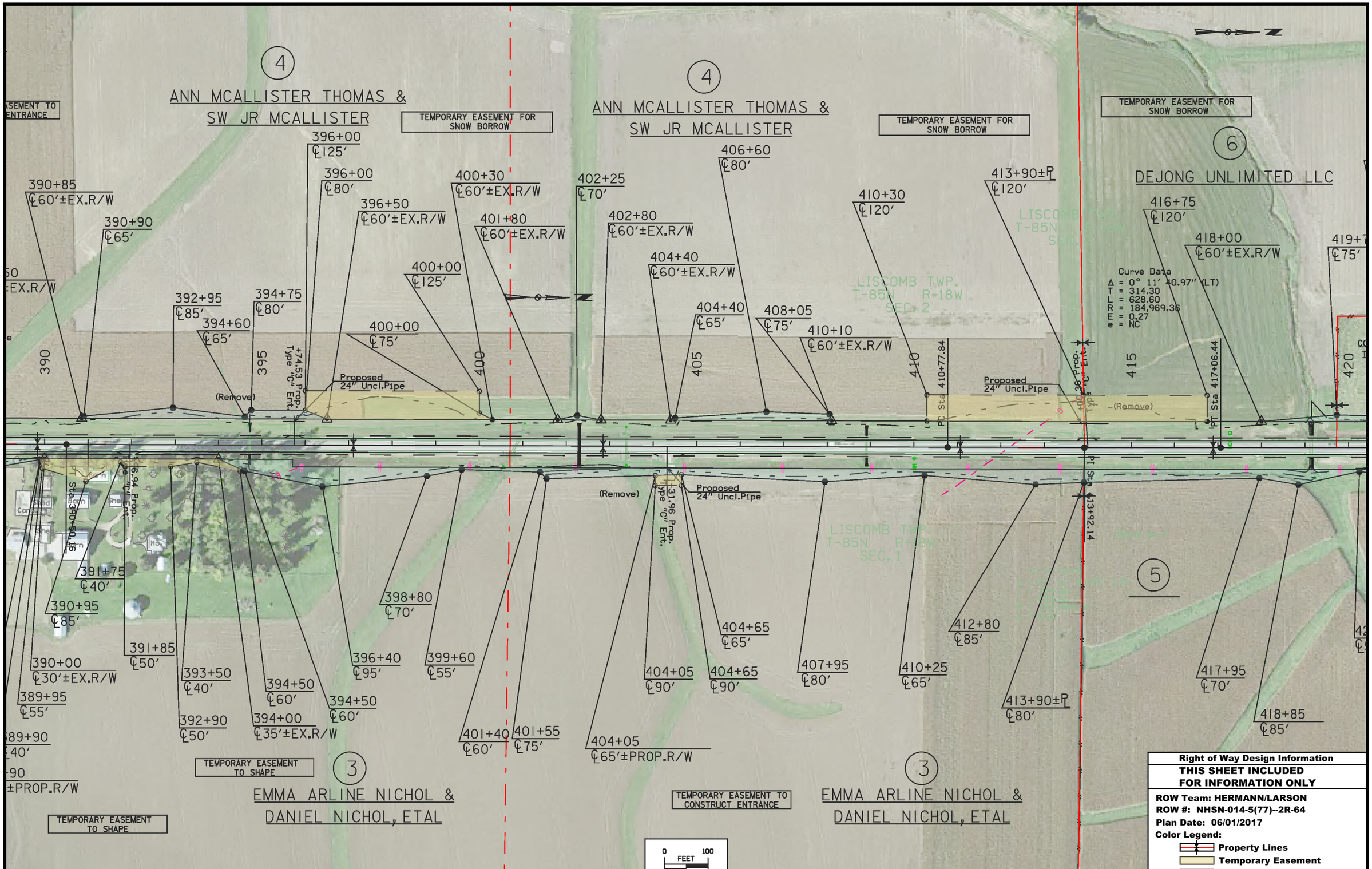


Right of Way Design Information
THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: HERMANN/LARSON
ROW #: NHSN-014-5(77)--2R-64
Plan Date: 06/01/2017
Color Legend:
- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.1

11:07:50 AM 6/2/2017 jherma2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\ROW\64014077H01.sht



Right of Way Design Information

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ROW Team: HERMANN/LARSON
ROW #: NHSN-014-5(77)--2R-64
Plan Date: 06/01/2017
Color Legend:
- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.2

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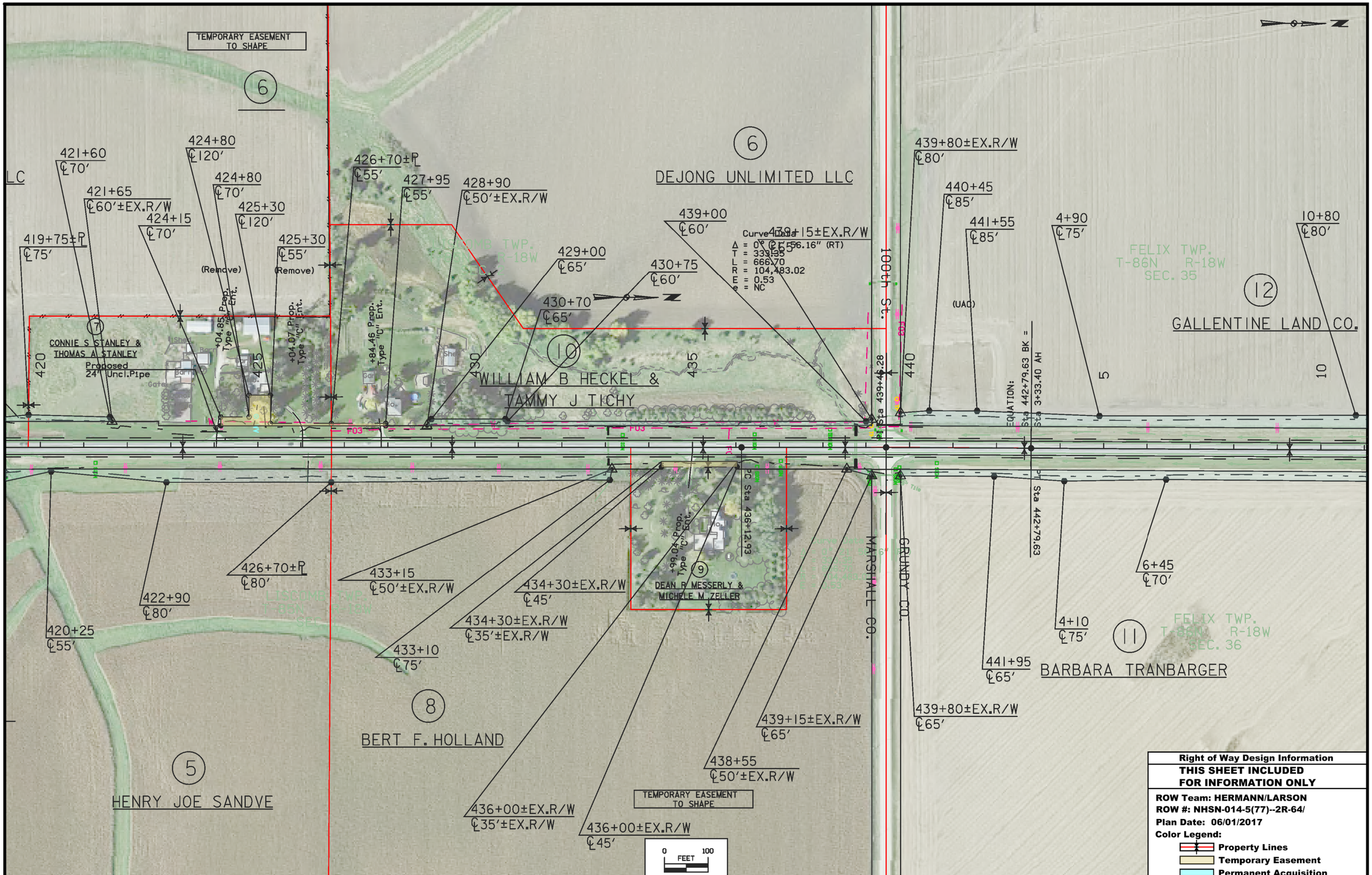

Right of Way Design Information

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ROW Team: HERMANN/LARSON
ROW #: NHSN-014-5(77)--2R-64/
Plan Date: 06/01/2017
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.3

1:55:59 PM 6/2/2017 jherma2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\ROW\64014077H01.sht

10+80
℄80′

13+65
℄80′

15+65
℄70′

23+30
℄85′

26+30±P
℄80′

31+15
℄65′

37+15
℄65′

AND CO.

12
GALLENTINE LAND CO.

14
WALTER H MILLER &
CONNIE L MILLER

FELIX TWP.
T-86N R-18W
SEC. 35

10 15 20 25 30 35 40

Sta. 26+32.40

+39.7 R 2
35.4 LT
Beehive Intake

+43.1 R 2
28.5 RT
Beehive Intake

Proposed
24" Uncl.Pipe

+75.56 R 2 Prop.
Type "C" Ent.
Set @ No. 35

+51.3 R 2
50.2 LT
Beehive Intake

+57.4 R 2
36.3 LT
Beehive Intake

+41.8 R 2
39.2 RT
Beehive Intake

11
BARBARA TRANBARGER

23+30
℄75′

FELIX TWP.
T-86N R-18W
SEC. 36

26+35±P
℄65′

13
PROSSER FARMS, INC.

0 100
FEET

Right of Way Design Information

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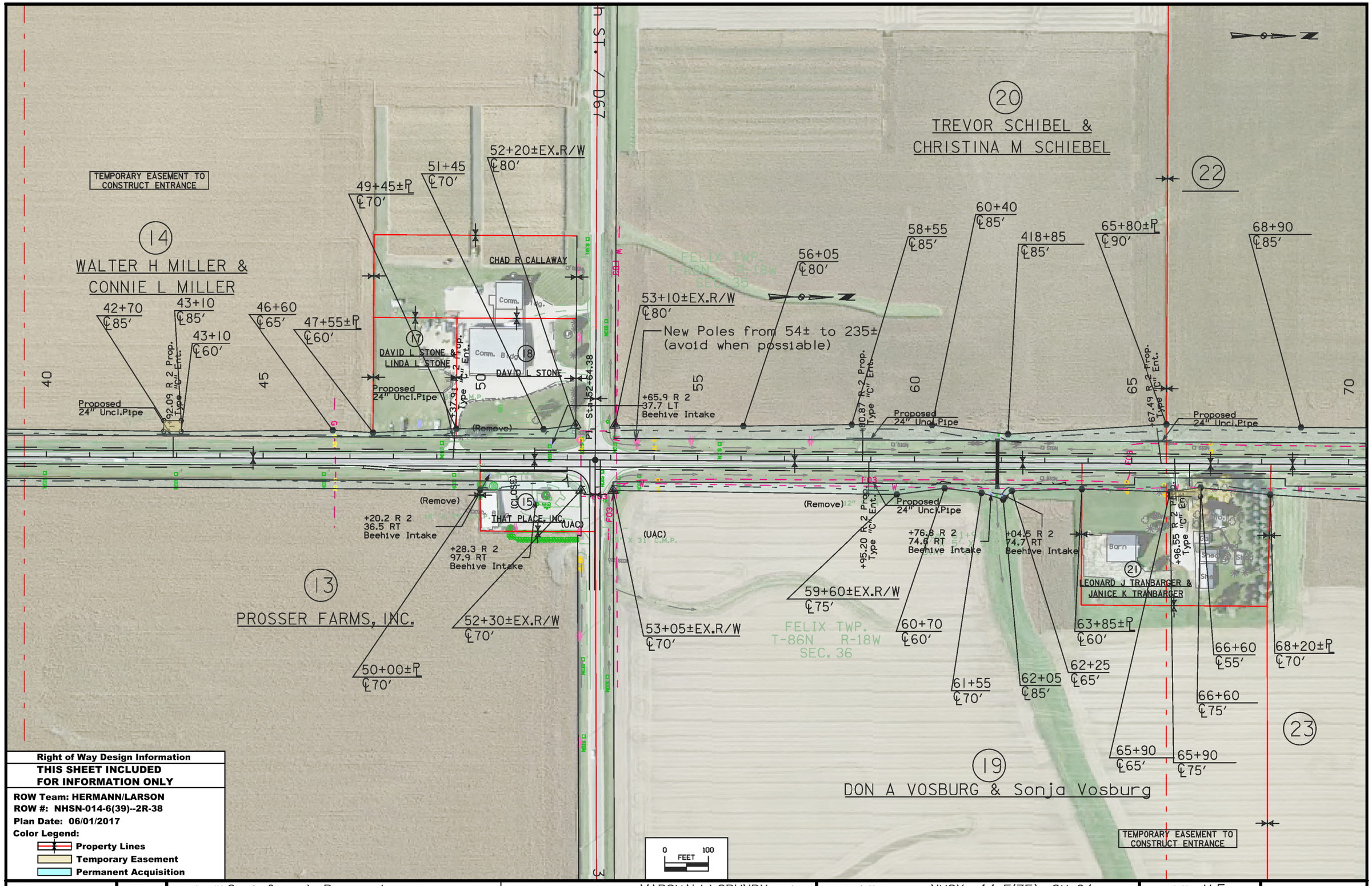
ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.4

11:09:43 AM 6/2/2017 jherma2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\ROW\64014077H01.sht



Right of Way Design Information

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ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:

- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.5

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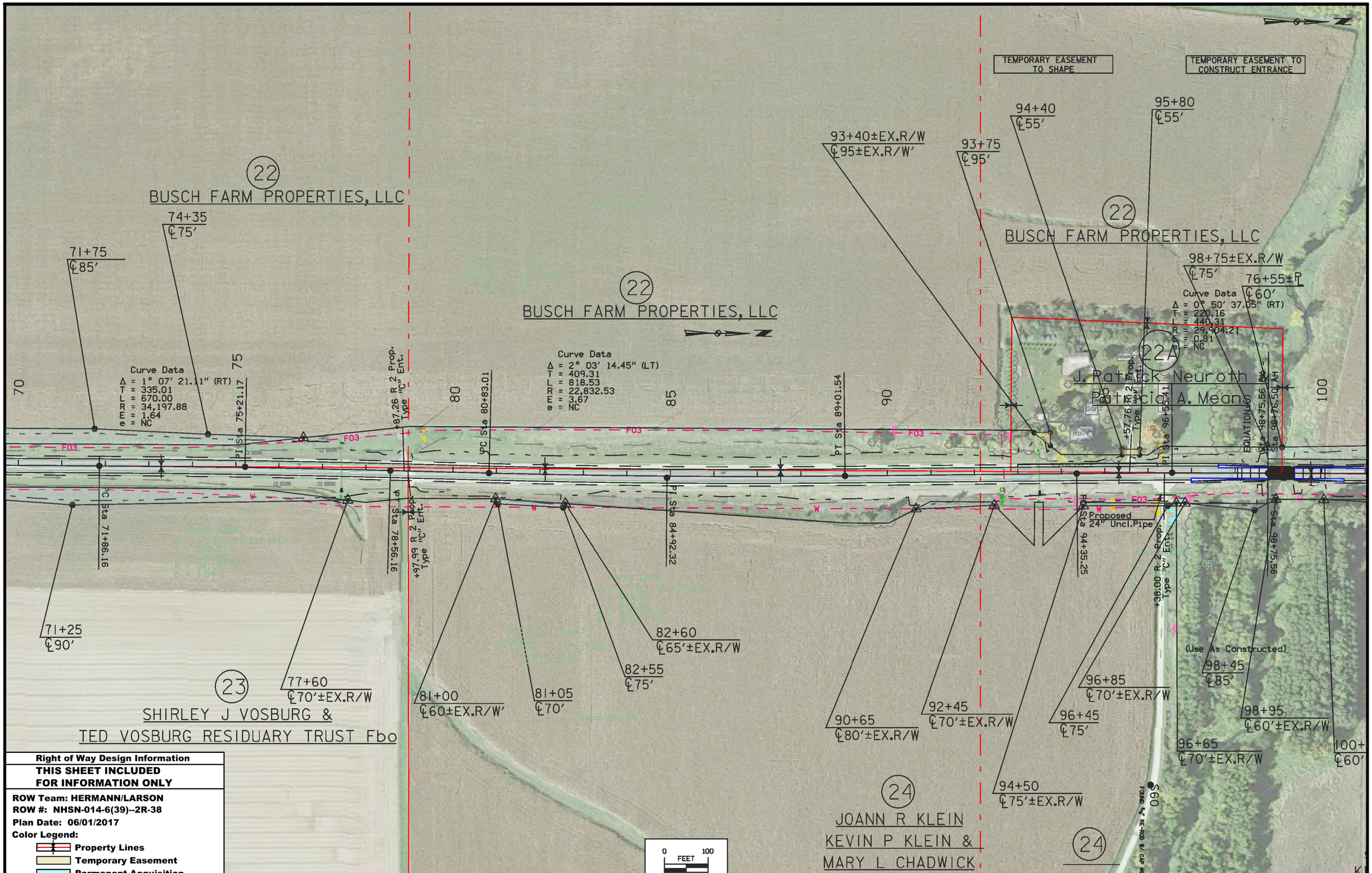

Right of Way Design Information
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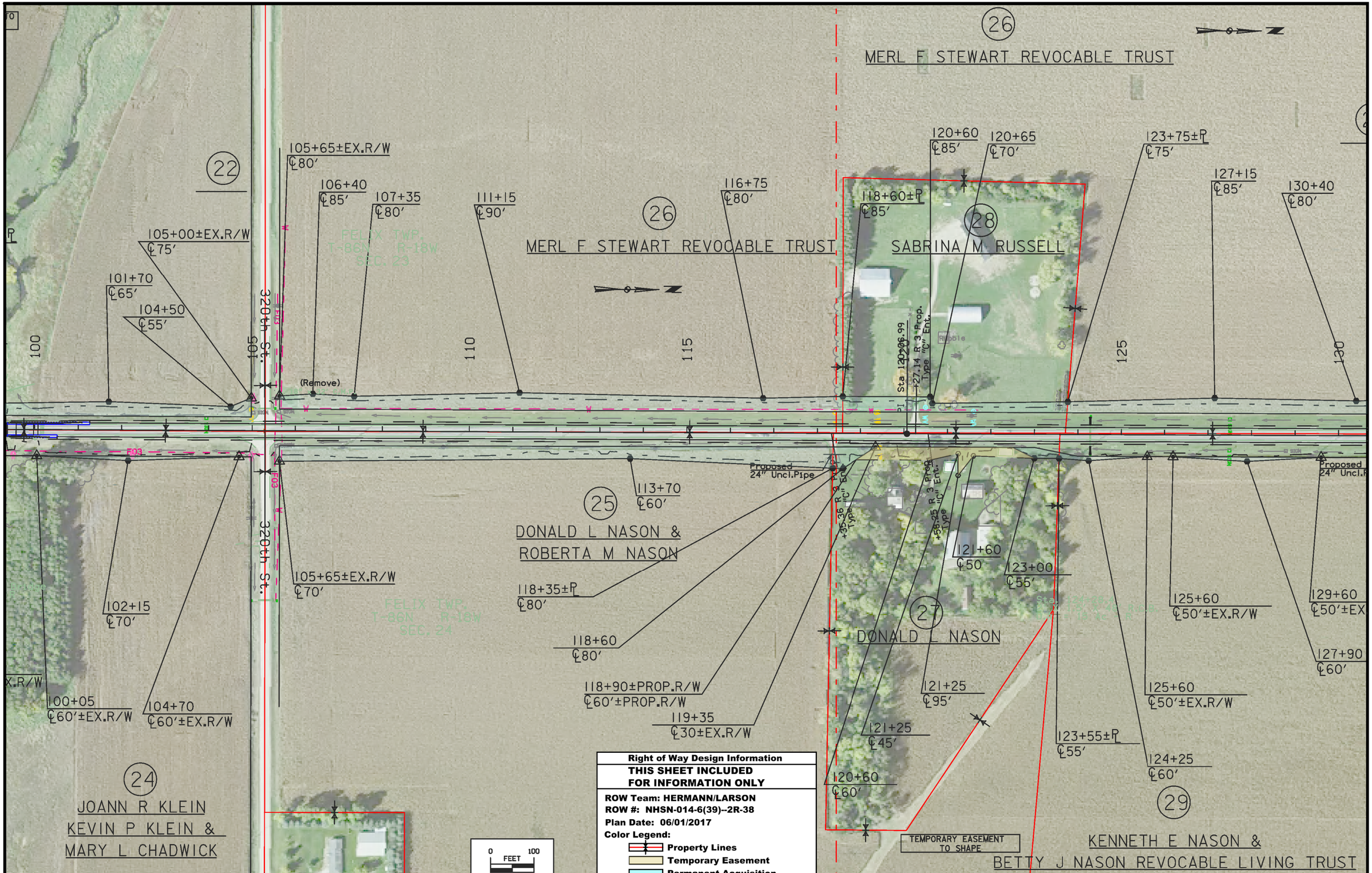
ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.6

11:11:06 AM 6/2/2017 jherma2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\ROW\64014077H01.sht



Right of Way Design Information
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ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:
- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.7

11:11:44 AM 6/2/2017 jherma2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\ROW\64014077H01.sht

26

MERL F STEWART REVOCABLE TRUST

TEMPORARY EASEMENT TO REMOVE SILO

158+65±EX.R/W
℄85′±EX.R/W

31

130+40
℄80′

135+25
℄90′

142+45
℄85′

148+10
℄60′

148+20
℄50′

149+20
℄60′

150+30
℄55′

150+45
℄80′

157+05±EX.R/W
℄80′

150+45
℄75′

130 135 140 145 150 155 160

Proposed 24" Uncl.Pipe (Remove)

+29.82 R 3 Prop. Type "C" Ent.

+37.72 R 3 Prop. Type "C" Ent.

Proposed 24" Uncl.Pipe (Remove)

F03

Proposed 24" Uncl.Pipe

+47.05 R 3 Prop. Type "C" Ent.

+36.60 R 3 Prop. Type "C" Ent.

+17.14 R 3 Prop. Type "C" Ent.

Proposed 24" Uncl.Pipe

W. PECK

(UAC)

25

DONALD L NASON & ROBERTA M NASON

29

TEMPORARY EASEMENT TO SHAPE

129+60
℄50′±EX.R/W

127+90
℄60′

137+65
℄50′

143+60
℄55′

137+50
℄55′

144+70
℄50′±EX.R/W

137+08
℄70′

135+50±P
℄75′

134+90
℄75′

134+75
℄50′±EX.R/W

147+00
℄65′

147+55
℄65′

149+25
℄70′

150+55
℄50′±EX.R/W

158+50±EX.R/W
℄75′±EX.R/W

26

MERL F STEWART REVOCABLE TRUST

TEMPORARY EASEMENT TO CONSTRUCT ENTRANCE

147+00
℄50′±PROP.R/W

30

0 100 FEET

FELIX TWP.
T-86N R-18W
SEC. 24

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.8

11:12:26 AM 6/2/2017 jherma2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\ROW\64014077H01.sht

TEMPORARY EASEMENT TO CONSTRUCT ENTRANCE

EX.R/W
.R/W

163+60
℄85′

163+70
℄60′

170+50±P
℄75′

170+90
℄80′±PROP.R/W

170+90
℄95′

172+05
℄95′

172+05
℄85′

172+20
℄65′

175+95
℄75′

177+20±P
℄70′

31
DOROTHY ANN BEEGHLY

31A
KEVIN R BEEGHLY &
STACY L BEEGHLY

Barn

+55.43 R 3 Prop. Type "C" Ent.

160 165 170 175 180

Sta 183+43.27

+22.42 R 3 Prop. Type "C" Ent.

185

Sta 189+43.27

190

32
184+10±P
℄85′

Sect. No. 14

F03

+51.5 R 3
50.2 RT
Beehive Intake

168+90
℄70′

166+10
℄70′

168+85
℄60′

166+20
℄55′

171+60
℄75′

171+65
℄70′

30
TALSMA LAND HOLDINGS, LLLP

FELIX TWP
T-86N R-18W
SEC. 13

Curve Data
Δ = 0° 21′ 49.99″ (LT)
T = 300.00
L = 600.00
R = 94,473.35
E = 0.48
e = NC

Sta 186+43.27

Curve Data
Δ = 0° 21′ 49.99″ (LT)
T = 300.00
L = 600.00
R = 94,473.35
E = 0.48

188+75
℄80′

Sect. No. 13

0 100
FEET

Right of Way Design Information

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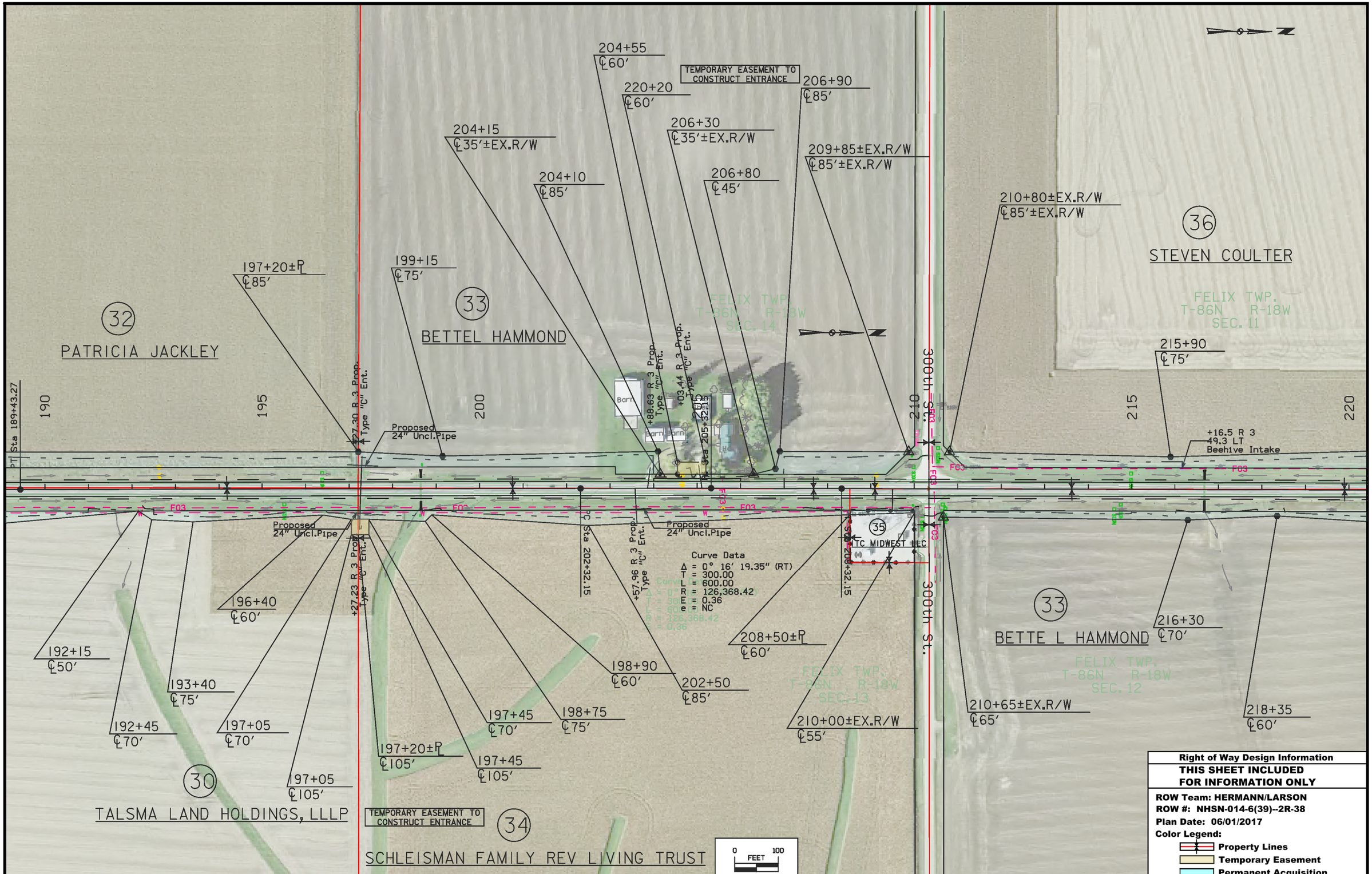
ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.9

11:13:08 AM 6/2/2017 jherma2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\ROW\64014077H01.sht



Right of Way Design Information

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ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:
- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.10

11:13:47 AM 6/2/2017 jherma2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\ROW\64014077H01.sht

36

220+60
℄90′

223+50±℄
℄85′

225+35
℄80′

37
KENT R ADAMS &
KAREN S ADAMS
KATHLEEN C BLAEMIRE

220

225

230

235

240

245

250

Old Poles (Lt)

153.55' R 3 Prop. Type "C" Ent.

Proposed 24" Uncl.Pipe

239+10
℄85′

37
KENT R ADAMS &
KAREN S ADAMS
KATHLEEN C BLAEMIRE

241+05
℄70′

245+70±℄
℄90′

249+10±℄
℄80′

27.23' R 3 Prop. Type "C" Ent.

59.31' R 3 Prop. Type "C" Ent.

39
JORDAN ROY
AALFS FAMILY TRUST

F03

33

220+85
℄75′

226+35
℄60′

228+65
℄75′

33
BETTE L HAMMOND

New Poles End (RT)

236+60±℄
℄60′

38
GRANNIS FAMILY TRUST

238+65
℄55′

239+65
℄65′

239+40
℄85′

246+55
℄80′

FELIX TWP.
T-86N R-18W
SEC. 12

0 FEET 100

Right of Way Design Information

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ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:

- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL \ GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.11

11:14:29 AM 6/2/2017 jherma2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\ROW\64014077H01.sht

42

LYMAR, INC

42

249+80
℄75′

253+00
℄80′

259+75
℄75′

260+95
℄55′

262+15±EX.R/W
℄60′±EX.R/W

263+55±EX.R/W
℄70′±EX.R/W

265+60
℄80′

274+90
℄70′

279+6
℄75′

37

KENT R ADAMS &
KAREN S ADAMS
KATHLEEN C BLAEMIRE

FELIX TWP.
T-86N R-18W
SEC. 11

FELIX TWP.
T-86N R-18W
SEC. 2

250 255 260 265 270 275 280

(UAC) (UAC)

+56.9 R 3
28.2 LT
Beehive Intake

38

GRANNIS FAMILY TRUST

251+85
℄70′

259+60
℄80′

262+35±EX.R/W
℄75′

(UAC)

263+45
℄75′±EX.R/W

267+85
℄75′

269+70
℄65′

273+40
℄75′

41

FELIX TWP.
T-86N R-18W
SEC. 12

FELIX TWP.
T-86N R-18W
SEC. 1

41

C&G HOG COMPANY, INC

0 FEET 100

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ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.12

11:15:45 AM 6/2/2017 jherma2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\ROW\64014077H01.sht

42
LYMAR, INC

44
LARRY DON HUGHES

45
ALAN M. HUGHES

43
DONNA MINCKS

41
C&G HOG COMPANY, INC

279+60 ℄75′
279+80 ℄55′
283+80 ℄60′
283+95 ℄70′
289+20±℄ ℄85′
291+10 ℄85′
291+20 ℄70′
293+85 ℄65′
294+00 ℄80′
301+05 ℄65′
302+35±℄ ℄70′
305+80 ℄80′
309+50 ℄70′
284+15 ℄60′
289+20±℄ ℄75′

280
285
290
295
300
305
310

+23.1 R 3
29.4 LT
Beehive Intake

+68.26 R 3 Prop. "C" Ent.

Barn

Ho.

Proposed
24" Uncl.Pipe

(REMOVE)

PT Sta 297+84.47

+98.3 R 3
33.5 LT
Beehive Intake

PC Sta 294+84.47

+98.9 R 3
40.0 RT
Beehive Intake

Curve Data
Δ = 0° 12′ 34.12″ (RT)
T = 300.00
L = 600.00
R = 164,110.35
E = 0.27
e = NC

PT Sta 300+84.47

FELIX TWP.
T-86N R-18W
SEC. 1

0 100
FEET

Right of Way Design Information
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ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
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Property Lines
Temporary Easement
Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.13

11:16:26 AM 6/2/2017 jherma2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\ROW\64014077H01.sht

45

47
DORES J ROSS &
MARLYS E ROSS (TRUSTEES)

48
HOMER H ROSS &
DELORES N ROSS

311+85
℄80'

314+80±EX.R/W
℄50'±EX.R/W

315+45±EX.R/W
℄75'

317+15
℄70'

328+25±P
℄65'

323+95
℄90'

329+55
℄90'

330+00
℄70'

331+05
℄80'

333+05
℄70'

335+10
℄60'

337+85
℄75'

340+00
℄65'

(UAC)

(UAC)

310

315

320

325

330

335

340

FELIX TWP.
T-87N R-18W
SEC. 35

Proposed
24" Uncl.Pipe

+01.87 R 3 Prop.
Type "C" Ent.

Barn
Shed
Barn
Gate
Barn
Shed

(REMOVE)

Sta 340+28.22

Proposed
24" Uncl.Pipe

+52.51 R 3 Prop.
Type "C" Ent.

(REMOVE)

Proposed
24" Uncl.Pipe

+19.12 R 3 Prop.
Type "C" Ent.

314+80±EX.R/W
℄70'

43

315+45±EX.R/W
℄70'

323+50
℄85'

327+90
℄90'

329+20
℄65'

328+40
℄90'

FELIX TWP.
T-87N R-18W
SEC. 36

46
STEVEN E SIMMS &
CYNTHIA K SIMMS

TEMPORARY EASEMENT TO
CONSTRUCT ENTRANCE

332+60
℄75'

46
STEVEN E SIMMS &
CYNTHIA K SIMMS

0 100
FEET

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Plan Date: 06/01/2017
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- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.14

1:59:26 PM 6/2/2017 jherma2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\ROW\64014077H01.sht

48

50
JANE SLIFER GALLENTINE

344+10
℄85′

341+90
℄70′

347+20
℄75′

351+10
℄75′

352+30
℄80′

356+70
℄65′

357+70
℄55′

358+00
℄65′

359+95
℄75′

355+75
℄60′

362+60
℄70′

365+70
℄80′

367+05±EX.R/W
℄70′

368+45±EX.R/W
℄55′±EX.R/W

369+25
℄55′

369+35
℄70′

52

(UAC)

Curve Data
Δ = 0° 14′ 34.40″ (LT)
T = 300.00
L = 600.00
R = 141,535.08
E = 0.32
e = NC

Sta 340+28.22

340

345

350

355

360

365

370

52.51 R 3 Prop. Type "C" Ent.

46.20 R 3 Prop. Type "C" Ent.

Proposed 24″ Uncl.Pipe

+29.7 R 3
73.0 LT
Beehive Intake

41.54 R 3 Prop. Type "C" Ent.

Sta 364+66.54

Sta 367+66.54

Curve Data
Δ = 0° 14′ 34.40″ (LT)
T = 300.00
L = 600.00
R = 141,535.08
E = 0.32

Proposed 24″ Uncl.Pipe

82.56 R 3 Prop. Type "C" Ent.

(REMOVE)

46

341+40±R
℄80′

49
PISNEY FARMS, LLC

FELIX TWP.
T-87N R-18W
SEC. 36

356+75
℄70′

359+95
℄90′

367+35±EX.R/W
℄75′

49
PISNEY FARMS, LLC

368+50
℄65′

367+35±EX.R/W
℄70′

51

0 FEET 100

Right of Way Design Information
THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.15

11:17:47 AM 6/2/2017 jherma2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\ROW\64014077H01.sht

52

EX.R/W
R/W

25

+35

52
ROGER A DAVIDSON &
SHARON SUE DAVIDSON

377+00
℄65′

379+40
℄75′

380+65±P
℄80′

381+05
℄85′

382+65±P
℄85′

386+65
℄130′

TEMPORARY EASEMENT FOR
SNOW BORROW

55
DAVID R HOMMEL

393+95±P
℄130′

393+95±P
℄80′

397+85
℄70′

370+60
℄80′

371+60
℄85′

FELIX TWP.
T-87N R-18W
SEC. 26

53
JACOB T PELHAM &
ANGELA M PELHAM

370+90
℄105′

370

375

380

385

390

395

400

Sta 370+66.54

F03

Proposed
24" Uncl.Pipe

+80.34 R 36 Prop.
Type "C" Ent.

(REMOVE)

52
ROGER A DAVIDSON &
SHARON SUE DAVIDSON

(REMOVE)

+79.92 R 3 Prop.
Type "C" Ent.

Proposed
24" Uncl.Pipe

396+40
℄60′

398+90
℄85′

51
TRUSTEE OF VANHEUKELOM REVOCABLE TRUST

370+45
℄110′

51
TRUSTEE OF VANHEUKELOM REVOCABLE TRUST

393+95±P
℄75′

54
DOUGLAS R HESS

68+50
65′

X.R/W

FELIX TWP.
T-87N R-18W
SEC. 25

379+65
℄65′

378+80
℄110′

0 FEET 100

Right of Way Design Information

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ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:
- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.16

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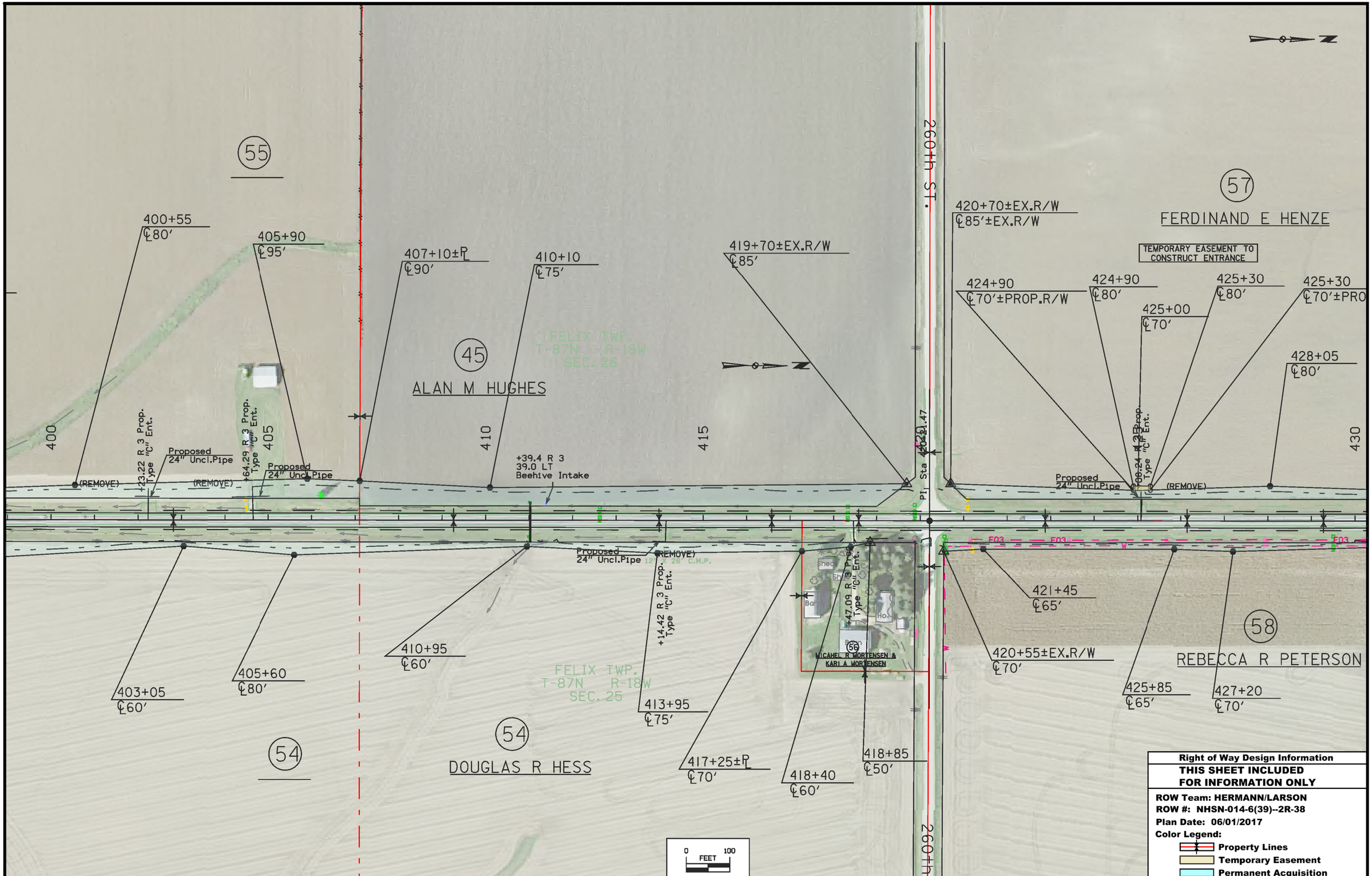

Right of Way Design Information

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ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.17

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NZE

57

425+30
℄70'±PROP.R/W

431+10
℄70'

8+05
0'

THEONE ANDREESSEN

59

433+35±P
℄75'

434+45
℄80'

440+35
℄80'

443+50
℄70'

446+45±P
℄75'

FELIX TWP.
T-87N R-18W
SEC. 23

Sect. No. 13

61

CUSON PROPERTIES PARTNERSHIP

Entrance should be marked as JT

452+75
℄70'±PROP.R/W

452+75
℄85'

453+00±P
℄85'

TEMPORARY EASEMENT TO CONSTRUCT ENTRANCE

453+00±P
℄70'±EX.R/W

63

CARLA S DRAPER &
DUANE P DRAPER

453+40
℄70'±PROP.R/W

453+40
℄85'

455+50
℄65'

458+10
℄75'

458+40
℄55'

430

435

440

445

450

455

460

+41.2 R 3
38.2 LT
Beehive Intake

+78.59 R 3 Prop. Type "C" Ent.

+20.8 R 3
37.8 LT
Beehive Intake

+99.02 R 3 Prop. Type "C" Ent.

Proposed
24" Uncl.Pipe

(REMOVE)

(REMOVE)

Proposed
24" Uncl.Pipe

F03

W

+65.1 R 3
43.1 RT
Beehive Intake

(REMOVE)

+10.46 R 3 Prop. Type "C" Ent.

Proposed
24" Uncl.Pipe

+96.5 R 3
40.3 RT
Beehive Intake

Proposed
24" Uncl.Pipe

+21.19 R 3 Prop.

58

60

JUDITH HESS

62

MARY ASCHER

TERSON

430+55
℄60'

437+10
℄75'

441+35
℄70'

442+70
℄60'

445+05
℄70'

446+45±P
℄65'

453+05
℄75'

459+60±P
℄65'

FELIX TWP.
T-87N R-18W
SEC. 24

Sect. No. 24

Need Property line here

0 100
FEET

Right of Way Design Information

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ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:

- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.18

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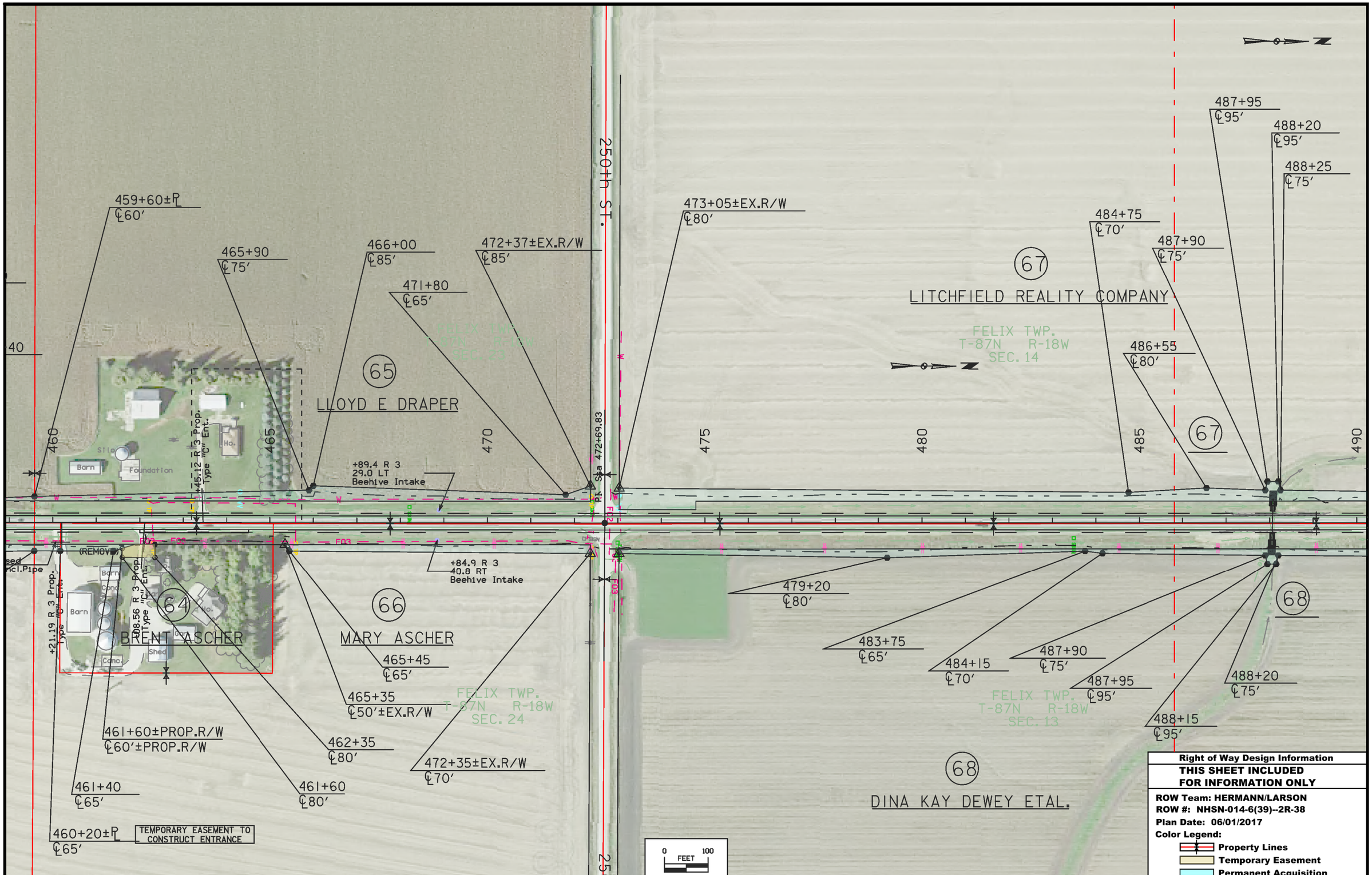

Right of Way Design Information

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ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.19

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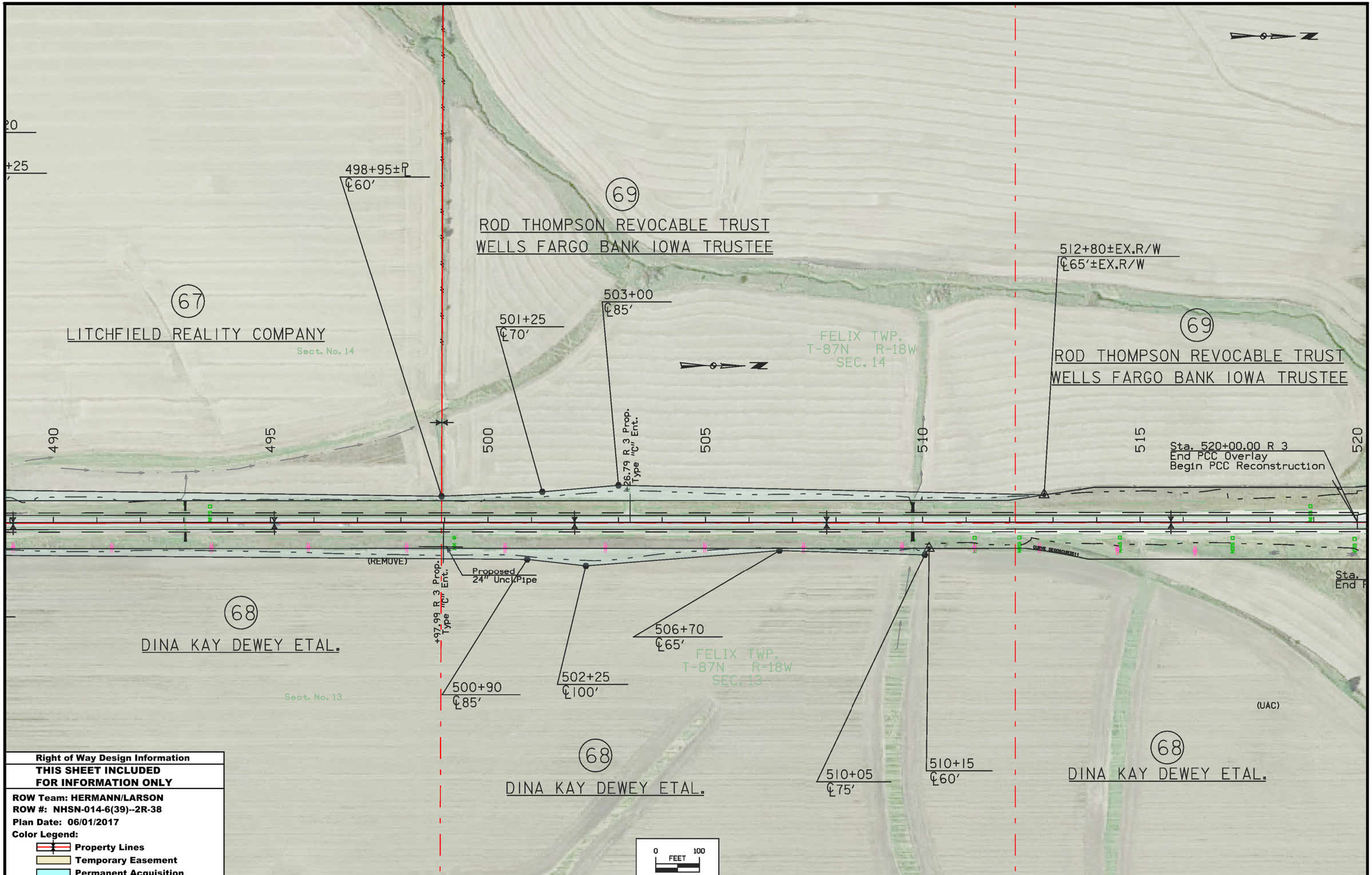

Right of Way Design Information
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ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.20

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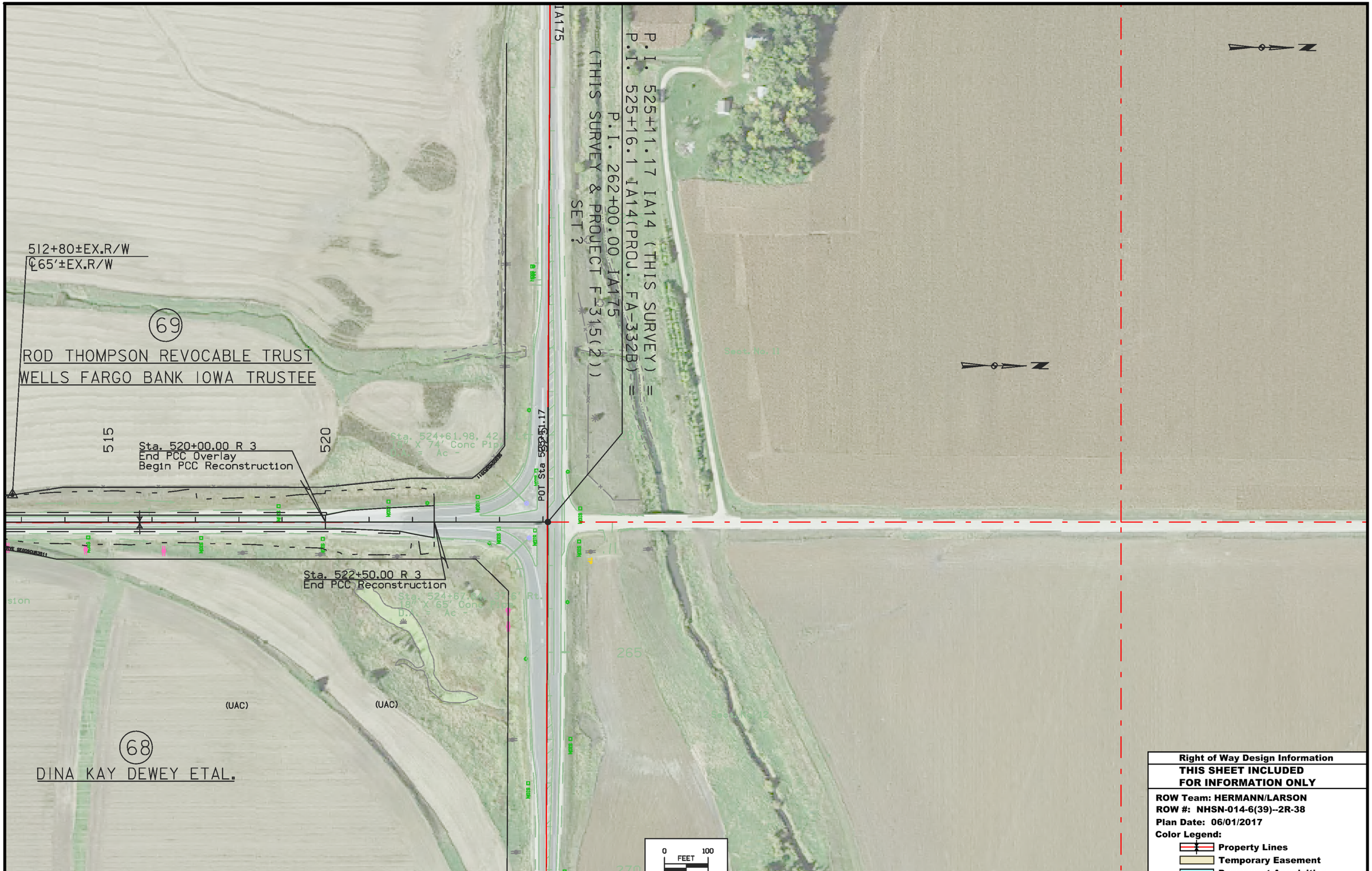

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: HERMANN/LARSON
ROW #: NHSN-014-6(39)--2R-38
Plan Date: 06/01/2017
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER H.21

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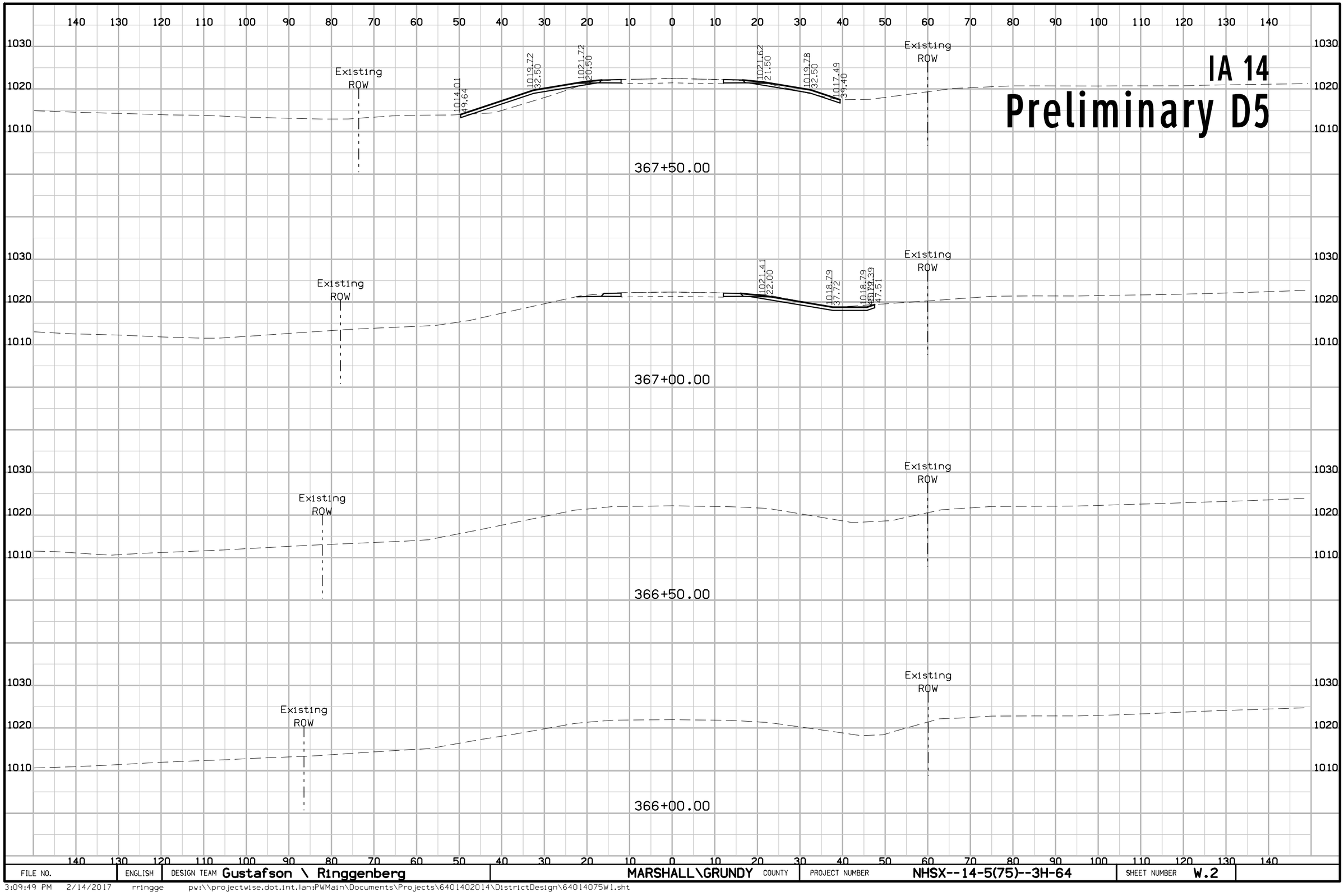
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.2

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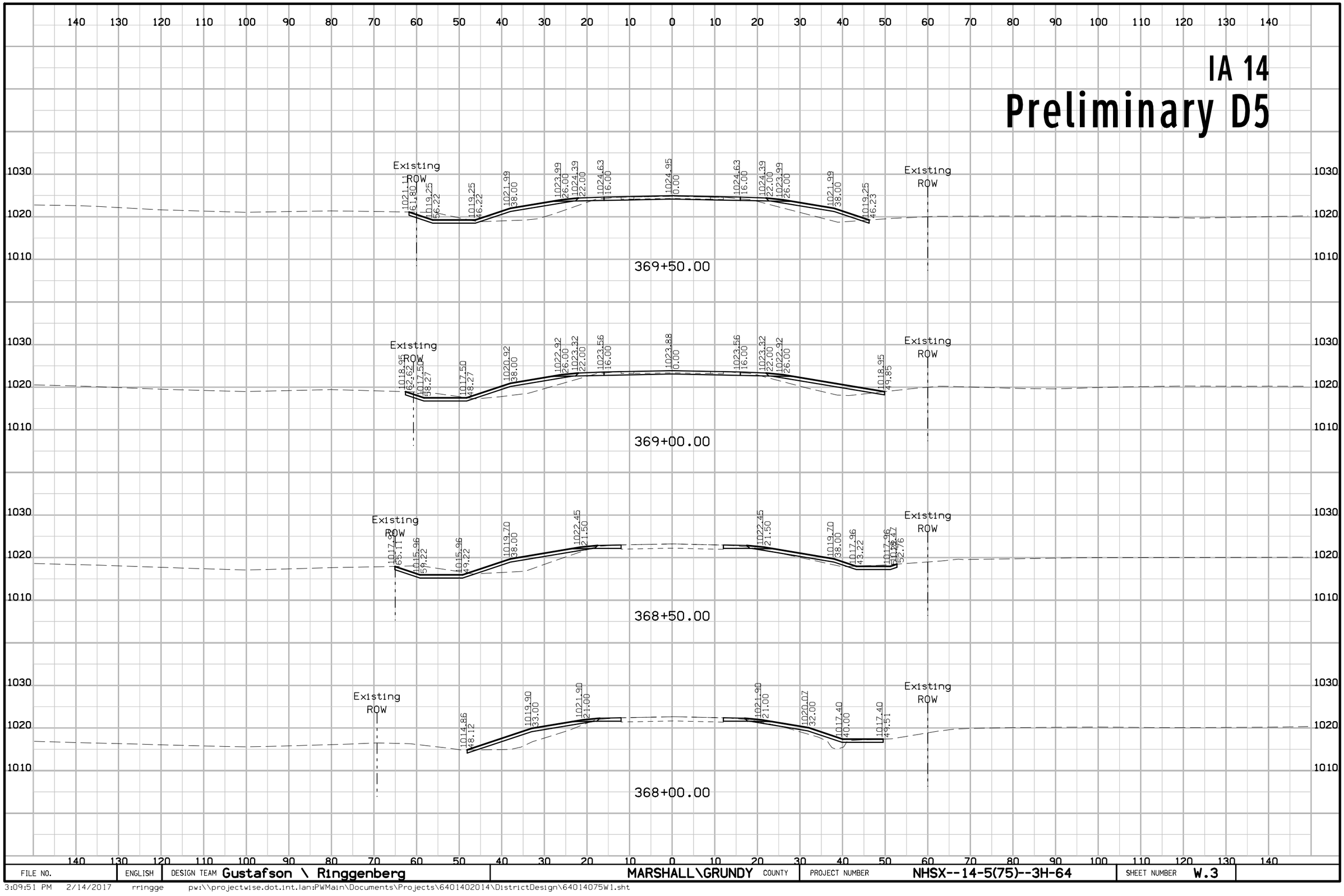
IA 14
Preliminary D5



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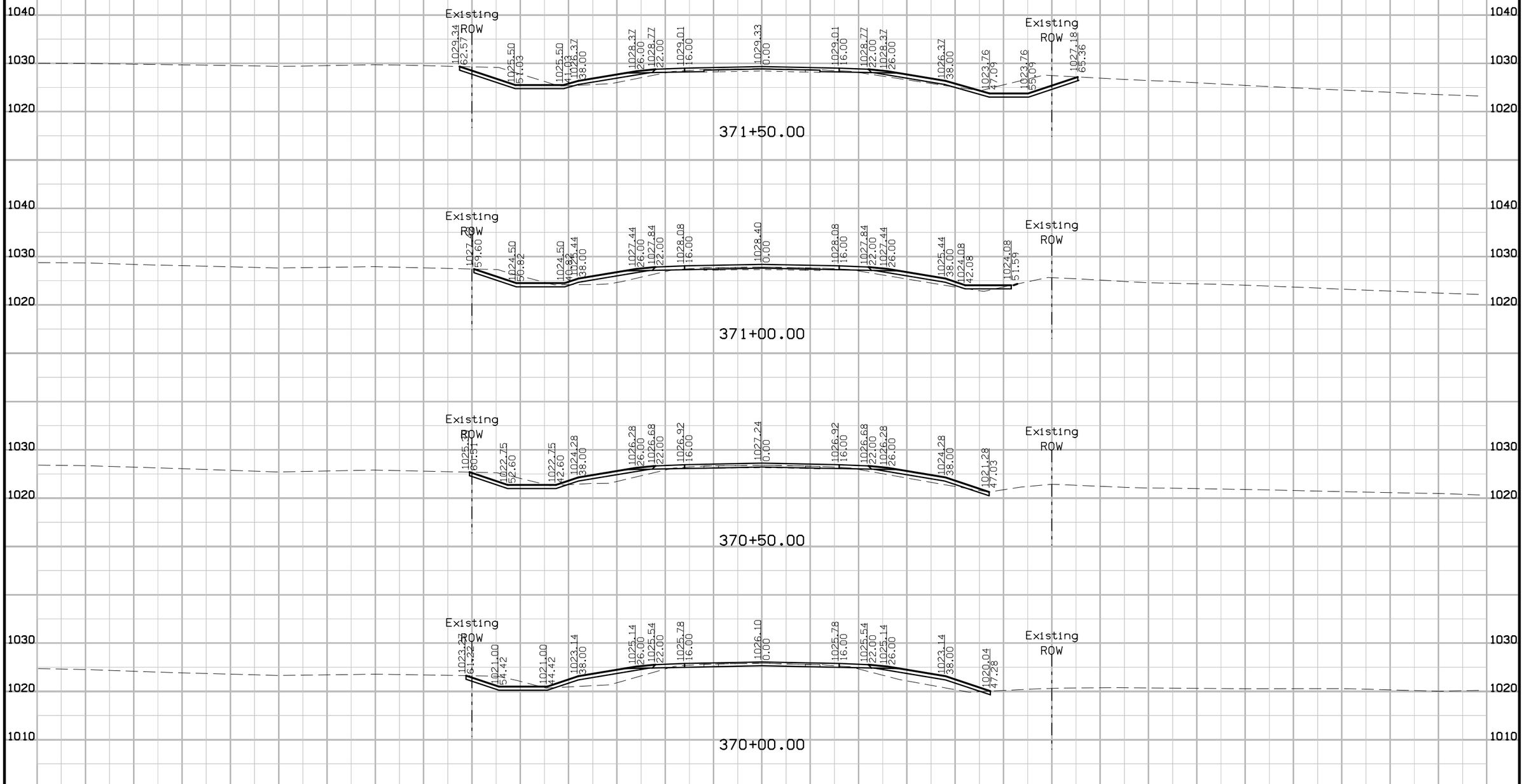
IA 14
Preliminary D5



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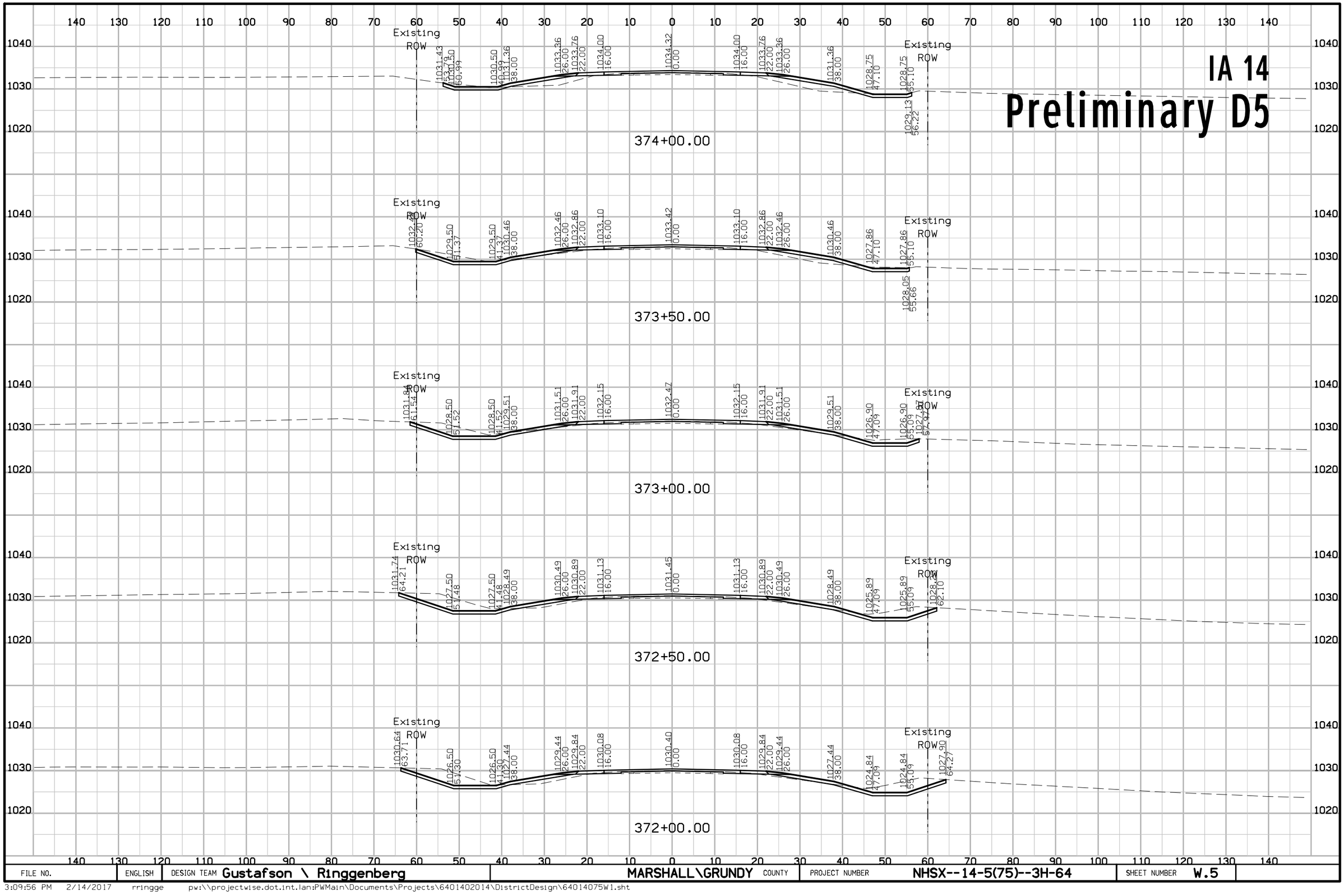
IA 14
Preliminary D5



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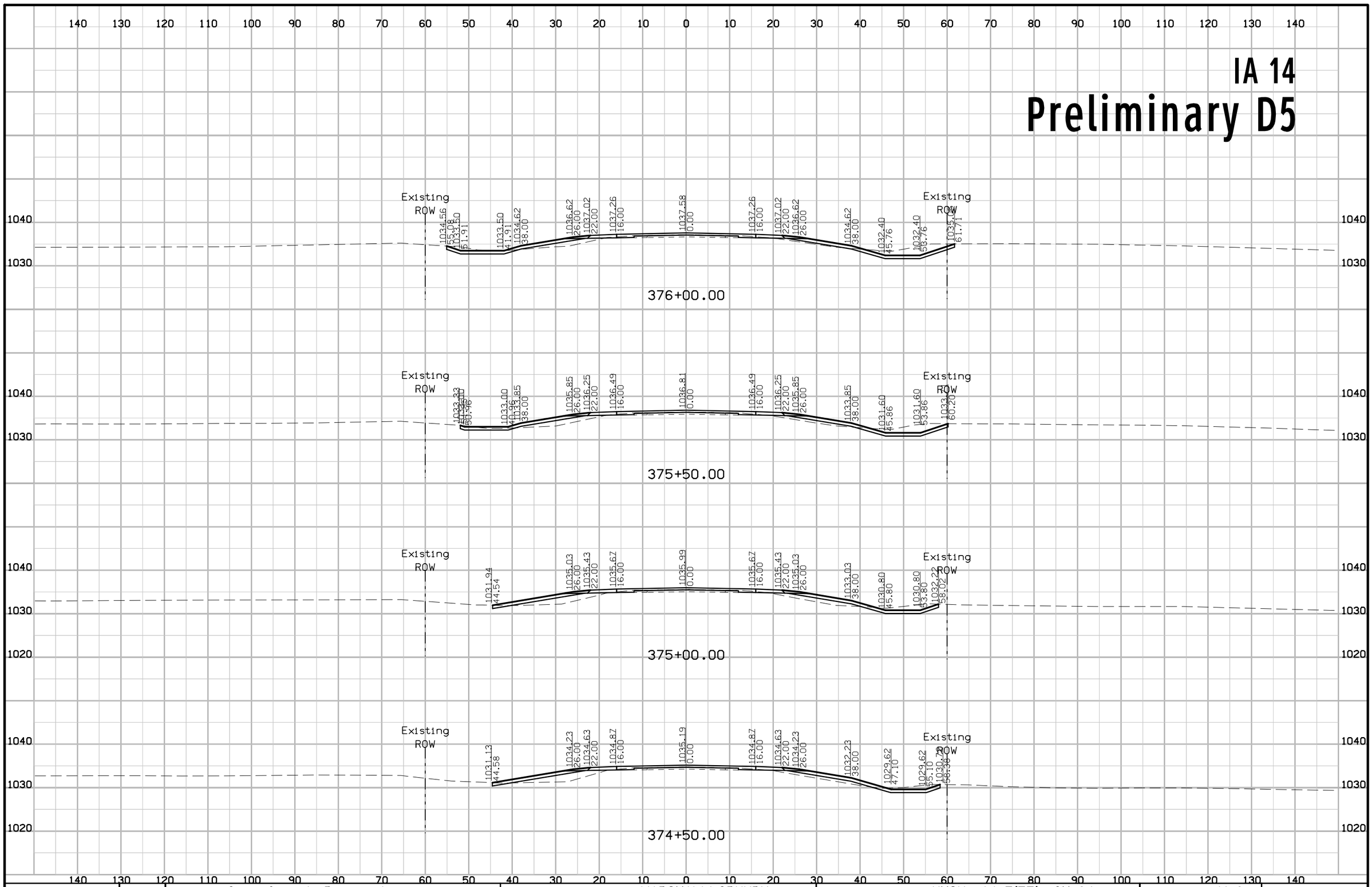
IA 14
Preliminary D5



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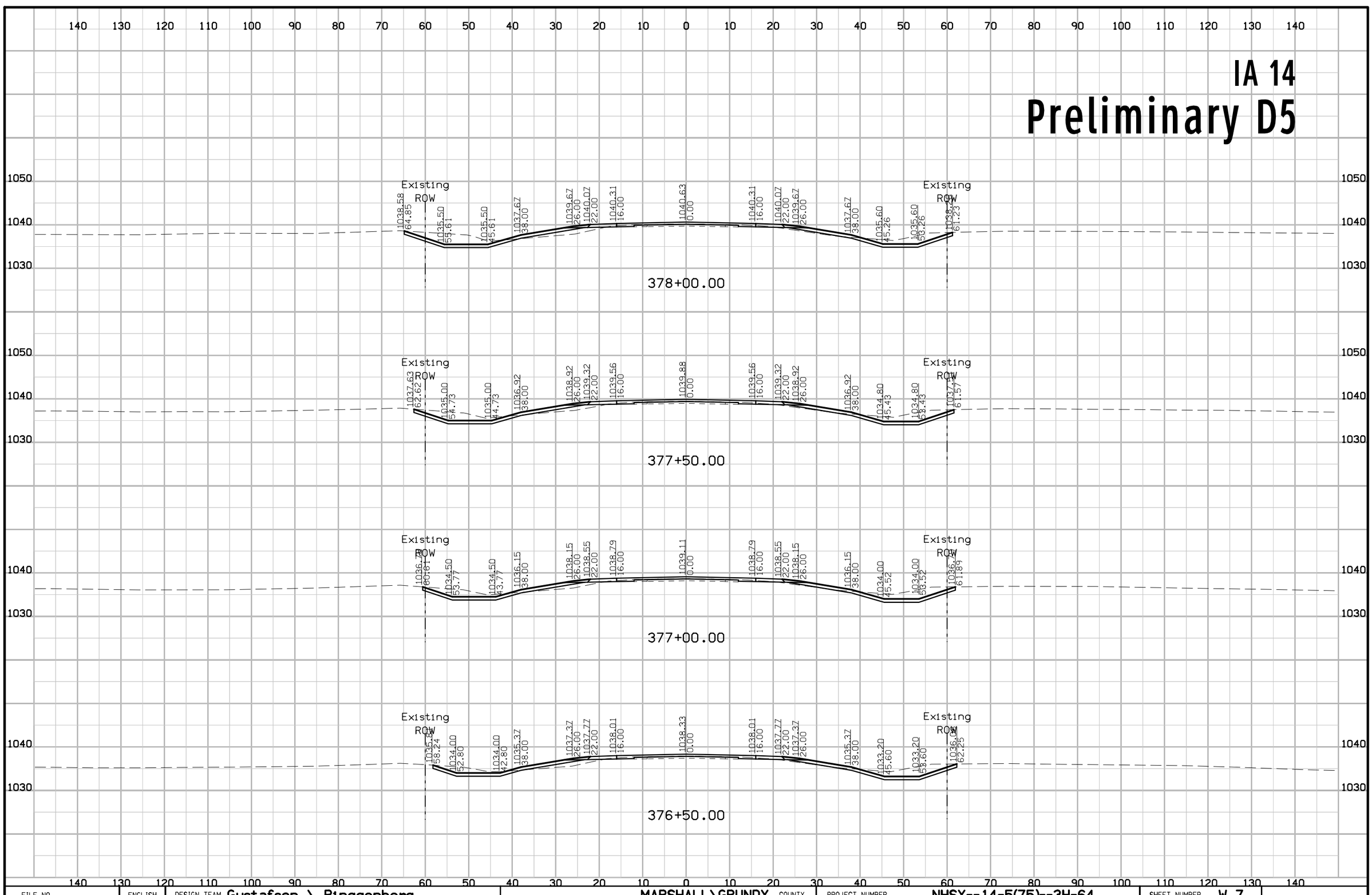
IA 14
Preliminary D5



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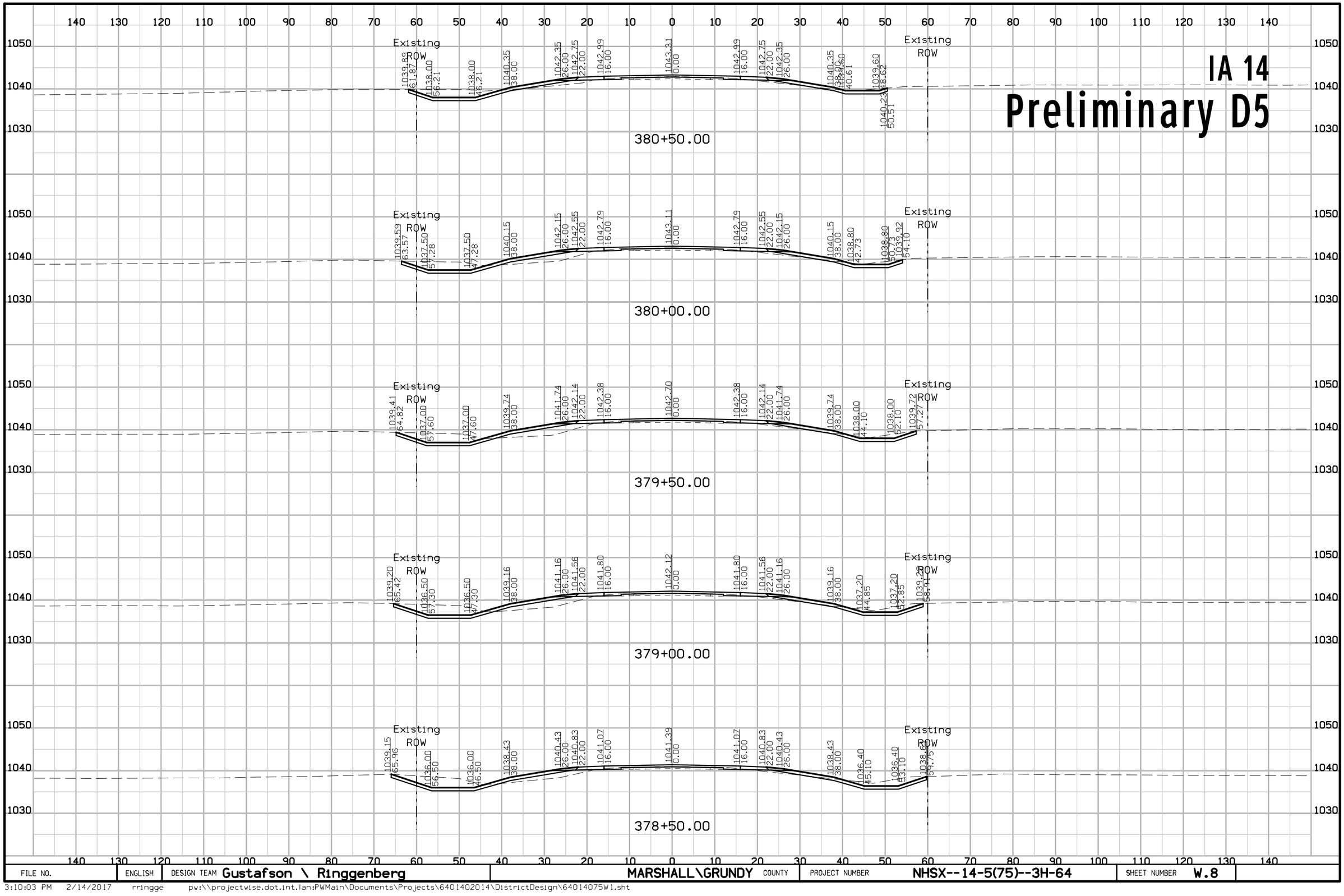
IA 14
Preliminary D5



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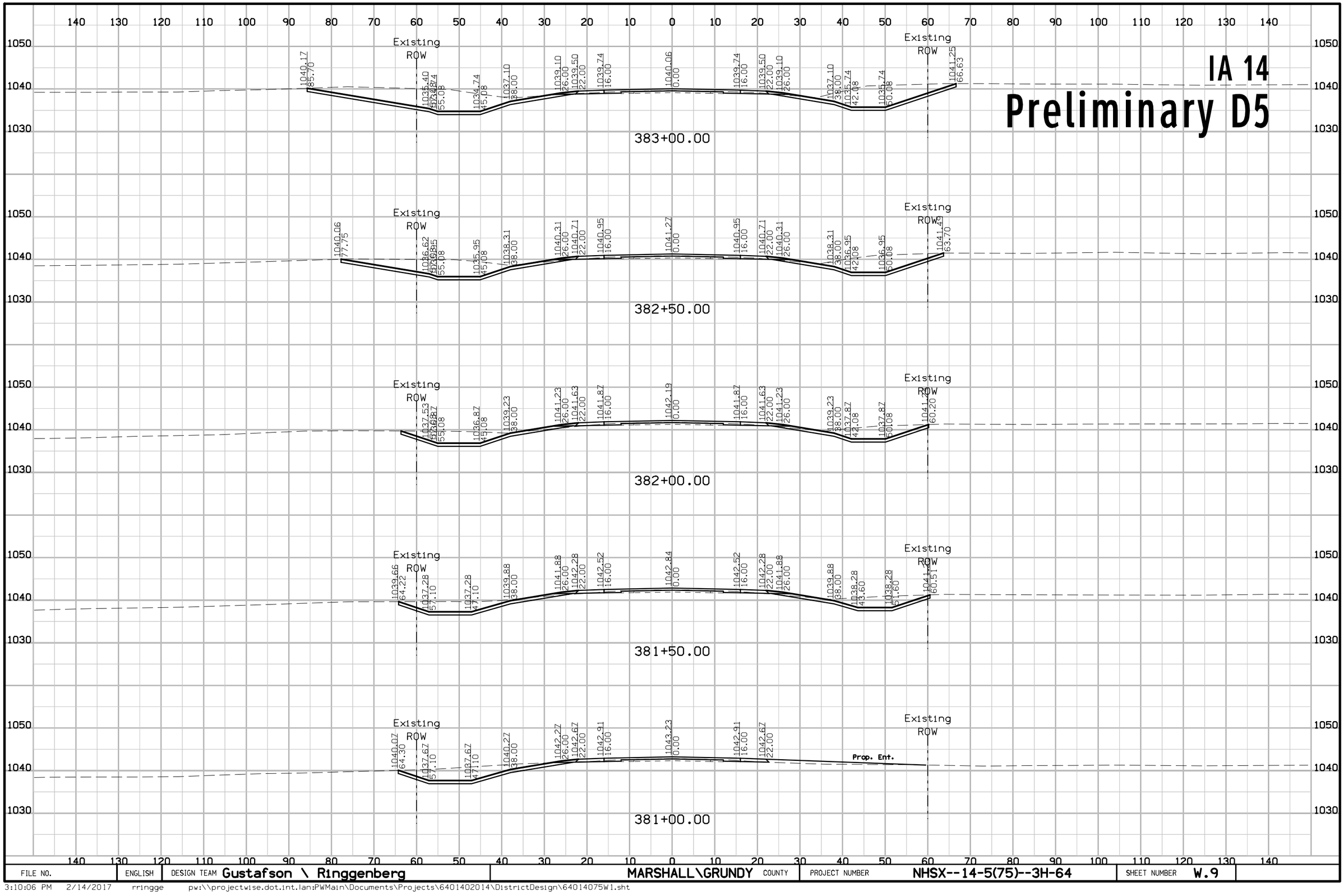
IA 14
Preliminary D5



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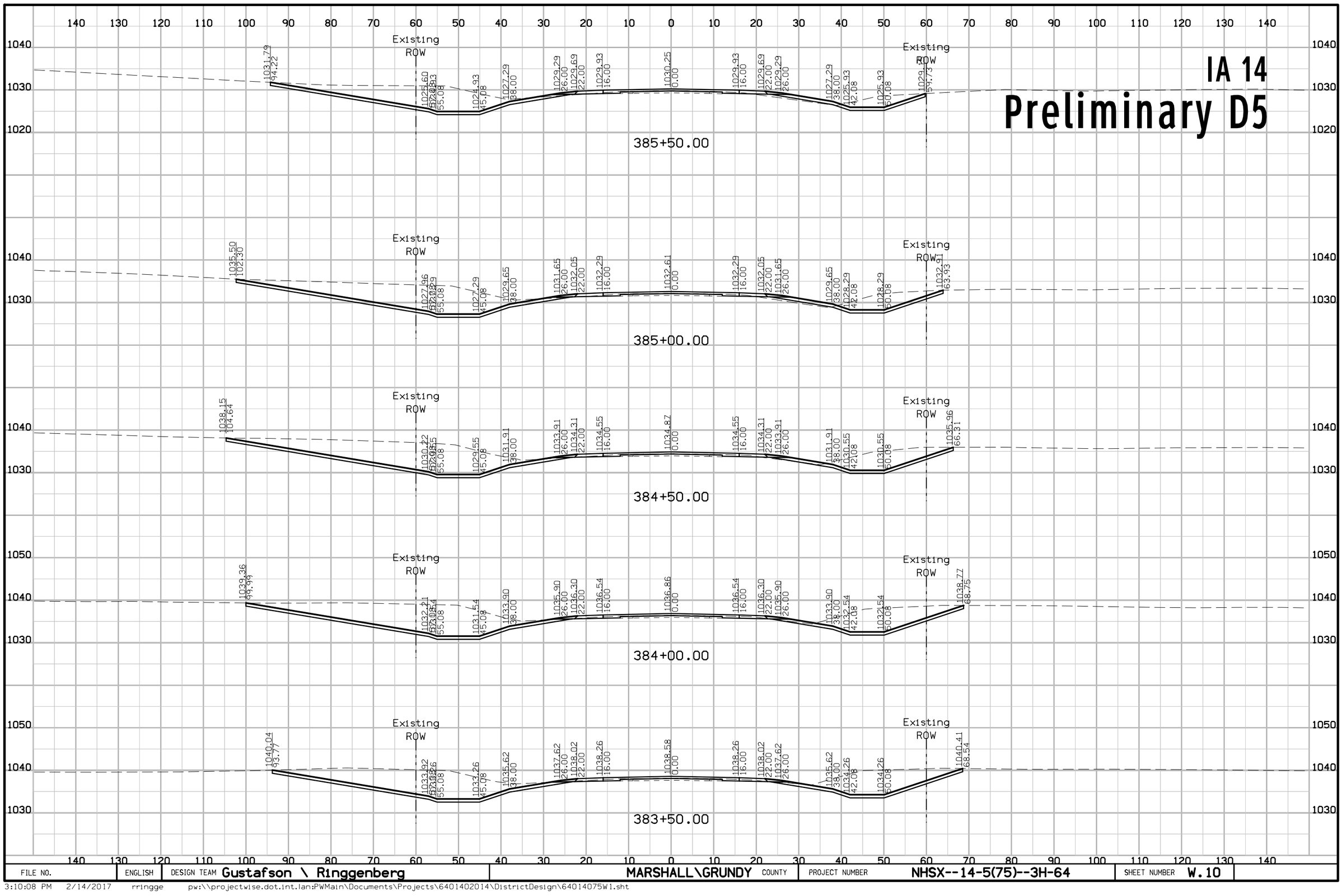
IA 14
Preliminary D5



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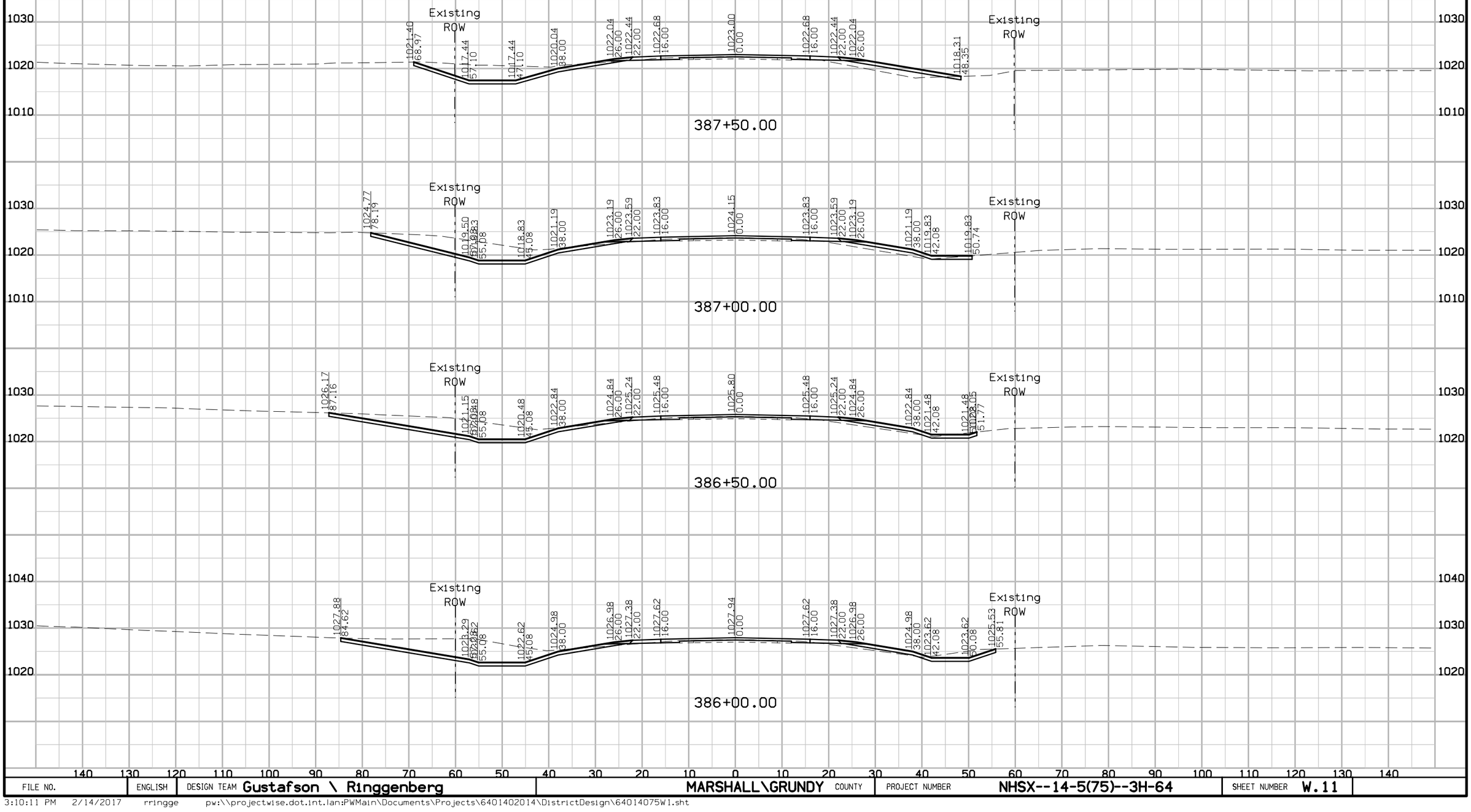
IA 14
Preliminary D5



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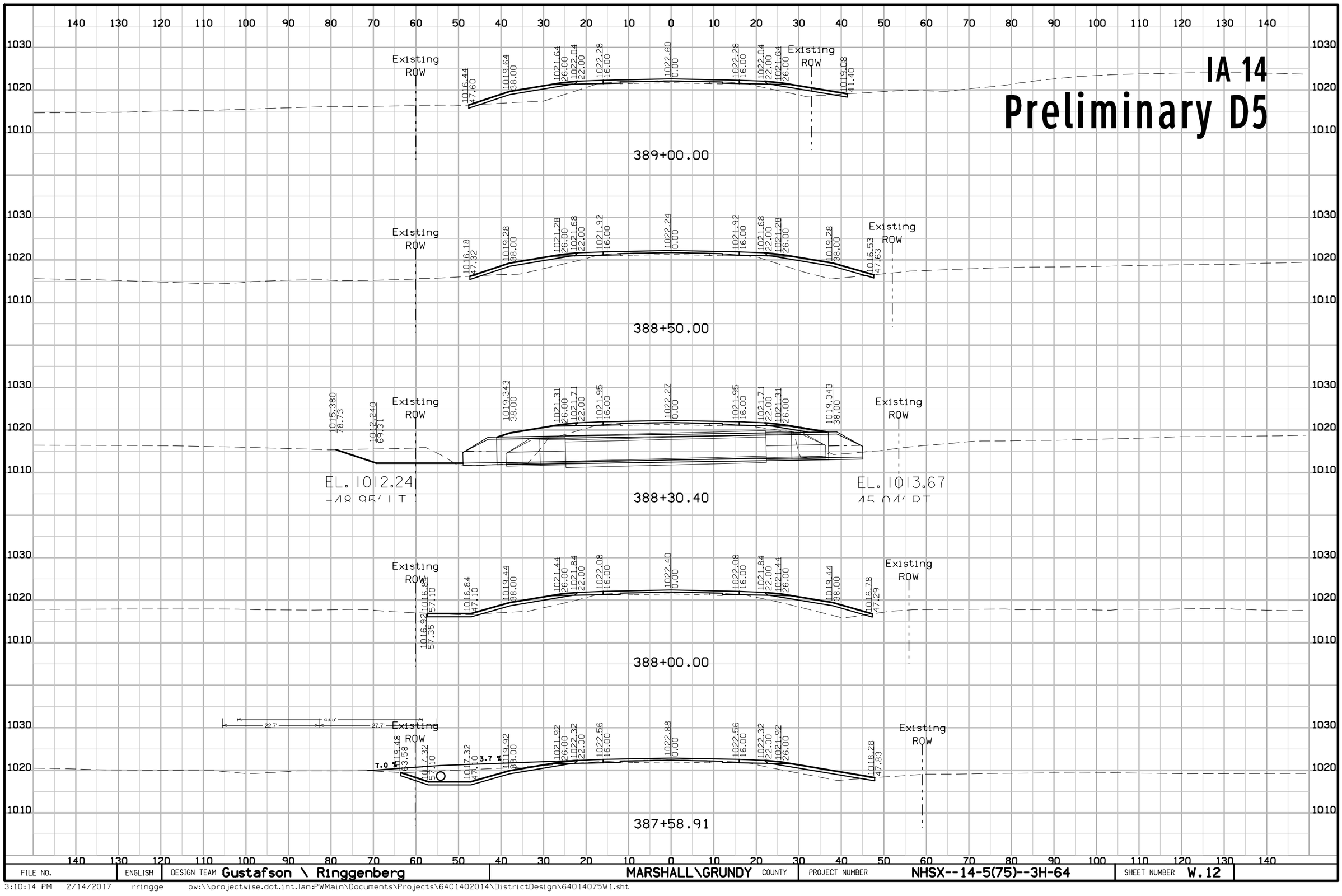
IA 14
Preliminary D5



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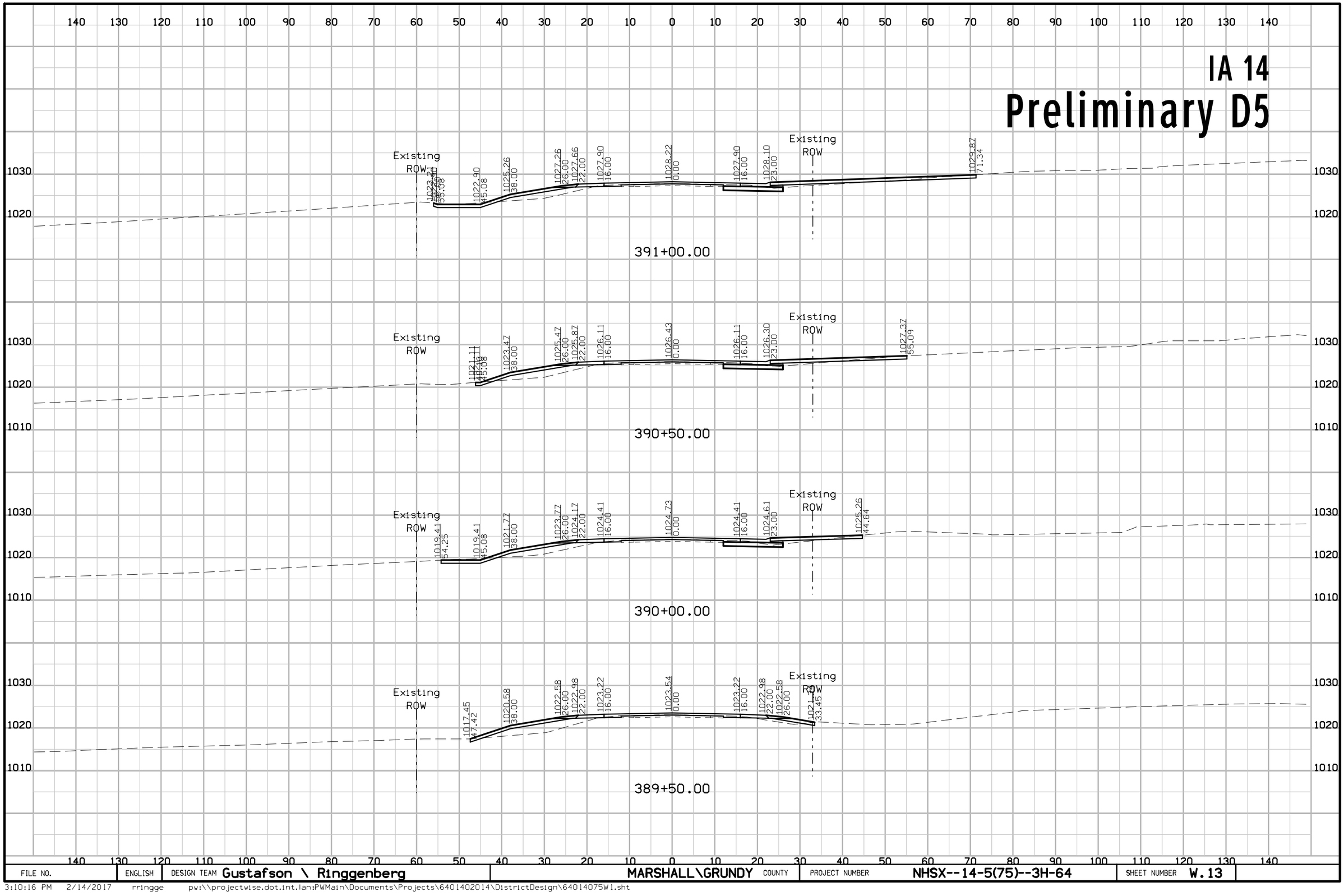
IA 14
Preliminary D5



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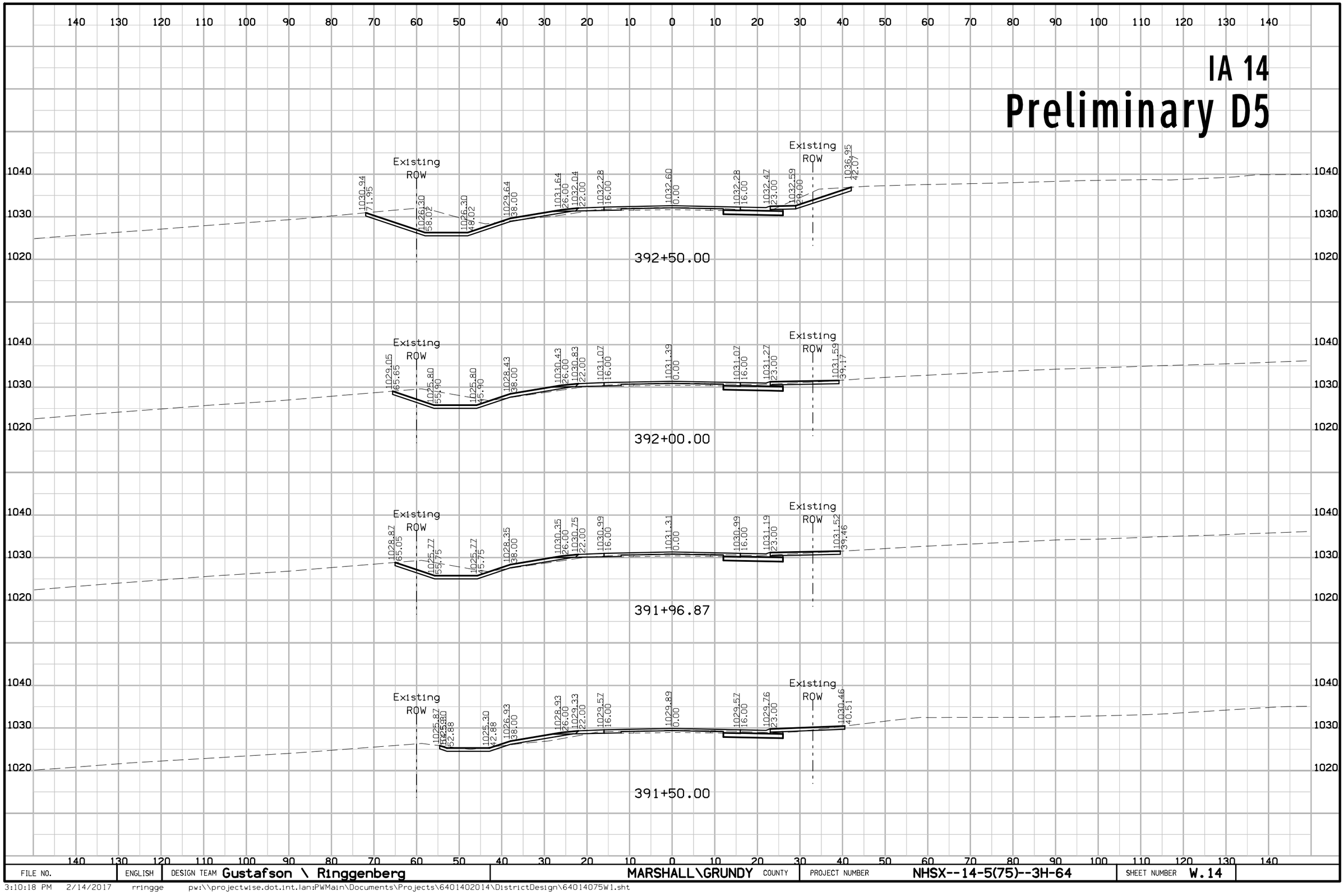
IA 14
Preliminary D5



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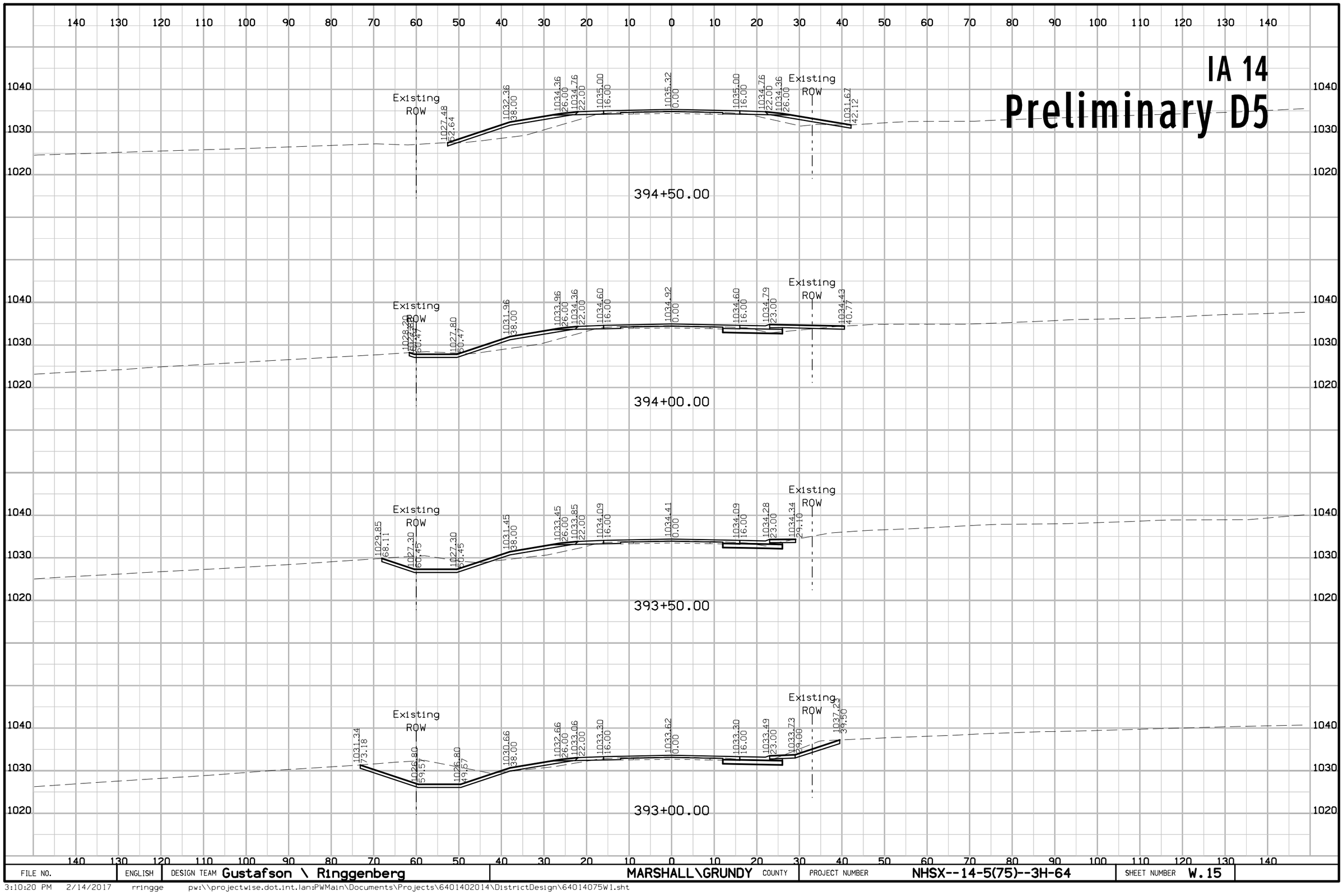
IA 14
Preliminary D5



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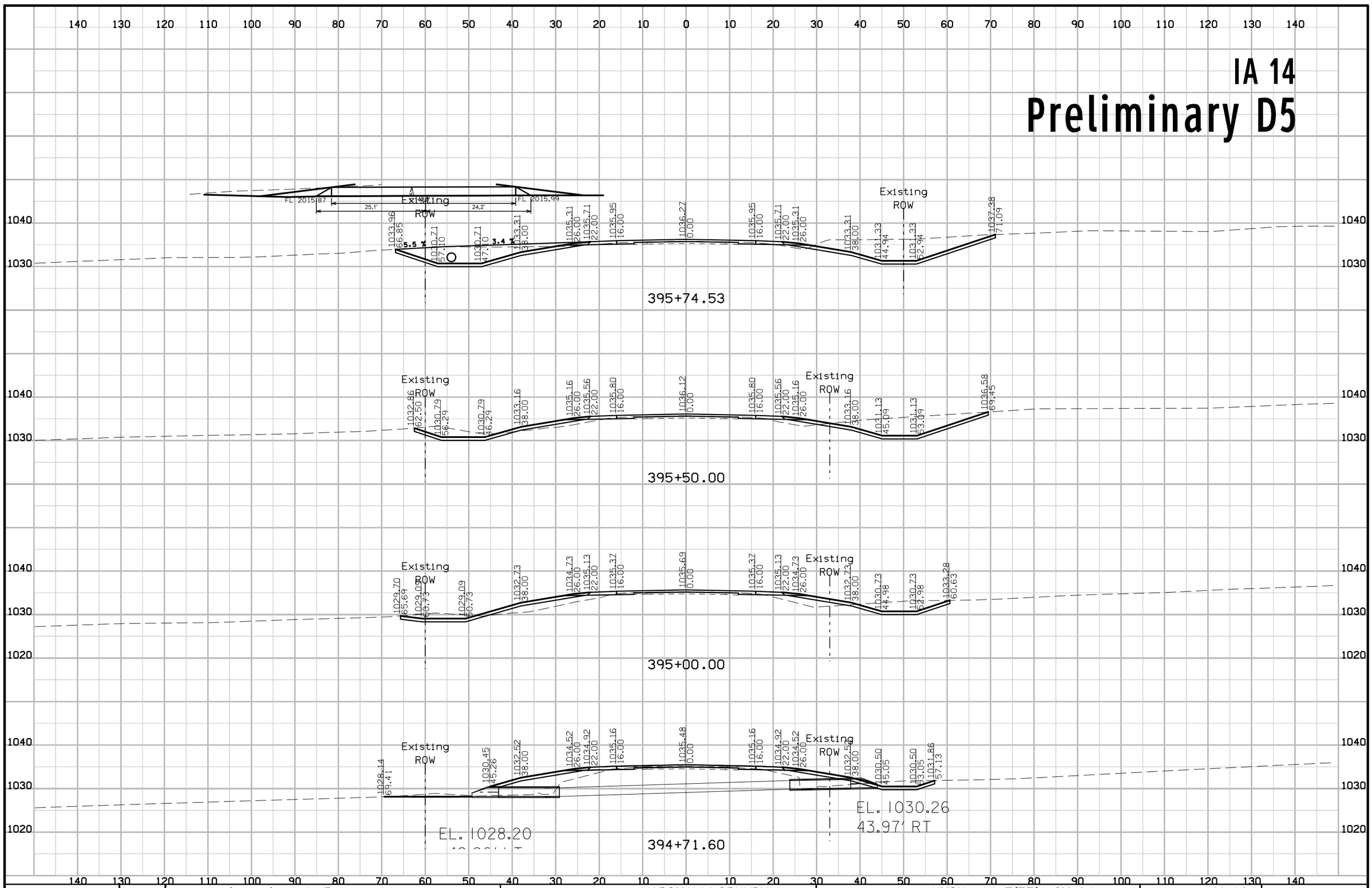
IA 14
Preliminary D5



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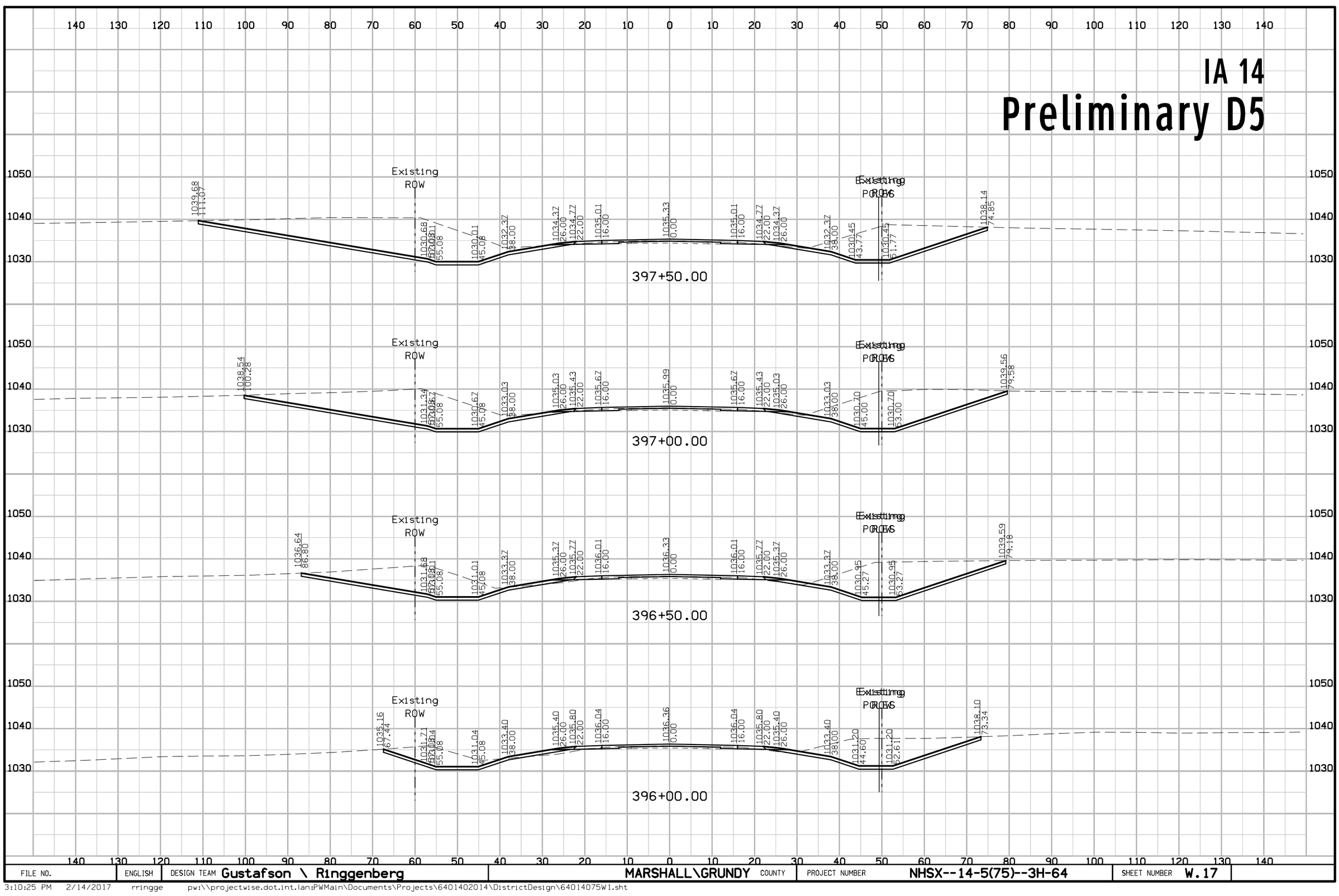
IA 14
Preliminary D5



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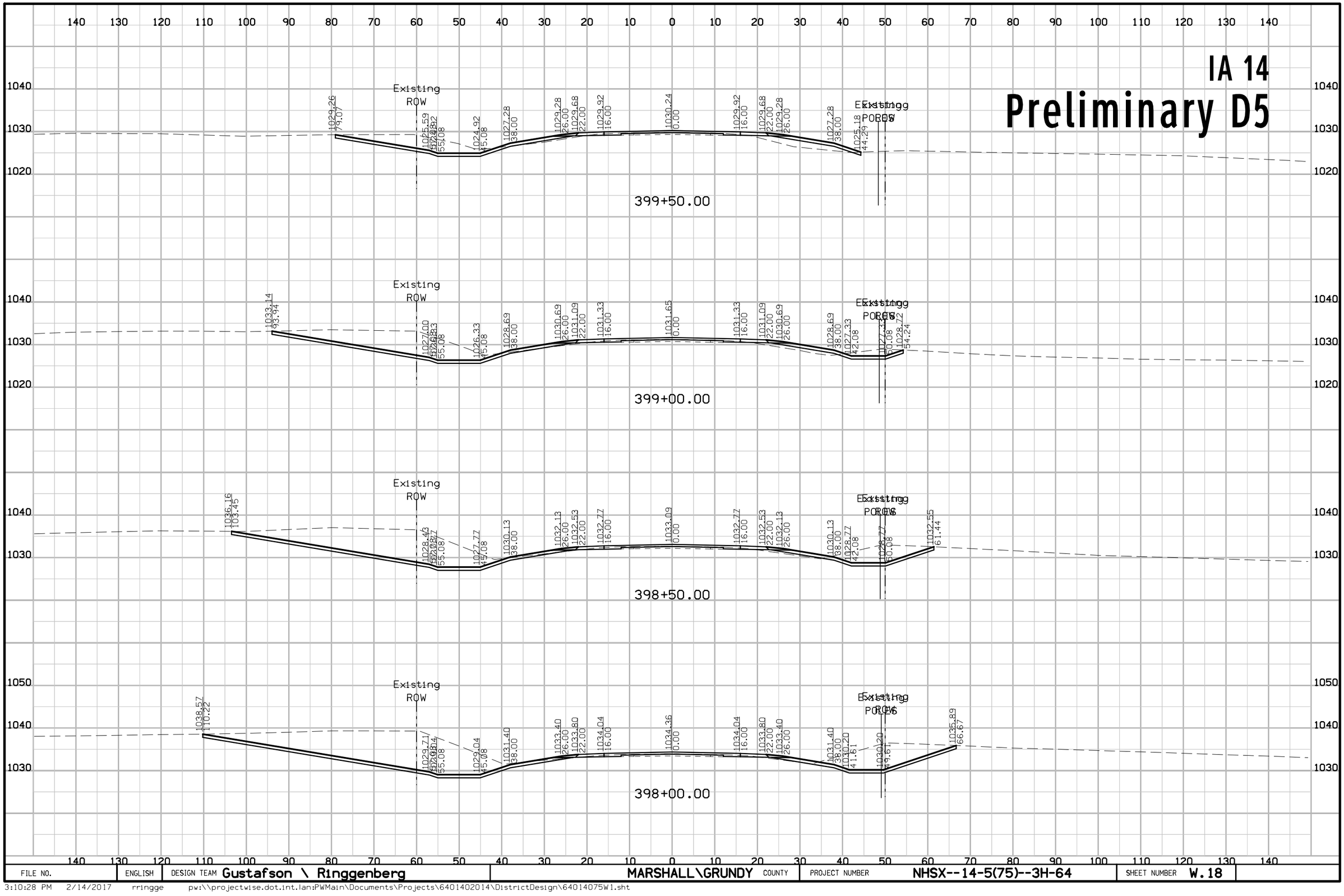
IA 14
Preliminary D5



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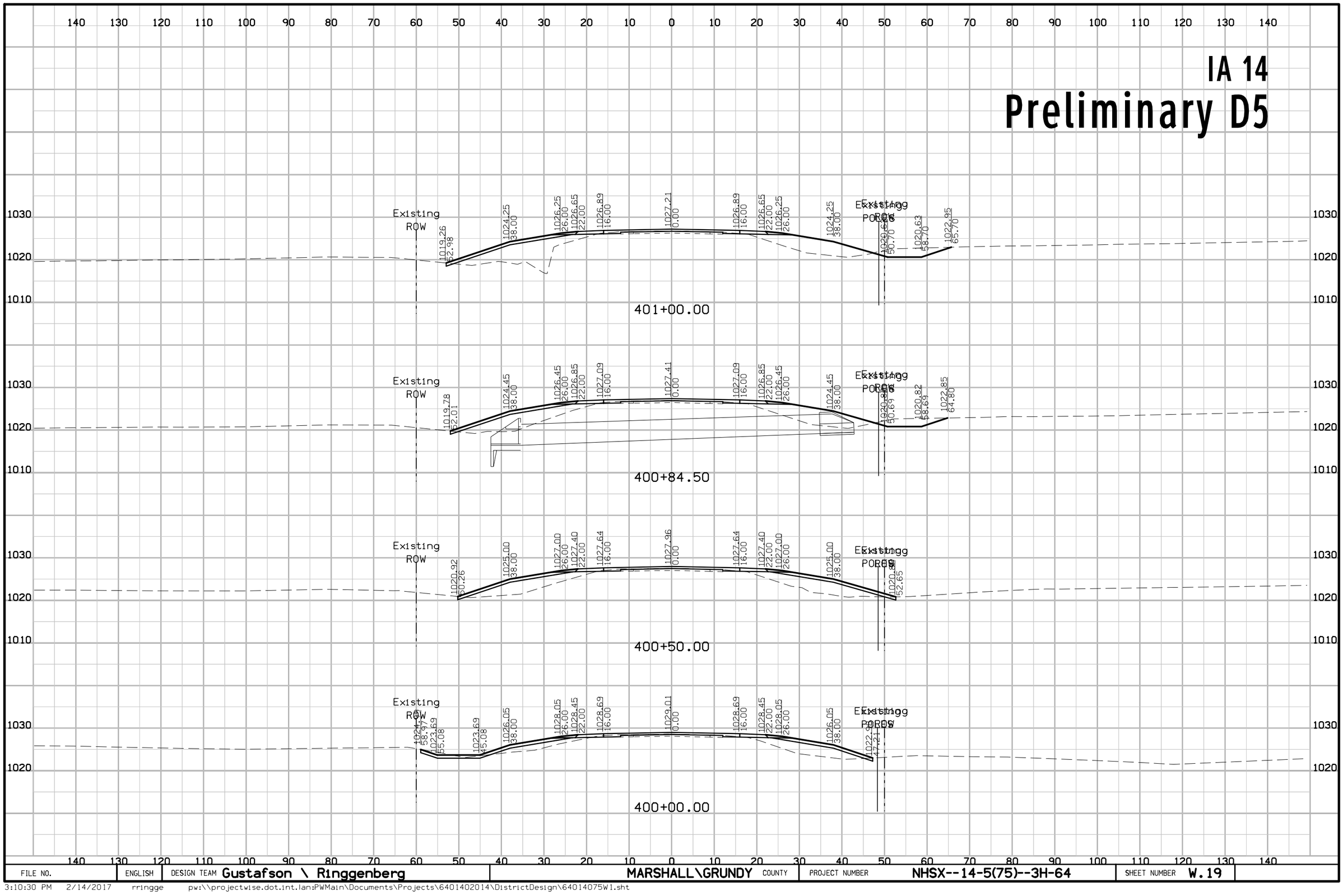
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.19

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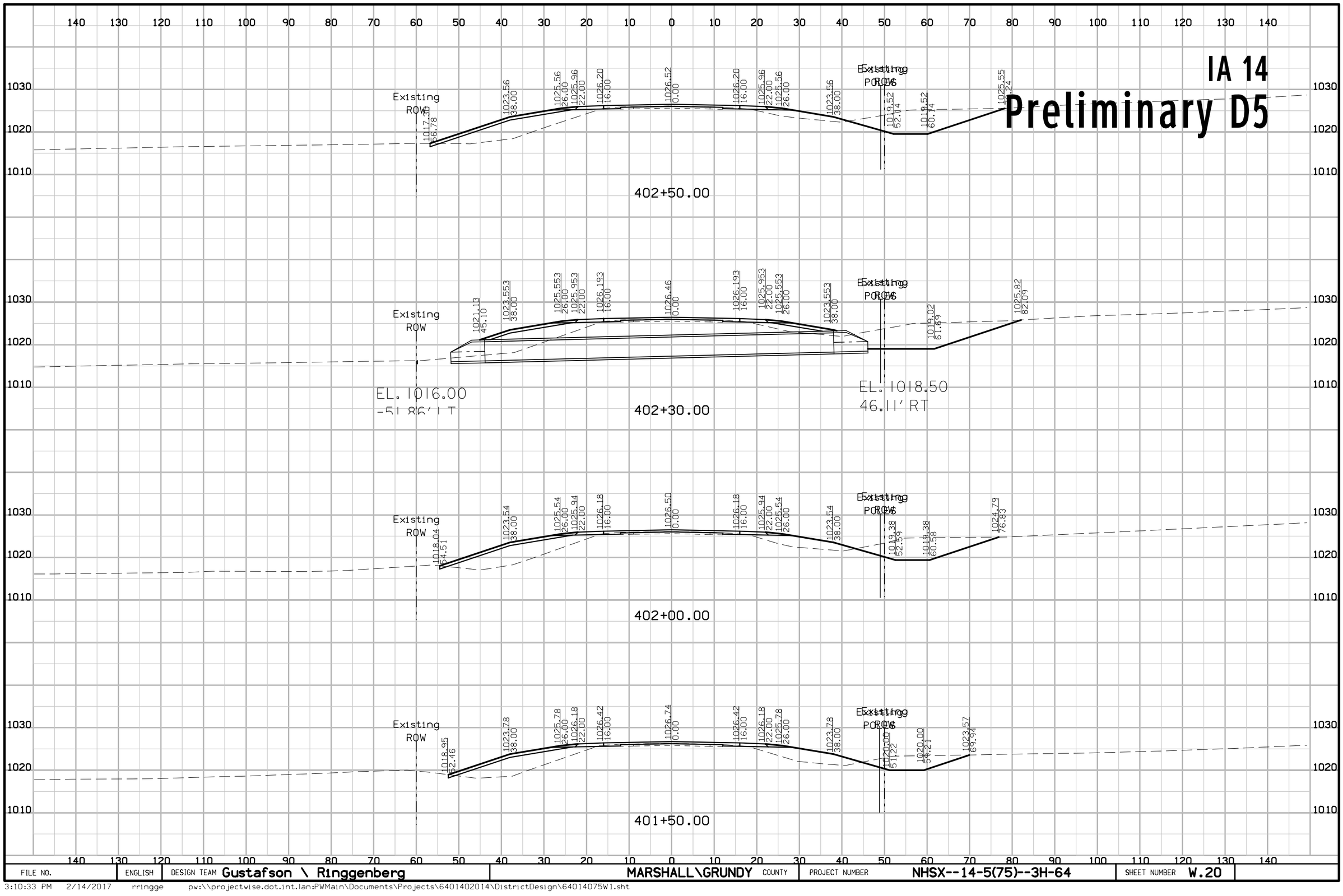
IA 14

Preliminary D5



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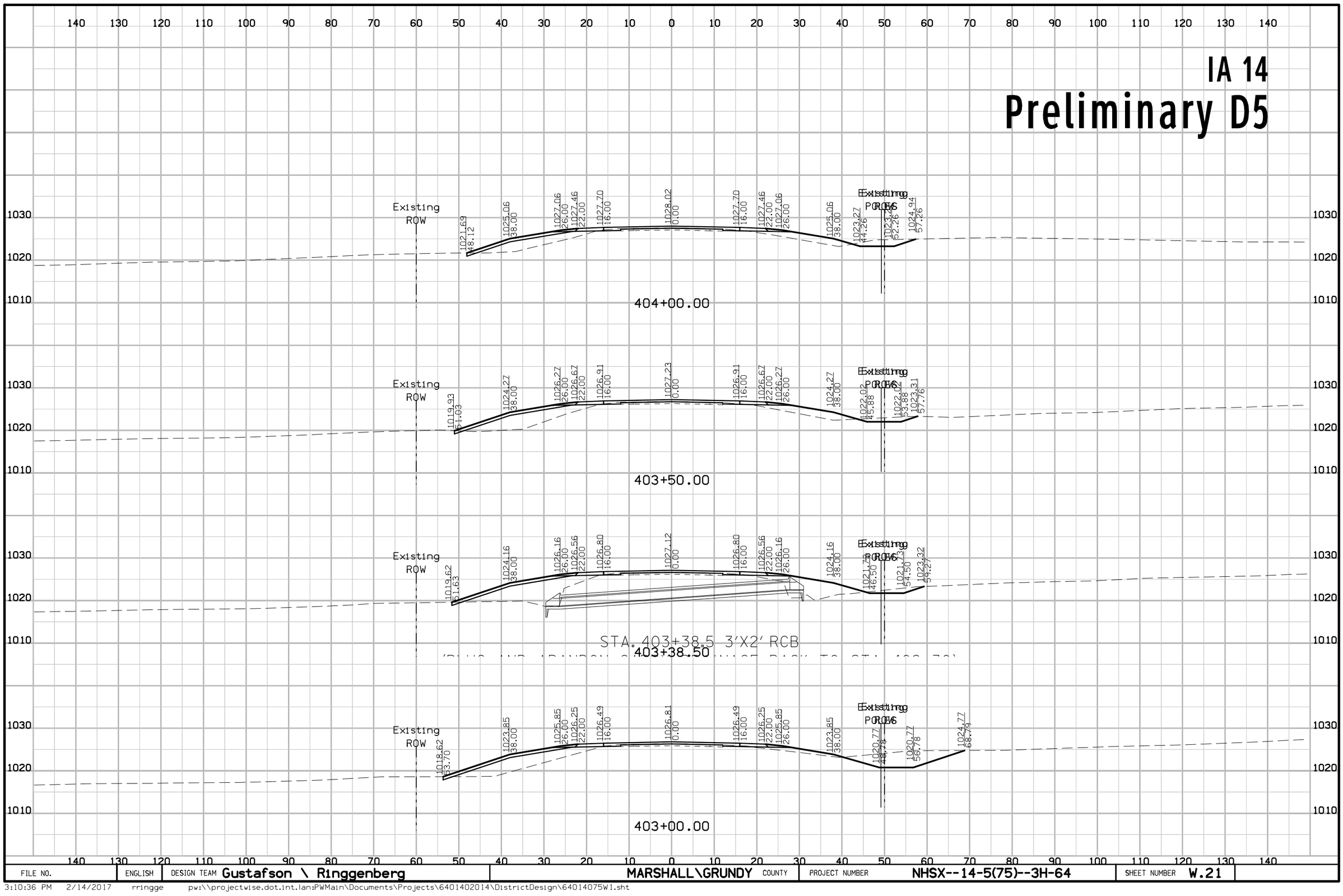
IA 14
Preliminary D5



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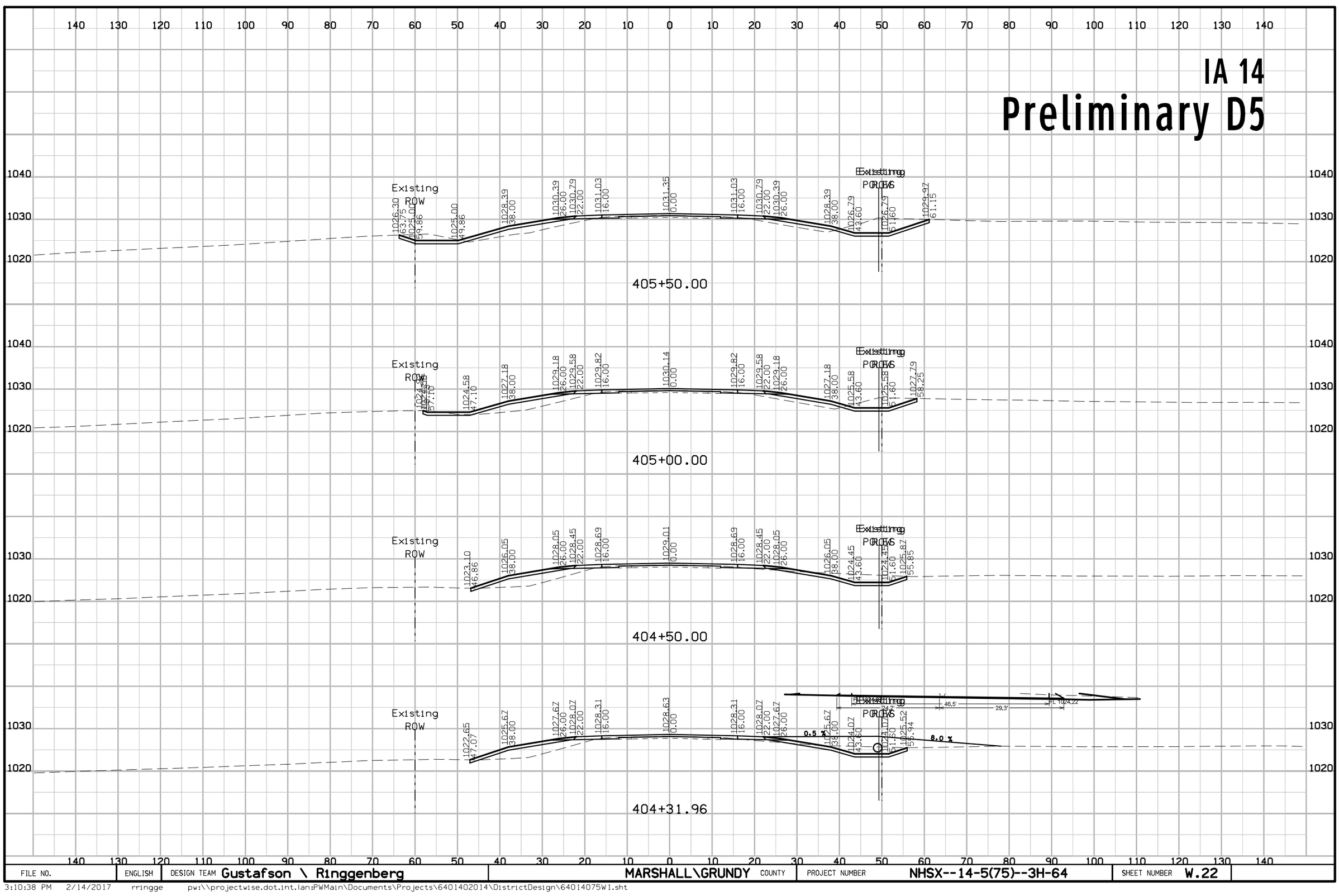
IA 14
Preliminary D5



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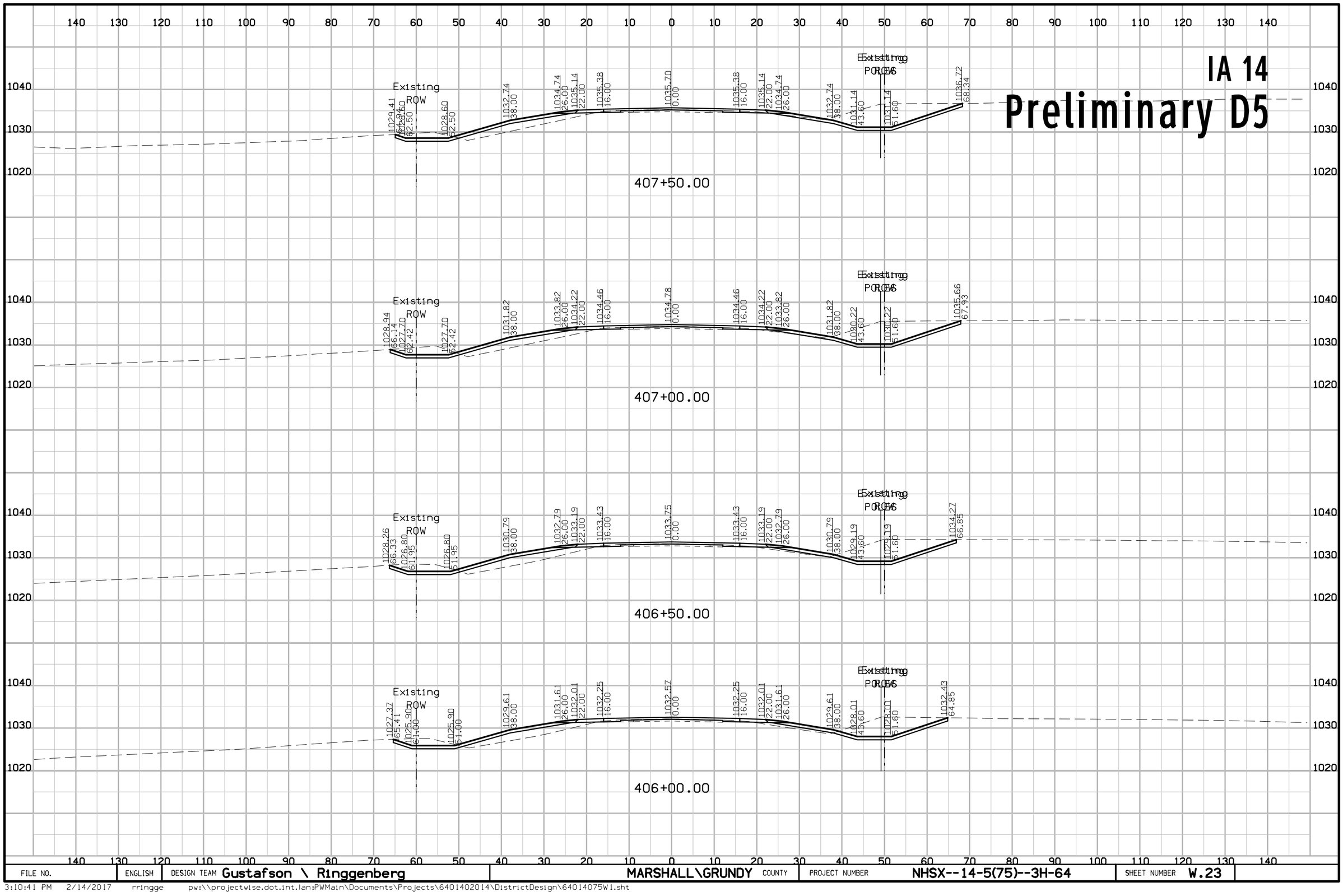
IA 14

Preliminary D5



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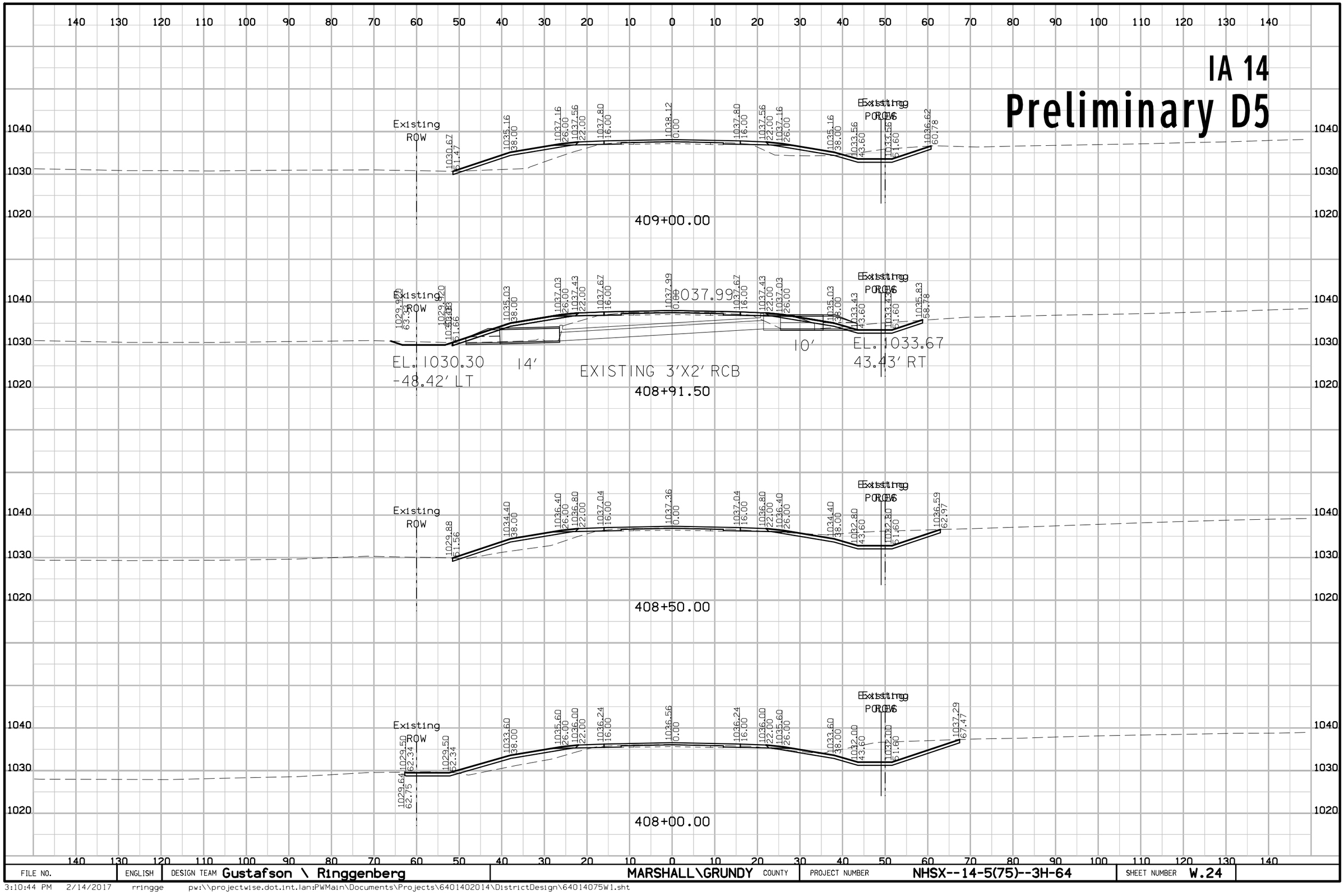
IA 14
Preliminary D5



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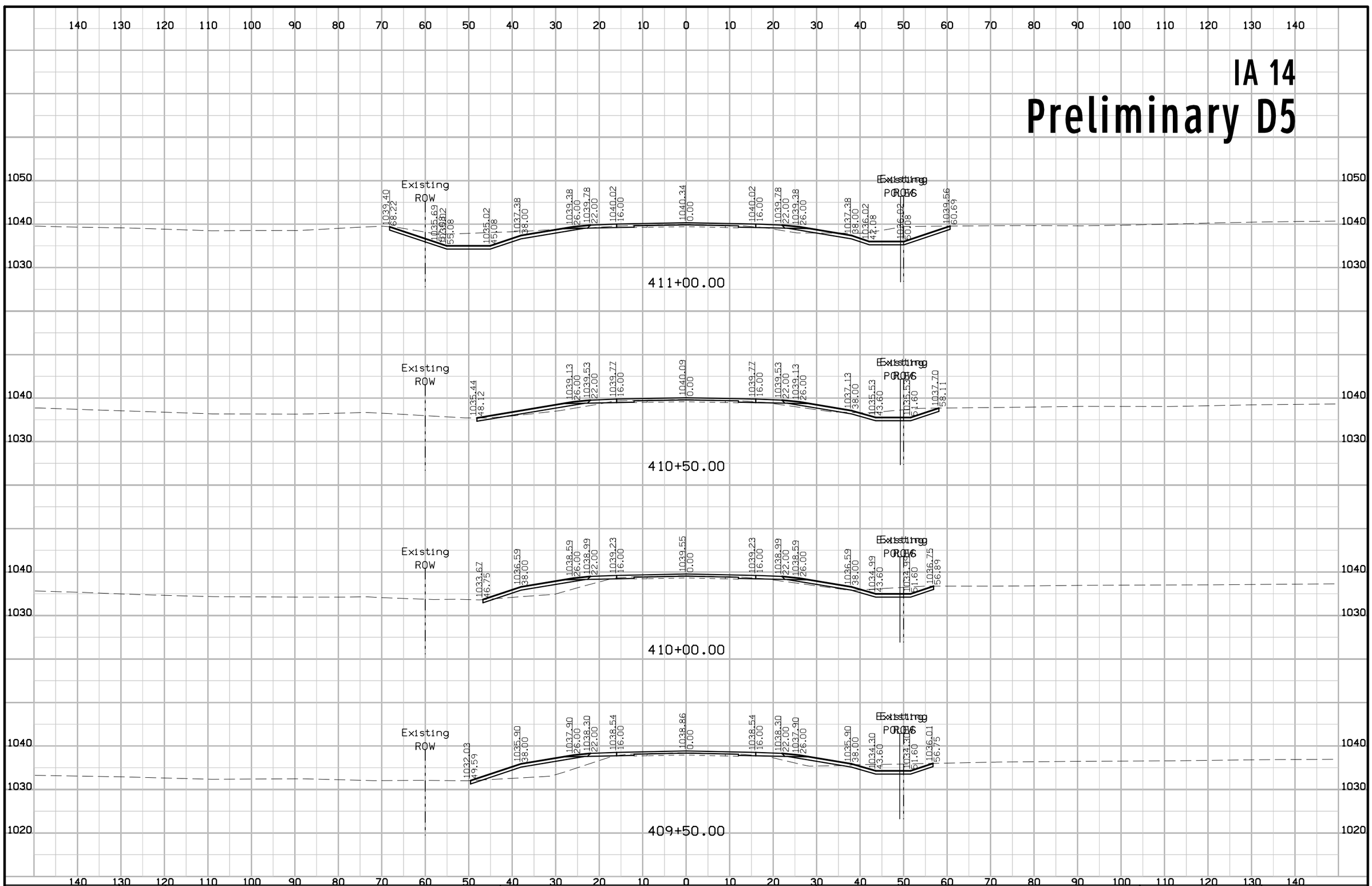
IA 14
Preliminary D5



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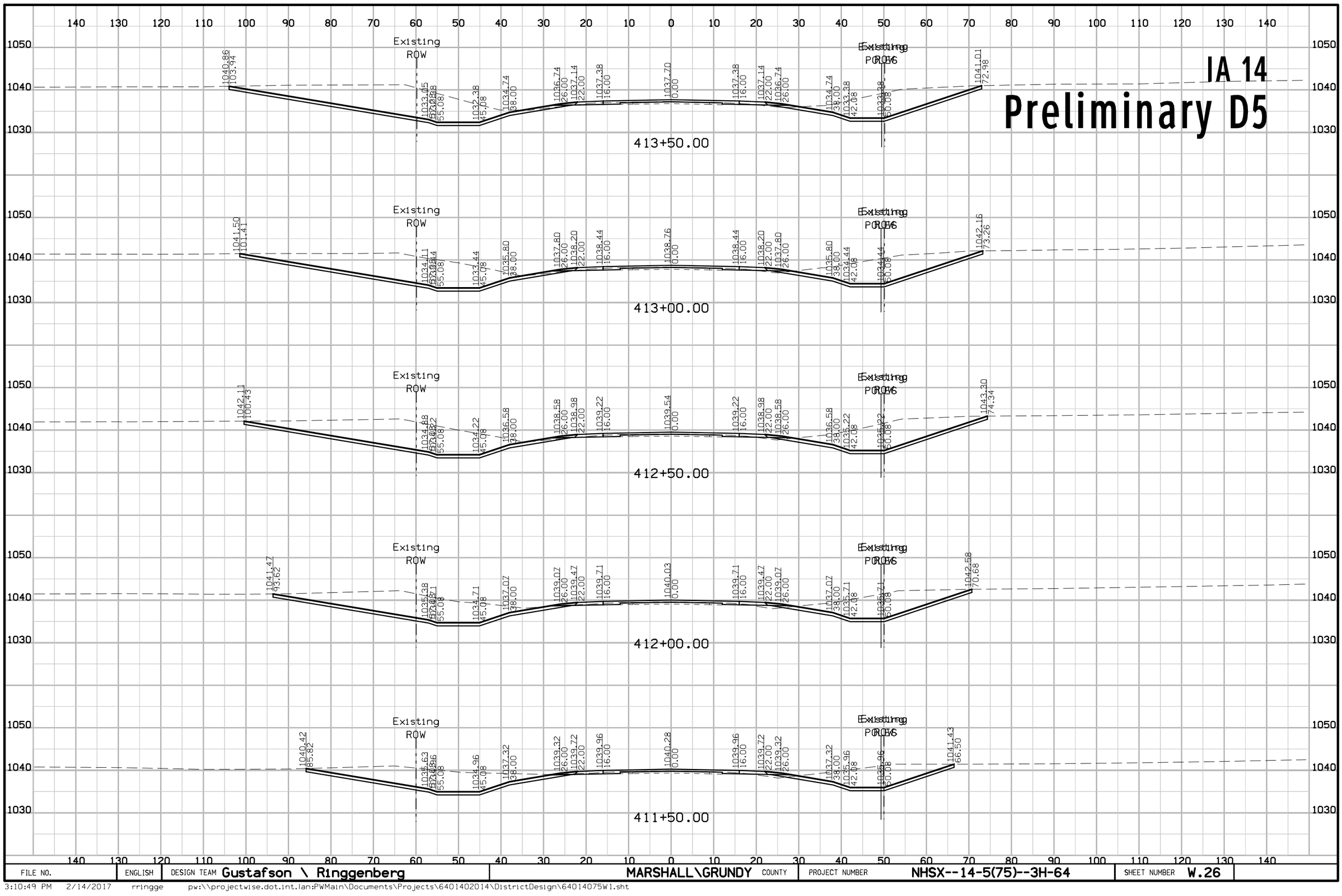
IA 14

Preliminary D5



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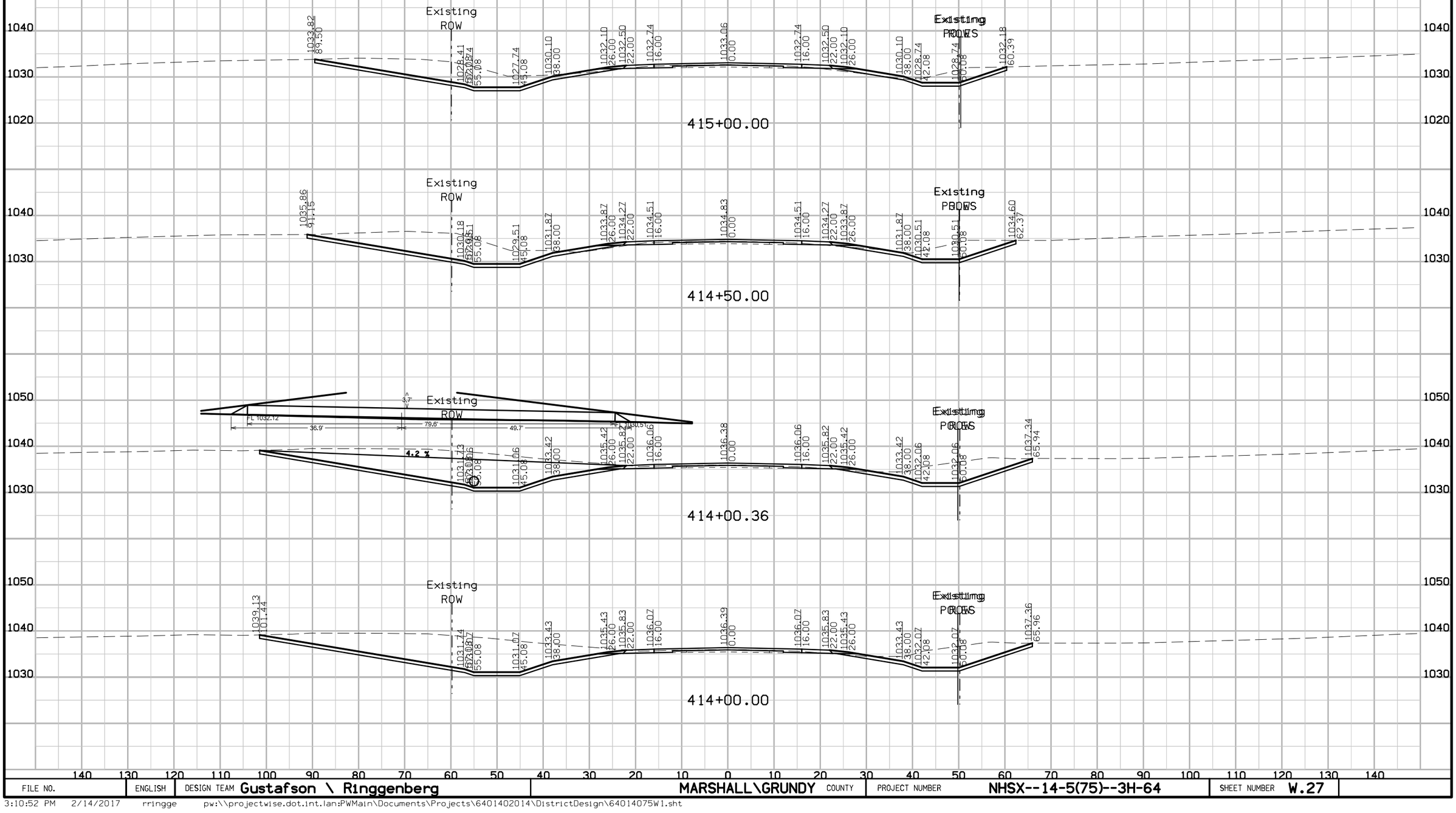
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.27

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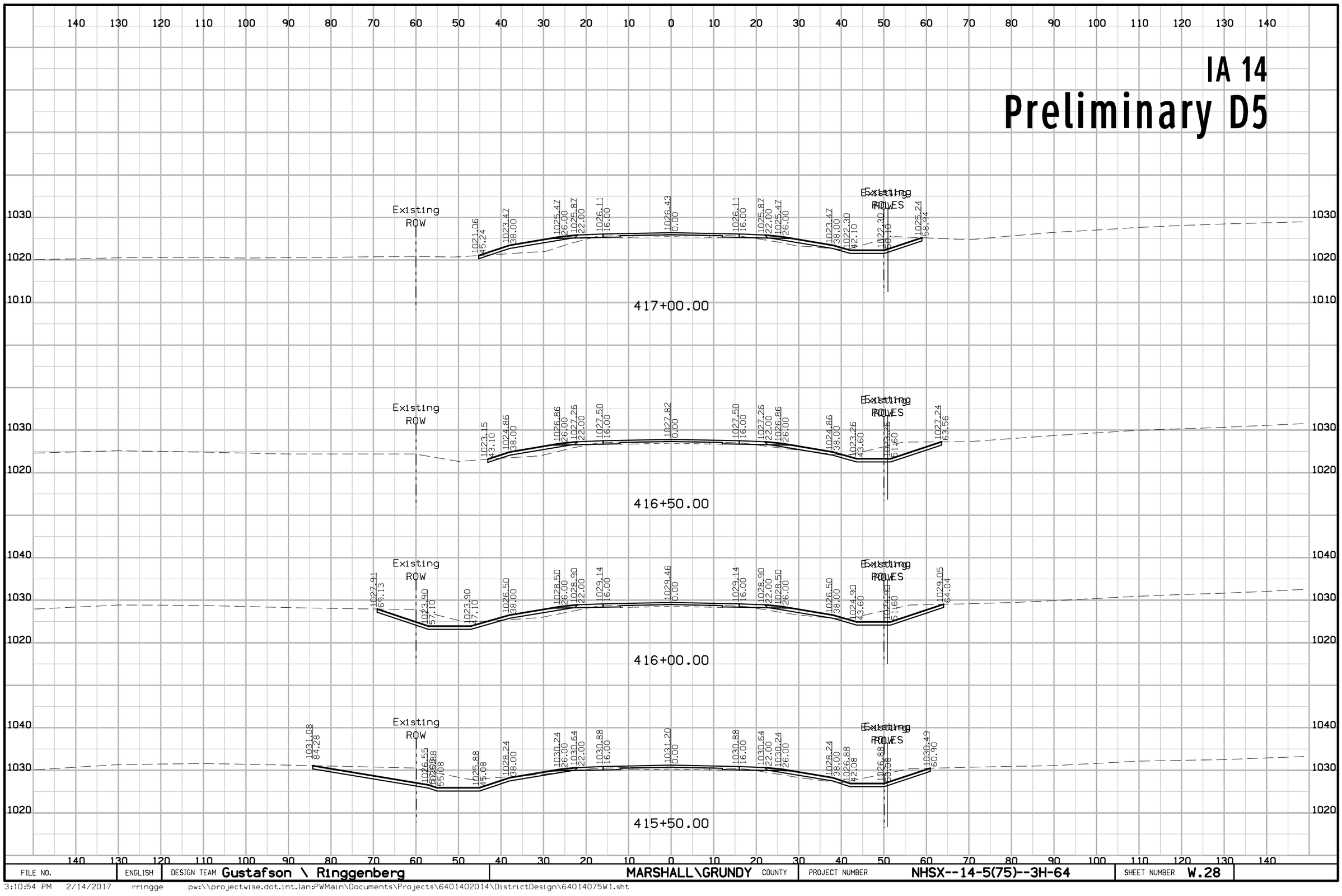
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.28

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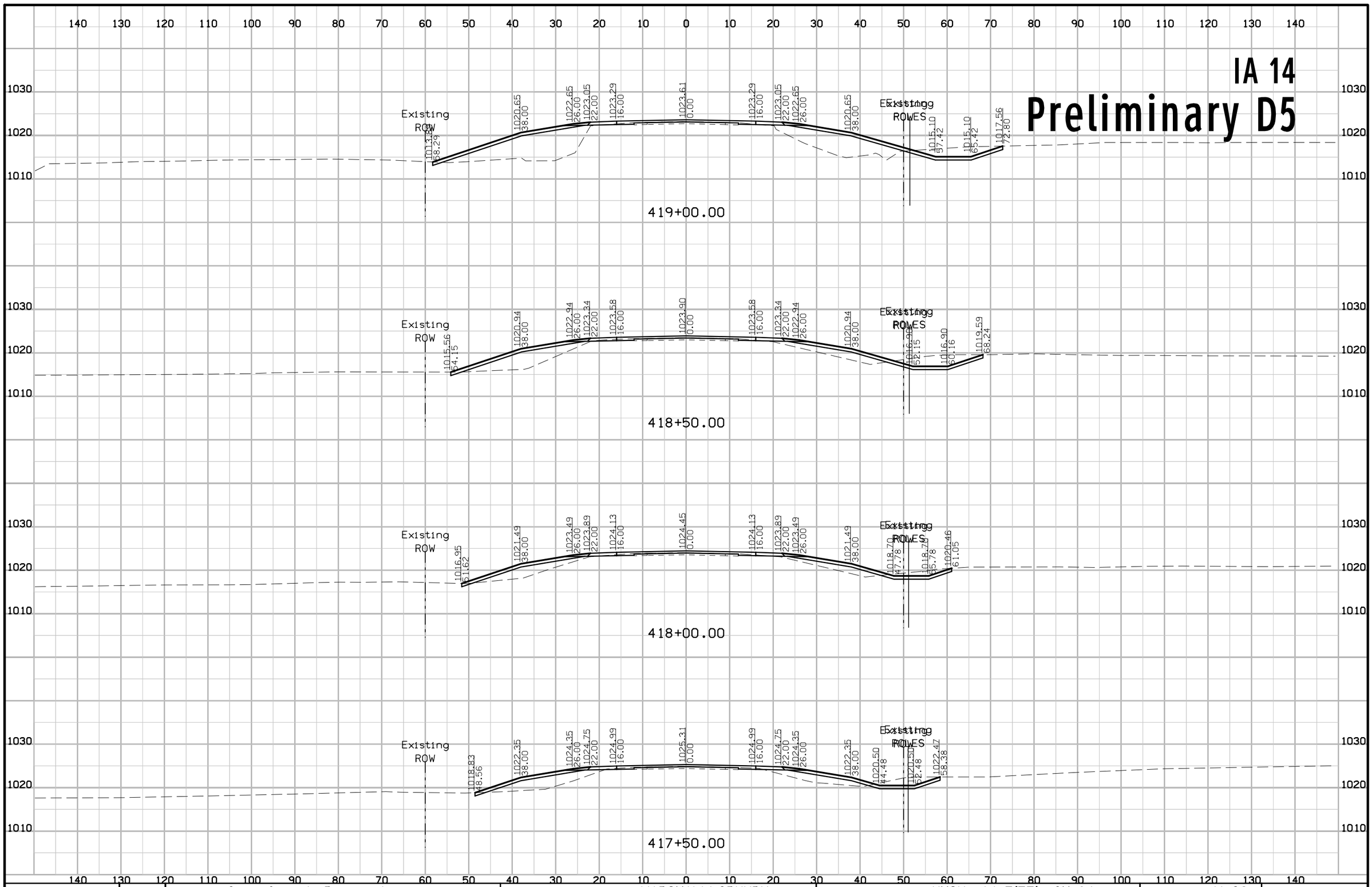
IA 14
Preliminary D5



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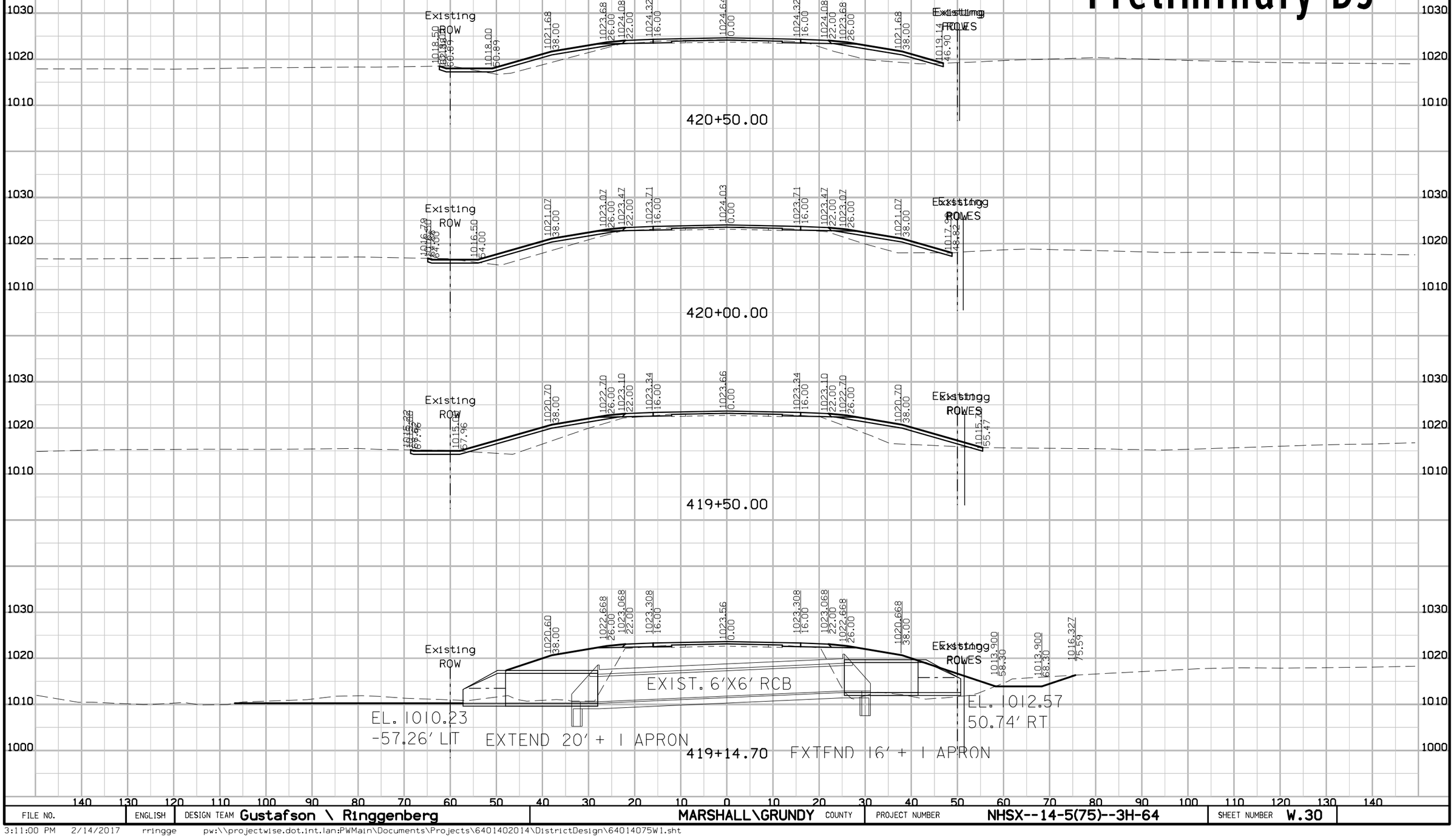
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.30

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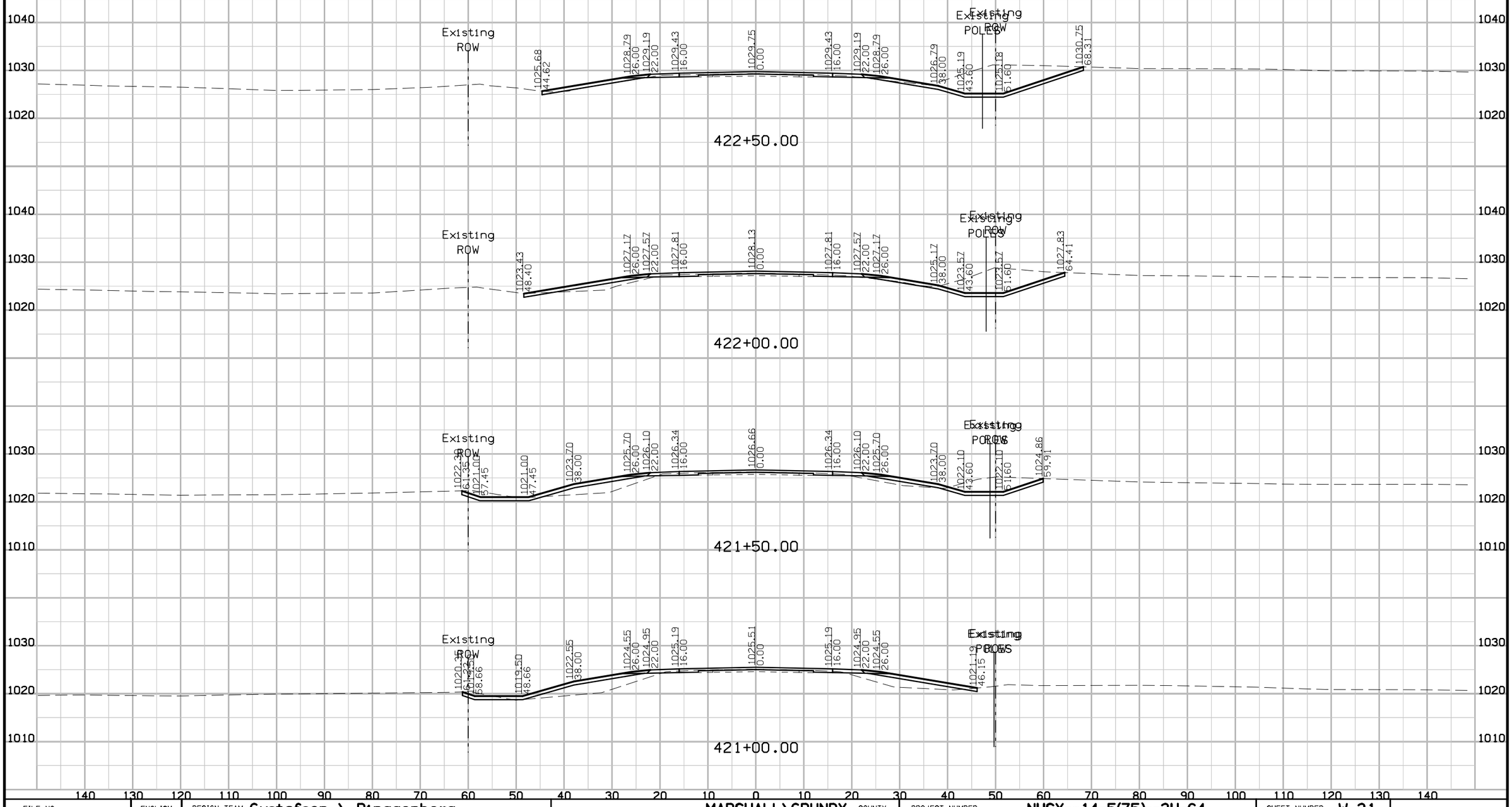
IA 14
Preliminary D5



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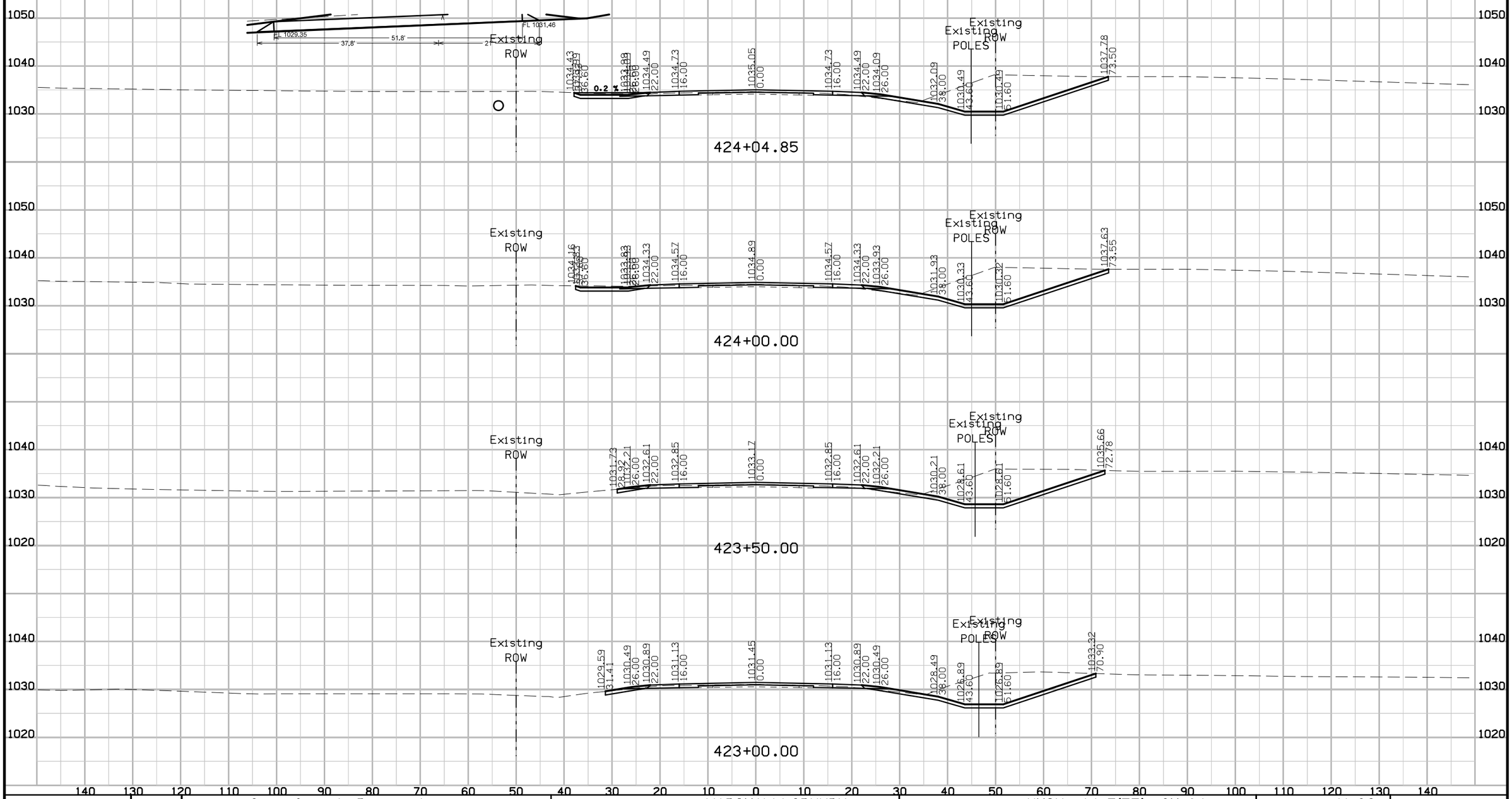
IA 14
Preliminary D5



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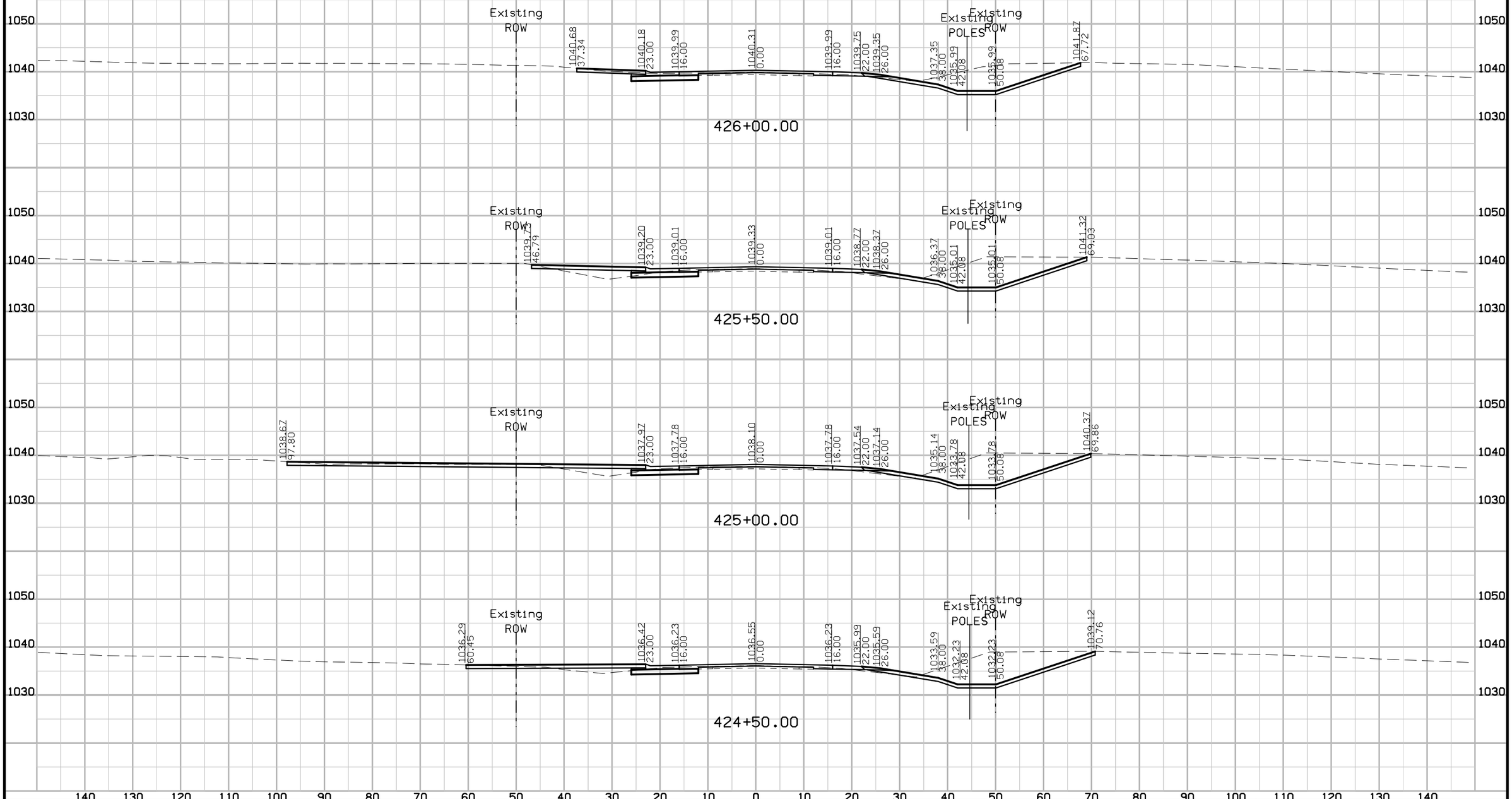
IA 14
Preliminary D5



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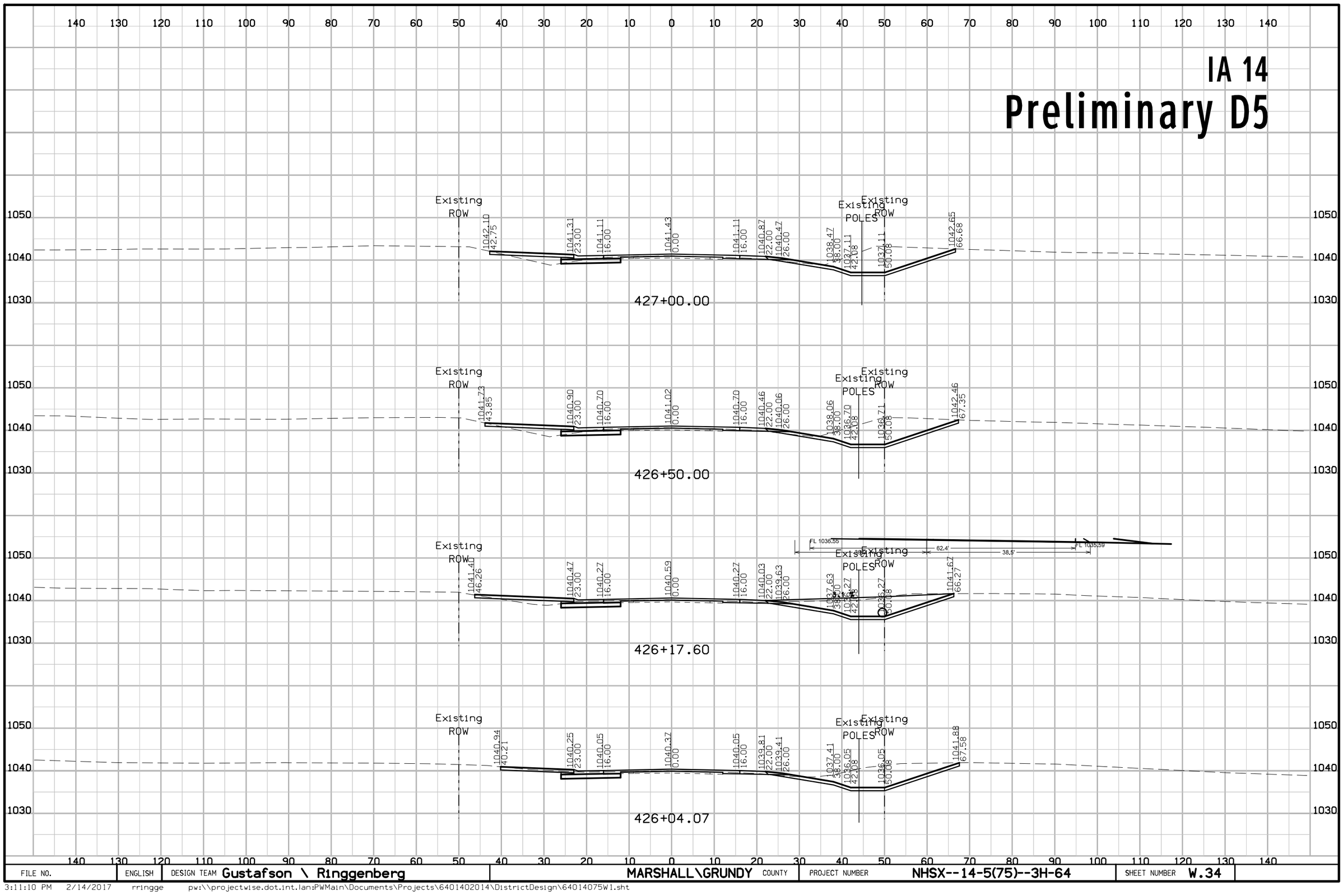
IA 14
Preliminary D5



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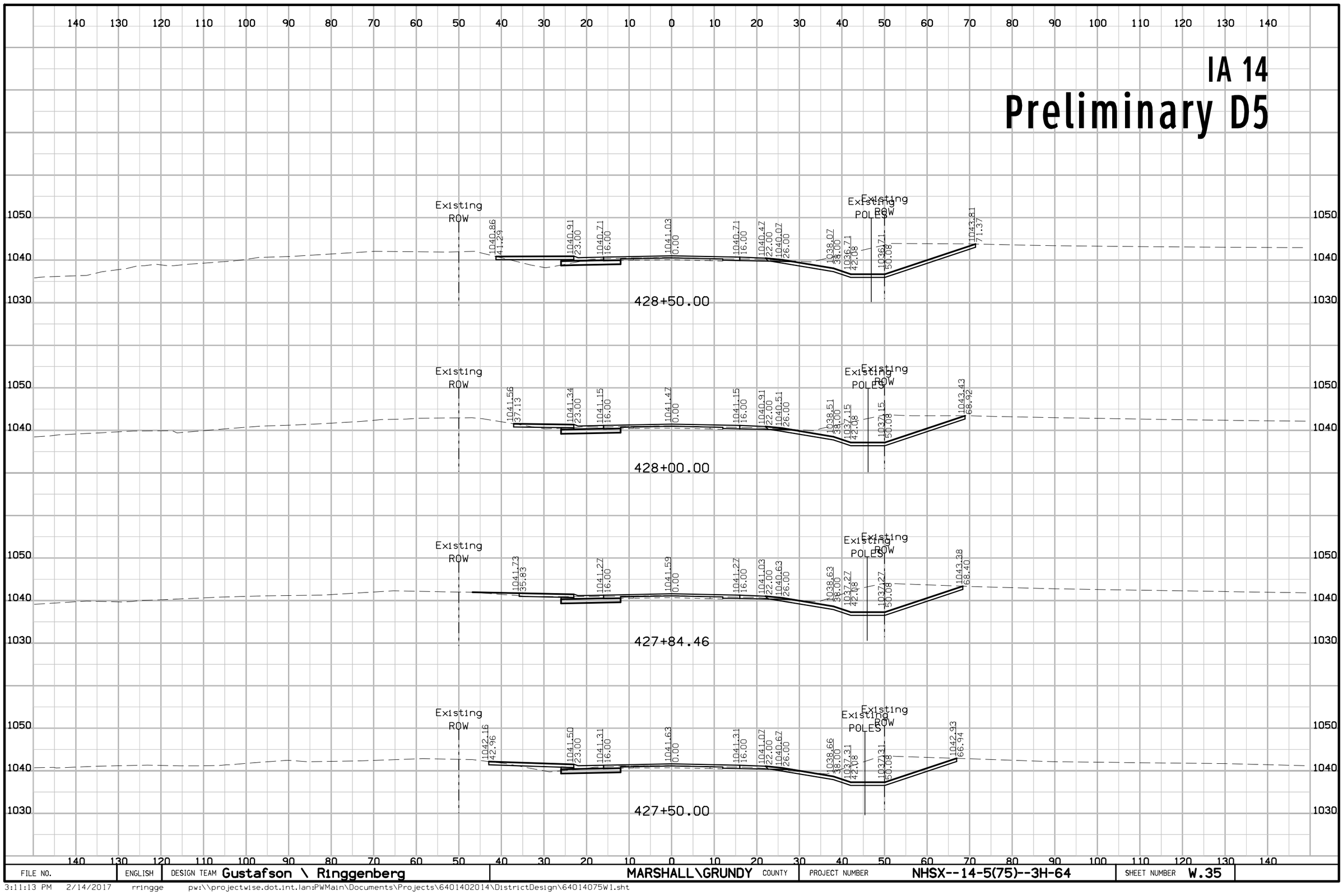
IA 14
Preliminary D5



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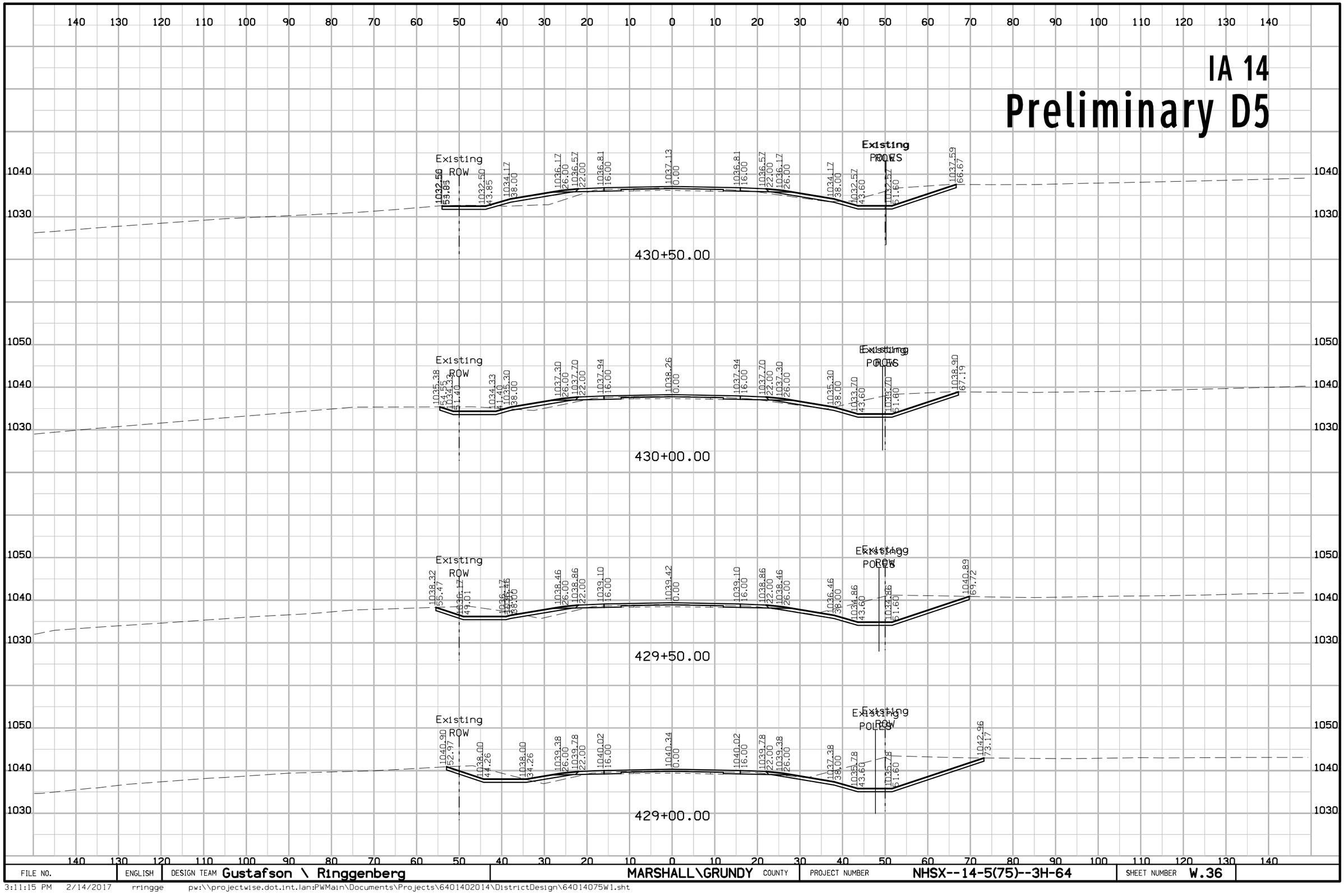
IA 14
Preliminary D5



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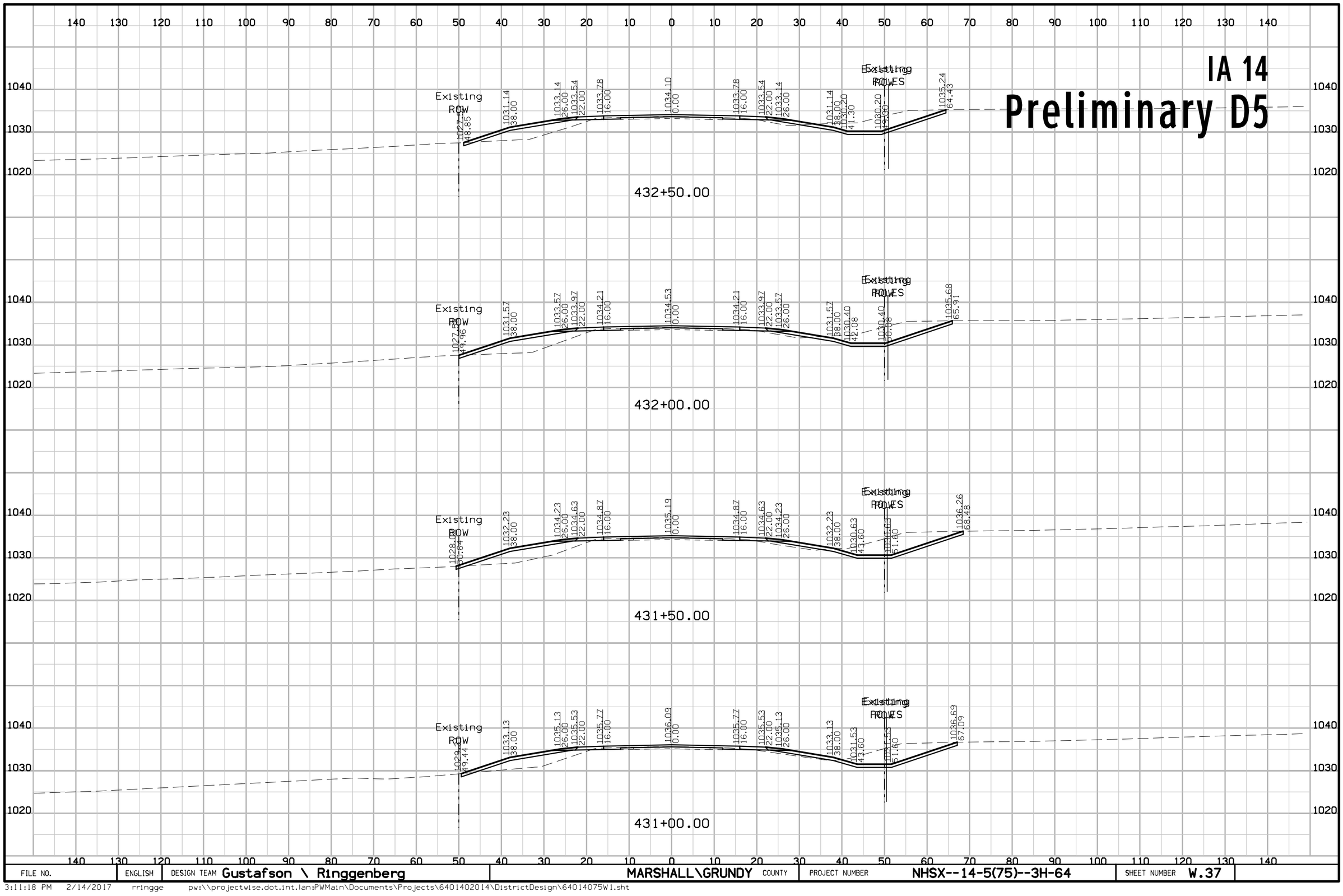
IA 14
Preliminary D5



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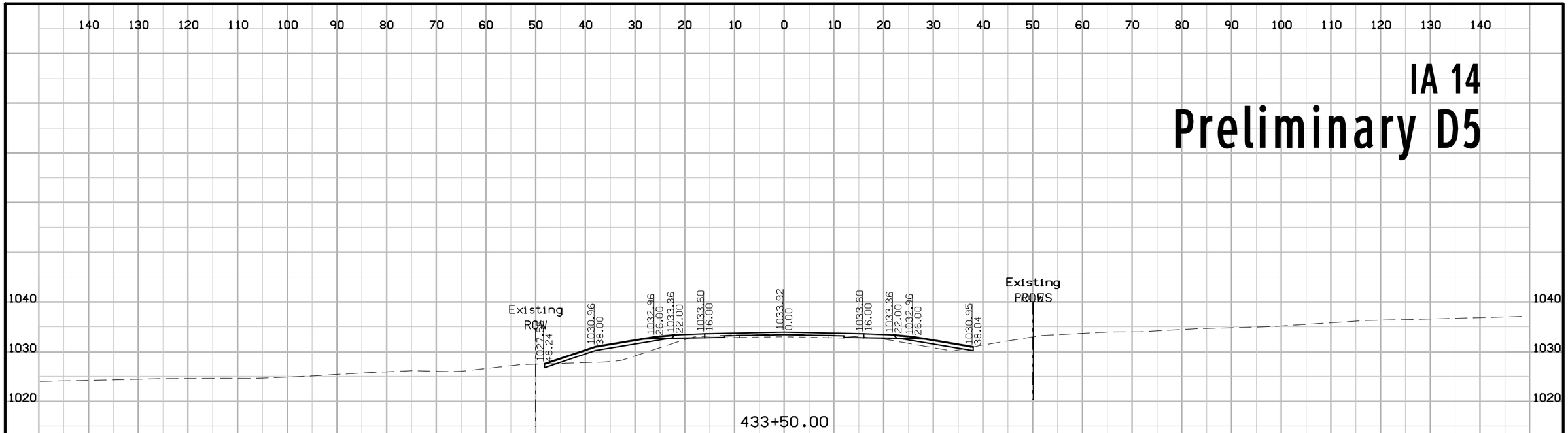
IA 14
Preliminary D5



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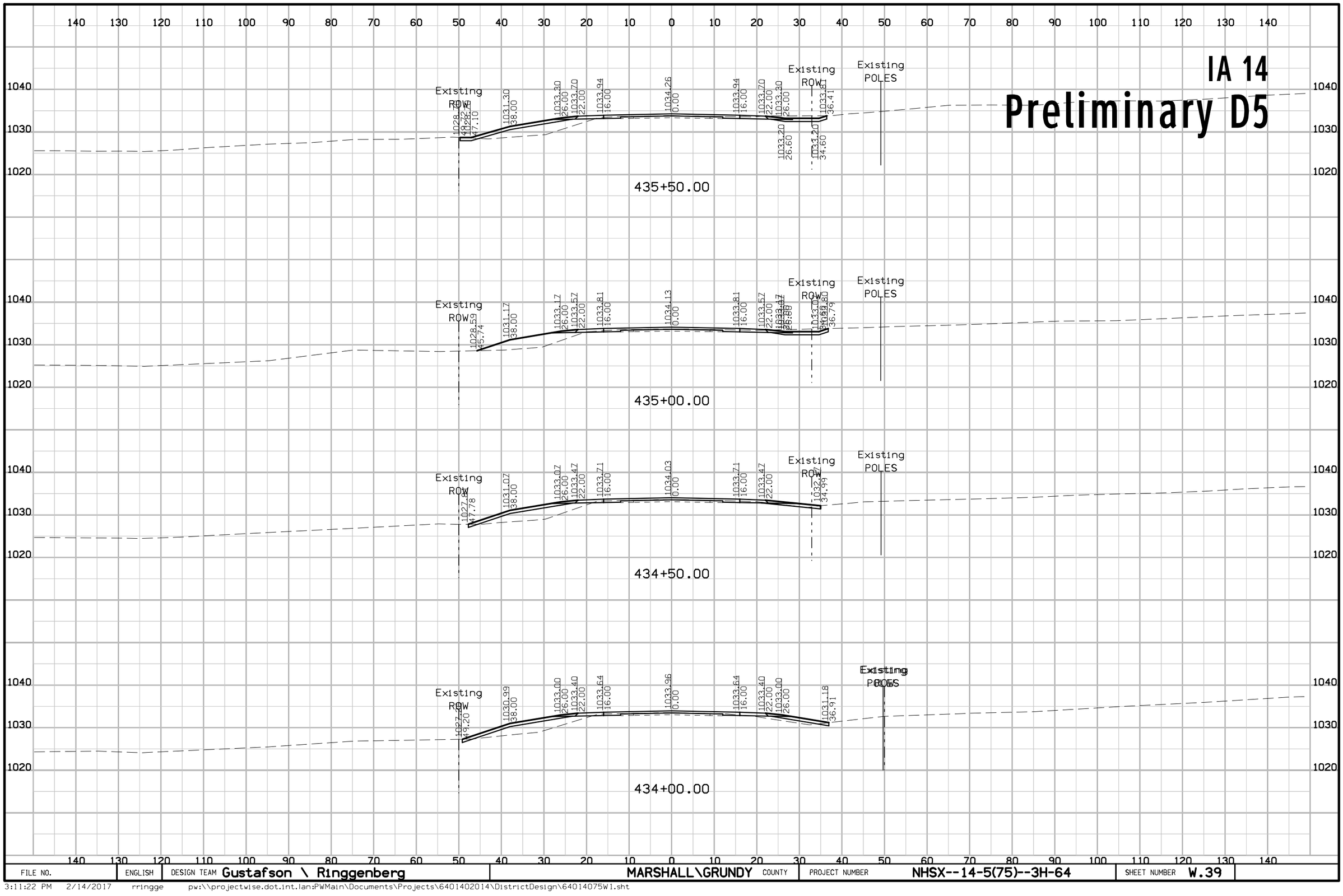
IA 14

Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.39

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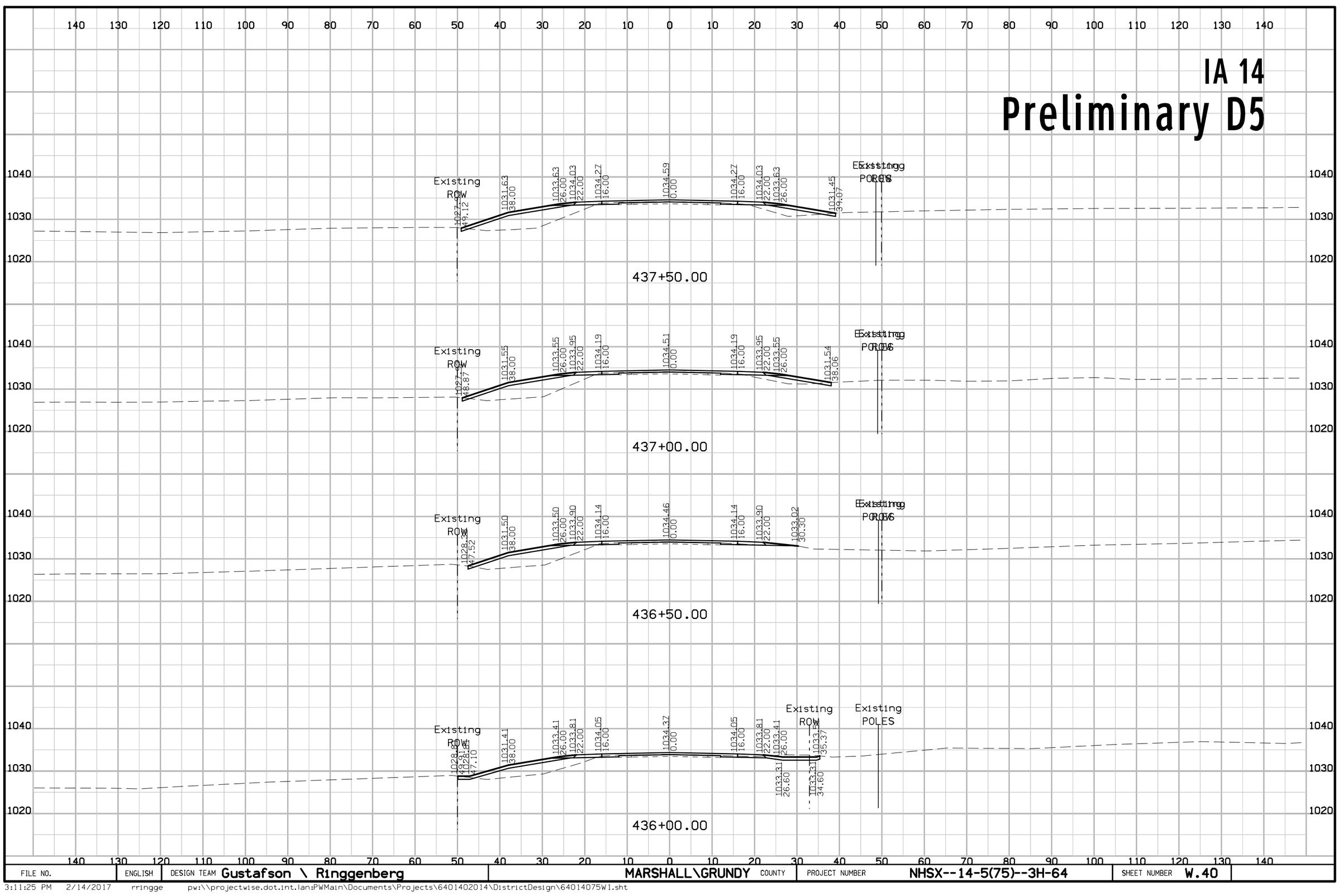
IA 14
Preliminary D5



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IA 14
Preliminary D5

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

1040 / 1030

1033.91 70.59 | 1029.41 57.10 | 1029.41 47.10 | 1032.01 38.00 | 1034.01 26.00 | 1034.41 22.00 | 1034.65 16.00 | 1034.97 0.00 | 1034.65 16.00 | 1034.41 22.00 | 1034.01 26.00 | 1032.01 38.00 | 1030.41 43.60 | 1030.41 51.60 | 1033.49 60.83

439+50.00

1040 / 1030 / 1020

Existing ROW | 1029.42 45.41 | 1031.89 38.00 | 1033.89 26.00 | 1034.29 22.00 | 1034.53 16.00 | 1034.85 0.00 | 1034.53 16.00 | 1034.29 22.00 | 1033.89 26.00 | Existing ROW | 1030.69 45.18 | Existing POLES

439+00.00

1040 / 1030 / 1020

1028.395 71.10 | 1026.270 64.72 | 1026.270 54.72 | Existing ROW | 1027.50 51.01 | 1031.84 38.00 | 1033.84 26.00 | 1034.24 22.00 | 1034.48 16.00 | 1034.80 0.00 | 1034.48 16.00 | 1034.24 22.00 | 1033.84 26.00 | 1031.844 38.00 | Existing ROW | 1030.66 45.10 | 1028.000 49.54 | 1028.000 59.54 | 1031.874 71.16

438+76.80

1040 / 1030 / 1020

Existing ROW | 1027.50 50.22 | 1031.80 38.00 | 1033.80 26.00 | 1034.20 22.00 | 1034.44 16.00 | 1034.76 0.00 | 1034.44 16.00 | 1034.20 22.00 | 1033.80 26.00 | Existing ROW | 1030.88 43.50 | Existing POLES

438+50.00

1040 / 1030 / 1020

Existing ROW | 1027.50 49.34 | 1031.72 38.00 | 1033.72 26.00 | 1034.12 22.00 | 1034.36 16.00 | 1034.68 0.00 | 1034.36 16.00 | 1034.12 22.00 | 1033.72 26.00 | Existing ROW | 1030.96 42.56 | Existing POLES

438+00.00

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

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.41

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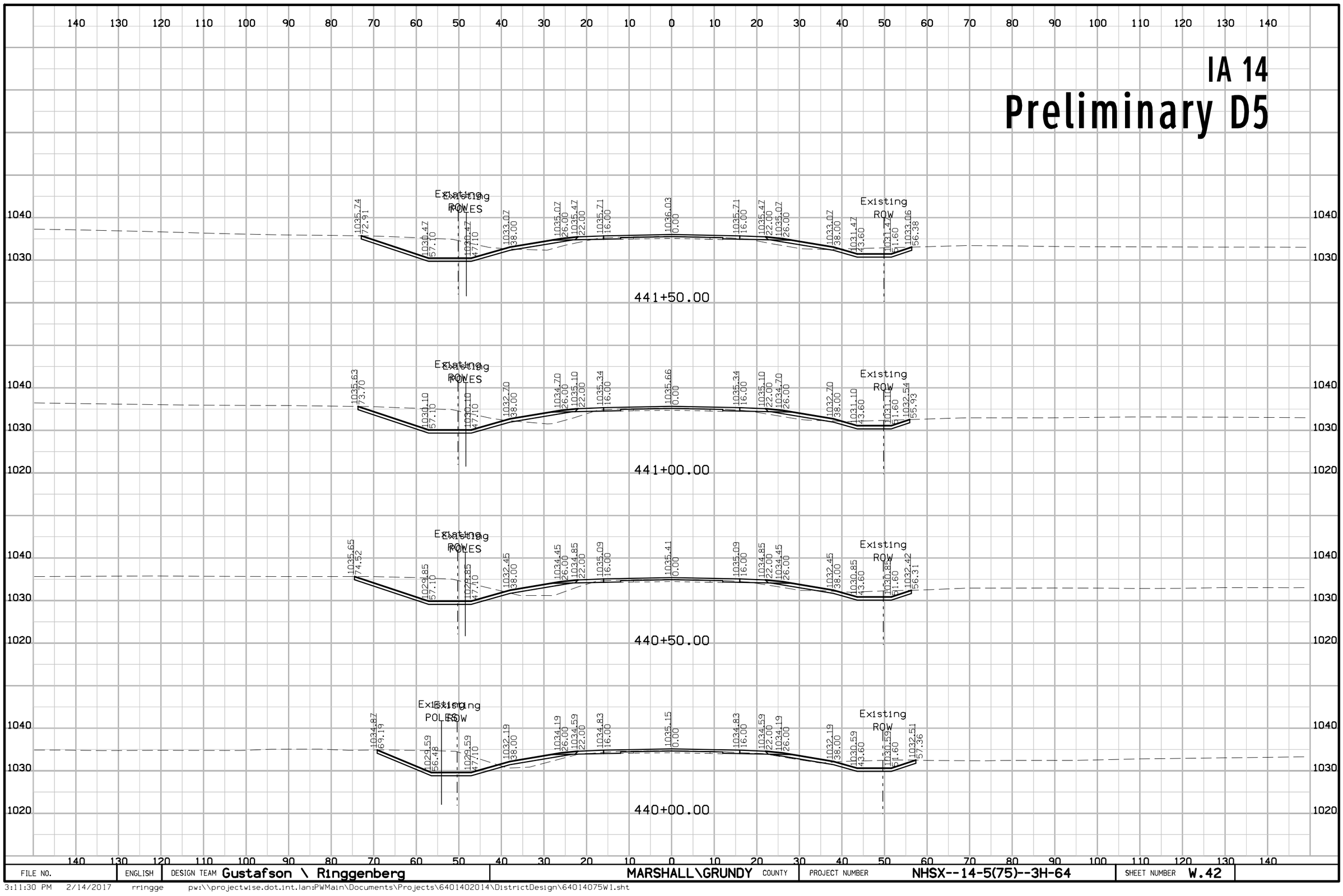
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.42

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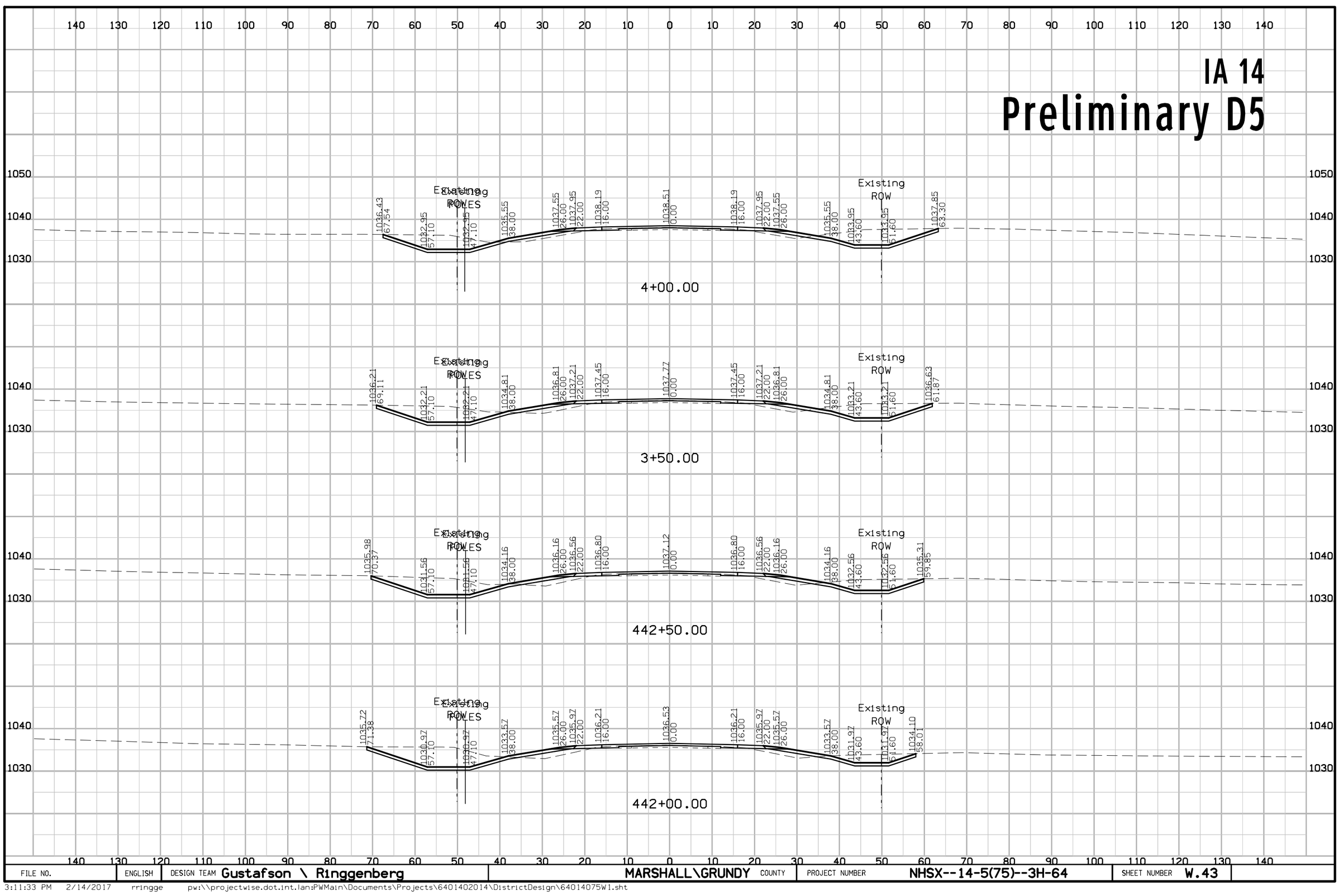
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.43

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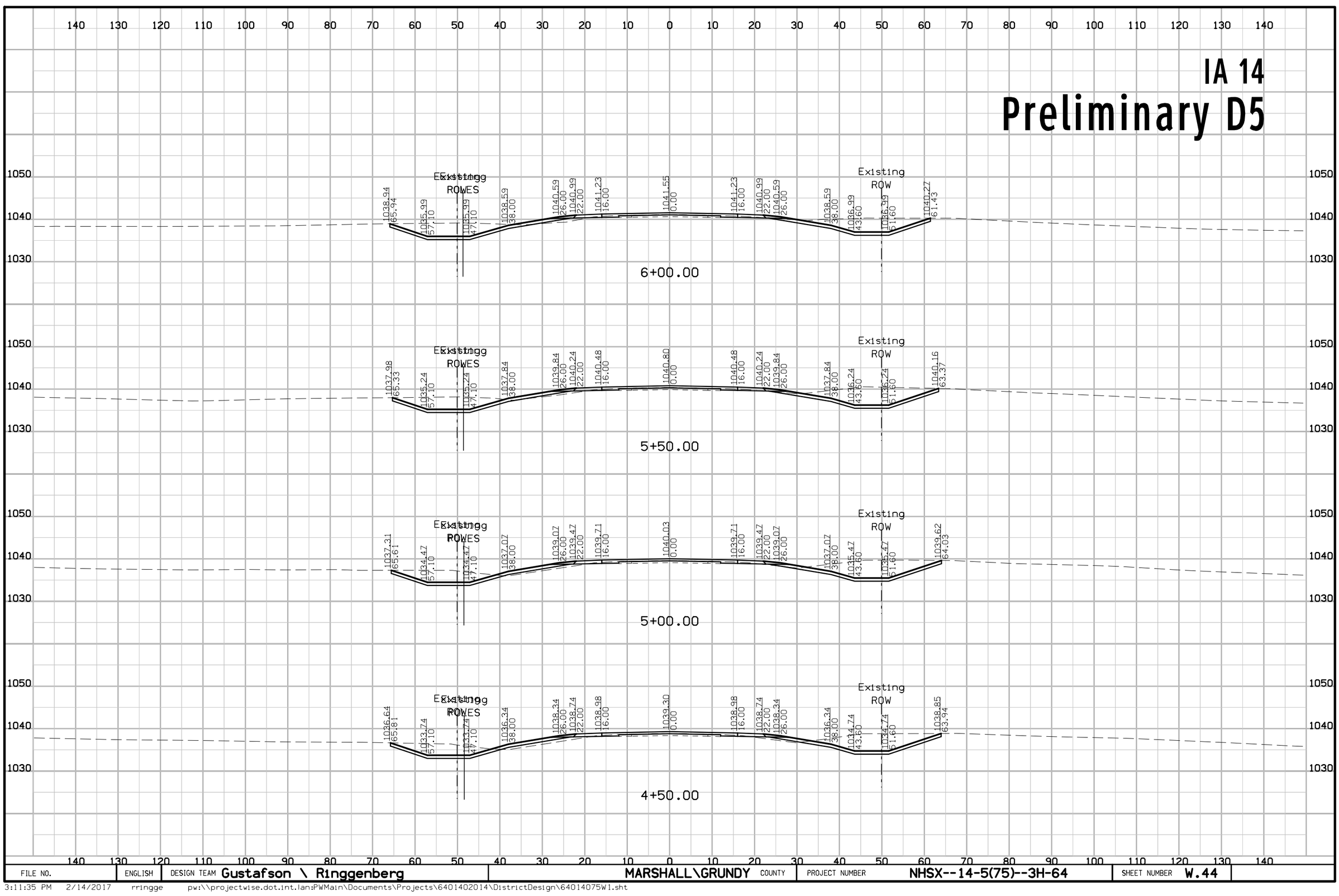
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.44

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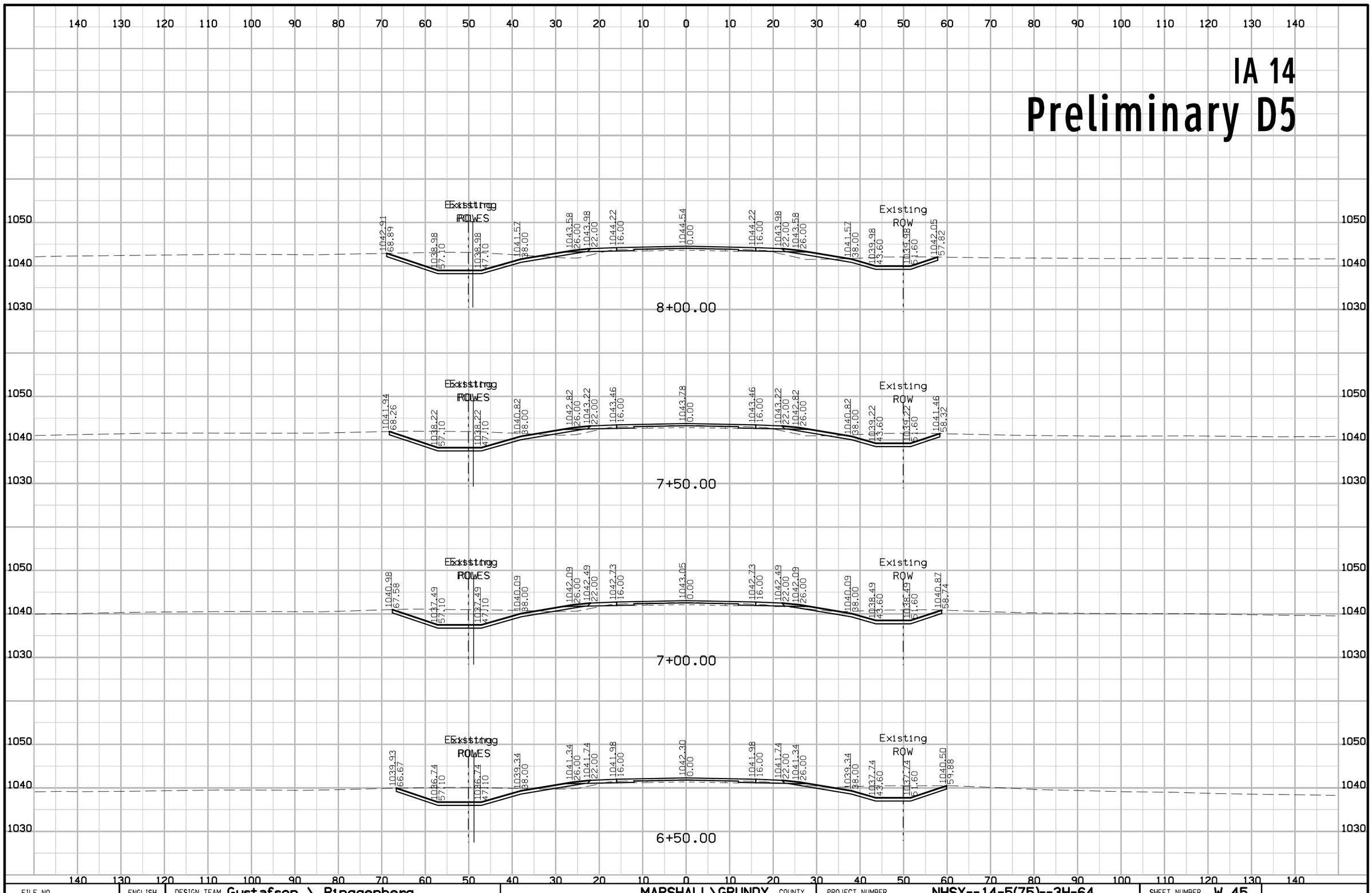
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.45

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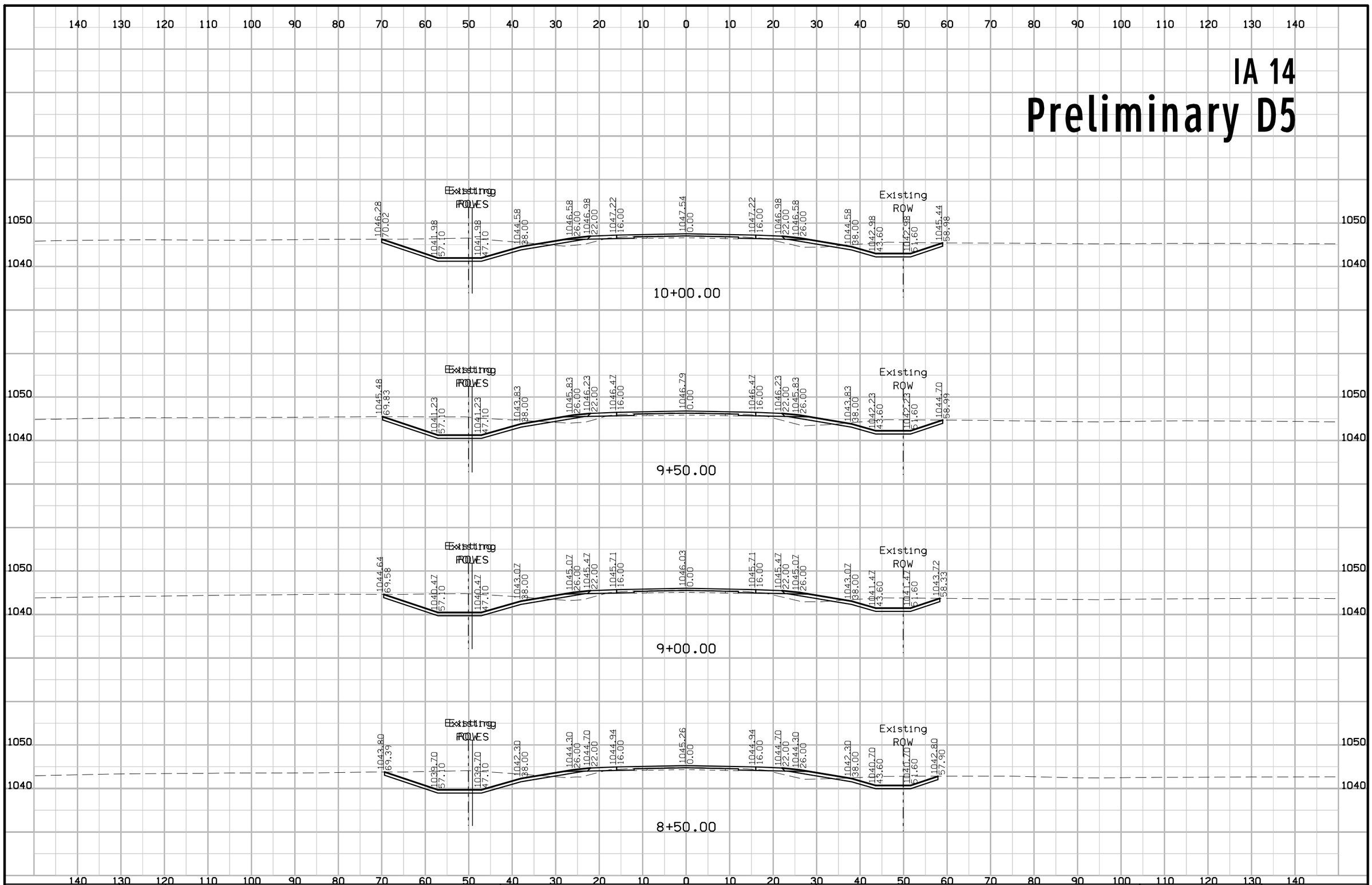
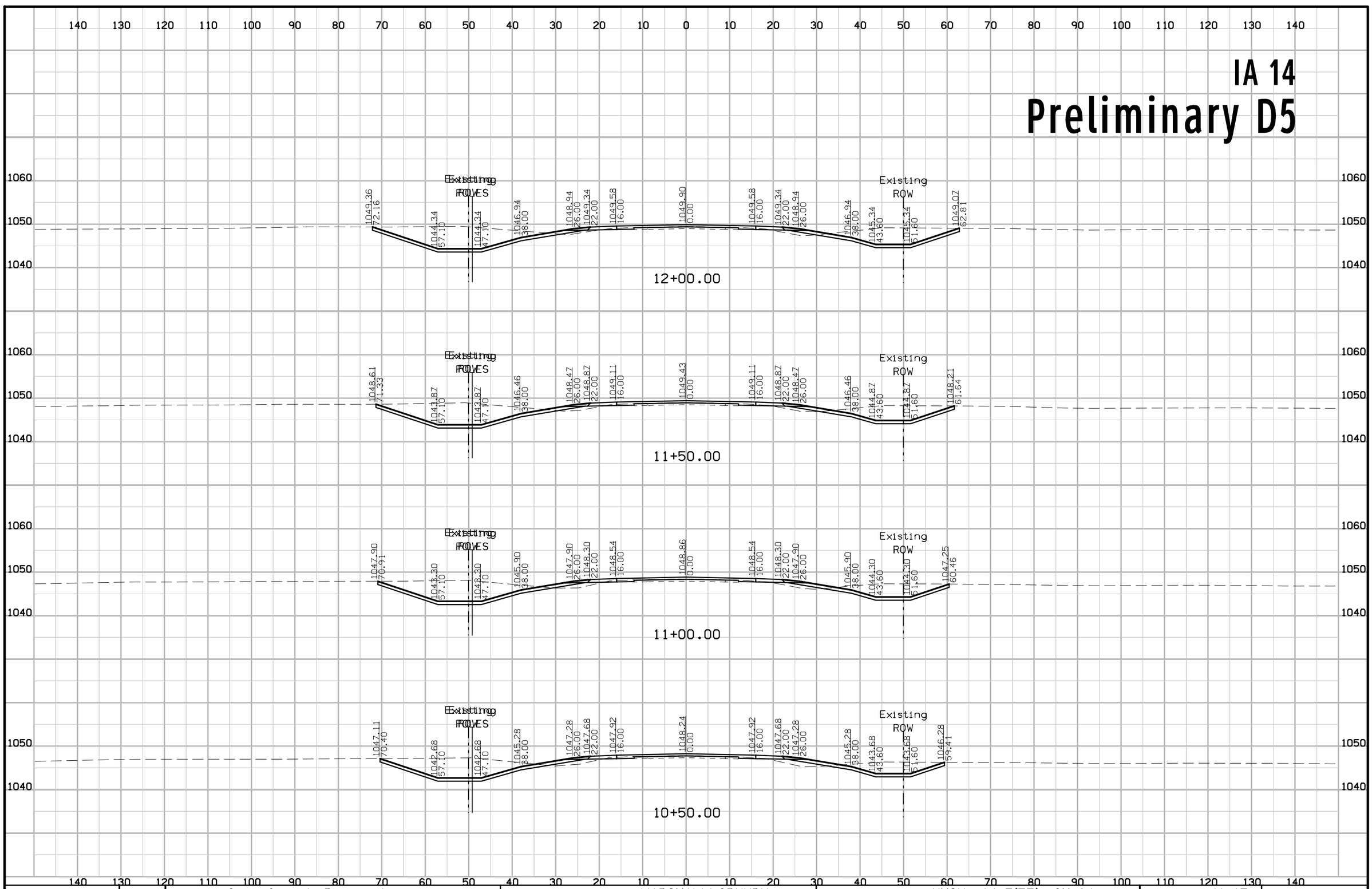
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.46

IA 14
Preliminary D5



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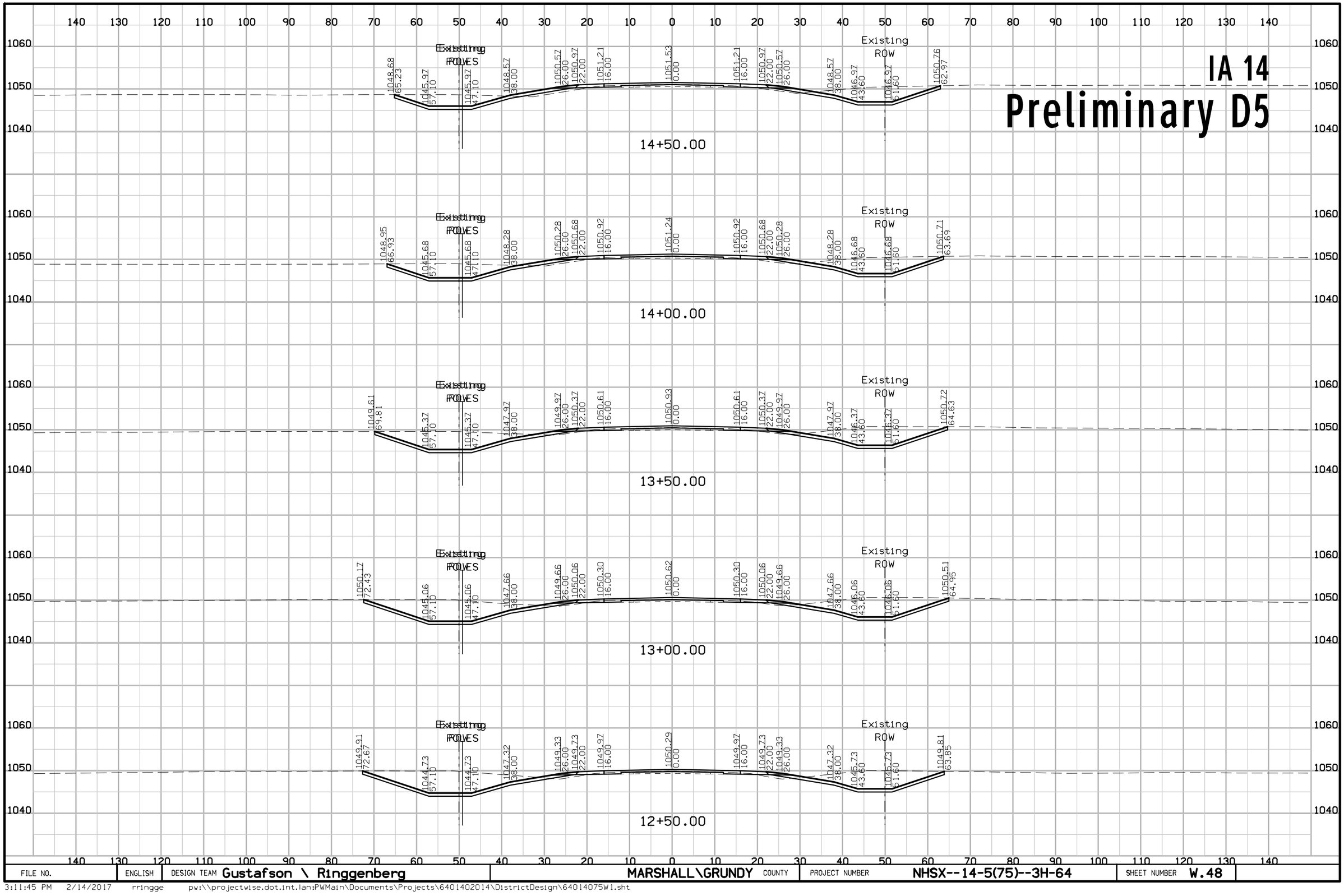
IA 14
Preliminary D5



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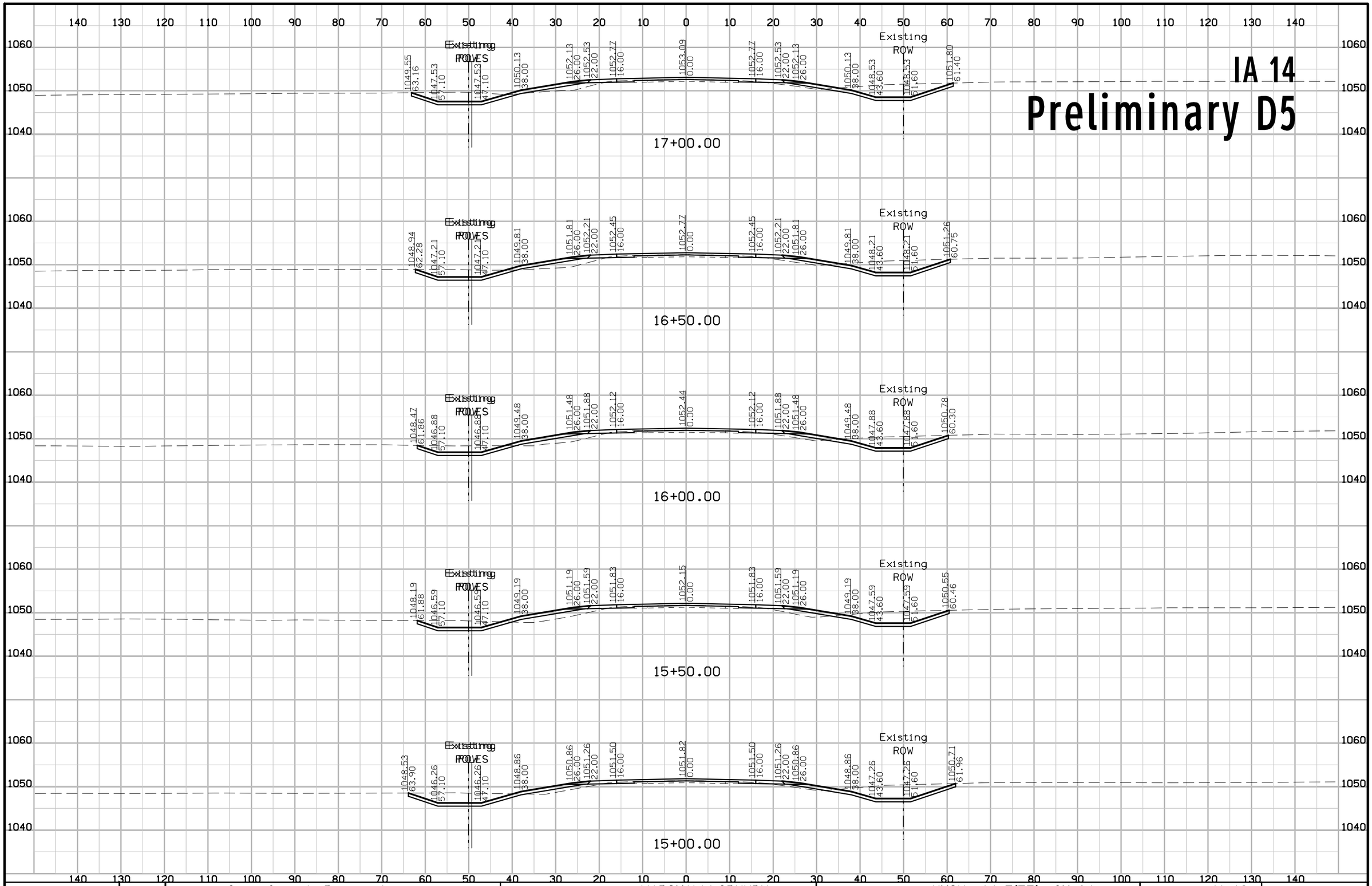
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.49

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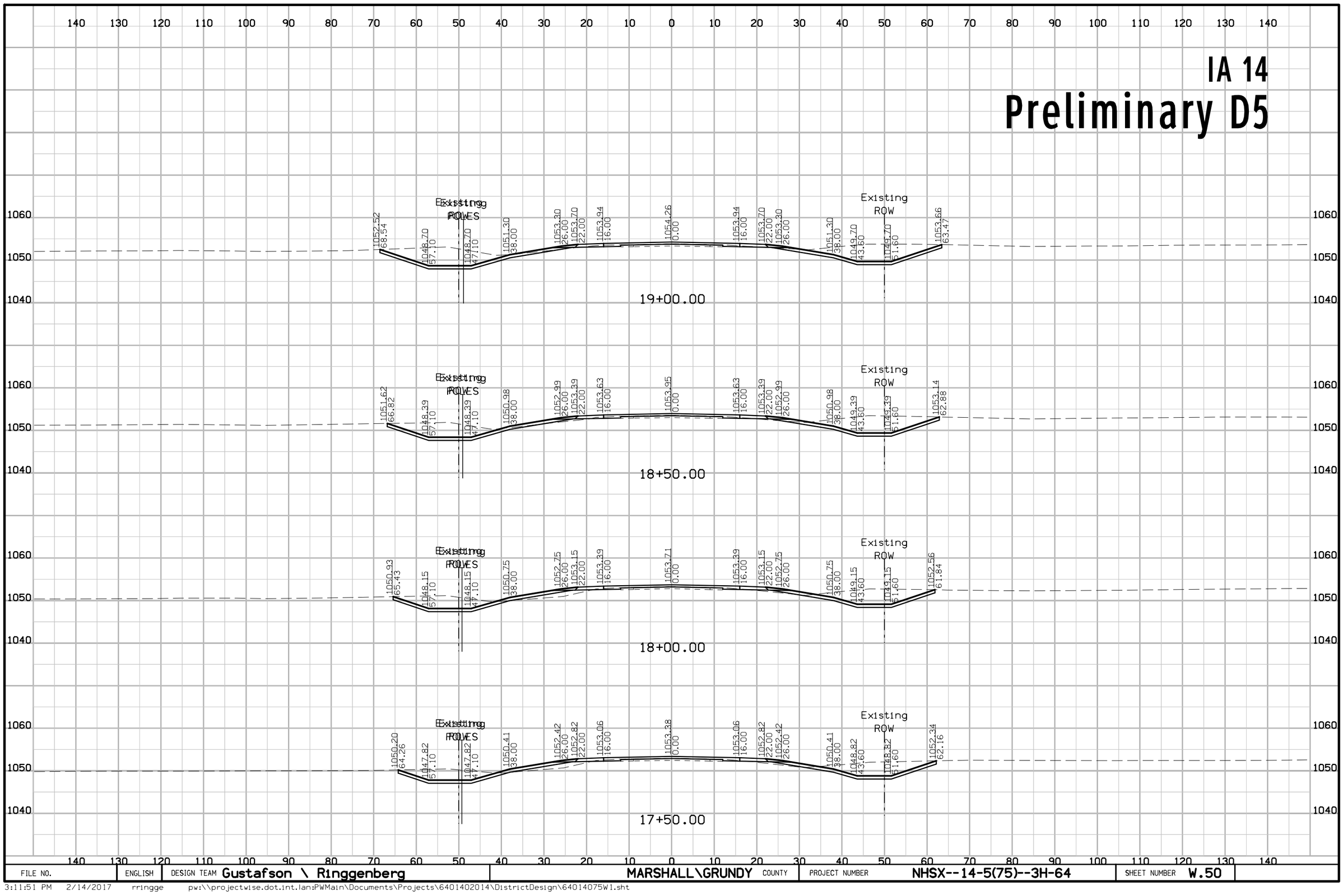
IA 14
Preliminary D5



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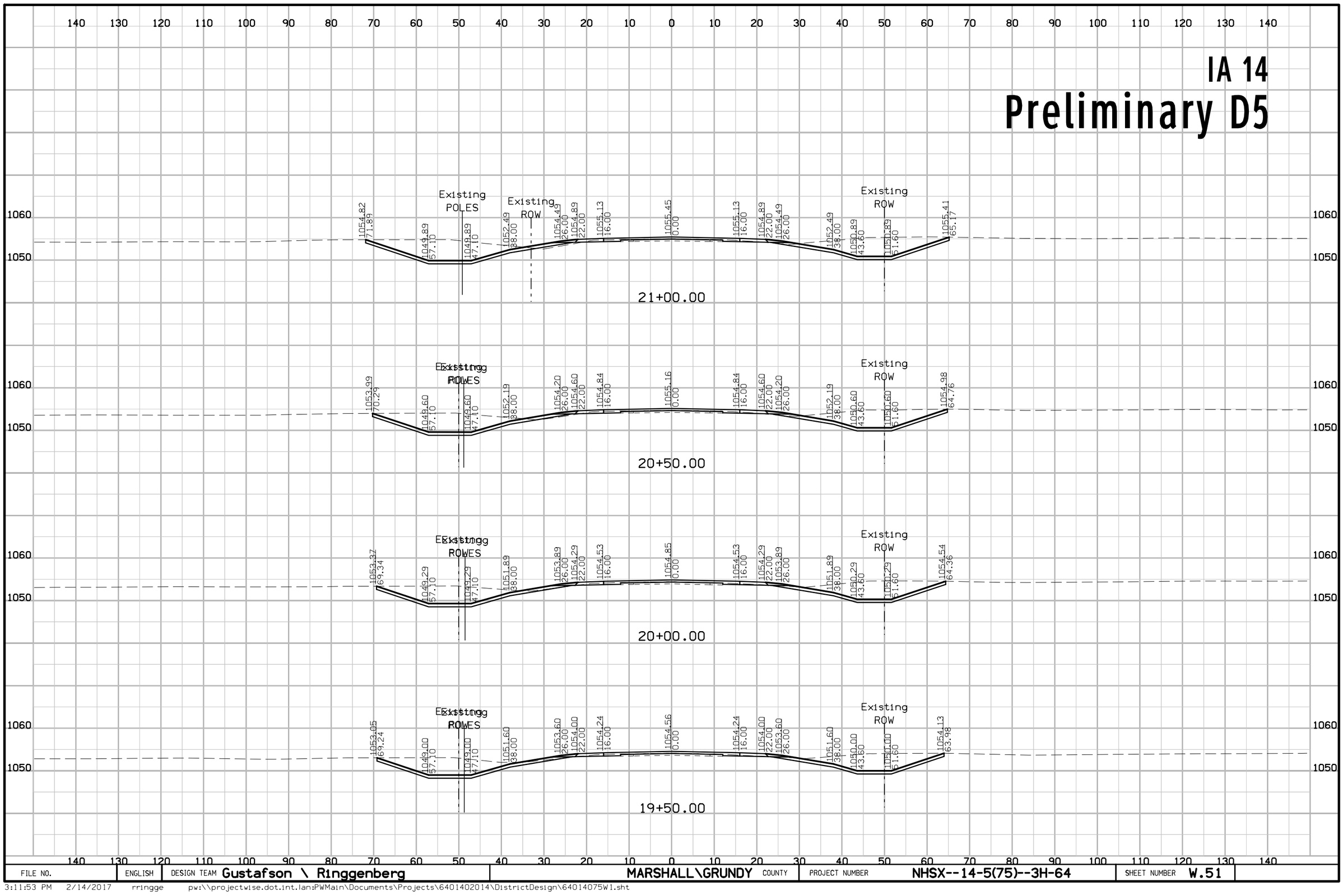
IA 14
Preliminary D5



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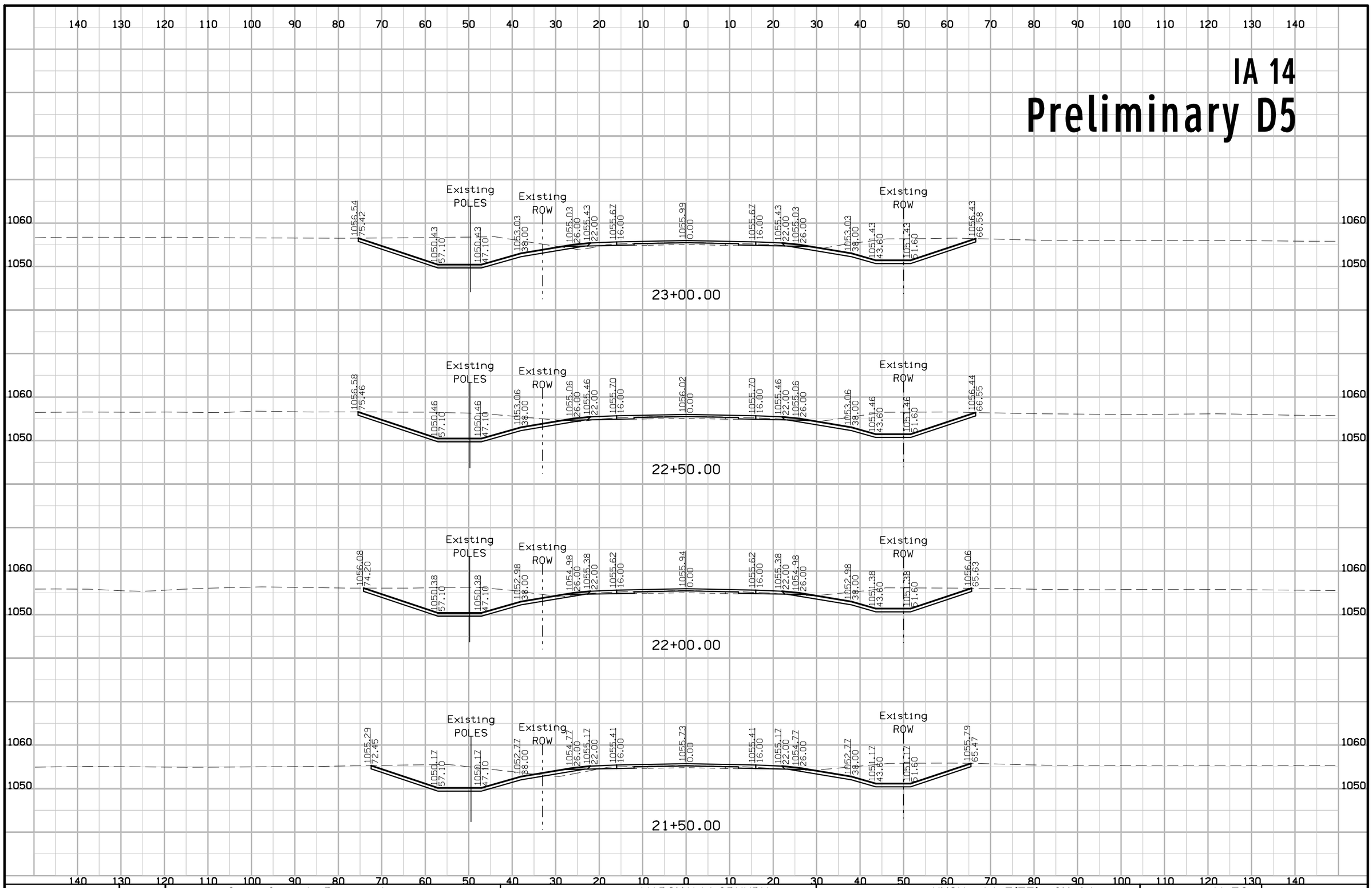
IA 14
Preliminary D5



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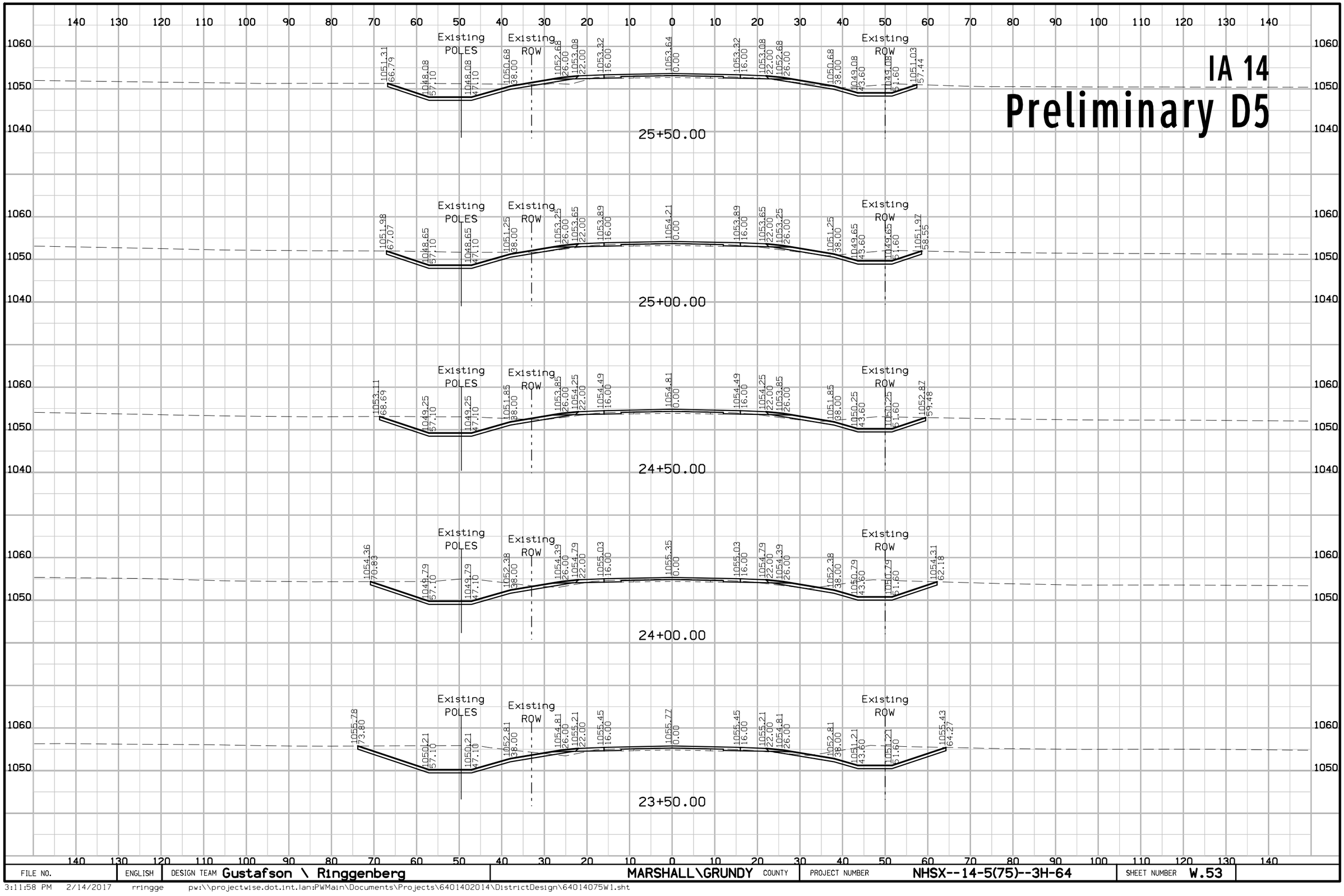
IA 14
Preliminary D5



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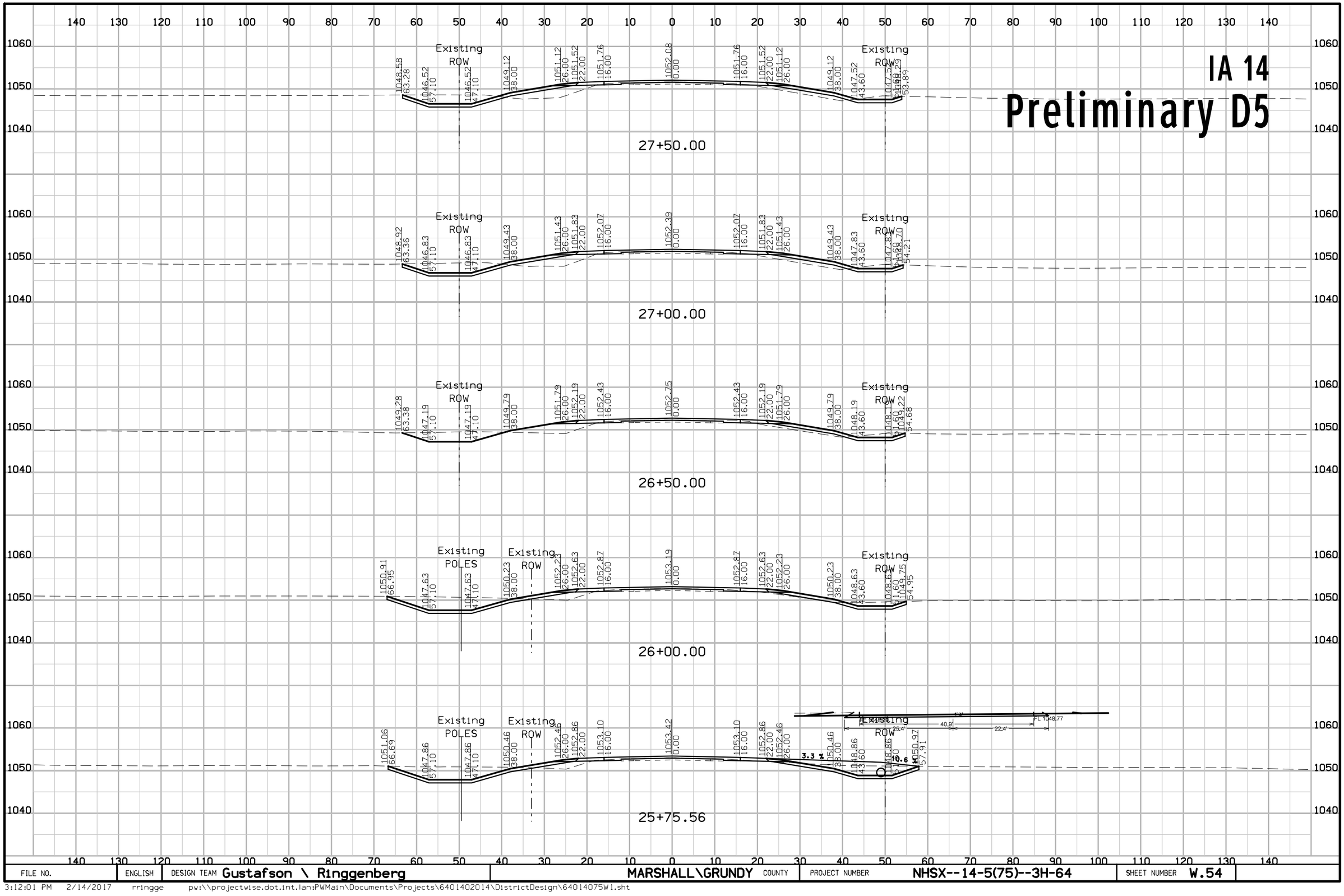
IA 14
Preliminary D5



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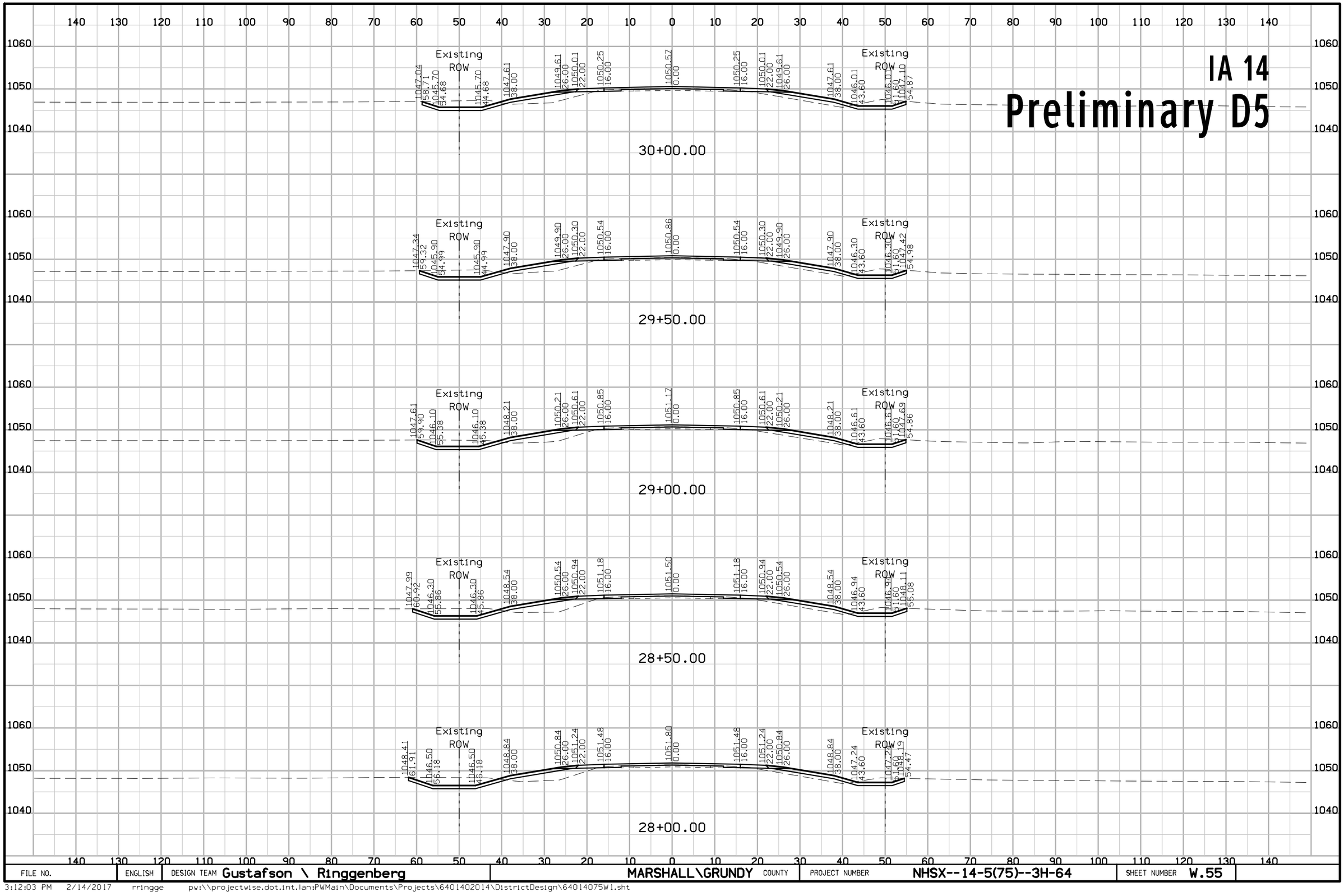
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.55

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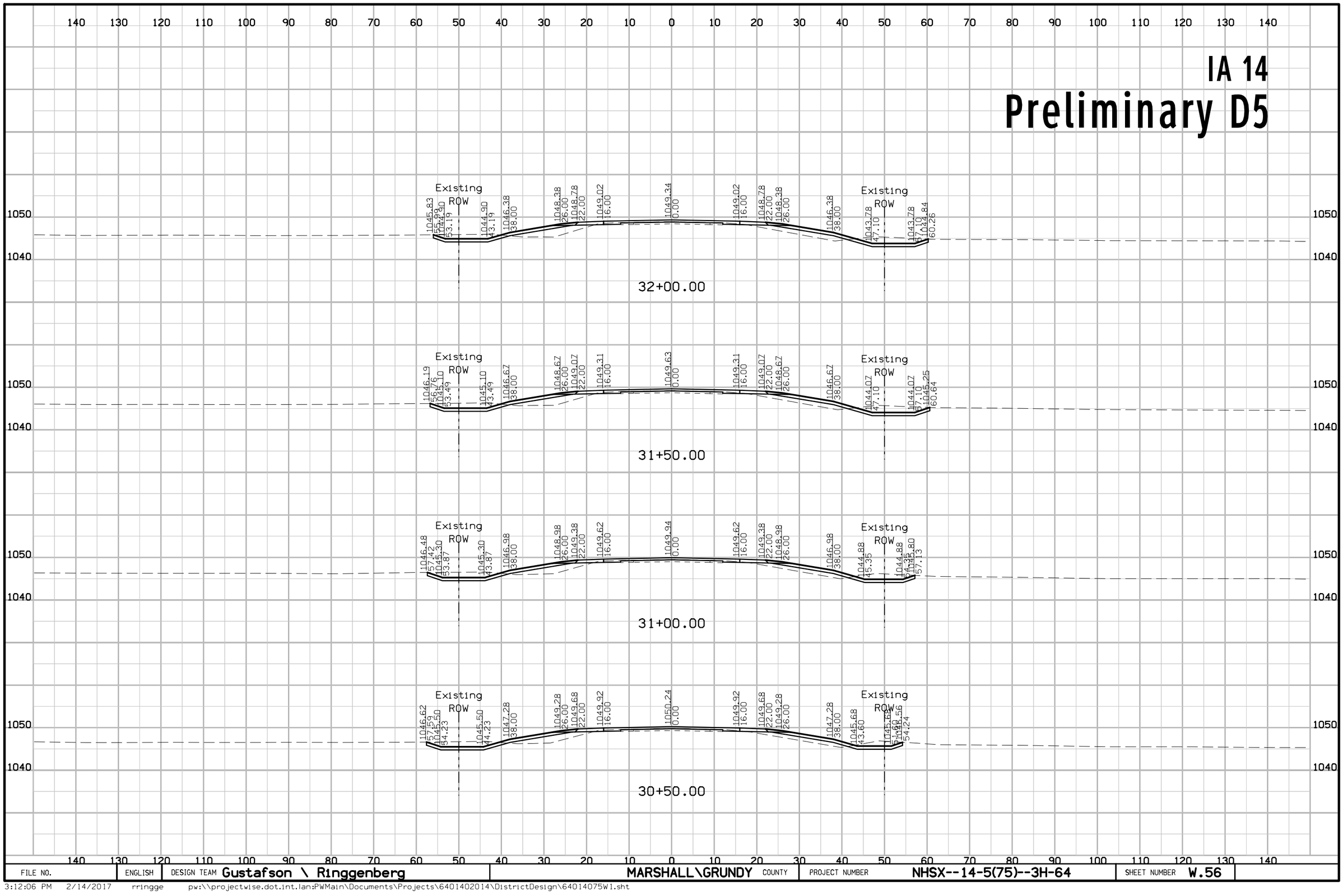
IA 14
Preliminary D5



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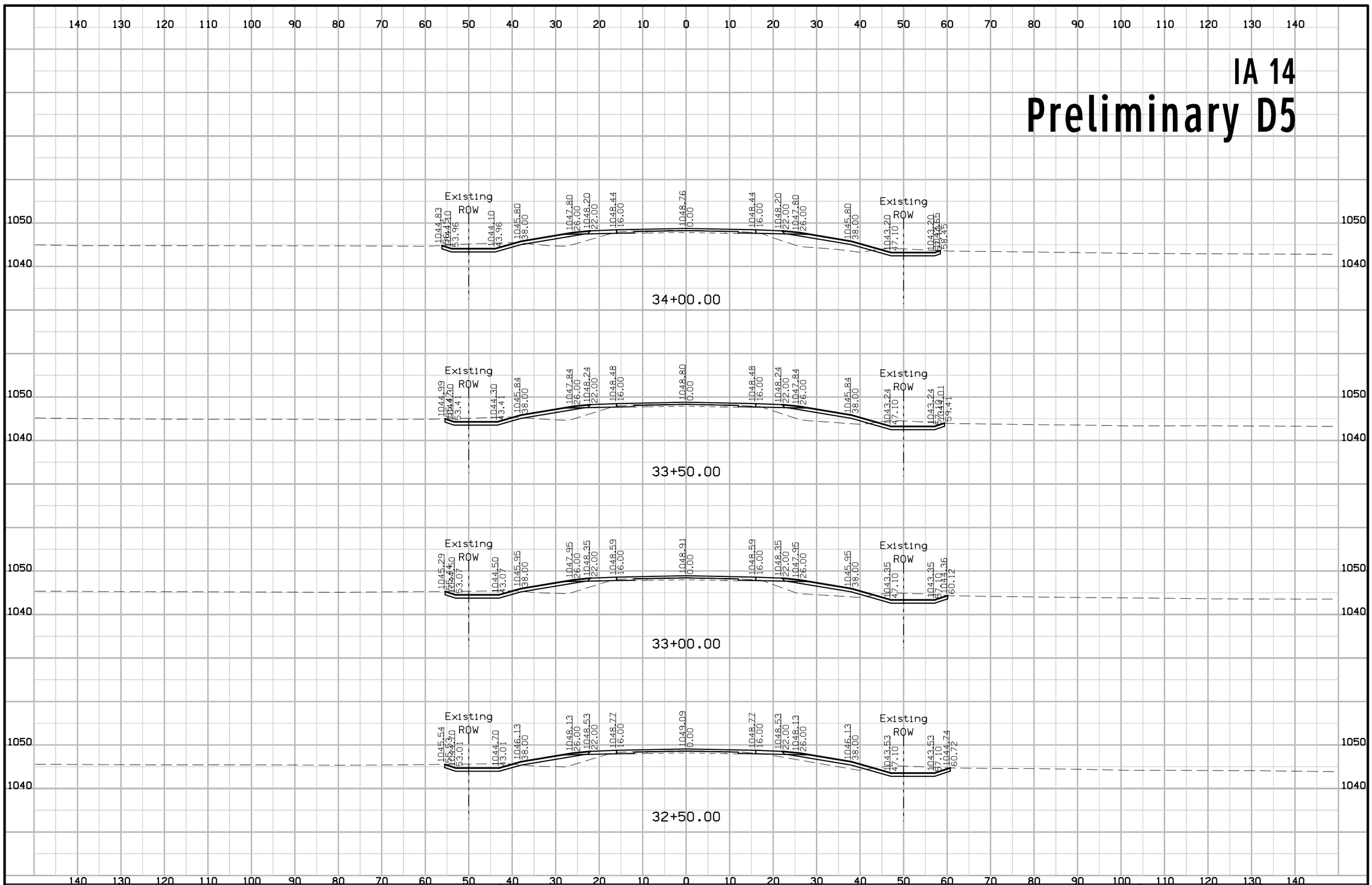
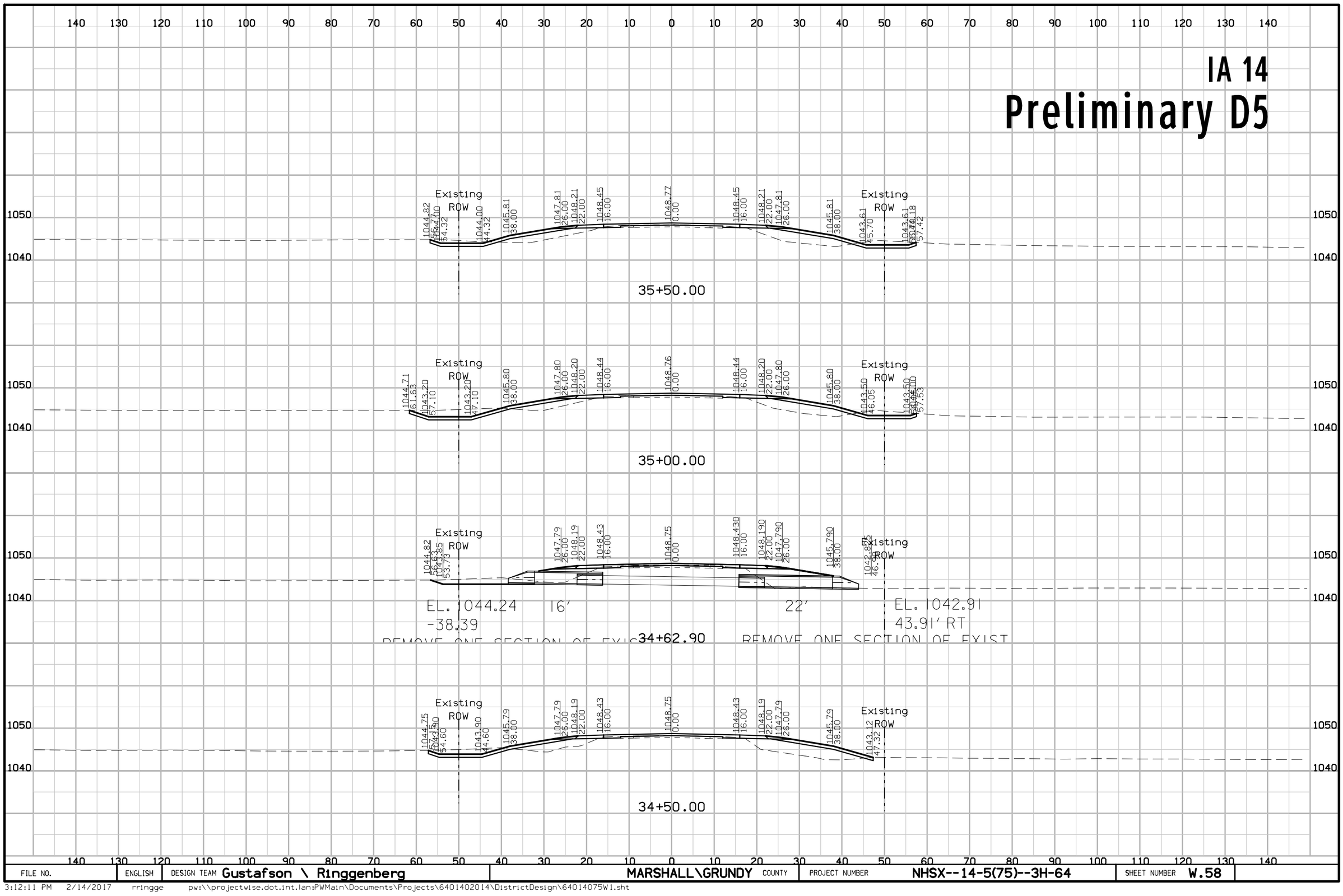
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.57

IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.58

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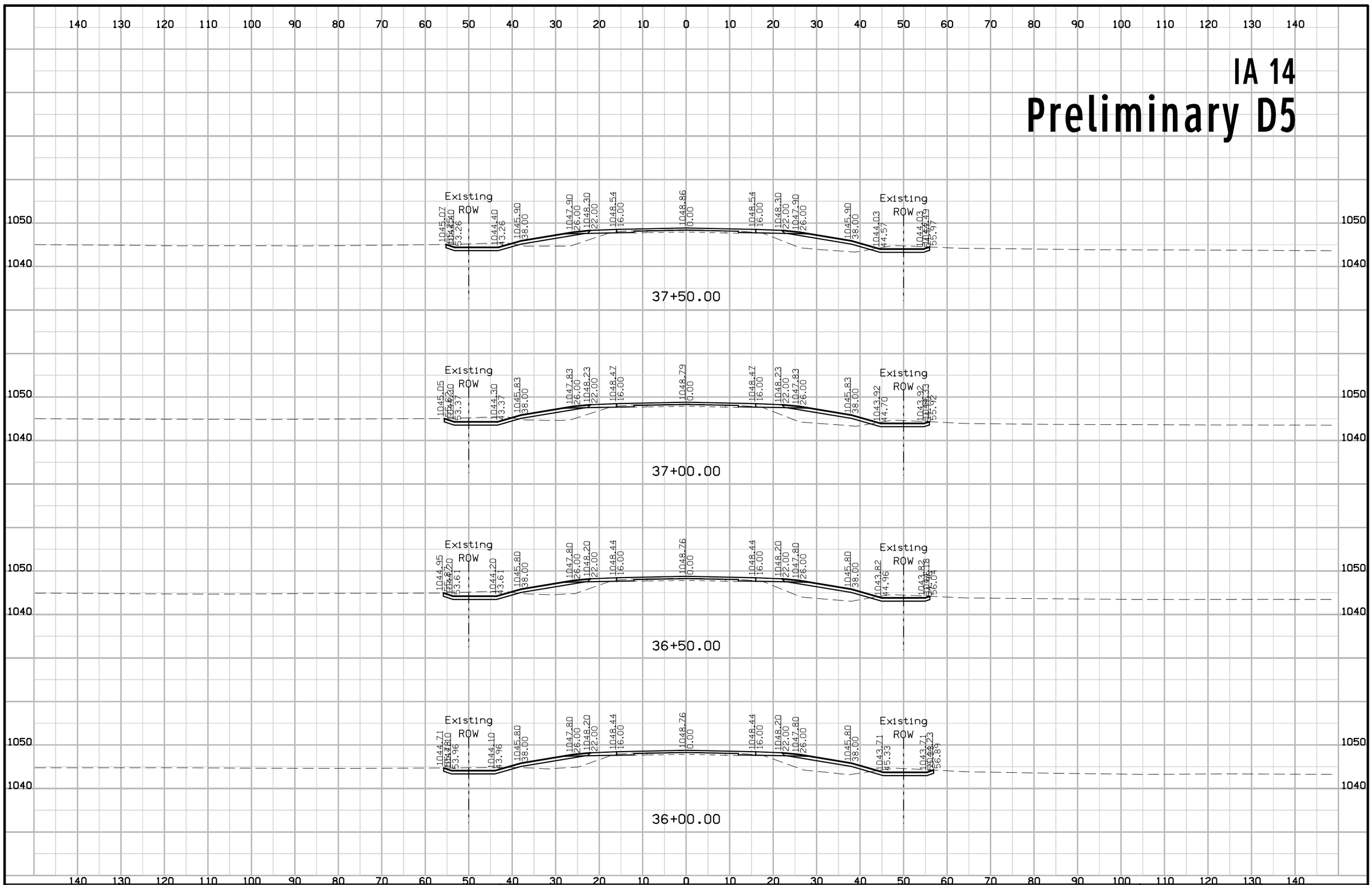
IA 14
Preliminary D5



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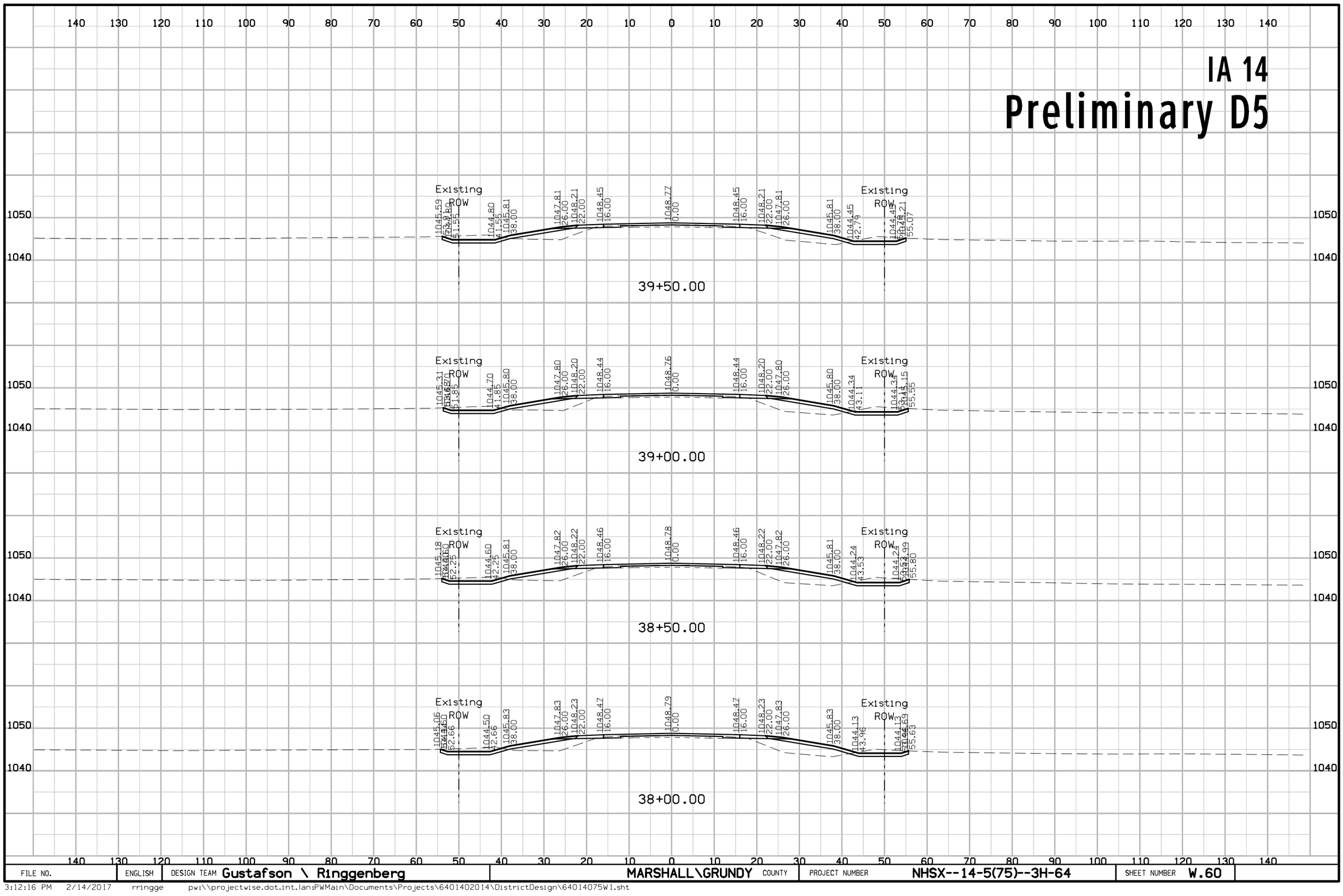
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.60

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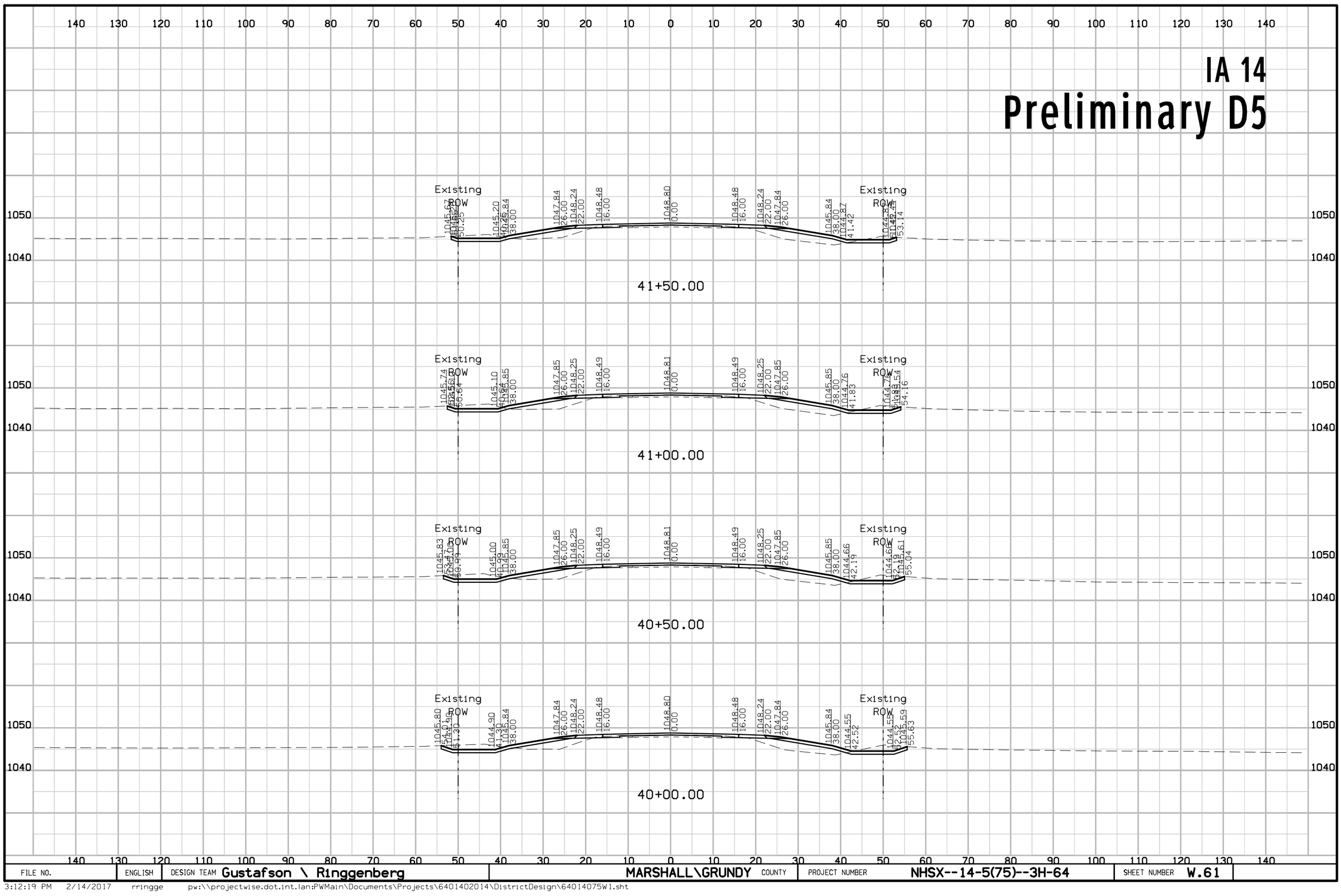
IA 14
Preliminary D5



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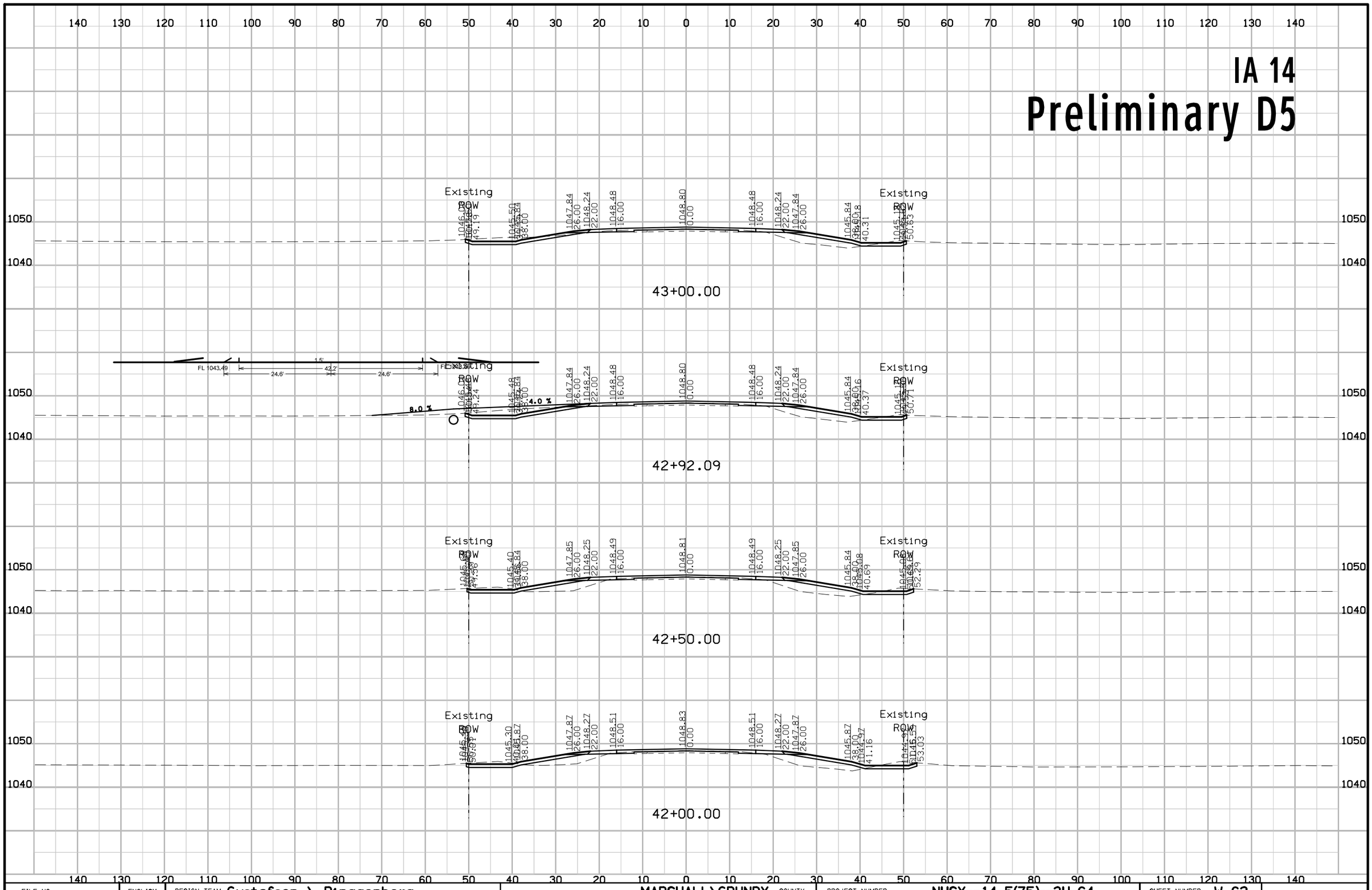
IA 14
Preliminary D5



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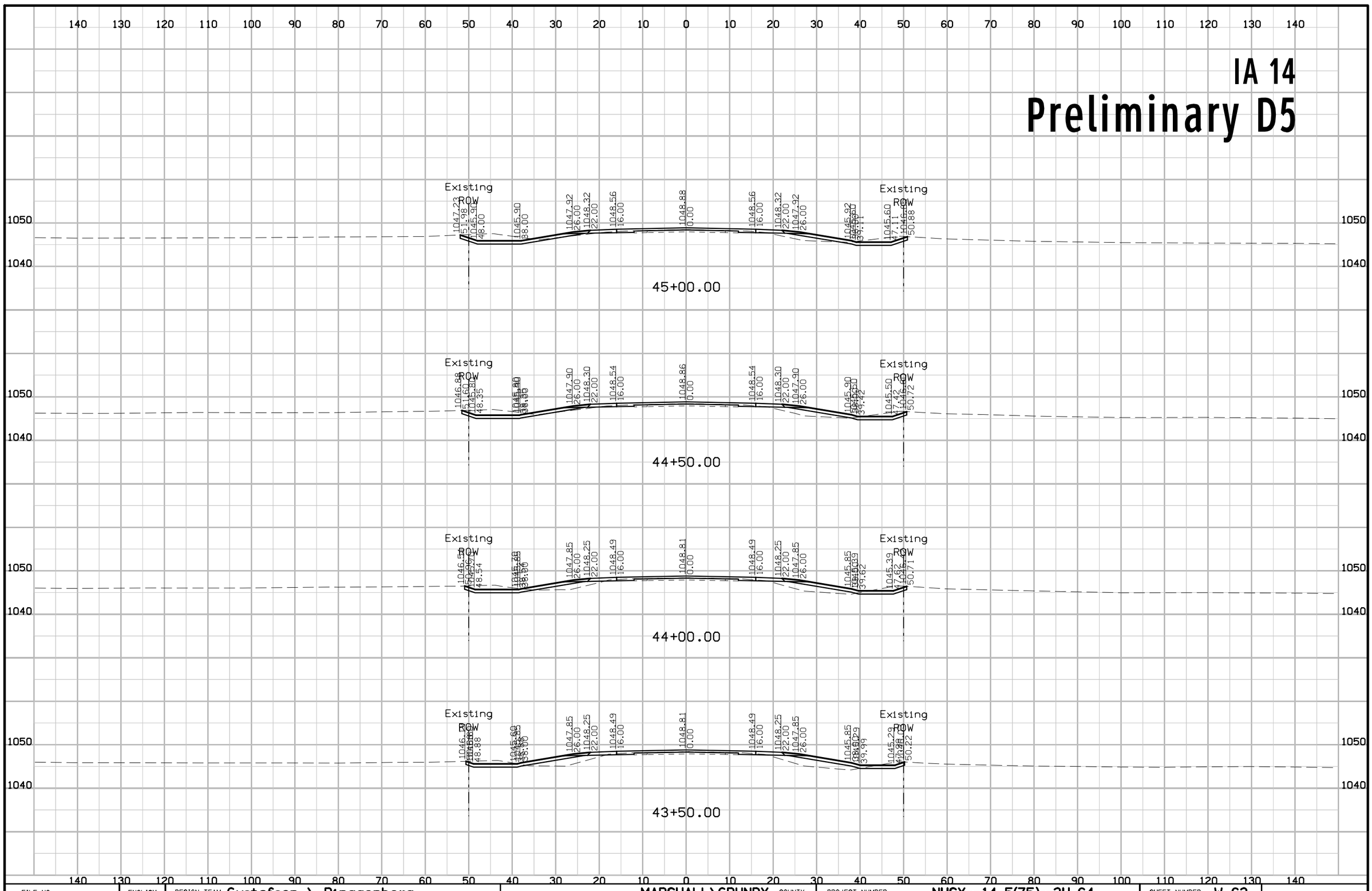
IA 14
Preliminary D5



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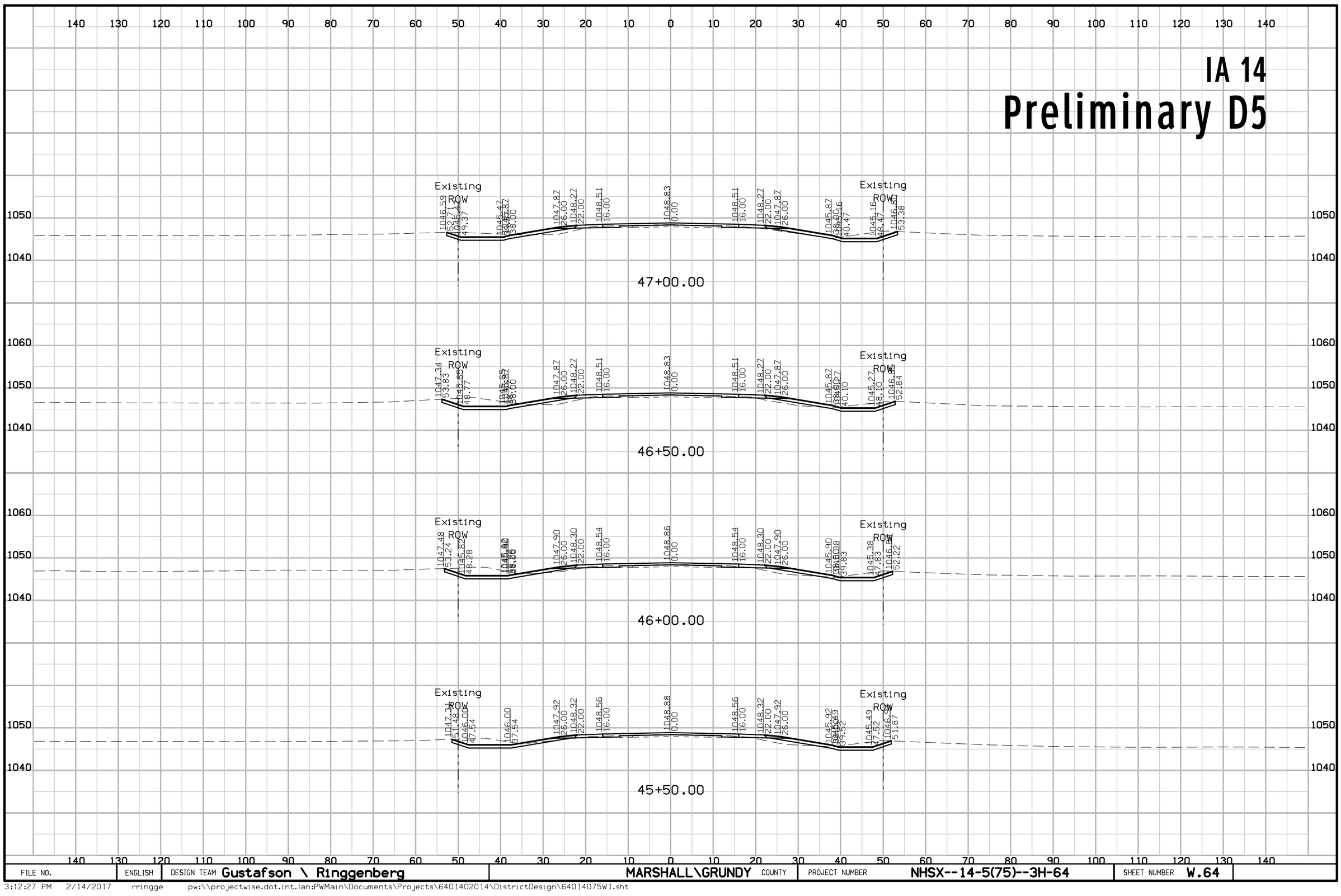
IA 14
Preliminary D5



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IA 14
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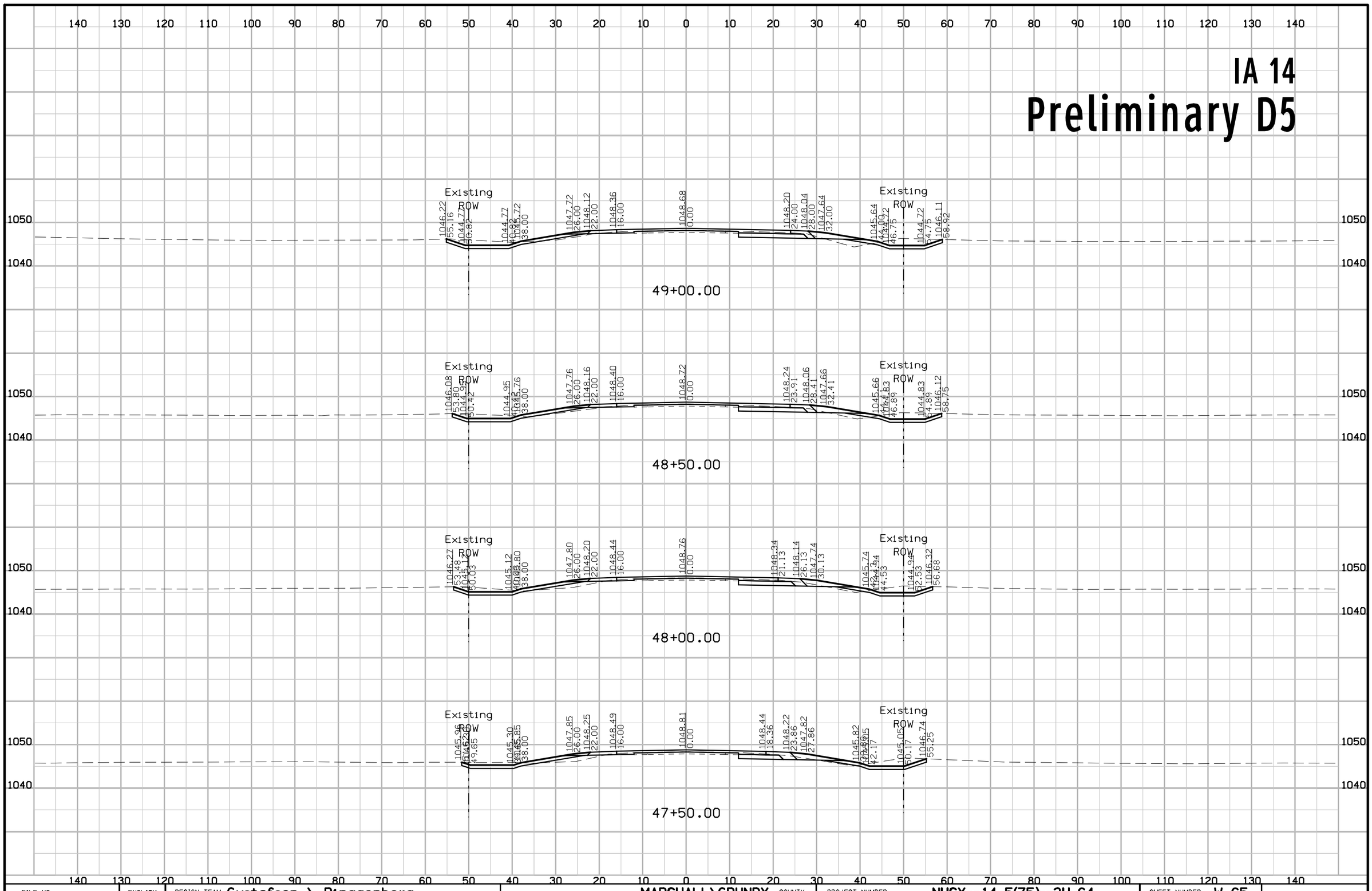

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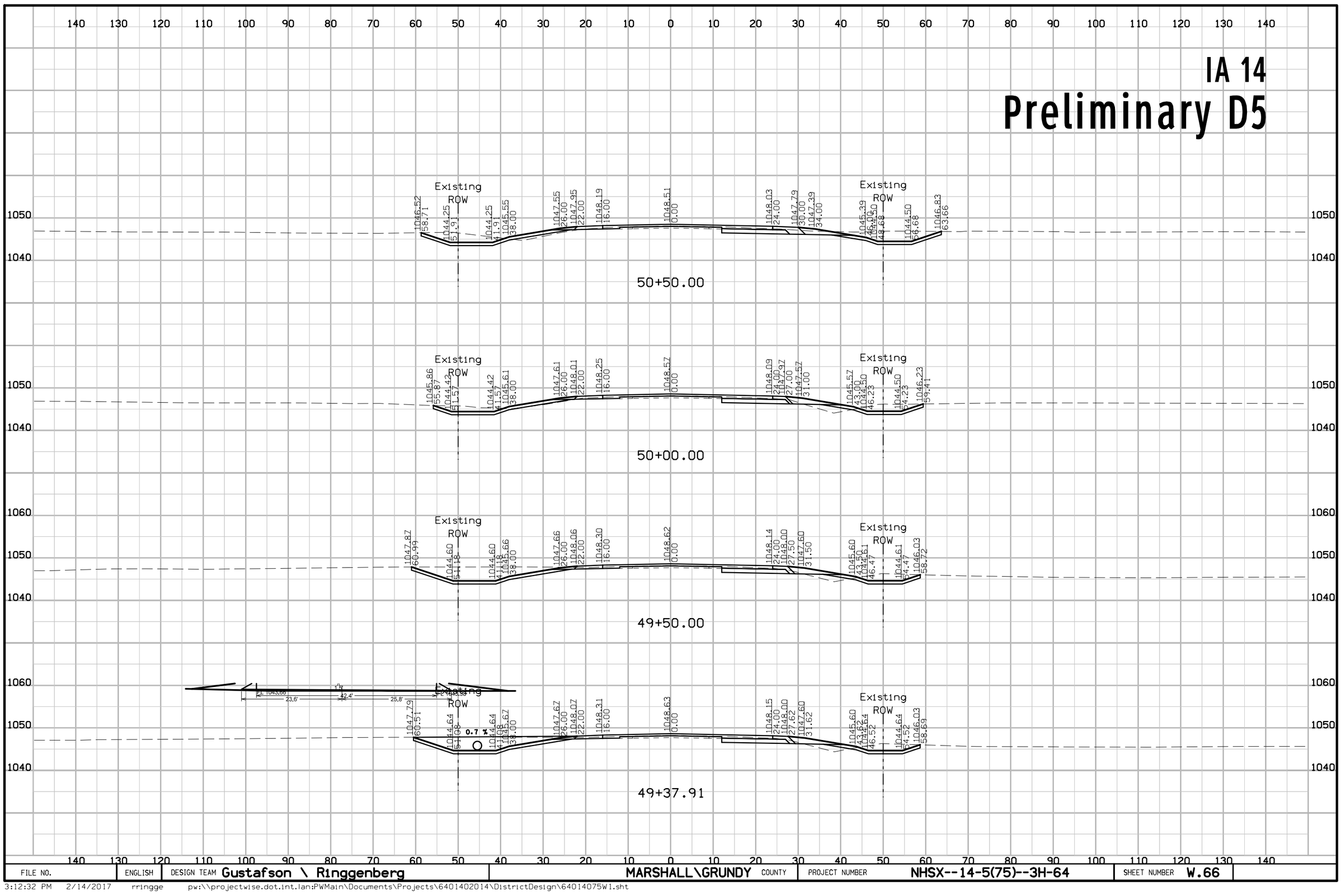
IA 14
Preliminary D5



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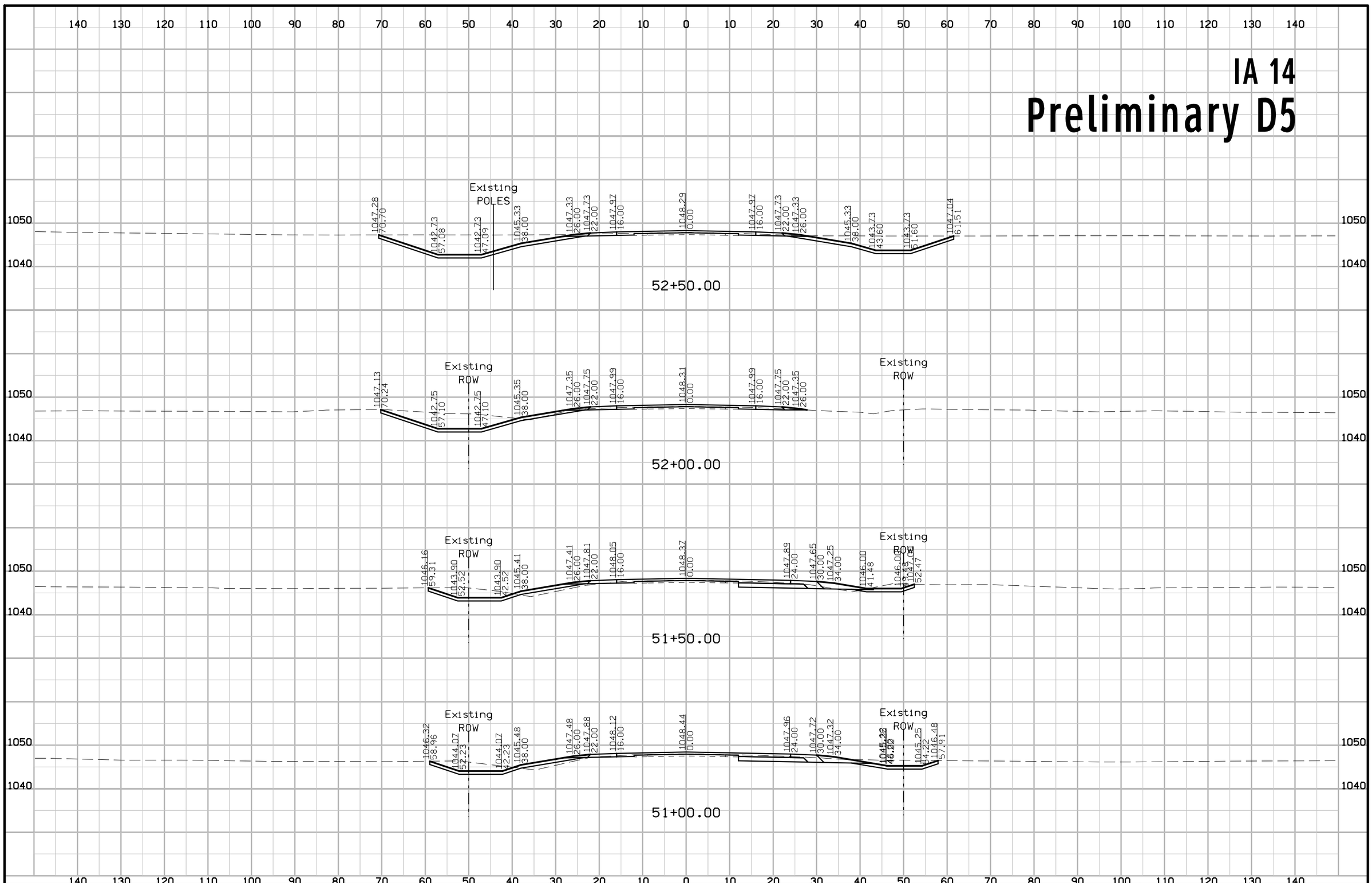
IA 14
Preliminary D5



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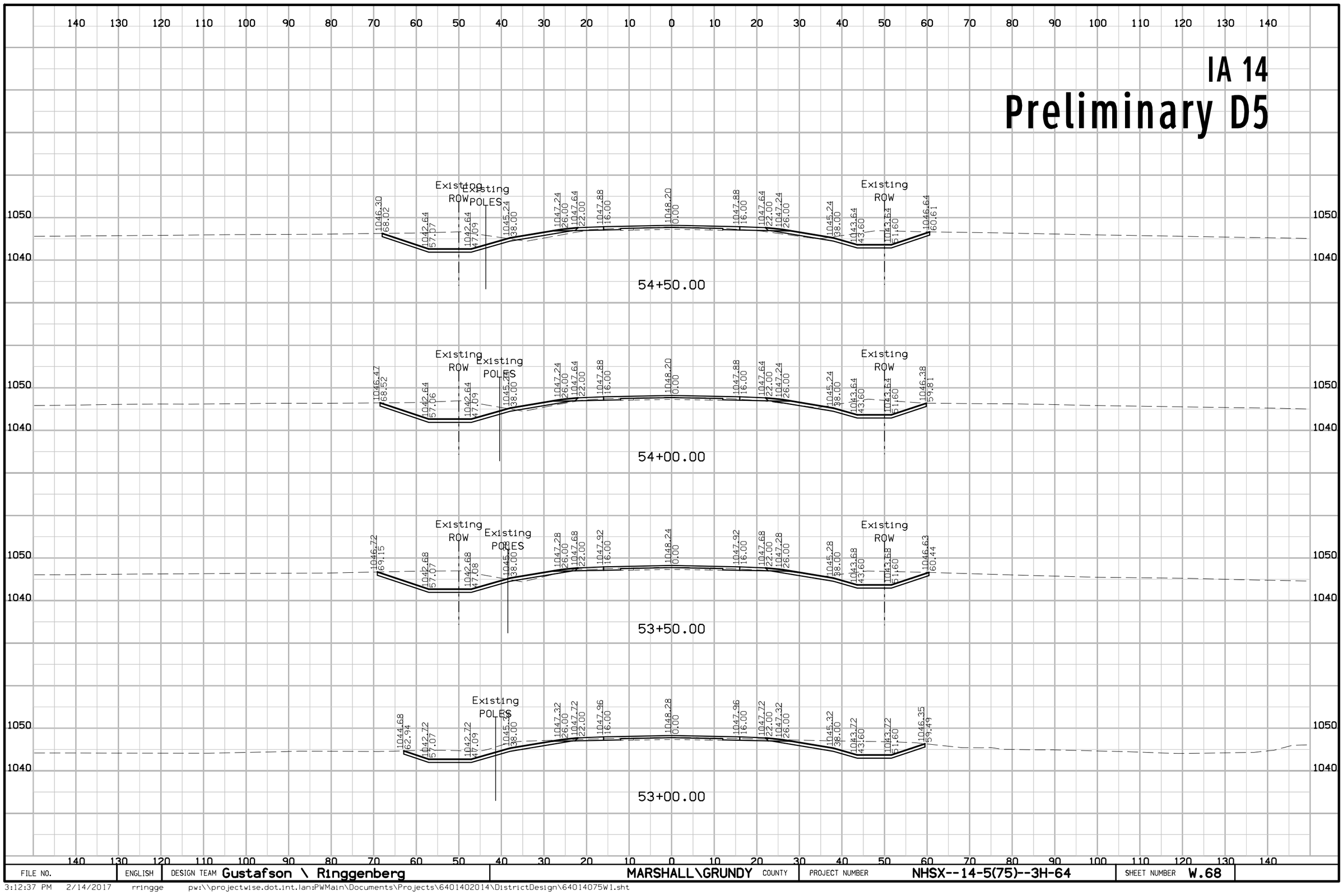
IA 14
Preliminary D5



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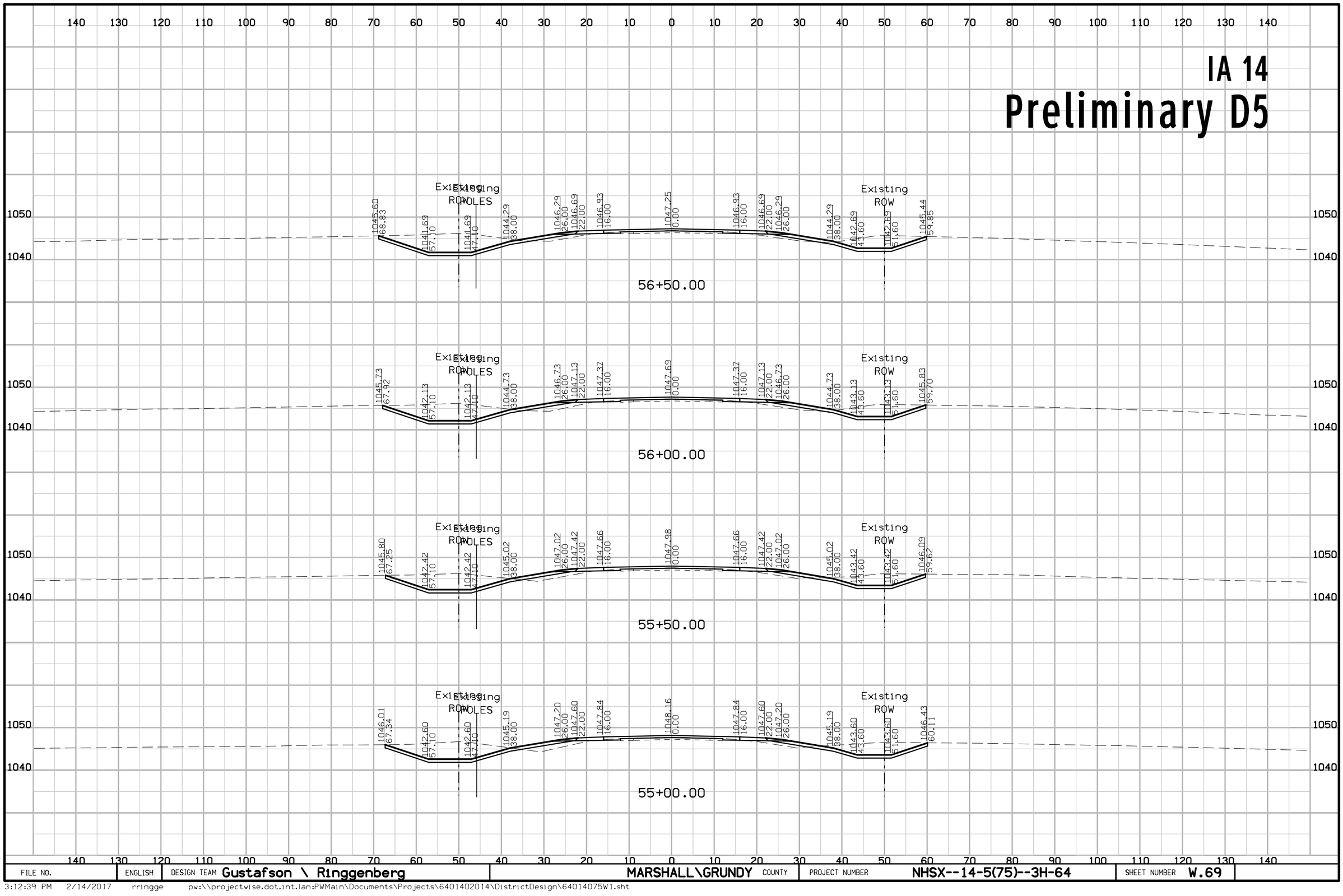
IA 14
Preliminary D5



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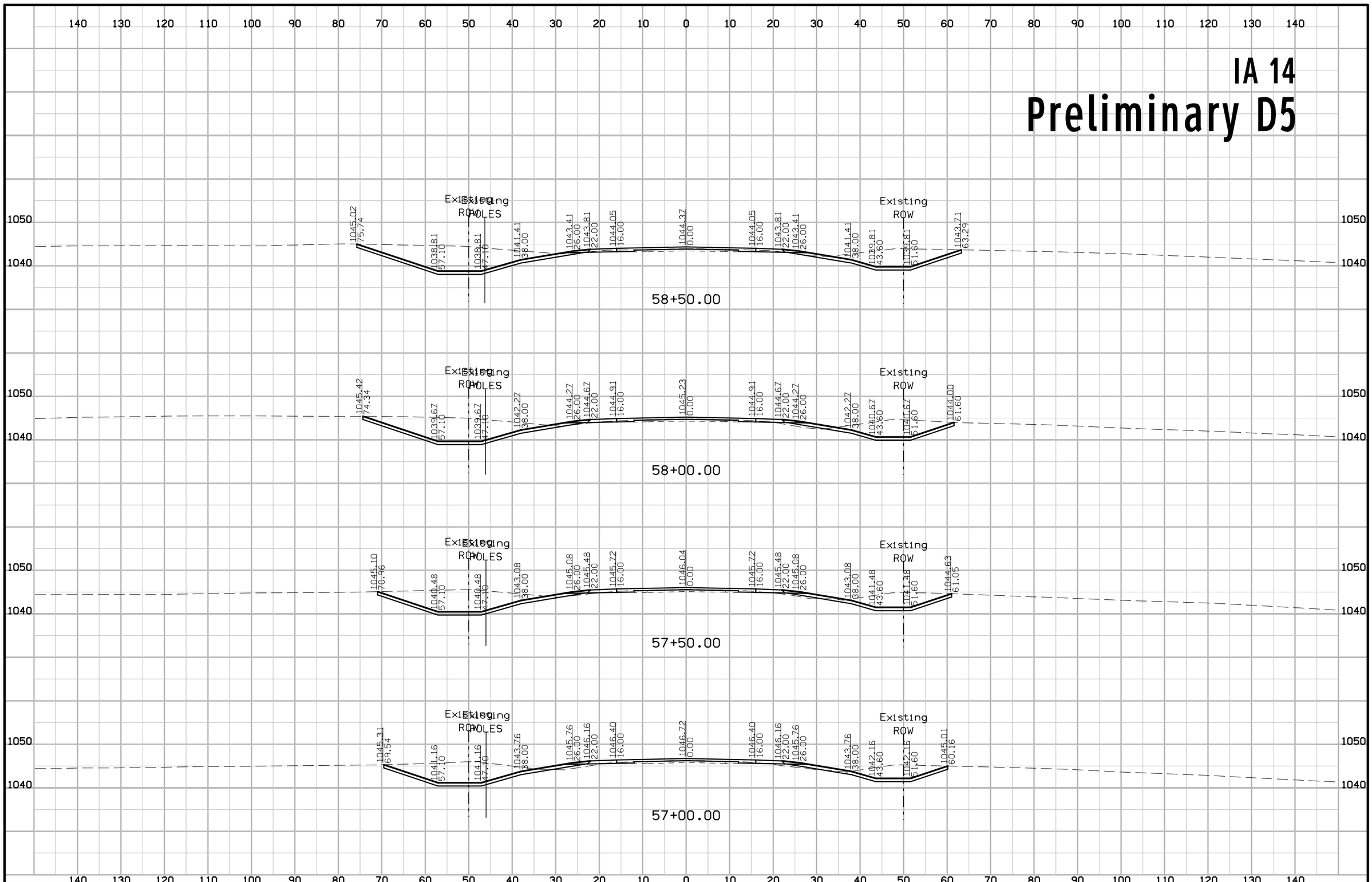
IA 14
Preliminary D5



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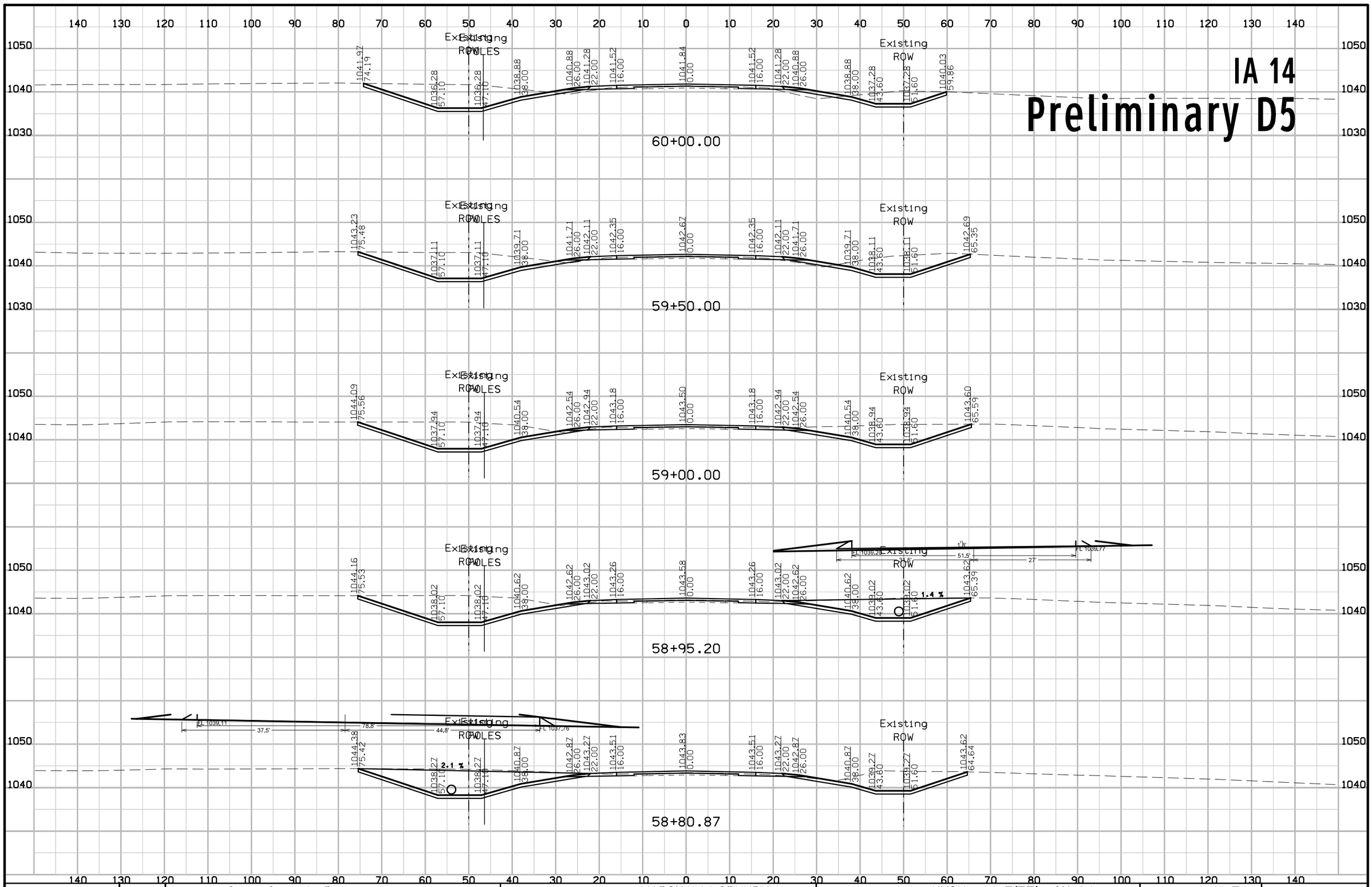
IA 14
Preliminary D5



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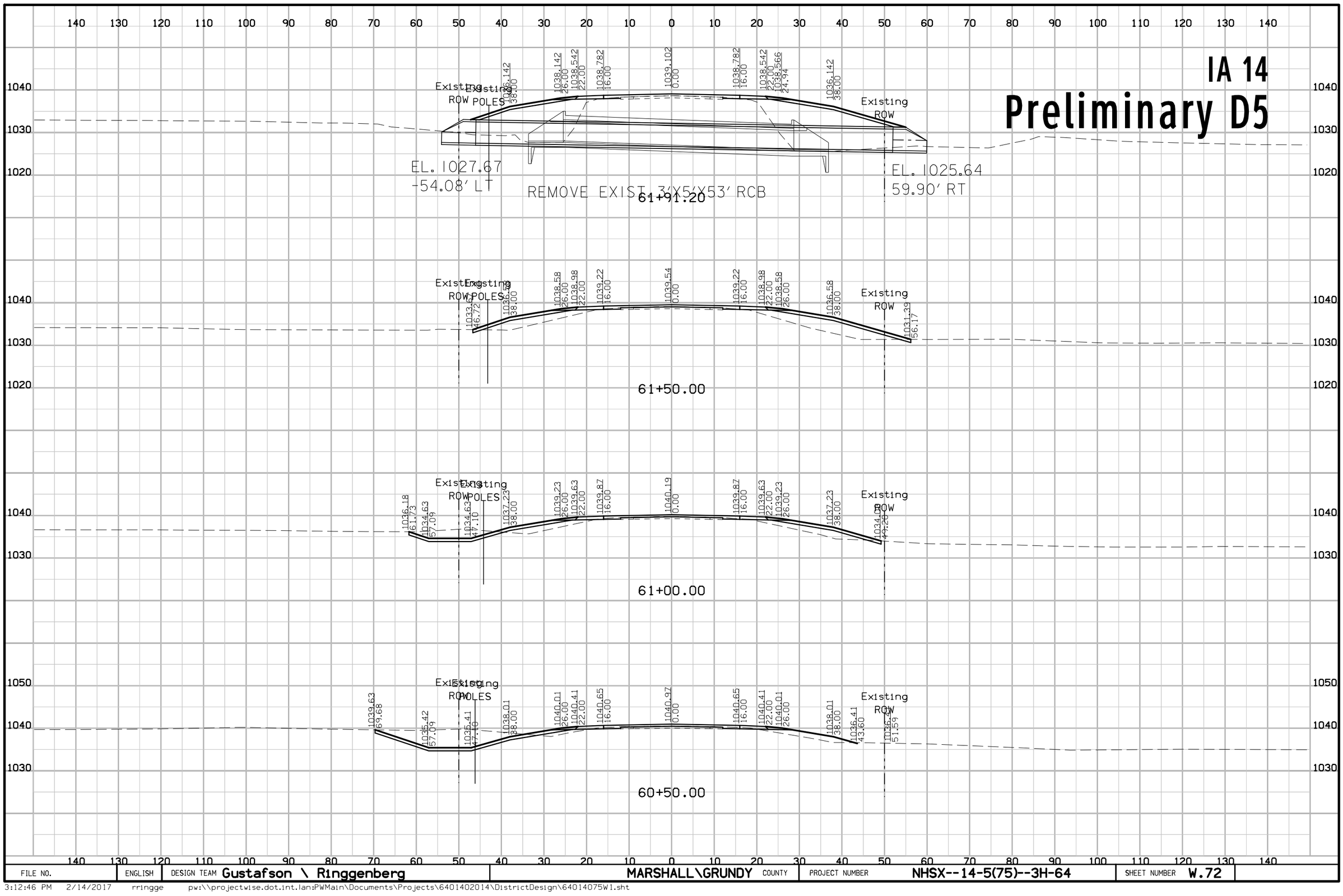
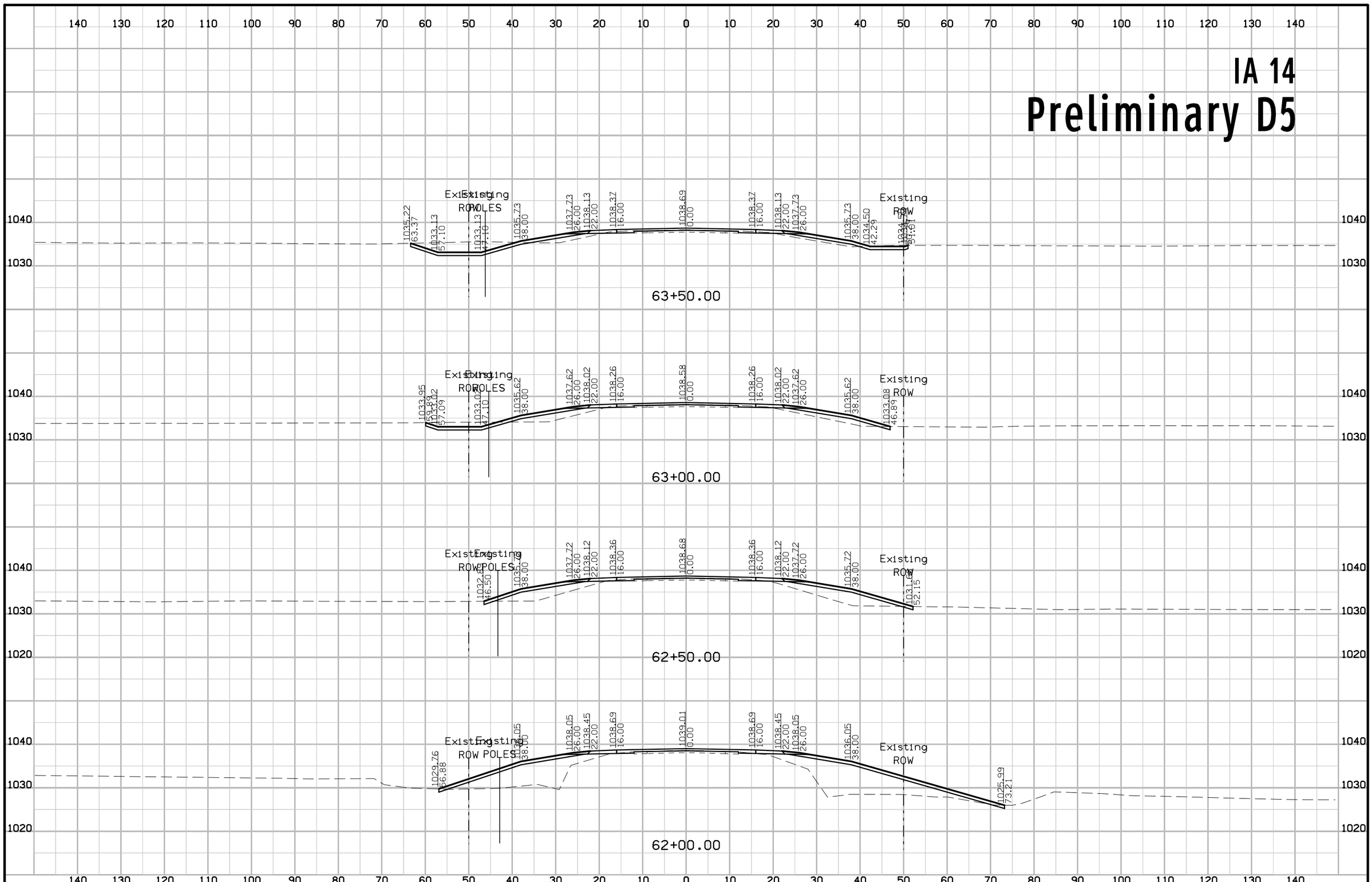
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.72

IA 14
Preliminary D5



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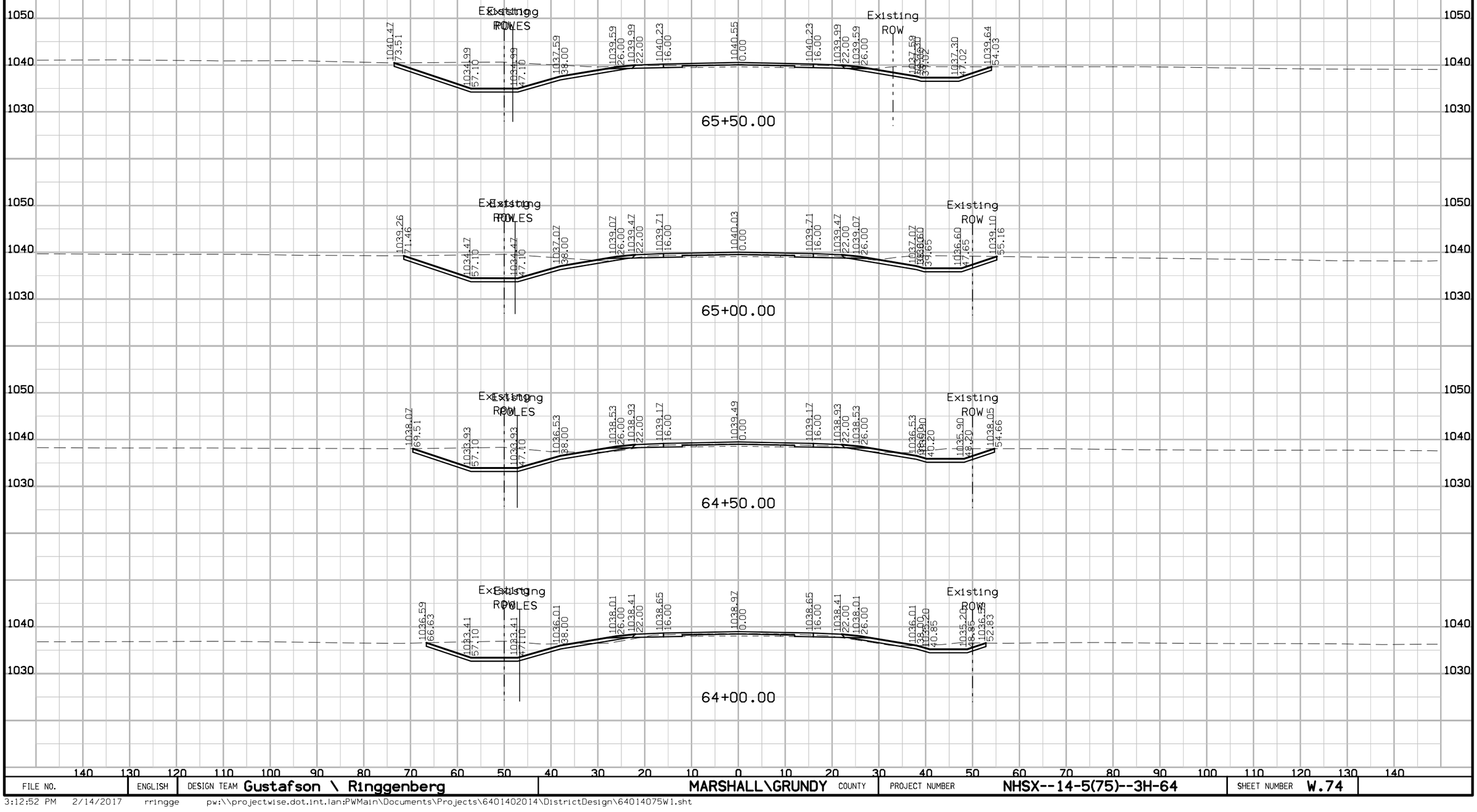
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.74

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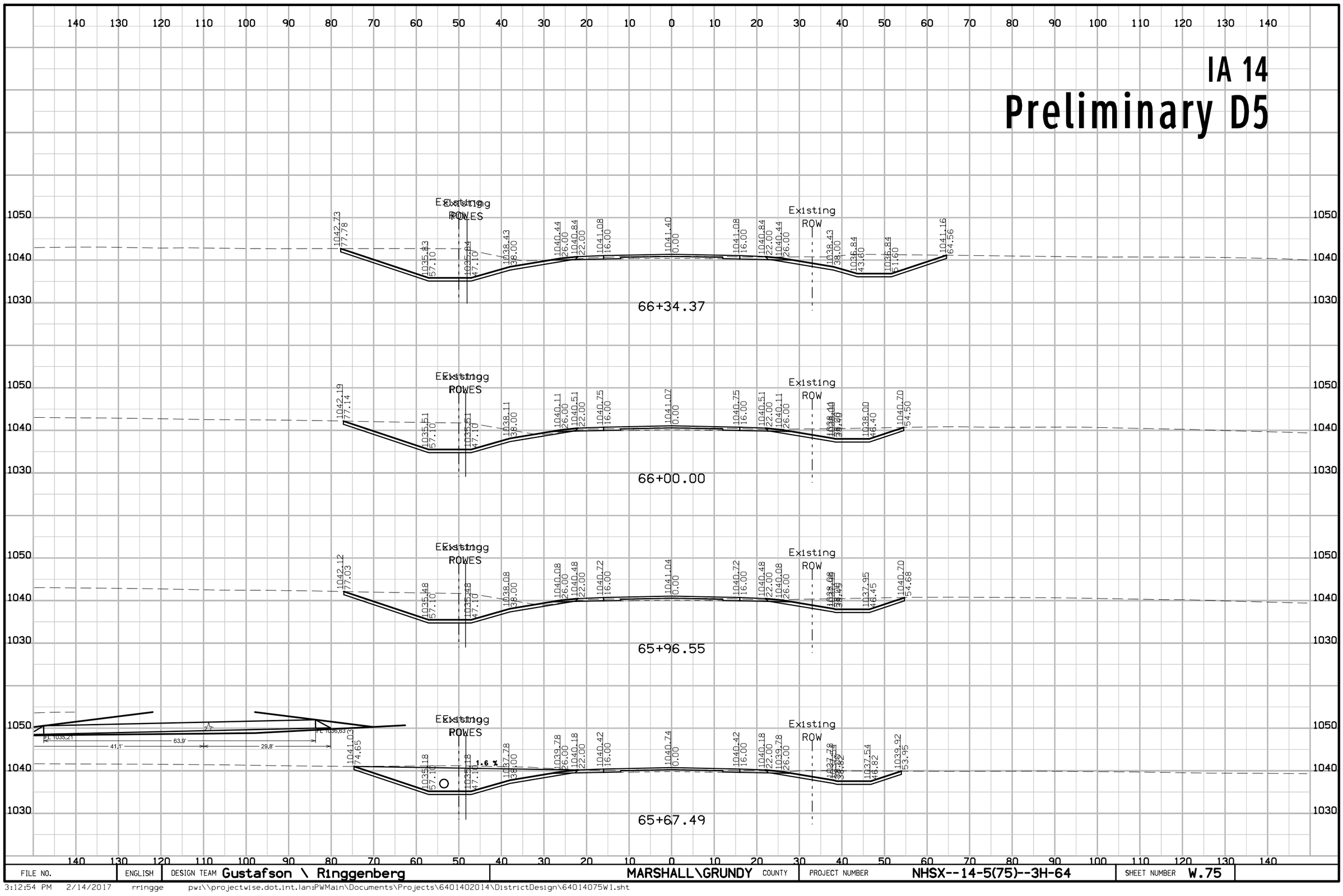
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.75

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IA 14
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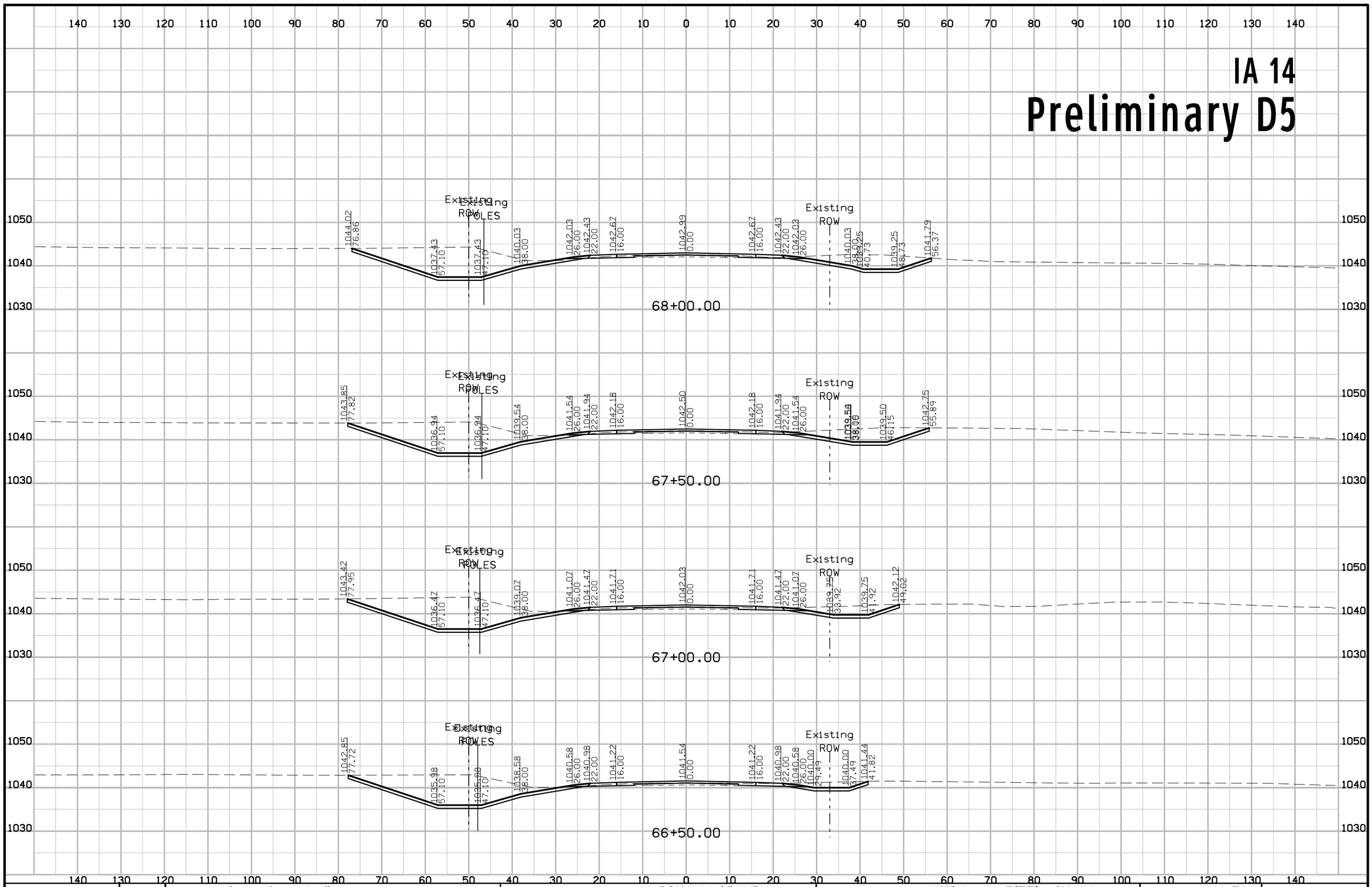

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.76

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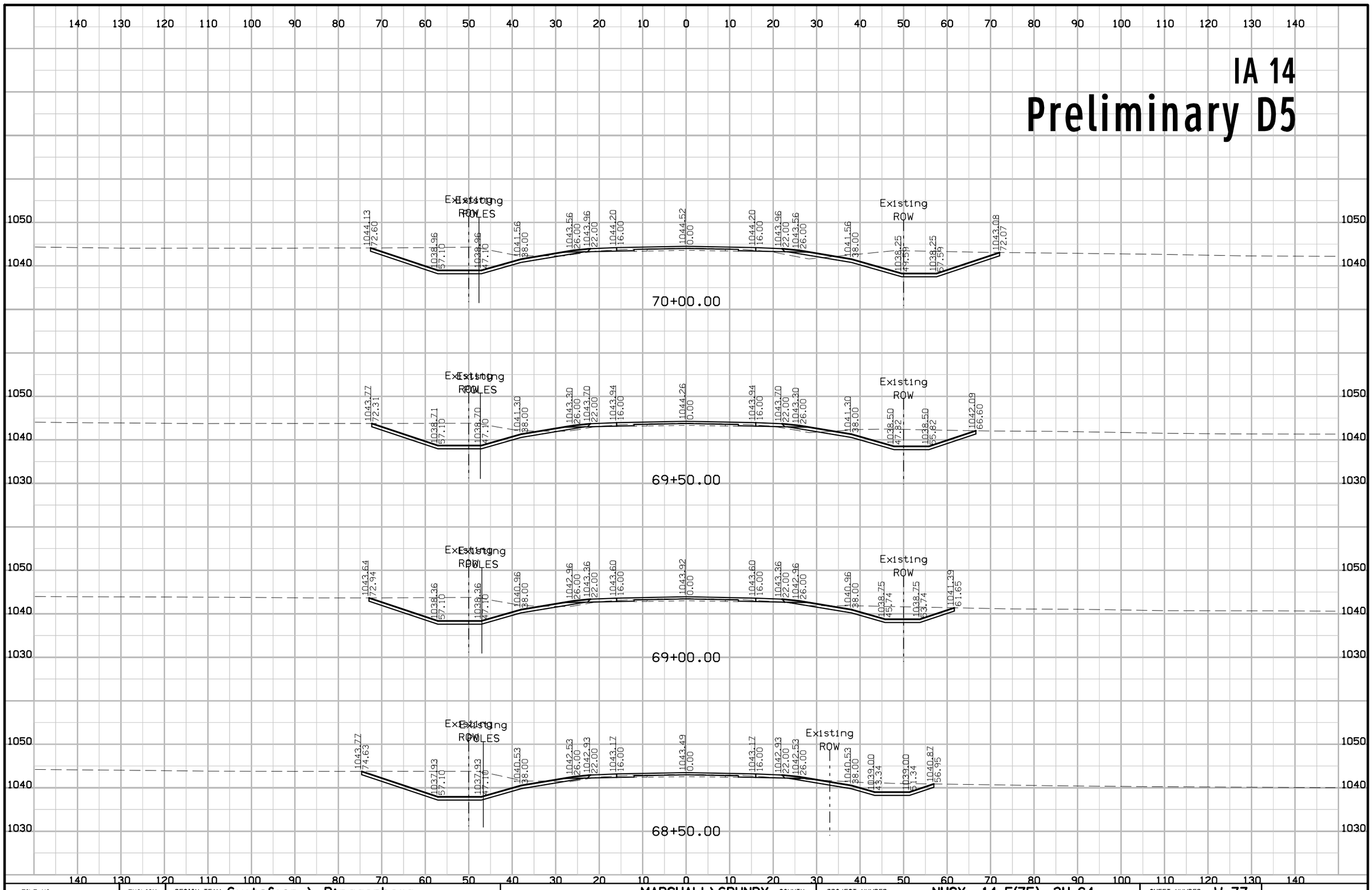
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.77

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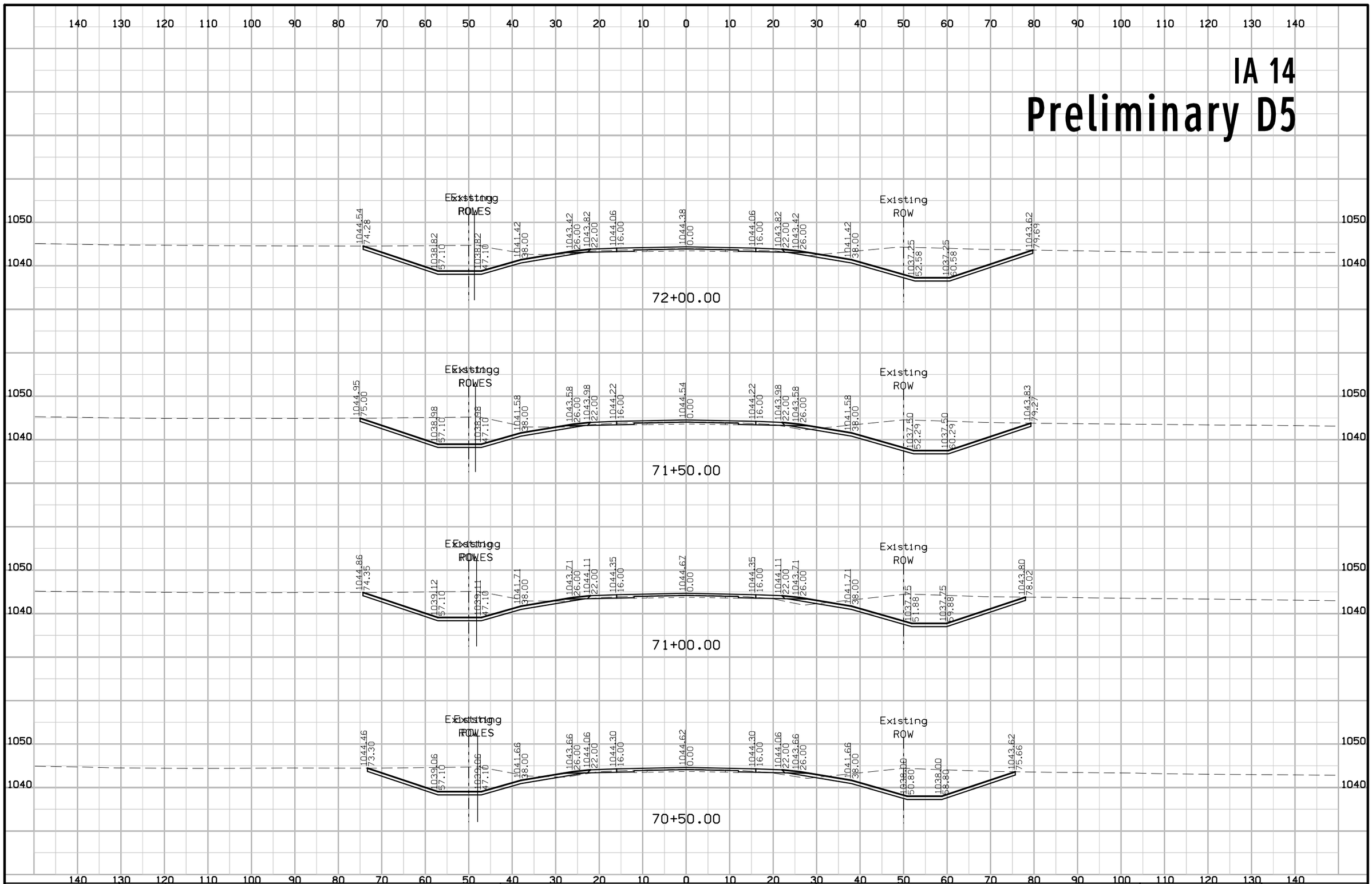
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.78

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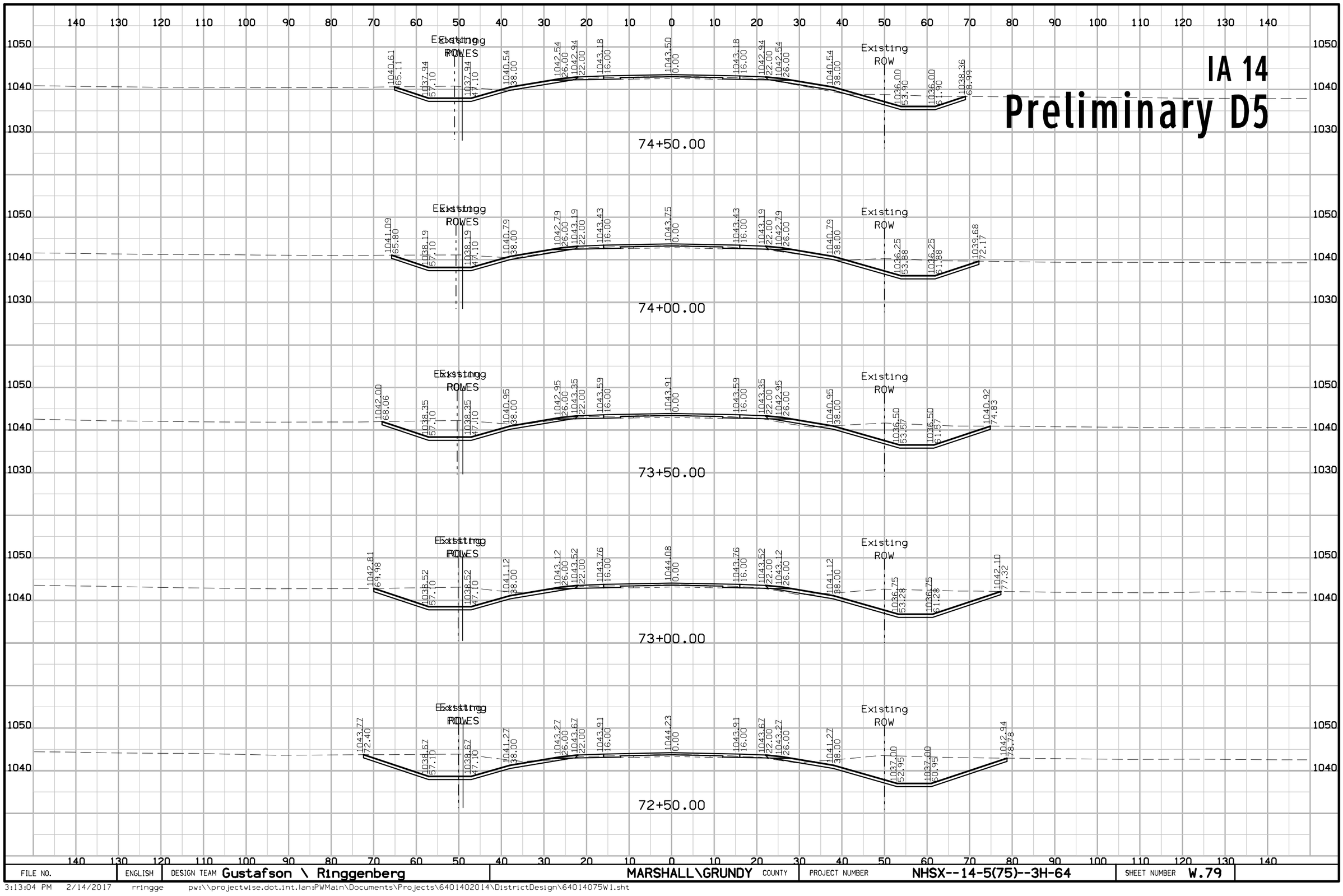
IA 14
Preliminary D5



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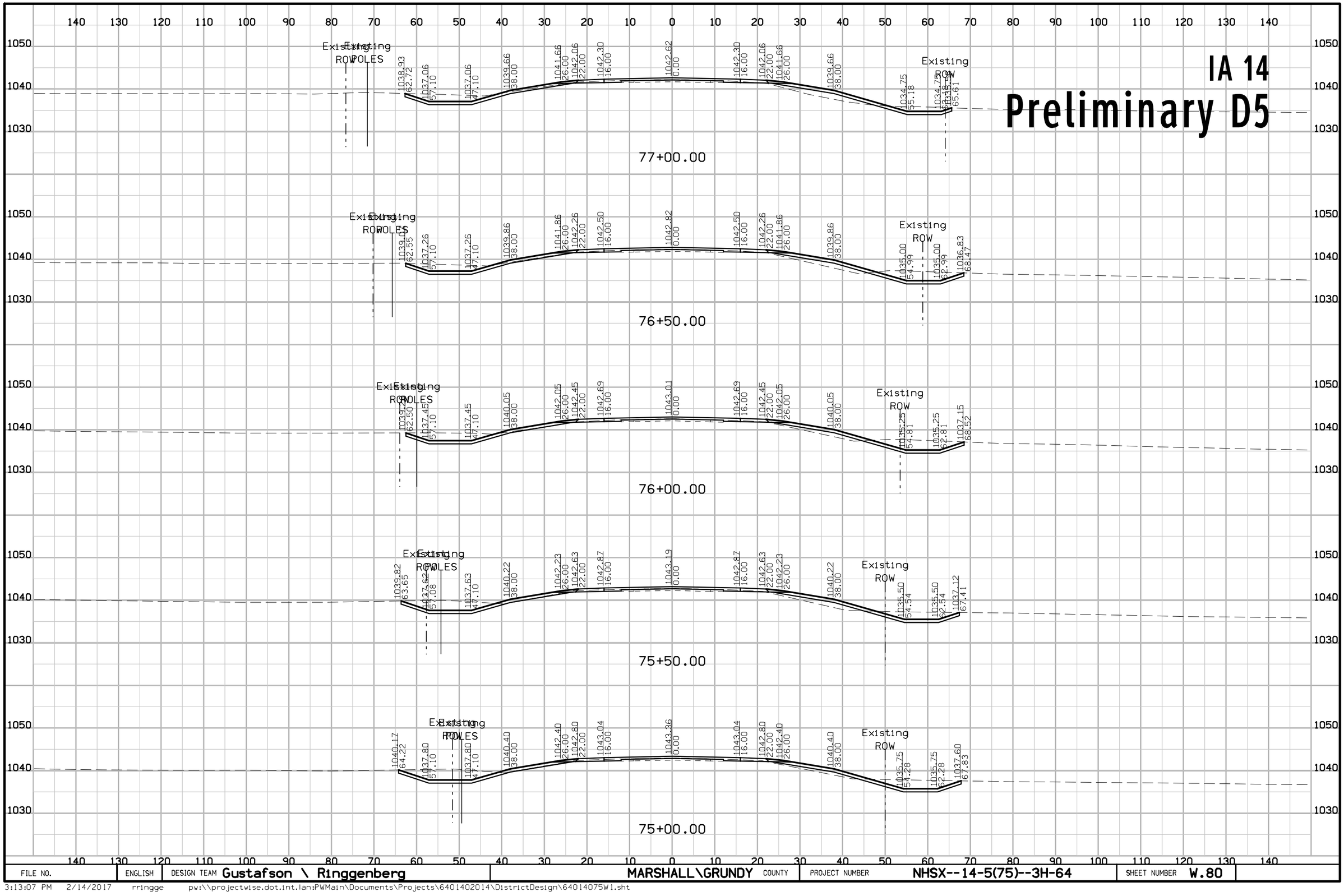
IA 14
Preliminary D5



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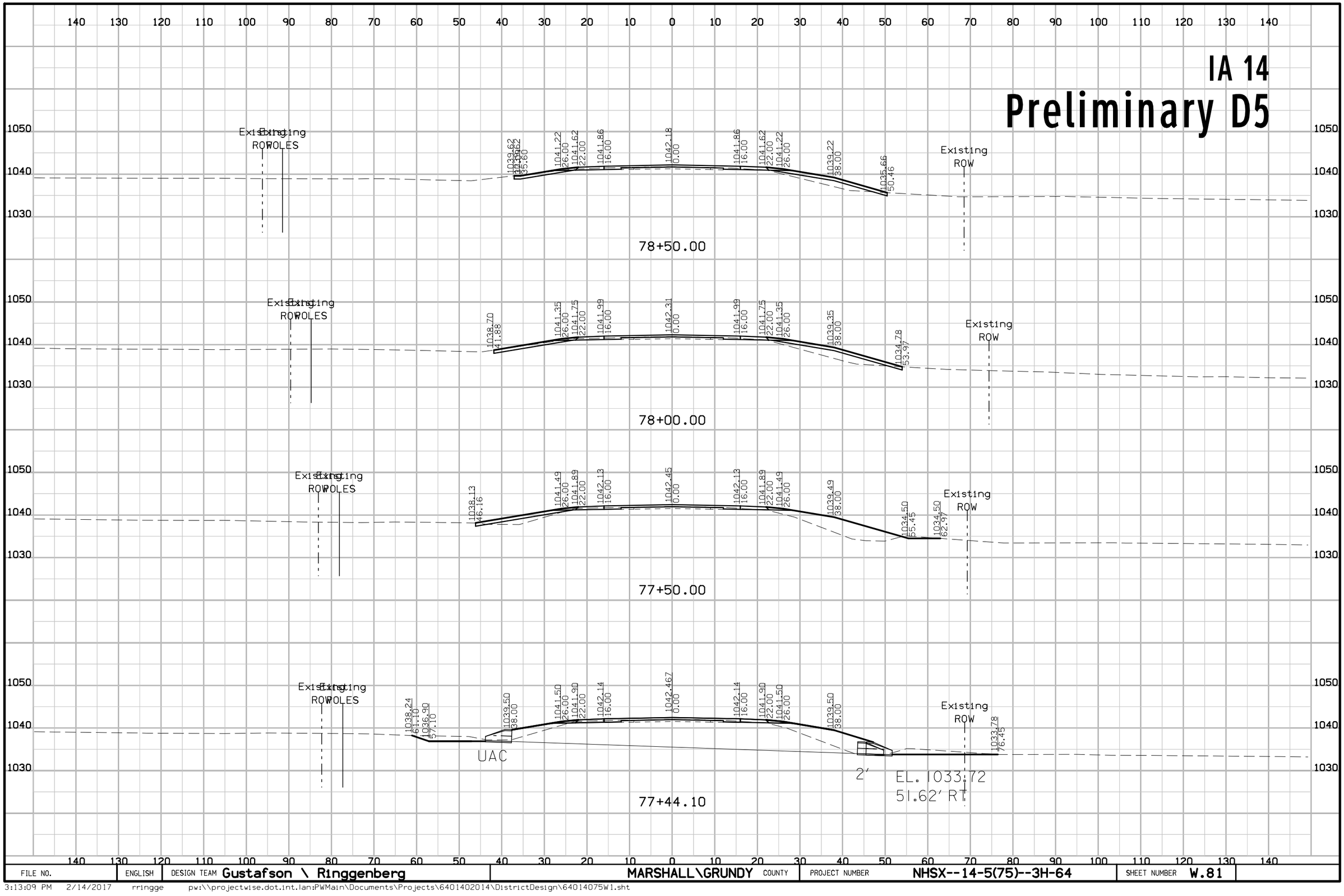
IA 14
Preliminary D5



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IA 14
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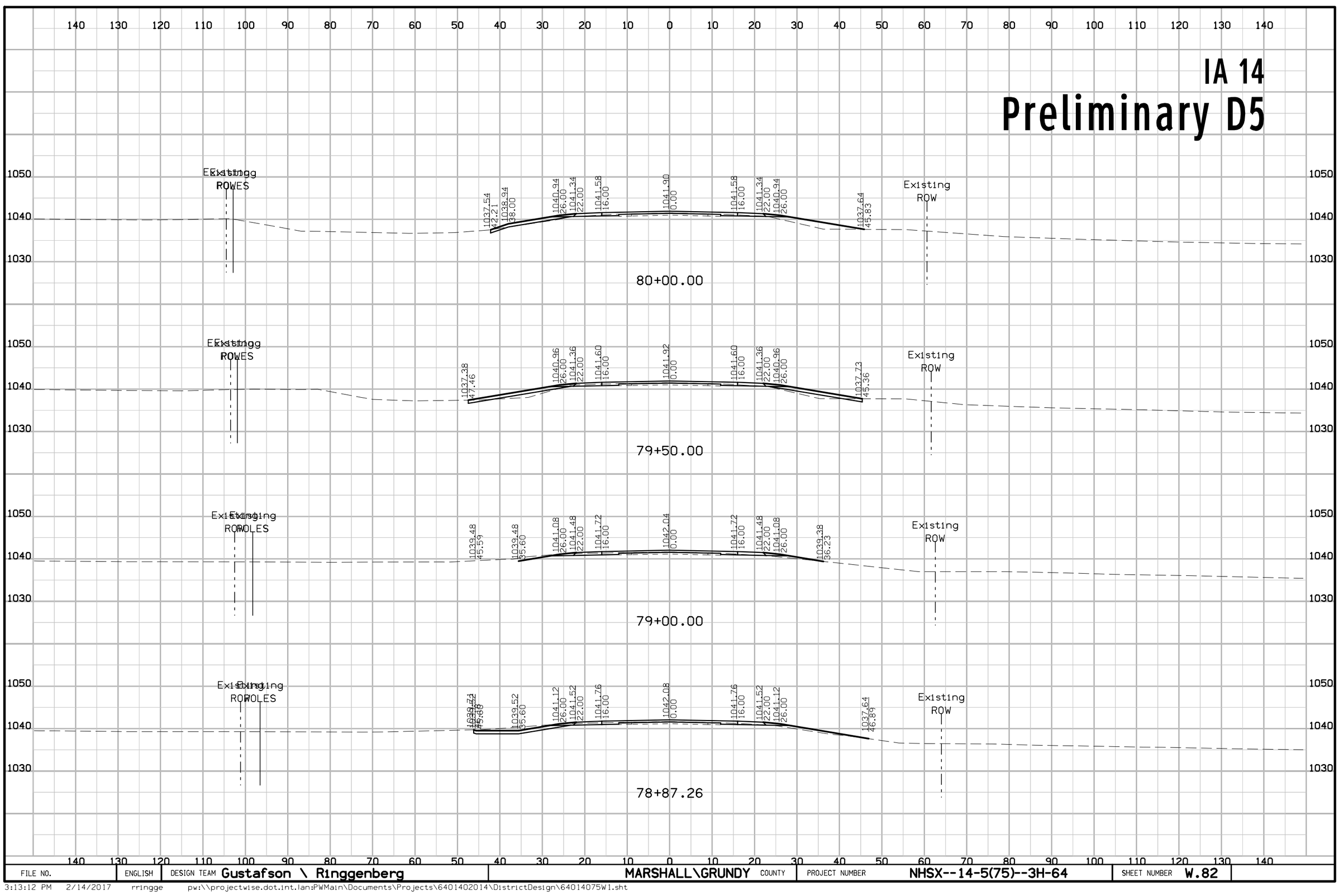

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IA 14
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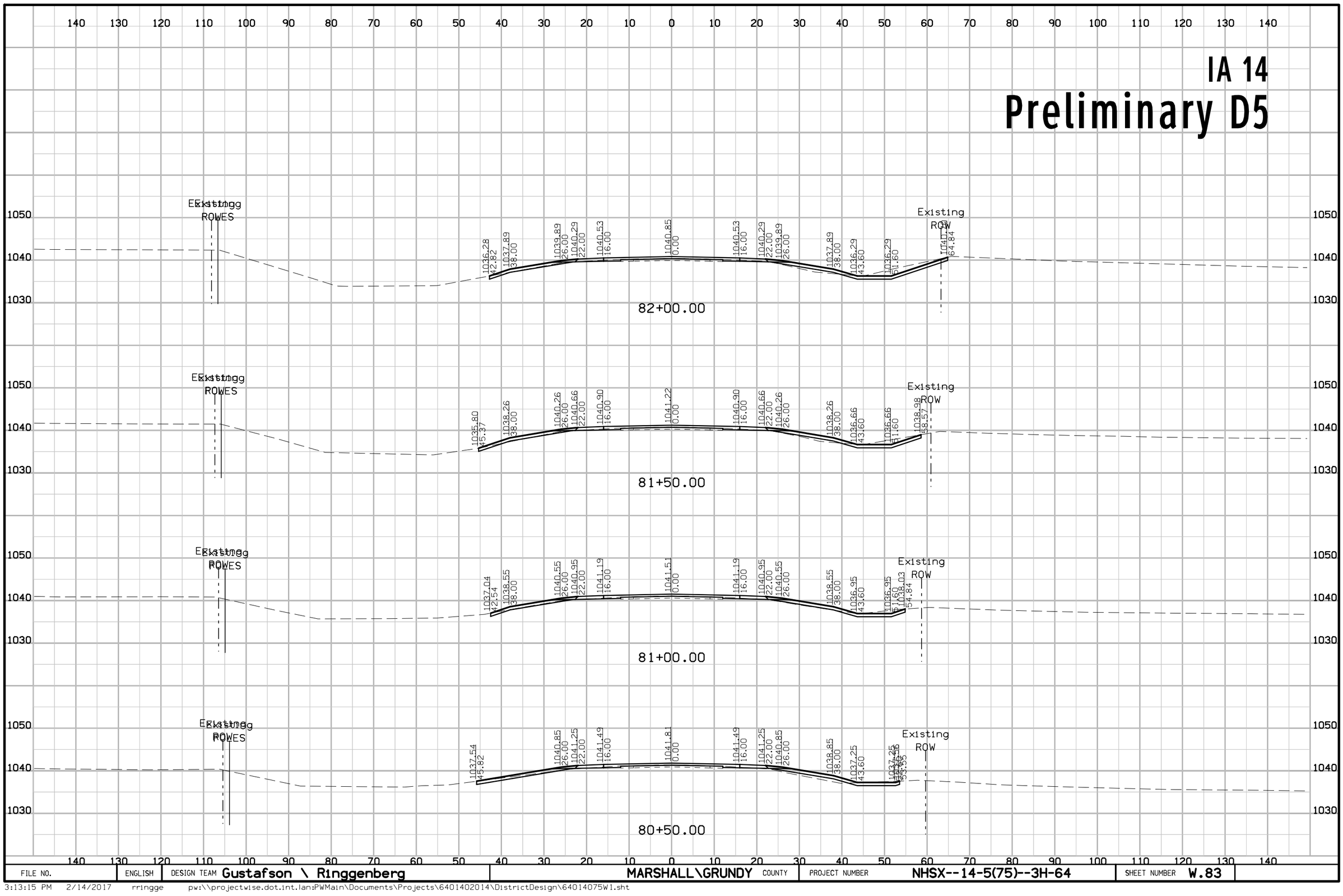

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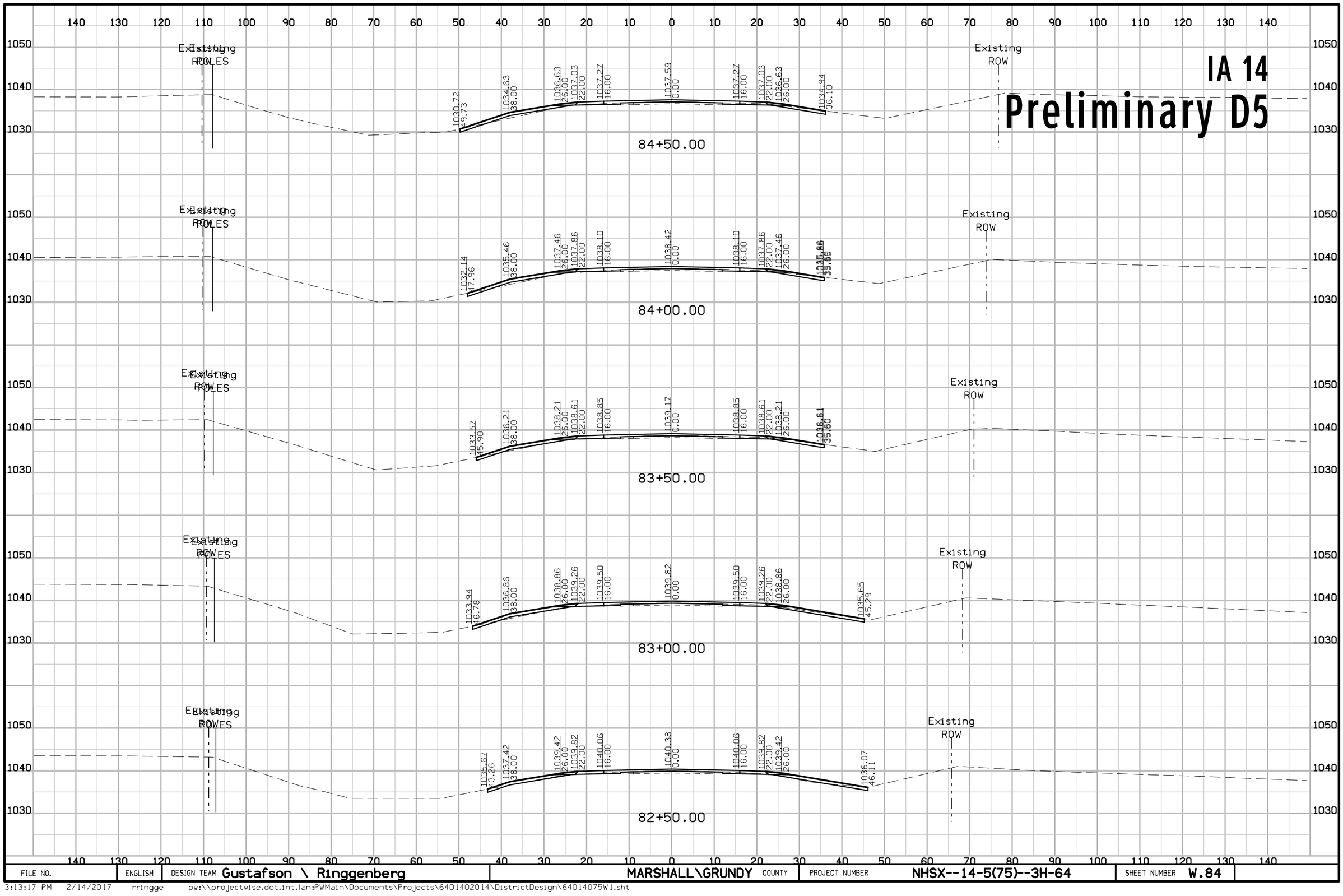
IA 14

Preliminary D5



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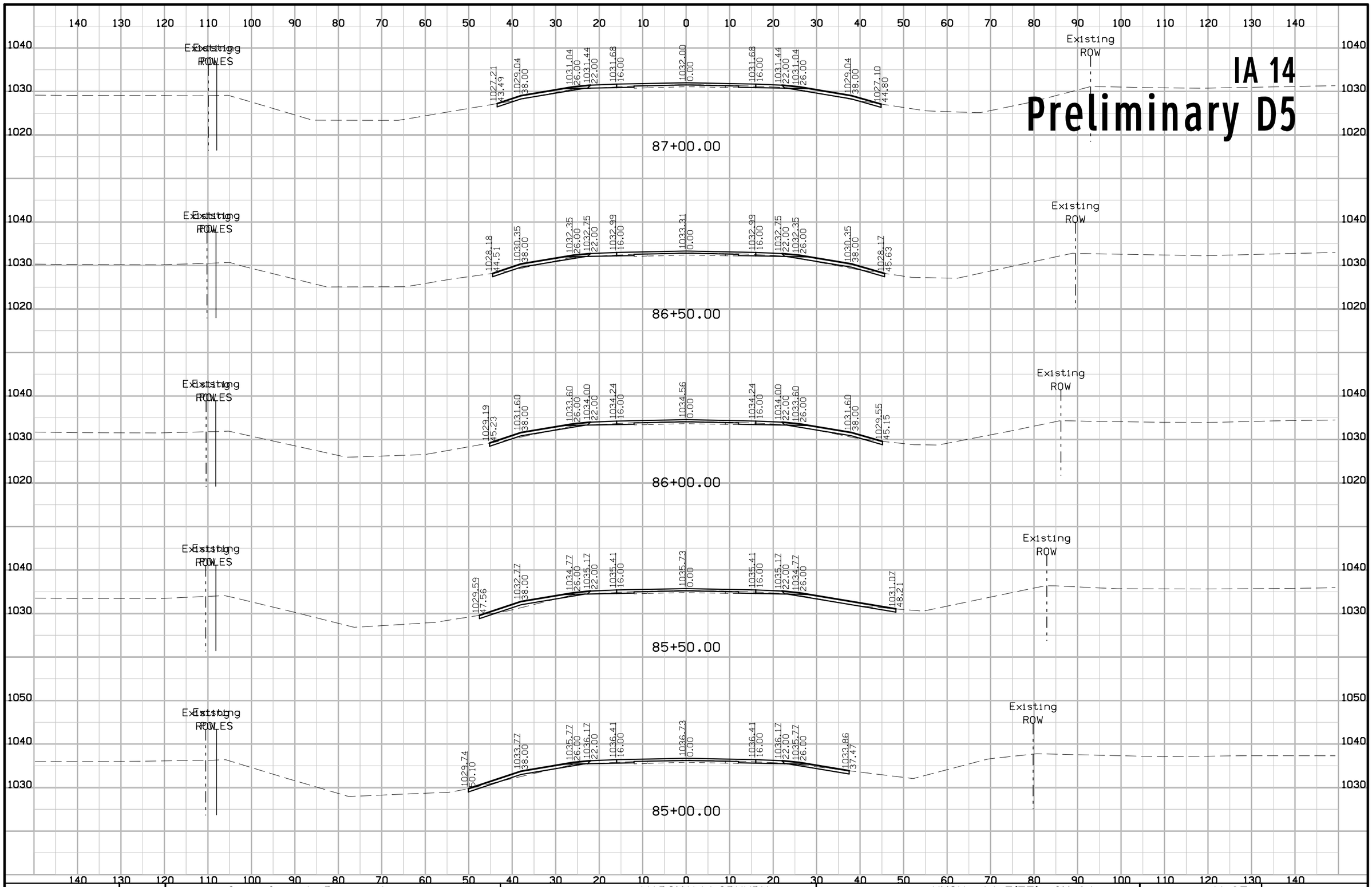
IA 14
Preliminary D5



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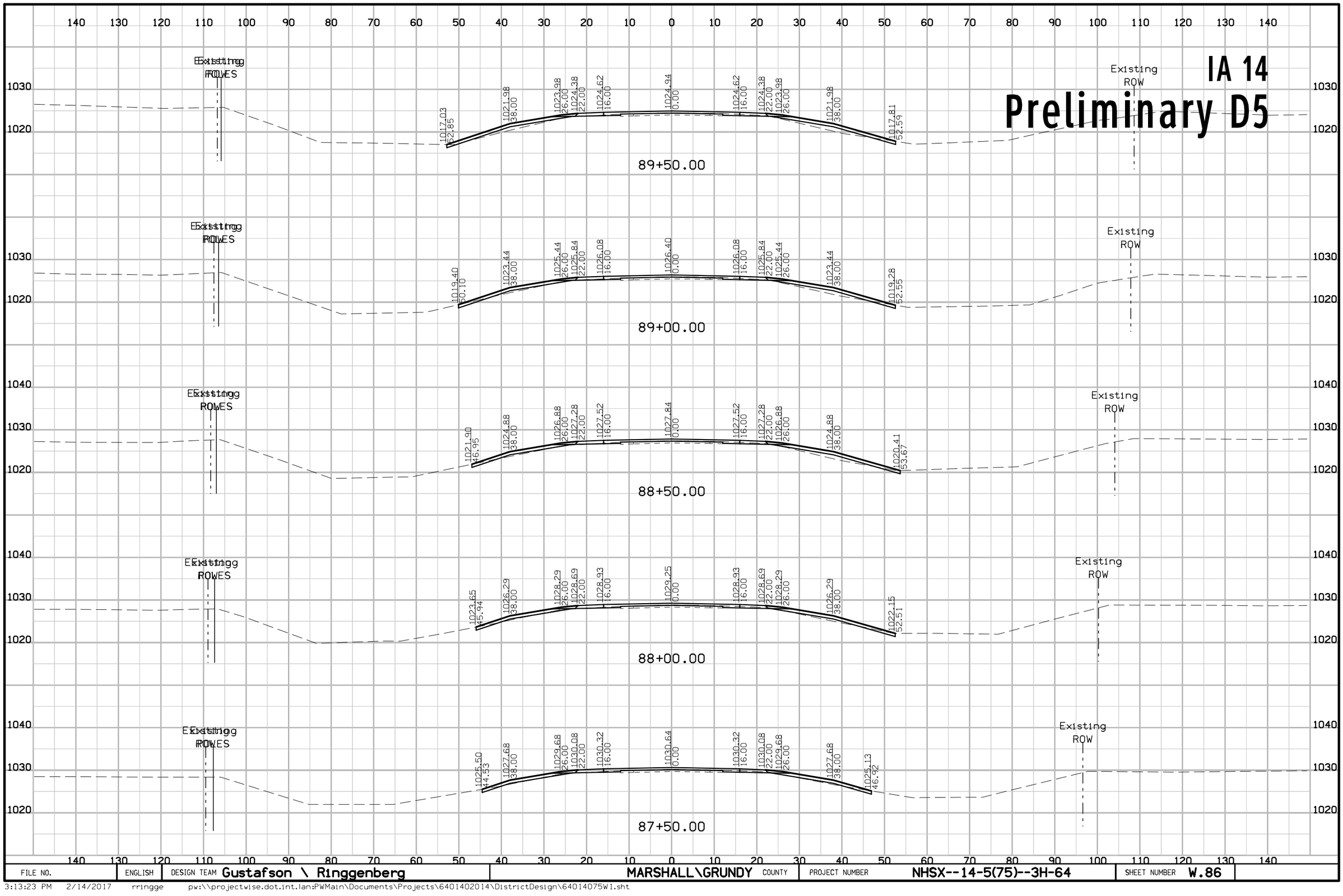
IA 14

Preliminary D5



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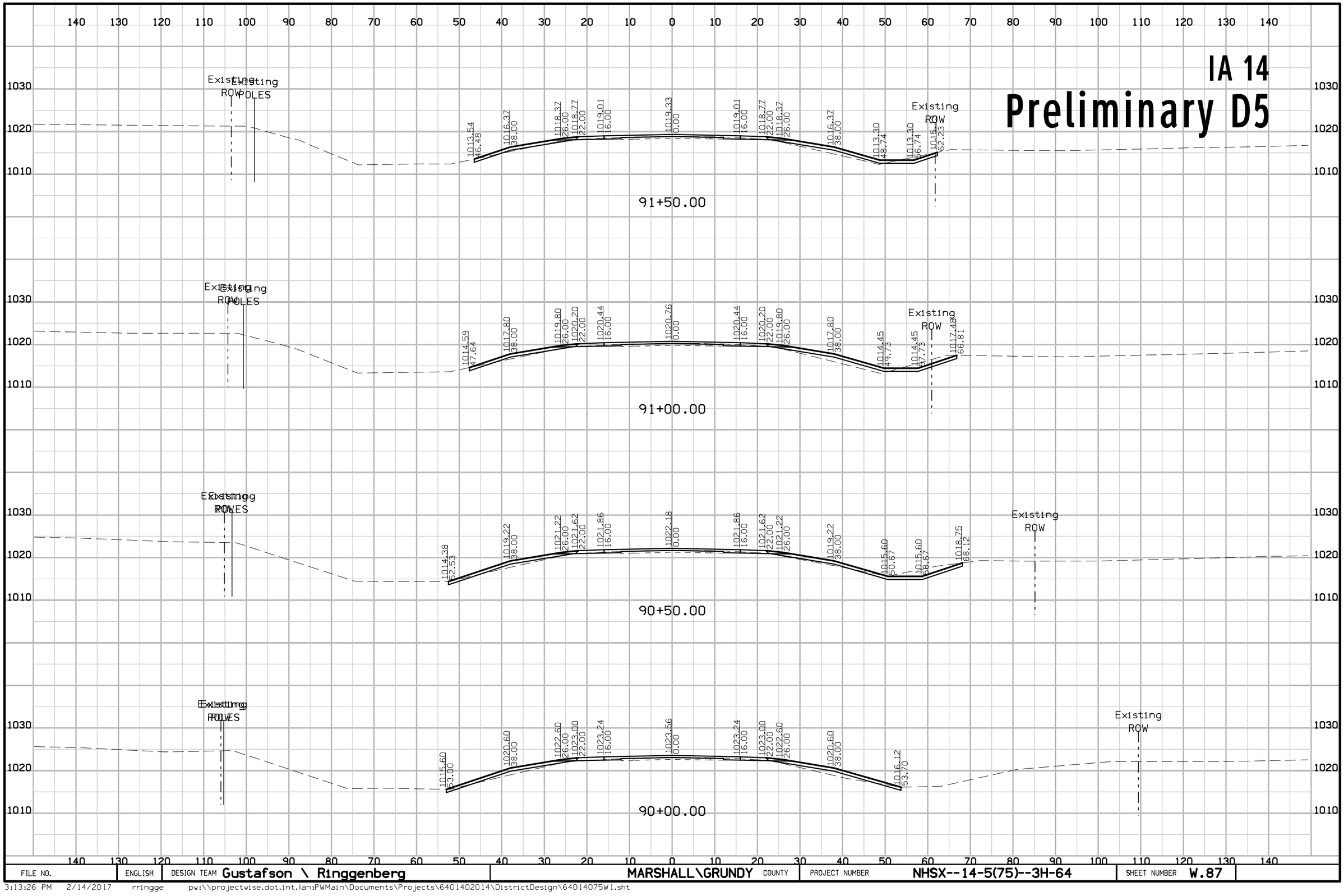
IA 14
Preliminary D5



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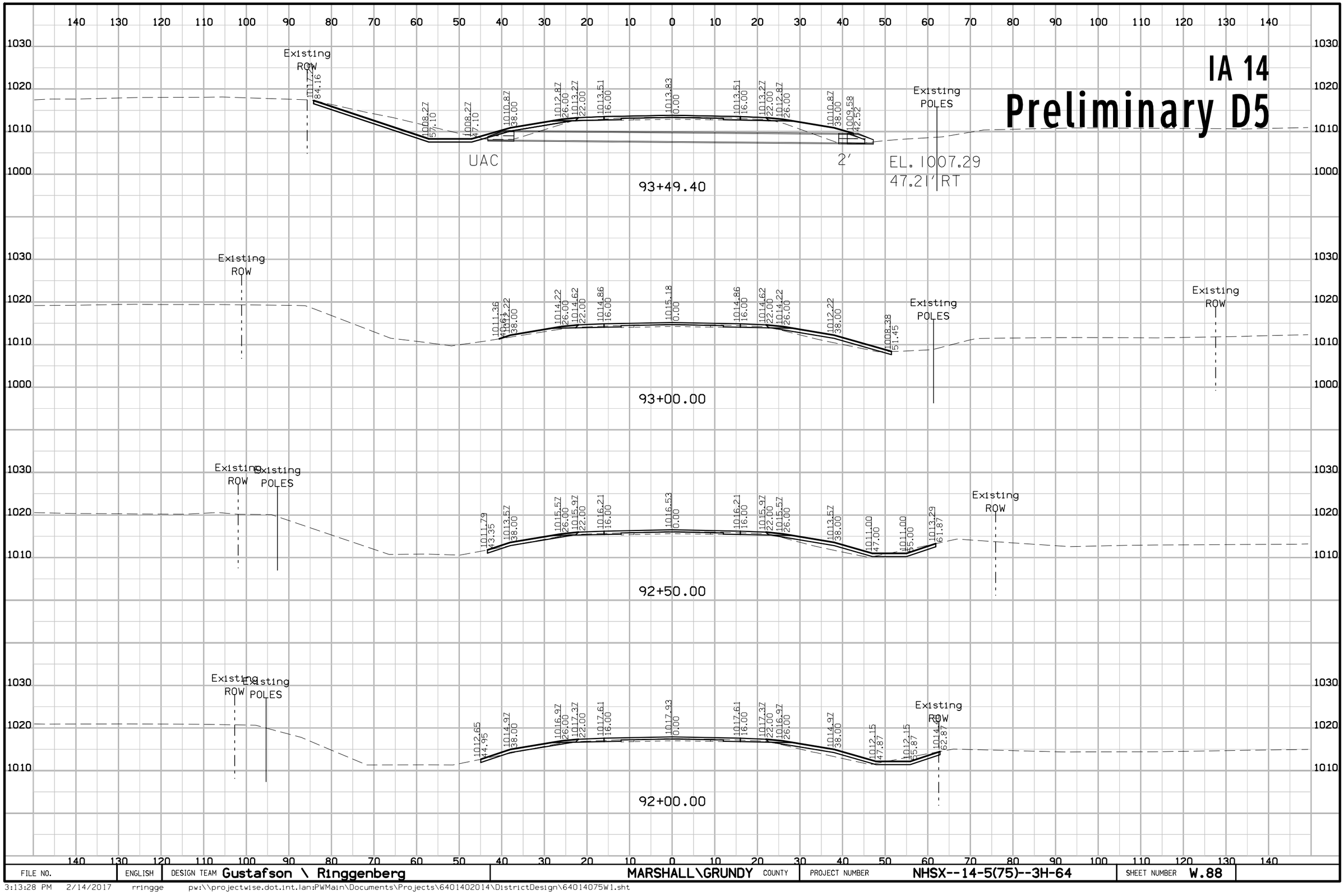
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.88

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IA 14
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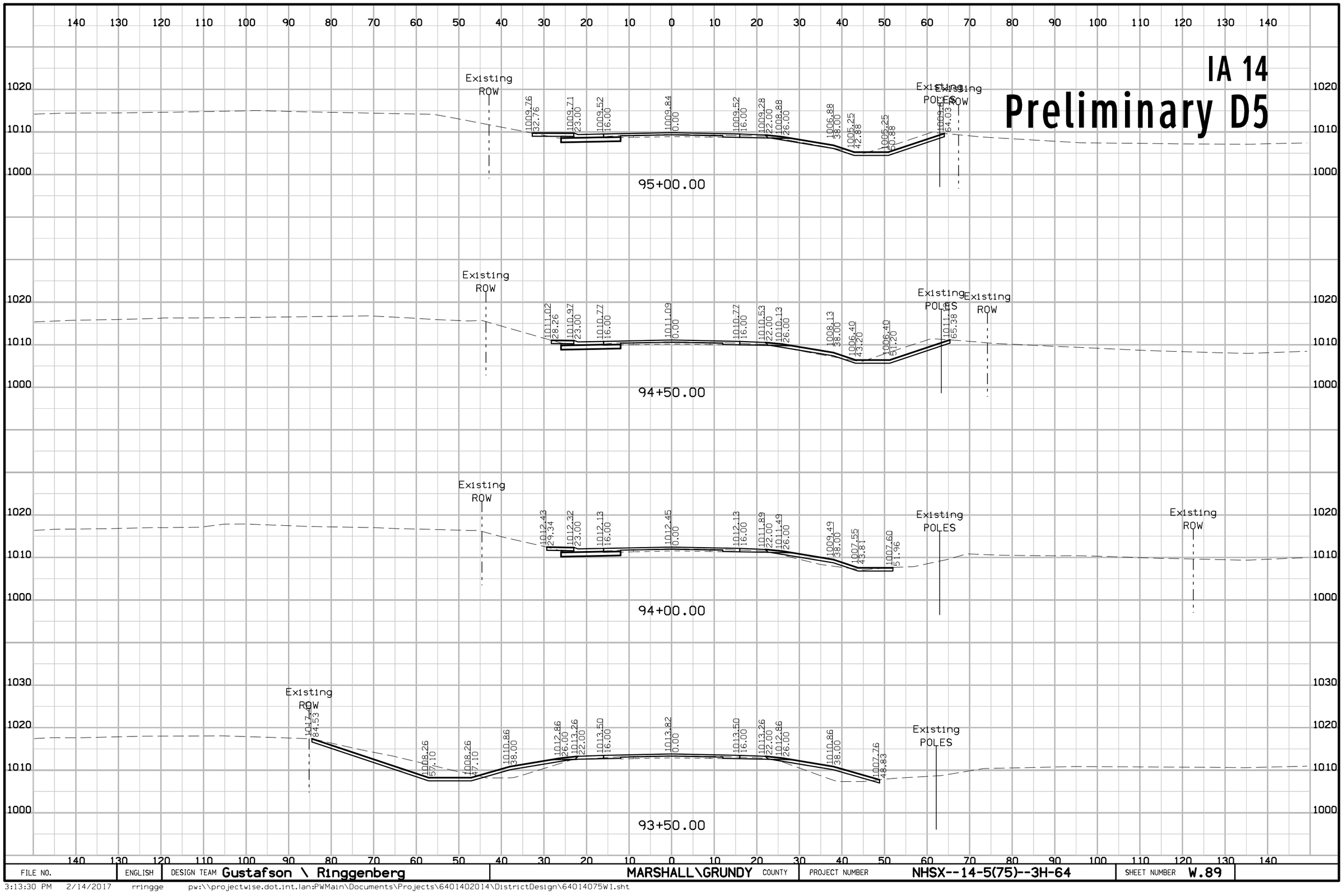

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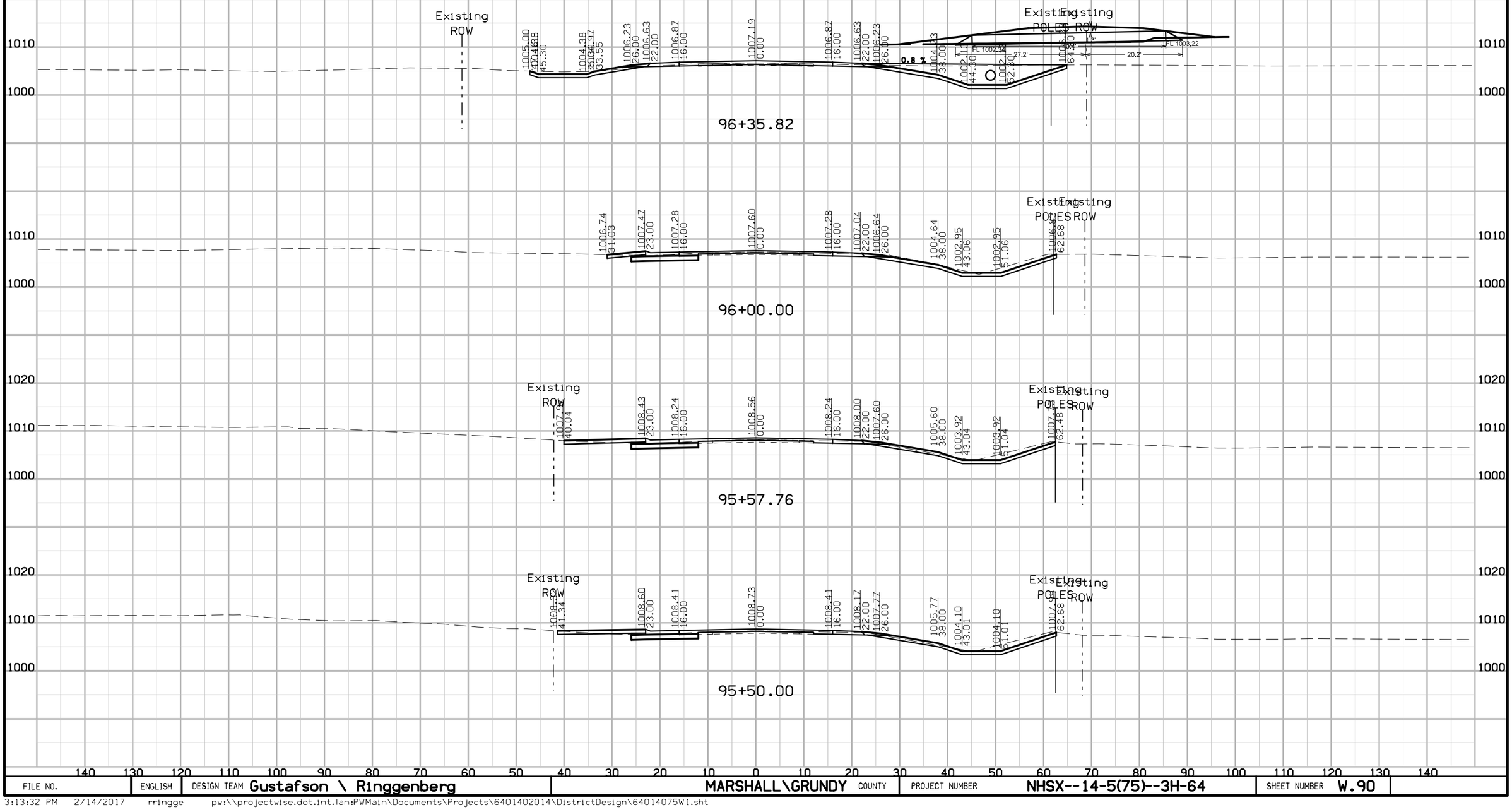
IA 14
Preliminary D5



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IA 14
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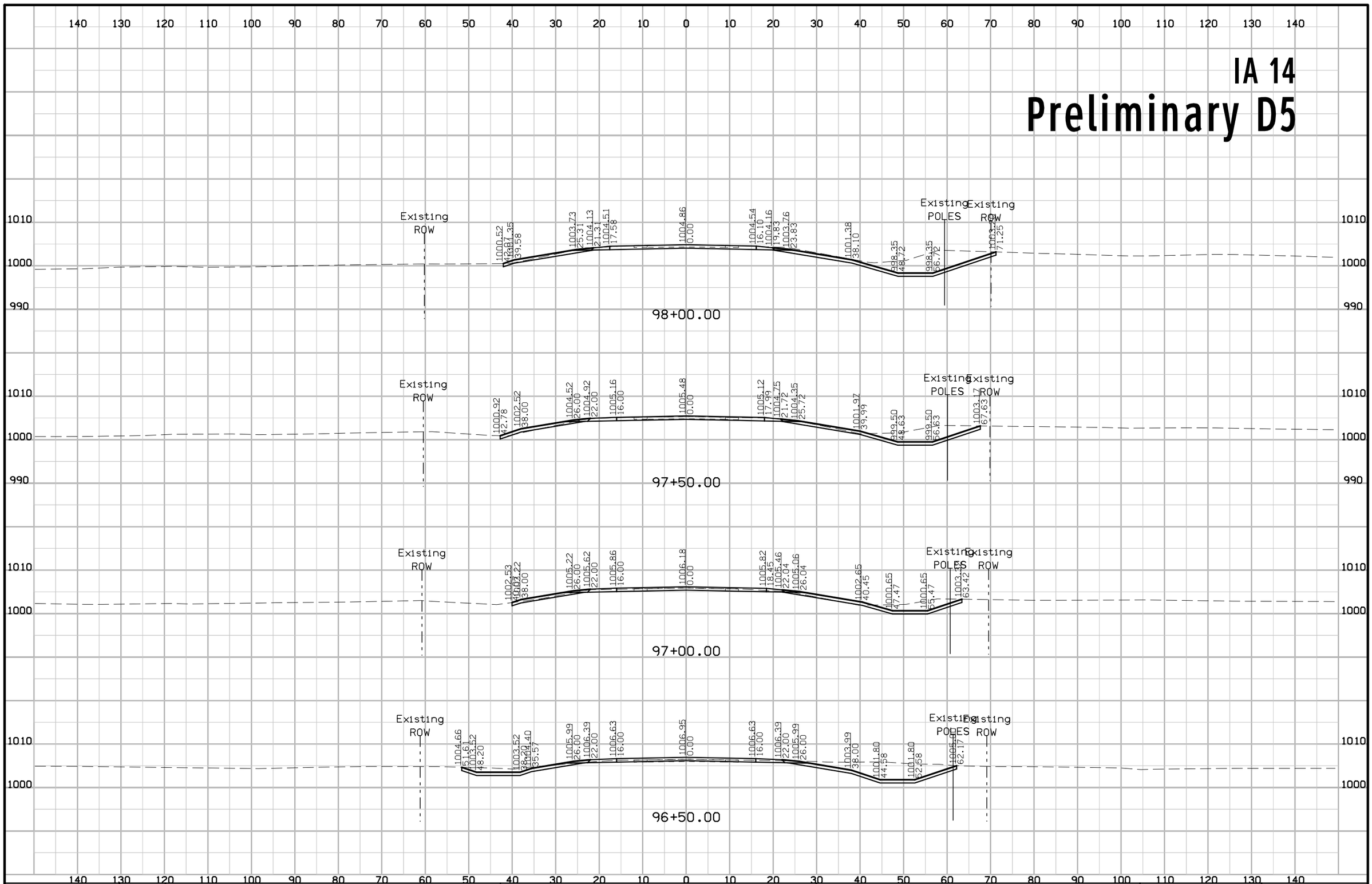

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.91

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IA 14
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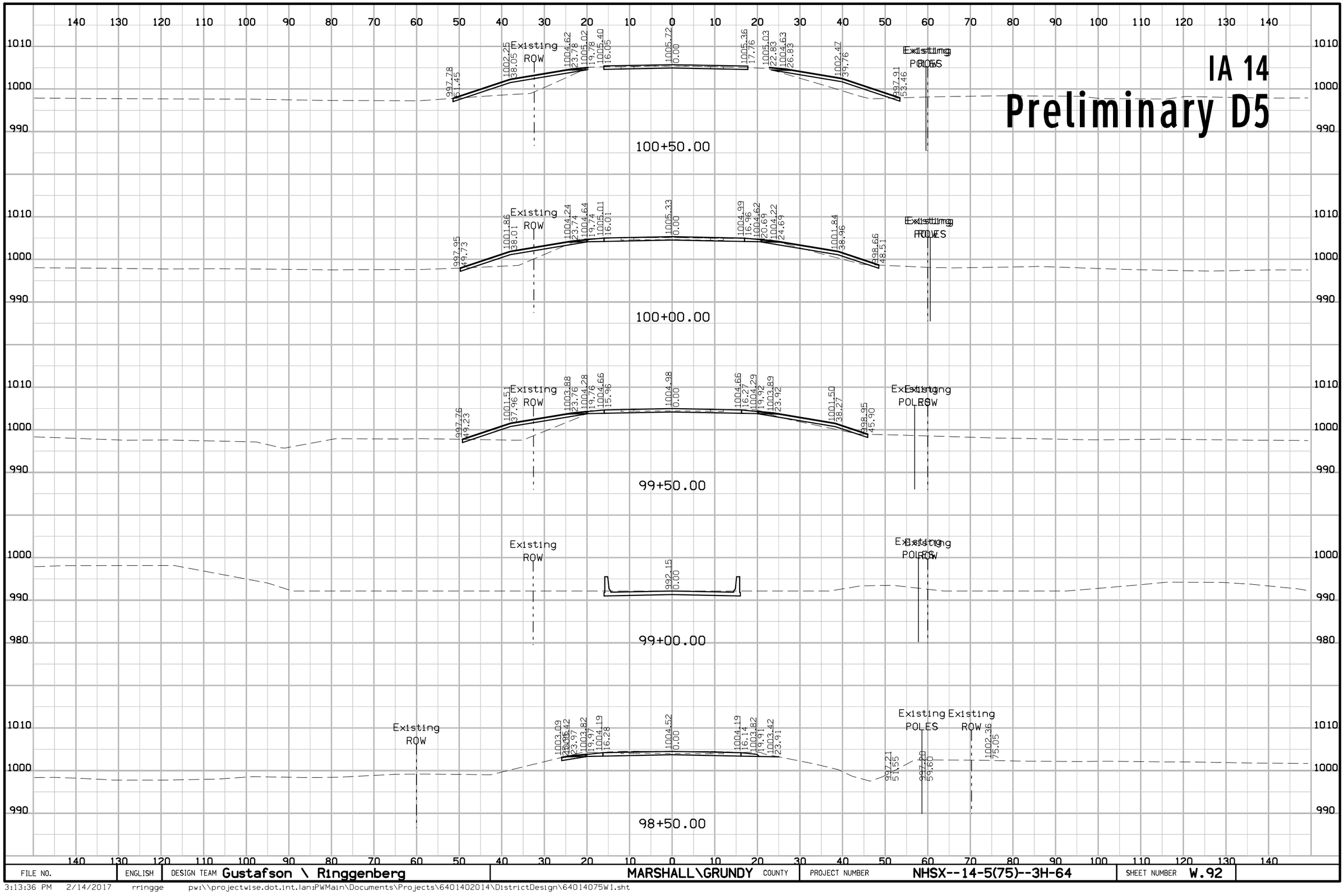

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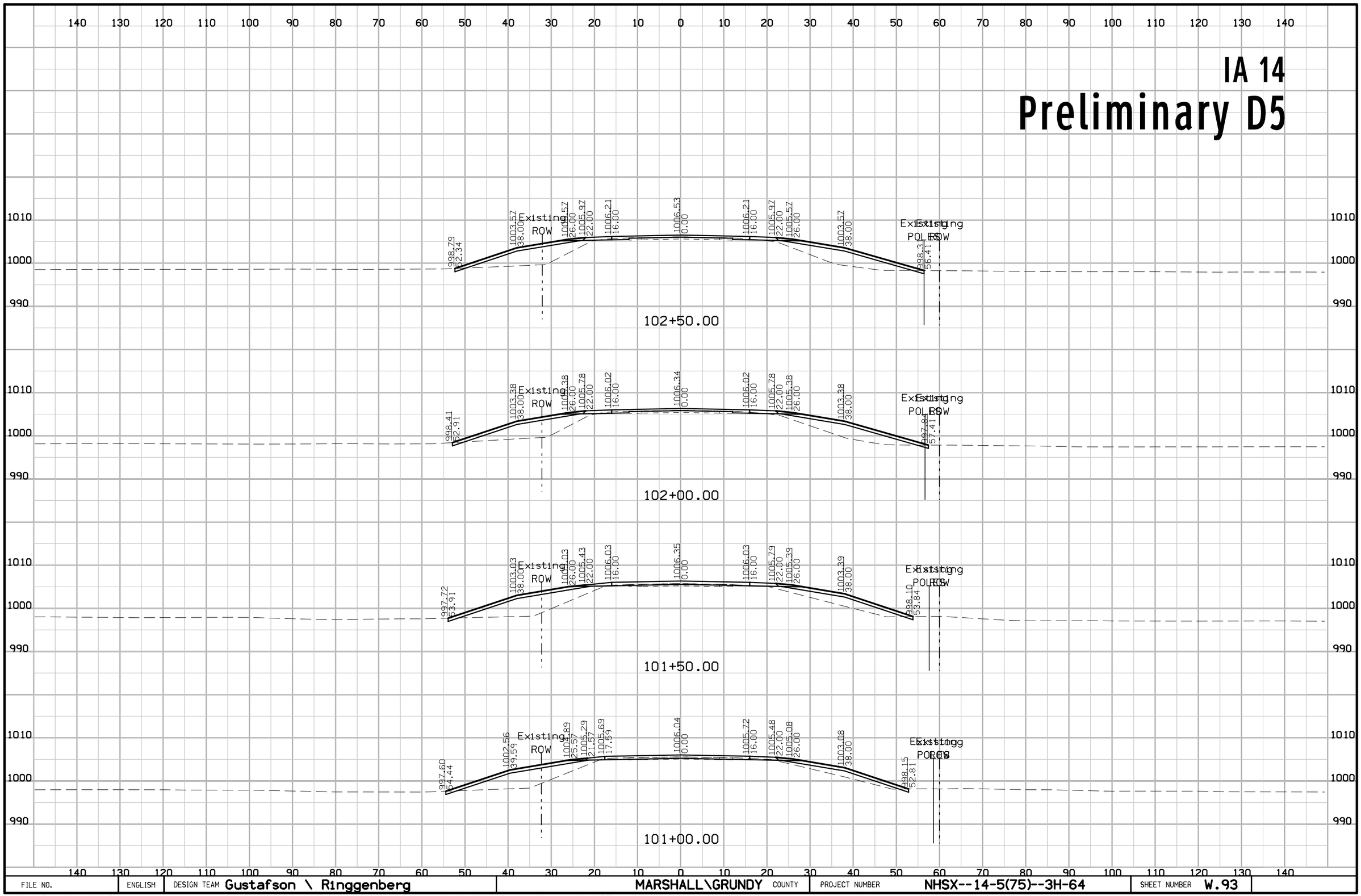

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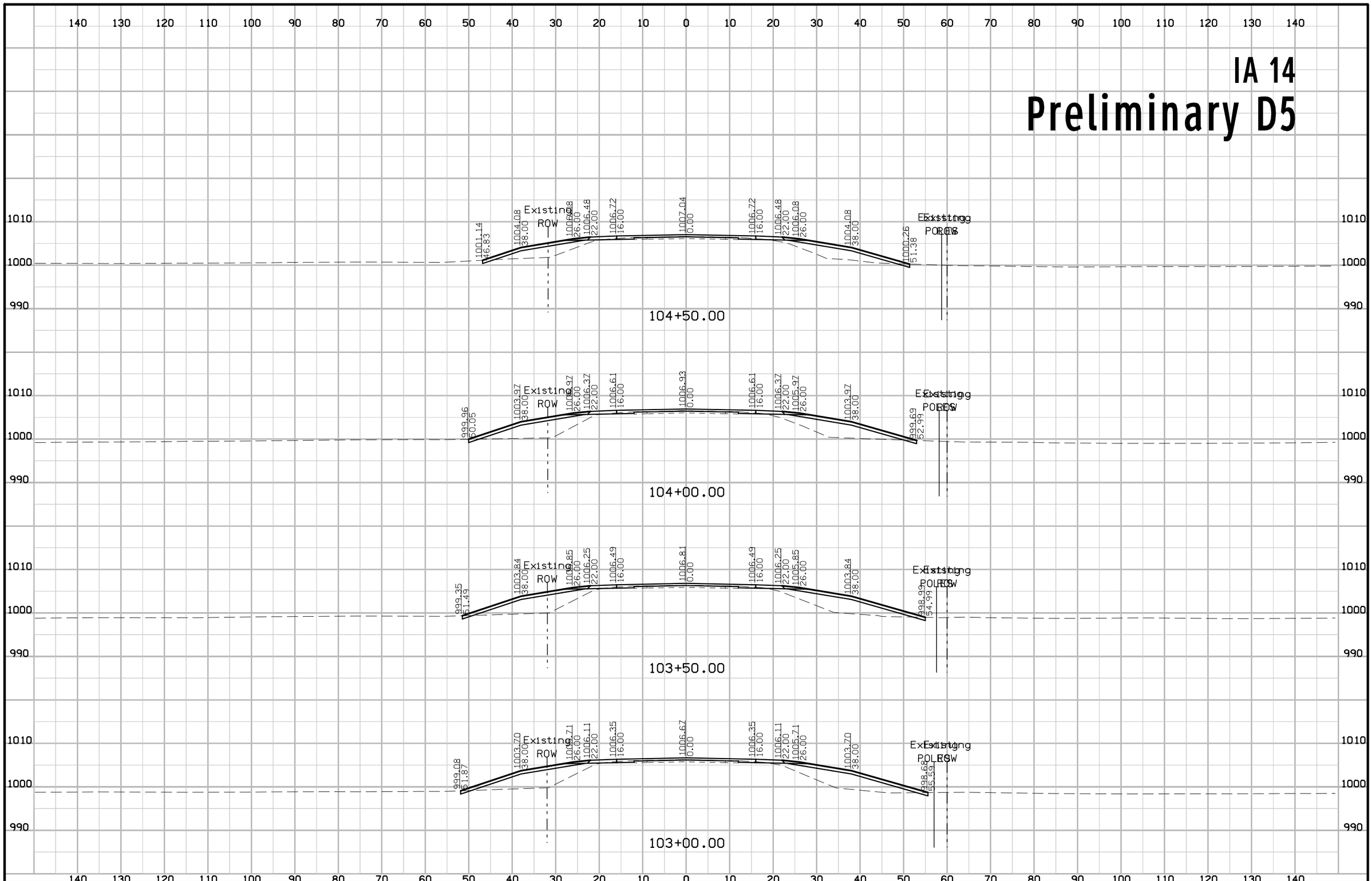

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IA 14
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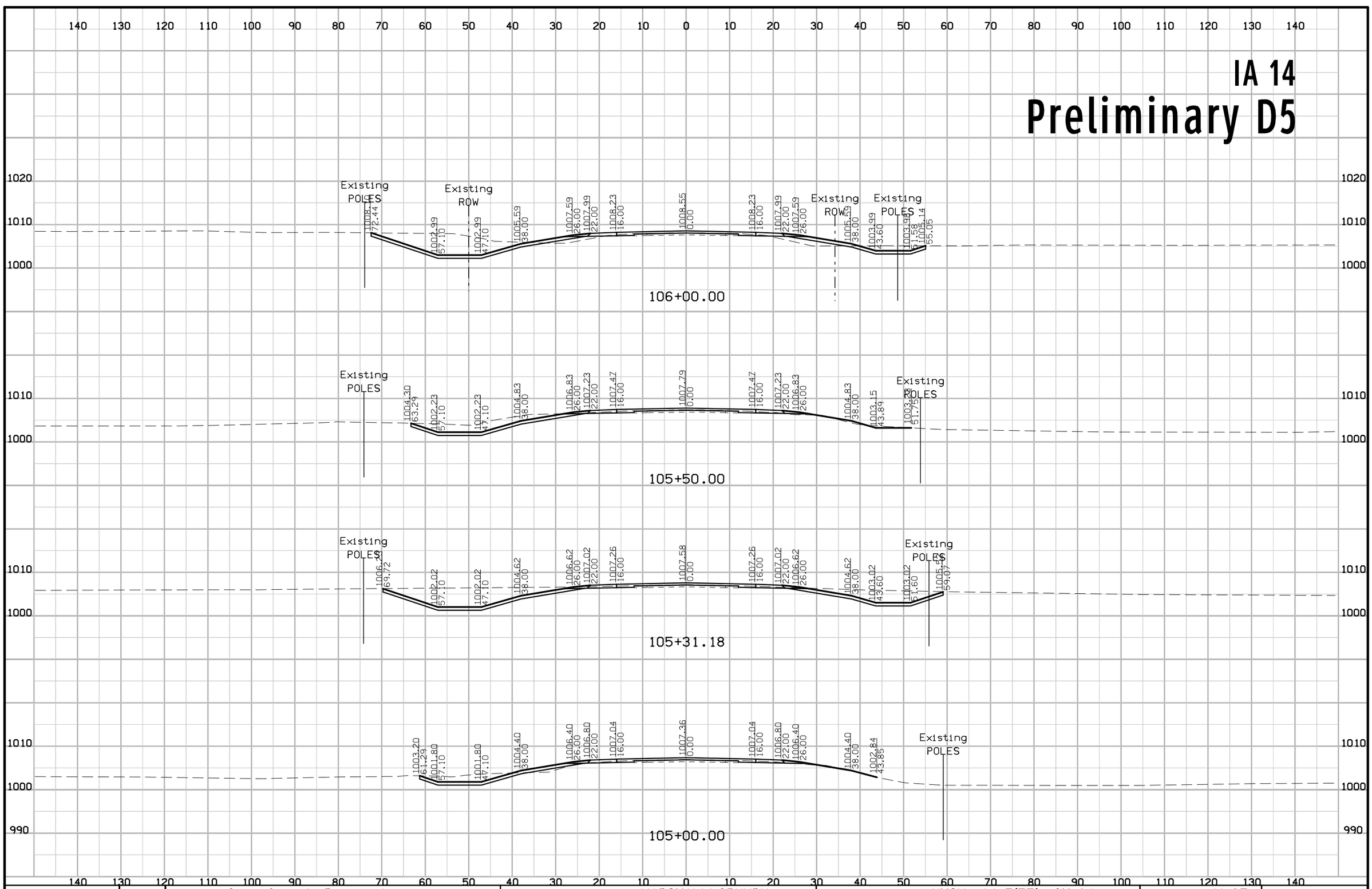

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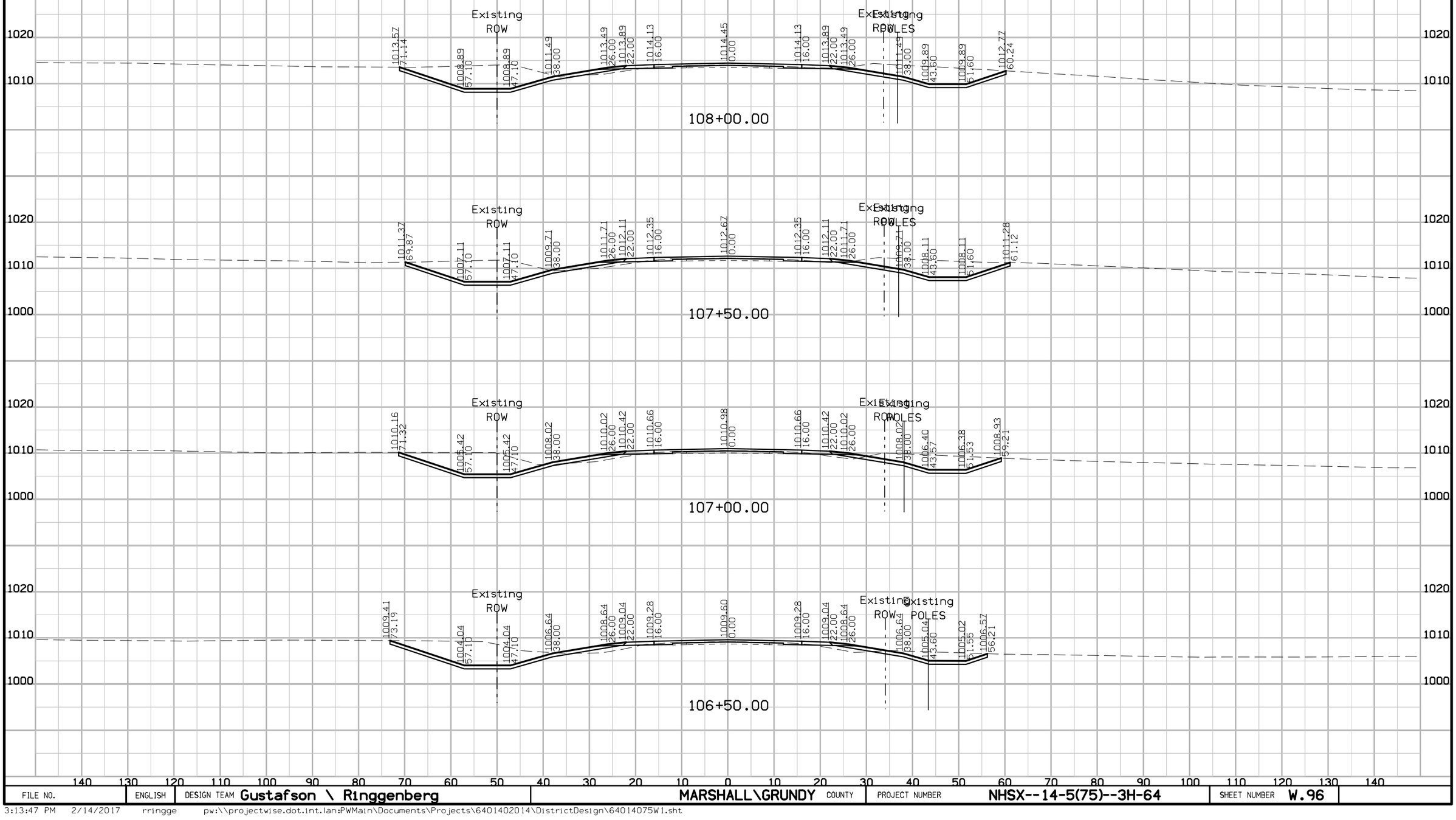
IA 14
Preliminary D5



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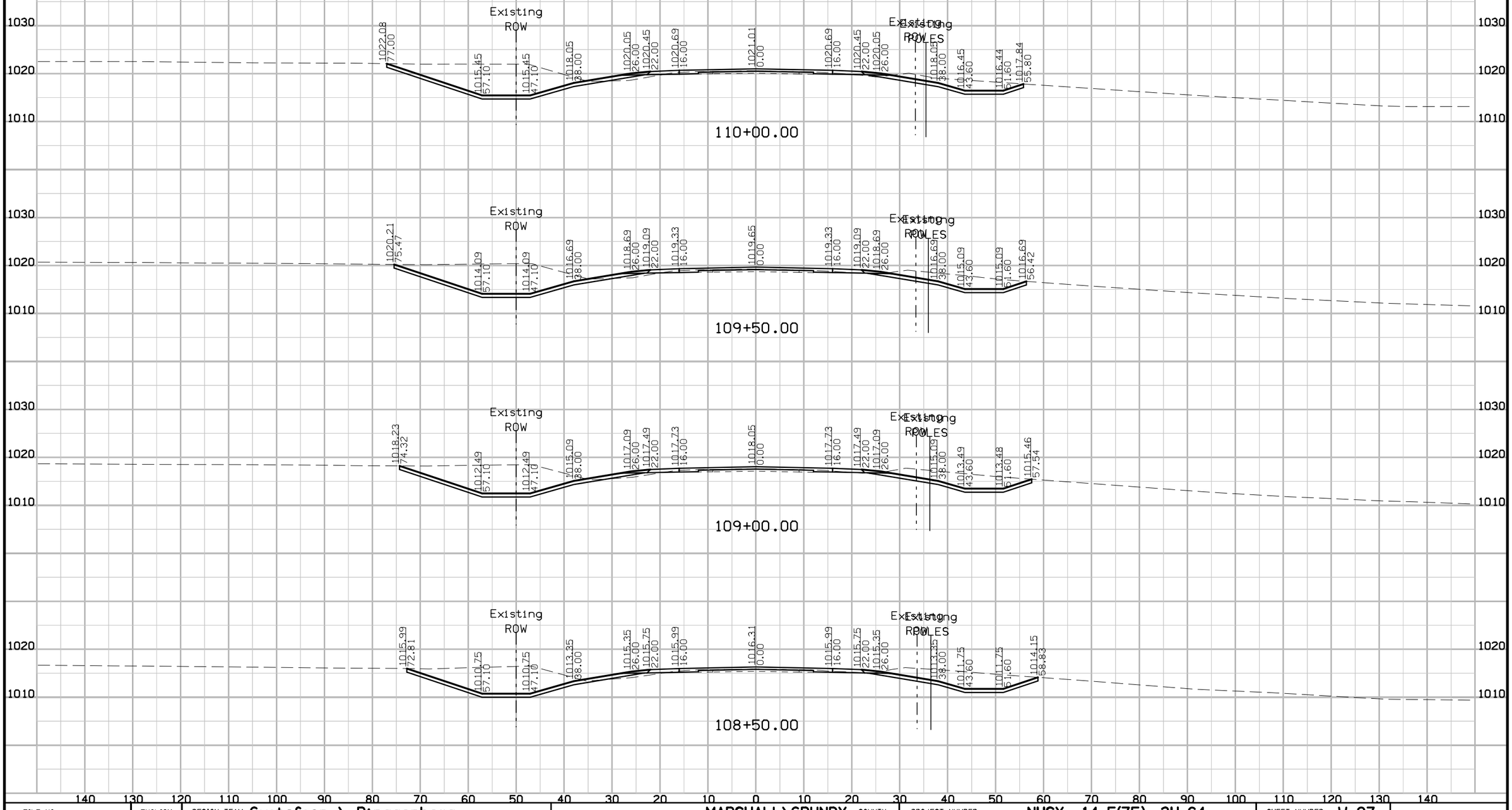

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IA 14
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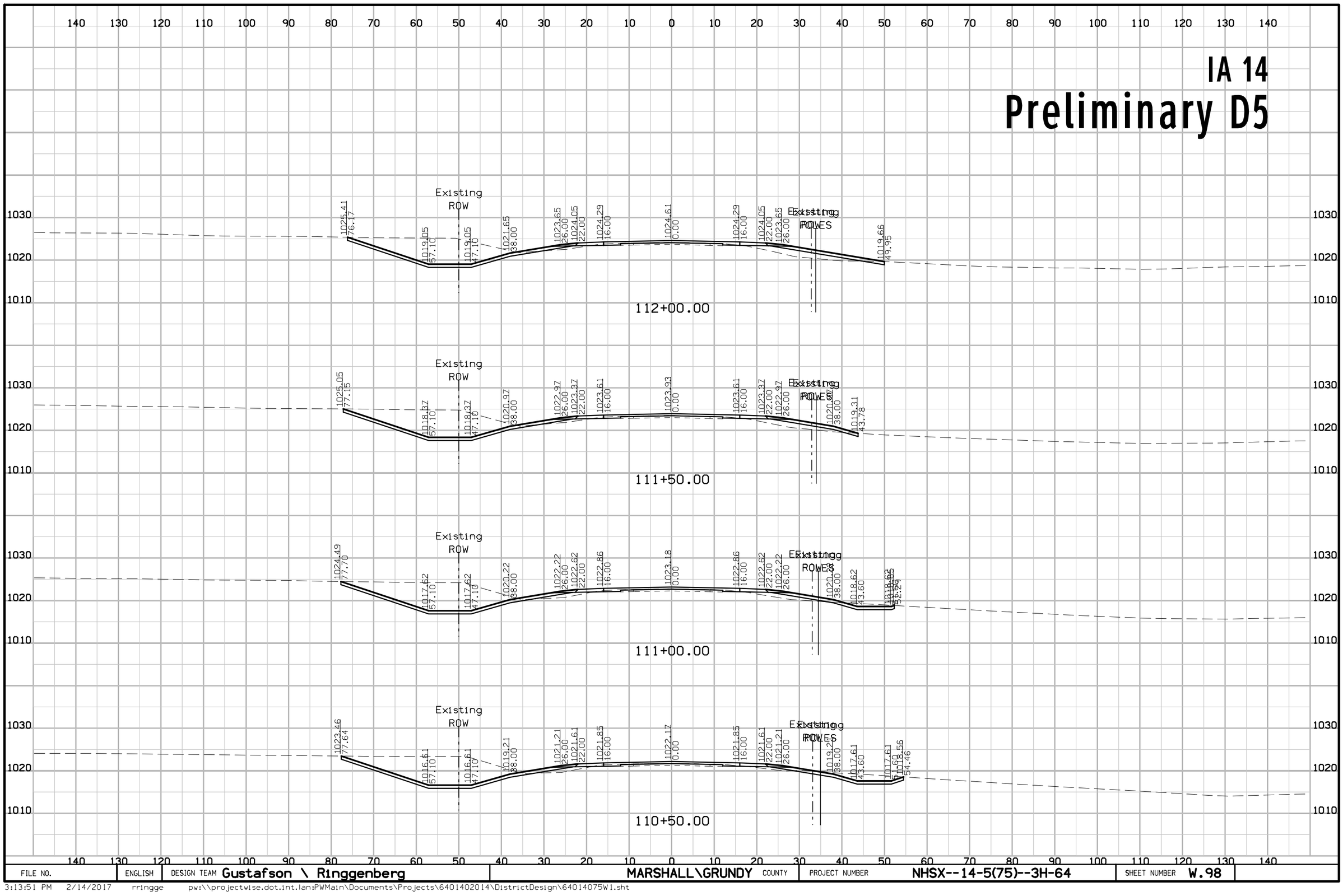

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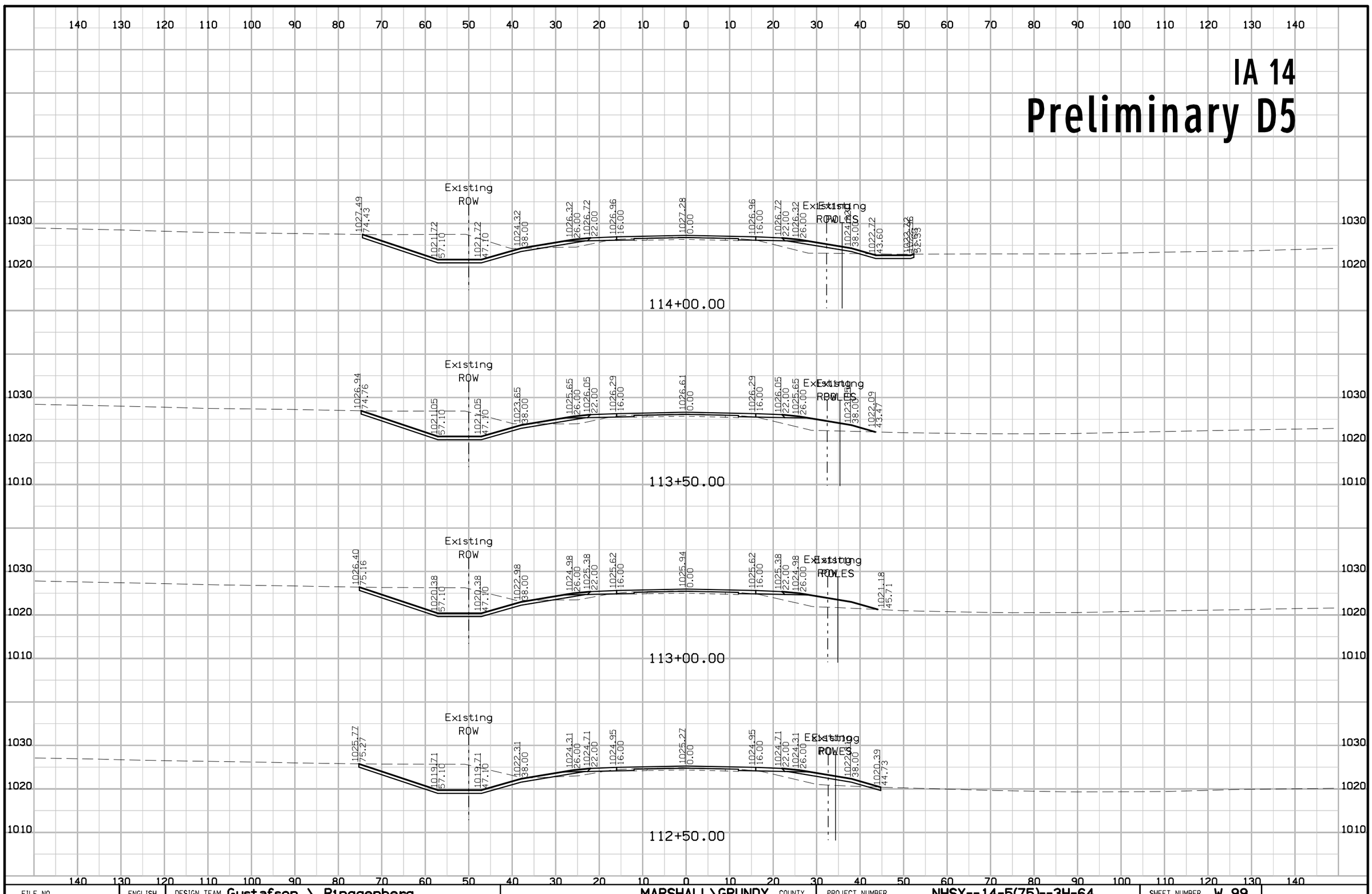
IA 14
Preliminary D5



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IA 14
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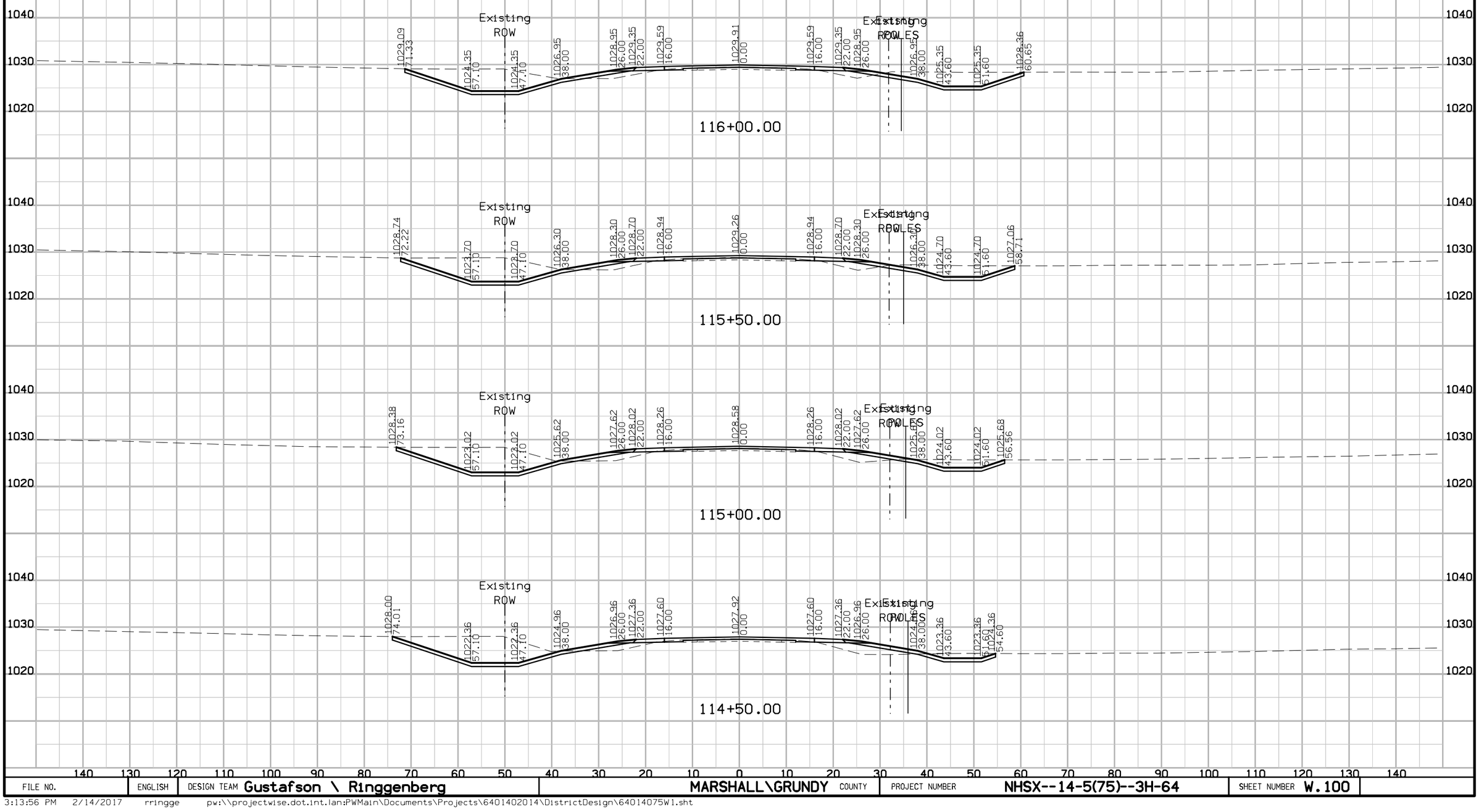

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IA 14
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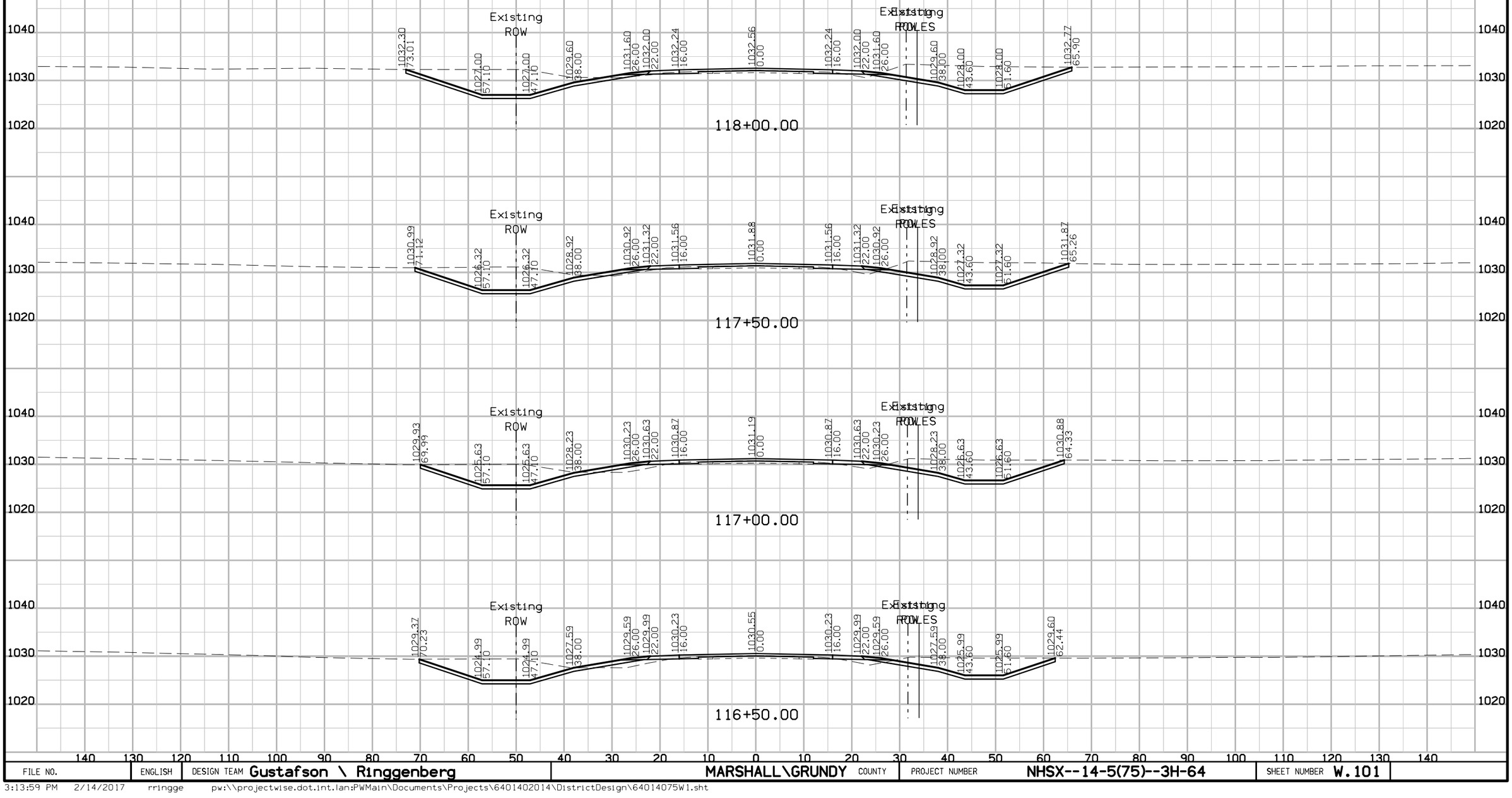

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IA 14
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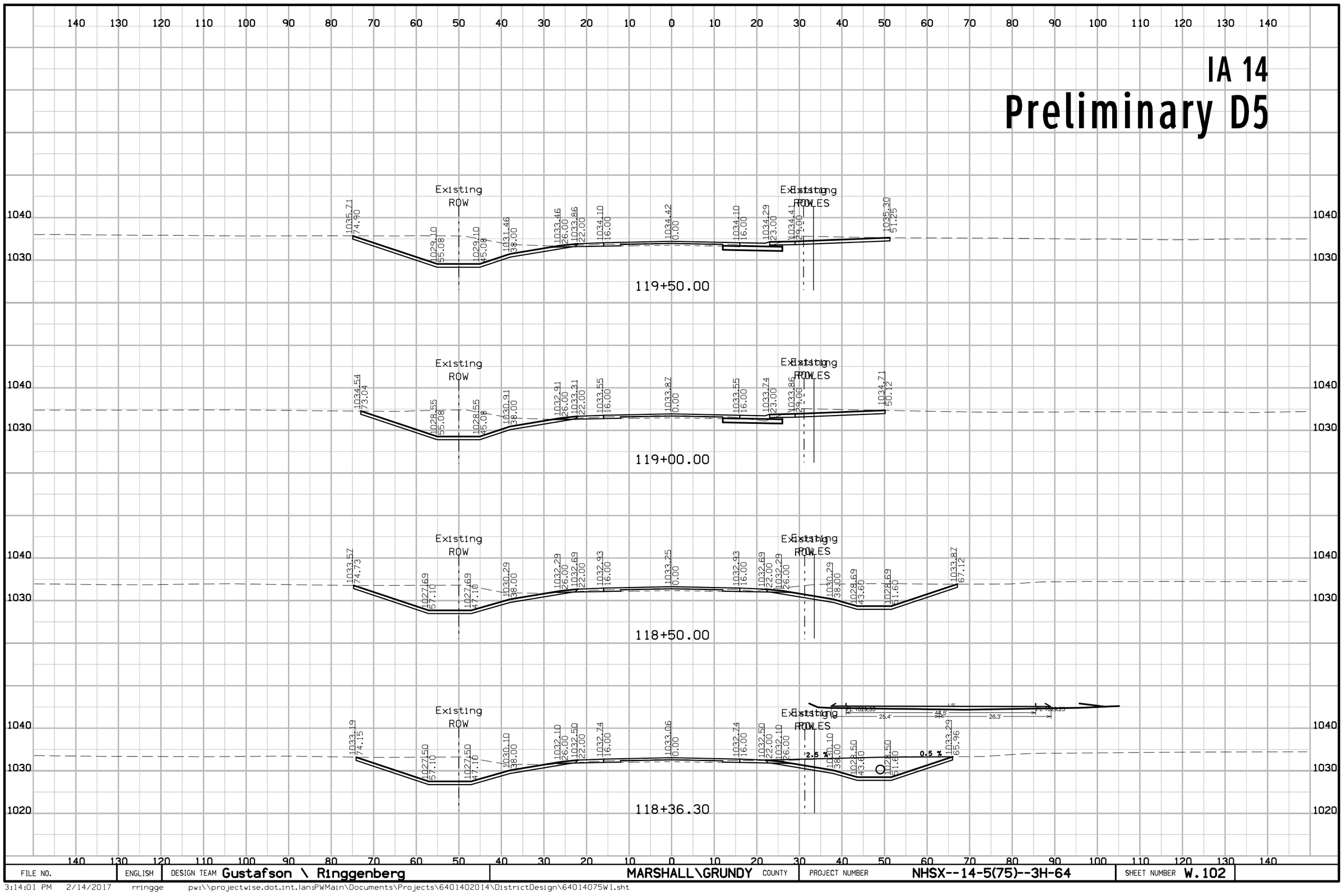

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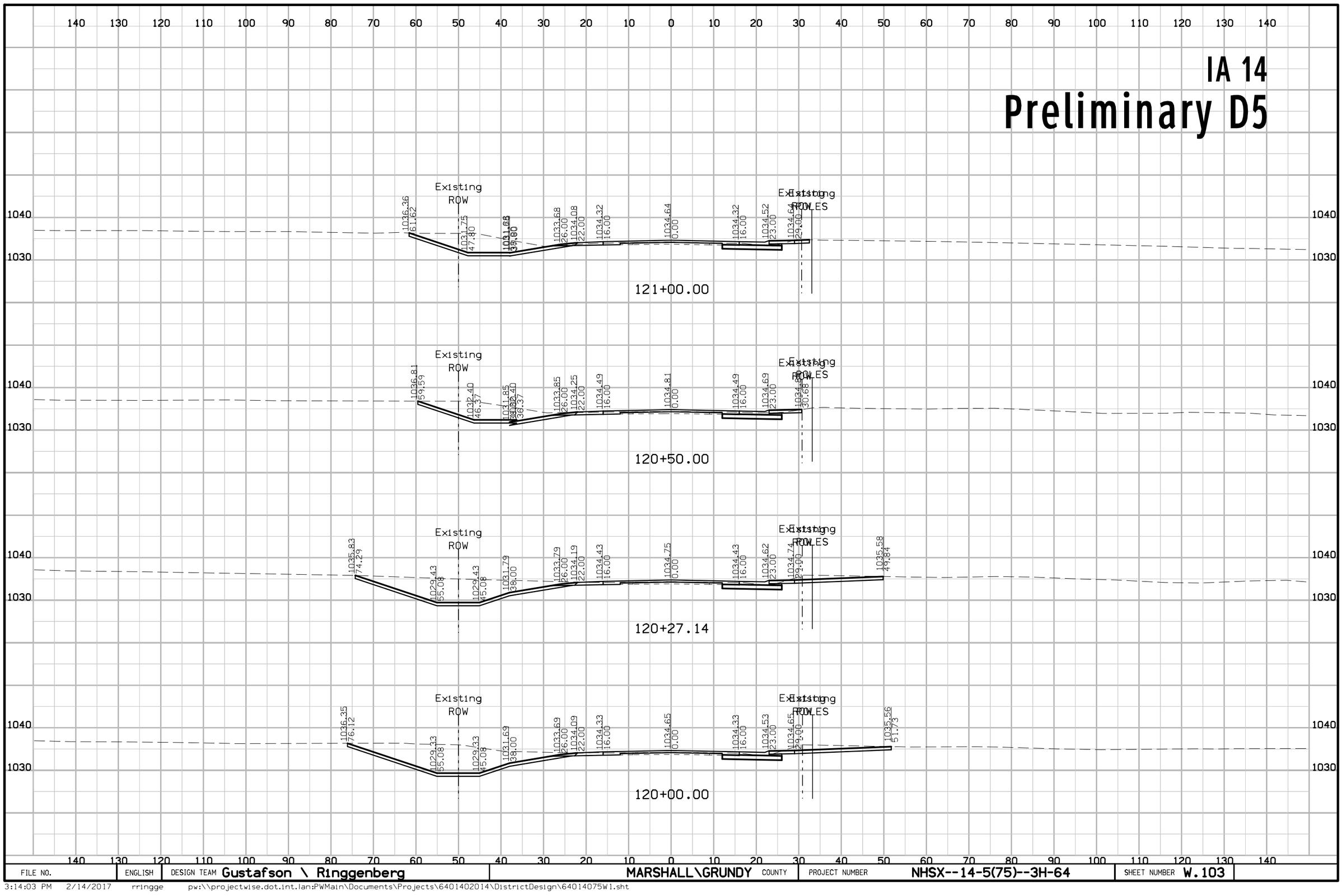
IA 14
Preliminary D5



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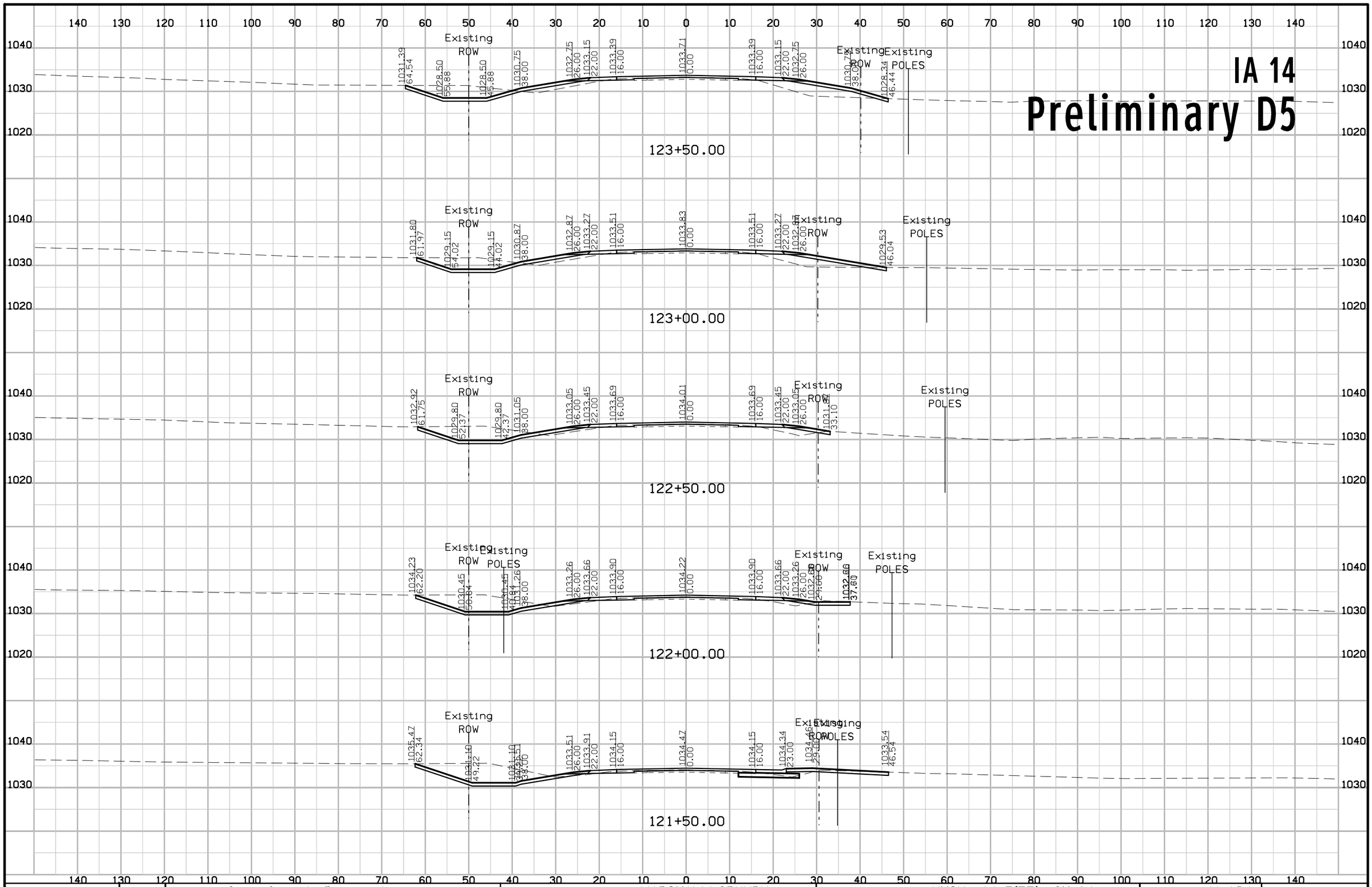
IA 14
Preliminary D5



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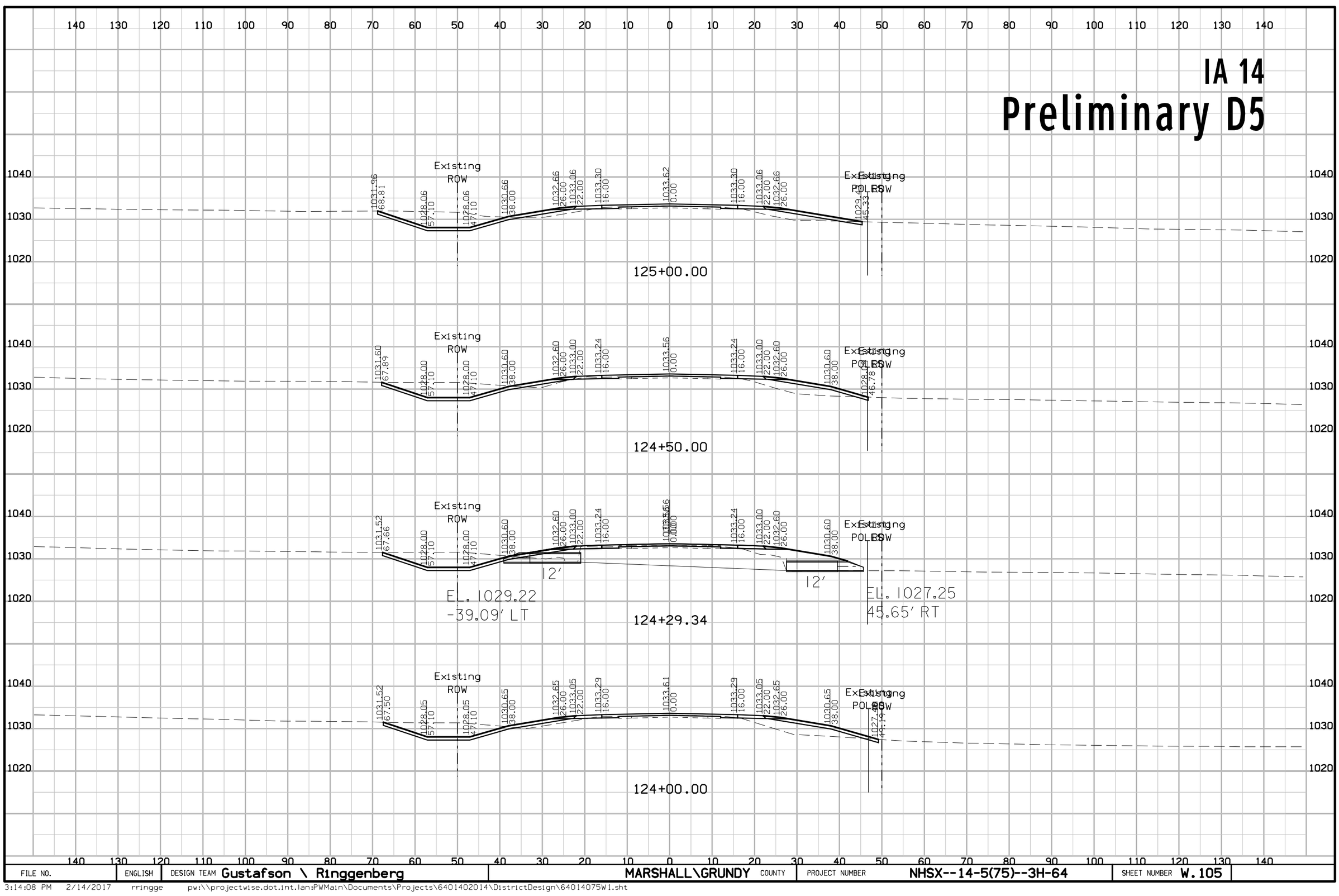
IA 14
Preliminary D5



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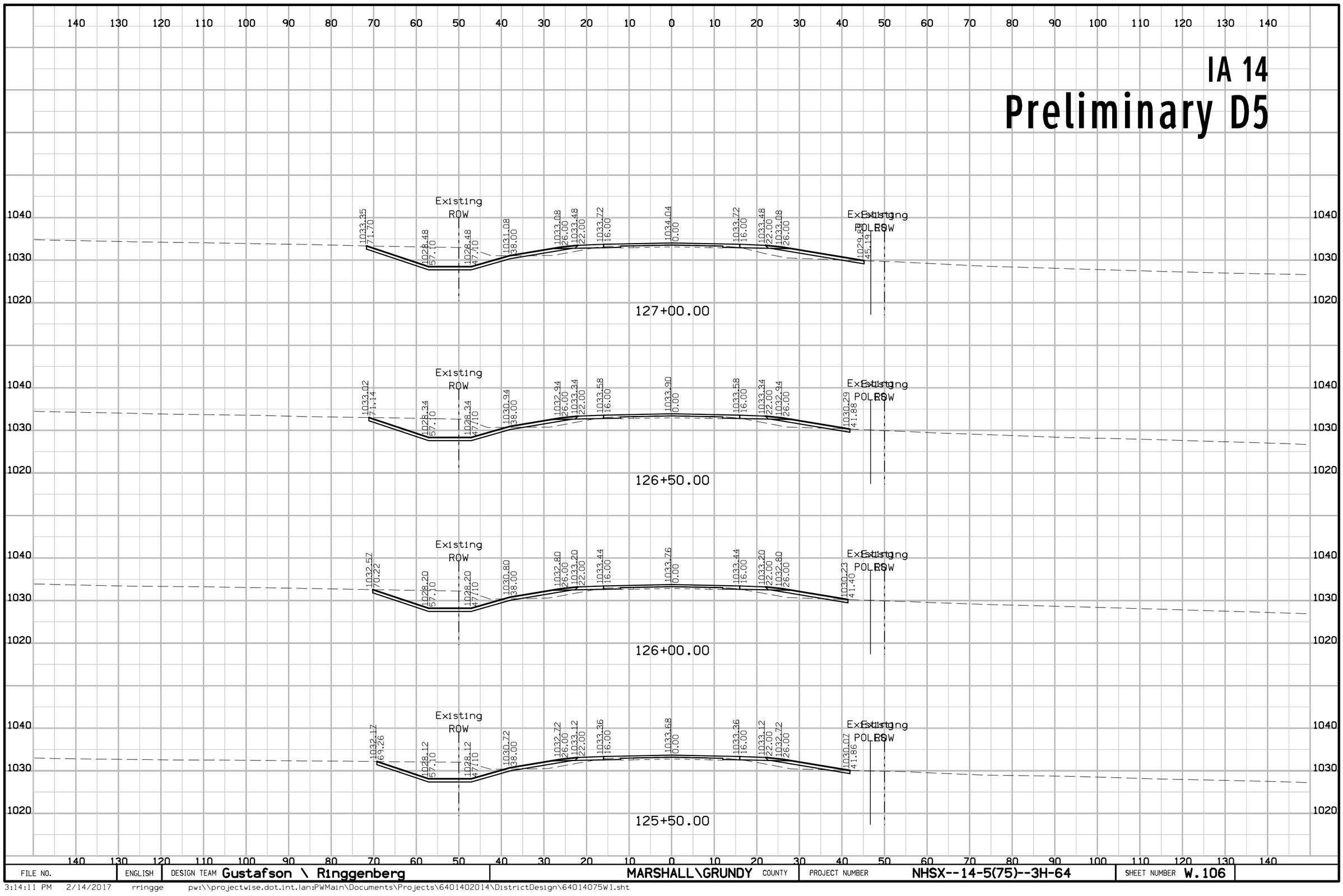
IA 14
Preliminary D5



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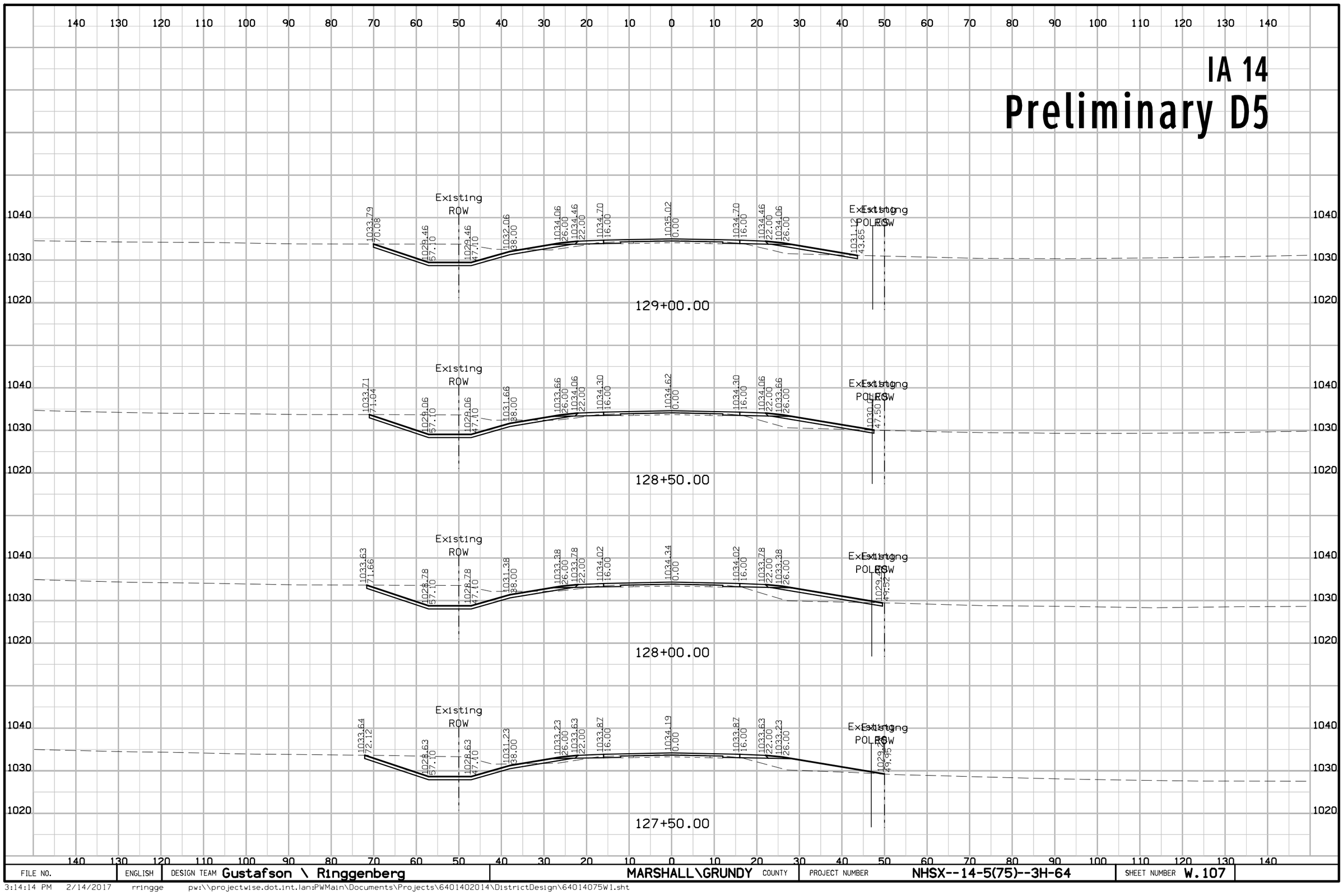
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.107

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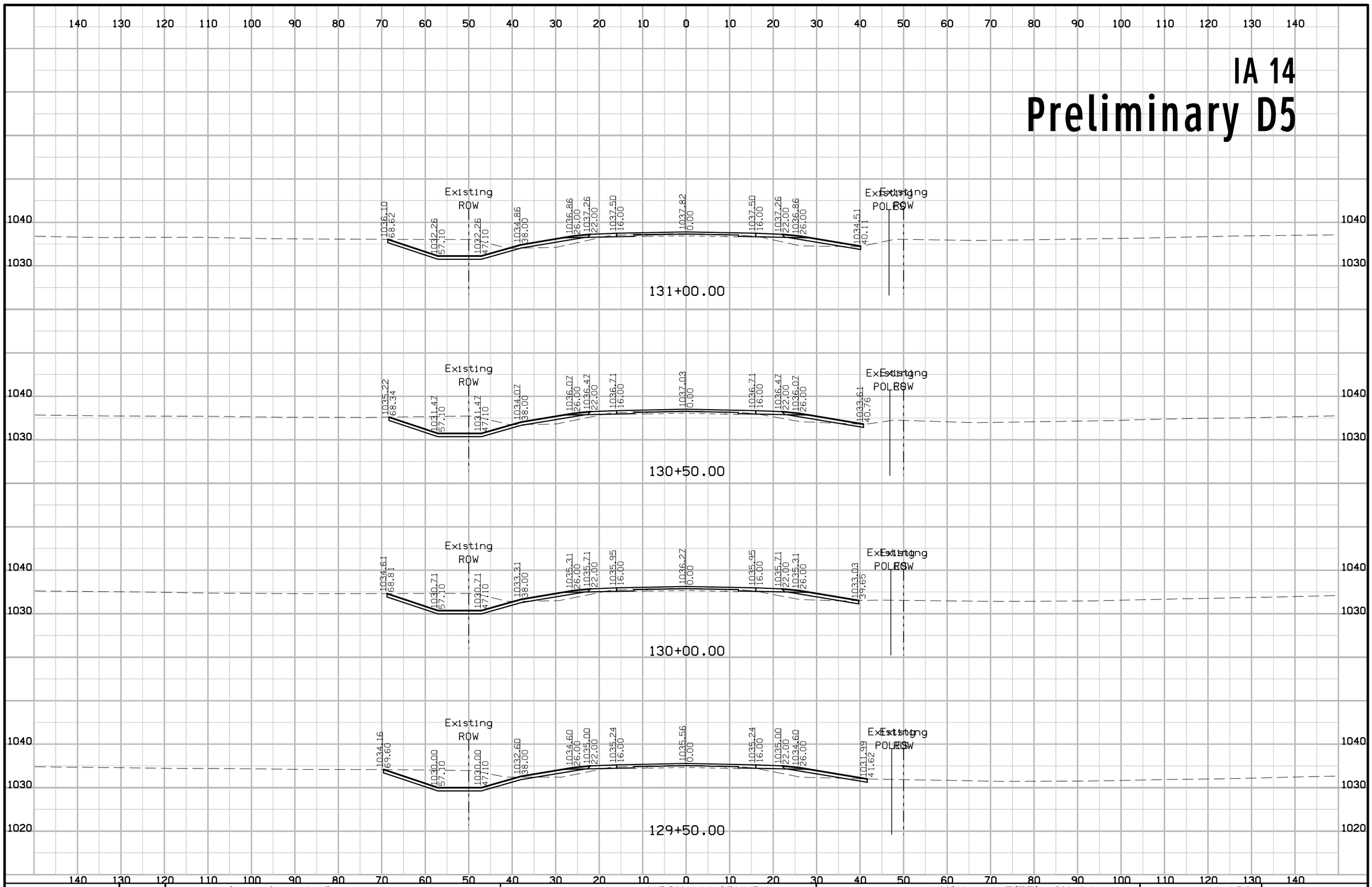
IA 14
Preliminary D5



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IA 14
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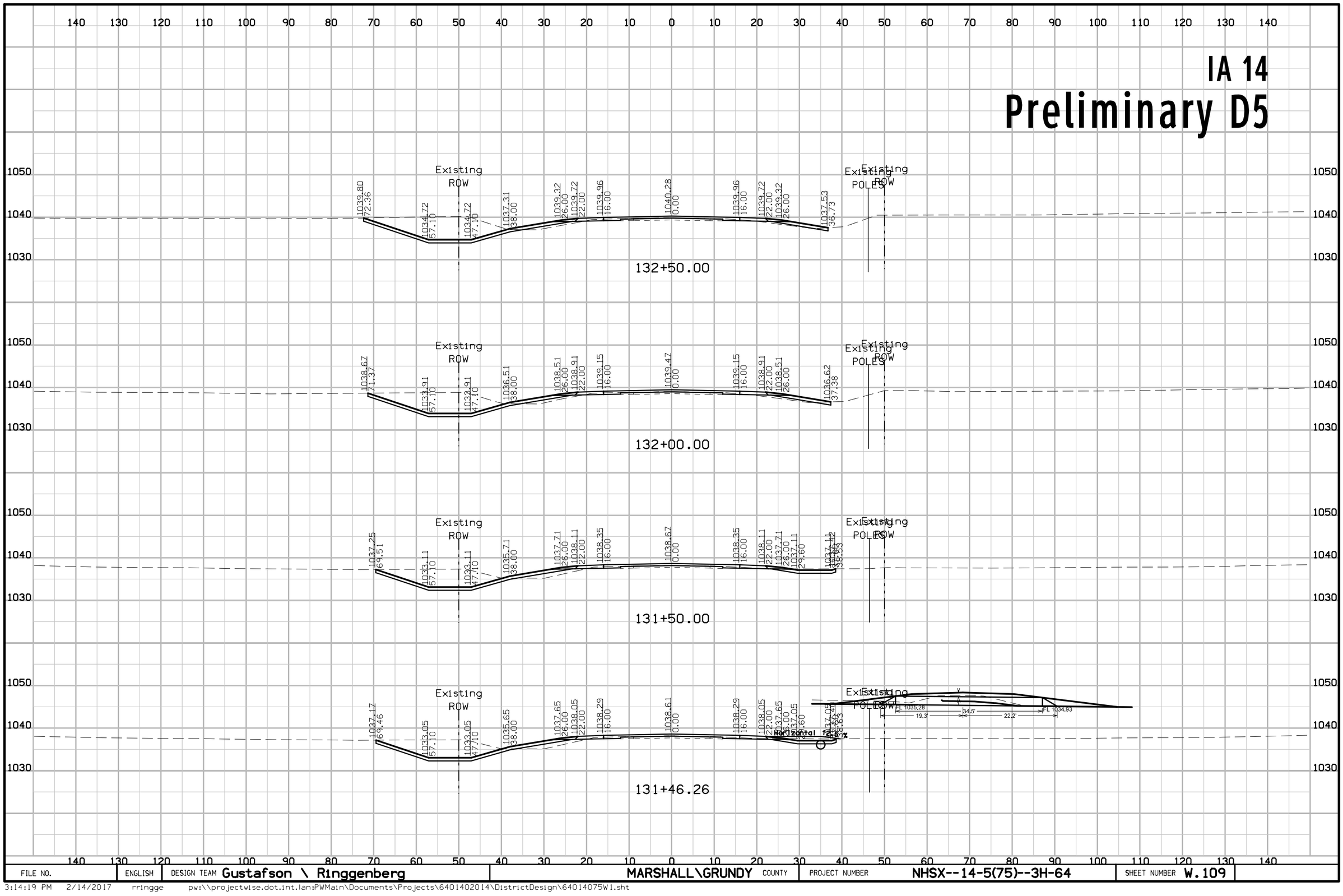
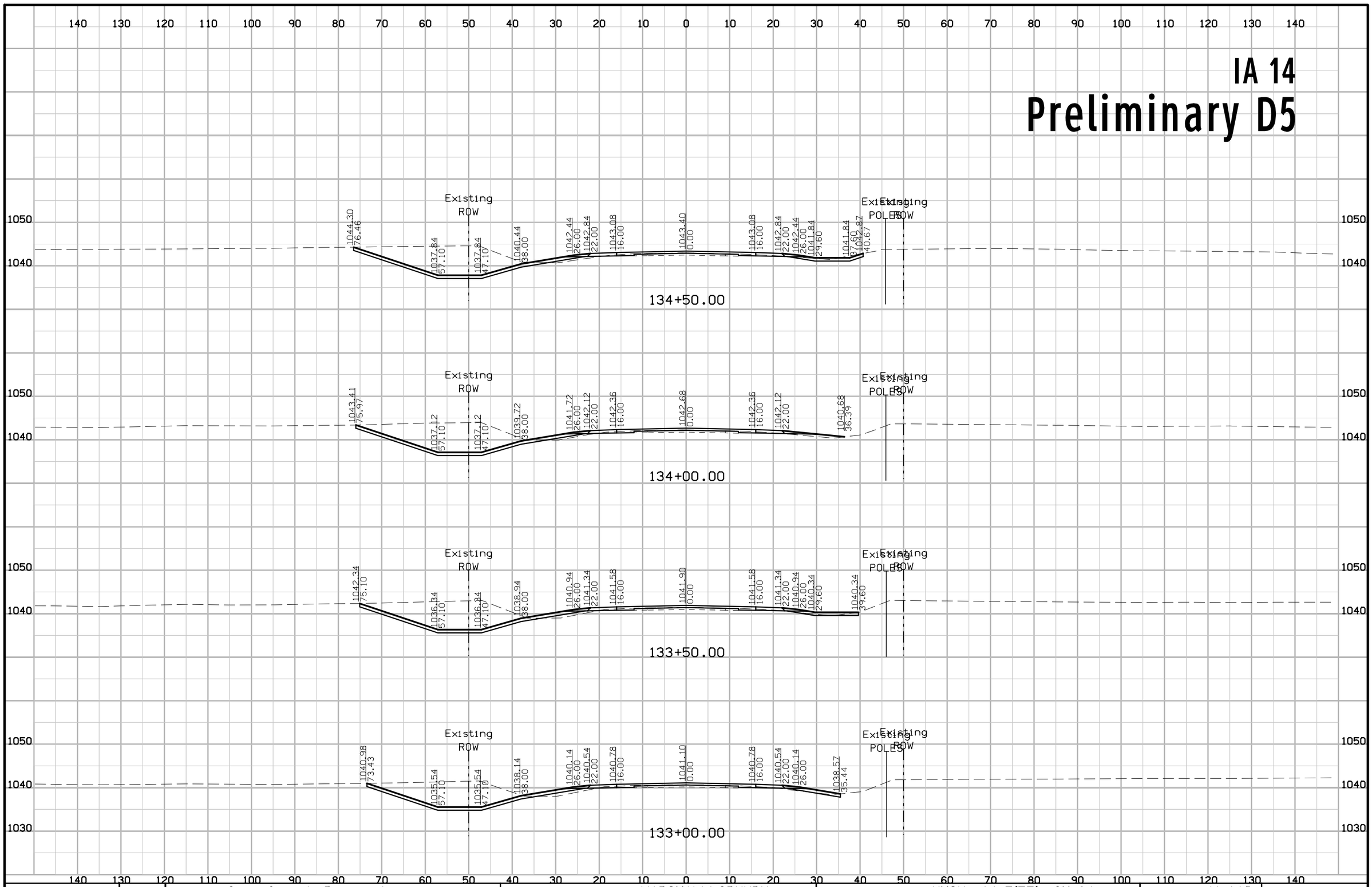


FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.109

IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.110

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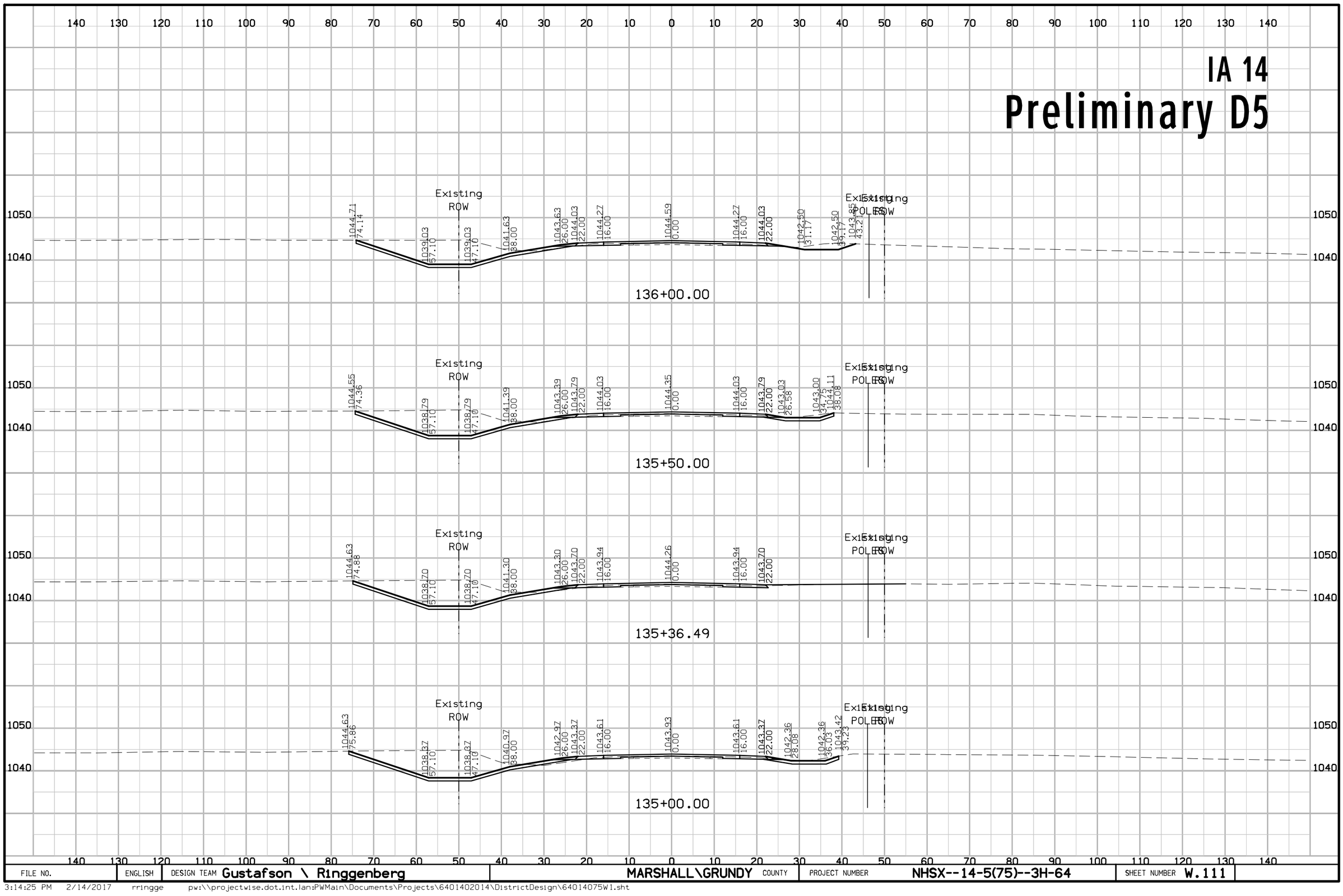
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.111

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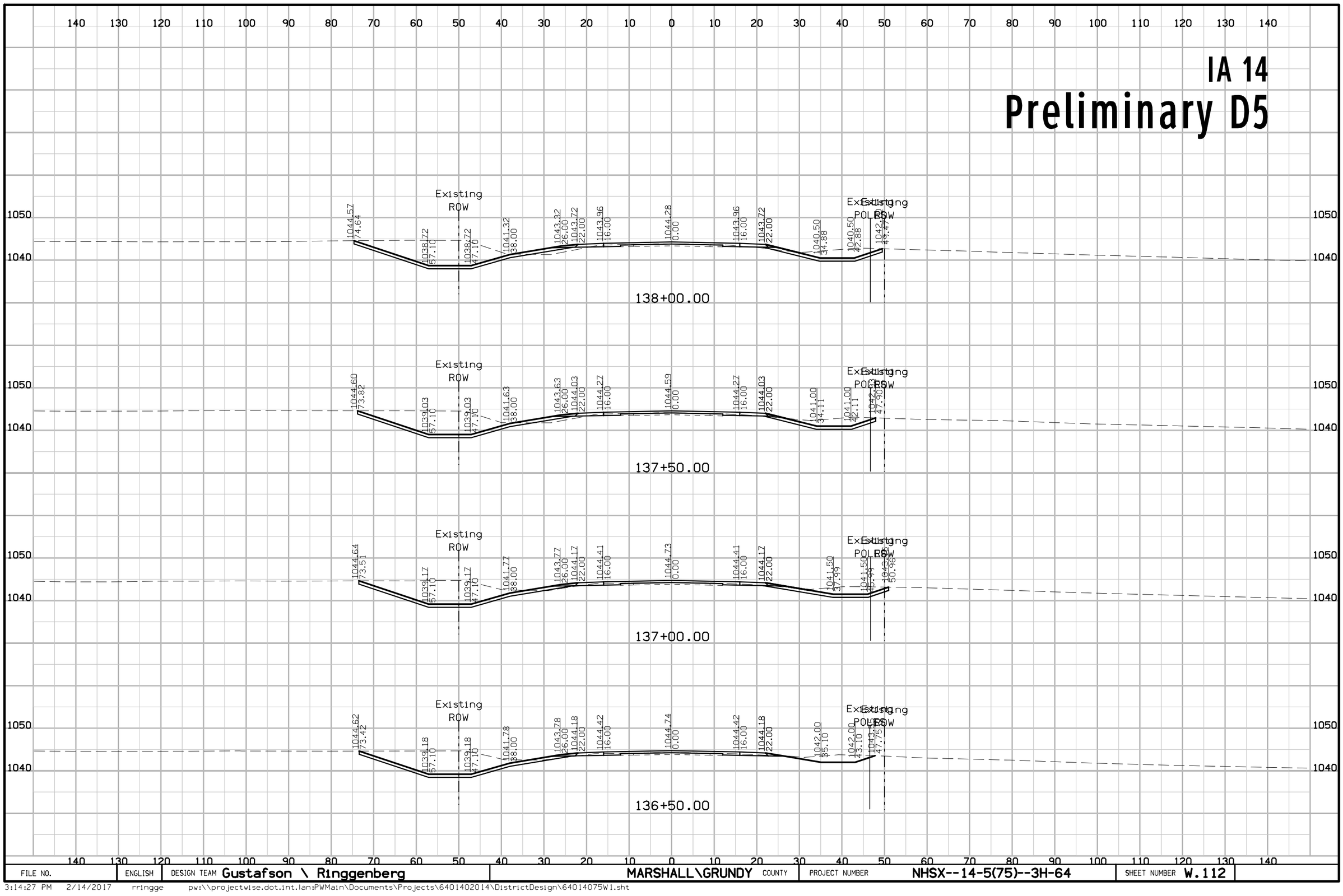
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.112

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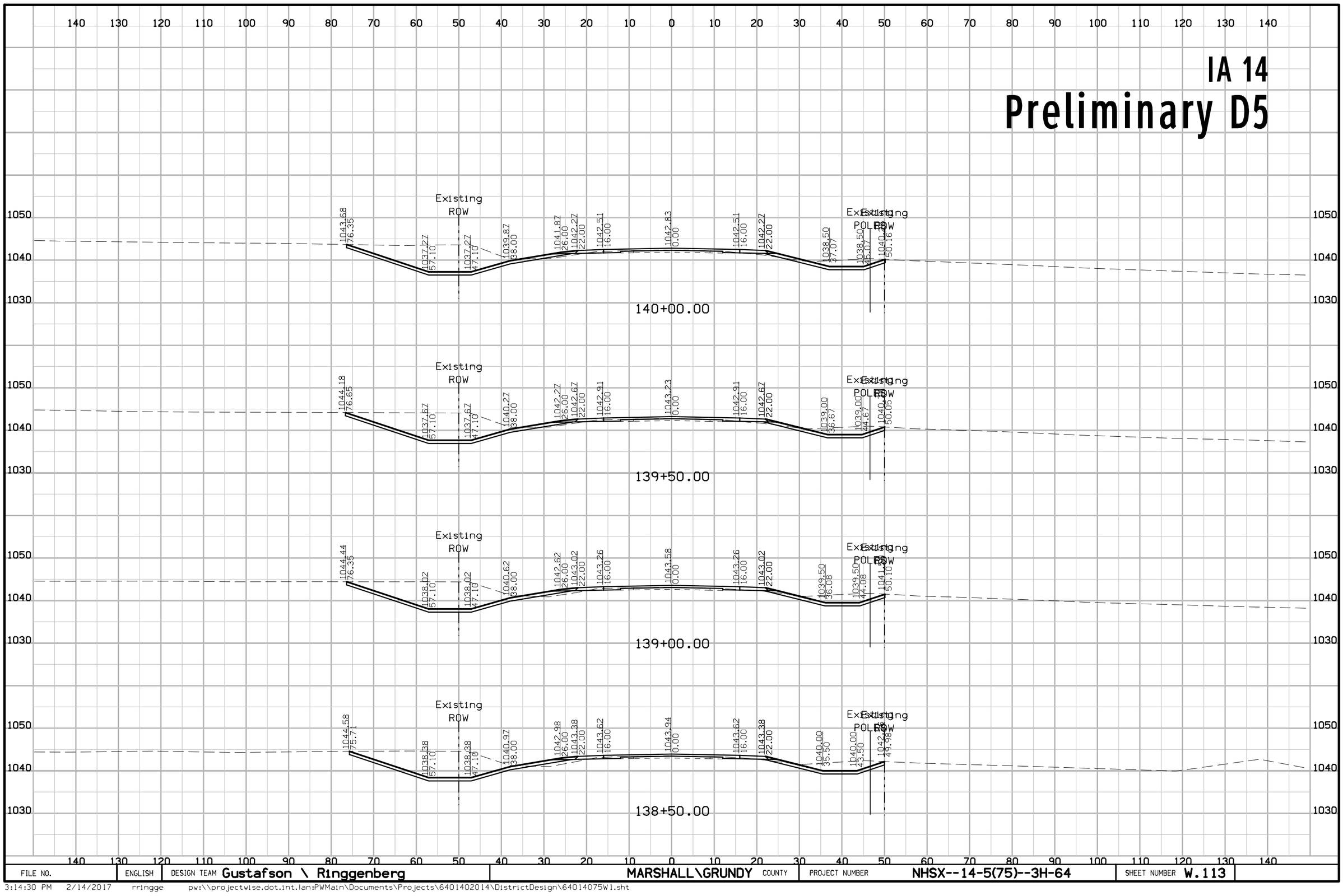
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.113

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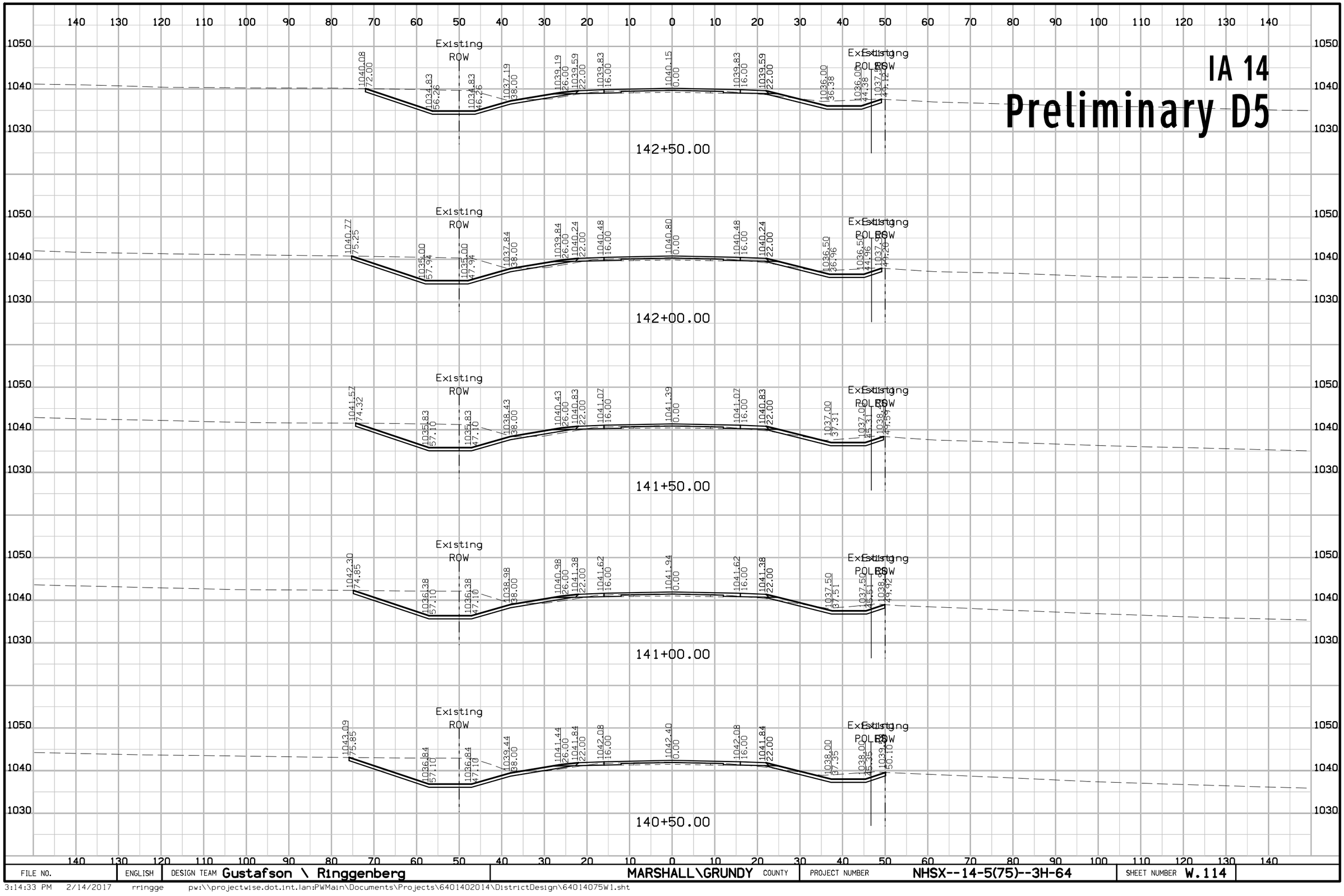
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.114

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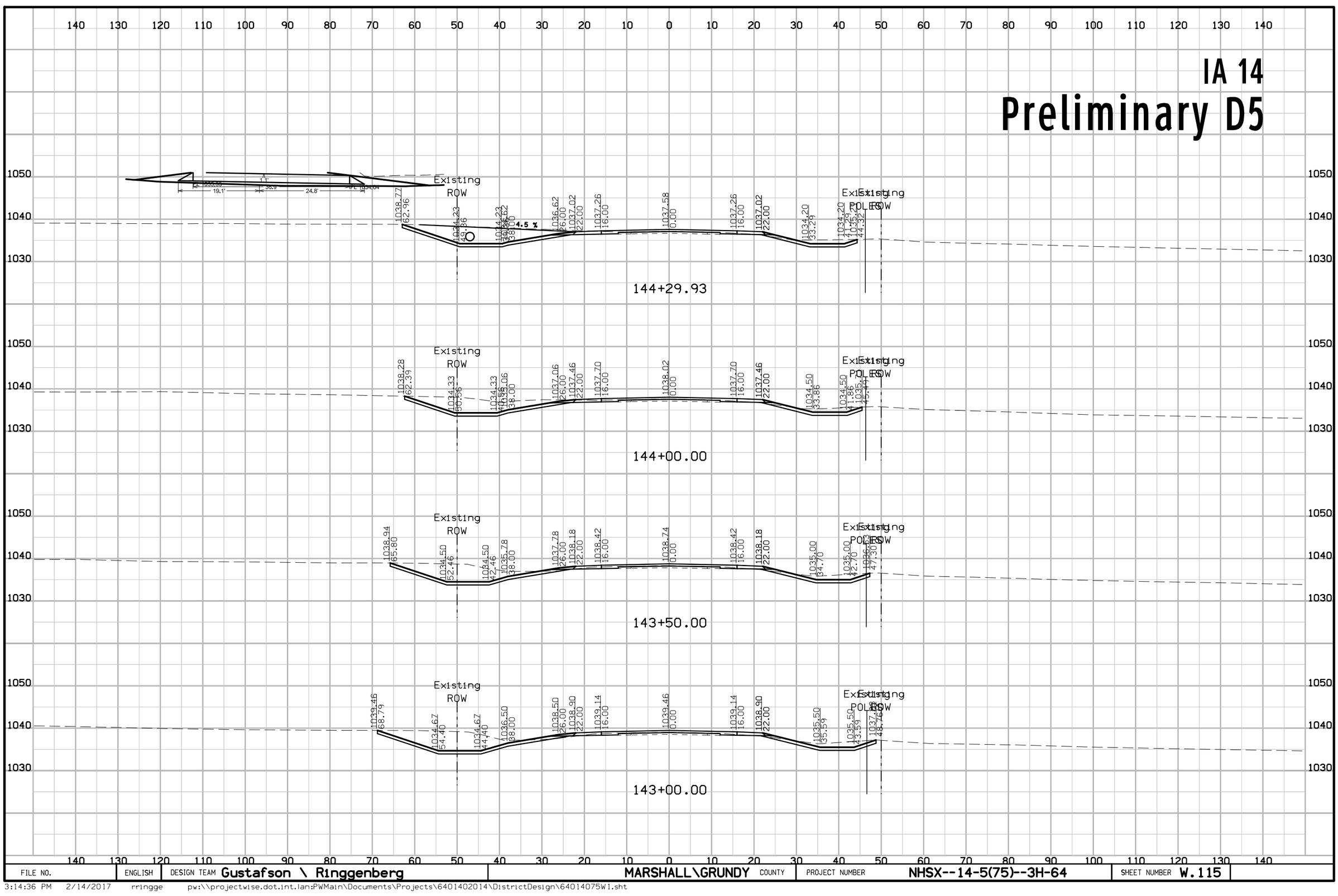
IA 14
Preliminary D5



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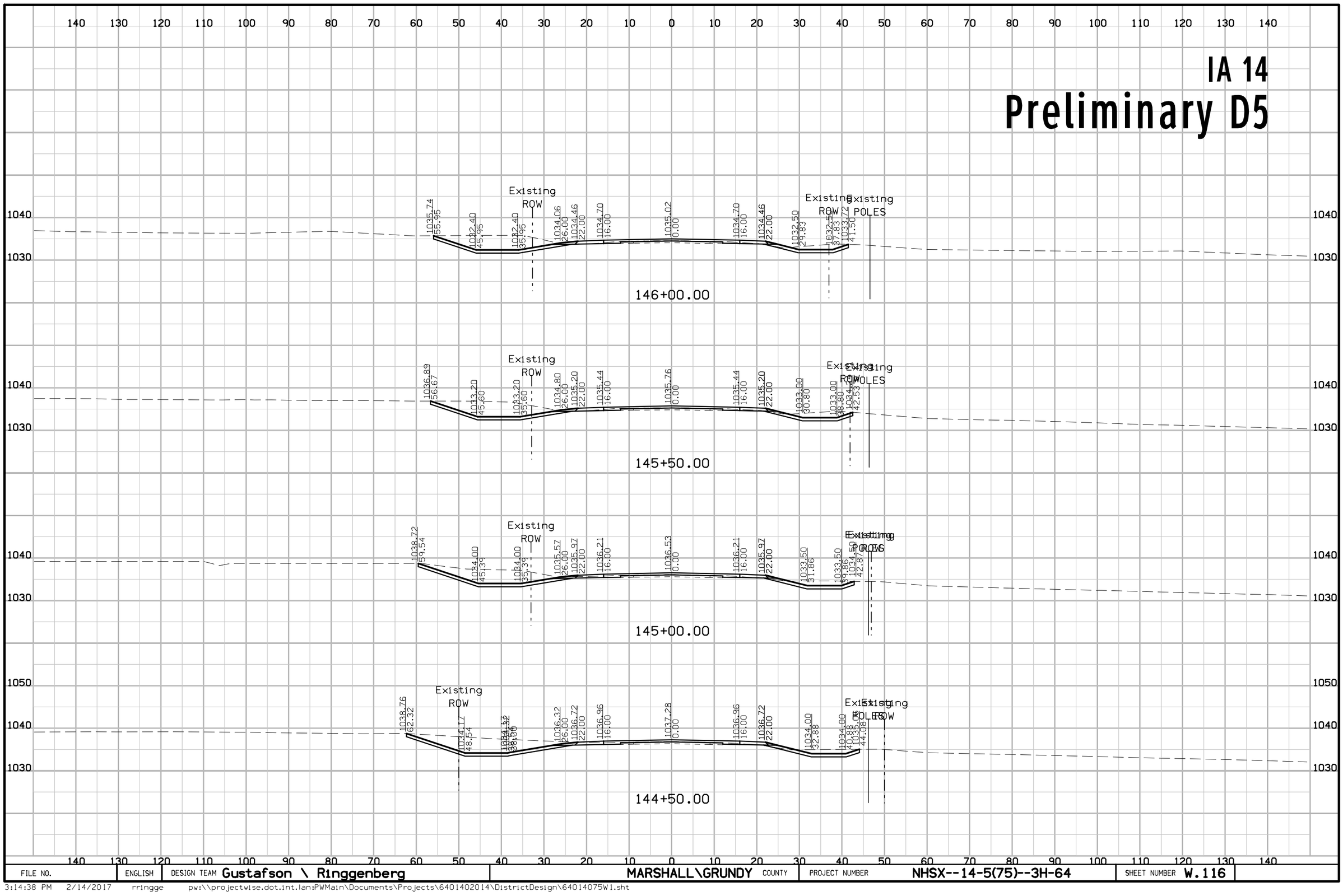
IA 14
Preliminary D5



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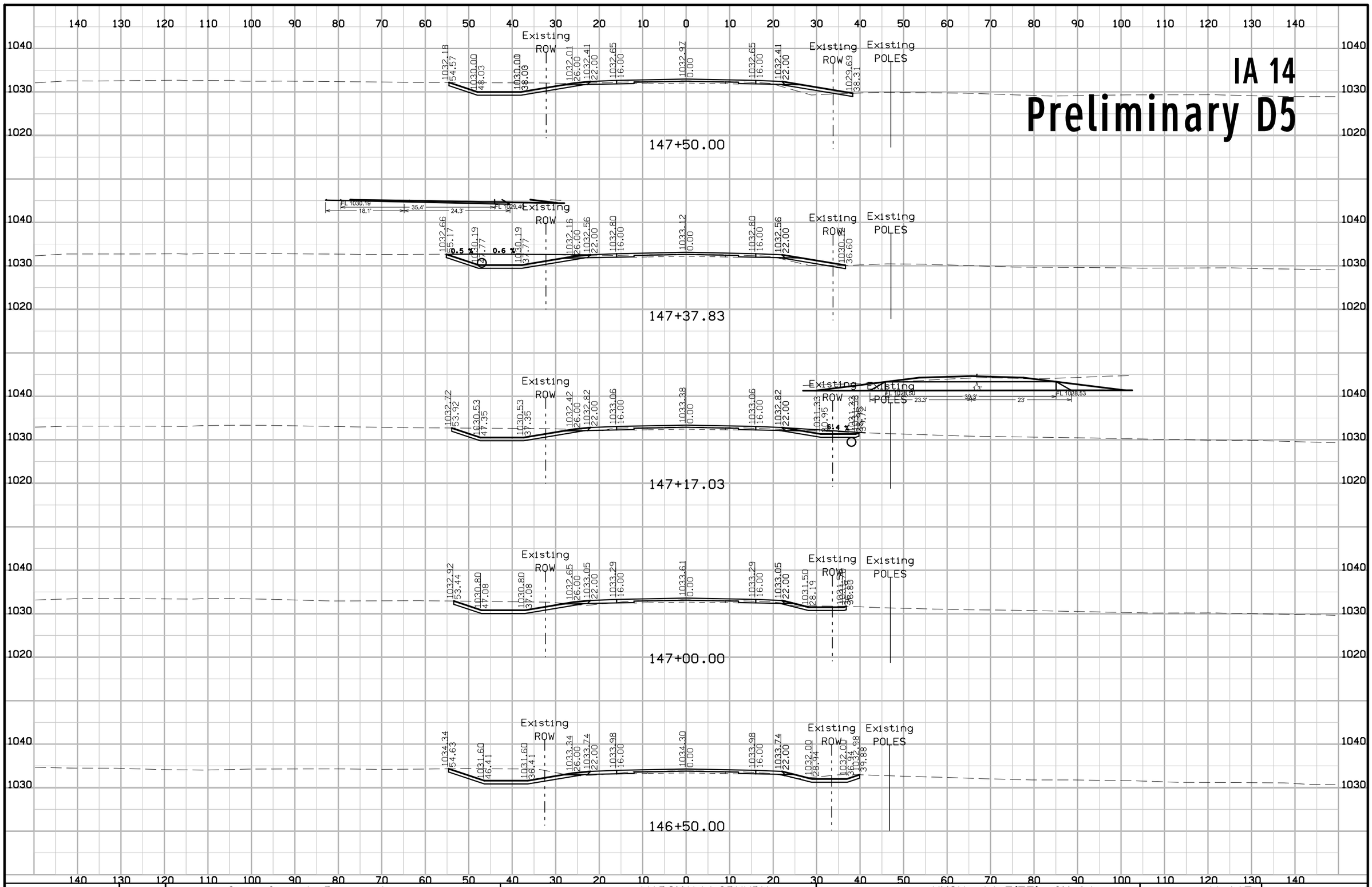
IA 14
Preliminary D5



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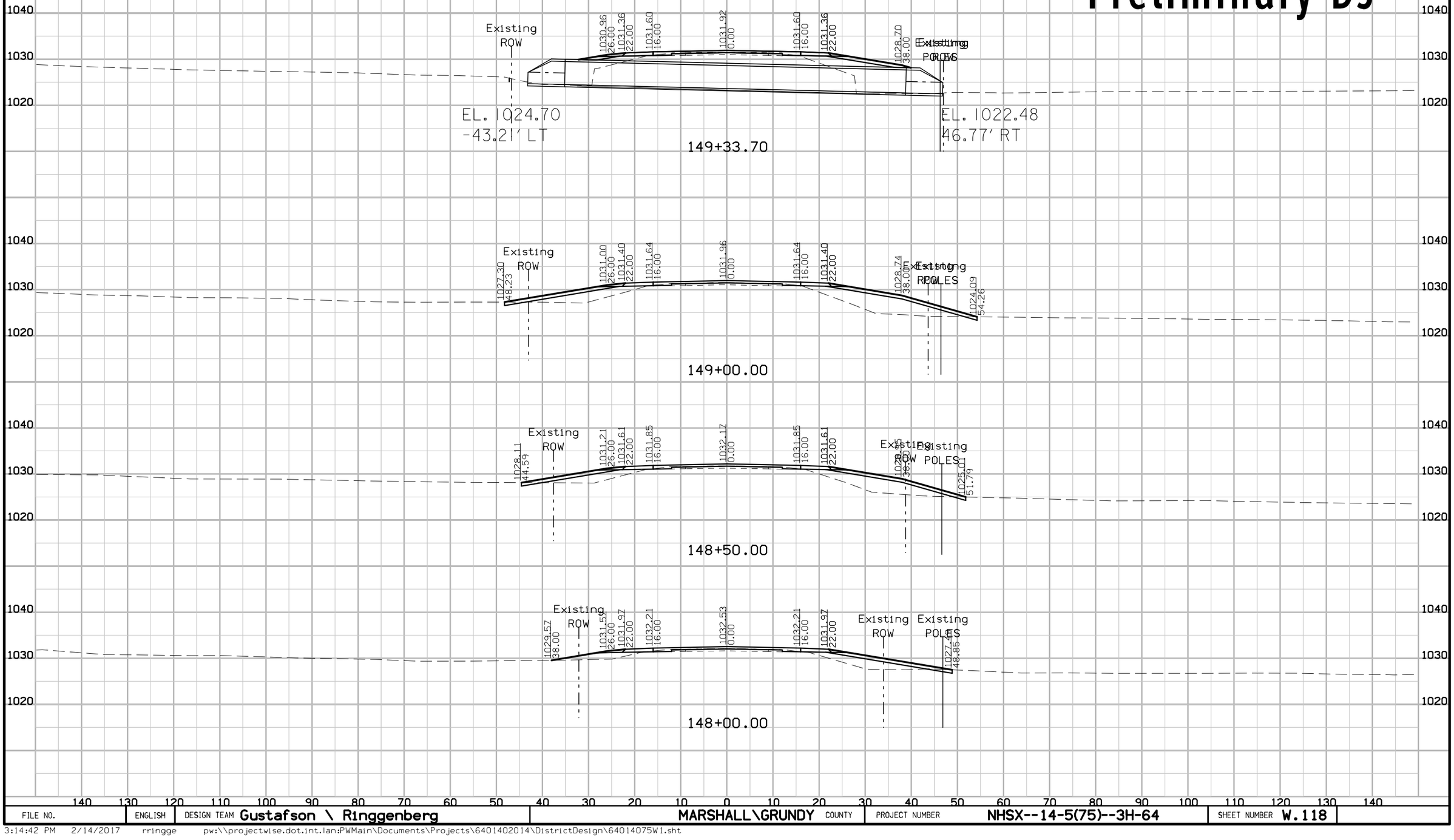
IA 14
Preliminary D5



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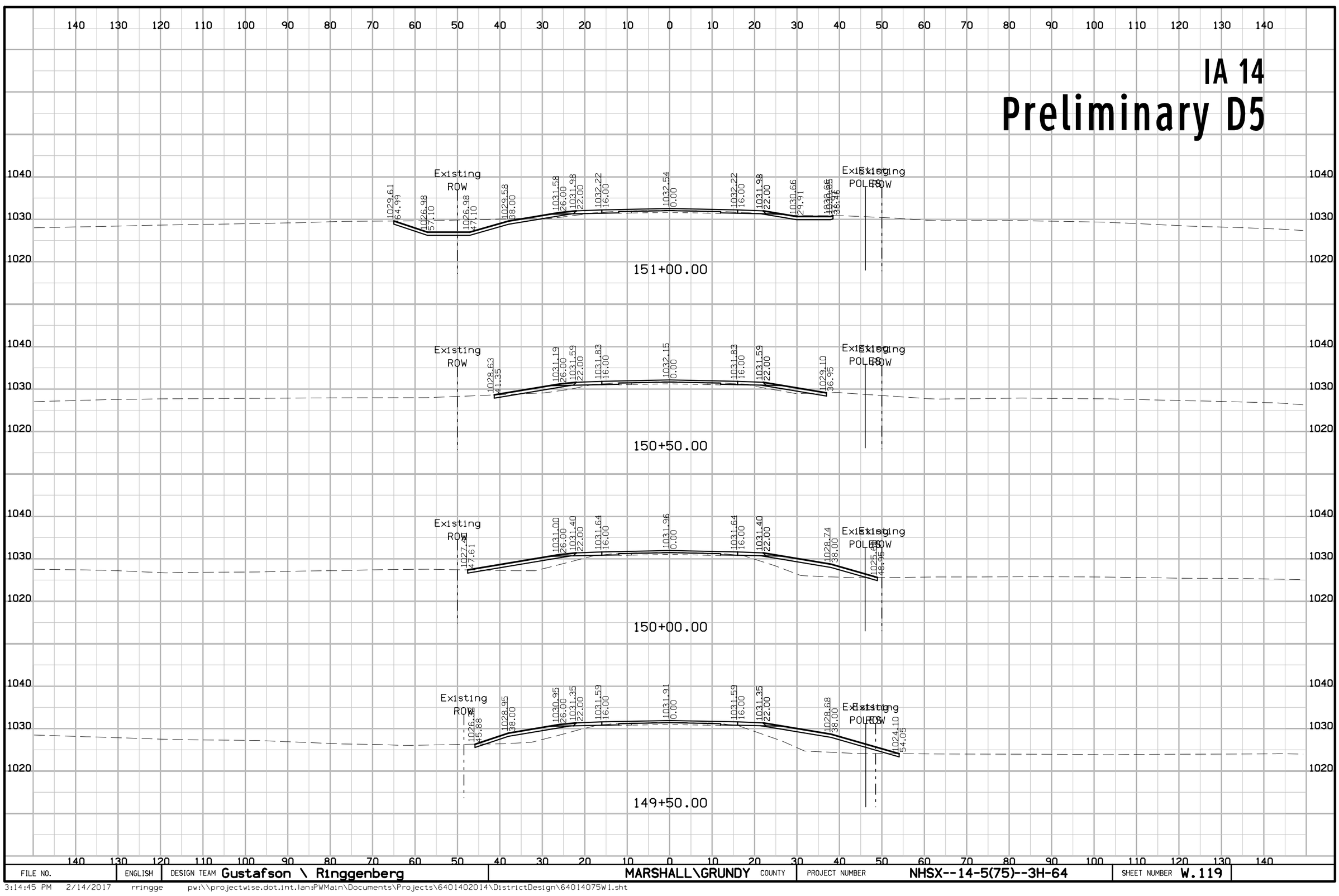
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.119

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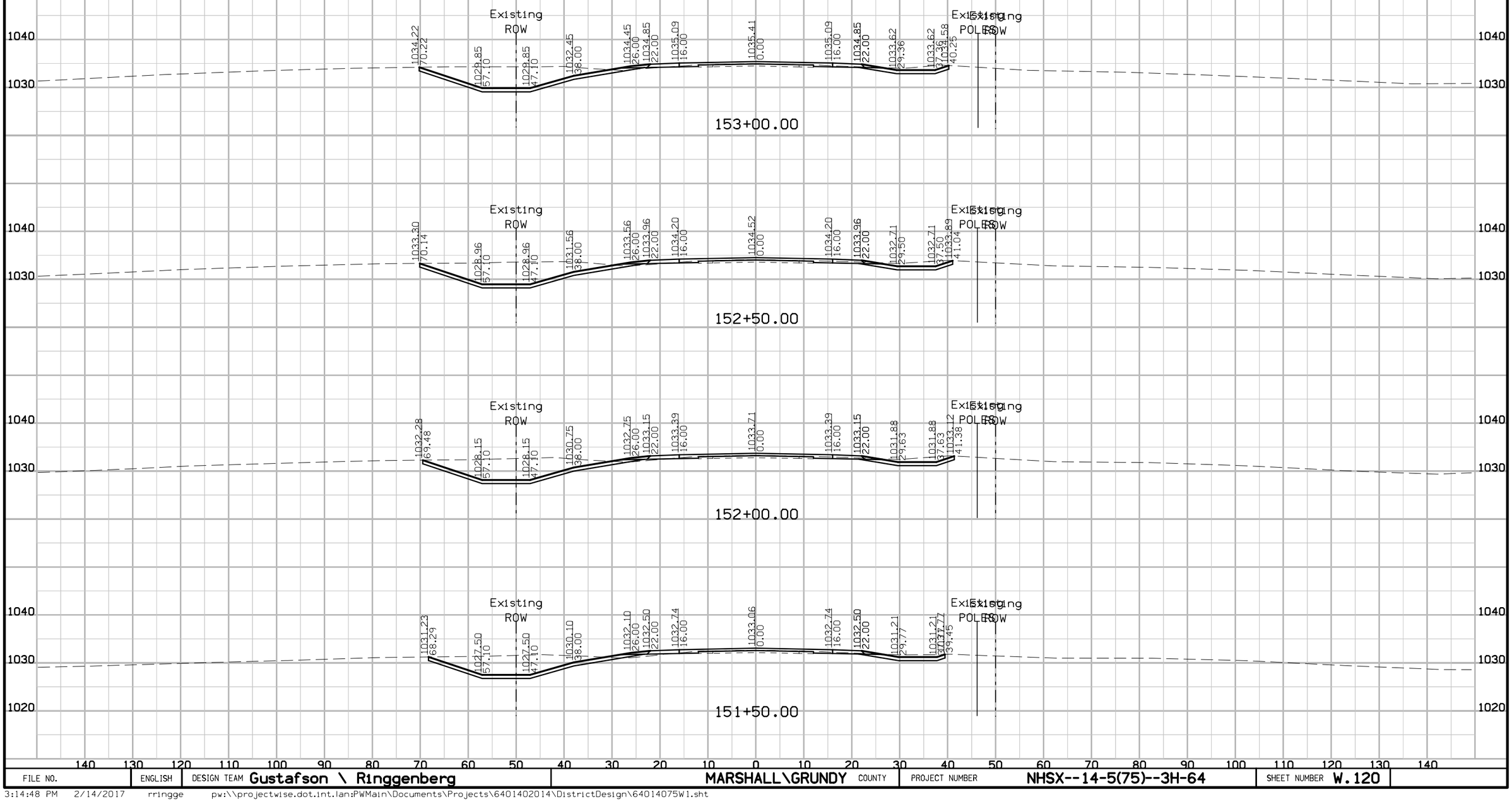
IA 14
Preliminary D5



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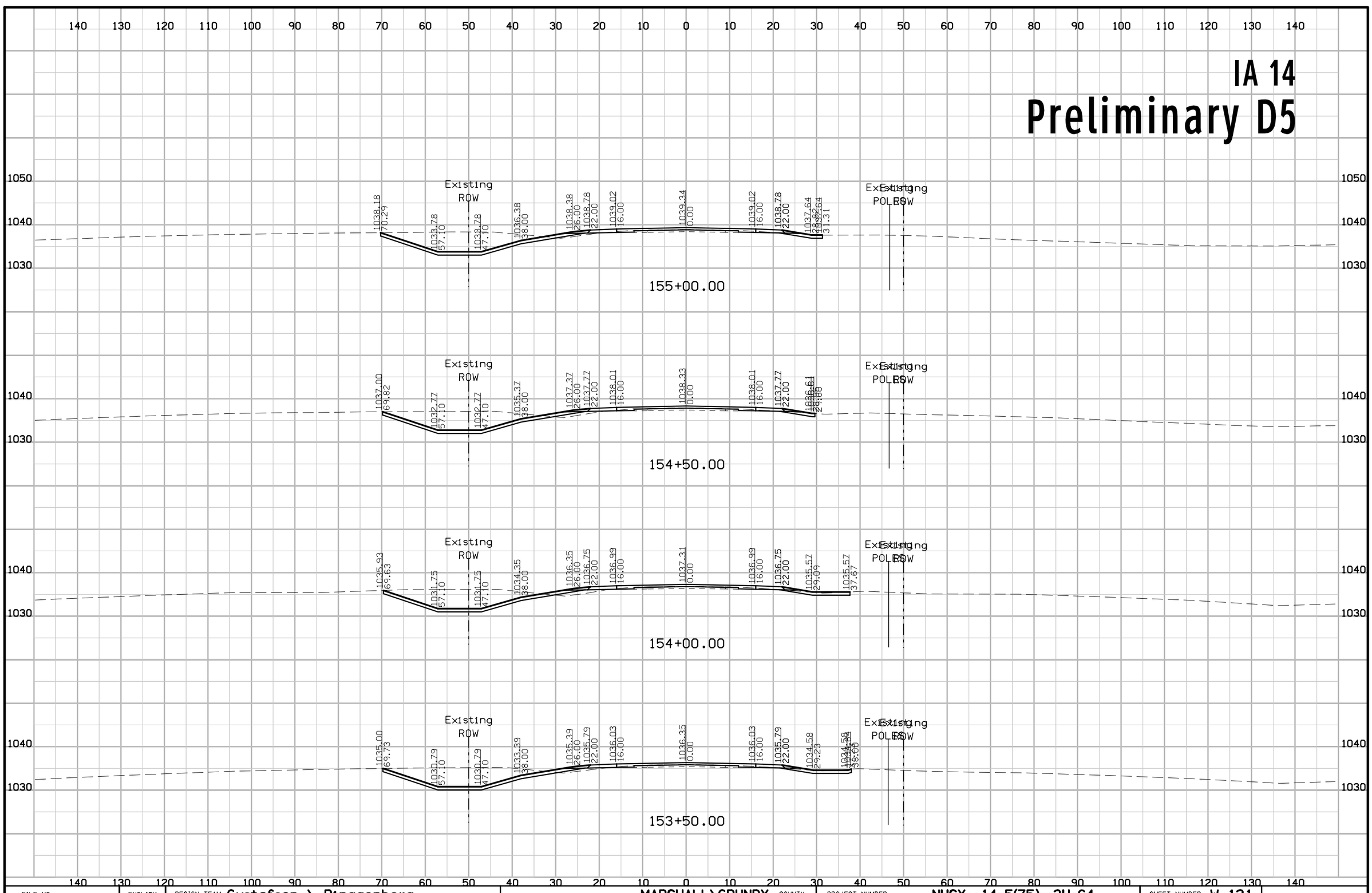
IA 14
Preliminary D5



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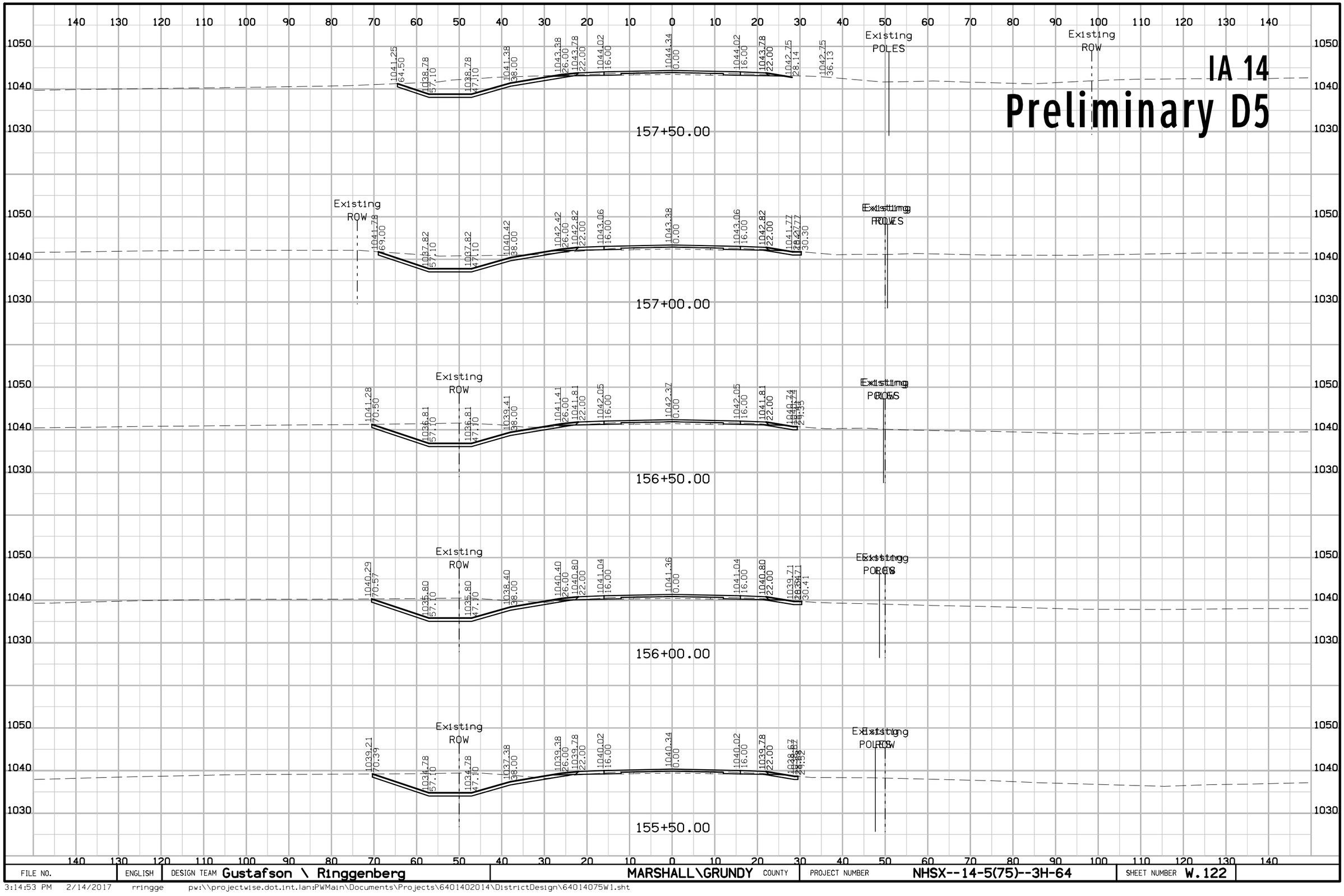
IA 14

Preliminary D5



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IA 14
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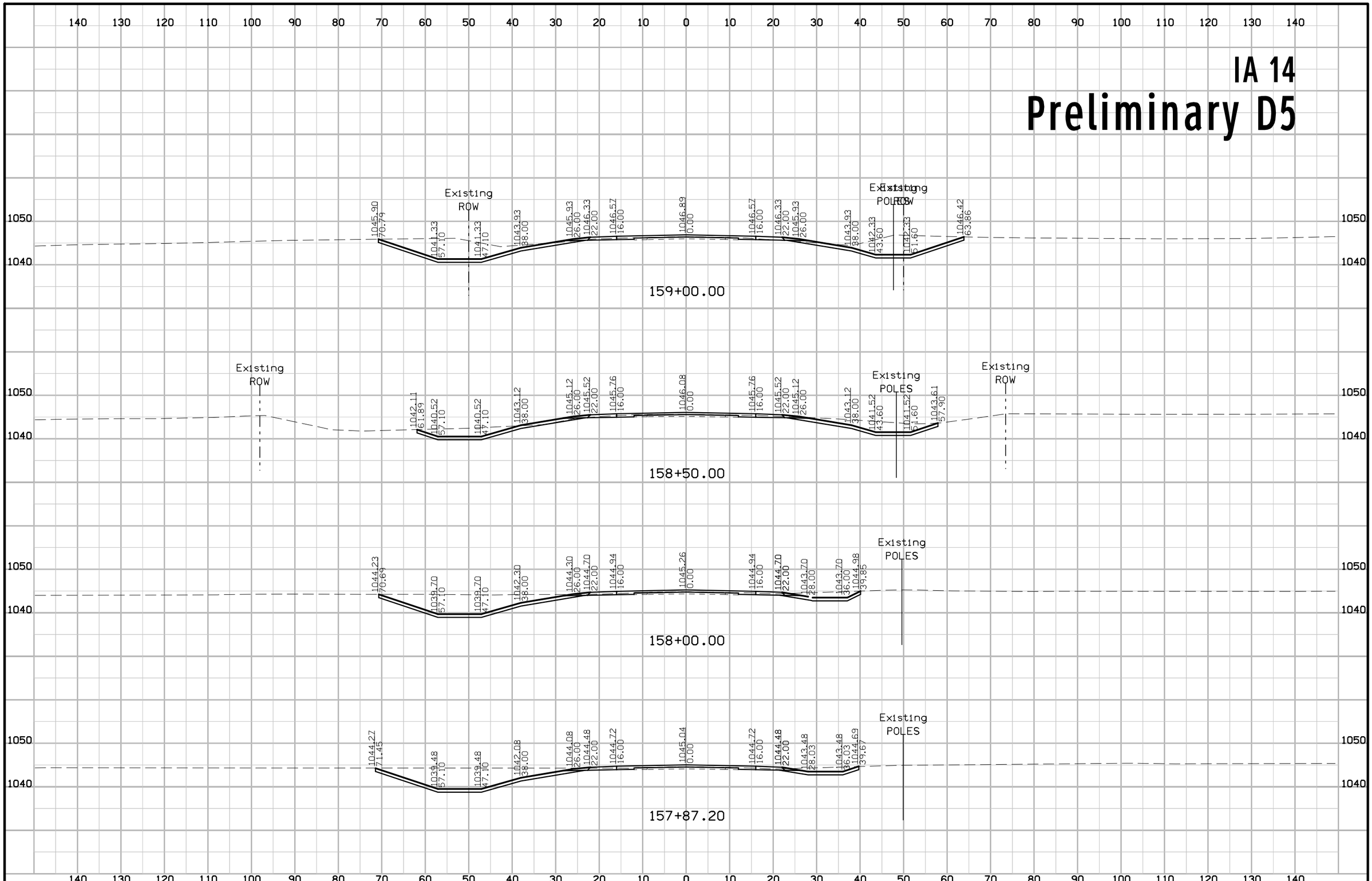

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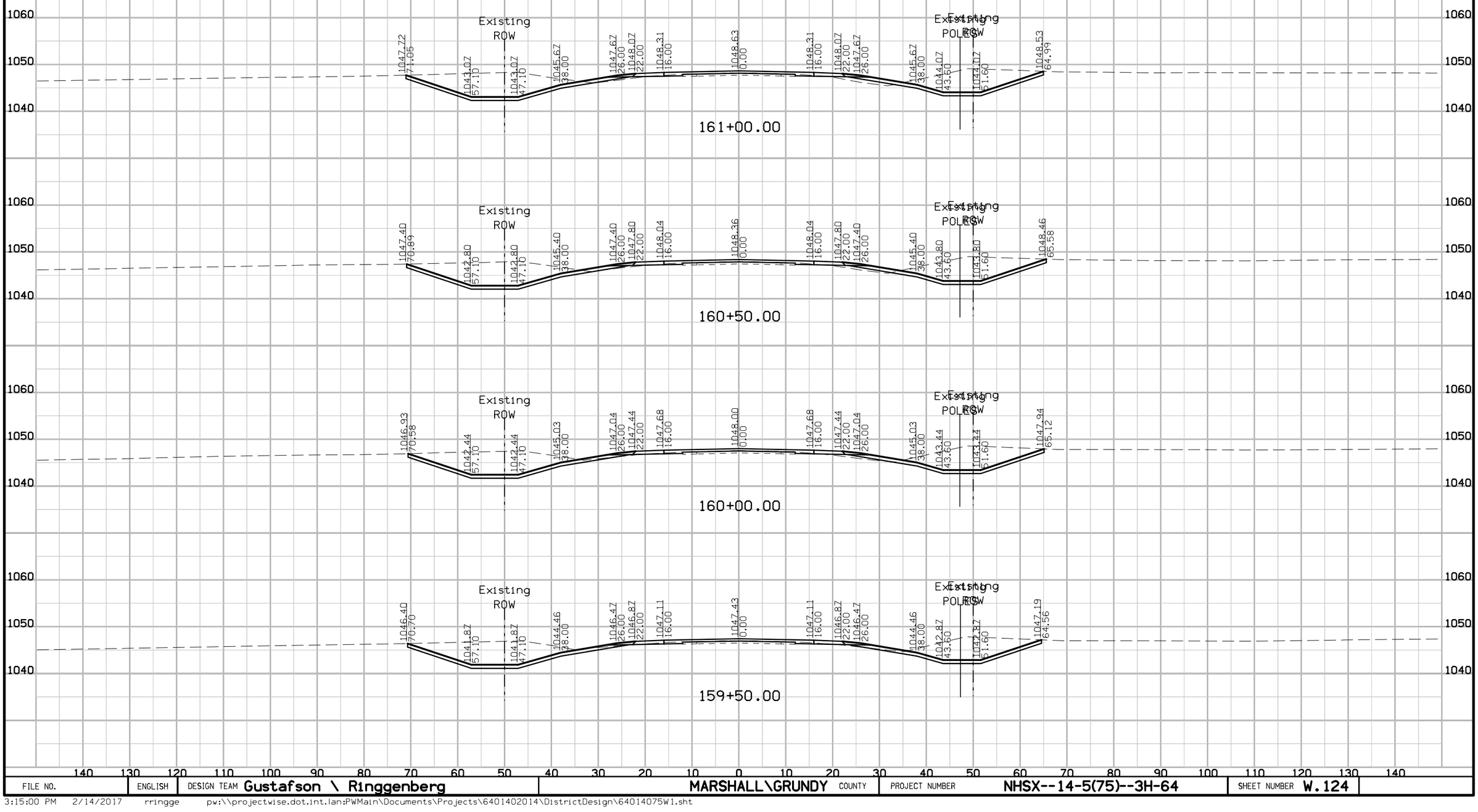
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.124

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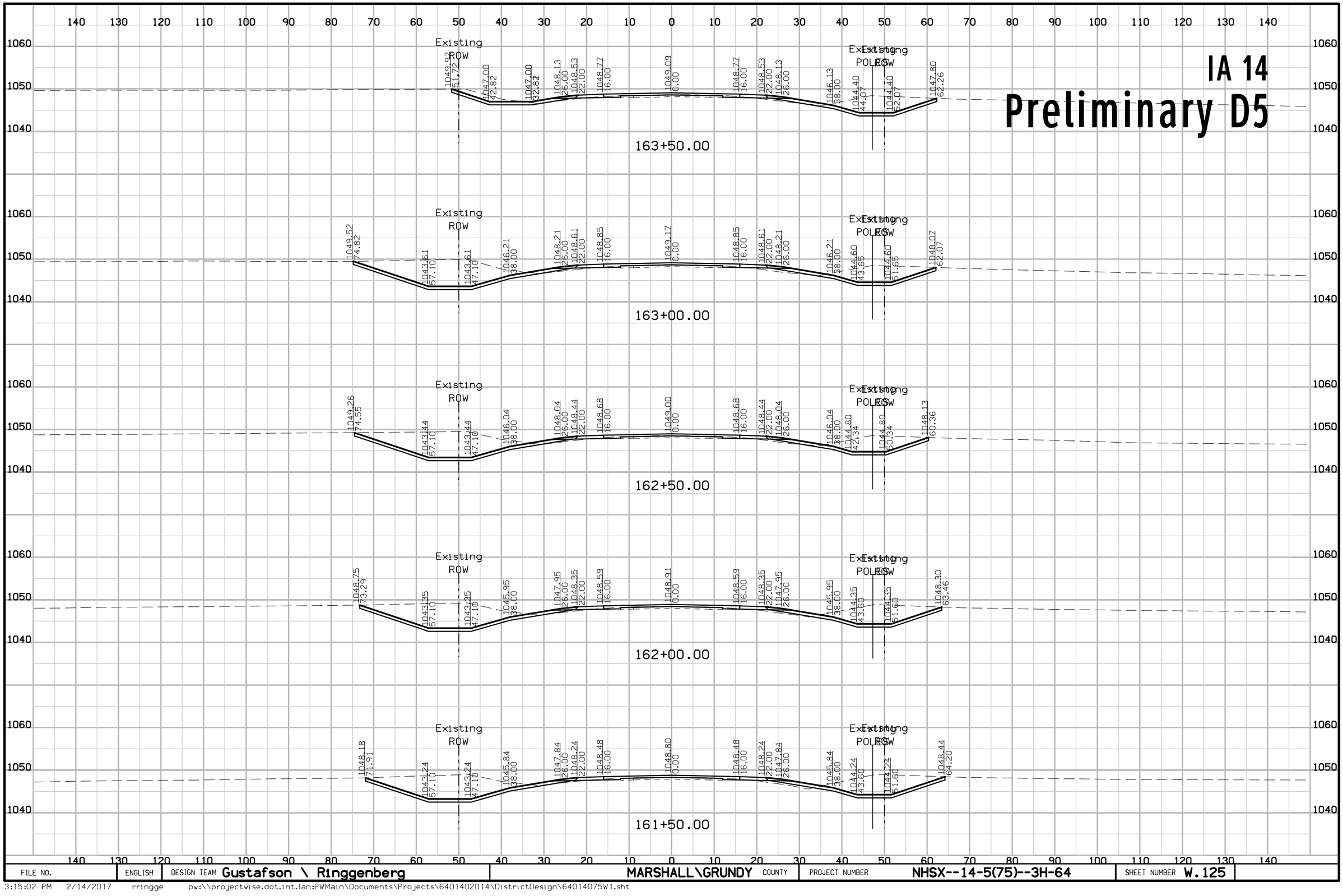
IA 14
Preliminary D5



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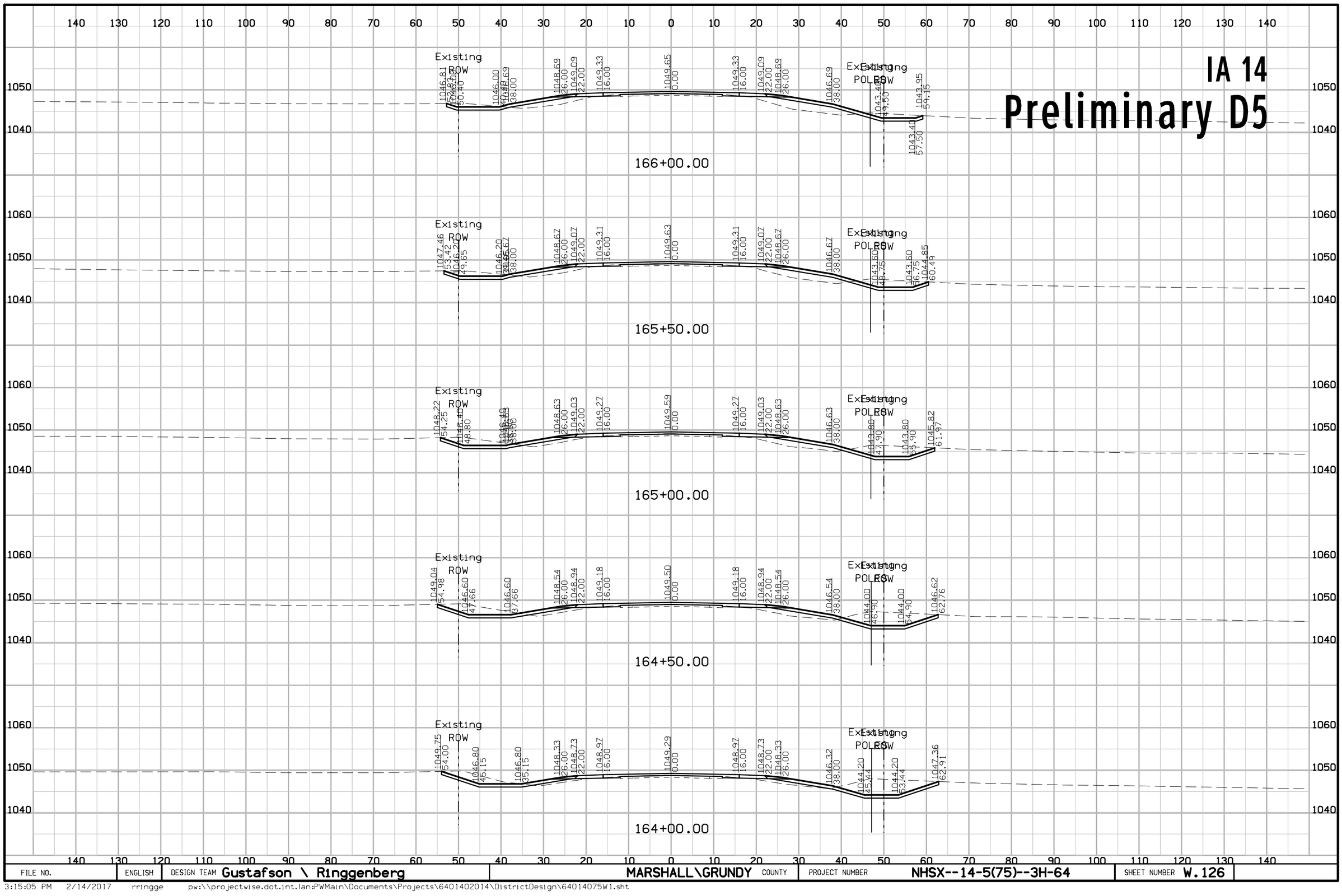
IA 14
Preliminary D5



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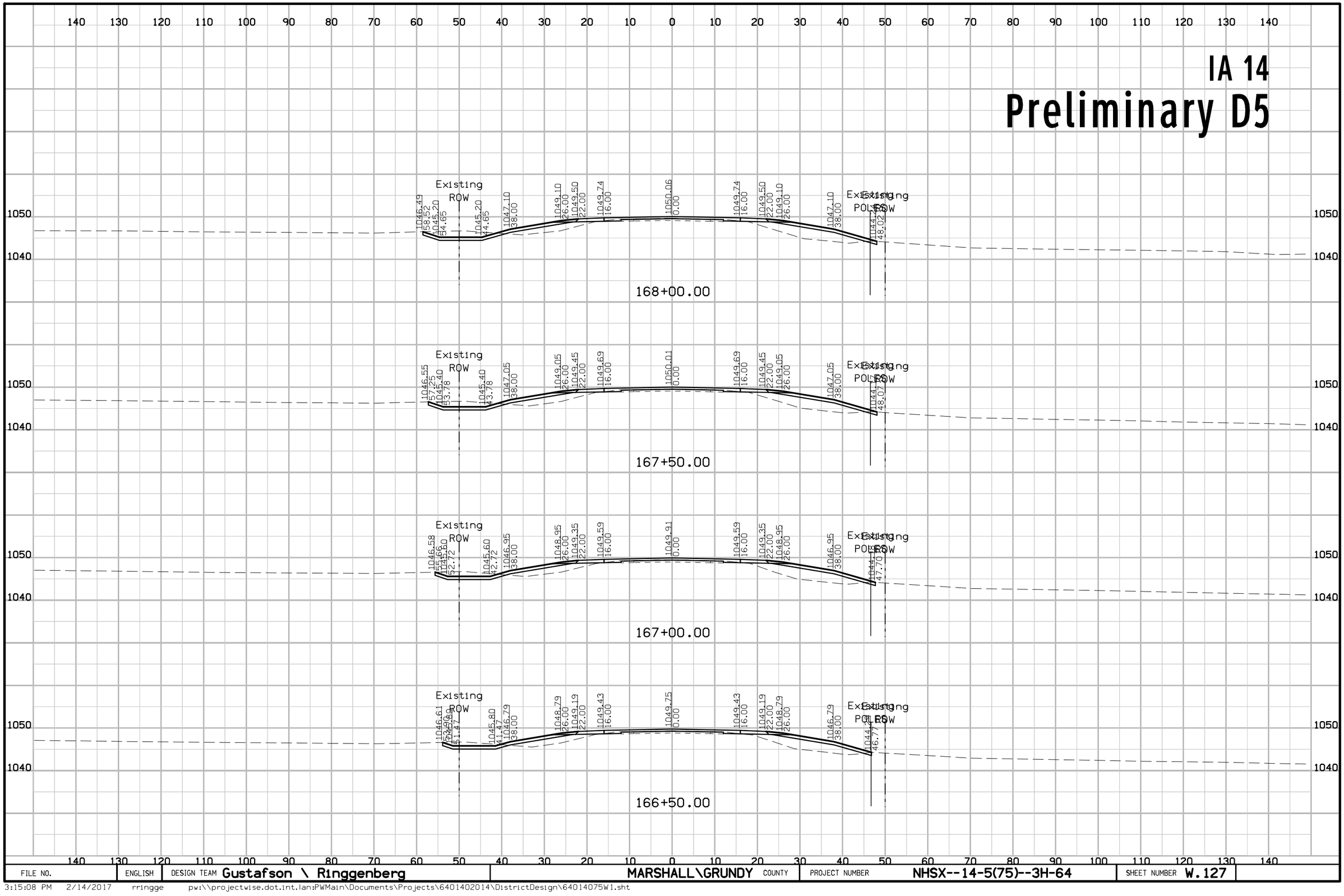
IA 14
Preliminary D5



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IA 14
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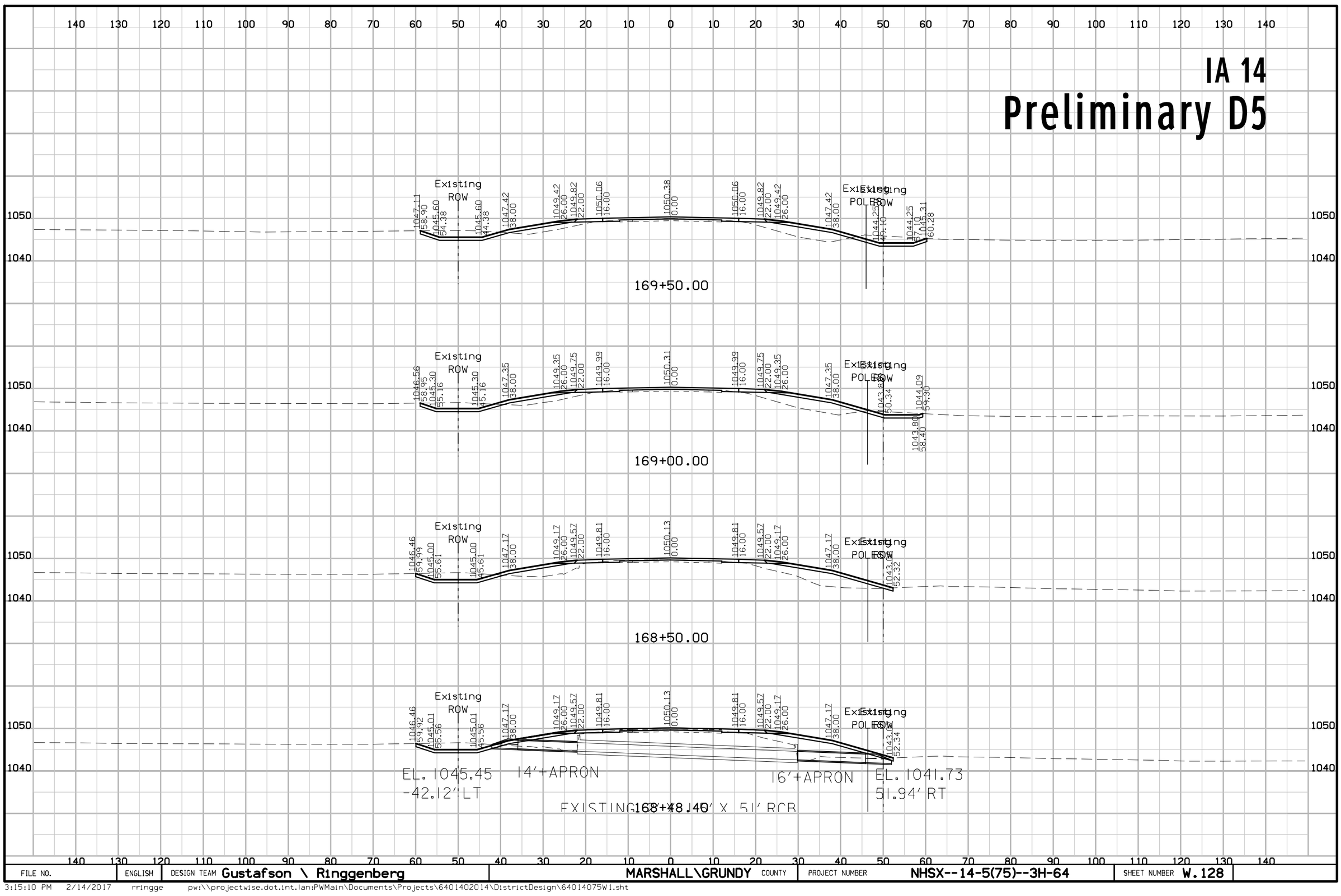

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IA 14
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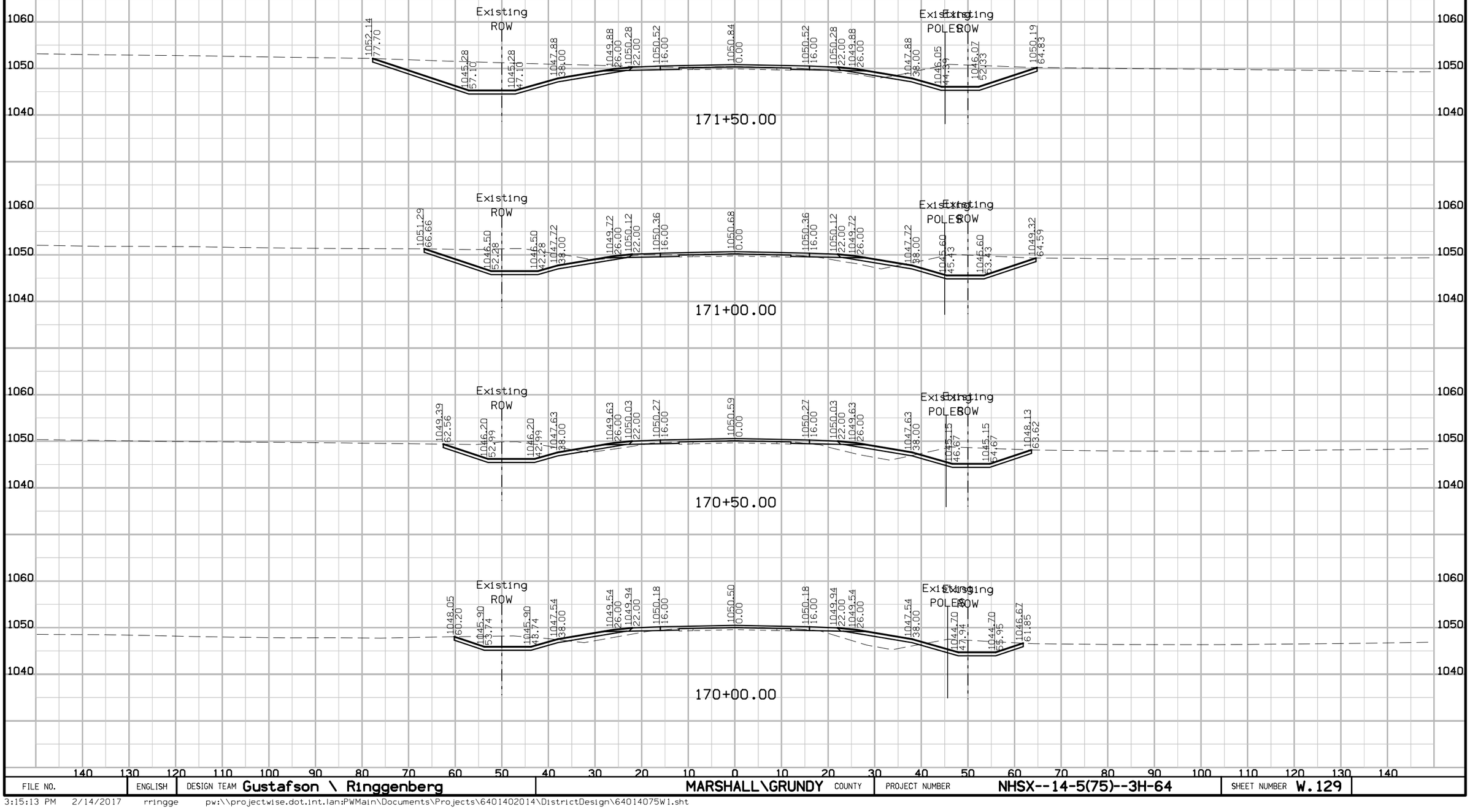

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IA 14
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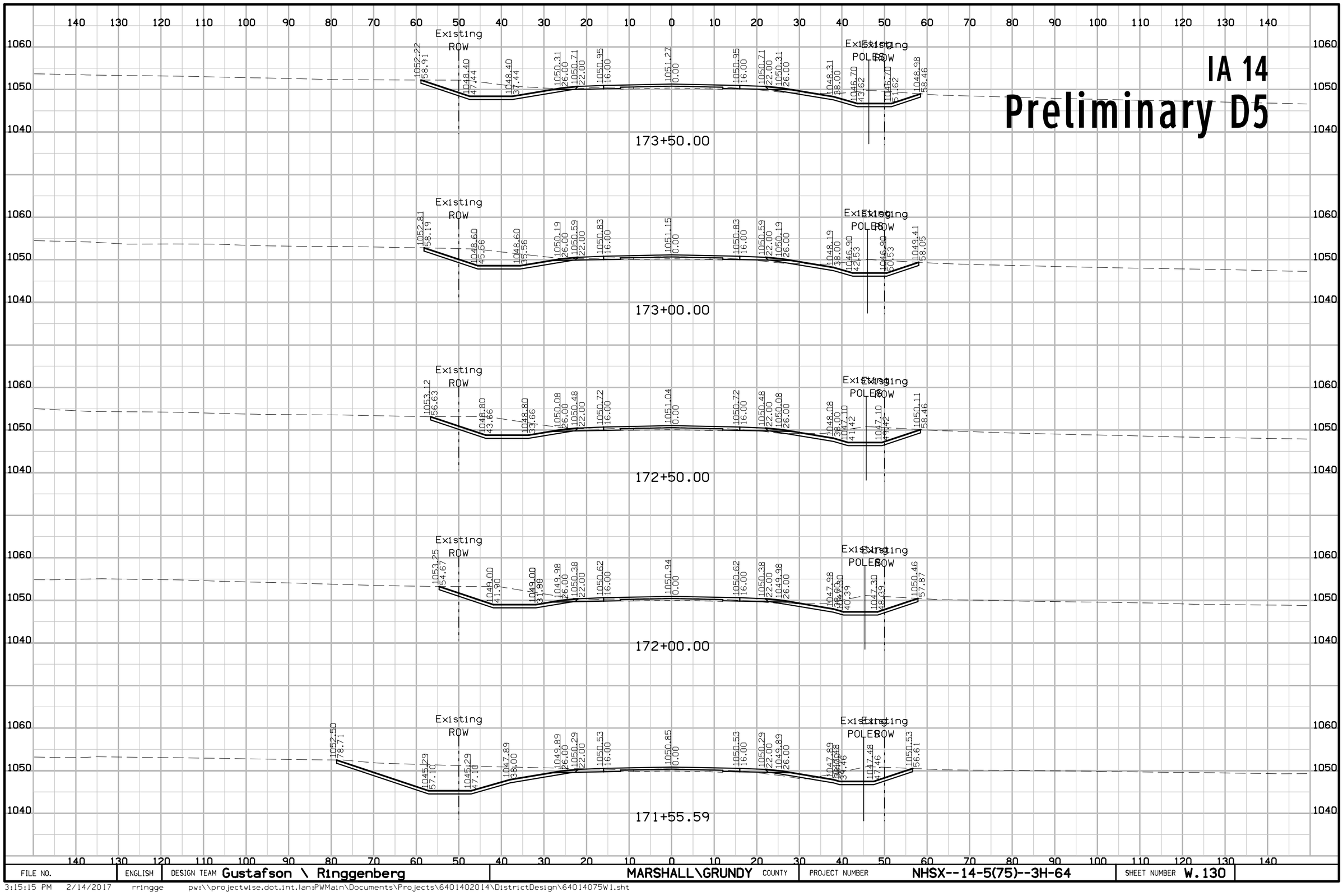

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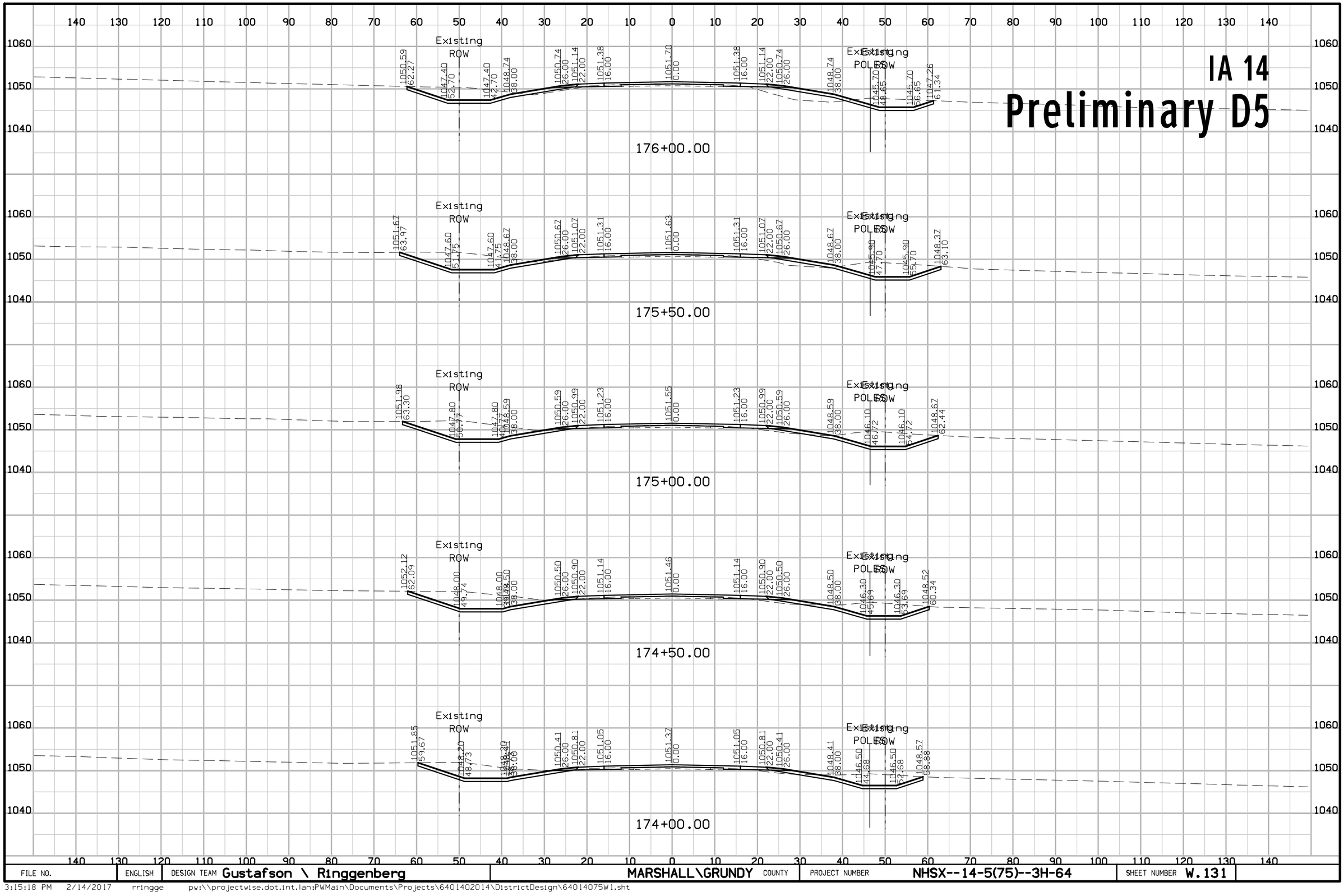

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.131

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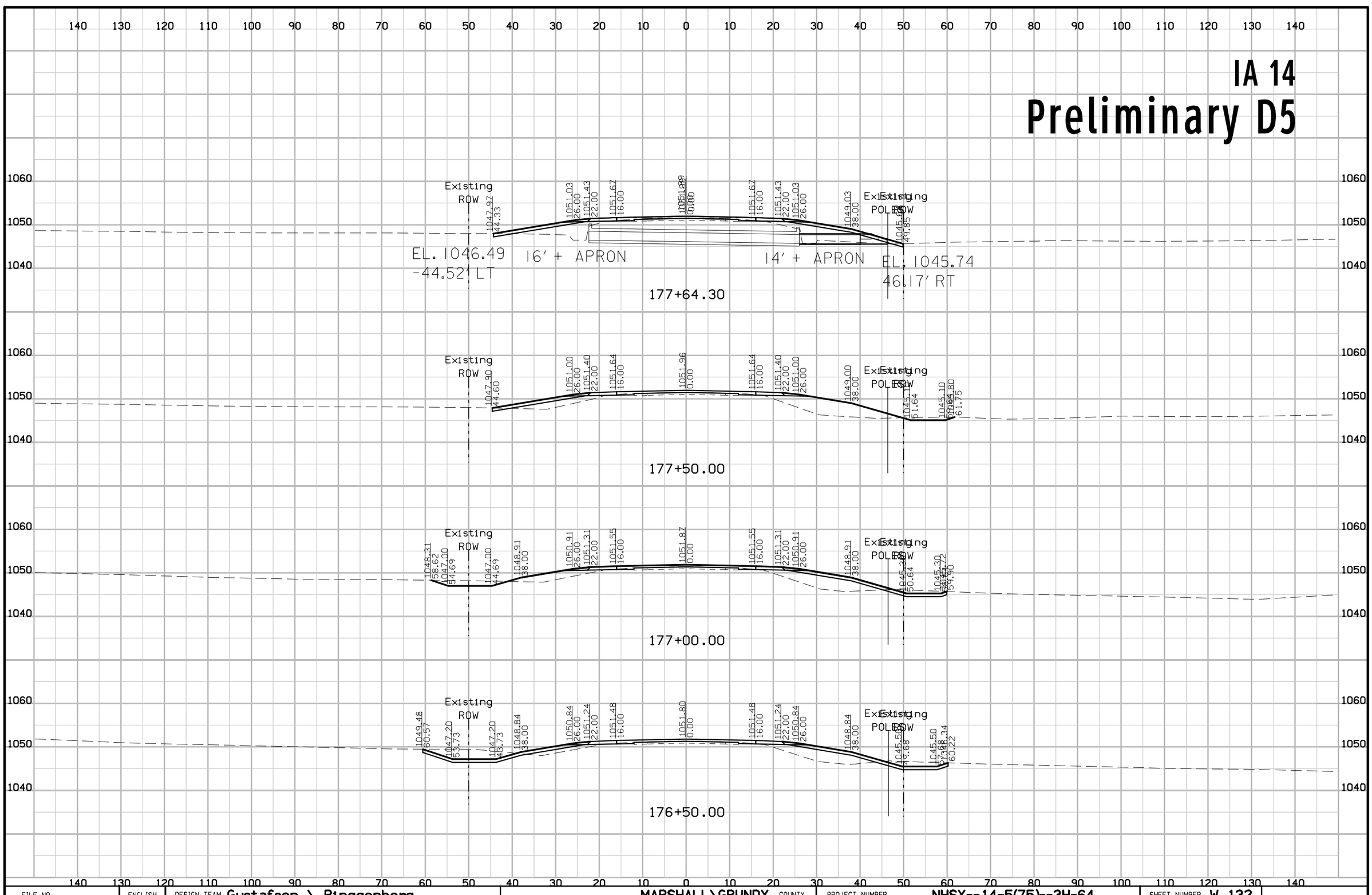

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.132

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IA 14
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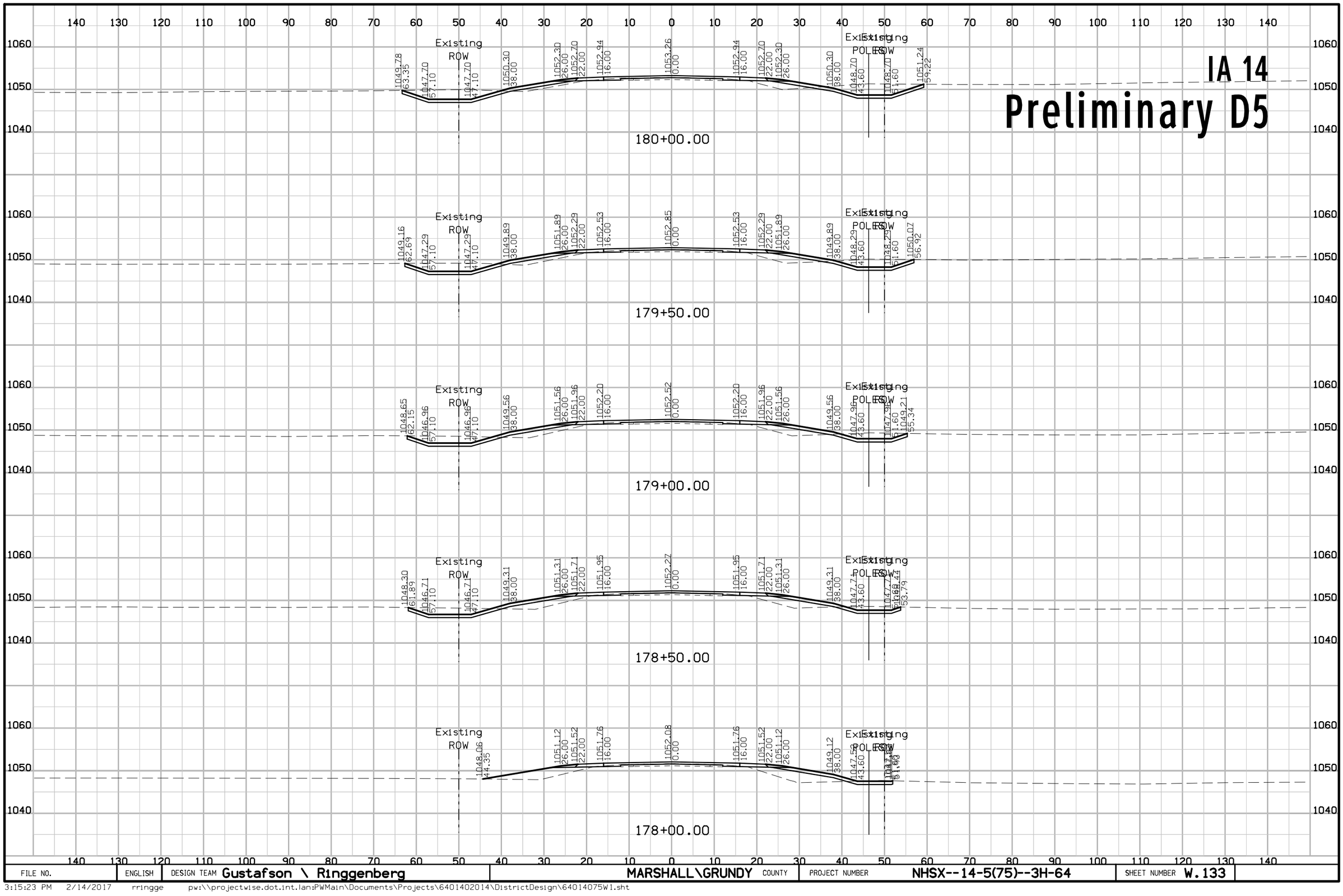

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IA 14
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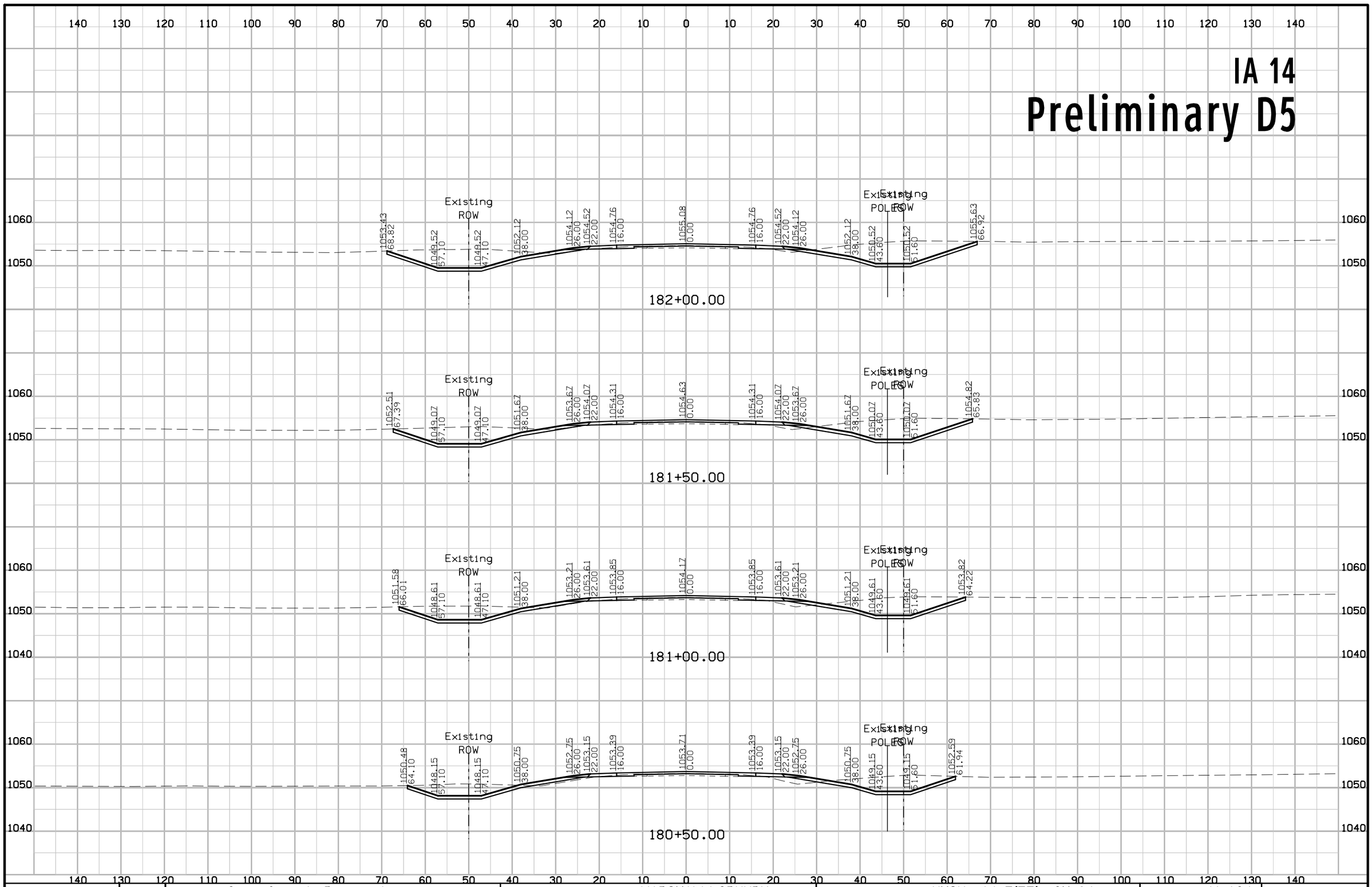

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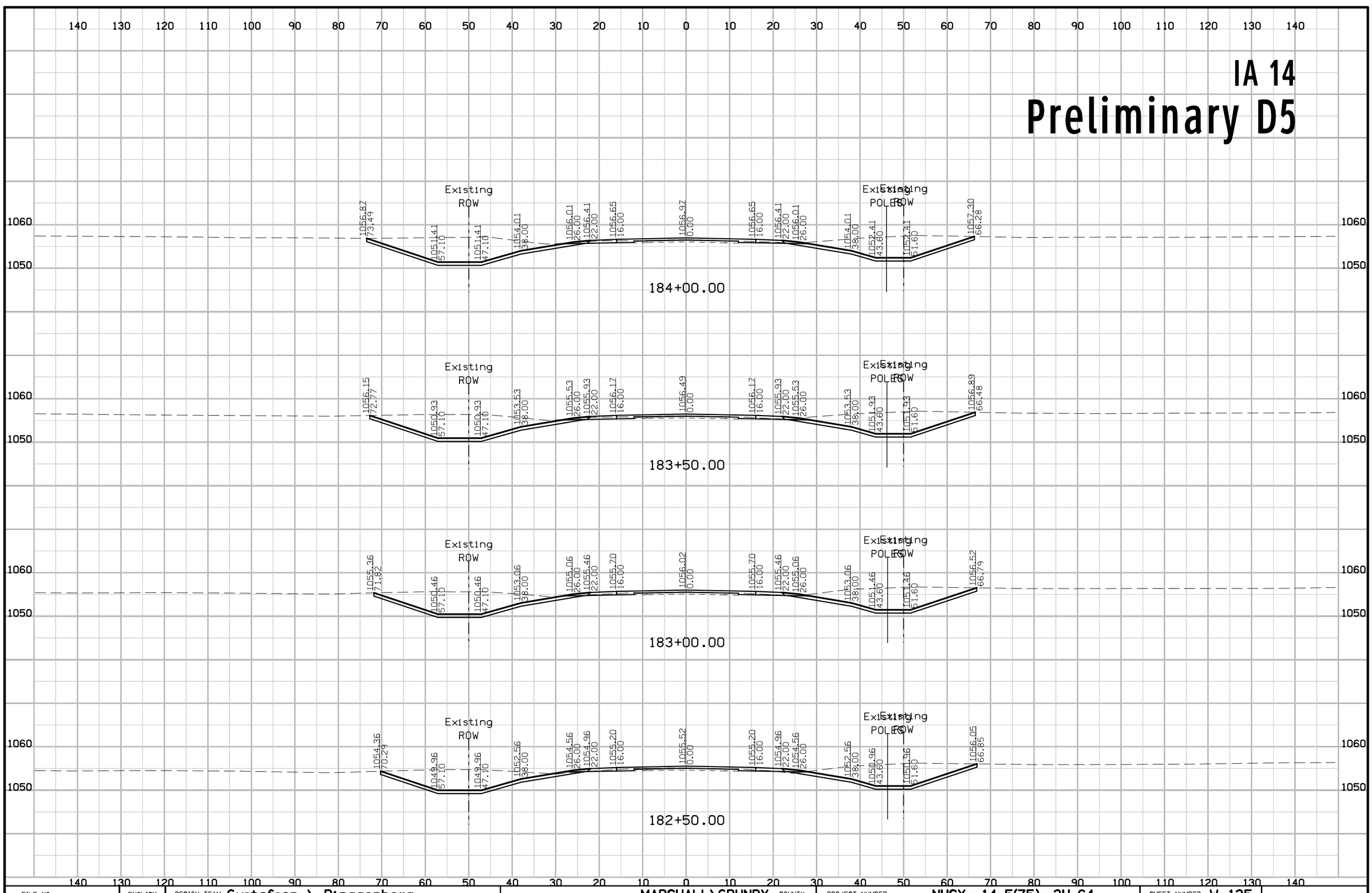
IA 14
Preliminary D5



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IA 14
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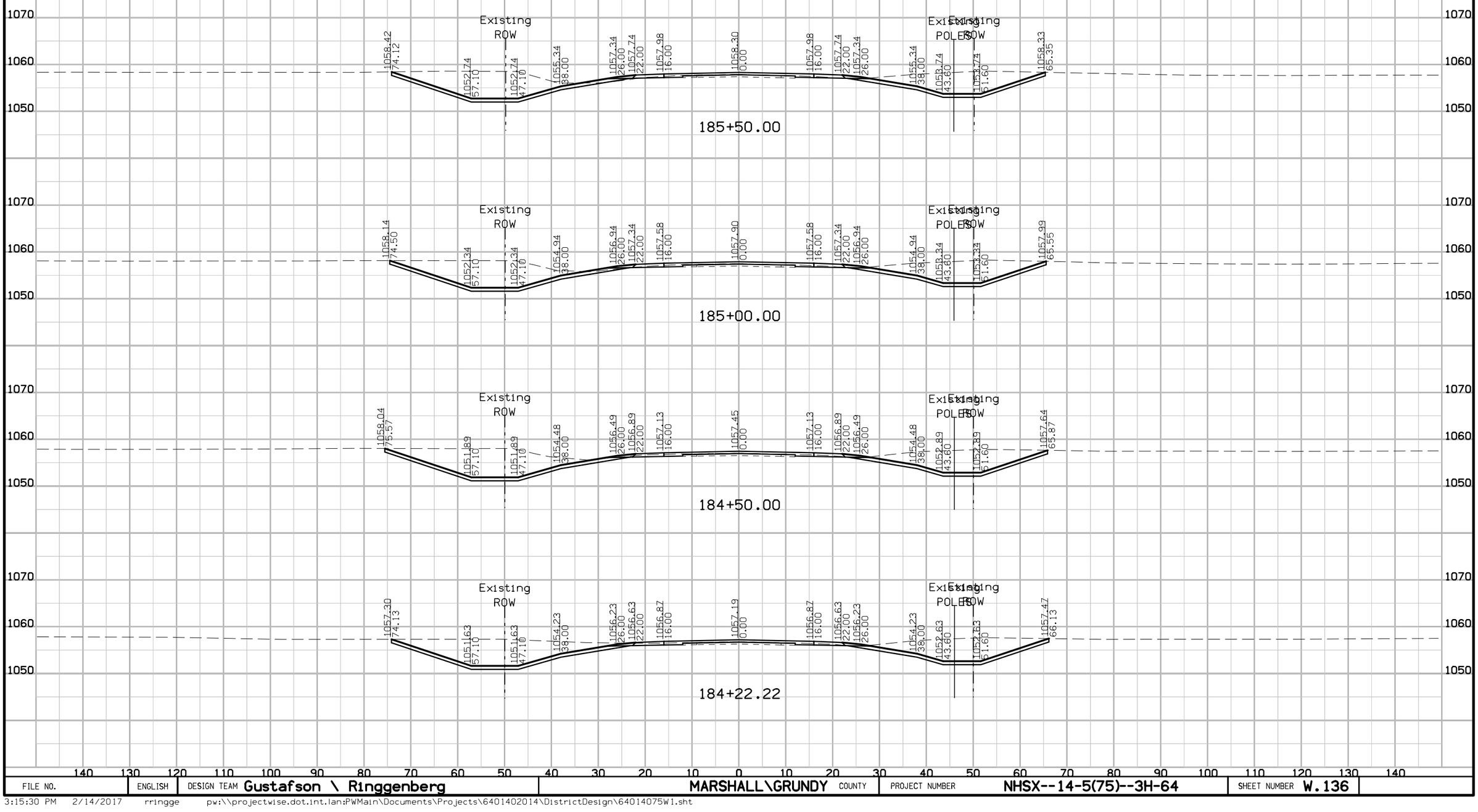

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.136

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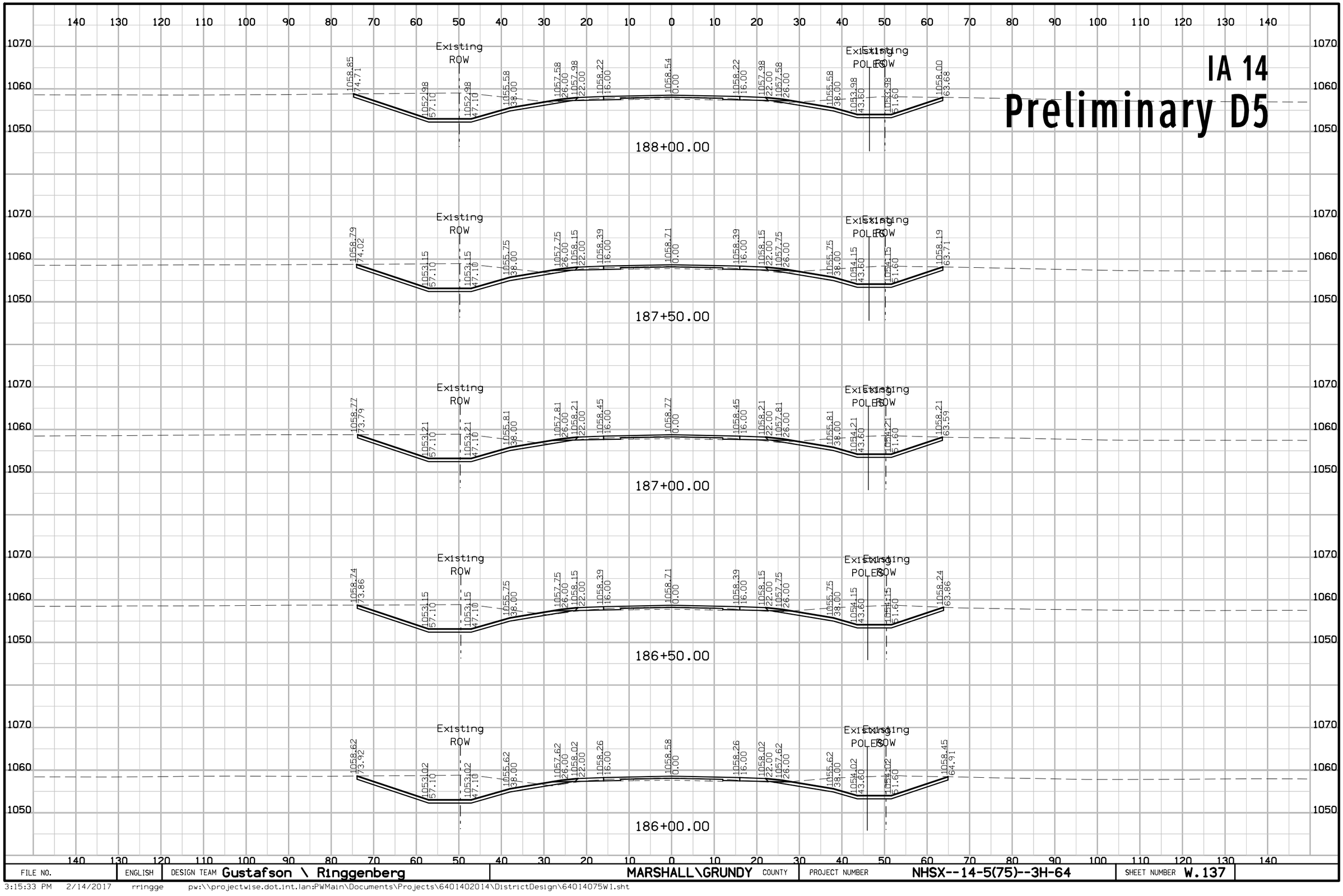
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.137

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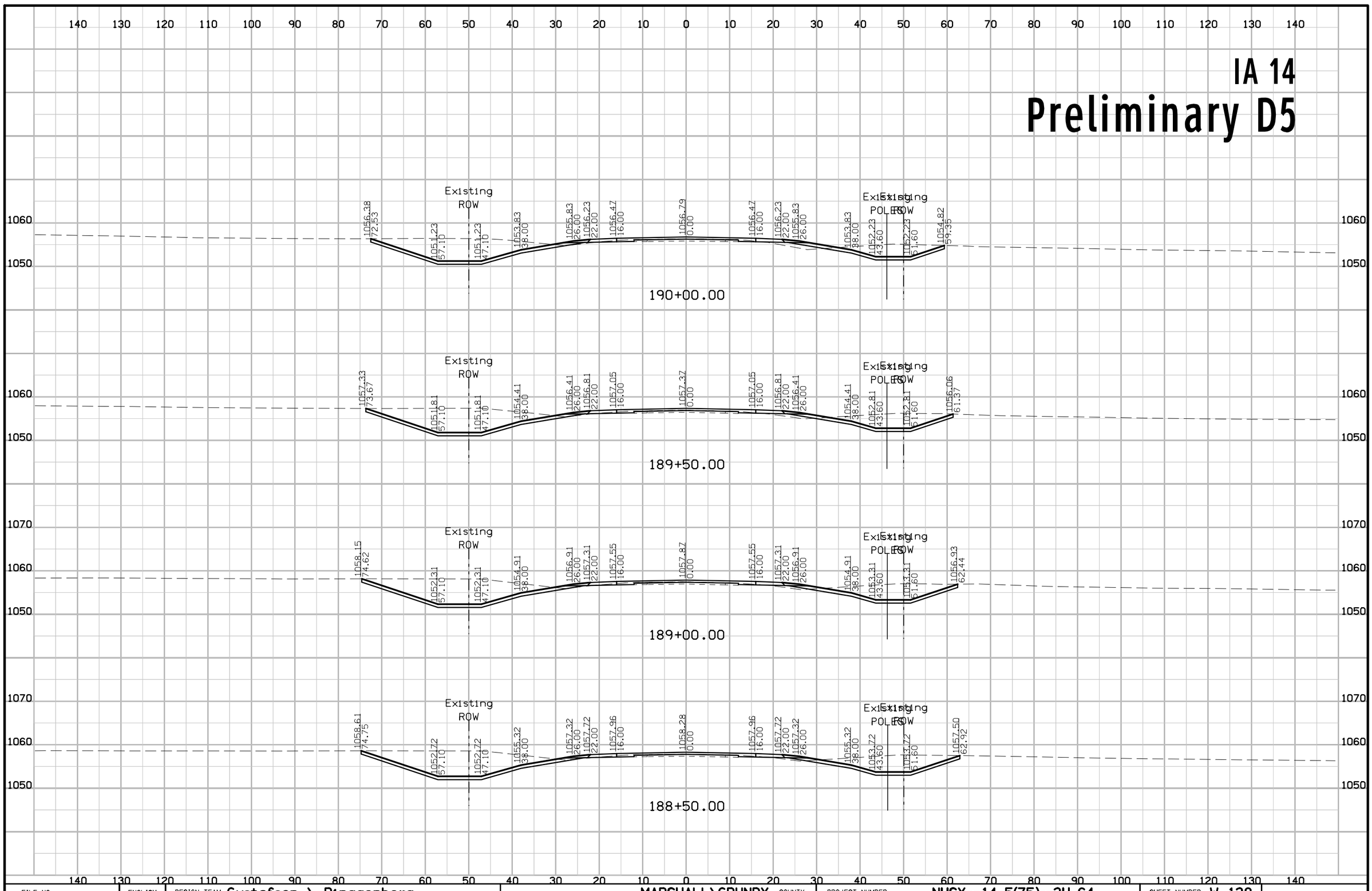
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.138

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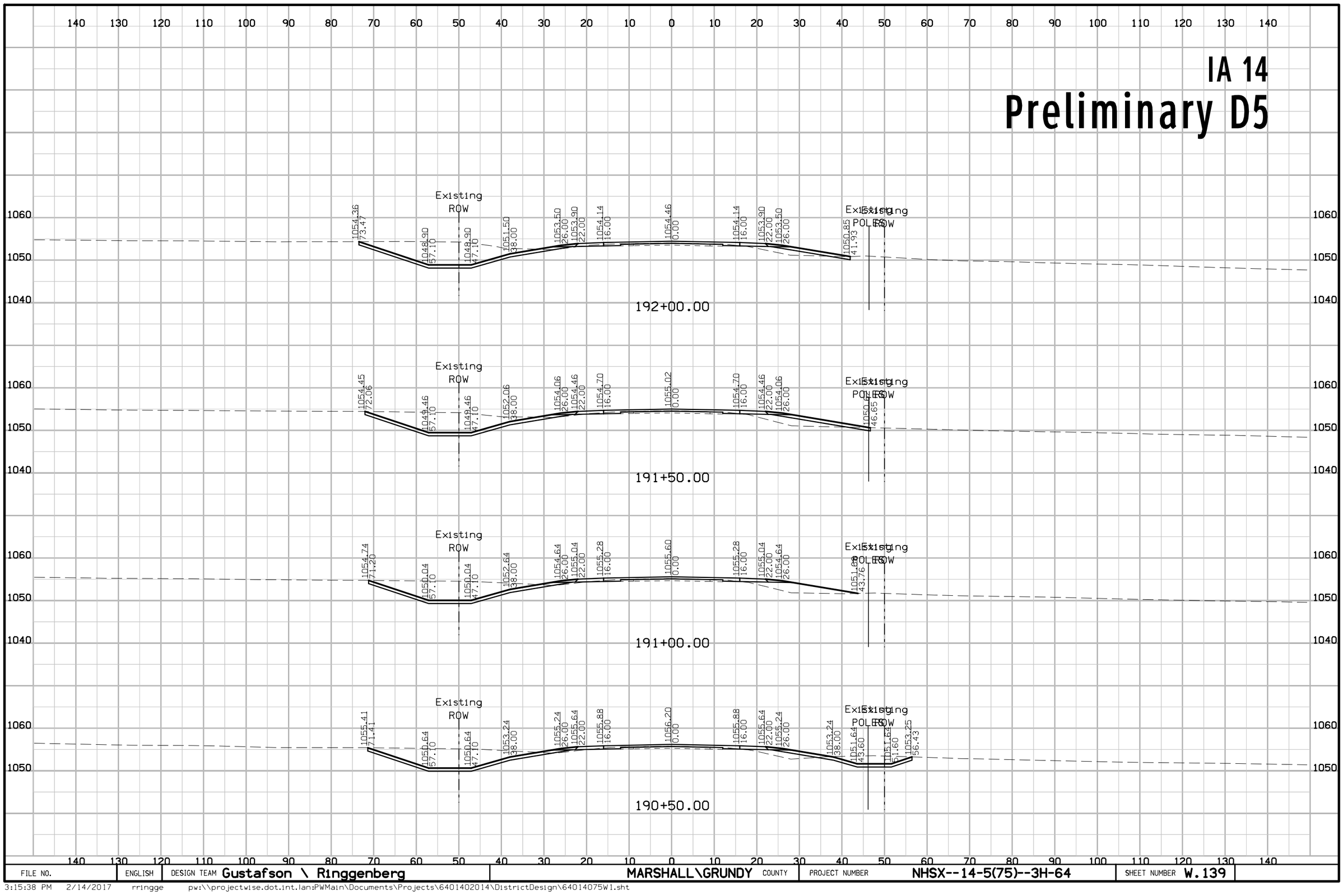
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.139

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IA 14
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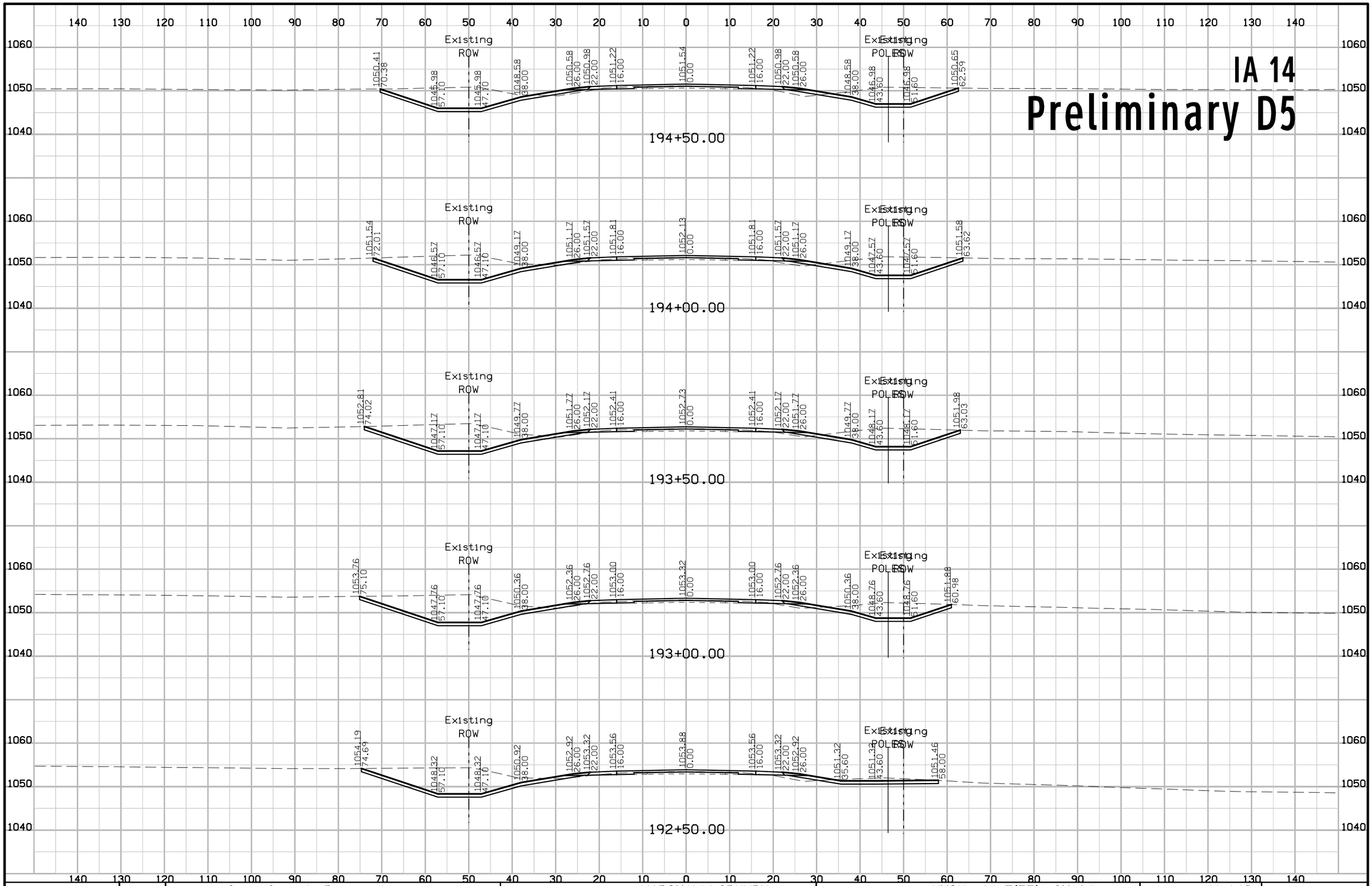

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IA 14
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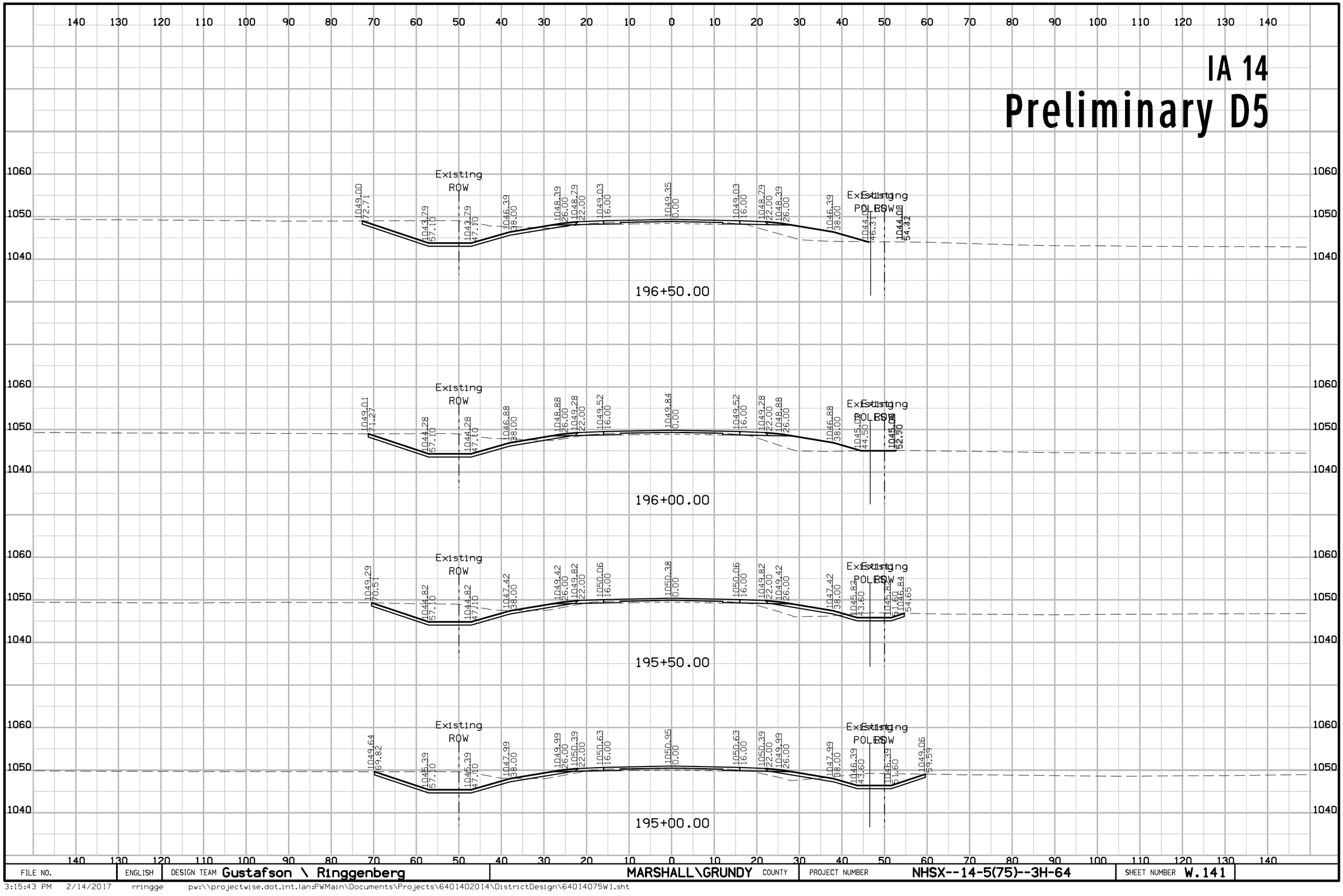

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.141

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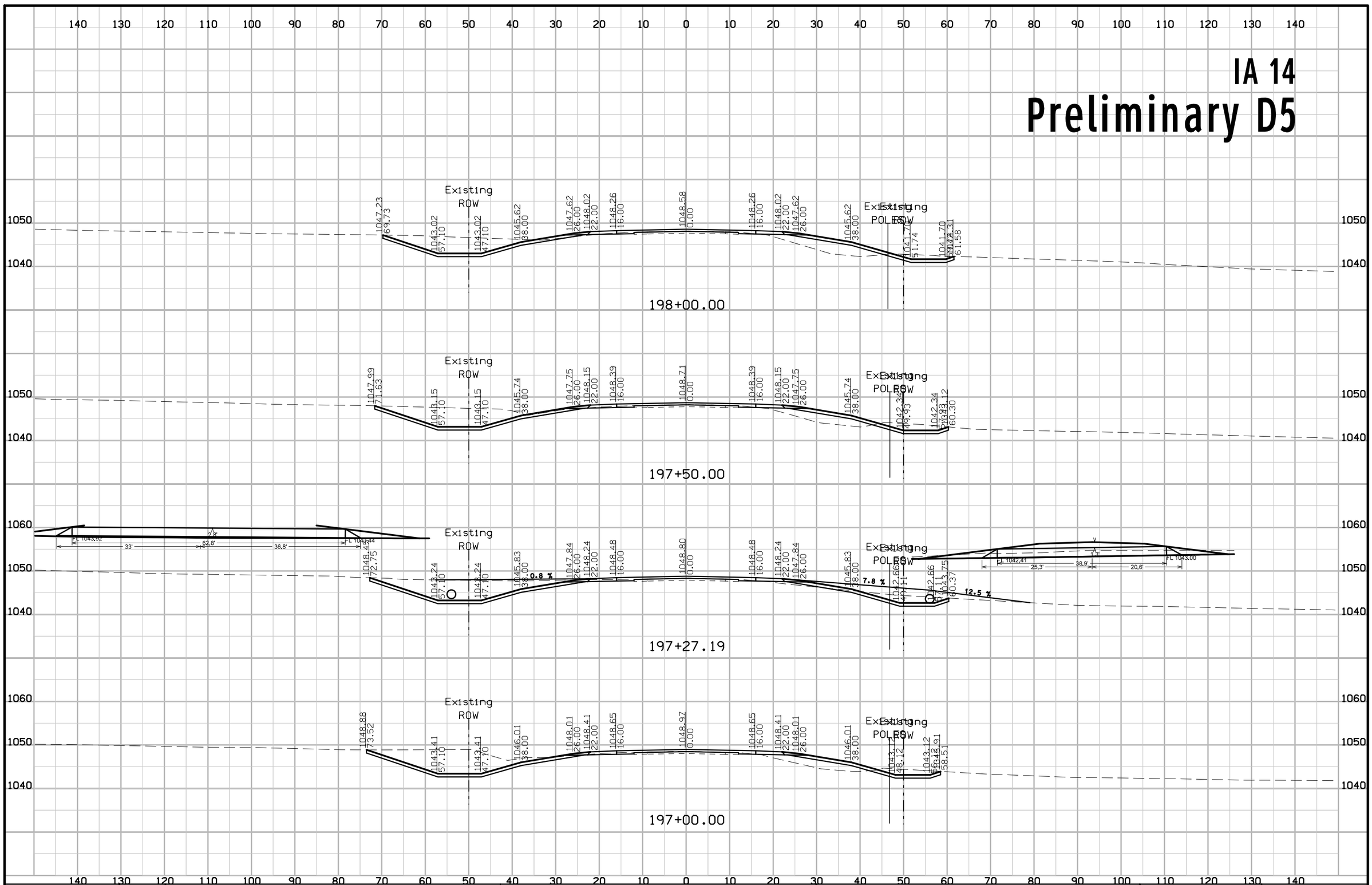
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.142

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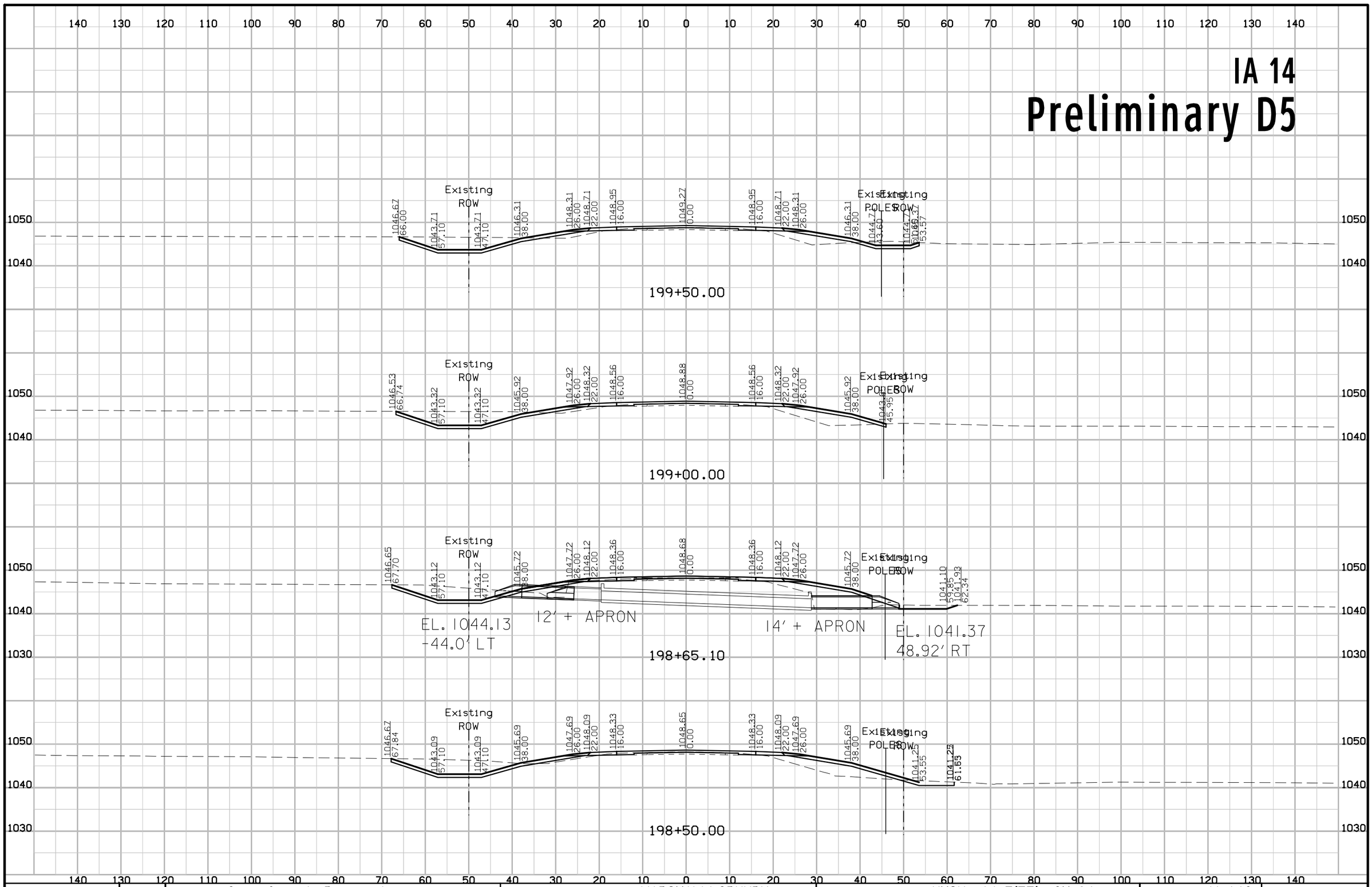
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.143

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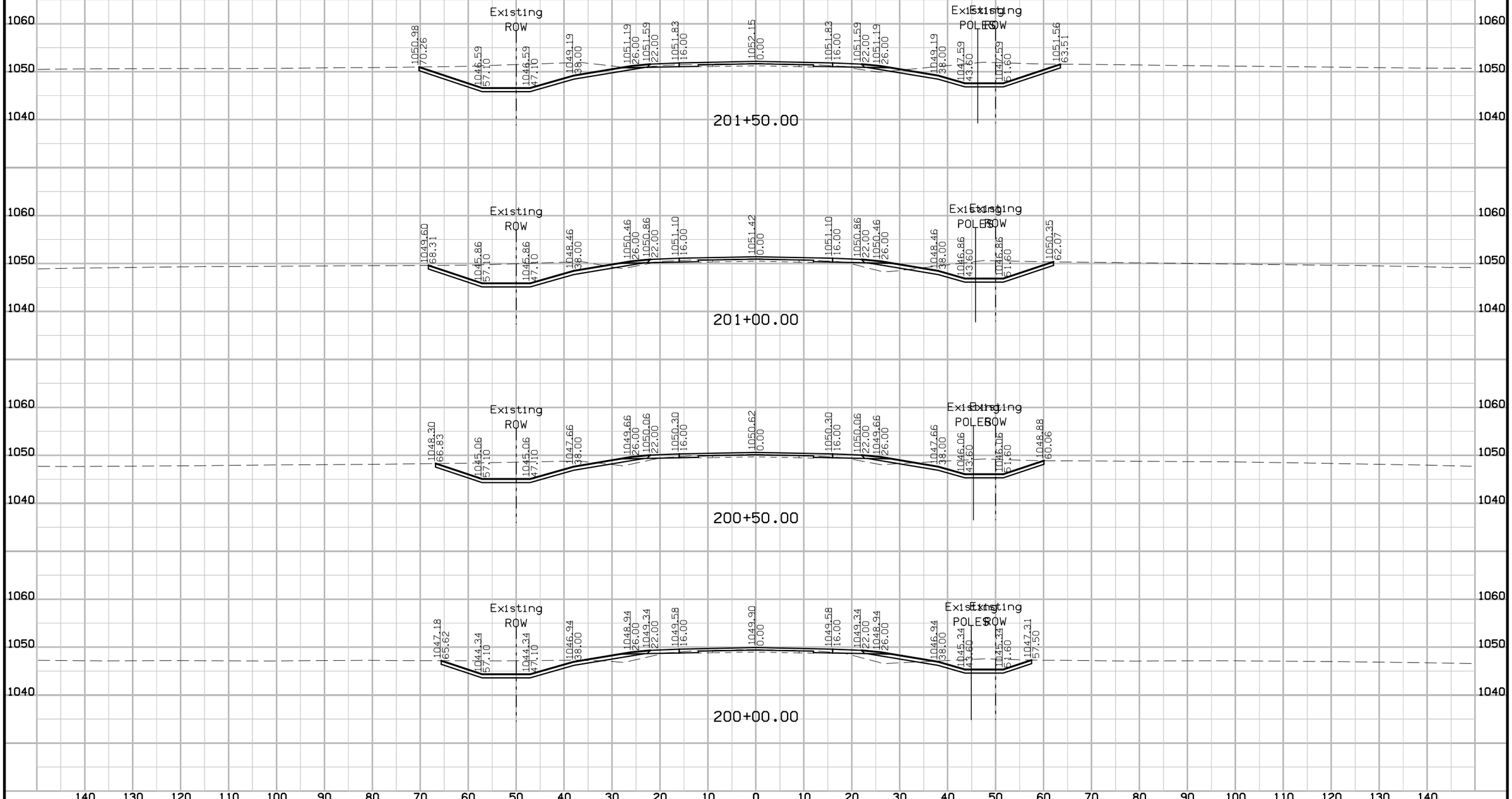
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.144

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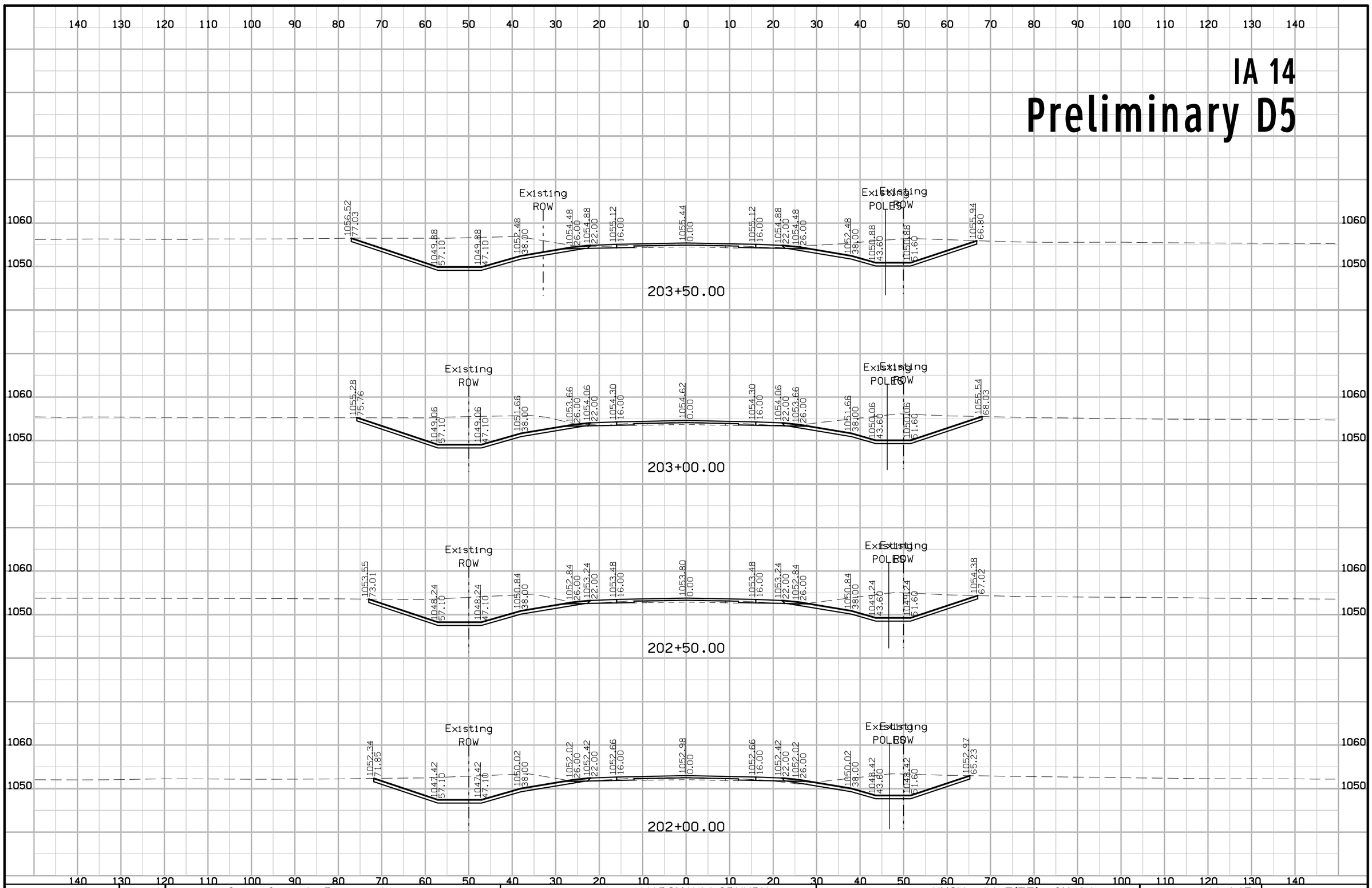
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.145

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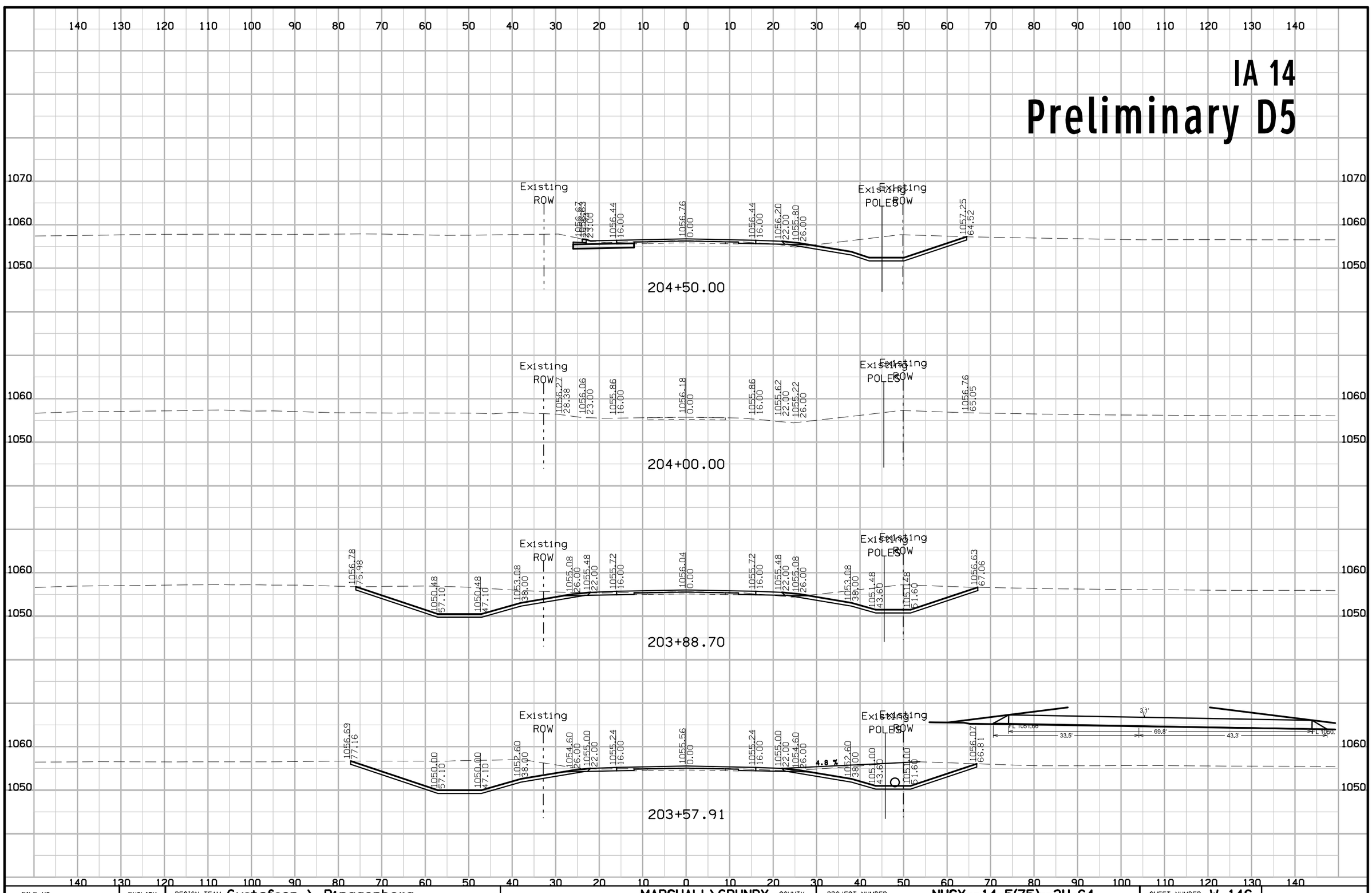
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.146

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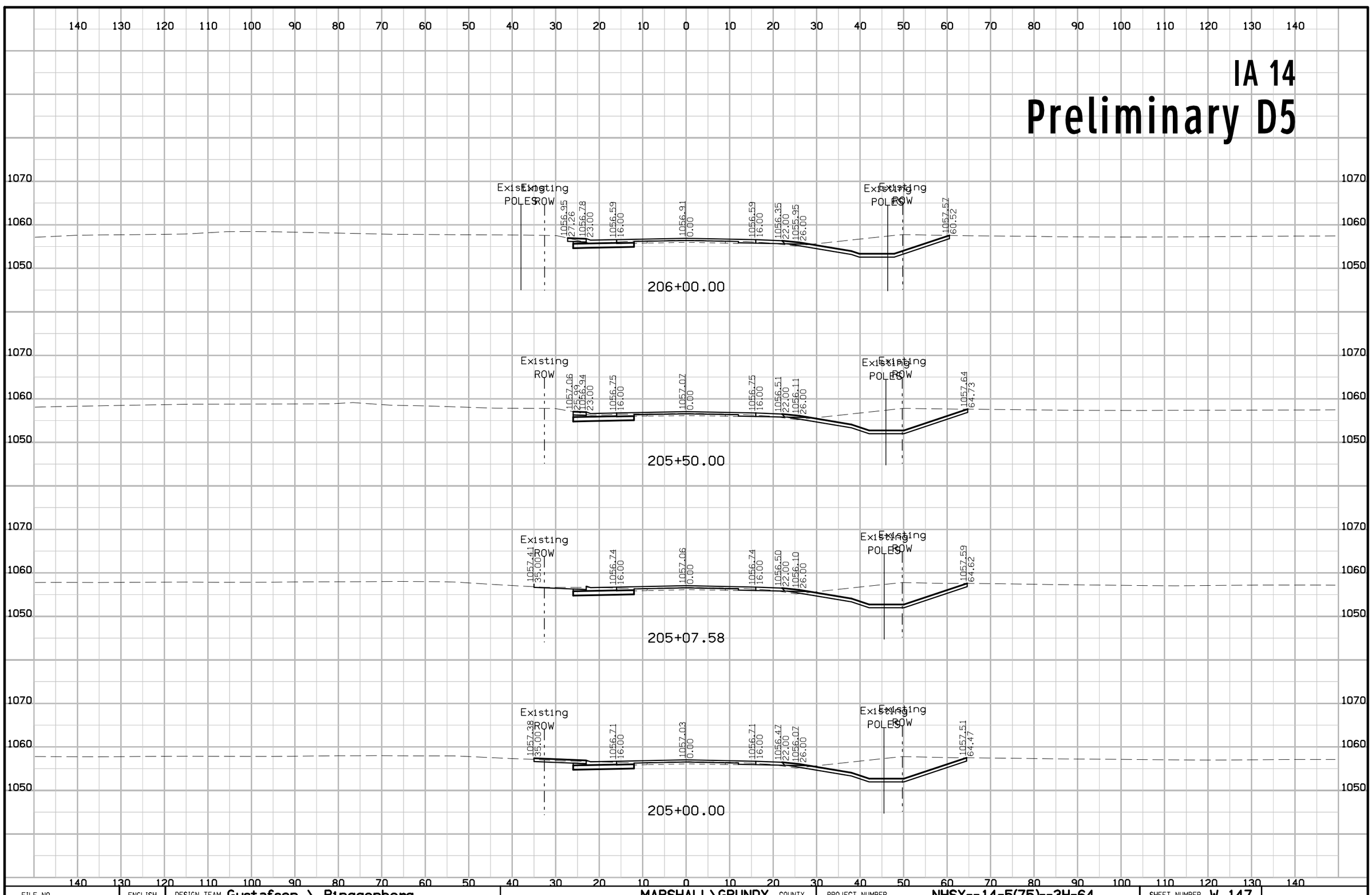
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.147

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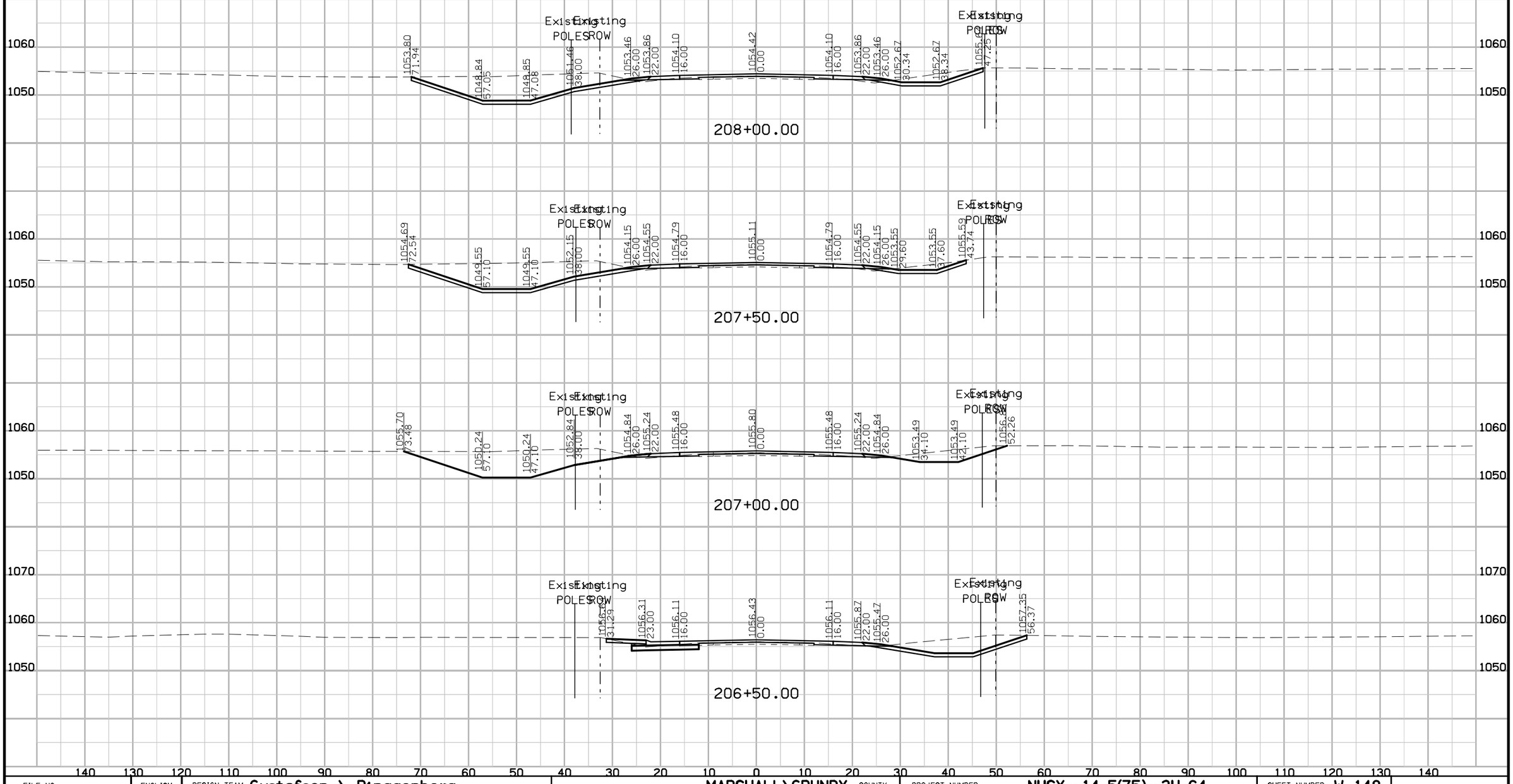
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.148

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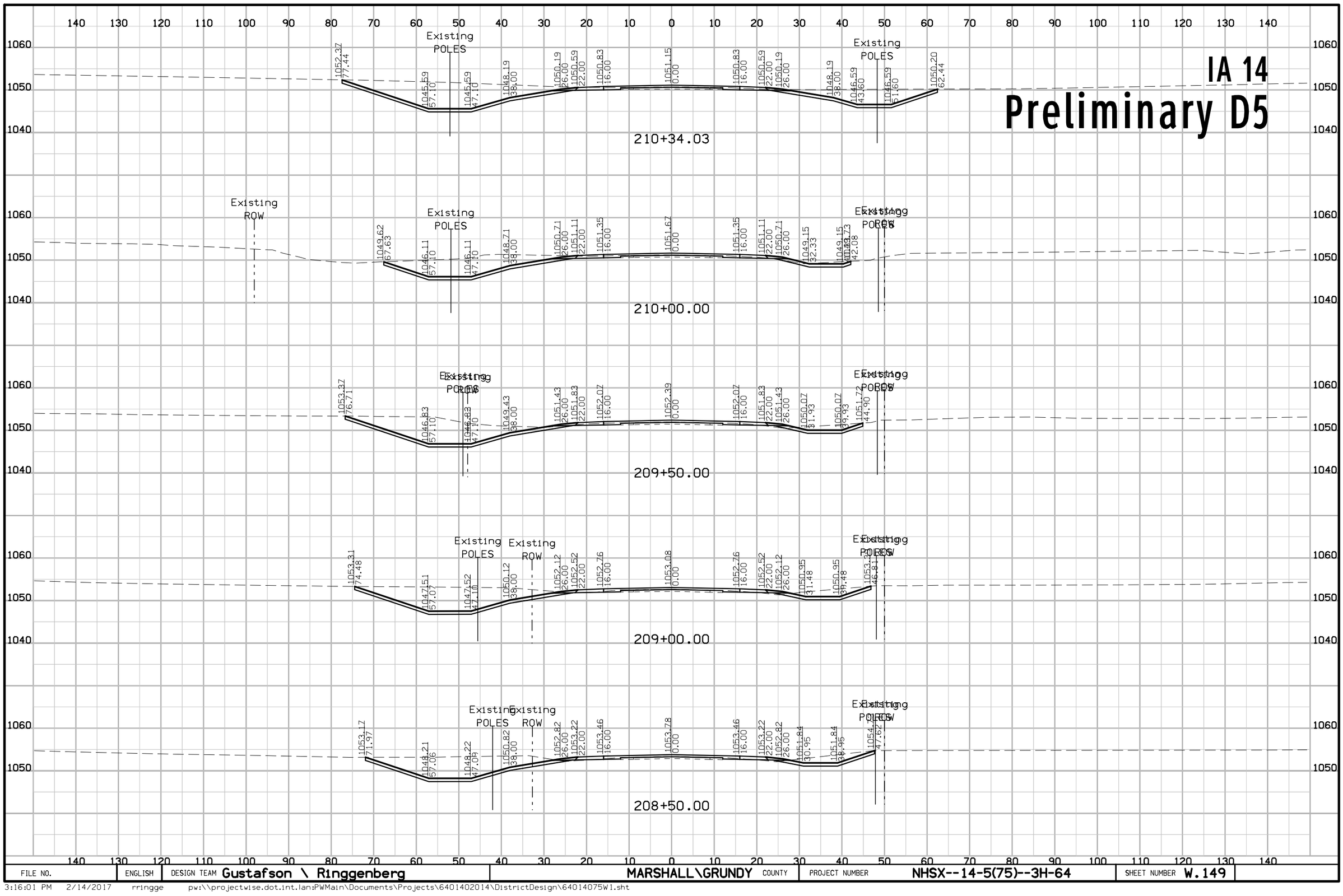
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.149

3:16:01 PM 2/14/2017 rringge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\DistrictDesign\64014075W1.sht

IA 14
Preliminary D5

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

1050
1040

Existing ROW
Existing POLES
1046.49 68.96
1042.53 57.10
1042.53 47.10
1045.13 38.00
1047.13 26.00
1047.53 22.00
1047.77 16.00
1048.09 0.00
1047.77 16.00
1047.53 22.00
1047.13 26.00
1045.13 38.00
1043.53 43.60
1043.53 53.07

212+50.00

Existing ROW
Existing POLES
1047.29 69.24
1043.24 57.10
1043.24 47.10
1045.84 38.00
1047.84 26.00
1048.24 22.00
1048.48 16.00
1048.80 0.00
1048.48 16.00
1048.24 22.00
1047.84 26.00
1045.84 38.00
1044.24 43.60
1044.24 53.10

212+00.00

1060
1050
1040

Existing ROW
Existing POLES
1048.65 71.24
1043.94 57.10
1043.94 47.10
1046.54 38.00
1048.54 26.00
1048.94 22.00
1049.18 16.00
1049.50 0.00
1049.18 16.00
1048.94 22.00
1048.54 26.00
1046.54 38.00
1044.94 43.60
1044.94 53.02

211+50.00

1060
1050
1040

Existing ROW
Existing POLES
1050.30 74.13
1044.62 57.10
1044.62 47.10
1047.22 38.00
1049.22 26.00
1049.62 22.00
1049.86 16.00
1050.18 0.00
1049.86 16.00
1049.62 22.00
1049.22 26.00
1047.22 38.00
1045.62 43.60
1045.62 53.40

211+00.00

1060
1050
1040

Existing POLES
1050.78 73.38
1045.36 57.10
1045.36 47.10
1047.96 38.00
1049.96 26.00
1050.36 22.00
1050.60 16.00
1050.92 0.00
1050.60 16.00
1050.36 22.00
1049.96 26.00
1047.96 38.00
1046.36 43.60
1046.36 51.60
1049.11 59.84

210+50.00

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

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.150

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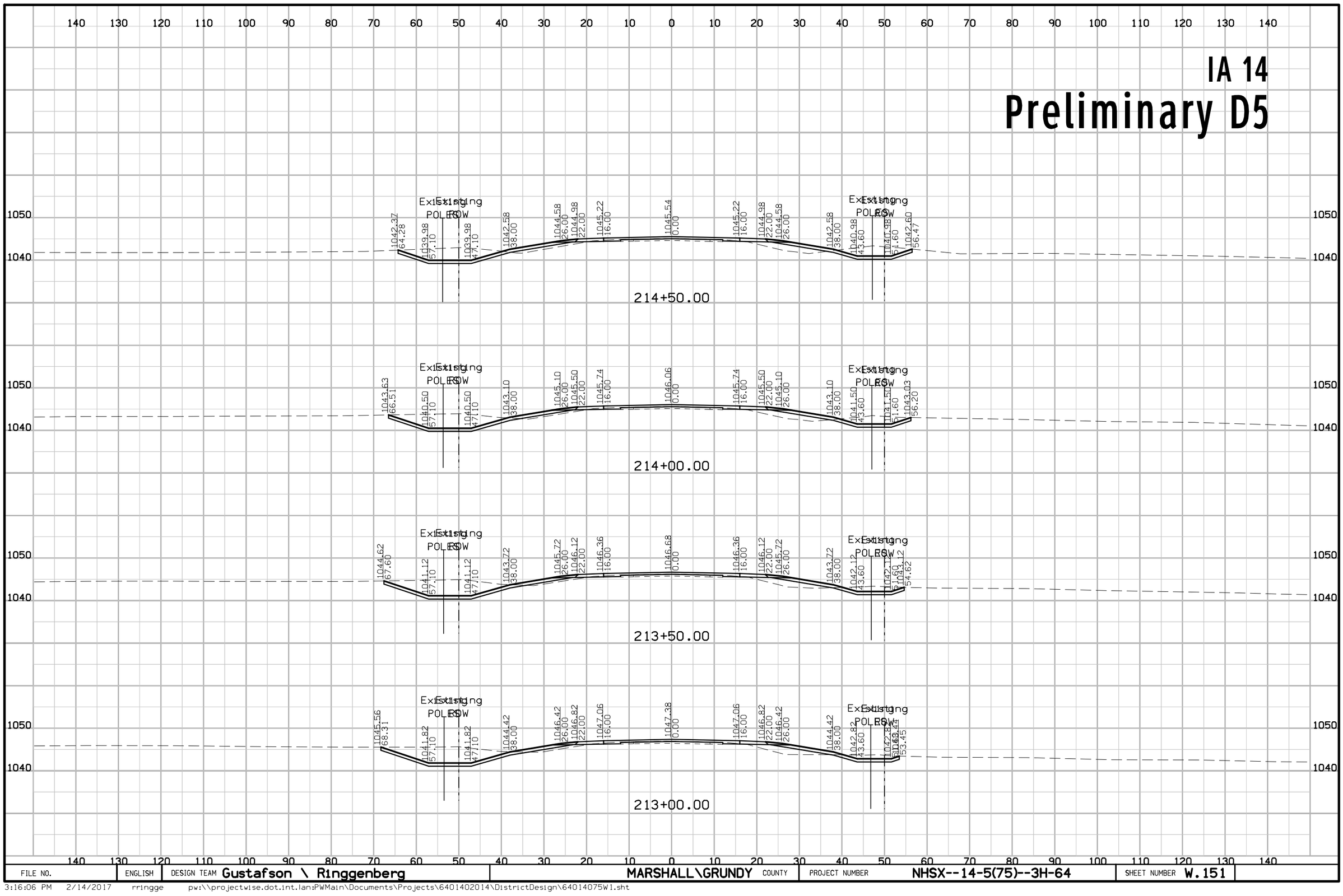
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.151

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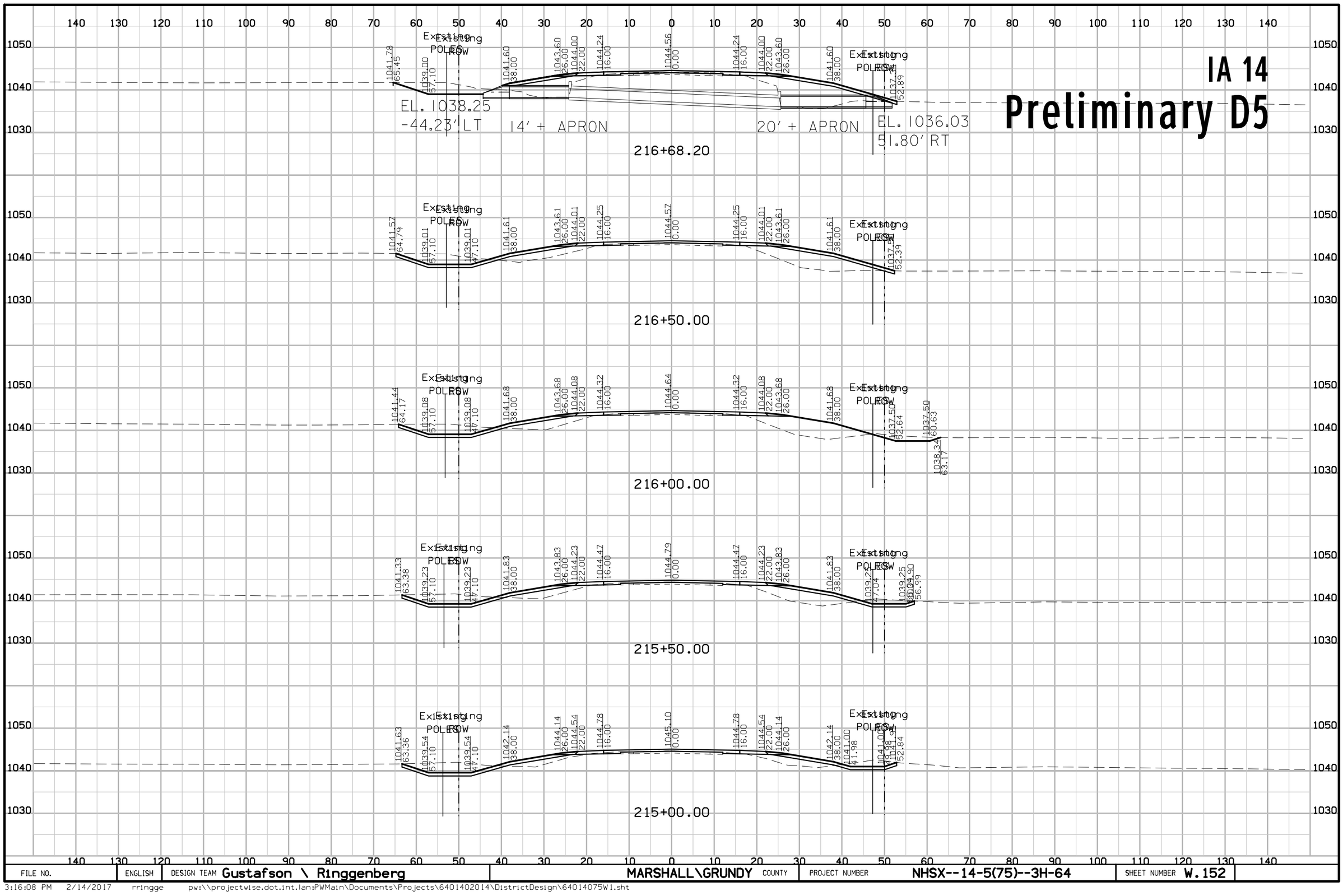
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.152

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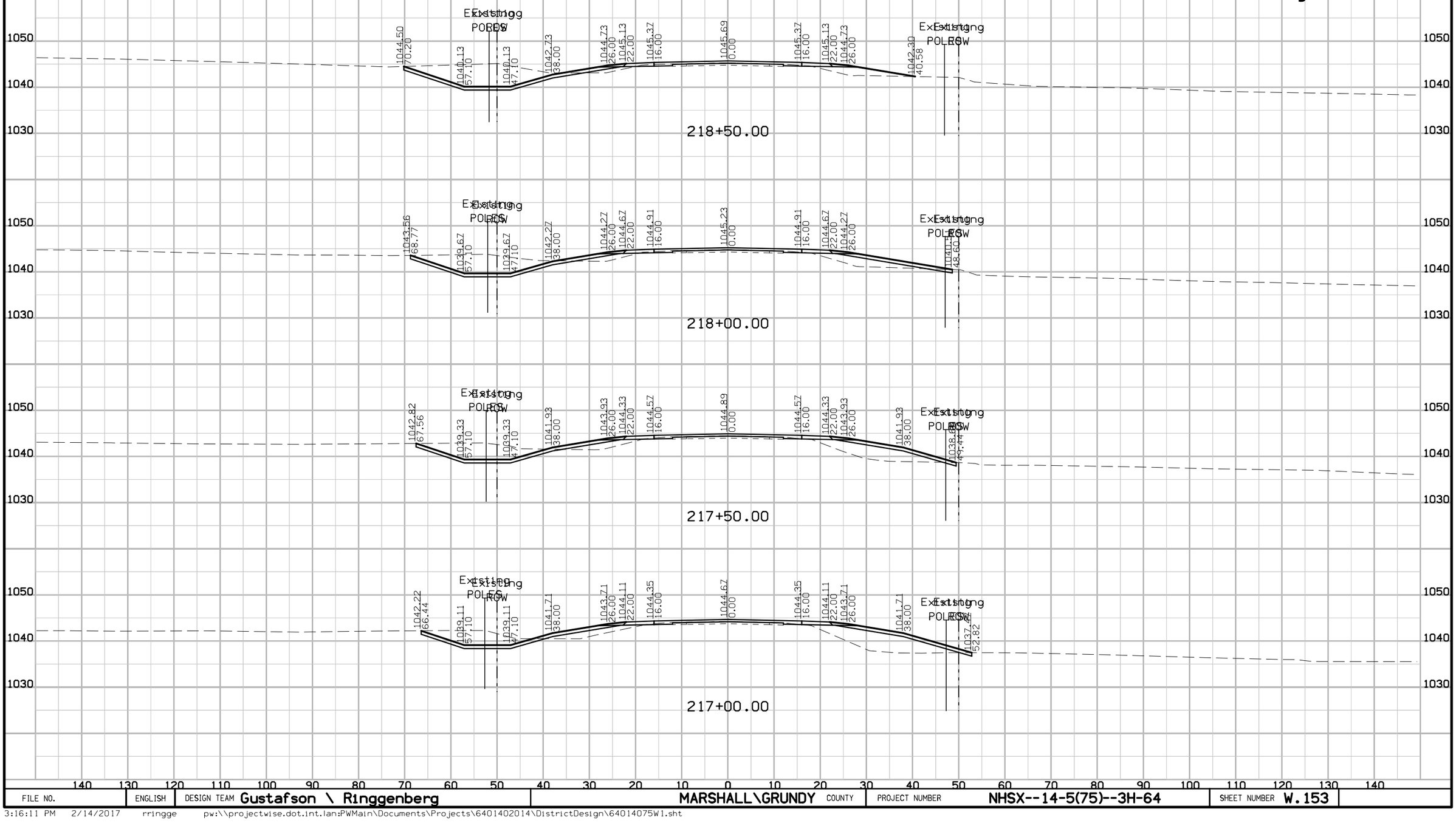
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.153

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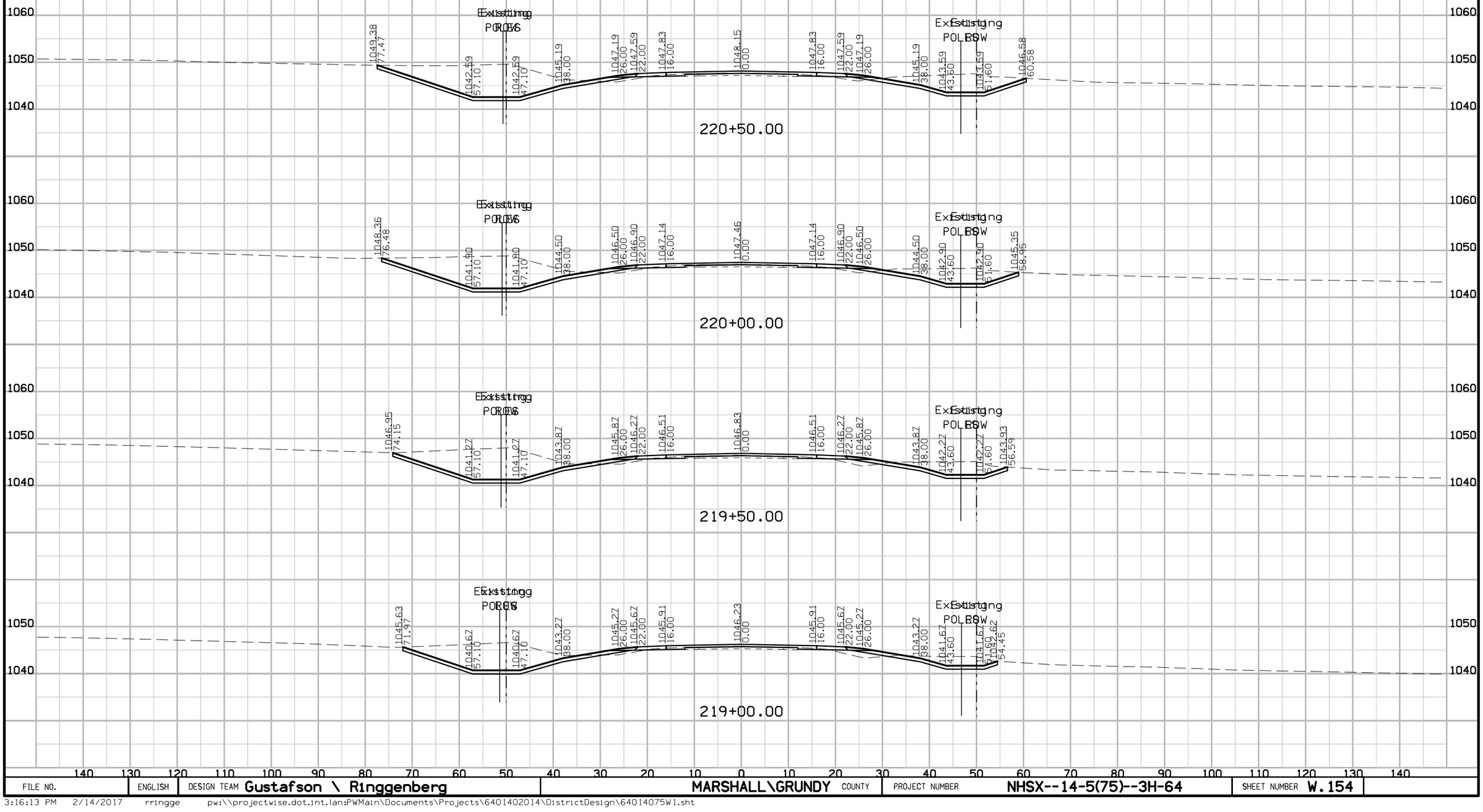
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.154

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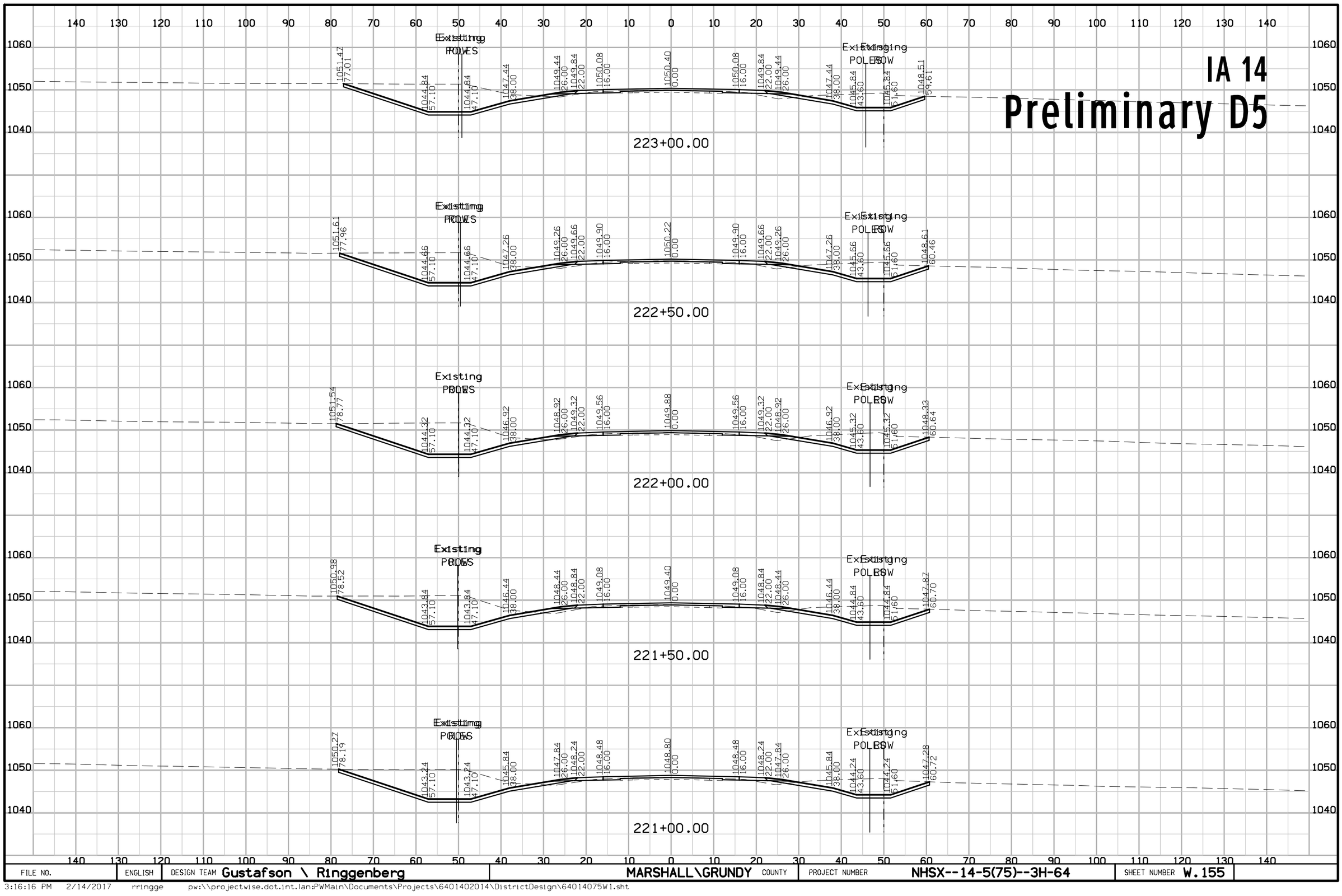
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.155

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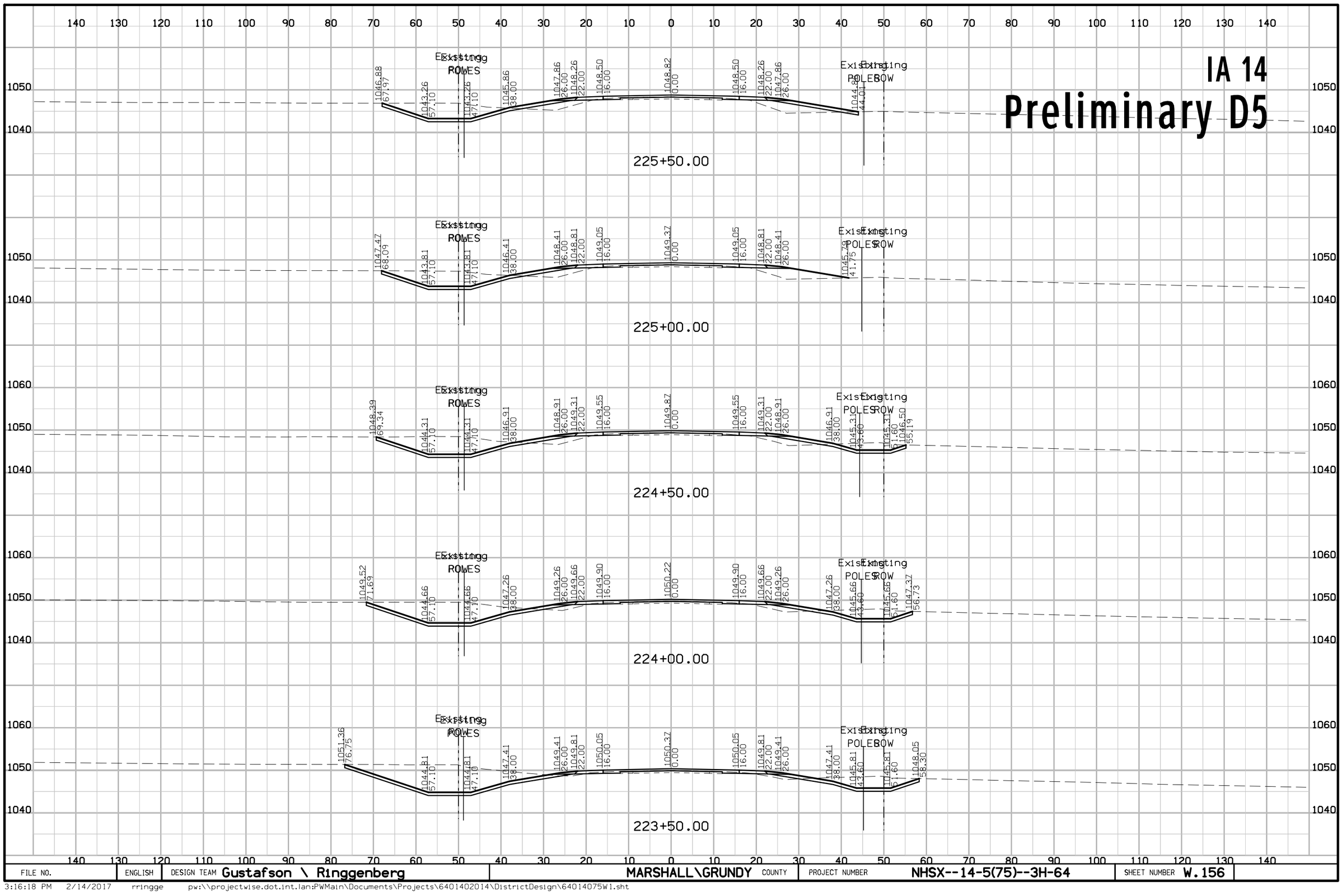
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.156

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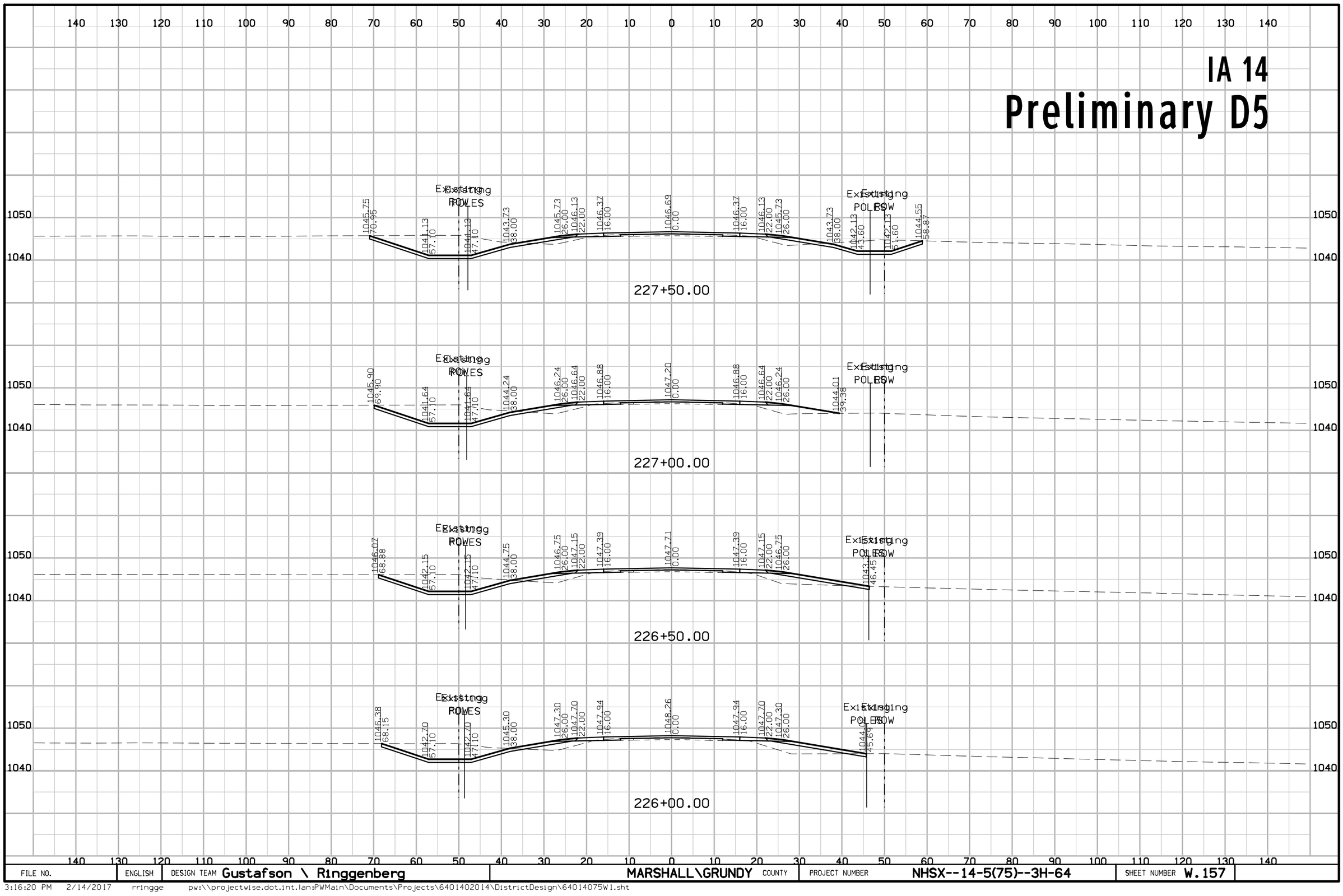
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.157

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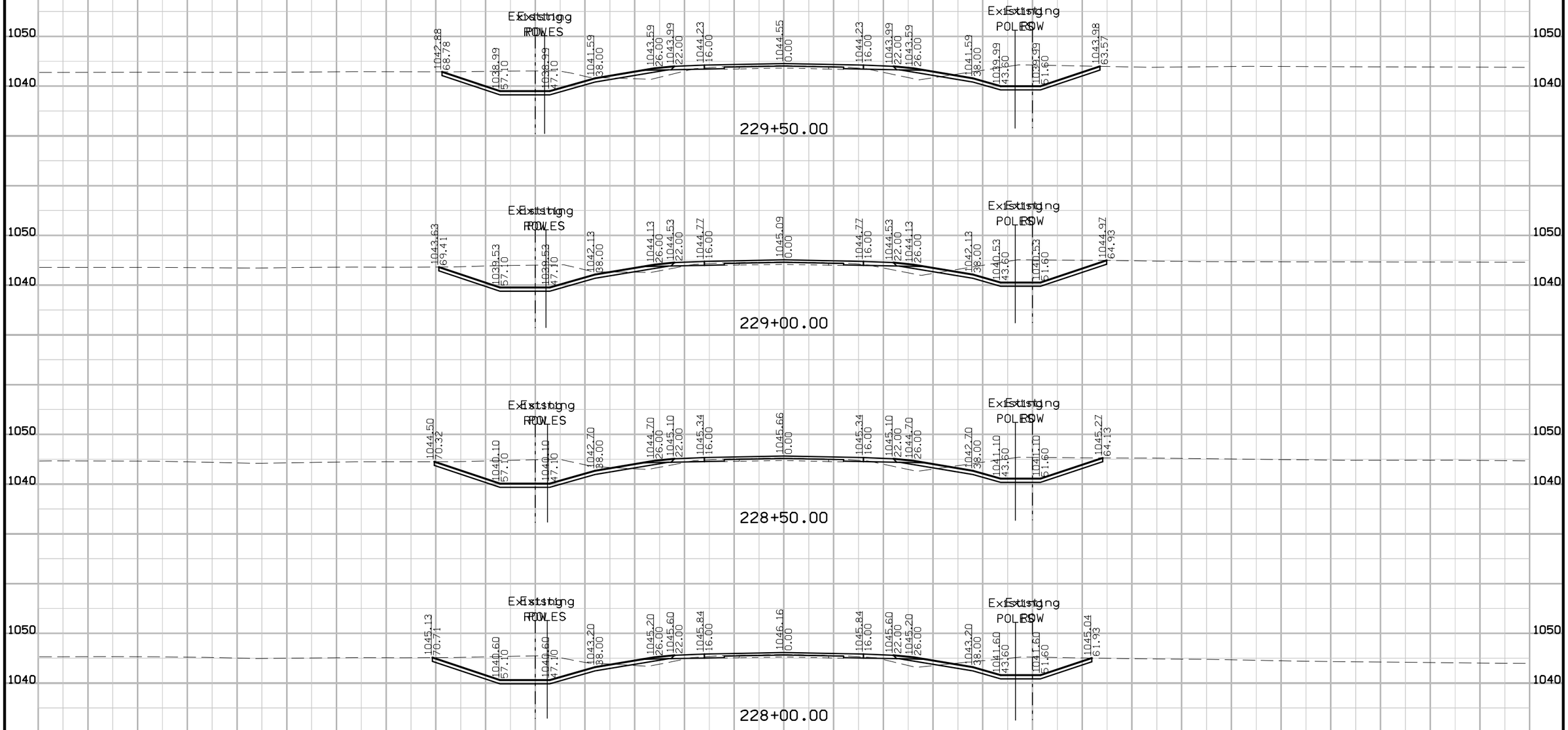
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.158

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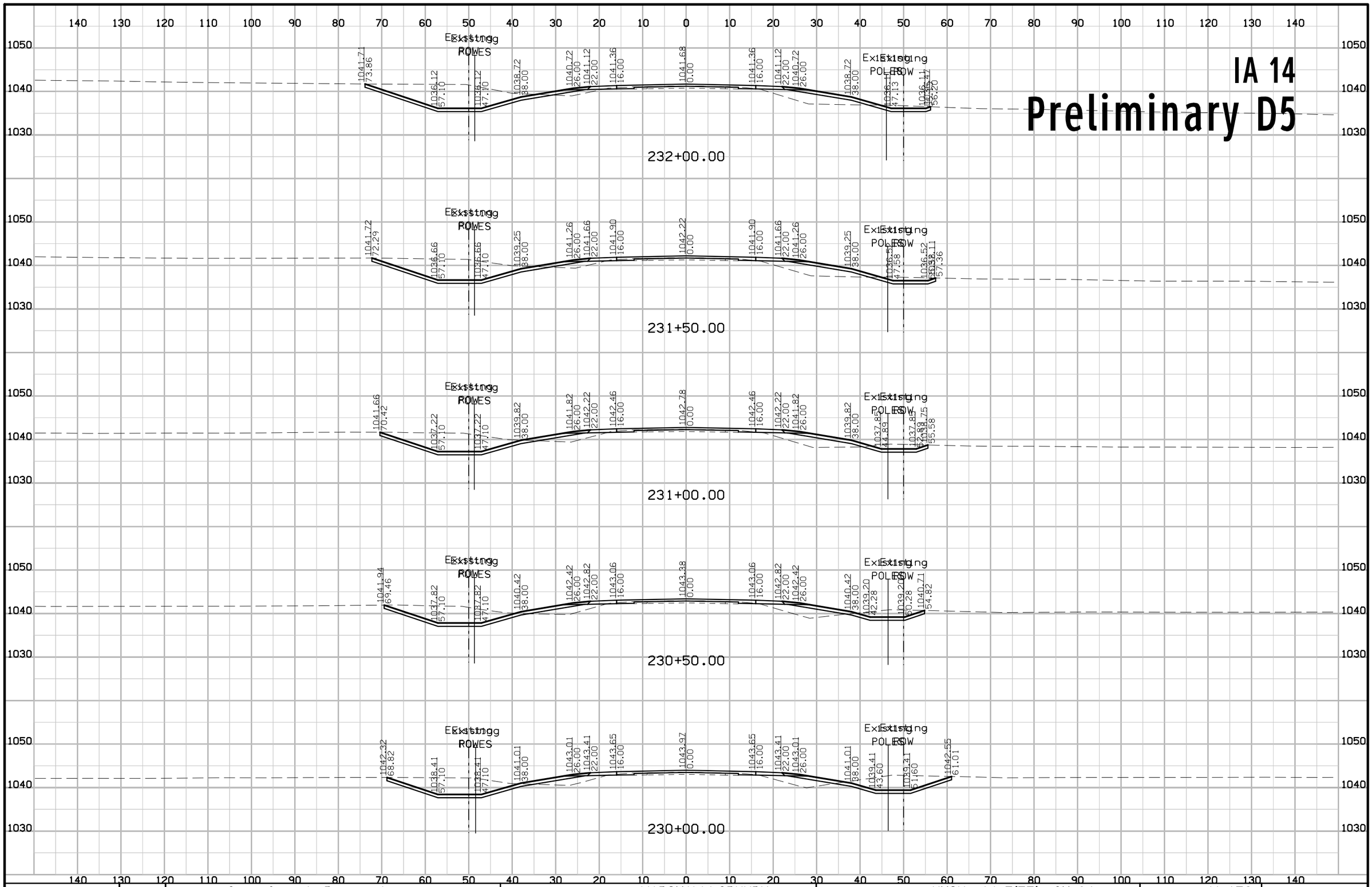
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.159

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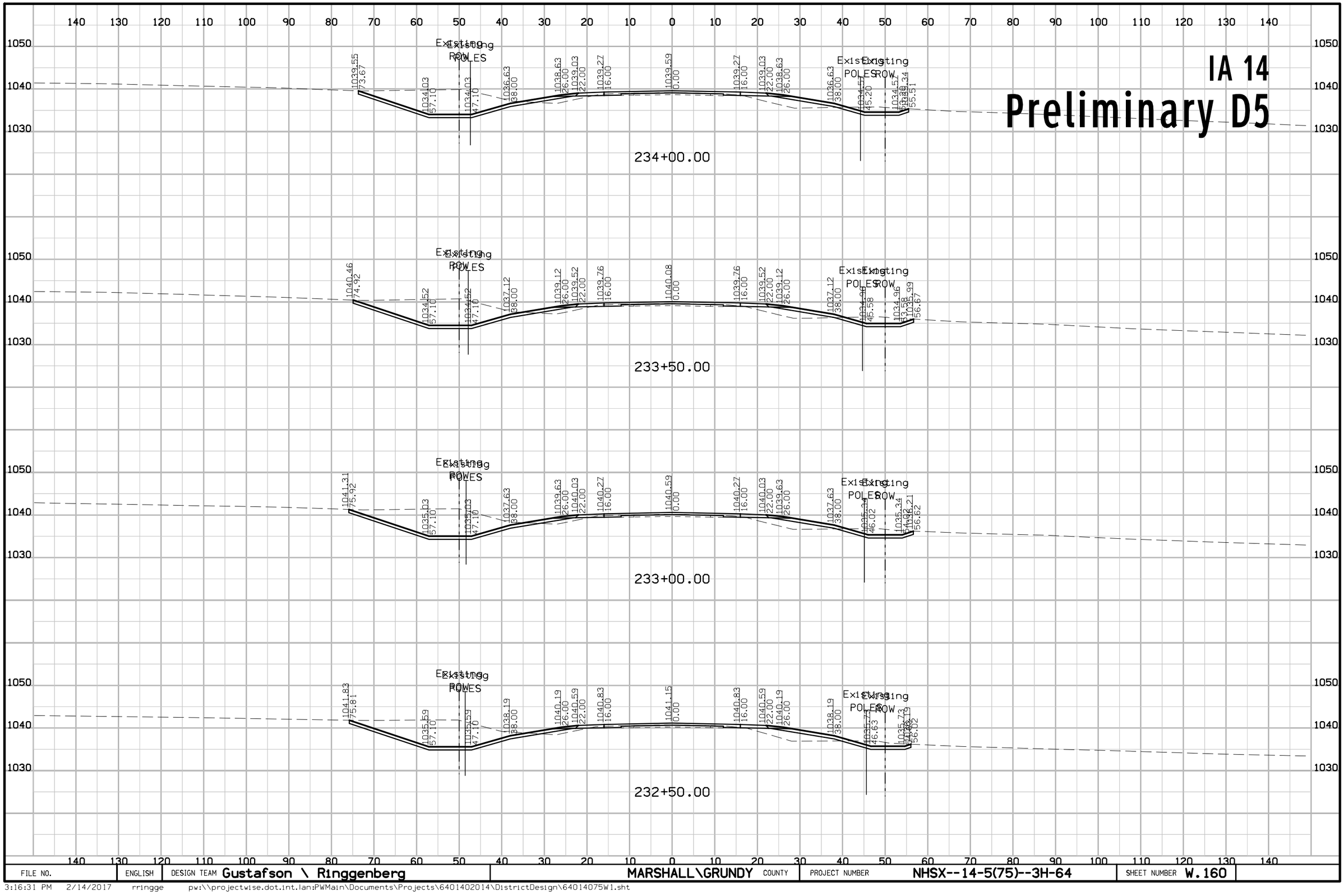
IA 14
Preliminary D5



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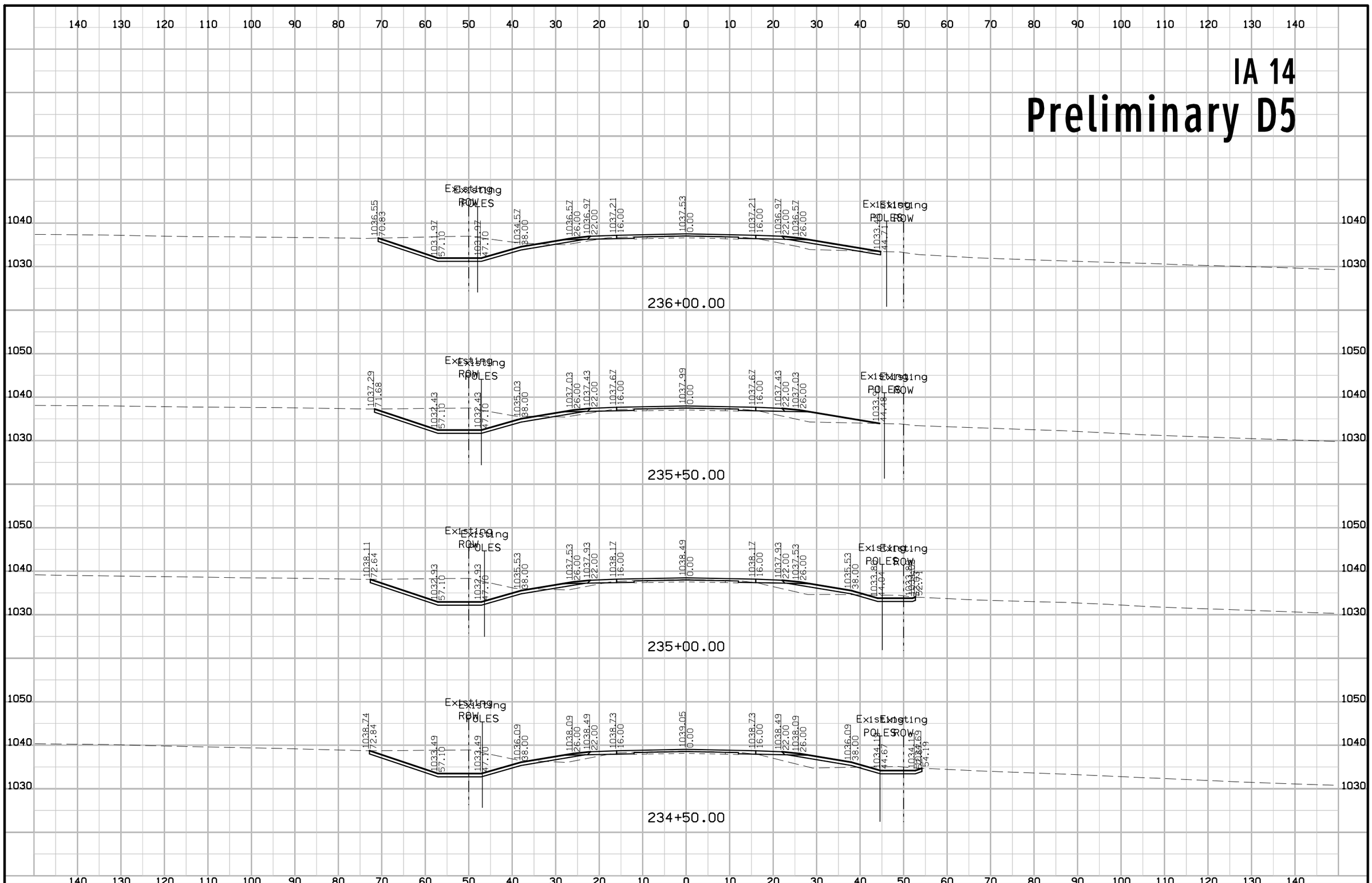
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.161

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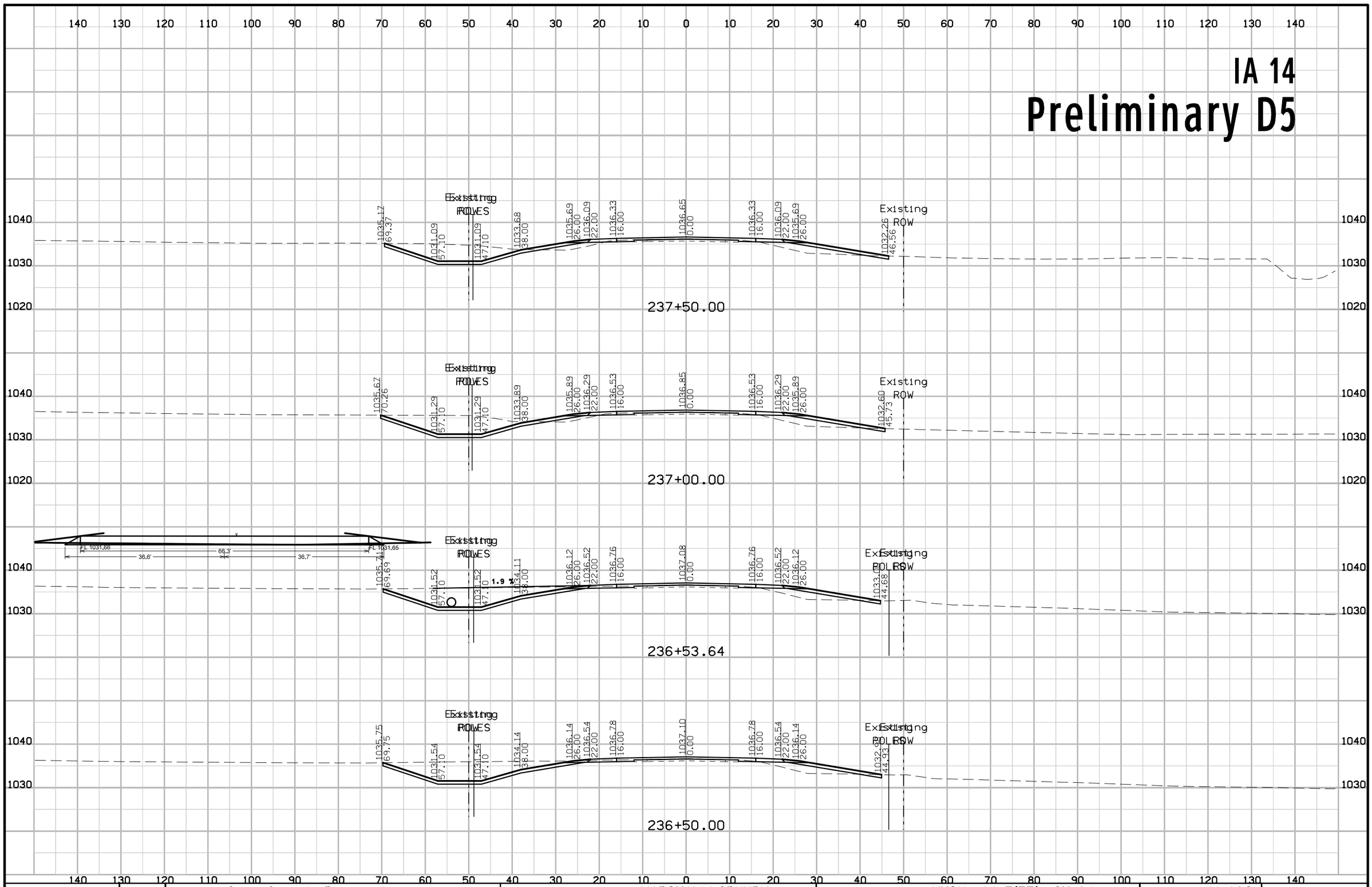
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.162

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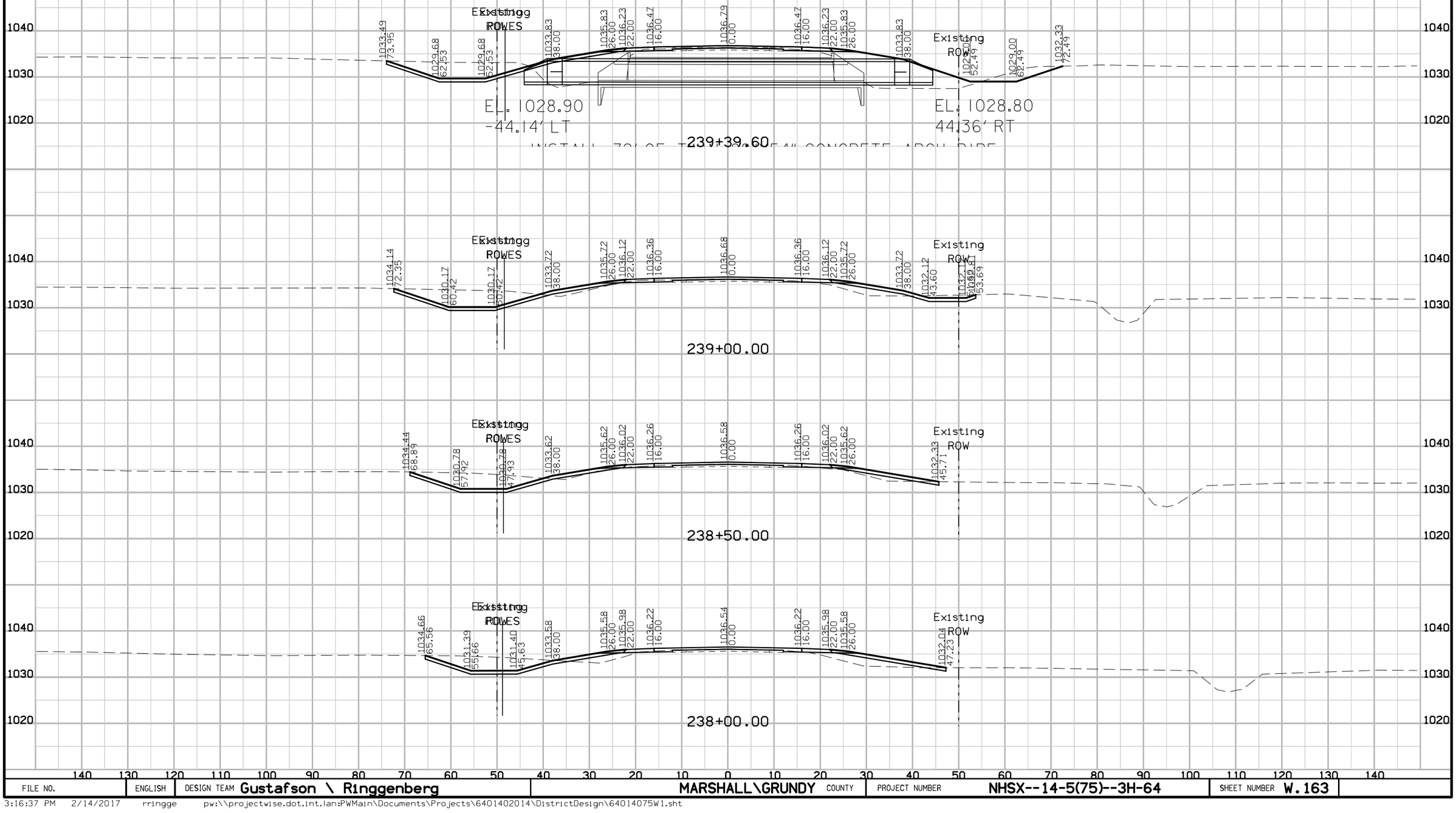
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.163

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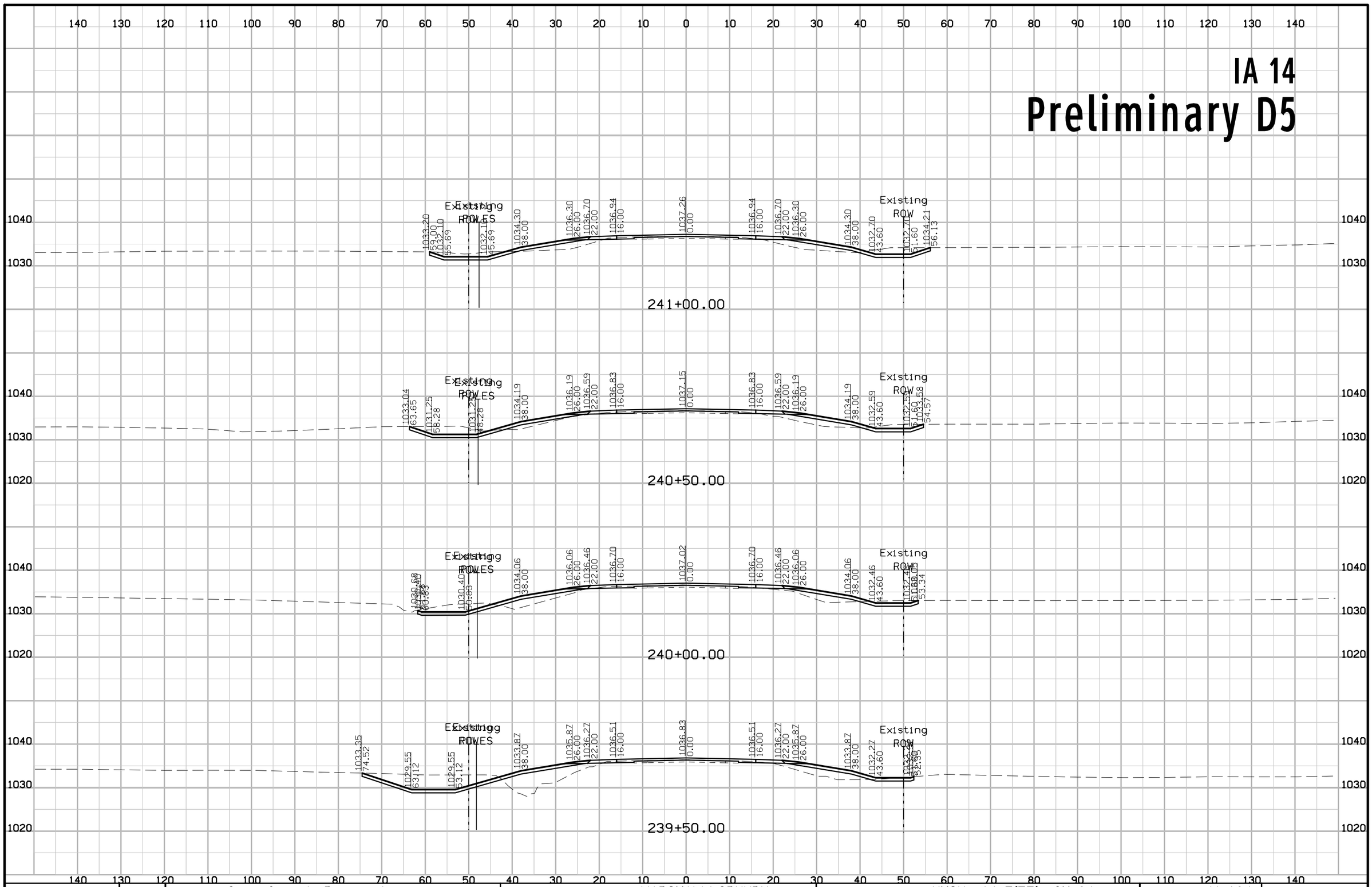
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.164

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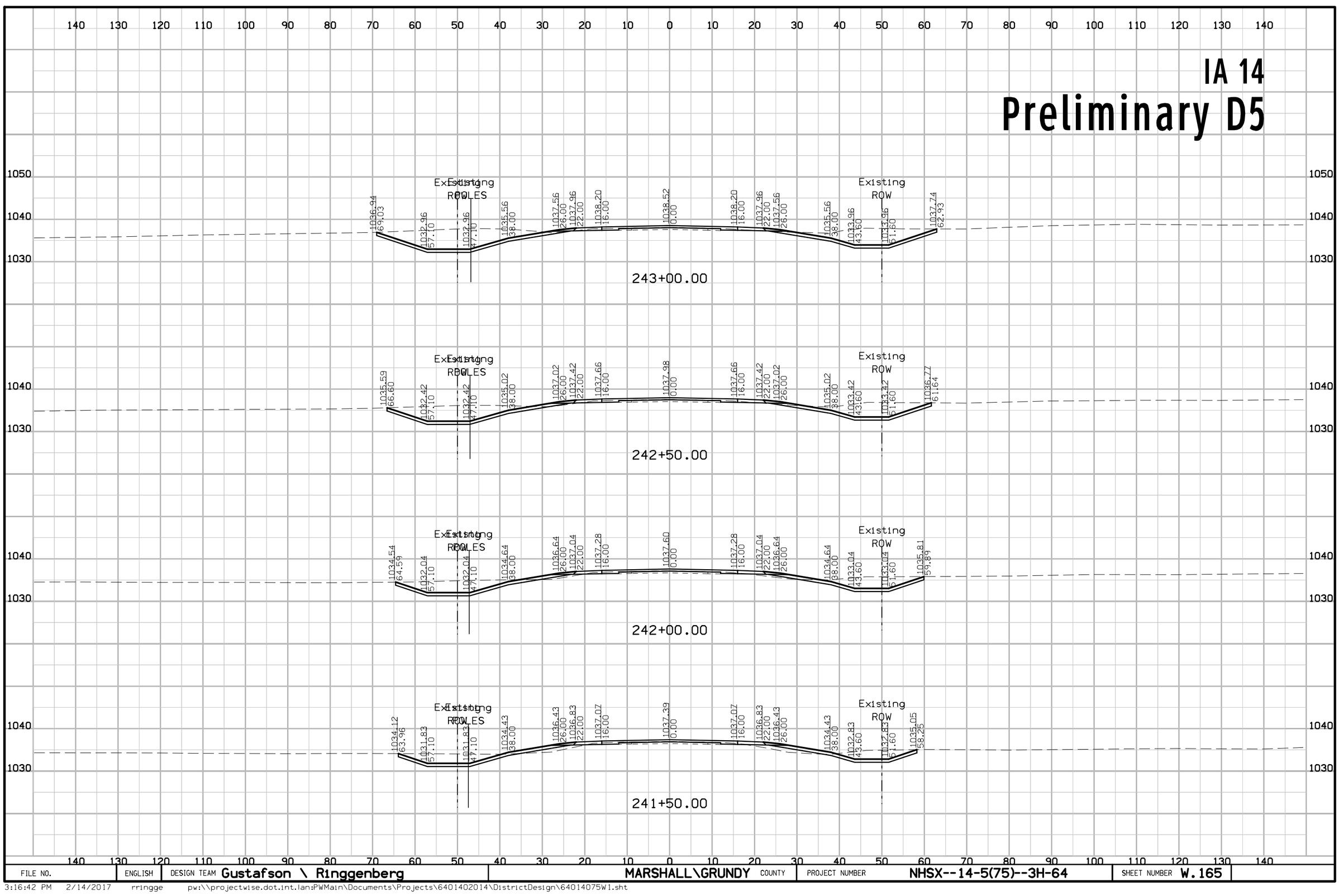
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.165

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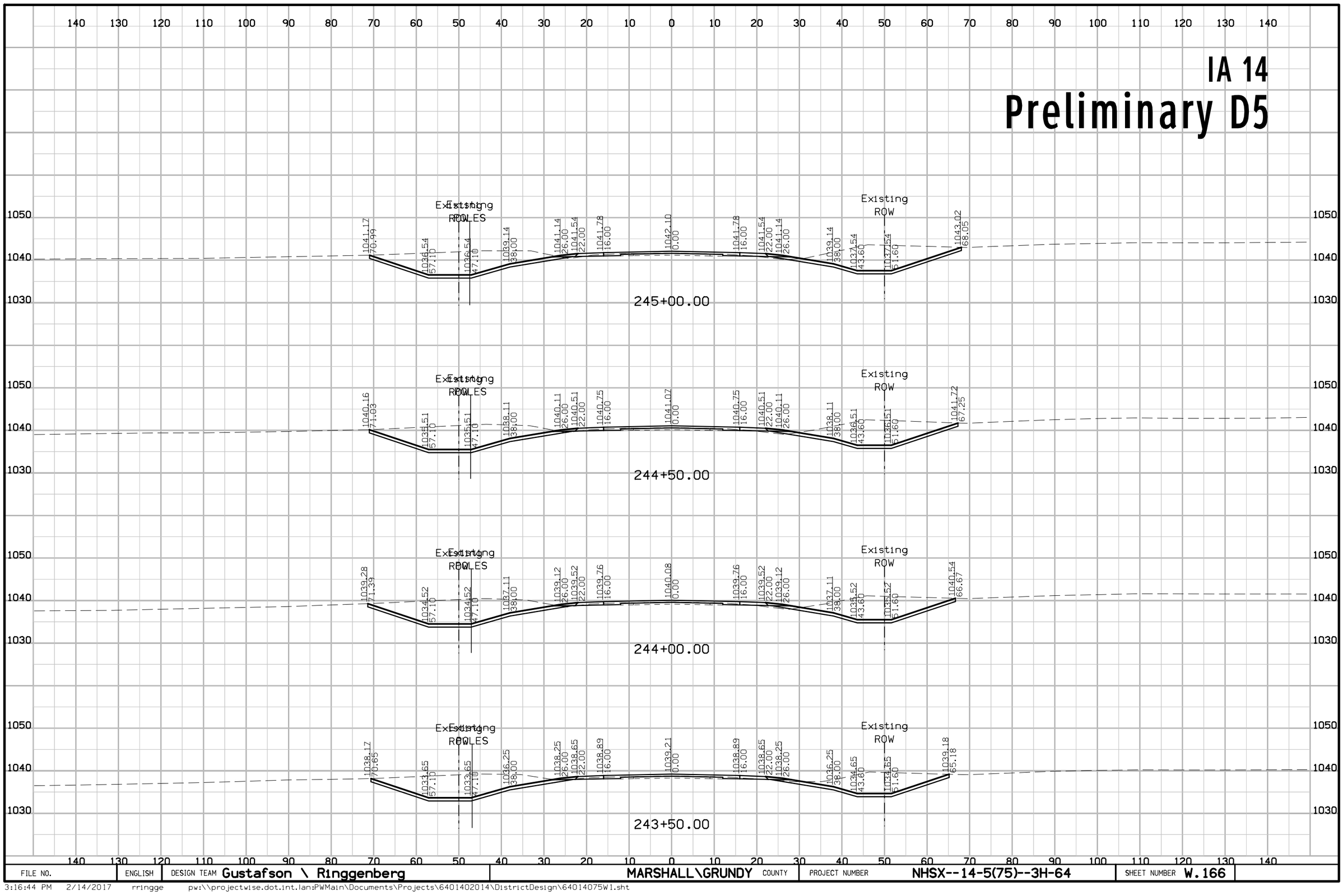
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.166

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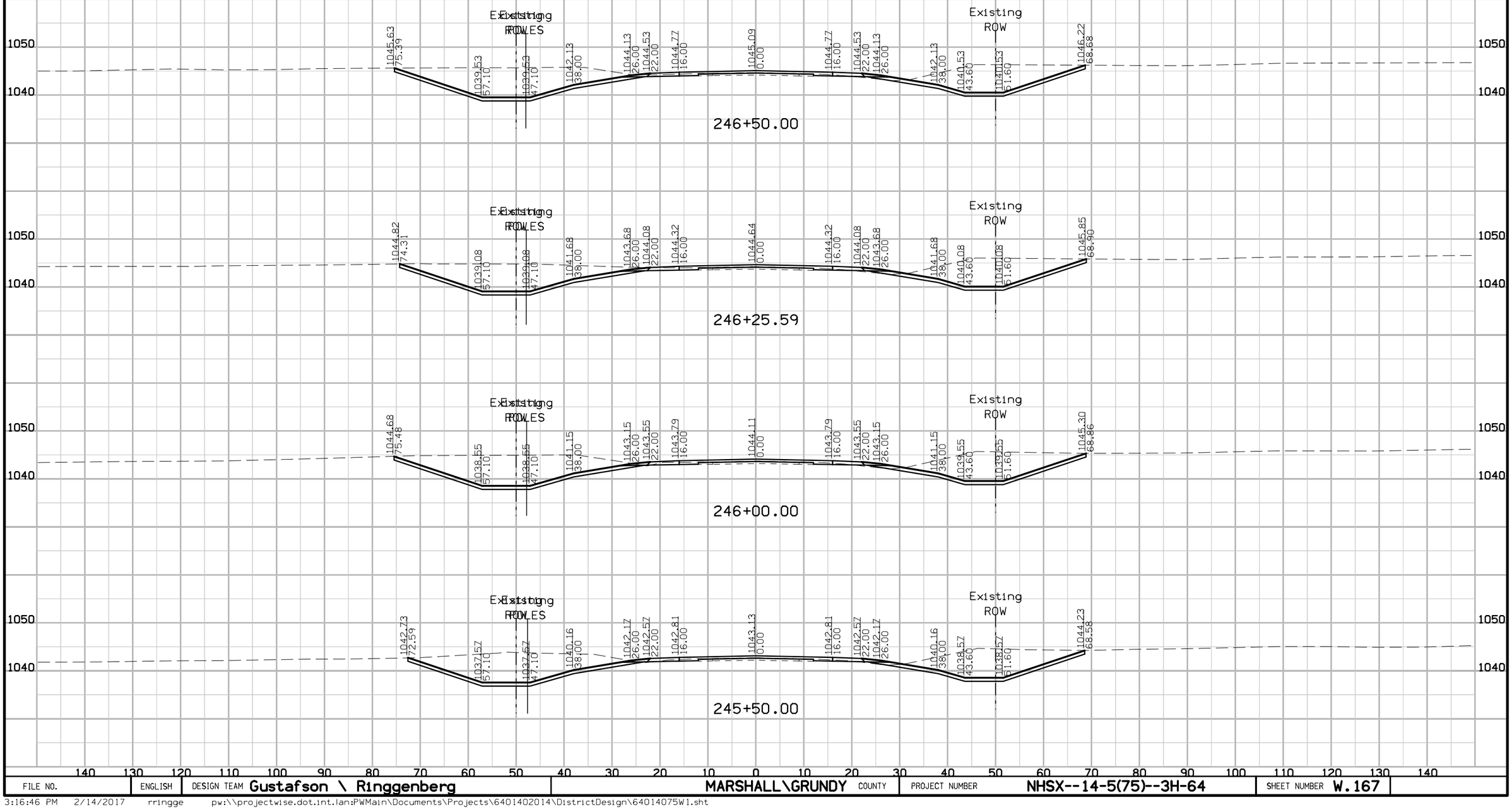
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.167

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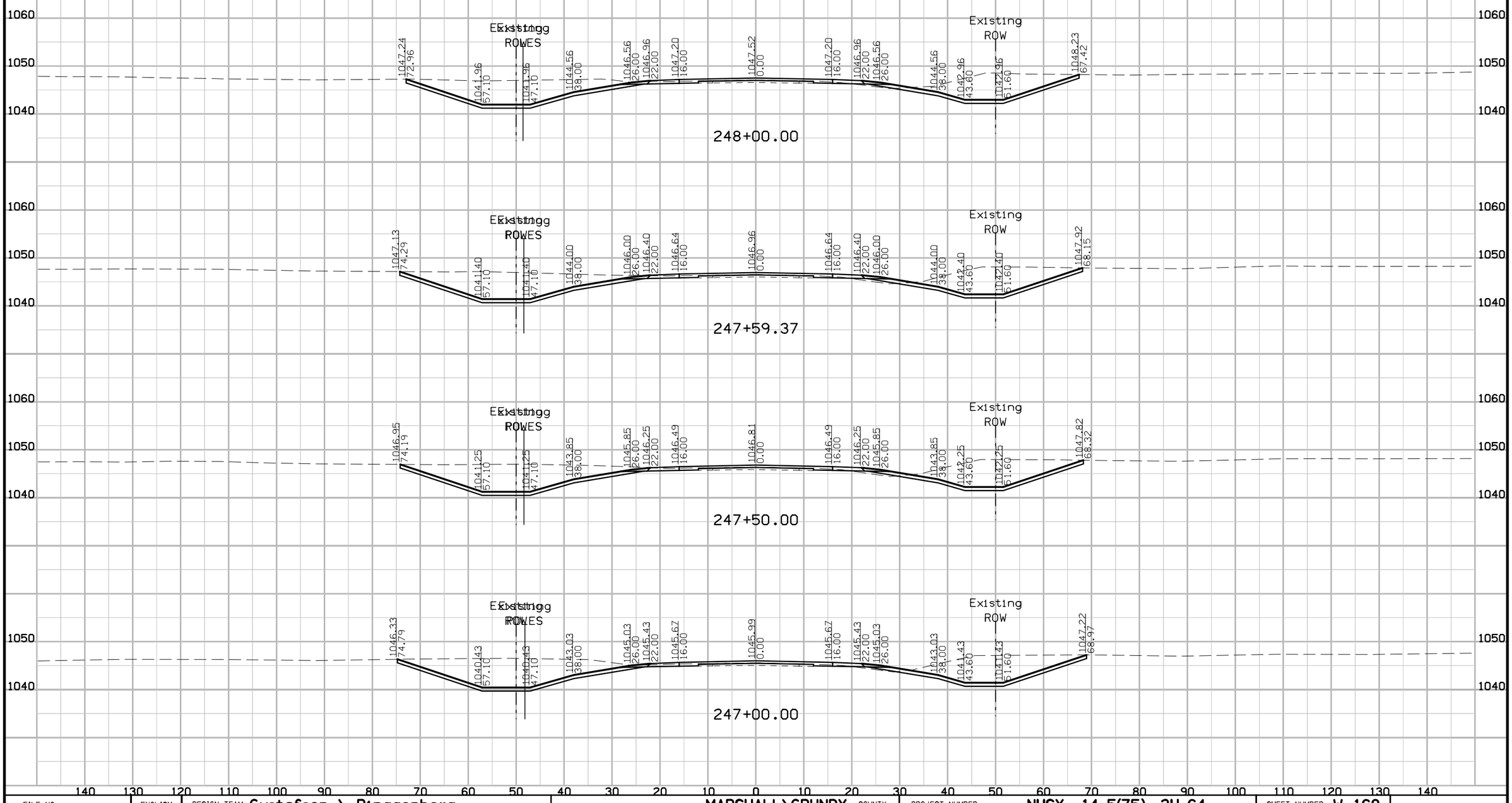
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.168

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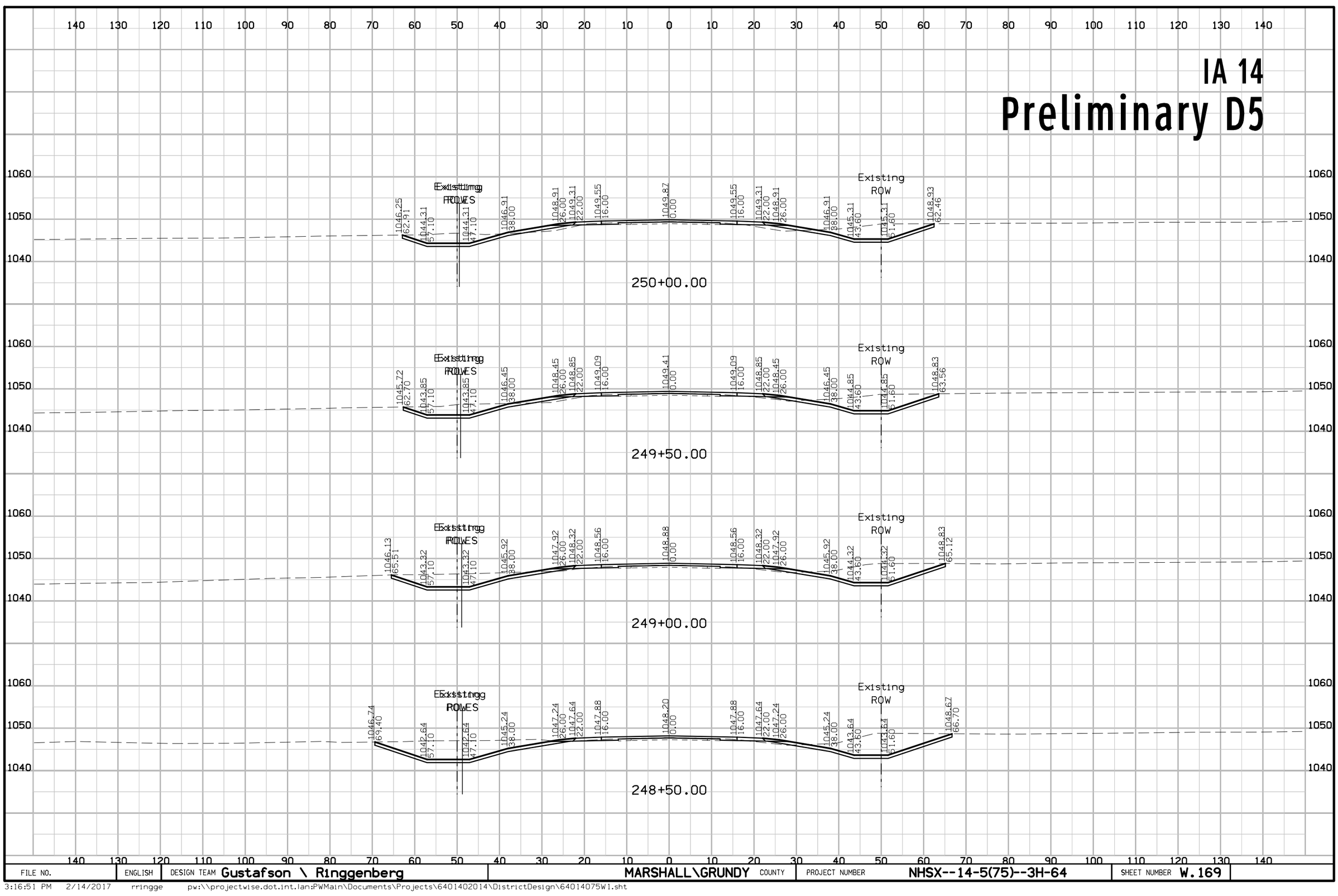
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.169

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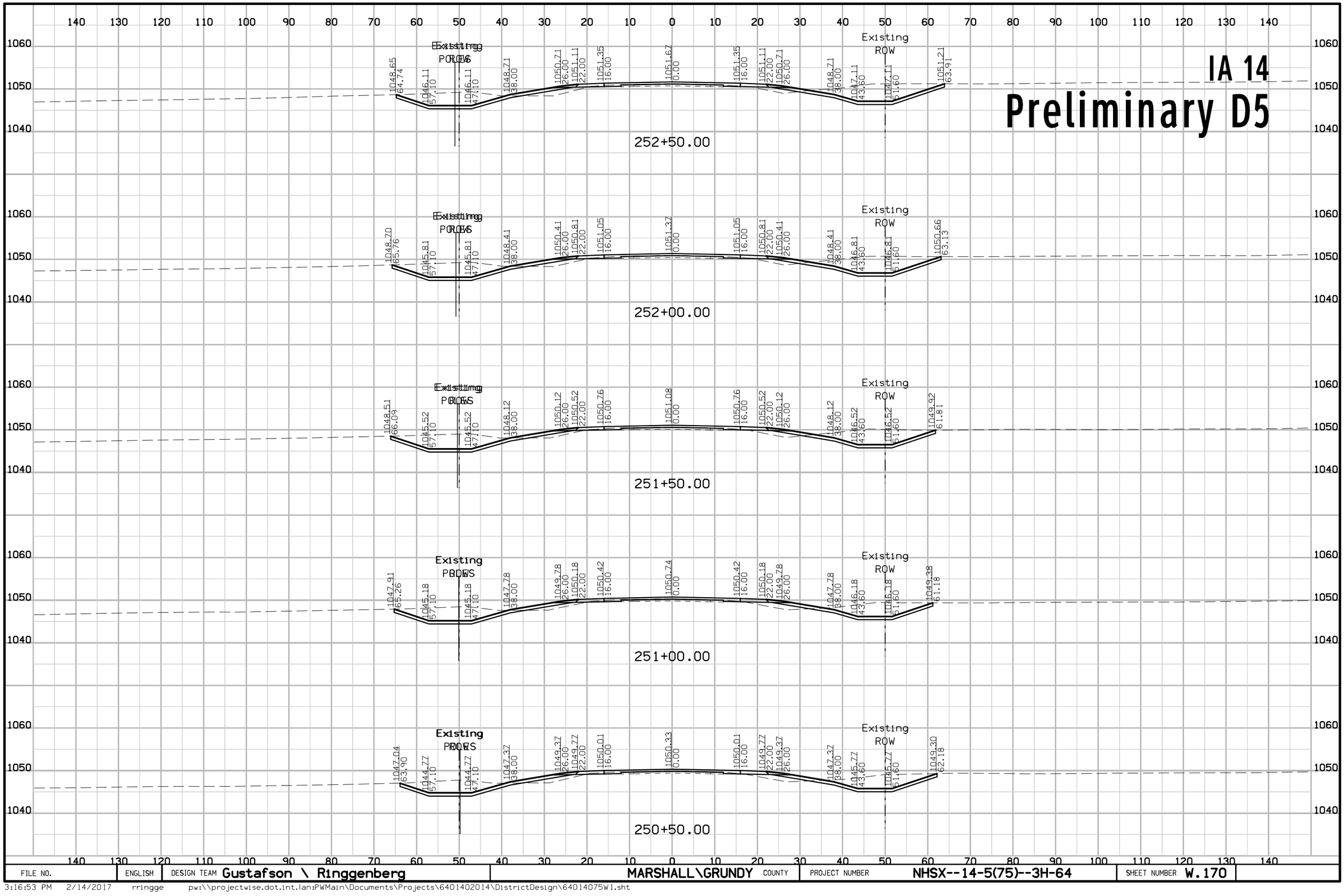
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.170

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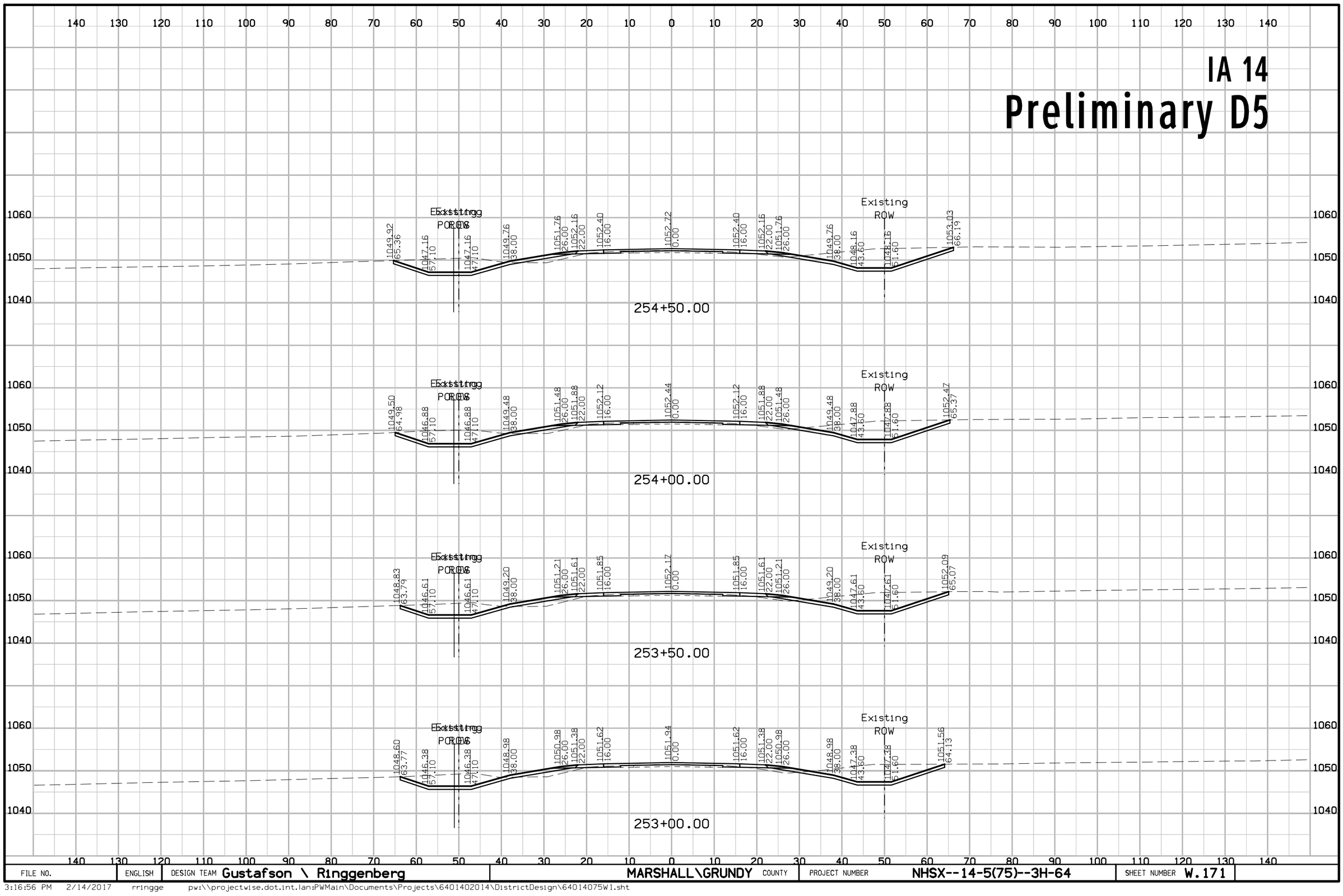
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.171

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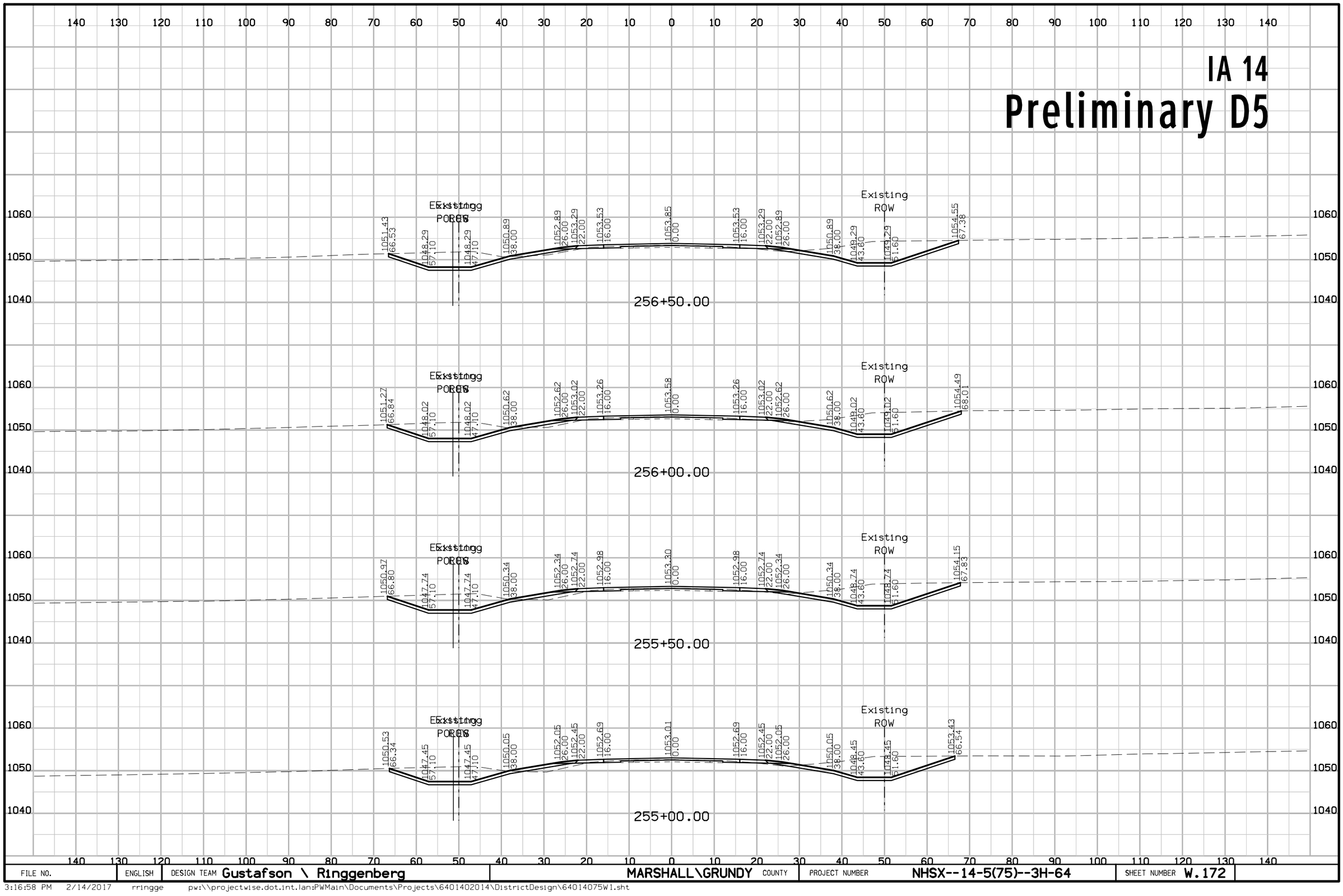
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.172

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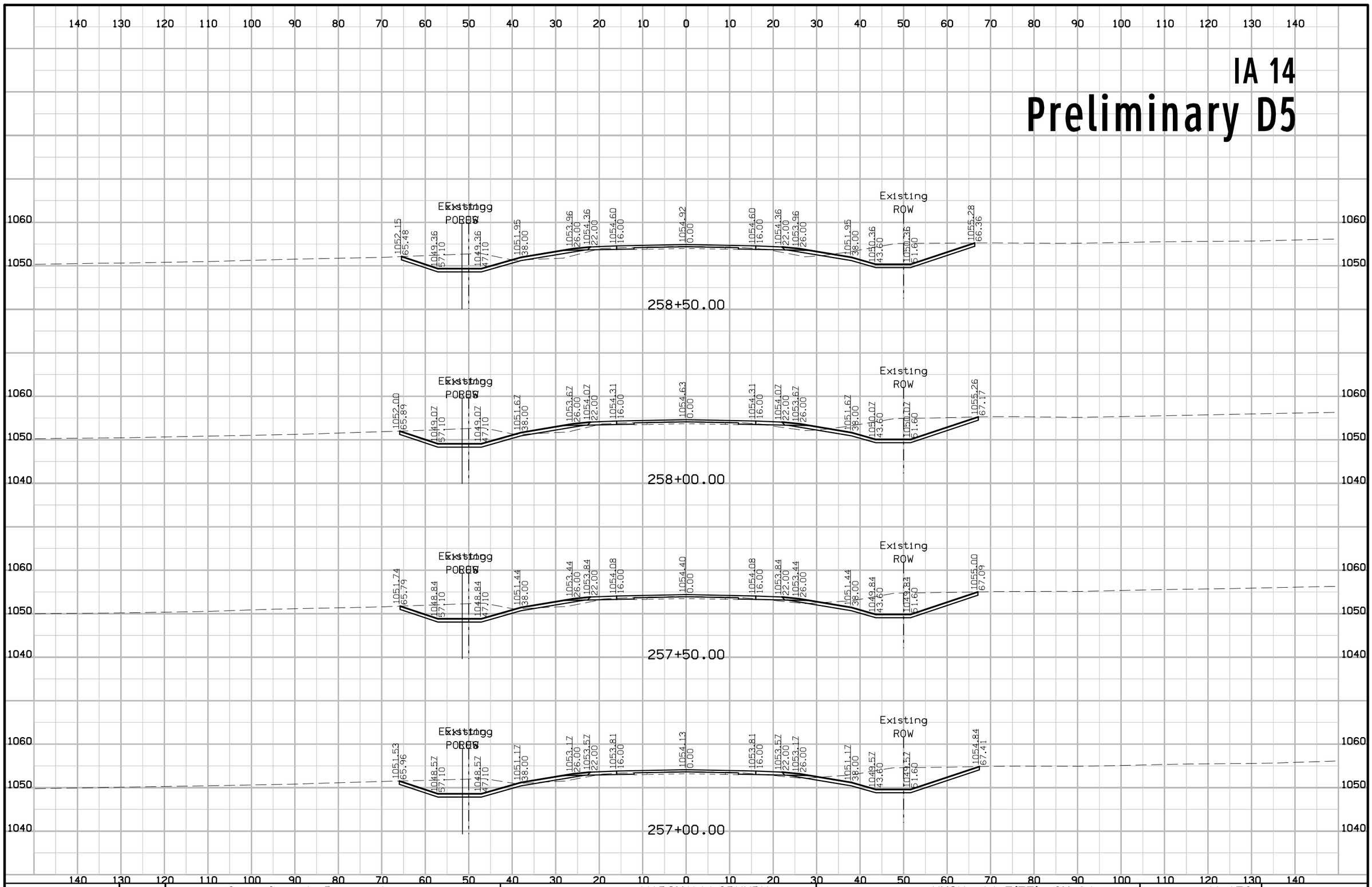
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.173

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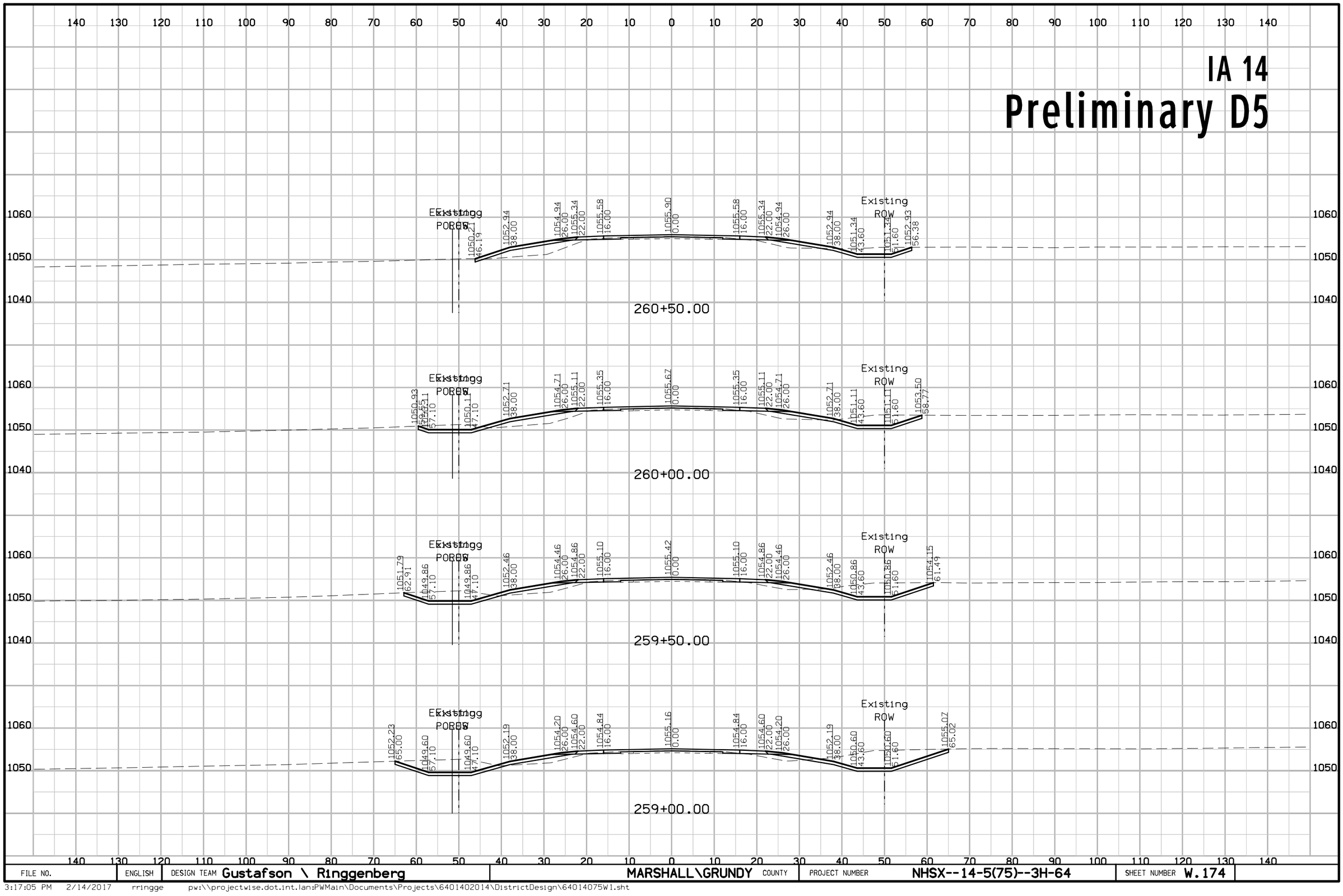
IA 14
Preliminary D5



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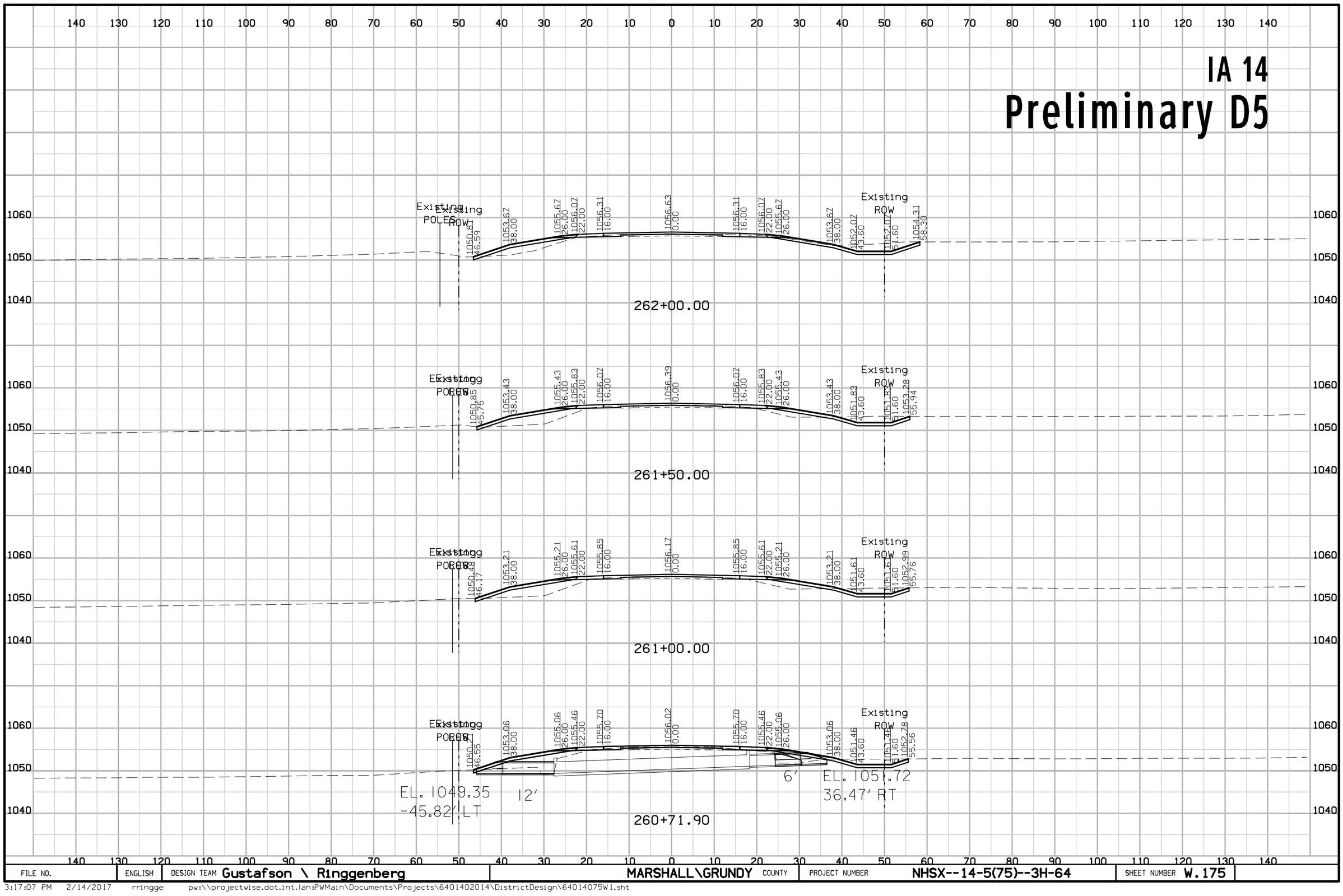
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.175

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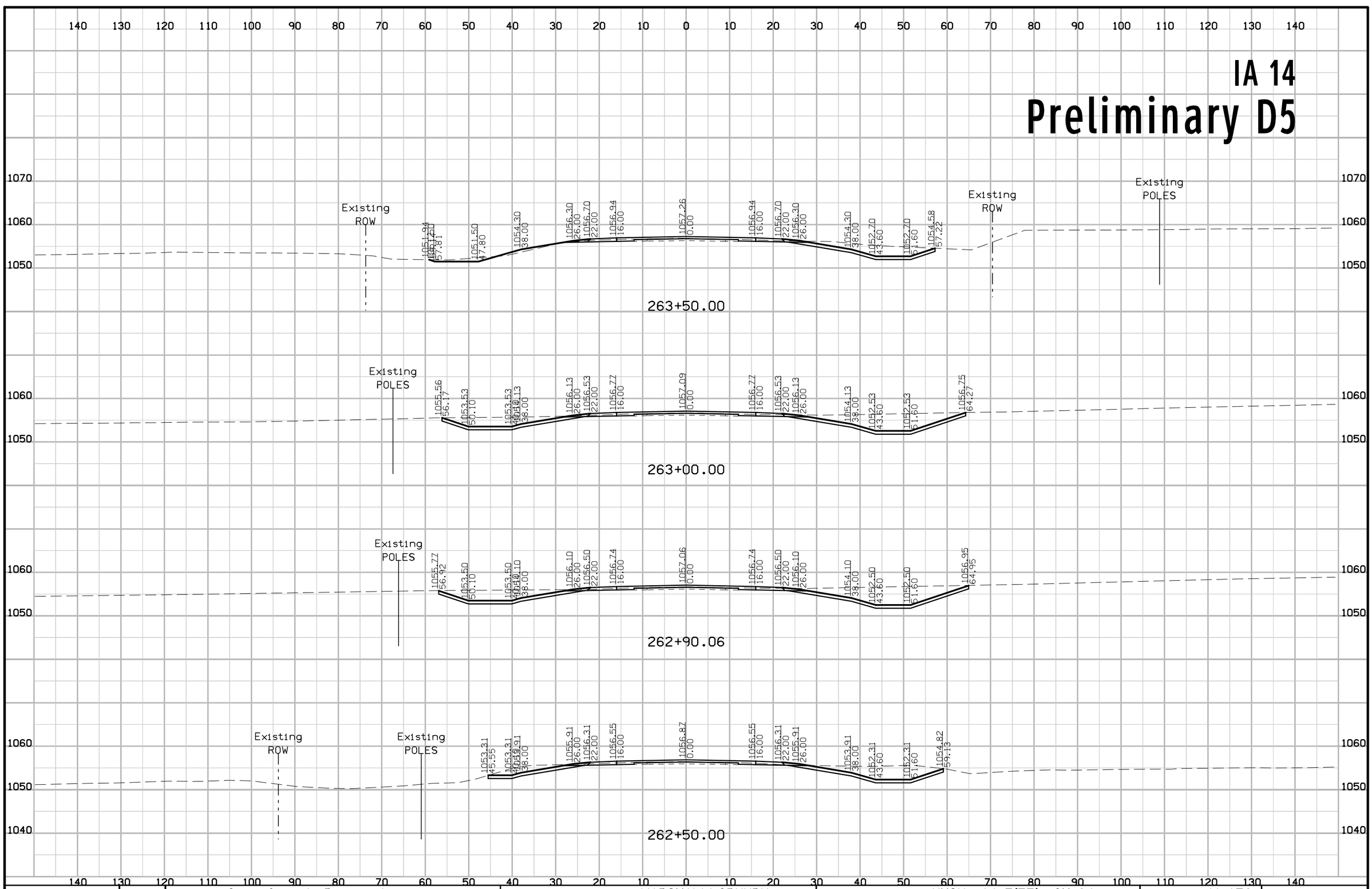
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.176

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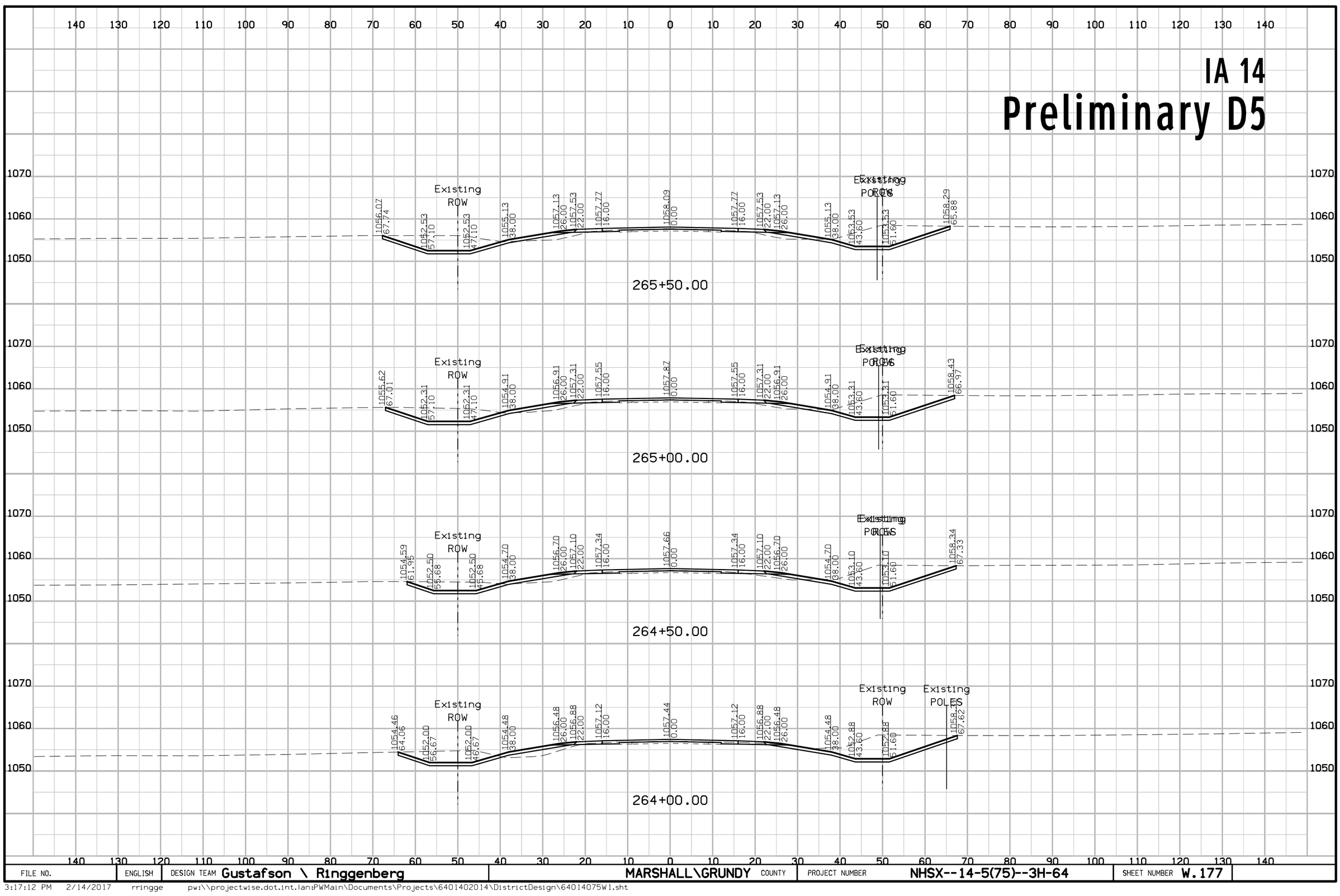
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.177

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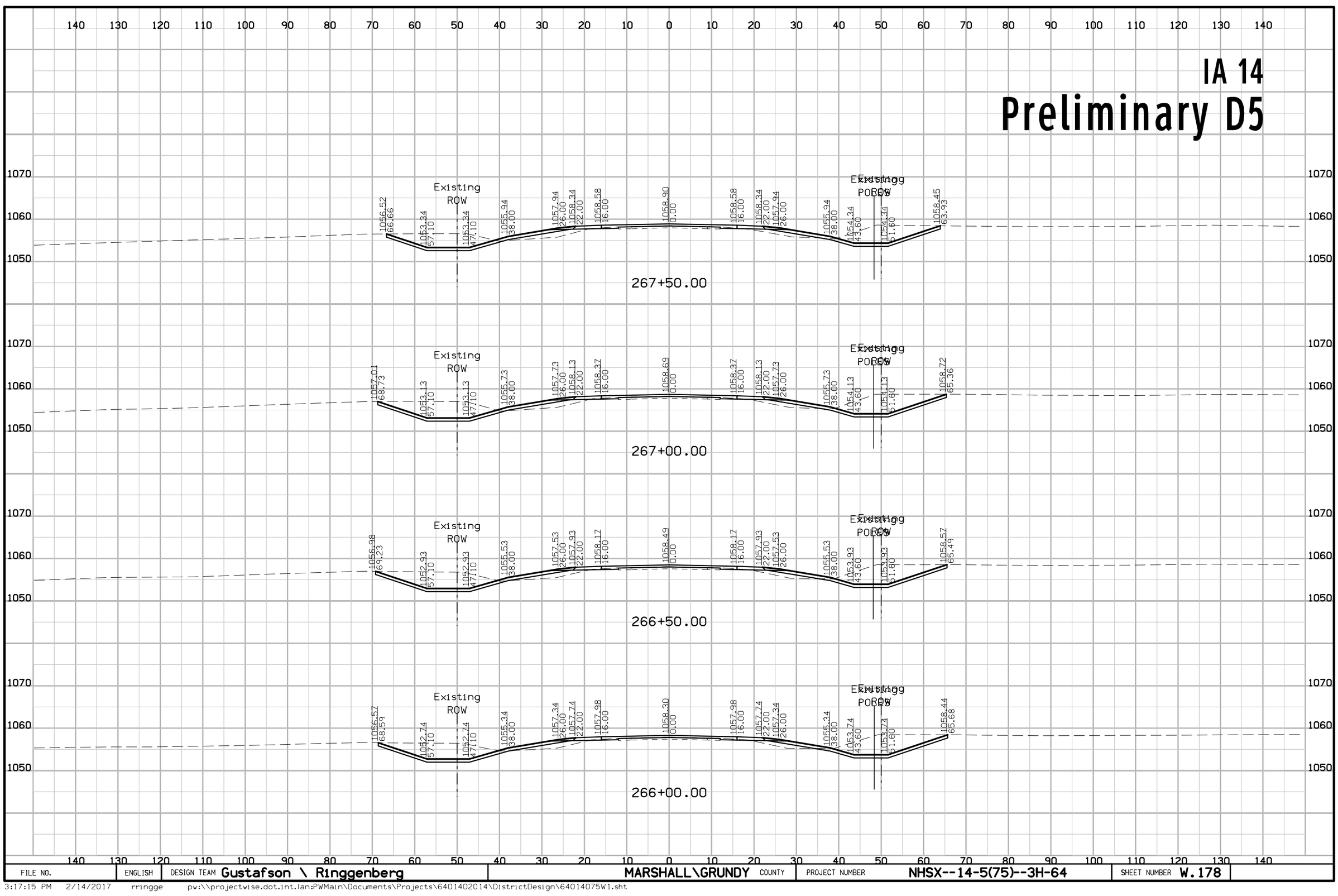
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.178

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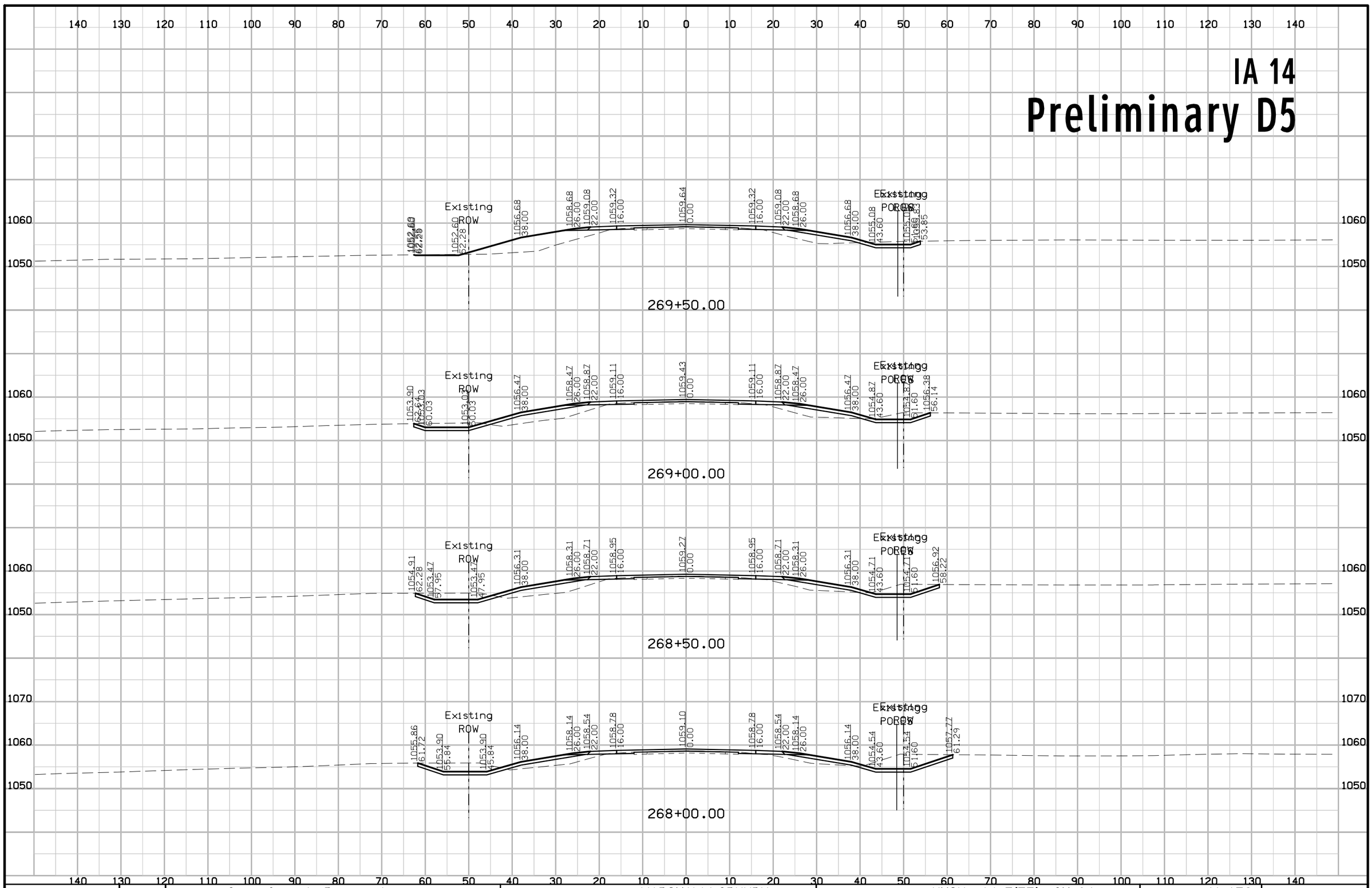
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.179

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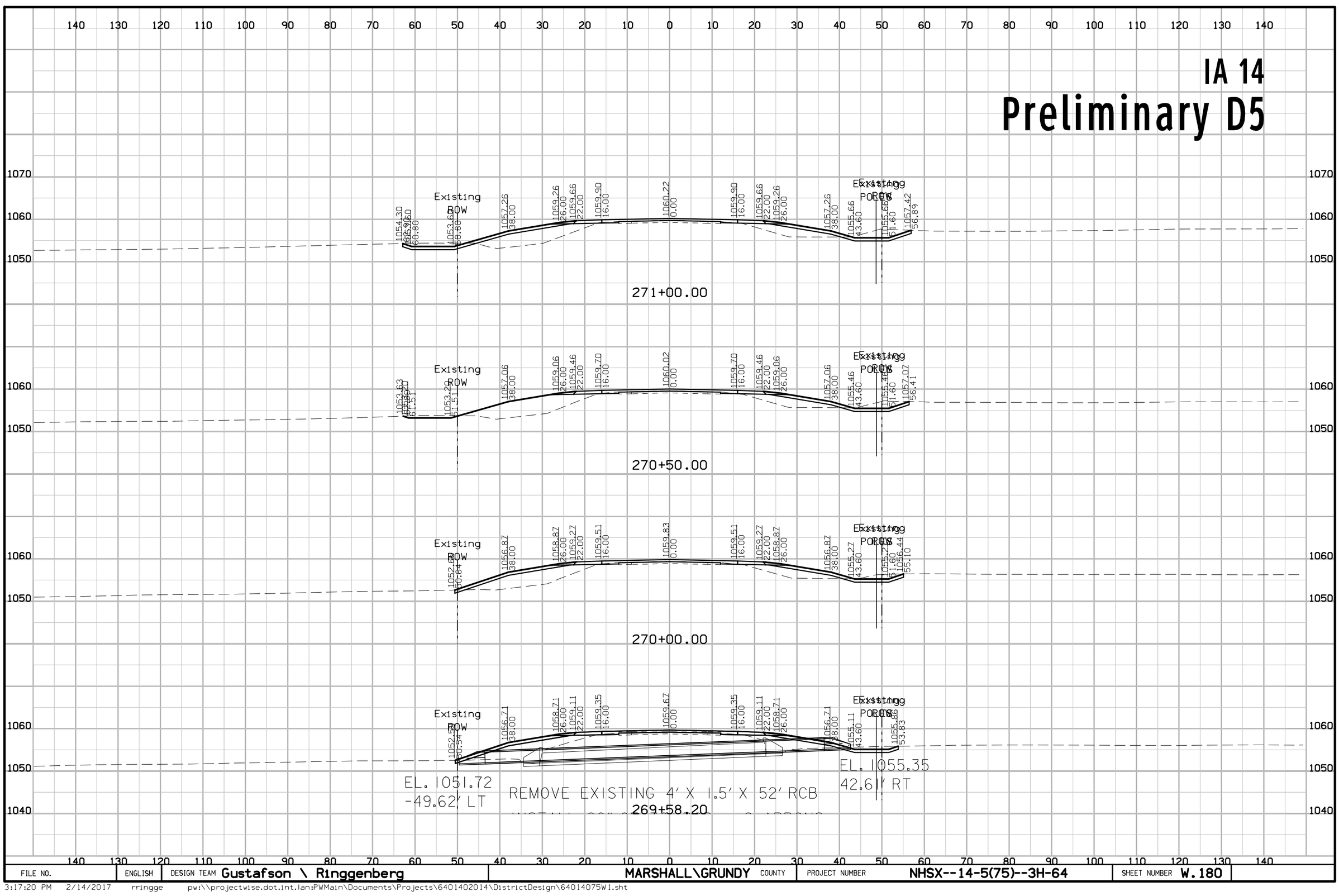
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.180

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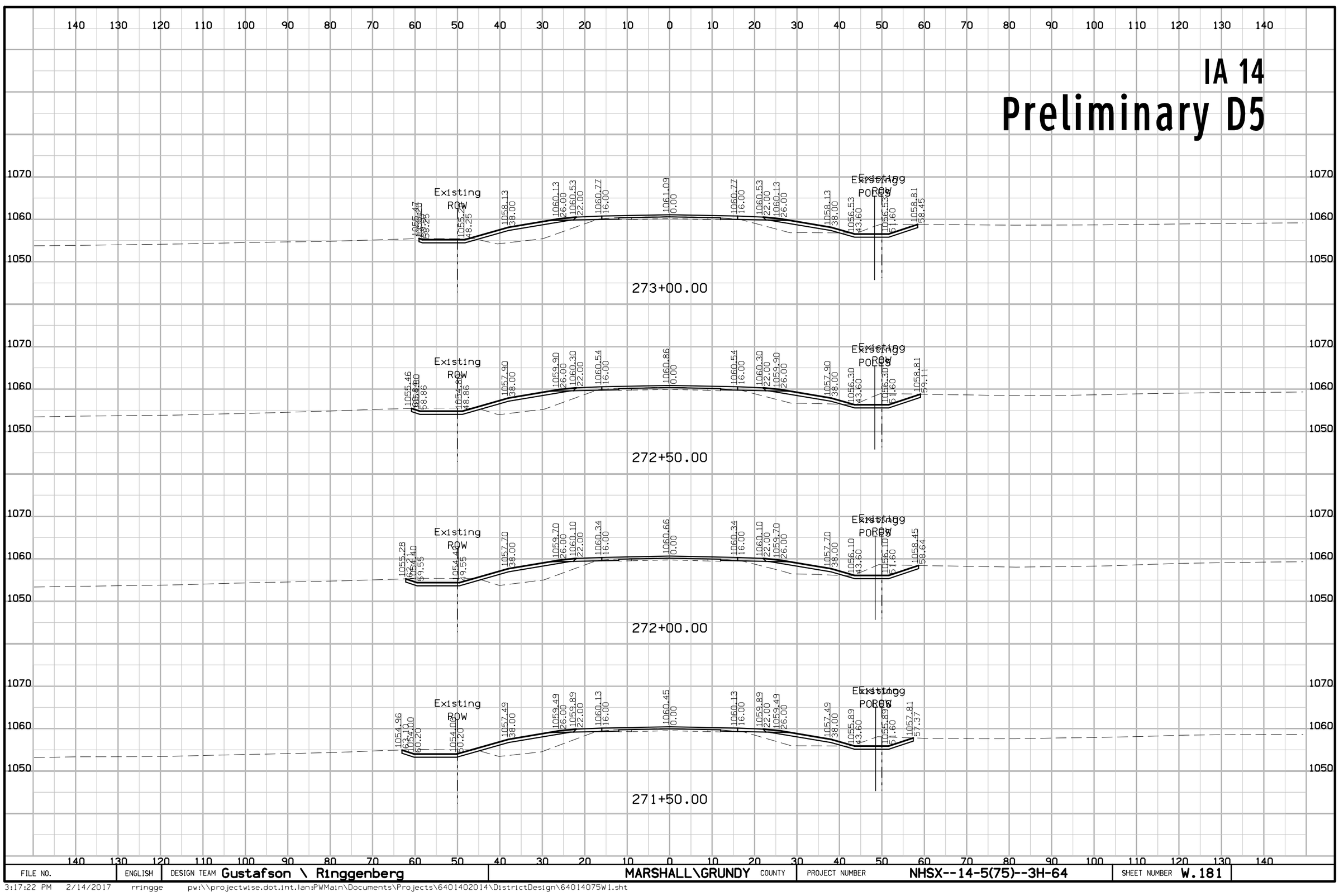
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.181

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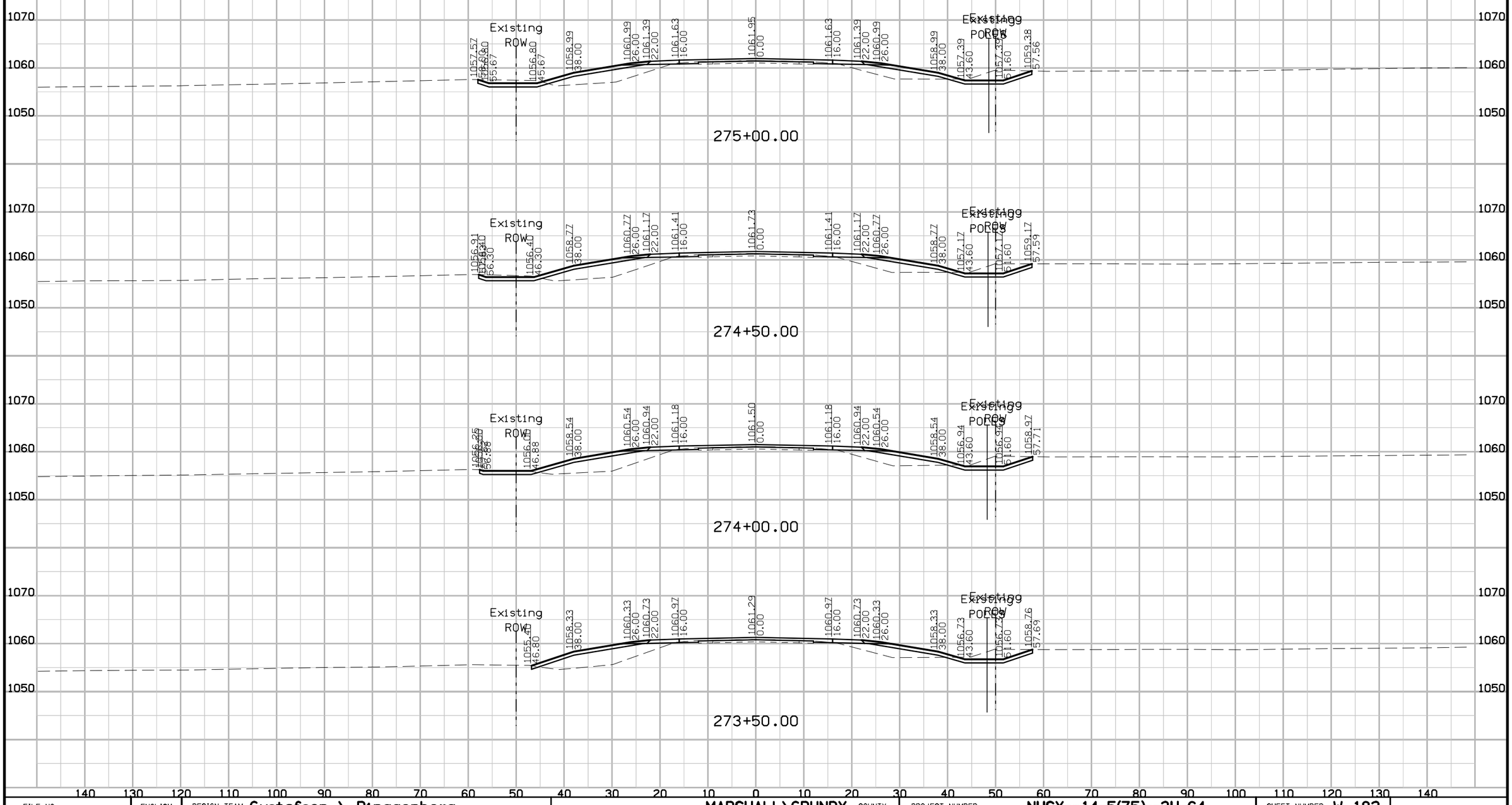
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.182

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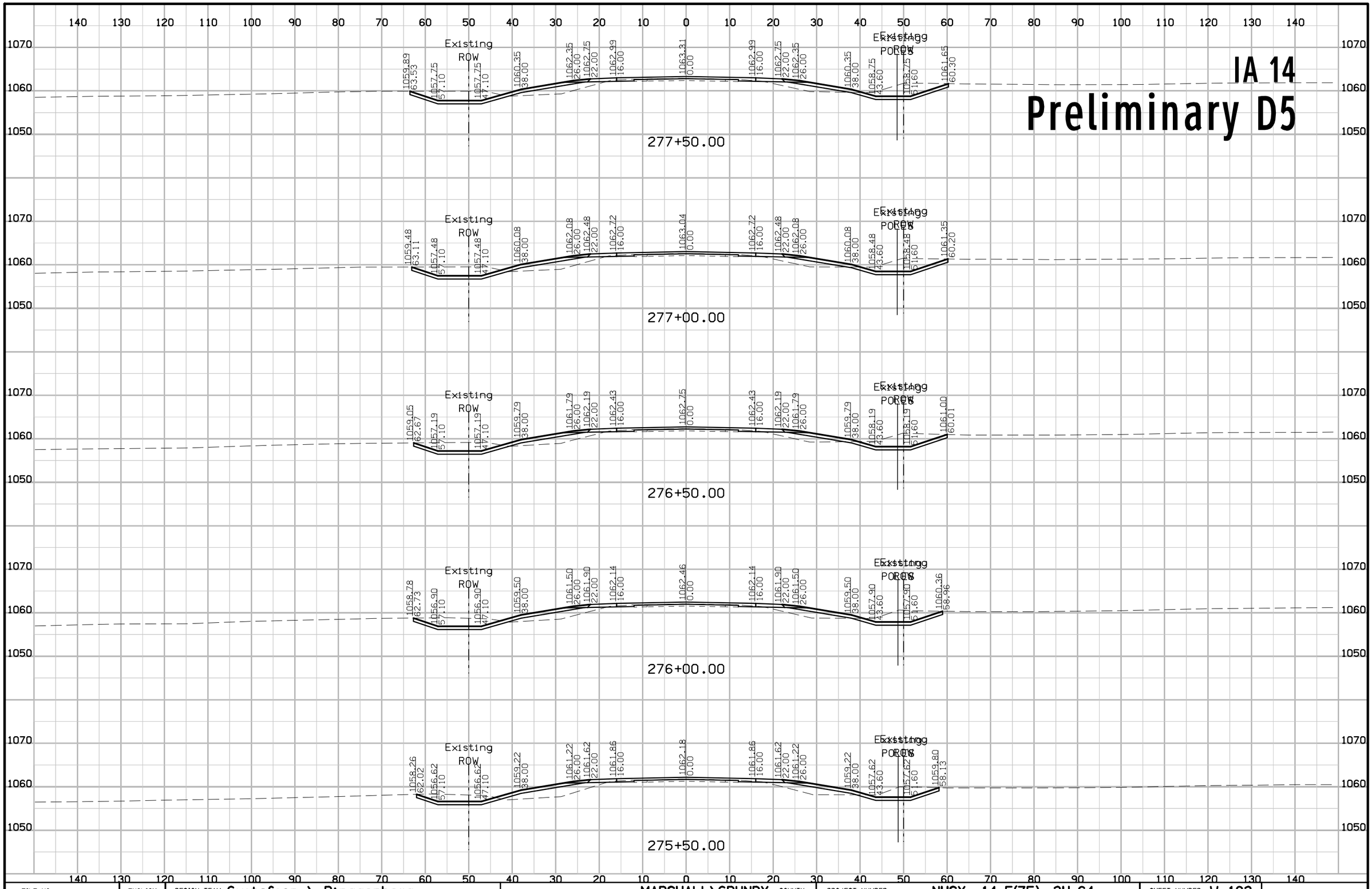
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.183

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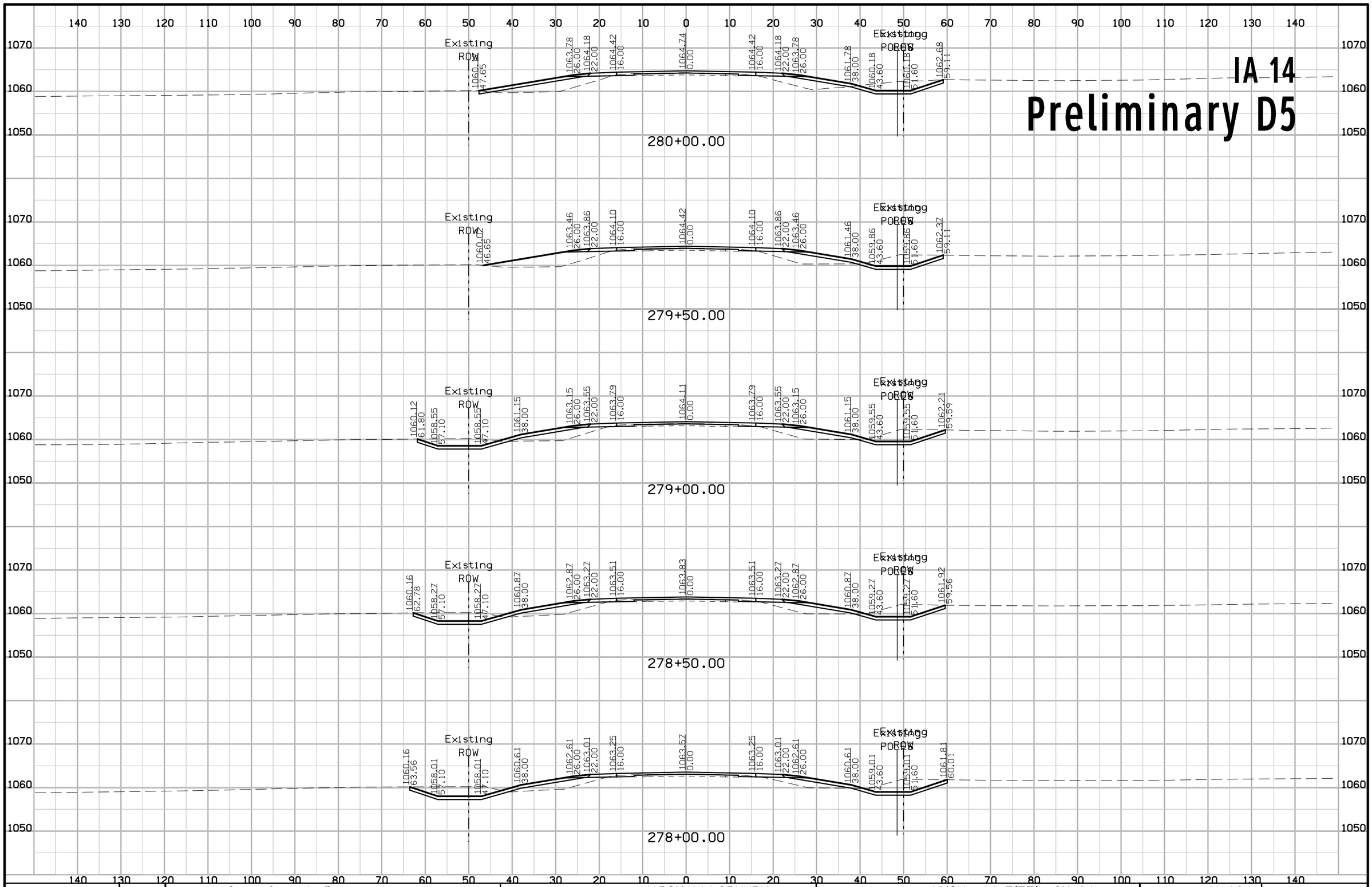
IA 14
Preliminary D5



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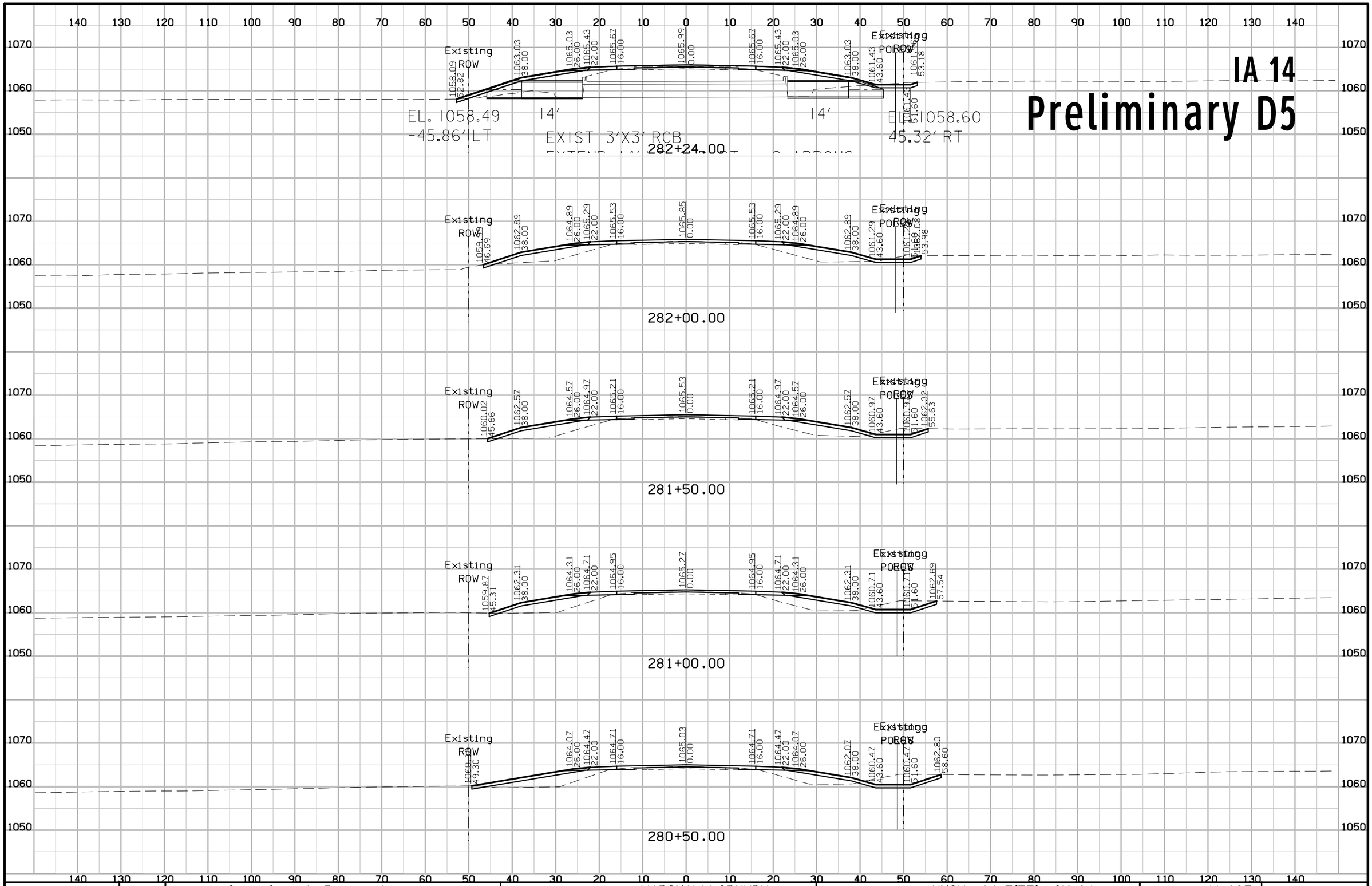
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.185

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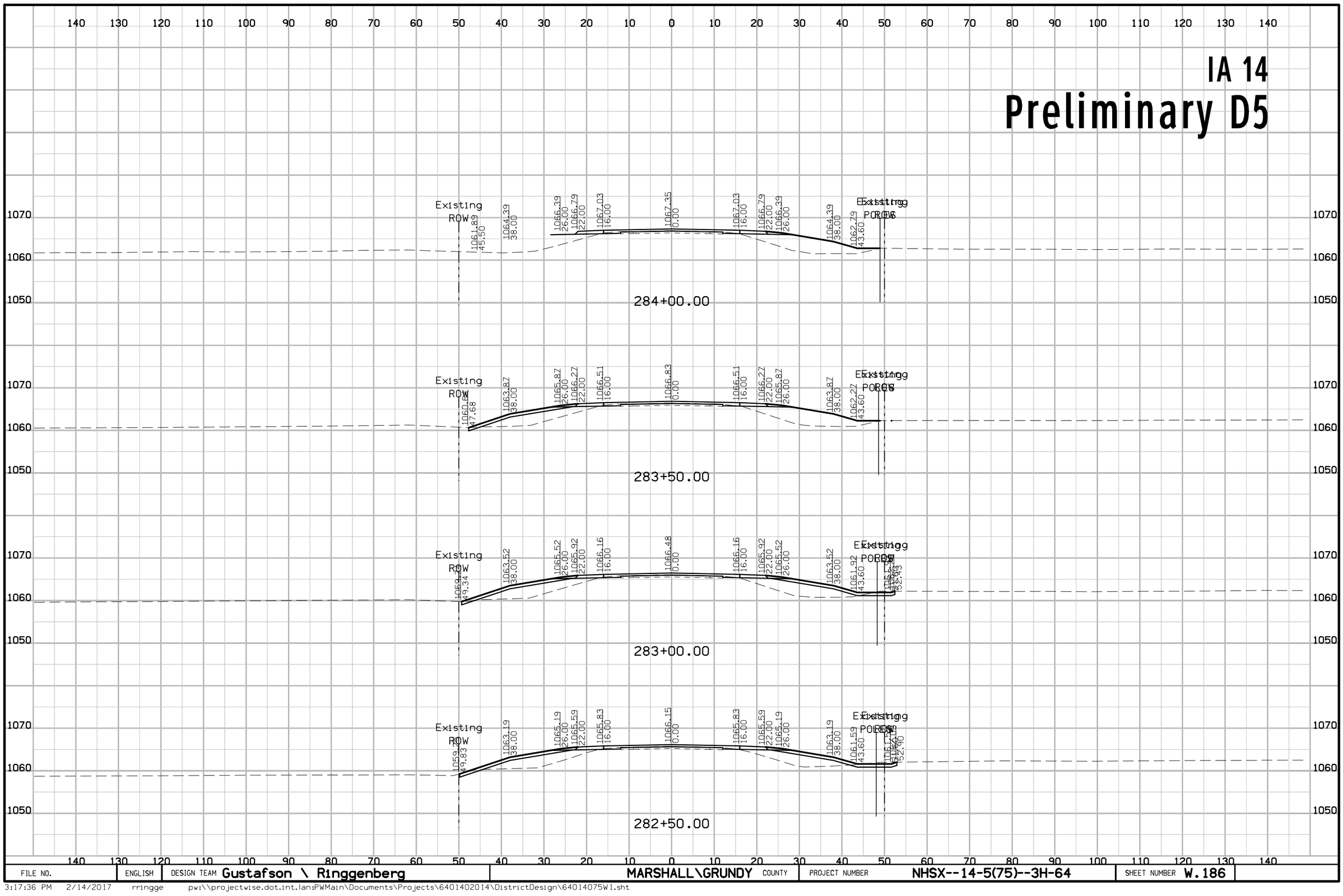
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.186

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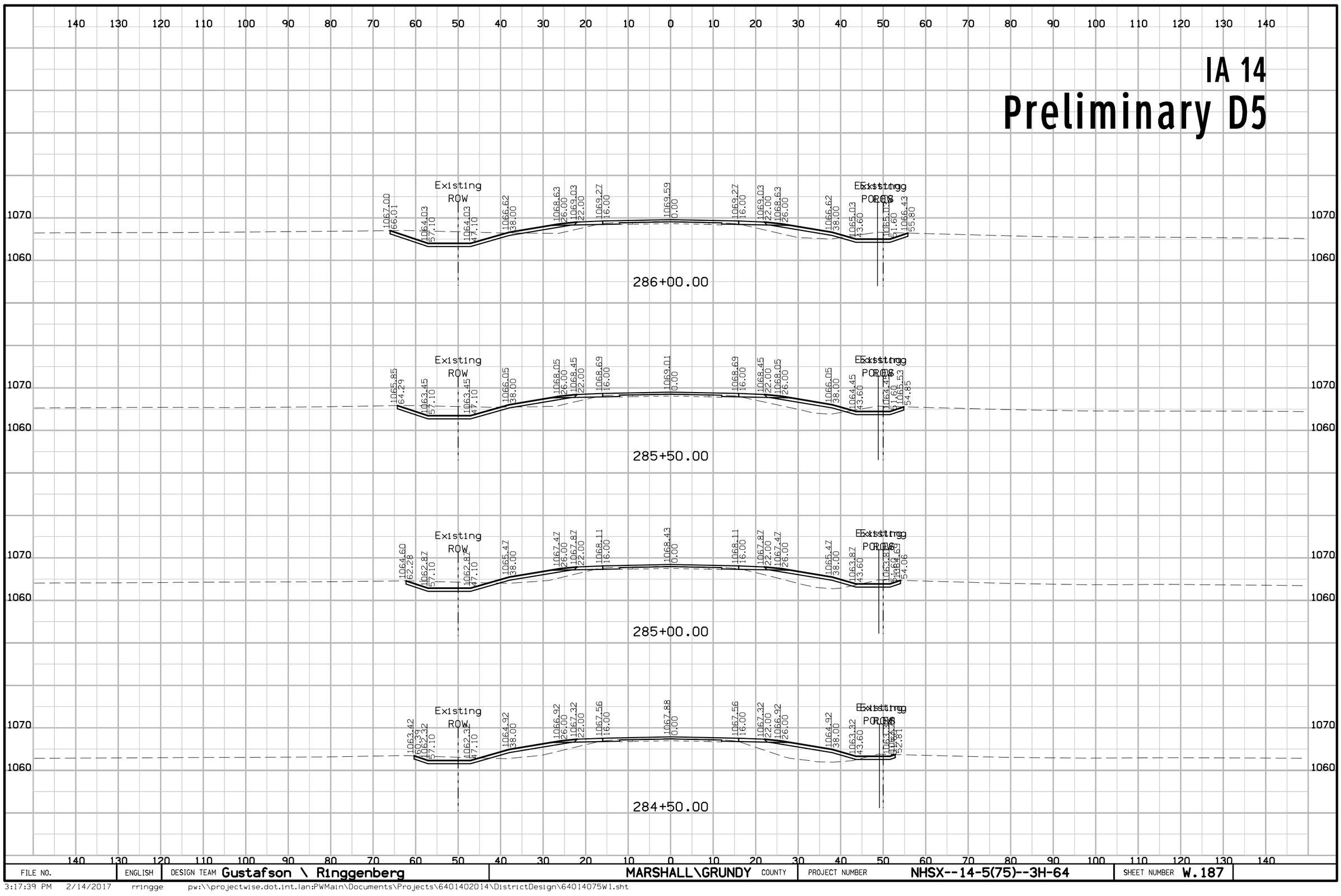
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.187

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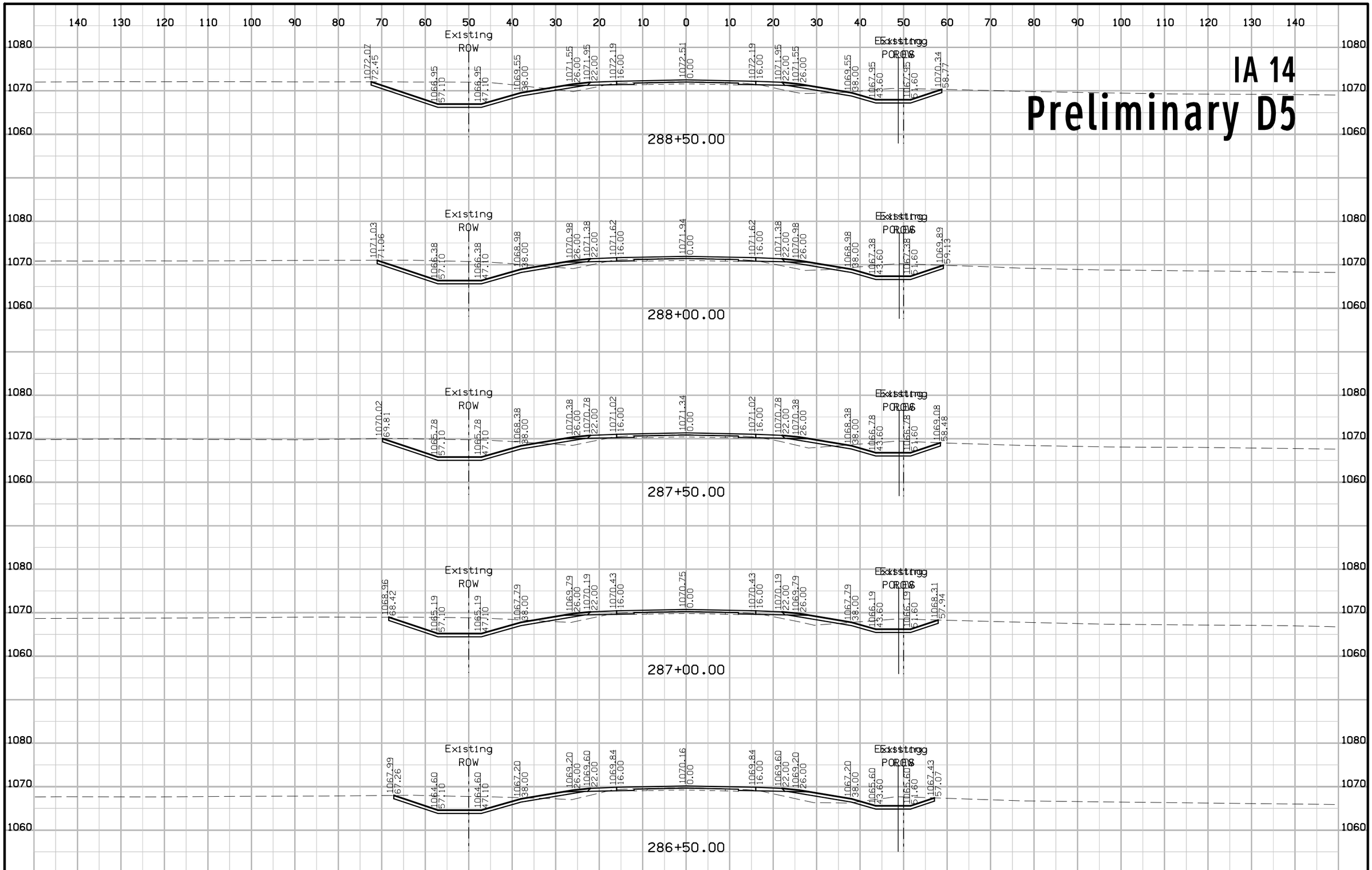
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.188

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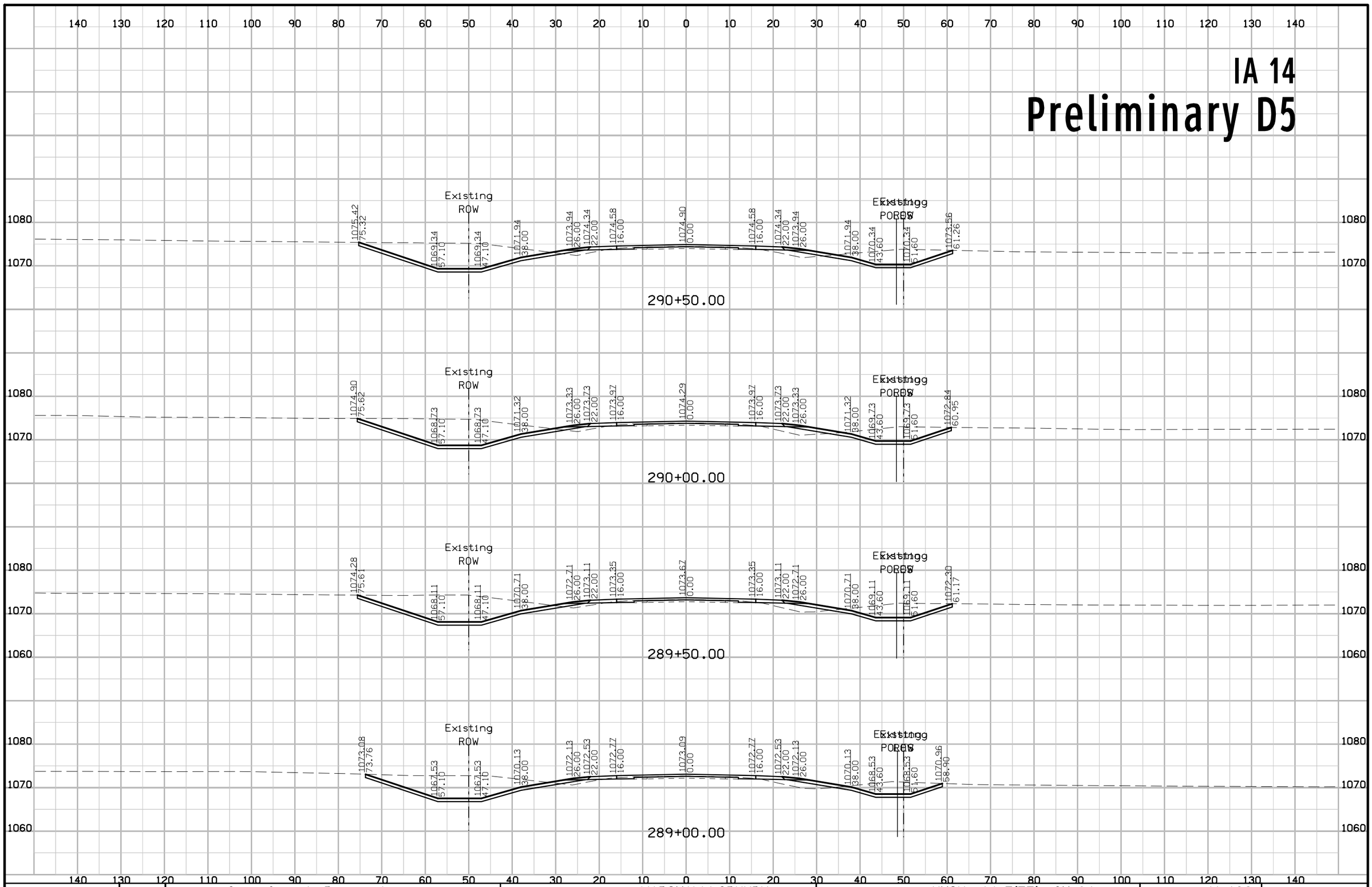
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.189

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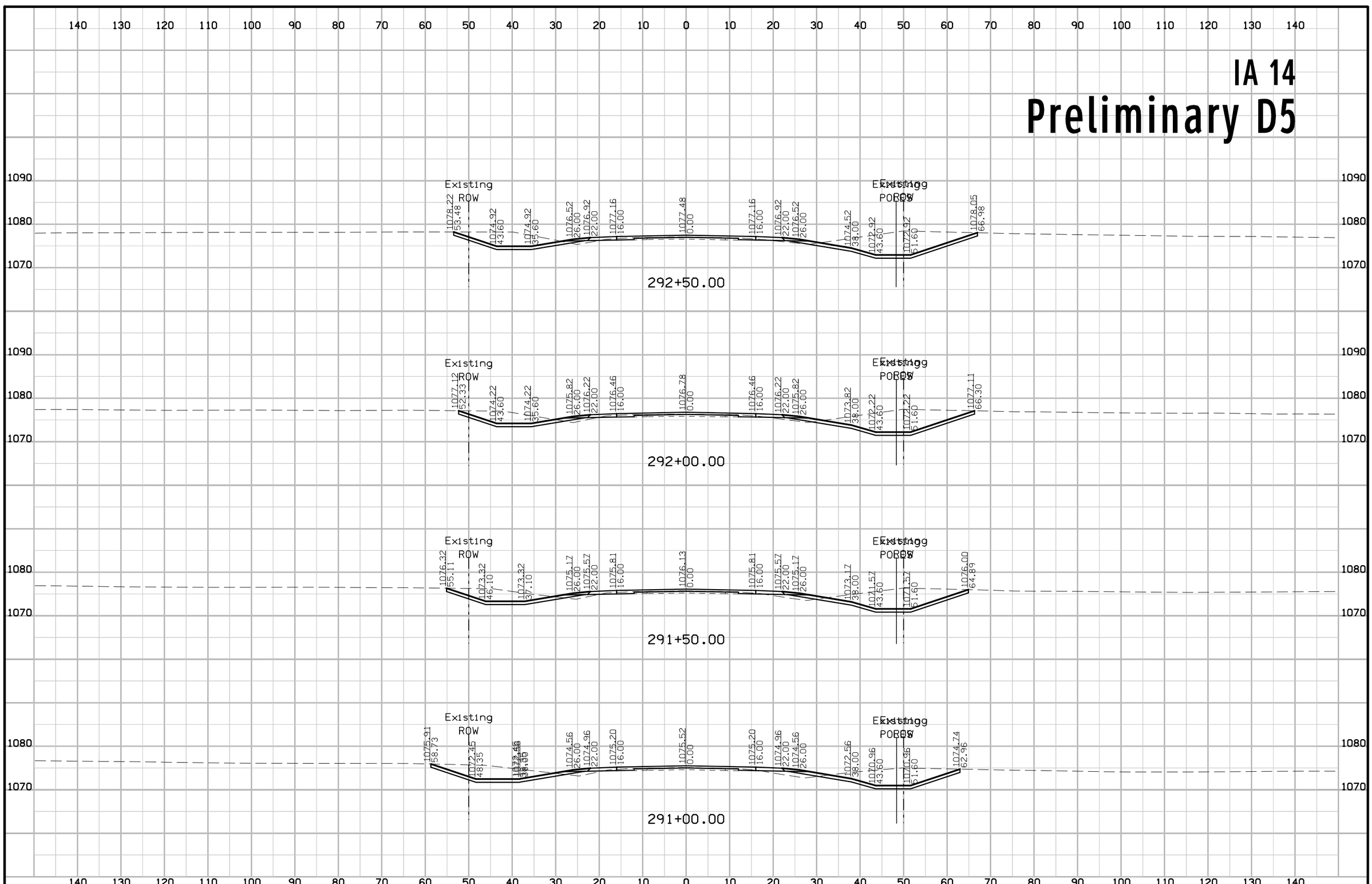
IA 14
Preliminary D5



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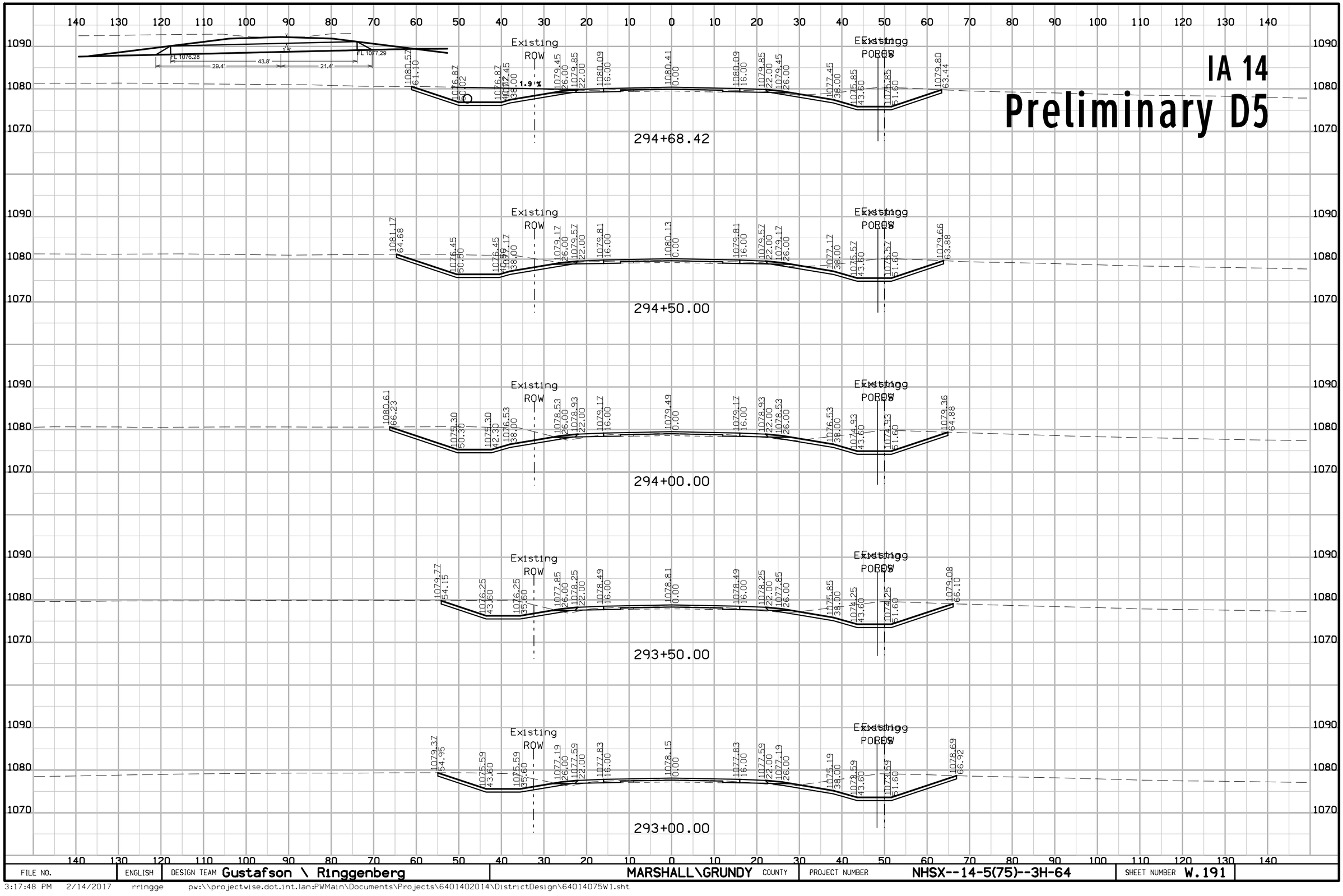
IA 14
Preliminary D5



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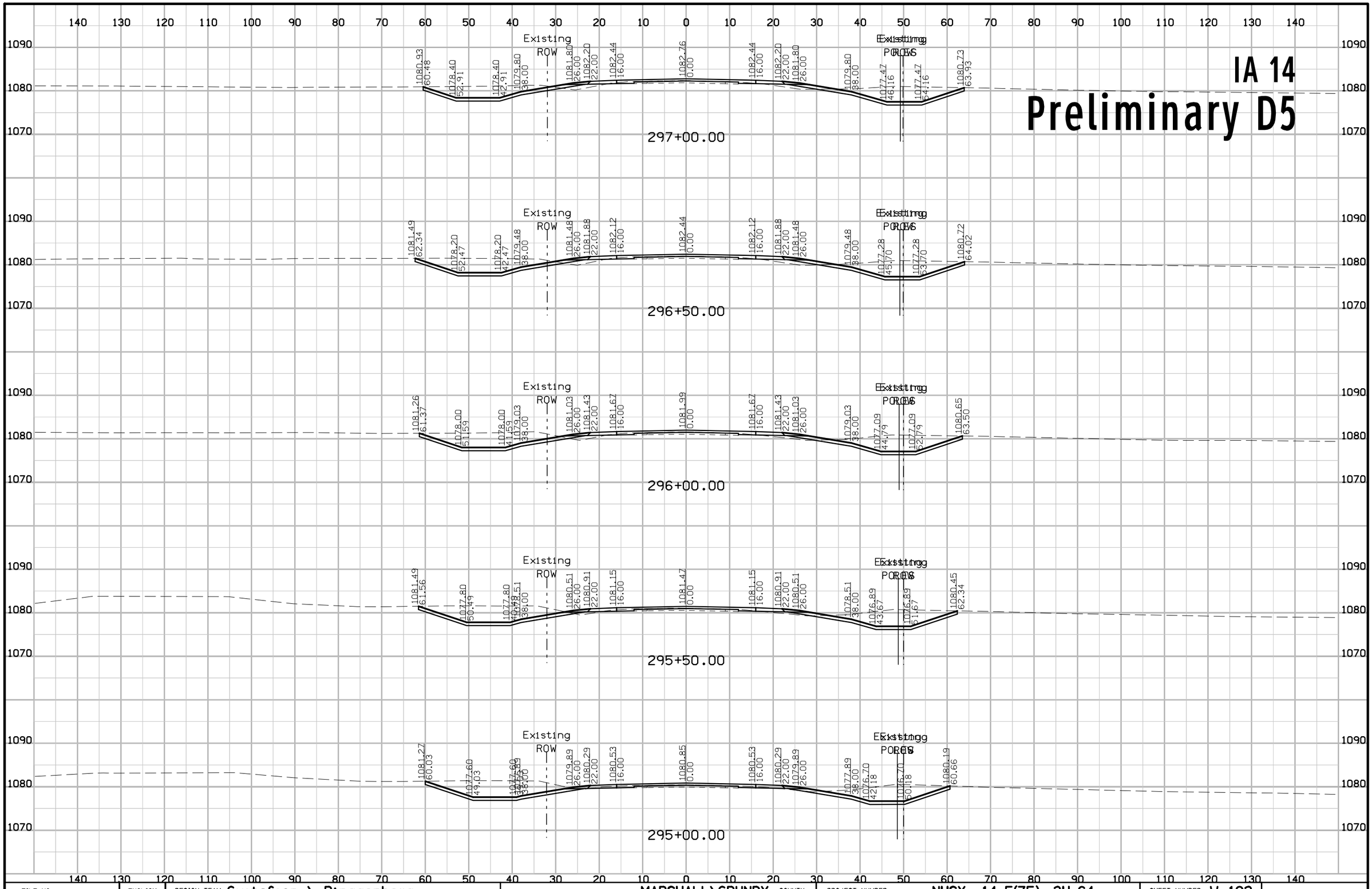
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.192

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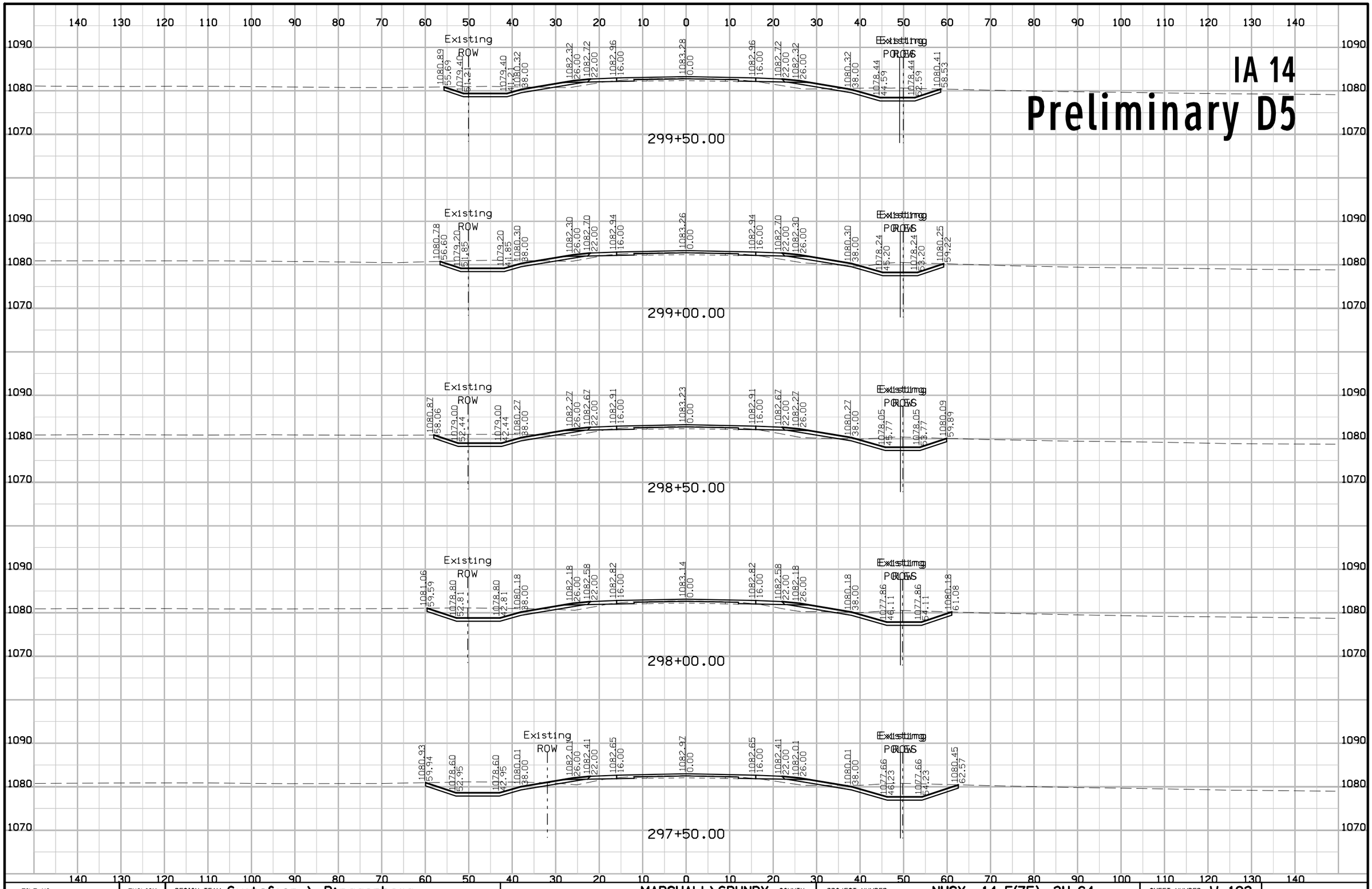
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.193

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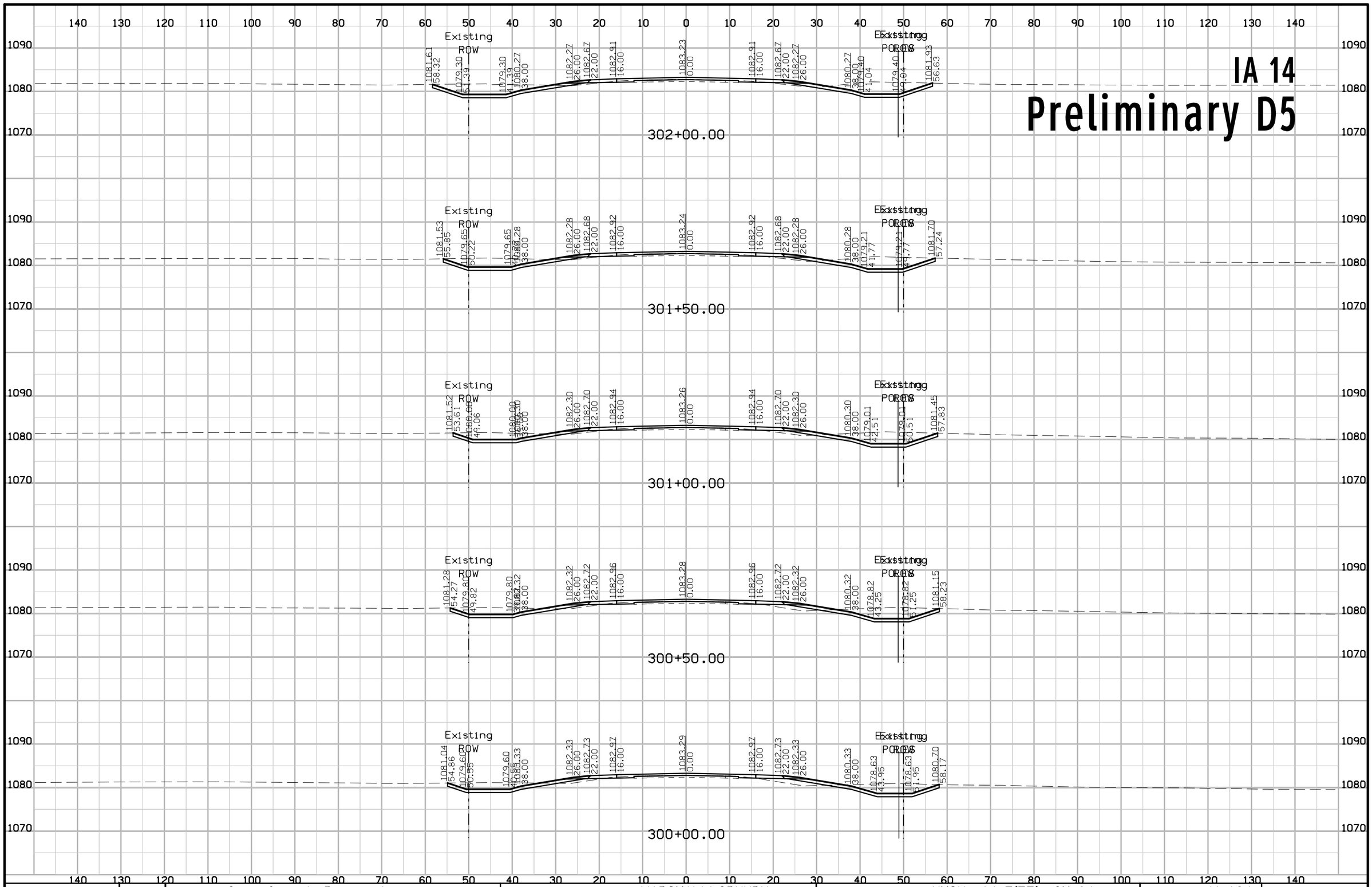
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.194

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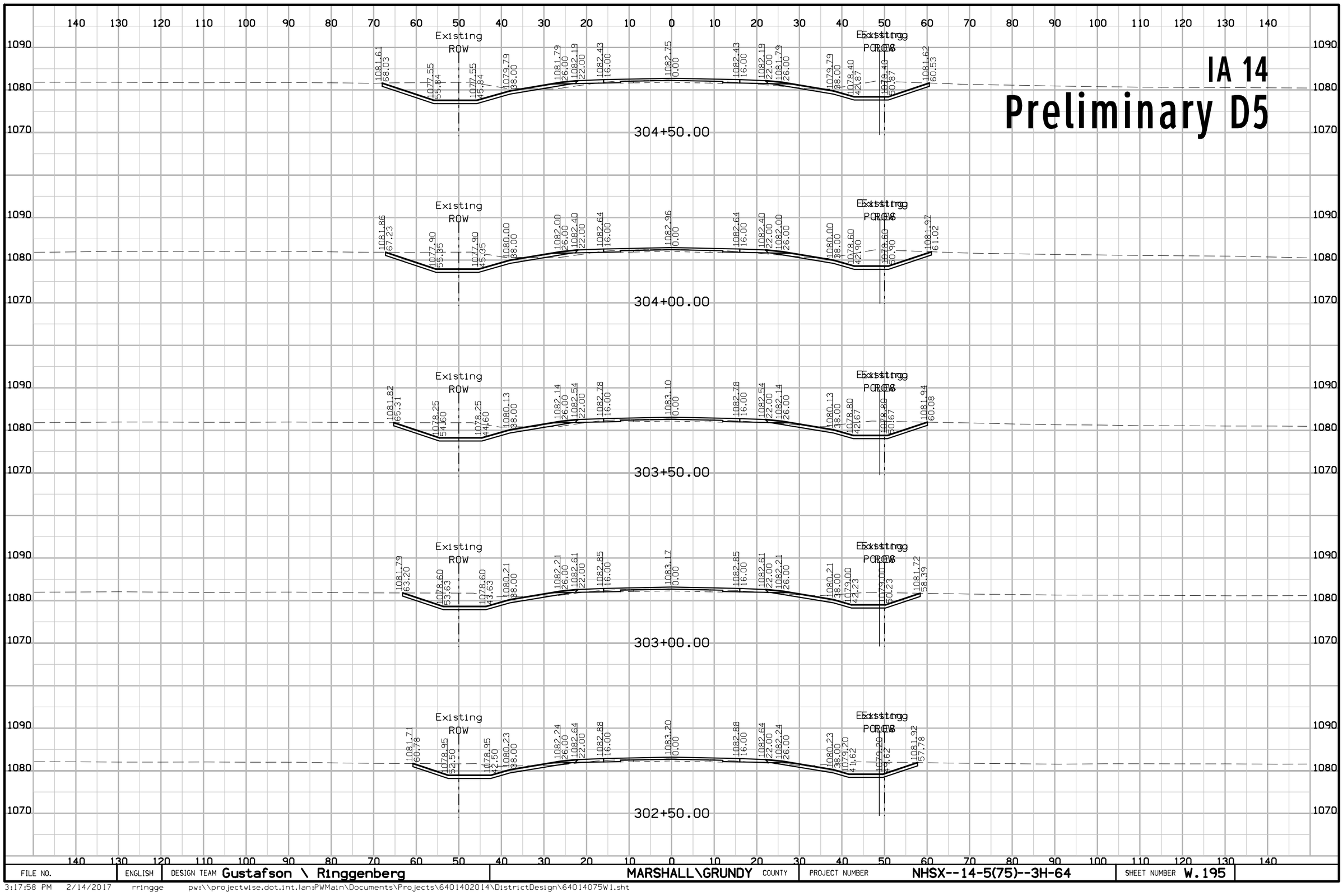
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.195

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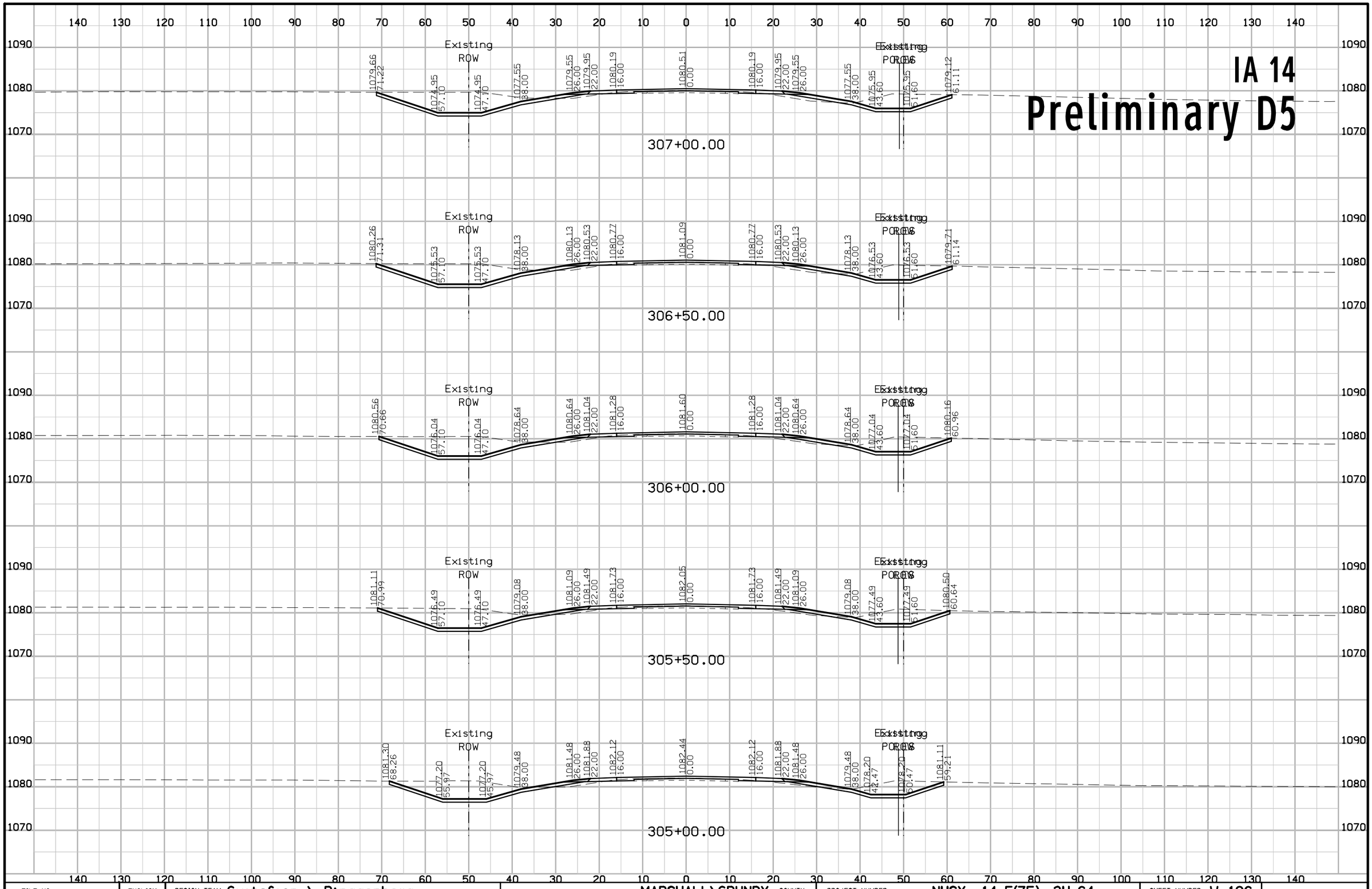
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.196

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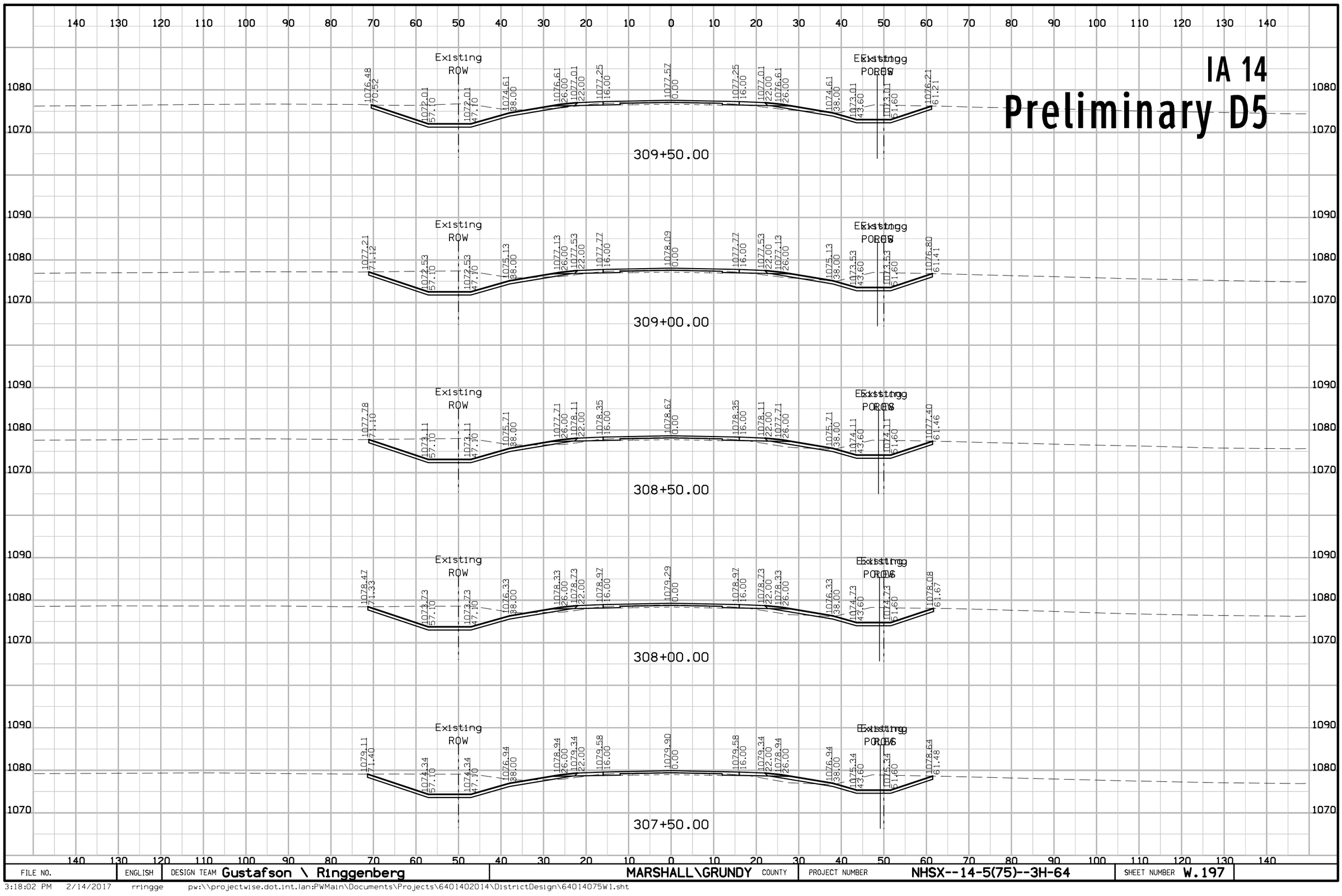
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.197

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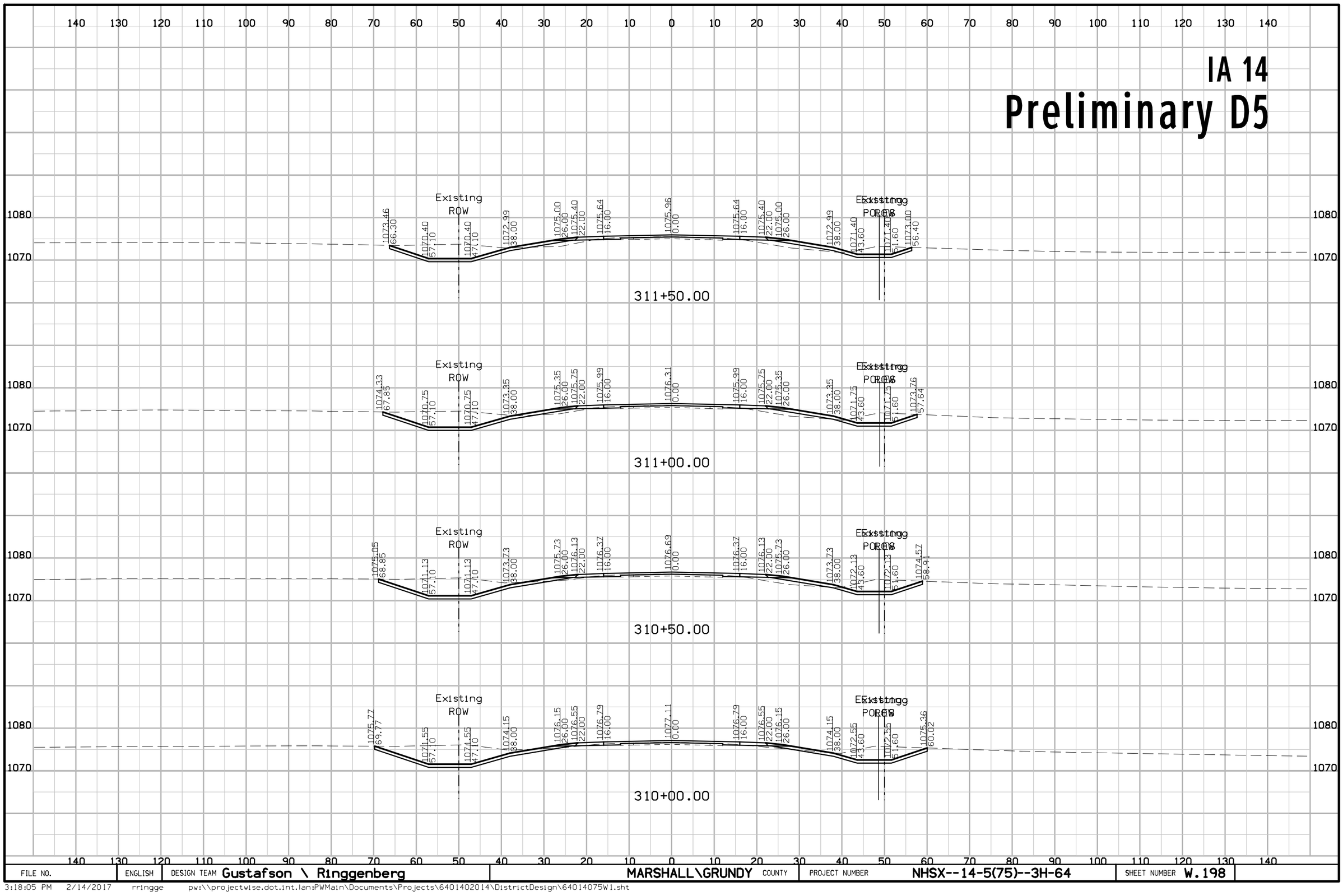
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.198

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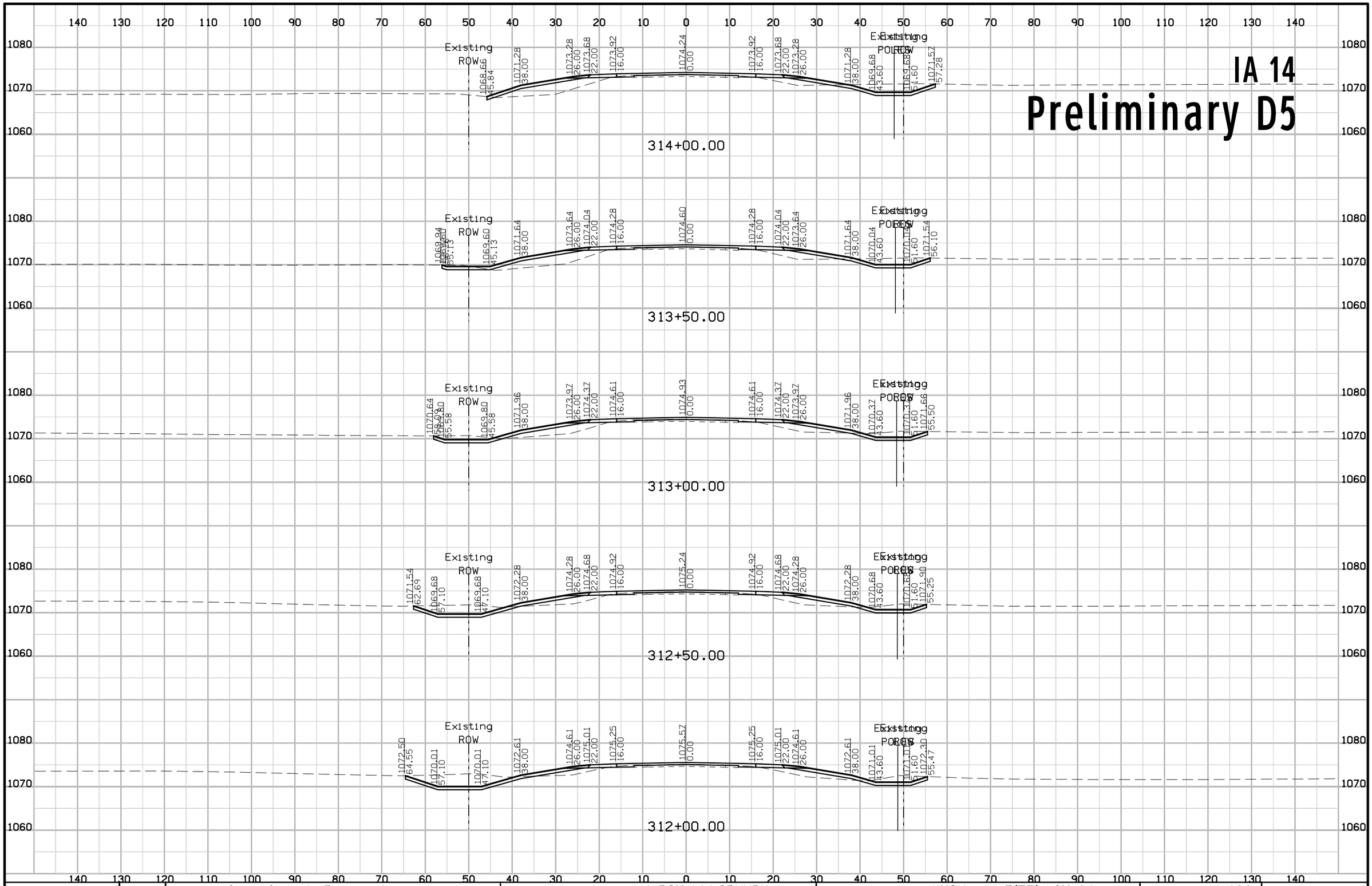
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.199

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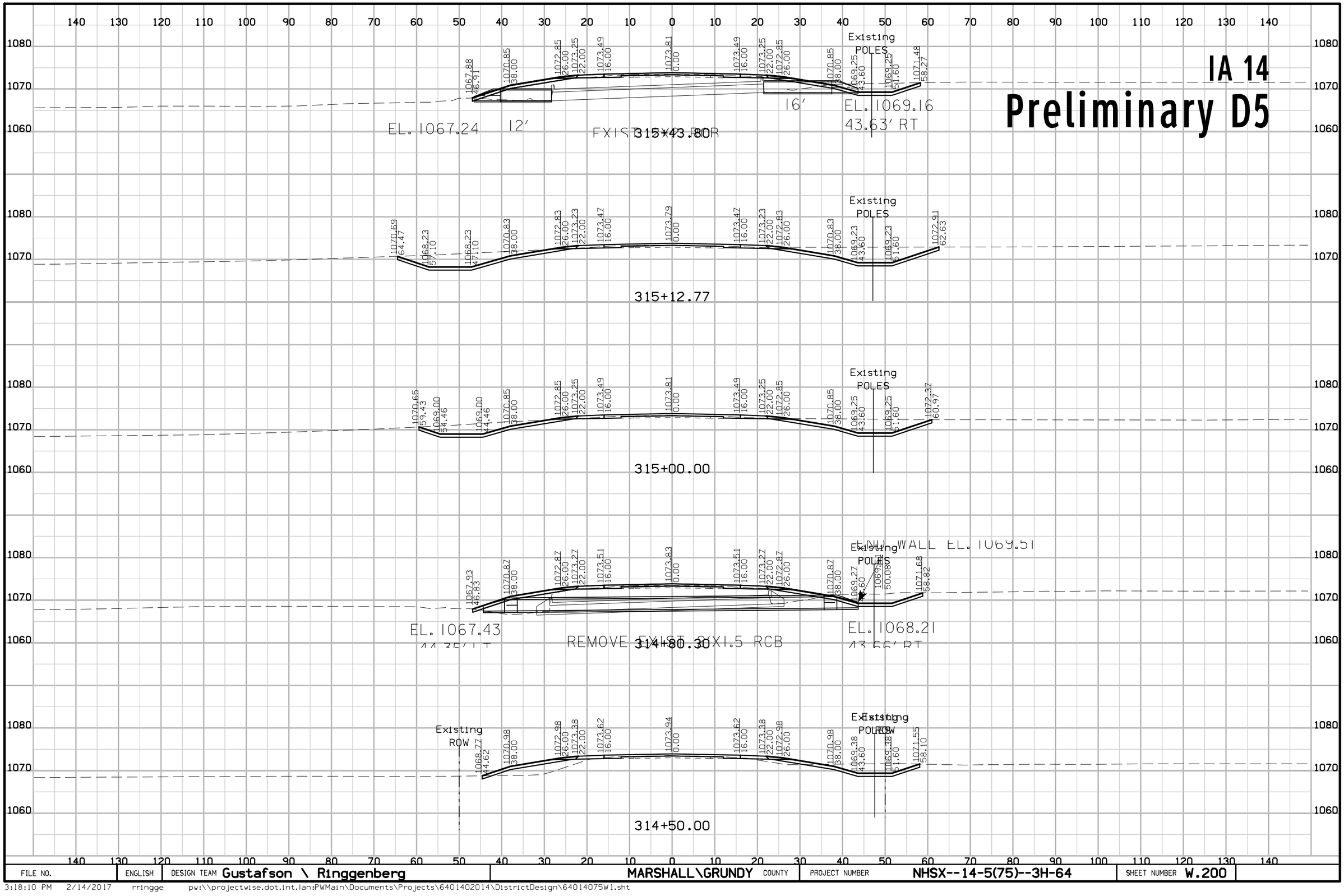
IA 14

Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.200

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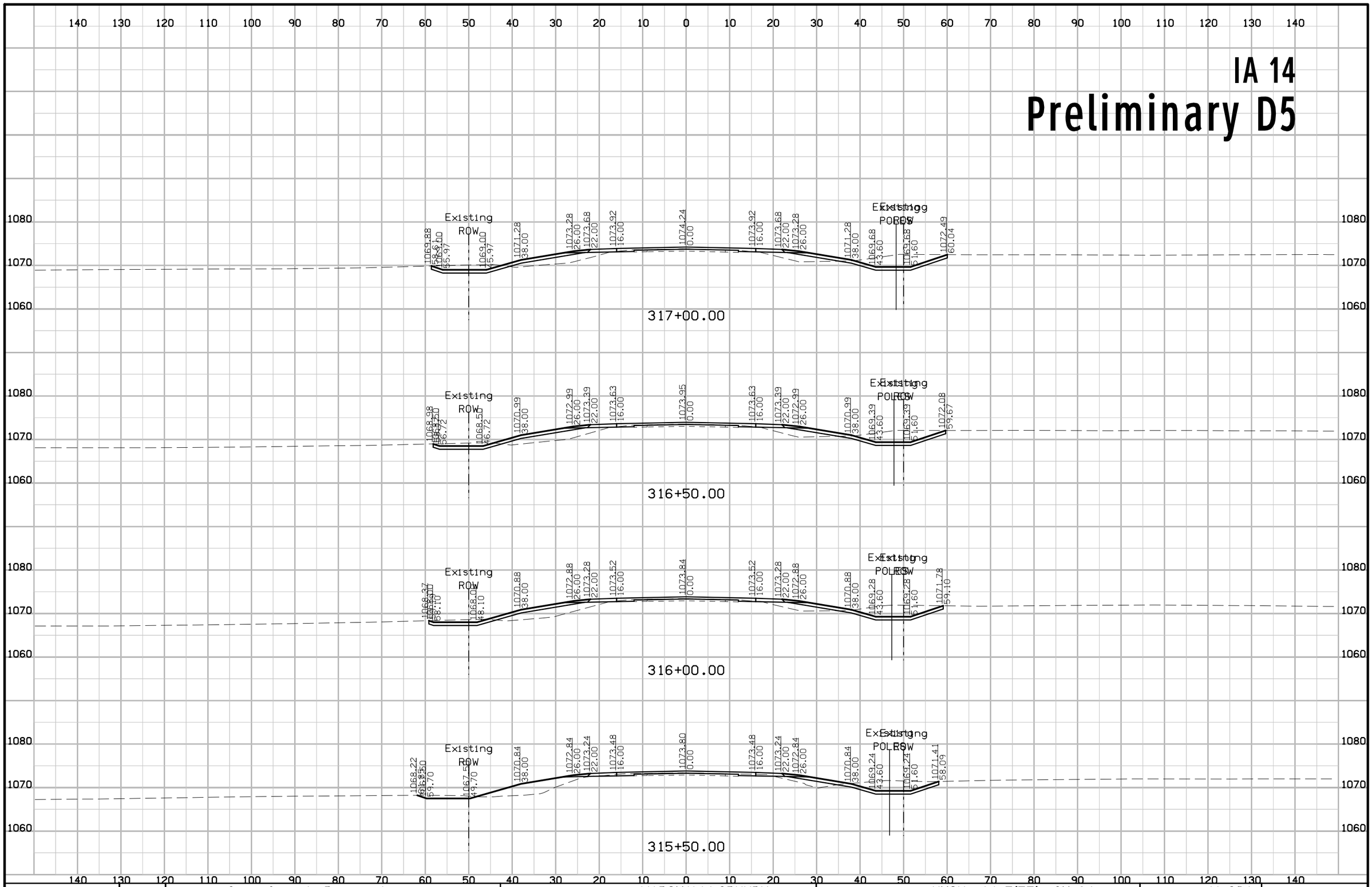
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.201

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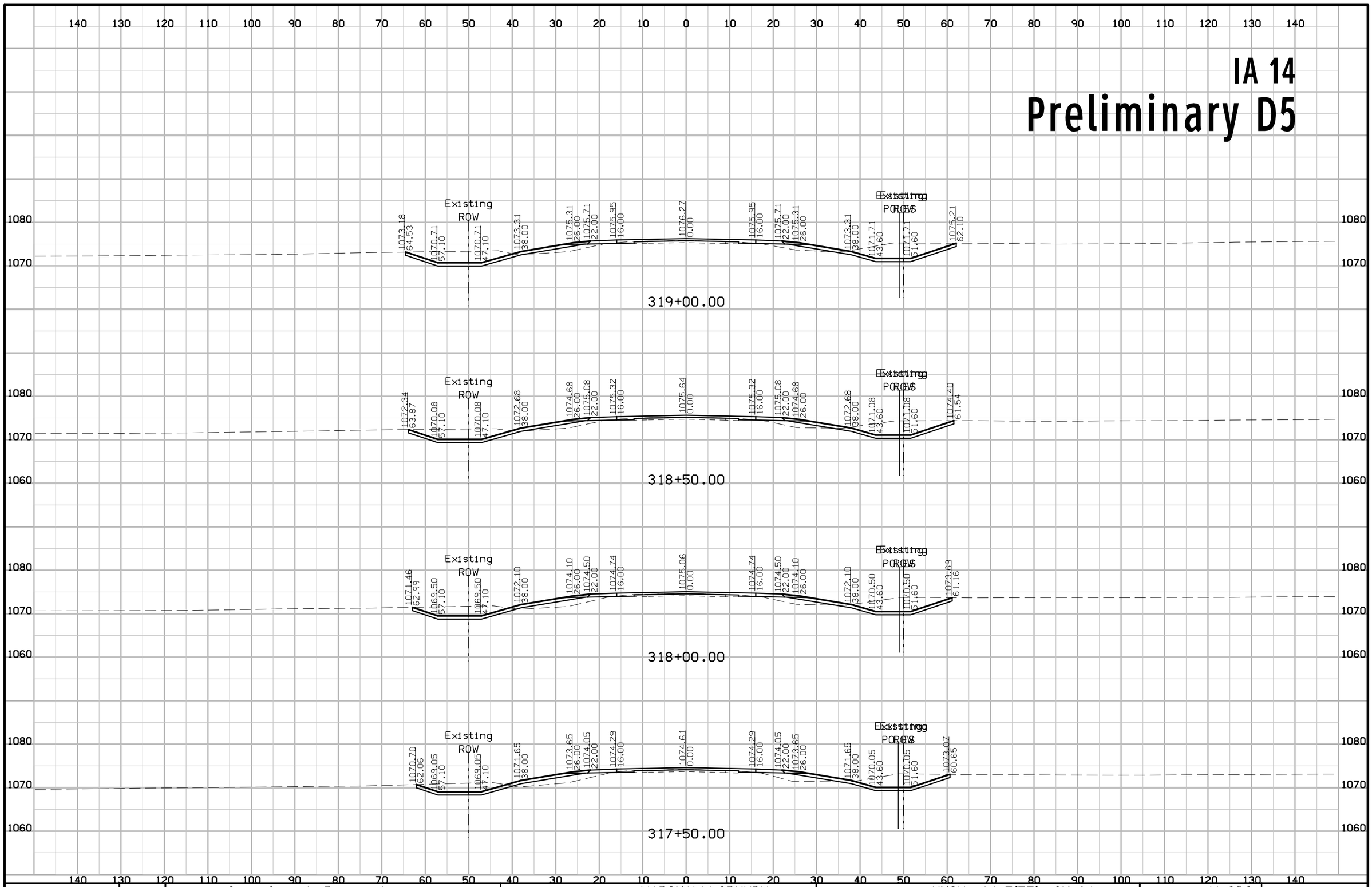
IA 14
Preliminary D5



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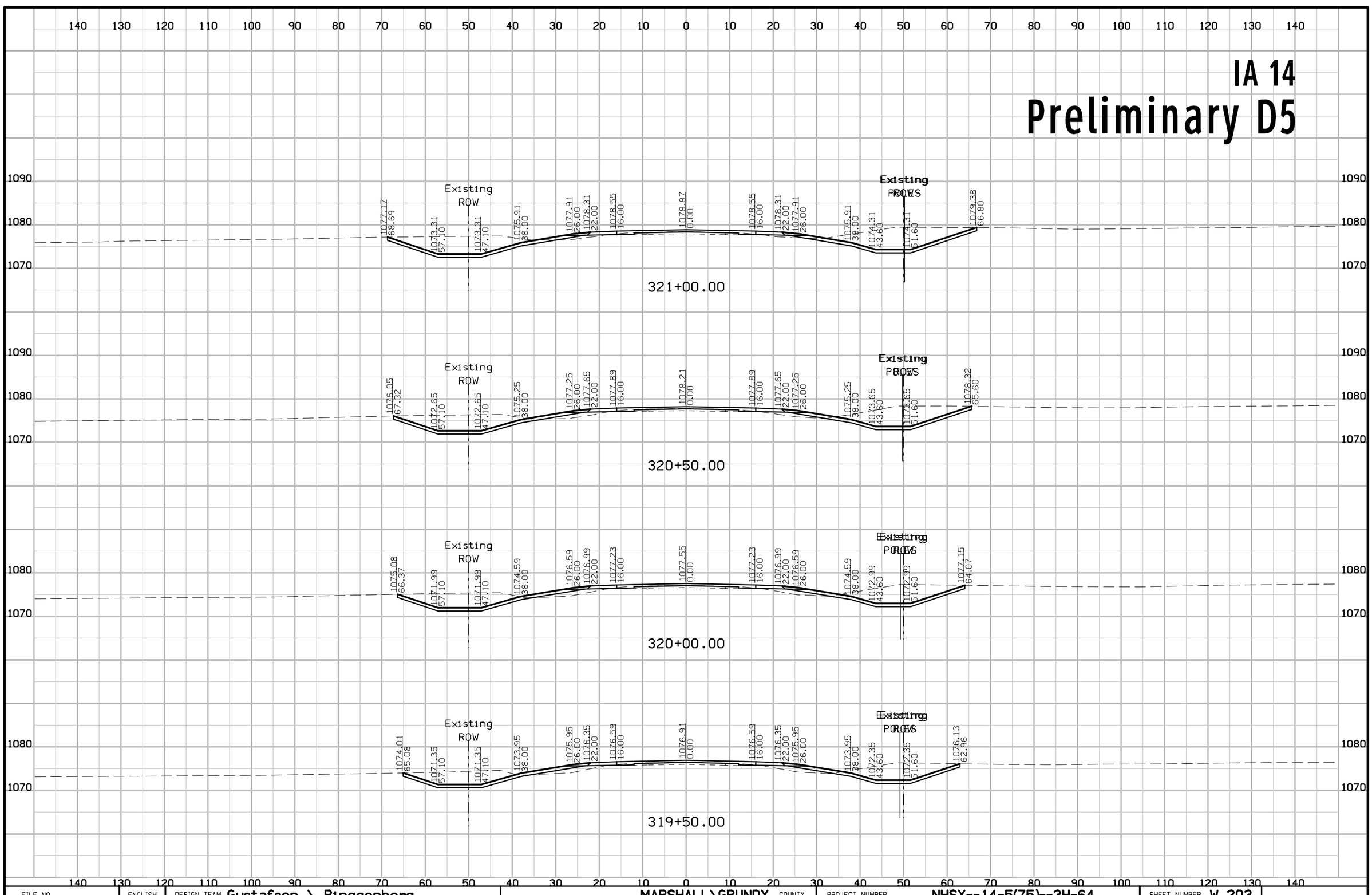
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.203

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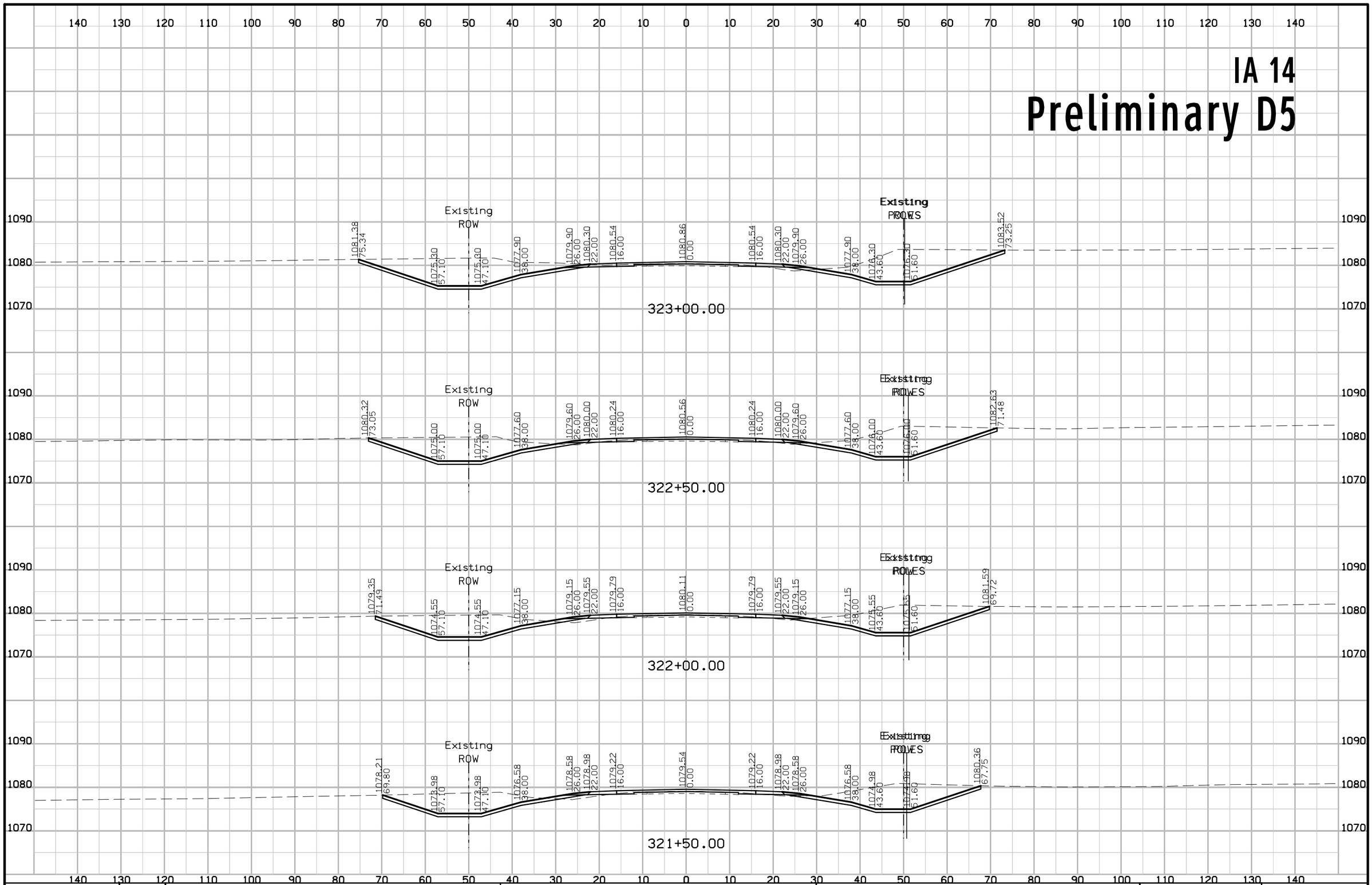
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.204

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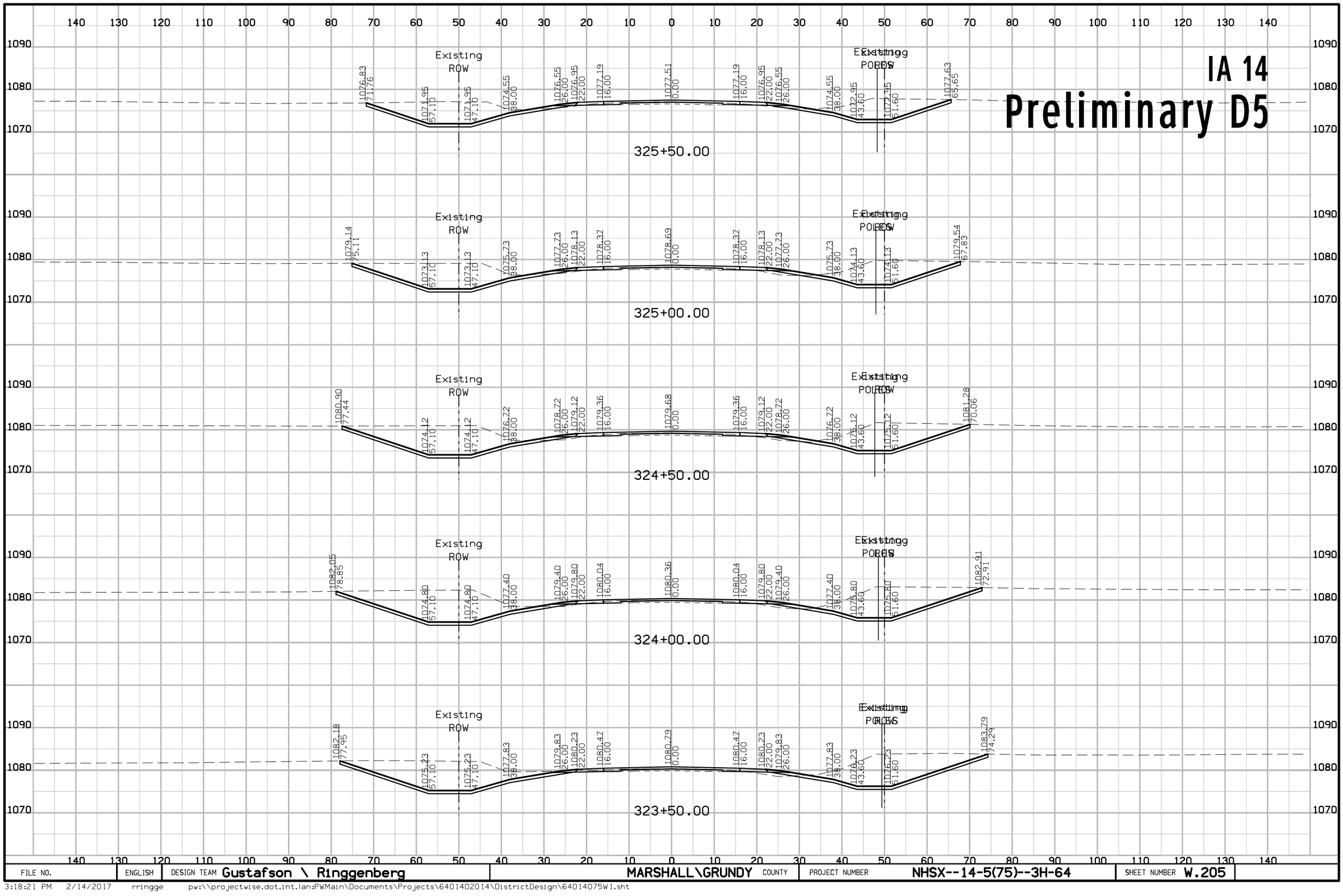
IA 14
Preliminary D5



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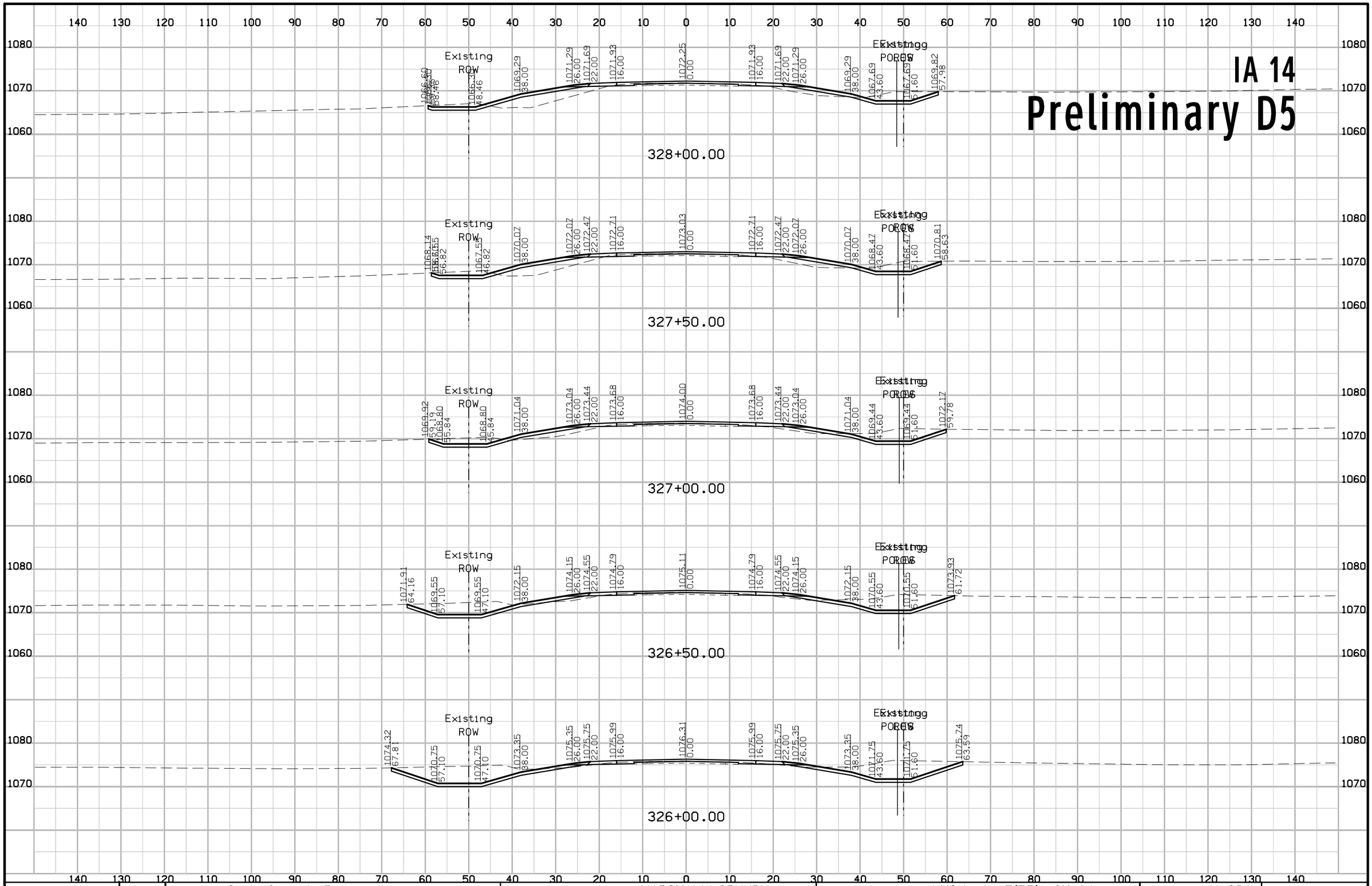
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.206

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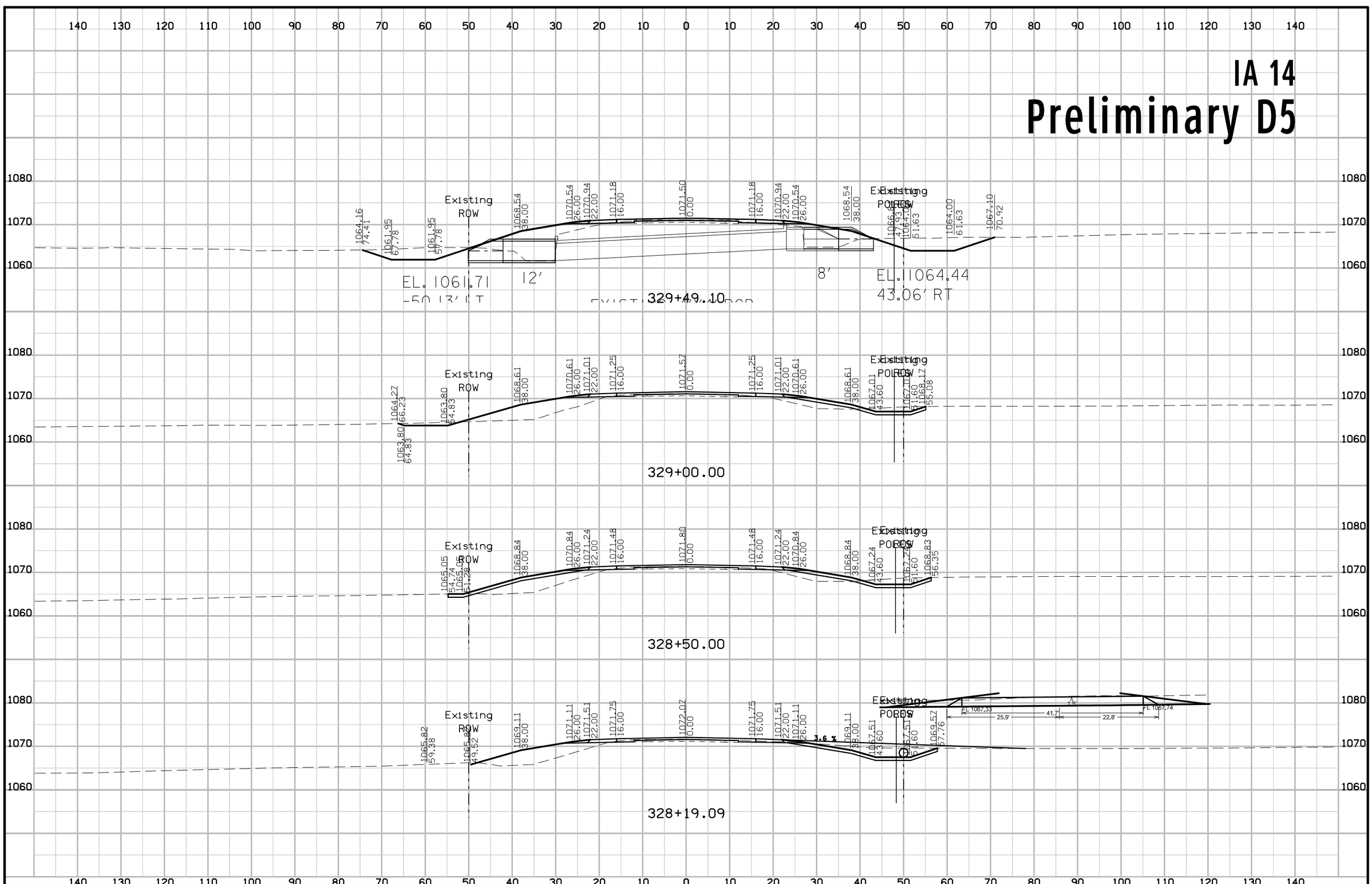
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.207

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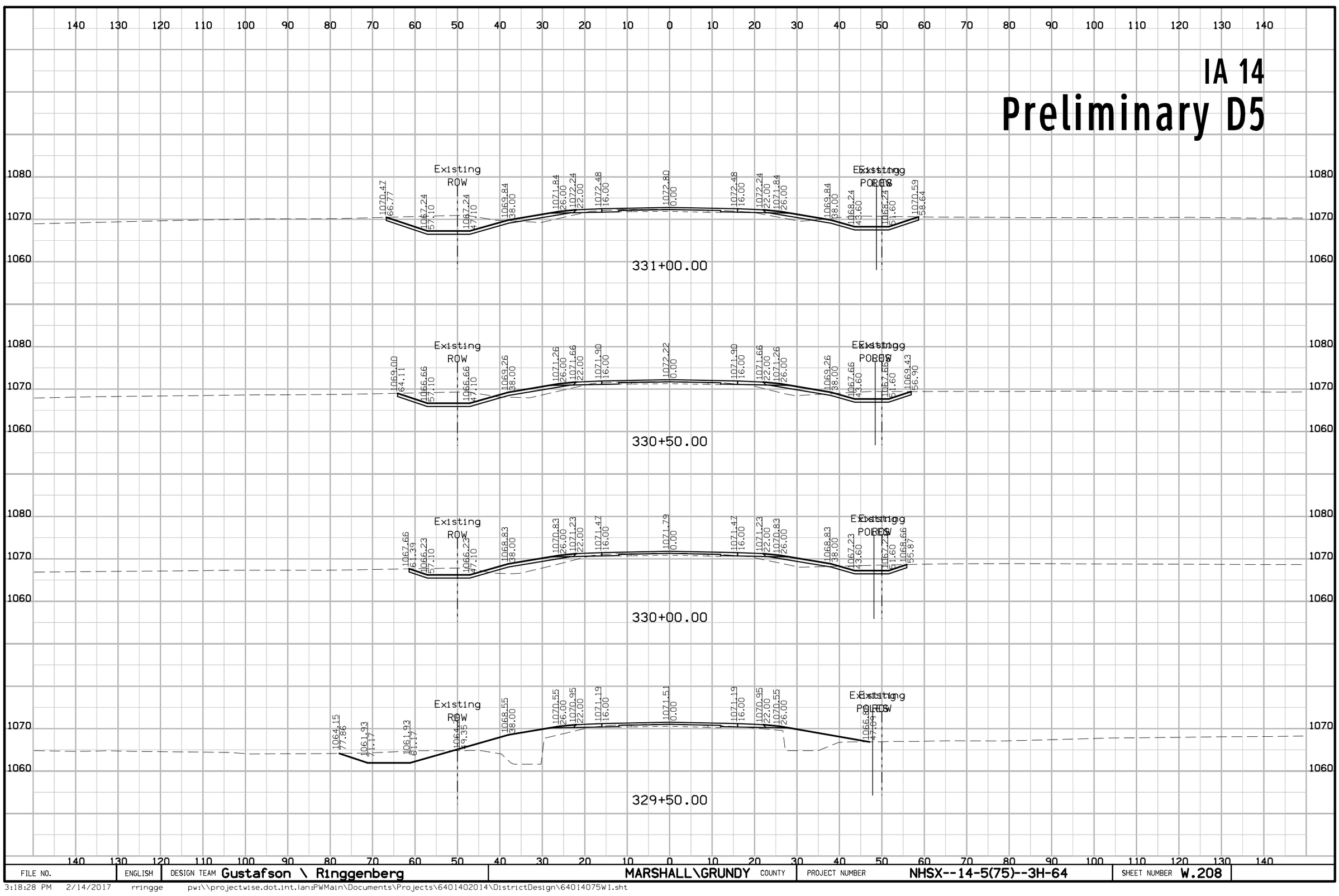
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.208

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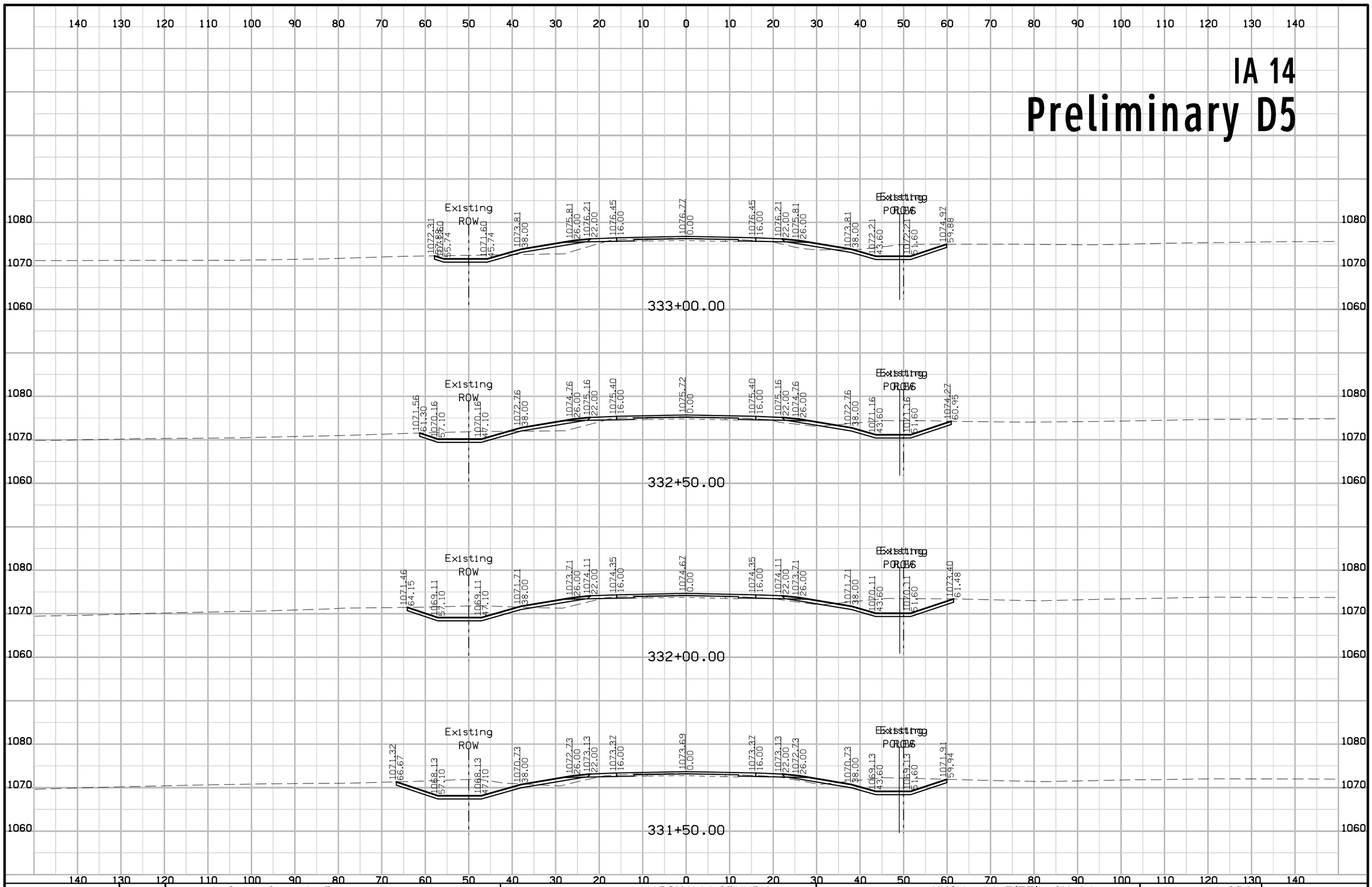
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.209

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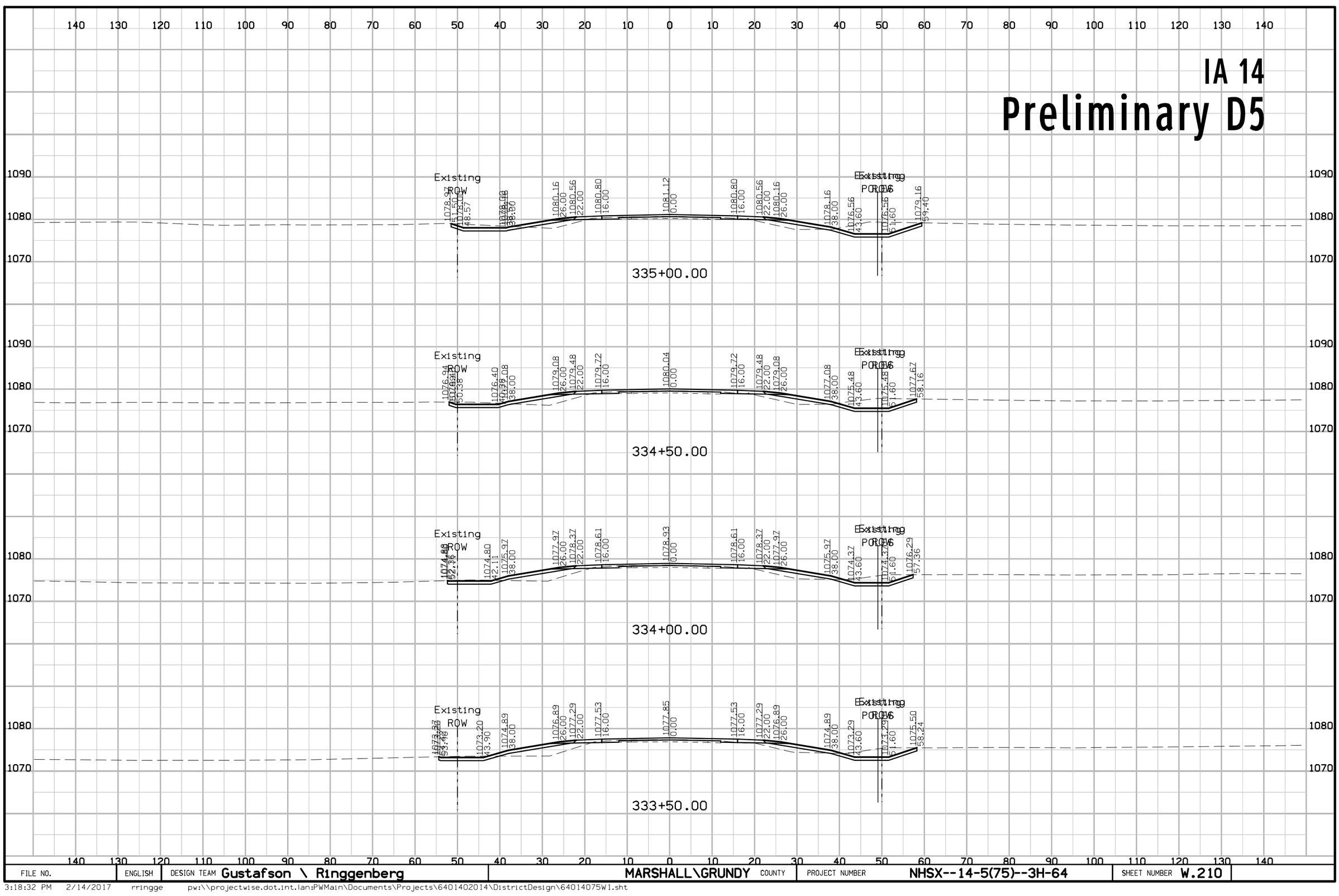
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.210

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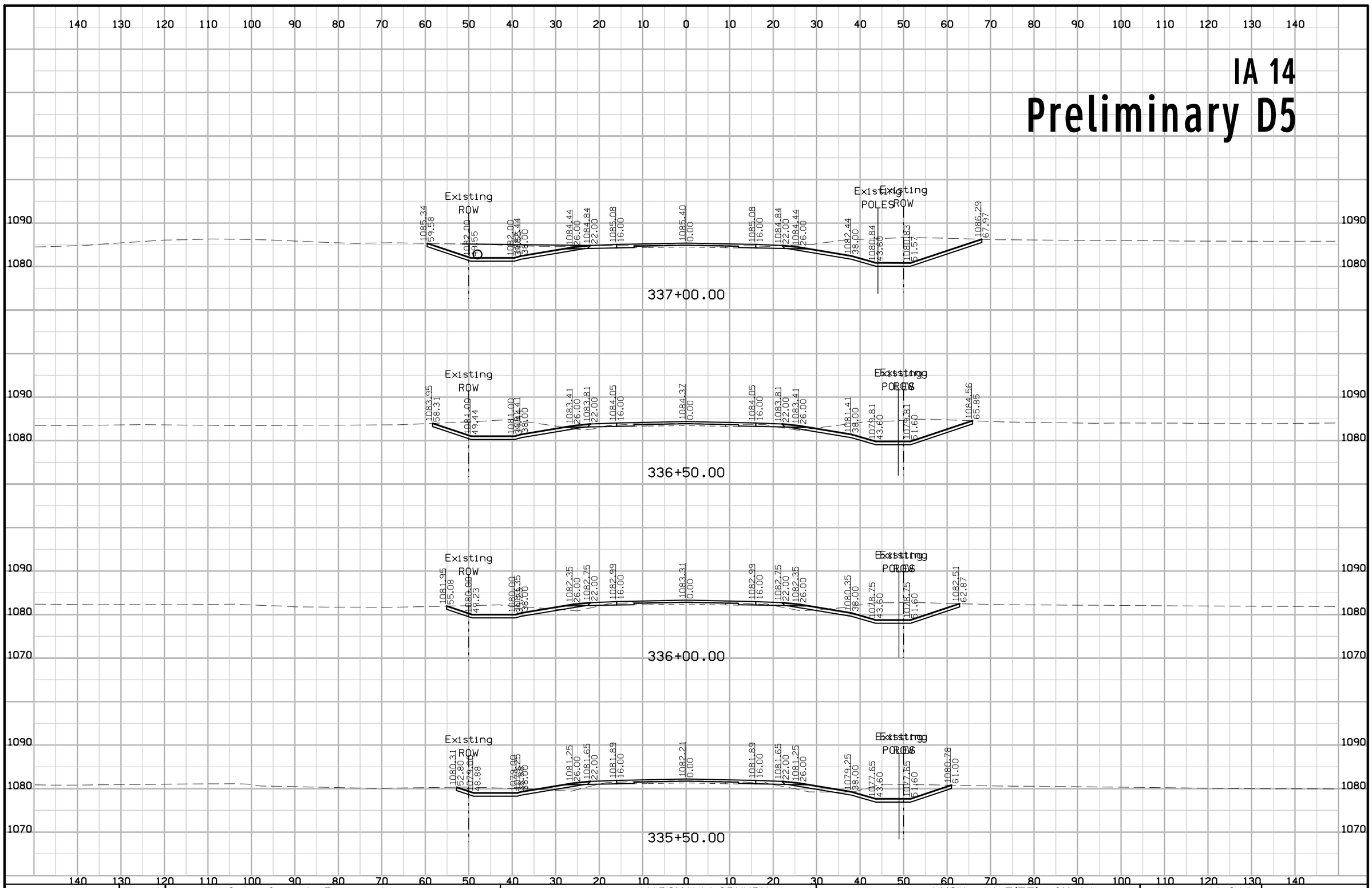
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.211

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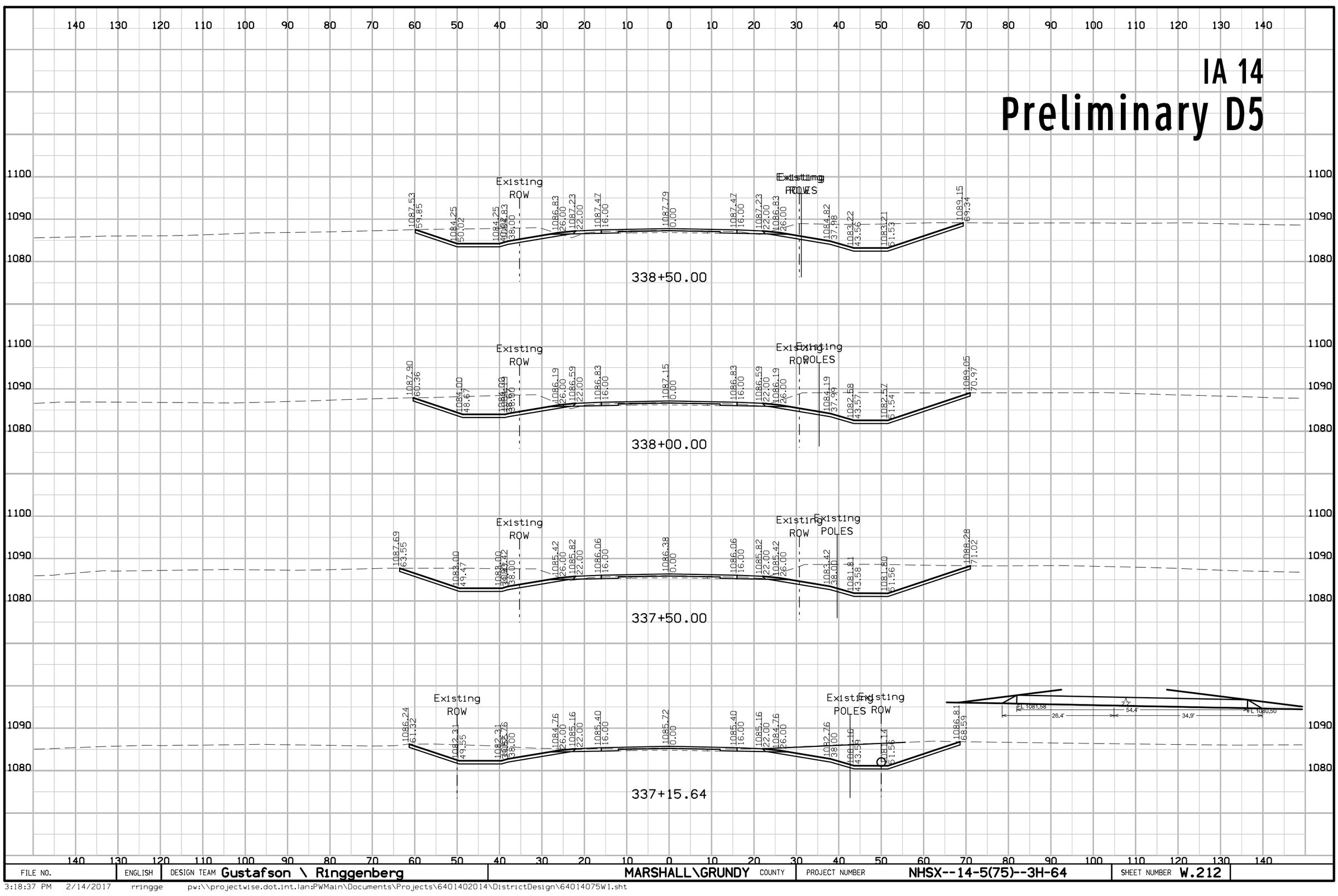
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.212

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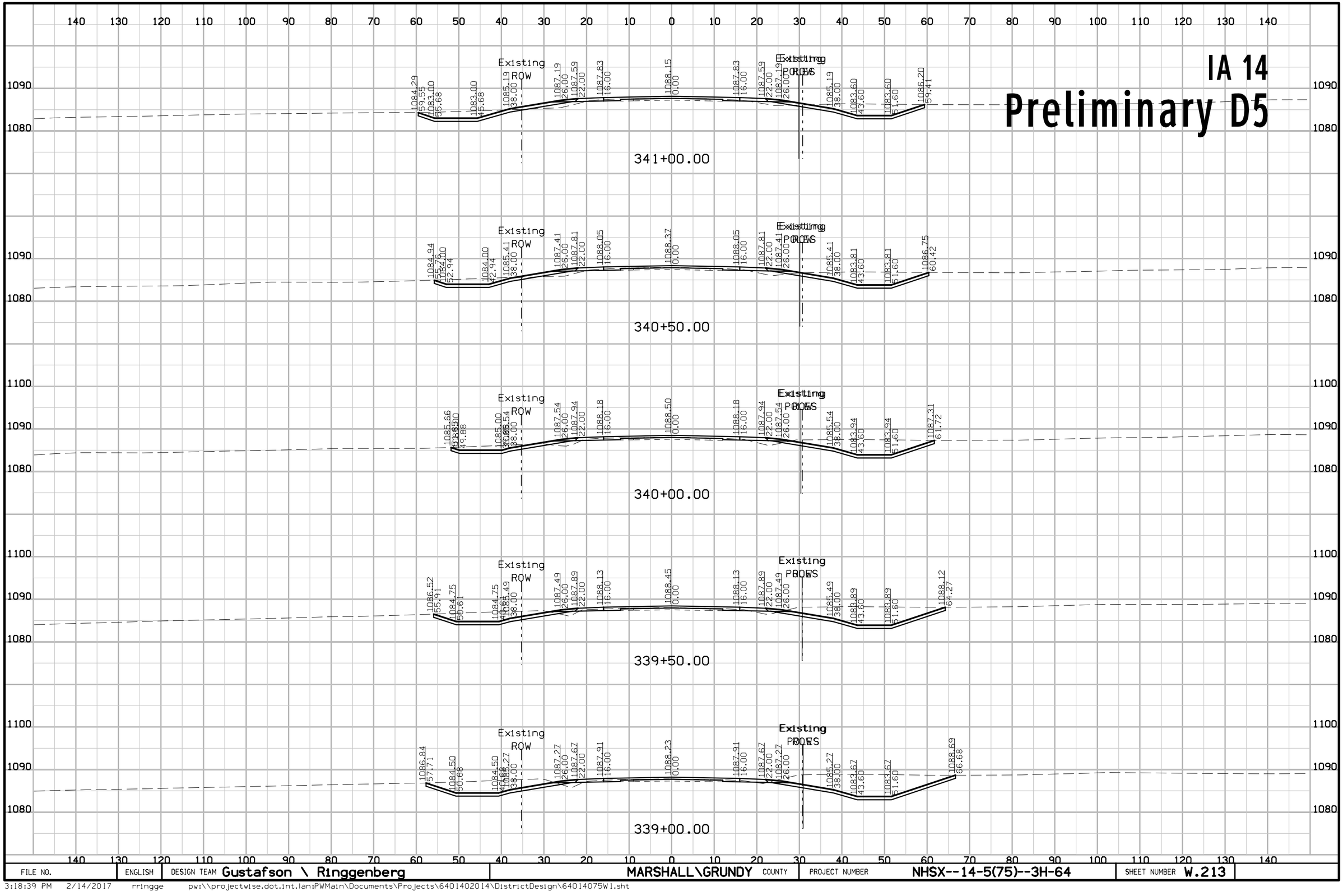
IA 14

Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.213

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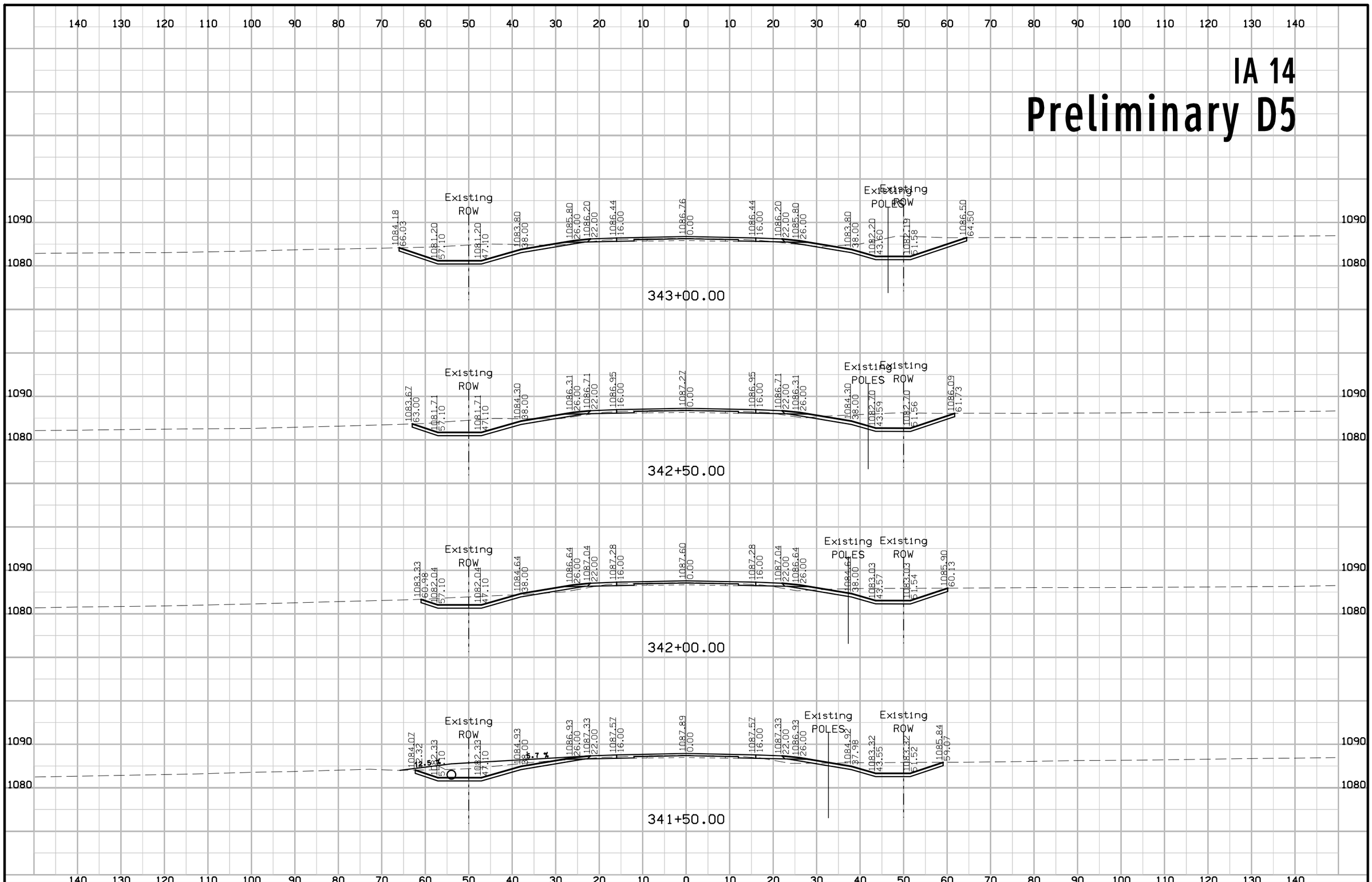
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.214

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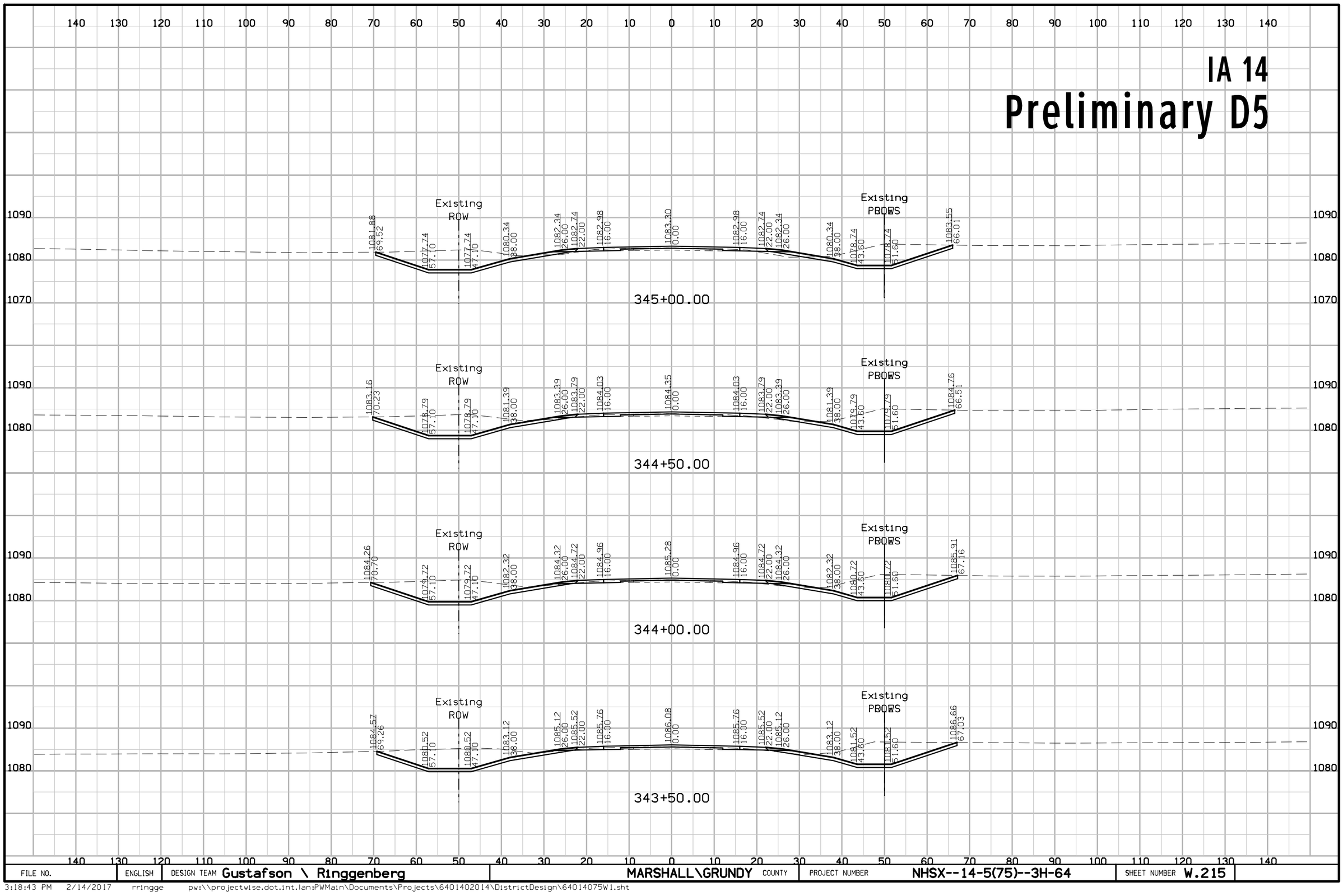
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.215

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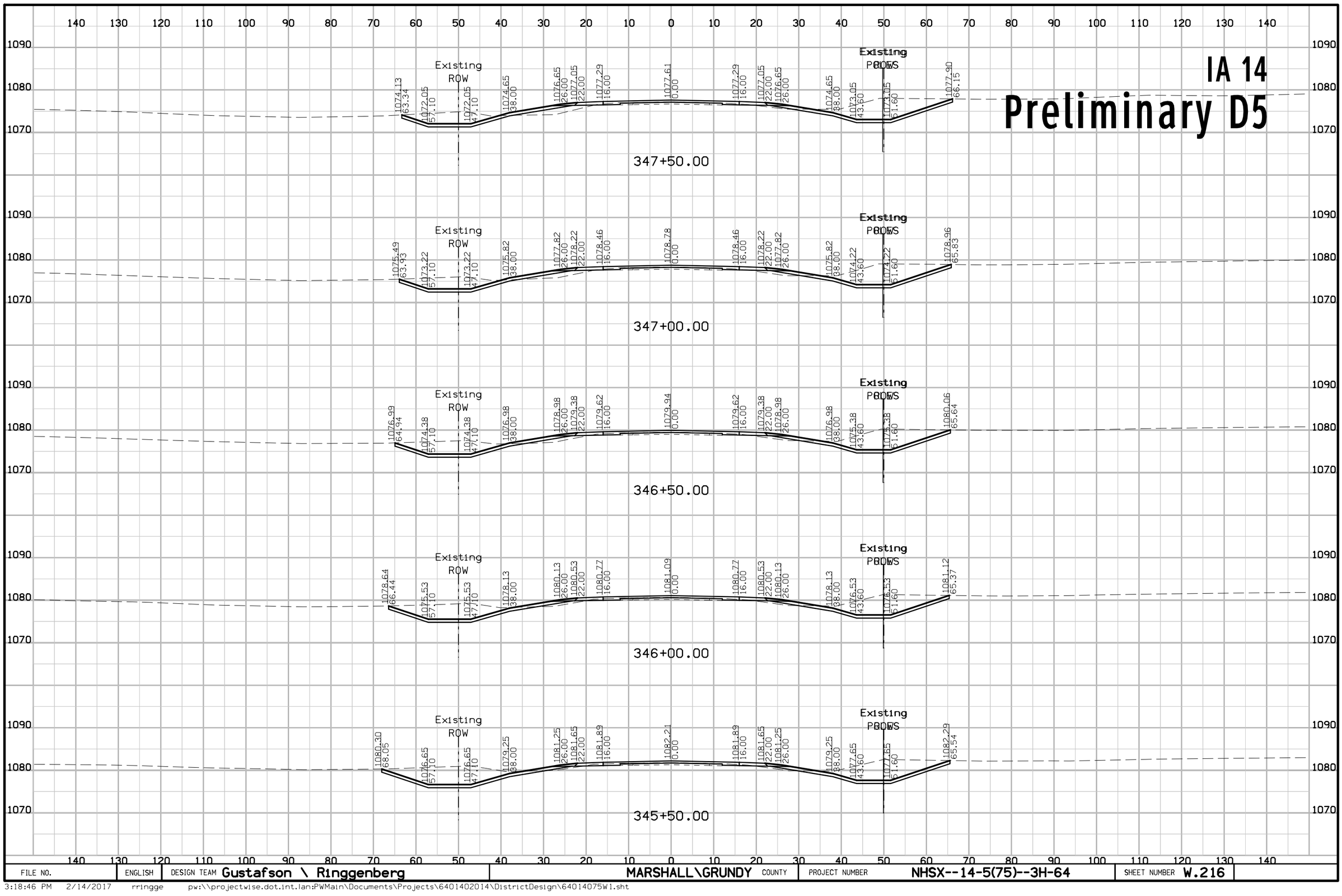
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.216

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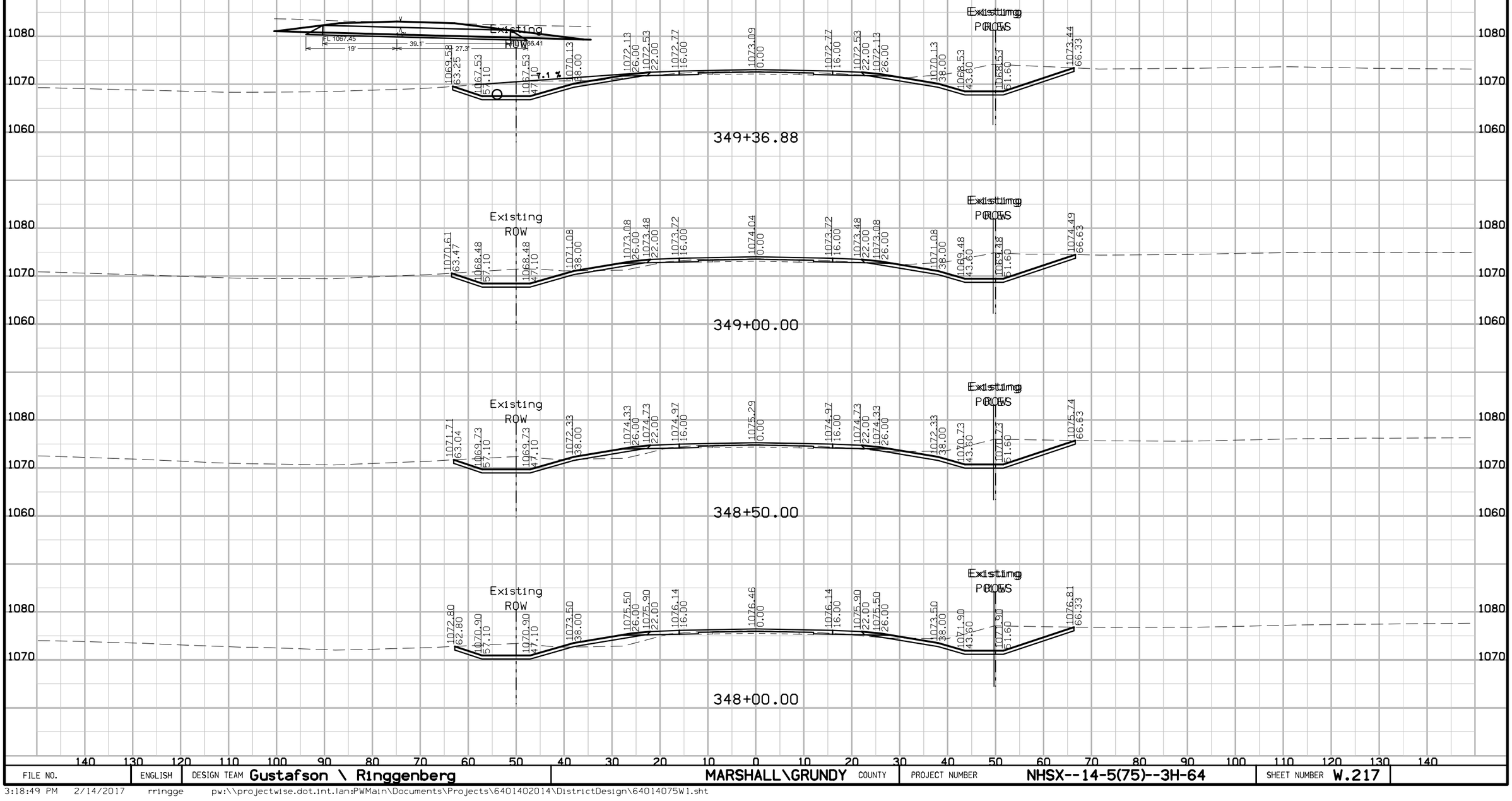
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.217

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IA 14
Preliminary D5

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

1070 / 1060

Existing ROW

1065.58 68.11 | 1061.91 57.10 | 1061.91 47.10 | 1064.51 38.00 | 1066.51 26.00 | 1066.91 22.00 | 1067.15 16.00 | 1067.47 0.00 | 1067.15 16.00 | 1066.91 22.00 | 1066.51 26.00 | 1064.51 38.00 | 1062.91 43.60 | 1062.91 61.60 | 1066.51 62.41

Existing PGL

351+50.00

1080 / 1070 / 1060

Existing ROW

1066.48 66.97 | 1063.19 57.10 | 1068.19 47.10 | 1065.79 38.00 | 1067.79 26.00 | 1068.19 22.00 | 1068.43 16.00 | 1068.75 0.00 | 1068.43 16.00 | 1068.19 22.00 | 1067.79 26.00 | 1065.79 38.00 | 1064.19 43.60 | 1064.19 61.60 | 1068.12 63.38

Existing PGL

351+00.00

1080 / 1070 / 1060

Existing ROW

1067.32 65.49 | 1064.52 57.10 | 1064.52 47.10 | 1067.12 38.00 | 1069.12 26.00 | 1069.52 22.00 | 1069.76 16.00 | 1070.08 0.00 | 1069.76 16.00 | 1069.52 22.00 | 1069.12 26.00 | 1067.12 38.00 | 1065.52 43.60 | 1065.52 61.60 | 1069.96 64.90

Existing PGL

350+50.00

1080 / 1070 / 1060

Existing ROW

1068.32 64.49 | 1065.85 57.10 | 1065.85 47.10 | 1068.45 38.00 | 1070.45 26.00 | 1070.85 22.00 | 1071.09 16.00 | 1071.41 0.00 | 1071.09 16.00 | 1070.85 22.00 | 1070.45 26.00 | 1068.45 38.00 | 1066.85 43.60 | 1068.85 61.60 | 1071.55 65.68

Existing PGL

350+00.00

1080 / 1070 / 1060

Existing ROW

1069.44 63.90 | 1067.18 57.10 | 1067.18 47.10 | 1069.78 38.00 | 1071.78 26.00 | 1072.18 22.00 | 1072.42 16.00 | 1072.74 0.00 | 1072.42 16.00 | 1072.18 22.00 | 1071.78 26.00 | 1069.78 38.00 | 1068.18 43.60 | 1068.18 61.60 | 1073.11 66.39

Existing PGL

349+50.00

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

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.218

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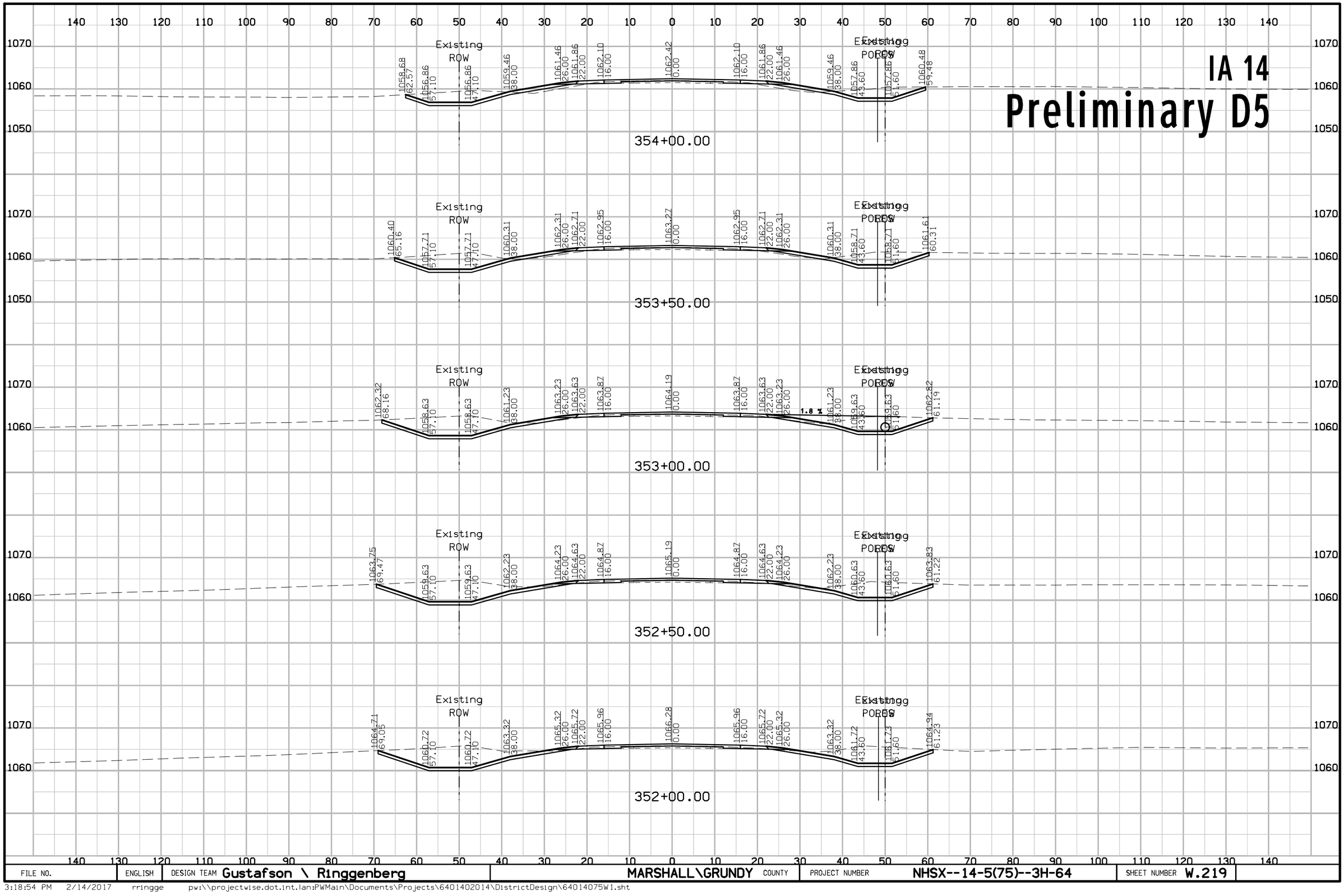
IA 14
Preliminary D5



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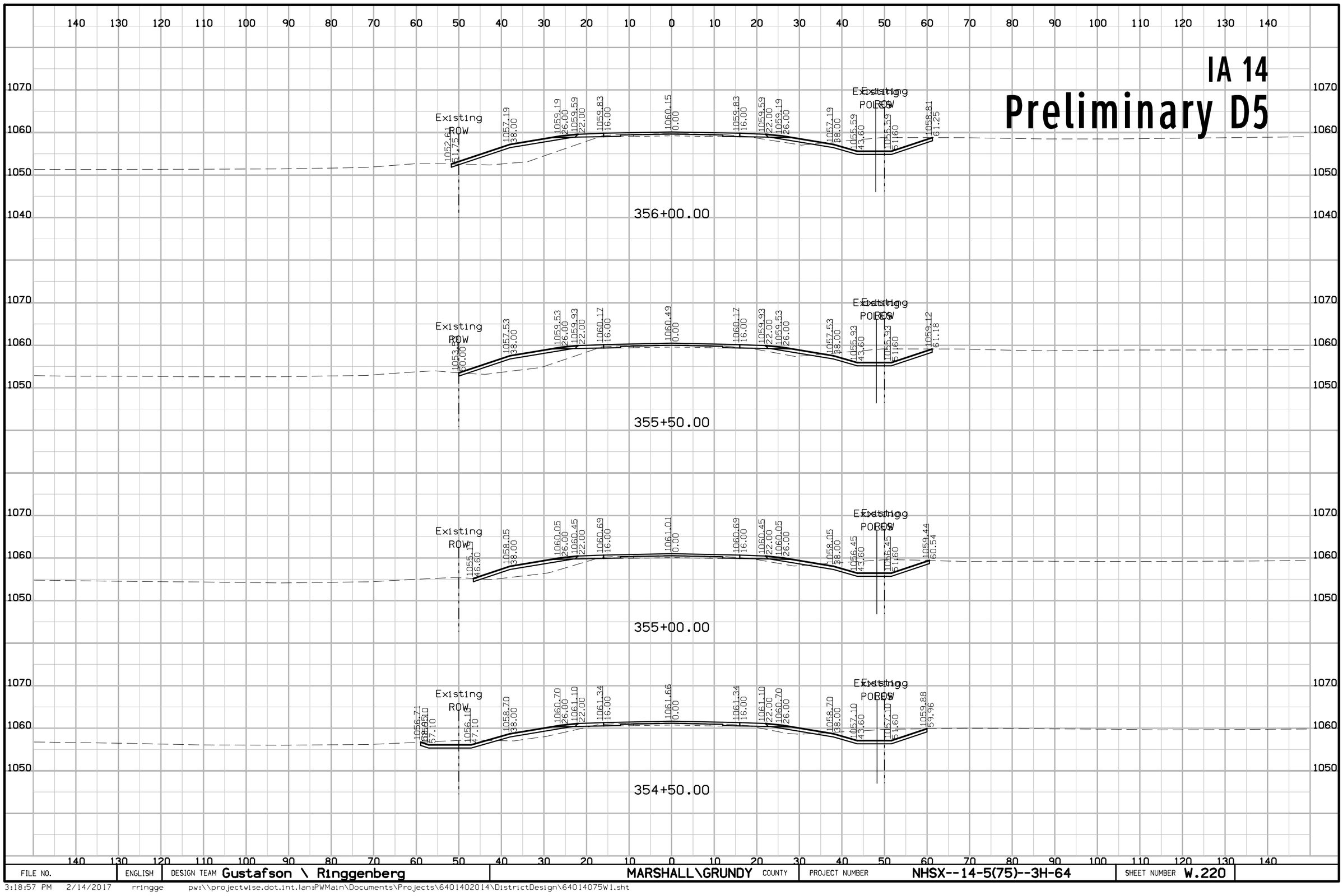
IA 14
Preliminary D5



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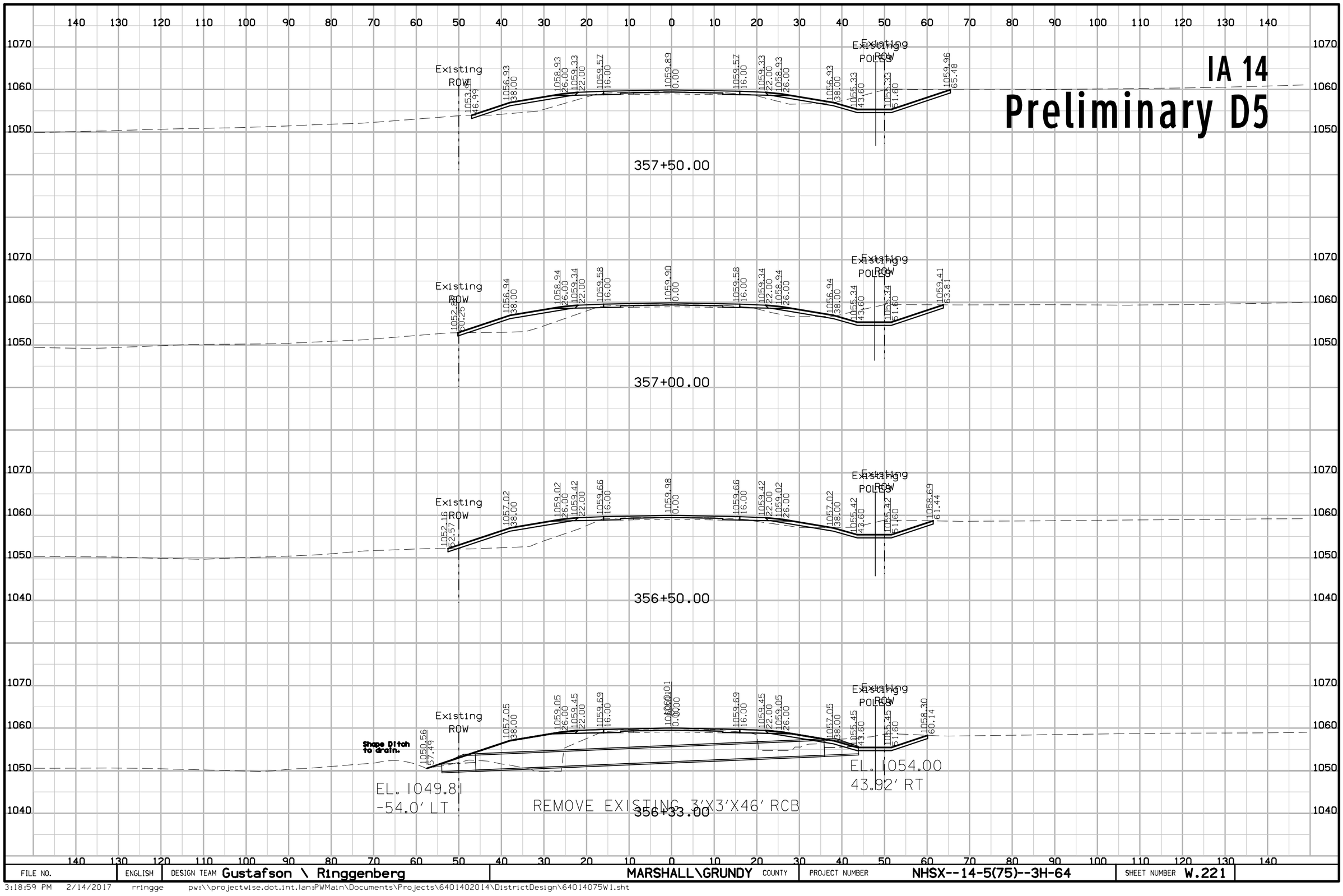
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.221

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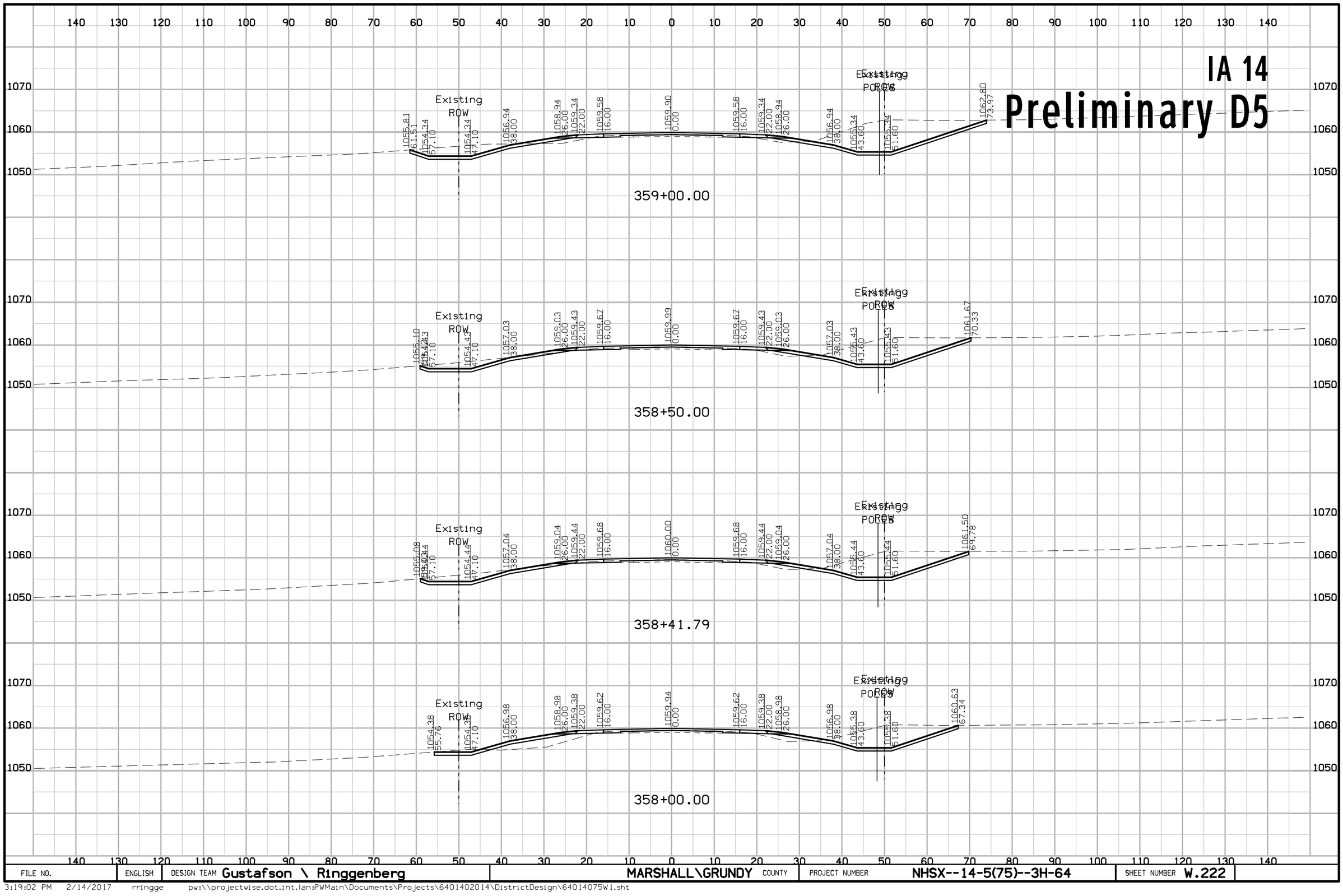
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.222

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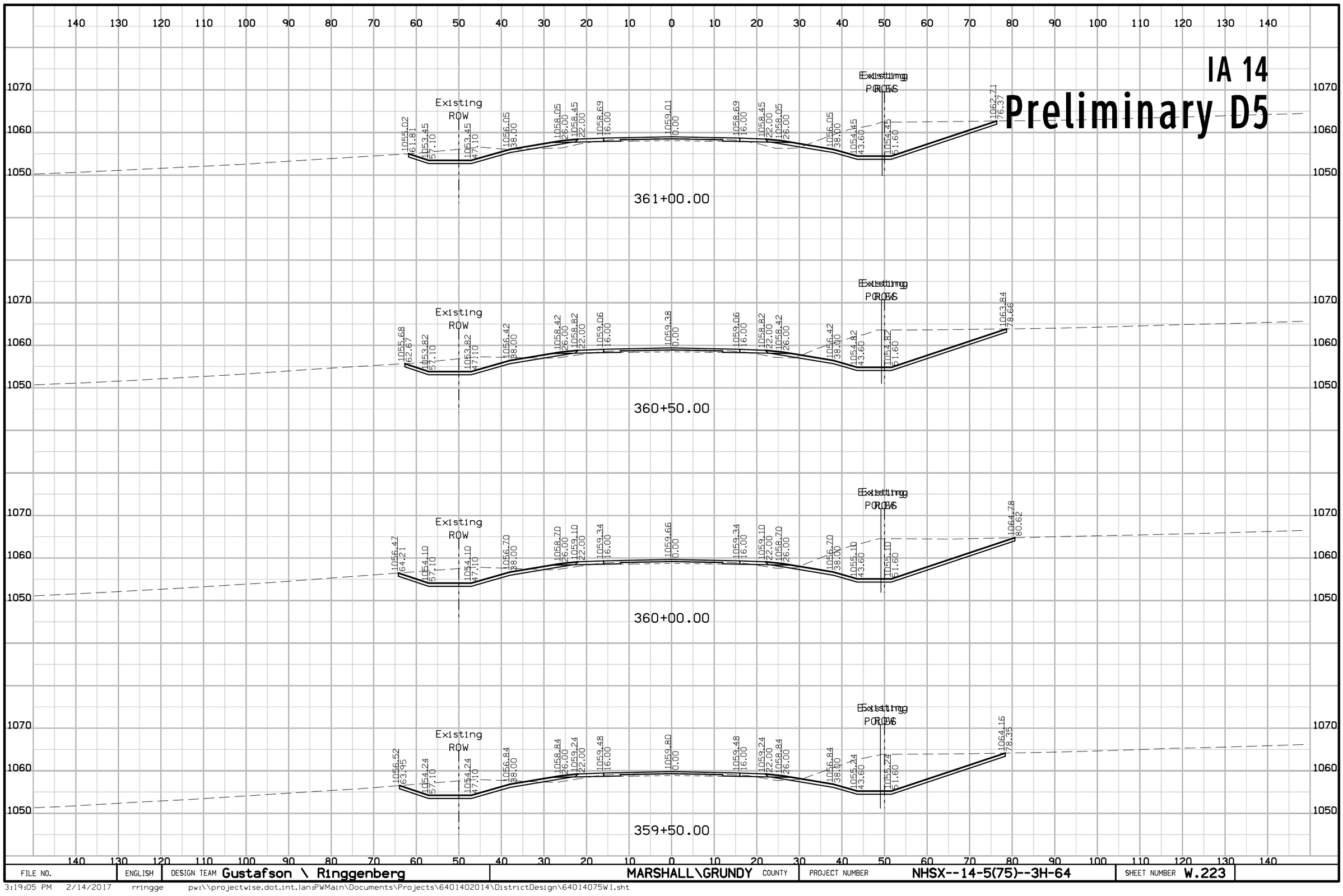
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.223

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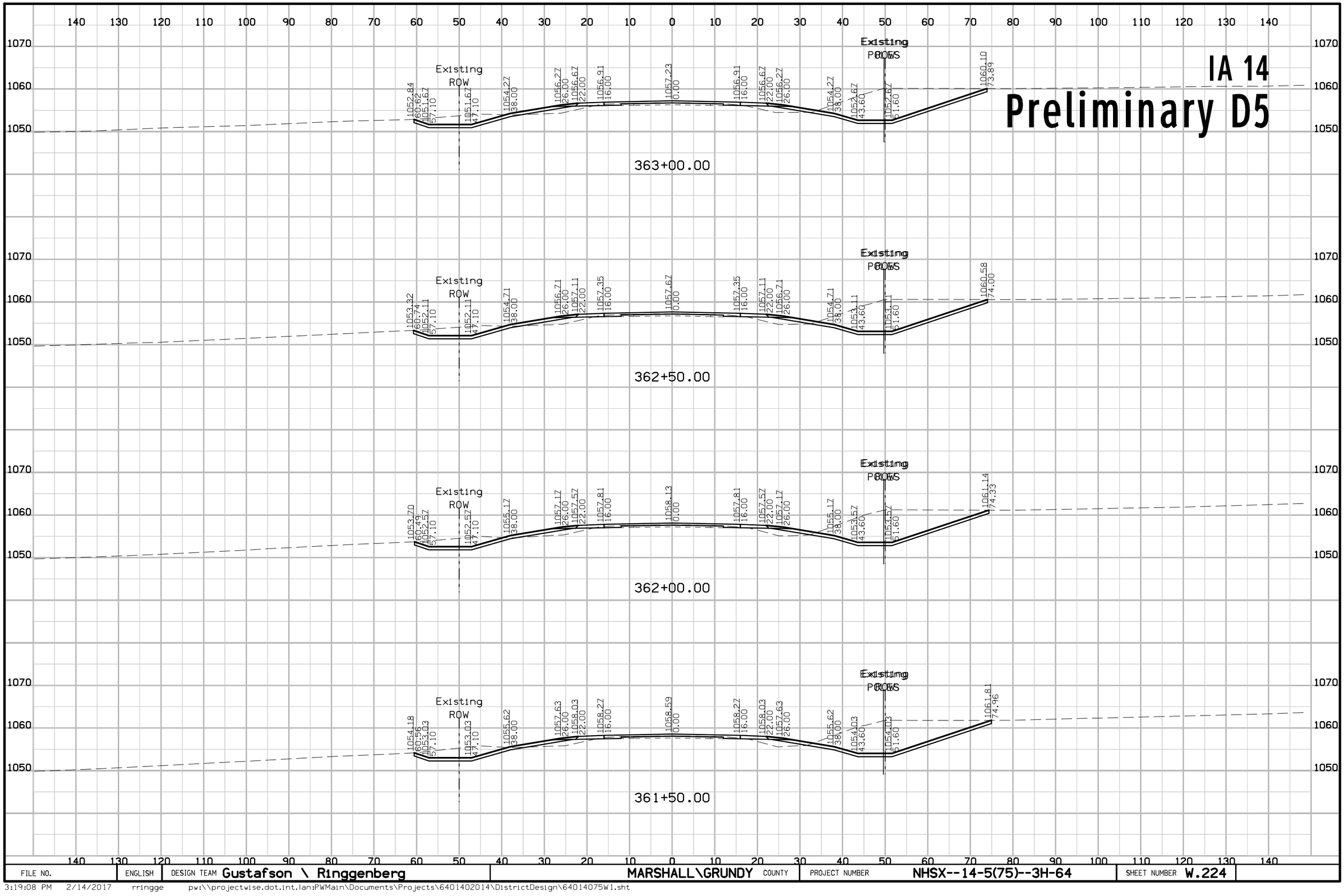
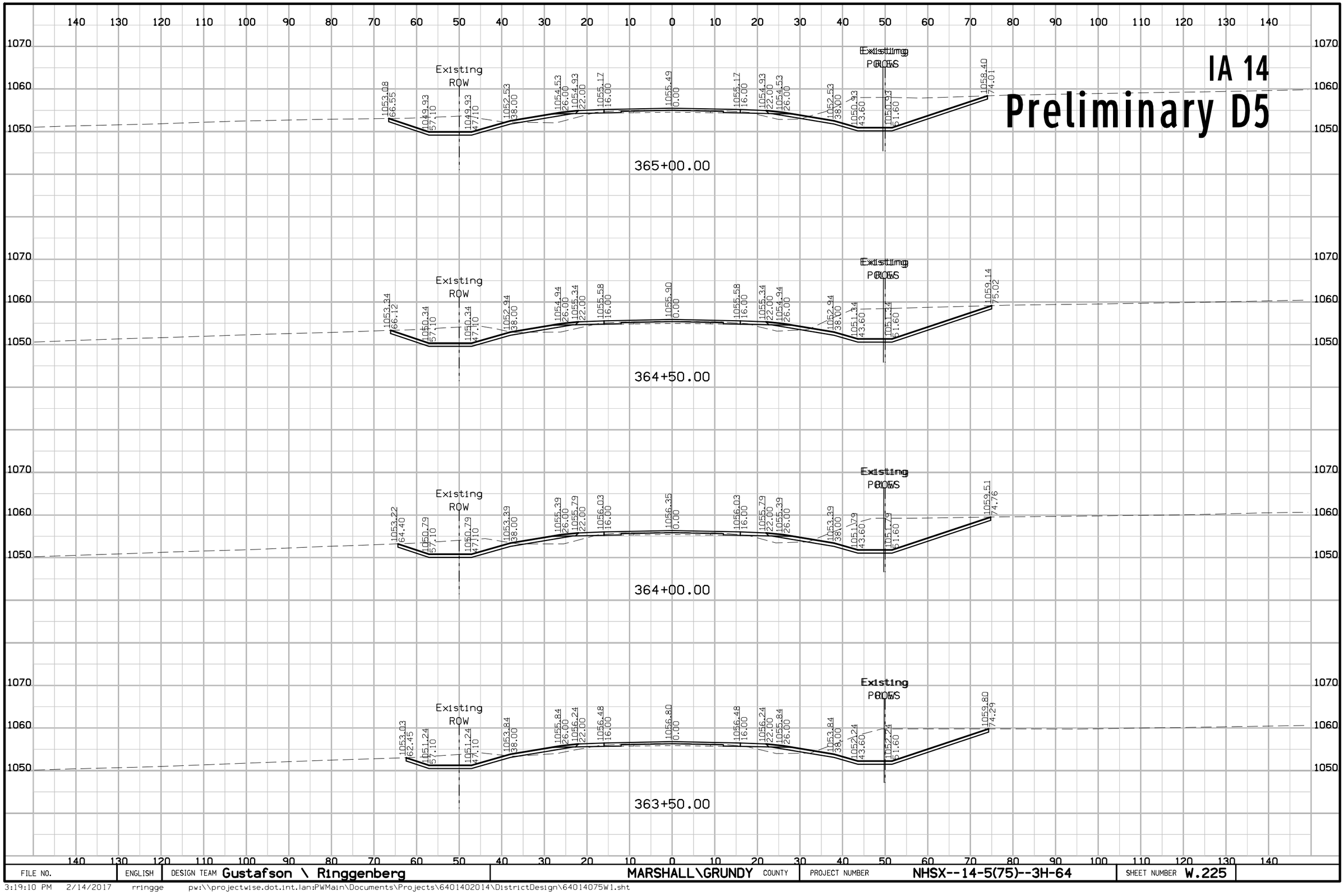
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.224

IA 14
Preliminary D5



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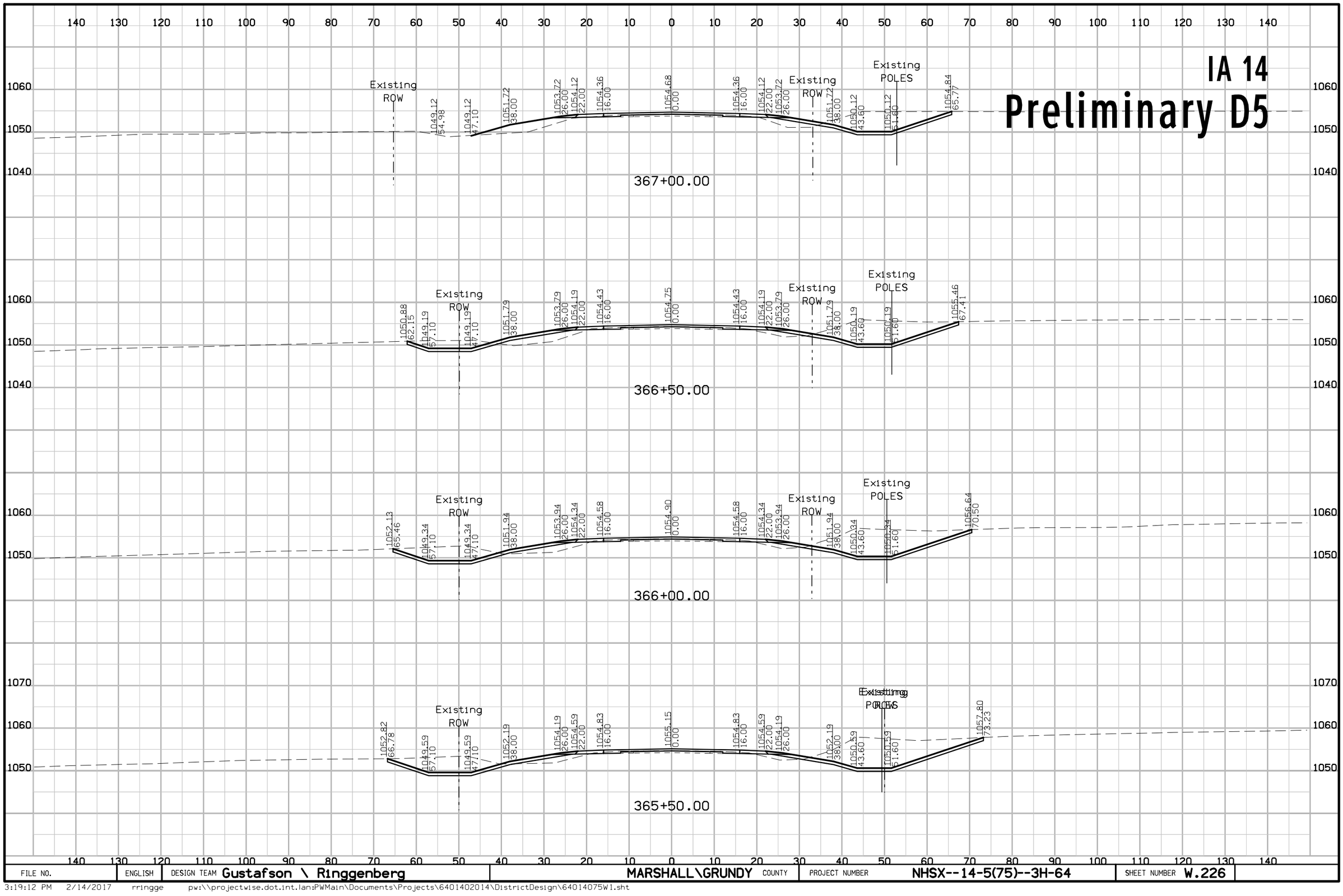
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.226

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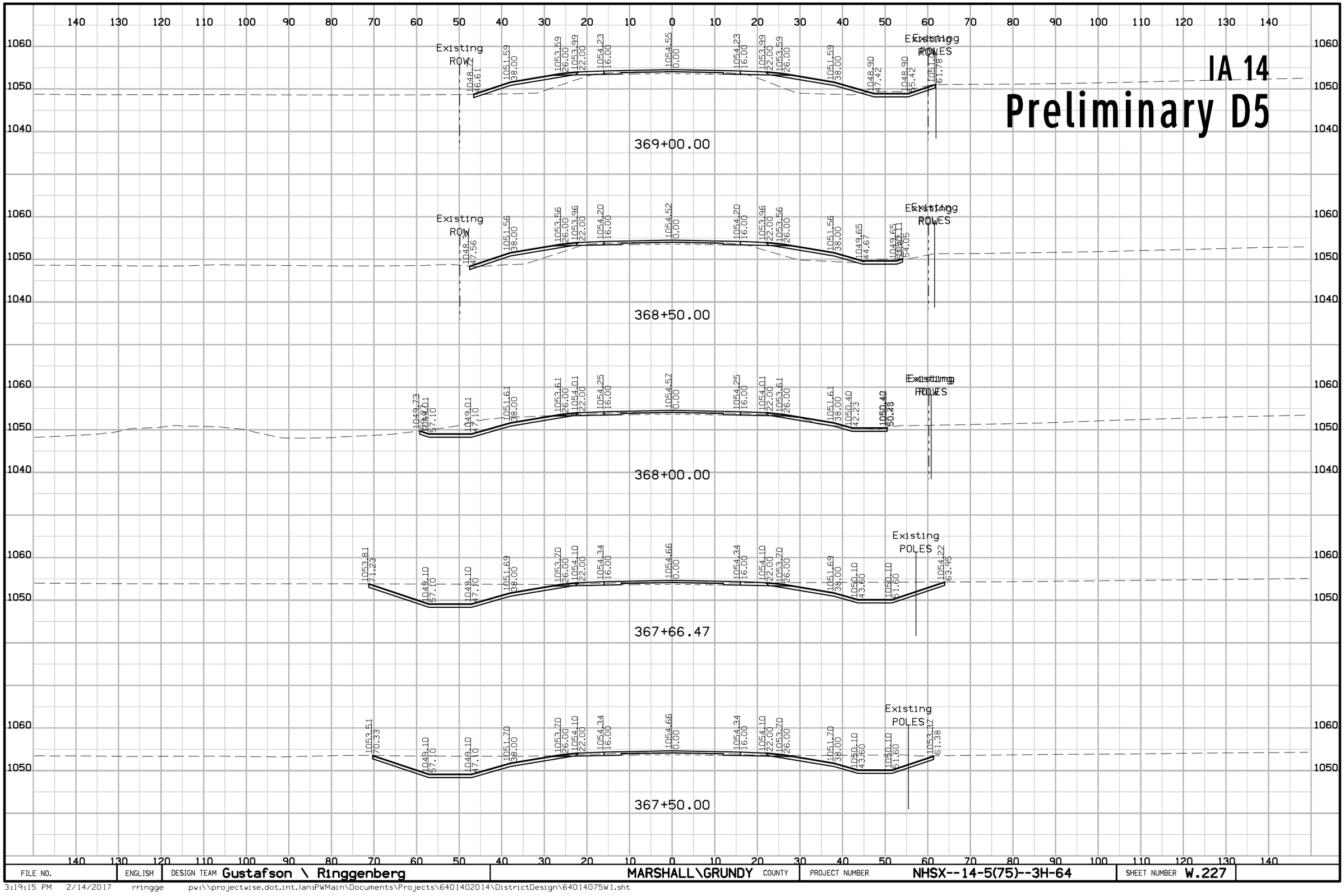
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.227

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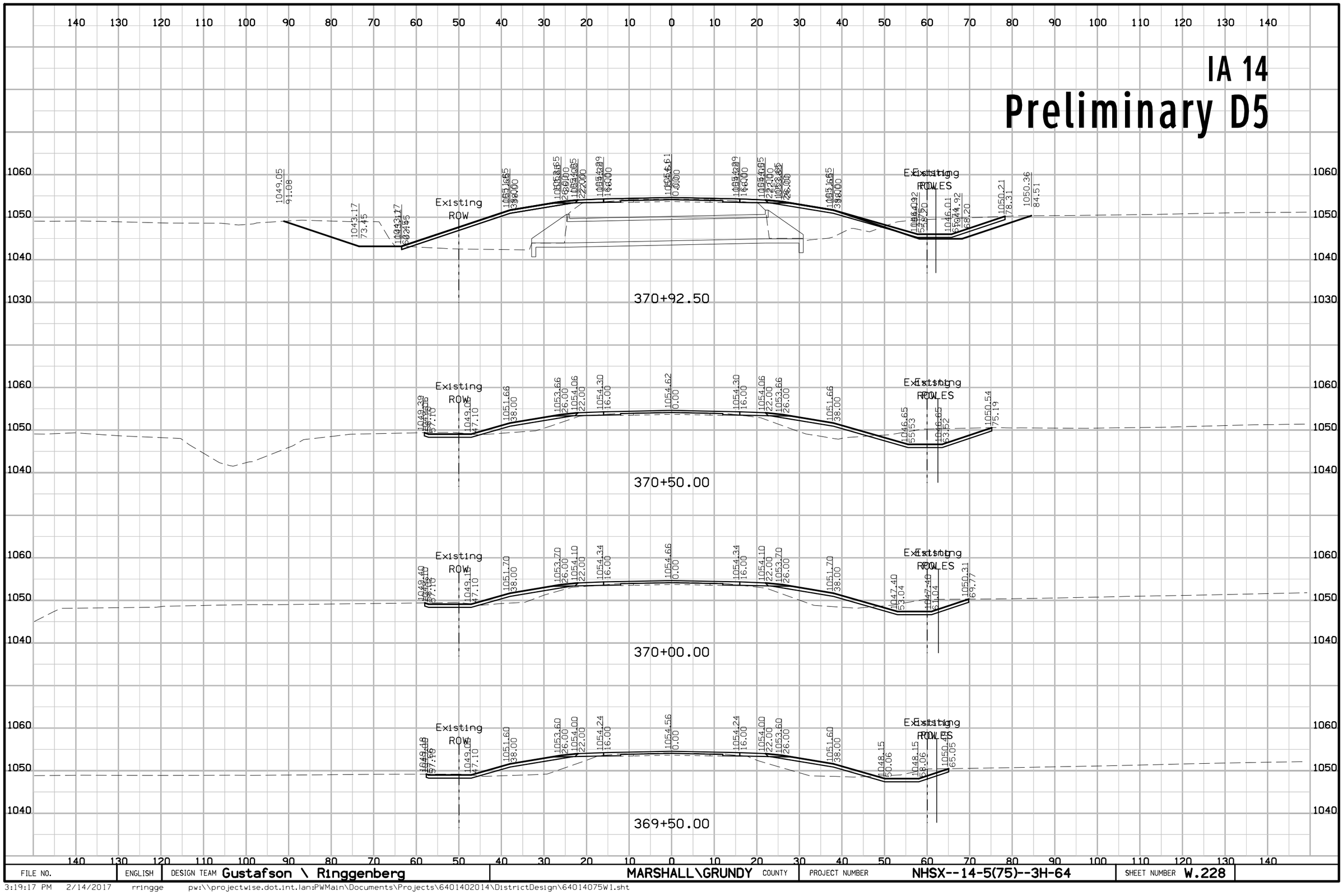
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.228

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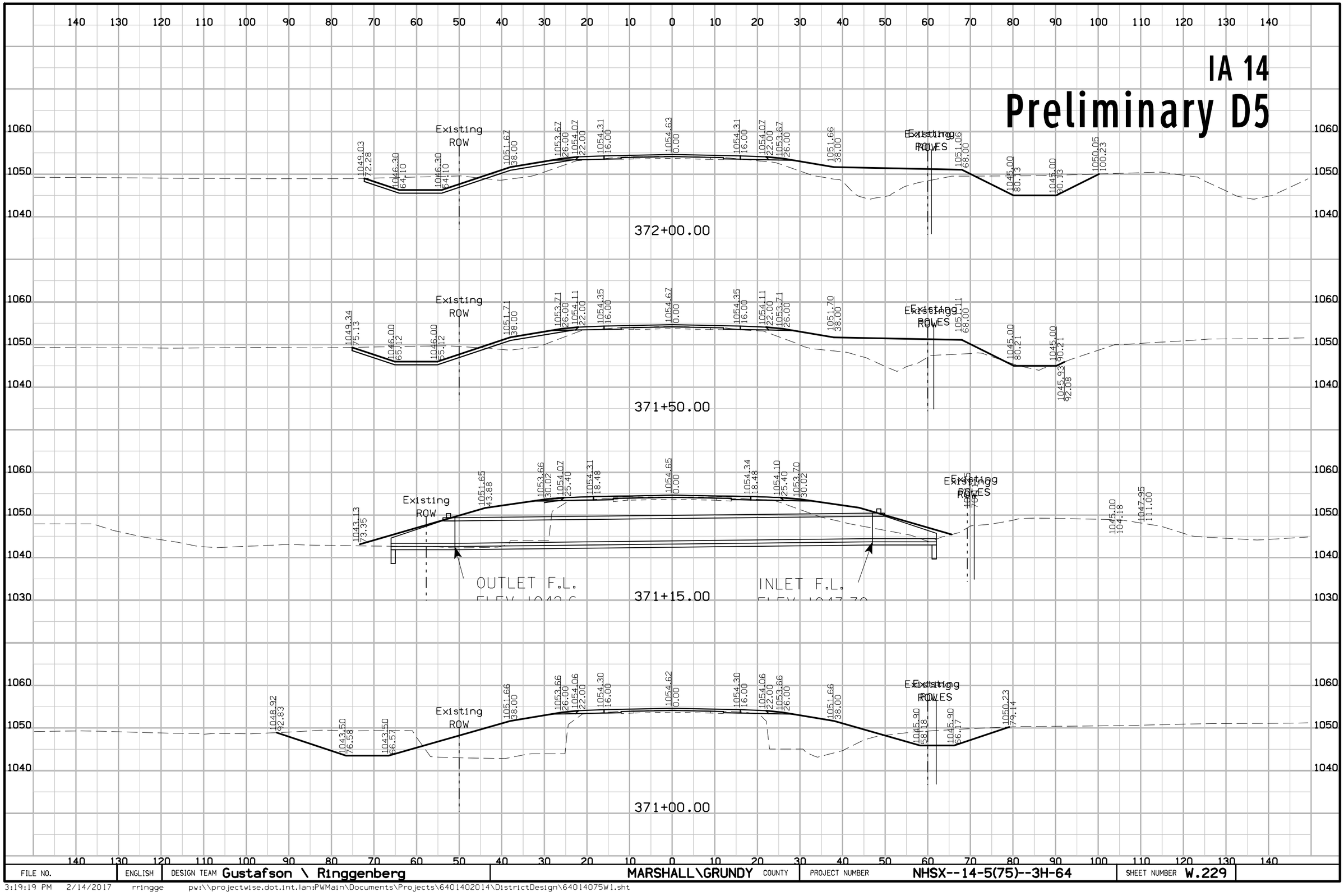
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.229

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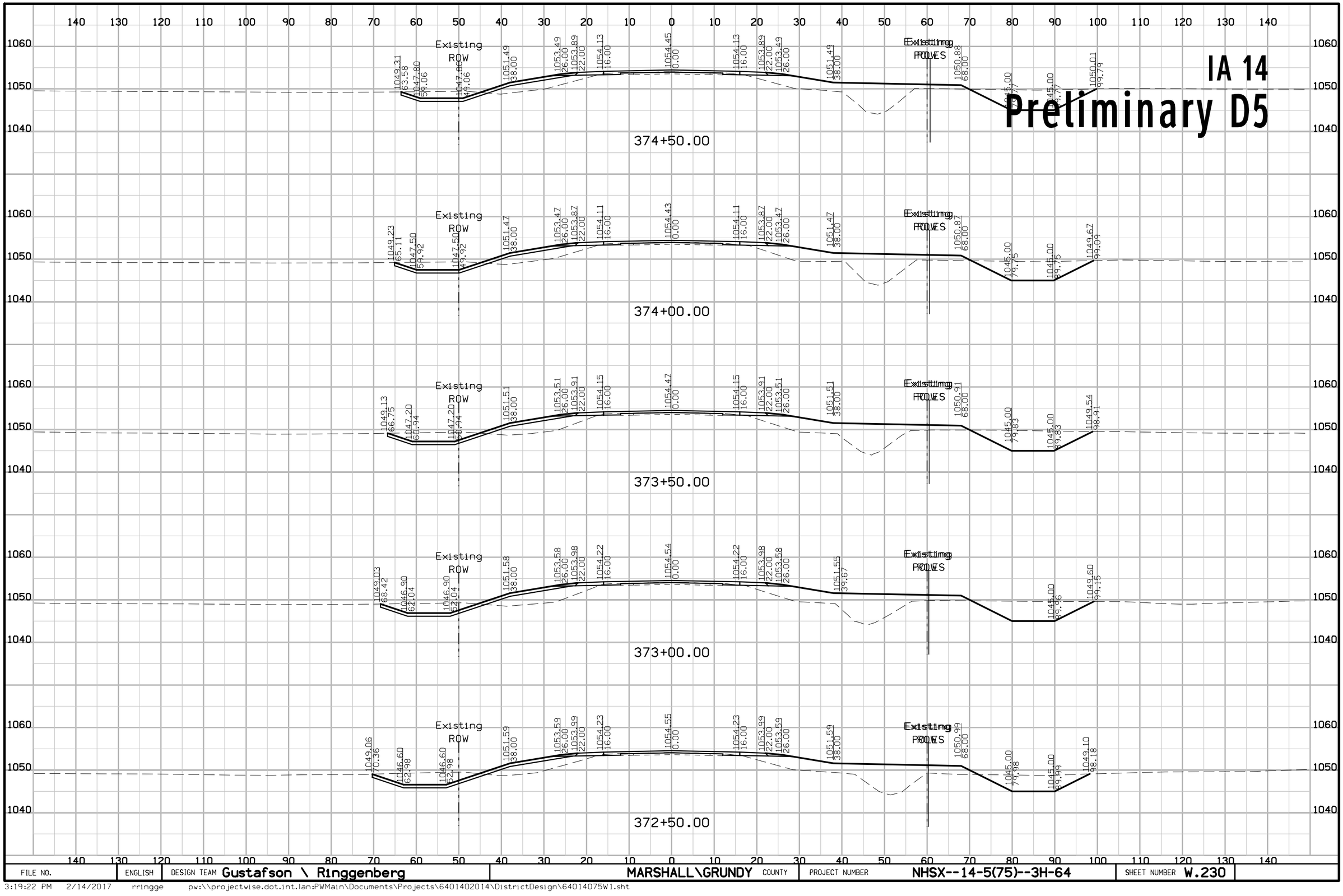
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.230

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IA 14
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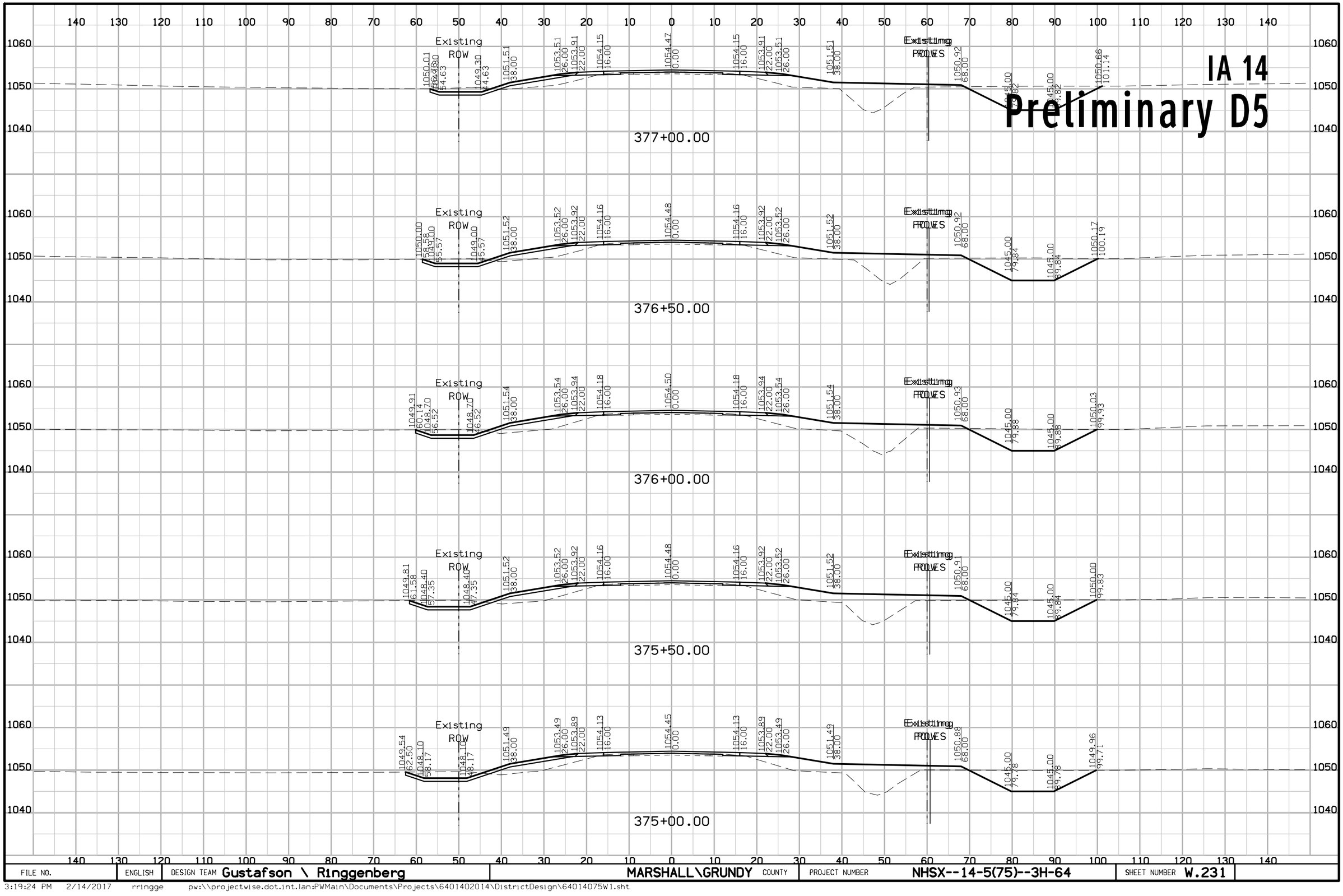

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.231

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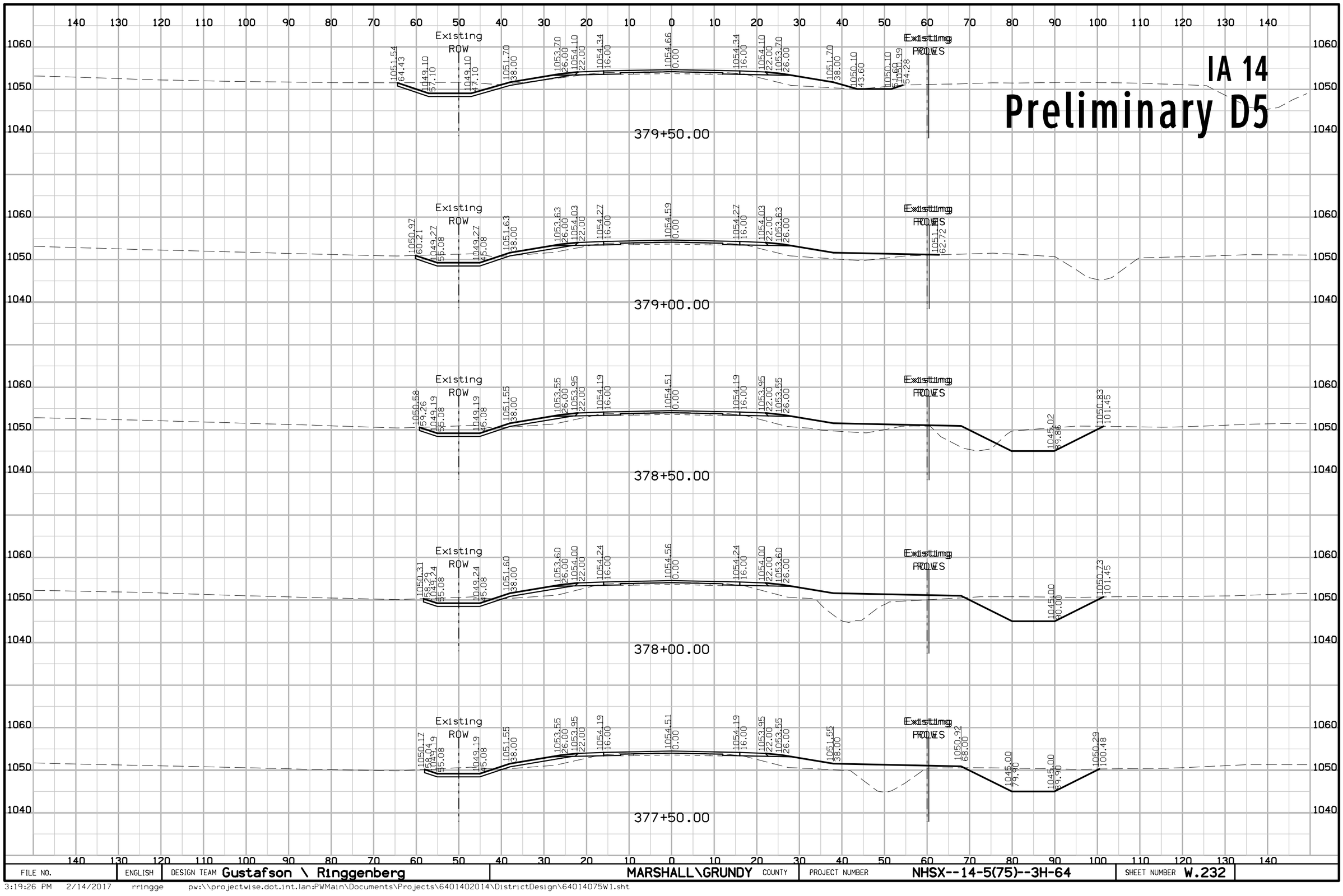
IA 14
Preliminary D5



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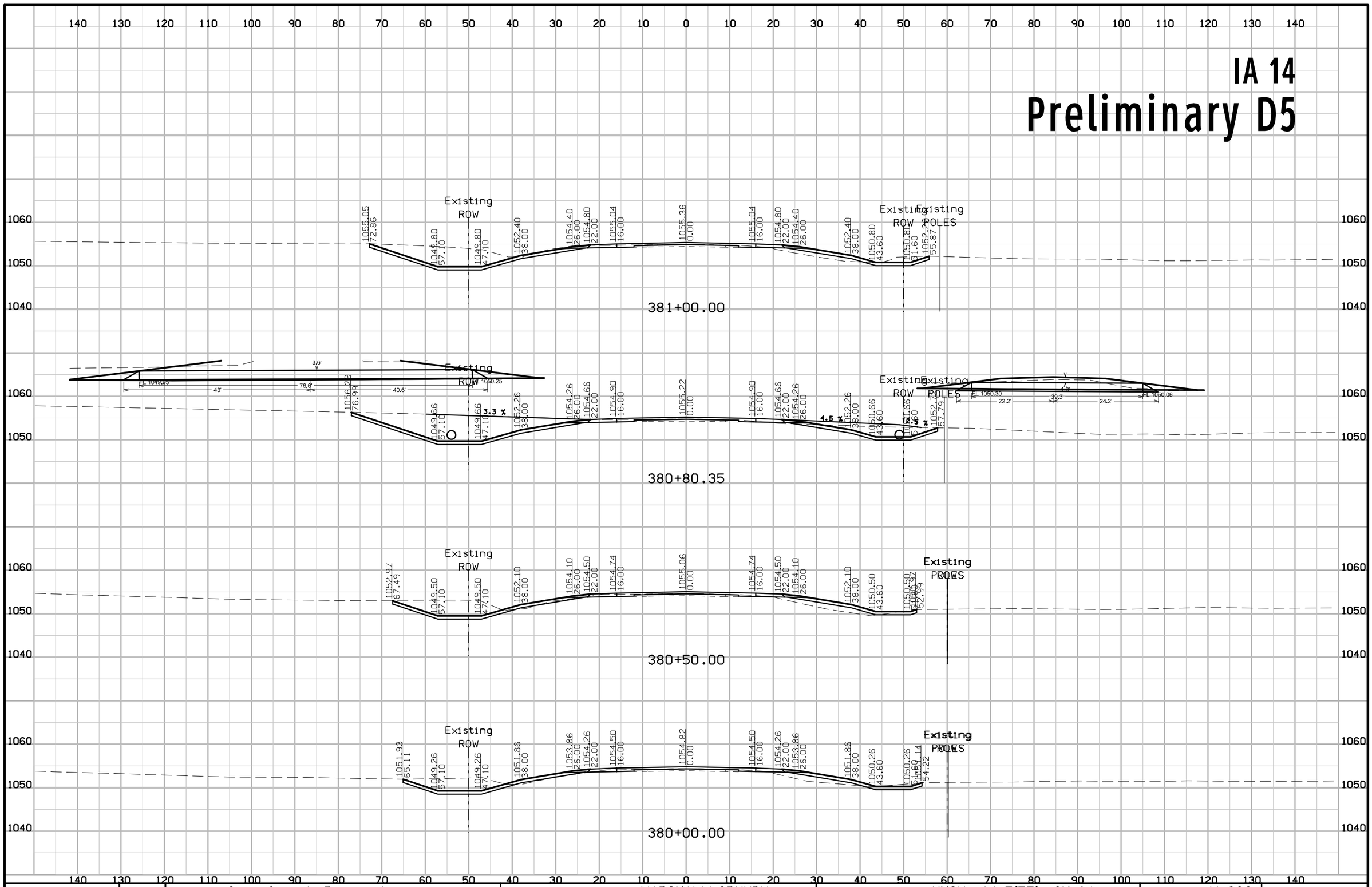
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.233

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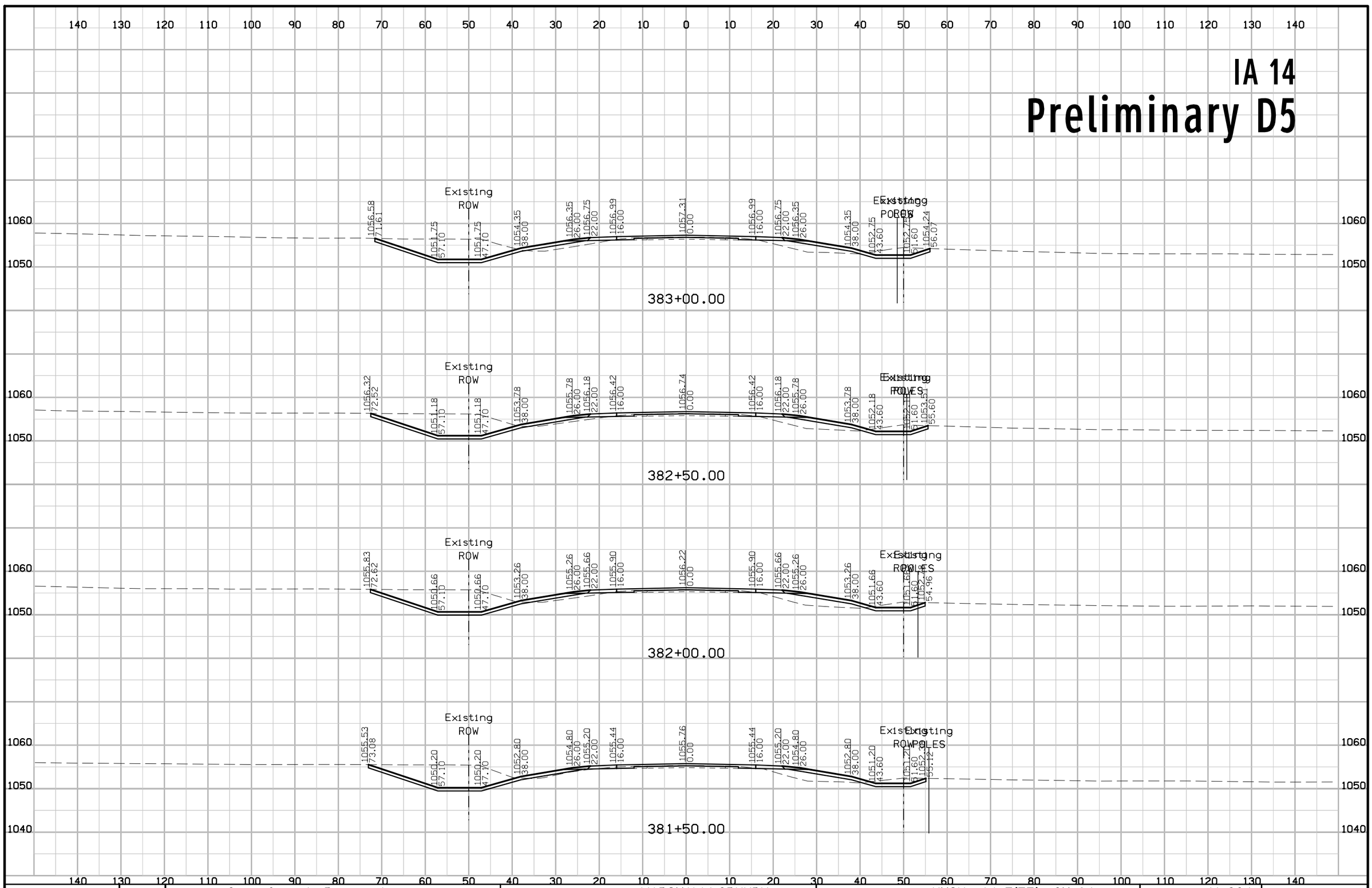
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.234

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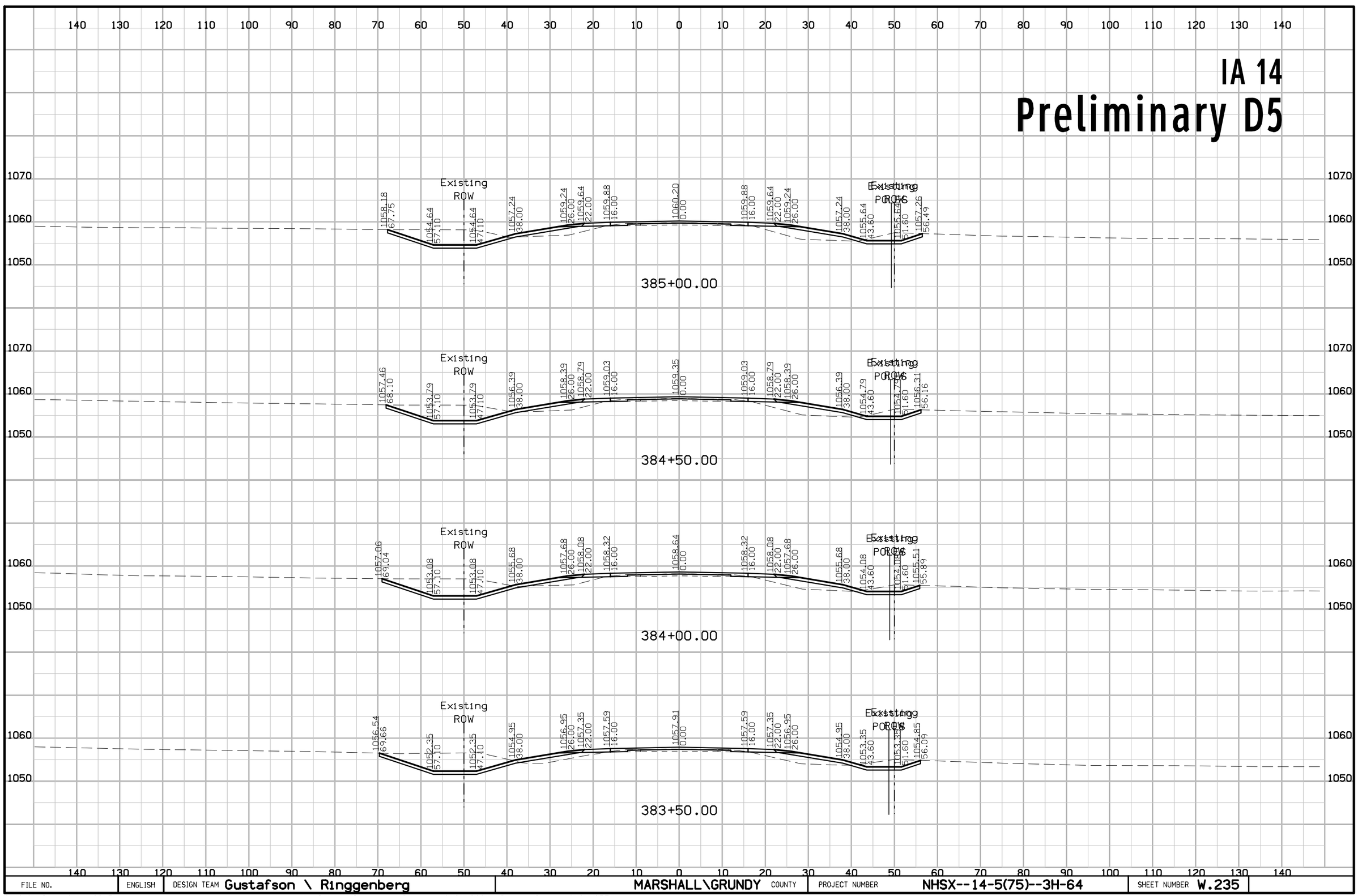
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.235

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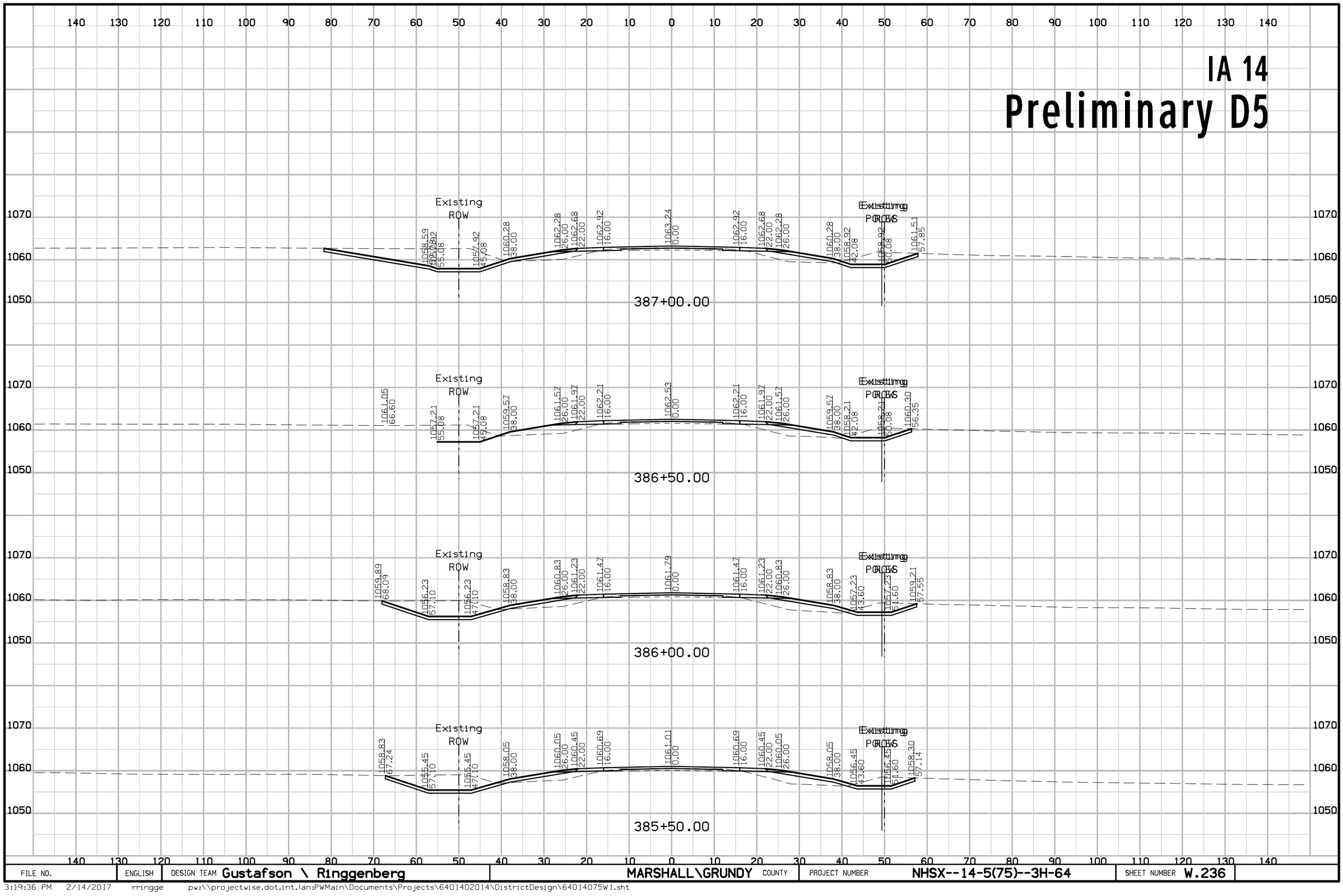
IA 14
Preliminary D5



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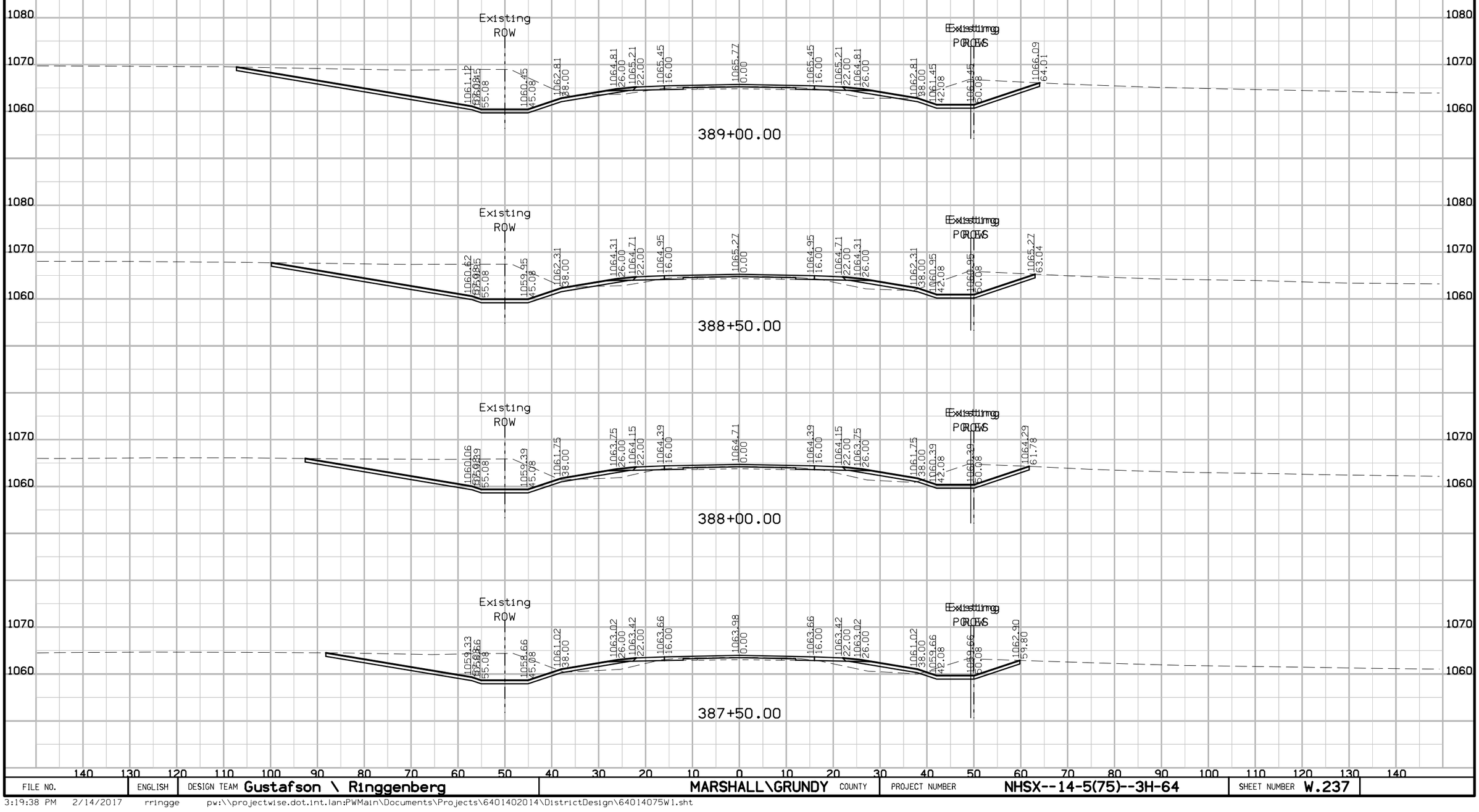
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.237

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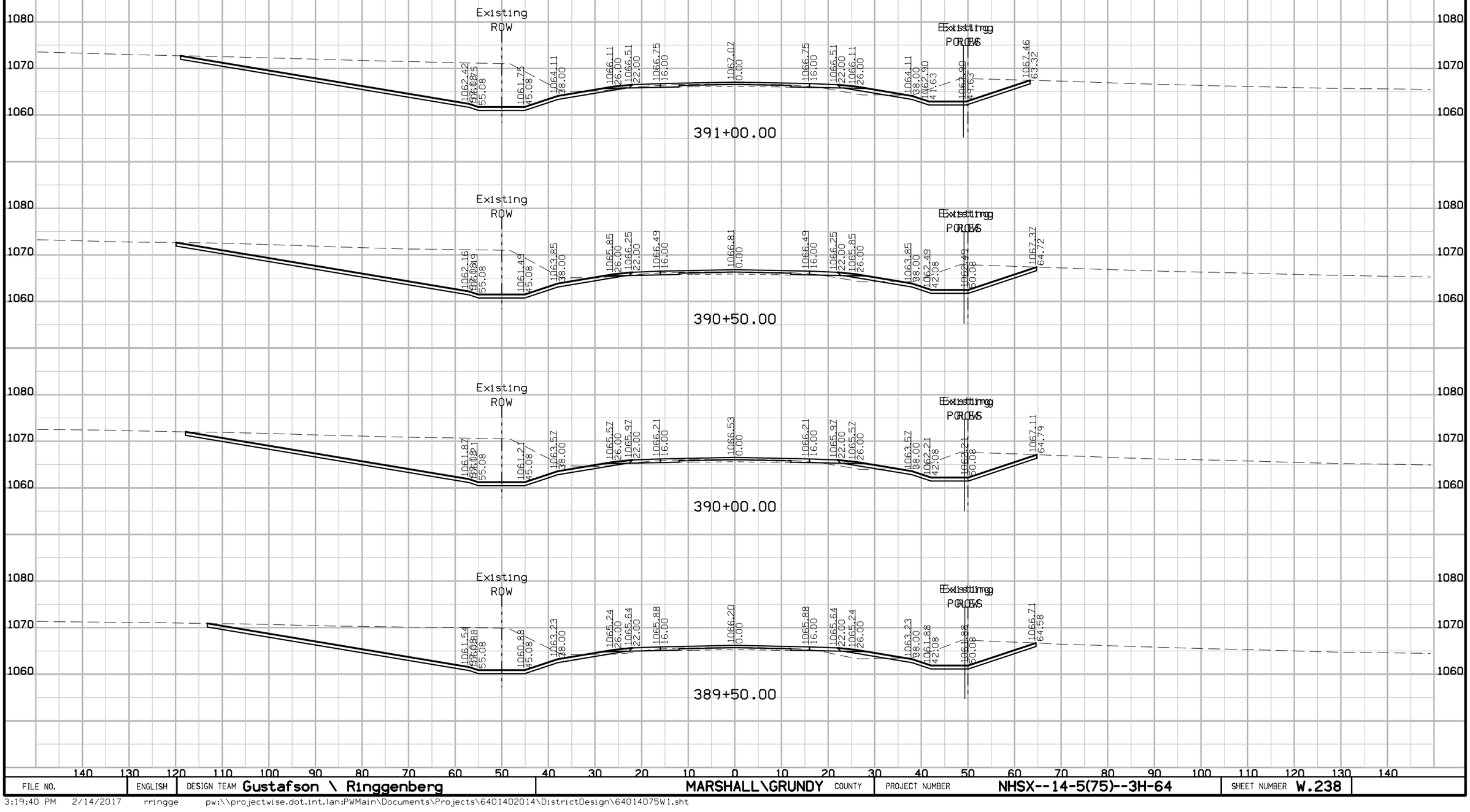
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.238

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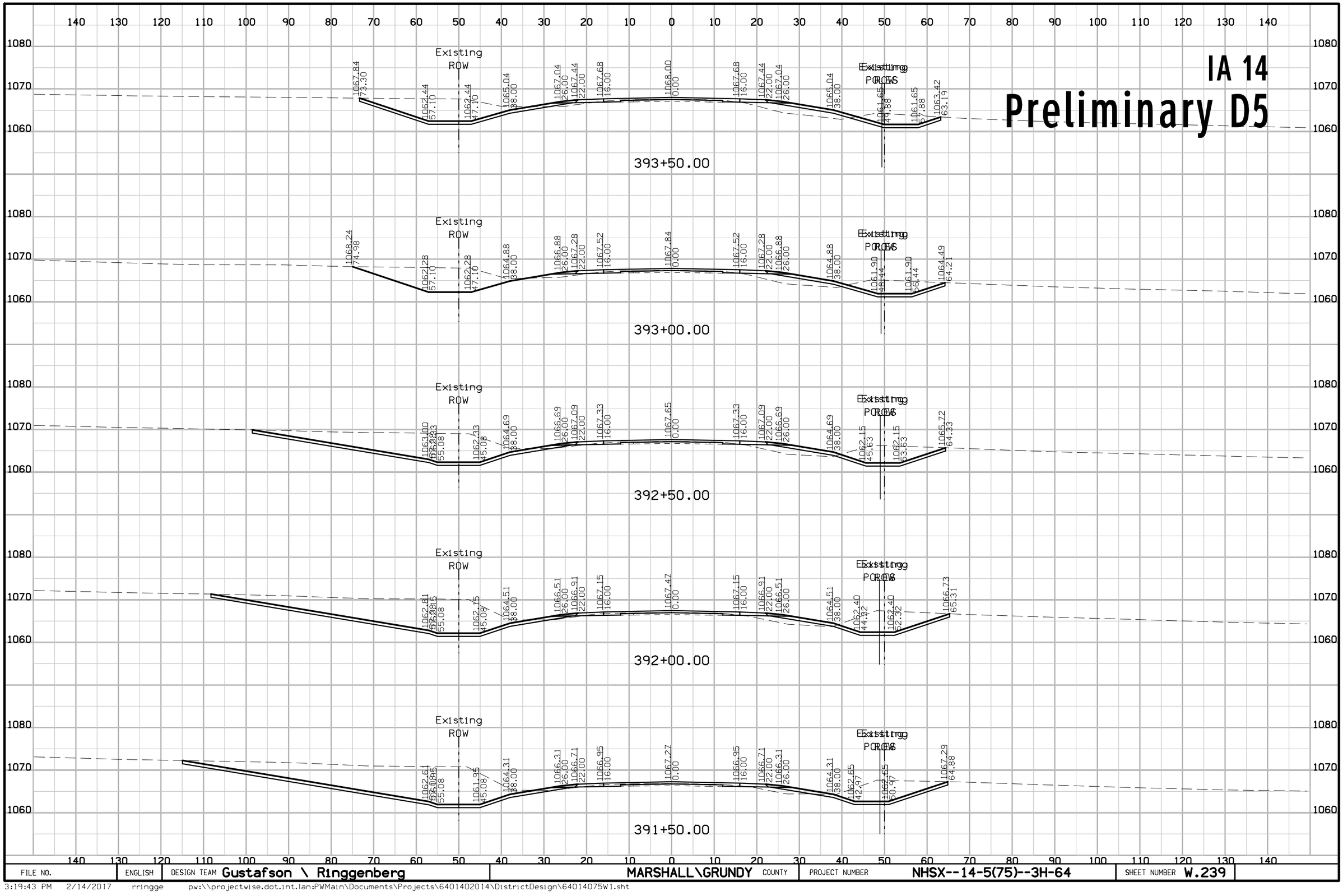
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.239

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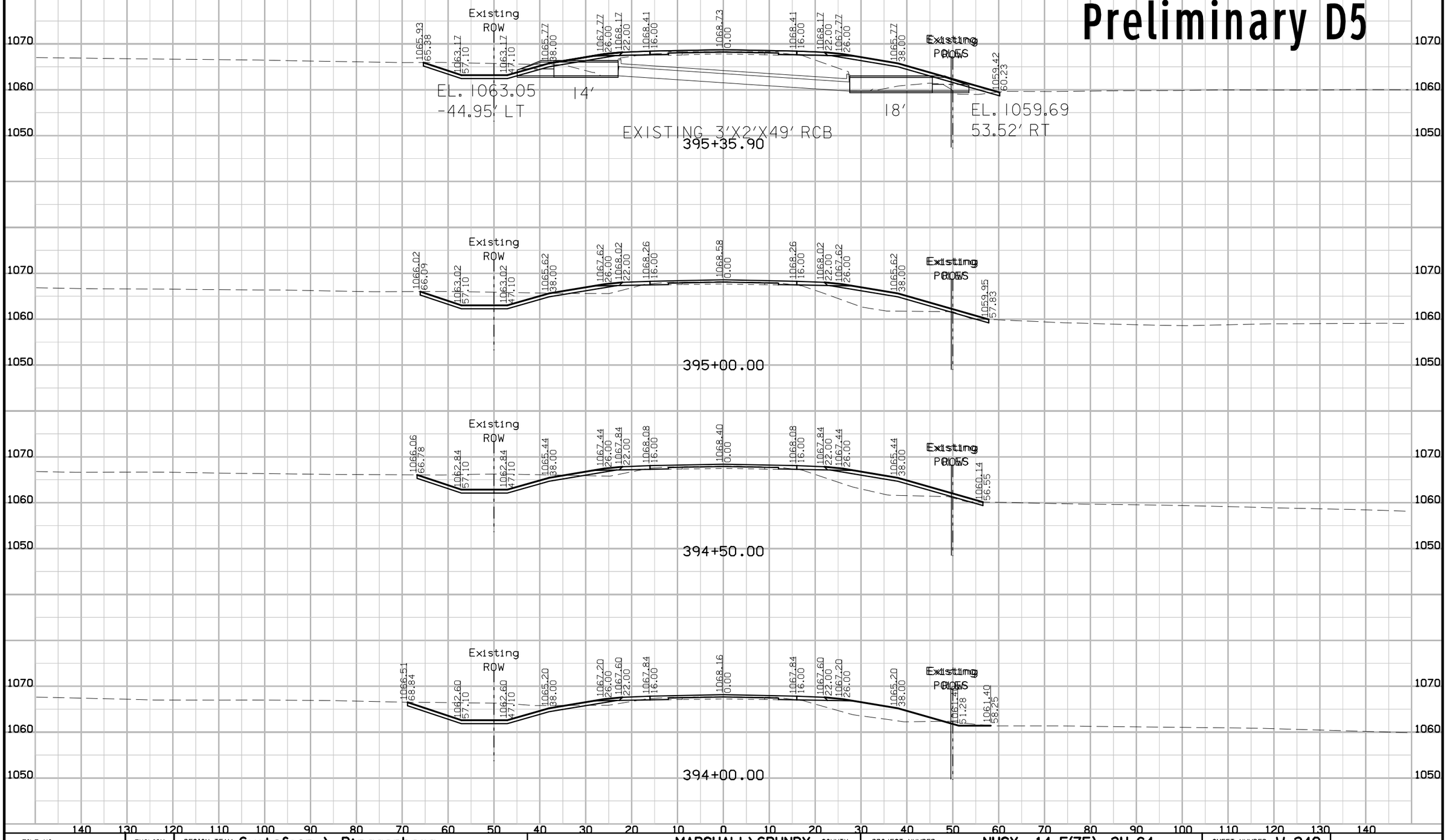
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.240

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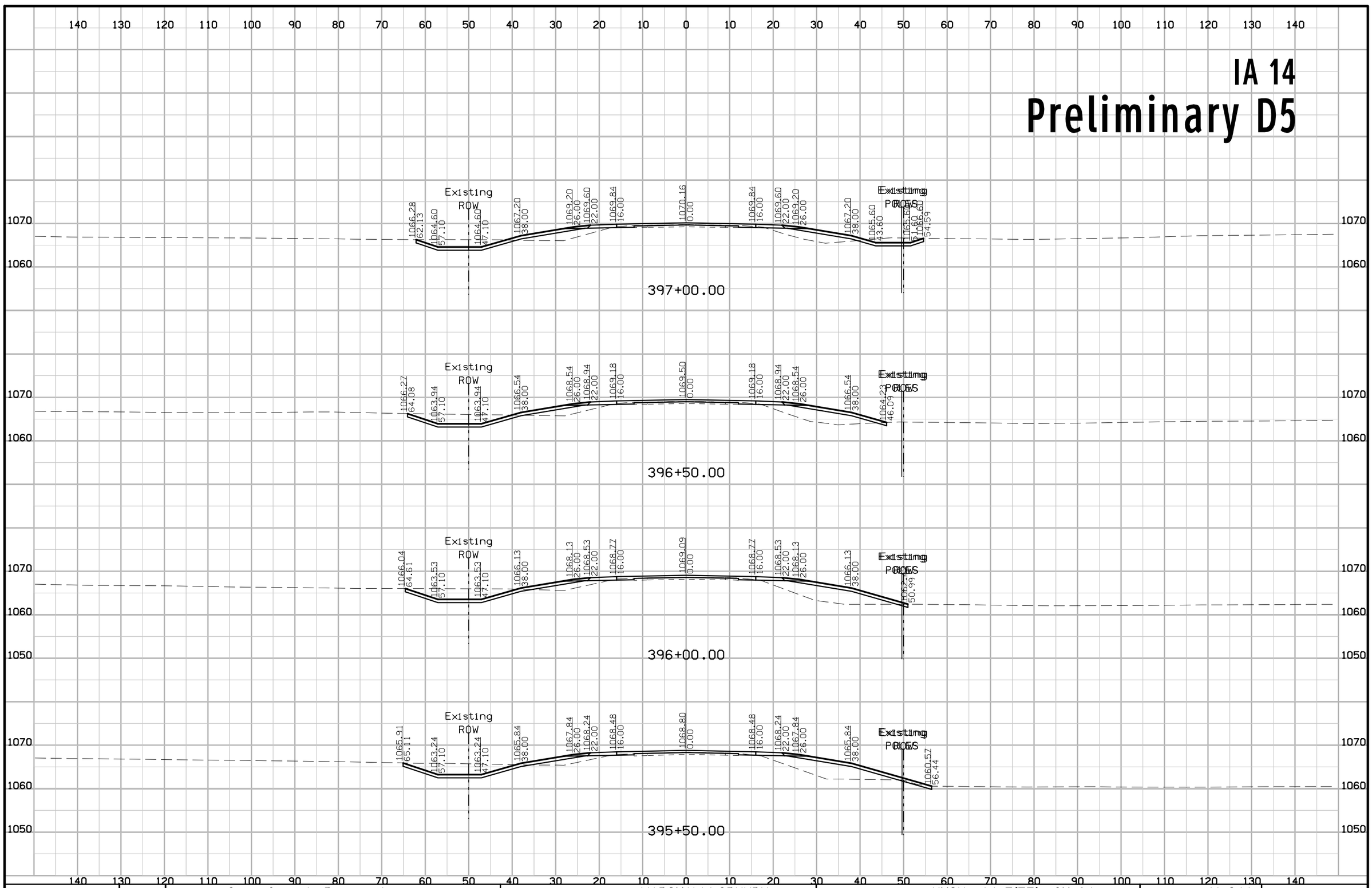
IA 14
Preliminary D5



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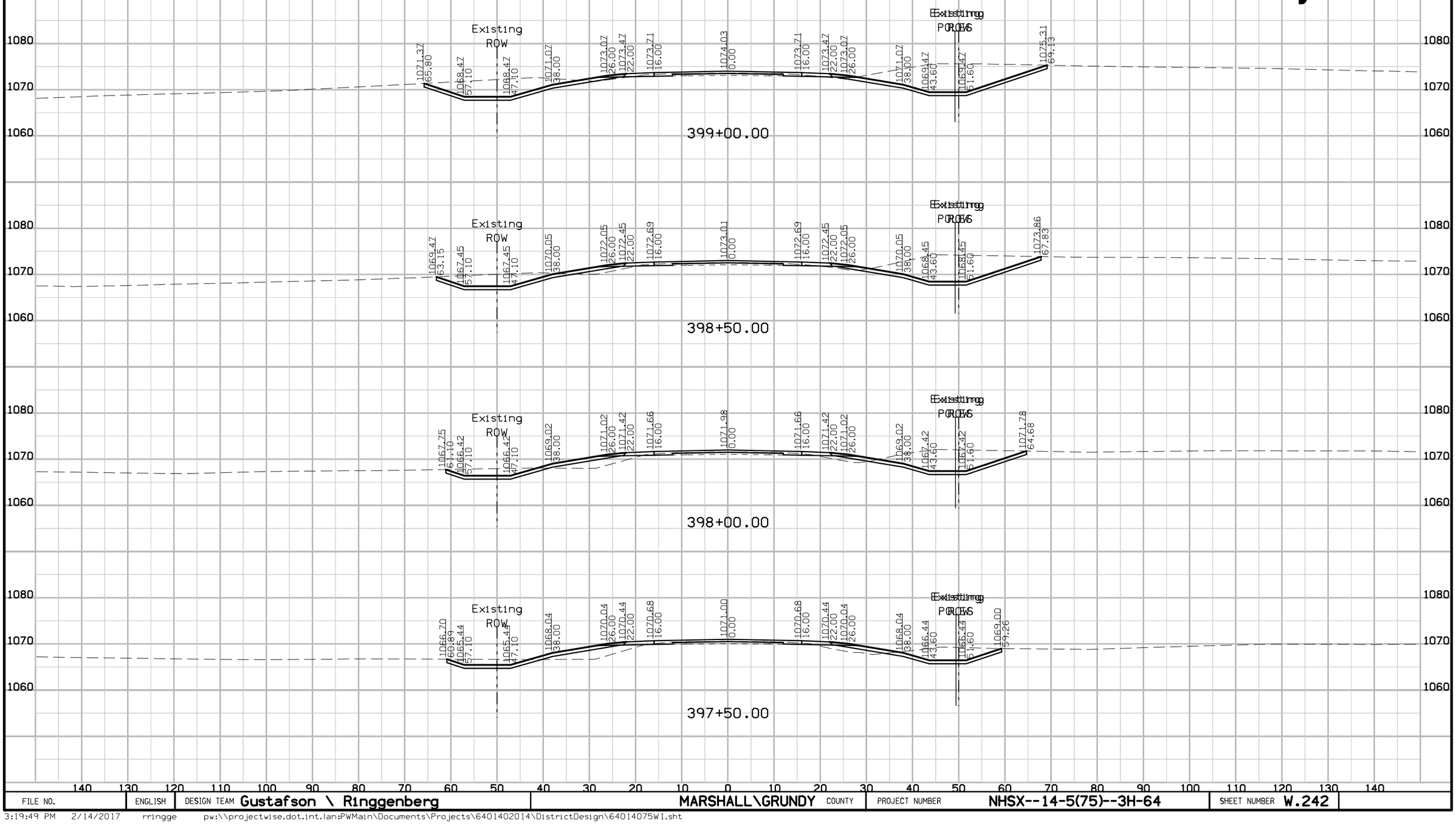
IA 14
Preliminary D5



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IA 14
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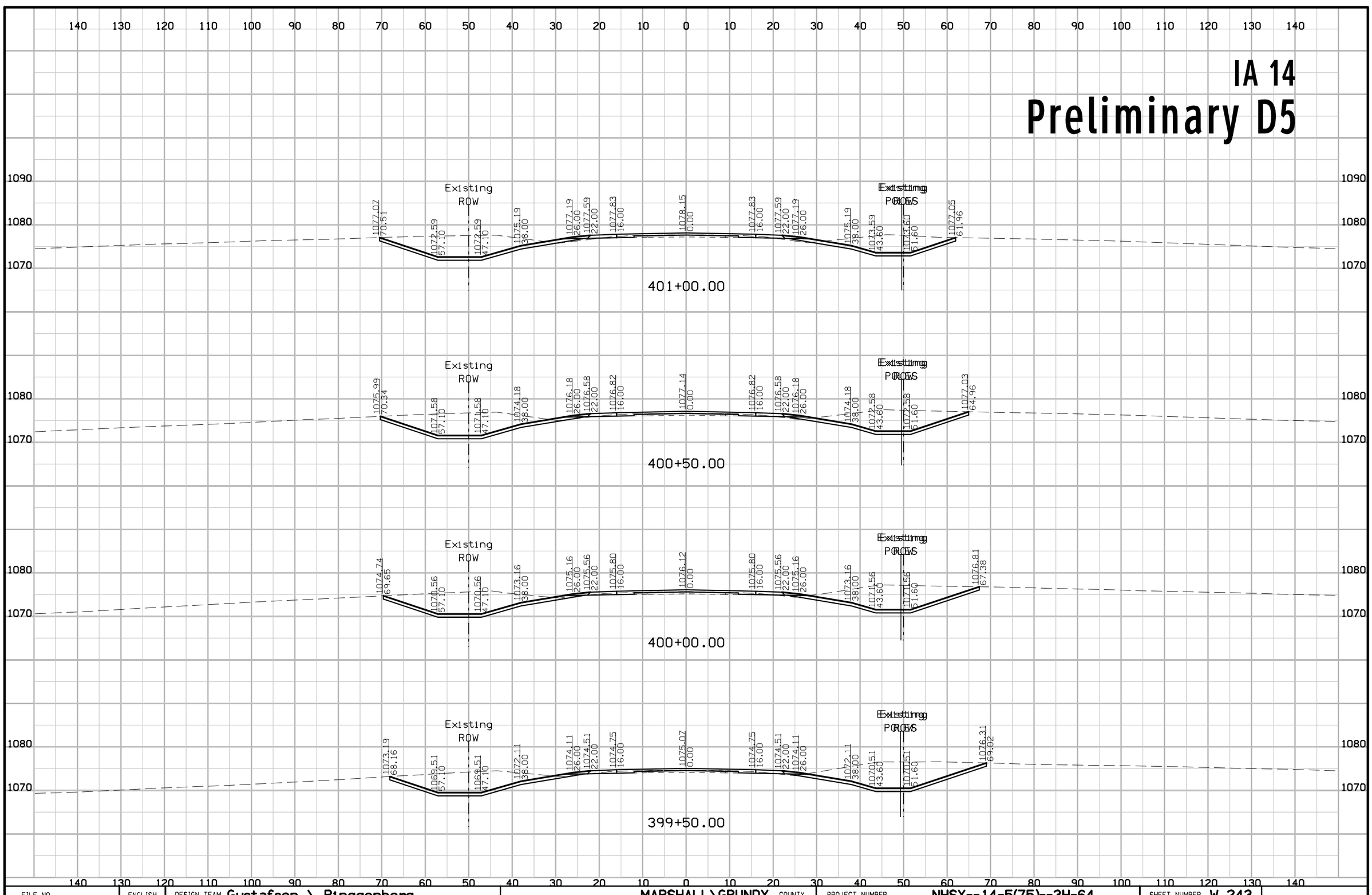

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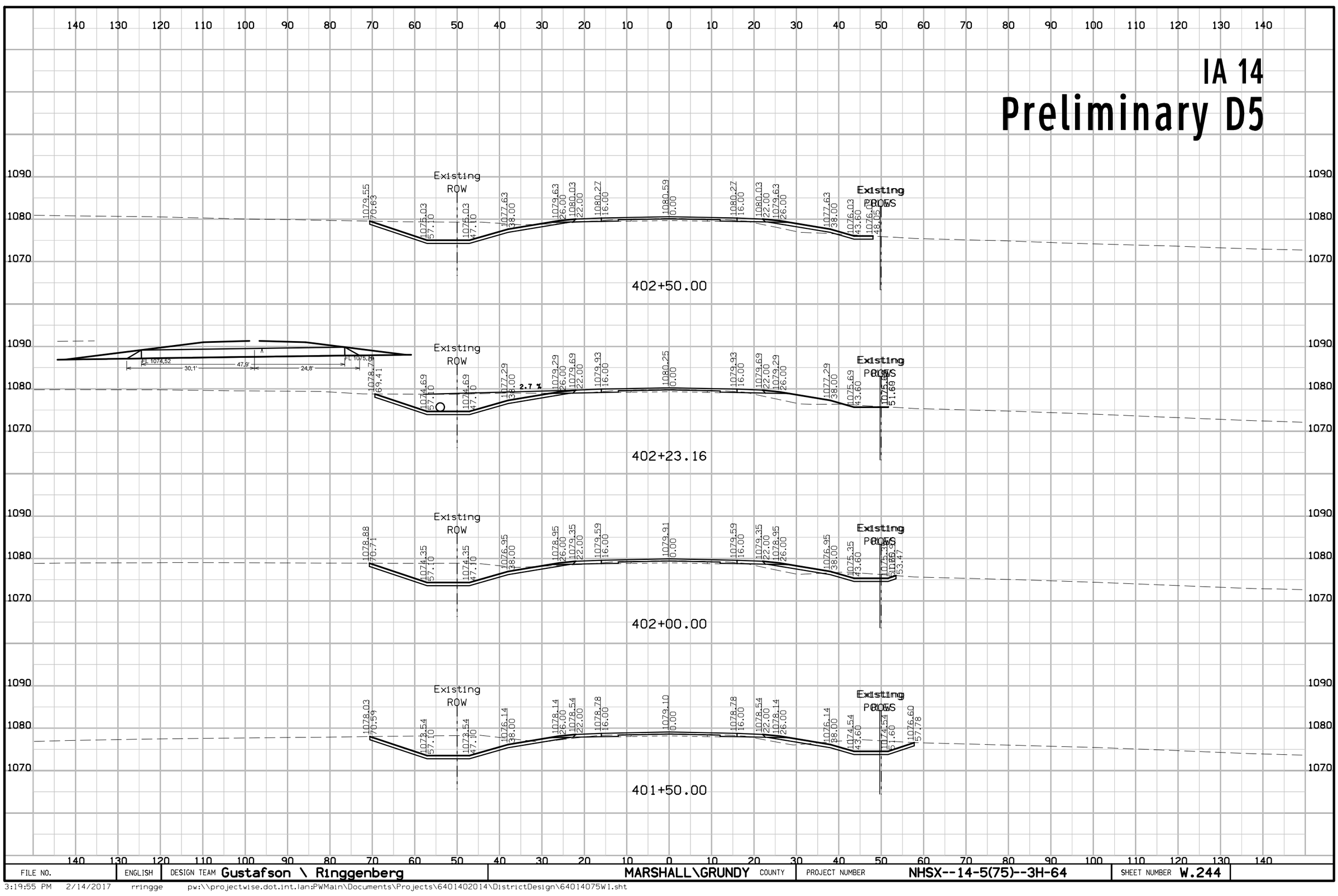
IA 14
Preliminary D5



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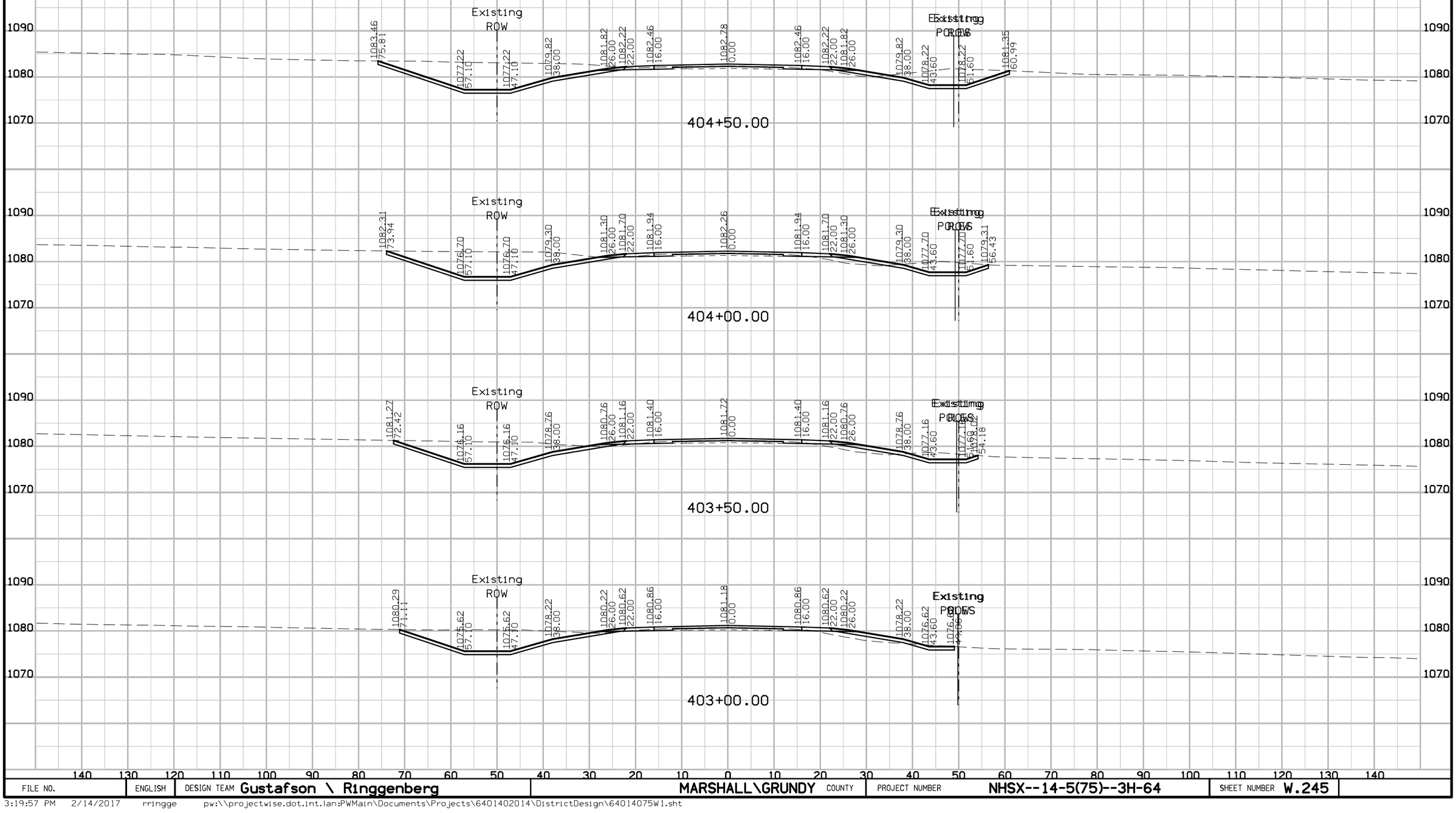

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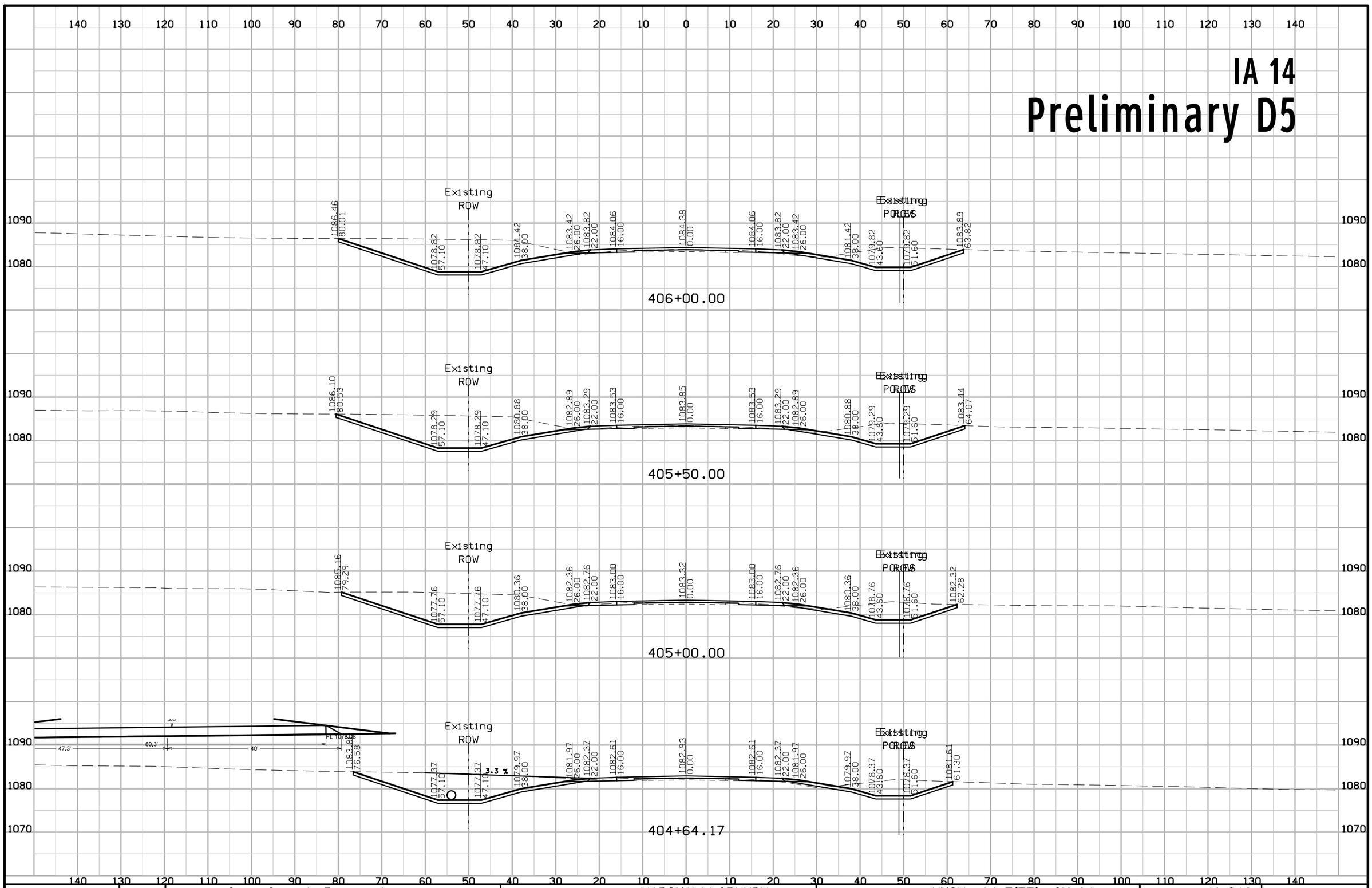
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.246

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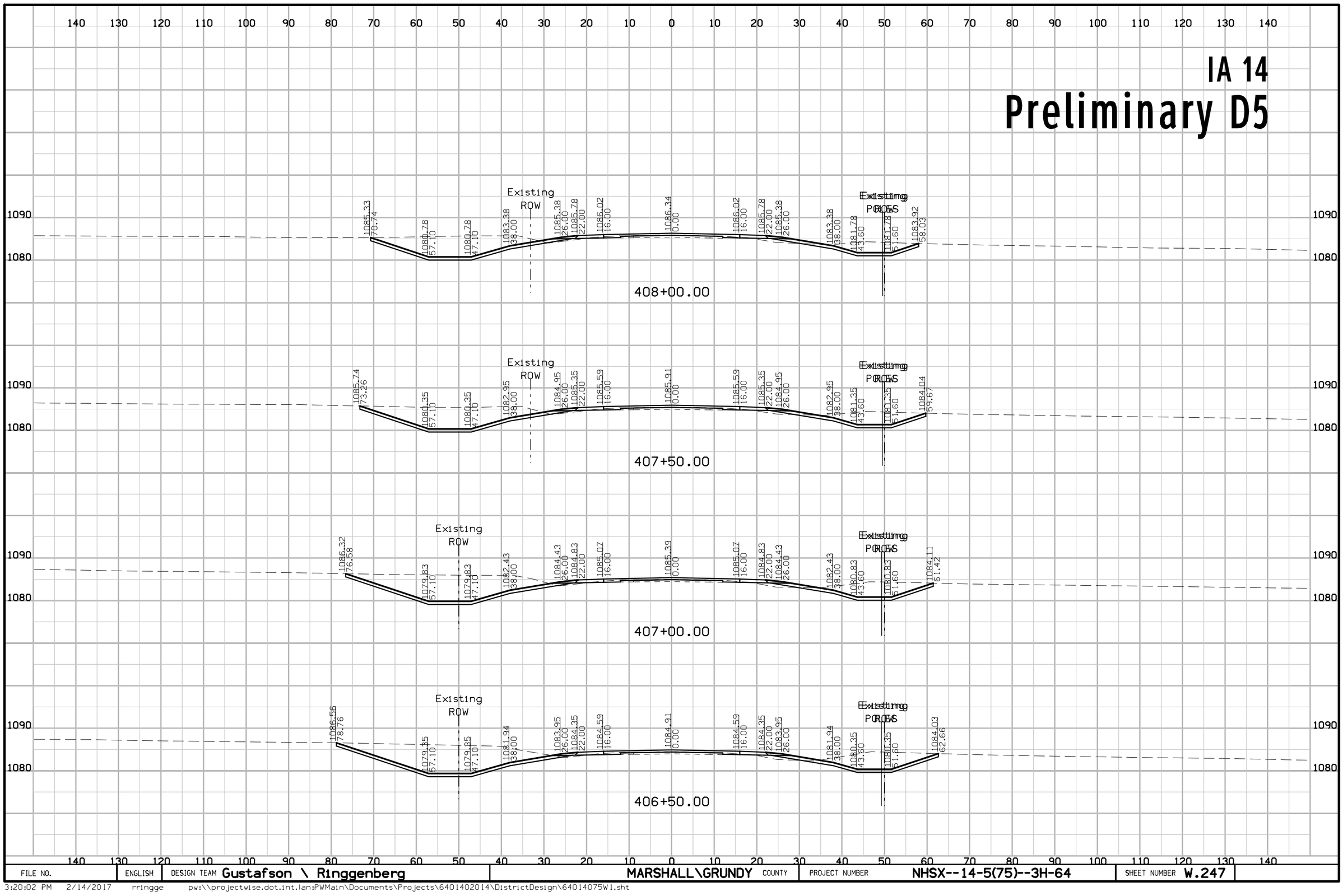
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.247

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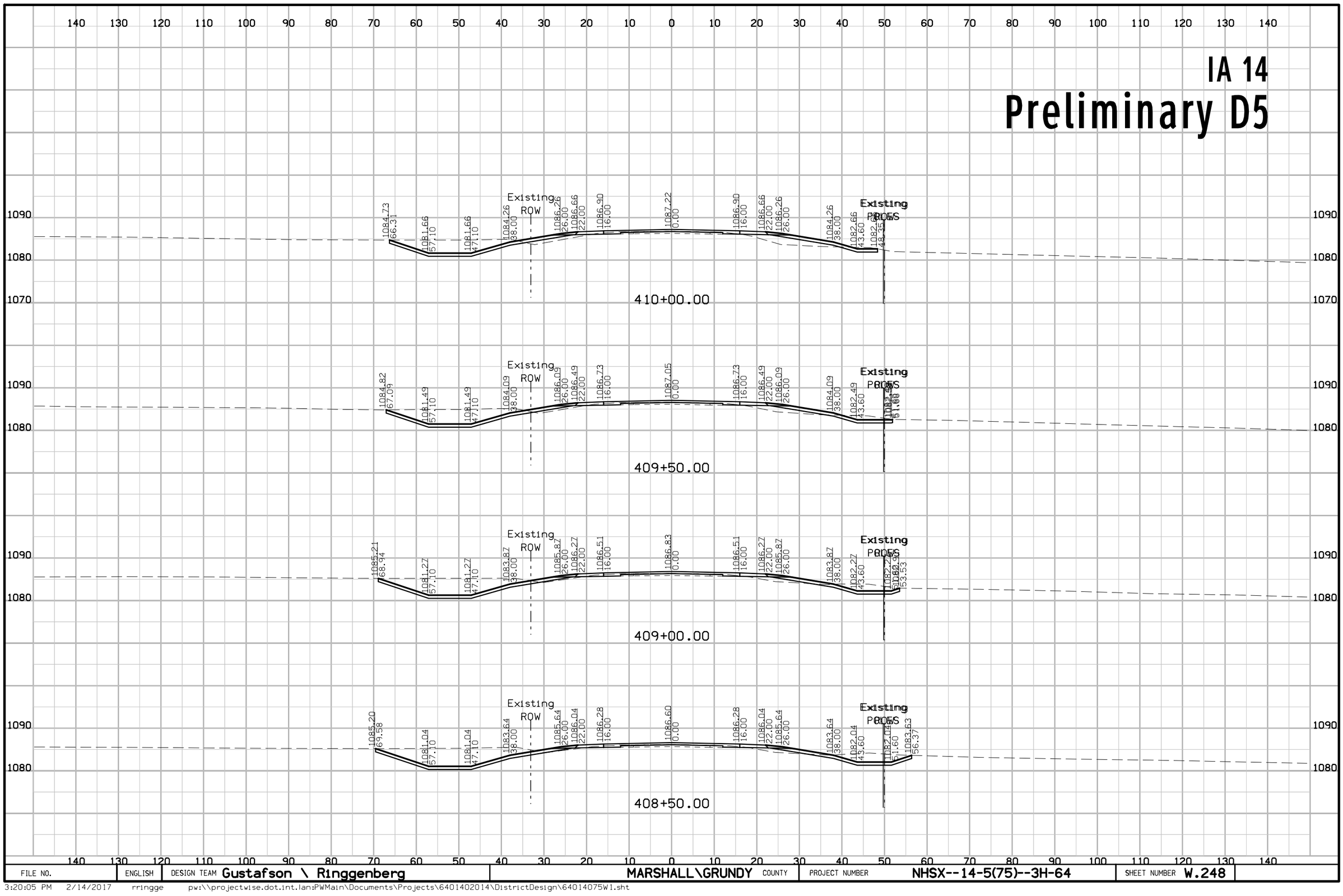

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IA 14
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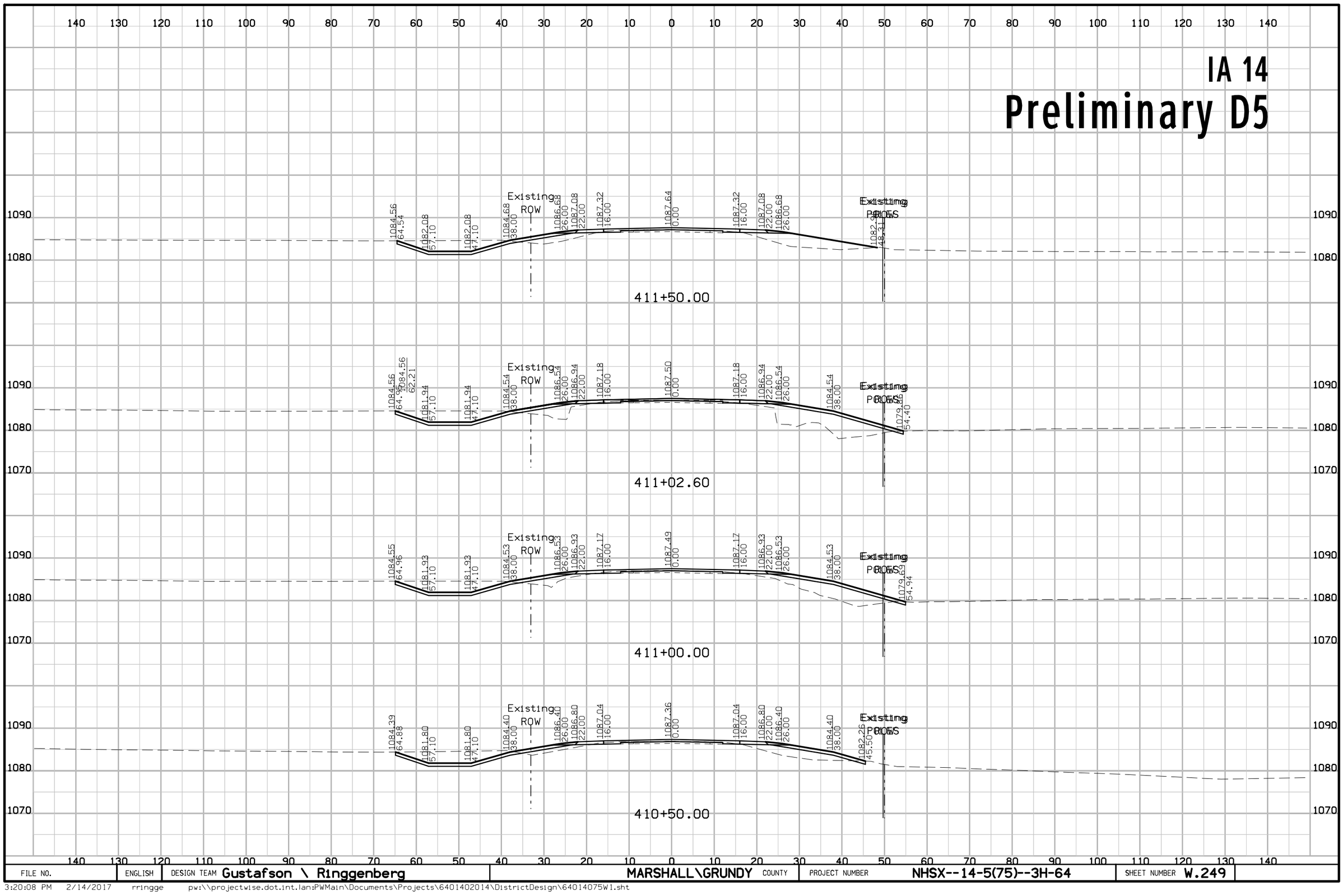

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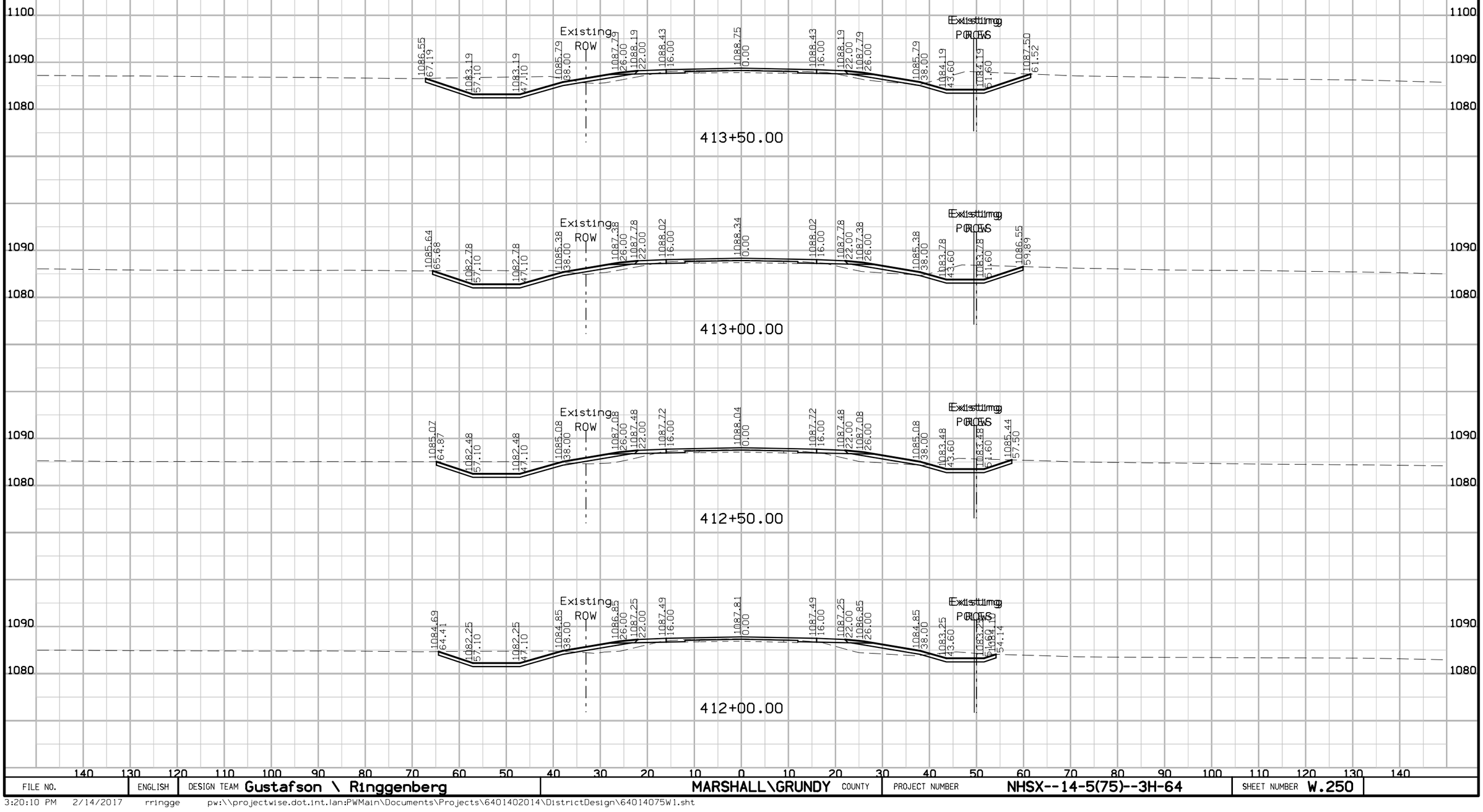
IA 14
Preliminary D5



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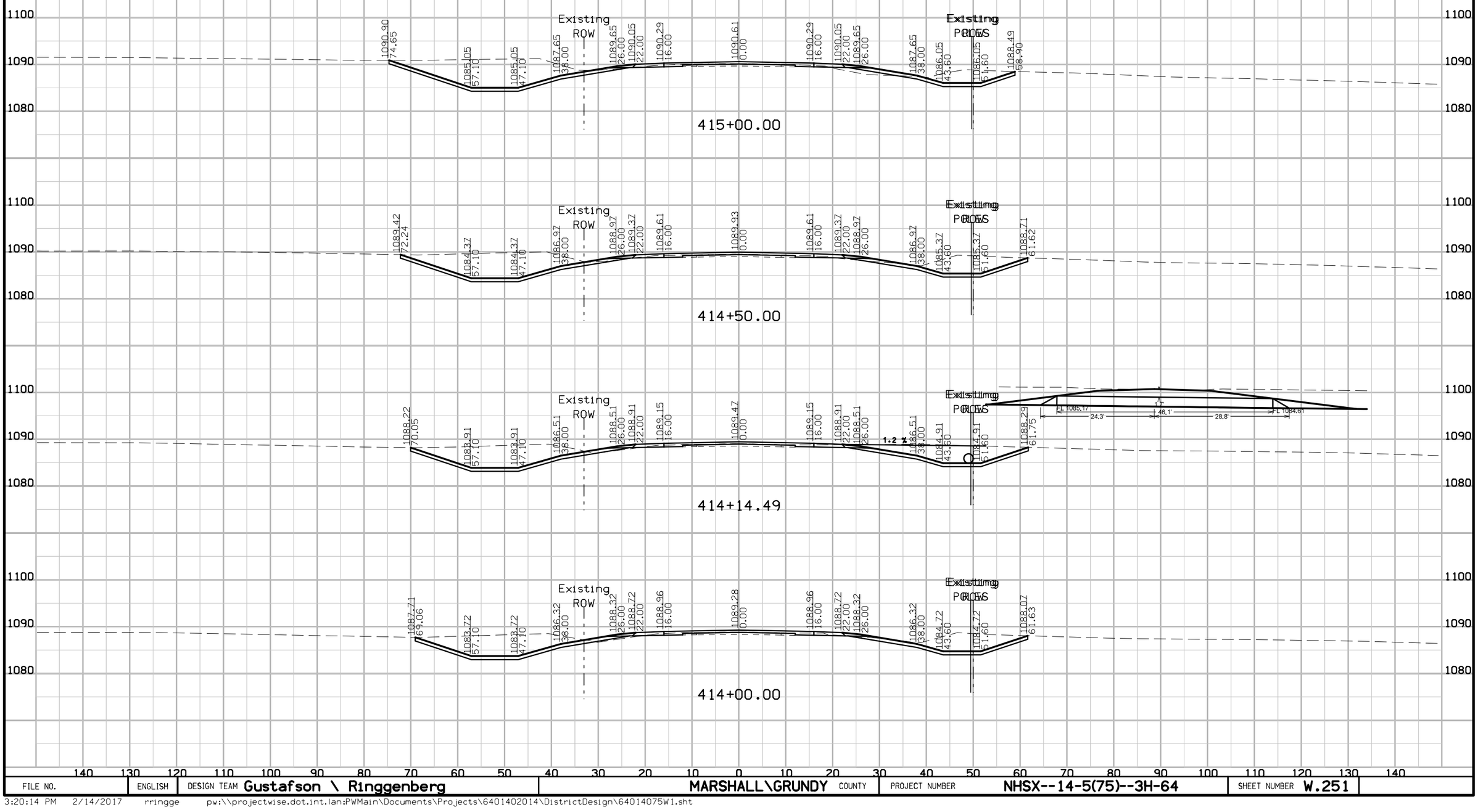

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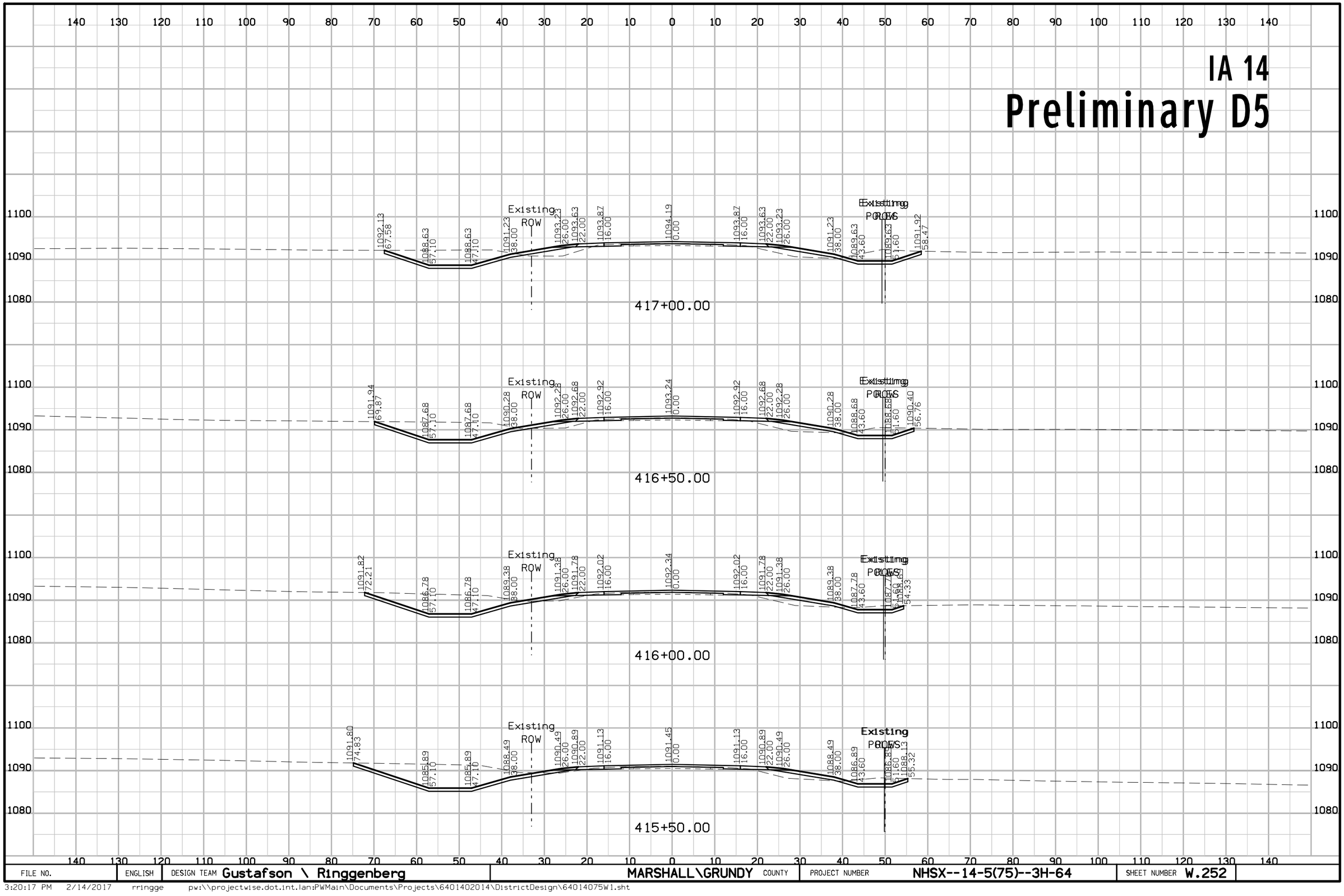
IA 14
Preliminary D5



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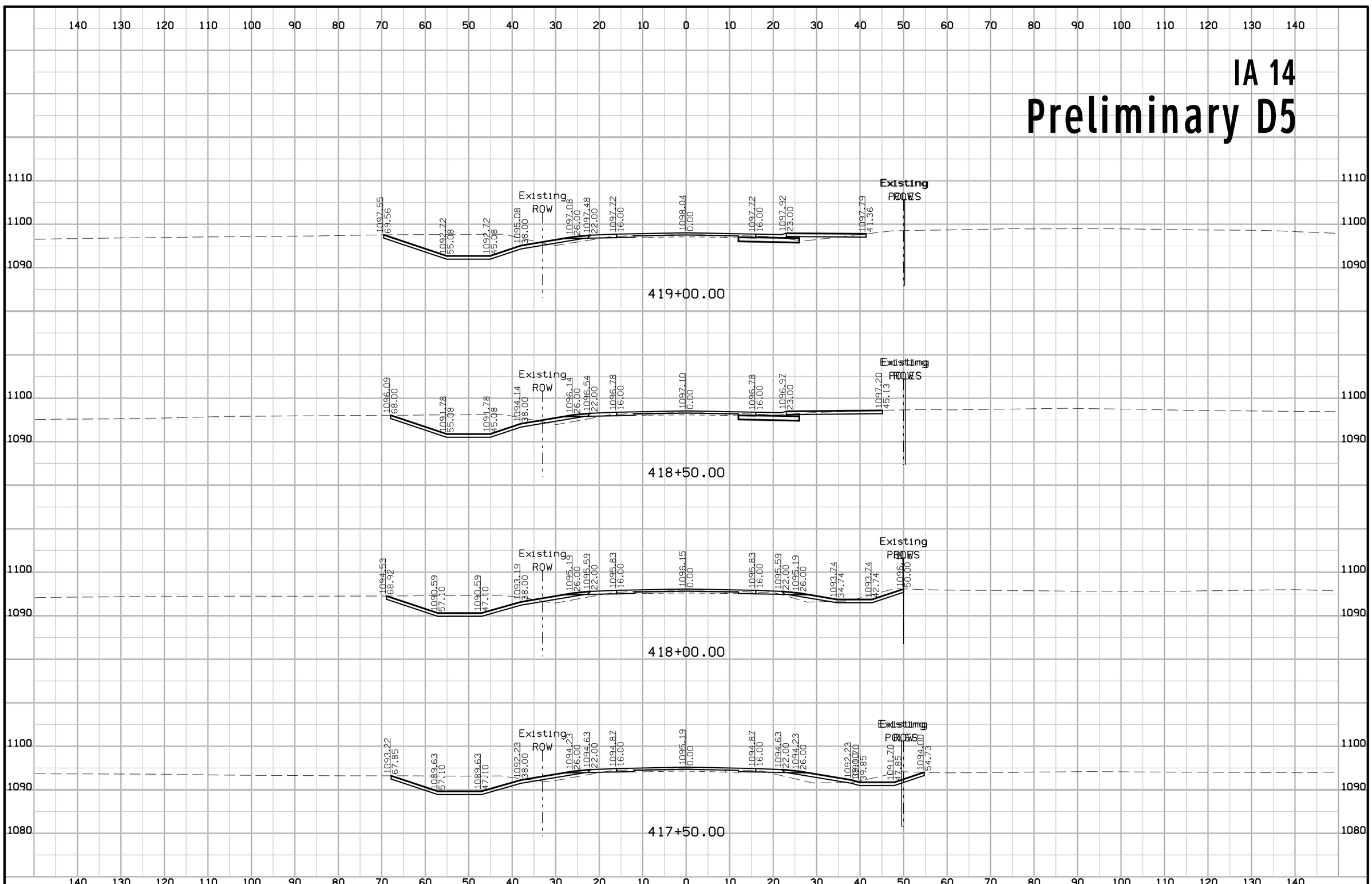
IA 14
Preliminary D5



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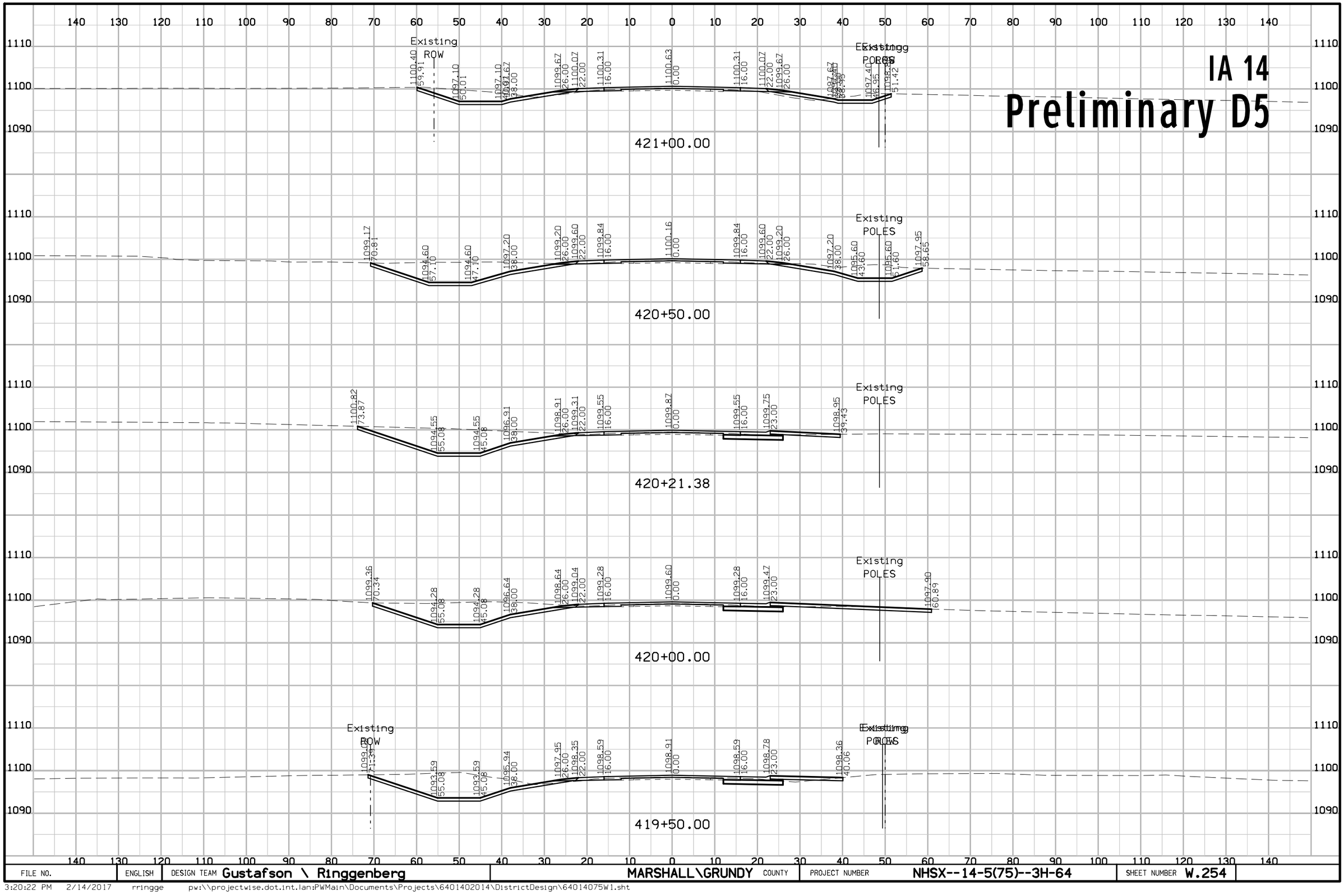
IA 14
Preliminary D5



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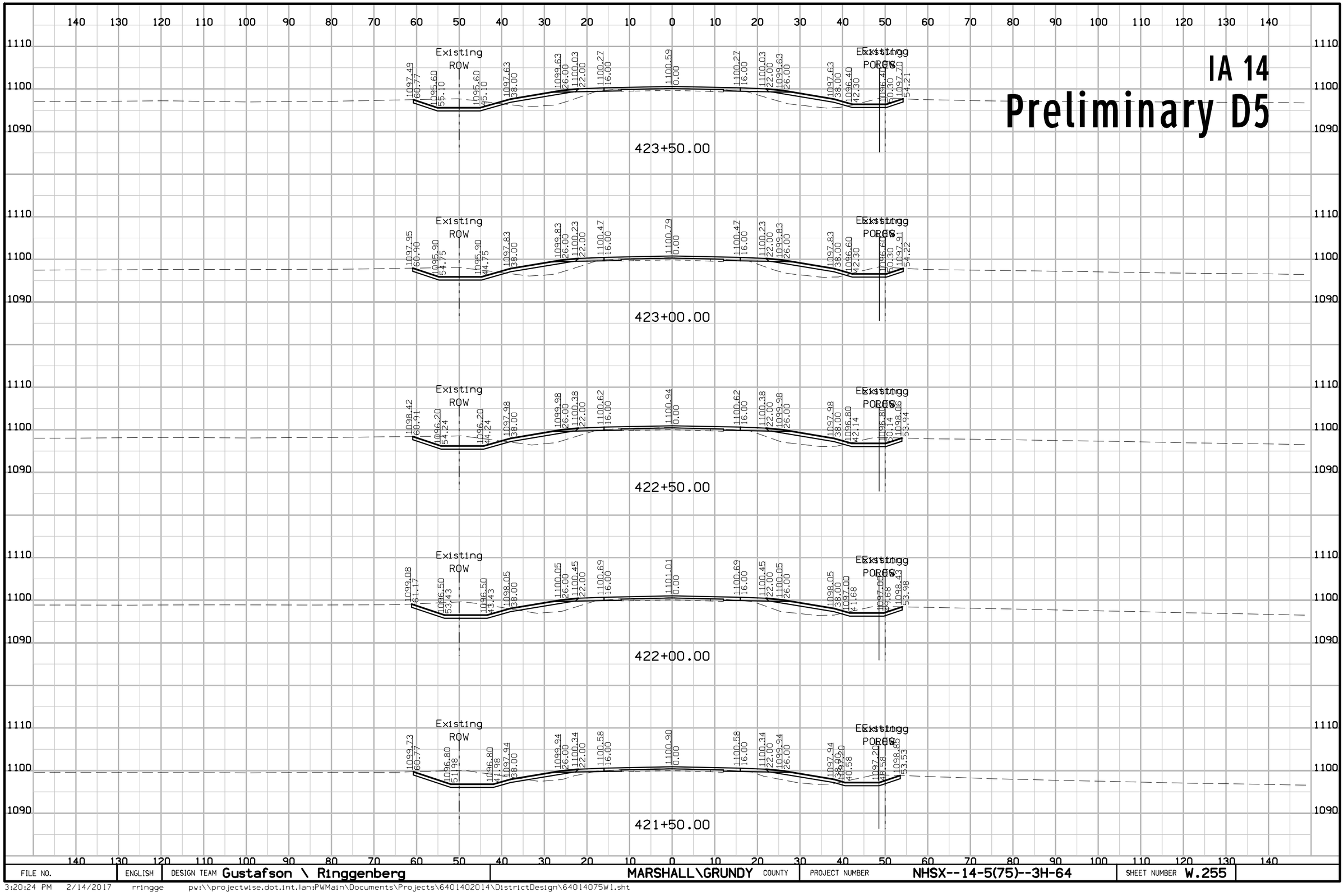
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.255

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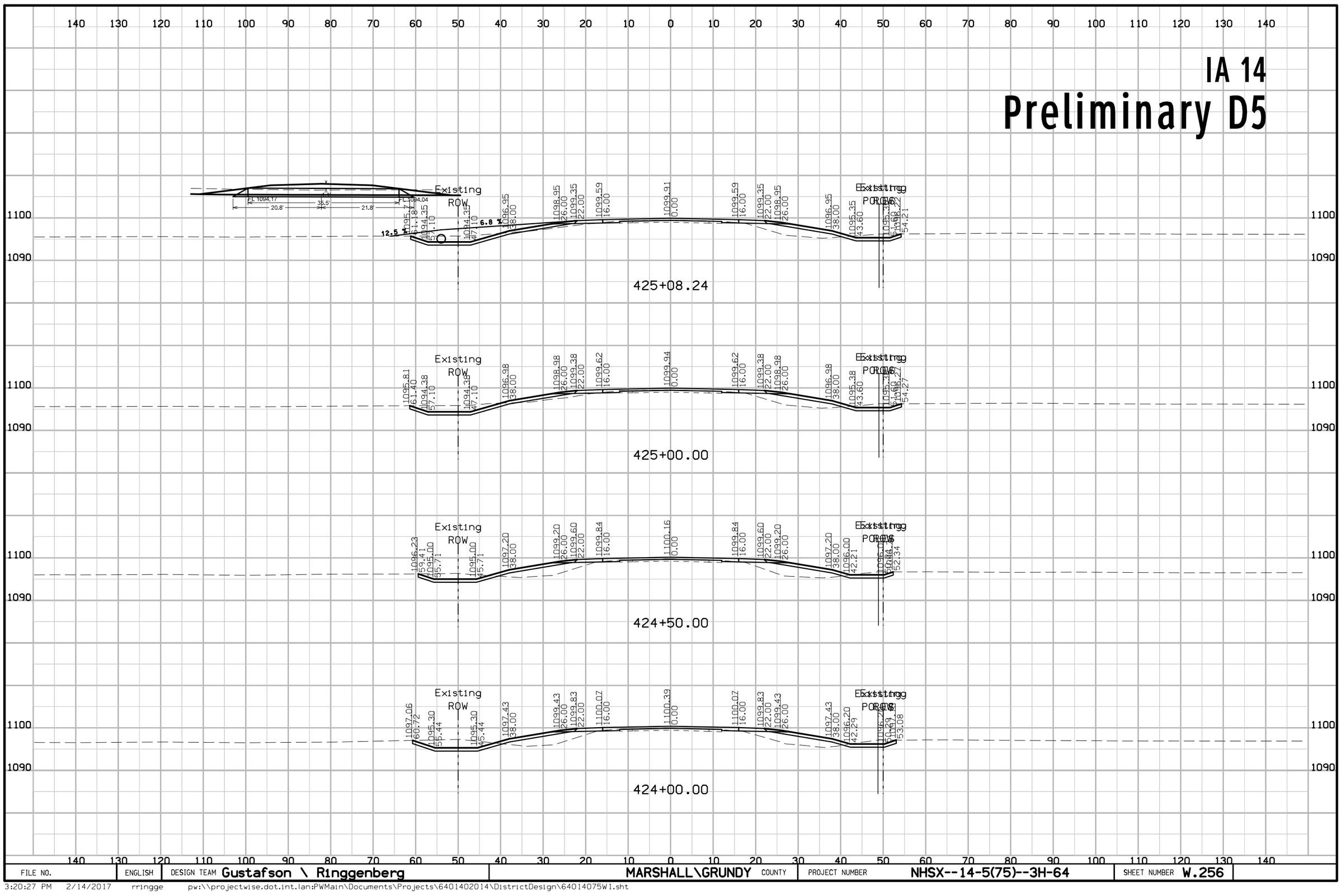
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.256

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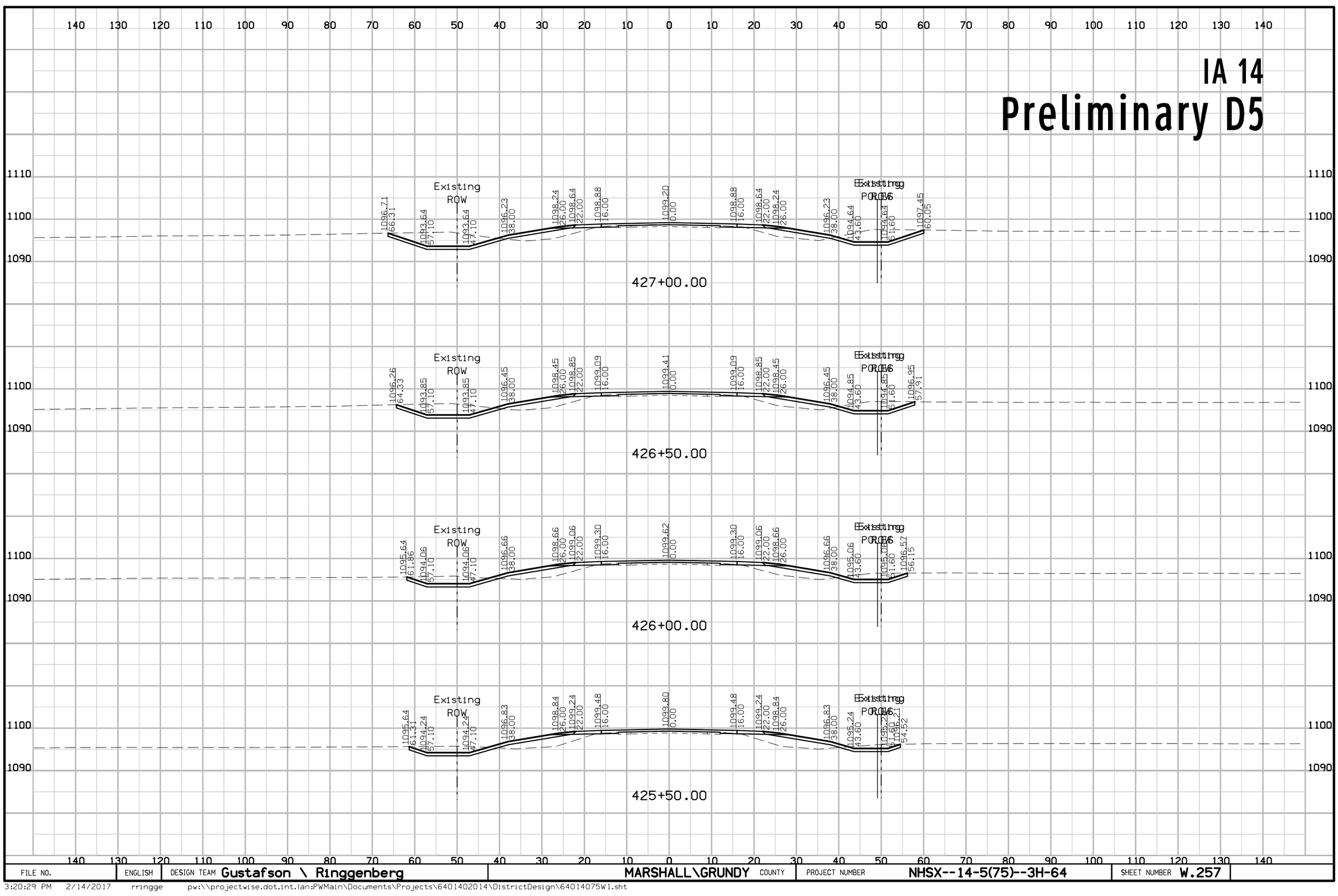
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.257

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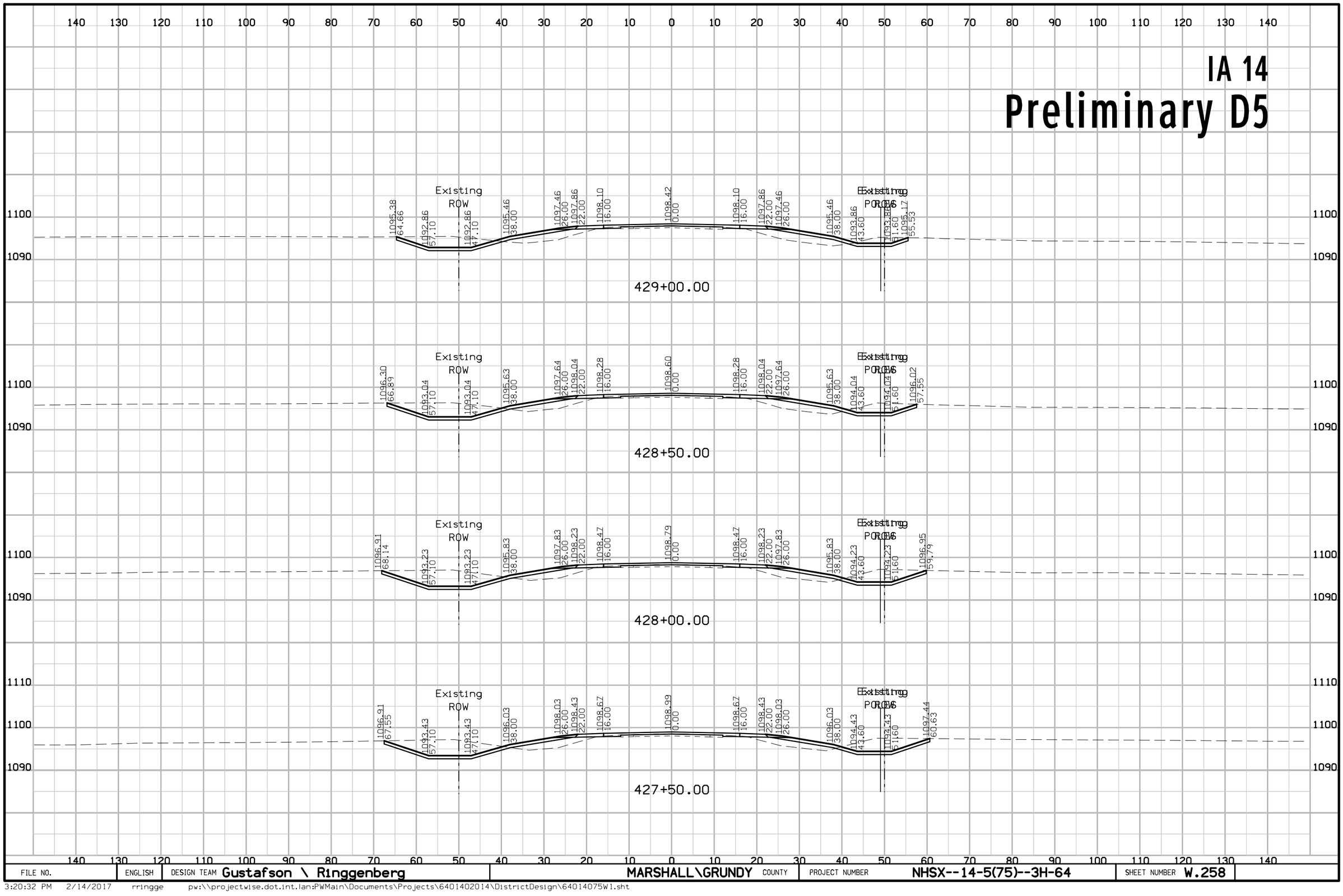
IA 14
Preliminary D5



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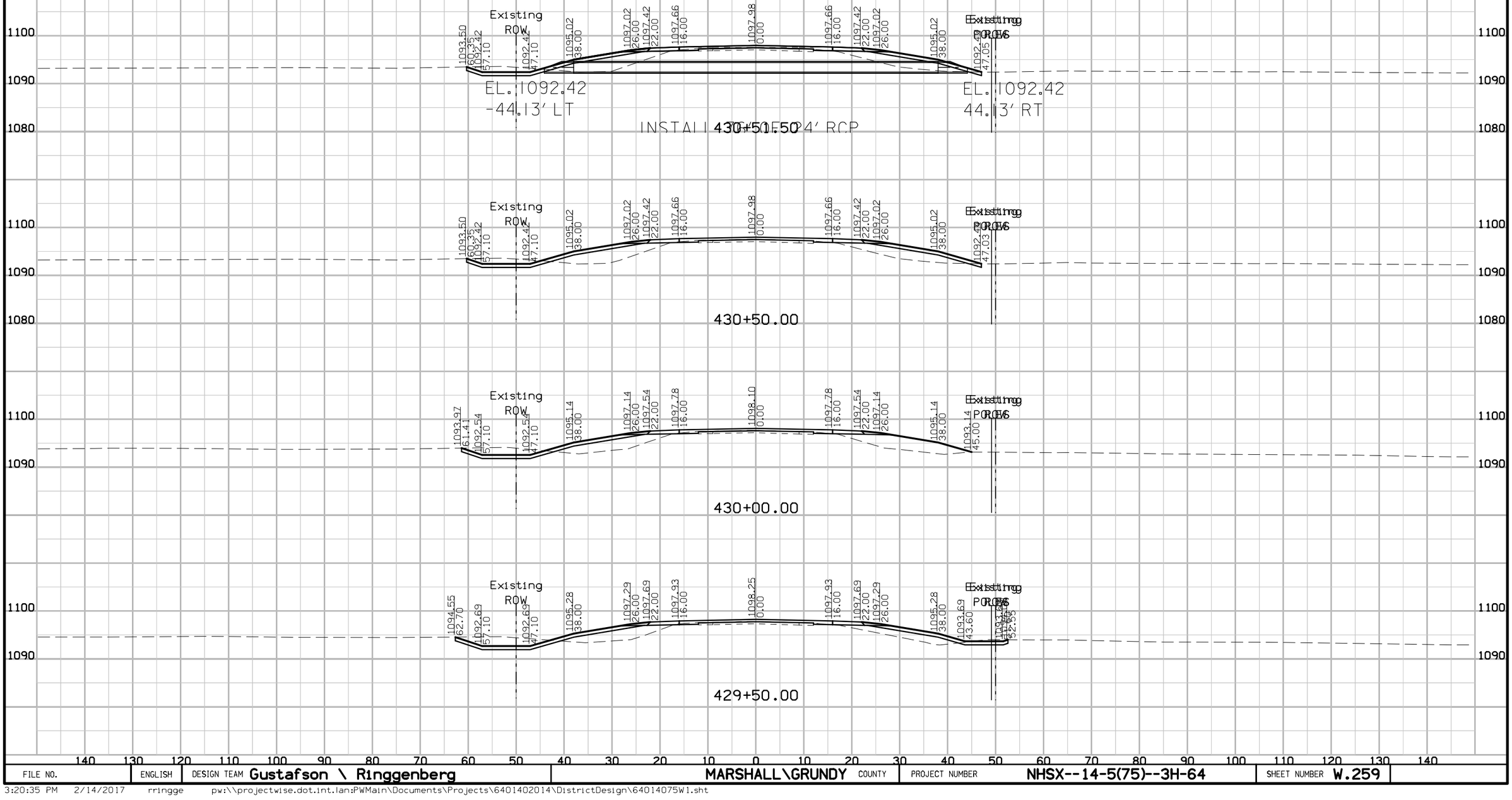
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.259

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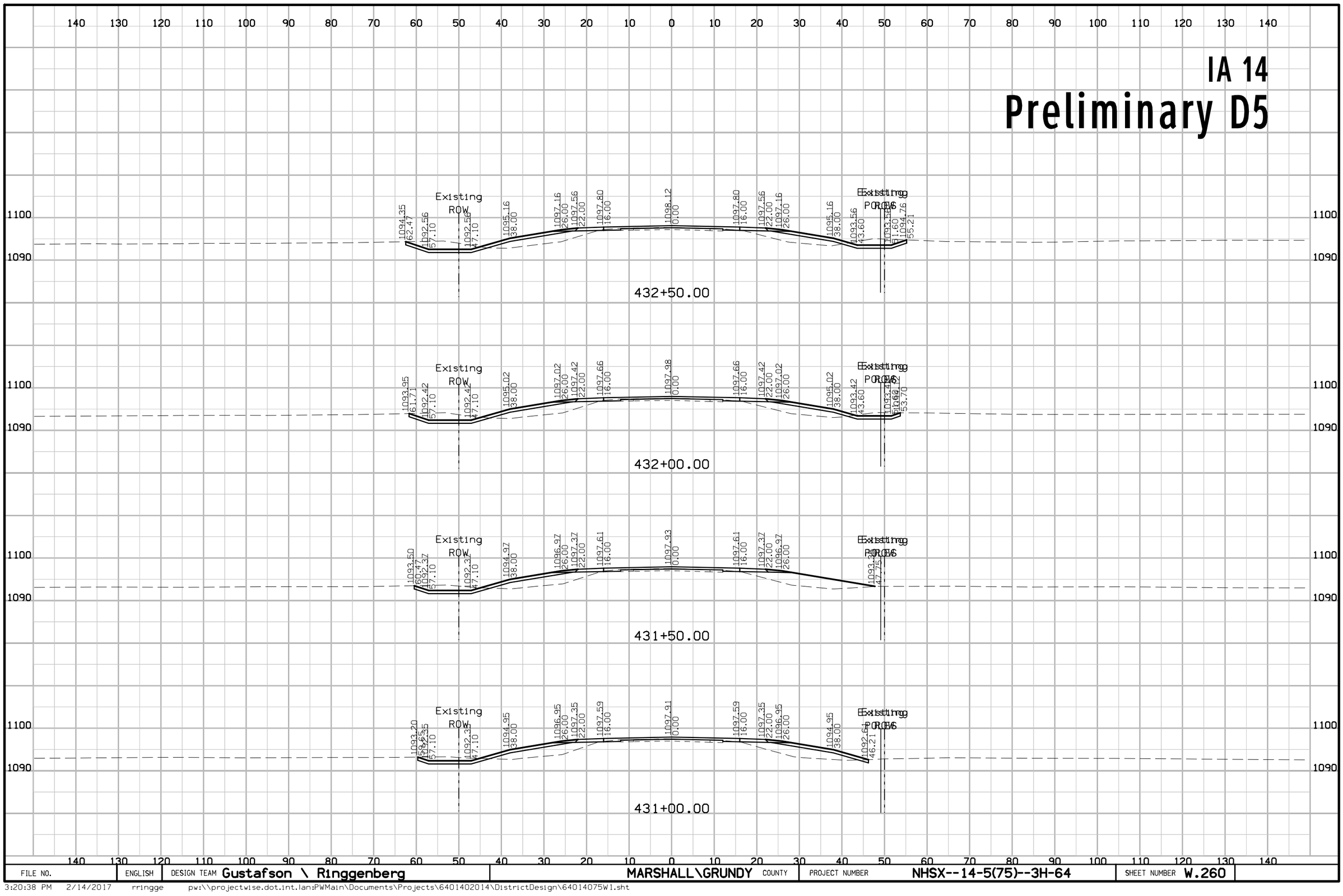
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.260

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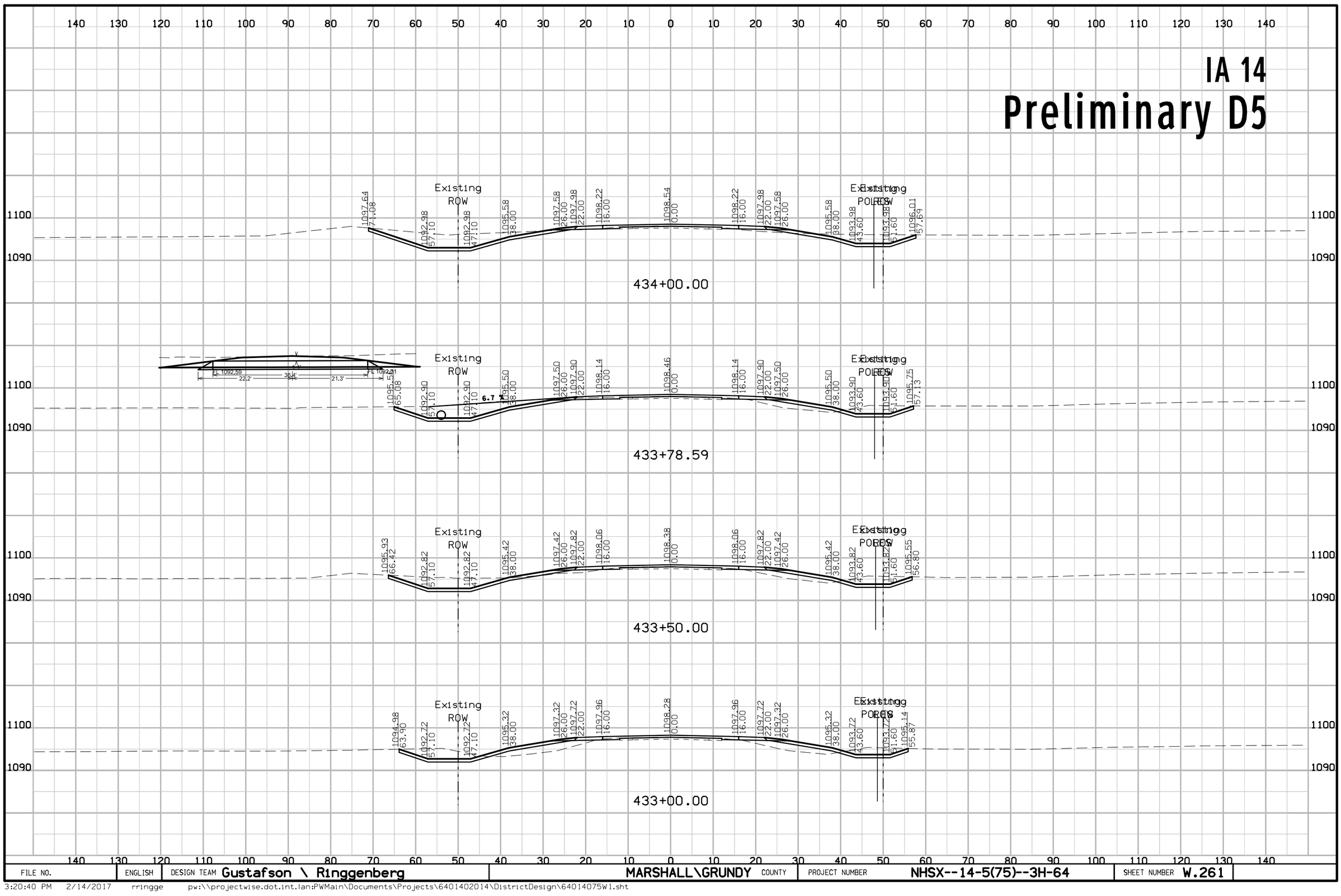
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.261

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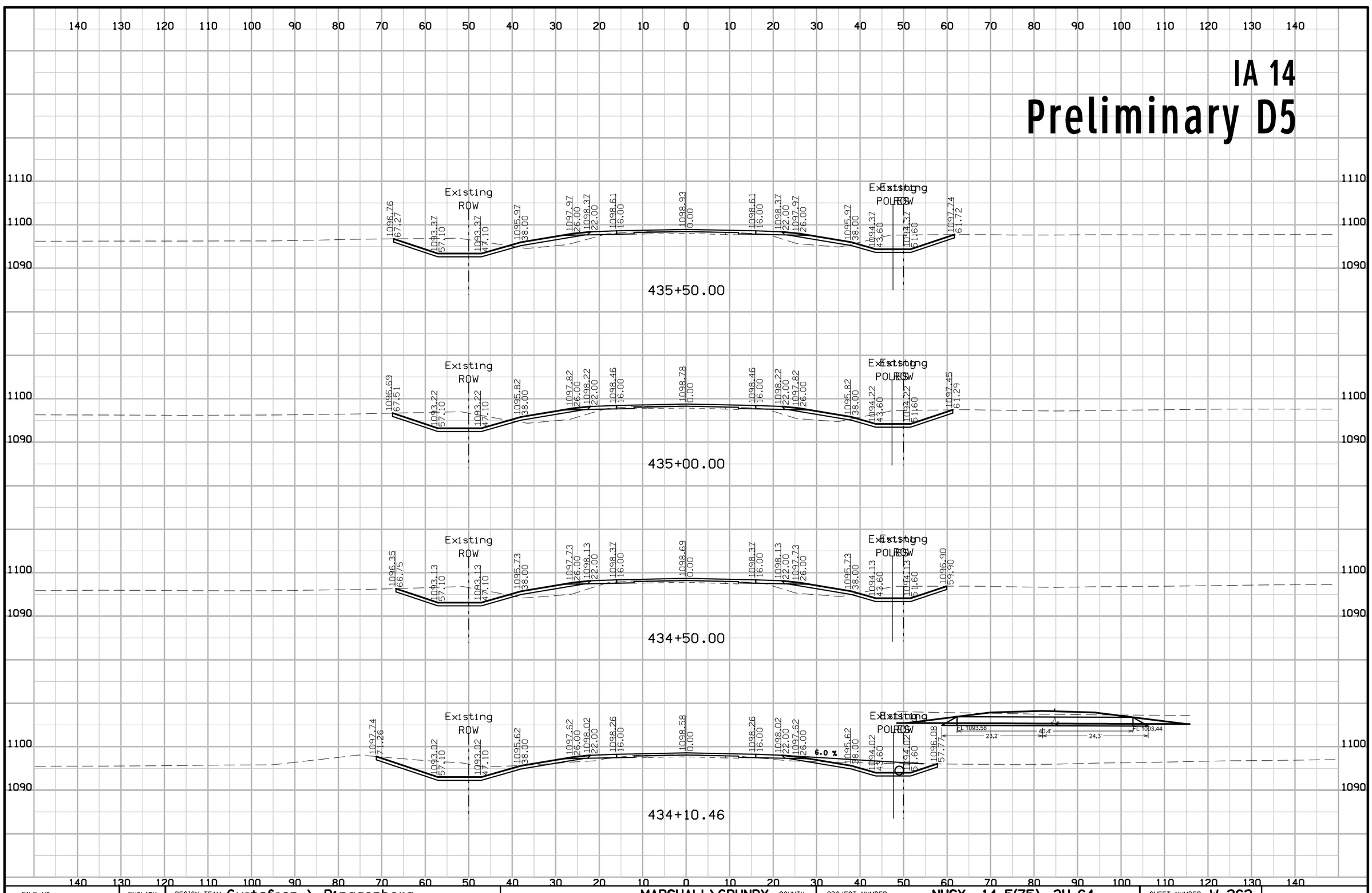
IA 14
Preliminary D5



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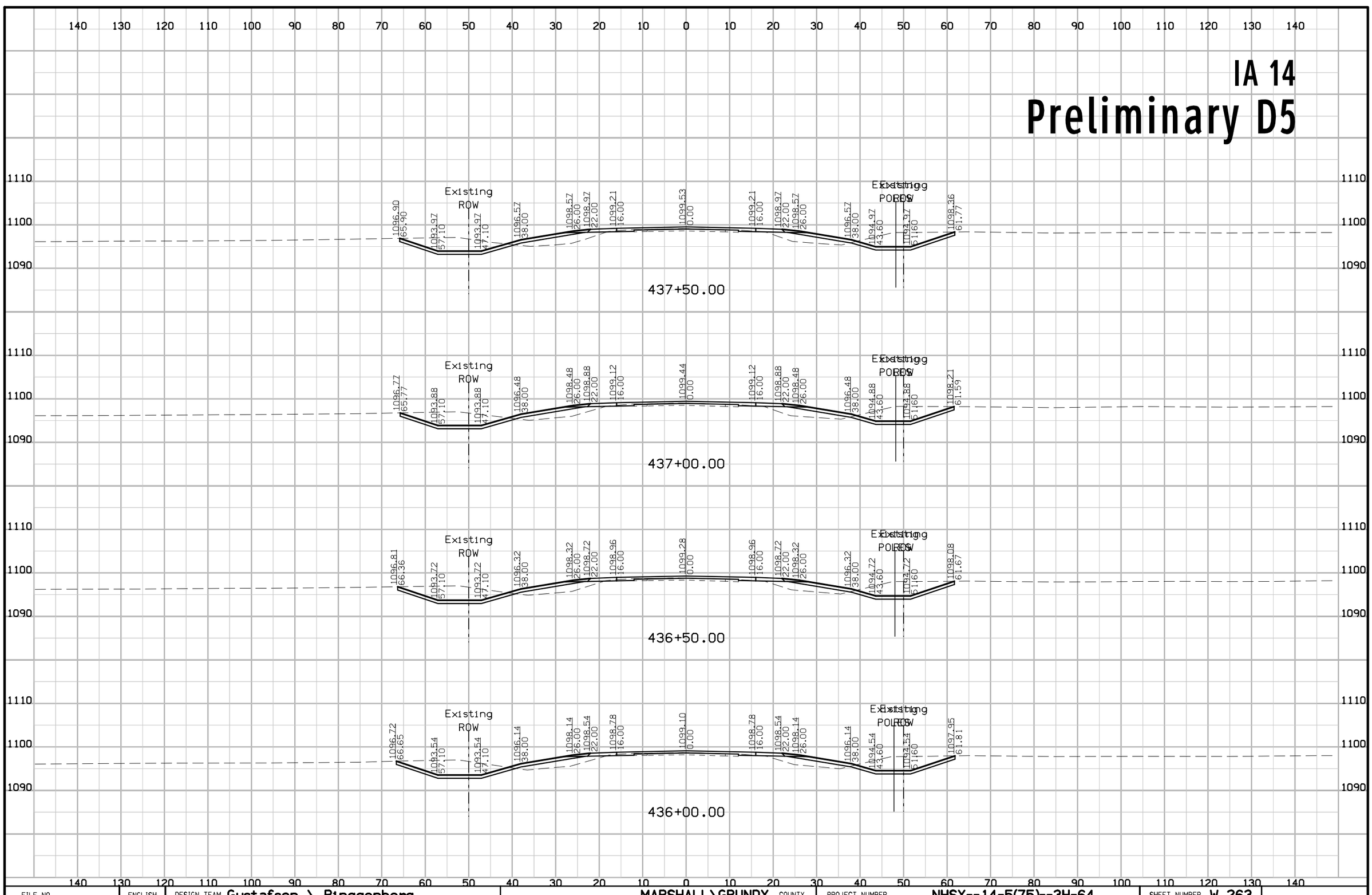
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.263

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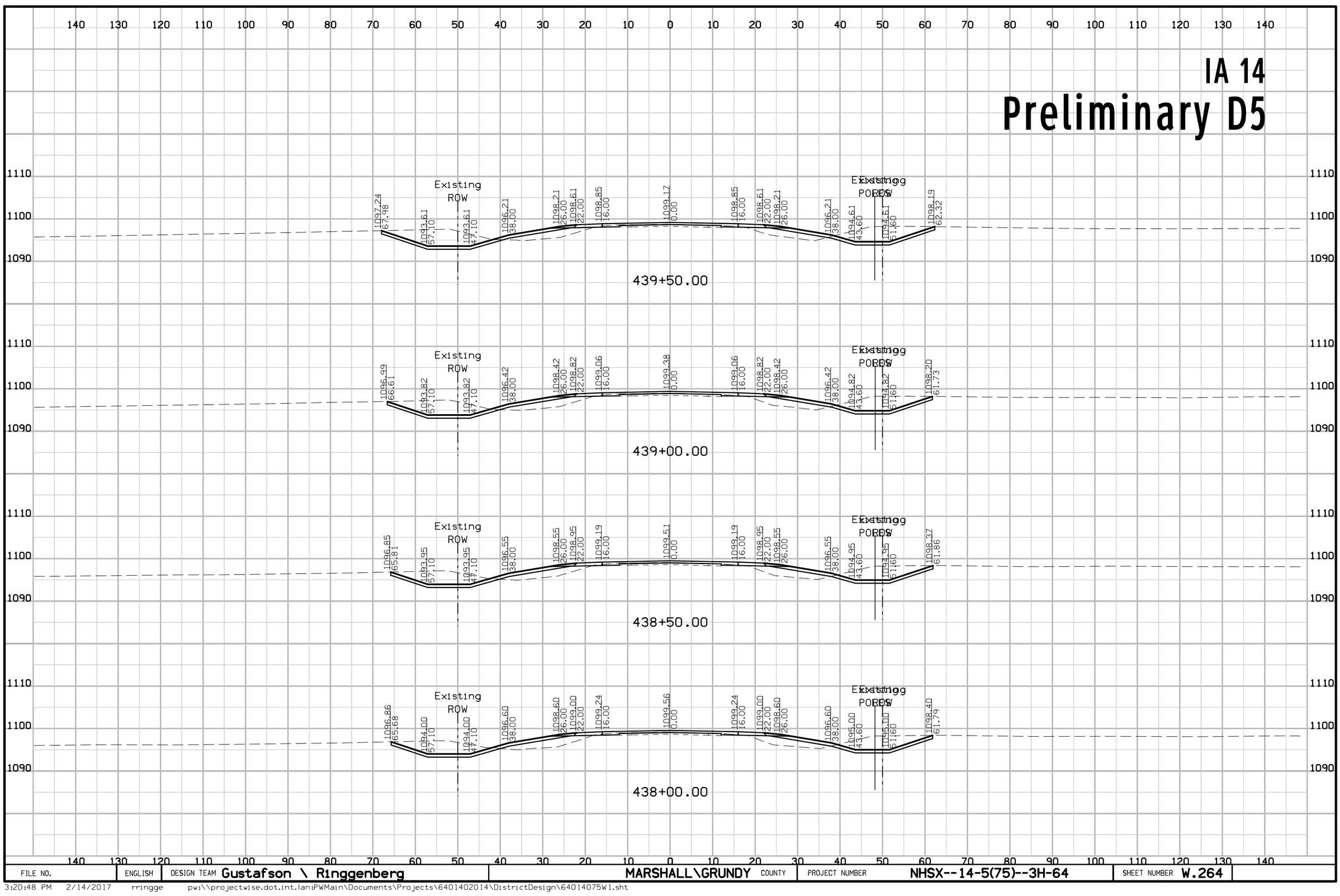
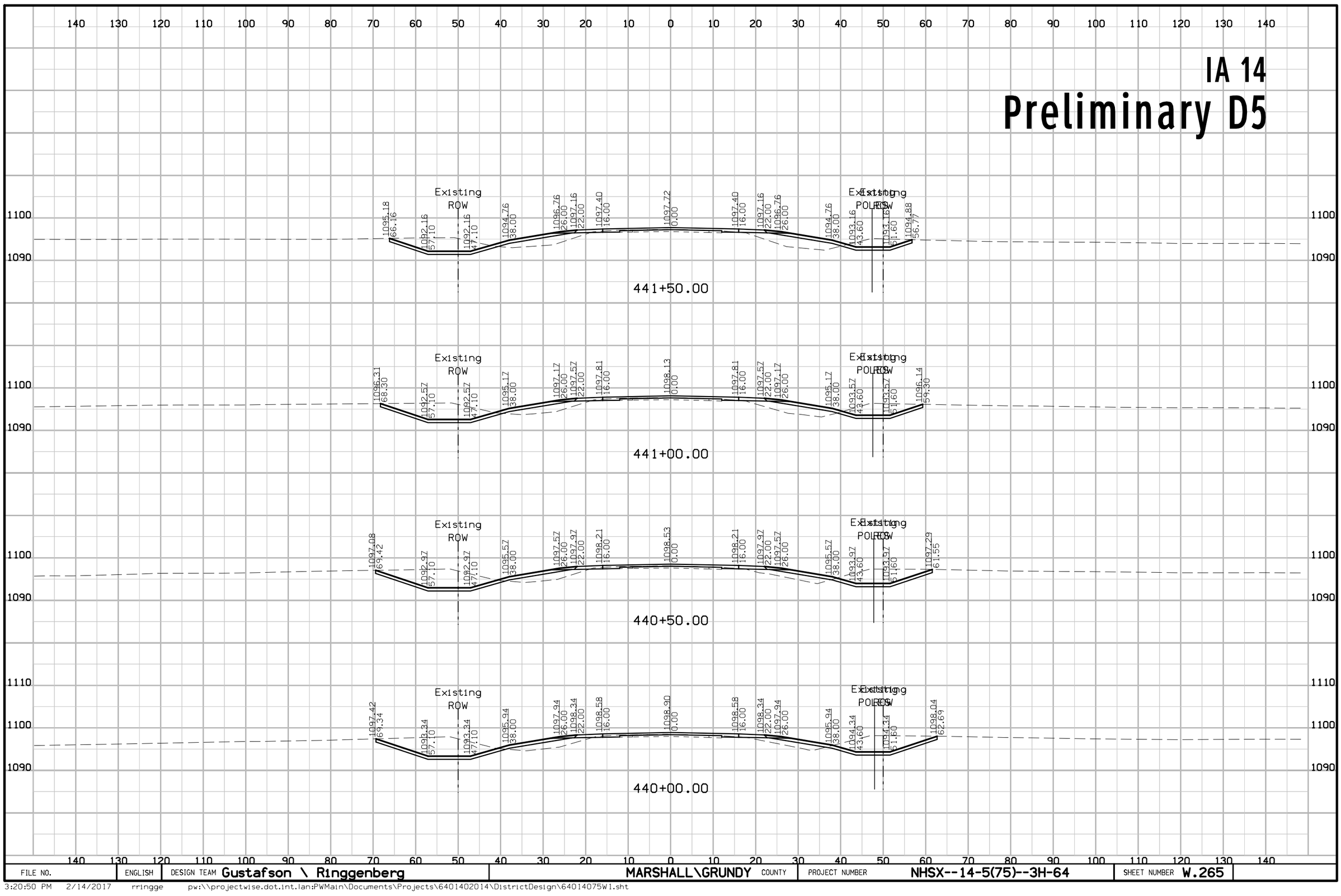
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.264

IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.265

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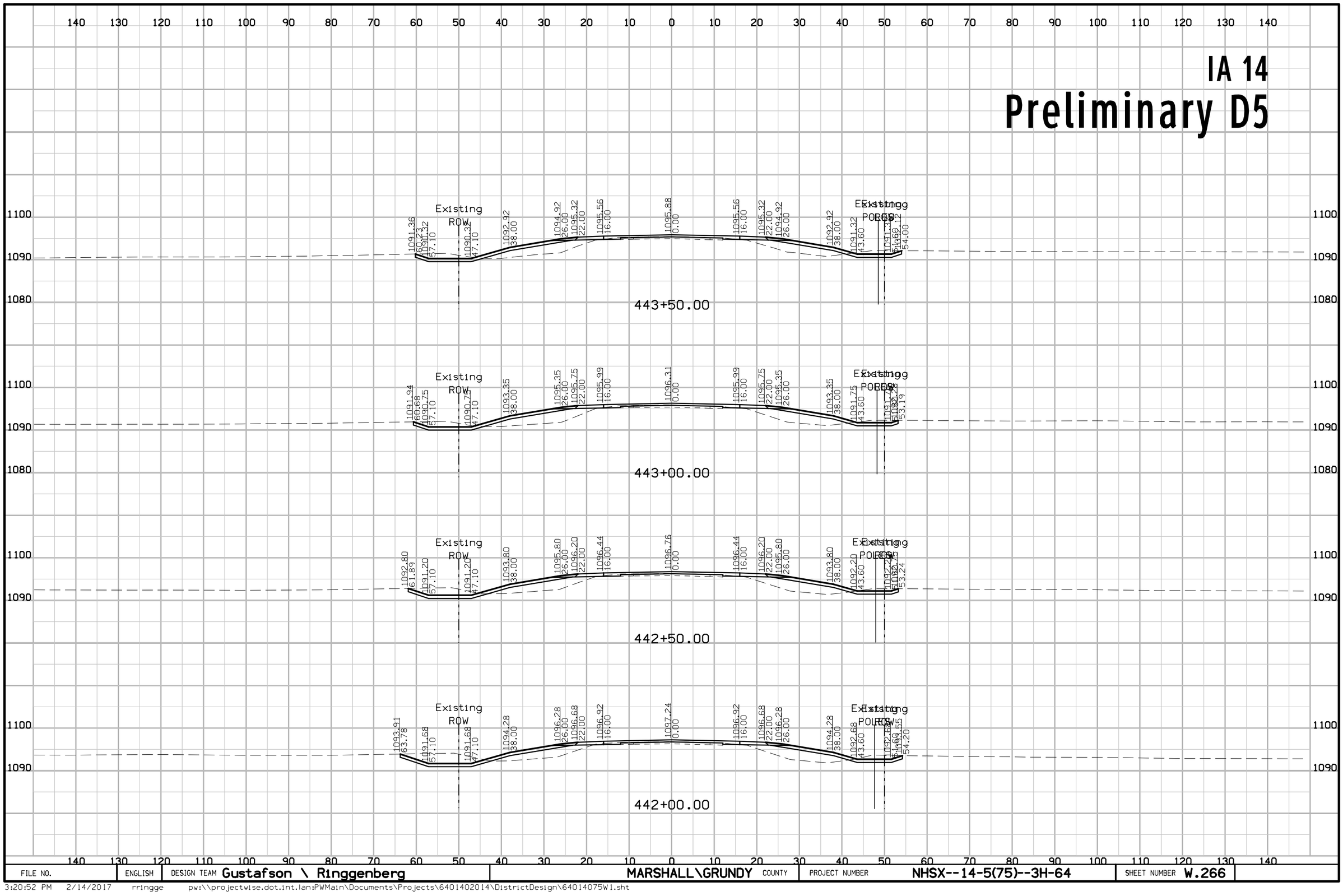
IA 14
Preliminary D5



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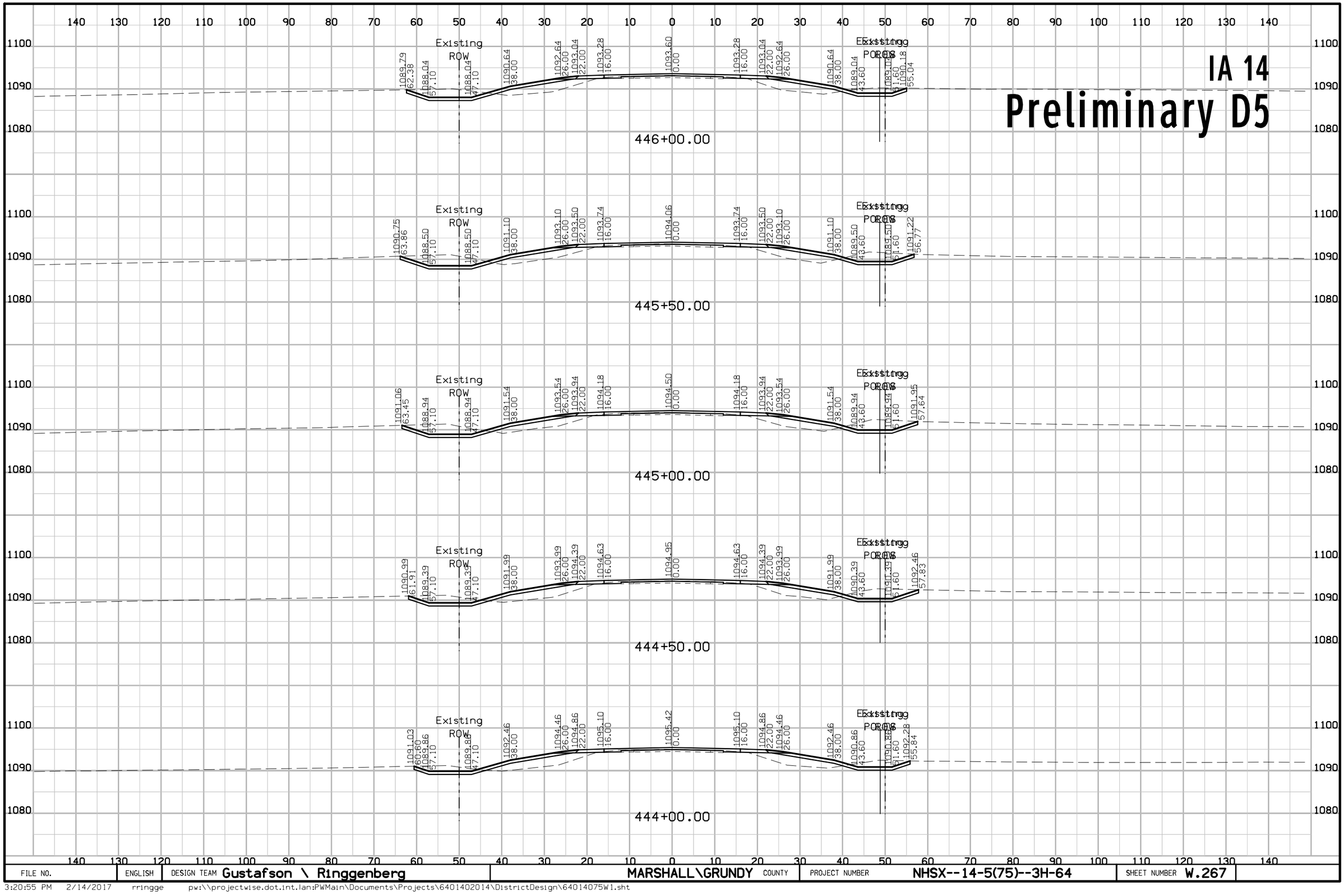
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.267

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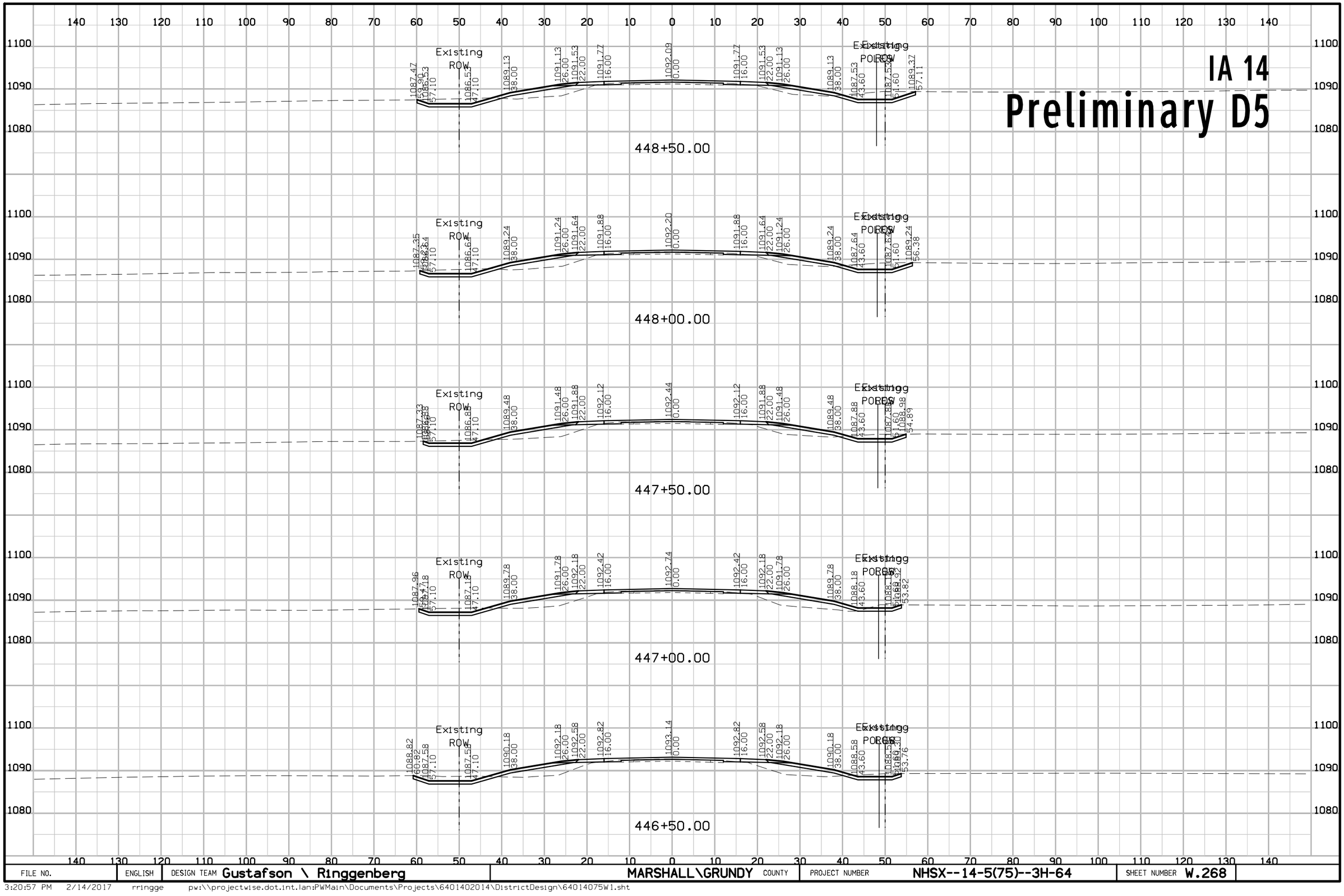
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.268

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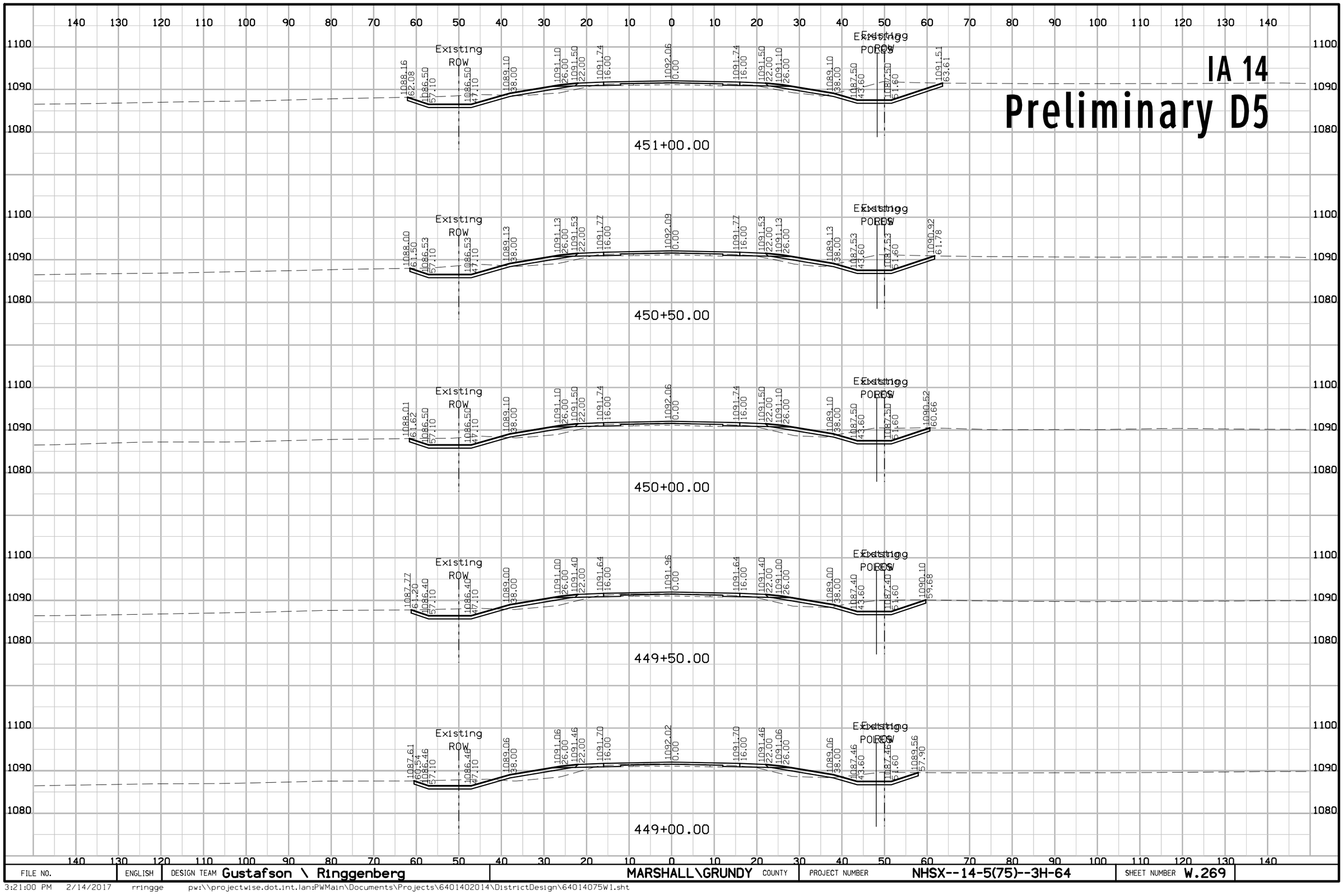
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.269

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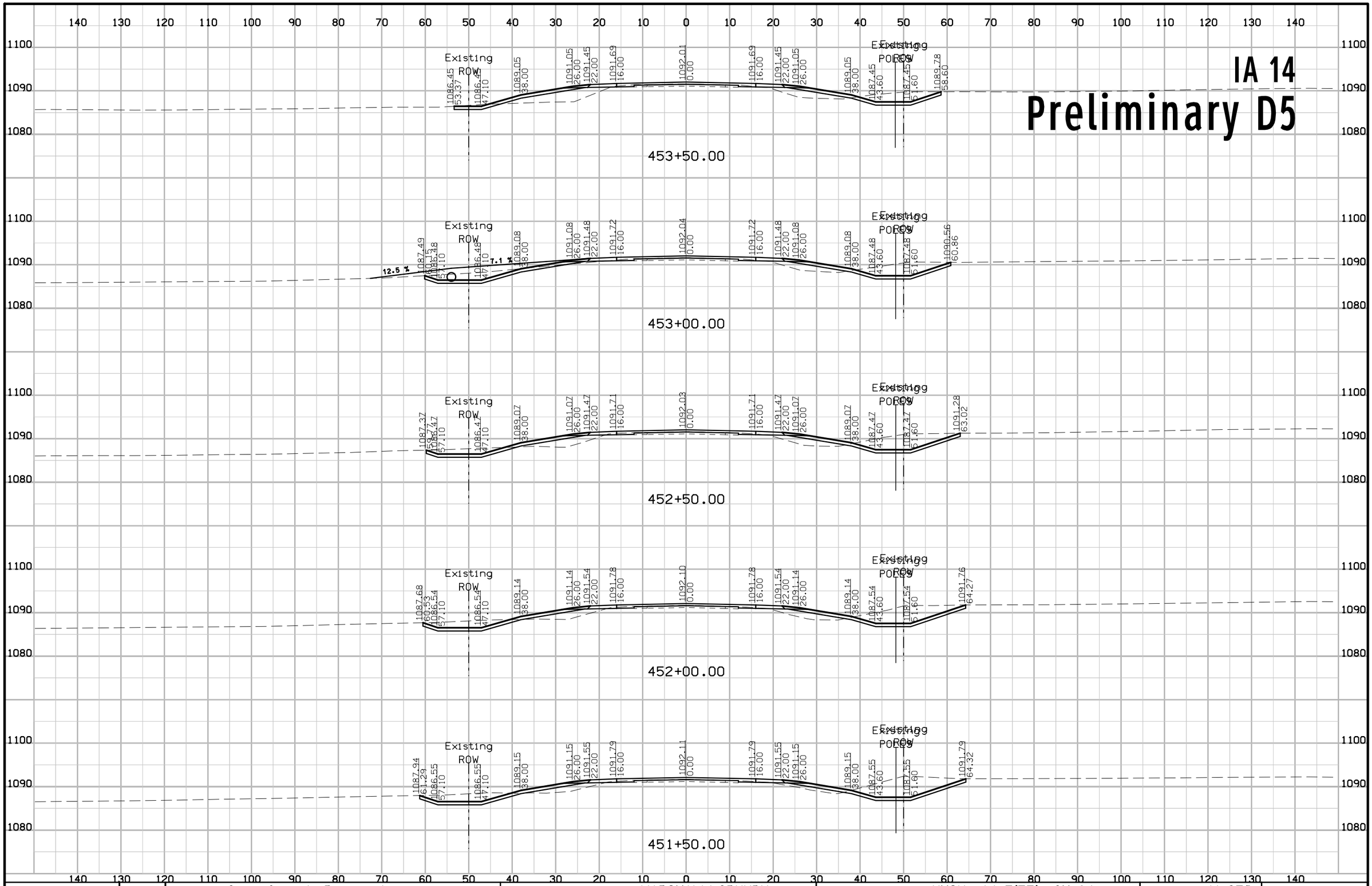
IA 14
Preliminary D5



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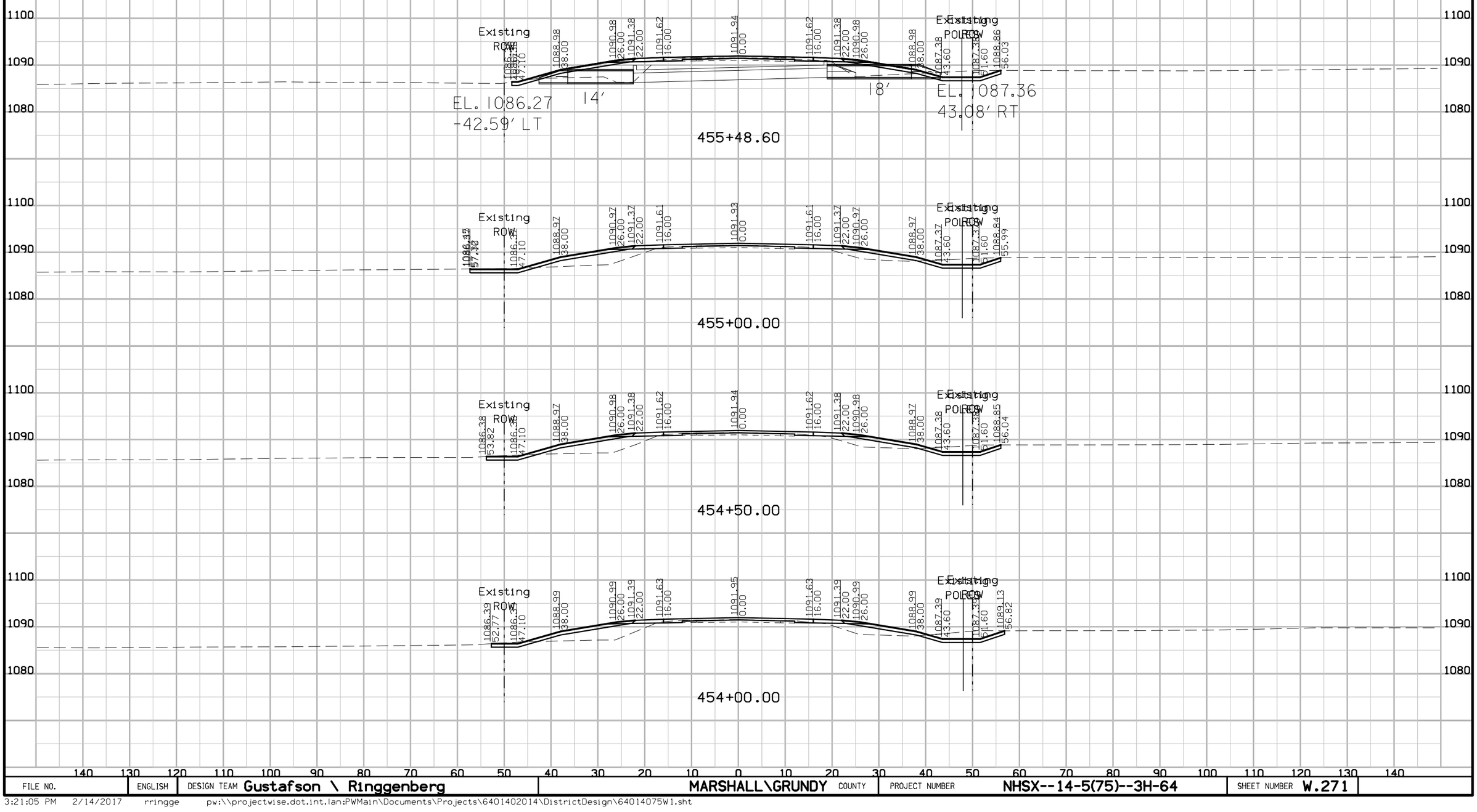
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.271

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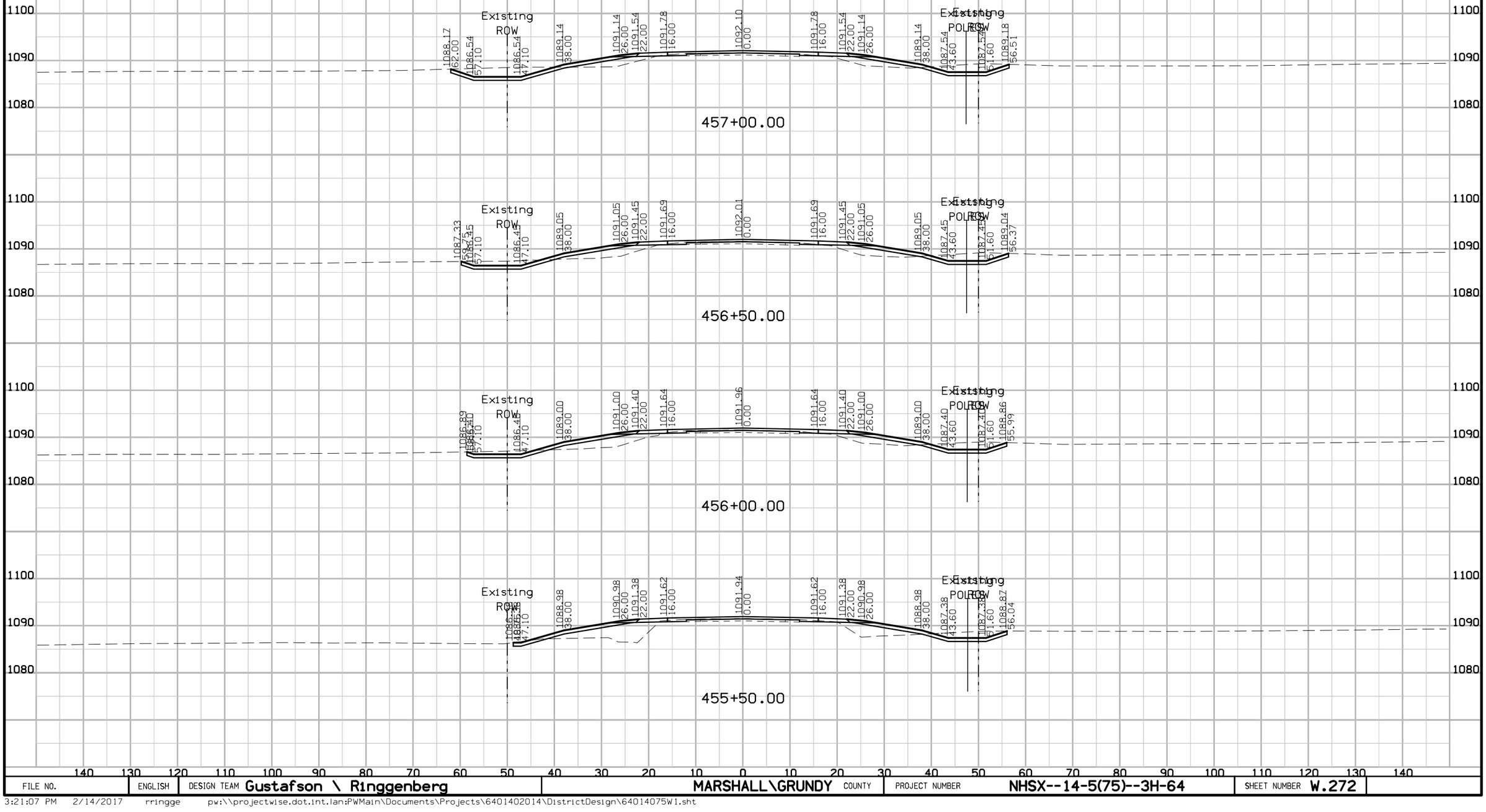
IA 14
Preliminary D5



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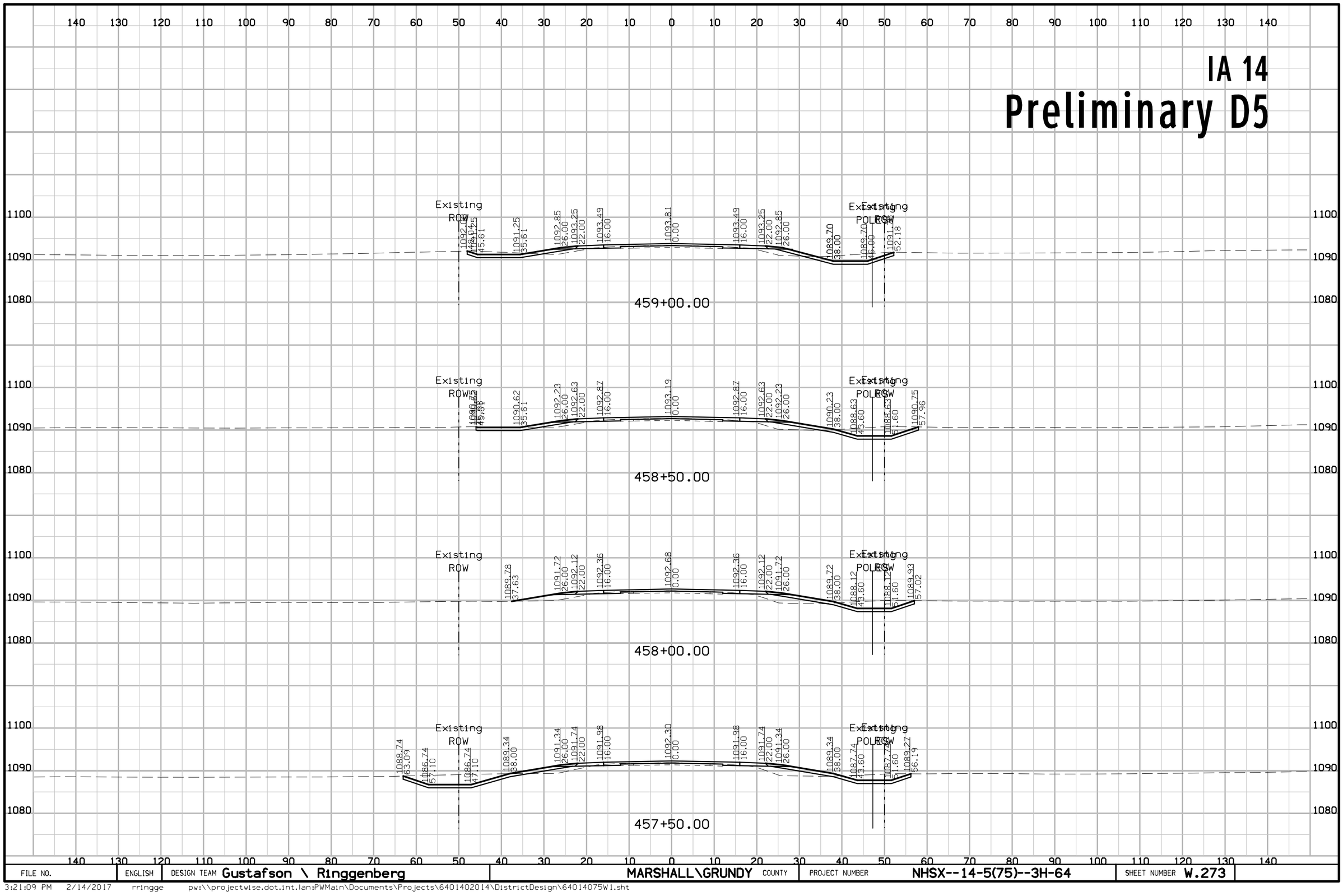
IA 14
Preliminary D5



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IA 14
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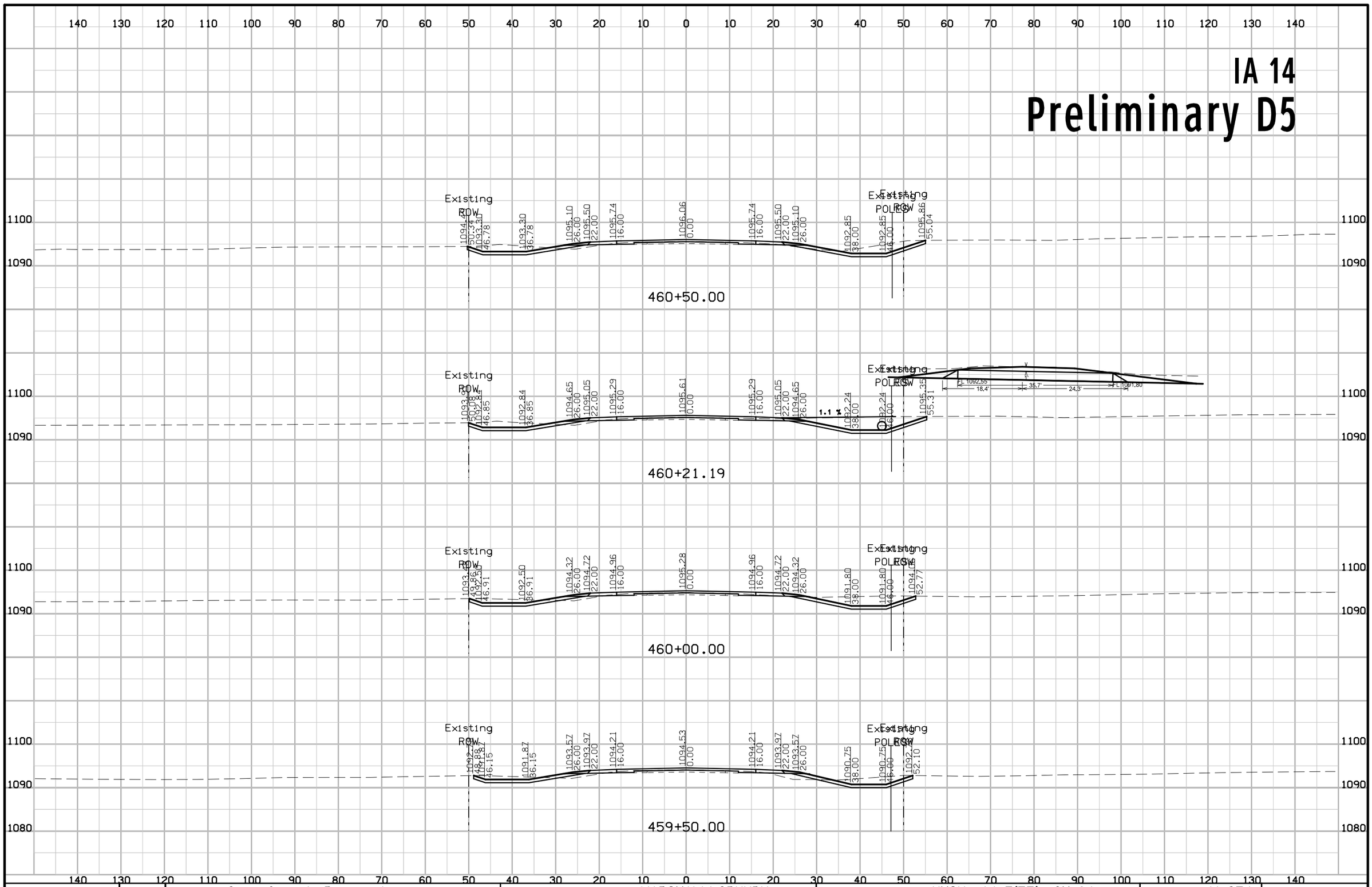

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IA 14
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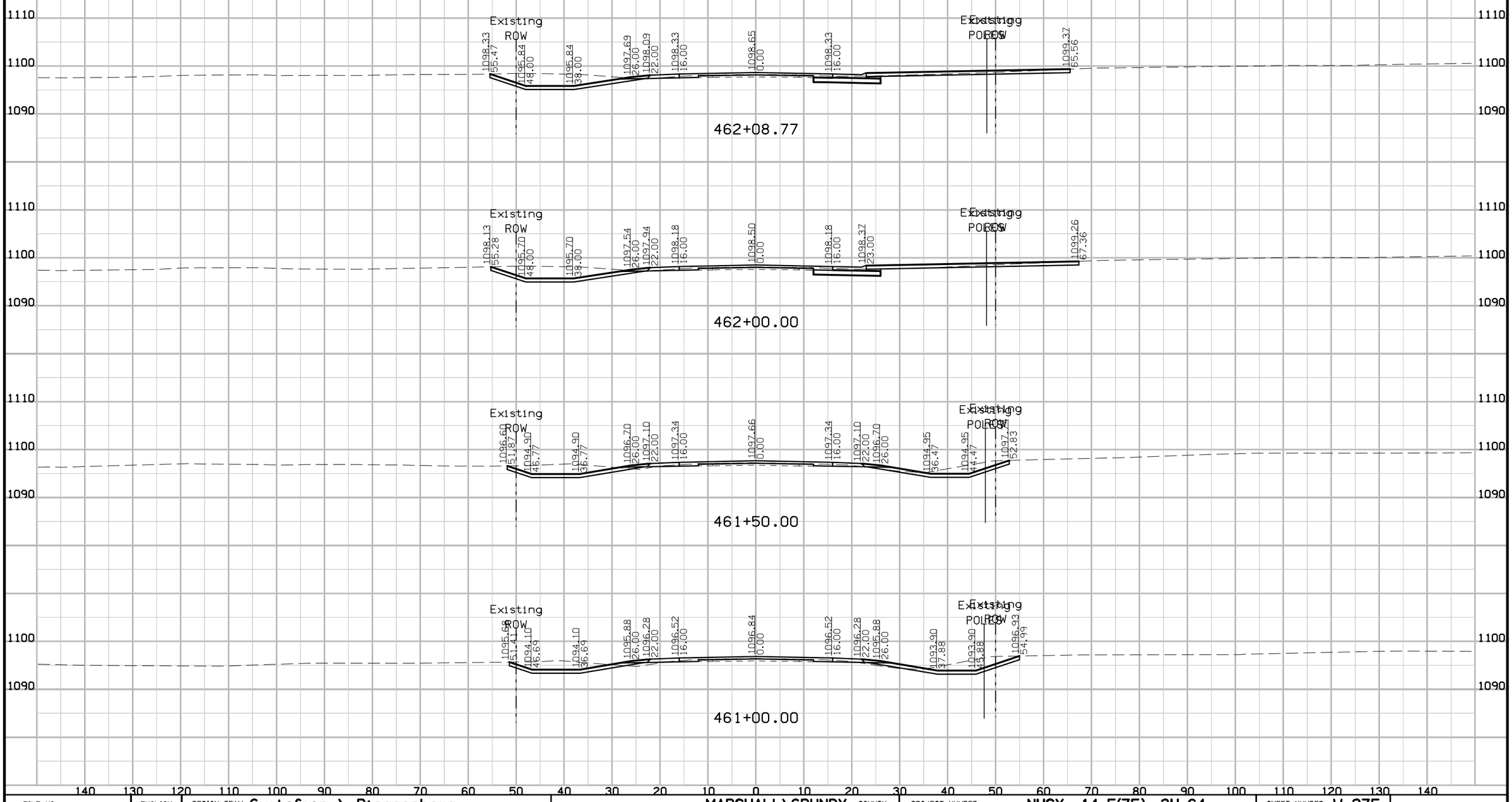

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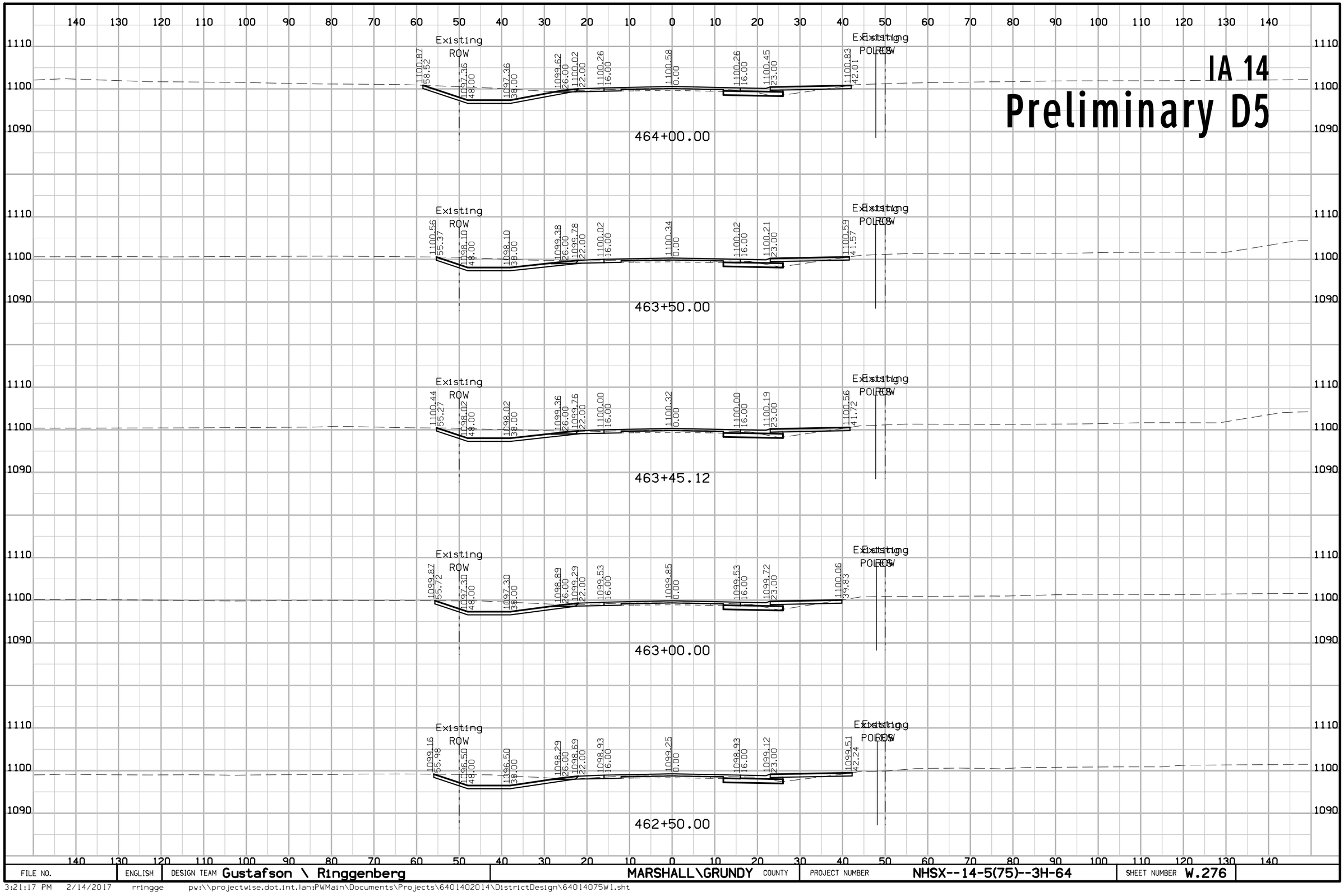
IA 14
Preliminary D5



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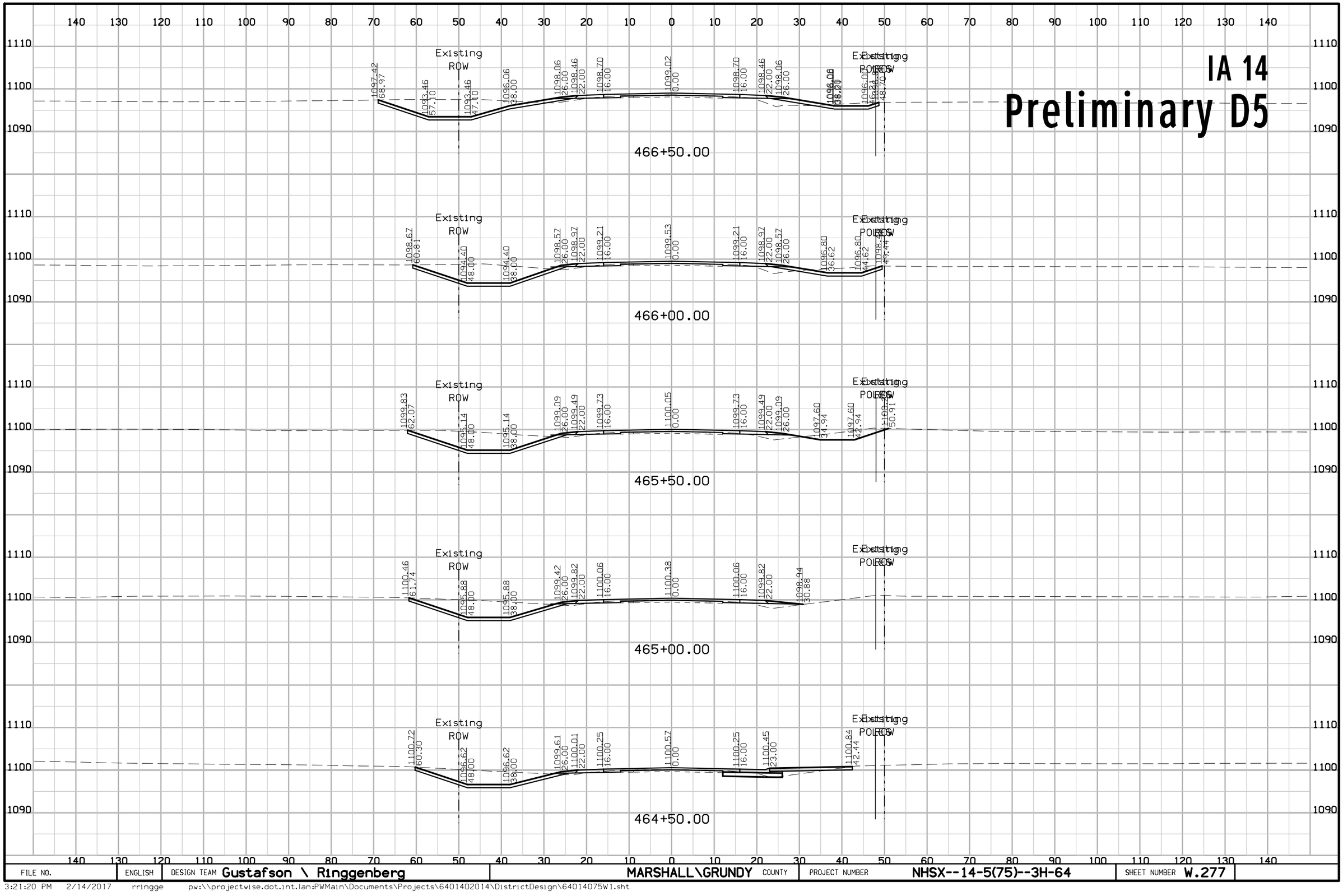
IA 14
Preliminary D5



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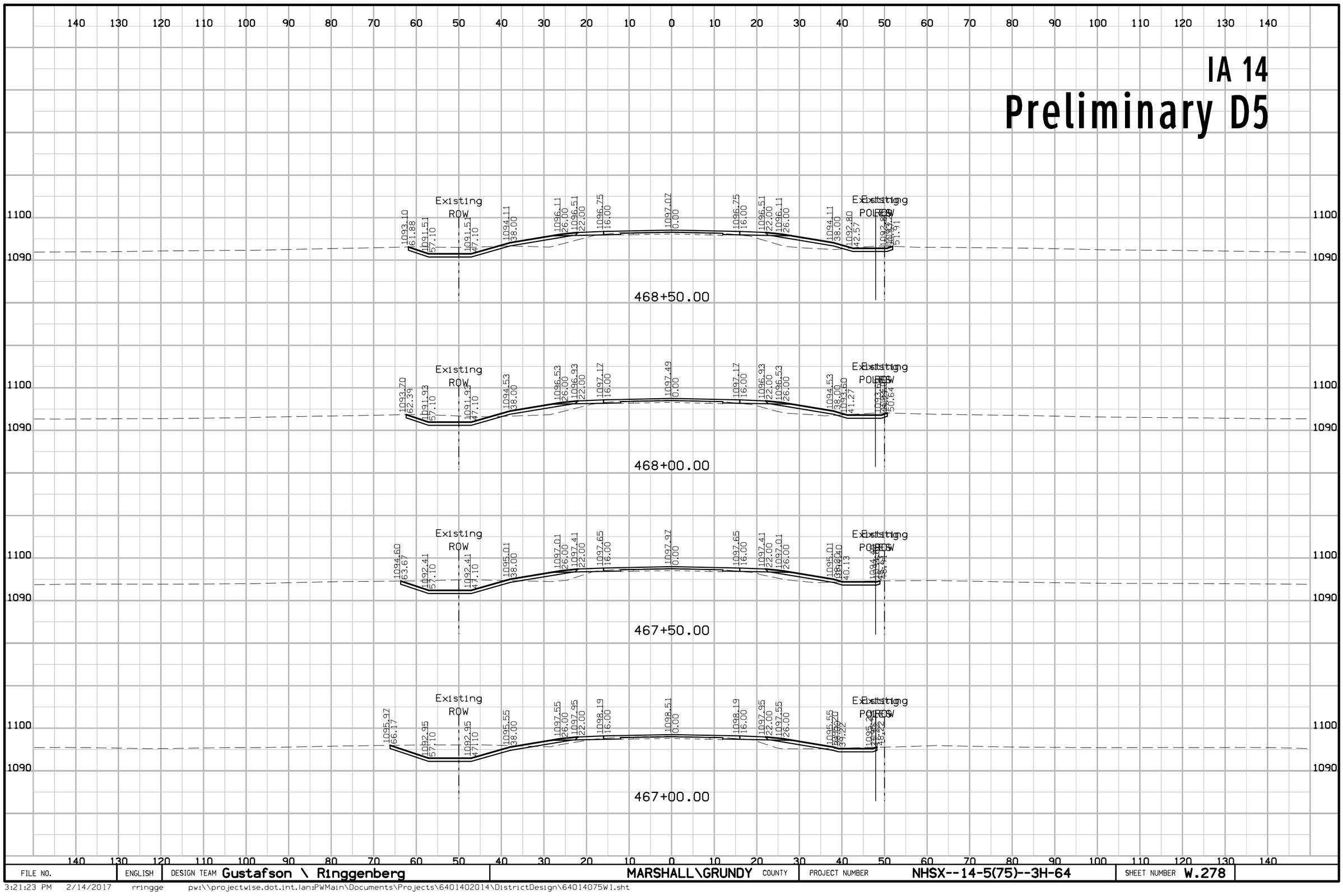
IA 14
Preliminary D5



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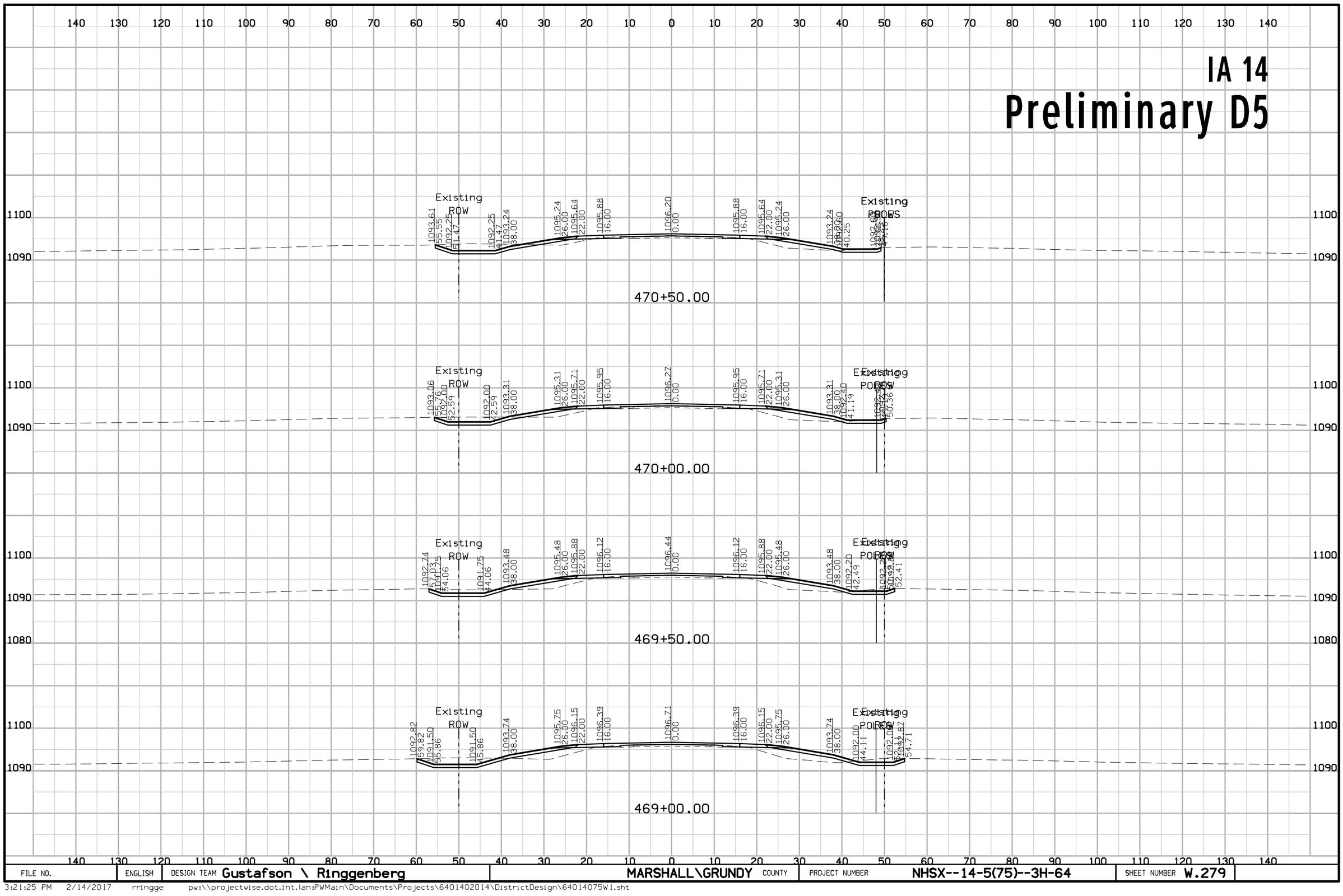
IA 14
Preliminary D5



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IA 14
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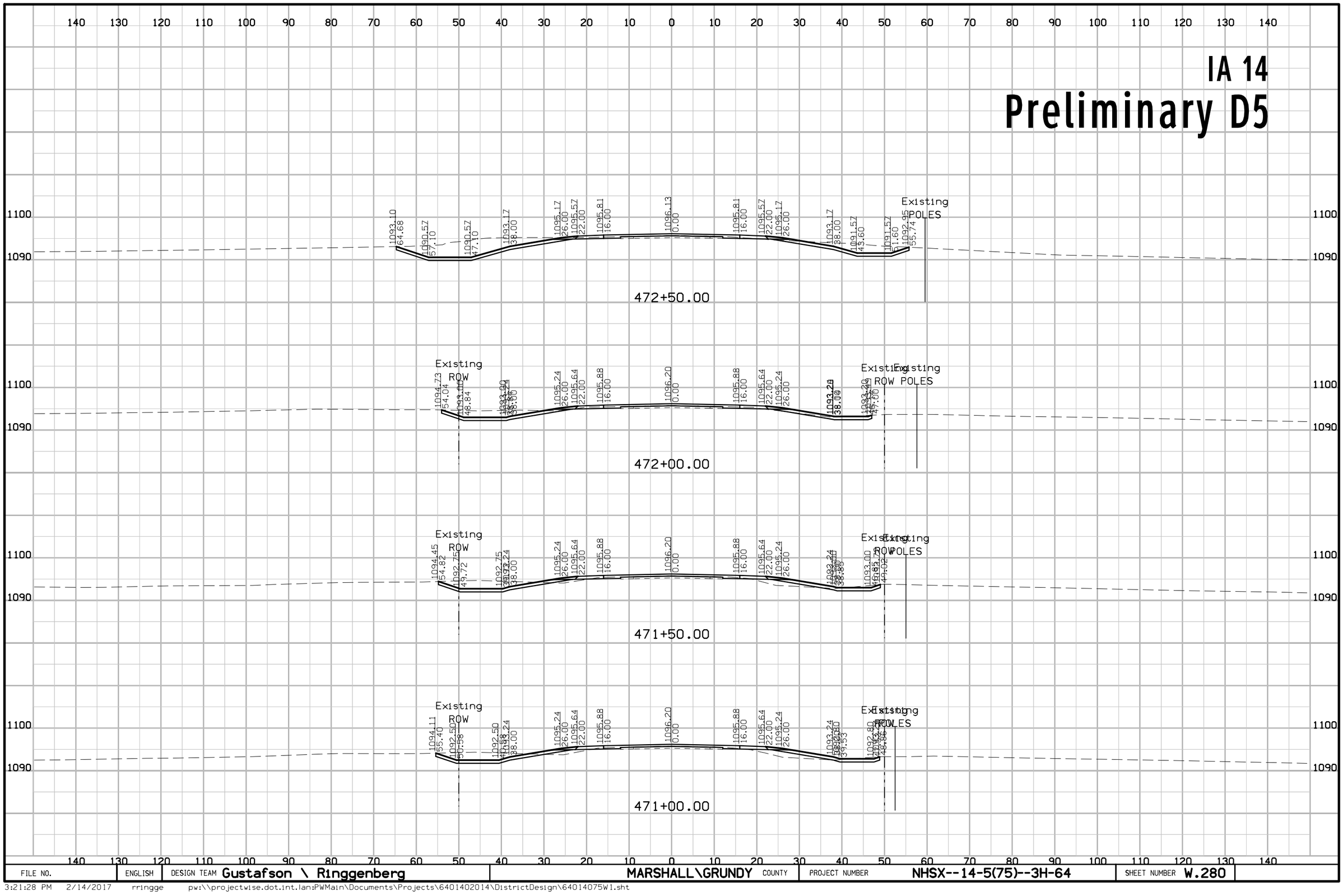

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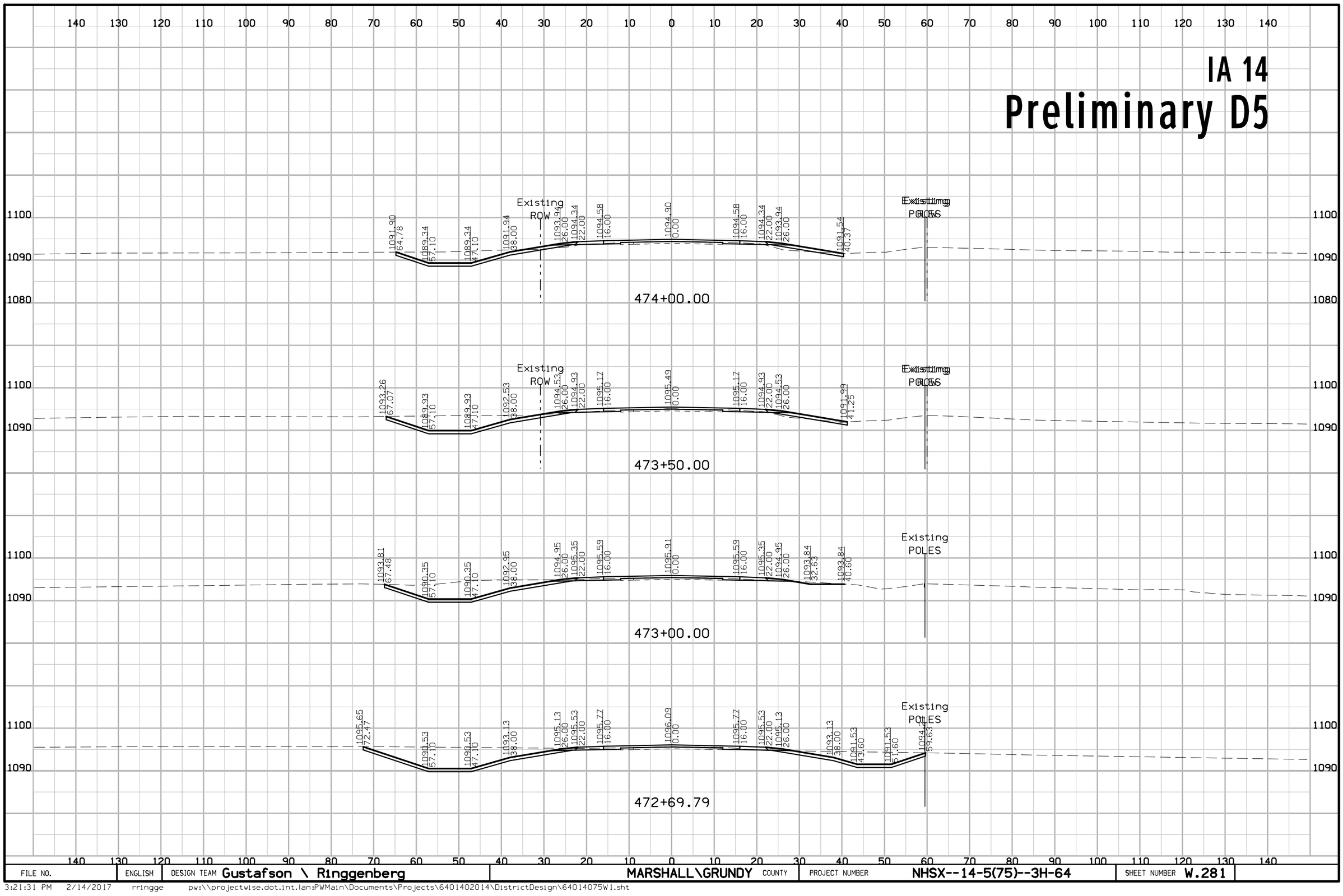
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.281

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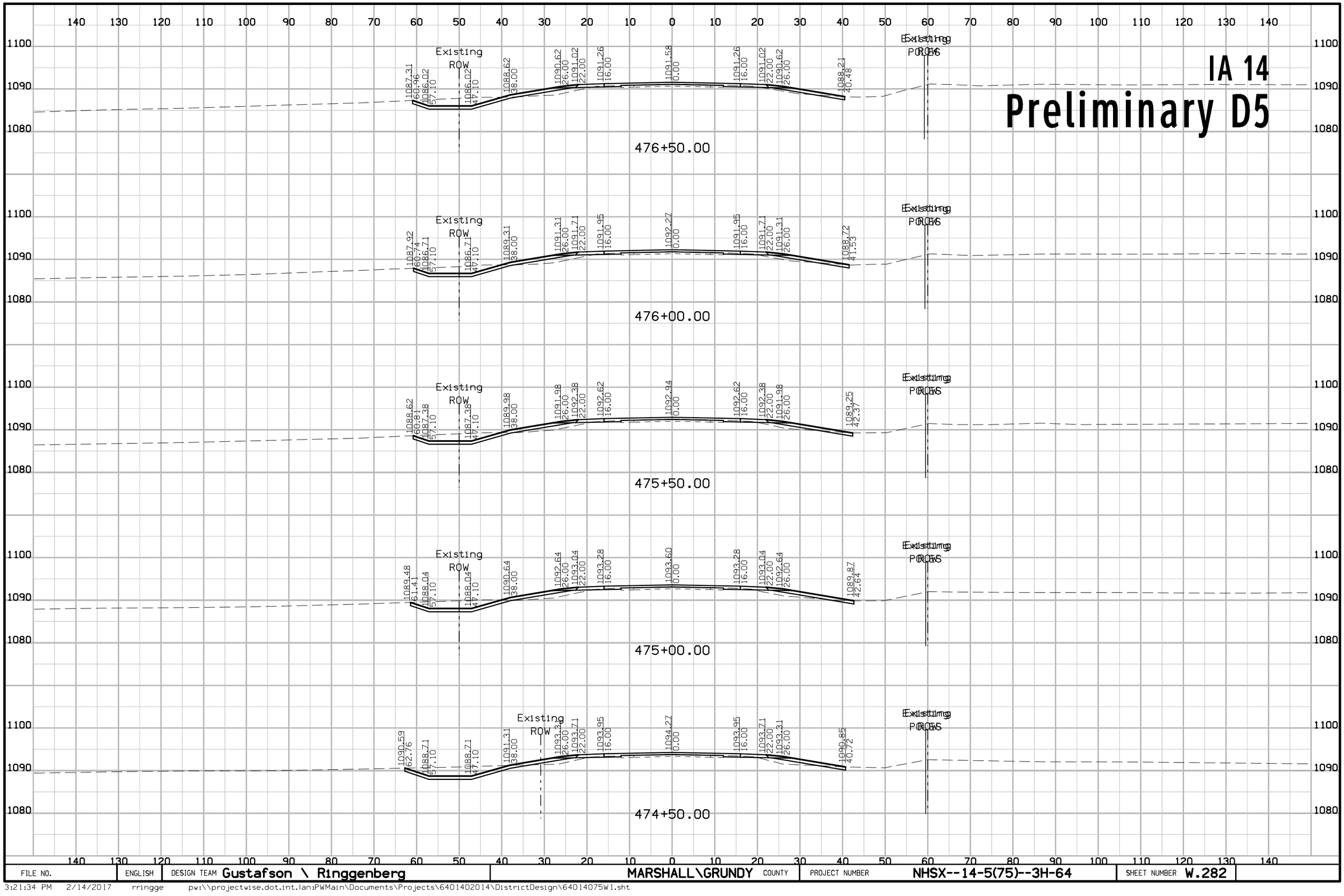
IA 14
Preliminary D5



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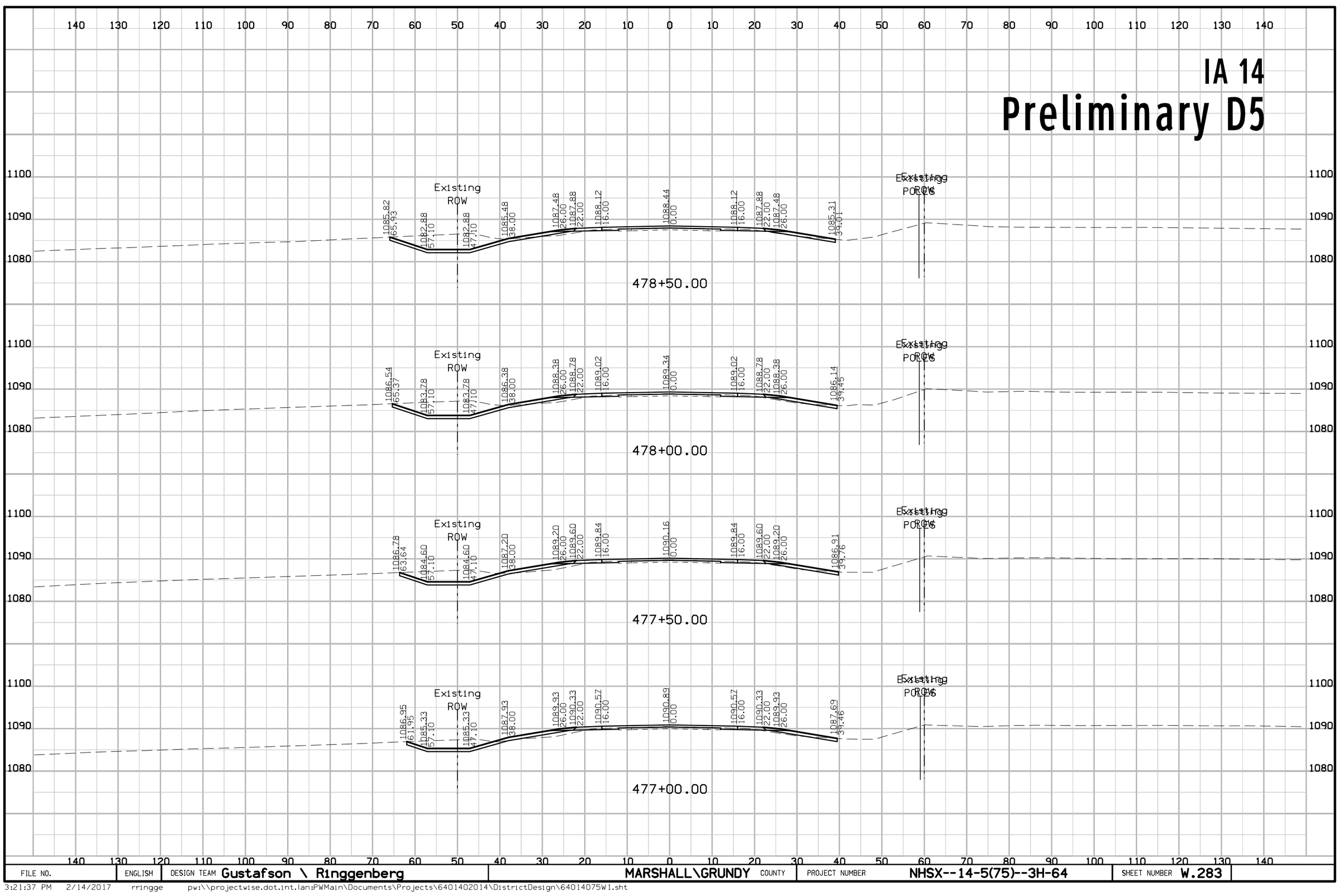
IA 14
Preliminary D5



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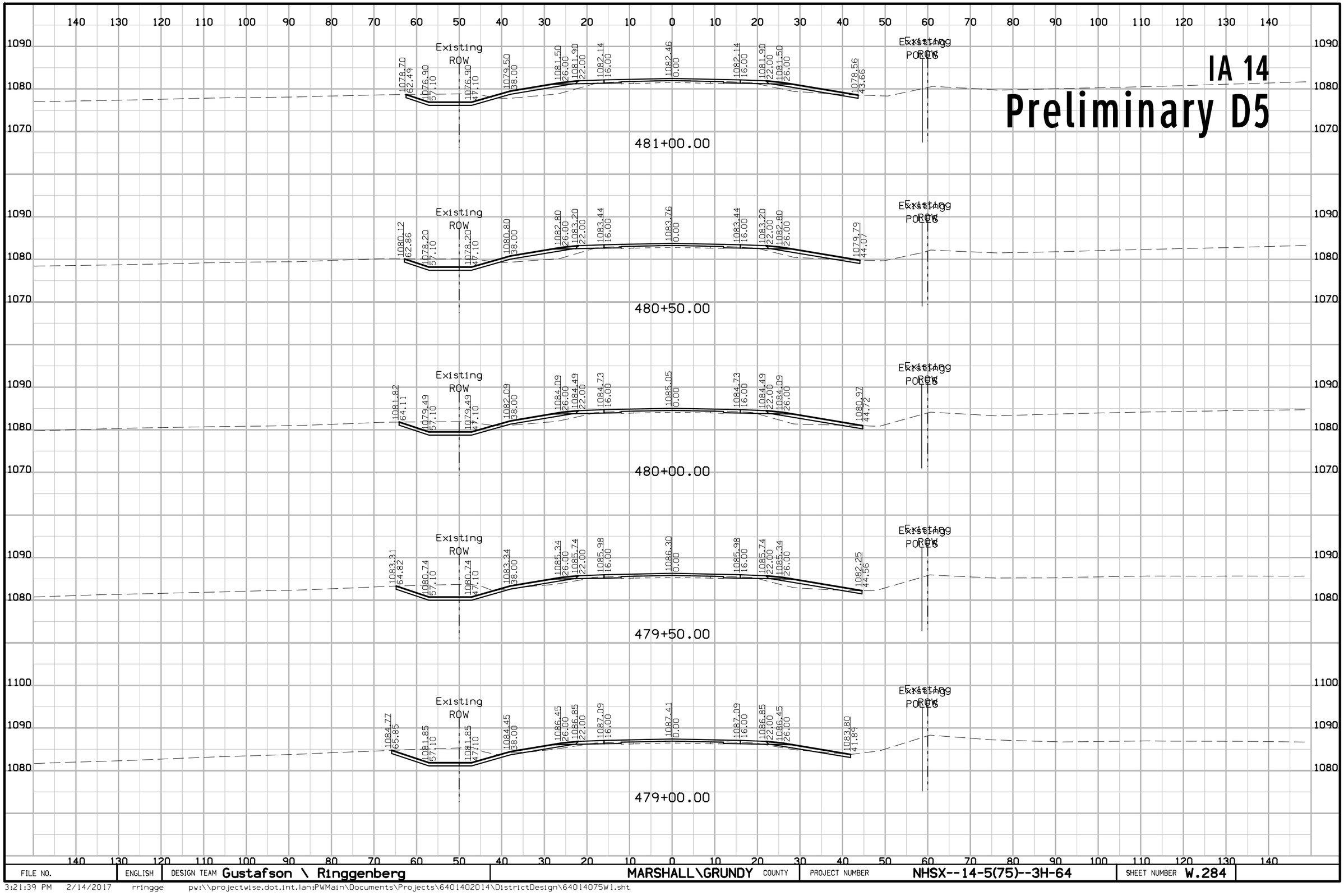
IA 14
Preliminary D5



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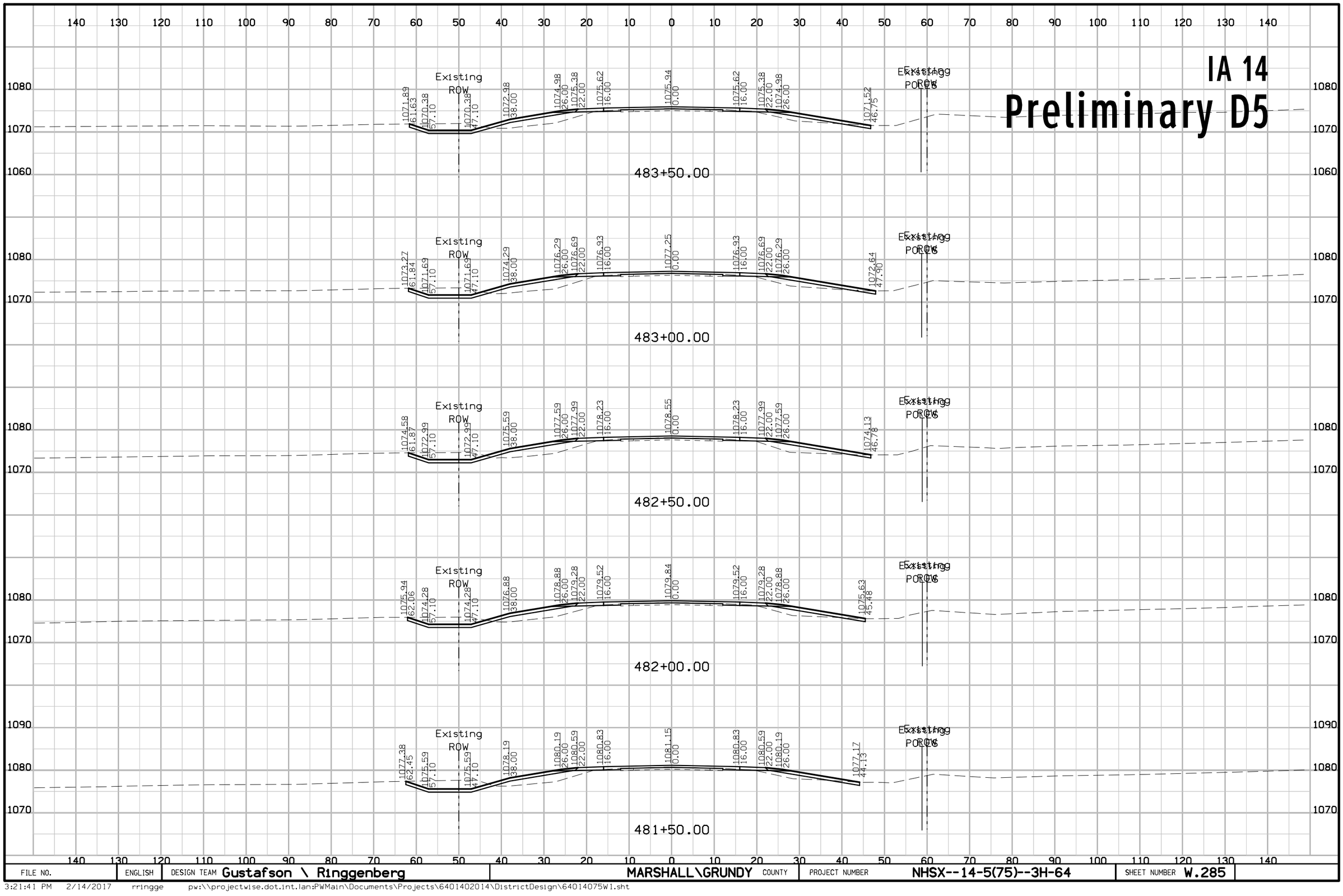
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.285

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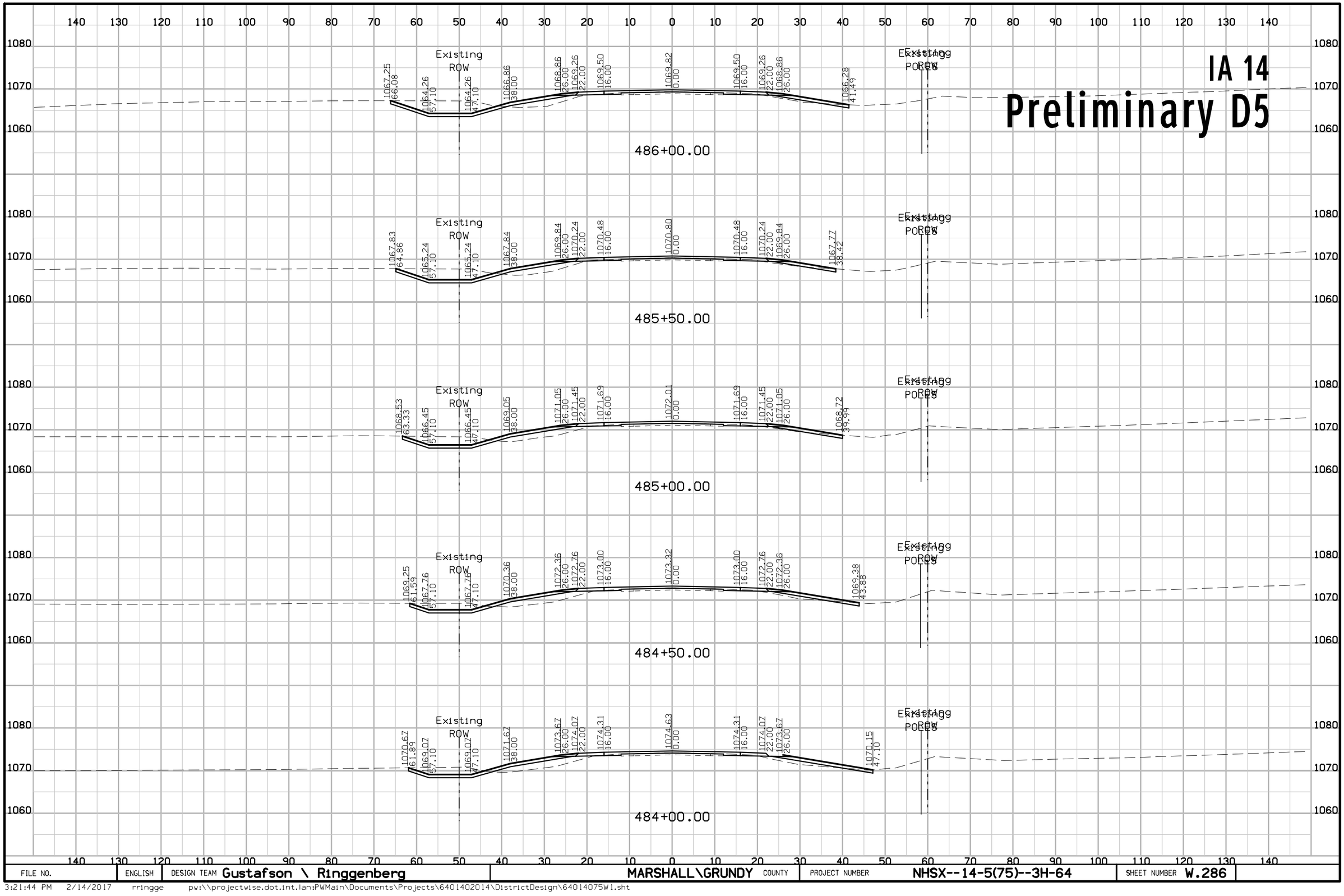
IA 14
Preliminary D5



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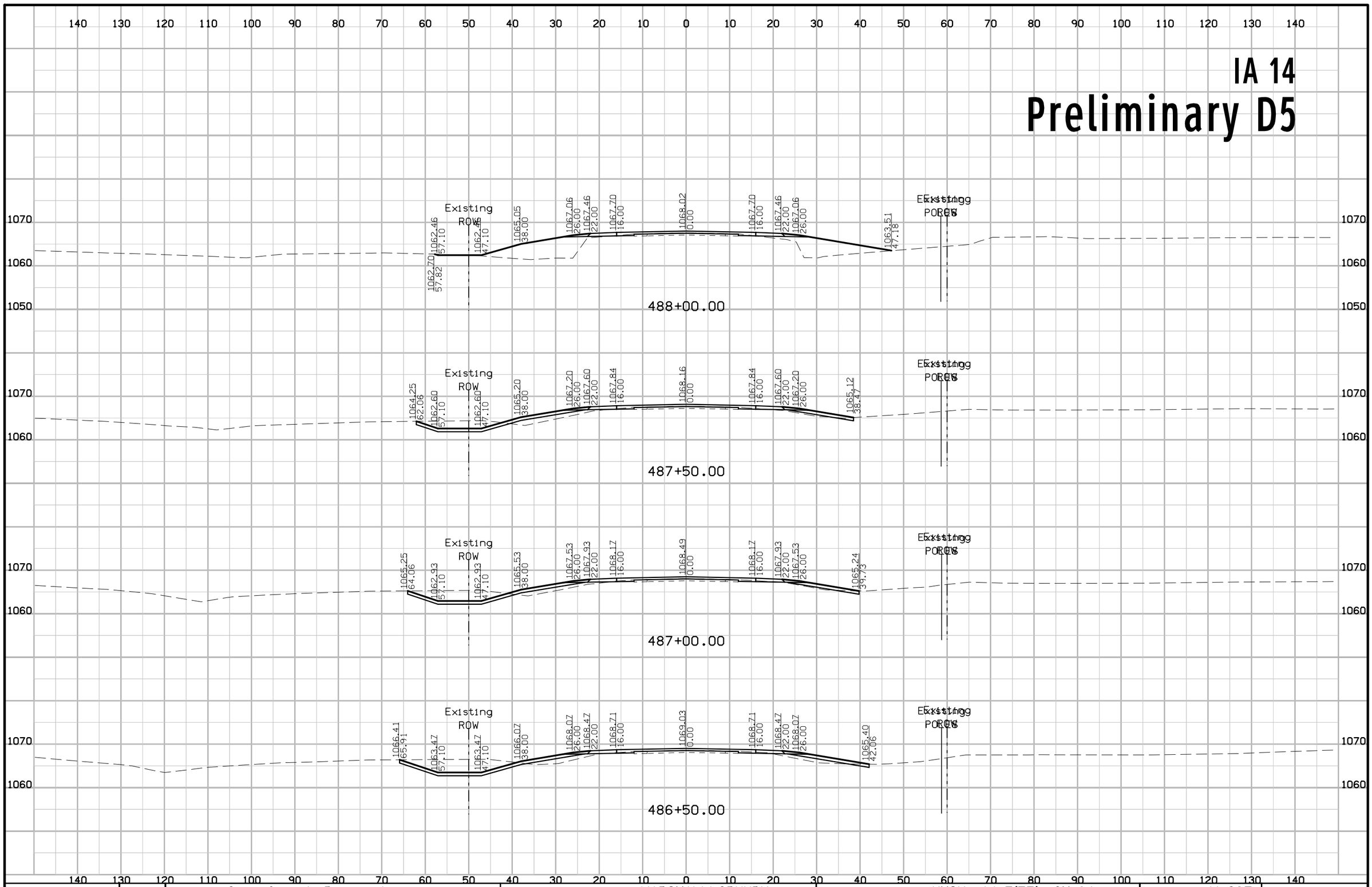
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.287

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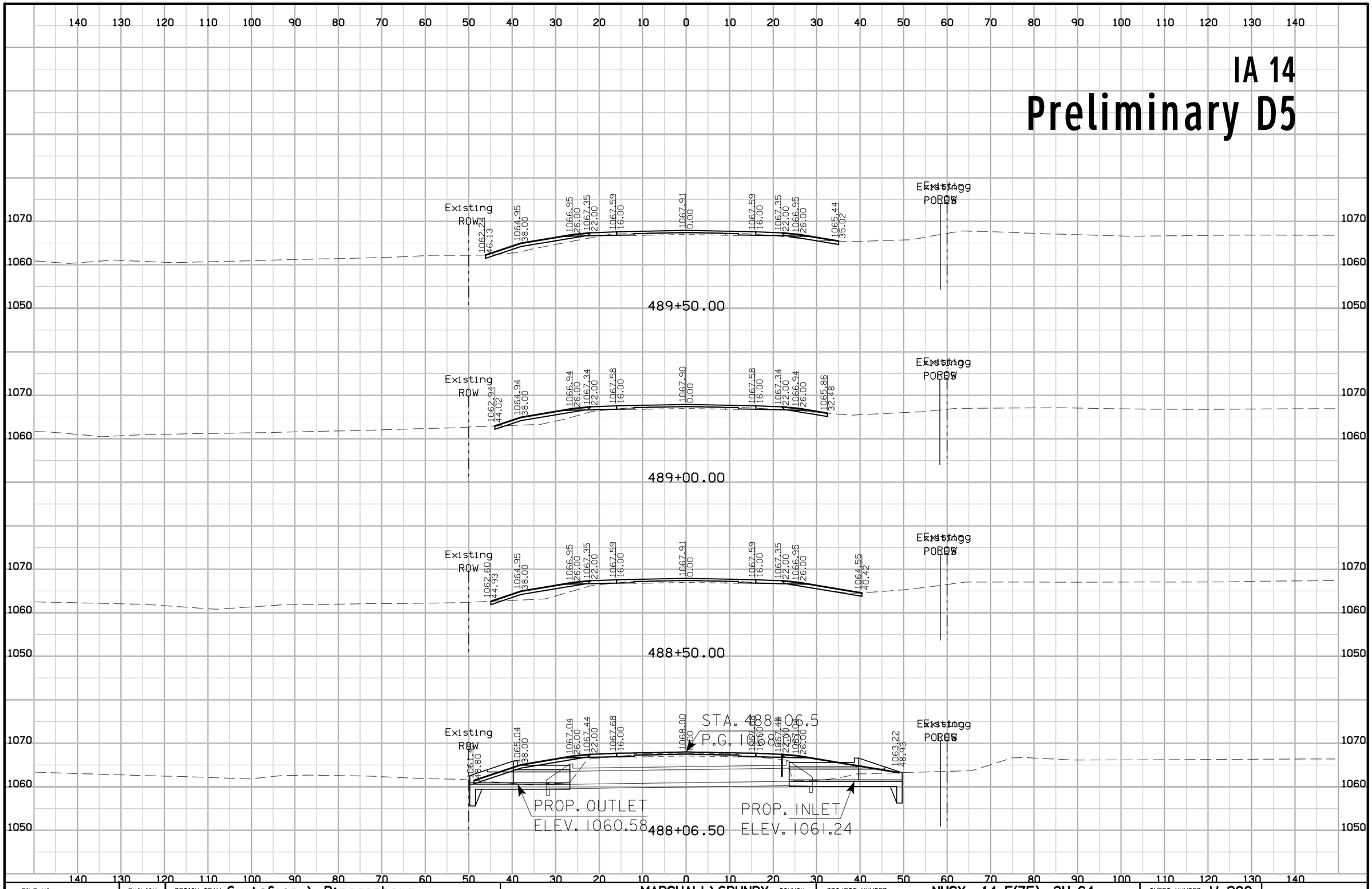
IA 14
Preliminary D5



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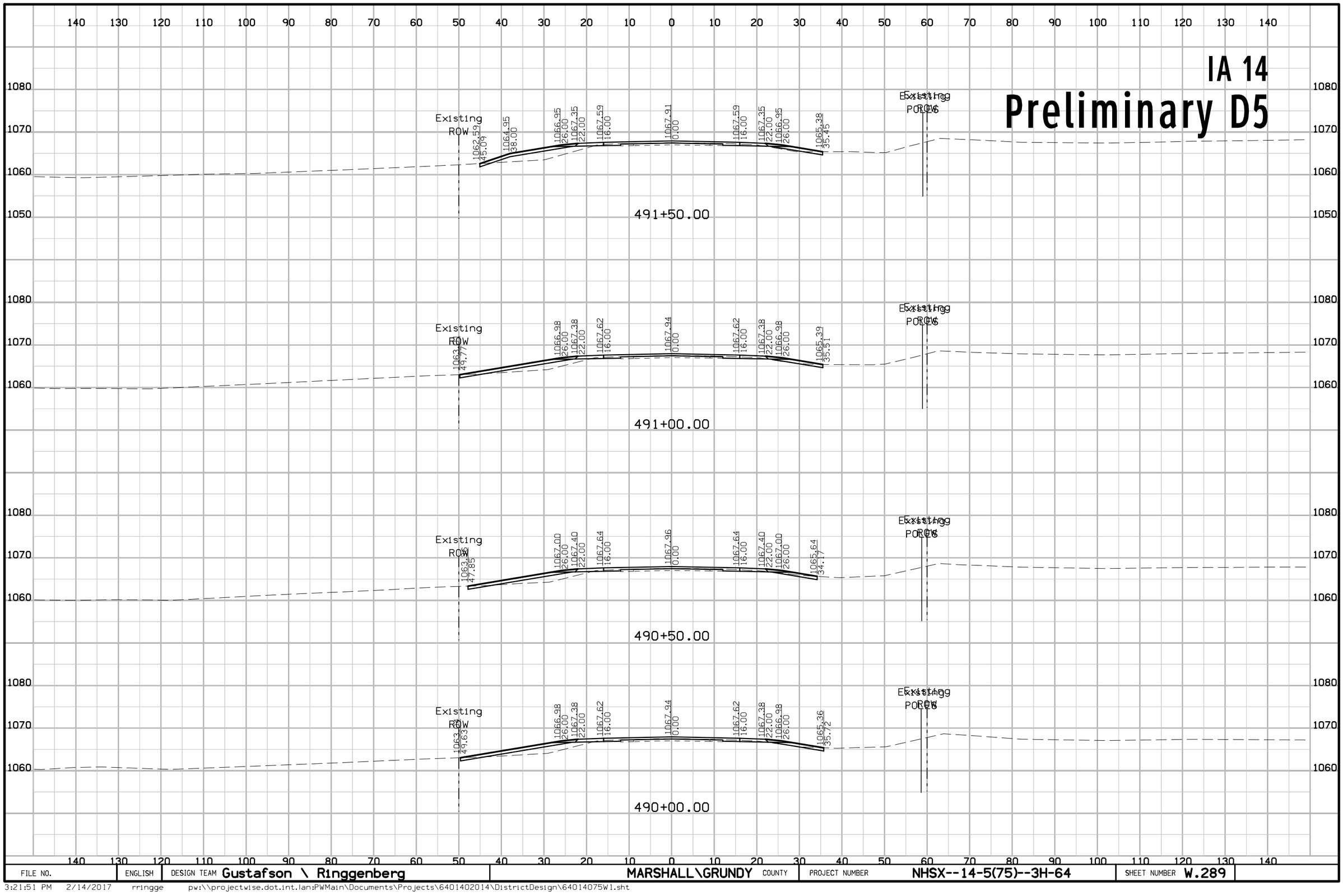
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.289

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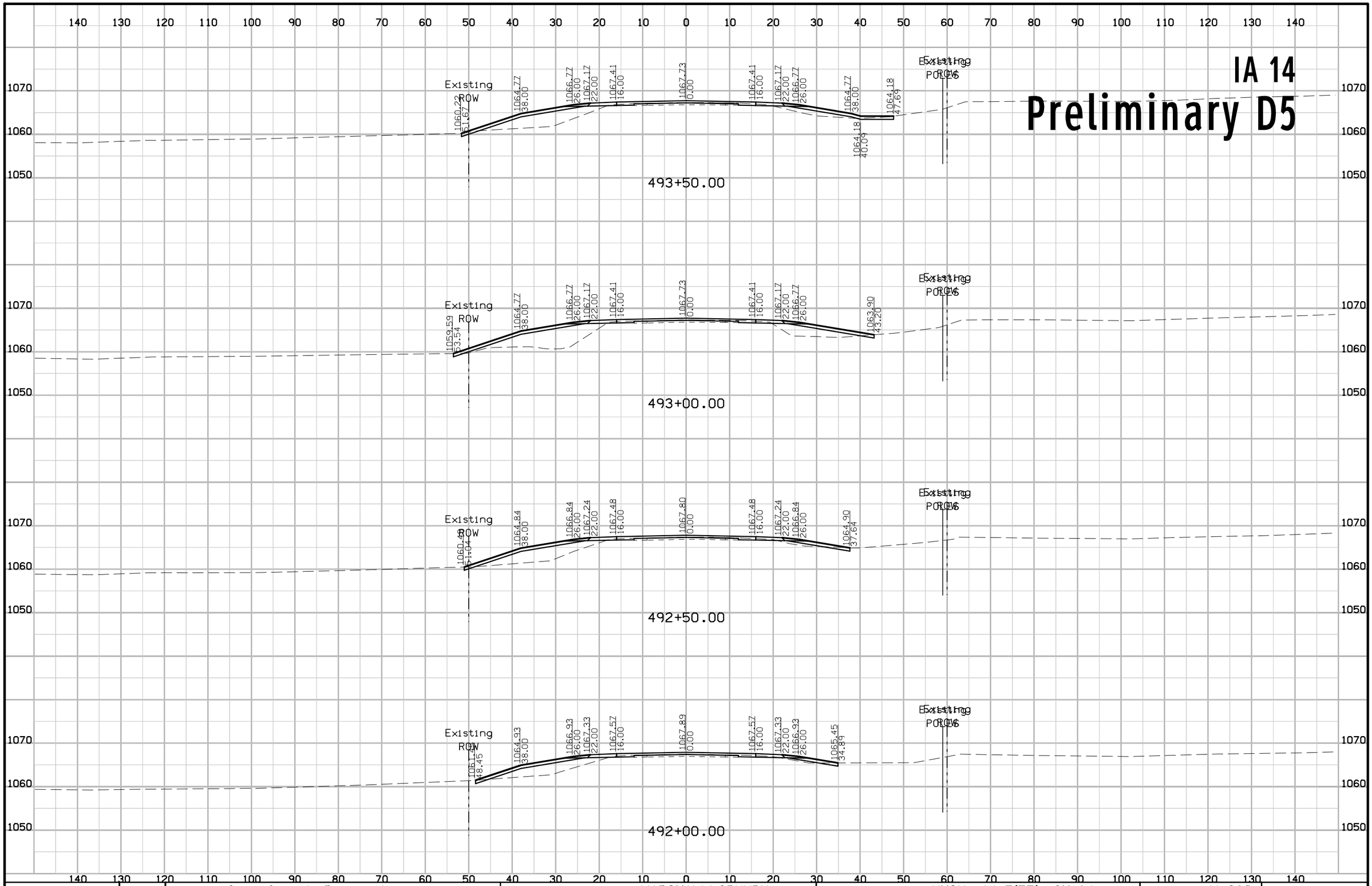
IA 14

Preliminary D5



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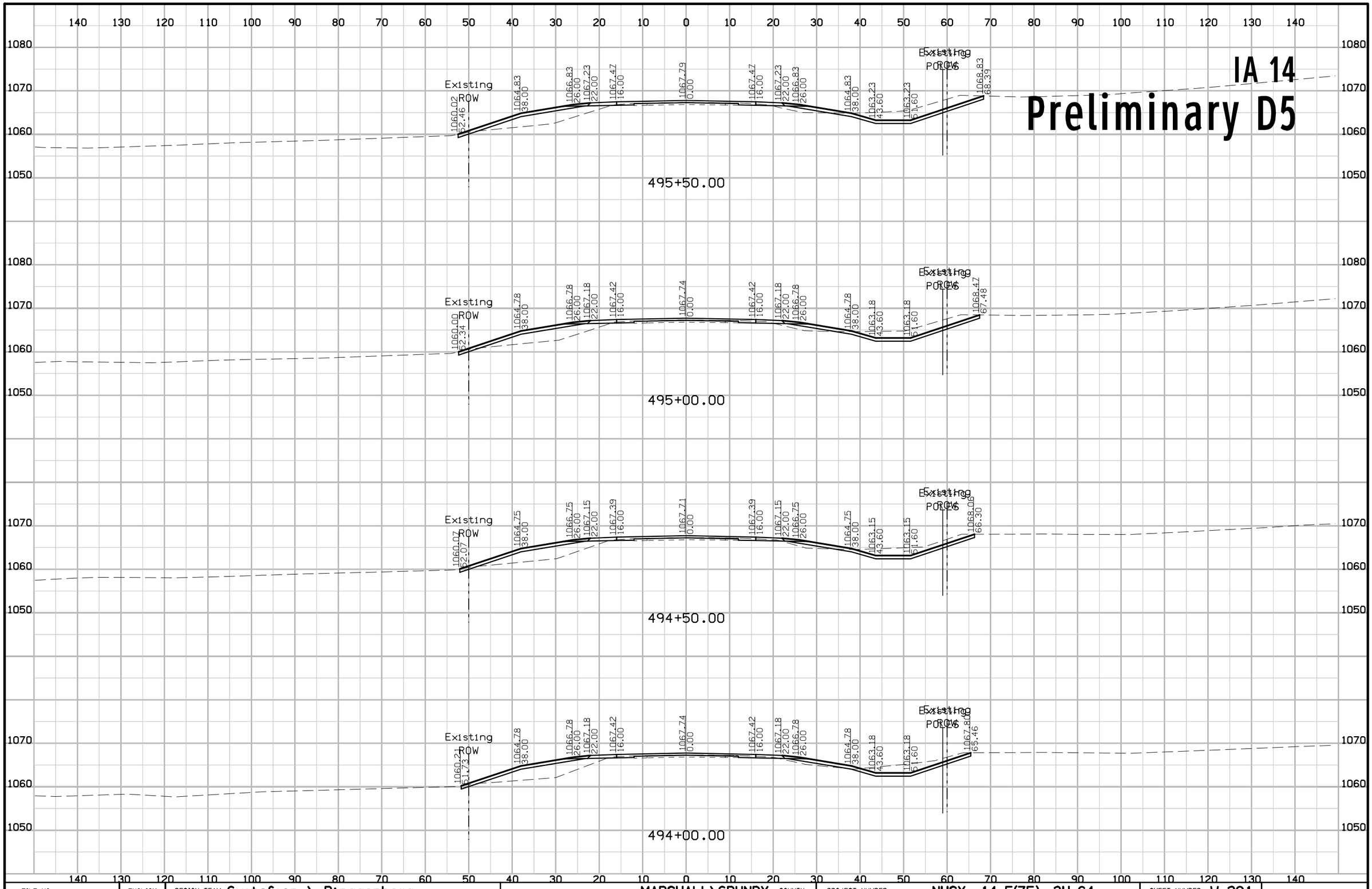
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.291

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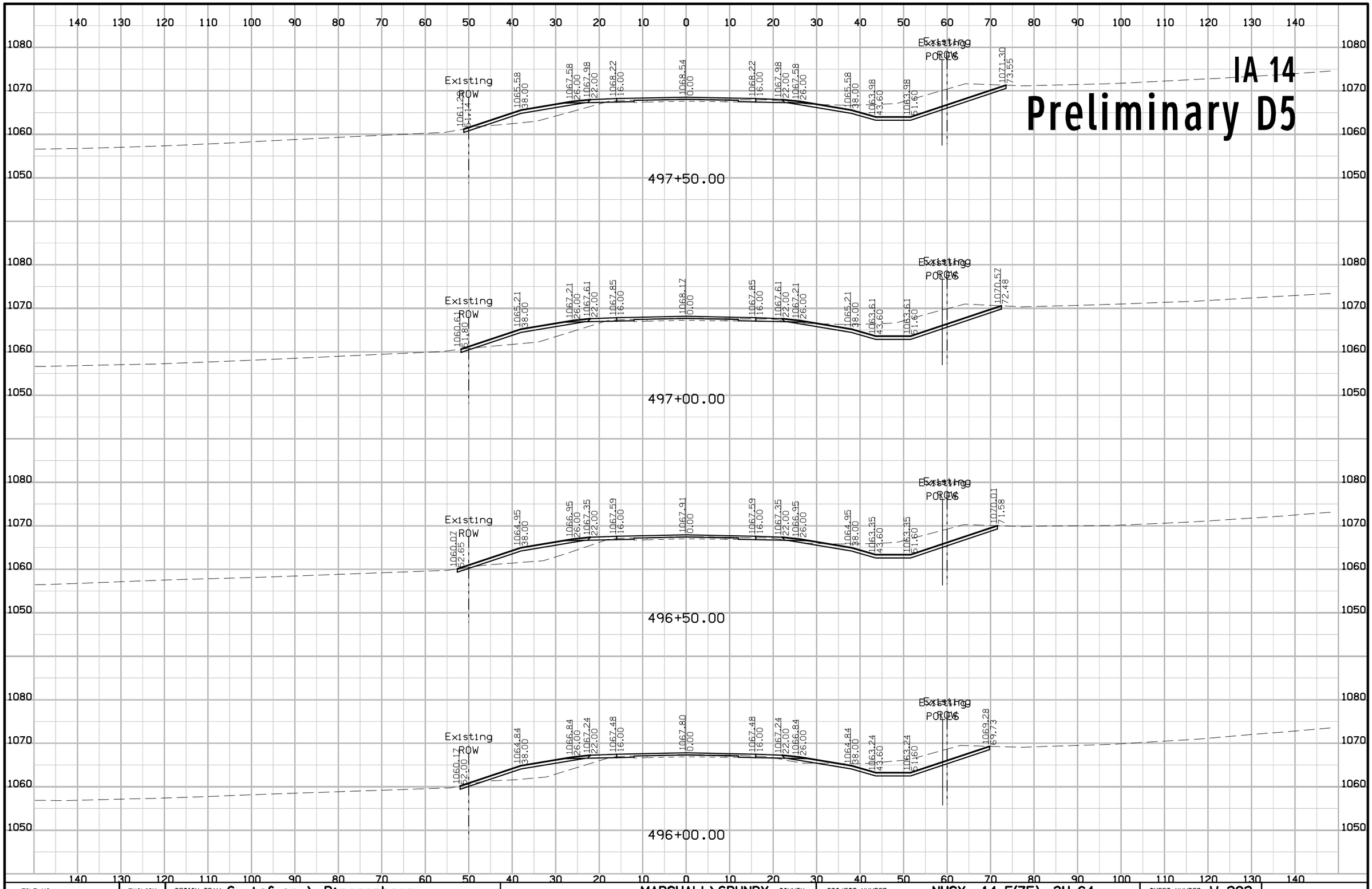
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.292

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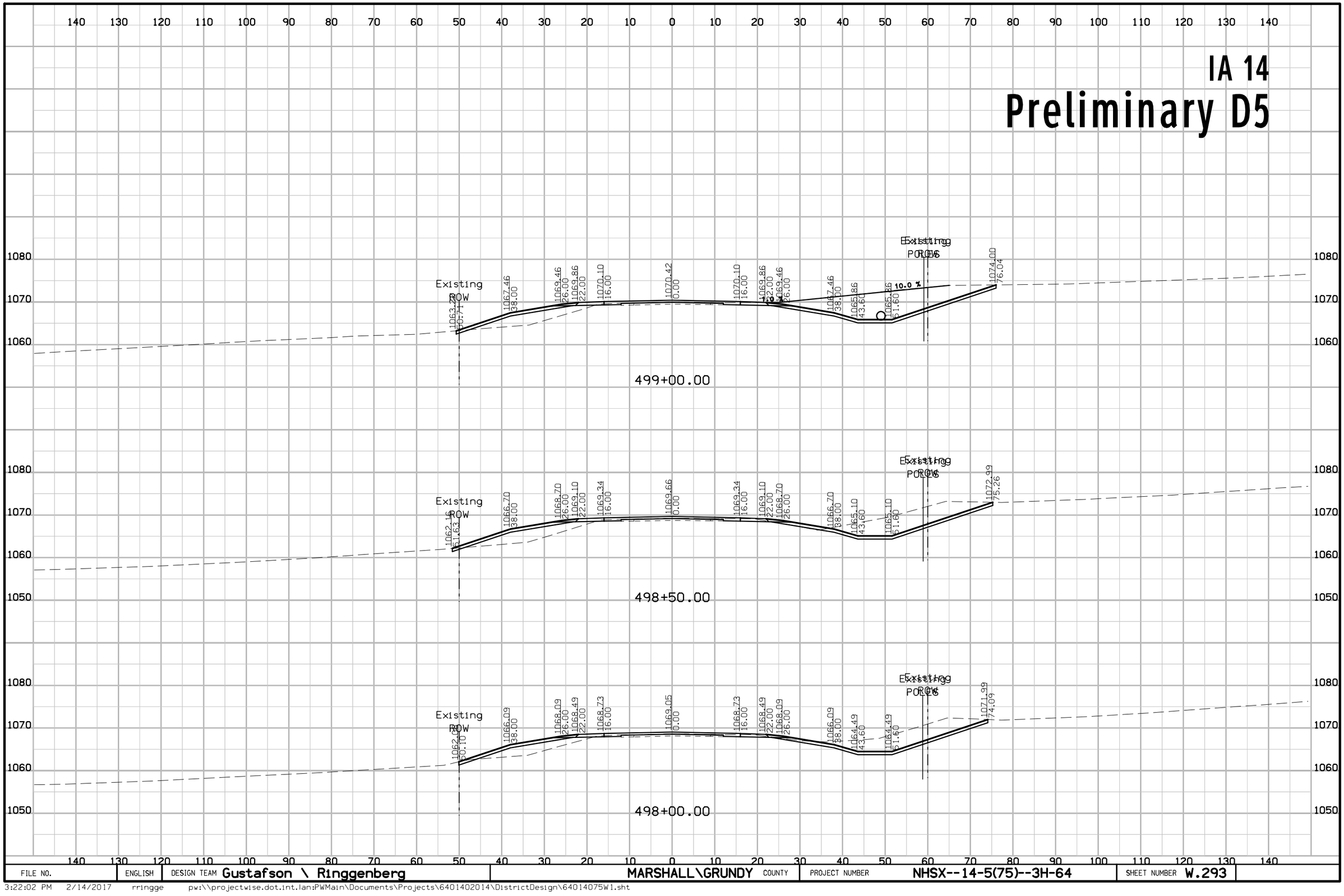
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.293

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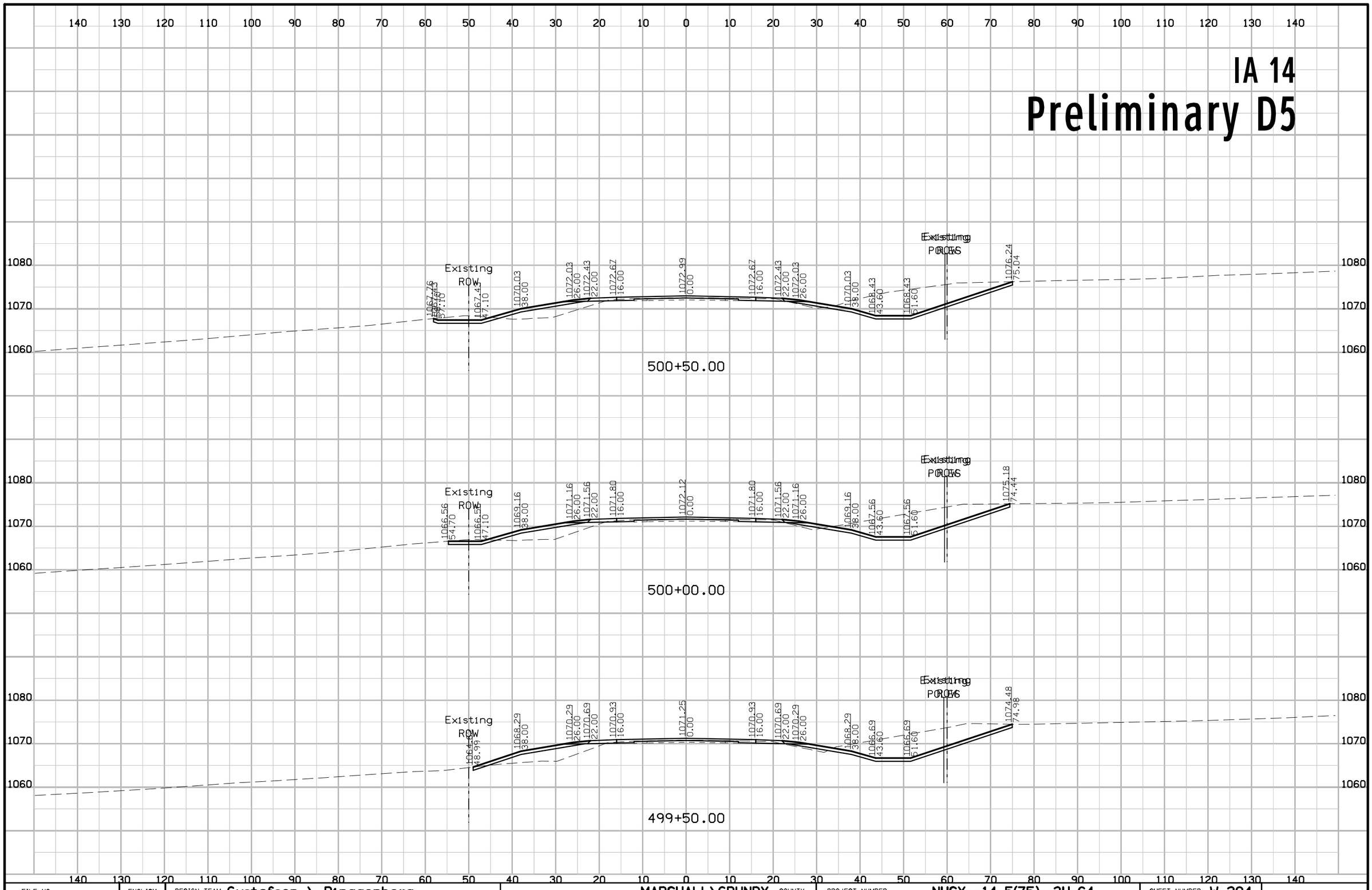
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.294

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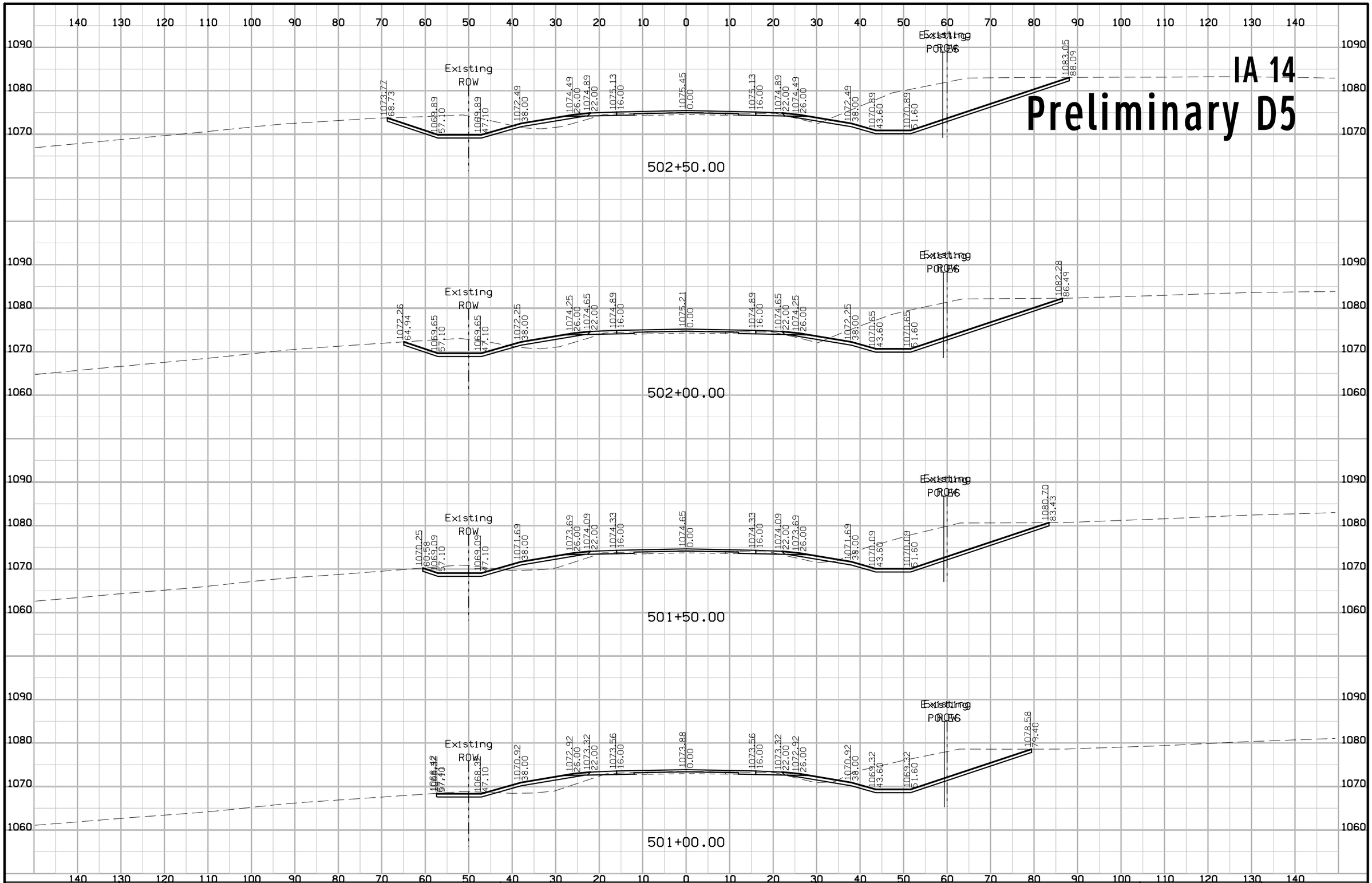
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.295

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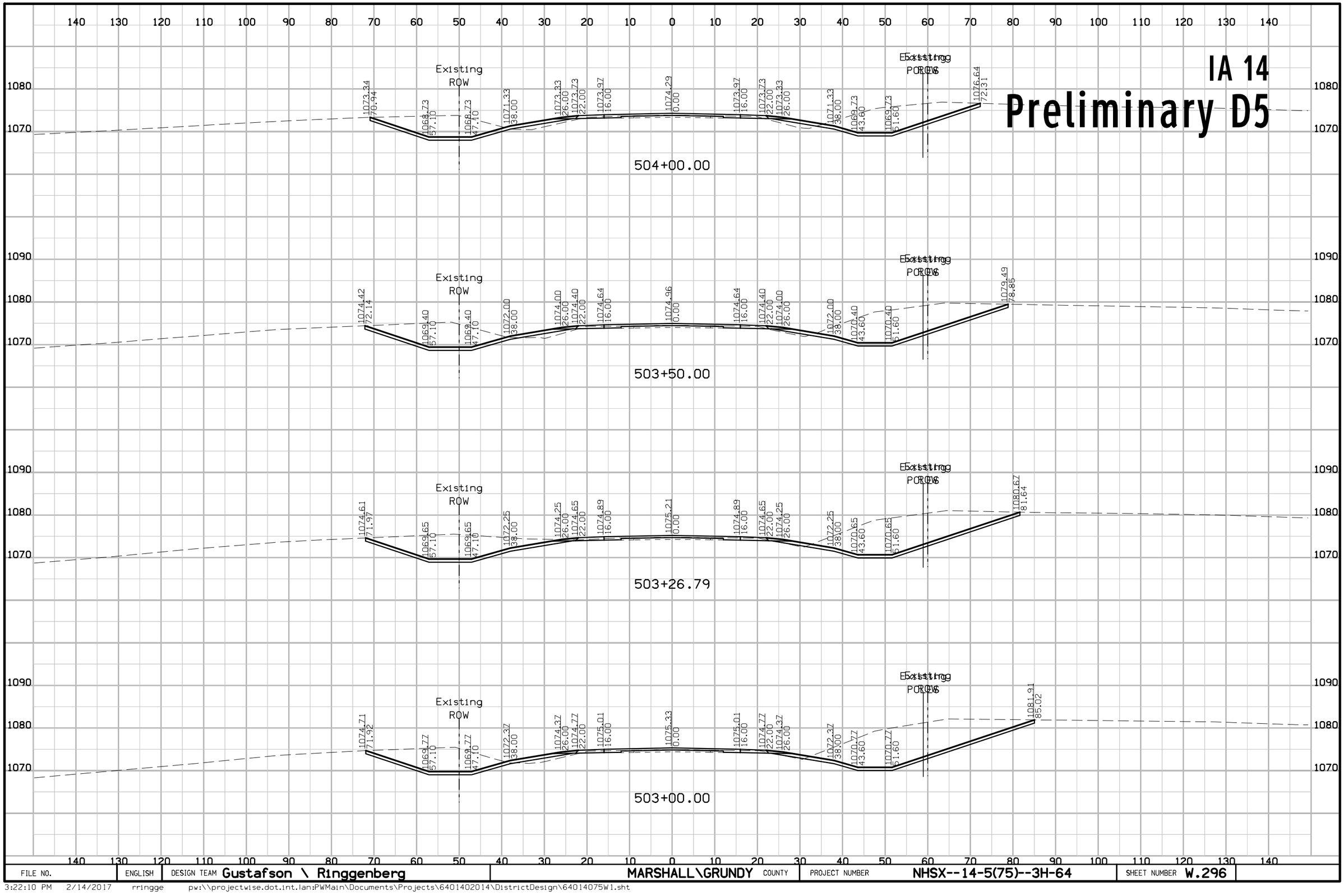
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.296

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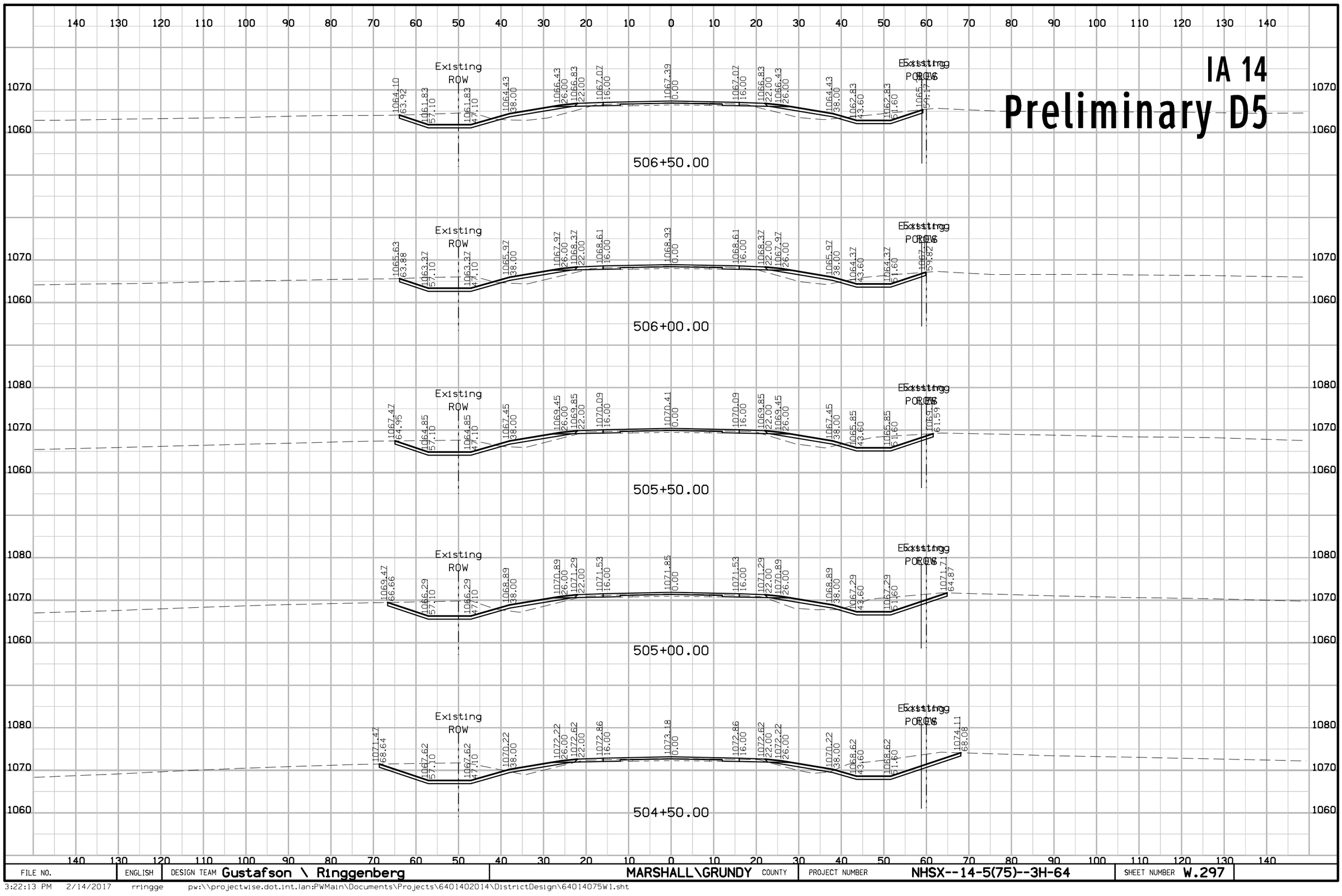
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.297

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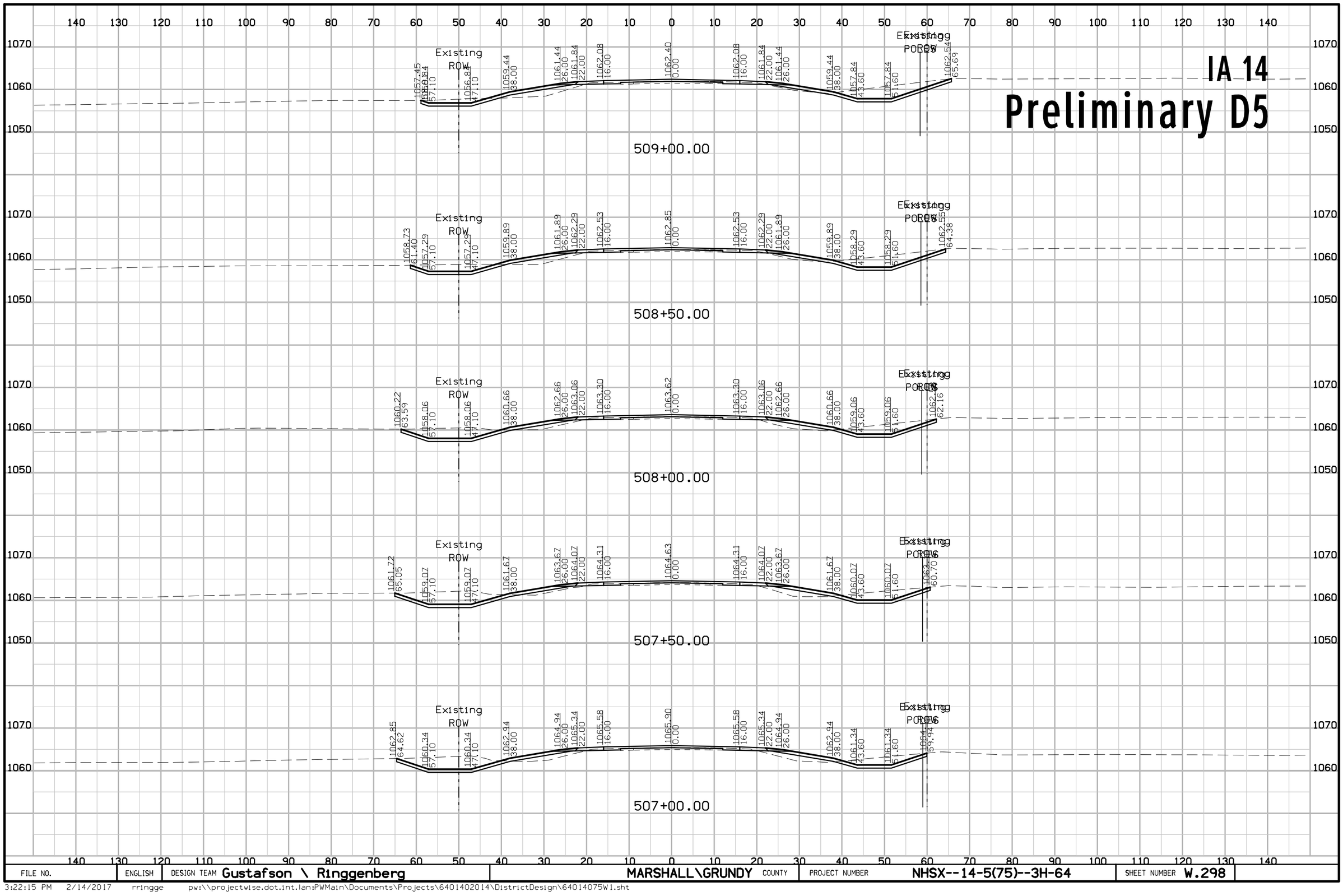
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.298

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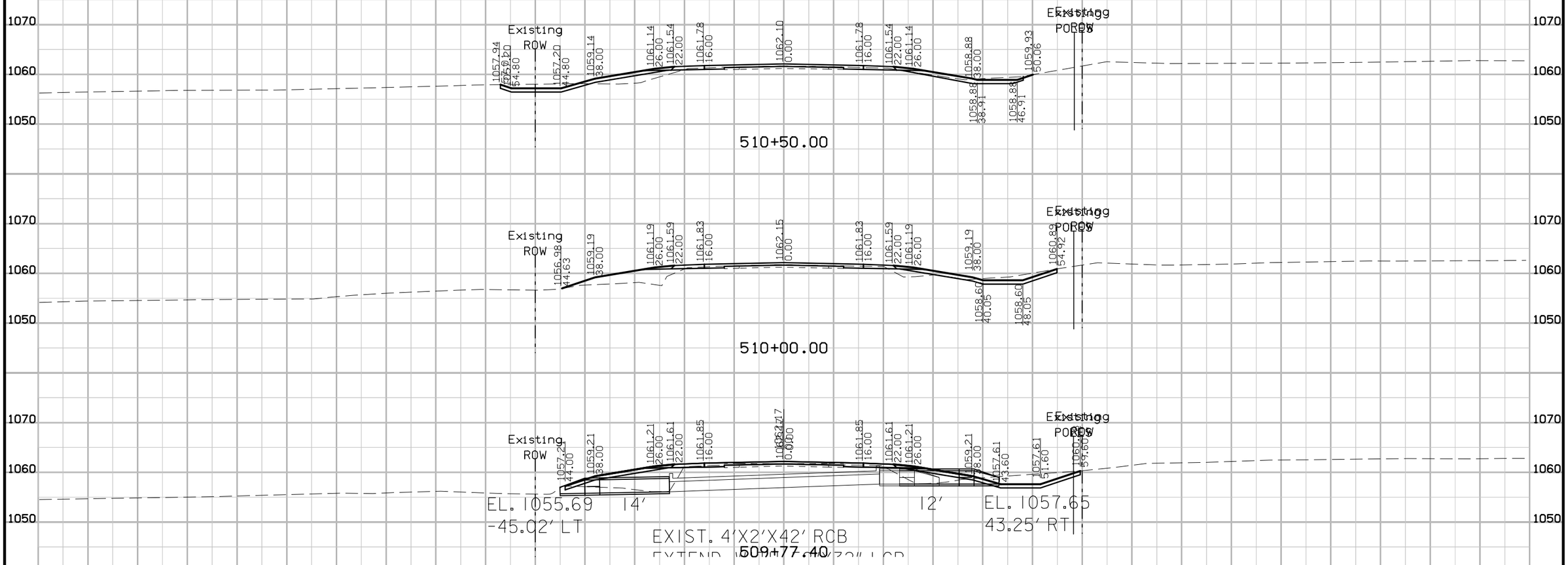
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.299

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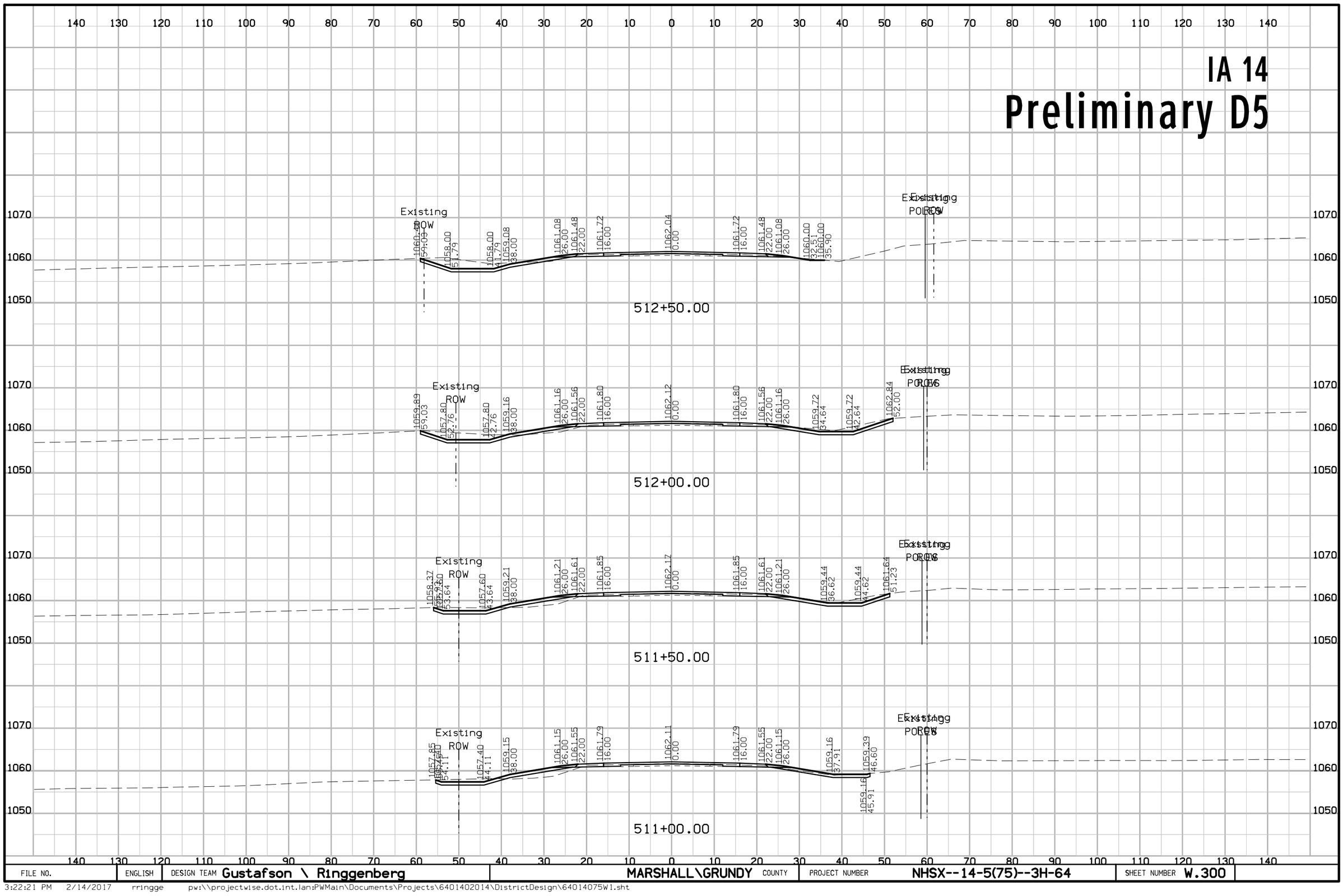
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY	COUNTY	PROJECT NUMBER	NHSX--14-5(75)--3H-64	SHEET NUMBER W.300

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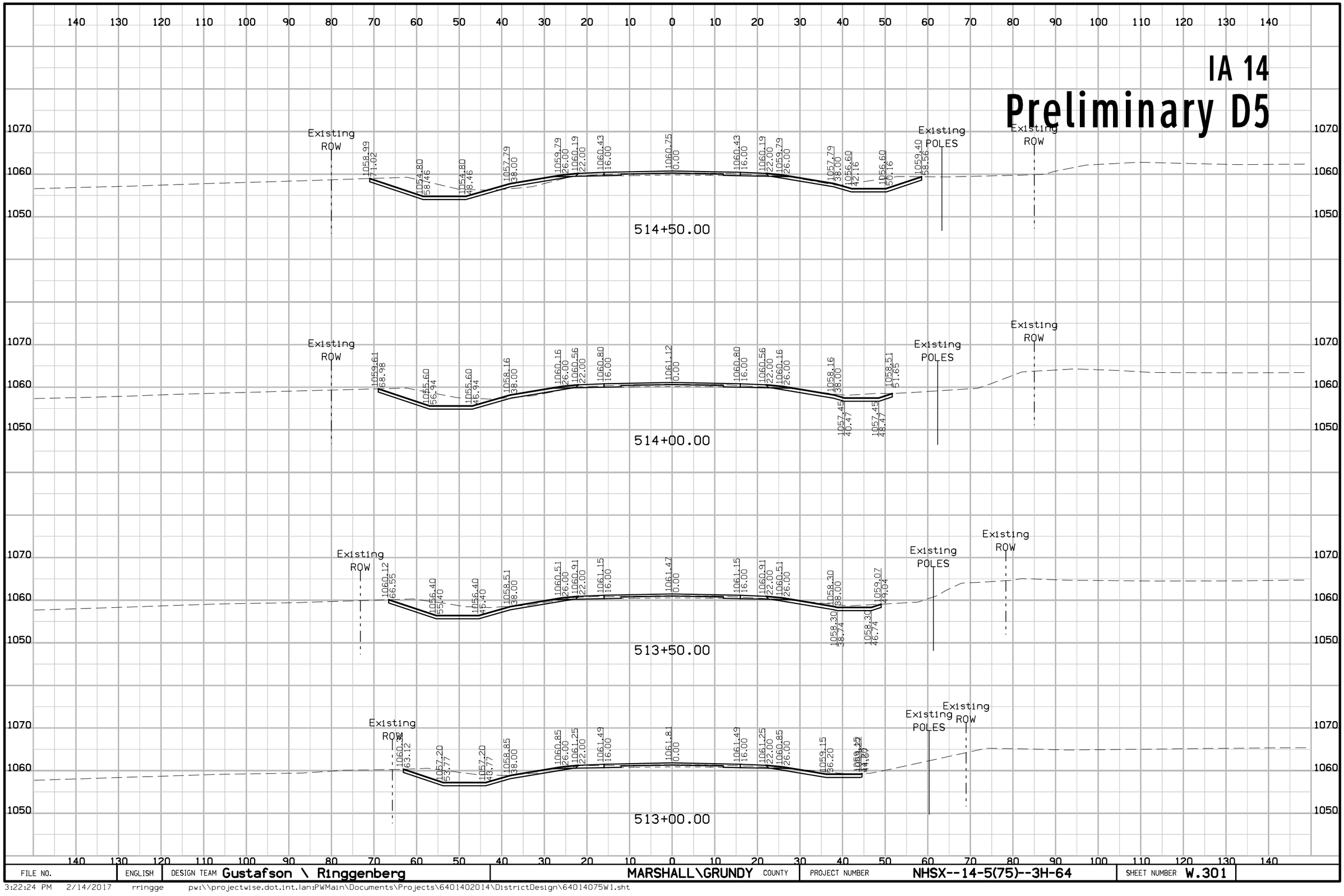
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.301

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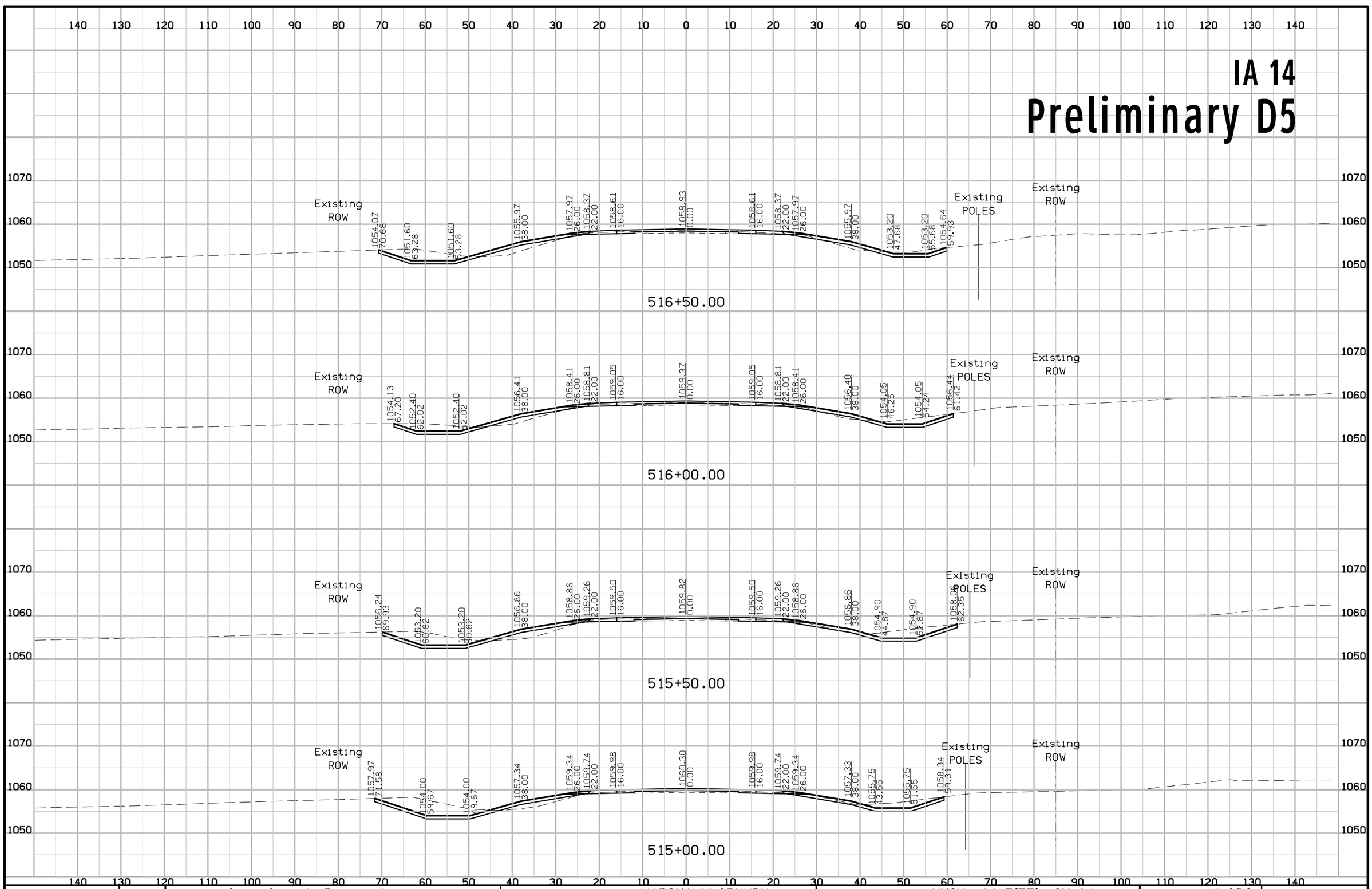
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.302

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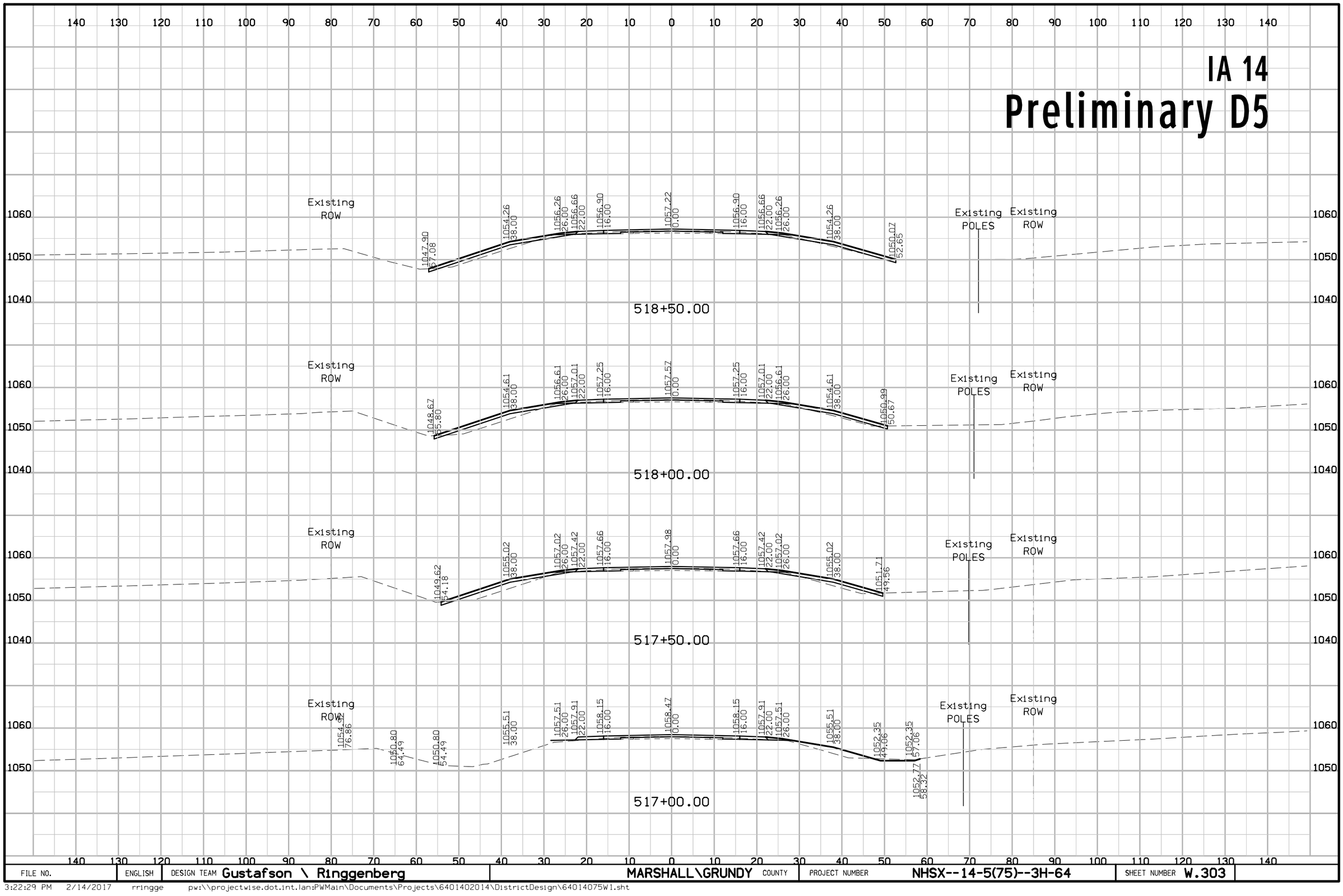
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.303

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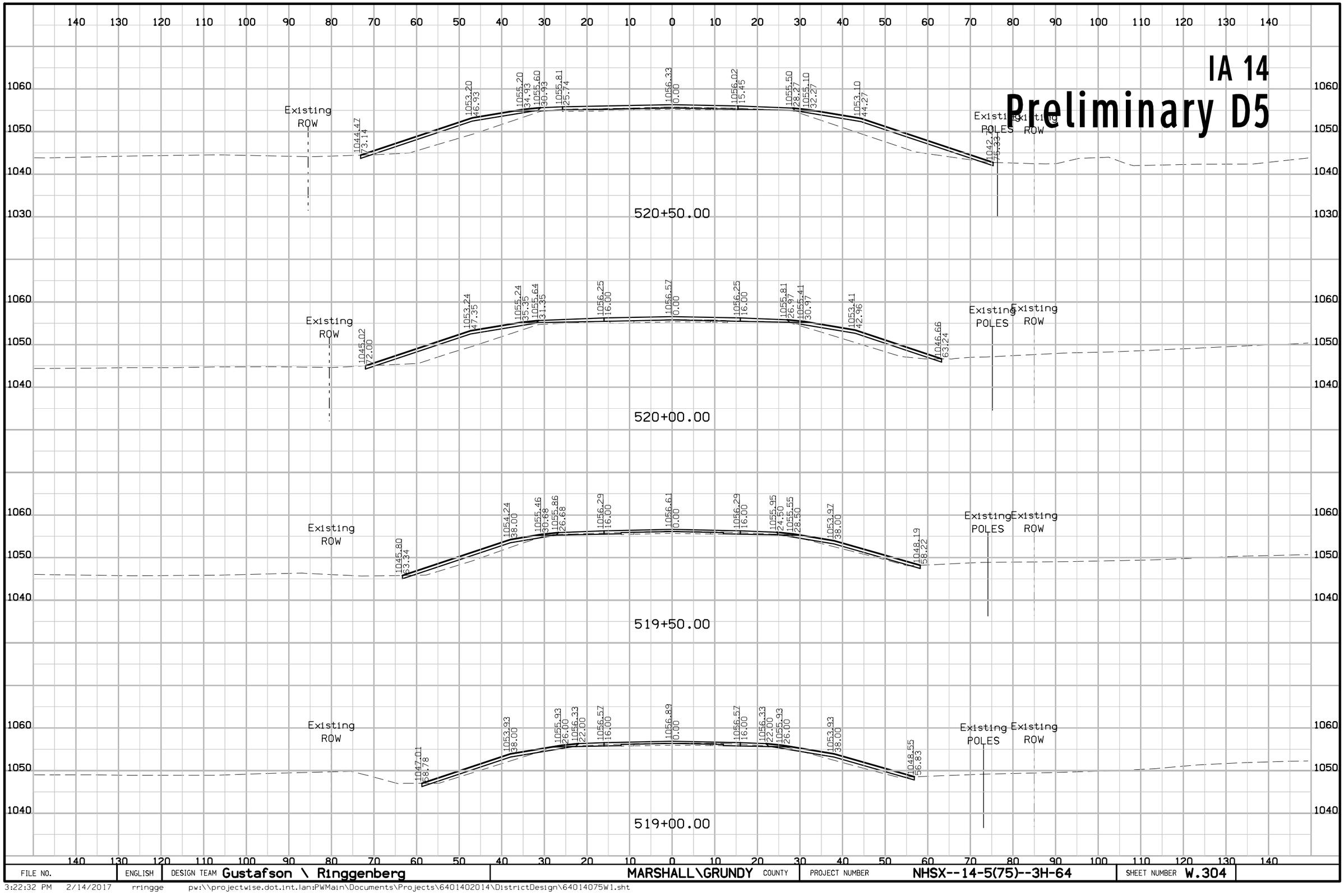
IA 14
Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.304

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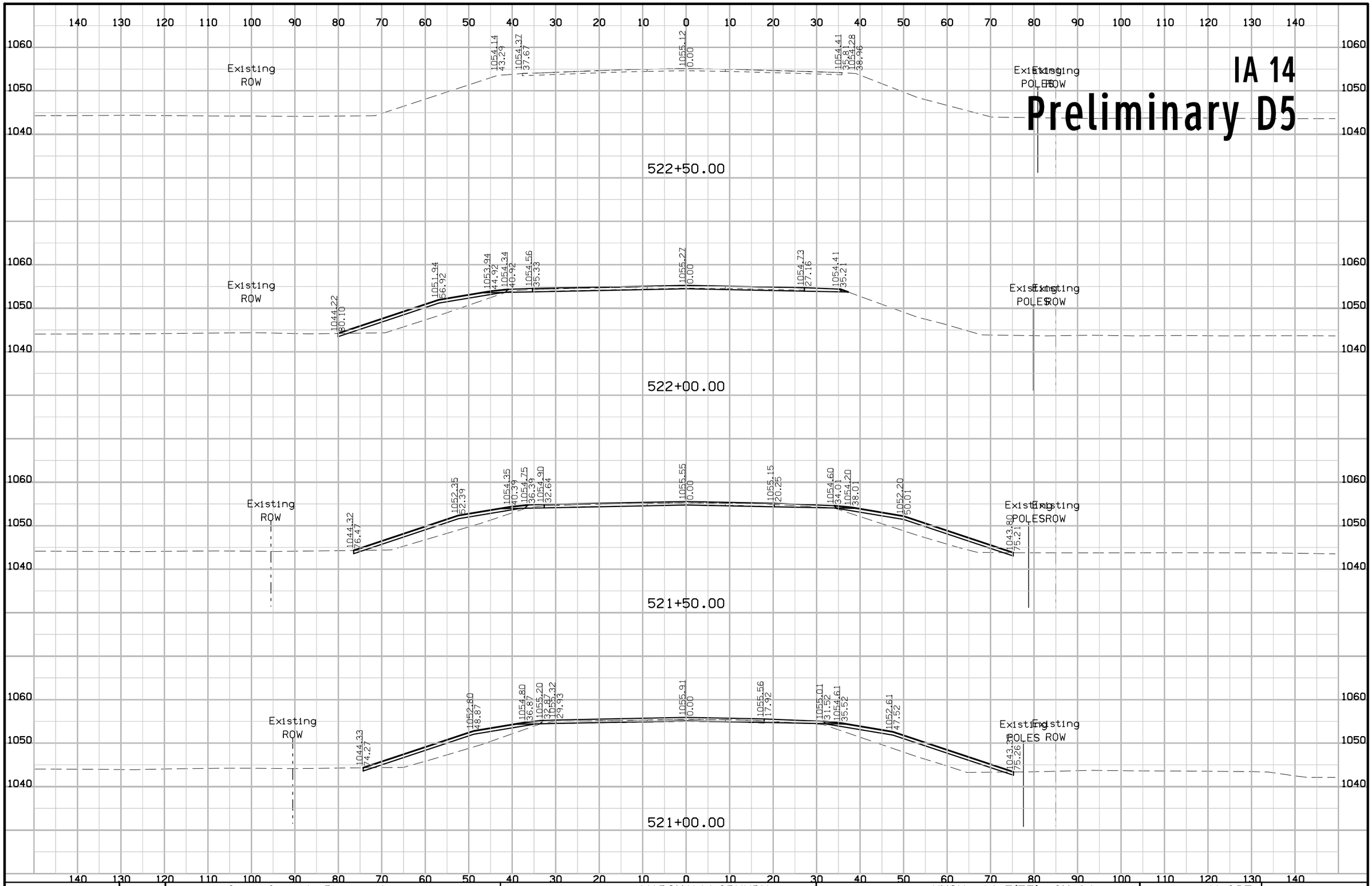
IA 14

Preliminary D5



FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.305

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IA 14
Preliminary D5

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

525+00.00

1050 1050

524+50.00

1050 1050
1040 1040

Existing ROW

524+00.00

1050 1050
1040 1040

Existing ROW

Existing ROW

523+50.00

Existing ROW

Existing POLE

Existing ROW

1050 1050
1040 1040

523+00.00

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

FILE NO.	ENGLISH	DESIGN TEAM Gustafson \ Ringgenberg	MARSHALL\GRUNDY COUNTY	PROJECT NUMBER NHSX--14-5(75)--3H-64	SHEET NUMBER W.306

3:22:37 PM 2/14/2017 rringge pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6401402014\DistrictDesign\64014075W1.sht