BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

May 25, 2018

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MAY 25 2018
NORTH DAKOTA
PUBLIC SERVICE COMMISSION

Darrell Nitschke
Executive Director
North Dakota Public Service Commission
600 East Boulevard; Dept. 408
Bismarck, ND 58505-0480

Dear Mr. Nitschke:

RE: Basin Electric Power Cooperative AVS to Neset 345-kV Transmission Project
As-Build Submittal PU-11-696

Enclosed is Basin Electric Power Cooperative's (Basin Electric) AVS to Nest 345-kV Transmission Project's final structure location, plan and profile and design specifications. A CD containing the electronic files is also enclosed. Due to the file size, the files cannot been updated directly to the docket.

The Project's final segment was placed into electrical service late November 2017. The reclamation and re-vegetation efforts has significant completion in fall of 2017. The re-vegetated areas will continued to be monitored for final acceptance by Basin Electric's staff.

For inquiries regarding the application, please call Cris Miller at 701.557.5635.

Sincerely,

Cris Miller
Senior Environmental Project Specialist

/ser
Enclosures
cc: Casey Jacobson
Amanda Wangler

338 **PU-11-696** Filed: 5/25/2018 Pages: 295
As-Built Maps

Basin Electric Power Cooperative

Cris Miller

Antelope Valley Station to Neset 345kV Transmission Line Project

Design Criteria Report

October 2013

BASIN ELECTRIC POWER COOPERATIVE

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- General Location Map

TRANSMISSION LINE DESIGN DATA SUMMARY

I. GENERAL INFORMATION

BORROWER:	DATE:
LINE IDENTIFICATION: AVS to Neset 345kV Transmission Project	

VOLTAGE		LENGTH	
TRANSMISSION	ADD'L CIRCUIT	TRANSMISSION	ADD'L CIRCUIT
345 kV		200 miles	

TYPE OF TANGENT STRUCTURE: Single Steel Pole	BASE POLE: 115 HT. _____ CL
DESIGNED BY: Basin Electric Power Cooperative	

II. CONDUCTOR DATA

Note: Add'l circuit by Mountrail Williams Electric Cooperative

	TRANSMISSION	OHGW	OPGW	ADD'L CIRCUIT
SIZE *(kcmil or IN.)*	2312.0	7/16 EHS	71/571	
STRANDING	76/19	7	15	
MATERIAL	ACSR	EHS	Alum. Clad Steel	
DIAMETER *(IN)*	1.802	0.435	0.571	
WEIGHT *(LB/FT.)*	2.526	0.399	0.411	
ULTIMATE STRENGTH *(LBS.)*	56,700	20,800	20,546	

III. DESIGN LOADS (Wire)

		TRANSMISSION *(LBS/FT)*	OHGW *(LBS/FT)*	OPGW *(LBS/FT)*	ADD'L CIRCUIT *(LBS/FT)*
NESC: HEAVY LOADING DISTRICT					
a. ICE: 1/2 IN.	Vertical.	3.958	0.981	1.075	
b. WIND ON ICED CONDUCT. 4 PSF	Transverse	0.934	0.478	0.524	
c. CONSTANT K 0.3	Resultant + K	4.367	1.391	1.496	
HEAVY ICE*(NO WIND)* 1.25 IN.	Vertical.	7.272	3.019	3.241	
HIGH WIND*(NO ICE)* 31 PSF	Transverse	4.660	1.124	1.475	
EXTREME HIGH WIND/ICE					
ICE: 1/2 IN.	Vertical.	3.958	0.981	1.075	
WIND ON ICED CONDUCT. 9.2 PSF	Transverse	2.148	1.100	1.204	

IV. SAG & TENSION DATA

SPANS AVERAGE*(EST)* 800-950 FT. MAXIMUM*(EST).* 1200 FT. RULING*(EST.)* 950 FT

SOURCE OF SAG-TENSION DATA: ALCOA SAG 10

TENSIONS *(% RATED STRENGTH)*	TRANSMISSION INITIAL	TRANSMISSION FINAL	OHGW INITIAL	OHGW FINAL	OPGW INITIAL	OPGW FINAL	*(ESTIMATED)* INITIAL	*(ESTIMATED)* FINAL
NESC HEAVY (0˚F, 1/2 IN, 4.00 PSF, 0.30 LB/F)	39.2	34.5	28.5	27.7	32	30.4		
MAXIMUM ICE 1.25 IN (32˚F)	53.3		47.1		51.3			
HIGH WIND 31 PSF (60˚F, 0 IN)	39.3		24.2		30			
UNLOADED LOW TEMPERATURE (-40˚F)	32.7		14.0		17.3			
SAGS *(FT)*								
NESC DISTRICT LOADED (0˚F)		25.3		27.37		27.17		
UNLOADED HIGH TEMP (212˚F) (120˚F FOR OHGW & OP)		35.5		23.63		24.49		
MAXIMUM ICE 1.25IN (0˚F)		28.6		35.0		34.92		
LOADED 1/2" ICE, NO WIND (32˚F)		26.7		25.55		25.74		

V. CLEARANCES

MINIMUM CLEARANCES TO MAINTAINED AT: 212°F, FINAL SAG

CLEARANCES IN FEET	RAILROADS	HIGHWAY	CULTIVATED FIELDS	RURAL ROADS		ADD. ALLOW. FOR TEMPLATE
TRANSMISSION	38	30	30	30		--
ADD'L CIRCUIT						--

VI. RIGHT OF WAY

WIDTH 150 FT *(MIN.)* 150 FT. *(MAX.)*

VII. CONDUCTOR MOTION DATA

HISTORY OF CONDUCTOR GALLOPING: MINIMAL TO RARE

HISTORY OF AEOLIAN VIBRATION: YES – DAMPER REQUIRED

a. TYPE OF VIBRATION DAMPERS USED *(IF ANY)* STOCKBRIDGE (conductor) SPIRAL (OHGW and OPGW)

b. TYPE OF ARMOR RODS USED *(IF ANY)* PREFORMED AGS

VIII. INSULATION

NO. OF THUNDERSTORM DAYS/YR ~ 30 ELEV.ABOVE SEA LEVEL (MIN, MAX, FT) 2000 - 2500

CONTAMINATION EXPECTED? minimal MAX EST. FOOTING RESISTANCE 25 Ω SHIELD ANGLE 20˚

STRUCTURE TYPE	STRUCTURE DESIGNATION	NO. OF BELLS PIN OR POST	60 HZ DRY FLASHOVER	INSULATOR SIZE	M&E RATING / CANTILEVER STR	OTHER
TANGENT		18	965 kV	5-3/4 X 10	30K M&E	
STRAIN STRUC		19 (double string)	1050 kV	5-3/4 X 10	30K M&E	

IX. INSULATOR SWING

CRITERIA: (1) 6 PSF ON BARE CONDUCTOR AT -40°F (6 psf MIN) FOR 76 IN. CLEARANCE

(2) 31 PSF HIGH WIND ON BARE CONDUCTOR AT 60°F FOR 30 IN. CLEARANCE

(3) 0 PSF ON BARE CONDUCTOR AT 60°F FOR 104 IN. CLEARANCE

(4) 9 PSF ON BARE CONDUCTOR AT 60°F FOR 76 IN. CLEARANCE

ALLOWABLE SWING ANGLE			ANGLE IN DEGREES			
NAME OF STR.	STRUCTURE TYPE	NO. OF INSULATORS.	(1) 6 PSF MIN WIND	(2) HIGH WIND	(3) 0 PSF WIND, 60°F	(4) 9 PSF WIND, 60°F
3ST	TANGENT	18	47º Max	72º Max	24º Max	47º Max
3SA	ANGLE	19				
3SDA	DEADEND	19 (38)				

X. ENVIRONMENTAL AND METEORLOGICAL DATA

TEMPERATURE: MIN -50° MAX. 110°
AVERAGE YEARLY LOW
-30°

EXTREME WIND VELOCITIES *(MPH):*
10 YR. 60 50 YR. ____ 100 YR 80
90 mph 3-second gust (maximum recorded)

MAXIMUM HEIGHT OF SNOW ON THE GROUND UNDER THE CONDUCTOR*(FT)*: 2.0

CORROSIVENESS OF ATMOSPHERE:
MINIMAL

DESCRIBE TERRAIN AND CHARACTERISTICS OF SOIL:
1. Rolling hills and plains dissected by streams.
2. Soils comprised of lean clays, silt soils, and sandy clays/silts overlaying sandy lean clay glacial till with cobbles and boulders.

XI. STRUCTURE DATA

SPECIES OF WOOD: N/A

DESIGNATED BENDING FIBER STRESS N/A

SPANS *(FT)* FOR TANGENT TYPE 3ST	BASE POLE 115 FT	OTHER HEIGHTS/CLASSES AND BRACING		
LEVEL GROUND SPAN	950'			
MAX. HORIZON. SPAN LIMITED BY STRUCTURE STRENGTH	1200'			
MAX. VERTICAL SPAN LIMITED BY STRUCTURE STRENGTH	1400'			
MAX. HORIZONTAL SPAN LIMITED BY COND. SEPARATION	>1200'			
MAX. SPAN LIMITED BY UNDERBUILD	---			
MAX. SPAN LIMITED BY GALLOPING	>1200'			

EMBEDMENT DEPTH: Concrete Pier Foundations

PRESERVATIVE: N/A
(TYPE & RETENTION) N/A

GUYING: TYPE OF ANCHORS: n/a GUY SIZE AND R.B.S.: n/a

XII. LINE DESCRIPTION

TANGENTS 70%	LIGHT ANGLES 5%	AVERAGE NUMBER OF LINE ANGLES PER MILE 0.3
MEDIUM ANGLES 15%	DEADEND & HEAVY ANGLES 10%	MAXIMUM DISTANCE BETWEEN FULL DEADENDS *(IN MILES)* 5 MILES

A. INTRODUCTION

B. Basin Electric Power Cooperative is a consumer-owned, regional cooperative headquartered in Bismarck, North Dakota. Basin Electric is proposing construction of a 345kV transmission line in northwestern North Dakota that will run approximately 200-miles from Antelope Valley Station (AVS) near Beulah, North Dakota, connect to the 345kV Charlie Creek substation near Grassy Butte, the 345kV Judson Substation near Williston, the 345kV Tande Substation near Tioga, and end at the Neset 230kV Substation near Tioga, North Dakota.

The proposed transmission line will be constructed using steel single-pole structures.

A location map is shown in the Appendix.

C. CLIMATE

The semi-arid climate for the transmission line is characterized by cold, dry winters and moderately hot summers. The area is subject to large annual variations in temperature because it is near the center of the North American land mass. Arctic air moves into the region from the north and northwest during the winter, causing periods of extreme cold alternating with milder temperatures. Summer temperatures are usually warm, but some hot spells and occasional cool days can be expected. The transmission line design will incorporate the following climate conditions.

1. Temperature

   Temperature extremes: Lowest: -50°F (12/23/1983) Highest: 110°F (07/05/1936)
   Mean lowest daily minimum temperature: -6.1°F
   Mean annual temperature: 41.9°F

2. Wind

   Basic Wind Speed: 90 mph (from NESC Figure 250-2)
   Coldest month mean wind velocity: 9.7 mph (December)
   Prevailing wind direction for coldest month: NW

3. Precipitation

   Average annual precipitation: 14.3 inches
   Expected maximum 24-hour snow accumulations: 15 inches

4. Isokeraunic Level

   The Isokeraunic level for the area is 30.

5. Frost Depth

   The average depth for frost penetration is 5 feet.

C. ELEVATION

Elevation ranges from 2000 feet to 2500 feet above sea level.

D. CODES AND STANDARDS

This transmission line will be constructed in accordance with Rural Utilities Service (RUS) Standards. In addition, design, materials, and construction will conform to the latest revision of the following:

1. NESC – National Electrical Safety Code

2. ASTM – American Society for Testing and Materials
3. ANSI – American National Standards Institute
4. AISC – American Institute of Steel Construction
5. IEEE – Institute of Electrical and Electronic Engineers
6. ASCE – American Society of Civil Engineers
7. AWS – American Welding Society
8. NEMA – National Electrical Manufacturers Association
9. OSHA – Occupational Safety and Health Act
10. ASME – American Society of Mechanical Engineers

All federal, state, local, and municipal government requirements will also be adhered to.

E. GENERAL CRITERIA

1. Nominal Voltage

   The nominal phase-to-phase voltage is 345 kV.

2. Structure Type

   Steel pole structures on concrete foundations or directly embedded steel poles will be used. A comprehensive structure design criteria is contained in the Appendix.

3. Line Access and Structure Numbers

   Special access may be required to some structures. Gates will be provided in existing fences. Structure numbers will be provided at the top of every 5th structure, in addition to deadends, angles, and crossings..

4. Thermal Capacity

   Basin Electric Power Cooperative has had satisfactory electric operation using a single 2306.2 MCM ACSR conductor per phase at 345 kV. The electrical operating characteristic of this line will be similar with the single 2312 MCM ACSR conductor. The maximum summer current rating is 1810 amperes at 100°C and at 2 feet per second crosswind. The maximum winter current rating is 2525 amperes at 100°C and at 2 feet per second crosswind. Thermal capacity is not a limiting factor for this transmission line.

5. Electrical Effects Analysis

   Basin Electric's experience with 345 kV transmission lines indicates that they do not produce objectionable levels of audible noise, television interference, electric or magnetic fields off the right-of-way. Therefore, no specific study for such electrical effects is planned for this project.

6. Transposition Structures

   Due to the delta configurations on tangents and deadends, and the stacked configurations from the angles, transposition structures will not be necessary.

F. INSULATION COORDINATION

1. Insulation Requirements for Power Frequency

Power frequency voltages rarely control insulation design except in highly contaminated conditions. For this 345 kV line, the 60 hertz wet line crest voltage is (1.05 x 345 kV):

$$\frac{362}{\sqrt{3}} \times \sqrt{2} = 295 \text{ kV}$$

Seven (7) standard 5¾" x 10" suspension insulators would be sufficient. However, a reduction in flashover voltage is caused by rain and is further decreased by contaminants within the rainwater. To compensate for the contaminated conditions, the leakage distance (the distance along the surface of the insulator) has to be increased. Even for very lightly contaminated areas, RUS recommends a total leakage distance of up to 1 inch per kV (RMS line to ground). On that basis, a leakage distance of 209 inches or a minimum of 18 insulators would be required. The insulation design must obviously withstand the power frequency voltage during all weather conditions including the high wind condition. A power frequency air gap of 30 inches shall be maintained during maximum insulator swing condition.

2. Insulation for Switching Surge

It is assumed that the maximum per unit switching surge for the 345 kV line will be kept below a level of 2.8 by using surge arresters. For design purposes the switching surge voltage is:

$$\frac{262}{\sqrt{3}} \times \sqrt{2} \times 2.8 = 826 \text{ kV to ground}$$

The basic insulation level of the line is the withstand value of the impulse voltage of the insulator string which can successfully withstand the expected switching surge.

3. Insulation for Lightning Surges

Insulator strings with 18 units on steel and wood structures have proven satisfactory lightning performance. Angle structures may have additional units to maintain clearance. Angle and Deadend Structures will have 19 (38) units per string. To prevent the near certainty of flashover due to a lightning strike, the following criteria will be maintained:

Minimum OHGW Shielding Angle	20 degrees
Maximum Grounding Resistance	25 ohms

4. Insulator-Hardware Assemblies

The hardware and components of insulator assemblies shall withstand the following loading conditions based upon the appropriate conductor tensions.

	MAXIMUM PERCENT OF RATED STRENGTH
NESC	40
1¼" Ice	70

Tangent and small angle suspensions will use 30,000 lb single-string insulators. For medium angles, 30,000 lb single-string insulators will be used. For large running angles and deadends, 30,000 lb double-string insulatores will be used. Single-string assemblies may also need to be doubled at significant crossings. Insulators will be standard 5¾-inch x 10-inch glass

Armor grip suspension (AGS) units will be used for conductor and OPGW. Suspension shoes with armor rod will be used for OHGW. Hardware for assemblies will be suitable for hot line maintenance. Corona free clamps and armor rods will be used. Corona rings will not be needed.

Internally fired dead-ends and mid-span splices (AMP Type) will not be considered.

G. CLEARANCES

1. Phase Spacing

Phase spacing for design ruling span will be 28 feet, but may vary for special ruling spans and specific cases.

2. Crossing Clearances (Vertical)

The following minimum clearances will be used for the line design:

CROSSING TYPE	CLEARANCE @ 100°C (ft)
A. Agricultural Land	30.0
b. Rural Roads	30.0
c. Highways and Paved County Roads	30.0
d. Railroads	38.0
e. Communication Lines	15.0
f. Waterways, lakes, ponds, rivers, and streams	34.0 or as required by the Corps of Engineers or other agency
g. Power Lines:	
0 to 69 kV	15.0
to 138 kV	16.0
to 161 kV	17.0
to 230 kV	18.0
to 345 kV	19.0
h. Buildings	18.0

Vertical clearances over special crossings should be provided as the situation demands. The sag of existing conductors and wires will be neglected in order to allow adequate clearances during galloping conductor conditions.

3. Minimum Horizontal Clearances at Crossings

No structure will be located within the right-of-way of another utility, except under special circumstances as approved by the utility. Horizontal clearances from transmission structures are given below:

Distance From	Recommended Clearance (ft)
Communication lines	50.0
Distribution line	50.0
Pipelines	50.0
Railroad Centerline	Structures to be located off right-of-way
Roads & Highways	Structures to be located off right-of-way

4. Right-of-Way Width

A right-of-way width of 150 feet has been chosen per the requirements of NESC Rule 234, which governs clearance requirements from the conductor to structures (buildings, towers, antenna, etc.) directly on the edge of the right-of-way. The right-of-way width provides additional room for construction and maintenance. Additional temporary construction easements may be obtained to provide working space at deadend and angle structure locations, as required to install conductor.

5. Clearance Between Conductor and Overhead Ground Wire

The OHGW vertical separation will be about 25 feet at the structure attachment points. Initial unloaded tension shall not exceed 25 percent of rated strength at 0°F and OHGW sags shall not exceed 80 percent of the final conductor sag at 60°F with no wind. During iced conductor and OHGW conditions, the conductor has a tendency to drop its ice first. If the OHGW has not dropped its ice, the reduced separation may result in a flashover from the conductor. To ensure adequate phase-to-ground clearance, the minimum vertical separation between conductor and OHGW during differential ice (½" ice at 32°F) conditions shall be 5 feet.

6. Insulator Swing

All tangent and angle structures for this project will utilize suspension insulators which are free to swing about their points of support. The amount of swing varies with such factors as conductor tension, temperature, wind velocity, and the ratio of the vertical to horizontal spans.

Insulator swing charts will be developed which show the allowable vertical span to horizontal span ratio for the tangent structures under the following three conditions (per RUS Bulletin 1724E-200, Table 7-1):

a. The normal, no wind clearance at 60°F (final) shall be no less than 104 inches. Angle structures will be checked to verify the above criteria is maintained during minimum and maximum insulator swing conditions.

b. A 9-pound wind at 60°F (Final) while maintaining a 76-inch lightning surge clearance.

c. A 6-pound per square foot transverse wind (≈48 mph) at -40°F (Initial) while maintaining a 76-inch switching surge clearance to ground.

d. A 31-pound per square foot transverse wind (≈90 mph) at 60°F (Final) and maintaining the power frequency clearance of 30 inches.

H. CONDUCTOR

1. Selection

Conductor selection is based on load flow data and Basin Electric's past operating experience with 345 kV lines. A Thrasher 2312.0 MCM 76/19 ACSR conductor will meet the electrical load requirements for this project. The physical and electrical characteristics of the conductor are listed below:

2312.0 MCM 76/19 ACSR

Code Name	Thrasher
Overall Minimum Diameter	1.802 in.
Cross Sectional Area	1.9144 sq. in.
Weight Per 1,000 Feet	2.526 lbs.
Rated Strength, Standard	56,700 lbs.
Resistance (Ohm/Mile)	
AC at 25°C	0.0457
AC at 75°C	0.0529

2. Tension Limitations

Sag-tension data for the conductor is based on the following limitations:

a. Initial tension at the NESC heavy load shall not exceed 40 percent of rated strength.

b. Initial bare tension at 0°F shall not exceed 28 percent of rated strength.

c. Final bare tension at 0°F shall not exceed 23 percent of rated strength.

d. Initial tension at 1¼" ice at 0°F shall not exceed 54 percent of rated strength.

Sag-tension data is provided for the NESC heavy loading condition as well as special loadings including the heavy ice load of 1¼ inch at 0°F, Initial, and a 100 mph wind at 60°F, Final.

Ground clearance will be checked at a maximum temperature of 100°C. Uplift on suspension insulators will be checked at -40°F.

3. Galloping Conductors

Galloping conductors have occurred within the project area and will be accounted for in the design. Fortunately, single-loop galloping rarely occurs in spans over 600 to 700 feet (Design Manual for High Voltage Transmission Lines, RUS 1724E-200). Galloping will be checked under a weather condition consisting of 32°F, ½" radial

ice, 2 psf wind, and final sag. Lissajous ellipses, which show the theoretical envelop of the galloping conductor, will be prepared for both conductor's designs as follows:

a. Full loop analysis for spans up to 700 feet.

b. Double loop analysis for spans 700 feet to maximum.

4. Vibration Protection

Conductor tension limitations have been selected to limit aeolian vibrations and conductor oscillation on the line. Stockbridge type dampers will be used to limit vibration and protect the conductors. Spiral type dampeners will be used for overhead ground wire and optical ground wire.

I. OVERHEAD GROUND WIRE AND GROUNDING

1. Selection

The overhead ground wire will be extra high strength (EHS) galvanized steel, strand, 7/16 inch, and 20,800 pounds minimum breaking strength.

The optical ground wire (OPGW) will be used to establish a fiber optic path for the entire line. Therefore, the single pole steel structures will have one OPGW and one galvanized steel wire. The OPGW sags will match those of the OHGW under normal loads.

2. Tension Limitations

a. Sag-tension data for the OHGW is based on the following limitations:

1) Not greater than 80 percent of conductor sag at 60°F, Final.

2) Initial bare tension at 0°F shall not exceed 15 percent of minimum breaking strength.

3) Initial 1¼-inch ice at 0°F .

b. Sag-tension data (not limiting conditions) is provided for the NESC heavy loading condition as well as the following special loadings:

1) 1¼ inch ice at 0°F

2) 110 mph wind at 60°F

c. Uplift on OHGW attachments will be checked at -40°F. Clearance between the ½" iced OHGW and bare conductor at 32°F will also be verified.

3. Shielding Angle

A shielding angle of 20 degrees will provide an adequate shielding angle to prevent lightning strikes to the conductor. Standard practice and calculated trip out rates substantiate the selected shield angle. Using an average span of 950 feet, an isokeraunic level of 30 and footing resistance of 25 ohms, calculations show the outage rate due to lightning will be under 0.5 per 100 miles per year for this project, well below the generally accepted limit.

4. Grounding

The lightning performance of the line is dependent upon the structure footing resistance. Since the lines lie in an area where the isokeraunic level is fairly high, a

25-ohm maximum design ground resistance has been chosen. Ground rods will be installed, as required, to provide a maximum resistance of 25-ohms.

Fences and gates within the transmission line right-of-way will be grounded to prevent electrostatic voltage build-up and electromagnetic shock hazards.

J. STRUCTURE LOADING CRITERIA

1. Structure Design Loads

The structures shall meet the strength requirements of the latest edition of the National Electric Safety Code (NESC). In addition, the structures will be designed to withstand a high wind condition and a heavy ice condition.

The extreme wind load was calculated per ASCE Manual 74, "Guidelines for Electrical Transmission Line Structural Loading." This standard is written for reliability-based design methods, and was updated in 2010.

The following table defines all load cases and overload factors to be applied:

Load Case	Overload Factors
• NESC Heavy (0°F, ½" Ice, 4 psf wind, initial tension) NESC 250 B	Vertical = 1.5 Transverse = 2.5 Tension = 1.65 Wind on structure = 2.5
• Extreme Wind (60°F, bare, 31 psf wind, final tension) NESC 250 C	Vertical = 1.1 Transverse = 1.1 Tension = 1.1 Wind on structure = 1.1
• Extreme Ice with Concurrent Wind (15°F, ½" Ice, 9.2 psf wind, initial tension) NESC 250 D	Vertical = 1.1 Transverse = 1.1 Tension = 1.1 Wind on structure = 1.1
• Heavy Ice (0°F, 1 ¼ " Ice, no wind, initial tension)	Vertical = 1.1 Transverse = 1.1 Tension = 1.1 Wind on structure = 1.1
• Camber (40°F, bare, 2 psf wind, final tension)	Vertical = 1.0 Transverse = 1.0 Tension = 1.0 Wind on structure = 1.0

All load cases include tension components and insulator hardware. Some minor adjustment of load cases will be necessary based on type of structure used.

K. FOUNDATIONS

Drilled-pier concrete foundations will constitute the typical foundation system for all structures. Transmission foundations for single pole structures are subjected to significant lateral forces and overturning moments. Drilled-pier concrete foundations will utilize the use of steel reinforcement.

REFERENCES

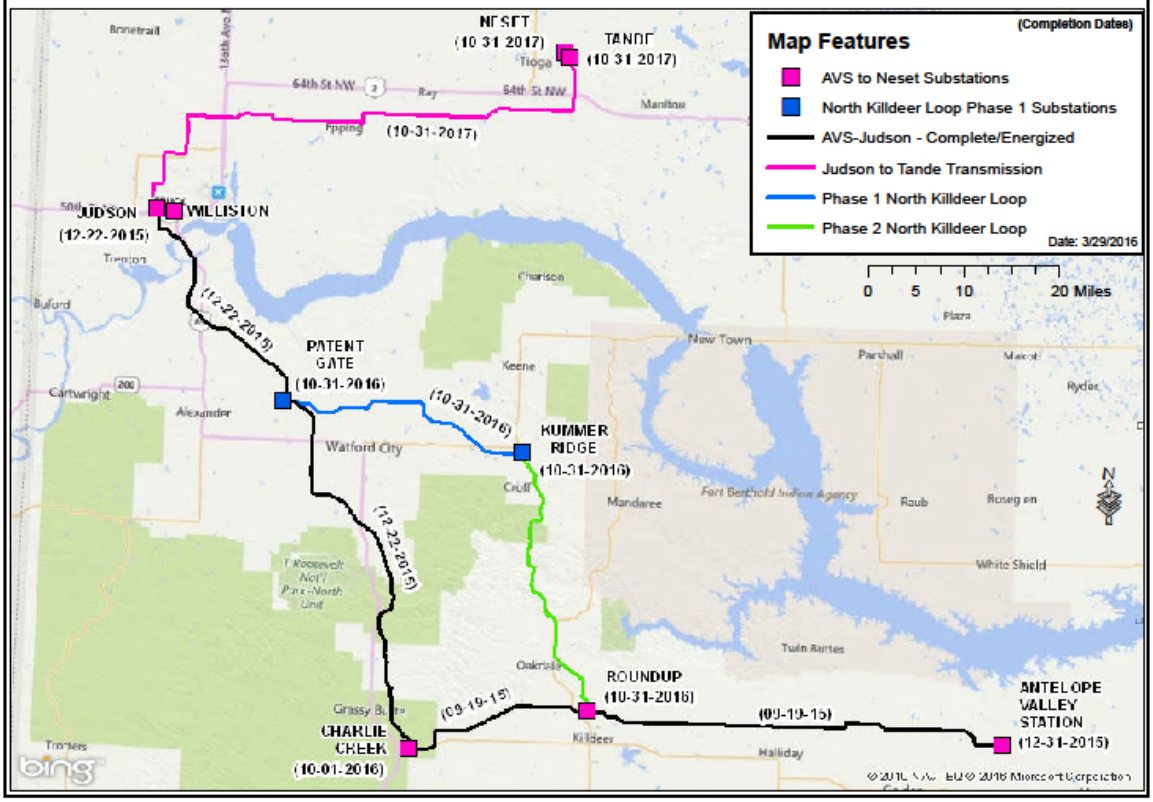
1. Electric Power Research Institute (EPRI): "Transmission Line Reference Book 345 kV and Above", Project UHV, Pittsfield, Mass. 19

Antelope Valley Station to Neset 345kV Transmission Line Project

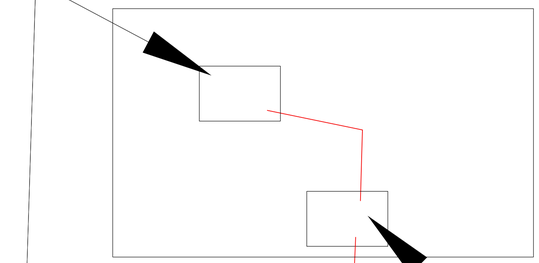
Appendix

Project Location Map

NW ND Transmission and Substation Construction Completion Dates



NESET SUBSTATION



SHEET 1

WILLIAMS

TANDE SUBSTATION

MOUNTRAIL

1	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18

LINE 289
TANDE TO NESET
SHEET INDEX MAP

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LEGEND:

- AS BUILT STRUCTURE LOCATION
- 125' WIDE EASEMENT

SEC. 20 & 29 – T157N – R94W
MOUNTRAIL COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 289
CASE #PU-11-696
230kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

SHEET 1 OF 1

REV. NO. 2

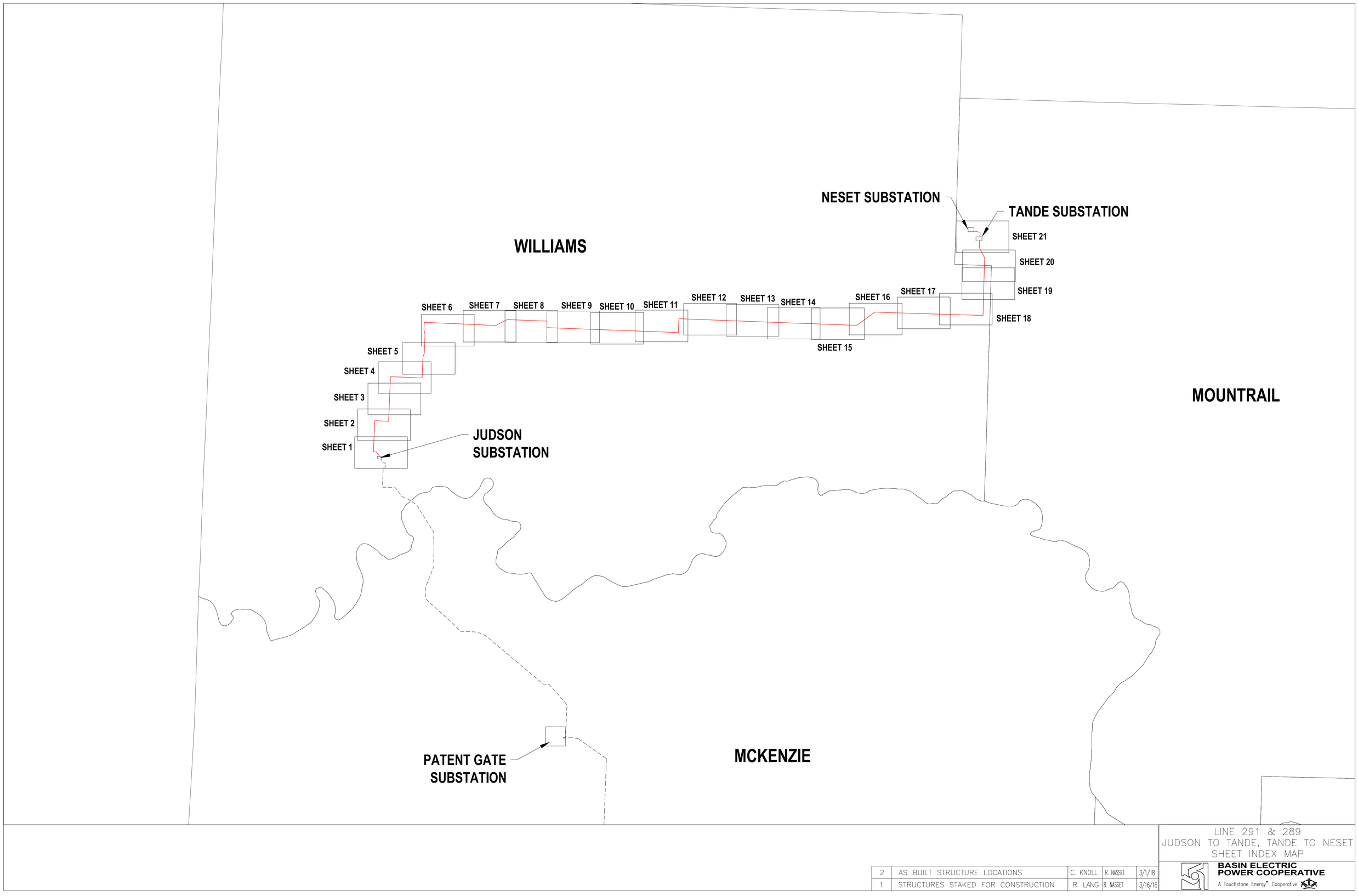
BASIN ELECTRIC POWER COOPERATIVE
CASE NO: PU-11-696

AS BUILT
PLAN AND PROFILES AND STRUCTURE LOCATIONS FOR
AVS-NESET 345kV TRANSMISSION PROJECT

LINE 291 - JUDSON TO TANDE SEGMENT
LINE 289 - TANDE TO NESET SEGMENT

NORTH DAKOTA PUBLIC SERVICE COMMISSION
MARCH 2018

BASIN ELECTRIC
POWER COOPERATIVE
A Touchstone Energy® Cooperative



2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

LINE 291 & 289
JUDSON TO TANDE, TANDE TO NESET
SHEET INDEX MAP

BASIN ELECTRIC
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LEGEND:

STRUCTURES PREVIOUSLY PERMITTED

150' WIDE EASEMENT

SEC. 2,3,10 & 11 – T154N – R102W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
CONSTRUCTED AND PERMITTED IN 2012 AS PART OF MOUNTRAIL WILLIAMS ELECTRIC COOPERATIVE'S 115kV PROJECT

PREVIOUSLY CONSTRUCTED
MOUNTRAIL WILLIAMS 115kV
TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 0



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 2,3,10 & 11 – T154N – R102W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

3	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
2	STRUCTURE 291–026 MOVED AHEAD 15'	C. KNOLL	R. NASSET	9/16/16
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291
CASE #PU–11–696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 3



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 26 & 35 – T155N – R102W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

3	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
2	291–040 AHEAD 10˚ & 291–042 AHEAD 20˚	C. KNOLL	R. NASSET	11/18/16
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 3



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 23,24 & 26 – T155N – R102W
SEC. 17,19 & 20 – T155N – R101W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

3	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
2	STRUCTURE 291-059 MOVED 10' SOUTH	C. KNOLL	R. NASSET	7/8/16
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 3



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 8 & 17 – T155N – R101W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

PSC SUBMITTAL FOR LINE 291
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

REV. NO. 2



LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

SEC. 5 – T155N – R101W
SEC. 32,33,34,35 – T156N – R101W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

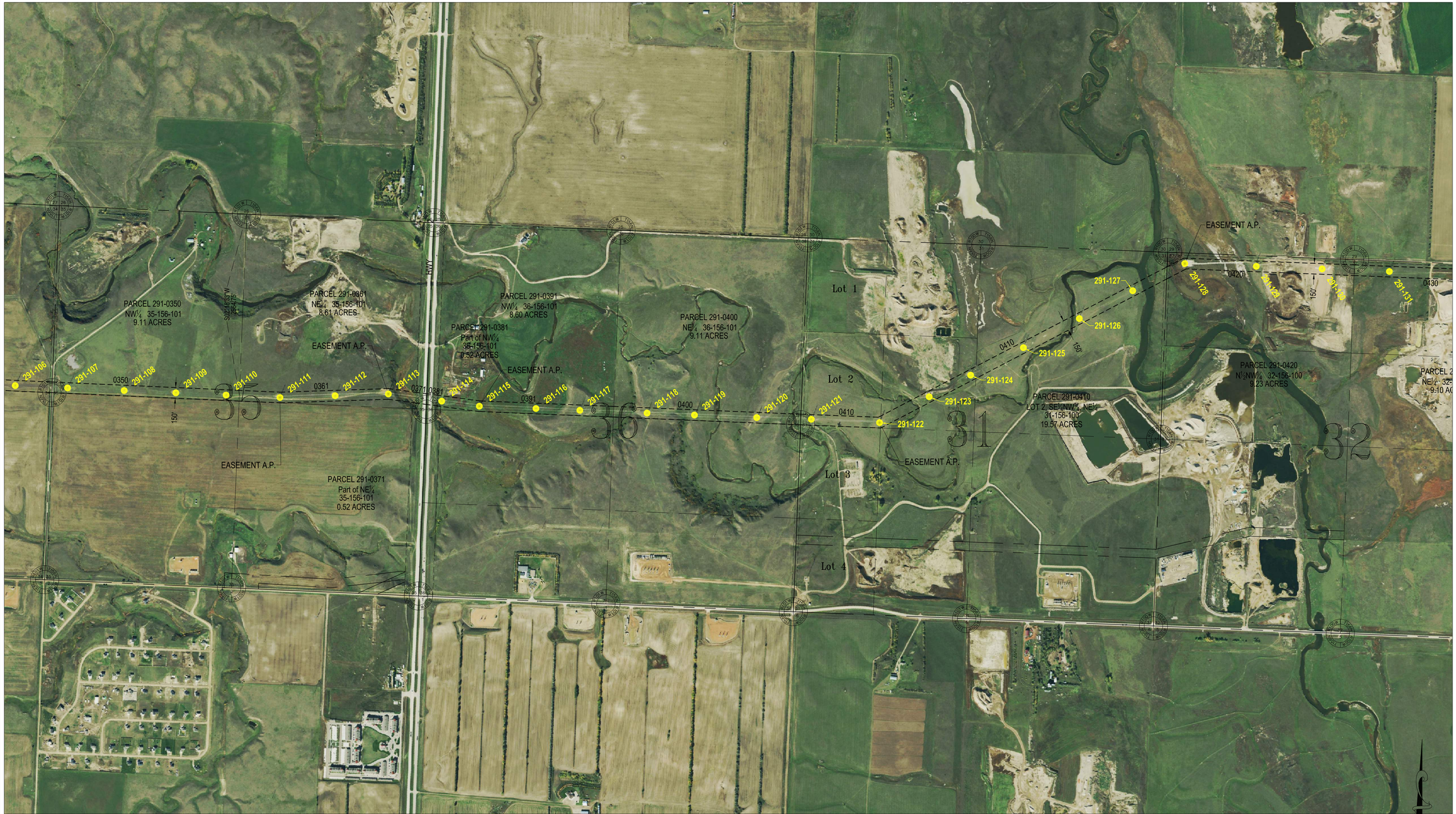
4	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
3	291-097, 291-101, 291-107, 291-109 MOVED	C. KNOLL	R. NASSET	9/16/16
2	291-081 MOVED, REMOVED 082 & RENUMBERED LINE	C. KNOLL	R. NASSET	7/8/16
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

SHEET 6 OF 21

REV. NO. 4



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

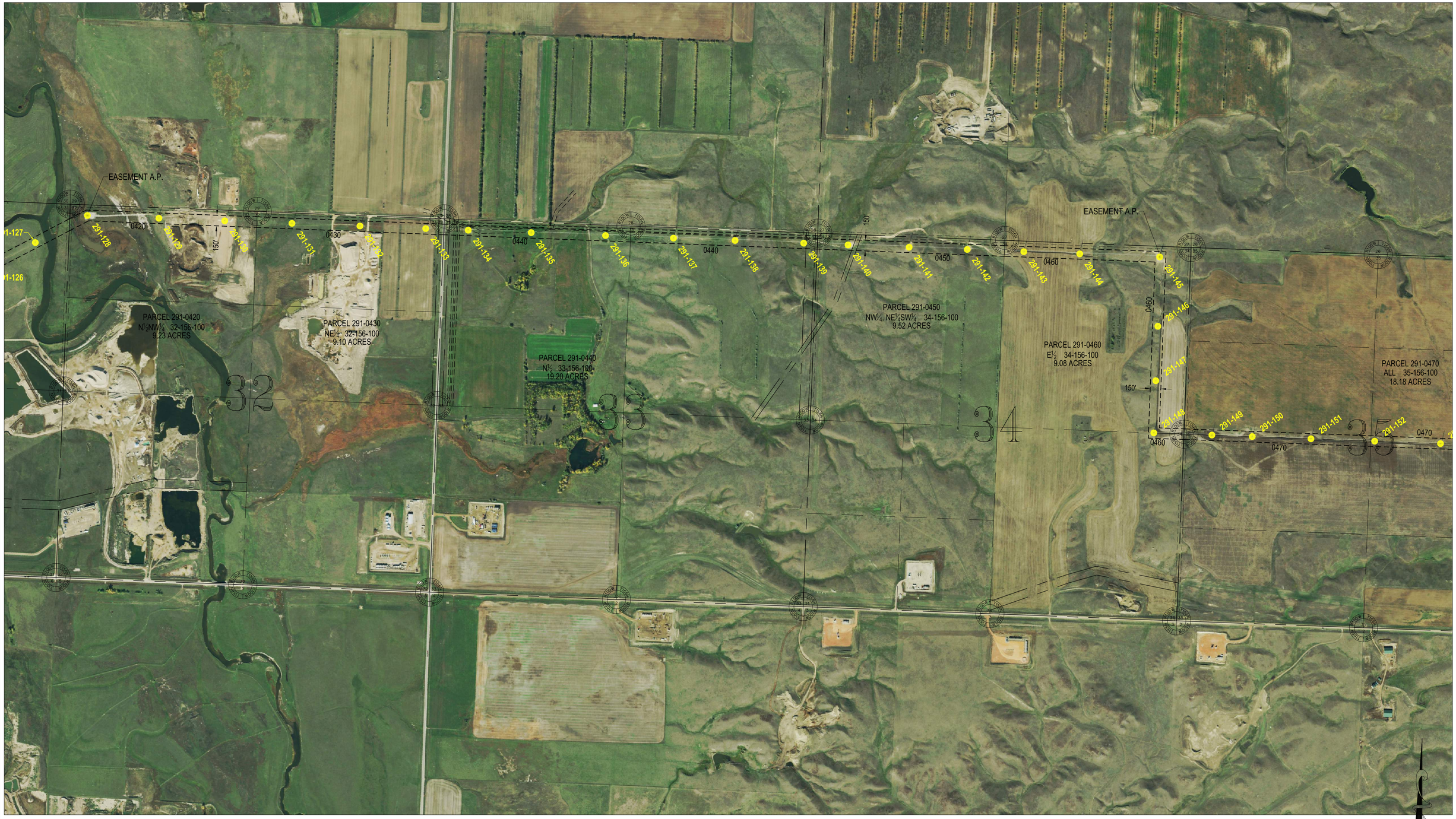
SEC. 31 & 32 – T156N – R100W
SEC. 35 & 36 – T156N – R101W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

4	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
3	291–129 AHEAD 20'	C. KNOLL	R. NASSET	11/18/16
2	291–114 AHEAD 20' & 291–127 BACK 20'	C. KNOLL	R. NASSET	9/16/16
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291
CASE #PU–11–696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 32,33,34 & 35 – T156N – R100W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

3	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
2	291–132 BACK 10' & 291–145 BACK 12'	C. KNOLL	R. NASSET	7/8/16
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291
CASE #PU–11–696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 3



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

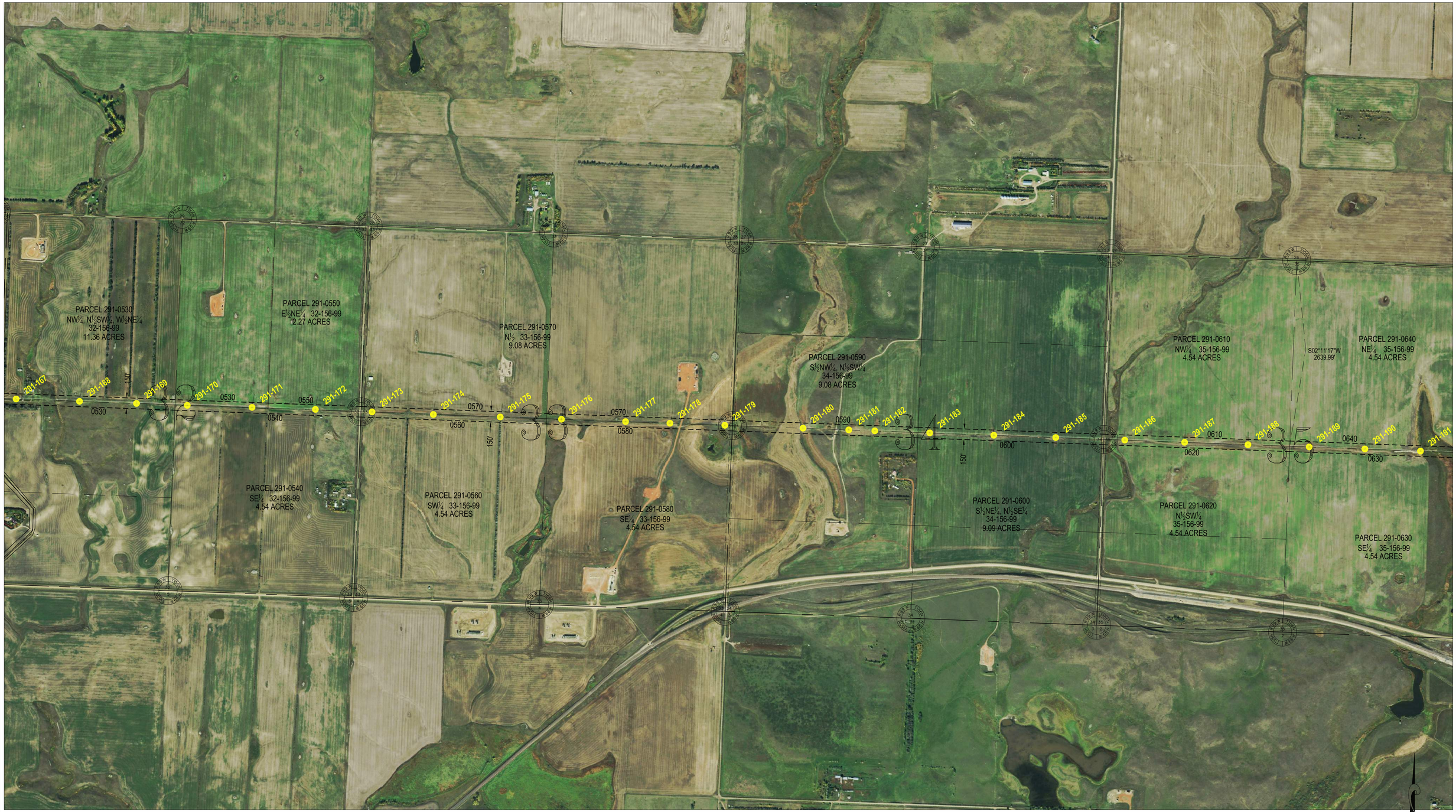
SEC. 35 & 36 – T156N – R100W
SEC. 31 & 32 – T156N – R99W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

4	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
3	STR 291–158 AHD 20' AND STR 291–161 AHD 20'	C. KNOLL	R. NASSET	4/24/17
2	STR 291–150 BACK 20'	C. KNOLL	R. NASSET	11/18/16
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291
CASE #PU–11–696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 32,33,34,35 – T156N – R99W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

3	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
2	291–180 AHEAD 30' & 291–191 BACK 30'	C. KNOLL	R. NASSET	6/1/17
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291
CASE #PU–11–696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 3



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 35 & 36 – T156N – R99W
SEC. 29,31 & 32 – T156N – R98W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

3	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
2	291–216 BACK 20'	C. KNOLL	R. NASSET	7/8/16
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291
CASE #PU–11–696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

SEC. 25,26,27 & 28 – T156N – R98W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

PSC SUBMITTAL FOR LINE 291
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 25 – T156N – R98W
SEC. 28,29 & 30 – T156N – R97W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

3	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
2	STRUCTURE 291–236 MOVED AHEAD 30'	C. KNOLL	R. NASSET	9/16/16
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291
CASE #PU–11–696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

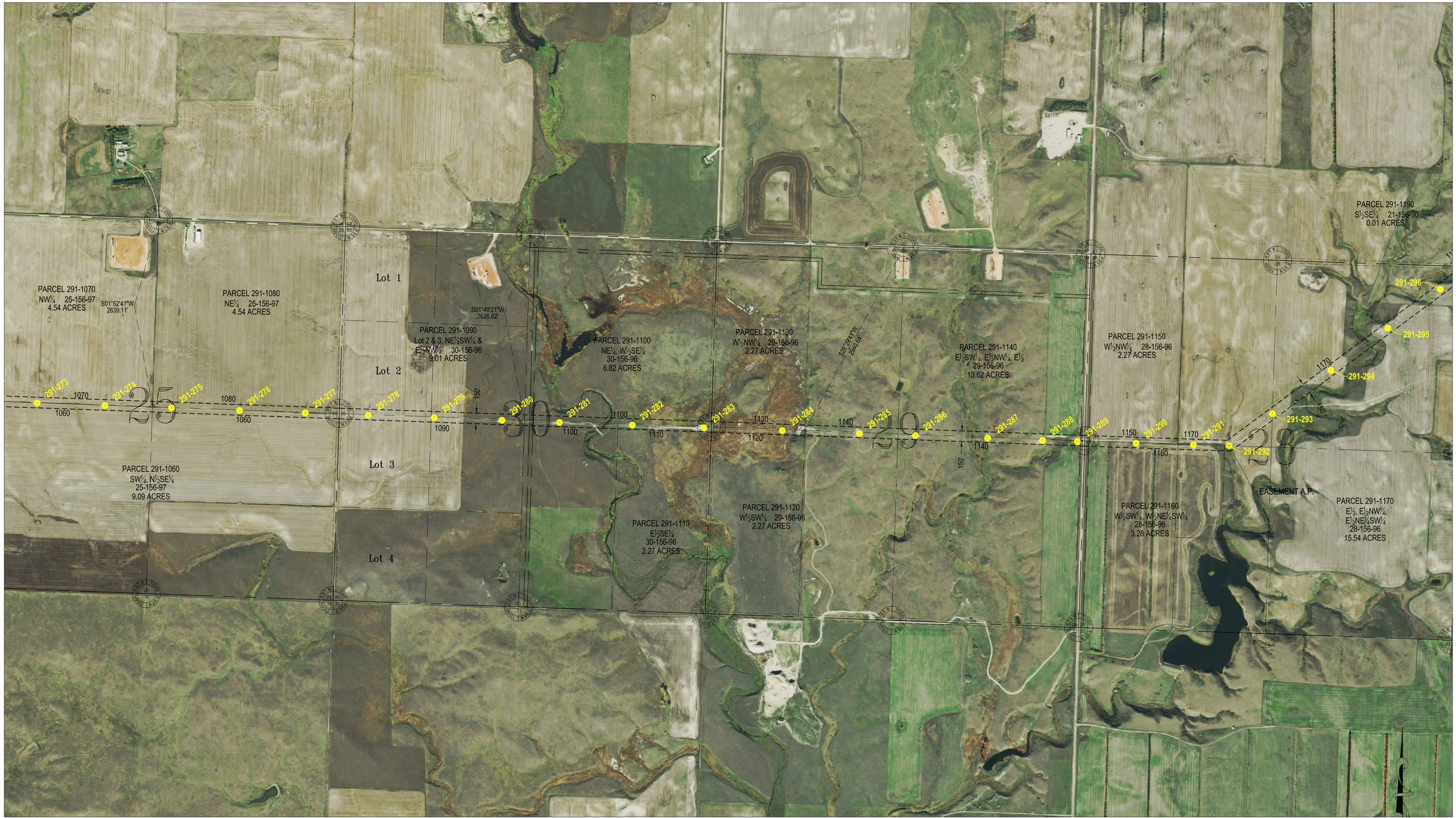
SEC. 25,26,27 & 28 – T156N – R97W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

PSC SUBMITTAL FOR LINE 291
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



SEC. 25 – T156N – R97W
SEC. 28,29 & 30 – T156N – R96W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 291
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



SEC. 22,23,24,27 & 28–T156N – R96W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

3	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
2	STRUCTURE 291–236 MOVED AHEAD 30'	C. KNOLL	R. NASSET	9/16/16
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291
CASE #PU–11–696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 19,20 & 21–T156N – R95W
SEC. 24–T156N – R96W
WILLIAMS COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

3	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
2	STRUCTURE 291–318 MOVED 15' AHEAD	C. KNOLL	R. NASSET	9/16/16
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291
CASE #PU–11–696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 3



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

NOTE:
AS BUILT STRUCTURE LOCATIONS

SEC. 13,21,22,23 & 24–T156N – R95W
WILLIAMS COUNTY, NORTH DAKOTA

PSC SUBMITTAL FOR LINE 291
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 1 & 12 – T156N – R95W
WILLIAMS COUNTY, NORTH DAKOTA

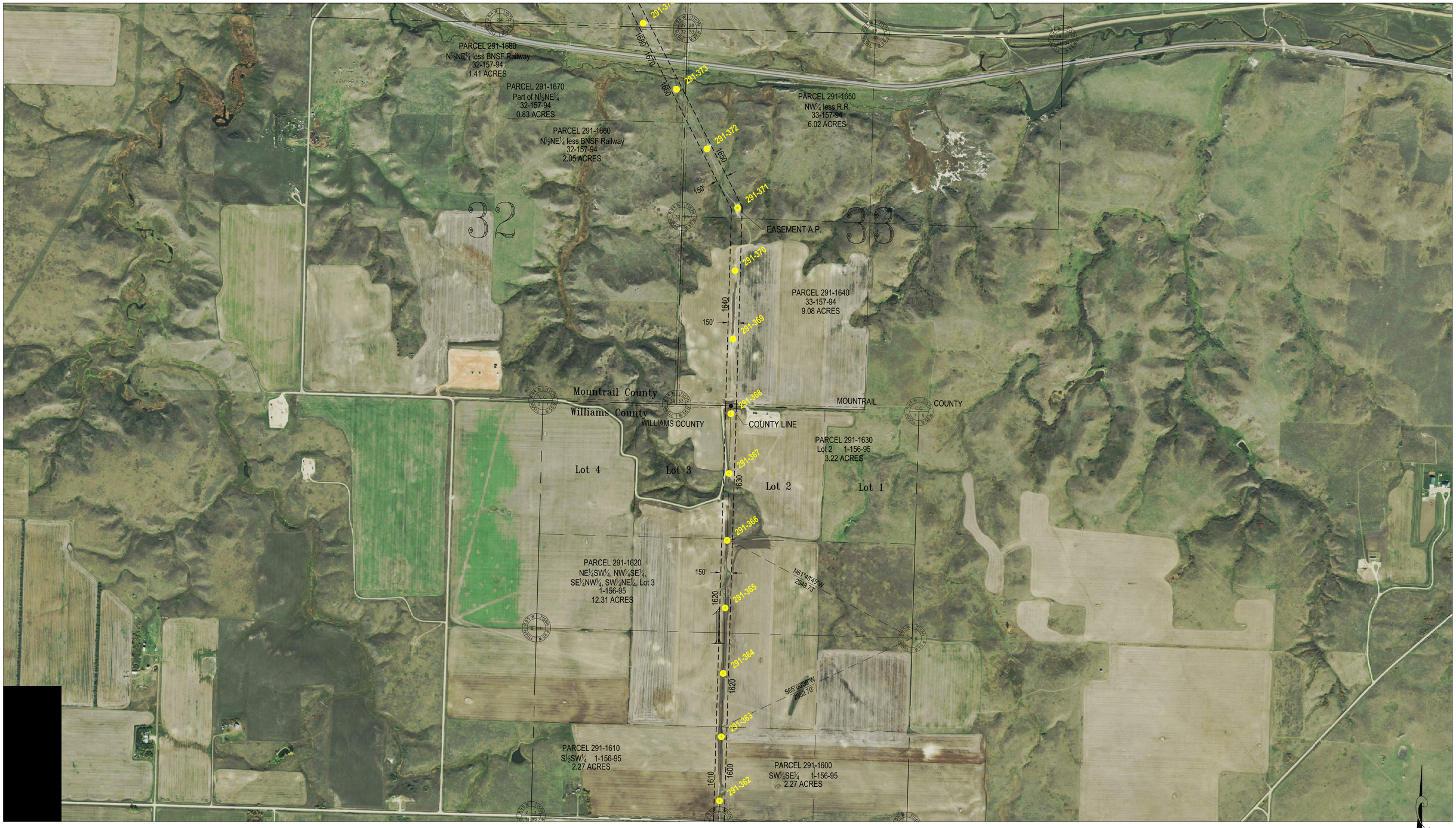
NOTE:
AS BUILT STRUCTURE LOCATIONS

PSC SUBMITTAL FOR LINE 291
CASE #PU-11-696
345kV TRANSMISSION LINE

REV. NO.				
2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 1 – T156N – R95W
WILLIAMS COUNTY, NORTH DAKOTA
SEC. 32 & 33 – T157N – R94W
MOUNTRAIL COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 20,28,29 & 32 – T157N – R94W
MOUNTRAIL COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

3	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	4/1/18
2	STR 291-376 (ELIMINATED OFFSET)	C. KNOLL	R. NASSET	11/18/16
1	STRUCTURES STAKED FOR CONSTRUCTION	R. LANG	R. NASSET	3/16/16

PSC SUBMITTAL FOR LINE 291 & 289
CASE #PU-11-696
230kV & 345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

SHEET 21 OF 21 | REV. NO. 3



JUD TOS
STA=0+00.00
HT=86.50 ELE=2200.68
TOS

291-001
STA=2+55.49
HT=126.50 ELE=2202.01
3SD55-125
OFFSET ADJUST=20.00
345KV - END 227' RS, BEGIN 793' RS

291-001A
STA=2+39.71
HT=76.50 ELE=2202.20
1SD123-75
OFFSET ADJUST=-50.00
115KV - BEGIN 798' RS

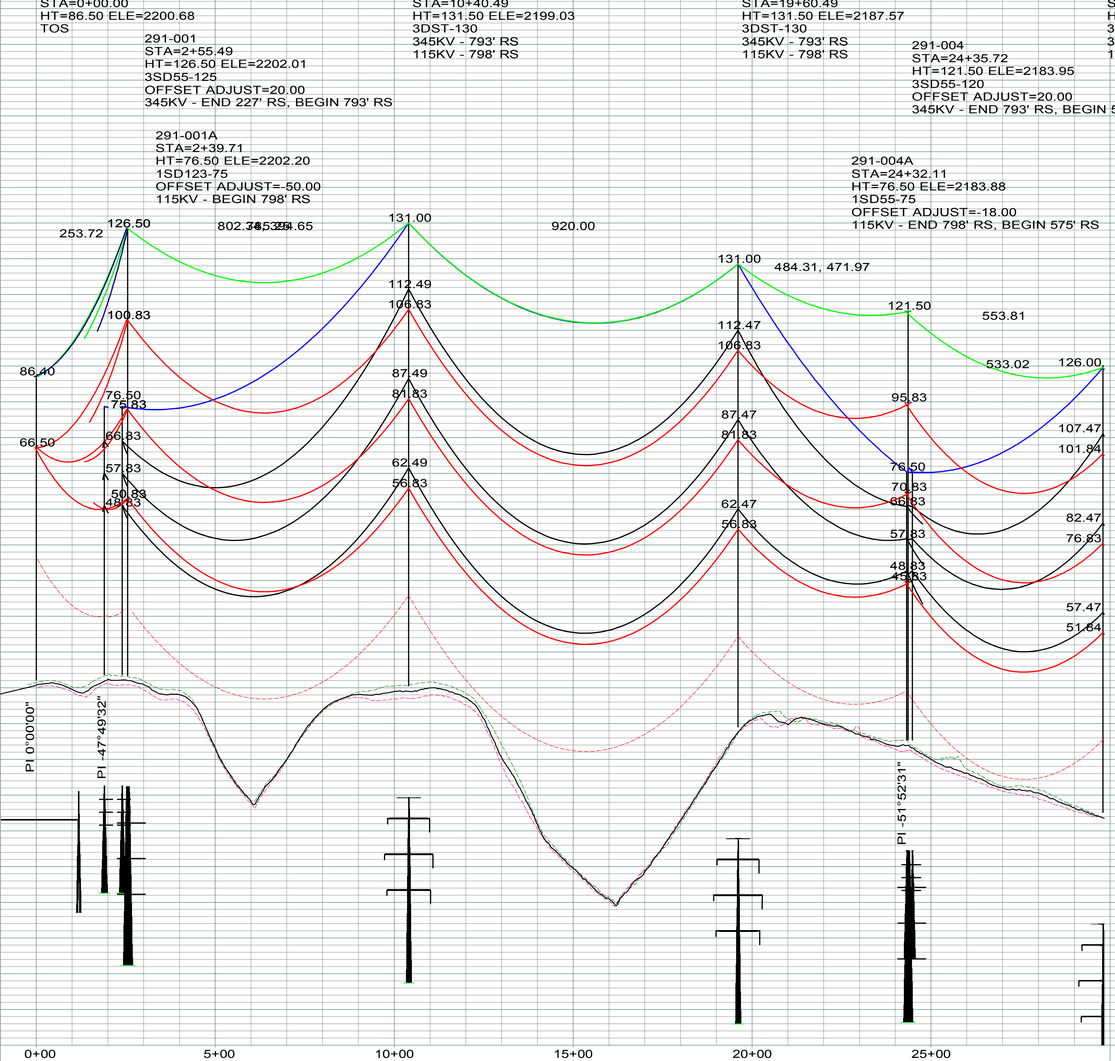
291-002
STA=10+40.49
HT=131.50 ELE=2199.03
3DST-130
345KV - 793' RS
115KV - 798' RS

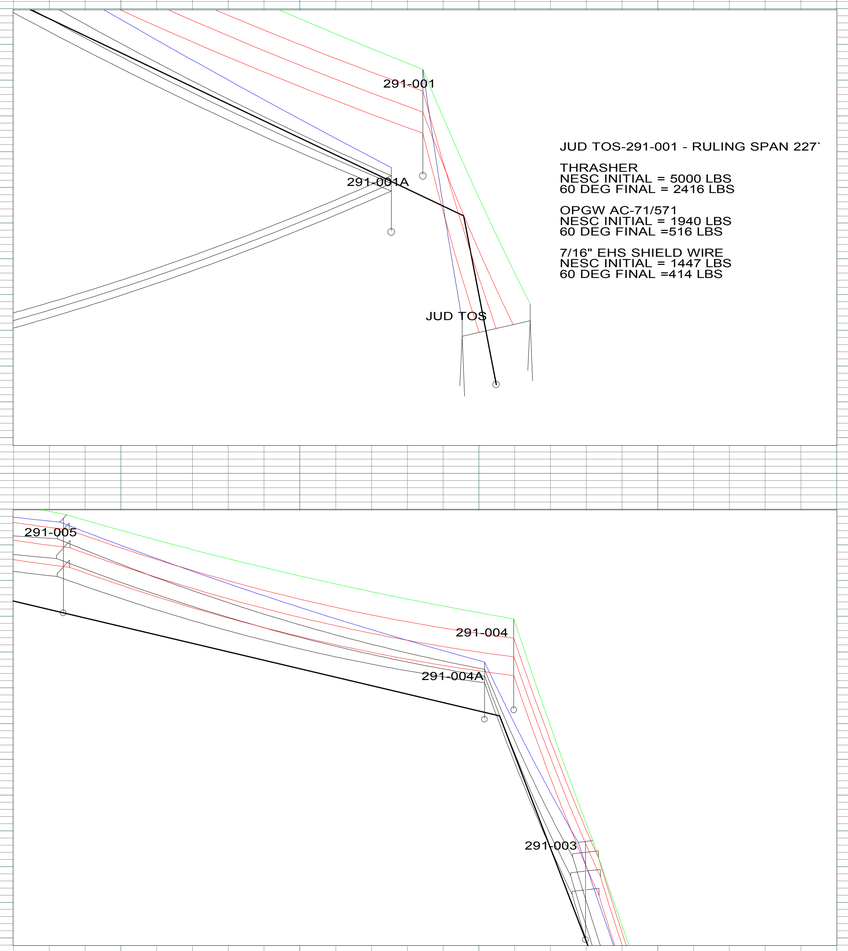
291-003
STA=19+60.49
HT=131.50 ELE=2187.57
3DST-130
345KV - 793' RS
115KV - 798' RS

291-004
STA=24+35.72
HT=121.50 ELE=2183.95
3SD55-120
OFFSET ADJUST=20.00
345KV - END 793' RS, BEGIN 565' RS

291-004A
STA=24+32.11
HT=76.50 ELE=2183.88
1SD55-75
OFFSET ADJUST=-18.00
115KV - END 798' RS, BEGIN 575' RS

291-005
STA=29+80.49
HT=126.50 ELE=2163.63
3DST-125
345KV - 565' RS
115KV - 575' RS





JUD TOS-291-001 - RULING SPAN 227`

THRASHER
NESC INITIAL = 5000 LBS
60 DEG FINAL = 2416 LBS

OPGW AC-71/571
NESC INITIAL = 1940 LBS
60 DEG FINAL =516 LBS

7/16" EHS SHIELD WIRE
NESC INITIAL = 1447 LBS
60 DEG FINAL =414 LBS

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
4	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	793	9961	18447
OPGW AC-71/571 (GREEN)	793	2188	5953
OHGW 7/16" EHS (BLUE)	797	2129	5837
115KV T2 IBIS CONDUCTOR (BLK)	565	1932	5087

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	565	8596	16701
OPGW AC-71/571 (GREEN)	565	1961	5147
OHGW 7/16" EHS (BLUE)	574	1932	5087
115KV T2 IBIS CONDUCTOR (BLK)			

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: -1+00 TO 29+84
STRUCTURE: JUD TOS TO 291-005

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-001
REV. NO.: 4

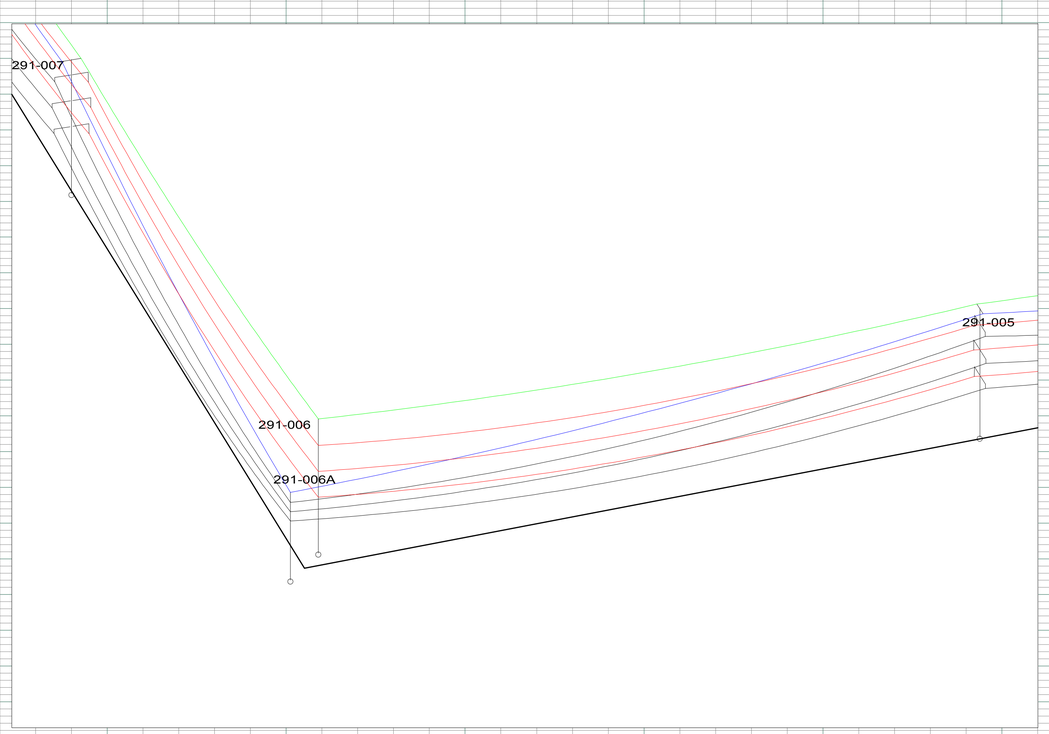


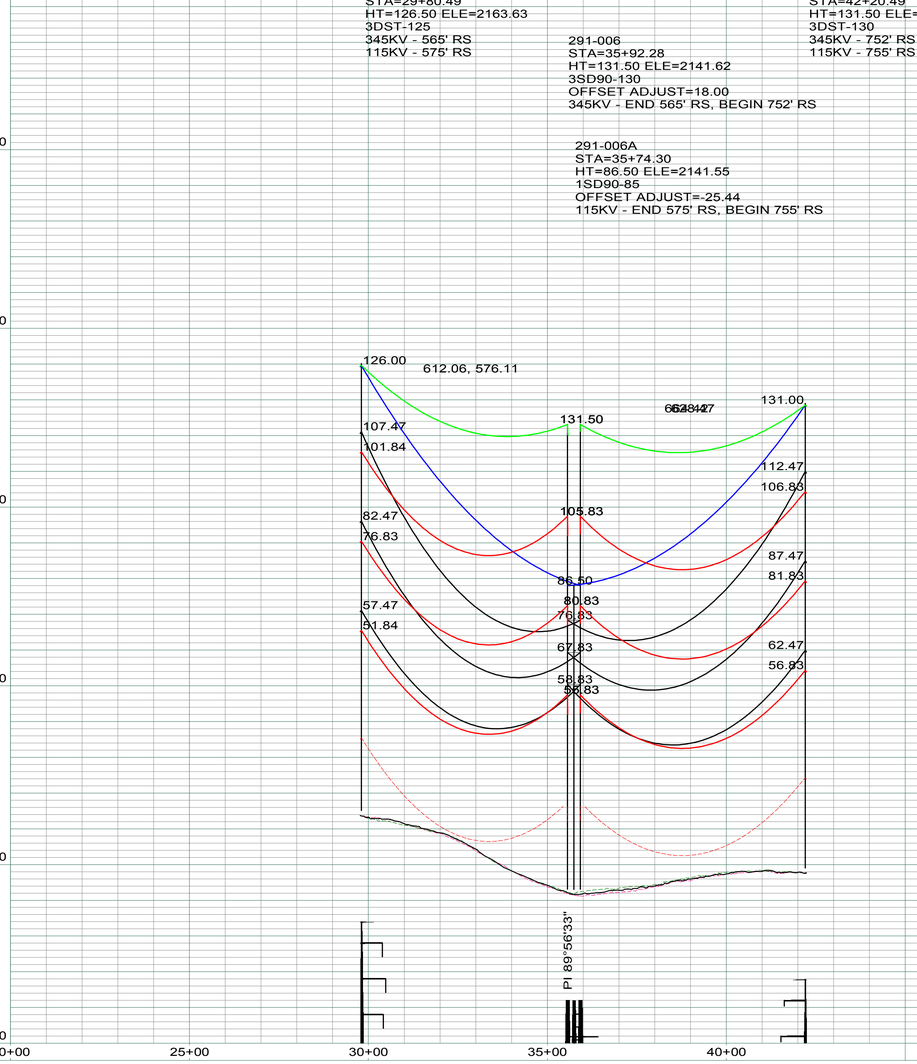
291-005
STA=29+80.49
HT=126.50 ELE=2163.63
3DST-125
345KV - 565' RS
115KV - 575' RS

291-006
STA=35+92.28
HT=131.50 ELE=2141.62
3SD90-130
OFFSET ADJUST=18.00
345KV - END 565' RS, BEGIN 752' RS

291-006A
STA=35+74.30
HT=86.50 ELE=2141.55
1SD90-85
OFFSET ADJUST=-25.44
115KV - END 575' RS, BEGIN 755' RS

291-007
STA=42+20.49
HT=131.50 ELE=2147.51
3DST-130
345KV - 752' RS
115KV - 755' RS





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
5	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	565	8596	16701	752	9739	21074
OPGW AC-71/571 (GREEN)	565	1961	5147	752	2151	5934
OHGW 7/16" EHS (BLUE)	574	1932	5087	755	2098	5709
115KV T2 IBIS CONDUCTOR (BLK)						

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

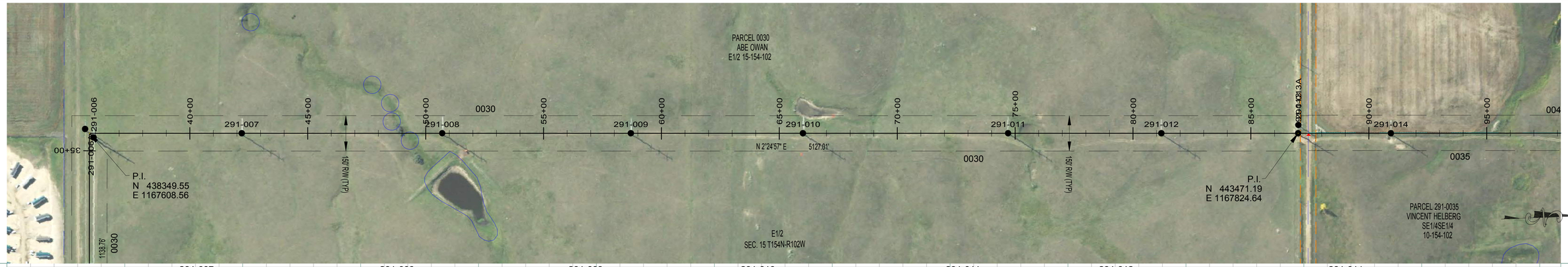
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 20+00 TO 42+24
STRUCTURE: 291-004A TO 291-007

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-002
REV. NO.: 5



291-007
STA=42+20.49
HT=131.50 ELE=2147.51
3DST-130
345KV - 752' RS
115KV - 755' RS

291-008
STA=50+70.49
HT=141.50 ELE=2152.11
3DST-140
345KV - 752' RS
115KV - 755' RS

291-009
STA=58+70.49
HT=131.50 ELE=2176.26
3DST-130
345KV - 752' RS
115KV - 755' RS

291-010
STA=66+00.49
HT=136.50 ELE=2173.54
3DST-135
345KV - 752' RS
115KV - 755' RS

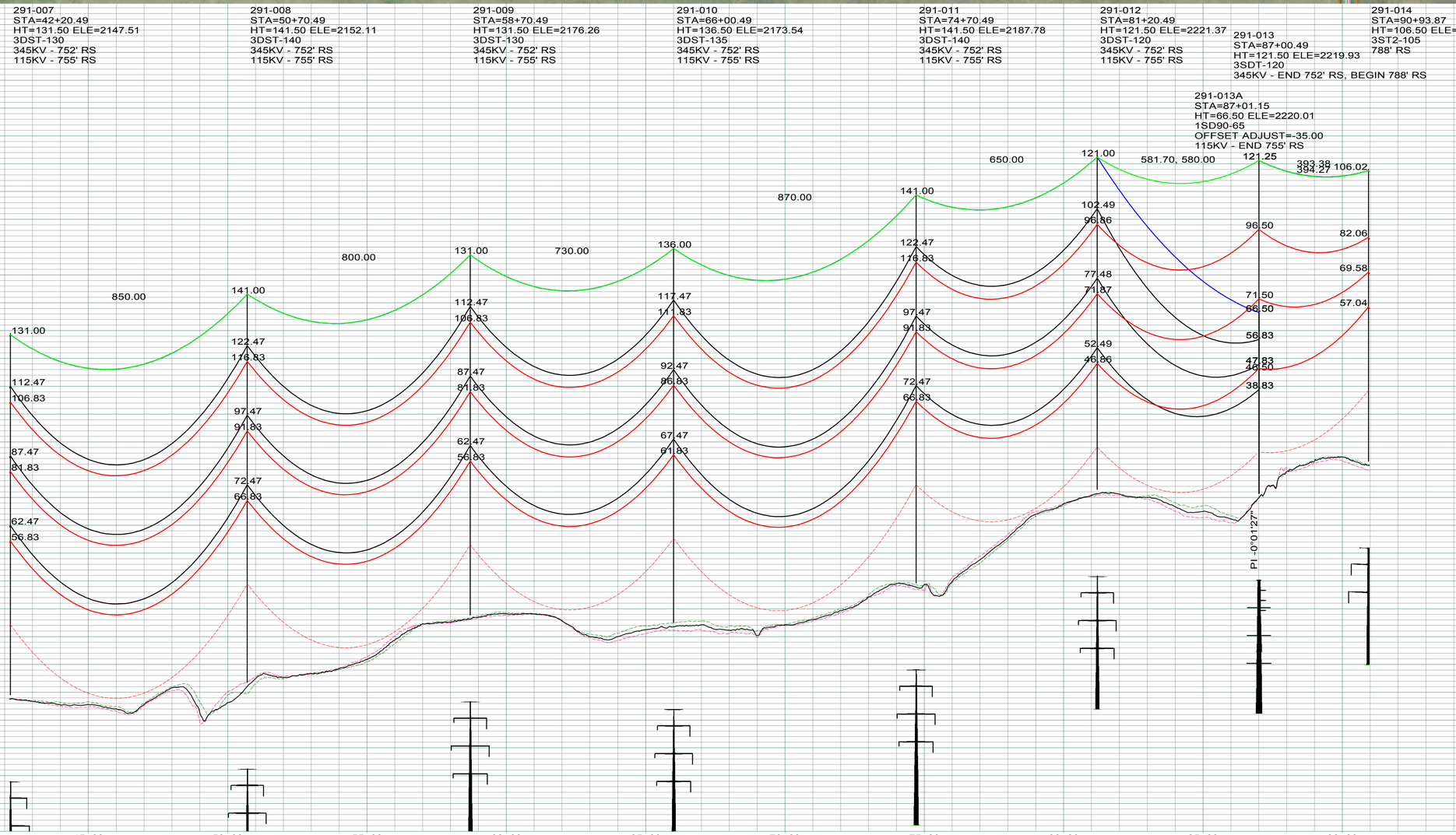
291-011
STA=74+70.49
HT=141.50 ELE=2187.78
3DST-140
345KV - 752' RS
115KV - 755' RS

291-012
STA=81+20.49
HT=121.50 ELE=2221.37
3DST-120
345KV - 752' RS
115KV - 755' RS

291-013
STA=87+00.49
HT=121.50 ELE=2219.93
3SDT-120
345KV - END 752' RS, BEGIN 788' RS

291-013A
STA=87+01.15
HT=66.50 ELE=2220.01
1SD90-65
OFFSET ADJUST=-35.00
115KV - END 755' RS

291-014
STA=90+93.87
HT=106.50 ELE=2231.52
3ST2-105
788' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	**AS BUILT**	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	752	9739	21074	788	12220	21283
OPGW AC-71/571 (GREEN)	752	2151	5934	788	2427	6047
OHGW 7/16" EHS (BLUE)				786	2167	5850
115KV T2 IBIS CONDUCTOR (BLK)						

DESIGN BY: S. VASBINDER	DATE:	04/16
DRAWN BY: C. KNOLL	DATE:	04/16
DESIGN CHK: R. NASSET	DATE:	04/16
DRAFT CHK: R. LANG	DATE:	04/16
APPROVED: S. WISEMAN	DATE:	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 35+00 TO 90+97
STRUCTURE: 291-006A TO 291-014

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-003
REV. NO.: 1



291-014
STA=90+93.87
HT=106.50 ELE=2231.52
3ST2-105
788' RS

291-015
STA=100+23.87
HT=96.50 ELE=2220.05
3ST2-095
788' RS

291-016
STA=107+43.87
HT=136.50 ELE=2167.77
3ST2-135
788' RS

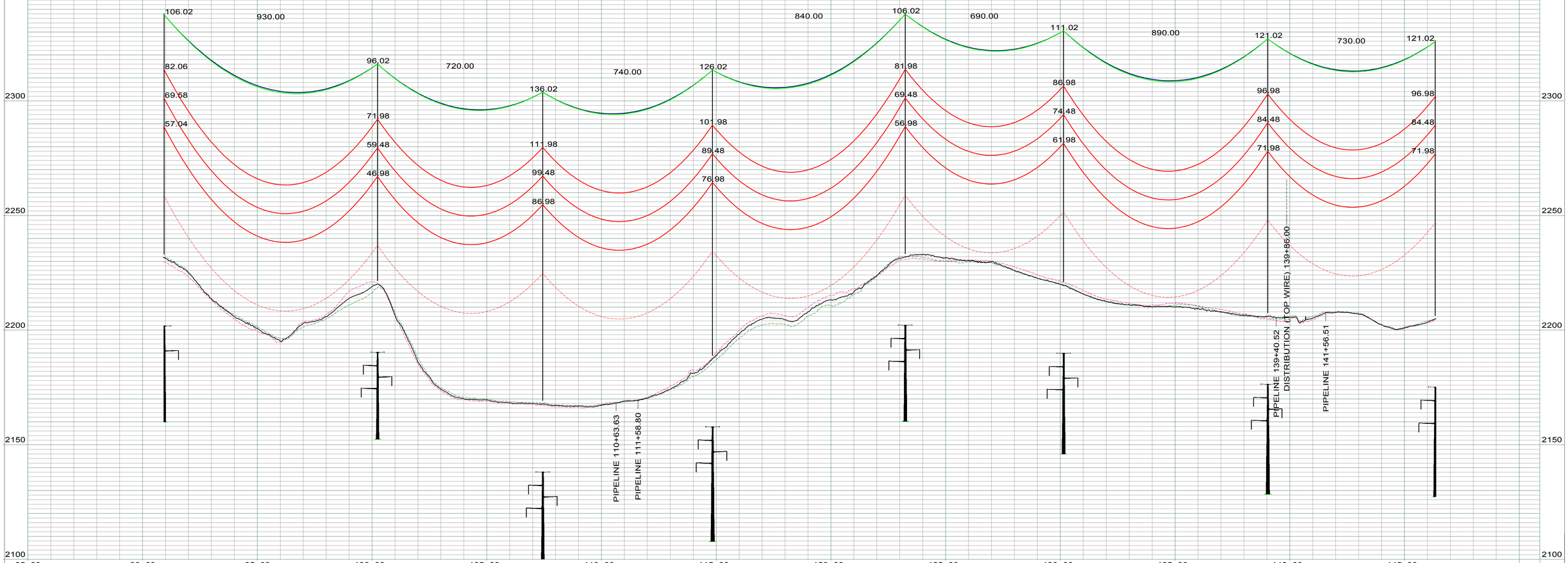
291-017
STA=114+83.87
HT=126.50 ELE=2187.46
3ST2-125
788' RS

291-018
STA=123+23.87
HT=106.50 ELE=2231.87
3ST2-105
788' RS

291-019
STA=130+13.87
HT=111.50 ELE=2219.57
3ST2-110
788' RS

291-020
STA=139+03.87
HT=121.50 ELE=2206.07
3ST2-120M1
CROSSING - 3 PHASE
788' RS

291-021
STA=146+33.87
HT=121.50 ELE=2204.85
3ST2-120M1
788' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	788	9930	21283	--	--	--
OPGW AC-71/571 (GREEN)	788	2183	6048	--	--	--
OHGW 7/16`` EHS (BLUE)	786	2123	5350	--	--	--
--	--	--	--	--	--	--

		DATE
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

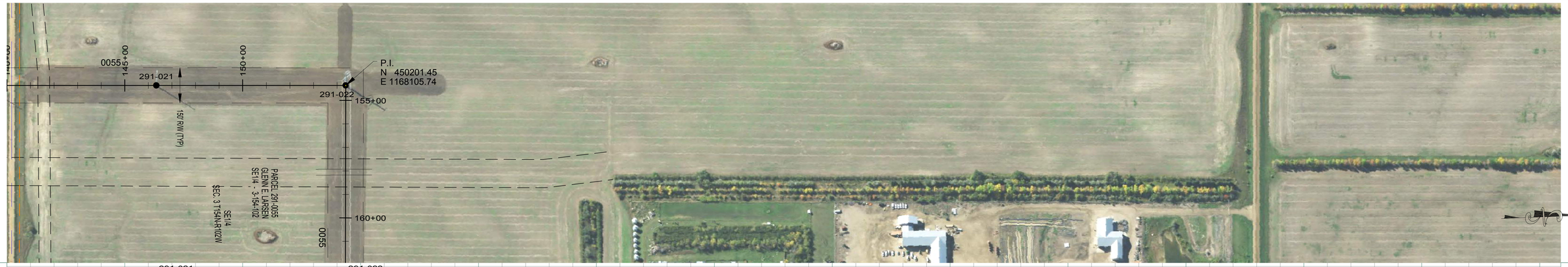
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 85+00 TO 146+37
STRUCTURE: 291-013 TO 291-021

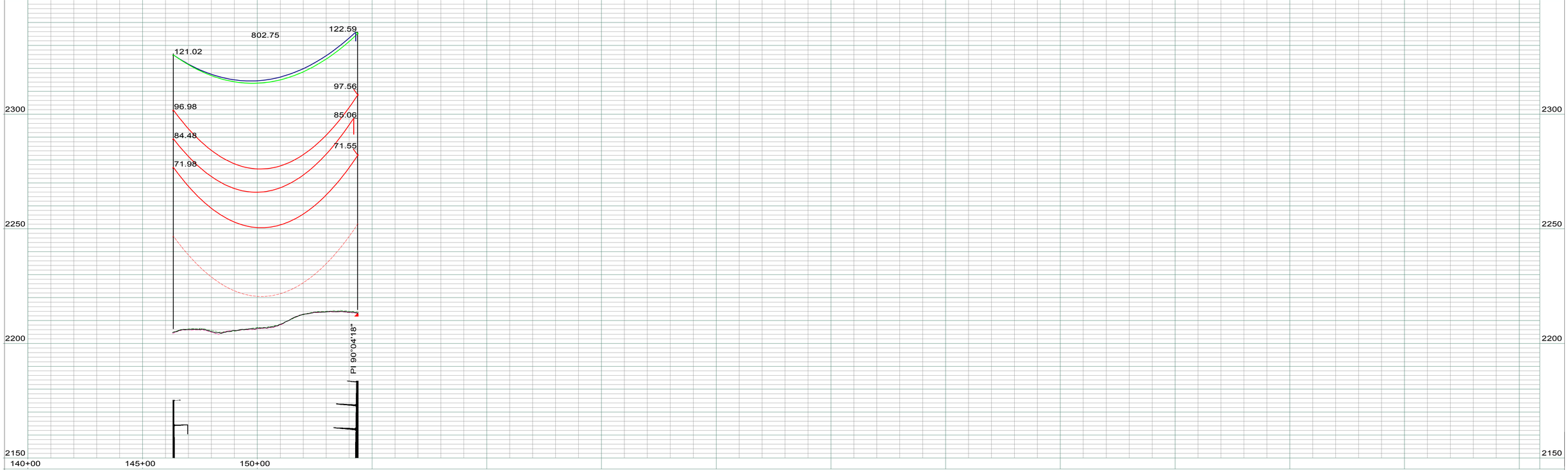
SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-004
REV. NO.: 1



291-021
STA=146+33.87
HT=121.50 ELE=2204.85
3ST2-120M1
788' RS

291-022
STA=154+36.61
HT=122.59 ELE=2213.20
3SDA90-121
END 788' RS, BEGIN 849' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	788	9930	21283	--	--	--
OPGW AC-71/571 (GREEN)	788	2183	6048	--	--	--
OHGW 7/16`` EHS (BLUE)	786	2123	5350	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

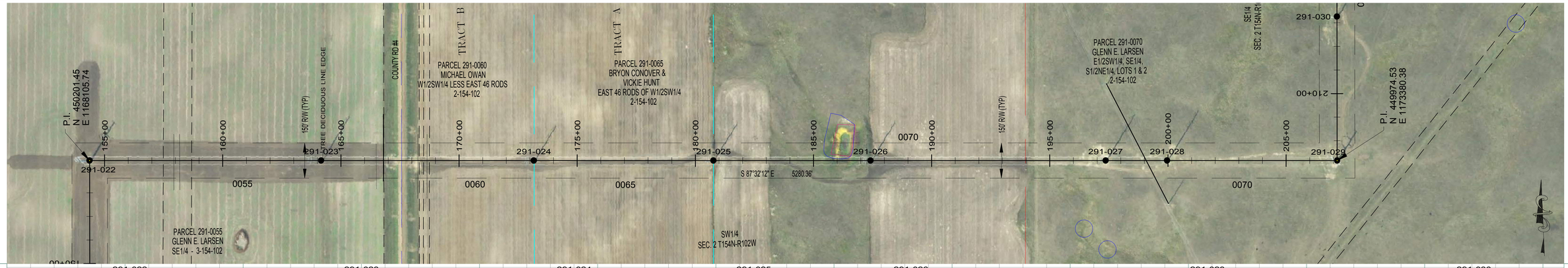
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 140+00 TO 154+40
STRUCTURE: 291-021 TO 291-022

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-005
REV. NO.: 1



291-022
STA=154+36.61
HT=122.59 ELE=2213.20
3SDA90-121
END 788' RS, BEGIN 849' RS

291-023
STA=164+16.62
HT=146.50 ELE=2222.13
3ST2-145
CROSSING - 3 PHASE
849' RS

291-024
STA=173+16.62
HT=116.50 ELE=2248.83
3ST2-115M
849' RS

291-025
STA=180+76.62
HT=111.50 ELE=2235.99
3ST2-110
849' RS

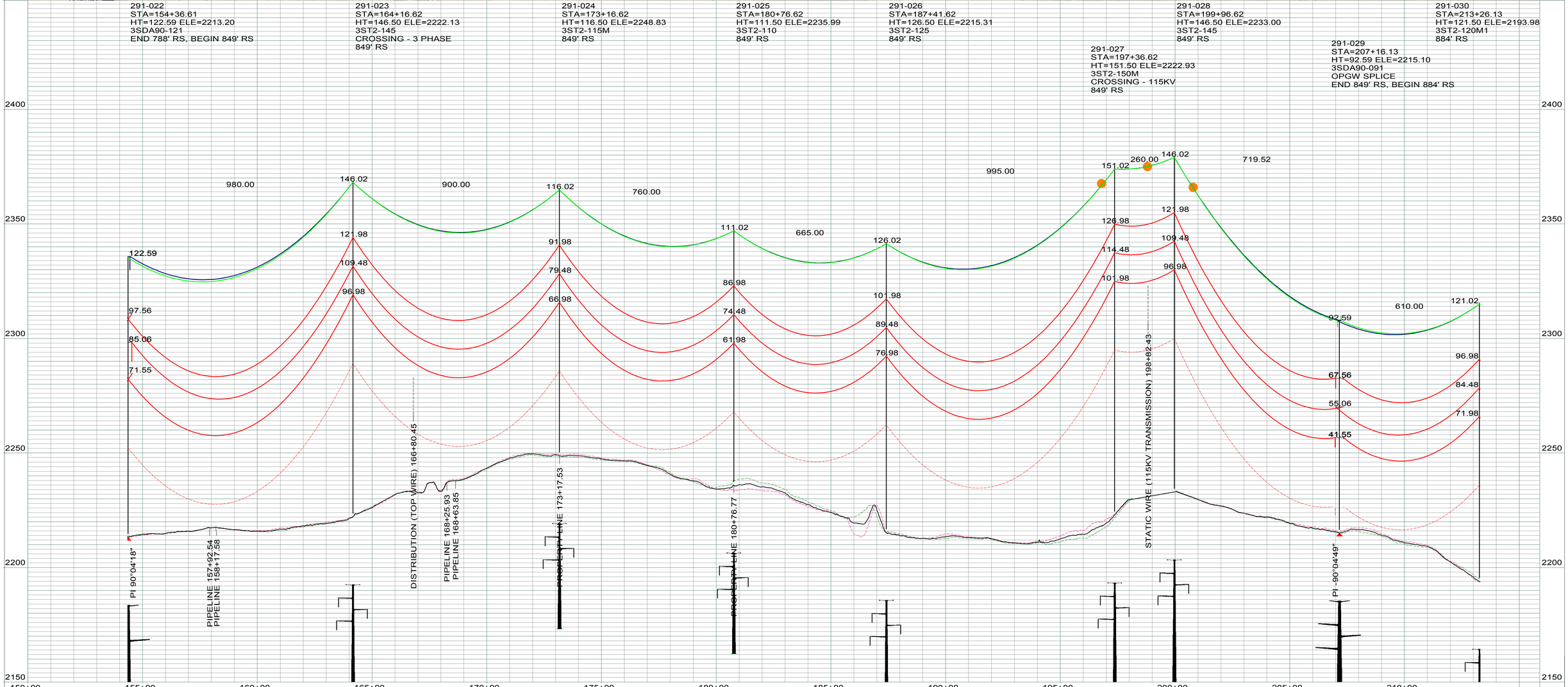
291-026
STA=187+41.62
HT=126.50 ELE=2215.31
3ST2-125
849' RS

291-027
STA=197+36.62
HT=151.50 ELE=2222.93
3ST2-150M
CROSSING - 115KV
849' RS

291-028
STA=199+96.62
HT=146.50 ELE=2233.00
3ST2-145
849' RS

291-029
STA=207+16.13
HT=92.59 ELE=2215.10
3SDA90-091
OPGW SPLICE
END 849' RS, BEGIN 884' RS

291-030
STA=213+26.13
HT=121.50 ELE=2193.98
3ST2-120M1
884' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	849	10197	21517	884	10398	21798
OPGW AC-71/571 (GREEN)	849	2224	6216	884	2259	6331
OHGW 7/16`` EHS (BLUE)	847	2138	5489	883	2165	5594
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

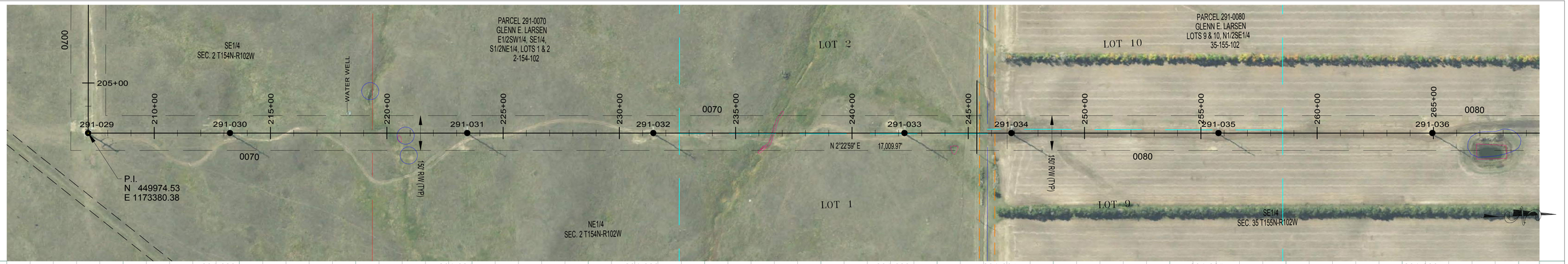
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 150+00 TO 213+29
STRUCTURE: 291-022 TO 291-030

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-006
REV. NO.: 1



291-030
STA=213+26.13
HT=121.50 ELE=2193.98
3ST2-120M1
884' RS

291-031
STA=223+46.13
HT=116.50 ELE=2191.47
3ST2-115
884' RS

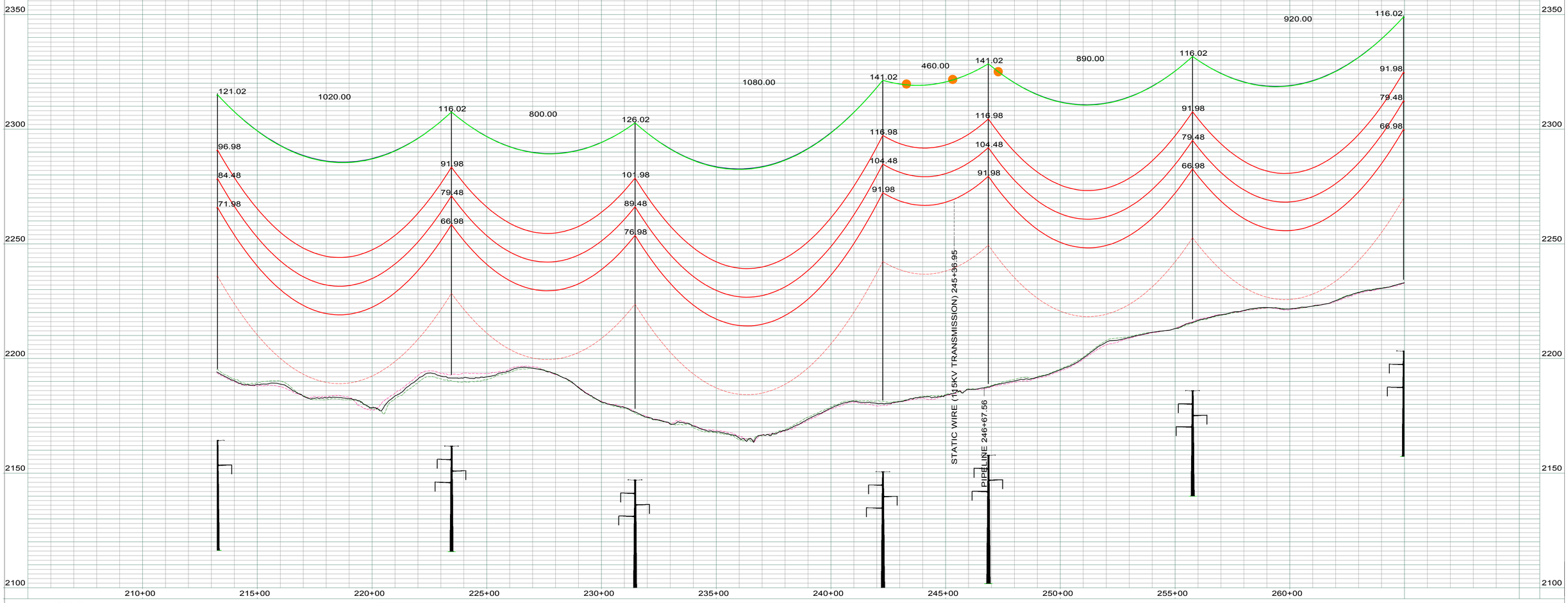
291-032
STA=231+46.13
HT=126.50 ELE=2176.72
3ST2-125
884' RS

291-033
STA=242+26.13
HT=141.50 ELE=2180.30
3ST2-140
CROSSING - 115KV
884' RS

291-034
STA=246+86.13
HT=141.50 ELE=2187.49
3ST2-140
884' RS

291-035
STA=255+76.13
HT=116.50 ELE=2215.67
3ST2-115
884' RS

291-036
STA=264+96.13
HT=116.50 ELE=2232.94
3ST2-115
884' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	884	10398	21798	--	--	--
OPGW AC-71/571 (GREEN)	884	2259	6331	--	--	--
OHGW 7/16`` EHS (BLUE)	883	2165	5594	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER 04/16
DRAWN BY: C. KNOLL 04/16
DESIGN CHK: R. NASSET 04/16
DRAFT CHK: R. LANG 04/16
APPROVED: S. WISEMAN 04/16

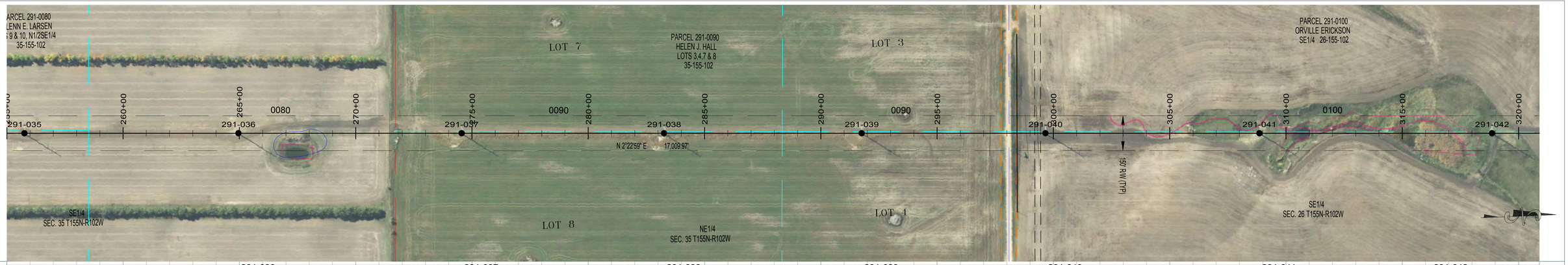
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

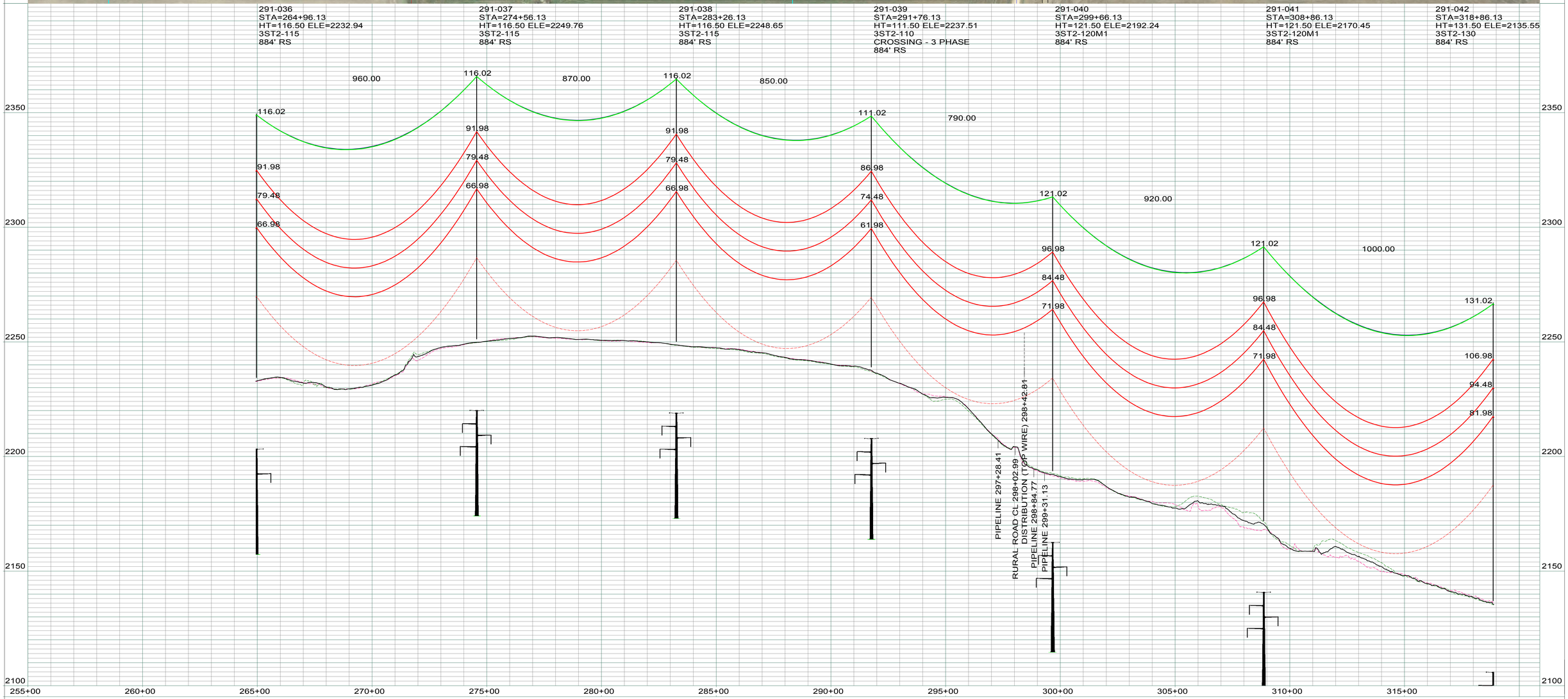
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 205+00 TO 264+99
STRUCTURE: 291-029 TO 291-036

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-007
REV. NO. 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	884	10398	21798	--	--	--
OPGW AC-71/571 (GREEN)	884	2259	6331	--	--	--
OHGW 7/16`` EHS (BLUE)	883	2165	5594	--	--	--
--	--	--	--	--	--	--

		DATE:
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

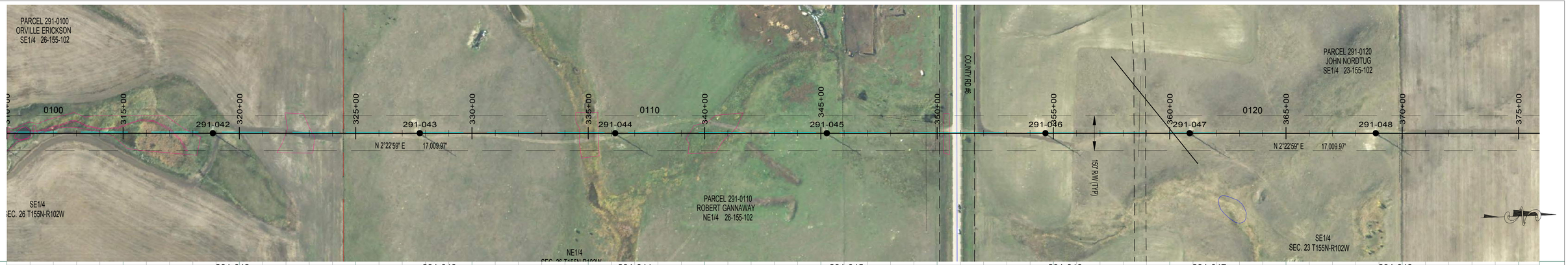
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 255+00 TO 318+89
STRUCTURE: 291-035 TO 291-042

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-008

REV. NO.: 1



291-042
STA=318+86.13
HT=131.50 ELE=2135.55
3ST2-130
884' RS

291-043
STA=327+76.13
HT=116.50 ELE=2135.63
3ST2-115
884' RS

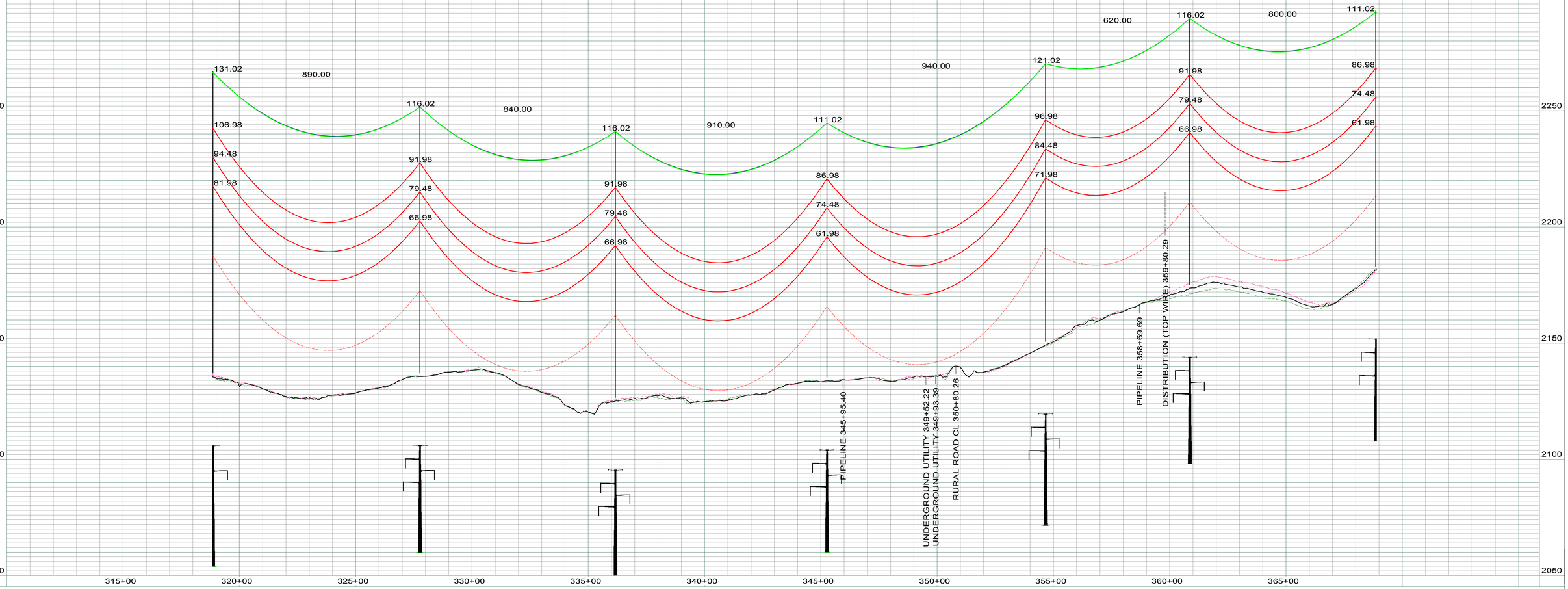
291-044
STA=336+16.13
HT=116.50 ELE=2125.09
3ST2-115
884' RS

291-045
STA=345+26.13
HT=111.50 ELE=2133.74
3ST2-110
884' RS

291-046
STA=354+66.13
HT=121.50 ELE=2149.22
3ST2-120M1
CROSSING - 1 PHASE
884' RS

291-047
STA=360+86.13
HT=116.50 ELE=2173.72
3ST2-115
884' RS

291-048
STA=368+86.13
HT=111.50 ELE=2181.49
3ST2-110
884' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	884	10398	21798	--	--	--
OPGW AC-71/571 (GREEN)	884	2259	6331	--	--	--
OHGW 7/16`` EHS (BLUE)	883	2165	5594	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 310+00 TO 368+89
STRUCTURE: 291-042 TO 291-048

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

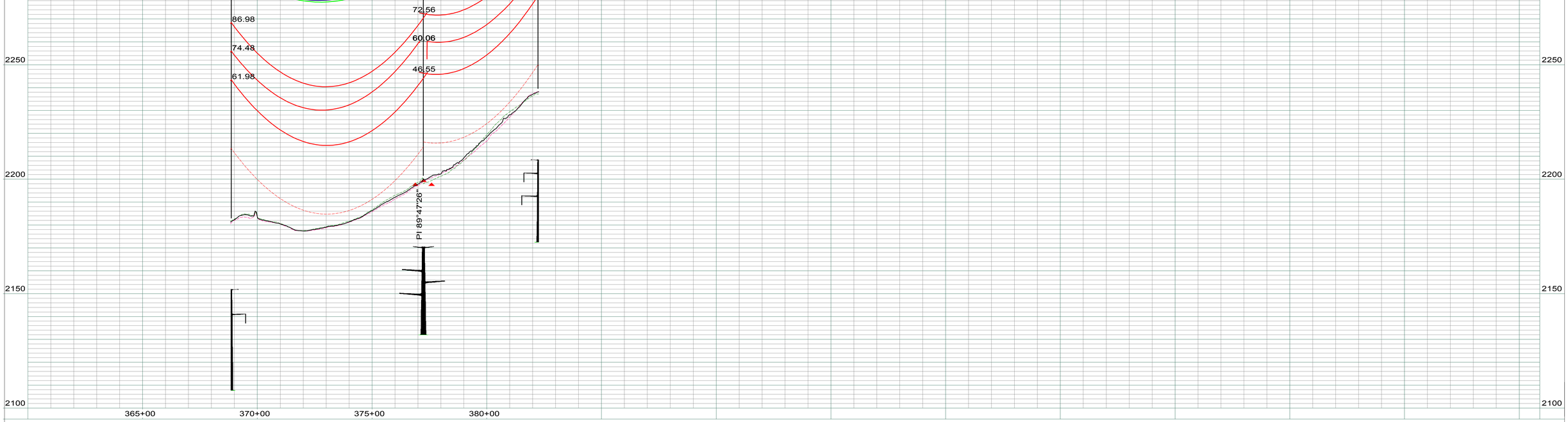
BASIN DRAWING NO.: 291-090-T3-009
REV. NO.: 1



291-048
STA=368+86.13
HT=111.50 ELE=2181.49
3ST2-110
884' RS

291-049
STA=377+23.38
HT=97.59 ELE=2200.14
3SDA90-096
OPGW SPLICE
END 884' RS, BEGIN 827' RS

291-050
STA=382+23.38
HT=91.50 ELE=2238.13
3ST2-090
827' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	884	10398	21798	827	10121	21480
OPGW AC-71/571 (GREEN)	884	2259	6331	826	2212	6161
OHGW 7/16`` EHS (BLUE)	883	2165	5594	827	2140	5453
--	--	--	--	--	--	--

		DATE
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

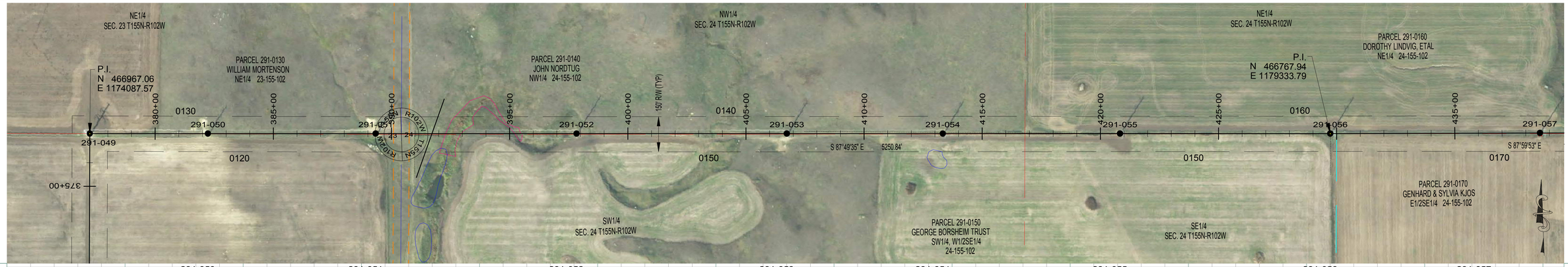
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 360+00 TO 382+27
STRUCTURE: 291-047 TO 291-050

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-010
REV. NO.: 1



291-050
STA=382+23.38
HT=91.50 ELE=2238.13
3ST2-090
827' RS

291-051
STA=389+33.38
HT=121.50 ELE=2187.16
3ST2-120M1
CROSSING - 1 PHASE
827' RS

291-052
STA=397+83.38
HT=126.50 ELE=2175.50
3ST2-125
827' RS

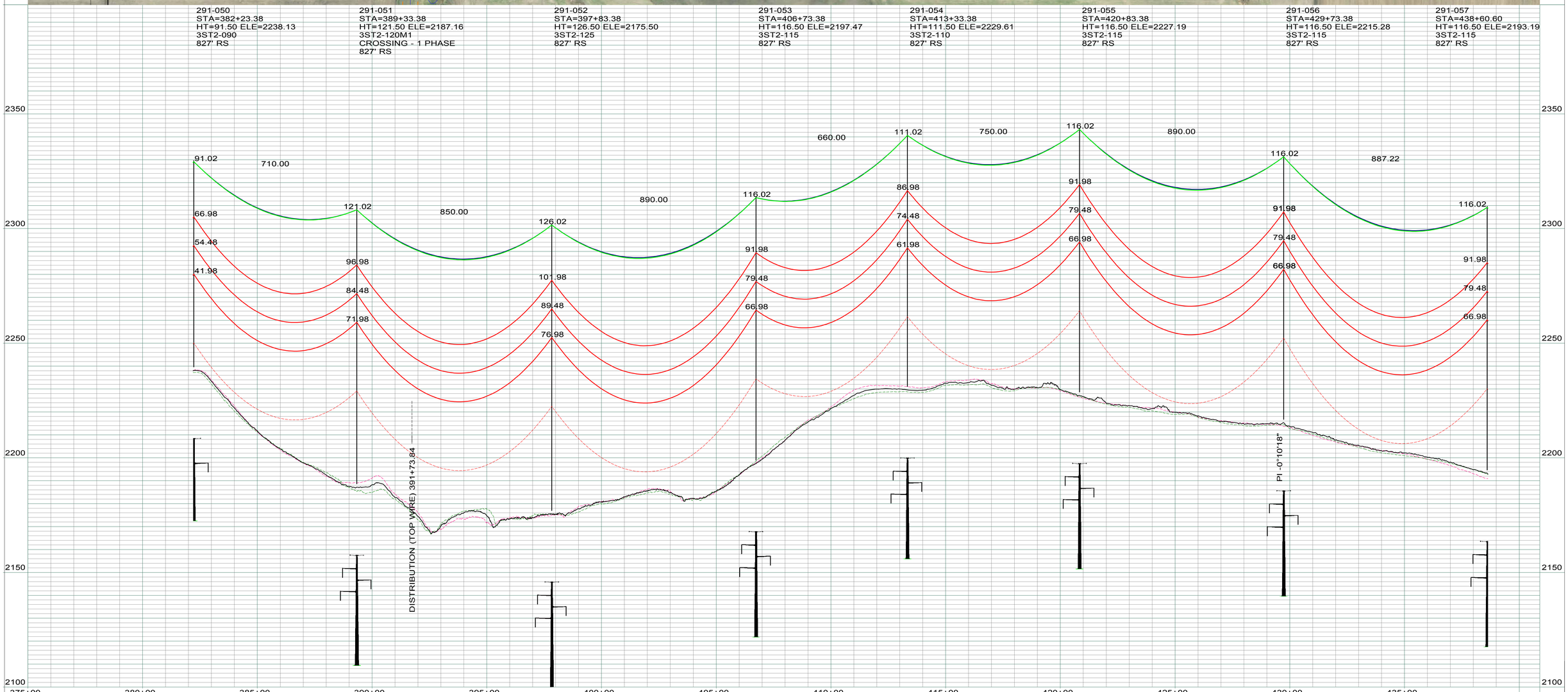
291-053
STA=406+73.38
HT=116.50 ELE=2197.47
3ST2-115
827' RS

291-054
STA=413+33.38
HT=111.50 ELE=2229.61
3ST2-110
827' RS

291-055
STA=420+83.38
HT=116.50 ELE=2227.19
3ST2-115
827' RS

291-056
STA=429+73.38
HT=116.50 ELE=2215.28
3ST2-115
827' RS

291-057
STA=438+60.60
HT=116.50 ELE=2193.19
3ST2-115
827' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	827	10121	21480	--	--	--
OPGW AC-71/571 (GREEN)	826	2212	6161	--	--	--
OHGW 7/16`` EHS (BLUE)	827	2140	5453	--	--	--
--	--	--	--	--	--	--

		DATE
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

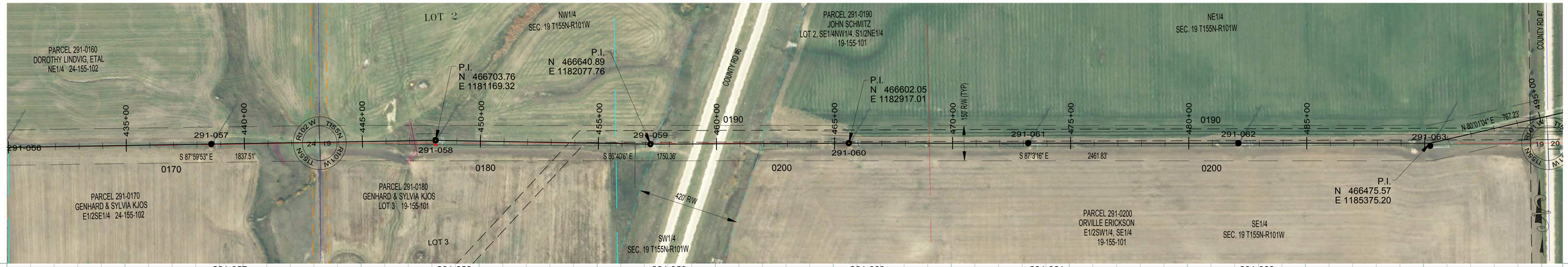
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

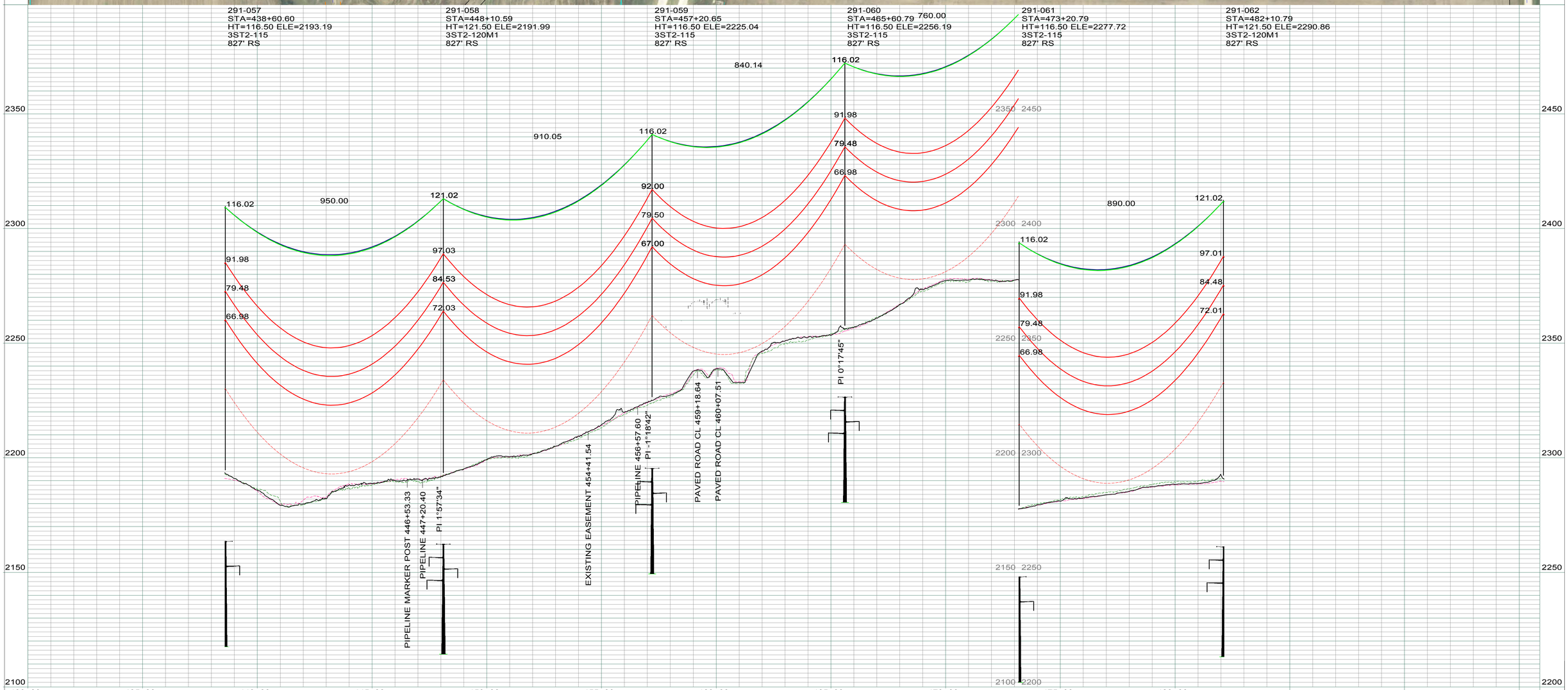
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 375+00 TO 438+64
STRUCTURE: 291-049 TO 291-057

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-011
REV. NO.: 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	827	10121	21480	--	--	--
OPGW AC-71/571 (GREEN)	826	2212	6161	--	--	--
OHGW 7/16`` EHS (BLUE)	827	2140	5453	--	--	--
--	--	--	--	--	--	--

		DATE:
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 430+00 TO 482+14
STRUCTURE: 291-057 TO 291-062

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

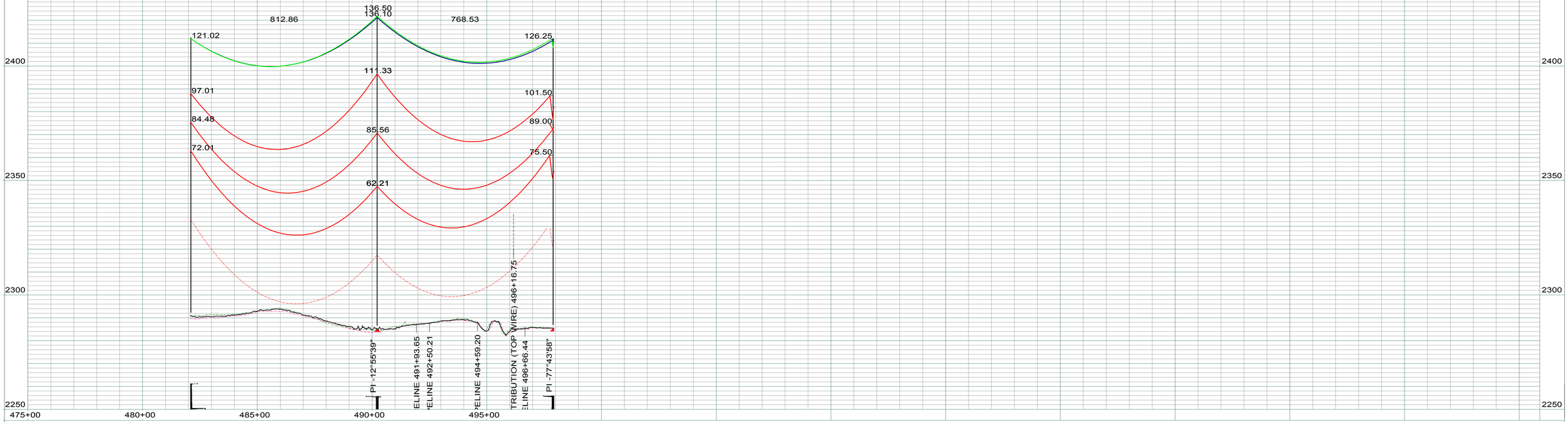
BASIN DRAWING NO.: 291-090-T3-012
REV. NO.: 1



291-062
STA=482+10.79
HT=121.50 ELE=2290.86
3ST2-120M1
827' RS

291-063
STA=490+22.24
HT=136.50 ELE=2285.22
3SA15-135
OFFSET ADJUST=11.80
CROSSING - 1 PHASE
827' RS

291-064
STA=497+89.35
HT=126.50 ELE=2285.49
3SDA80-125
END 827' RS, BEGIN 867' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	827	10121	21480	--	--	--
OPGW AC-71/571 (GREEN)	826	2212	6161	--	--	--
OHGW 7/16`` EHS (BLUE)	827	2140	5453	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

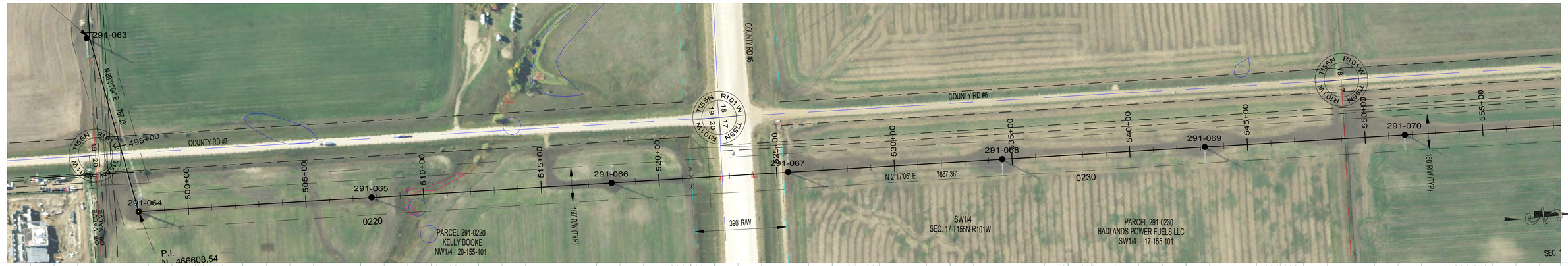
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 475+00 TO 497+93
STRUCTURE: 291-062 TO 291-064

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-013
REV. NO. 1



291-064
STA=497+89.35
HT=126.50 ELE=2285.49
3SDA80-125
END 827' RS, BEGIN 867' RS

291-065
STA=507+79.35
HT=126.50 ELE=2265.98
3ST2-125
867' RS

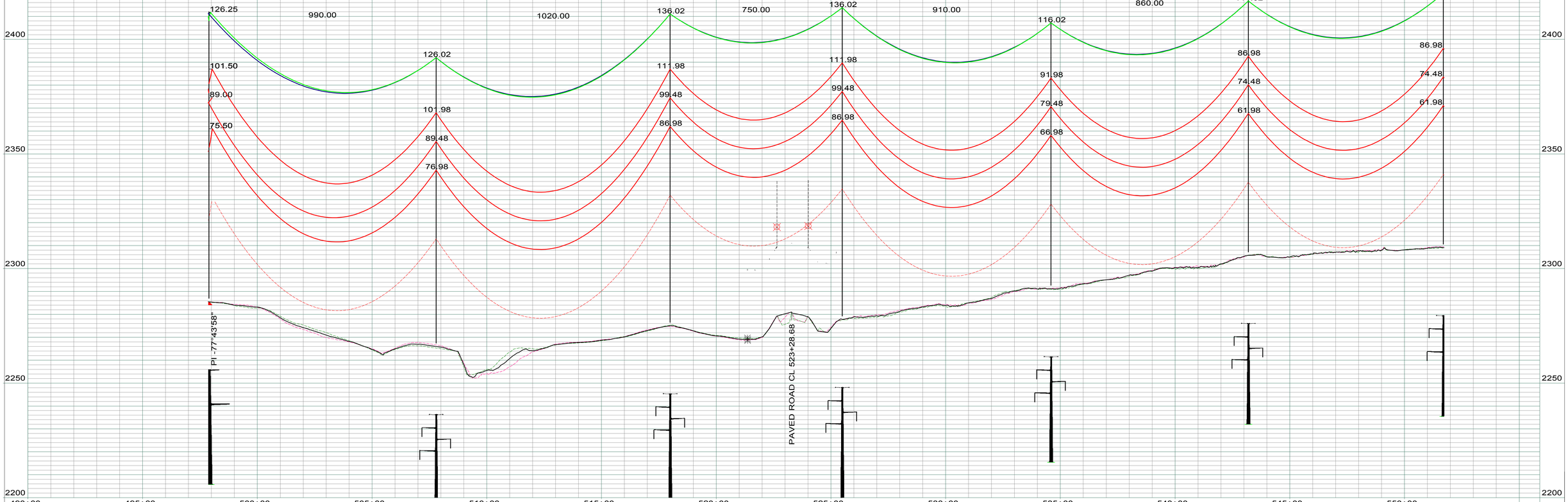
291-066
STA=517+99.35
HT=136.50 ELE=2275.03
3ST2-135
867' RS

291-067
STA=525+49.35
HT=136.50 ELE=2277.78
3ST2-135
867' RS

291-068
STA=534+59.35
HT=116.50 ELE=2291.15
3ST2-115
867' RS

291-069
STA=543+19.35
HT=111.50 ELE=2305.71
3ST2-110
867' RS

291-070
STA=551+69.35
HT=111.50 ELE=2309.13
3ST2-110
867' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	867	10321	21715	--	--	--
OPGW AC-71/571 (GREEN)	867	2248	6283	--	--	--
OHGW 7/16`` EHS (BLUE)	869	2162	5561	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

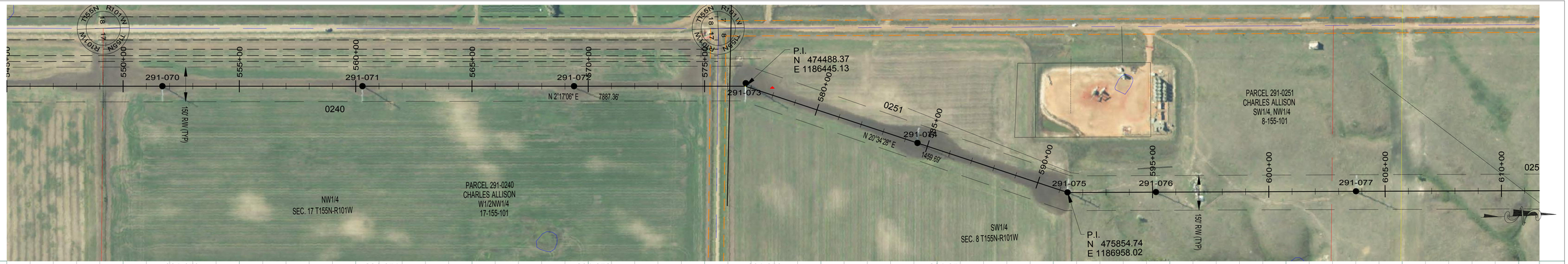
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 490+00 TO 551+73
STRUCTURE: 291-063 TO 291-070

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-014
REV. NO.: 1



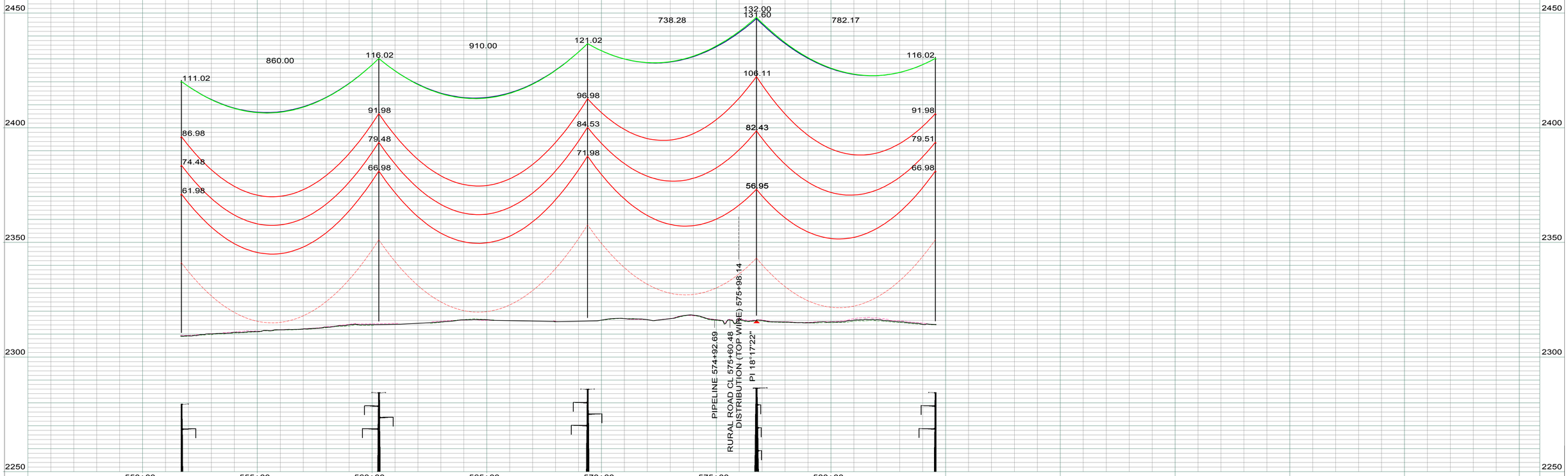
291-070
STA=551+69.35
HT=111.50 ELE=2309.13
3ST2-110
867' RS

291-071
STA=560+29.35
HT=116.50 ELE=2314.15
3ST2-115
867' RS

291-072
STA=569+39.35
HT=121.50 ELE=2315.66
3ST2-120M2
CROSSING - 1 PHASE
867' RS

291-073
STA=576+75.45
HT=132.00 ELE=2316.19
3SA20-130
OFFSET ADJUST=-13.00
TOC = 2318.1, TOS < 2450.00
867' RS

291-074
STA=584+55.45
HT=116.50 ELE=2314.21
3ST2-115
867' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	867	10321	21715	--	--	--
OPGW AC-71/571 (GREEN)	867	2248	6283	--	--	--
OHGW 7/16`` EHS (BLUE)	869	2162	5561	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

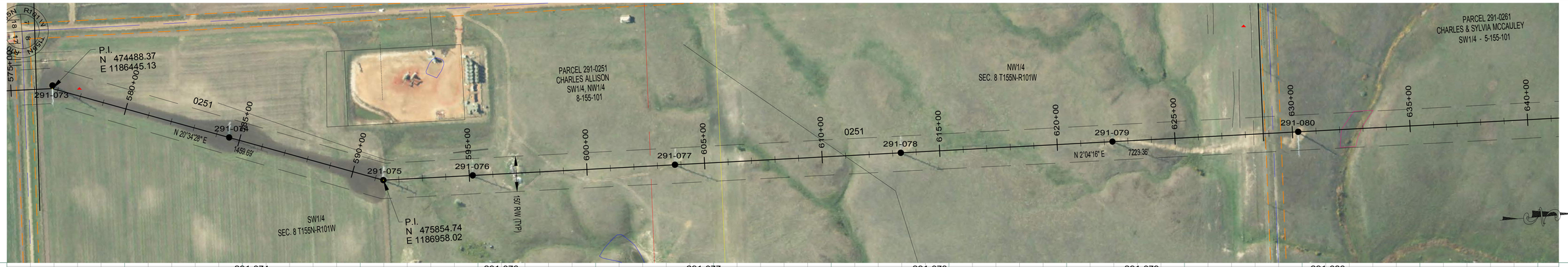
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 545+00 TO 584+59
STRUCTURE: 291-070 TO 291-074

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-015
REV. NO.: 1



291-074
STA=584+55.45
HT=116.50 ELE=2314.21
3ST2-115
867' RS

291-075
STA=591+34.91
HT=91.59 ELE=2309.99
3SDA25-090
OPGW SPLICE
END 867' RS, BEGIN 977' RS

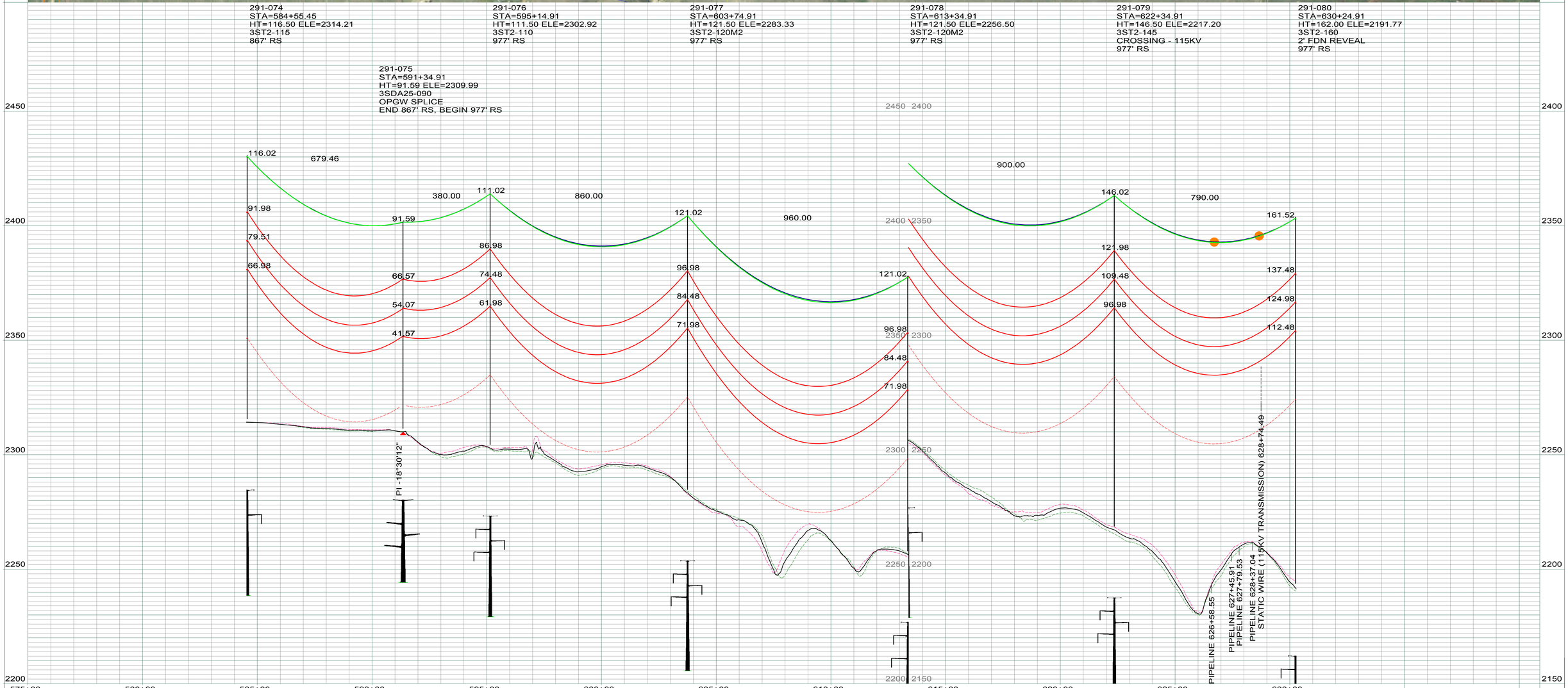
291-076
STA=595+14.91
HT=111.50 ELE=2302.92
3ST2-110
977' RS

291-077
STA=603+74.91
HT=121.50 ELE=2283.33
3ST2-120M2
977' RS

291-078
STA=613+34.91
HT=121.50 ELE=2256.50
3ST2-120M2
977' RS

291-079
STA=622+34.91
HT=146.50 ELE=2217.20
3ST2-145
CROSSING - 115KV
977' RS

291-080
STA=630+24.91
HT=162.00 ELE=2191.77
3ST2-160
2' FDN REVEAL
977' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	867	10321	21715	977	10751	22101
OPGW AC-71/571 (GREEN)	867	2248	6283	977	2290	6531
OHGW 7/16`` EHS (BLUE)	869	2162	5561	976	2166	5760
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

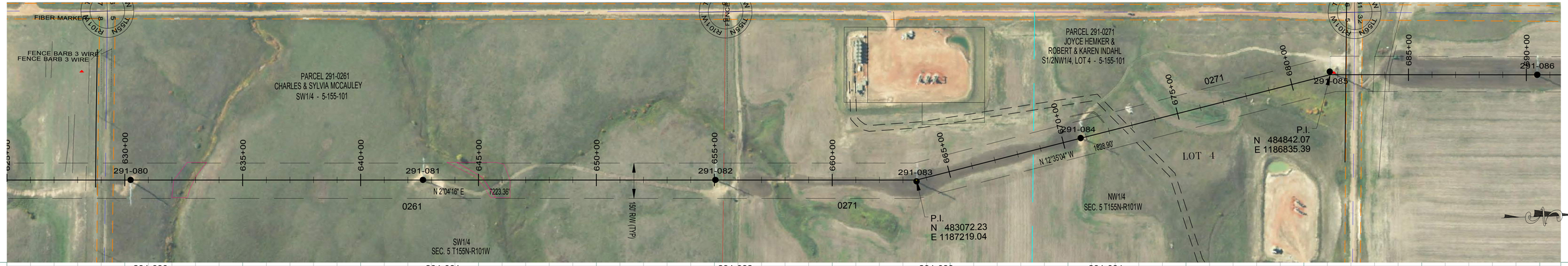
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

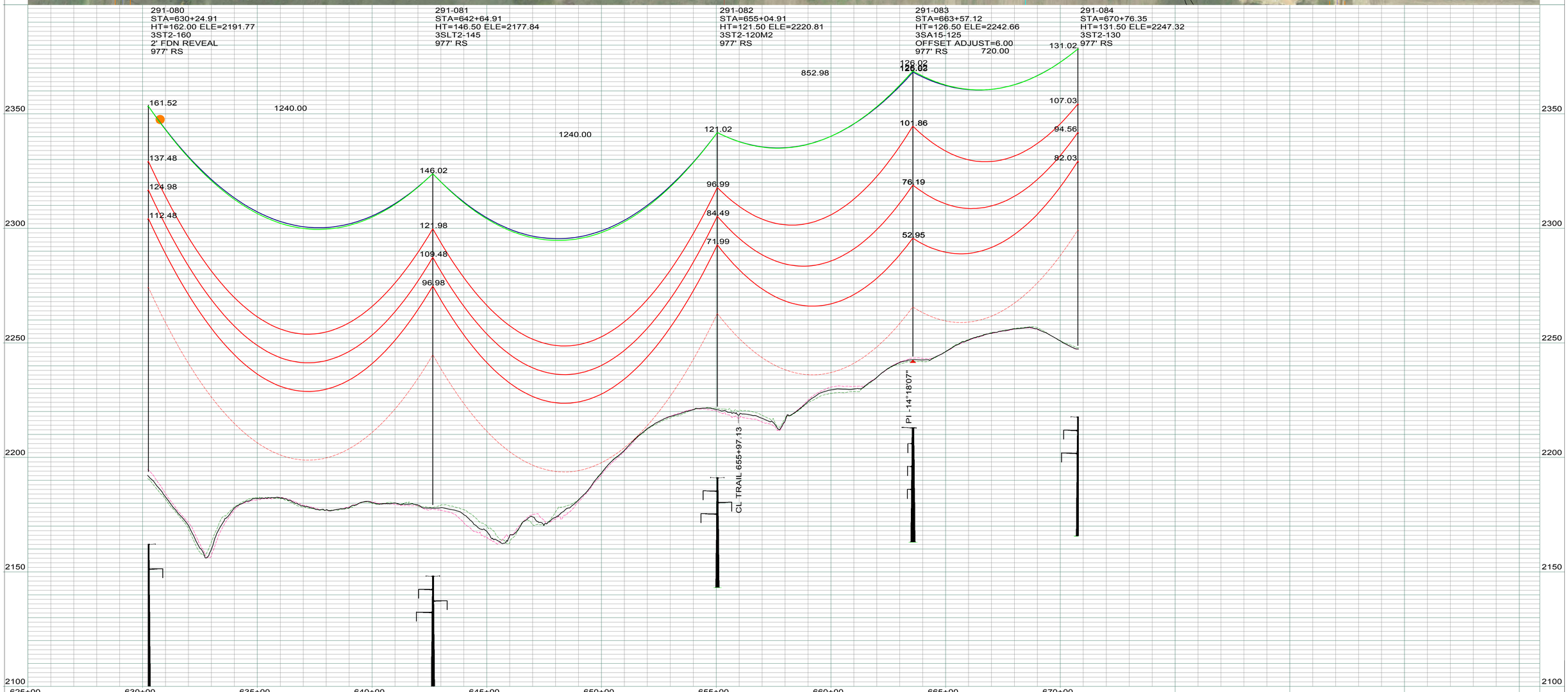
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 575+00 TO 630+28
STRUCTURE: 291-073 TO 291-080

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-016
REV. NO.: 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	977	10751	22101	--	--	--
OPGW AC-71/571 (GREEN)	977	2290	6531	--	--	--
OHGW 7/16`` EHS (BLUE)	976	2166	5760	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

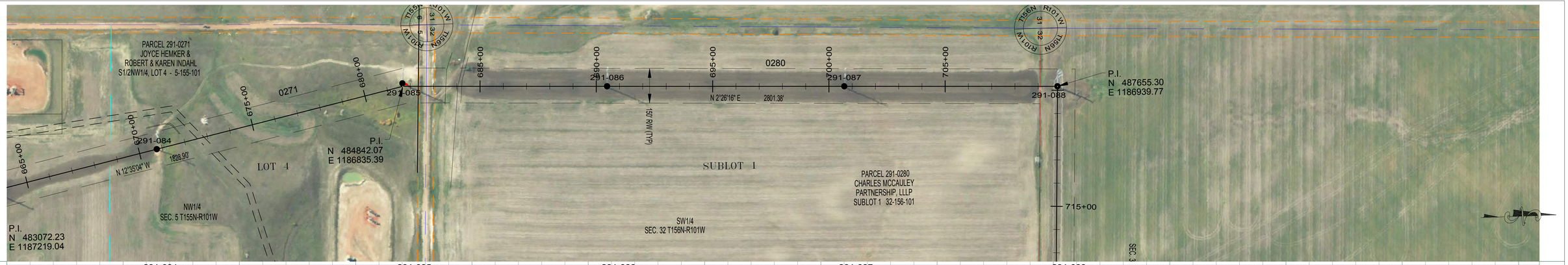
PLAN AND PROFILES
STATION: 625+00 TO 670+80
STRUCTURE: 291-080 TO 291-084

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-017

REV. NO. 1



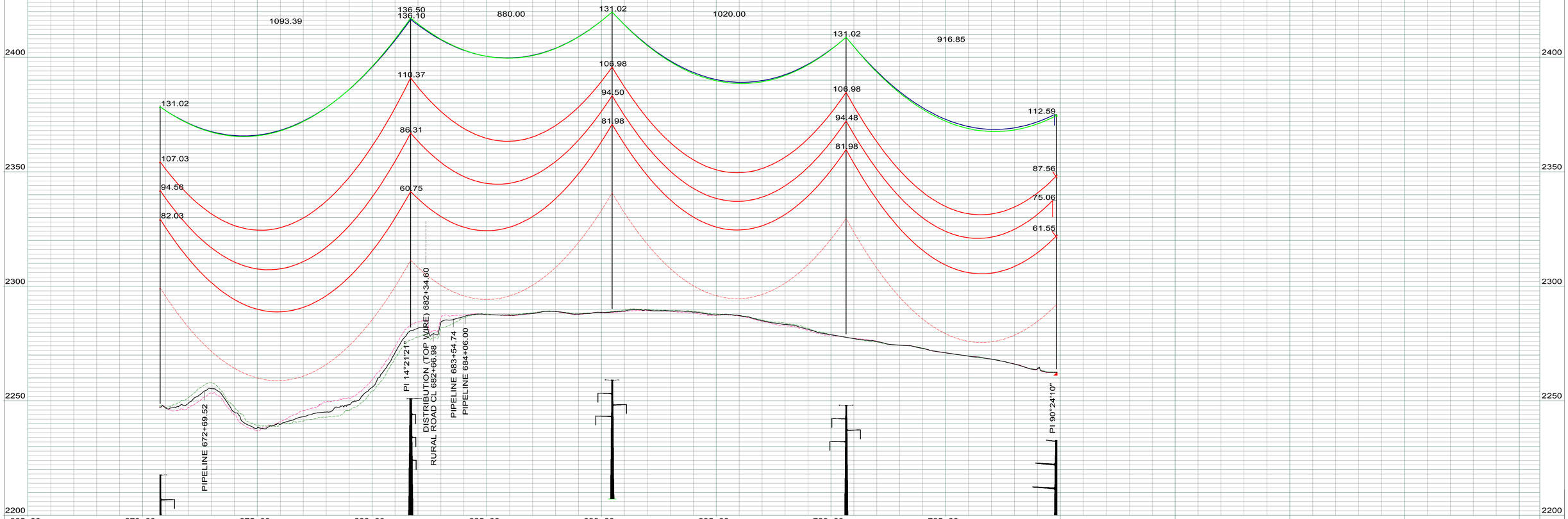
291-084
STA=670+76.35
HT=131.50 ELE=2247.32
3ST2-130
977' RS

291-085
STA=681+68.07
HT=136.50 ELE=2280.64
3SA15-135
OFFSET ADJUST=-12.80
CROSSING - 3 PHASE
977' RS

291-086
STA=690+46.37
HT=131.50 ELE=2288.76
3ST2-130
977' RS

291-087
STA=700+66.37
HT=131.50 ELE=2277.72
3ST2-130
977' RS

291-088
STA=709+83.23
HT=112.59 ELE=2262.41
3SDA90-111
END 977' RS, BEGIN 883' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	977	10751	22101	--	--	--
OPGW AC-71/571 (GREEN)	977	2290	6531	--	--	--
OHGW 7/16`` EHS (BLUE)	976	2166	5760	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

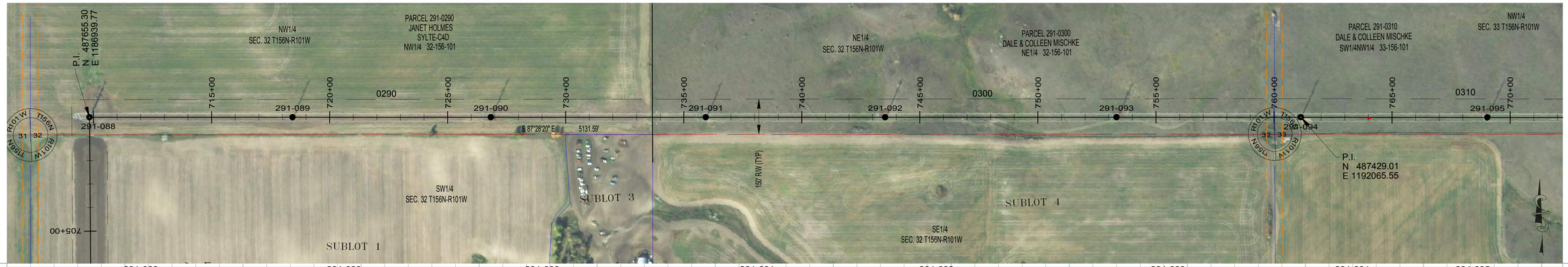
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

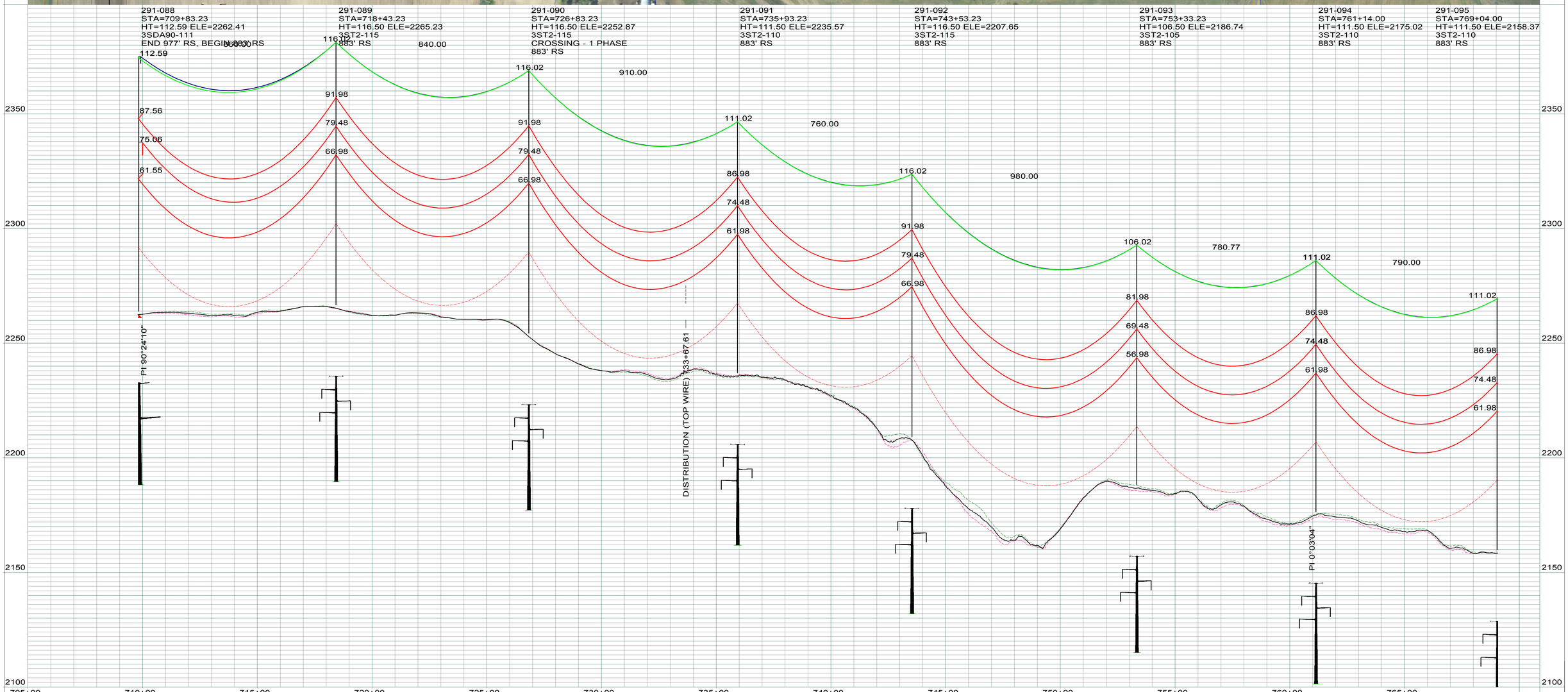
PLAN AND PROFILES
STATION: 665+00 TO 709+87
STRUCTURE: 291-084 TO 291-088

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-018
REV. NO.: 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	883	10390	21780	--	--	--
OPGW AC-71/571 (GREEN)	883	2258	6327	--	--	--
OHGW 7/16`` EHS (BLUE)	882	2164	5589	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

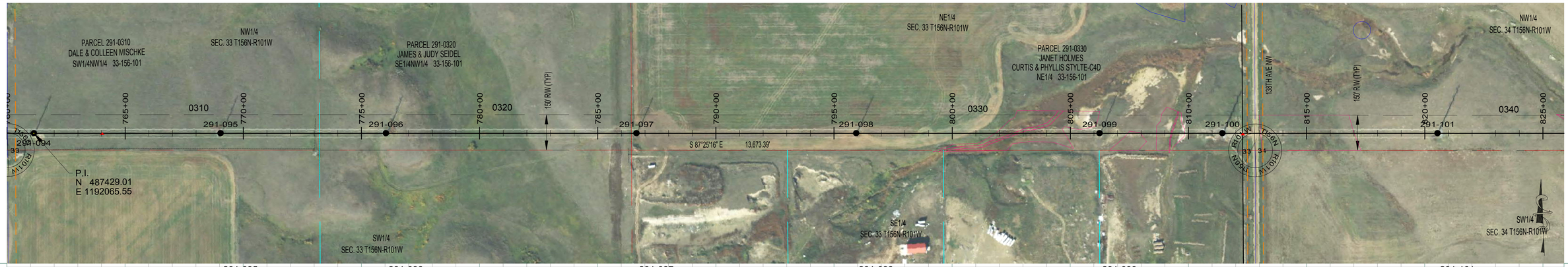
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 705+00 TO 769+07
STRUCTURE: 291-088 TO 291-095

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-019
REV. NO.: 1



291-095
STA=769+04.00
HT=111.50 ELE=2158.37
3ST2-110
883' RS

291-096
STA=776+04.00
HT=116.50 ELE=2151.71
3ST2-115
883' RS

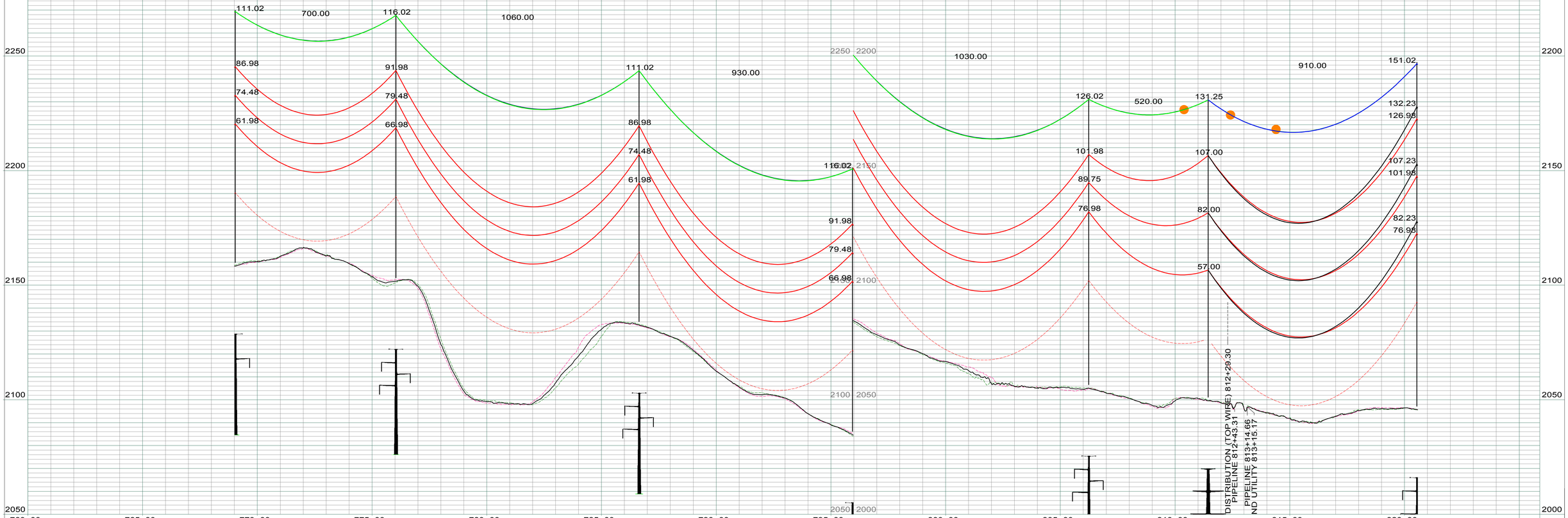
291-097
STA=786+64.00
HT=111.50 ELE=2132.60
3ST2-110
883' RS

291-098
STA=795+94.00
HT=116.50 ELE=2084.74
3ST2-115
883' RS

291-099
STA=806+24.00
HT=126.50 ELE=2055.07
3ST2-125
883' RS

291-101
STA=820+54.00
HT=151.50 ELE=2045.68
3-3DST-150
345KV - 798' RS
115 KV - 798' RS

291-100
STA=811+44.00
HT=131.50 ELE=2049.59
3-1DSD03-90-2S-130
OPGW SPLICE (2)
CROSSING - 115KV
345KV - END 883' RS, BEGIN 798' RS
BEGIN 115 KV - 798' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	883	10390	21780
OPGW AC-71/571 (GREEN)	883	2258	6327
OHGW 7/16`` EHS (BLUE)	882	2164	5589
115KV TERN CONDUCTOR (BLK)	798	3396	8732

RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
798	9969	21311
798	2188	6071

		DATE
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

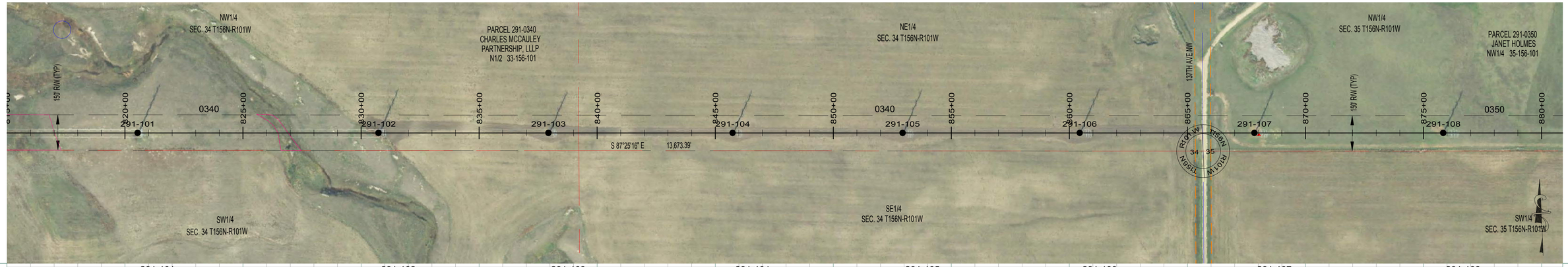
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 760+00 TO 820+57
STRUCTURE: 291-094 TO 291-101

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-020

REV. NO. 1



291-101
STA=820+54.00
HT=151.50 ELE=2045.68
3-3DST-150
345KV - 798' RS
115 KV - 798' RS

291-102
STA=830+74.00
HT=146.50 ELE=2043.27
3-3DST-145
345KV - 798' RS
115 KV - 798' RS

291-103
STA=837+94.00
HT=136.50 ELE=2053.13
3-3DST-135
345KV - 798' RS
115 KV - 798' RS

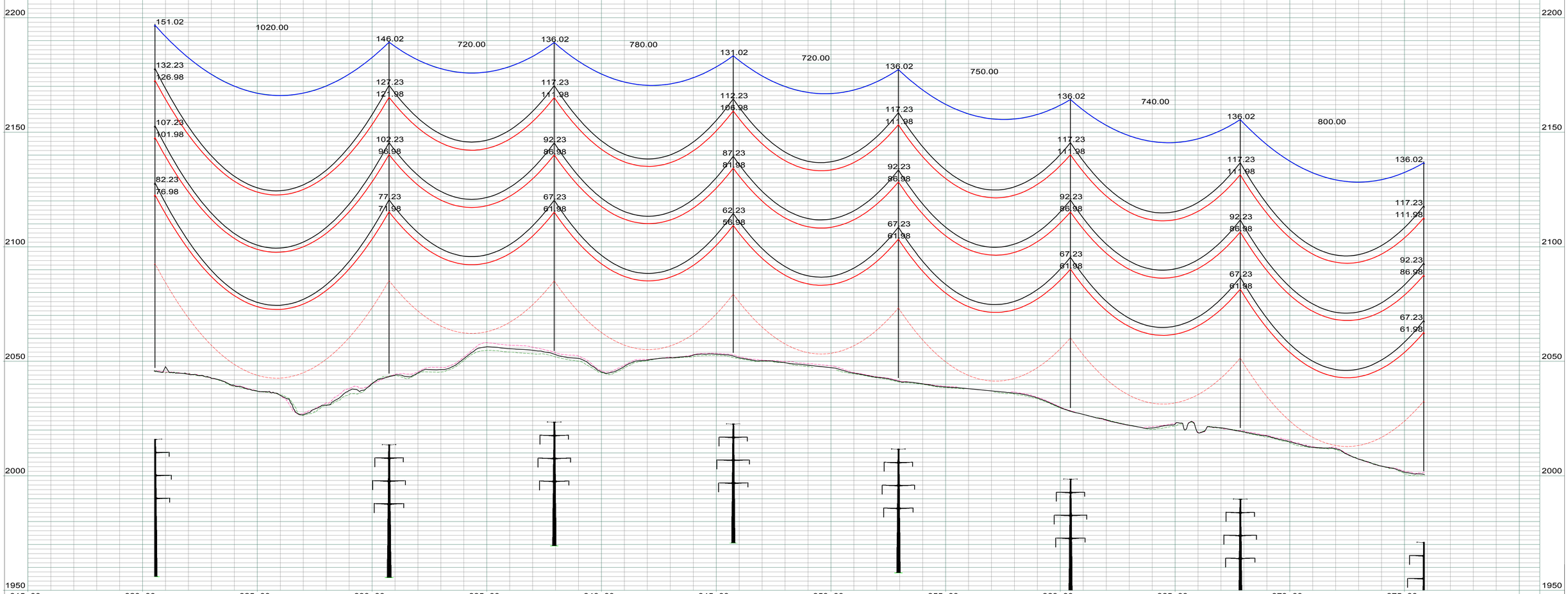
291-104
STA=845+74.00
HT=131.50 ELE=2052.33
3-3DST-130
345KV - 798' RS
115 KV - 798' RS

291-105
STA=852+94.00
HT=136.50 ELE=2041.32
3-3DST-135
345KV - 798' RS
115 KV - 798' RS

291-106
STA=860+44.00
HT=136.50 ELE=2028.24
3-3DST-135
345KV - 798' RS
115 KV - 798' RS

291-107
STA=867+84.00
HT=136.50 ELE=2019.47
3-3DST-135
345KV - 798' RS
115 KV - 798' RS

291-108
STA=875+84.00
HT=136.50 ELE=2000.63
3-3DST-135
345KV - 798' RS
115 KV - 798' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	798	9969	21311	--	--	--
OPGW AC-71/571 (GREEN)	798	2188	6071	--	--	--
OPGW AC-74/552 (BLUE)	798	2139	5860	--	--	--
115KV TERN CONDUCTOR (BLK)	798	3396	8732	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

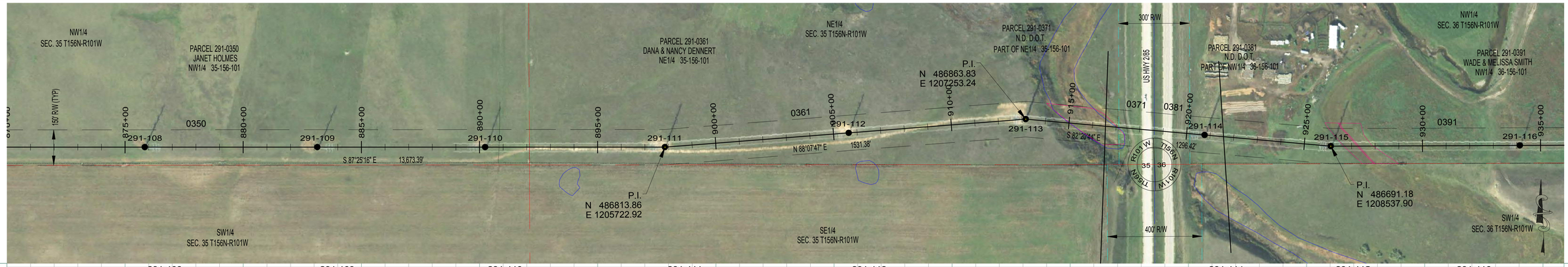
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 815+00 TO 875+87
STRUCTURE: 291-101 TO 291-108

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-021
REV. NO.: 1



291-108
STA=875+84.00
HT=136.50 ELE=2000.63
3-3DST-135
345KV - 798' RS
115 KV - 798' RS

291-109
STA=883+14.00
HT=131.50 ELE=1971.63
3-3DST-130
345KV - 798' RS
115 KV - 798' RS

291-110
STA=890+24.00
HT=131.50 ELE=1958.82
3-3DST-130
345KV - 798' RS
115 KV - 798' RS

291-111
STA=897+85.21
HT=136.50 ELE=1958.17
3-1DSA07L-135
345KV - 798' RS
115 KV - 798' RS

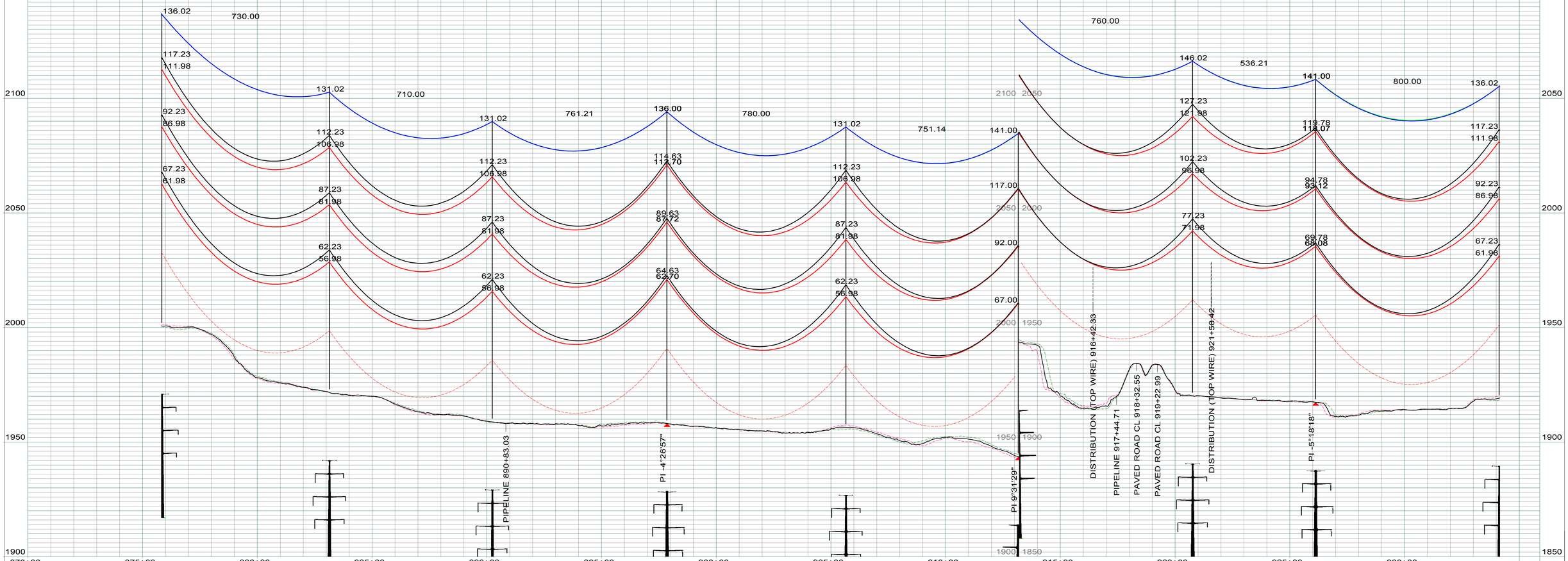
291-112
STA=905+65.21
HT=131.50 ELE=1956.47
3-3DST-130
345KV - 798' RS
115 KV - 798' RS

291-113
STA=913+16.35
HT=141.50 ELE=1943.62
3-1DSD10-140
CROSSING - 3 PHASE
345KV - END 798' RS, BEGIN 806' RS
115 KV - END 798' RS, BEGIN 779' RS

291-114
STA=920+76.35
HT=146.50 ELE=1920.17
3-3DST-145
CROSSING - 3 PHASE
345KV - 806' RS
115KV - 779' RS

291-115
STA=926+12.56
HT=141.50 ELE=1917.31
3-1DSA07L-140
345KV - 806' RS
115KV - 779' RS

291-116
STA=934+12.57
HT=136.50 ELE=1919.17
3-3DST-135
345KV - 806' RS
115KV - 779' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	798	9969	21311	806	10034	21416
OPGW AC-71/571 (GREEN)	798	2188	6071	806	2203	6109
OPGW AC-74/552 (BLUE)	798	2139	5860	779	2134	5819
115KV TERN CONDUCTOR (BLK)	798	3396	8732	779	3397	8736

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

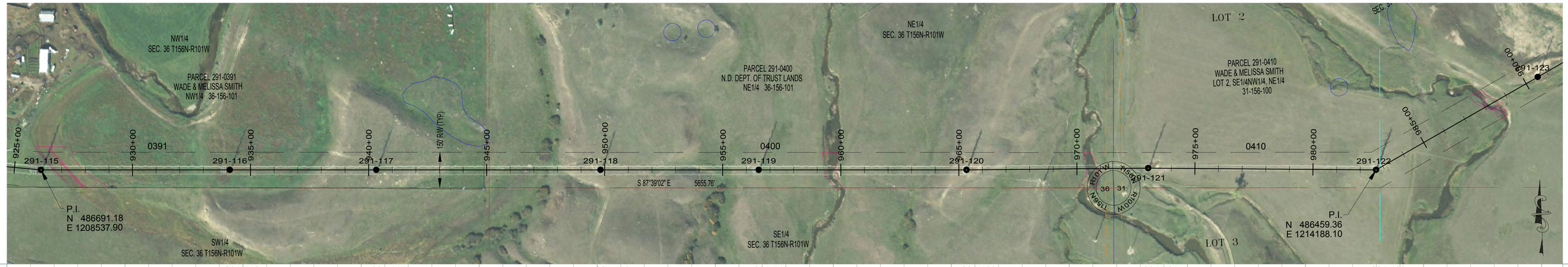
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 870+00 TO 934+16
STRUCTURE: 291-108 TO 291-116

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-022

REV. NO. 1



291-116
STA=934+12.57
HT=136.50 ELE=1919.17
3-3DST-135
345KV - 806' RS
115KV - 779' RS

291-117
STA=940+32.57
HT=126.50 ELE=1934.60
3-3DST-125
345KV - 806' RS
115KV - 779' RS

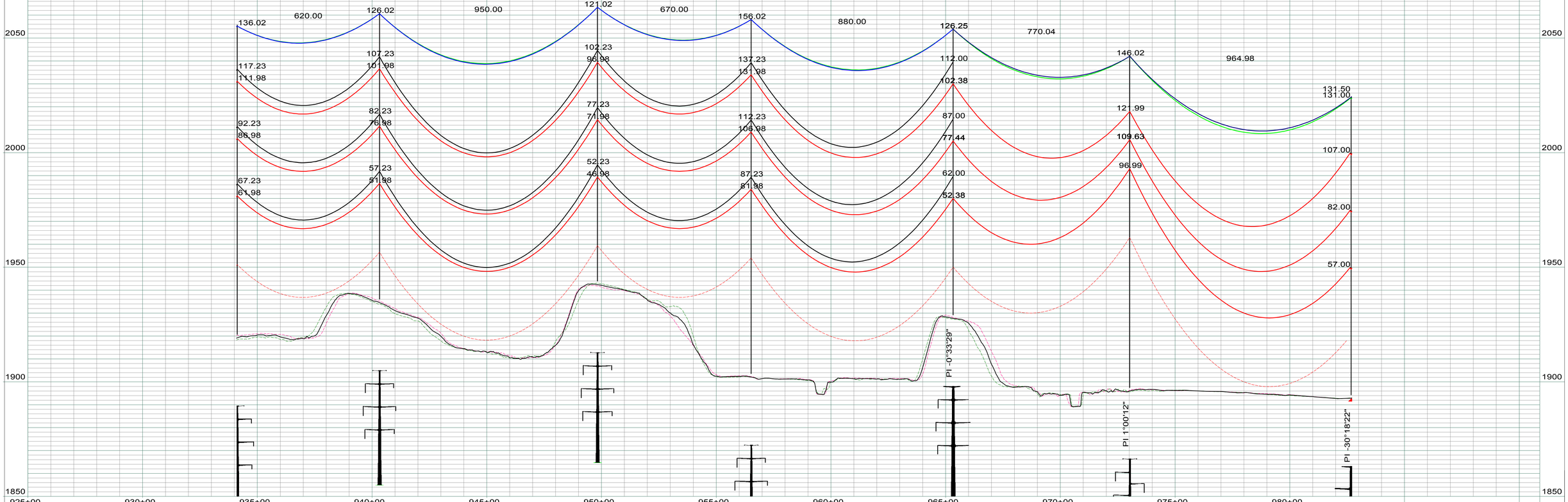
291-118
STA=949+82.57
HT=121.50 ELE=1942.41
3-3DST-120
345KV - 806' RS
115KV - 779' RS

291-119
STA=956+52.57
HT=156.50 ELE=1902.05
3-3DST-155
345KV - 806' RS
END 115 KV -779' RS

291-120
STA=965+32.57
HT=126.50 ELE=1927.66
3-1DSTD03-10-2S-125
OPGW SPLICE (MW)
345KV - 806' RS

291-121
STA=973+02.60
HT=146.50 ELE=1896.02
3ST2-145
345KV - 806' RS

291-122
STA=982+67.58
HT=131.50 ELE=1892.81
3-FDSD30-2S-130
END 806' RS, BEGIN 820' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	806	10034	21416	820	10106	21491
OPGW AC-71/571 (GREEN)	806	2203	6109	820	2212	6149
OPGW AC-74/552 (BLUE)	779	2134	5819	--	--	--
115KV TERN CONDUCTOR (BLK)	779	3397	8736	--	--	--

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

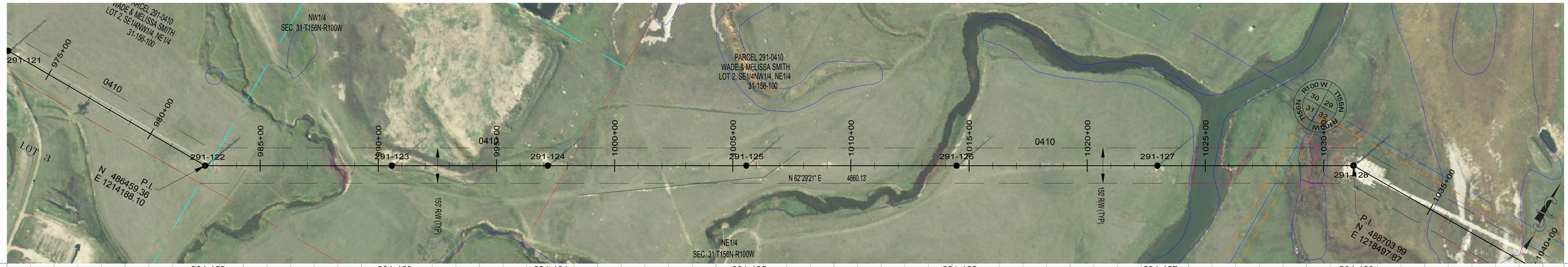
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 925+00 TO 982+71
STRUCTURE: 291-115 TO 291-122

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-023
REV. NO. 1



291-122
STA=982+67.58
HT=131.50 ELE=1892.81
3-FDSD30-2S-130
END 806' RS, BEGIN 820' RS

291-123
STA=990+57.59
HT=131.50 ELE=1896.53
3-FDST-130
820' RS

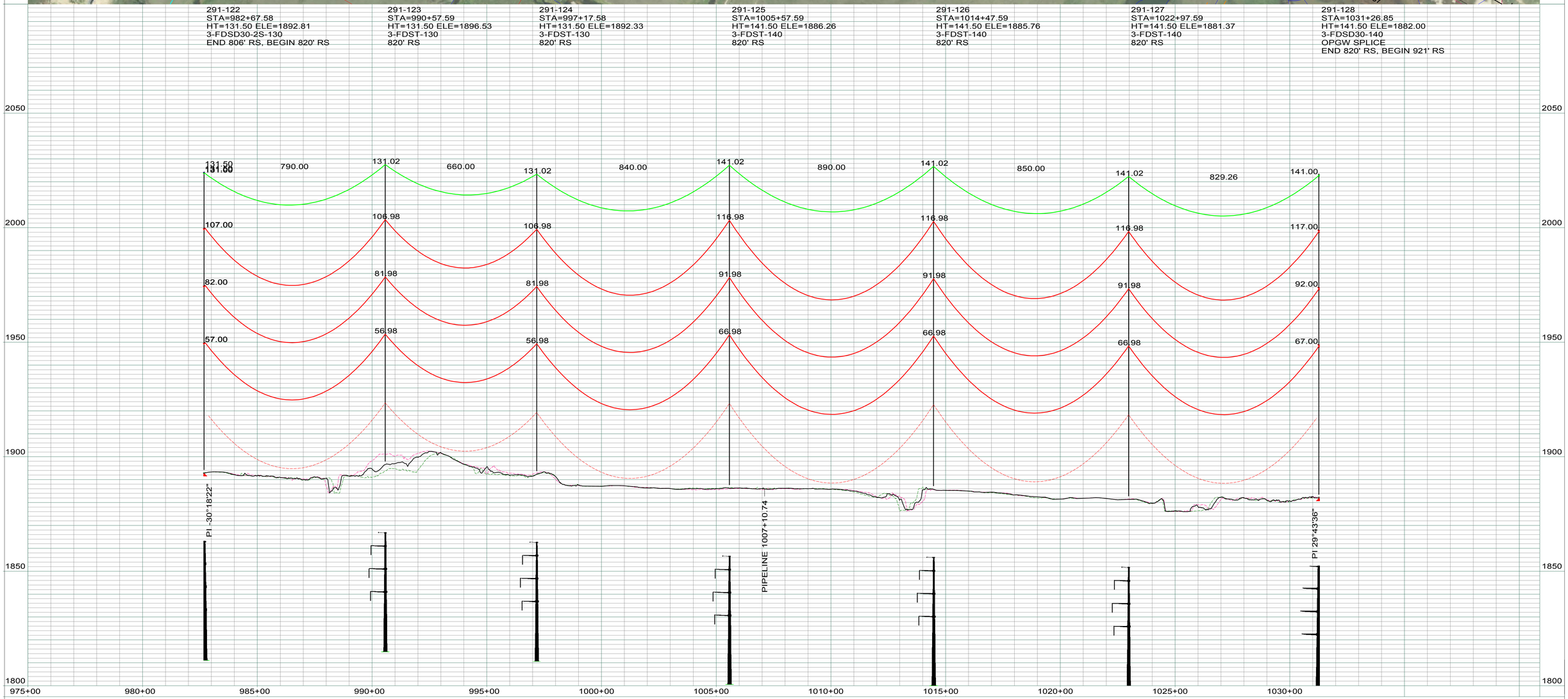
291-124
STA=997+17.58
HT=131.50 ELE=1892.33
3-FDST-130
820' RS

291-125
STA=1005+57.59
HT=141.50 ELE=1886.26
3-FDST-140
820' RS

291-126
STA=1014+47.59
HT=141.50 ELE=1885.76
3-FDST-140
820' RS

291-127
STA=1022+97.59
HT=141.50 ELE=1881.37
3-FDST-140
820' RS

291-128
STA=1031+26.85
HT=141.50 ELE=1882.00
3-FDSD30-140
OPGW SPLICE
END 820' RS, BEGIN 921' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	820	10106	21491	--	--	--
OPGW AC-71/571 (GREEN)	820	2212	6149	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER	DATE:	04/16
DRAWN BY: C. KNOLL	DATE:	04/16
DESIGN CHK: R. NASSET	DATE:	04/16
DRAFT CHK: R. LANG	DATE:	04/16
APPROVED: S. WISEMAN	DATE:	04/16

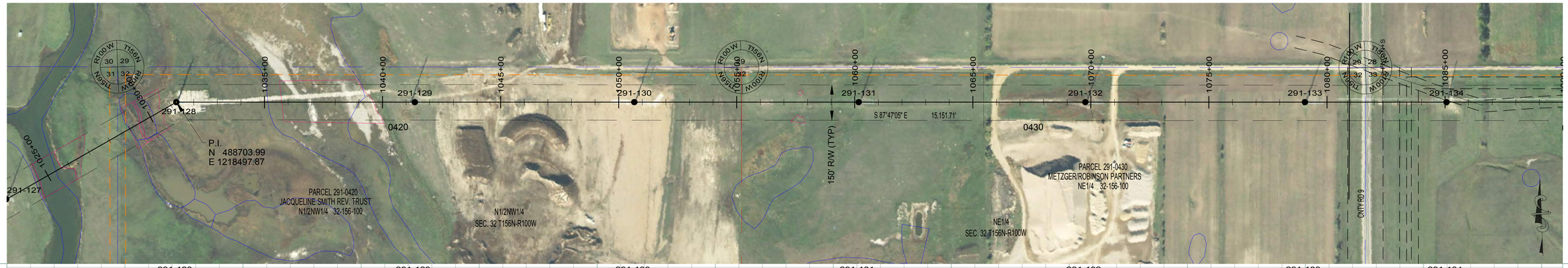
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 975+00 TO 1031+30
STRUCTURE: 291-122 TO 291-128

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-024
REV. NO.: 1



291-128
STA=1031+26.85
HT=141.50 ELE=1882.00
3-FDSD30-140
OPGW SPLICE
END 820' RS, BEGIN 921' RS

291-129
STA=1041+36.85
HT=151.50 ELE=1887.81
3-FDST-150
921' RS

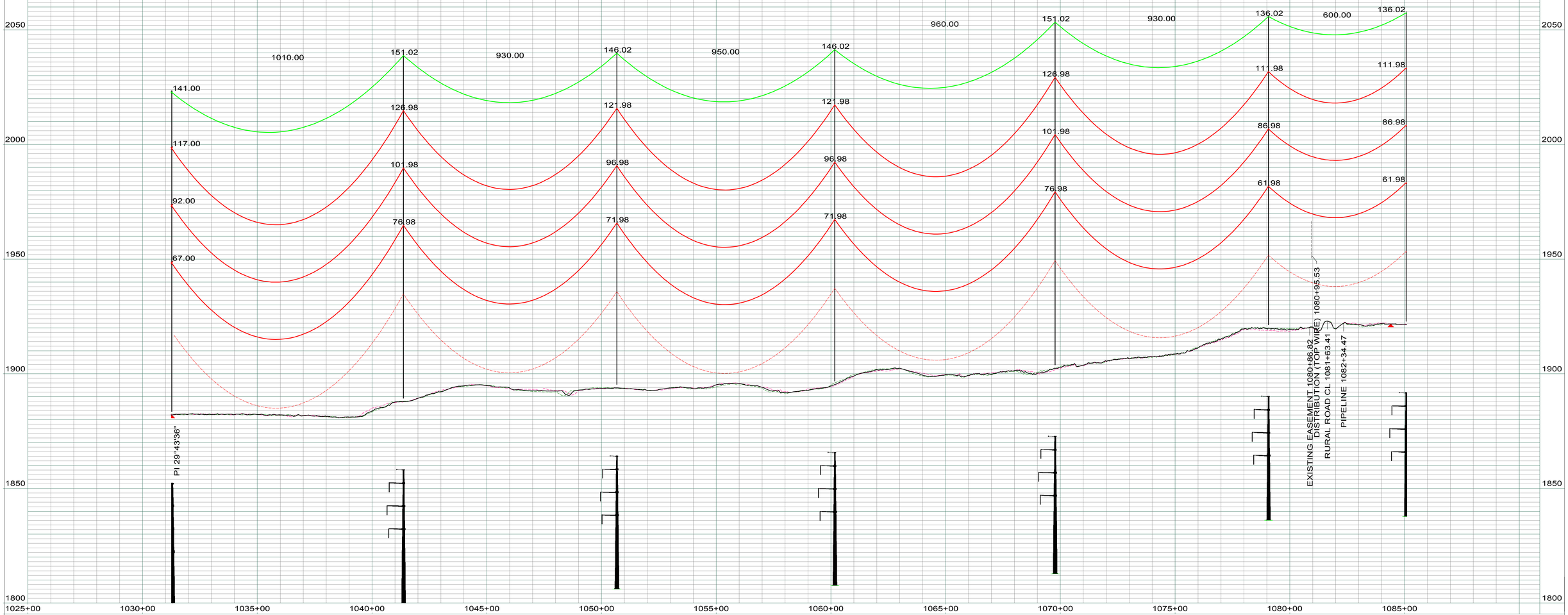
291-130
STA=1050+66.85
HT=146.50 ELE=1893.83
3-FDST-145
921' RS

291-131
STA=1060+16.85
HT=146.50 ELE=1895.33
3-FDST-145
921' RS

291-132
STA=1069+76.85
HT=151.50 ELE=1902.39
3-FDST-150
921' RS

291-133
STA=1079+06.85
HT=136.50 ELE=1919.83
3-FDST-135
CROSSING - 3 PHASE
921' RS

291-134
STA=1085+06.85
HT=136.50 ELE=1921.42
3-FDST-135
921' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	921	10556	21956	--	--	--
OPGW AC-71/571 (GREEN)	920	2285	6429	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

		DATE
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

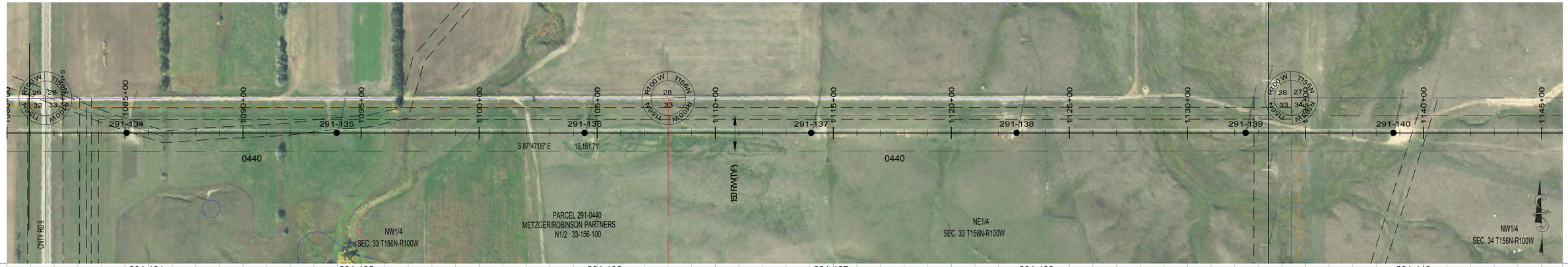
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 1025+00 TO 1085+10
STRUCTURE: 291-128 TO 291-134

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-025

REV. NO. 1



291-134
STA=1085+06.85
HT=136.50 ELE=1921.42
3-FDST-135
921' RS

291-135
STA=1093+96.85
HT=141.50 ELE=1924.26
3-FDST-140
921' RS

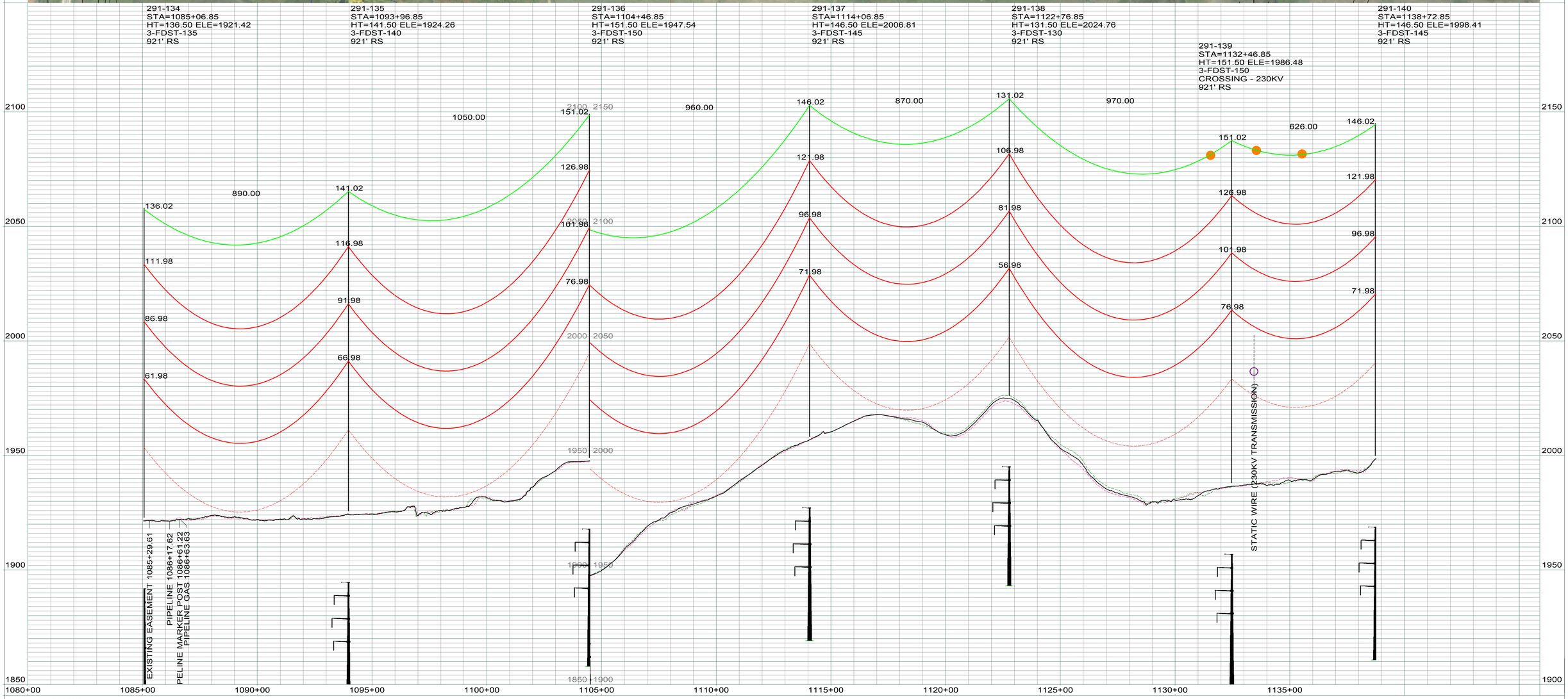
291-136
STA=1104+46.85
HT=151.50 ELE=1947.54
3-FDST-150
921' RS

291-137
STA=1114+06.85
HT=146.50 ELE=2006.81
3-FDST-145
921' RS

291-138
STA=1122+76.85
HT=131.50 ELE=2024.76
3-FDST-130
921' RS

291-139
STA=1132+46.85
HT=151.50 ELE=1986.48
3-FDST-150
CROSSING - 230KV
921' RS

291-140
STA=1138+72.85
HT=146.50 ELE=1998.41
3-FDST-145
921' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	921	10556	21956	--	--	--
OPGW AC-71/571 (GREEN)	920	2285	6429	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

		DATE
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

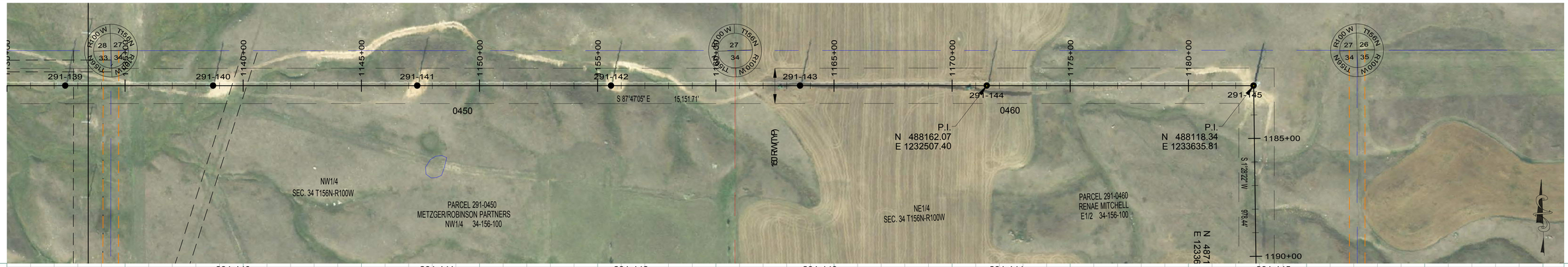
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 1080+00 TO 1138+76
STRUCTURE: 291-134 TO 291-140

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-026
REV. NO.: 1



291-140
STA=1138+72.85
HT=146.50 ELE=1998.41
3-FDST-145
921' RS

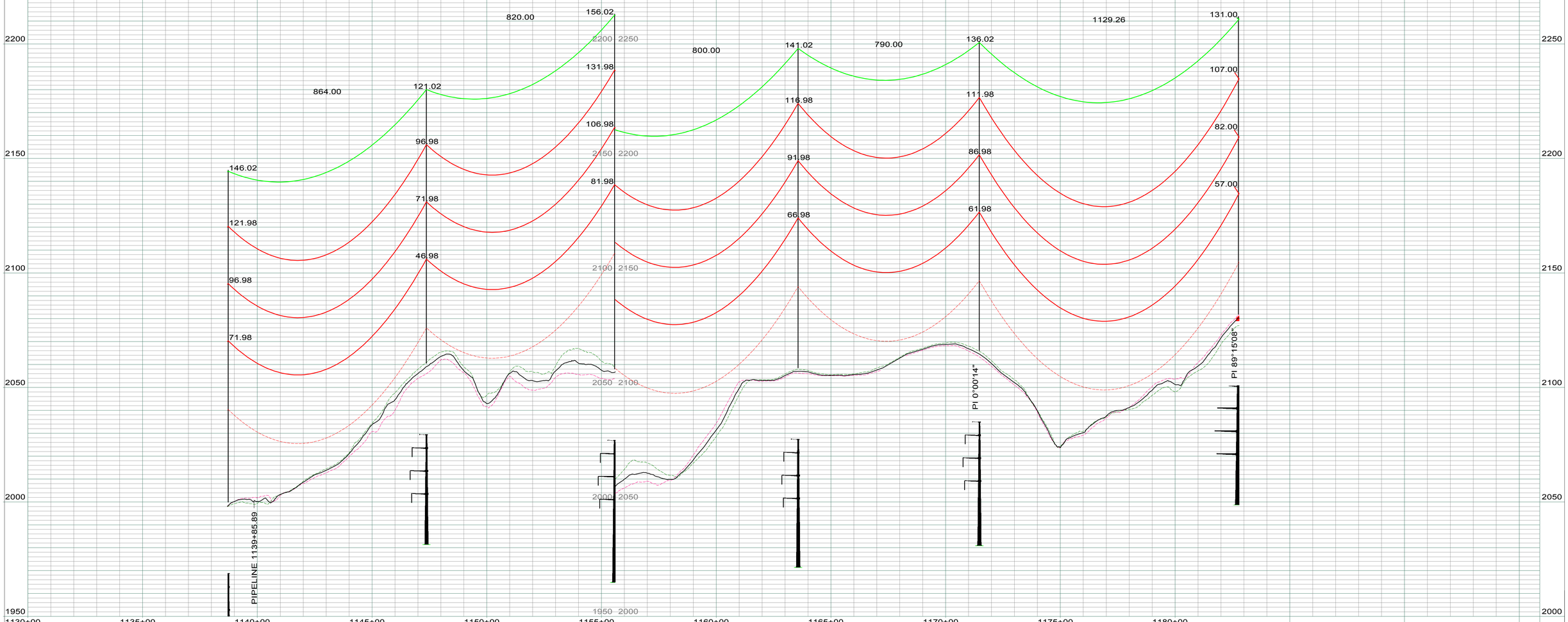
291-141
STA=1147+36.85
HT=121.50 ELE=2059.06
3-FDST-120
921' RS

291-142
STA=1155+56.85
HT=156.50 ELE=2056.58
3-FDST-155
921' RS

291-143
STA=1163+56.85
HT=141.50 ELE=2107.05
3-FDST-140
921' RS

291-144
STA=1171+46.85
HT=136.50 ELE=2114.65
3-FDST-135
921' RS

291-145
STA=1182+76.11
HT=131.50 ELE=2130.44
3-FDSD90-130
OPGW SPLICE
END 921' RS, BEGIN 856' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	921	10556	21956	--	--	--
OPGW AC-71/571 (GREEN)	920	2285	6429	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

		DATE:
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

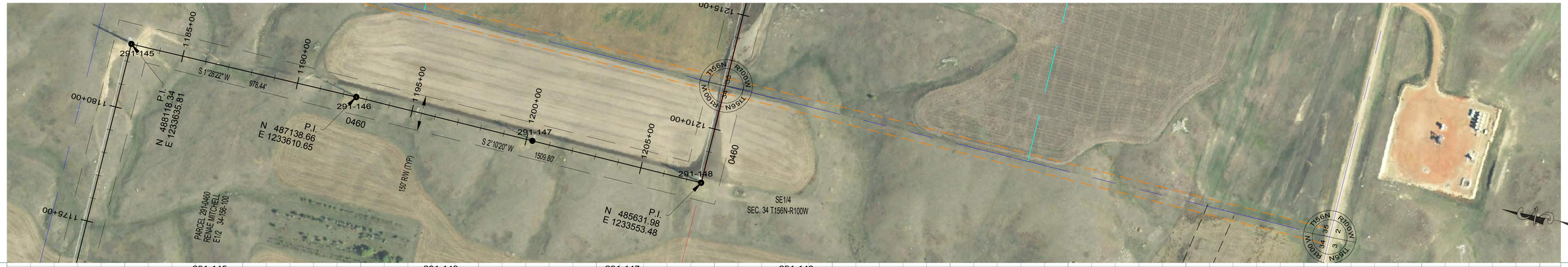
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

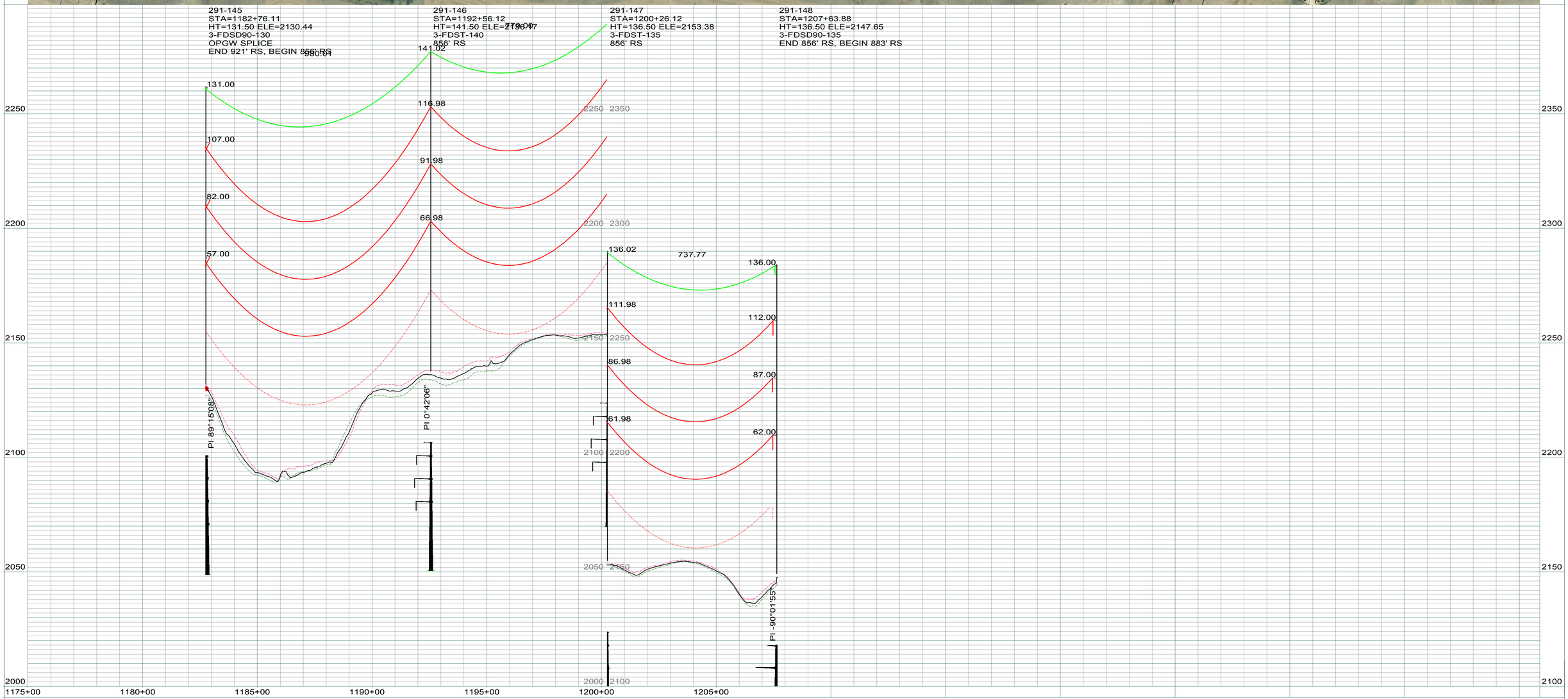
PLAN AND PROFILES
STATION: 1130+00 TO 1182+79
STRUCTURE: 291-139 TO 291-145

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-027

REV. NO. 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	856	10275	21668	--	--	--
OPGW AC-71/571 (GREEN)	853	2237	6242	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER	DATE:	04/16
DRAWN BY: C. KNOLL	DATE:	04/16
DESIGN CHK: R. NASSET	DATE:	04/16
DRAFT CHK: R. LANG	DATE:	04/16
APPROVED: S. WISEMAN	DATE:	04/16

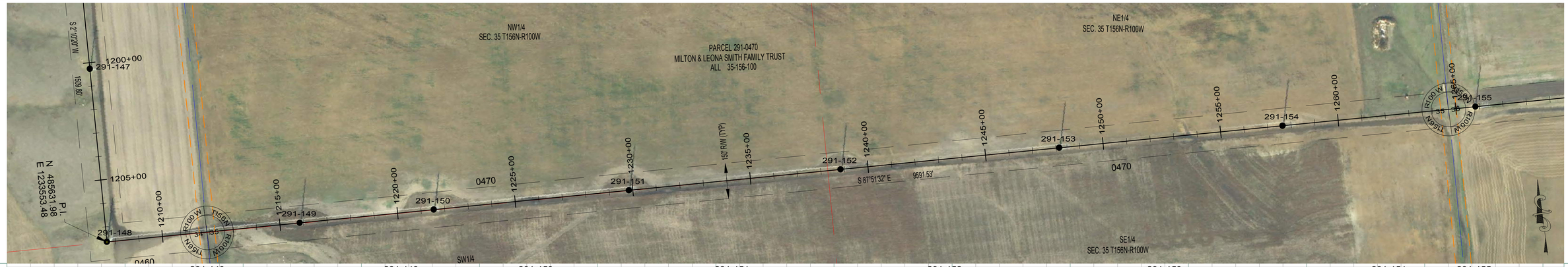
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 1175+00 TO 1207+67
STRUCTURE: 291-145 TO 291-148

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-028
REV. NO.: 1



291-148
STA=1207+63.88
HT=136.50 ELE=2147.65
3-FDSD90-135
END 856' RS, BEGIN 883' RS

291-149
STA=1215+83.88
HT=141.50 ELE=2154.59
3-FDST-140
883' RS

291-150
STA=1221+53.88
HT=116.50 ELE=2186.99
3-FDST-115
122173.817
883' RS

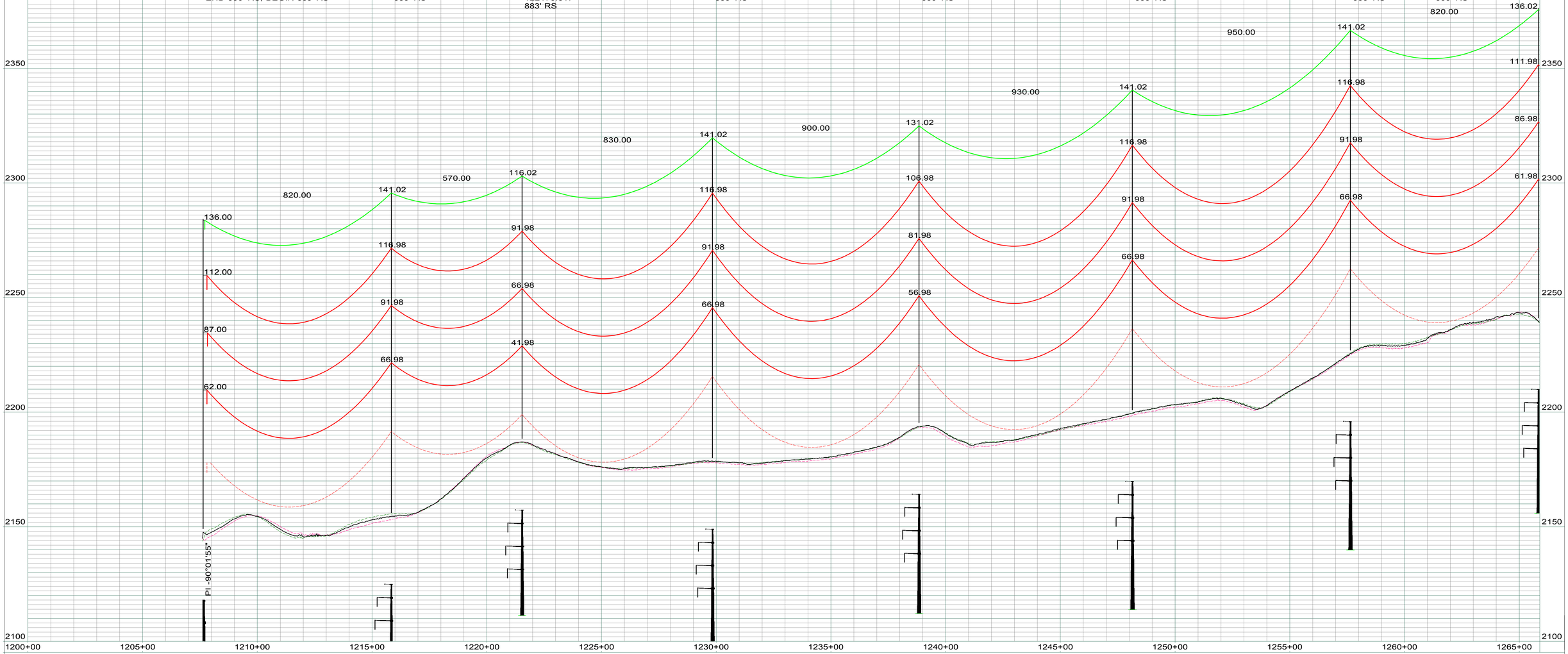
291-151
STA=1229+83.88
HT=141.50 ELE=2178.66
3-FDST-140
883' RS

291-152
STA=1238+83.88
HT=131.50 ELE=2193.85
3-FDST-130
883' RS

291-153
STA=1248+13.88
HT=141.50 ELE=2199.51
3-FDST-140
883' RS

291-154
STA=1257+63.88
HT=141.50 ELE=2225.53
3-FDST-140
883' RS

291-155
STA=1265+83.88
HT=136.50 ELE=2239.63
3-FDST-135
883' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	883	10398	21799	--	--	--
OPGW AC-71/571 (GREEN)	884	2259	6331	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

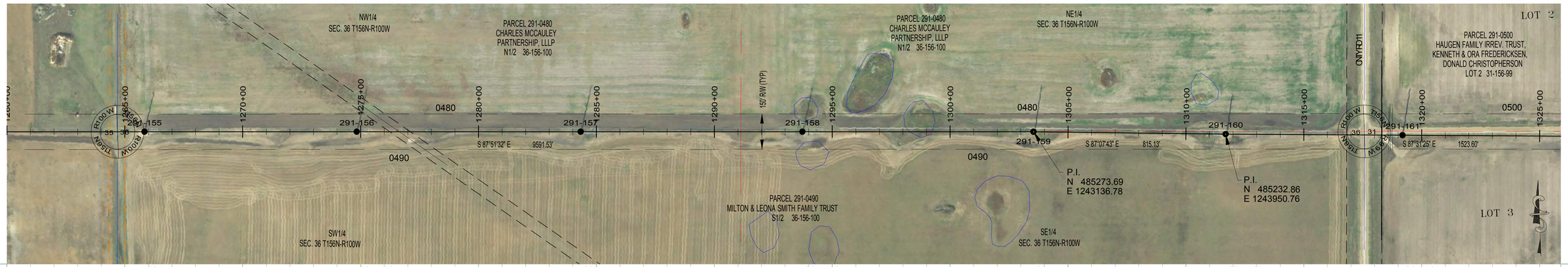
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

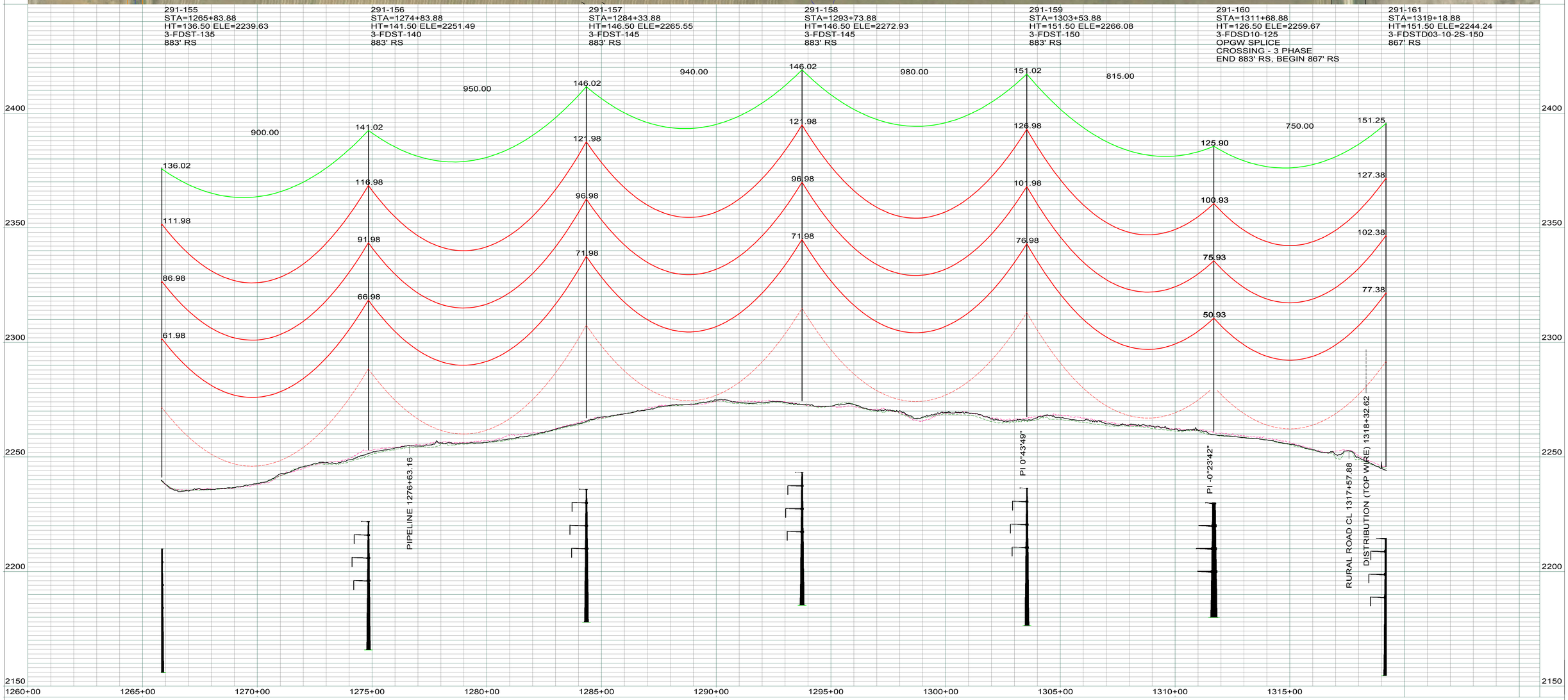
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 1200+00 TO 1265+87
STRUCTURE: 291-147 TO 291-155

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-029
REV. NO.: 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	883	10398	21799	867	10316	21696
OPGW AC-71/571 (GREEN)	884	2259	6331	867	2245	6279
--	--	--	--	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 1260+00 TO 1319+22
STRUCTURE: 291-155 TO 291-161

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-030

REV. NO. 1



291-161
STA=1319+18.88
HT=151.50 ELE=2244.24
3-FDSTD03-10-2S-150
867' RS

291-162
STA=1326+92.24
HT=141.50 ELE=2231.63
3-FDST-140
867' RS

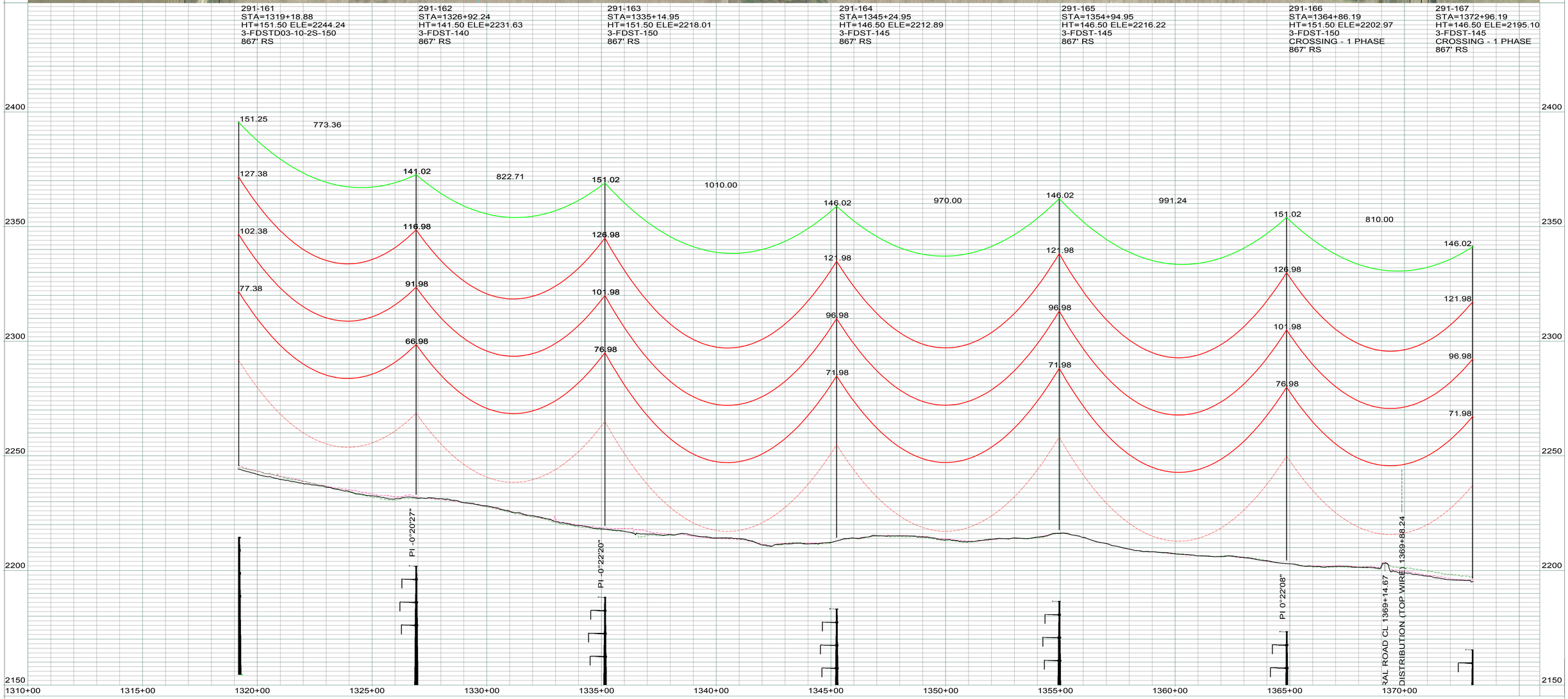
291-163
STA=1335+14.95
HT=151.50 ELE=2218.01
3-FDST-150
867' RS

291-164
STA=1345+24.95
HT=146.50 ELE=2212.89
3-FDST-145
867' RS

291-165
STA=1354+94.95
HT=146.50 ELE=2216.22
3-FDST-145
867' RS

291-166
STA=1364+86.19
HT=151.50 ELE=2202.97
3-FDST-150
CROSSING - 1 PHASE
867' RS

291-167
STA=1372+96.19
HT=146.50 ELE=2195.10
3-FDST-145
CROSSING - 1 PHASE
867' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	867	10316	21696	--	--	--
OPGW AC-71/571 (GREEN)	867	2245	6279	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

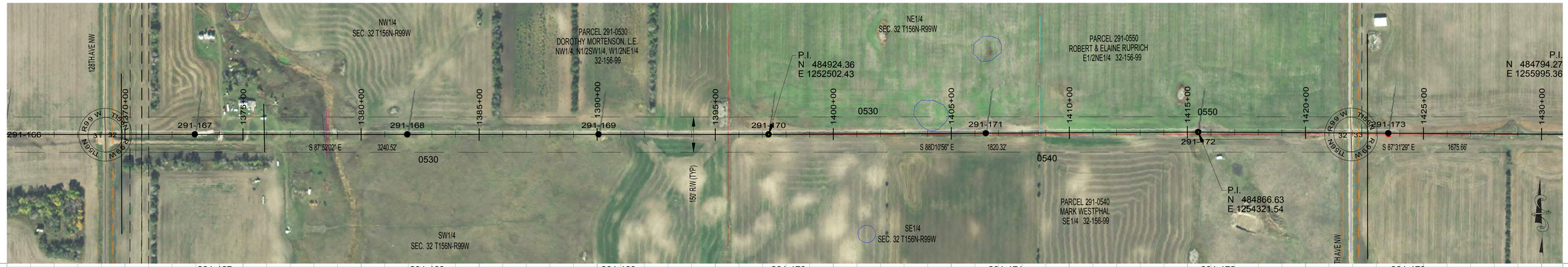
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

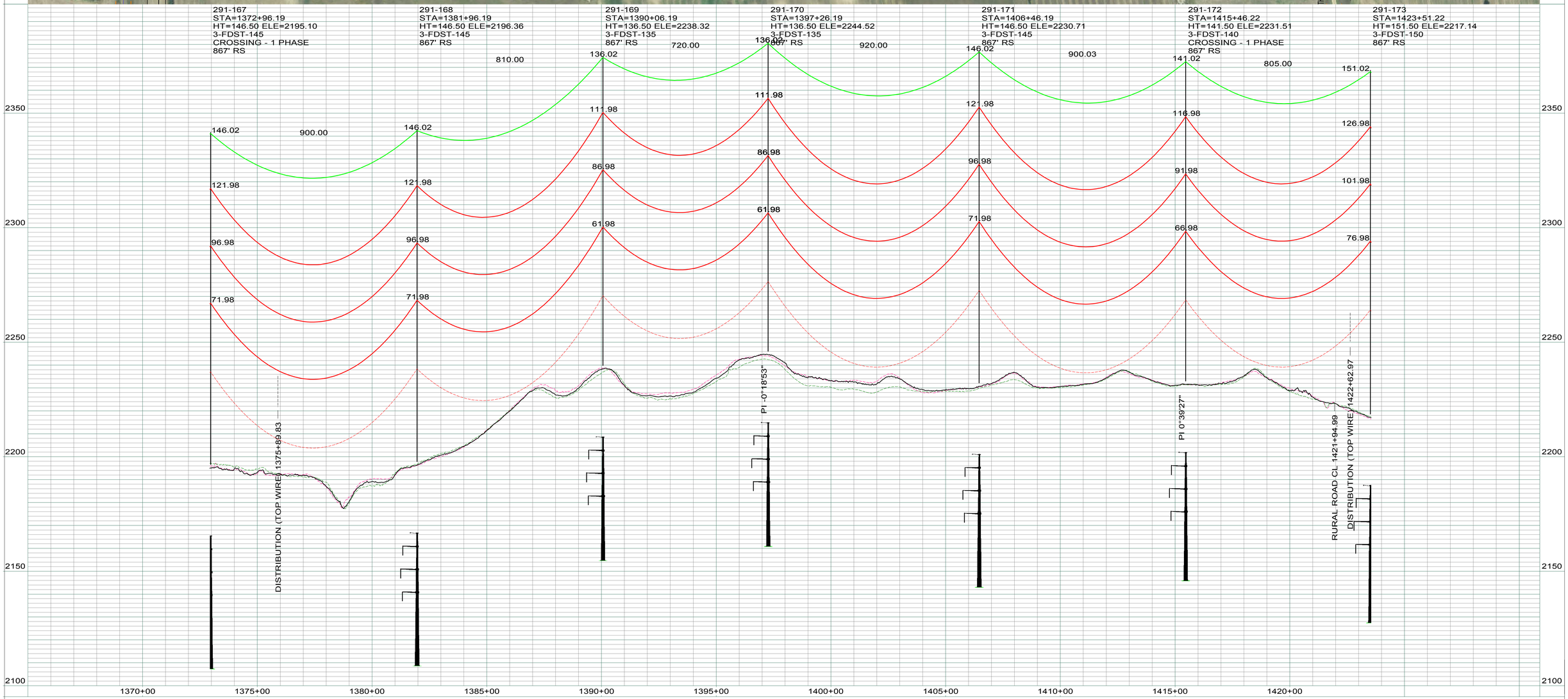
PLAN AND PROFILES
STATION: 1310+00 TO 1372+99
STRUCTURE: 291-160 TO 291-167

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-031
REV. NO.: 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	867	10316	21696	--	--	--
OPGW AC-71/571 (GREEN)	867	2245	6279	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

		DATE
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

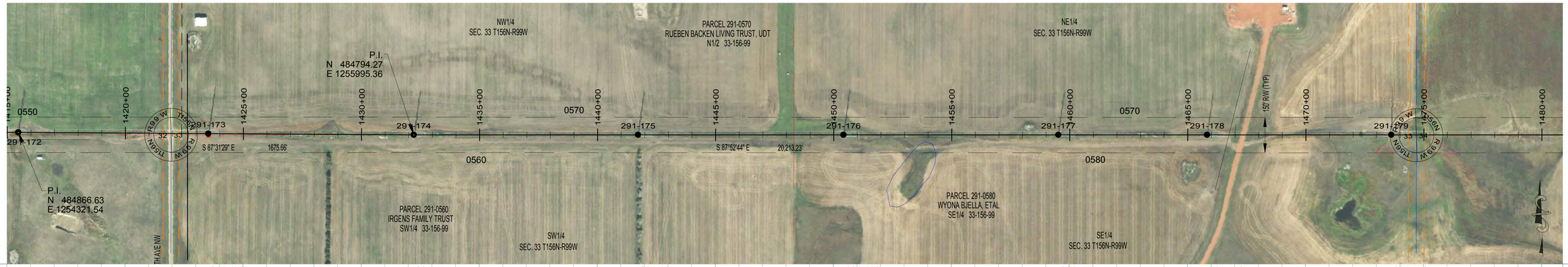
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 1365+00 TO 1423+55
STRUCTURE: 291-167 TO 291-173

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-032

REV. NO. 1



291-173
STA=1423+51.22
HT=151.50 ELE=2217.14
3-FDST-150
867' RS

291-174
STA=1432+21.61
HT=146.50 ELE=2188.11
3-FDST-145
867' RS

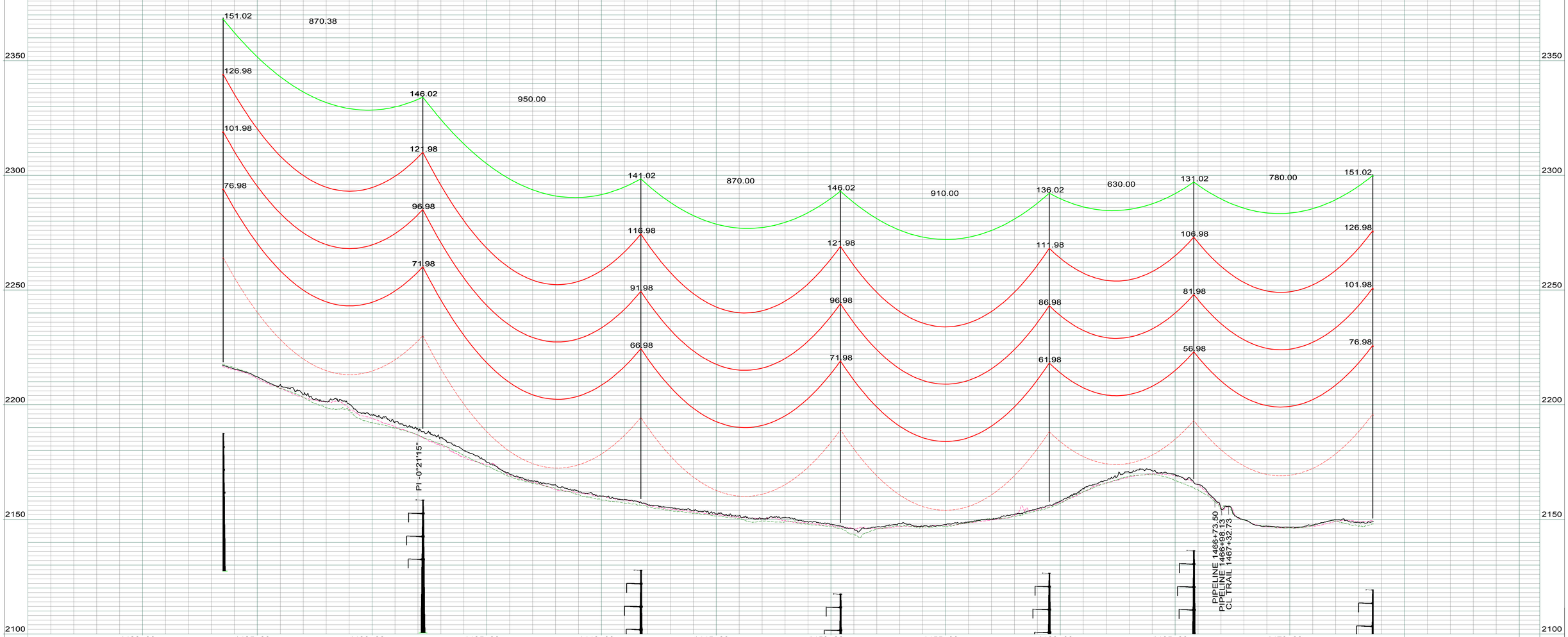
291-175
STA=1441+71.60
HT=141.50 ELE=2157.47
3-FDST-140
867' RS

291-176
STA=1450+41.60
HT=146.50 ELE=2147.10
3-FDST-145
867' RS

291-177
STA=1459+51.60
HT=136.50 ELE=2156.21
3-FDST-135
867' RS

291-178
STA=1465+81.60
HT=131.50 ELE=2166.06
3-FDST-130
867' RS

291-179
STA=1473+61.60
HT=151.50 ELE=2148.91
3-FDST-150
867' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	867	10316	21696	--	--	--
OPGW AC-71/571 (GREEN)	867	2245	6279	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

		DATE:
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 1415+00 TO 1473+65
STRUCTURE: 291-172 TO 291-179

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-033
REV. NO.: 1



291-179
STA=1473+61.60
HT=151.50 ELE=2148.91
3-FDST-150
867' RS

291-180
STA=1484+71.60
HT=156.50 ELE=2147.06
3-FDST-155
CROSSING - 3 PHASE
867' RS

291-181
STA=1491+21.60
HT=146.50 ELE=2186.14
3-FDST-145
CROSSING - 115KV
867' RS

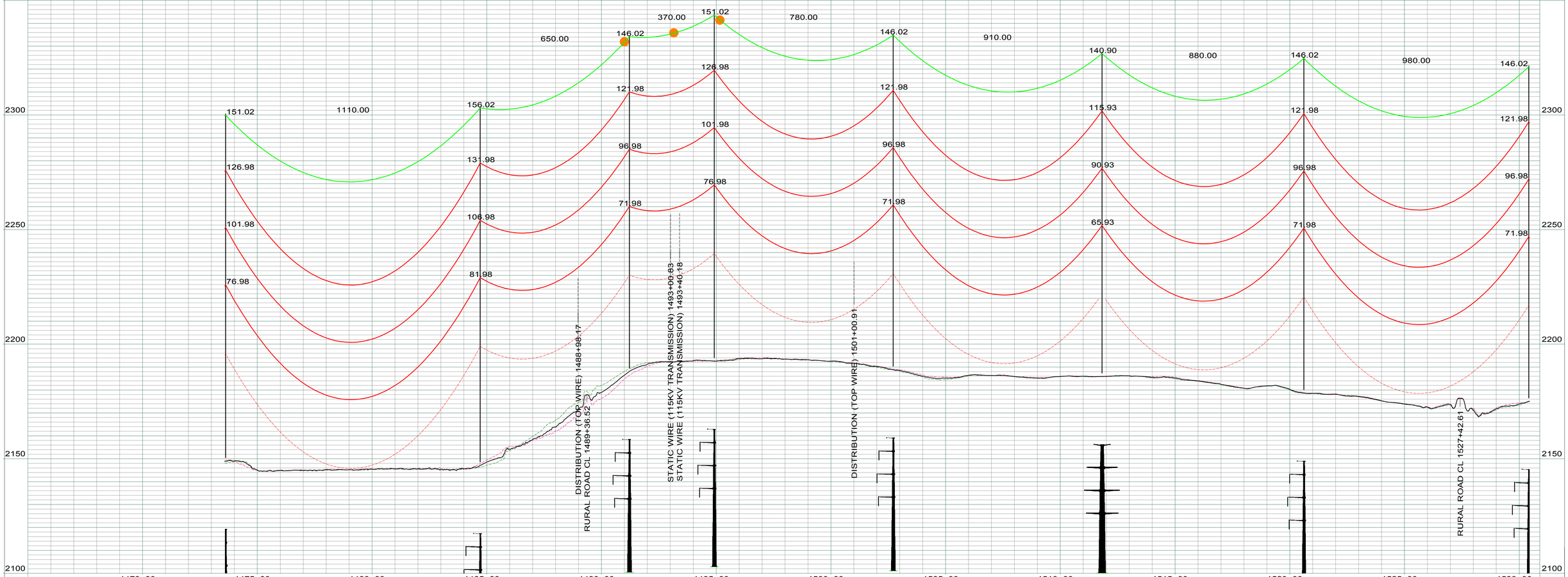
291-182
STA=1494+91.60
HT=151.50 ELE=2192.57
3-FDST-150
CROSSING - 1 PHASE
867' RS

291-183
STA=1502+71.60
HT=146.50 ELE=2188.81
3-FDST-145
867' RS

291-184
STA=1511+81.60
HT=141.50 ELE=2185.87
3-FDSD10-140
OPGW SPLICE
END 867' RS, BEGIN 868' RS

291-185
STA=1520+61.61
HT=146.50 ELE=2178.65
3-FDST-145
868' RS

291-186
STA=1530+41.60
HT=146.50 ELE=2175.00
3-FDST-145
868' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	867	10316	21696	868	10326	21715
OPGW AC-71/571 (GREEN)	867	2245	6279	868	2246	6283
--	--	--	--	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER	DATE:	04/16
DRAWN BY: C. KNOLL	DATE:	04/16
DESIGN CHK: R. NASSET	DATE:	04/16
DRAFT CHK: R. LANG	DATE:	04/16
APPROVED: S. WISEMAN	DATE:	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

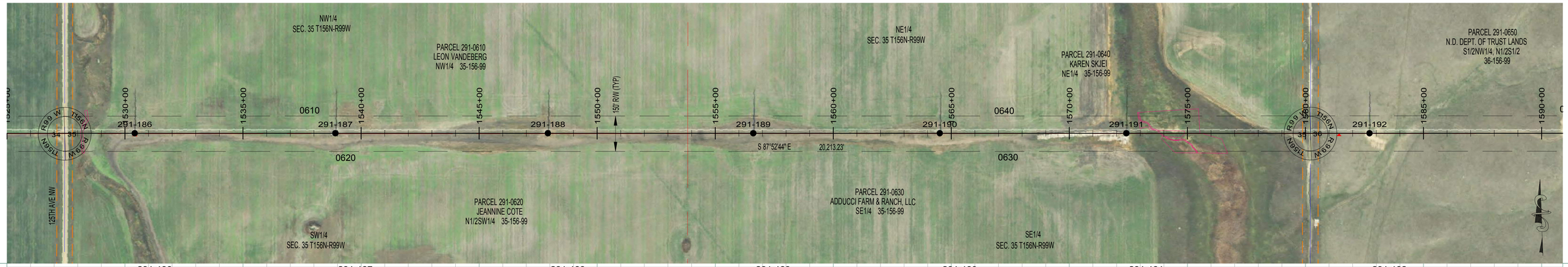
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 1465+00 TO 1530+45
STRUCTURE: 291-178 TO 291-186

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-034

REV. NO. 1



291-186
STA=1530+41.60
HT=146.50 ELE=2175.00
3-FDST-145
868' RS

291-187
STA=1538+91.61
HT=141.50 ELE=2195.99
3-FDST-140
868' RS

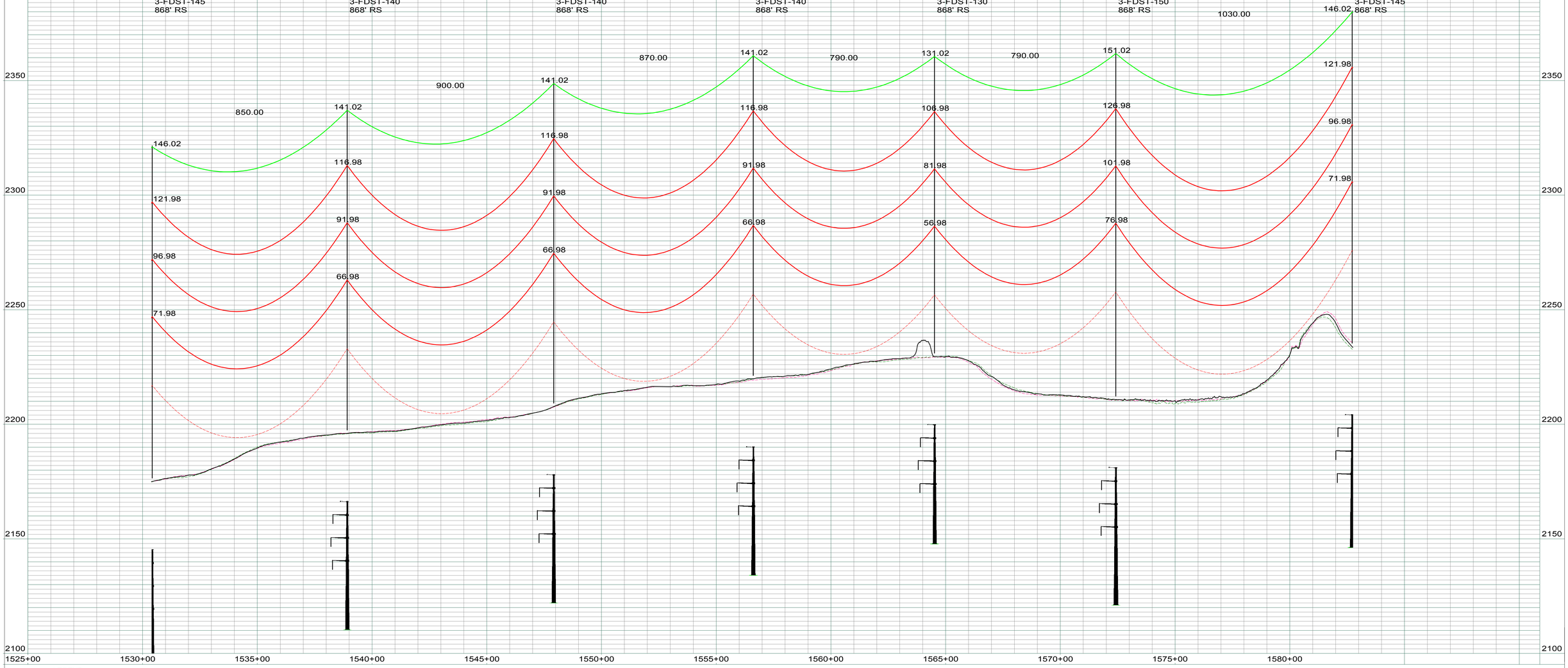
291-188
STA=1547+91.61
HT=141.50 ELE=2207.69
3-FDST-140
868' RS

291-189
STA=1556+61.60
HT=141.50 ELE=2219.81
3-FDST-140
868' RS

291-190
STA=1564+51.61
HT=131.50 ELE=2229.52
3-FDST-130
868' RS

291-191
STA=1572+41.61
HT=151.50 ELE=2210.77
3-FDST-150
868' RS

291-192
STA=1582+71.60
HT=146.50 ELE=2233.88
3-FDST-145
868' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	868	10326	21715	--	--	--
OPGW AC-71/571 (GREEN)	868	2246	6283	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

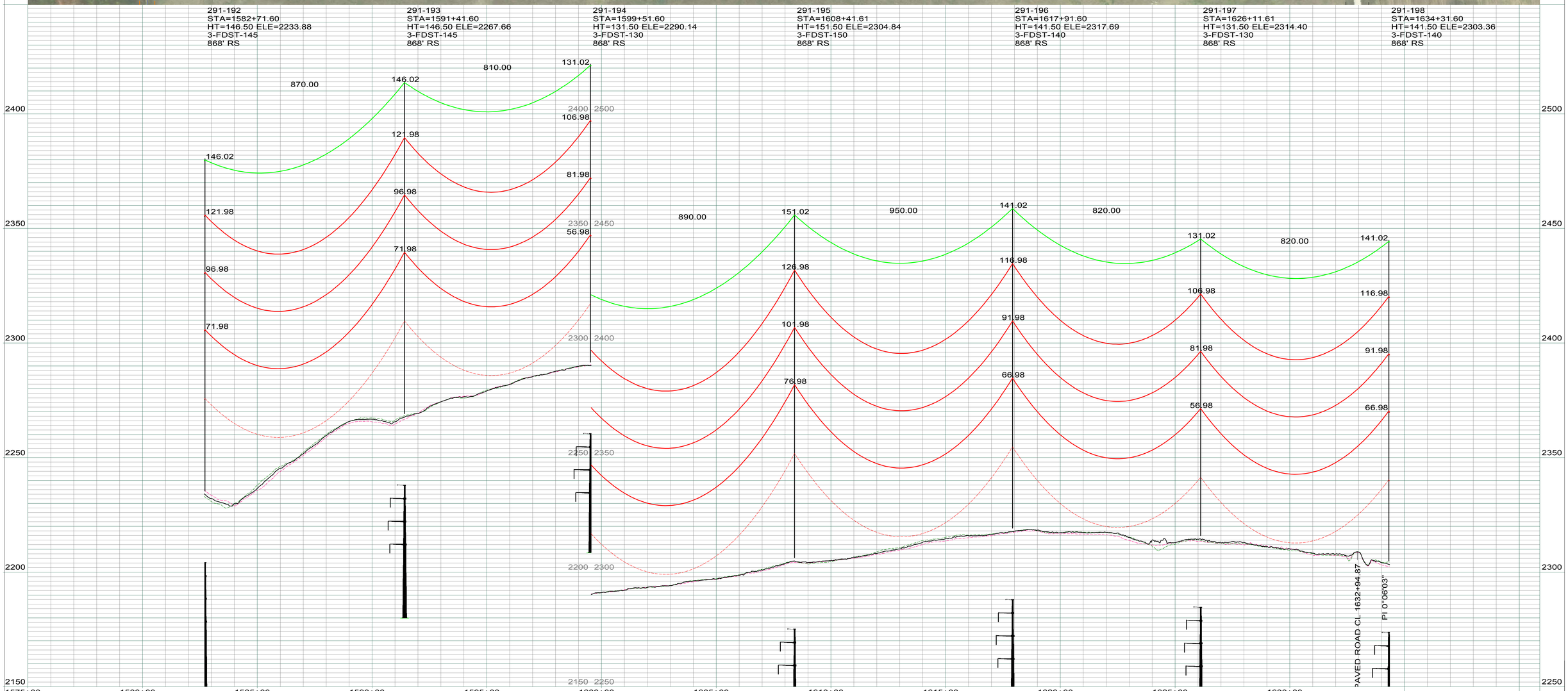
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 1525+00 TO 1582+75
STRUCTURE: 291-186 TO 291-192

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-035
REV. NO.: 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	868	10326	21715	--	--	--
OPGW AC-71/571 (GREEN)	868	2246	6283	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

		DATE
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

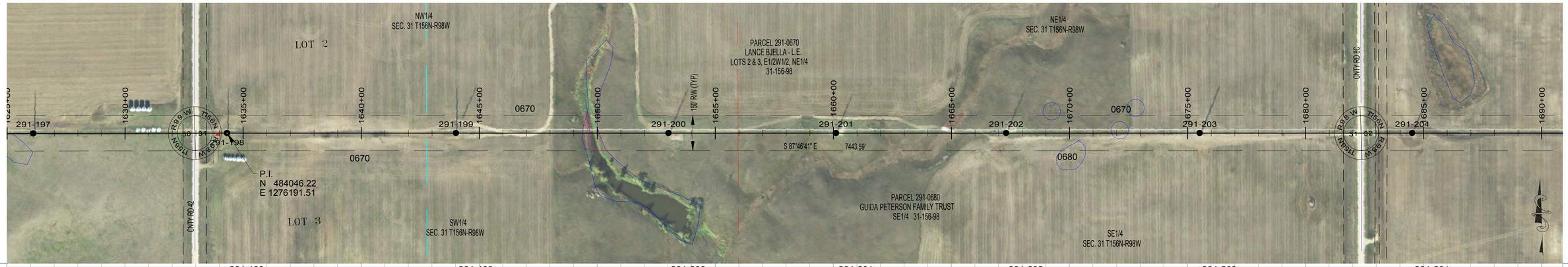
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 1575+00 TO 1634+35
STRUCTURE: 291-192 TO 291-198

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-036
REV. NO.: 1



291-198
STA=1634+31.60
HT=141.50 ELE=2303.36
3-FDST-140
868' RS

291-199
STA=1644+01.60
HT=141.50 ELE=2290.40
3-FDST-140
868' RS

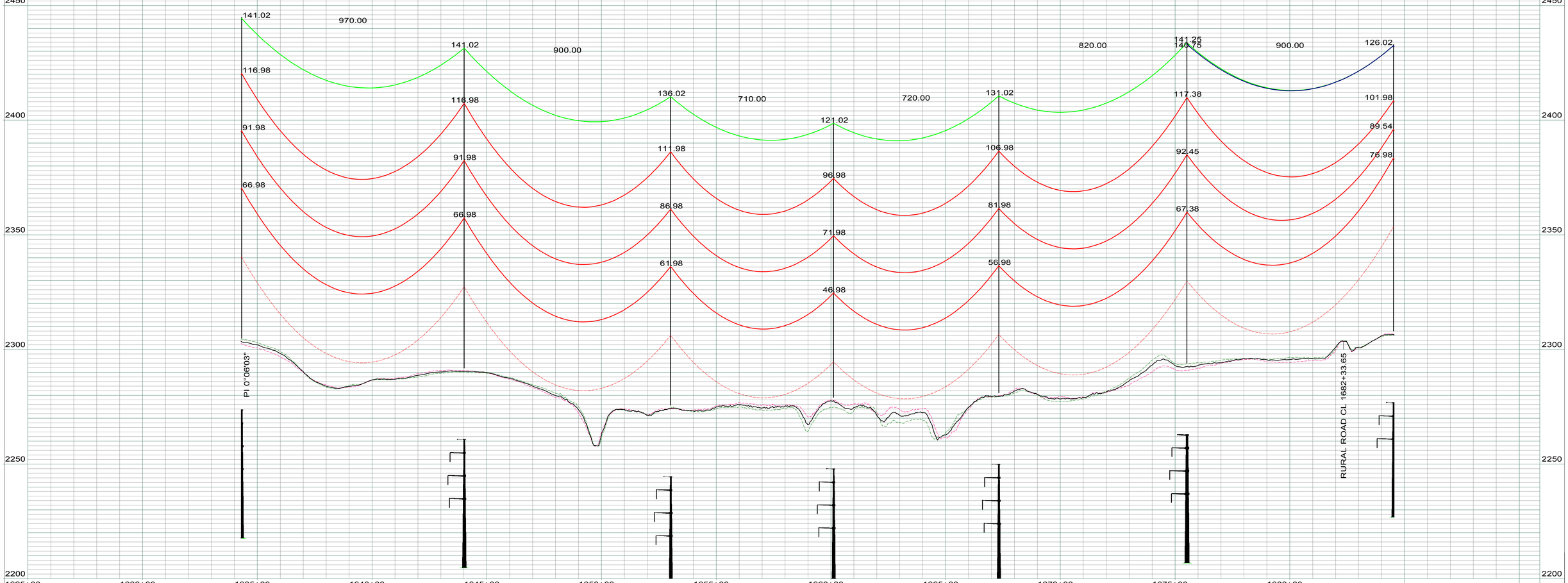
291-200
STA=1653+01.60
HT=136.50 ELE=2274.20
3-FDST-135
868' RS

291-201
STA=1660+11.61
HT=121.50 ELE=2277.62
3-FDST-120
868' RS

291-202
STA=1667+31.60
HT=131.50 ELE=2279.56
3-FDST-130
868' RS

291-203
STA=1675+51.60
HT=141.50 ELE=2292.51
3-FDSTD03-10-2S-140
868' RS

291-204
STA=1684+51.60
HT=126.50 ELE=2306.48
3ST2-125
868' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	868	10326	21715	--	--	--
OPGW AC-71/571 (GREEN)	868	2246	6283	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

		DATE
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

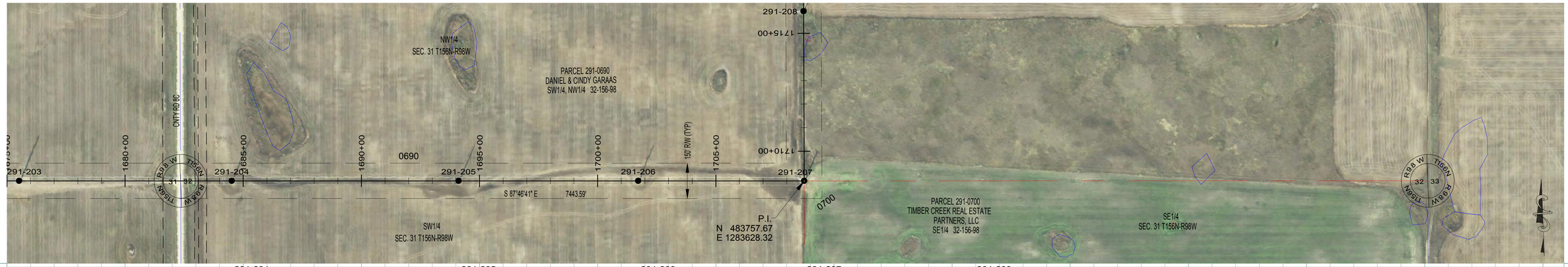
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 1625+00 TO 1684+55
STRUCTURE: 291-197 TO 291-204

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-037
REV. NO.: 1



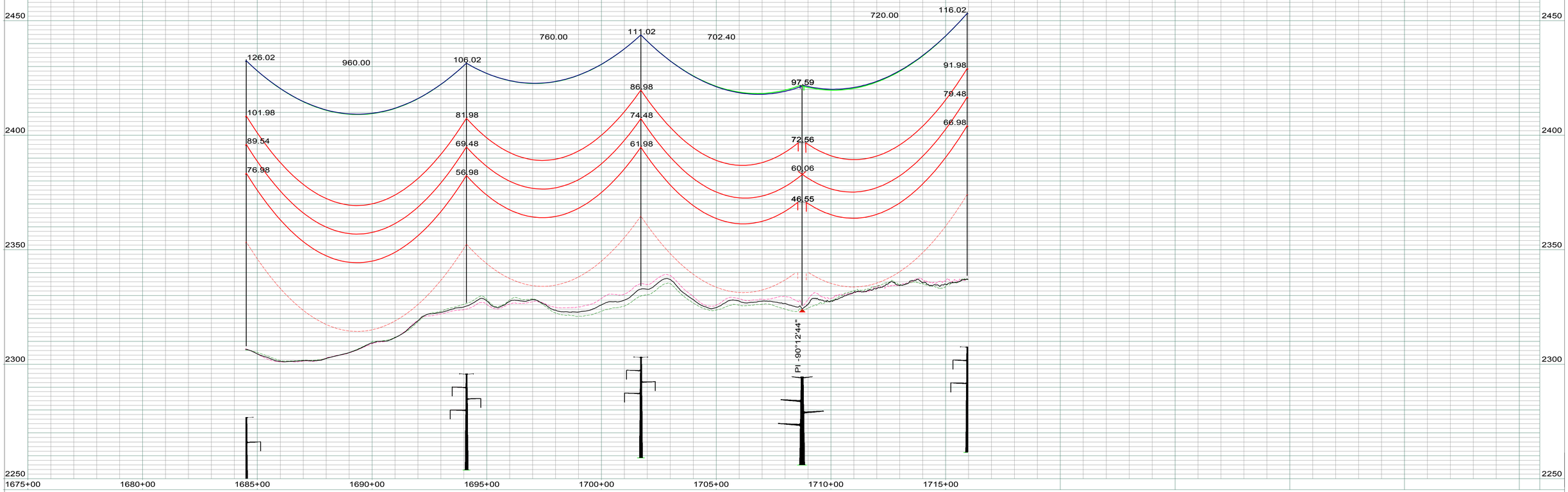
291-204
STA=1684+51.60
HT=126.50 ELE=2306.48
3ST2-125
868' RS

291-205
STA=1694+11.60
HT=106.50 ELE=2325.42
3ST2-105
868' RS

291-206
STA=1701+71.61
HT=111.50 ELE=2332.78
3ST2-110
868' RS

291-207
STA=1708+74.01
HT=97.59 ELE=2324.13
3SDA90-096
OPGW SPLICE
END 868' RS, BEGIN 893' RS

291-208
STA=1715+94.01
HT=116.50 ELE=2337.22
3ST2-115
893' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	868	10326	21715	893	10444	21854
OPGW AC-71/571 (GREEN)	868	2246	6283	892	2200	6254
OHGW 7/16`` EHS (BLUE)	851	2156	5520	893	2113	5541
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER	DATE:	04/16
DRAWN BY: C. KNOLL	DATE:	04/16
DESIGN CHK: R. NASSET	DATE:	04/16
DRAFT CHK: R. LANG	DATE:	04/16
APPROVED: S. WISEMAN	DATE:	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

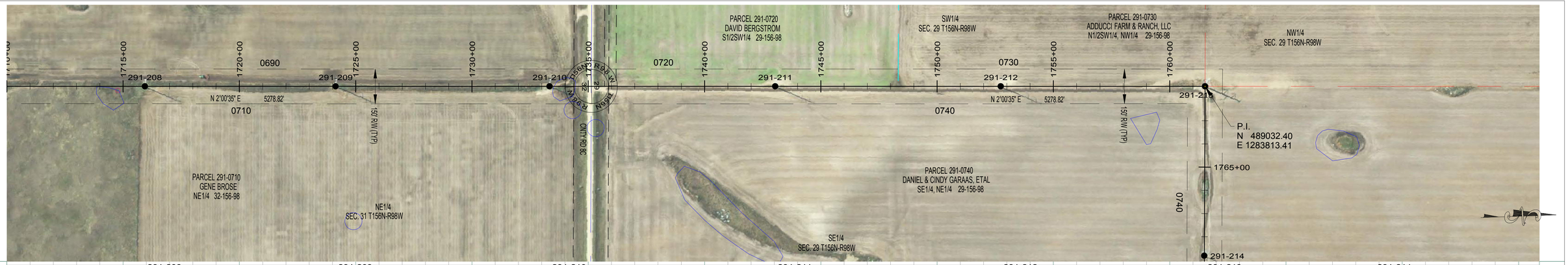
PLAN AND PROFILES
STATION: 1675+00 TO 1715+97
STRUCTURE: 291-203 TO 291-208

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-038

REV. NO.: 1



291-208
STA=1715+94.01
HT=116.50 ELE=2337.22
3ST2-115
893' RS

291-209
STA=1724+14.01
HT=121.50 ELE=2333.20
3ST2-120M2
893' RS

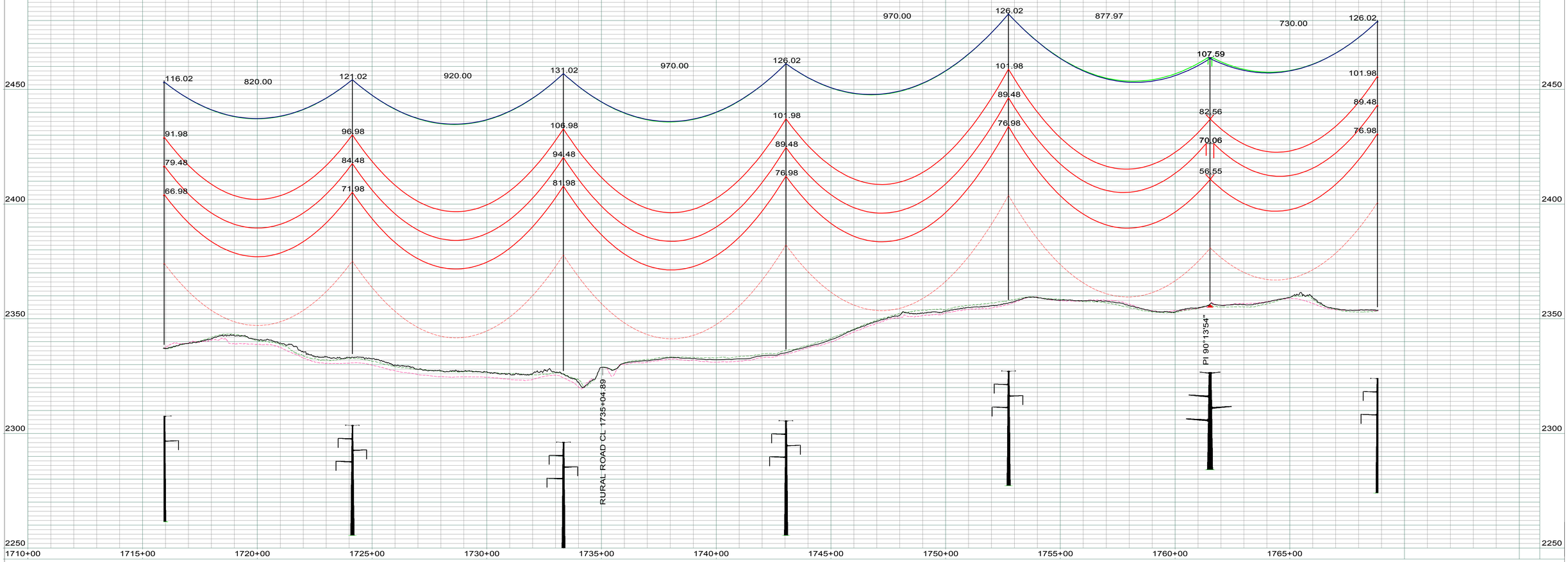
291-210
STA=1733+34.01
HT=131.50 ELE=2325.85
3ST2-130
893' RS

291-211
STA=1743+04.01
HT=126.50 ELE=2335.20
3ST2-125
893' RS

291-212
STA=1752+74.01
HT=126.50 ELE=2356.88
3ST2-125
893' RS

291-213
STA=1761+51.98
HT=107.59 ELE=2356.35
3SDA90-106
OPGW SPLICE
END 893' RS, BEGIN 837' RS

291-214
STA=1768+81.98
HT=126.50 ELE=2353.68
3ST2-125
837' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	893	10444	21854	837	10183	21565
OPGW AC-71/571 (GREEN)	892	2200	6254	837	2225	6196
OHGW 7/16`` EHS (BLUE)	893	2113	5541	850	2155	5516
--	--	--	--	--	--	--

		DATE
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

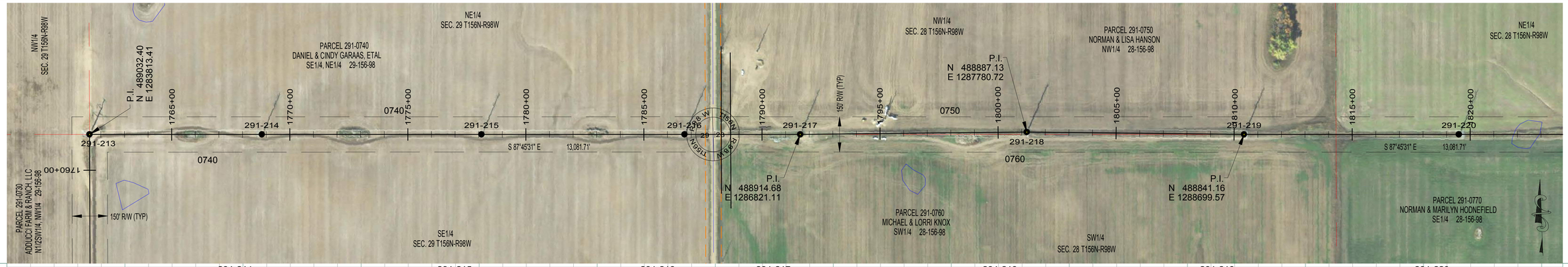
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 1710+00 TO 1768+85
STRUCTURE: 291-208 TO 291-214

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-039
REV. NO.: 1



291-214
STA=1768+81.98
HT=126.50 ELE=2353.68
3ST2-125
837' RS

291-215
STA=1778+11.98
HT=126.50 ELE=2355.47
3ST2-125
837' RS

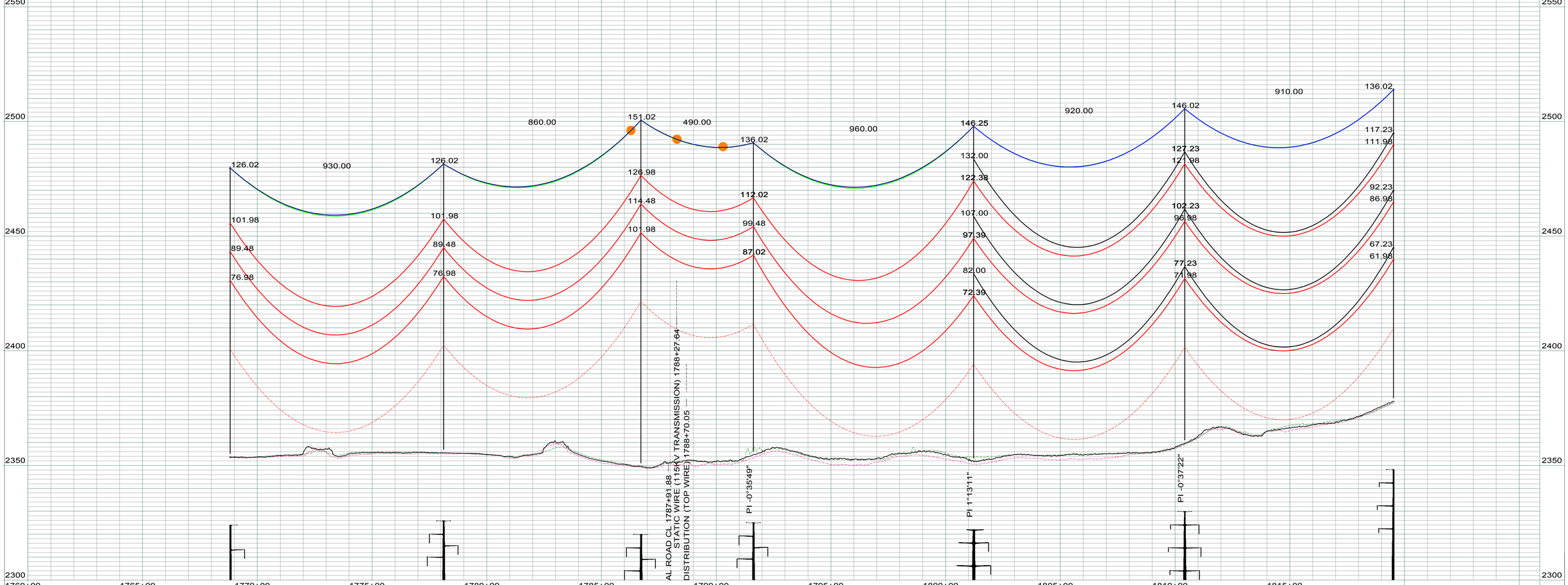
291-216
STA=1786+71.99
HT=151.50 ELE=2349.52
3ST2-150
CROSSING - 115KV
837' RS

291-217
STA=1791+61.99
HT=136.50 ELE=2354.68
3ST2-135
837' RS

291-218
STA=1801+21.99
HT=146.50 ELE=2351.66
3-1DSTD03-10-2S-145
OPGW SPLICE (MW)
345KV - 837' RS
BEGIN 115KV - 835' RS

291-219
STA=1810+41.99
HT=146.50 ELE=2359.54
3-3DST-145
345KV - 837' RS
115KV - 835' RS

291-220
STA=1819+51.99
HT=136.50 ELE=2377.86
3-3DST-135
345KV - 837' RS
115KV - 835' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	893	10444	21854	837	10183	21565
OPGW AC-71/571 (GREEN)	892	2200	6254	837	2225	6196
OHGW 7/16`` EHS (BLUE)	893	2113	5541	0	0	0
115KV TERN CONDUCTOR (BLK)	0	0	0	835	3406	8752

DESIGN BY: S. VASBINDER	DATE:	04/16
DRAWN BY: C. KNOLL	DATE:	04/16
DESIGN CHK: R. NASSET	DATE:	04/16
DRAFT CHK: R. LANG	DATE:	04/16
APPROVED: S. WISEMAN	DATE:	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

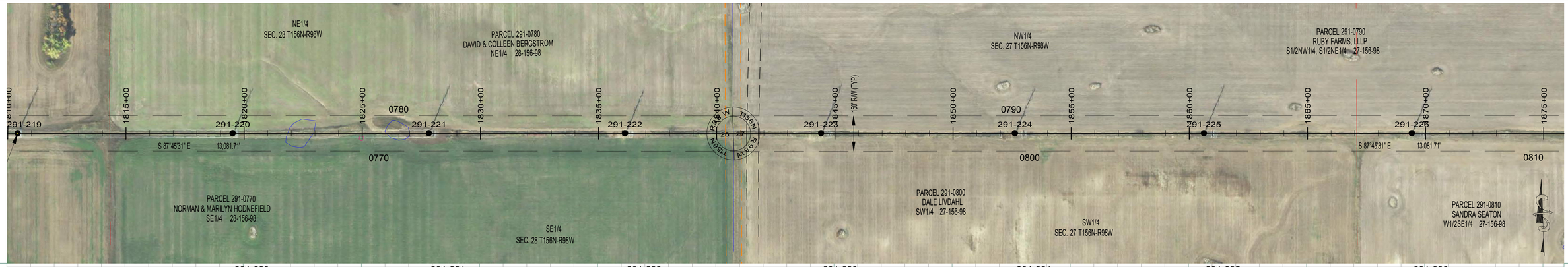
PLAN AND PROFILES
STATION: 1760+00 TO 1819+55
STRUCTURE: 291-213 TO 291-220

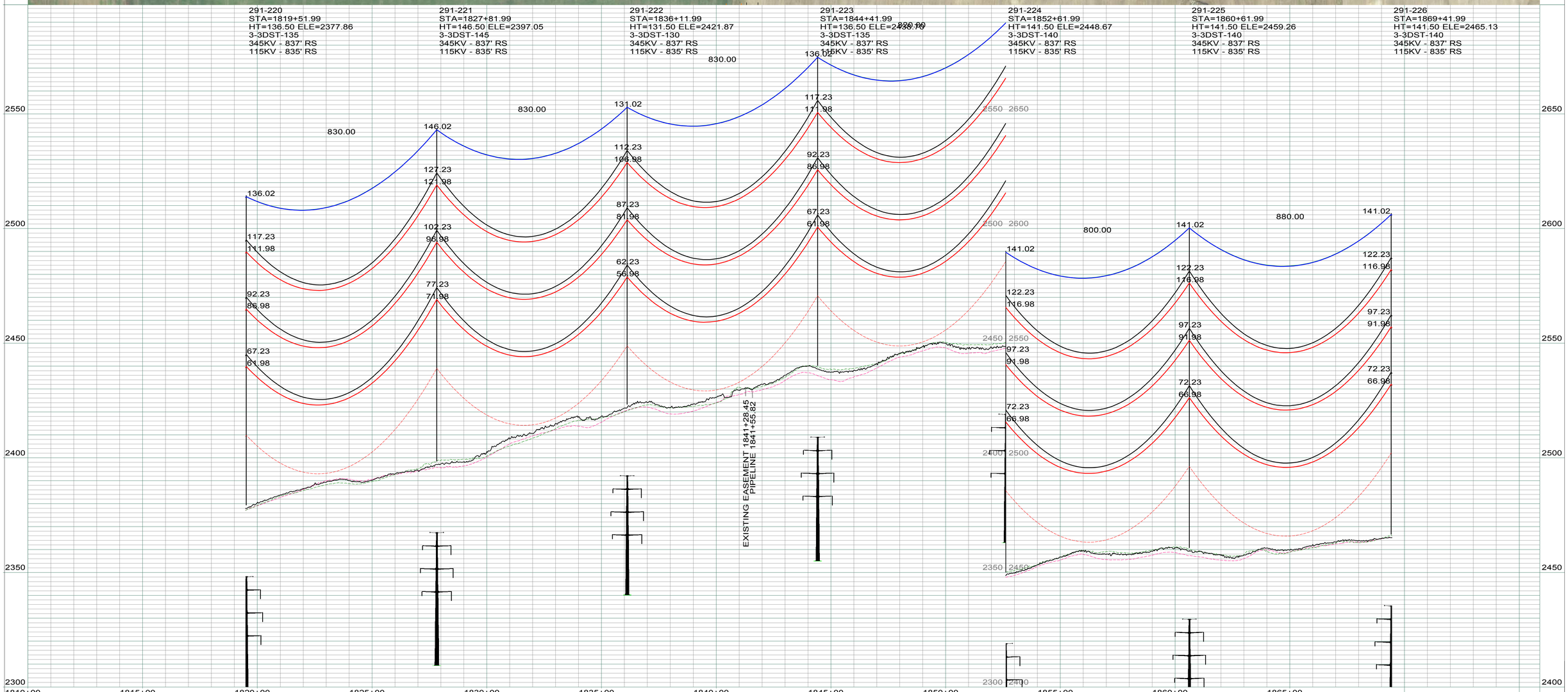
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-040

REV. NO. 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	837	10183	21565	--	--	--
OPGW AC-71/571 (GREEN)	837	2225	6196	--	--	--
OPGW AC-74/552 (BLUE)	835	2171	5974	--	--	--
115KV TERN CONDUCTOR (BLK)	835	3406	8752	--	--	--

DESIGN BY: S. VASBINDER	DATE:	04/16
DRAWN BY: C. KNOLL	DATE:	04/16
DESIGN CHK: R. NASSET	DATE:	04/16
DRAFT CHK: R. LANG	DATE:	04/16
APPROVED: S. WISEMAN	DATE:	04/16

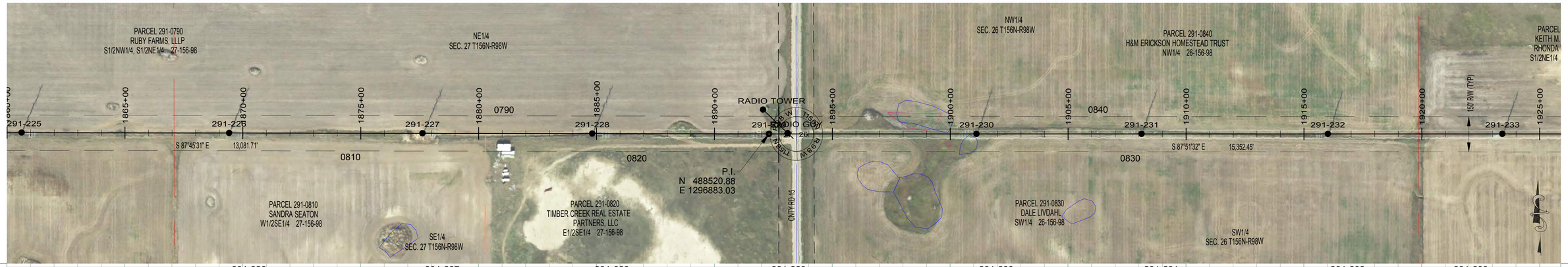
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 1810+00 TO 1869+45
STRUCTURE: 291-219 TO 291-226

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-041
REV. NO.: 1



291-226
STA=1869+41.99
HT=141.50 ELE=2465.13
3-3DST-140
345KV - 837' RS
115KV - 835' RS

291-227
STA=1877+61.99
HT=131.50 ELE=2477.19
3-3DST-130
345KV - 837' RS
115KV - 835' RS

291-228
STA=1884+81.99
HT=136.50 ELE=2473.50
3-3DST-135
345KV - 837' RS
115KV - 835' RS

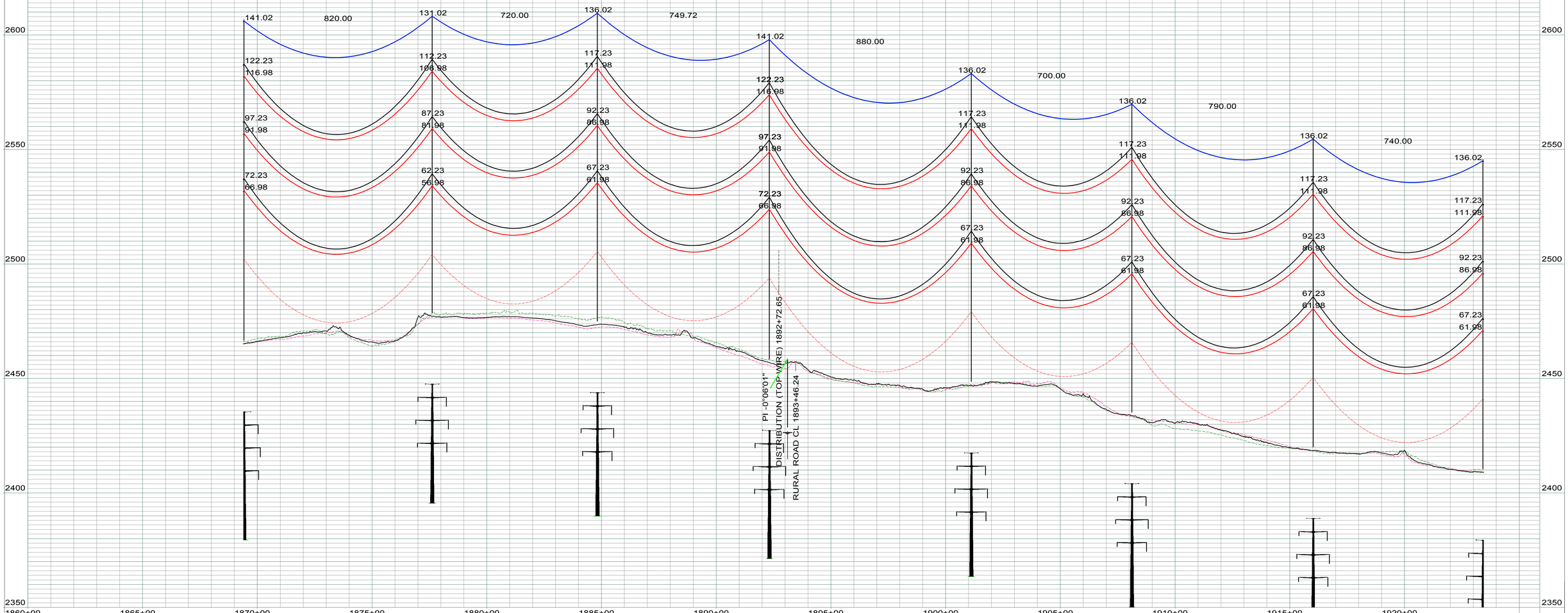
291-229
STA=1892+31.71
HT=141.50 ELE=2456.96
3-3DST-140
345KV - 837' RS
115KV - 835' RS

291-230
STA=1901+11.71
HT=136.50 ELE=2447.16
3-3DST-135
345KV - 837' RS
115KV - 835' RS

291-231
STA=1908+11.71
HT=136.50 ELE=2433.75
3-3DST-135
345KV - 837' RS
115KV - 835' RS

291-232
STA=1916+01.71
HT=136.50 ELE=2418.53
3-3DST-135
345KV - 837' RS
115KV - 835' RS

291-233
STA=1923+41.71
HT=136.50 ELE=2409.08
3-3DST-135
345KV - 837' RS
115KV - 835' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	837	10183	21565	--	--	--
OPGW AC-71/571 (GREEN)	837	2225	6196	--	--	--
OPGW AC-74/552 (BLUE)	835	2171	5974	--	--	--
115KV TERN CONDUCTOR (BLK)	835	3406	8752	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

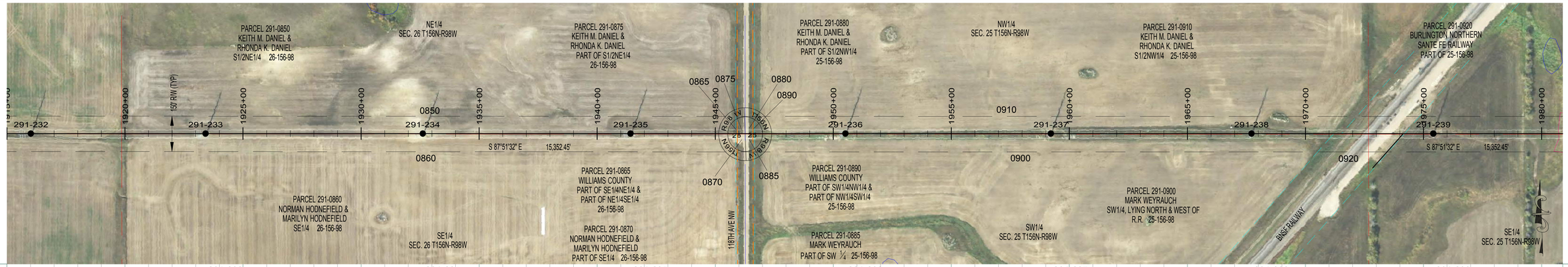
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 1860+00 TO 1923+45
STRUCTURE: 291-225 TO 291-233

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-042
REV. NO. 1



291-233
STA=1923+41.71
HT=136.50 ELE=2409.08
3-3DST-135
345KV - 837' RS
115KV - 835' RS

291-234
STA=1932+61.71
HT=131.50 ELE=2420.54
3-3DST-130
345KV - 837' RS
115KV - 835' RS

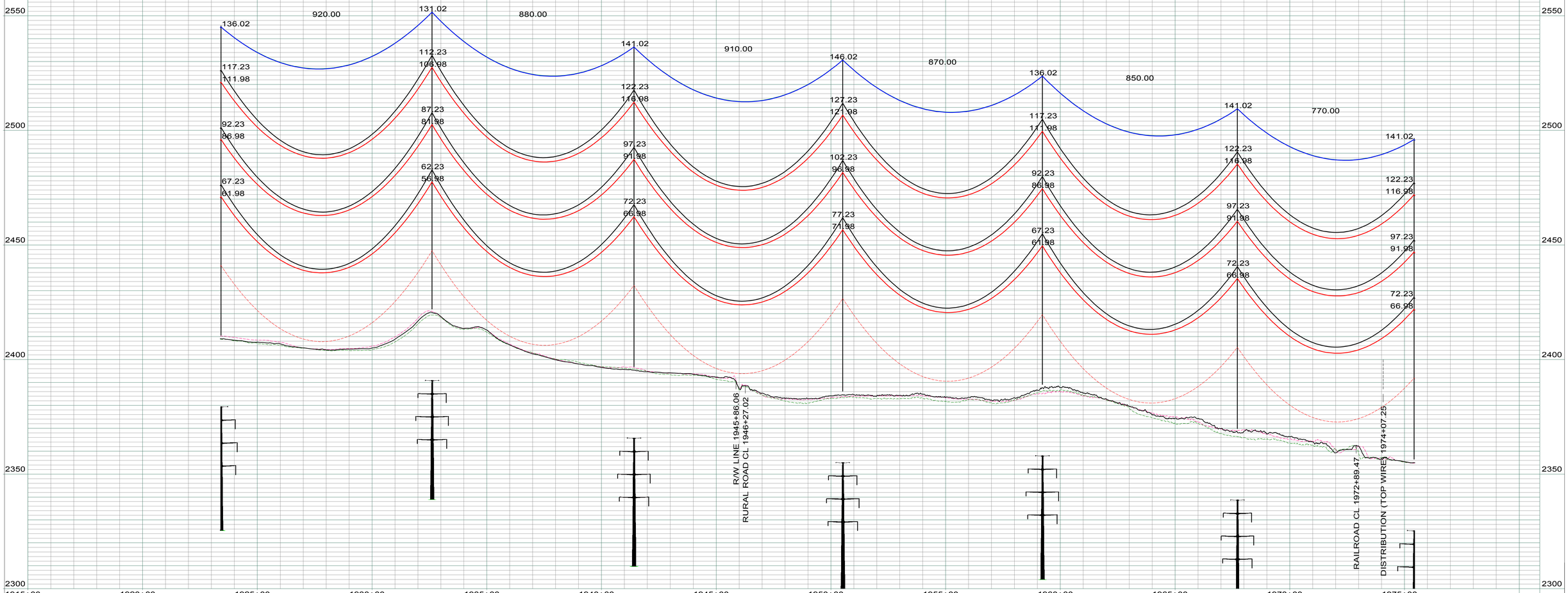
291-235
STA=1941+41.71
HT=141.50 ELE=2395.37
3-3DST-140
345KV - 837' RS
115KV - 835' RS

291-236
STA=1950+51.71
HT=146.50 ELE=2384.68
3-3DST-145
194993.085
345KV - 837' RS
115KV - 835' RS

291-237
STA=1959+21.71
HT=136.50 ELE=2387.65
3-3DST-135
345KV - 837' RS
115KV - 835' RS

291-238
STA=1967+71.71
HT=141.50 ELE=2368.37
3-3DST-140
CROSSING - 1 PHASE
345KV - 837' RS
115KV - 835' RS

291-239
STA=1975+41.71
HT=141.50 ELE=2354.99
3-3DST-140
345KV - 837' RS
115KV - 835' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	837	10183	21565	--	--	--
OPGW AC-71/571 (GREEN)	837	2225	6196	--	--	--
OPGW AC-74/552 (BLUE)	835	2171	5974	--	--	--
115KV TERN CONDUCTOR (BLK)	835	3406	8752	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

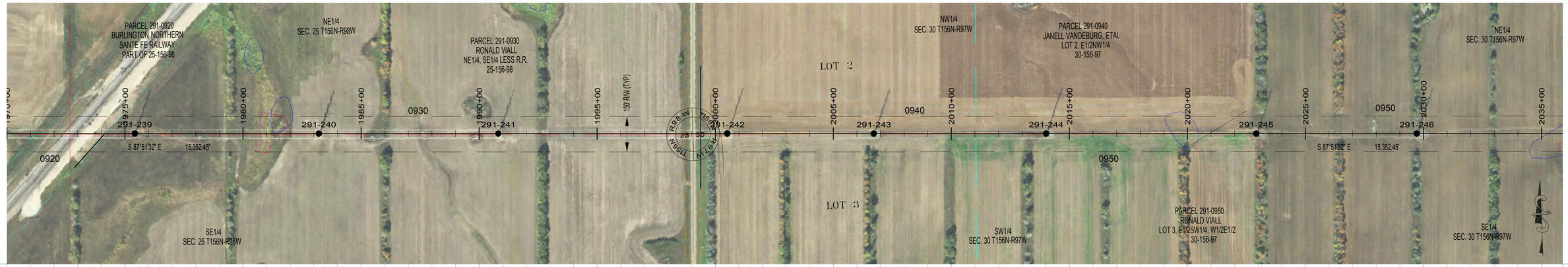
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 1915+00 TO 1975+45
STRUCTURE: 291-232 TO 291-239

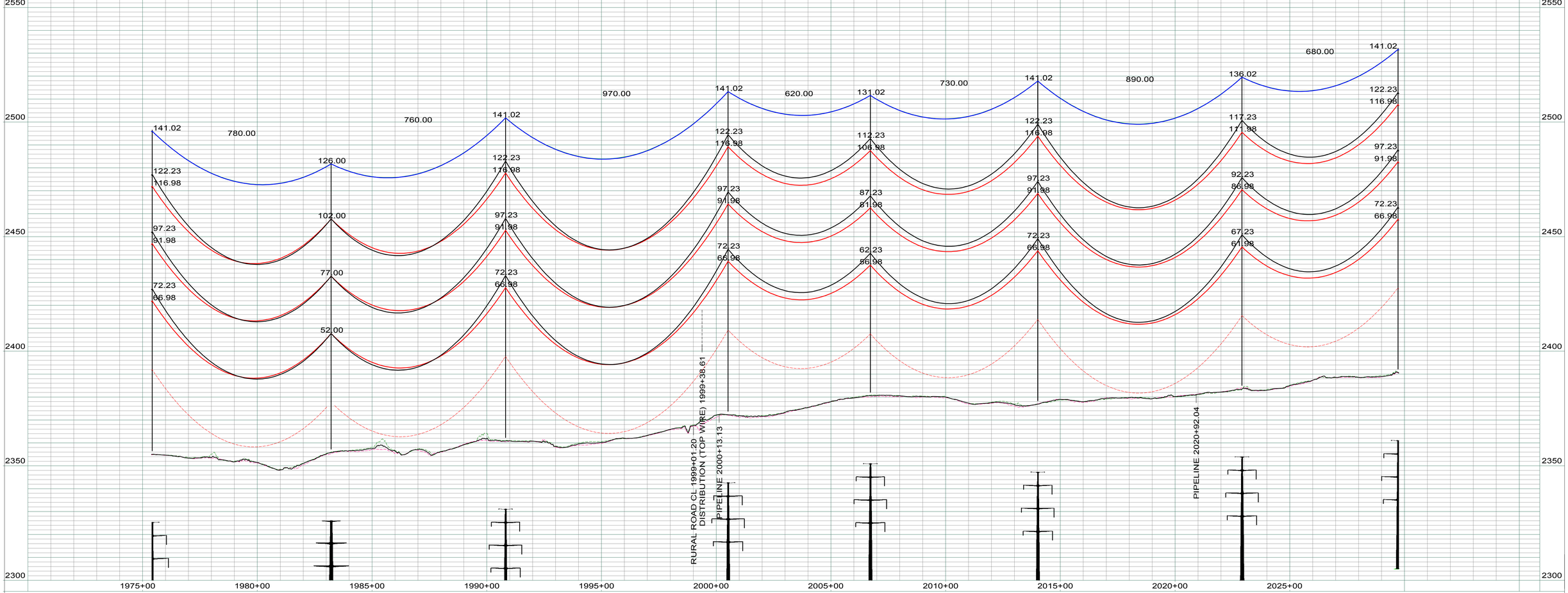
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-043
REV. NO. 1



291-239	291-240	291-241	291-242	291-243	291-244	291-245	291-246
STA=1975+41.71	STA=1983+21.71	STA=1990+81.71	STA=2000+51.71	STA=2006+71.71	STA=2014+01.71	STA=2022+91.71	STA=2029+71.71
HT=141.50 ELE=2354.99	HT=126.50 ELE=2355.74	HT=141.50 ELE=2360.79	HT=141.50 ELE=2372.27	HT=131.50 ELE=2380.58	HT=141.50 ELE=2376.89	HT=136.50 ELE=2383.55	HT=141.50 ELE=2390.70
3-3DST-140	3-1DSD10-125	3-3DST-140	3-3DST-140	3-3DST-130	3-3DST-140	3-3DST-135	3-3DST-140
345KV - 837' RS	OPGW SPLICE (2)	CROSSING - 1 PHASE	345KV - 877' RS	345KV - 877' RS	345KV - 877' RS	345KV - 877' RS	345KV - 877' RS
115KV - 835' RS	345KV - END 837' RS, BEGIN 877' RS	345KV - 877' RS	115KV - 877' RS	115KV - 877' RS	115KV - 877' RS	115KV - 877' RS	115KV - 877' RS
	115KV - END 835' RS, BEGIN 877' RS	115KV - 877' RS					



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	837	10183	21565	877	10372	21780
OPGW AC-71/571 (GREEN)	837	2225	6196	877	2253	6307
OPGW AC-74/552 (BLUE)	835	2171	5974	877	2198	6089
115KV TERN CONDUCTOR (BLK)	835	3406	8752	877	3410	8755

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 1970+00 TO 2029+75
STRUCTURE: 291-239 TO 291-246

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

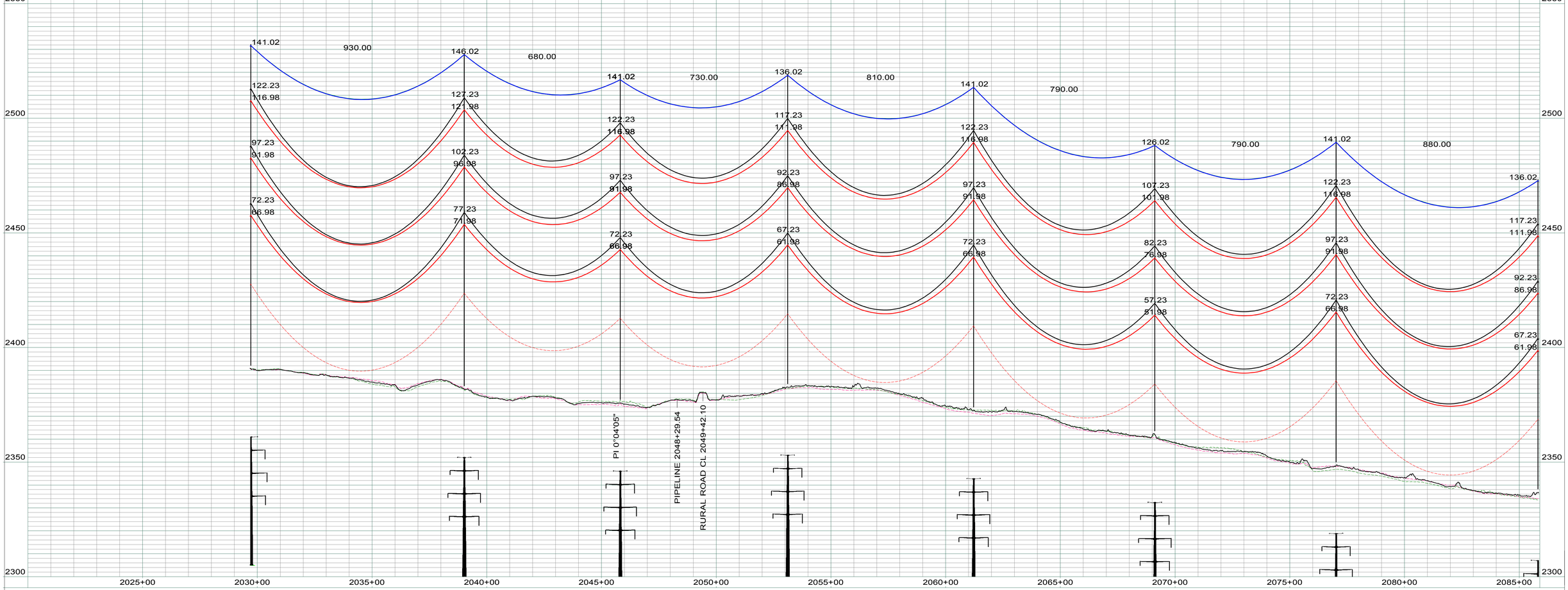
SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-044

REV. NO.: 1



291-246	291-247	291-248	291-249	291-250	291-251	291-252	291-253
STA=2029+71.71	STA=2039+01.71	STA=2045+81.71	STA=2053+11.71	STA=2061+21.71	STA=2069+11.71	STA=2077+01.71	STA=2085+81.71
HT=141.50 ELE=2390.70	HT=146.50 ELE=2381.73	HT=141.50 ELE=2375.77	HT=136.50 ELE=2382.73	HT=141.50 ELE=2372.47	HT=126.50 ELE=2362.09	HT=141.50 ELE=2348.54	HT=136.50 ELE=2336.78
3-3DST-140	3-3DST-145	3-3DST-140	3-3DST-135	3-3DST-140	3-3DST-125	3-3DST-140	3-3DST-135
345KV - 877' RS	345KV - 877' RS	345KV - 877' RS	345KV - 877' RS	345KV - 877' RS	345KV - 877' RS	345KV - 877' RS	345KV - 877' RS
115KV - 877' RS	115KV - 877' RS	115KV - 877' RS	115KV - 877' RS	115KV - 877' RS	115KV - 877' RS	115KV - 877' RS	115KV - 877' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	877	10372	21780	--	--	--
OPGW AC-71/571 (GREEN)	877	2253	6307	--	--	--
OPGW AC-74/552 (BLUE)	877	2198	6089	--	--	--
115KV TERN CONDUCTOR (BLK)	877	3410	8755	--	--	--

DESIGN BY: S. VASBINDER	DATE:	04/16
DRAWN BY: C. KNOLL	DATE:	04/16
DESIGN CHK: R. NASSET	DATE:	04/16
DRAFT CHK: R. LANG	DATE:	04/16
APPROVED: S. WISEMAN	DATE:	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

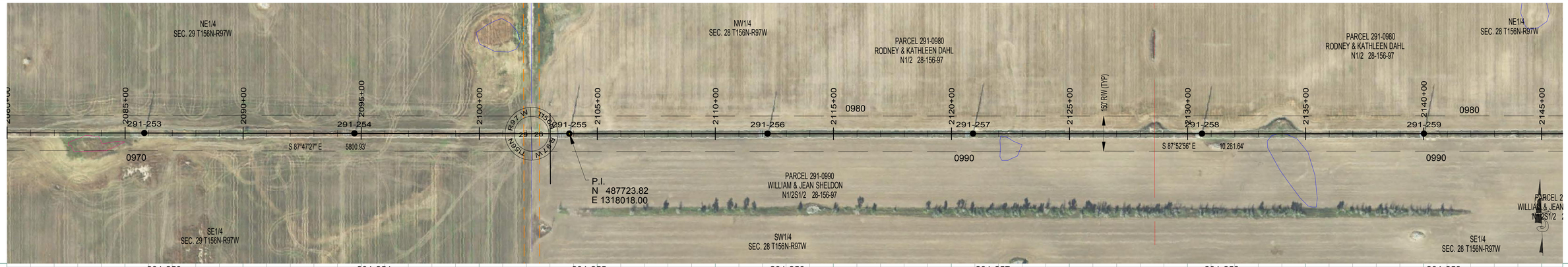
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2020+00 TO 2085+85
STRUCTURE: 291-245 TO 291-253

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-045

REV. NO. 1



291-253
STA=2085+81.71
HT=136.50 ELE=2336.78
3-3DST-135
345KV - 877' RS
115KV - 877' RS

291-254
STA=2094+71.71
HT=141.50 ELE=2328.35
3-3DST-140
CROSSING - 1 PHASE
345KV - 877' RS
115KV - 877' RS

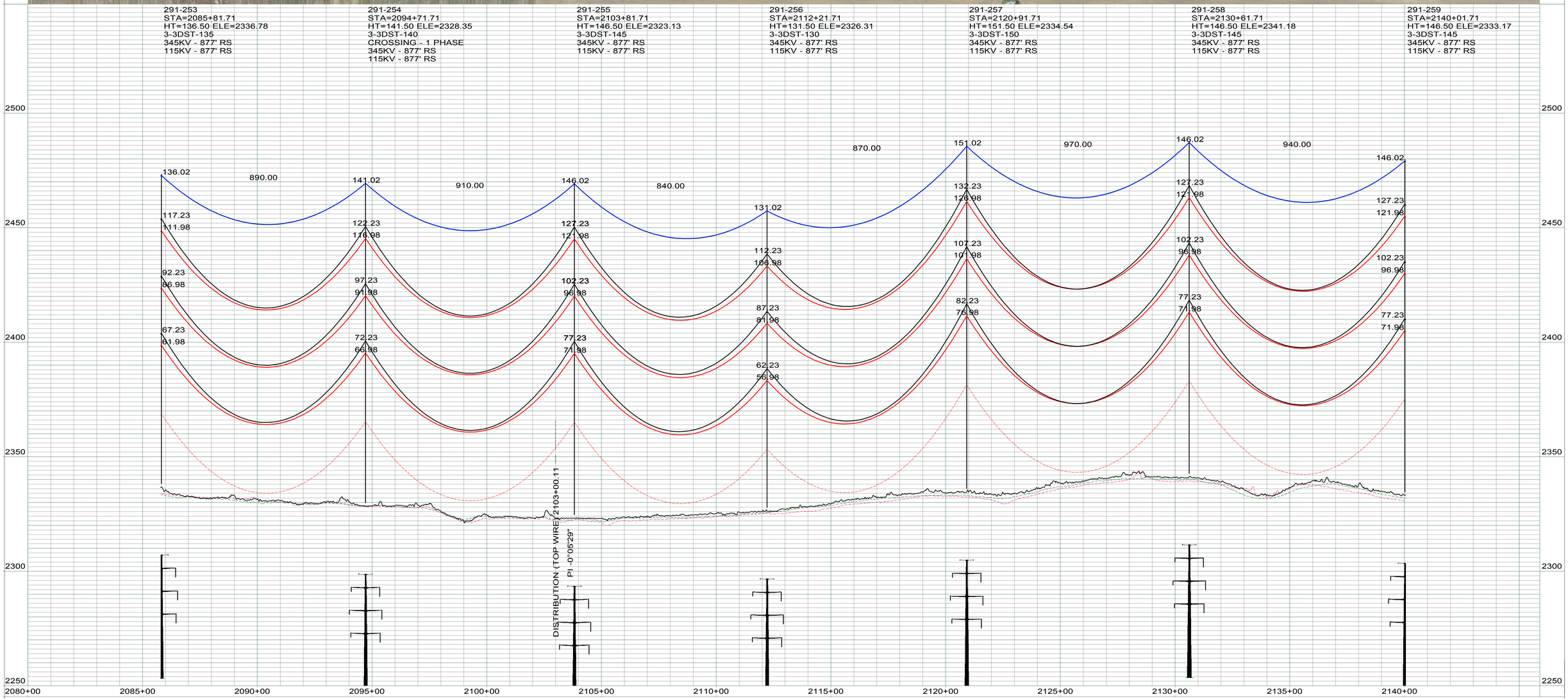
291-255
STA=2103+81.71
HT=146.50 ELE=2323.13
3-3DST-145
345KV - 877' RS
115KV - 877' RS

291-256
STA=2112+21.71
HT=131.50 ELE=2326.31
3-3DST-130
345KV - 877' RS
115KV - 877' RS

291-257
STA=2120+91.71
HT=151.50 ELE=2334.54
3-3DST-150
345KV - 877' RS
115KV - 877' RS

291-258
STA=2130+61.71
HT=146.50 ELE=2341.18
3-3DST-145
345KV - 877' RS
115KV - 877' RS

291-259
STA=2140+01.71
HT=146.50 ELE=2333.17
3-3DST-145
345KV - 877' RS
115KV - 877' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	877	10372	21780	--	--	--
OPGW AC-71/571 (GREEN)	877	2253	6307	--	--	--
OPGW AC-74/552 (BLUE)	877	2198	6089	--	--	--
115KV TERN CONDUCTOR (BLK)	877	3410	8755	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

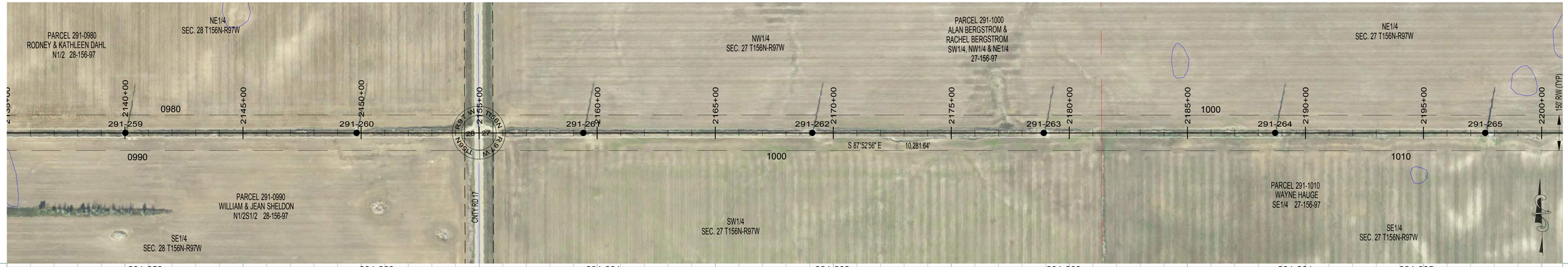
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2080+00 TO 2140+05
STRUCTURE: 291-253 TO 291-259

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-046
REV. NO. 1



291-259
STA=2140+01.71
HT=146.50 ELE=2333.17
3-3DST-145
345KV - 877' RS
115KV - 877' RS

291-260
STA=2149+81.71
HT=151.50 ELE=2329.39
3-3DST-150
345KV - 877' RS
115KV - 877' RS

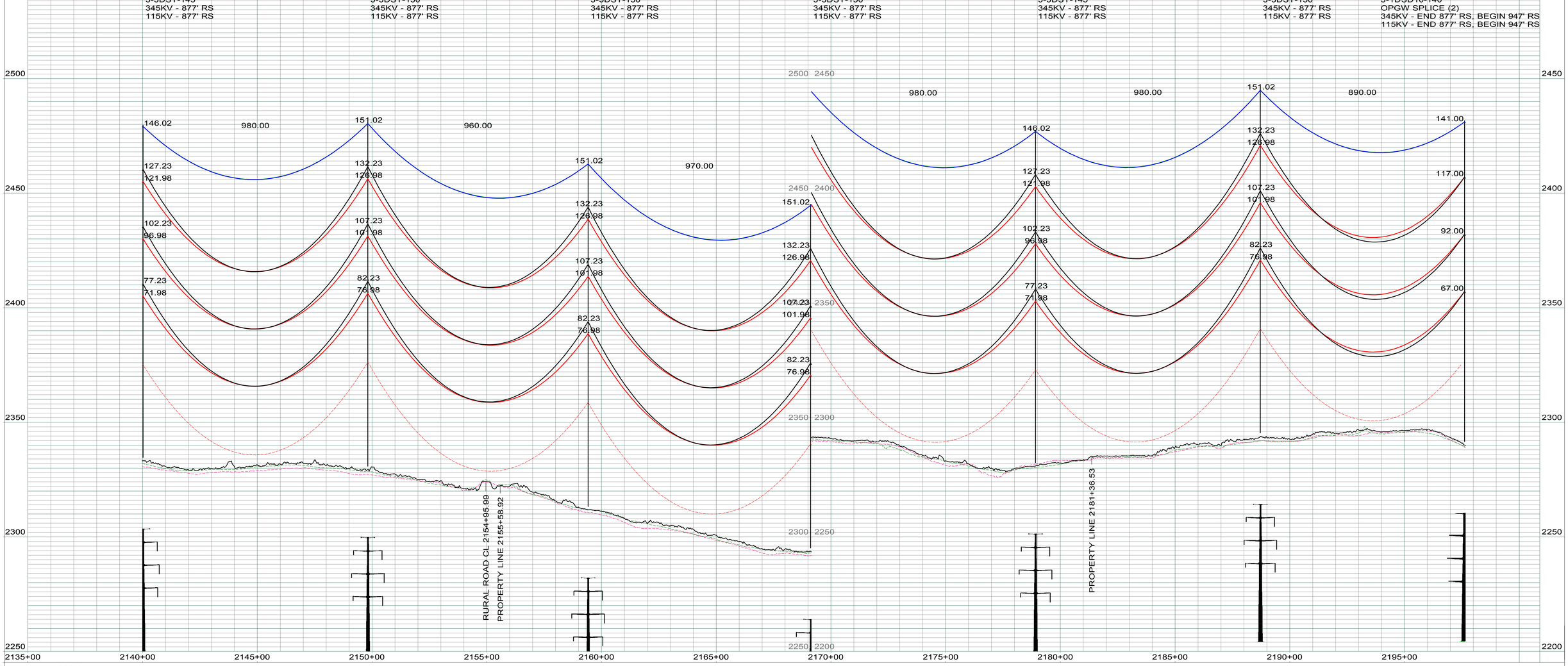
291-261
STA=2159+41.71
HT=151.50 ELE=2311.73
3-3DST-150
345KV - 877' RS
115KV - 877' RS

291-262
STA=2169+11.71
HT=151.50 ELE=2293.66
3-3DST-150
345KV - 877' RS
115KV - 877' RS

291-263
STA=2178+91.71
HT=146.50 ELE=2280.92
3-3DST-145
345KV - 877' RS
115KV - 877' RS

291-264
STA=2188+71.71
HT=151.50 ELE=2293.89
3-3DST-150
345KV - 877' RS
115KV - 877' RS

291-265
STA=2197+61.71
HT=141.50 ELE=2290.09
3-1DSD10-140
OPGW SPLICE (2)
345KV - END 877' RS, BEGIN 947' RS
115KV - END 877' RS, BEGIN 947' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	877	10372	21780	--	--	--
OPGW AC-71/571 (GREEN)	877	2253	6307	--	--	--
OPGW AC-74/552 (BLUE)	877	2198	6089	--	--	--
115KV TERN CONDUCTOR (BLK)	877	3410	8755	--	--	--

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

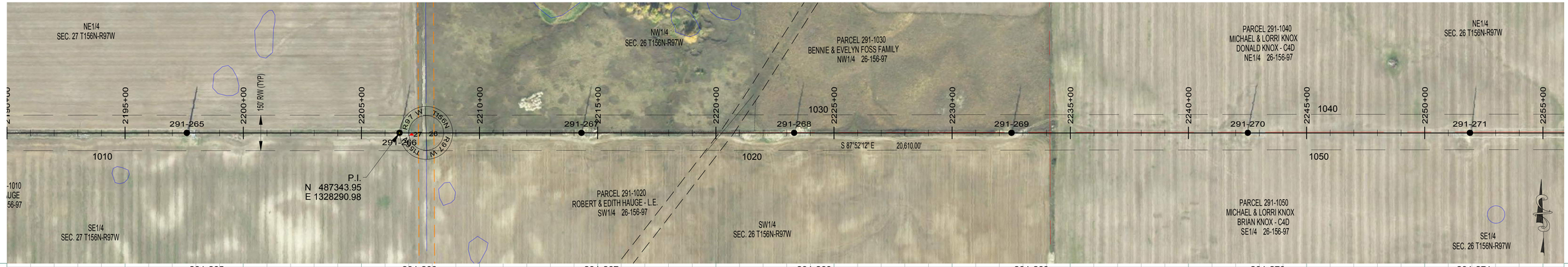
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2135+00 TO 2197+65
STRUCTURE: 291-259 TO 291-265

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-047
REV. NO.: 1



291-265
STA=2197+61.71
HT=141.50 ELE=2290.09
3-1DSD10-140
OPGW SPLICE (2)
345KV - END 877' RS, BEGIN 947' RS
115KV - END 877' RS, BEGIN 947' RS

291-266
STA=2206+61.71
HT=146.50 ELE=2273.06
3-3DST-145
345KV - 947' RS
115KV - 947' RS

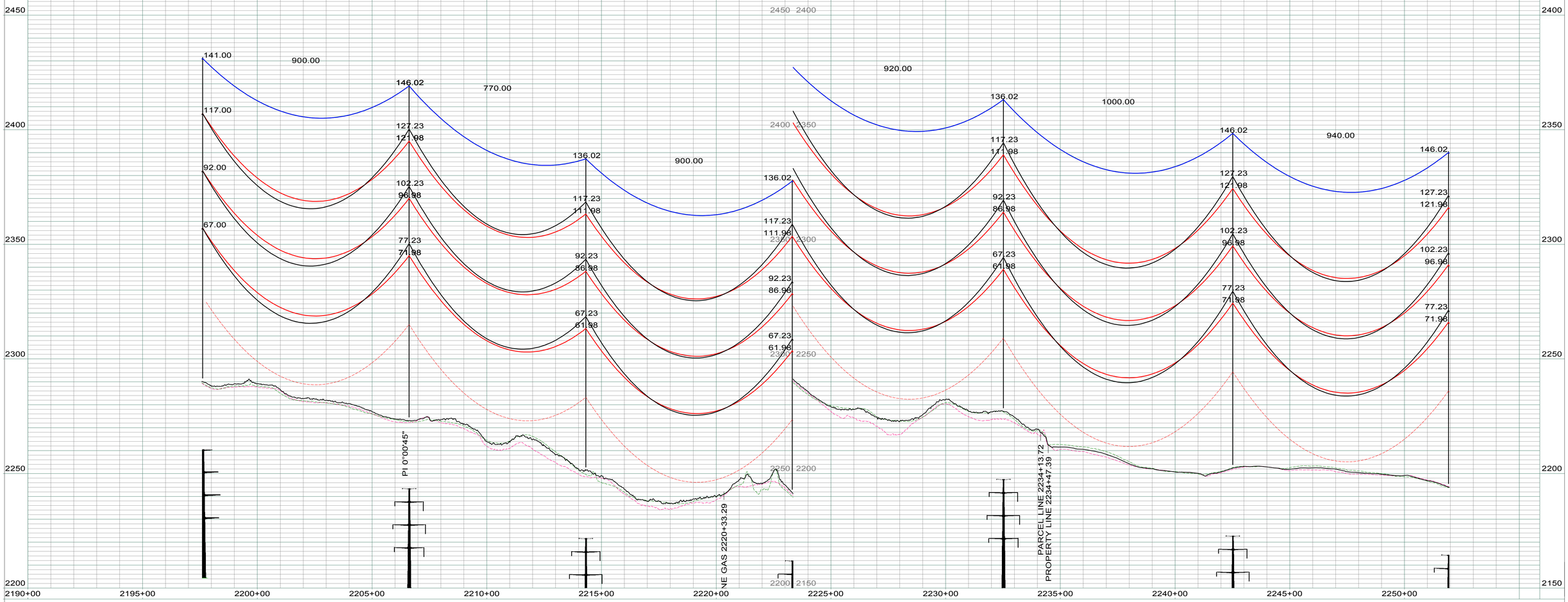
291-267
STA=2214+31.72
HT=136.50 ELE=2251.28
3-3DST-135
345KV - 947' RS
115KV - 947' RS

291-268
STA=2223+31.72
HT=136.50 ELE=2241.55
3-3DST-135
345KV - 947' RS
115KV - 947' RS

291-269
STA=2232+51.72
HT=136.50 ELE=2227.10
3-3DST-135
345KV - 947' RS
115KV - 947' RS

291-270
STA=2242+51.72
HT=146.50 ELE=2202.37
3-3DST-145
345KV - 947' RS
115KV - 947' RS

291-271
STA=2251+91.72
HT=146.50 ELE=2194.07
3-3DST-145
345KV - 947' RS
115KV - 947' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	877	10372	21780	947	10603	21906
OPGW AC-71/571 (GREEN)	877	2253	6307	947	2288	6480
OPGW AC-74/552 (BLUE)	877	2198	6089	947	2231	6258
115KV TERN CONDUCTOR (BLK)	877	3410	8755	947	3426	8784

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

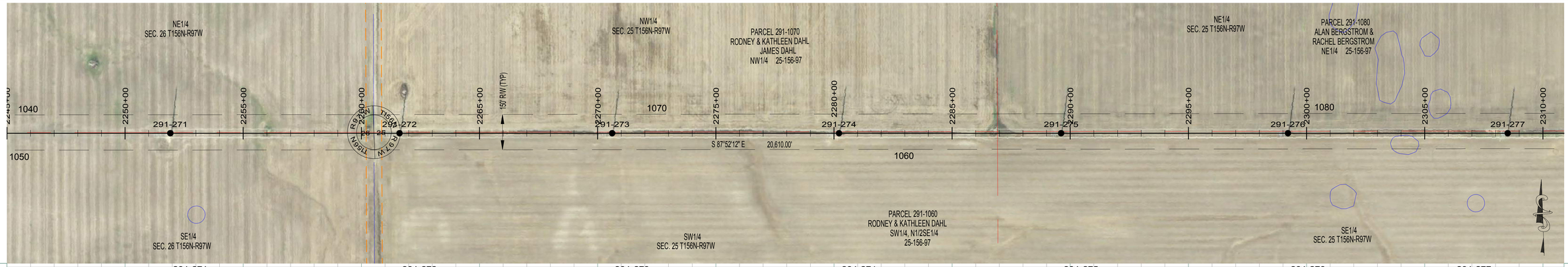
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2190+00 TO 2251+95
STRUCTURE: 291-265 TO 291-271

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-048
REV. NO.: 1



291-271
STA=2251+91.72
HT=146.50 ELE=2194.07
3-3DST-145
345KV - 947' RS
115KV - 947' RS

291-272
STA=2261+61.72
HT=136.50 ELE=2189.91
3-3DST-135
345KV - 947' RS
115KV - 947' RS

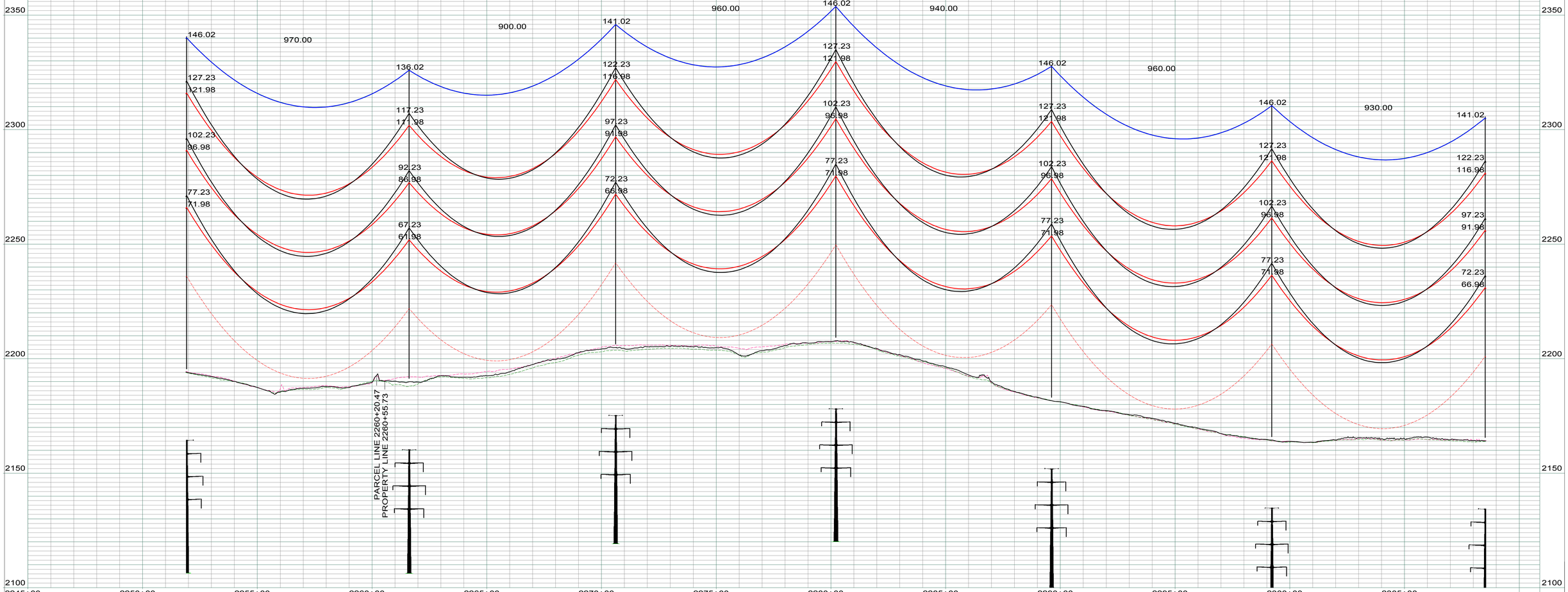
291-273
STA=2270+61.72
HT=141.50 ELE=2204.89
3-3DST-140
345KV - 947' RS
115KV - 947' RS

291-274
STA=2280+21.72
HT=146.50 ELE=2207.79
3-3DST-145
345KV - 947' RS
115KV - 947' RS

291-275
STA=2289+61.72
HT=146.50 ELE=2181.61
3-3DST-145
345KV - 947' RS
115KV - 947' RS

291-276
STA=2299+21.72
HT=146.50 ELE=2164.45
3-3DST-145
345KV - 947' RS
115KV - 947' RS

291-277
STA=2308+51.72
HT=141.50 ELE=2164.09
3-3DST-140
345KV - 947' RS
115KV - 947' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	947	10603	21906	--	--	--
OPGW AC-71/571 (GREEN)	947	2288	6480	--	--	--
OPGW AC-74/552 (BLUE)	947	2231	6258	--	--	--
115KV TERN CONDUCTOR (BLK)	947	3426	8784	--	--	--

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

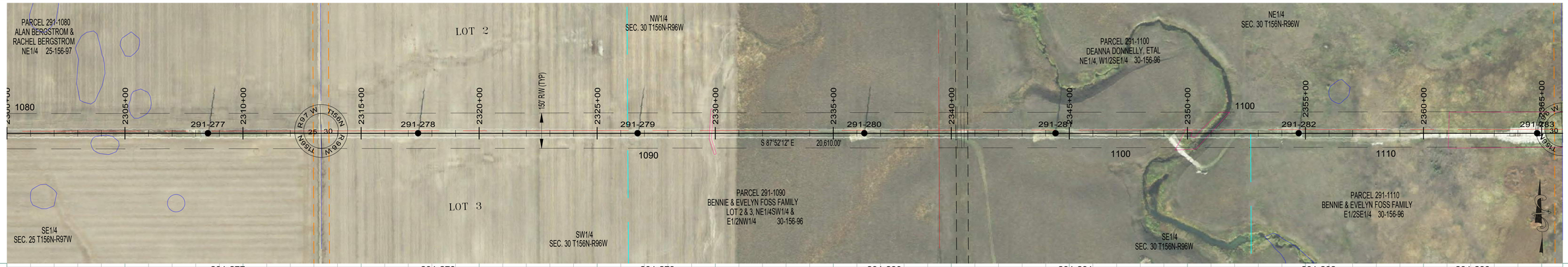
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2245+00 TO 2308+55
STRUCTURE: 291-271 TO 291-277

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-049

REV. NO. 1



291-277
STA=2308+51.72
HT=141.50 ELE=2164.09
3-3DST-140
345KV - 947' RS
115KV - 947' RS

291-278
STA=2317+41.72
HT=136.50 ELE=2151.38
3-3DST-135
345KV - 947' RS
115KV - 947' RS

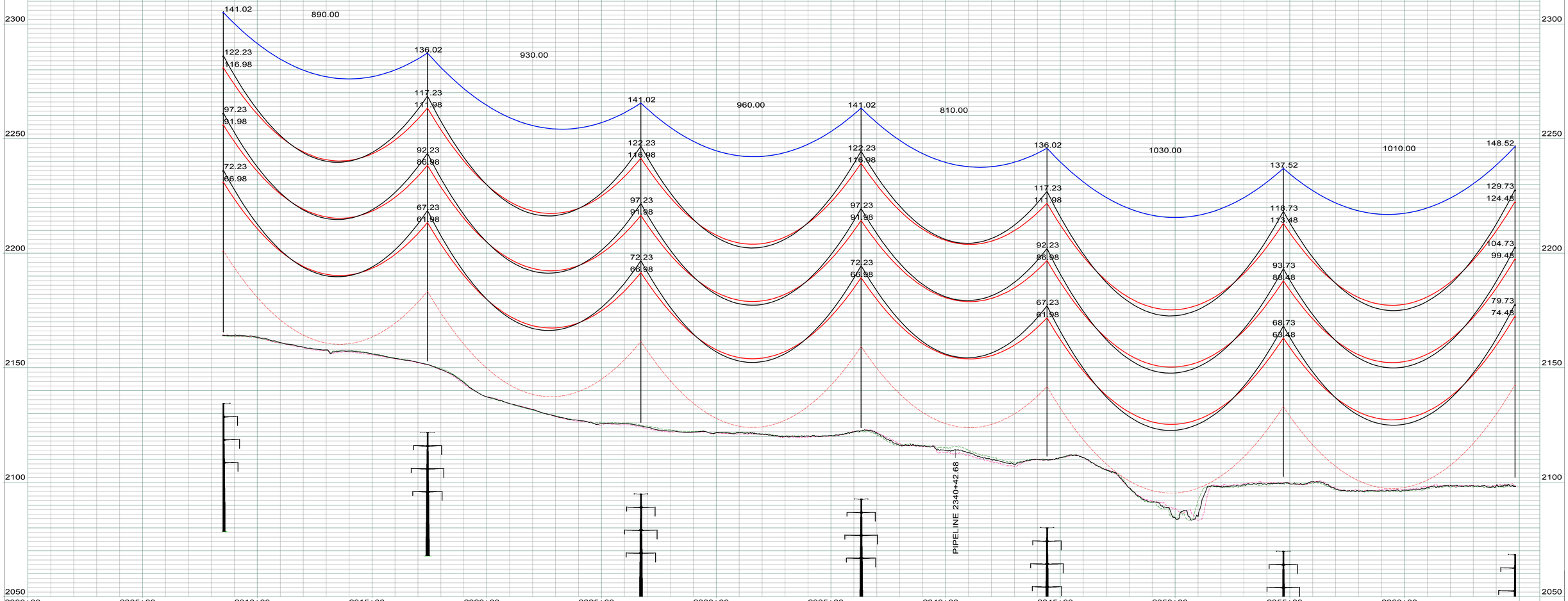
291-279
STA=2326+71.72
HT=141.50 ELE=2124.53
3-3DST-140
345KV - 947' RS
115KV - 947' RS

291-280
STA=2336+31.72
HT=141.50 ELE=2122.30
3-3DST-140
345KV - 947' RS
115KV - 947' RS

291-281
STA=2344+41.72
HT=136.50 ELE=2109.80
3-3DST-135
345KV - 947' RS
115KV - 947' RS

291-282
STA=2354+71.72
HT=138.00 ELE=2099.51
3-3DST-135
3' MIN FDN REVEAL
345KV - 947' RS
115KV - 947' RS

291-283
STA=2364+81.72
HT=149.00 ELE=2098.08
3-3DST-145
4' MIN FDN REVEAL
345KV - 947' RS
115KV - 947' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	947	10603	21906	--	--	--
OPGW AC-71/571 (GREEN)	947	2288	6480	--	--	--
OPGW AC-74/552 (BLUE)	947	2231	6258	--	--	--
115KV TERN CONDUCTOR (BLK)	947	3426	8784	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

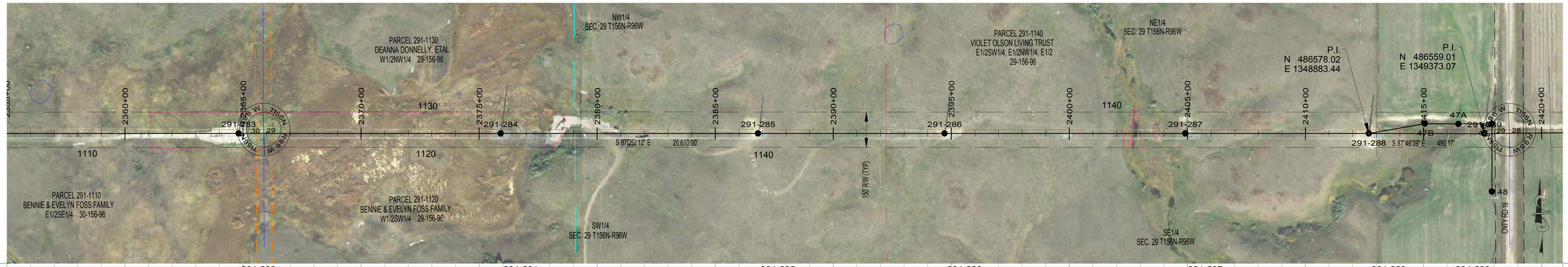
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

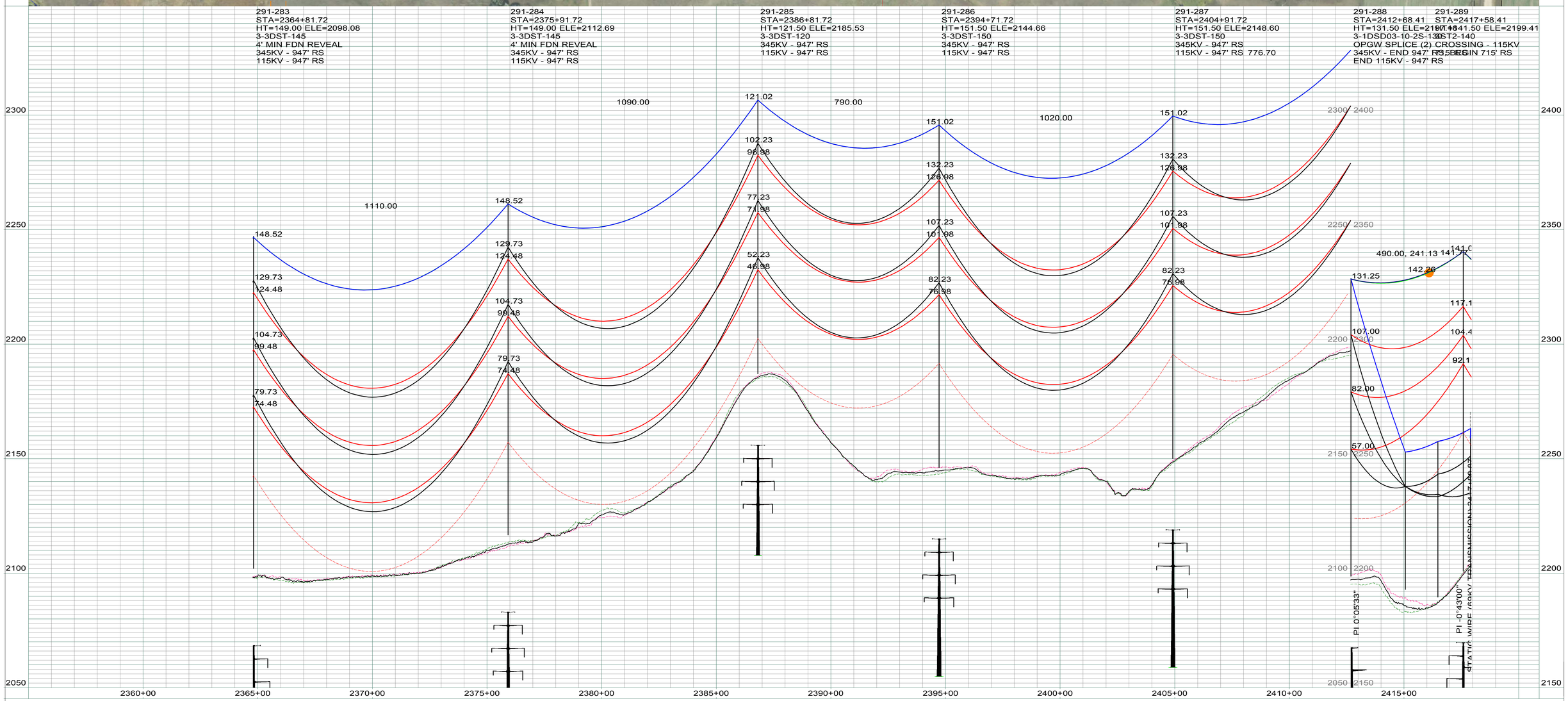
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2300+00 TO 2364+85
STRUCTURE: 291-277 TO 291-283

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-050
REV. NO. 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	947	10603	21906	--	--	--
OPGW AC-71/571 (GREEN)	947	2288	6480	--	--	--
OPGW AC-74/552 (BLUE)	947	2231	6258	--	--	--
115KV TERN CONDUCTOR (BLK)	947	3426	8784	--	--	--

DESIGN BY: S. VASBINDER	DATE: 04/16
DRAWN BY: C. KNOLL	DATE: 04/16
DESIGN CHK: R. NASSET	DATE: 04/16
DRAFT CHK: R. LANG	DATE: 04/16
APPROVED: S. WISEMAN	DATE: 04/16

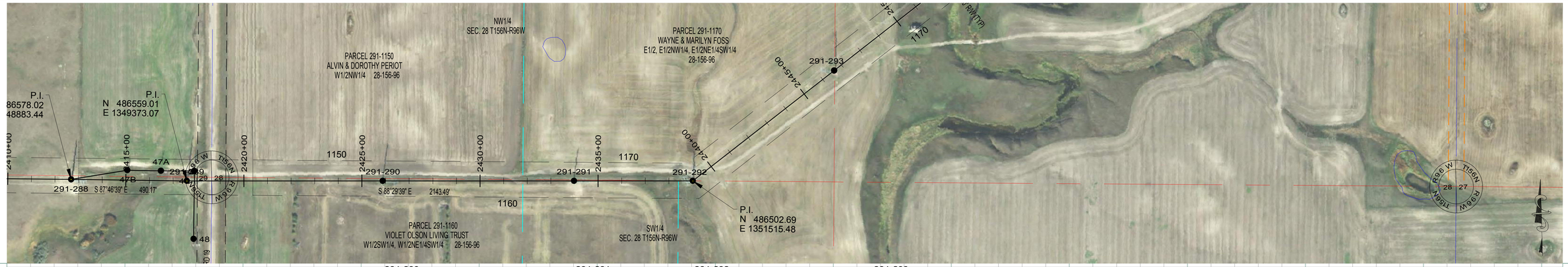
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2355+00 TO 2417+94
STRUCTURE: 291-283 TO 291-289

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-051
REV. NO. 1

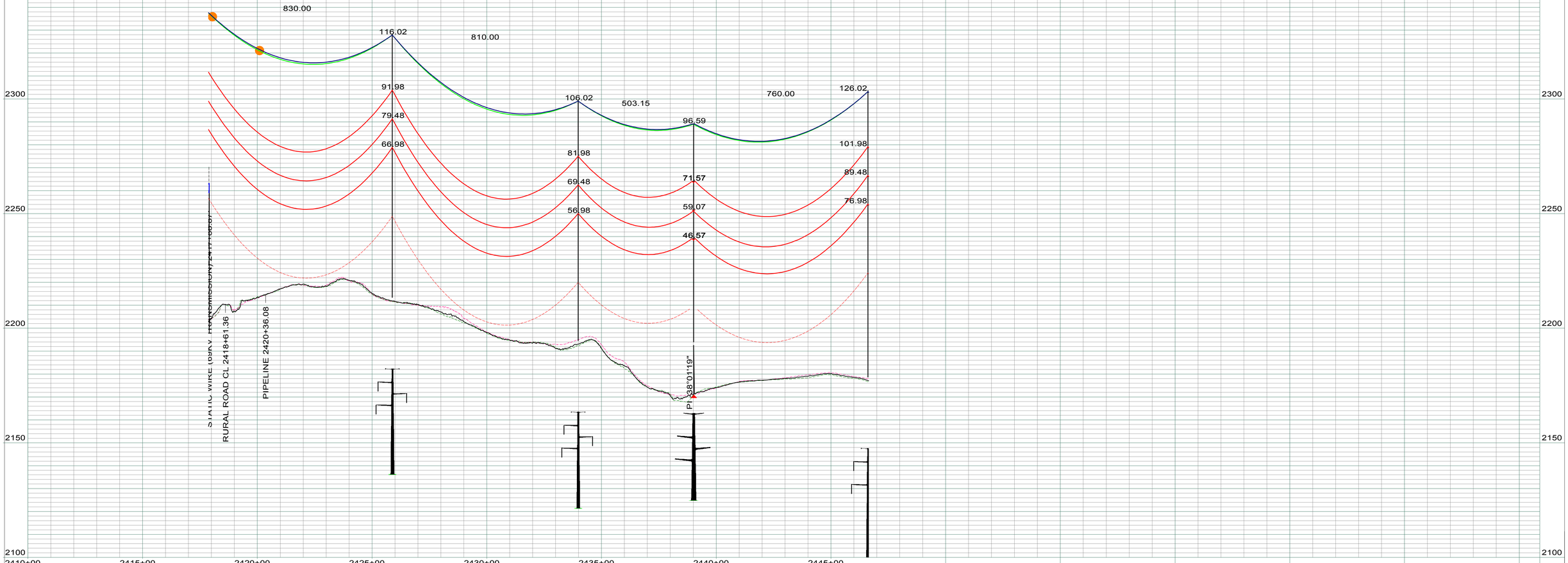


291-290
STA=2425+88.42
HT=116.50 ELE=2211.90
3ST2-115
715' RS

291-291
STA=2433+98.42
HT=106.50 ELE=2193.07
3ST2-105
715' RS

291-292
STA=2439+01.56
HT=96.59 ELE=2192.54
3SDA40-095
END 715' RS, BEGIN 959' RS

291-293
STA=2446+61.56
HT=126.50 ELE=2177.19
3ST2-125
959' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	947	10603	21906	715	9501	20759
OPGW AC-71/571 (GREEN)	947	2288	6480	716	2108	5802
OHGW 7/16`` EHS (BLUE)	0	0	0	715	2078	5145
115KV TERN CONDUCTOR (BLK)	947	3426	8784	0	0	0

		DATE
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

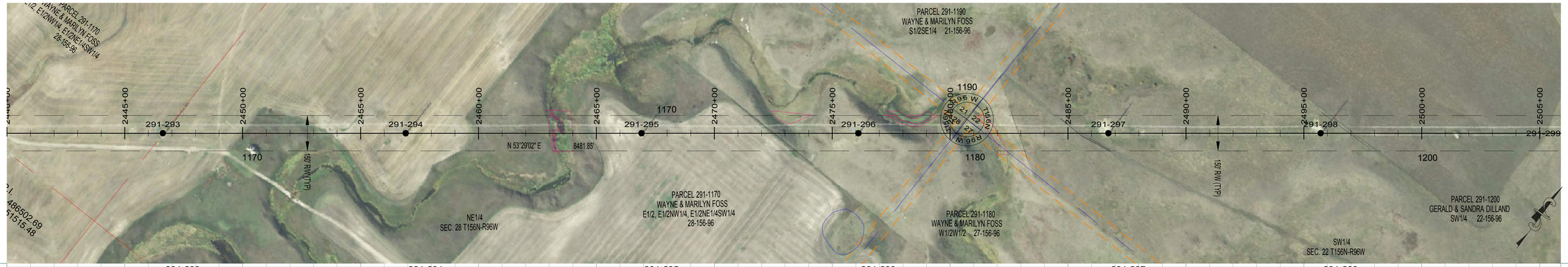
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2410+00 TO 2446+65
STRUCTURE: 291-288 TO 291-293

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-052
REV. NO.: 1



291-293
STA=2446+61.56
HT=126.50 ELE=2177.19
3ST2-125
959' RS

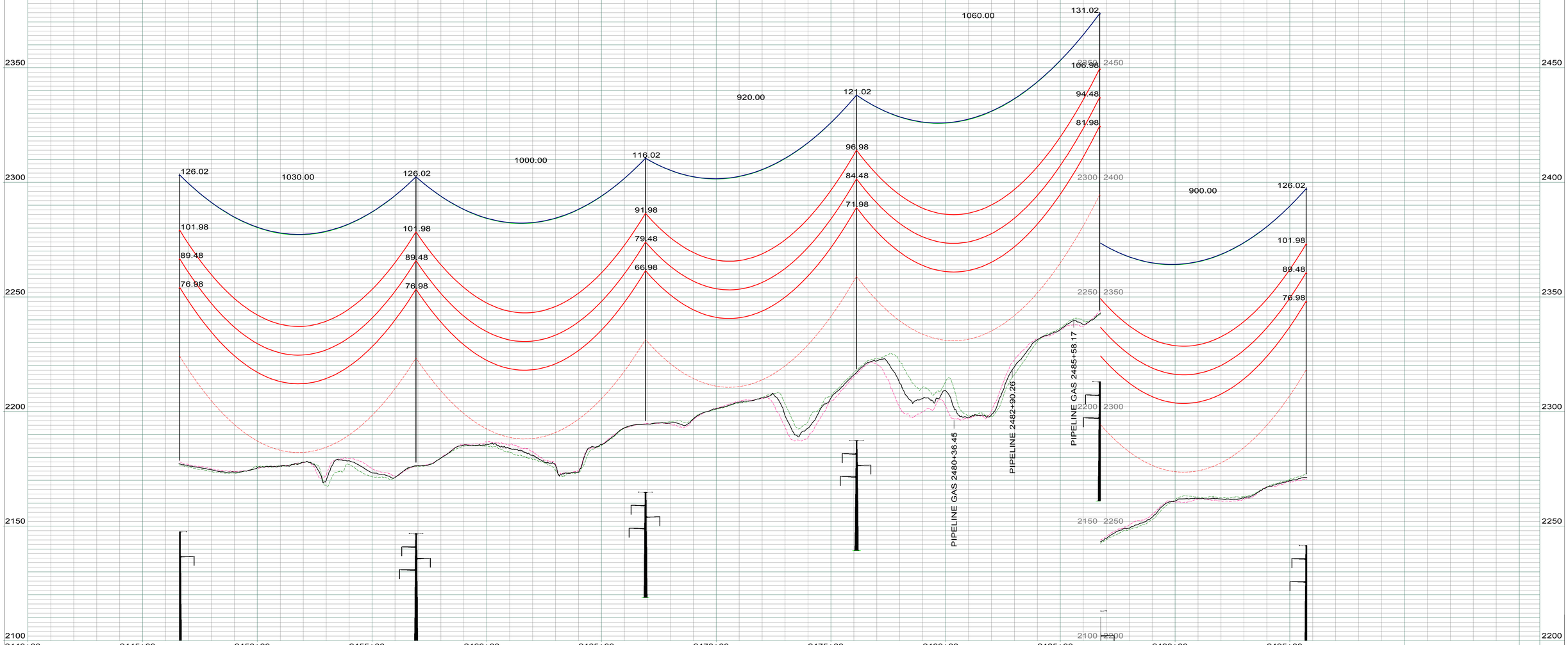
291-294
STA=2456+91.56
HT=126.50 ELE=2176.39
3ST2-125
959' RS

291-295
STA=2466+91.56
HT=116.50 ELE=2194.47
3ST2-115
959' RS

291-296
STA=2476+11.56
HT=121.50 ELE=2217.03
3ST2-120M2
959' RS

291-297
STA=2486+71.56
HT=131.50 ELE=2242.65
3ST2-130
959' RS

291-298
STA=2495+71.56
HT=126.50 ELE=2271.20
3ST2-125
959' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	959	10724	22150	--	--	--
OPGW AC-71/571 (GREEN)	958	2295	6510	--	--	--
OHGW 7/16`` EHS (BLUE)	959	2192	5765	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

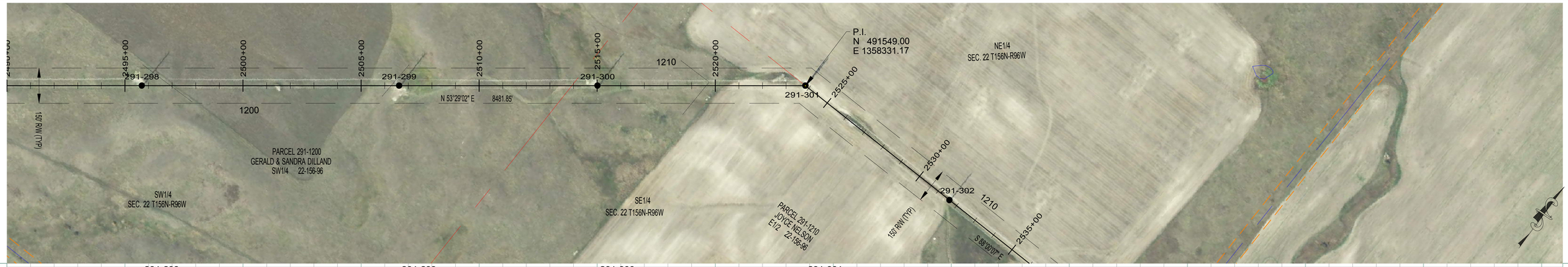
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2440+00 TO 2495+75
STRUCTURE: 291-293 TO 291-298

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-053
REV. NO. 1

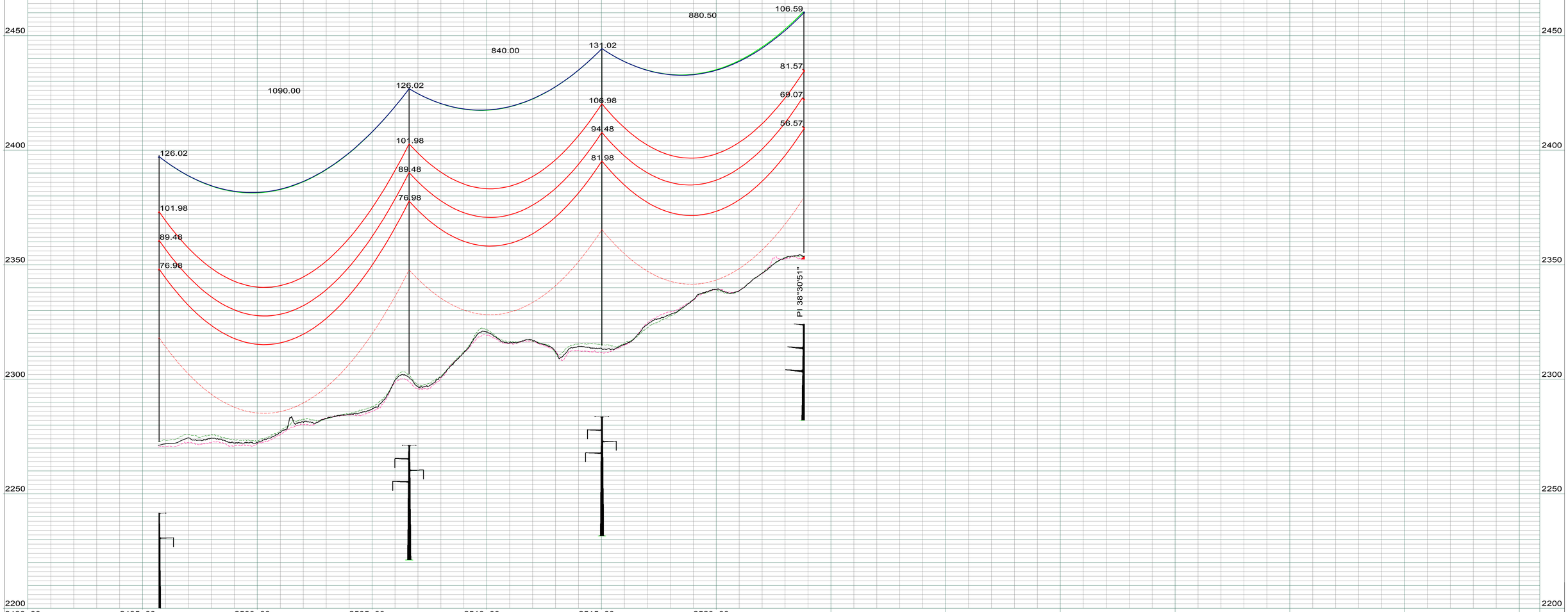


291-298
STA=2495+71.56
HT=126.50 ELE=2271.20
3ST2-125
959' RS

291-299
STA=2506+61.56
HT=126.50 ELE=2300.80
3ST2-125
959' RS

291-300
STA=2515+01.56
HT=131.50 ELE=2313.32
3ST2-130
959' RS

291-301
STA=2523+82.06
HT=106.59 ELE=2353.76
3SDA40-105
OPGW SPLICE
END 959' RS, BEGIN 931' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	959	10724	22150	--	--	--
OPGW AC-71/571 (GREEN)	958	2295	6510	--	--	--
OHGW 7/16`` EHS (BLUE)	959	2192	5765	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2490+00 TO 2523+85
STRUCTURE: 291-298 TO 291-301

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-054
REV. NO. 1



291-301
STA=2523+82.06
HT=106.59 ELE=2353.76
3SDA40-105
OPGW SPLICE
END 959' RS, BEGIN 931' RS

291-302
STA=2531+62.06
HT=106.50 ELE=2351.21
3ST2-105
931' RS

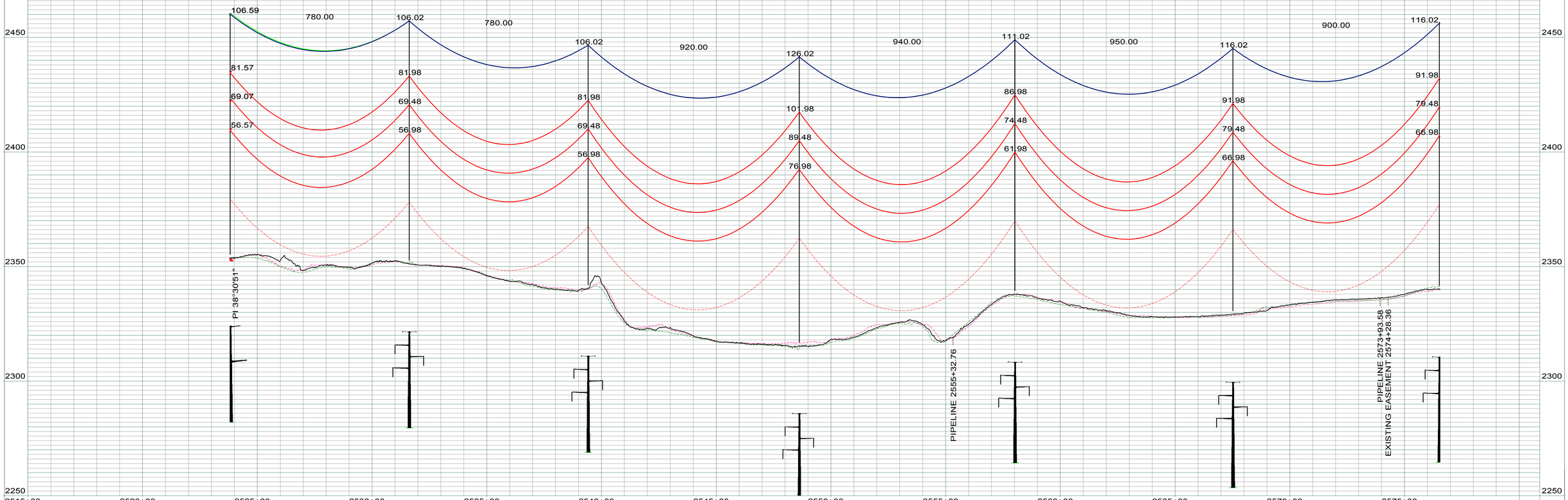
291-303
STA=2539+42.06
HT=106.50 ELE=2340.59
3ST2-105
931' RS

291-304
STA=2548+62.06
HT=126.50 ELE=2315.49
3ST2-125
931' RS

291-305
STA=2558+02.06
HT=111.50 ELE=2337.97
3ST2-110
931' RS

291-306
STA=2567+52.06
HT=116.50 ELE=2329.19
3ST2-115
931' RS

291-307
STA=2576+52.06
HT=116.50 ELE=2340.18
3ST2-115
931' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	931	10612	22030	--	--	--
OPGW AC-71/571 (GREEN)	931	2295	6465	--	--	--
OHGW 7/16`` EHS (BLUE)	931	2186	5706	--	--	--
--	--	--	--	--	--	--

		DATE
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

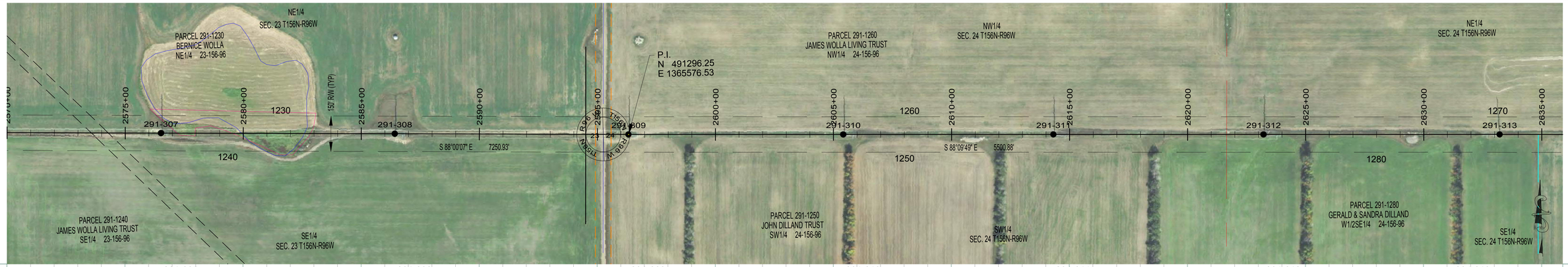
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2515+00 TO 2576+55
STRUCTURE: 291-300 TO 291-307

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-055
REV. NO.: 1



291-307
STA=2576+52.06
HT=116.50 ELE=2340.18
3ST2-115
931' RS

291-308
STA=2586+42.06
HT=126.50 ELE=2343.32
3ST2-125
CROSSING - 1 PHASE
931' RS

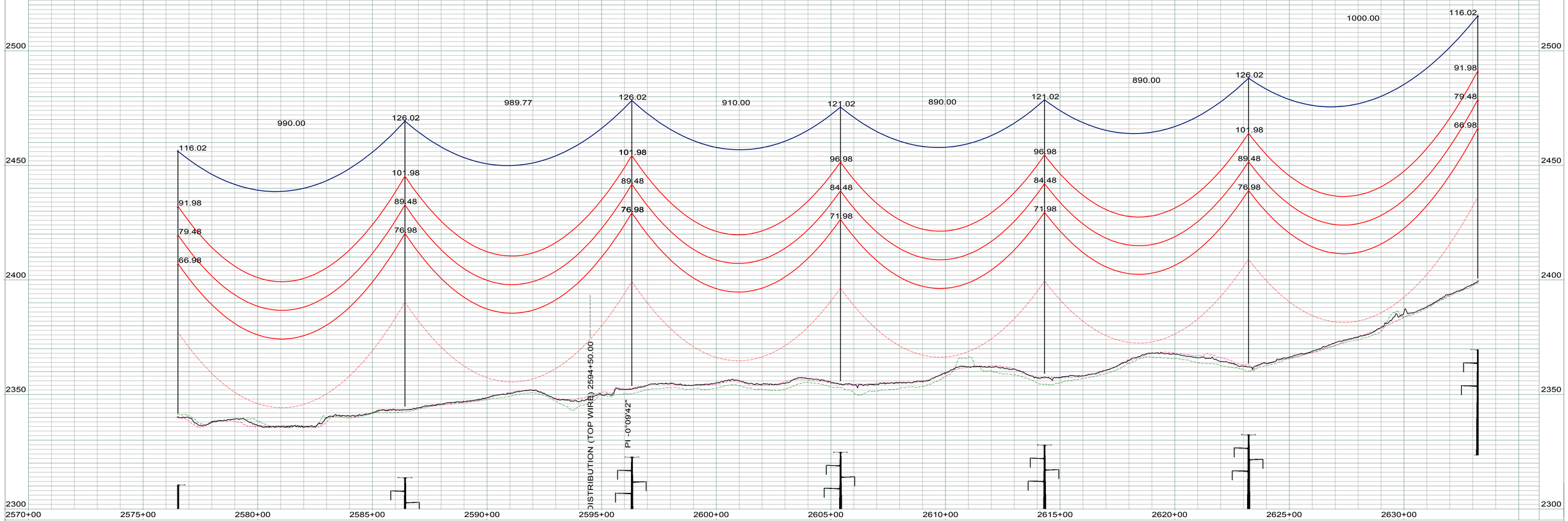
291-309
STA=2596+31.83
HT=126.50 ELE=2352.32
3ST2-125
931' RS

291-310
STA=2605+41.83
HT=121.50 ELE=2354.44
3ST2-120M2
931' RS

291-311
STA=2614+31.83
HT=121.50 ELE=2357.59
3ST2-120M2
931' RS

291-312
STA=2623+21.83
HT=126.50 ELE=2362.07
3ST2-125
931' RS

291-313
STA=2633+21.83
HT=116.50 ELE=2399.22
3ST2-115
931' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	931	10612	22030	--	--	--
OPGW AC-71/571 (GREEN)	931	2295	6465	--	--	--
OHGW 7/16`` EHS (BLUE)	931	2186	5706	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

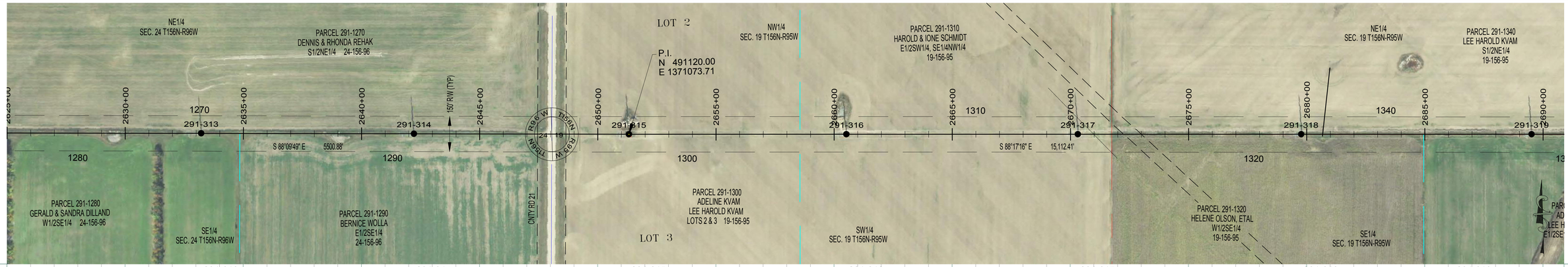
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 2570+00 TO 2633+25
STRUCTURE: 291-307 TO 291-313

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-056
REV. NO.: 1



291-313
STA=2633+21.83
HT=116.50 ELE=2399.22
3ST2-115
931' RS

291-314
STA=2642+21.83
HT=121.50 ELE=2396.03
3ST2-120M2
931' RS

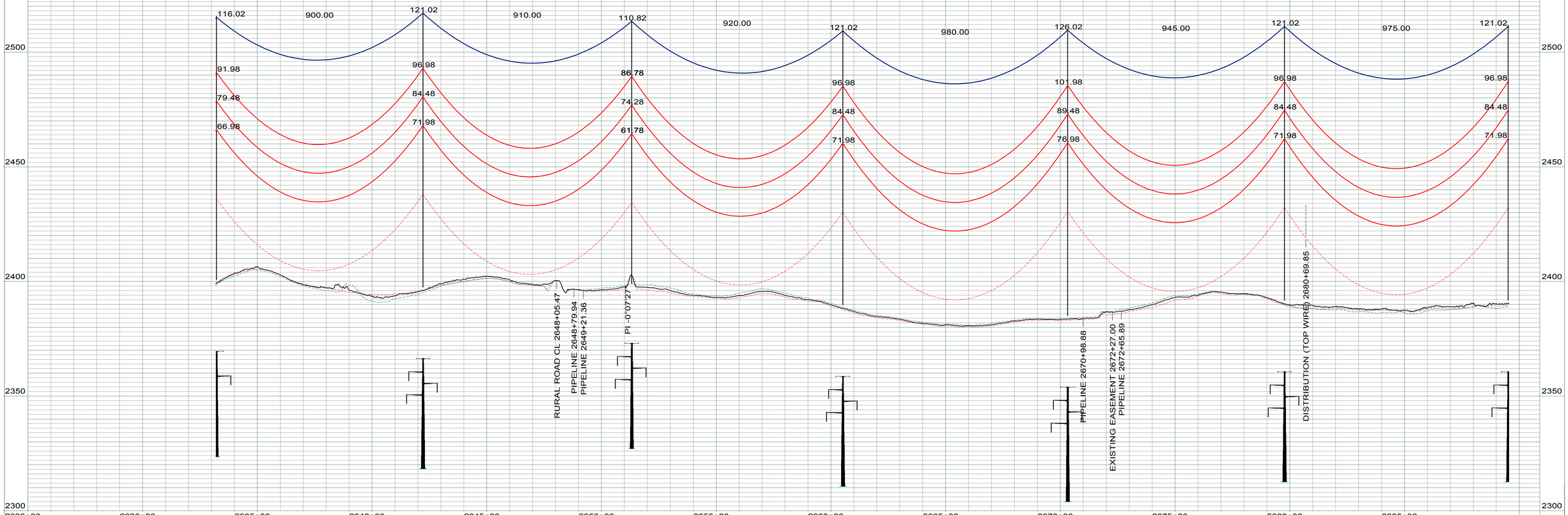
291-315
STA=2651+31.83
HT=111.30 ELE=2402.69
3ST2-115
931' RS

291-316
STA=2660+51.83
HT=121.50 ELE=2388.27
3ST2-120M2
931' RS

291-317
STA=2670+31.83
HT=126.50 ELE=2383.58
3ST2-125
931' RS

291-318
STA=2679+76.83
HT=121.50 ELE=2390.25
3ST2-120M2
CROSSING 1-PHASE
931' RS

291-319
STA=2689+51.83
HT=121.50 ELE=2390.27
3ST2-120M2
CROSSING 1-PHASE
931' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	931	10612	22030	--	--	--
OPGW AC-71/571 (GREEN)	931	2295	6465	--	--	--
OHGW 7/16`` EHS (BLUE)	931	2186	5706	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

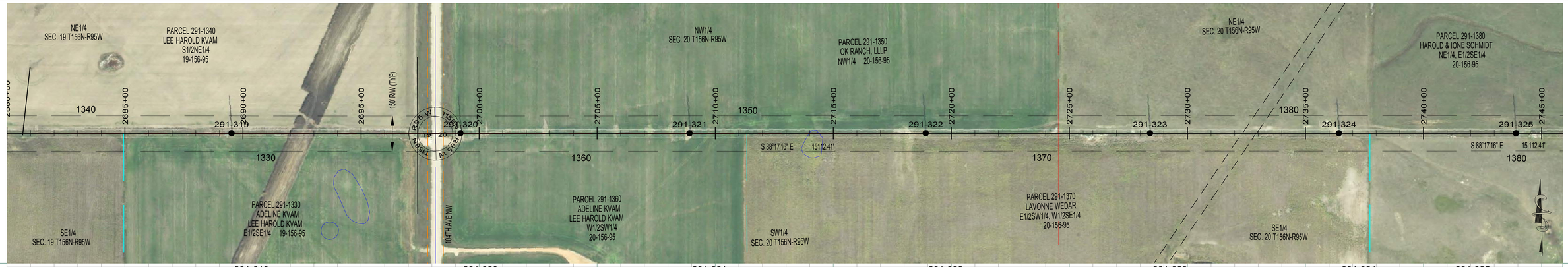
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2625+00 TO 2689+55
STRUCTURE: 291-313 TO 291-319

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-057
REV. NO. 1



291-319
STA=2689+51.83
HT=121.50 ELE=2390.27
3ST2-120M2
CROSSING 1-PHASE
931' RS

291-320
STA=2699+21.83
HT=123.00 ELE=2394.34
3ST2-120M2
FDN REVEAL = 3'
931' RS

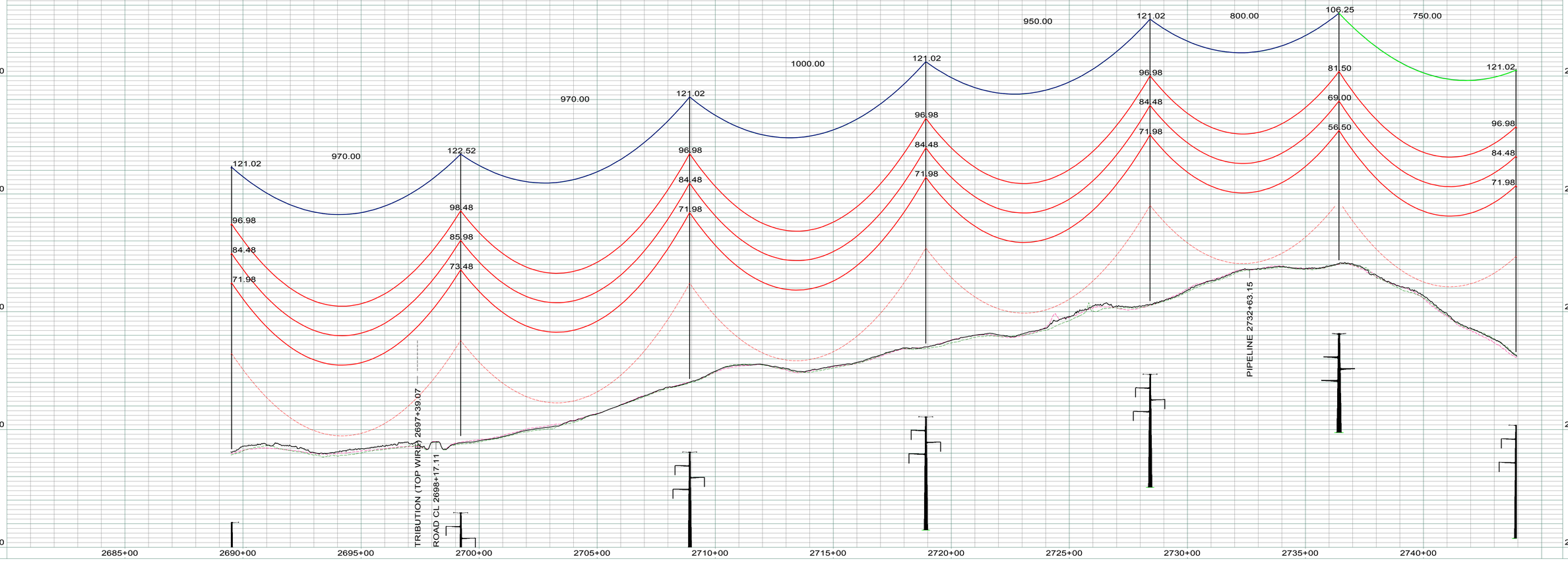
291-321
STA=2708+91.83
HT=121.50 ELE=2420.09
3ST2-120M2
931' RS

291-322
STA=2718+91.83
HT=121.50 ELE=2435.07
3ST2-120M2
931' RS

291-323
STA=2728+41.83
HT=121.50 ELE=2453.12
3ST2-120M2
931' RS

291-324
STA=2736+41.83
HT=106.50 ELE=2470.43
3SDA03-105
OPGW SPLICE
END 931' RS, BEGIN 894' RS

291-325
STA=2743+91.83
HT=121.50 ELE=2431.48
3ST2-120
CROSSING - 115KV
931' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	931	10612	22030	894	10436	21826
OPGW AC-71/571 (GREEN)	931	2295	6465	894	2266	6358
OHGW 7/16`` EHS (BLUE)	931	2186	5706	894	2167	5617
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

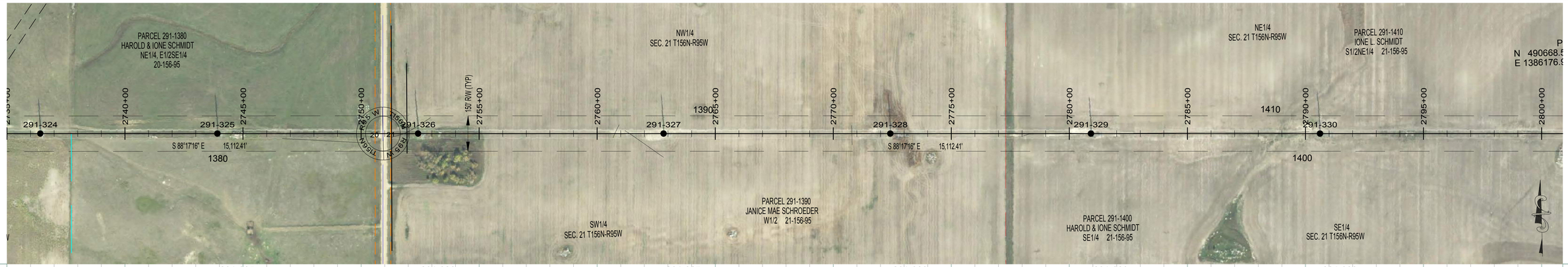
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 2680+00 TO 2743+95
STRUCTURE: 291-319 TO 291-325

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-058
REV. NO.: 1



291-325
STA=2743+91.83
HT=121.50 ELE=2431.48
3ST2-120
CROSSING - 115KV
894' RS

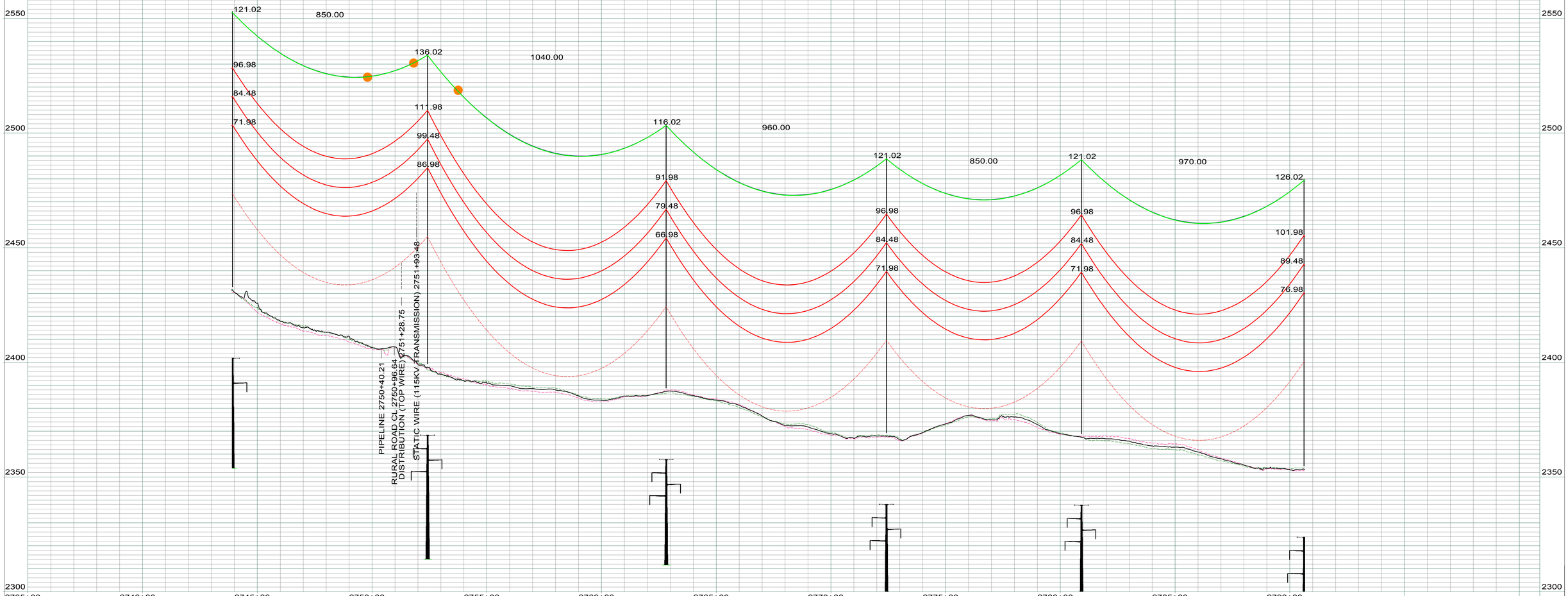
291-326
STA=2752+41.83
HT=136.50 ELE=2397.91
3ST2-135
894' RS

291-327
STA=2762+81.83
HT=116.50 ELE=2387.30
3ST2-115
894' RS

291-328
STA=2772+41.83
HT=121.50 ELE=2367.73
3ST2-120
894' RS

291-329
STA=2780+91.83
HT=121.50 ELE=2367.38
3ST2-120
894' RS

291-330
STA=2790+61.83
HT=126.50 ELE=2353.36
3ST2-125
894' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	894	10436	21826	--	--	--
OPGW AC-71/571 (GREEN)	894	2266	6358	--	--	--
OHGW 7/16`` EHS (BLUE)	894	2167	5617	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER 04/16
DRAWN BY: C. KNOLL 04/16
DESIGN CHK: R. NASSET 04/16
DRAFT CHK: R. LANG 04/16
APPROVED: S. WISEMAN 04/16

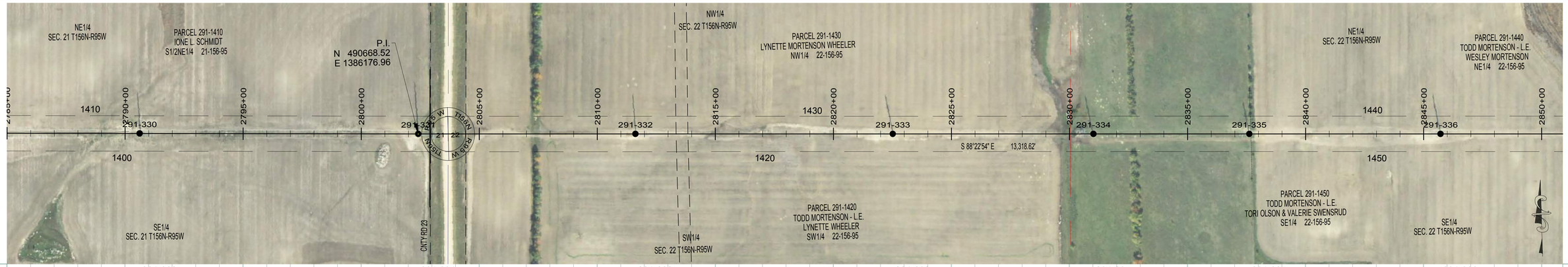
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2735+00 TO 2790+65
STRUCTURE: 291-324 TO 291-330

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-059
REV. NO.: 1



291-330
STA=2790+61.83
HT=126.50 ELE=2353.36
3ST2-125
894' RS

291-331
STA=2802+41.83
HT=151.50 ELE=2365.39
3ST2-150
CROSSING - 115KV
894' RS

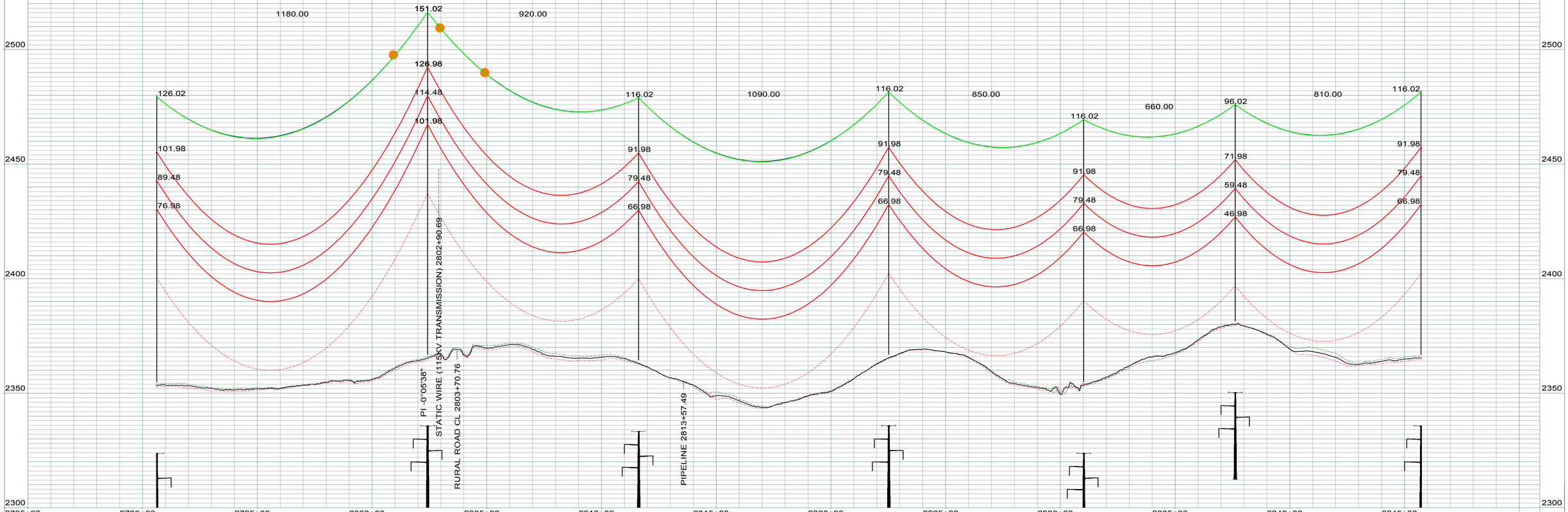
291-332
STA=2811+61.83
HT=116.50 ELE=2363.01
3ST2-115
894' RS

291-333
STA=2822+51.83
HT=116.50 ELE=2365.45
3ST2-115
894' RS

291-334
STA=2831+01.83
HT=116.50 ELE=2353.41
3ST2-115
894' RS

291-335
STA=2837+61.83
HT=96.50 ELE=2379.99
3ST2-095
894' RS

291-336
STA=2845+71.83
HT=116.50 ELE=2365.41
3ST2-115
894' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	894	10436	21826	--	--	--
OPGW AC-71/571 (GREEN)	894	2266	6358	--	--	--
OHGW 7/16`` EHS (BLUE)	894	2167	5617	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER	DATE:	04/16
DRAWN BY: C. KNOLL	DATE:	04/16
DESIGN CHK: R. NASSET	DATE:	04/16
DRAFT CHK: R. LANG	DATE:	04/16
APPROVED: S. WISEMAN	DATE:	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

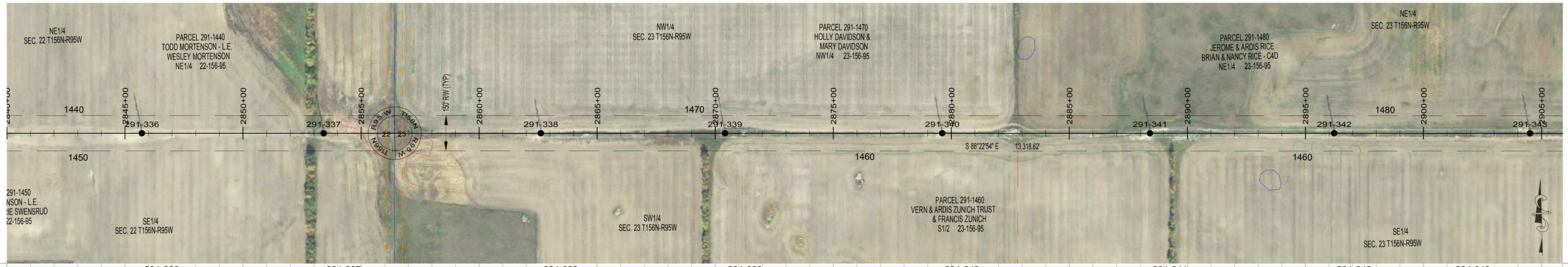
PLAN AND PROFILES
STATION: 2785+00 TO 2845+75
STRUCTURE: 291-330 TO 291-336

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-060

REV. NO. 1



291-336
STA=2845+71.83
HT=116.50 ELE=2365.41
3ST2-115
894' RS

291-337
STA=2853+41.83
HT=121.50 ELE=2341.26
3ST2-120
894' RS

291-338
STA=2862+61.83
HT=106.50 ELE=2360.93
3ST2-105
894' RS

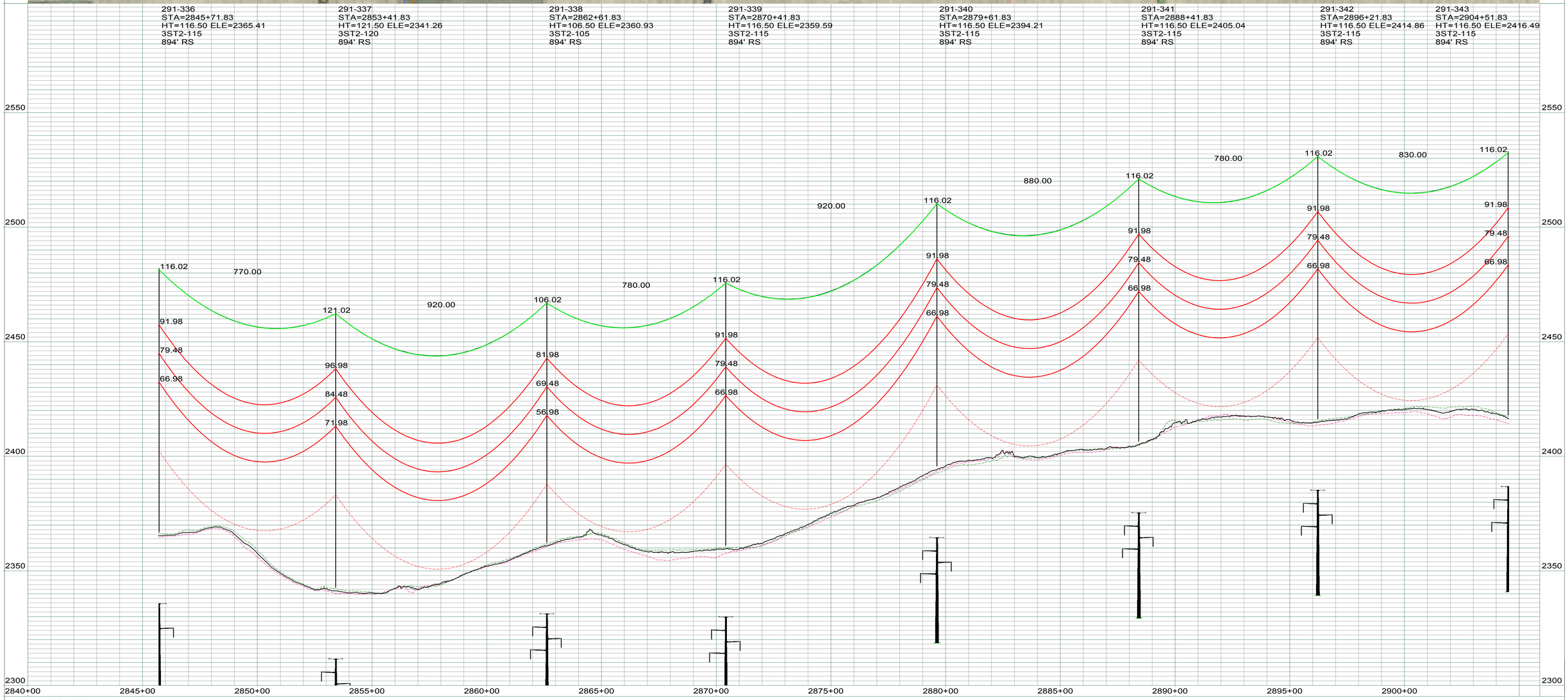
291-339
STA=2870+41.83
HT=116.50 ELE=2359.59
3ST2-115
894' RS

291-340
STA=2879+61.83
HT=116.50 ELE=2394.21
3ST2-115
894' RS

291-341
STA=2888+41.83
HT=116.50 ELE=2405.04
3ST2-115
894' RS

291-342
STA=2896+21.83
HT=116.50 ELE=2414.86
3ST2-115
894' RS

291-343
STA=2904+51.83
HT=116.50 ELE=2416.49
3ST2-115
894' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	894	10436	21826	--	--	--
OPGW AC-71/571 (GREEN)	894	2266	6358	--	--	--
OHGW 7/16`` EHS (BLUE)	894	2167	5617	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

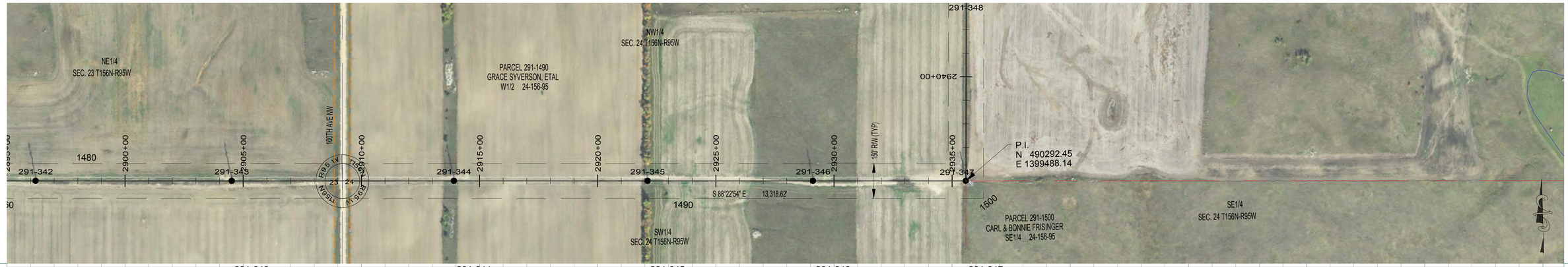
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2840+00 TO 2904+55
STRUCTURE: 291-336 TO 291-343

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-061
REV. NO. 1



291-343
STA=2904+51.83
HT=116.50 ELE=2416.49
3ST2-115
894' RS

291-344
STA=2913+91.83
HT=106.50 ELE=2427.57
3ST2-105
894' RS

291-345
STA=2922+11.83
HT=111.50 ELE=2414.02
3ST2-110
894' RS

291-346
STA=2929+11.83
HT=101.50 ELE=2390.77
3ST2-100
894' RS

291-347
STA=2935+58.29
HT=92.59 ELE=2386.61
3SDA90-091
OPGW SPLICE
END 894' RS, BEGIN 907' RS

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	894	10436	21826	--	--	--
OPGW AC-71/571 (GREEN)	894	2266	6358	--	--	--
OHGW 7/16`` EHS (BLUE)	894	2167	5617	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

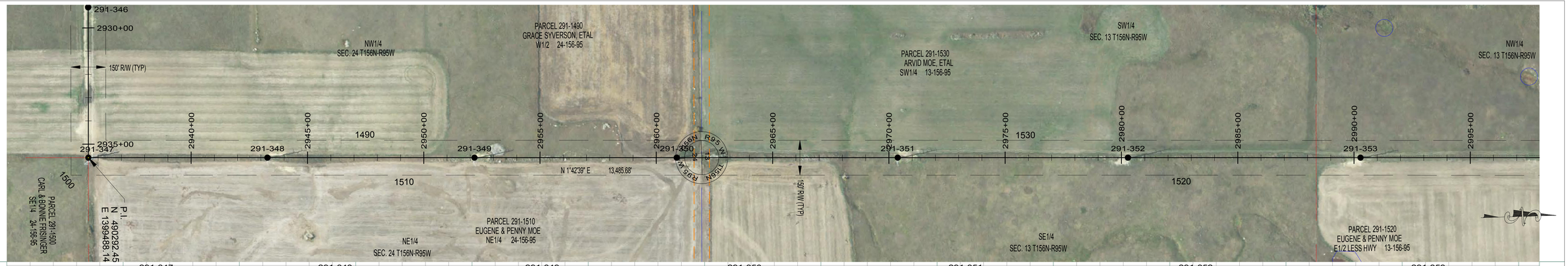
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

PLAN AND PROFILES
STATION: 2895+00 TO 2935+62
STRUCTURE: 291-342 TO 291-347

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-062
REV. NO.: 1



291-347
STA=2935+58.29
HT=92.59 ELE=2386.61
3SDA90-091
OPGW SPLICE
END 894' RS, BEGIN 907' RS

291-348
STA=2943+28.29
HT=116.50 ELE=2384.18
3ST2-115
907' RS

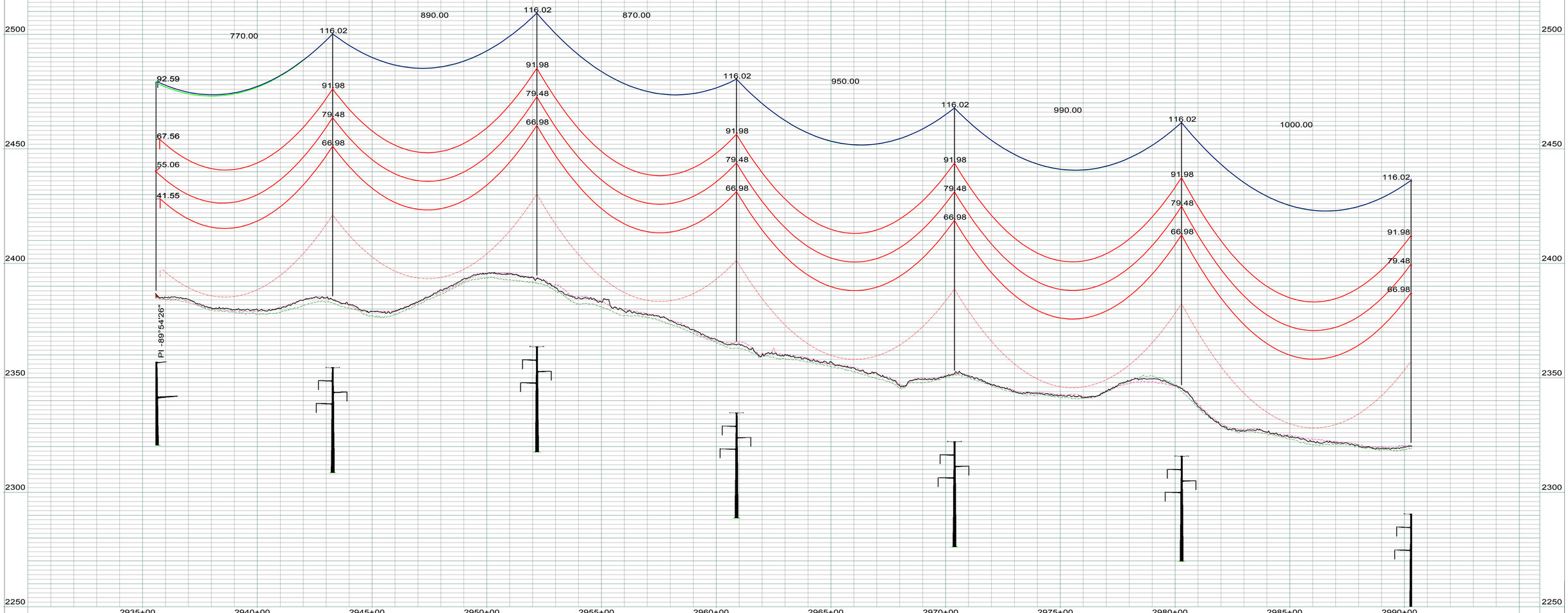
291-349
STA=2952+18.29
HT=116.50 ELE=2393.27
3ST2-115
907' RS

291-350
STA=2960+88.29
HT=116.50 ELE=2364.38
3ST2-115
907' RS

291-351
STA=2970+38.29
HT=116.50 ELE=2351.81
3ST2-115
907' RS

291-352
STA=2980+28.29
HT=116.50 ELE=2345.45
3ST2-115
907' RS

291-353
STA=2990+28.29
HT=116.50 ELE=2320.21
3ST2-115
907' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	907	10513	21929	--	--	--
OPGW AC-71/571 (GREEN)	908	2279	6402	--	--	--
OHGW 7/16`` EHS (BLUE)	907	2178	5654	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

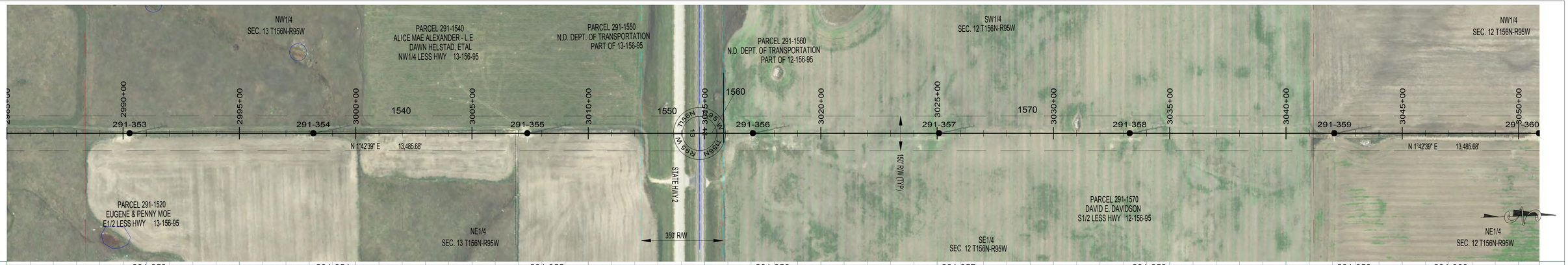
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2930+00 TO 2990+32
STRUCTURE: 291-347 TO 291-353

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-063
REV. NO. 1



291-353
STA=2990+28.29
HT=116.50 ELE=2320.21
3ST2-115
907' RS

291-354
STA=2998+18.29
HT=121.50 ELE=2302.66
3ST2-120
907' RS

291-355
STA=3007+38.29
HT=126.50 ELE=2304.27
3ST2-125
CROSSING - 1 PHASE
907' RS

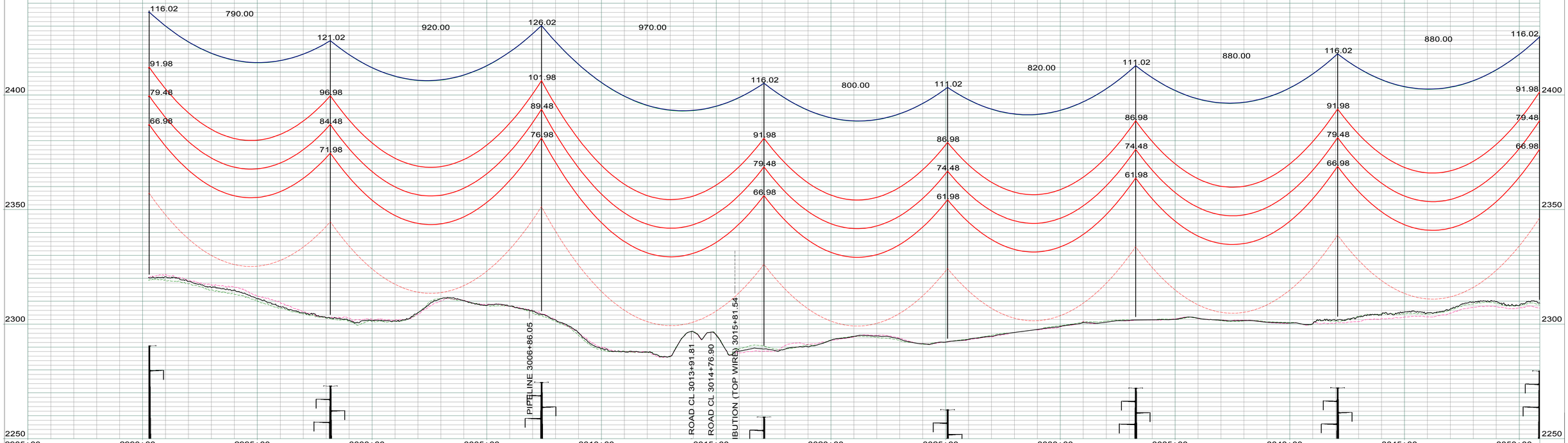
291-356
STA=3017+08.29
HT=116.50 ELE=2289.12
3ST2-115
907' RS

291-357
STA=3025+08.29
HT=111.50 ELE=2292.30
3ST2-110
907' RS

291-358
STA=3033+28.29
HT=111.50 ELE=2301.78
3ST2-110
907' RS

291-359
STA=3042+08.29
HT=116.50 ELE=2301.38
3ST2-115
907' RS

291-360
STA=3050+88.29
HT=116.50 ELE=2309.24
3ST2-115
907' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	907	10513	21929	--	--	--
OPGW AC-71/571 (GREEN)	908	2279	6402	--	--	--
OHGW 7/16`` EHS (BLUE)	907	2178	5654	--	--	--
--	--	--	--	--	--	--

		DATE
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

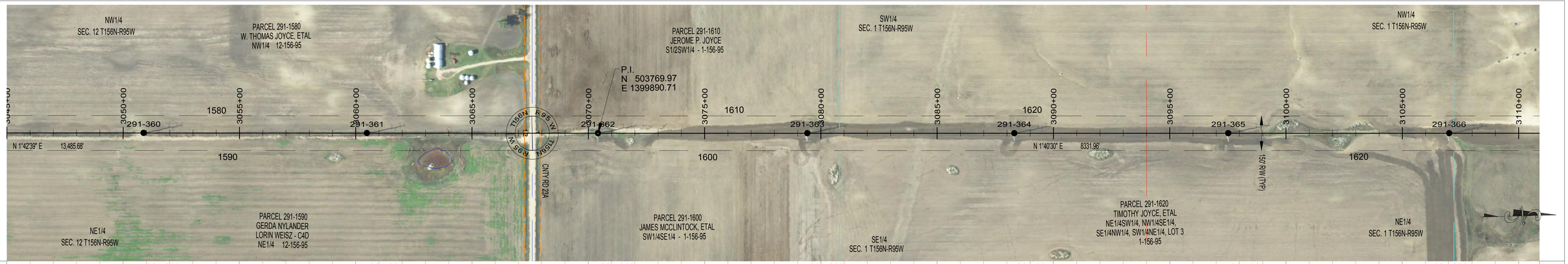
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 2985+00 TO 3050+90
STRUCTURE: 291-353 TO 291-360

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-064

REV. NO. 1



291-360
STA=3050+88.29
HT=116.50 ELE=2309.24
3ST2-115
907' RS

291-361
STA=3060+48.29
HT=116.50 ELE=2302.14
3ST2-115
907' RS

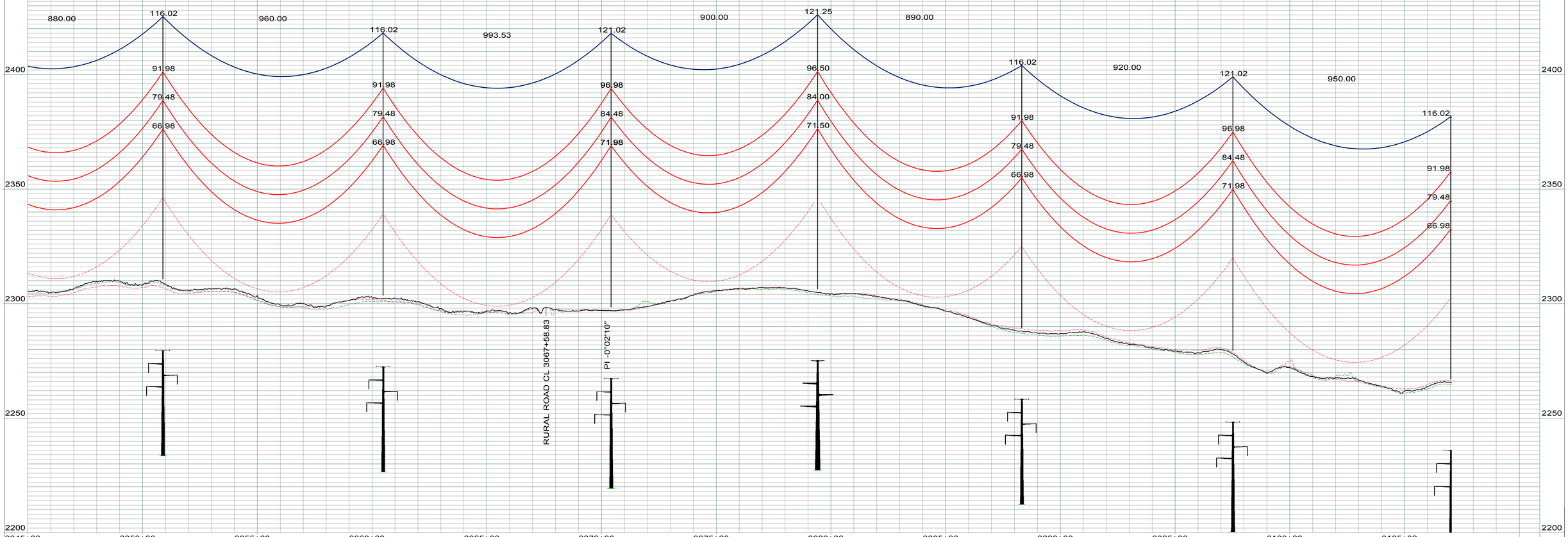
291-362
STA=3070+41.83
HT=121.50 ELE=2296.98
3ST2-120
907' RS

291-363
STA=3079+41.83
HT=121.50 ELE=2304.88
3SDA03-120
OPGW SPLICE
END 907' RS, BEGIN 919' RS

291-364
STA=3088+31.83
HT=116.50 ELE=2287.98
3ST2-115
919' RS

291-365
STA=3097+51.83
HT=121.50 ELE=2277.99
3ST2-120
919' RS

291-366
STA=3107+01.83
HT=116.50 ELE=2265.65
3ST2-115
919' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	907	10513	21929	919	10548	21946
OPGW AC-71/571 (GREEN)	908	2279	6402	918	--	6417
OHGW 7/16`` EHS (BLUE)	907	2178	5654	919	2172	5666
--	--	--	--	--	--	--

		DATE:
DESIGN BY:	S. VASBINDER	04/16
DRAWN BY:	C. KNOLL	04/16
DESIGN CHK:	R. NASSET	04/16
DRAFT CHK:	R. LANG	04/16
APPROVED:	S. WISEMAN	04/16

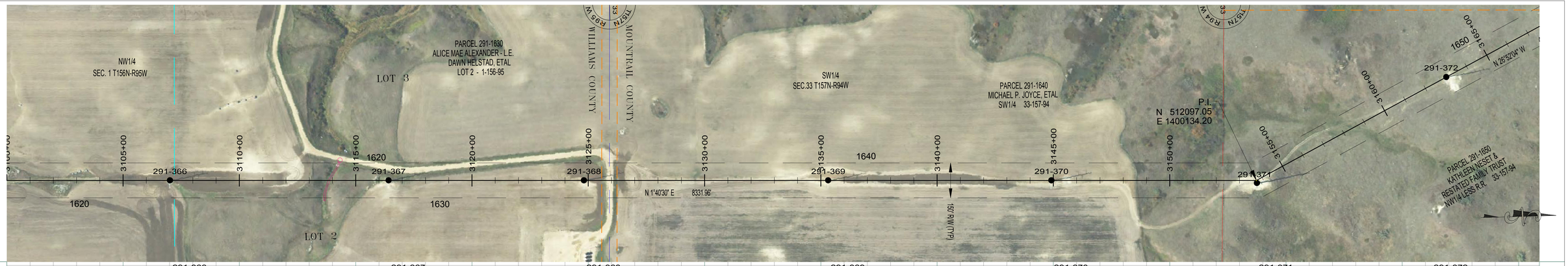
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 3045+00 TO 3107+05
STRUCTURE: 291-360 TO 291-366

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-065
REV. NO.: 1



291-366
STA=3107+01.83
HT=116.50 ELE=2265.65
3ST2-115
919' RS

291-367
STA=3116+41.83
HT=121.50 ELE=2254.68
3ST2-120
919' RS

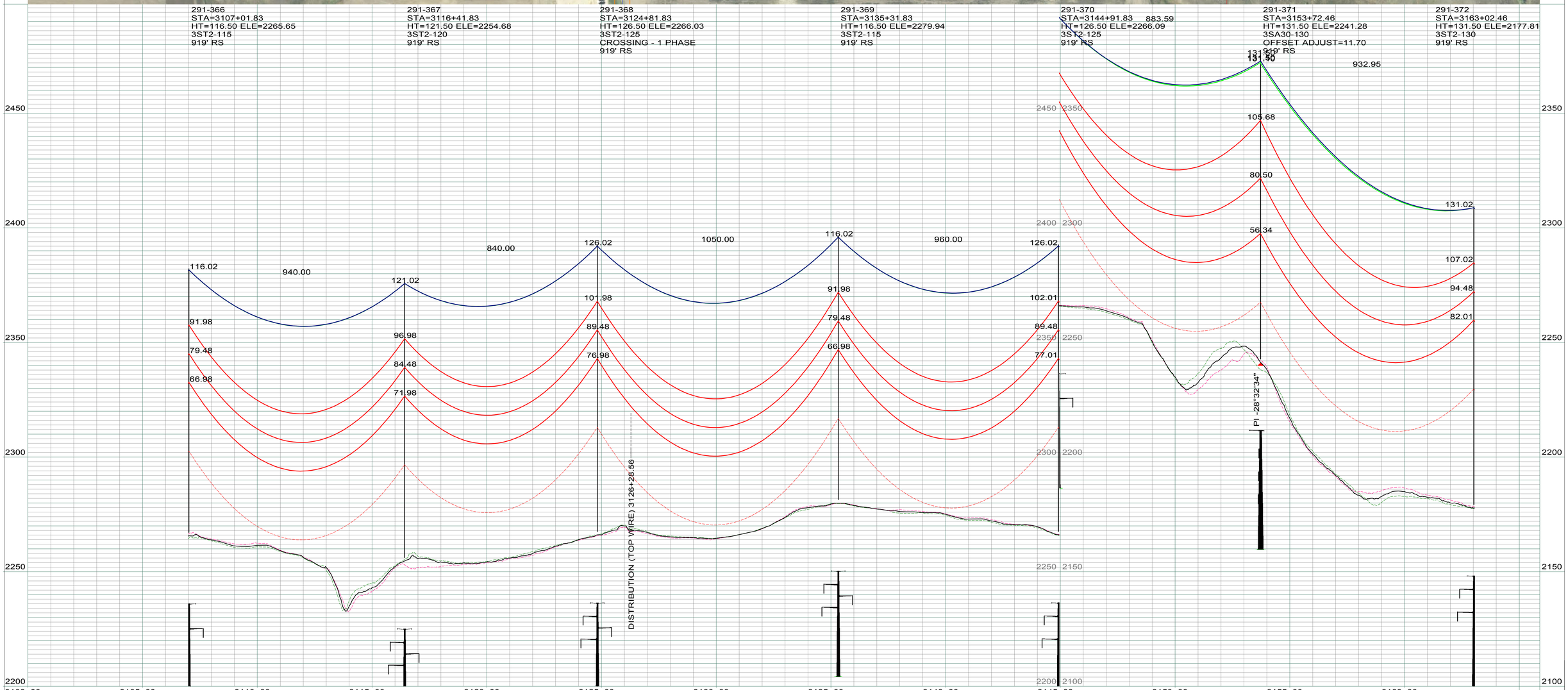
291-368
STA=3124+81.83
HT=126.50 ELE=2266.03
3ST2-125
CROSSING - 1 PHASE
919' RS

291-369
STA=3135+31.83
HT=116.50 ELE=2279.94
3ST2-115
919' RS

291-370
STA=3144+91.83 883.59
HT=126.50 ELE=2266.09
3ST2-125
919' RS

291-371
STA=3153+72.46
HT=131.50 ELE=2241.28
3SA30-130
OFFSET ADJUST=11.70
919' RS

291-372
STA=3163+02.46
HT=131.50 ELE=2177.81
3ST2-130
919' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	919	10548	21946	--	--	--
OPGW AC-71/571 (GREEN)	918	2279	6417	--	--	--
OHGW 7/16`` EHS (BLUE)	919	2172	5666	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

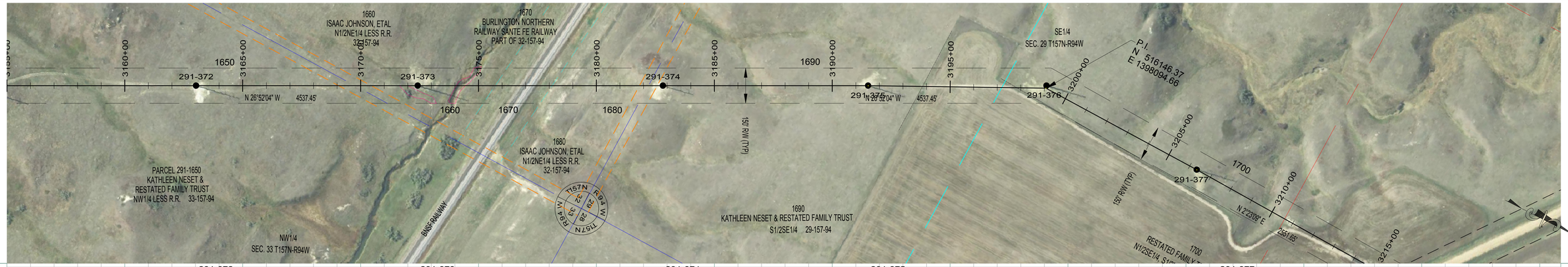
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: WILLIAMS/MOUNTRAIL

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 3100+00 TO 3163+06
STRUCTURE: 291-366 TO 291-372

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 291-090-T3-066
REV. NO.: 1



291-372
STA=3163+02.46
HT=131.50 ELE=2177.81
3ST2-130
919' RS

291-373
STA=3172+42.46
HT=151.50 ELE=2124.24
3ST2-150
919' RS

291-374
STA=3182+82.46
HT=96.50 ELE=2188.49
3ST2-095
919' RS

291-375
STA=3191+52.46
HT=116.50 ELE=2198.81
3ST2-115
919' RS

291-376
STA=3199+06.48
HT=126.50 ELE=2207.62
3SA30-125
OFFSET ADJUST=-11.00
919' RS

291-377
STA=3206+33.74
HT=116.50 ELE=2205.38
3ST2-115
919' RS

932.95 940.00 1040.00 870.00 756.72 729.96

131.02 107.02 94.48 82.01
151.02 126.98 114.48 101.98
96.02 71.98 59.48 46.98
116.02 92.00 79.49 67.01
126.50 126.10 100.92 76.96 51.86
116.02 92.02 79.50 67.02

PI 0°48'32"
PI 27°36'22"
PI 0°50'19"

R/W LINE 3175+70.50
RAILROAD CL 3176+93.93

2350 2300 2250 2200 2150 2100
2300 2250 2200 2150 2100 2050

3160+00 3165+00 3170+00 3175+00 3180+00 3185+00 3190+00 3195+00 3200+00 3205+00

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	919	10548	21946	--	--	--
OPGW AC-71/571 (GREEN)	918	2279	6417	--	--	--
OHGW 7/16`` EHS (BLUE)	919	2172	5666	--	--	--
--	--	--	--	--	--	--

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: MOUNTRAIL

PLAN AND PROFILES
STATION: 3155+00 TO 3206+37
STRUCTURE: 291-372 TO 291-377

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-067
REV. NO. 1

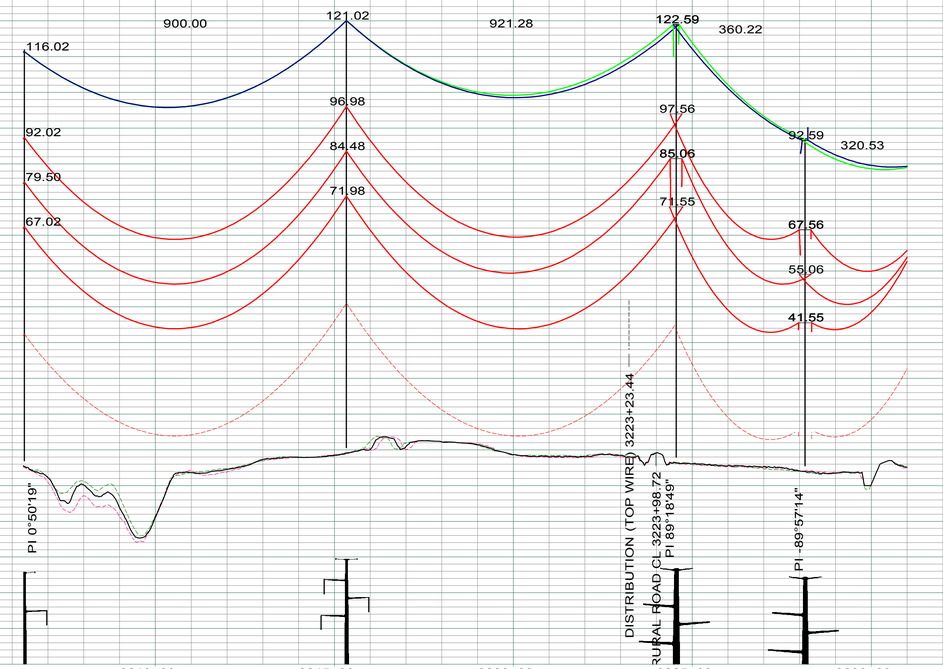


291-377
STA=3206+33.74
HT=116.50 ELE=2205.38
3ST2-115
919' RS

291-378
STA=3215+33.75
HT=121.50 ELE=2209.07
3ST2-120
CROSSING - 1 PHASE
919' RS

291-379
STA=3224+55.02
HT=122.59 ELE=2206.40
3SDA90-121
END 919' RS, BEGIN 359' RS

291-380
STA=3228+15.24
HT=92.59 ELE=2204.02
3SDA90-1-091
END 359' RS, BEGIN 314' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	RN	SV	01/18

WIRE DESIGN DATA	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY	RULING SPAN (FT)	TENSION (LBS) 60 DEG FINAL	TENSION (LBS) NESC HEAVY
345KV THRASHER CONDUCTOR (RED)	919	10548	21946	359	6943	14892
OPGW AC-71/571 (GREEN)	918	2279	6417	315	1660	4375
OHGW 7/16`` EHS (BLUE)	919	2172	5666	313	1808	3904
--	--	--	--	--		

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 291-345KV LINE - JUDSON SUB-TANDE SUB
COUNTY: MOUNTRAIL

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 3200+00 TO 3231+00
STRUCTURE: 291-377 TO 291-380

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 291-090-T3-068
REV. NO. 1

BASIN ELECTRIC POWER COOPERATIVE
CASE NO: PU-11-696

AS BUILT
PLAN AND PROFILES AND STRUCTURE LOCATIONS FOR
AVS-NESET 345kV TRANSMISSION PROJECT

LINE 294 - CHARLIE CREEK TO AVS SEGMENT

NORTH DAKOTA PUBLIC SERVICE COMMISSION
MARCH 2018

BASIN ELECTRIC
POWER COOPERATIVE
A Touchstone Energy® Cooperative

PATENT GATE SUBSTATION

MCKENZIE

DUNN

MCLEAN

ROUND UP SUBSTATION

SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
SHEET 7
SHEET 8
SHEET 9
SHEET 10
SHEET 11
SHEET 12
SHEET 13
SHEET 14
SHEET 15
SHEET 16
SHEET 17
SHEET 18

AVS

CHARLIE CREEK SUBSTATION

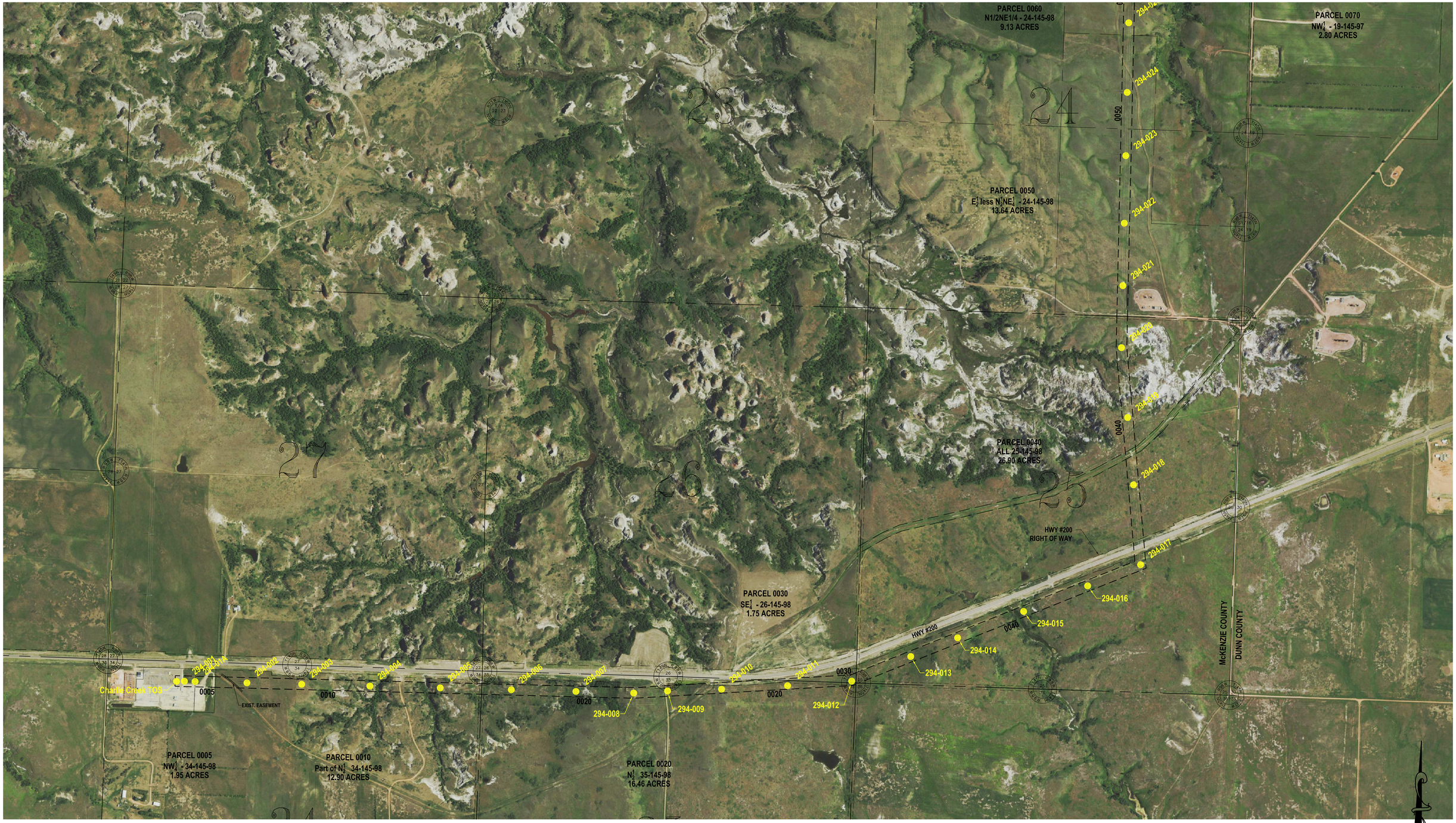
BILLINGS

MERCER

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	UPDATED FINAL ROUTE CENTERLINE	R. LANG	C. CHRISTENSON	7/18/14

LINE 294
CHARLIE CREEK TO AVS
SHEET INDEX MAP

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



NOTE:
AS BUILT STRUCTURE LOCATIONS

LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 24,25,26,27 – T145N – R98W
MCKENZIE COUNTY, NORTH DAKOTA

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

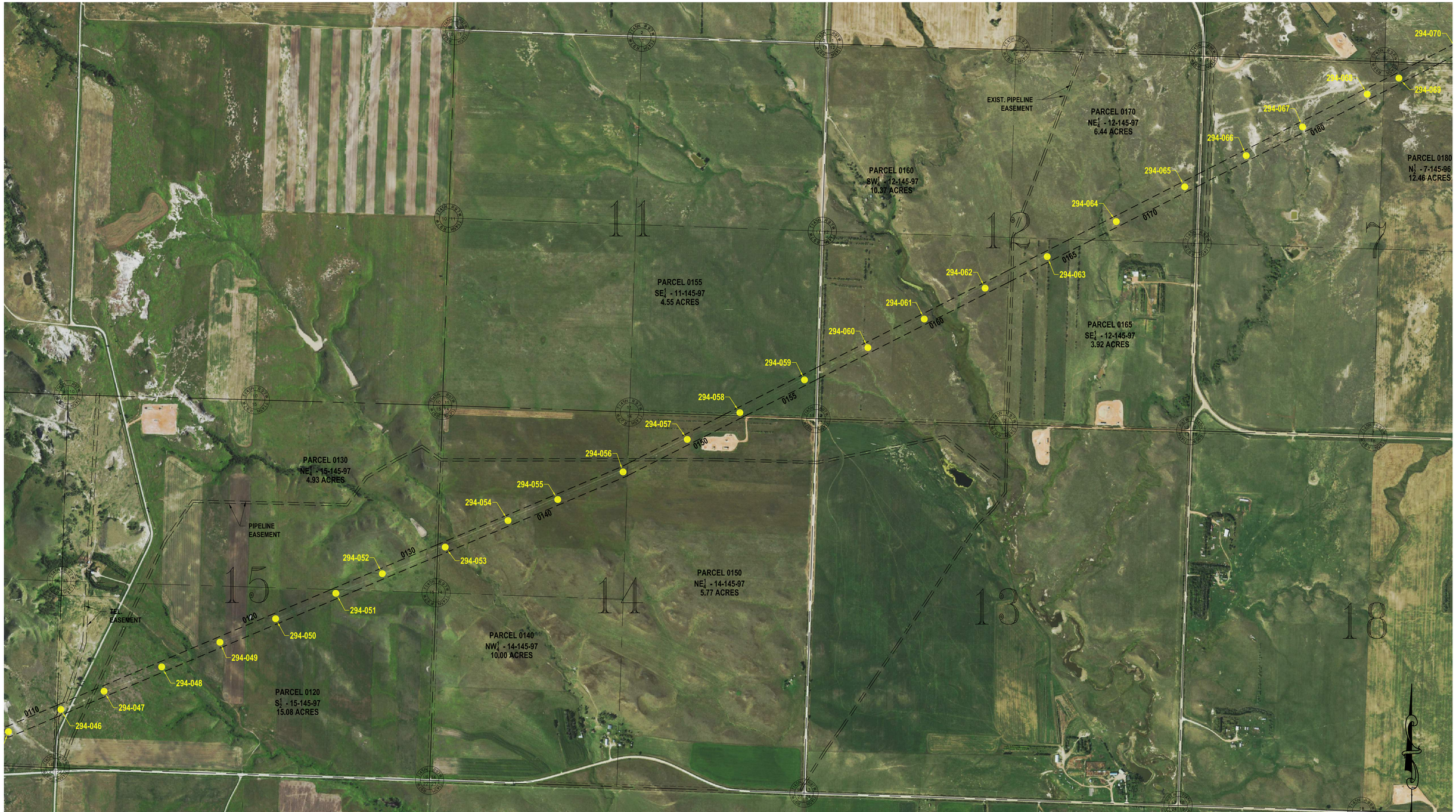
NOTE:
AS BUILT STRUCTURE LOCATIONS

SEC. 16,17,18,19 – T145N – R98W
DUNN COUNTY, NORTH DAKOTA

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

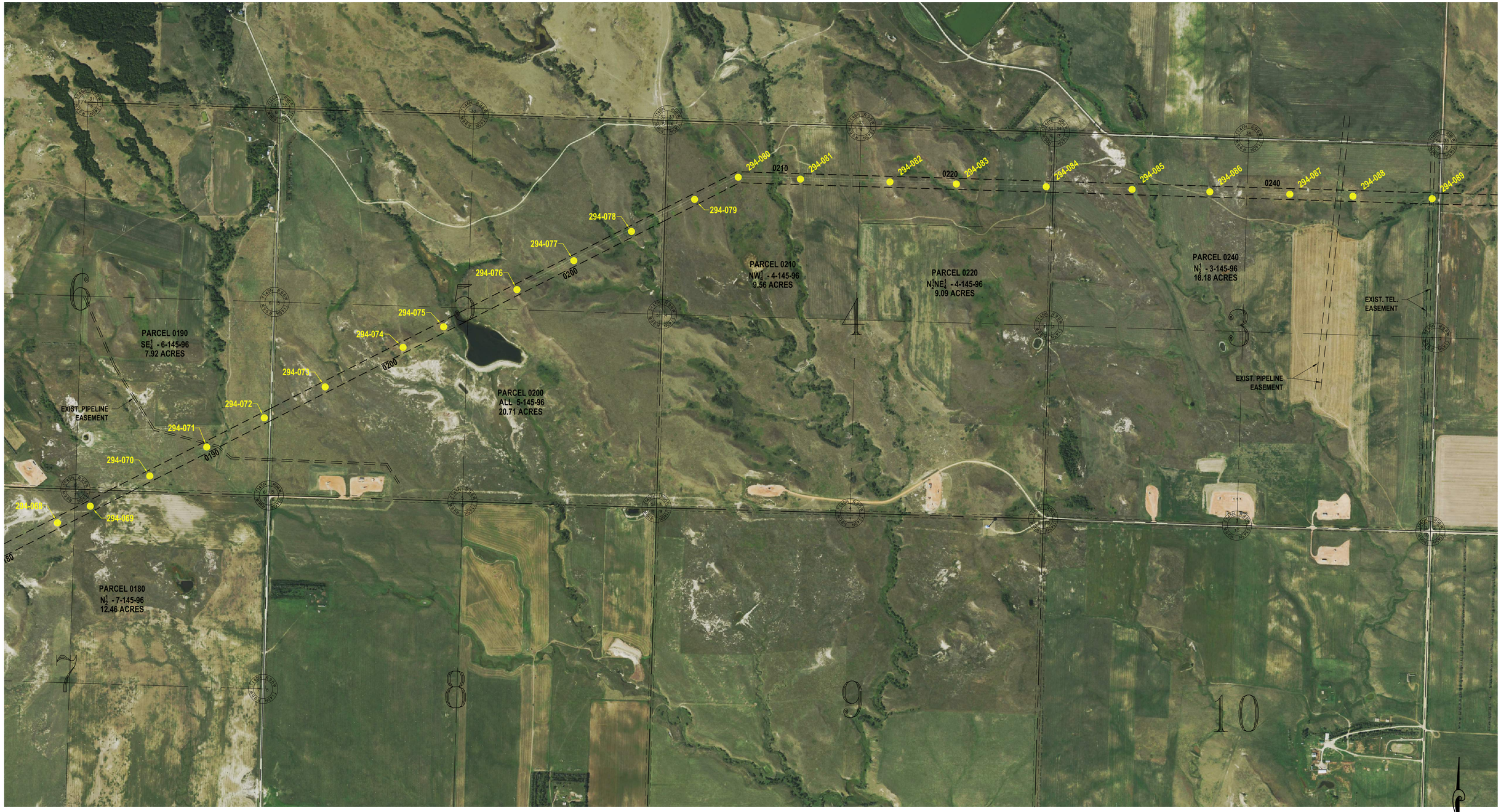
NOTE:
AS BUILT STRUCTURE LOCATIONS

SEC. 11,12,13,14,15 – T145N – R97W
SEC. 7,18 – T145N – R96W
DUNN COUNTY, NORTH DAKOTA

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

NOTE:
AS BUILT STRUCTURE LOCATIONS

SEC. 3,4,5,6,7,8,9,10 – T145N – R96W
DUNN COUNTY, NORTH DAKOTA

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	C. CHRISTENSON	7/18/14

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2

294-089 294-090 0250 294-091 294-092 294-093 0260 294-094 294-095 294-096 294-097 0270 294-098 294-099 294-100 294-101 294-102 294-103 0280 294-104 294-105 294-106 294-107 0290 294-108 294-109 0295 294-110

PARCEL 0250
NW¼ - 2-145-96
9.09 ACRES

PARCEL 0260
NE¼ - 2-145-96
9.10 ACRES

PARCEL 0270
N½ - 1-145-96
18.21 ACRES

EXIST.
PIPELINE
EASEMENT

PARCEL 0280
N½ - 6-145-95
18.20 ACRES

PARCEL 0290
NW¼ - 5-145-95
9.09 ACRES

PARCEL 0295
NE¼ - 5-145-95
10.09 ACRES

2 1 6 5 11 12

LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

NOTE:
AS BUILT STRUCTURE LOCATIONS

SEC. 1,2,11,12 – T145N – R96W
SEC. 5,6 – T145N – R95W
DUNN COUNTY, NORTH DAKOTA

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	C. CHRISTENSON	7/18/14

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

NOTE:
AS BUILT STRUCTURE LOCATIONS

SEC. 1,2,3,4 – T145N – R95W
DUNN COUNTY, NORTH DAKOTA

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

NOTE:
AS BUILT STRUCTURE LOCATIONS

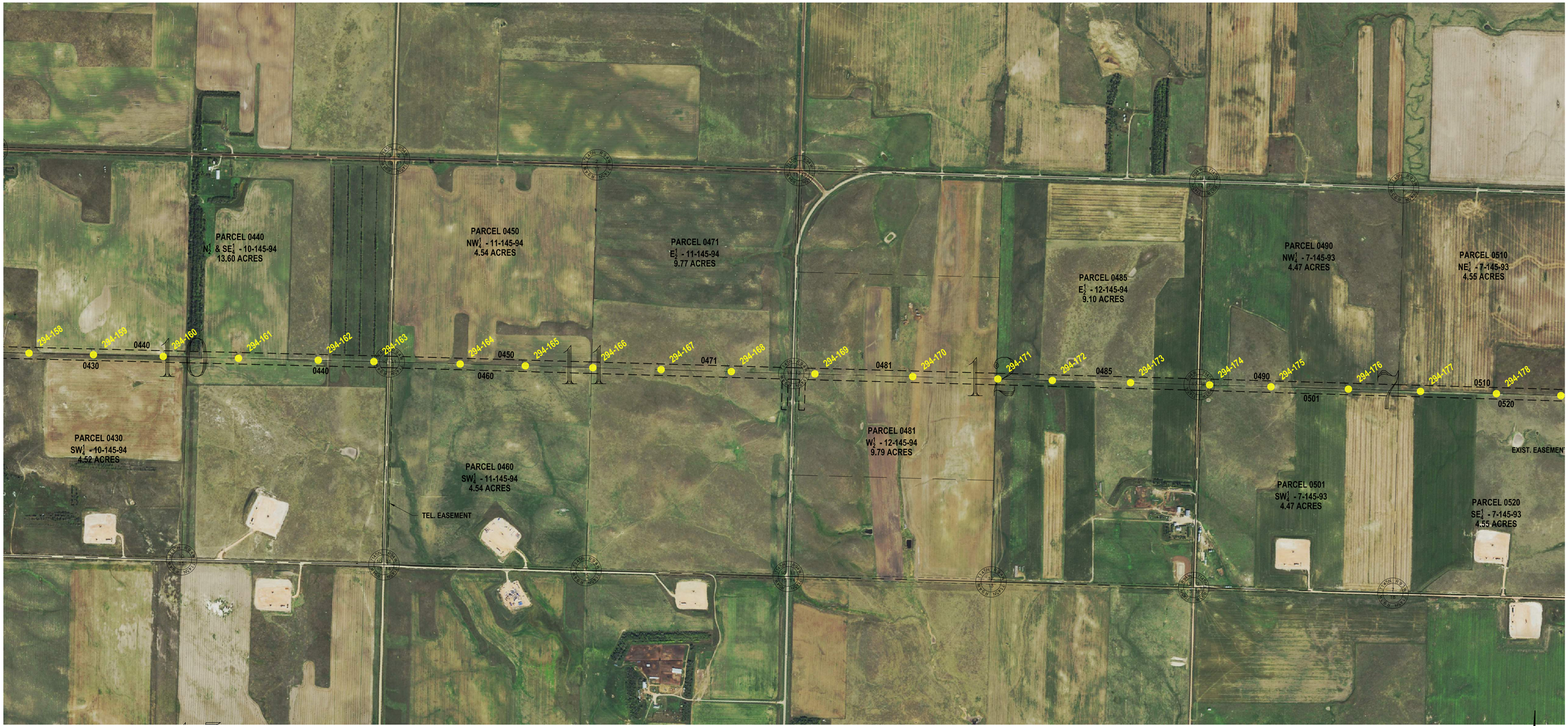
SEC. 1 – T145N – R95W
SEC. 6,7,8,9 – T145N – R94W
DUNN COUNTY, NORTH DAKOTA

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18	
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14	

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

NOTE:
AS BUILT STRUCTURE LOCATIONS

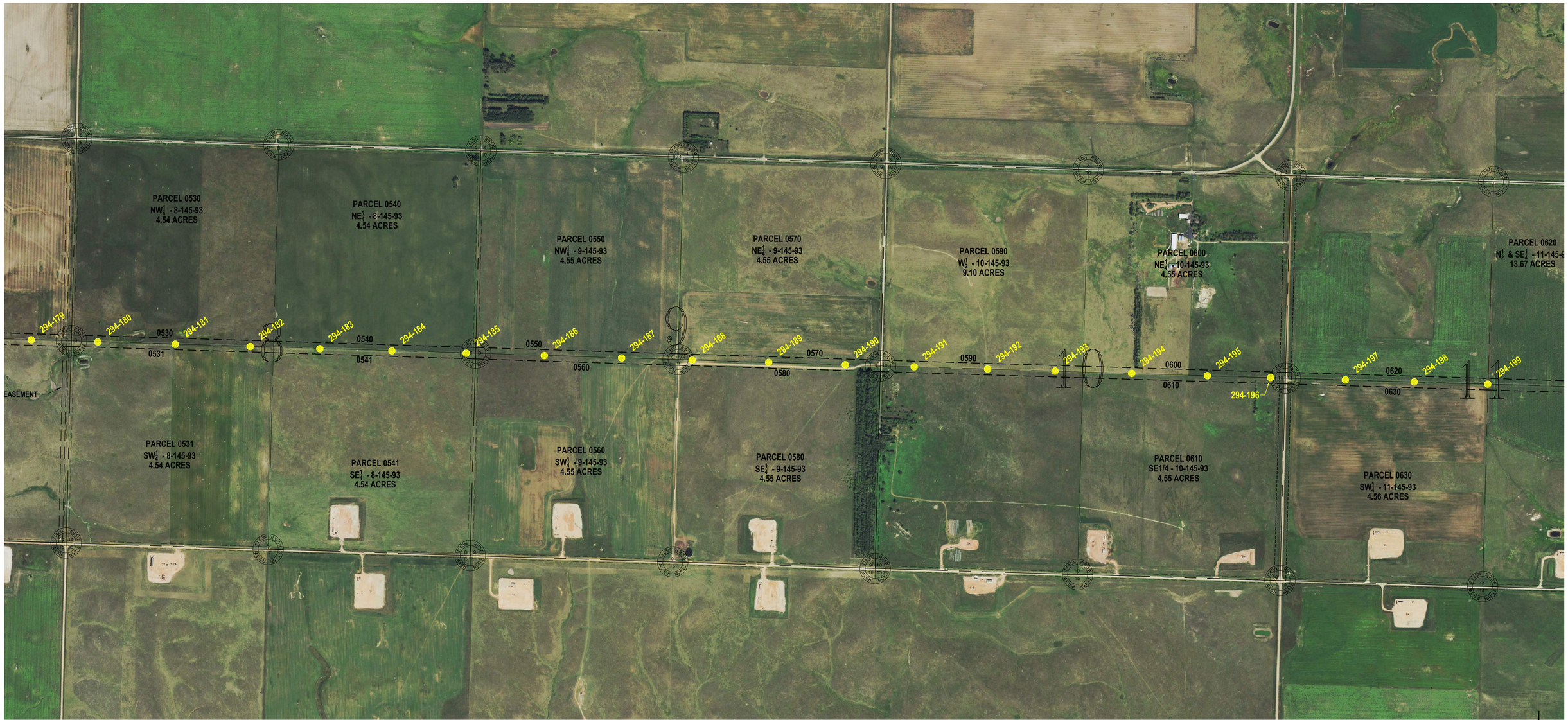
SEC. 10,11,12 – T145N – R94W
SEC. 7 – T145N – R93W
DUNN COUNTY, NORTH DAKOTA

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

NOTE:
AS BUILT STRUCTURE LOCATIONS

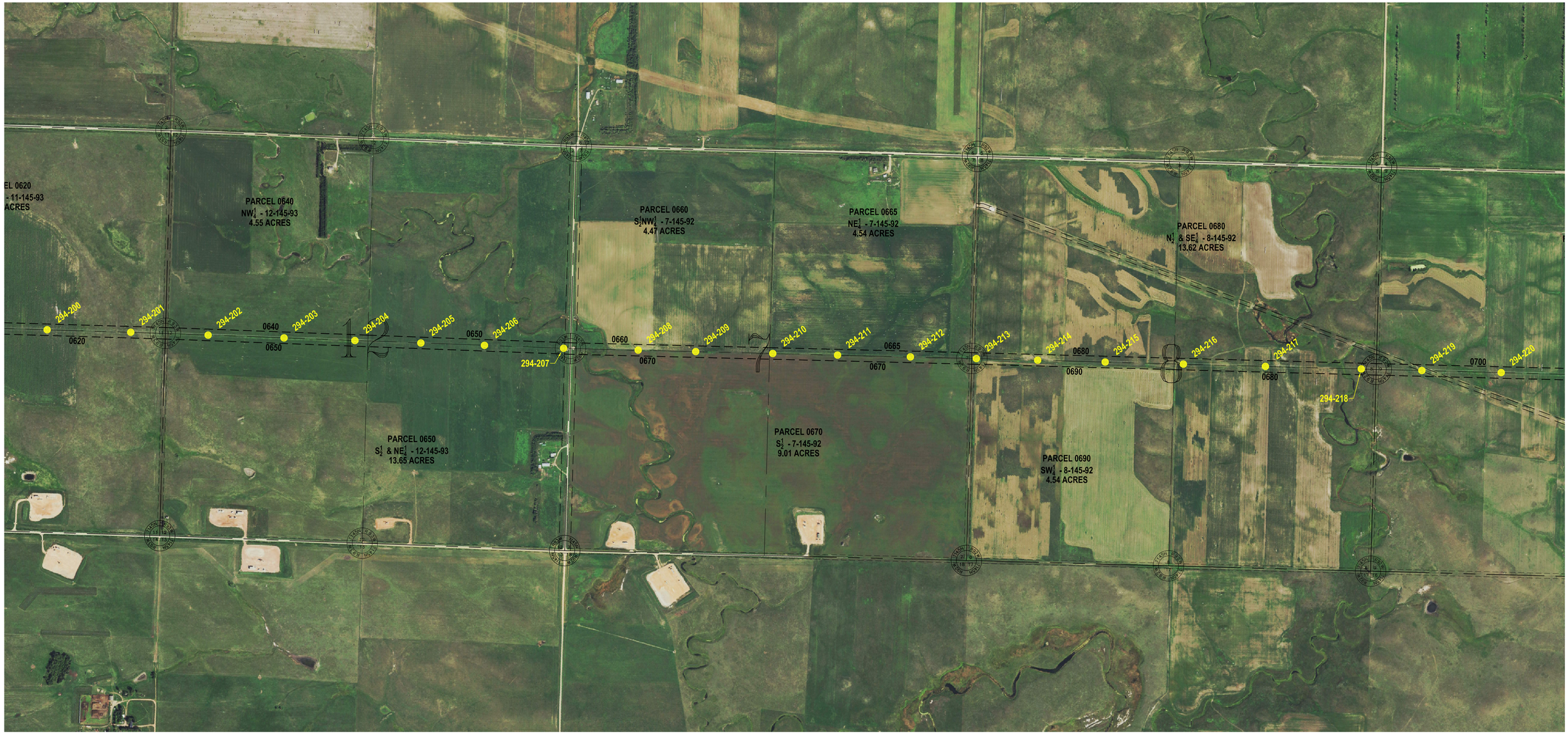
SEC. 8,9,10,11 – T145N – R93W
DUNN COUNTY, NORTH DAKOTA

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



SEC. 12 – T145N – R93W
SEC. 7,8 – T145N – R92W
DUNN COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

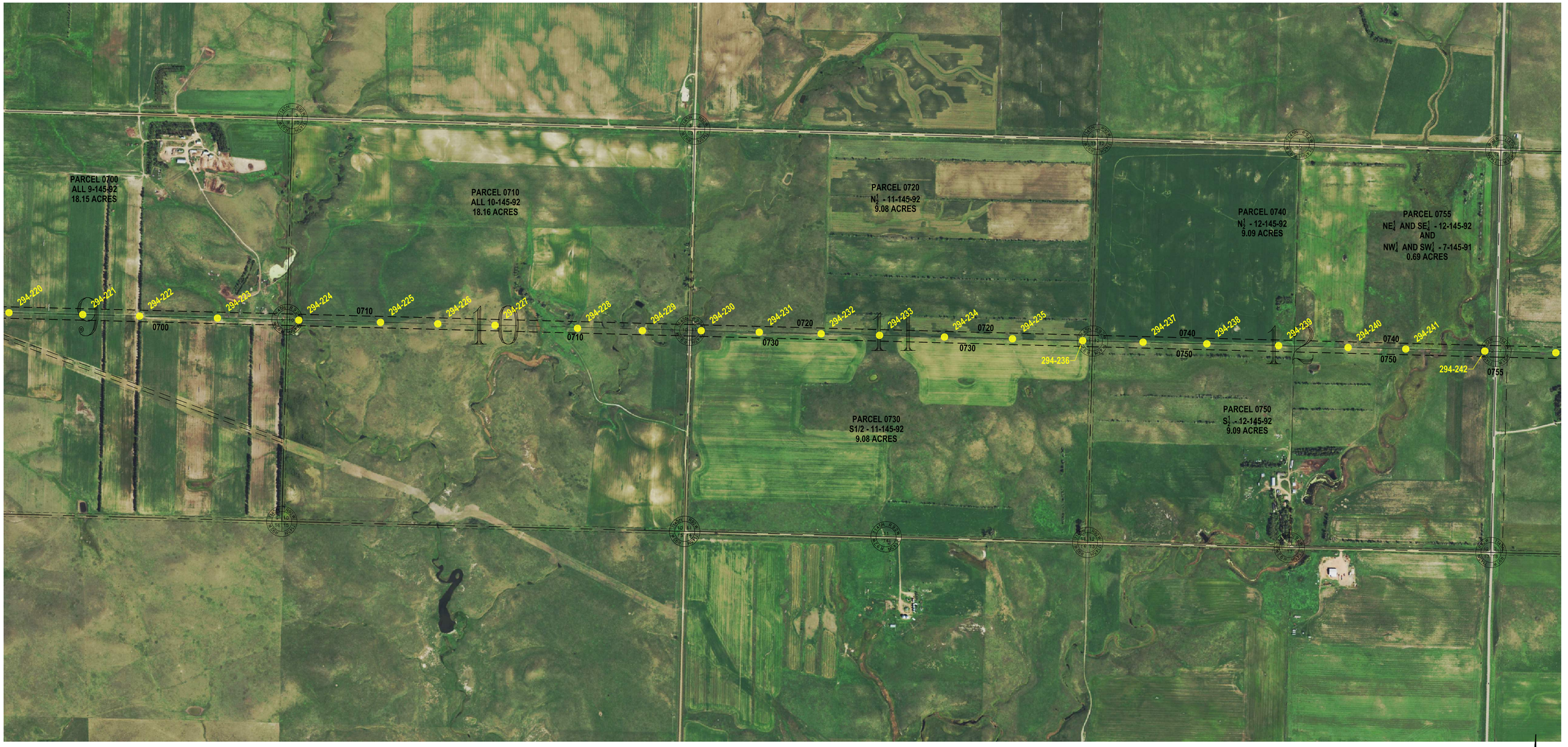
LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



NOTE:
AS BUILT STRUCTURE LOCATIONS

LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

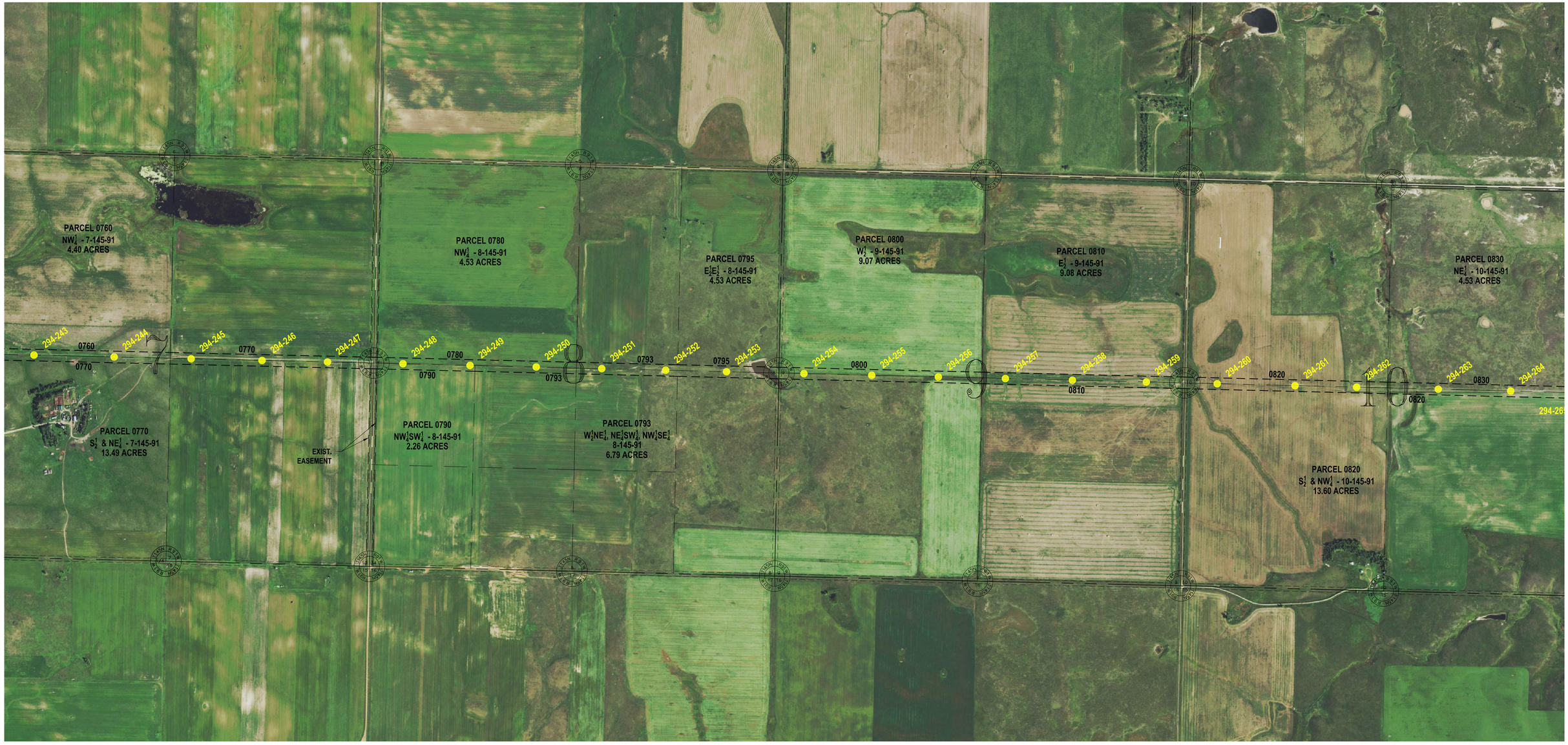
SEC. 9,10,11,12 – T145N – R92W
DUNN COUNTY, NORTH DAKOTA

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

NOTE:
AS BUILT STRUCTURE LOCATIONS

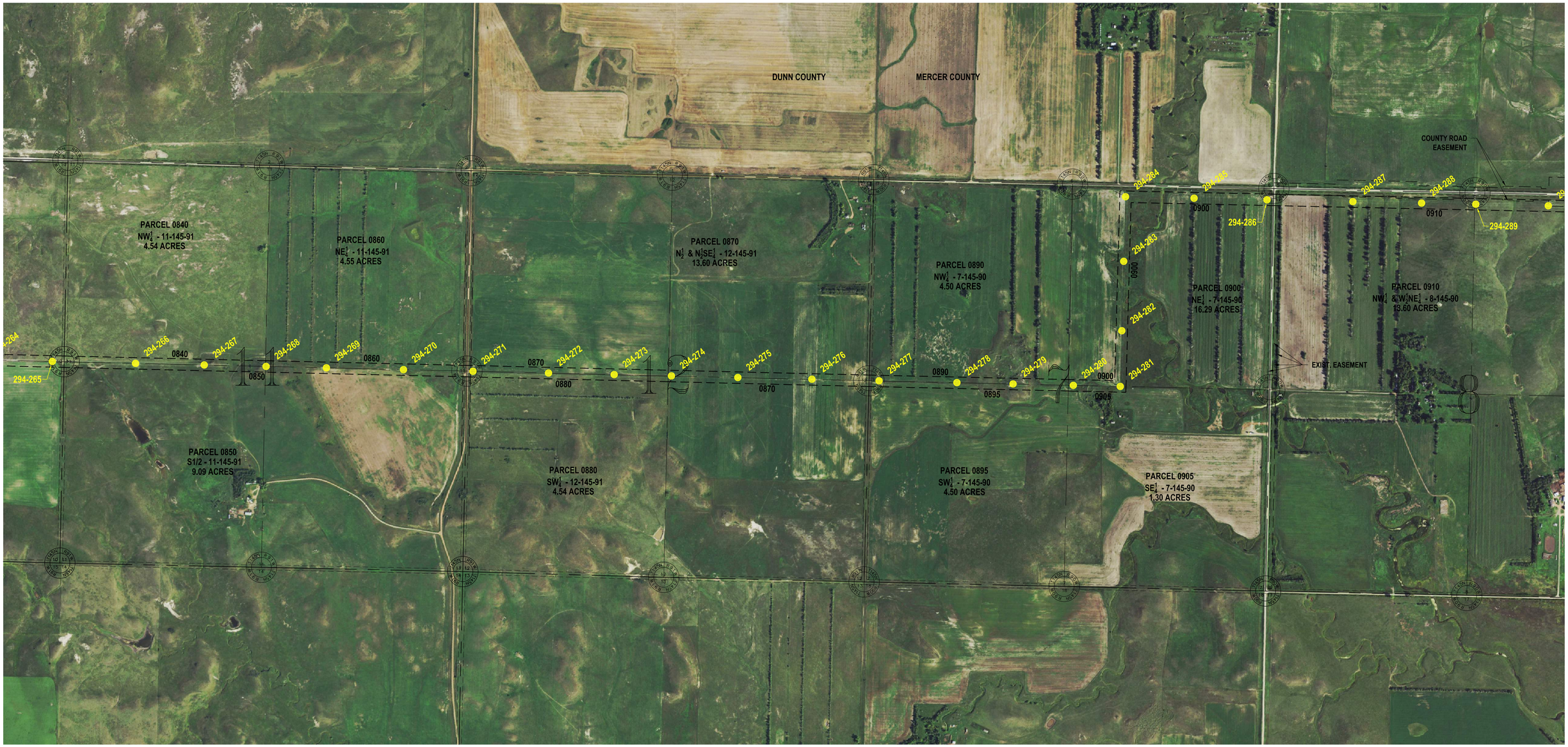
SEC. 7,8,9,10 – T145N – R91W
DUNN COUNTY, NORTH DAKOTA

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



BASIS OF BEARING IS NAD83 ND STATE PLANE NORTH ZONE – INTERNATIONAL FEET.
ALL DISTANCES ARE GROUND DISTANCE. COMBINED SCALE FACTOR = 0.999893141

SEC. 11,12 – T145N – R91W
DUNN COUNTY, NORTH DAKOTA
SEC. 7,8 – T145N – R90W
MERCER COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



NOTE:
AS BUILT STRUCTURE LOCATIONS

LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

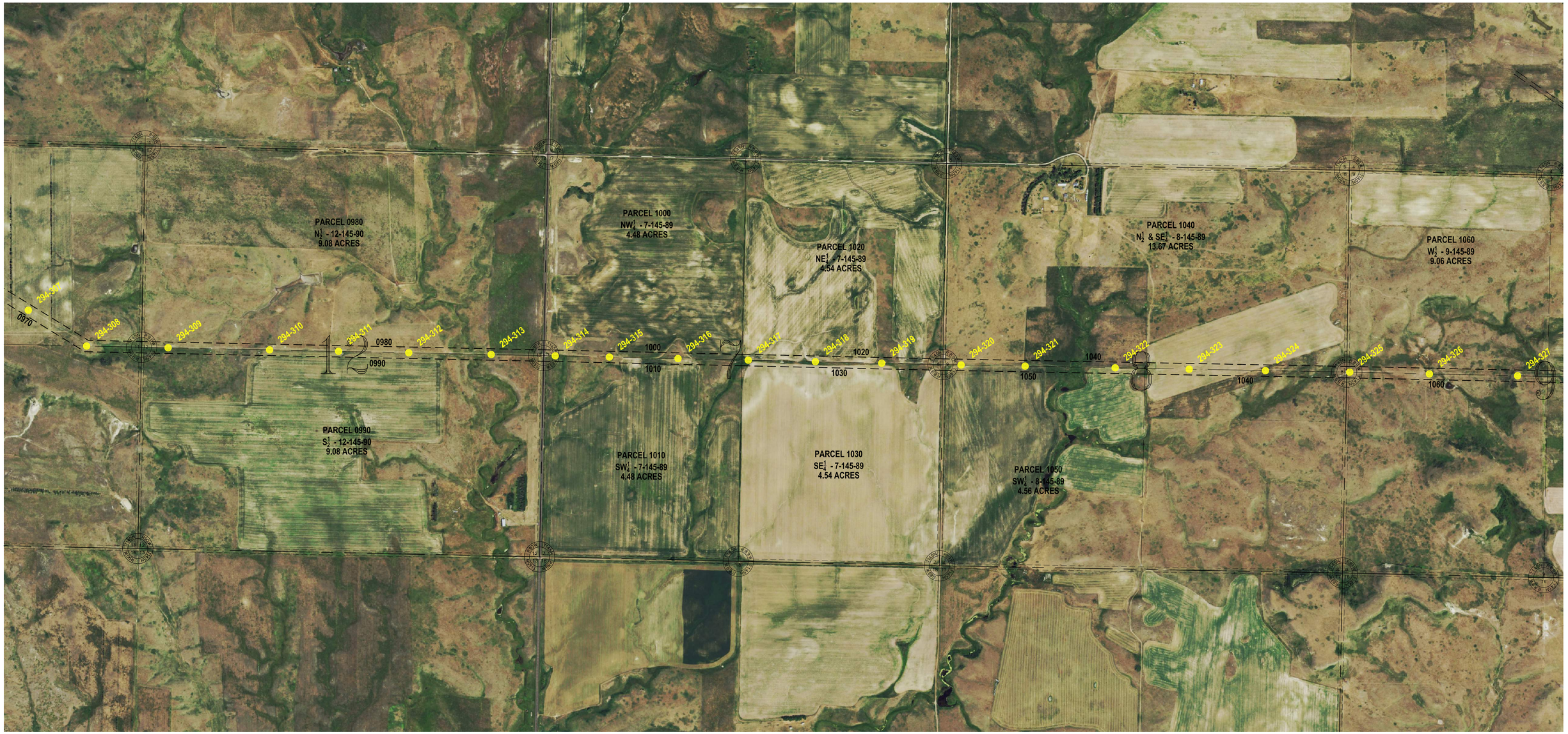
SEC. 8,9,10,11 – T145N – R90W
MERCER COUNTY, NORTH DAKOTA

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



SEC. 12 – T145N – R90W
SEC. 7,8,9 – T145N – R89W
MERCER COUNTY, NORTH DAKOTA

NOTE:
AS BUILT STRUCTURE LOCATIONS

LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



NOTE:
AS BUILT STRUCTURE LOCATIONS

LEGEND:

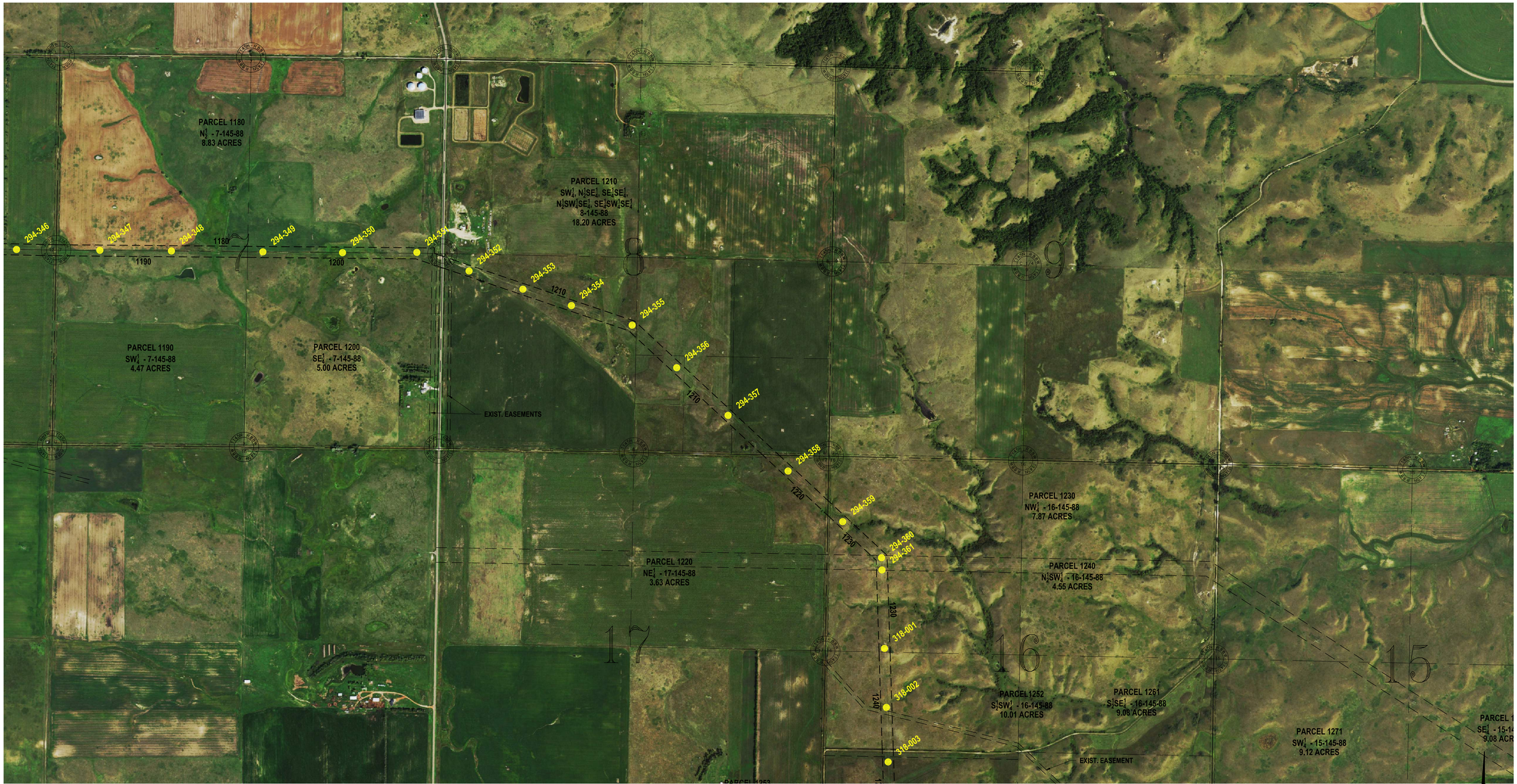
- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

SEC. 9,10,11,12 – T145N – R89W
MERCER COUNTY, NORTH DAKOTA

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

NOTE:
AS BUILT STRUCTURE LOCATIONS

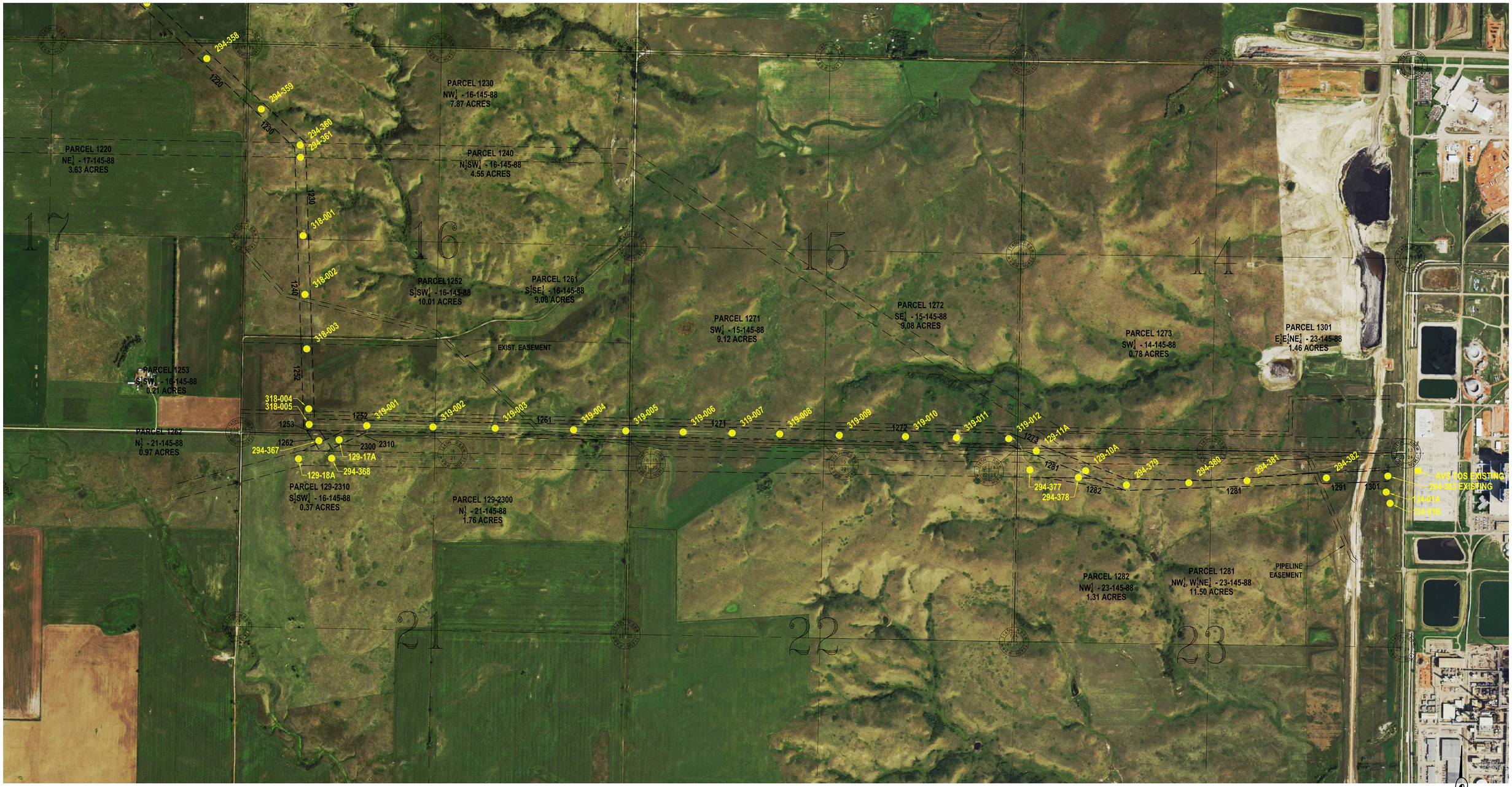
SEC. 7,8,9,15,16,17 – T145N – R88W
MERCER COUNTY, NORTH DAKOTA

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

NOTE:
AS BUILT STRUCTURE LOCATIONS

SEC. 14,15,16,17,21,22,23 – T145N – R88W
MERCER COUNTY, NORTH DAKOTA

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2

BASIN ELECTRIC POWER COOPERATIVE
CASE NO: PU-11-696

AS BUILT
PLAN AND PROFILES AND
STRUCTURE LOCATIONS FOR
AVS-NESET 345kV TRANSMISSION PROJECT

LINE 298 - CHARLIE CREEK TO JUDSON SEGMENT

NORTH DAKOTA PUBLIC SERVICE COMMISSION
MARCH 2018

BASIN ELECTRIC
POWER COOPERATIVE
A Touchstone Energy® Cooperative

JUDSON SUBSTATION

WILLIAMS

SHEET 23

SHEET 22

SHEET 21

SHEET 20

SHEET 19

SHEET 18

SHEET 17

SHEET 16

SHEET 15

SHEET 14

PATENT GATE SUBSTATION

MCKENZIE

SHEET 13

SHEET 12

SHEET 11

SHEET 10

SHEET 9

SHEET 8

SHEET 7

SHEET 6

SHEET 5

SHEET 4

SHEET 3

SHEET 2

SHEET 1

CHARLIE CREEK SUBSTATION

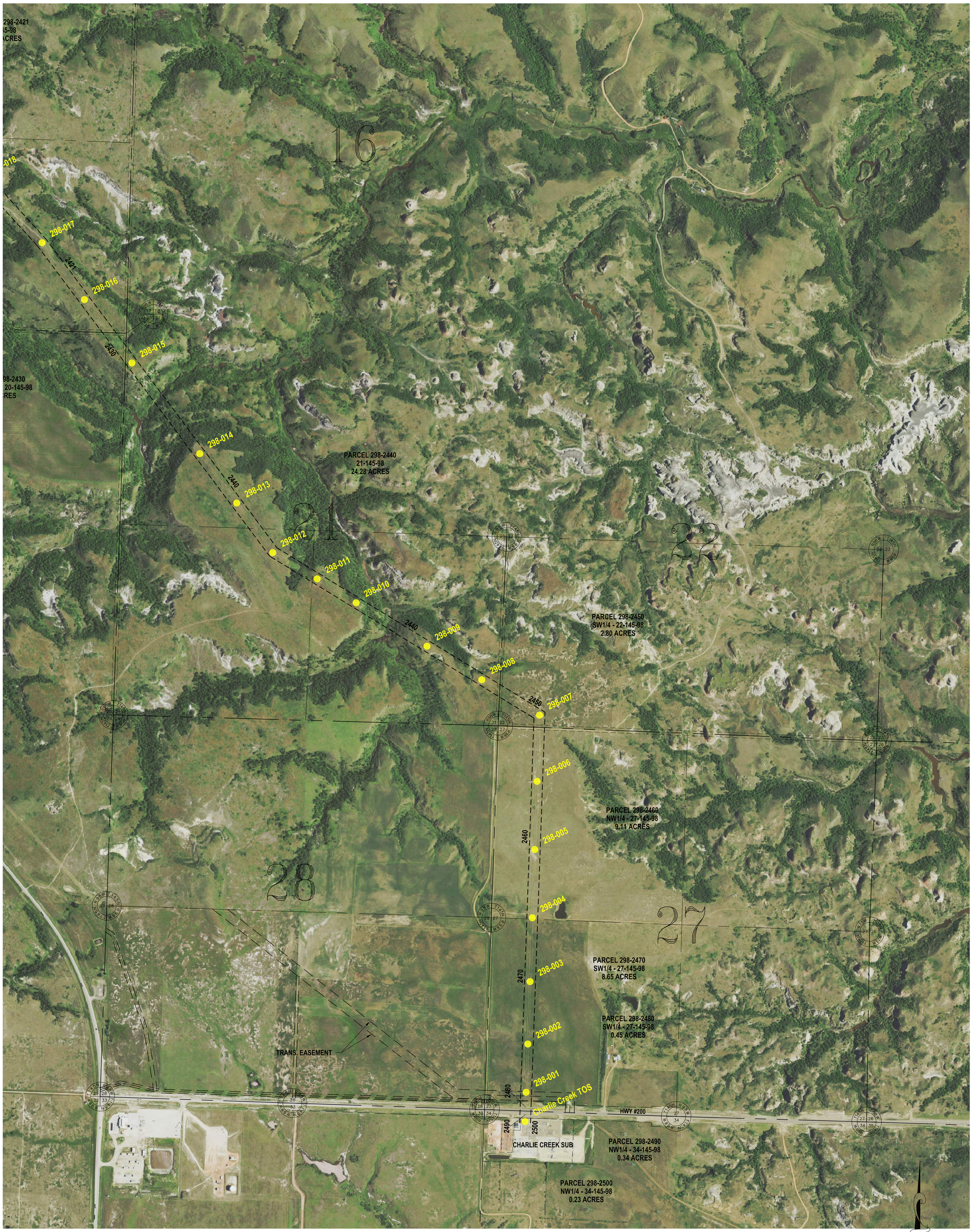
GOLDEN VALLEY

BILLINGS

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	UPDATED FINAL ROUTE CENTERLINE	R. LANG	G. CHRISTENSON	7/18/14

LINE 298
CHARLIE CREEK TO JUDSON
SHEET INDEX MAP

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



SEC. 16,21,22,27 – T145N – R98W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

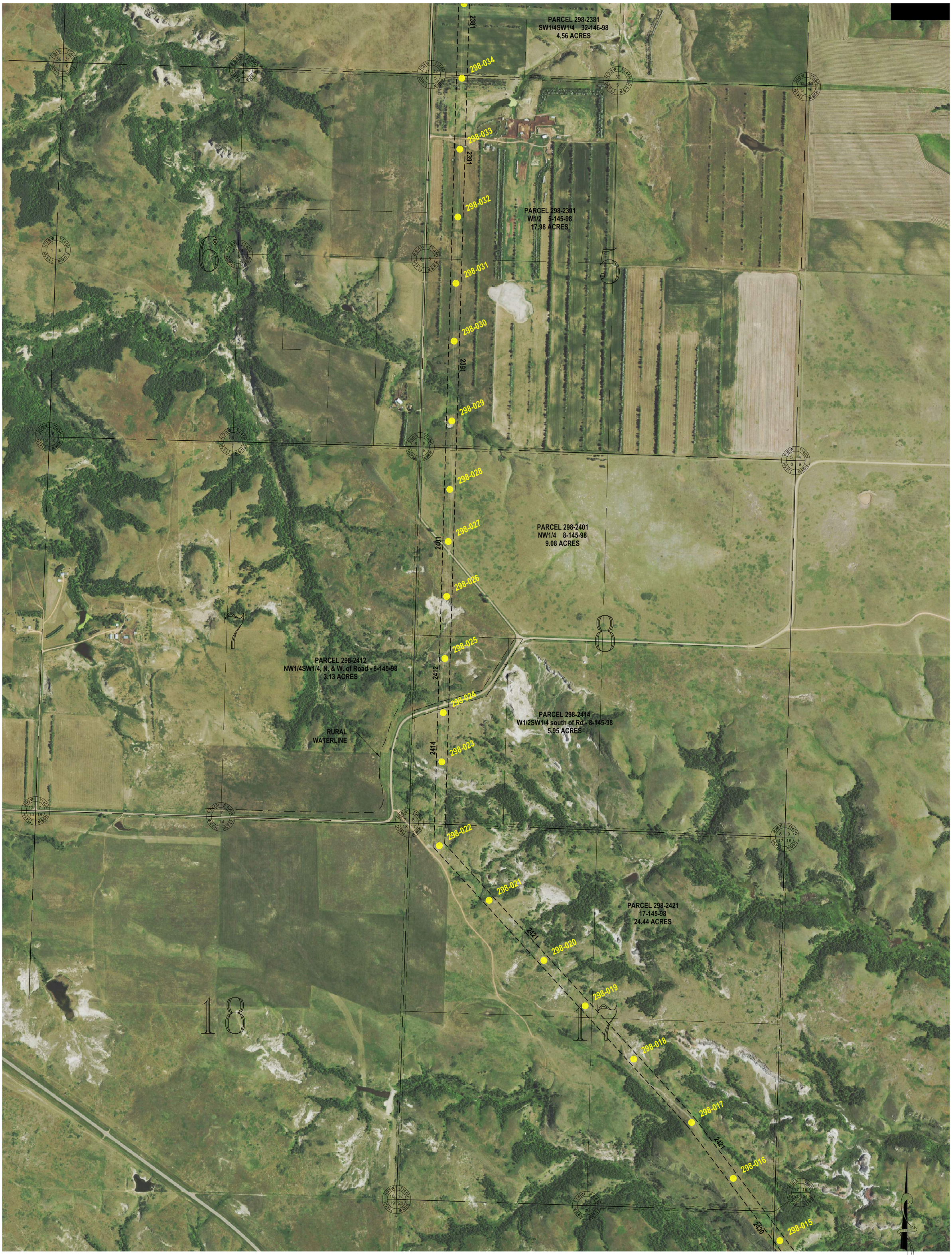
PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

SHEET 1 OF 23

REV. NO. 2



SEC. 5,8,17 – T145N – R98W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2

PARCEL 298-2300
NE1/4SW1/4
18-146-98
2.28 ACRES

PARCEL 298-2310
SE1/4, SE1/4SW1/4
18-146-98
6.84 ACRES

PARCEL 298-2321
E1/2NW1/4, E1/2SW1/4
19-146-98
9.08 ACRES

PARCEL 298-2331
E1/2 19-146-98
9.39 ACRES

PARCEL 298-2341
NE1/4, E1/2SE1/4 30-146-98
20.82 ACRES

PARCEL 298-2351
NE1/4 31-146-98
8.43 ACRES

PARCEL 298-2371
SW1/4NW1/4, NW1/4SW1/4
32-146-98
5.61 ACRES

PARCEL 298-2381

TEL. EASEMENT

298-056
298-055
298-054
298-053
298-052
298-051
298-050
298-049
298-048
298-047
298-046
298-045
298-044
298-043
298-042
298-041
298-040
298-039
298-038
298-037
298-036
298-035

2300
2310
2310
2321
2331
2341
2351
2371

19
20
30
29
31
32

SEC. 19,30,31,32 – T146N – R98W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

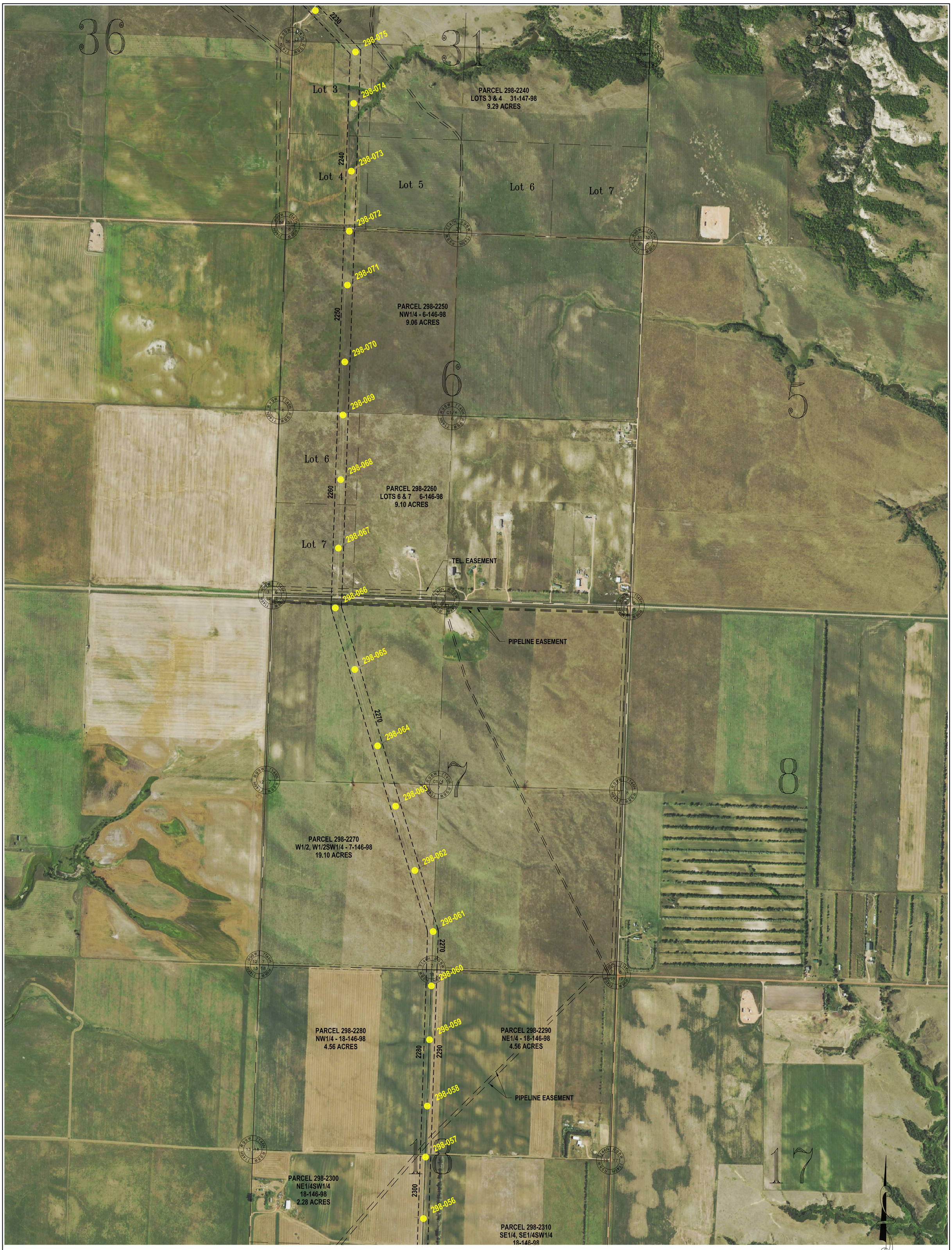
PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	C. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

SHEET 3 OF 23

REV. NO. 2



SEC. 31 – T147N – R98W
SEC. 6,7,18 – T146N – R98W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2

PARCEL 298-2192
U.S.A. (FOREST SERVICE)
13-147-99

PARCEL 298-2181
U.S.A. (FOREST SERVICE)
E1/2NE1/4, SW1/4NE1/4,
N1/2S1/2, SE1/4NW1/4
18-147-98

Lot 4

PARCEL 298-2202
PARCEL 298-2207
PARCEL 298-2209
U.S.A. (FOREST SERVICE)
24-147-99

PARCEL 298-2203
N.D. DEPARTMENT
OF TRANSPORTATION
24-147-99

PARCEL 298-2204 & 298-2208
MCKENZIE COUNTY
24-147-99

PARCEL 298-2212
ALL 25-147-99
19.08 ACRES

PARCEL 298-2221
NE1/4 - 36-147-99
8.24 ACRES

PARCEL 298-2230
NW1/4 - 31-147-98
3.74 ACRES

PIPELINE EASEMENT

PIPELINE EASEMENT

SEC. 31 – T147N – R98W
SEC. 13,24,25,36 – T147N – R99W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



SEC. 31 – T148N – R98W
SEC. 5,6,7,8,18 – T147N – R98W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

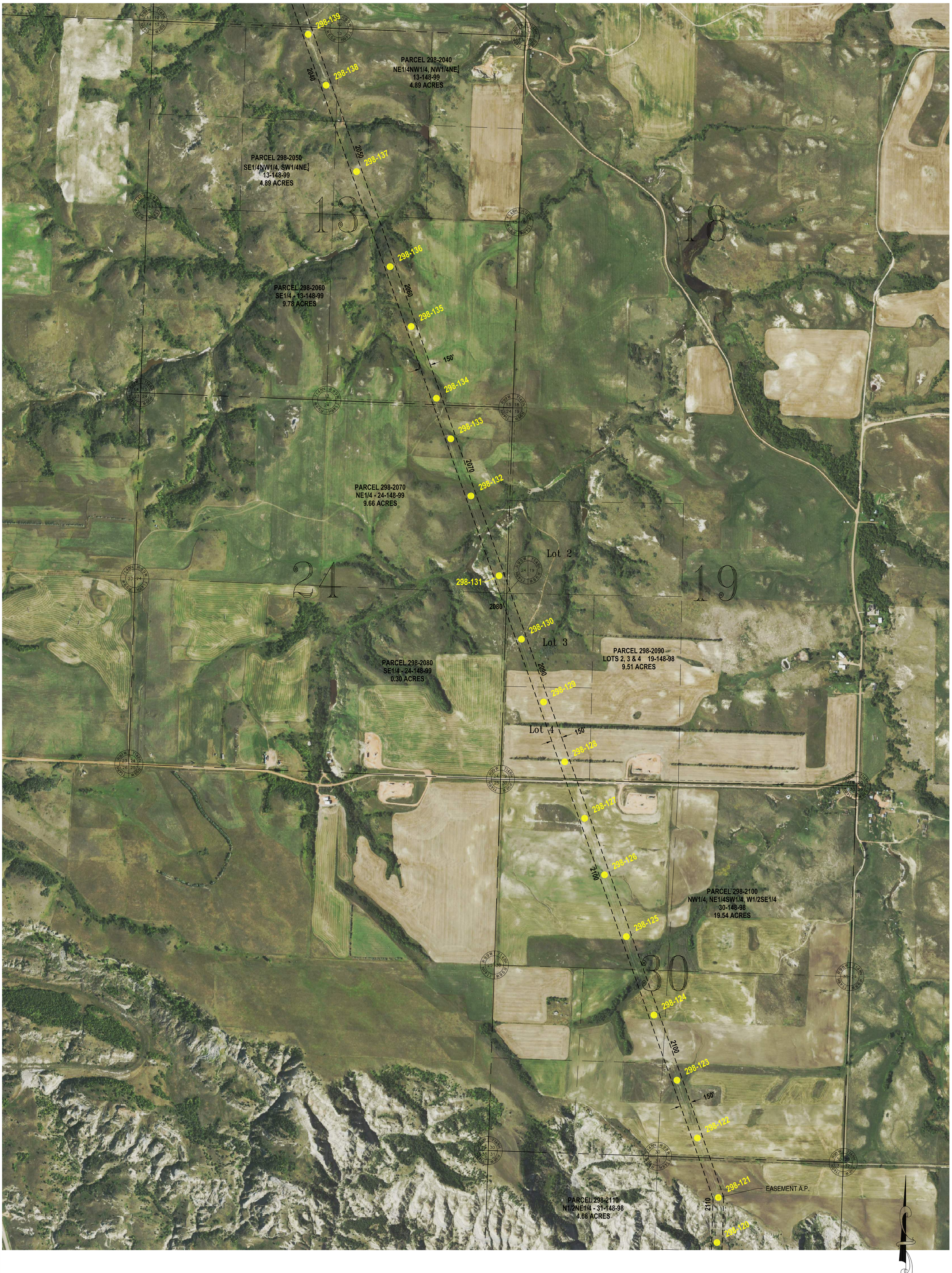
150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



SEC. 19,30 – T148N – R98W
SEC. 13,24 – T148N – R99W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

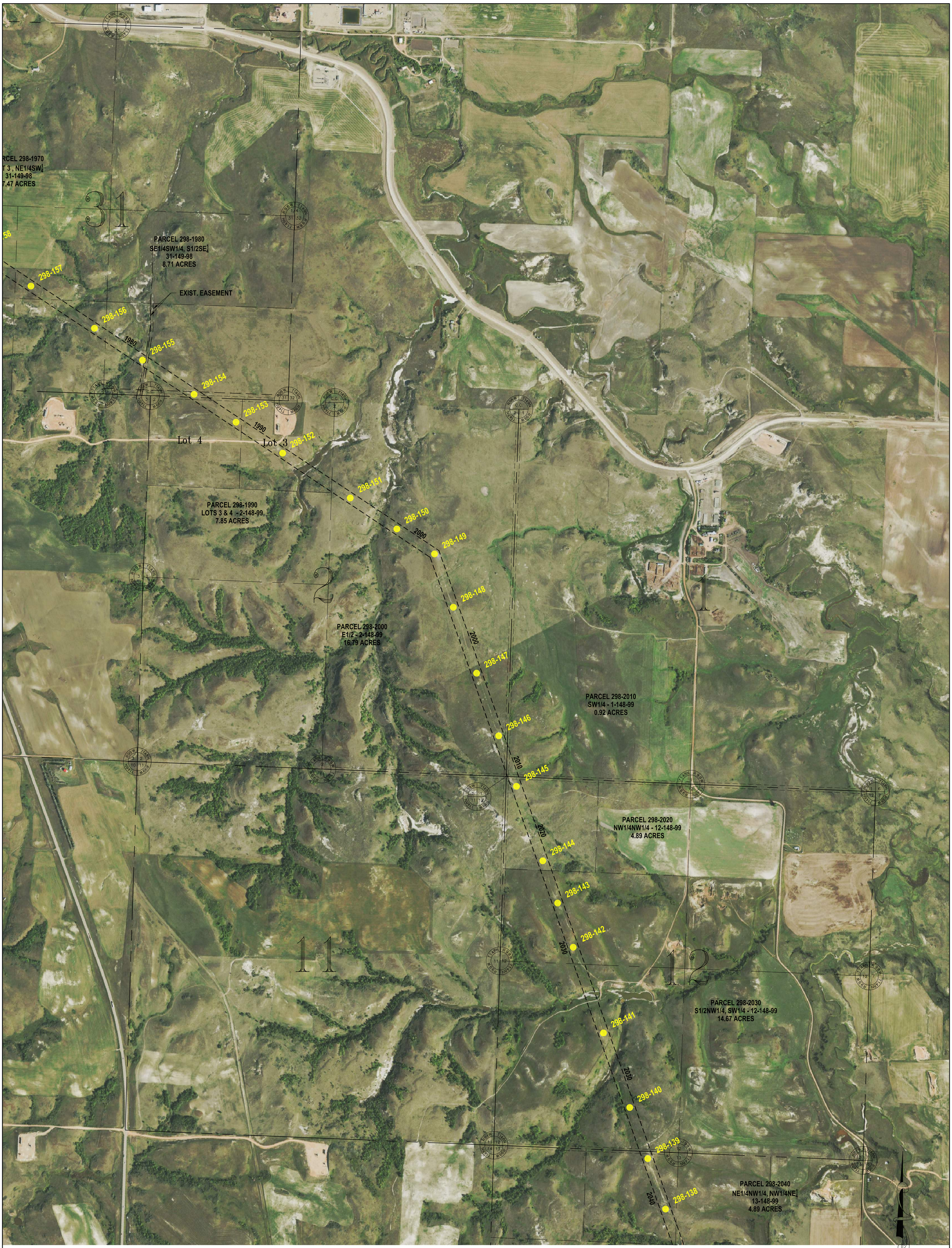
PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

SHEET 7 OF 23

REV. NO. 2



SEC. 1,2,11,12 – T148N – R99W
SEC. 31 – T149N – R98W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

REV. NO. 2

PARCEL 298-1850
N1/2NW1/4 - 23-149-99
1.77 ACRES

PARCEL 298-1860
SW1/4NW1/4 - 23-149-99
4.15 ACRES

PARCEL 298-1870
NE1/4SW1/4, SE1/4NW1/4, NW1/4SE1/4
23-149-99
7.72 ACRES

PIPELINE EASEMENT

PARCEL 298-1880
SW1/4SE1/4, SE1/4SW1/4
23-149-99
5.50 ACRES

PARCEL 298-1890
W1/2NE1/4 - 26-149-99
2.97 ACRES

PARCEL 298-1900
NE1/4NE1/4 - 26-149-99
2.53 ACRES

PARCEL 298-1910
SE1/4NE1/4, SE1/4 - 26-149-99
5.57 ACRES

PARCEL 298-1920
NW1/4 - 25-149-99
0.10 ACRES

PARCEL 298-1930
SW1/4 - 25-149-99
10.80 ACRES

PIPELINE EASEMENT

PARCEL 298-1940
NW1/4 - 36-149-99
5.03 ACRES

ROAD EASEMENT

PARCEL 298-1950
Part of NW1/4 - 36-149-99
0.13 ACRES

PARCEL 298-1960
E1/2 less Hwy - 36-149-99
9.50 ACRES

PARCEL 298-1963
Part of E1/2 - 36-149-99
1.14 ACRES

US HWY 85

PARCEL 298-1970
LOT 3 , NE1/4SW1/4
31-149-98
7.47 ACRES

Lot 3

Lot 4

298-177 1850 298-176 1860 298-175 1870 298-174 298-173 1880 298-172 298-171 1890 298-170 1900 298-169 1910 298-168 1920 298-167 298-166 1930 298-165 298-164 1940 298-163 1950 298-162 298-161 1960 298-160 298-159 1963 298-158 298-157 1970 298-156 1980

SEC. 31 – T149N – R98W
SEC. 23,25,26,36 – T149N – R99W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

ROAD EASEMENT

PARCEL 298-1820
N1/2, SE1/4 - 16-149-99
19.20 ACRES

PARCEL 298-1830
S1/2SE1/4, SW1/4 - 15-149-99
11.53 ACRES

PARCEL 298-1840
NE1/4 - 22-149-99
8.67 ACRES

PARCEL 298-1850
N1/2NW1/4 - 23-149-99
1.77 ACRES

PARCEL
SW1/4NW1/
4.15 A

EXIST. EASEMENT

PARCEL 298-1880
SW1/4SE1/4, SE1/4SW1
23-149-99
5.50 ACRES

298-191 298-190 298-189 1820 298-188 298-187 298-186 298-185 1820 298-184 298-183 298-182 1830 298-181 298-180 298-179 1840 298-178 298-177 1850 298-176 1860 298-175 1870

16 15 22

SEC. 15,16,22 – T149N – R99W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

SHEET 10 OF 23

REV. NO. 2

PIPELINE EASEMENT

298-213

298-212

1740

298-211

PIPELINE EASEMENT

298-210

PARCEL 298-1740
W1/2E1/2, E1/2W1/2
6-149-99
18.61 ACRES

1740

298-209

298-208

298-207

298-206

1750

298-205

PARCEL 298-1750
W1/2NE1/4, NW1/4SE1/4
7-149-99
13.69 ACRES

298-204

298-203

298-202

PARCEL 298-1760
S1/2SE1/4- 7-149-99
4.54 ACRES

1760

298-201

COUNTY ROAD
EASEMENT

298-200

1770

PARCEL 298-1770
W1/2NE1/4 - 18-149-99
10.19 ACRES

PARCEL 298-1790
W1/2NW1/4 - 17-149-99
4.55 ACRES

PARCEL 298-1810
NE1/4 - 17-149-99
9.10 ACRES

298-199

PIPELINE
EASEMENT

298-198

298-197

1780

298-196

1790

298-195

298-194

1800

298-193

298-192

1810

298-191

298-190

PARCEL 298-1780
E1/2NE1/4 - 18-149-99
4.54 ACRES

PARCEL 298-1800
E1/2NW1/4 - 17-149-99
4.55 ACRES

SEC. 6,7,8,17,18 – T149N – R99W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



SEC. 19,30,31 – T150N – R99W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

SHEET 12 OF 23

REV. NO. 2

298-250
1530
298-249
Lot 4
1540
298-248
298-247
Lot 4
Lot 3
1550
298-246
298-245
1560
Lot 5
PARCEL 298-1550
GOV'T LOTS 3 & 4,
SE1/4NW1/4, E1/2SW1/4
6-150-99
14.82 ACRES
298-244
PARCEL 298-1560
E1/2 - 6-150-99
7.06 ACRES
298-243
Lot 6
1550
298-242
1560
298-241
Lot 7
PIPELINE EASEMENT
298-240
1570
298-239
PARCEL 298-1570
W1/2NE1/4, E1/2NW1/4 - 7-150-99
9.08 ACRES
1570
298-238
298-237
1590
PARCEL 298-1580
E1/2SW1/4 - 7-150-99
4.55 ACRES
PARCEL 298-1590
SE1/4 - 7-150-99
4.55 ACRES
1580
298-236
PIPELINE EASEMENT
298-235
298-234
1610
PARCEL 298-1610
NE1/4 - 18-150-99
4.54 ACRES
PARCEL 298-1600
W1/2 - 18-150-99
8.91 ACRES
1600
298-233
298-232
298-231
PARCEL 298-1620
SE1/4 - 18-150-99
4.37 ACRES
1620
1600
298-230
PARCEL 298-1630
Part of S1/2 - 18-150-99
0.34 ACRES
TEL. EASEMENT
1630
298-229
hwy #85

SEC. 31 – T151N–R99W
SEC. 6,7,18 – T150N – R99W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

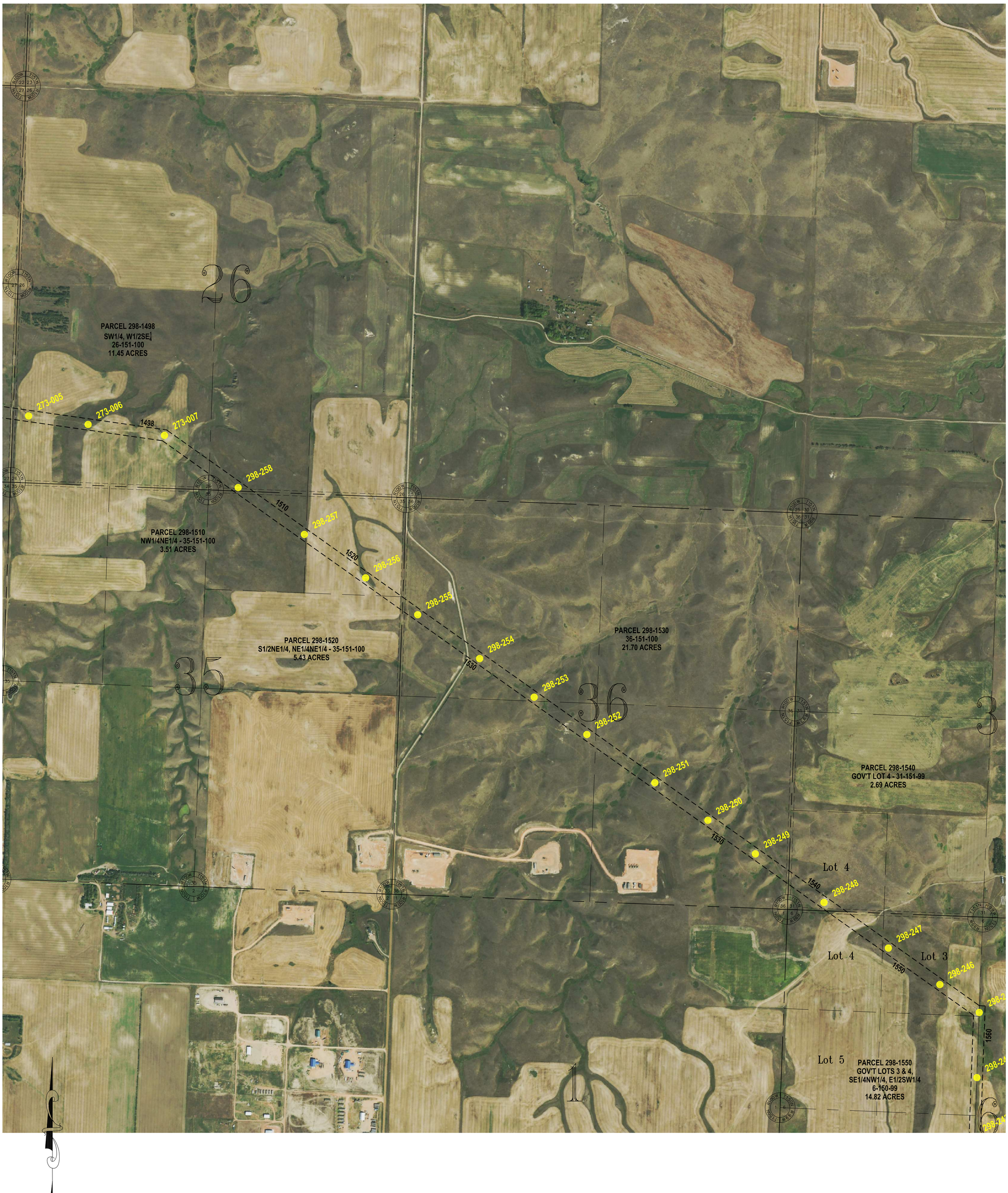
150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU–11–696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



SEC. 31 – T151N–R99W
SEC. 22,26,27,36,36 – T151N – R100W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

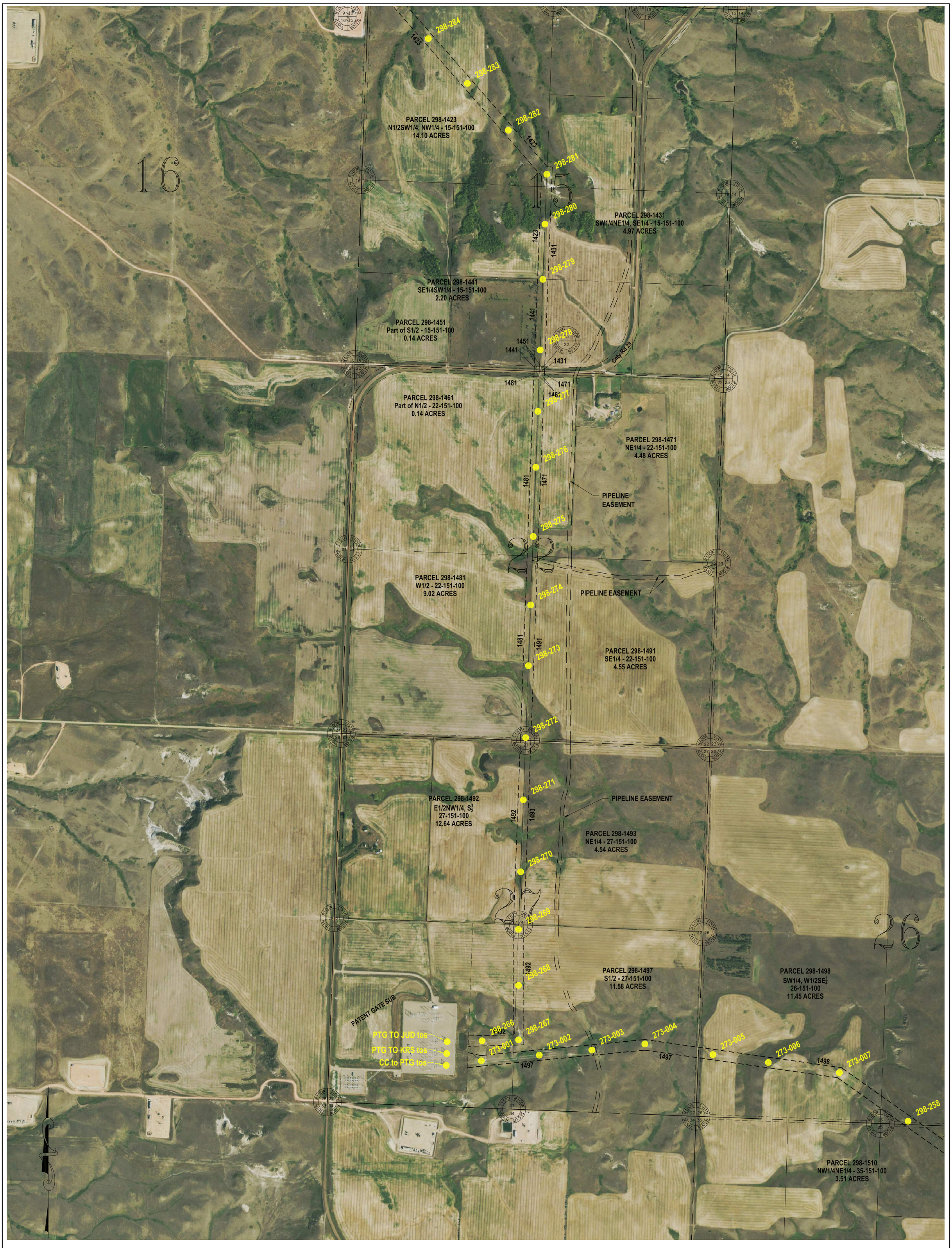
PSC SUBMITTAL FOR LINE 294
CASE #PU–11–696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

SHEET 14 OF 23

REV. NO. 2



SEC. 15,22,26,27 – T151N – R100W
MCKENZIE COUNTY, NORTH DAKOTA

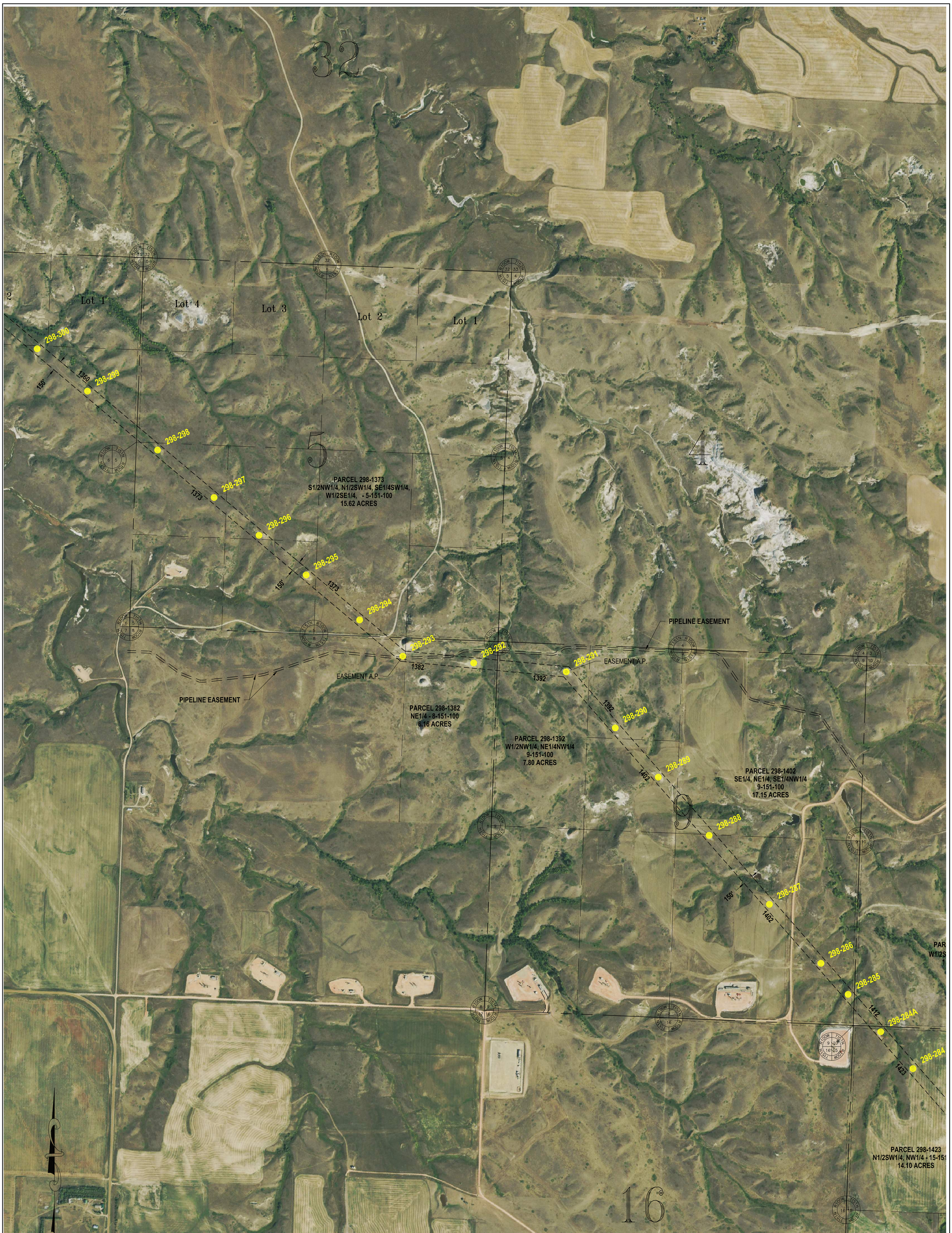
LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



SEC. 5,6,8,9,10 – T151N – R100W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

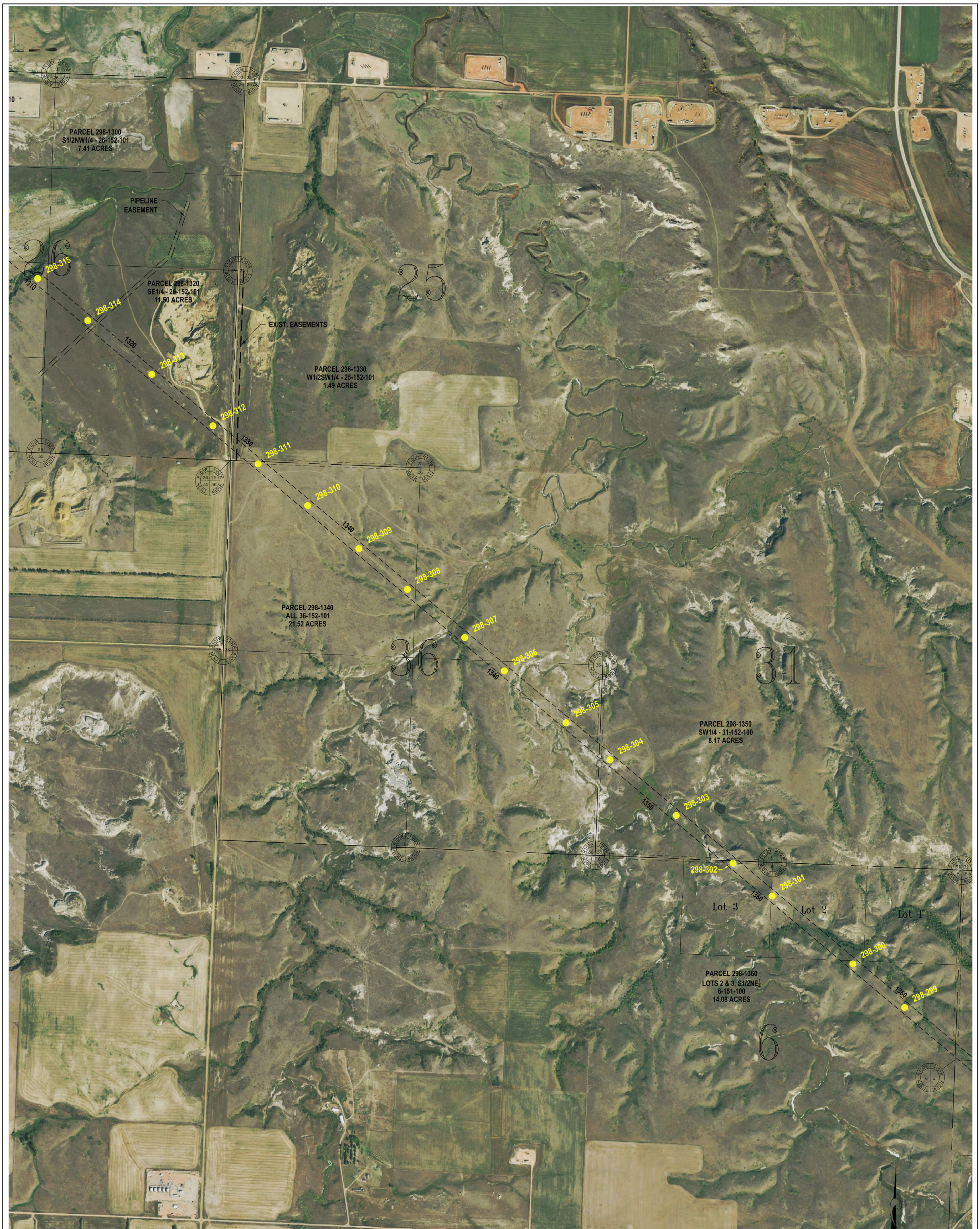
AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



SEC. 6 – T151N – R100W
SEC. 31 – T152N – R100W
SEC. 25,26,36 – T152N – R101W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

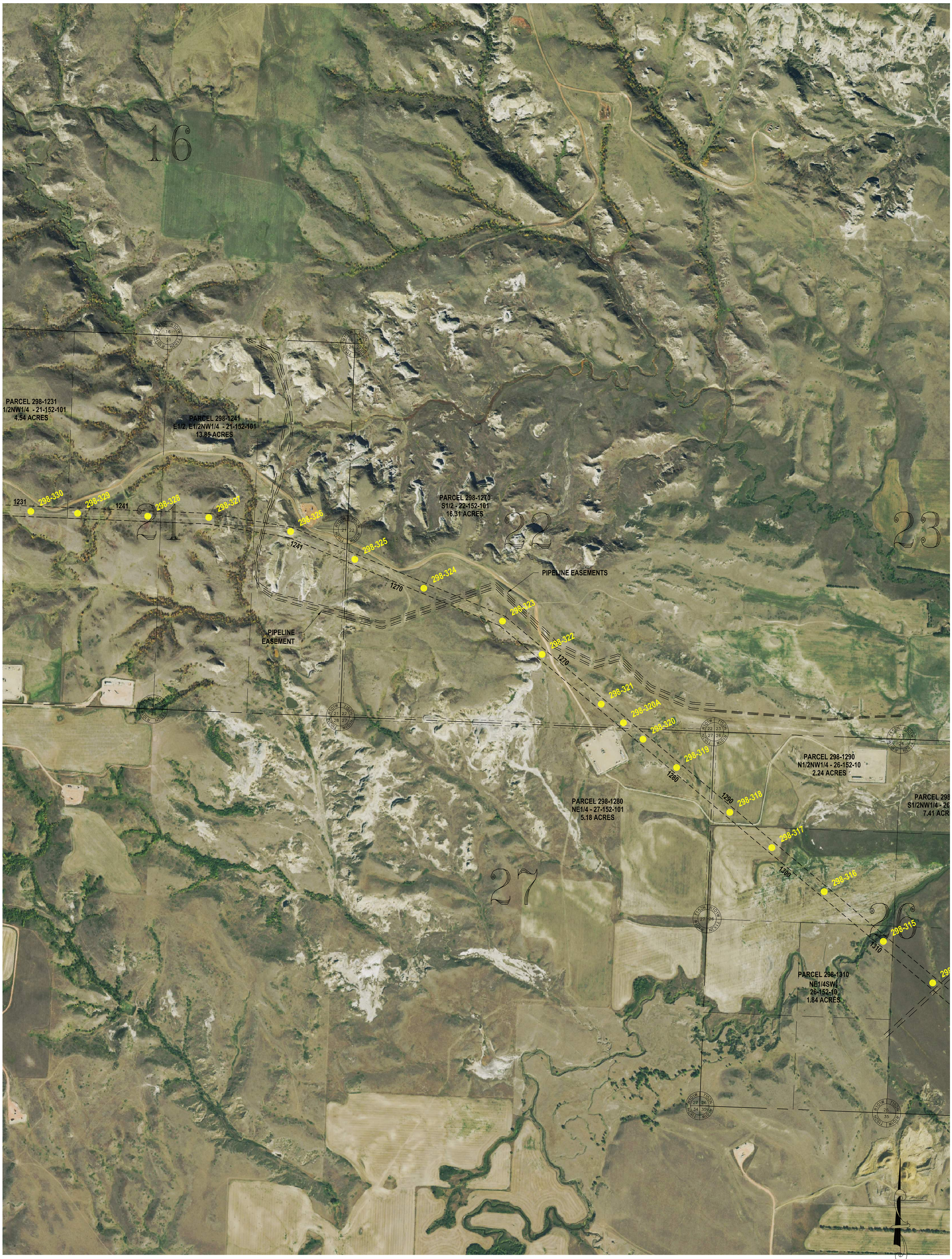
150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



SEC. 21,22,26,27 – T152N – R101W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



SEC. 7,17,18,20,21 – T152N – R101W
SEC. 13 – T152N – R102W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

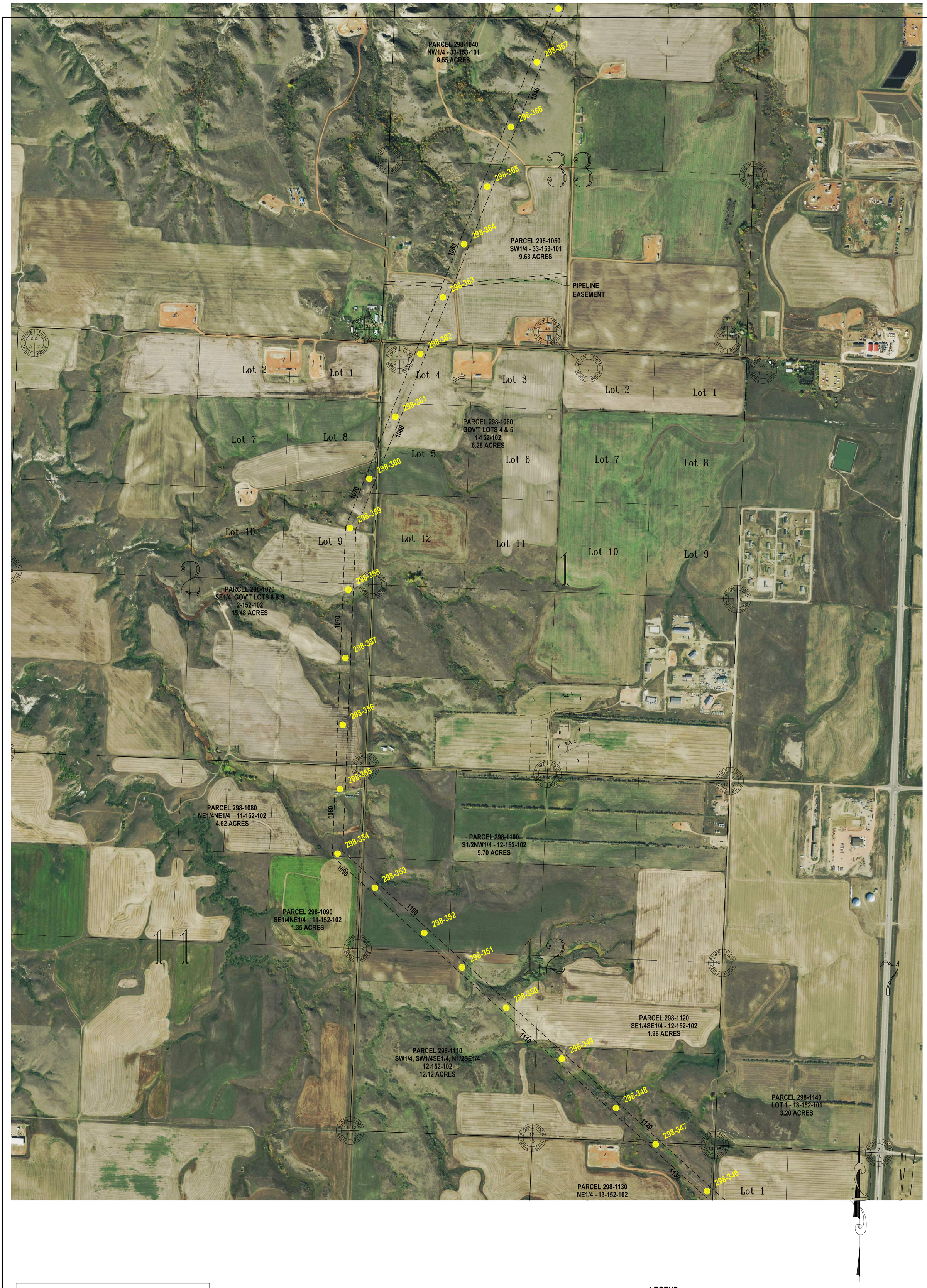
AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative



SEC. 1,2,11,12,13 – T152N – R102W
SEC. 33 – T153N – R101W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



SEC. 16,17,21,28 – T153N – R101W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

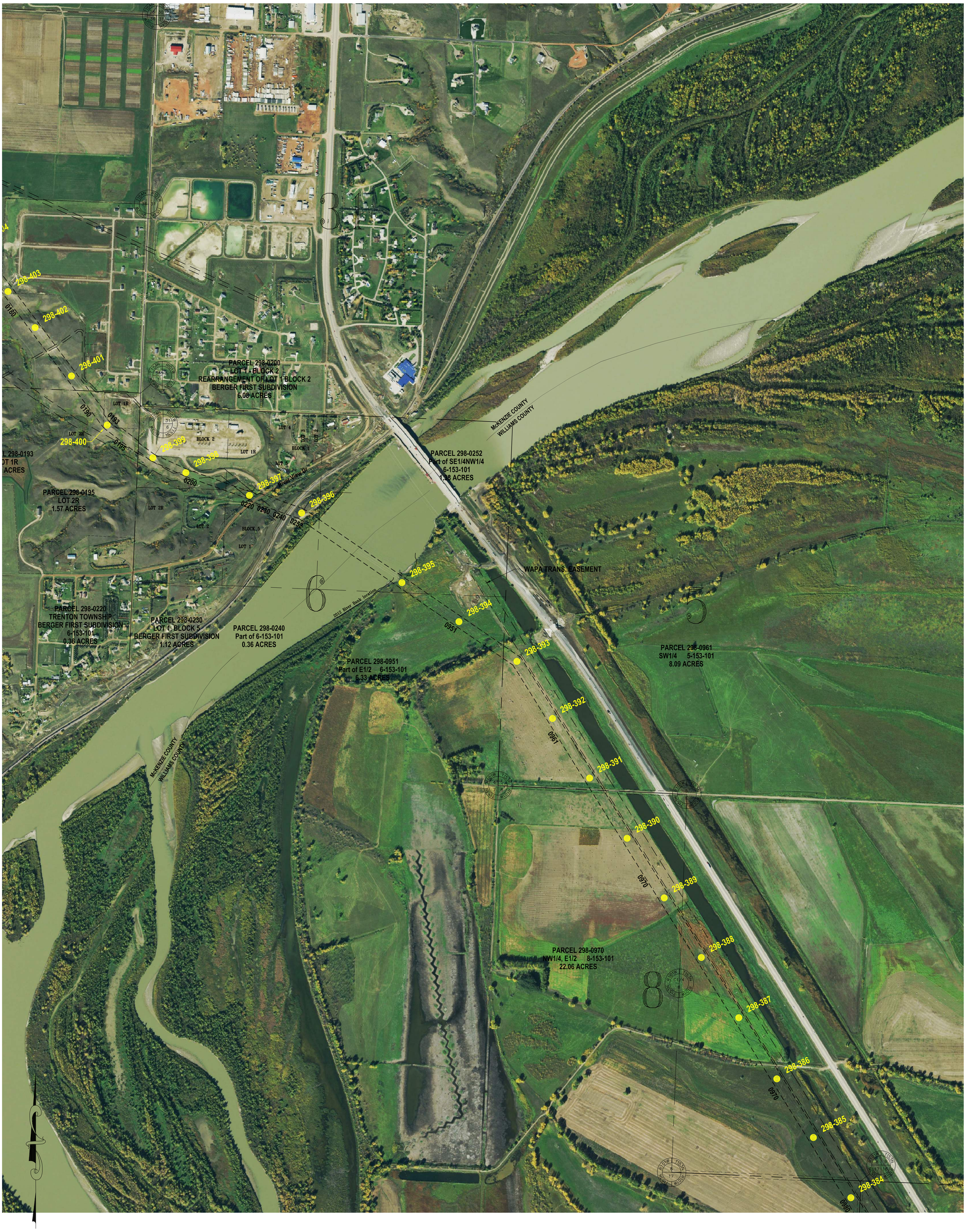
150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2



SEC. 5,6,8,17 – T153N – R101W
SEC. 31 – T154N – R101W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

- AS BUILT STRUCTURE LOCATION
- 150' WIDE EASEMENT

PSC SUBMITTAL FOR LINE 294
CASE #PU–11–696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

REV. NO. 2

PARCEL 298-0010
Part of W1/2 23-154-102
7.83 ACRES

JUDSON SUB

JUDSON TOS

298-427

0010

298-426

PARCEL 298-0014
Part of NW1/4SE1/4
23-154-102
1.52 ACRES

298-425

0010

PARCEL 298-0020
LOT 2 - BLOCK 1
INDUSTRIAL PARK SUBDIVISION
1.94 ACRES

PARCEL 298-0015
Part of SW1/4SE1/4 23-154-102
1.45 ACRES

298-424

298-423

0014

298-422

0010

0015

PARCEL 298-0040
LOT 3 - BLOCK 1
INDUSTRIAL PARK SUBDIVISION
0.20 ACRES

LOT 2

0020

298-421

PARCEL 298-0030
LOT 4 - BLOCK 1
INDUSTRIAL PARK SUBDIVISION
1.14 ACRES

BLK 1

LOT 4

0030

0040

LOT 3

PARCEL 298-0050
Part of SE1/4 23-154-102
0.34 ACRES

Hwy 200

298-419

0055

298-420

0060

PARCEL 298-0055
Part of NW1/4NE1/4 26-154-102
0.69 ACRES

298-418

0070

PARCEL 298-0070
NW1/4 26-154-102
4.14 ACRES

PARCEL 298-0060
NW1/4NE1/4 26-154-102
4.22 ACRES

0080

298-417

PARCEL 298-0080
S1/2NE1/4 26-154-102
2.28 ACRES

298-416

PARCEL 298-0090
SW1/4 26-154-102
4.53 ACRES

0090

0100

298-415

PARCEL 298-0100
SE1/4 26-154-102
4.53 ACRES

298-414

298-413

PARCEL 298-0110
NW1/4 35-154-102
4.53 ACRES

0110

0120

298-412

PARCEL 298-0120
NE1/4 35-154-102
8.97 ACRES

PARCEL 298-0150
NW1/4 36-154-102
4.12 ACRES

298-411

298-410

0120

298-409

0130

0140

298-408

298-407

0150

298-406

298-405

0160

PARCEL 298-0130
E1/2SW1/4 35-154-102
0.13 ACRES

PARCEL 298-0140
SE1/4 35-154-102
4.54 ACRES

PARCEL 298-0160
SW1/4 36-154-102
5.68 ACRES

298-404

298-403

PARCEL 298-0180
SE1/4 36-154-102
9.90 ACRES

0180

298-402

298-401

LOT 1R

0190

0193

LOT 2R

298-400

0195

PARCEL 298-0190
LOT 2R
1.70 ACRES

PARCEL 298-0193
LOT 1R
0.60 ACRES

BLOCK

298-399

SEC. 23,26,35,36 – T154N – R102W
MCKENZIE COUNTY, NORTH DAKOTA

LEGEND:

AS BUILT STRUCTURE LOCATION

150' WIDE EASEMENT

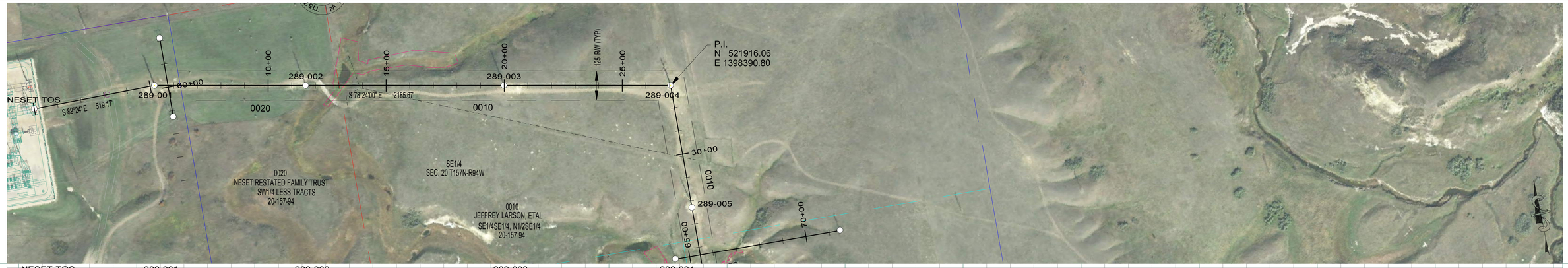
PSC SUBMITTAL FOR LINE 294
CASE #PU-11-696
345kV TRANSMISSION LINE

2	AS BUILT STRUCTURE LOCATIONS	C. KNOLL	R. NASSET	3/1/18
1	ADDED FINAL STRUCTURE LOCATIONS	R. LANG	G. CHRISTENSON	7/18/14

BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

SHEET 23 OF 23

REV. NO. 2



NESET TOS
TOS
STA=0+00.00
HT=75.00 ELE=2258.38

289-001
2SDA15-1-105
STA=5+19.08
HT=105.00 ELE=2222.96
END 520' RS, BEGIN 744' RS

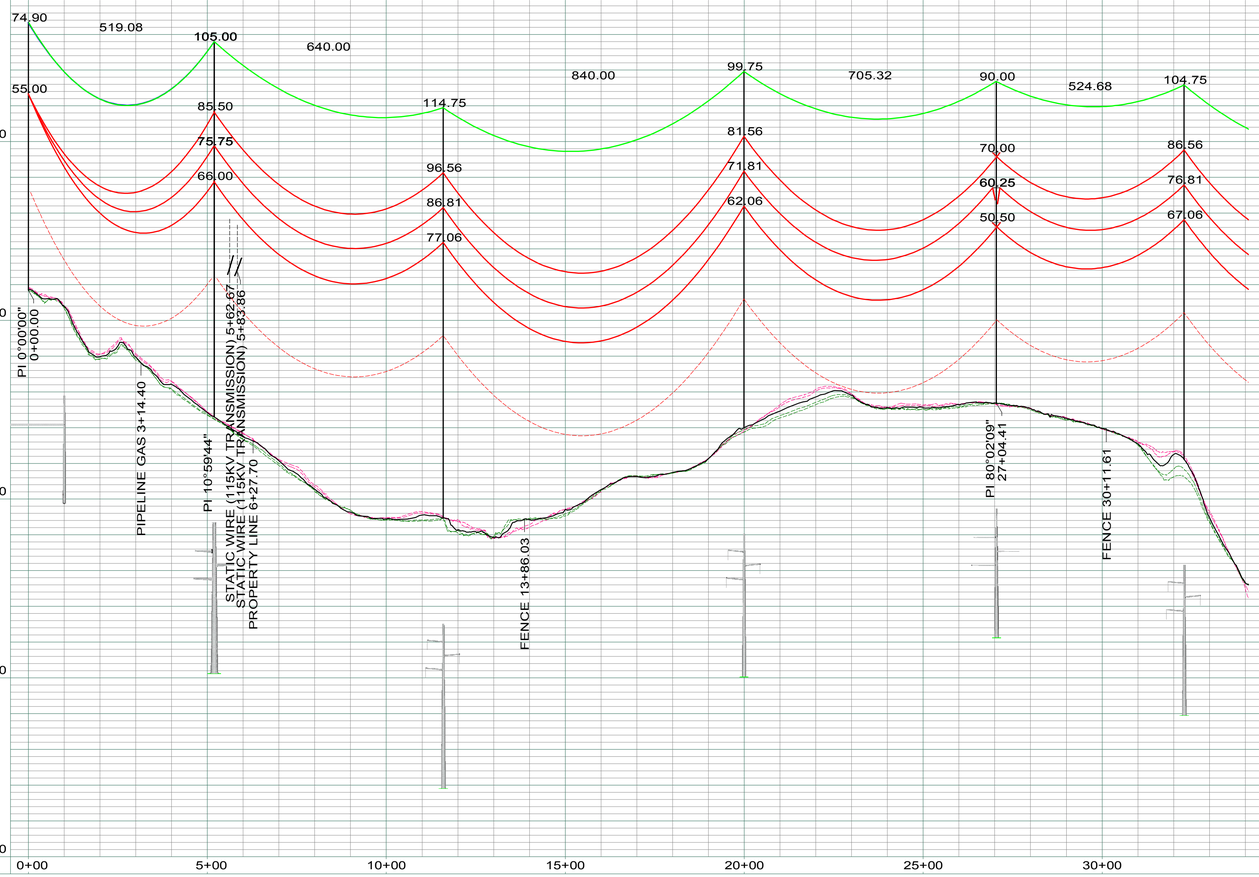
289-002
2ST2-115
STA=11+59.08
HT=115.00 ELE=2194.71
744' RS

289-003
2ST2-100
STA=19+99.08
HT=100.00 ELE=2219.91
744' RS

289-004
2SDA90-090
STA=27+04.41
HT=90.00 ELE=2226.85
END 744' RS, BEGIN 748' RS

289-005
2ST2-105
STA=32+29.08
HT=105.00 ELE=2211.10
748' RS

NESET TOS TO 289-001
520' RS
BITTERN 60 DEG FINAL TENSION = 2216 LBS
BITTERN NESC HEAVY INITIAL TENSION = 4912 LBS
BITTERN HEAVY ICE INITIAL TENSION = 8202 LBS
OPGW 60 DEG FINAL TENSION = 679 LBS
OPGW NESC FINAL TENSION = 2465 LBS
OPGW HEAVY ICE TENSION = 4734 LBS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
-	-	--	--	--	--/--
-	-	--	--	--	--/--
-	-	--	--	--	--/--
1	AS BUILT	CLK	RN/SV	SV	04/18

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCT.	230KV BITTERN (RED)	5446	12525	16921	744
OPGW	AC-71/571 (GREEN)	2142	5902	8982	743
OHGW	3/8" EHS (BLUE)	480	2017	3991	521

DESIGN BY: S. VASBINDER — DATE: 04/16
DRAWN BY: C. KNOLL — DATE: 04/16
DESIGN CHK: R. NASSET — DATE: 04/16
DRAFT CHK: R. LANG — DATE: 04/16
APPROVED: S. WISEMAN — DATE: 04/16

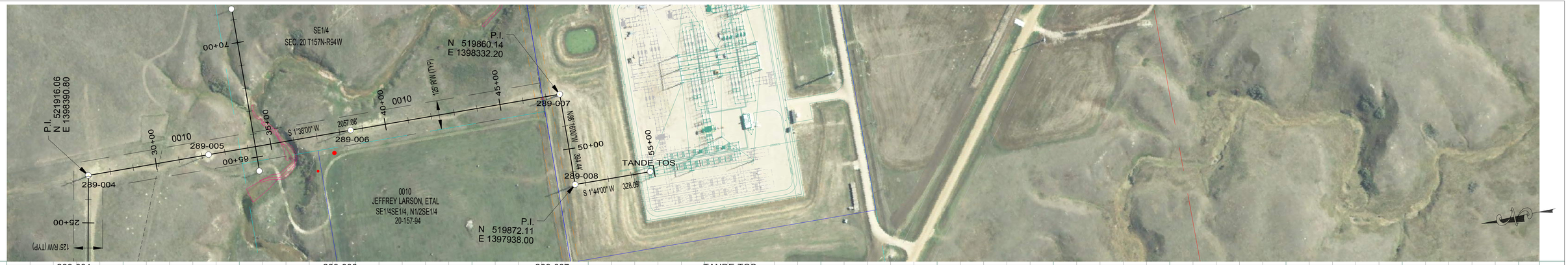
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 289 - 230KV LINE - NESET SUB TO TANDE SUB
COUNTY: MOUNTRAIL

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: -0+50 TO 34+09
STRUCTURE: NESET TOS TO 289-005

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 289-090-T3-001
REV. NO.: 1



289-004
2SDA90-090
STA=27+04.41
HT=90.00 ELE=2226.85
END 744' RS, BEGIN 748' RS

289-005
2ST2-105
STA=32+29.08
HT=105.00 ELE=2211.10
748' RS

289-006
2ST2-110
STA=38+49.08
HT=110.00 ELE=2189.74
748' RS

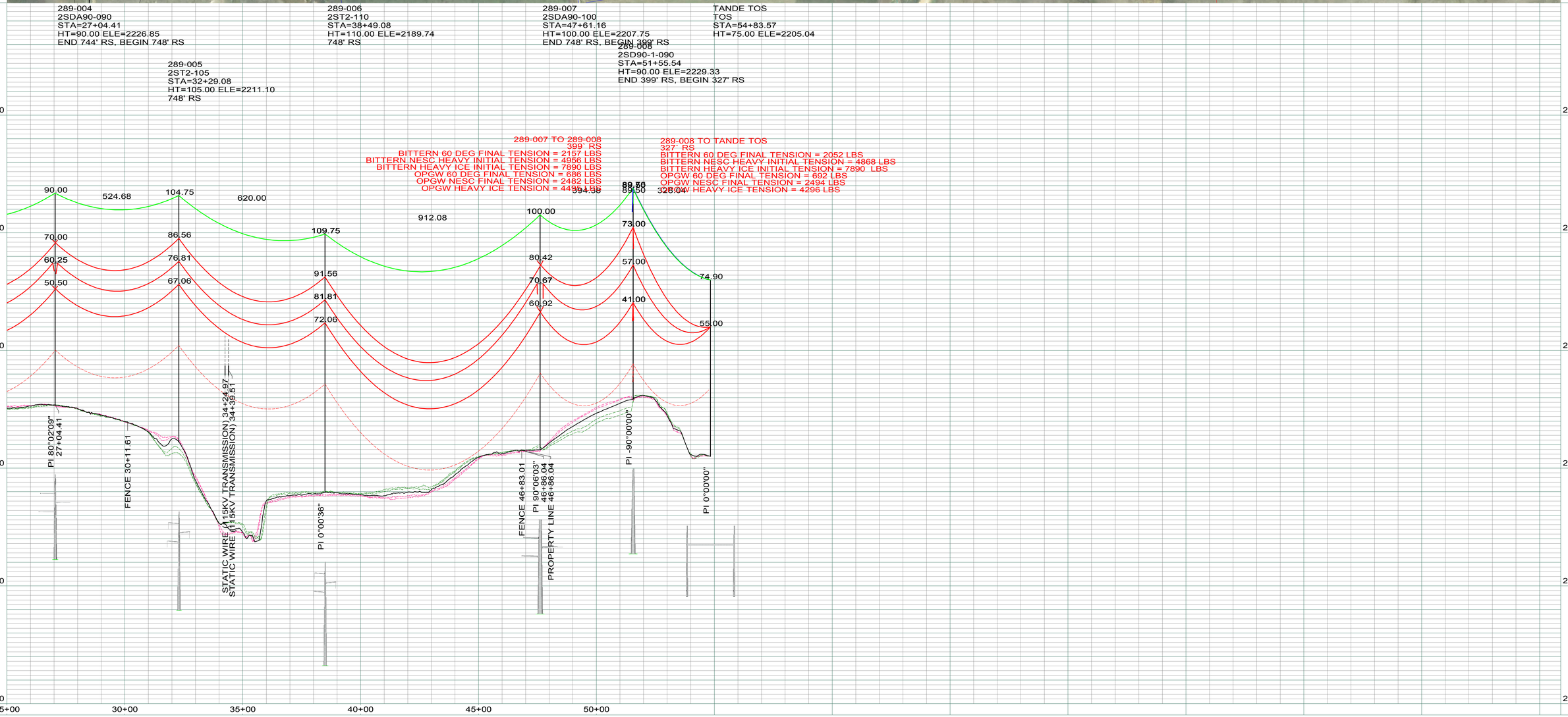
289-007
2SDA90-100
STA=47+61.16
HT=100.00 ELE=2207.75
END 748' RS, BEGIN 399' RS

289-008
2SD90-1-090
STA=51+55.54
HT=90.00 ELE=2229.33
END 399' RS, BEGIN 327' RS

TANDE TOS
TOS
STA=54+83.57
HT=75.00 ELE=2205.04

289-007 TO 289-008
399' RS
BITTERN 60 DEG FINAL TENSION = 2157 LBS
BITTERN NESC HEAVY INITIAL TENSION = 4956 LBS
BITTERN HEAVY ICE INITIAL TENSION = 7890 LBS
OPGW 60 DEG FINAL TENSION = 686 LBS
OPGW NESC FINAL TENSION = 2482 LBS
OPGW HEAVY ICE TENSION = 4429 LBS

289-008 TO TANDE TOS
327' RS
BITTERN 60 DEG FINAL TENSION = 2052 LBS
BITTERN NESC HEAVY INITIAL TENSION = 4868 LBS
BITTERN HEAVY ICE INITIAL TENSION = 7890 LBS
OPGW 60 DEG FINAL TENSION = 692 LBS
OPGW NESC FINAL TENSION = 2494 LBS
OPGW HEAVY ICE TENSION = 4296 LBS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
-	-	--	--	--	--/--
-	-	--	--	--	--/--
-	-	--	--	--	--/--
1	AS BUILT	CLK	RN/SV	SV	04/18

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCT.	230KV BITTERN (RED)	5446	12525	16921	748
OPGW	AC-71/571 (GREEN)	2146	5914	9004	746
OHGW	3/8" EHS (BLUE)	475	1870	3407	327

DESIGN BY: S. VASBINDER DATE: 04/16
DRAWN BY: C. KNOLL DATE: 04/16
DESIGN CHK: R. NASSET DATE: 04/16
DRAFT CHK: R. LANG DATE: 04/16
APPROVED: S. WISEMAN DATE: 04/16

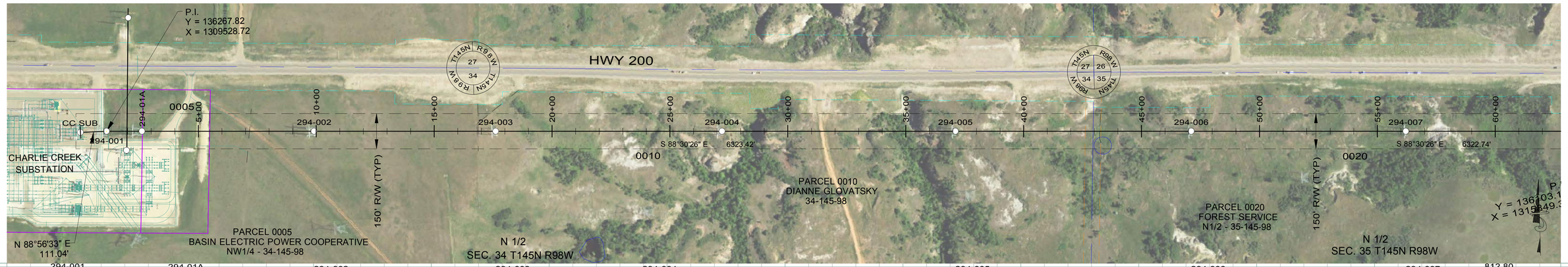
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 289 - 230KV LINE - NESET SUB TO TANDE SUB
COUNTY: MOUNTRAIL

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILES
STATION: 25+00 TO 55+00
STRUCTURE: 289-004 TO TANDE TOS

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 289-090-T3-002
REV. NO.: 1



294-001
STA=1+11.03
HT=116.00 ELE=2665.29
3HS1-135
EMBED 19 FT
600' SLACK SPAN

294-01A
STA=2+61.03
HT=121.42 ELE=2661.70
3HS-140
600' SLACK SPAN

294-002
STA=9+91.03
HT=92.22 ELE=2649.90
3HD-090
END 600' SLACK SPAN,
BEGIN 850' RS

294-003
STA=17+61.03
HT=74.80 ELE=2654.14
3HS-091
850' RS

294-004
STA=27+21.03
HT=96.46 ELE=2589.60
3HS-118L-113R
850' RS

294-005
STA=37+11.03
HT=94.48 ELE=2583.80
3HS-113
850' RS

294-006
STA=47+11.03
HT=105.11 ELE=2575.30
3HS-124
850' RS

294-007
STA=56+21.03
HT=103.61 ELE=2603.09
3HS-124
850' RS

CC SUB
STA=0+00.00
HT=85.00 ELE=2666.08
TOS
END 600' SLACK SPAN
OPGW SPLICE

730.00
770.00
960.00
990.00
1000.00
910.00
812.80

PI 0°00'00"
PI 2°33'01"
PIPELINE GAS 8+33.07
FENCE 16+84.02
FENCE 43+22.97

DISPLAYED 212°F MAX SAG 3460 (LBS)
DISPLAYED 60°F MAX SAG 827 (LBS)
DISPLAYED 60°F MAX SAG 852 (LBS)

DISPLAYED 212°F MAX SAG 7423 (LBS)
DISPLAYED 60°F MAX SAG 2279 (LBS)
DISPLAYED 60°F MAX SAG 2227 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10221	21574	28918	850`
OPGW (GRN)	AFL 0.571" 36 FIBER	2746	6522	10148	850`
OHGW (BLU)	7/16" EHS	2457	5871	9419	850`

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

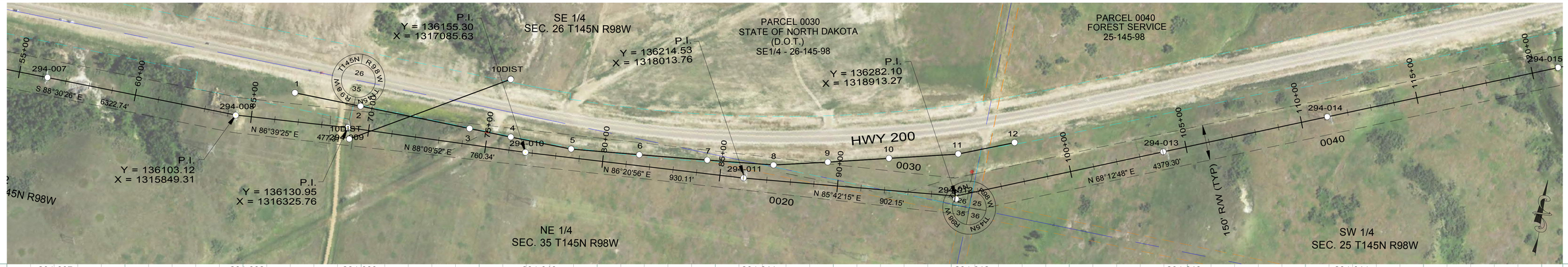
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: -3+00 TO 62+78
STRUCTURE: CC SUB TO 294-007

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-001
REV. NO. 2



294-007
STA=56+21.03
HT=103.61 ELE=2603.09
3HS-124
850' RS

294-008
STA=64+33.77
HT=76.00 ELE=2690.11
3HA07-075
OFFSET ADJUST=1.40
850' RS

294-009
STA=69+11.03
HT=104.61 ELE=2652.34
3HS-124
850' RS

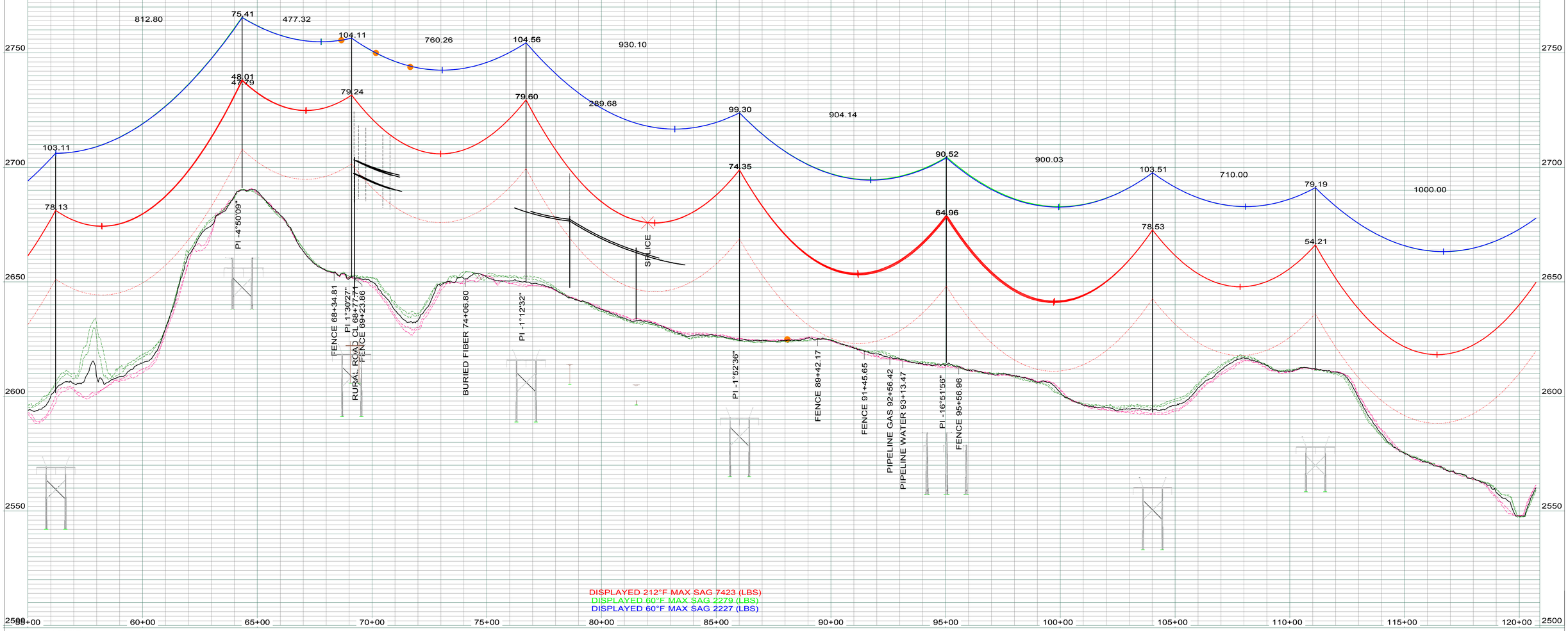
294-010
STA=76+71.29
HT=105.06 ELE=2649.90
3HS-124
850' RS

294-011
STA=86+01.39
HT=99.80 ELE=2624.56
3HS-118
850' RS

294-012
STA=95+03.57
HT=91.00 ELE=2613.82
3TPA20-090
OFFSET ADJUST=12.75
850' RS

294-013
STA=104+01.65
HT=104.01 ELE=2594.17
3HS-124
850' RS

294-014
STA=111+11.65
HT=79.69 ELE=2611.98
3HS-096
850' RS



DISPLAYED 212°F MAX SAG 7423 (LBS)
DISPLAYED 60°F MAX SAG 2279 (LBS)
DISPLAYED 60°F MAX SAG 2227 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
	IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.				
2	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10221	21574	28918	850'
OPGW (GRN)	AFL 0.571" 36 FIBER	2279	6522	10148	850'
OHGW (BLU)	7/16" EHS	2227	5871	9419	850'

DESIGN BY:	CDB/GCC	DATE: 14-JUL
DRAWN BY:	C. BAUER	DATE: 14-JUL
DESIGN CHK:	G. CHRISTENSON	DATE: 14-JUL
DRAFT CHK:		DATE:
APPROVED:	G CHRISTENSON	DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 55+00 TO 120+73
STRUCTURE: 294-007 TO 294-014

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

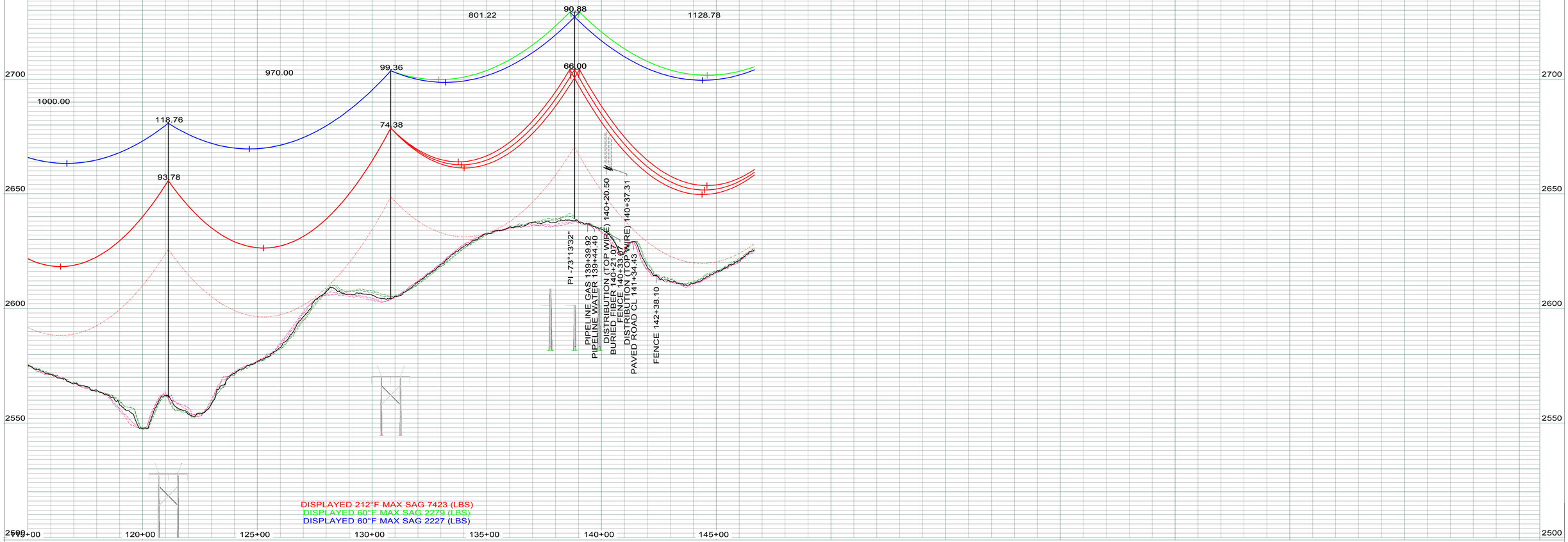
BASIN DRAWING NO. 294-090-T3-002
REV. NO. 2



294-015
STA=121+11.65
HT=119.26 ELE=2562.00
3HS-140
850' RS

294-016
STA=130+81.65
HT=99.86 ELE=2604.27
3HS-118
850' RS

294-017
STA=138+82.87
HT=91.00 ELE=2638.26
3TPD75-090
OPGW SPLICE
END 850' RS, BEGIN 900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10221	21574	28918	850`
OPGW (GRN)	AFL 0.571" 36 FIBER	2279	6522	10148	850`
OHGW (BLU)	7/16" EHS	2227	5871	9419	850`

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

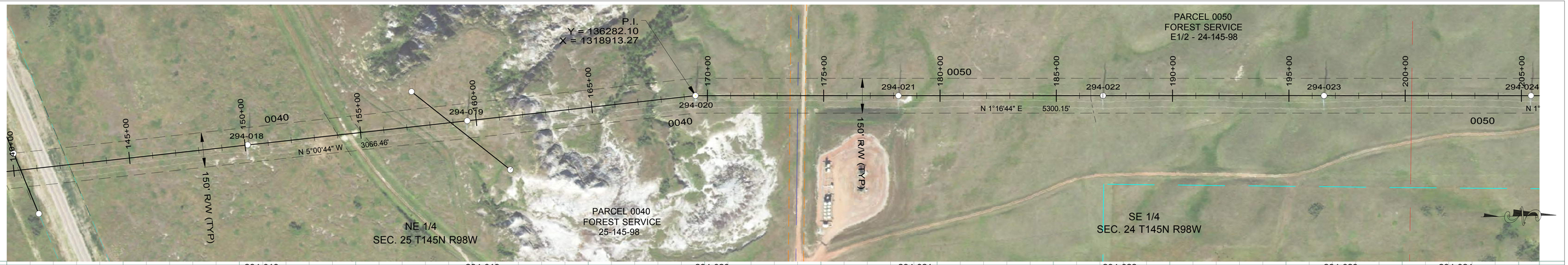
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 115+00 TO 146+66
STRUCTURE: 294-015 TO 294-017

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-003
REV. NO. 1



294-018
STA=150+11.65
HT=94.05 ELE=2635.03
3HS-113
900' RS

294-019
STA=159+61.65
HT=99.77 ELE=2627.36
3HS-118
900' RS

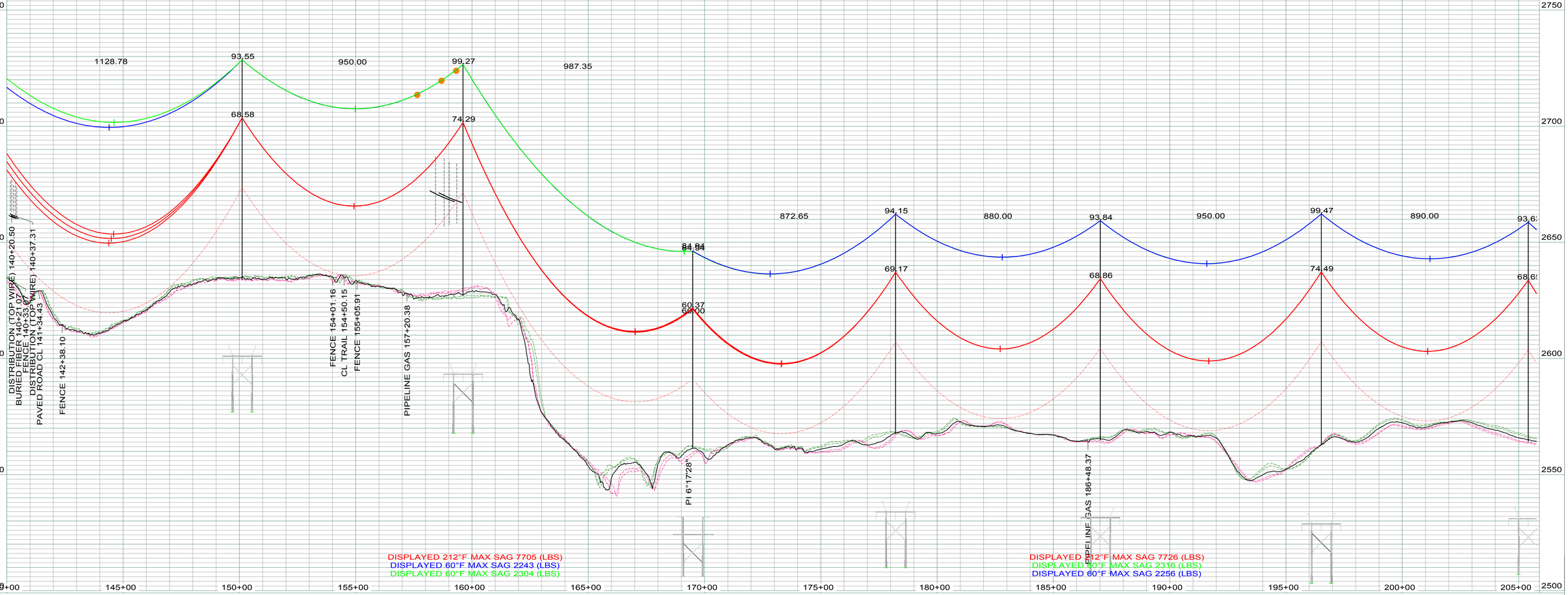
294-020
STA=169+49.00
HT=85.00 ELE=2561.24
3HTD10-085
END 900' RS, BEGIN 900' RS

294-021
STA=178+21.65
HT=94.65 ELE=2568.01
3HS-113
900' RS

294-022
STA=187+01.65
HT=94.34 ELE=2565.51
3HS-113
900' RS

294-023
STA=196+51.65
HT=99.97 ELE=2562.79
3HS-118
900' RS

294-024
STA=205+41.65
HT=94.13 ELE=2565.05
3HS-113
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10487	21910	29539	900
OPGW (GRN)	AFL 0.571" 36 FIBER	2316	6687	10455	900
OHGW (BLU)	7/16" EHS	2256	6020	9700	900

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 140+00 TO 205+77
STRUCTURE: 294-018 TO 294-024

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-004

REV. NO. 1

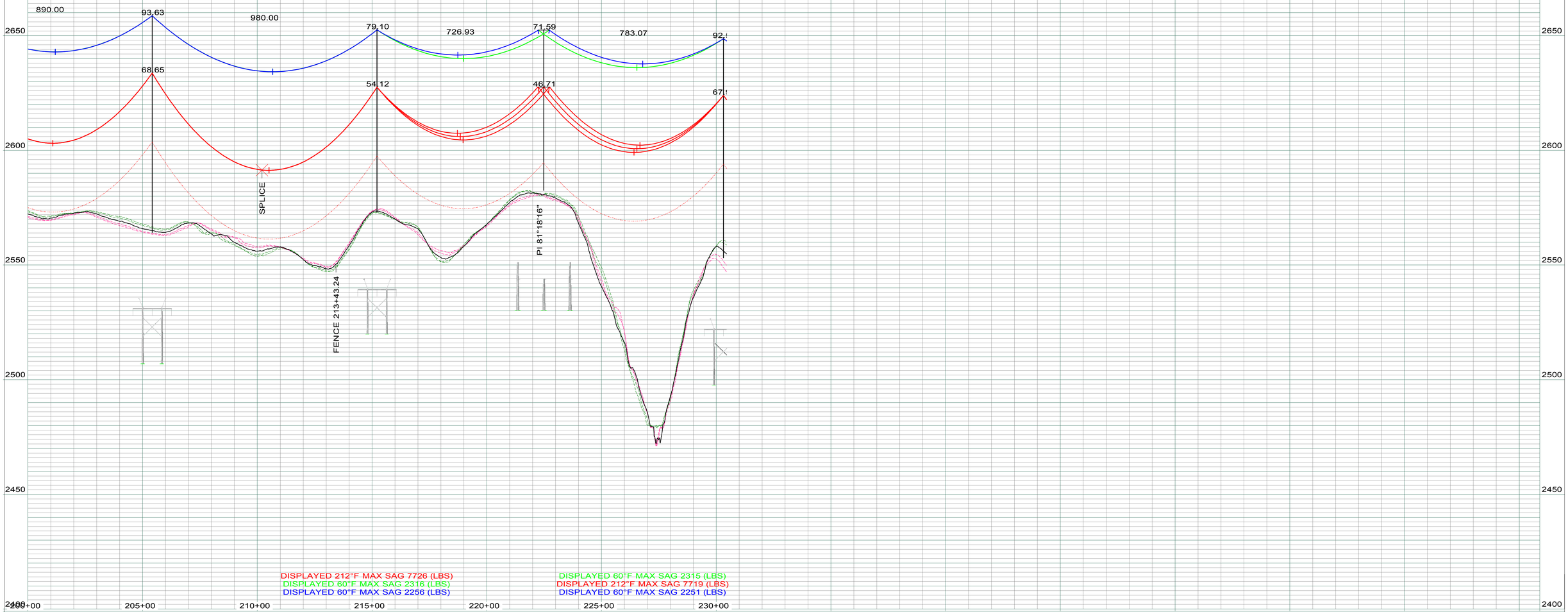


294-024
STA=205+41.65
HT=94.13 ELE=2565.05
3HS-113
900' RS

294-025
STA=215+21.65
HT=79.60 ELE=2573.42
3HS-096
900' RS

294-026
STA=222+48.57
HT=71.71 ELE=2580.81
3TPD85-070
OPGW SPLICE
END 900' RS, BEGIN 900' RS

294-027
STA=230+31.65
HT=93.09 ELE=2556.06
3HS-113L-108R
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10487	21910	29536	900`
OPGW (GRN)	AFL 0.571" 36 FIBER	2316	6687	10455	900`
OHGW (BLU)	7/16" EHS	2256	6020	9700	900`

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

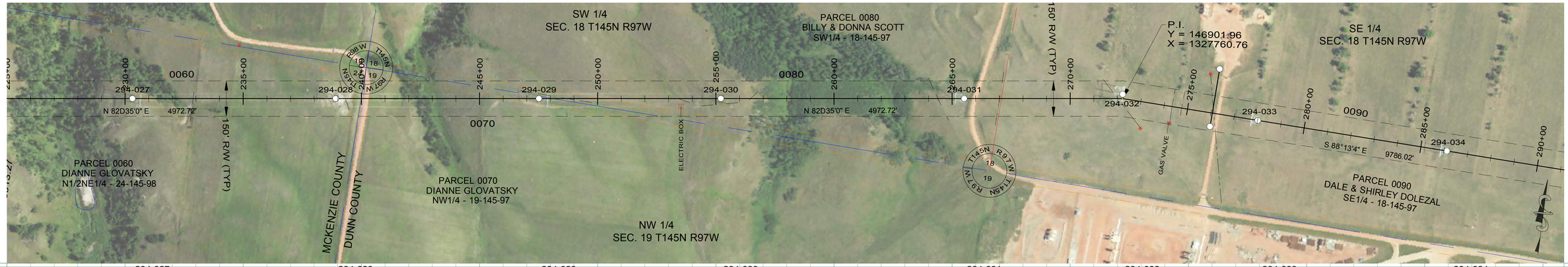
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 200+00 TO 230+46
STRUCTURE: 294-024 TO 294-027

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-005
REV. NO.: 1



294-027
STA=230+31.65
HT=93.09 ELE=2556.06
3HS-113L-108R
900' RS

294-028
STA=238+91.65
HT=74.57 ELE=2579.27
3HS-091
900' RS

294-029
STA=247+51.65
HT=83.62 ELE=2570.38
3HS-102
900' RS

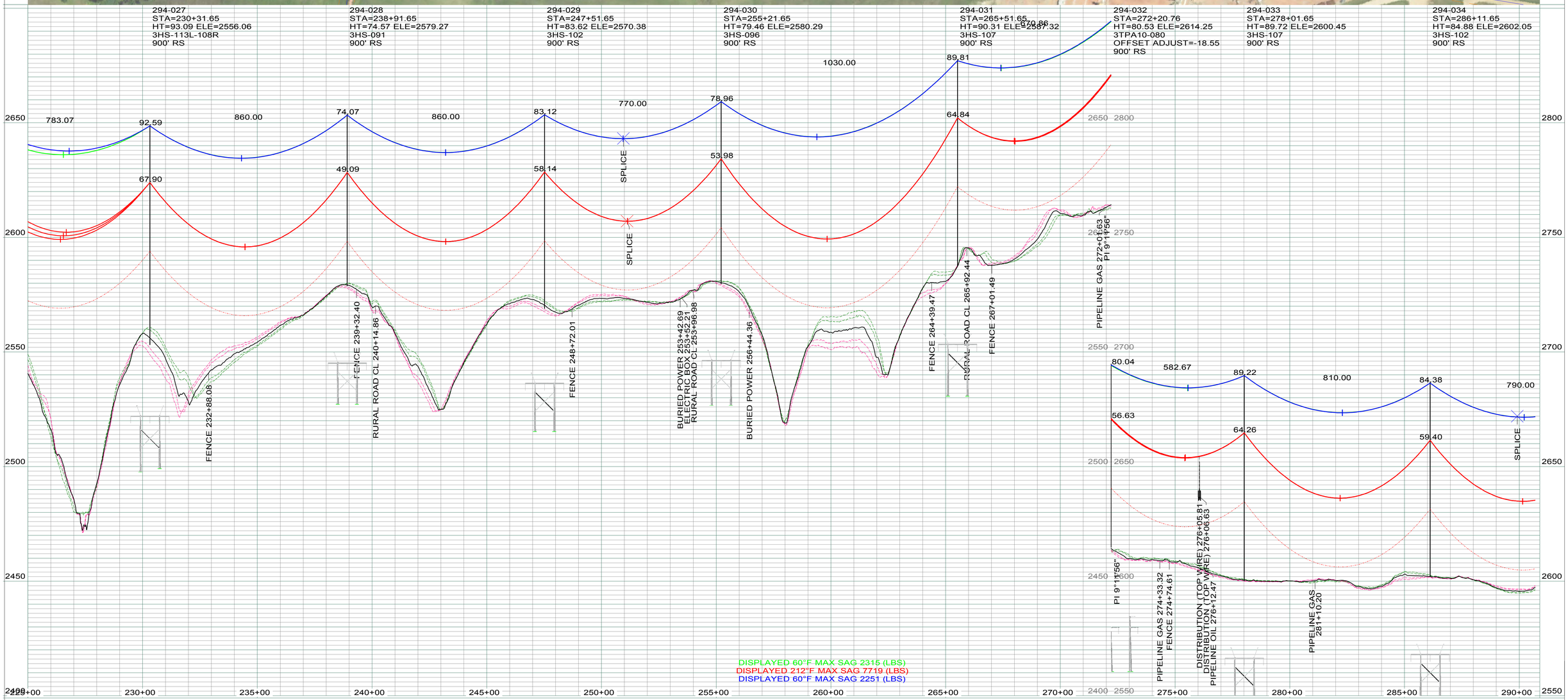
294-030
STA=255+21.65
HT=79.46 ELE=2580.29
3HS-096
900' RS

294-031
STA=265+51.65
HT=90.31 ELE=2587.32
3HS-107
900' RS

294-032
STA=272+20.76
HT=80.53 ELE=2614.25
3TPA10-080
OFFSET ADJUST=-18.55
900' RS

294-033
STA=278+01.65
HT=89.72 ELE=2600.45
3HS-107
900' RS

294-034
STA=286+11.65
HT=84.88 ELE=2602.05
3HS-102
900' RS



DISPLAYED 60°F MAX SAG 2315 (LBS)
DISPLAYED 212°F MAX SAG 7719 (LBS)
DISPLAYED 60°F MAX SAG 2251 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10469	21863	29498	900`
OPGW (GRN)	AFL 0.571" 36 FIBER	2315	6683	10452	900`
OHGW (BLU)	7/16" EHS	2251	6012	9692	900`

		DATE:
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

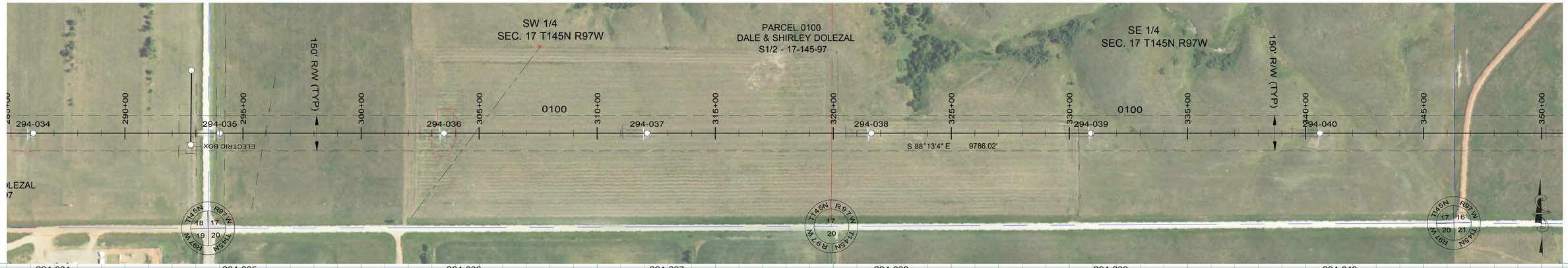
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 225+00 TO 290+70
STRUCTURE: 294-027 TO 294-034

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-006
REV. NO.: 1



294-034
STA=286+11.65
HT=84.88 ELE=2602.05
3HS-102
900' RS

294-035
STA=294+01.65
HT=94.35 ELE=2590.45
3HS-113
900' RS

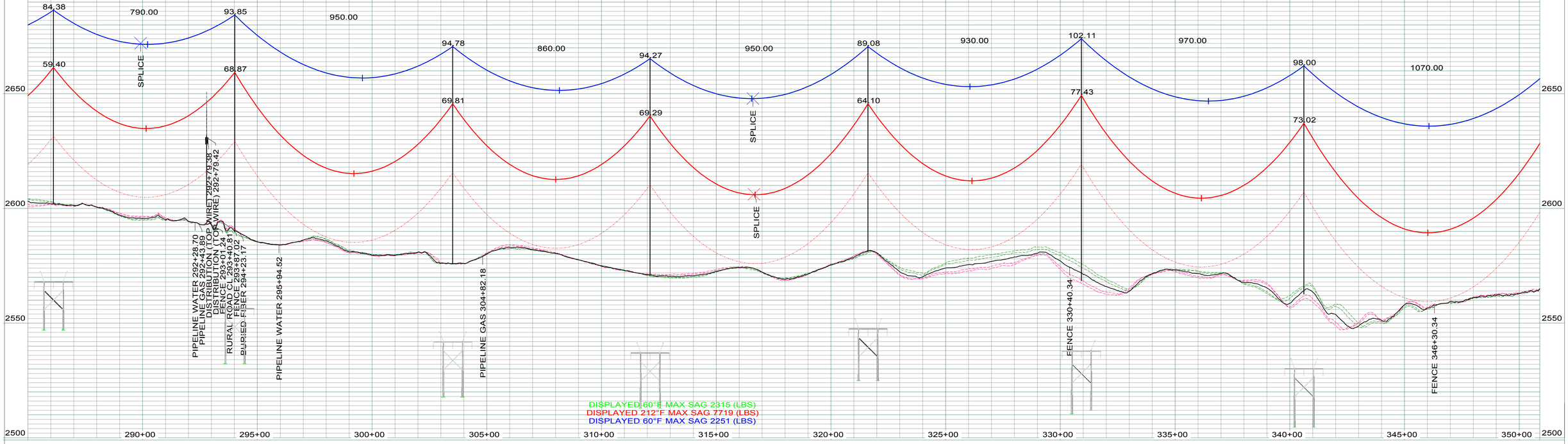
294-036
STA=303+51.65
HT=95.28 ELE=2575.80
3HS-113
900' RS

294-037
STA=312+11.65
HT=94.77 ELE=2571.02
3HS-113
900' RS

294-038
STA=321+61.65
HT=89.58 ELE=2581.51
3HS-107
900' RS

294-039
STA=330+91.65
HT=102.61 ELE=2571.87
3HS-124L-119R
900' RS

294-040
STA=340+61.65
HT=98.50 ELE=2564.15
3HS-118
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10469	21863	29498	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2315	6683	10452	900'
OHGW (BLU)	7/16" EHS	2251	6012	9692	900'

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MCKENZIE

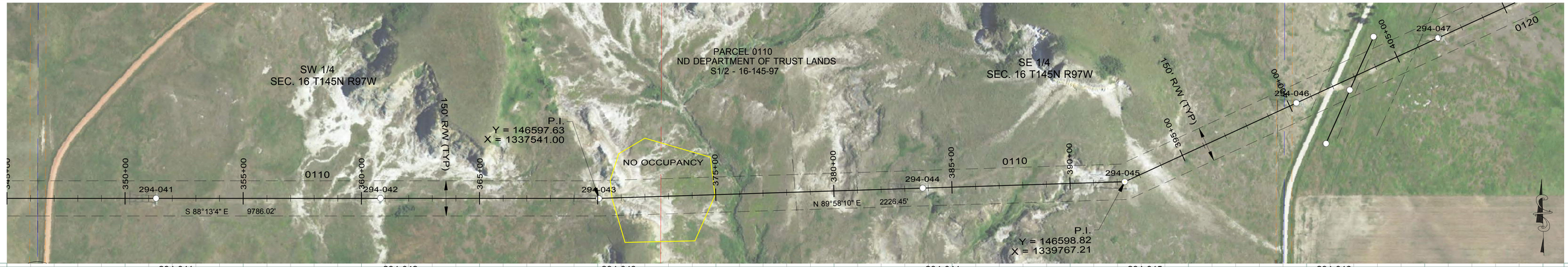
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 285+00 TO 350+90
STRUCTURE: 294-034 TO 294-040

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-007

REV. NO. 1



294-041
STA=351+31.65
HT=94.63 ELE=2566.20
3HS-113
900' RS

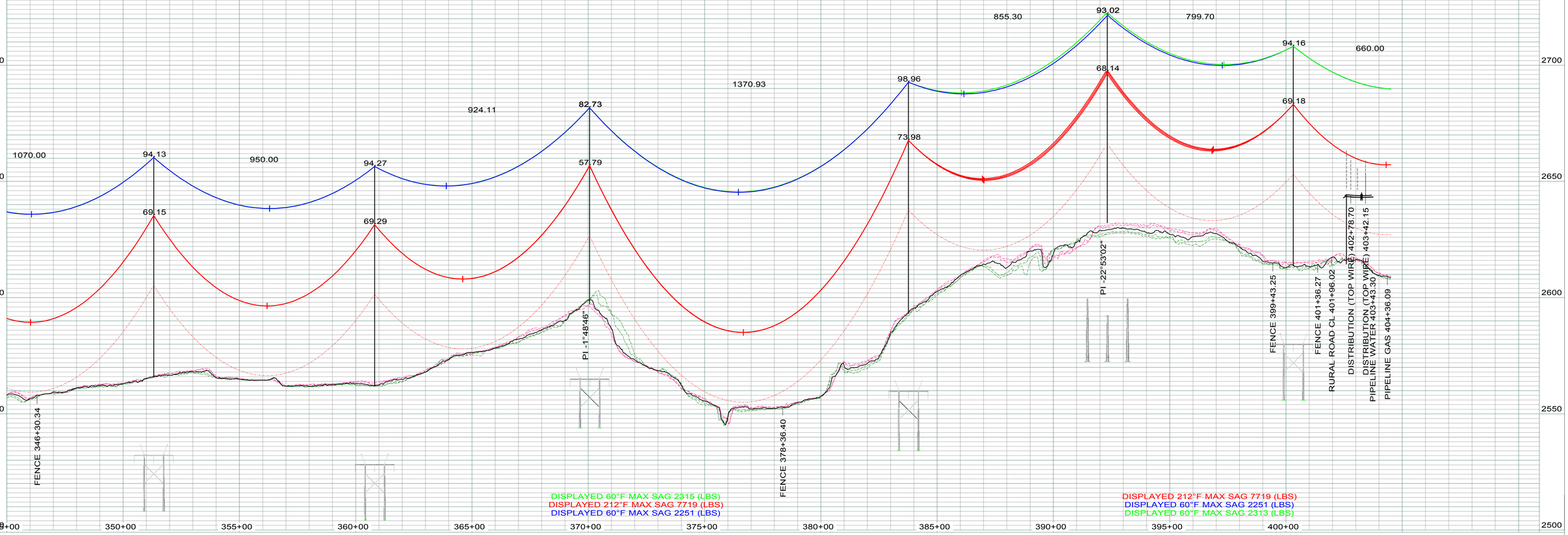
294-042
STA=360+81.65
HT=94.77 ELE=2562.17
3HS-113
900' RS

294-043
STA=370+05.74
HT=83.23 ELE=2598.97
3HSL-102
OFFSET ADJUST=1.00
900' RS

294-044
STA=383+76.65
HT=99.46 ELE=2593.74
3HS-118
900' RS

294-045
STA=392+31.95
HT=93.14 ELE=2629.14
3TPD25-090
OPGW SPLICE
END 900' RS, BEGIN 900' RS

294-046
STA=400+31.65
HT=94.66 ELE=2614.00
3HS-113
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10469	21863	29498	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2315	6683	10452	900'
OHGW (BLU)	7/16" EHS	2251	6012	9692	900'

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MCKENZIE

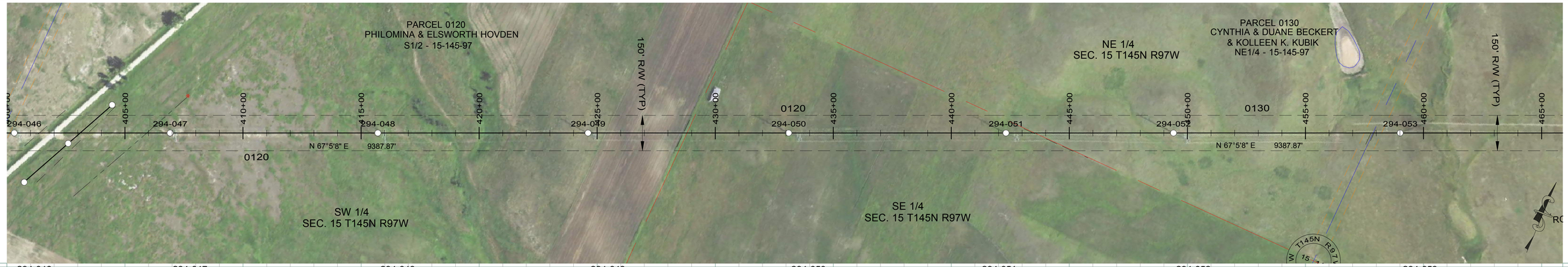
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 345+00 TO 404+51
STRUCTURE: 294-041 TO 294-046

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-008

REV. NO. 1



294-046
STA=400+31.65
HT=94.66 ELE=2614.00
3HS-113
900' RS

294-047
STA=406+91.65
HT=89.68 ELE=2604.10
3HS-107
900' RS

294-048
STA=415+71.65
HT=94.55 ELE=2587.27
3HS-113
900' RS

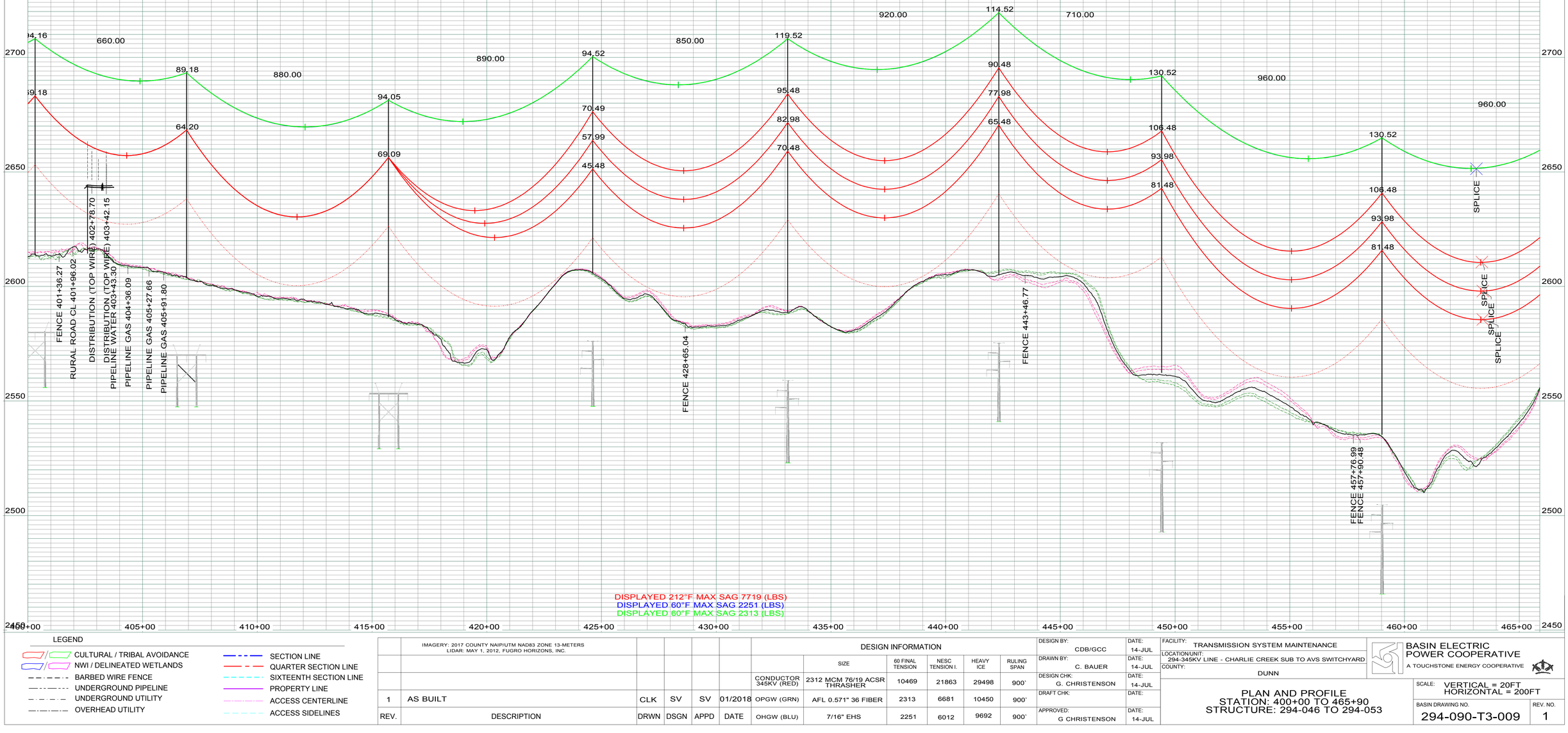
294-049
STA=424+61.65
HT=95.00 ELE=2605.82
3ST-116
900' RS

294-050
STA=433+11.65
HT=120.00 ELE=2588.65
3ST-144
900' RS

294-051
STA=442+31.65
HT=115.00 ELE=2605.04
3ST-138
900' RS

294-052
STA=449+41.65
HT=131.00 ELE=2561.43
3ST2-130
900' RS

294-053
STA=459+01.65
HT=131.00 ELE=2534.37
3ST2-130
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10469	21863	29498	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2313	6681	10450	900'
OHGW (BLU)	7/16" EHS	2251	6012	9692	900'

		DATE
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

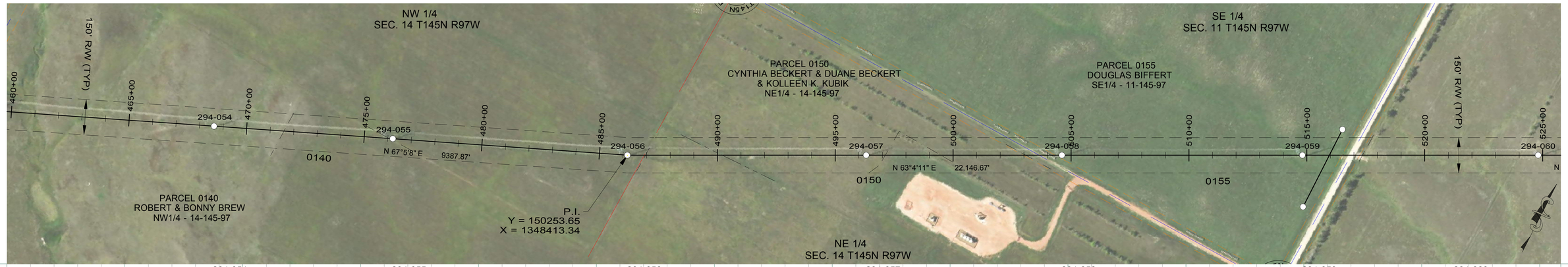
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 400+00 TO 465+90
STRUCTURE: 294-046 TO 294-053

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-009

REV. NO.: 1



294-054
STA=468+61.65
HT=110.00 ELE=2570.94
3ST-133
900' RS

294-055
STA=476+21.65
HT=120.00 ELE=2554.50
3ST-144
900' RS

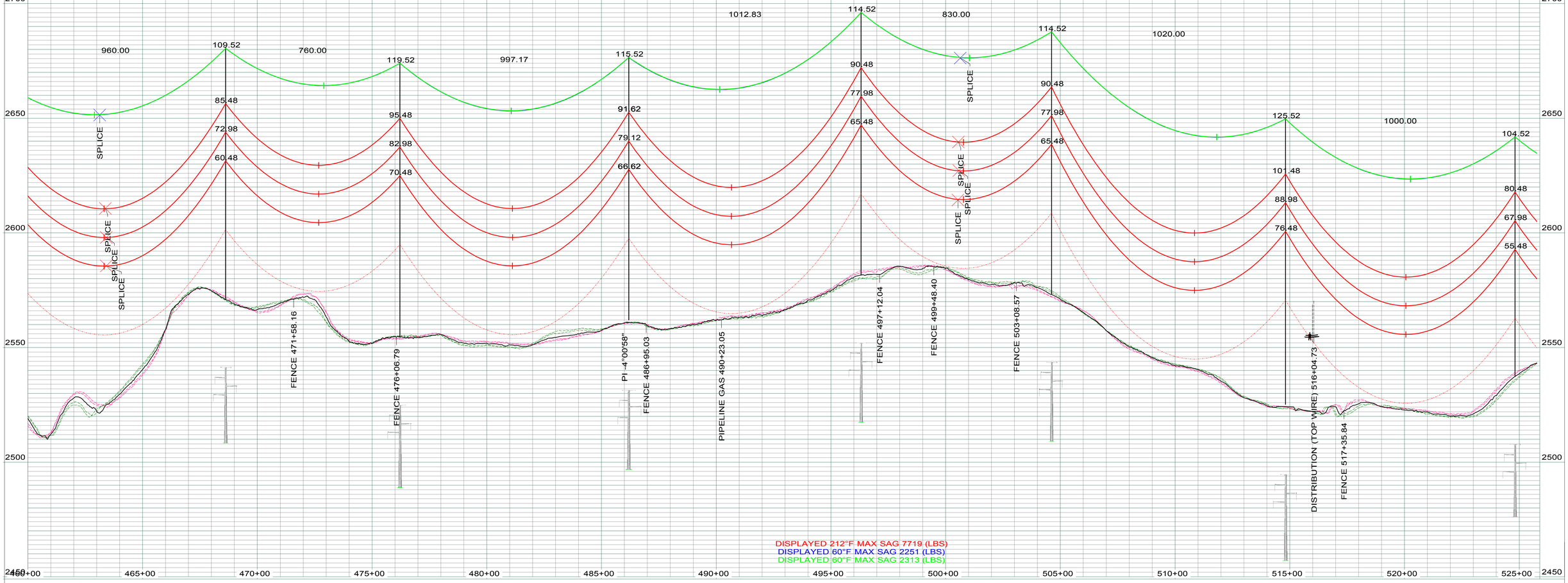
294-056
STA=486+18.82
HT=116.00 ELE=2560.99
3SA07L-115
900' RS

294-057
STA=496+31.65
HT=115.00 ELE=2581.61
3ST-138
900' RS

294-058
STA=504+61.65
HT=115.00 ELE=2573.17
3ST-138
900' RS

294-059
STA=514+81.65
HT=126.00 ELE=2524.21
3SLT2-125
900' RS

294-060
STA=524+81.65
HT=105.00 ELE=2537.34
3ST-127
900' RS



DISPLAYED 212°F MAX SAG 7719 (LBS)
DISPLAYED 60°F MAX SAG 2251 (LBS)
DISPLAYED 60°F MAX SAG 2313 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10469	21863	29498	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2313	6681	10450	900'
OHGW (BLU)	7/16" EHS	2251	6012	9692	900'

DESIGN BY: CDB/GCC — DATE: 14-JUL
DRAWN BY: C. BAUER — DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON — DATE: 14-JUL
DRAFT CHK: — DATE:
APPROVED: G CHRISTENSON — DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

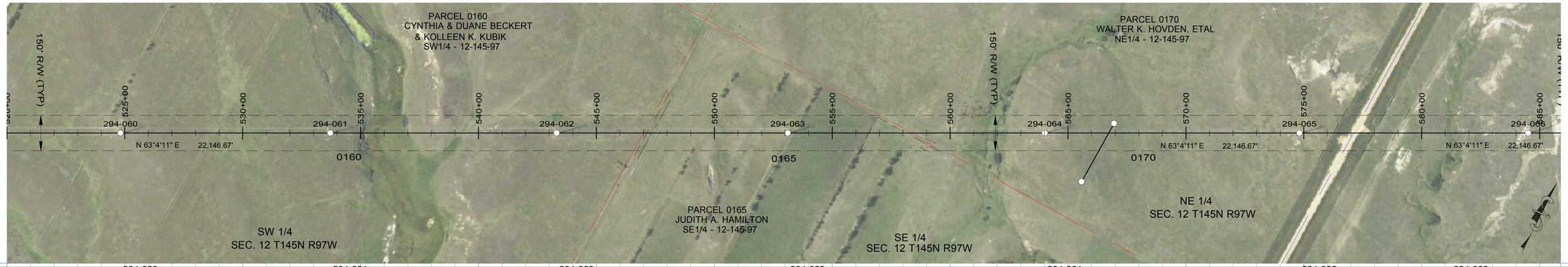
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 460+00 TO 525+77
STRUCTURE: 294-054 TO 294-060

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-010

REV. NO. 1



294-060
STA=524+81.65
HT=105.00 ELE=2537.34
3ST-127
900' RS

294-061
STA=533+71.65
HT=115.00 ELE=2522.80
3ST-138
900' RS

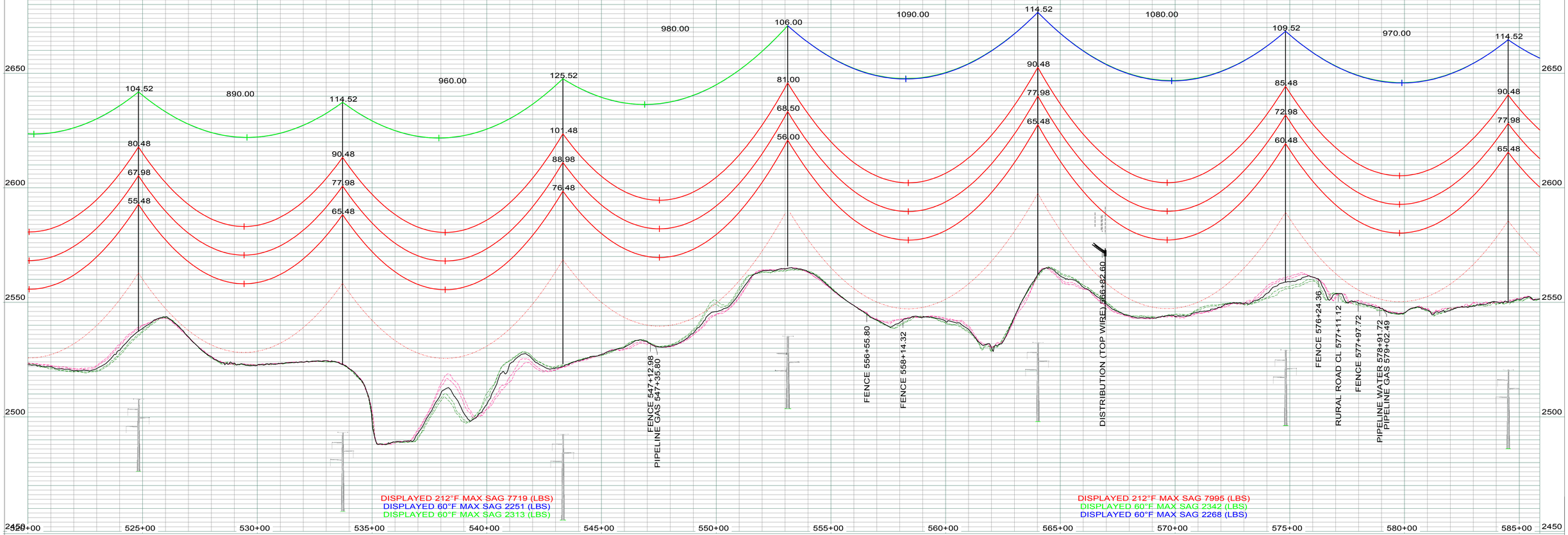
294-062
STA=543+31.65
HT=126.00 ELE=2522.09
3ST2-125
900' RS

294-063
STA=553+11.65
HT=106.00 ELE=2564.81
3SDT-105
OPGW SPLICE
END 900' RS, BEGIN 950' RS

294-064
STA=564+01.65
HT=115.00 ELE=2562.10
3SLT-139
950' RS

294-065
STA=574+81.65
HT=110.00 ELE=2558.83
3ST-133
950' RS

294-066
STA=584+51.65
HT=115.00 ELE=2550.13
3ST-138
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10469	21863	29498	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2313	6681	10450	900'
OHGW (BLU)	7/16" EHS	2251	6012	9692	900'

		DATE:
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

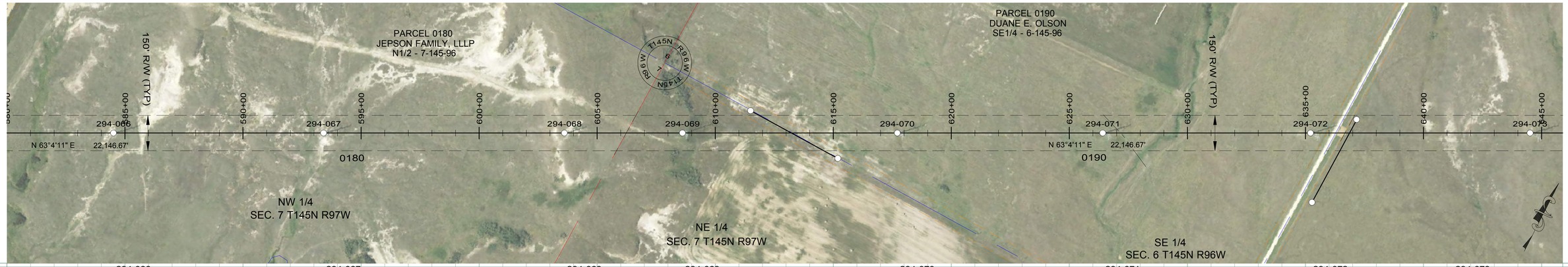
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 520+00 TO 585+90
STRUCTURE: 294-060 TO 294-066

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-011

REV. NO.: 1



294-066
STA=584+51.65
HT=115.00 ELE=2550.13
3ST-138
950' RS

294-067
STA=593+41.65
HT=120.00 ELE=2552.05
3ST-144
950' RS

294-068
STA=603+61.65
HT=90.00 ELE=2611.26
3ST-111
950' RS

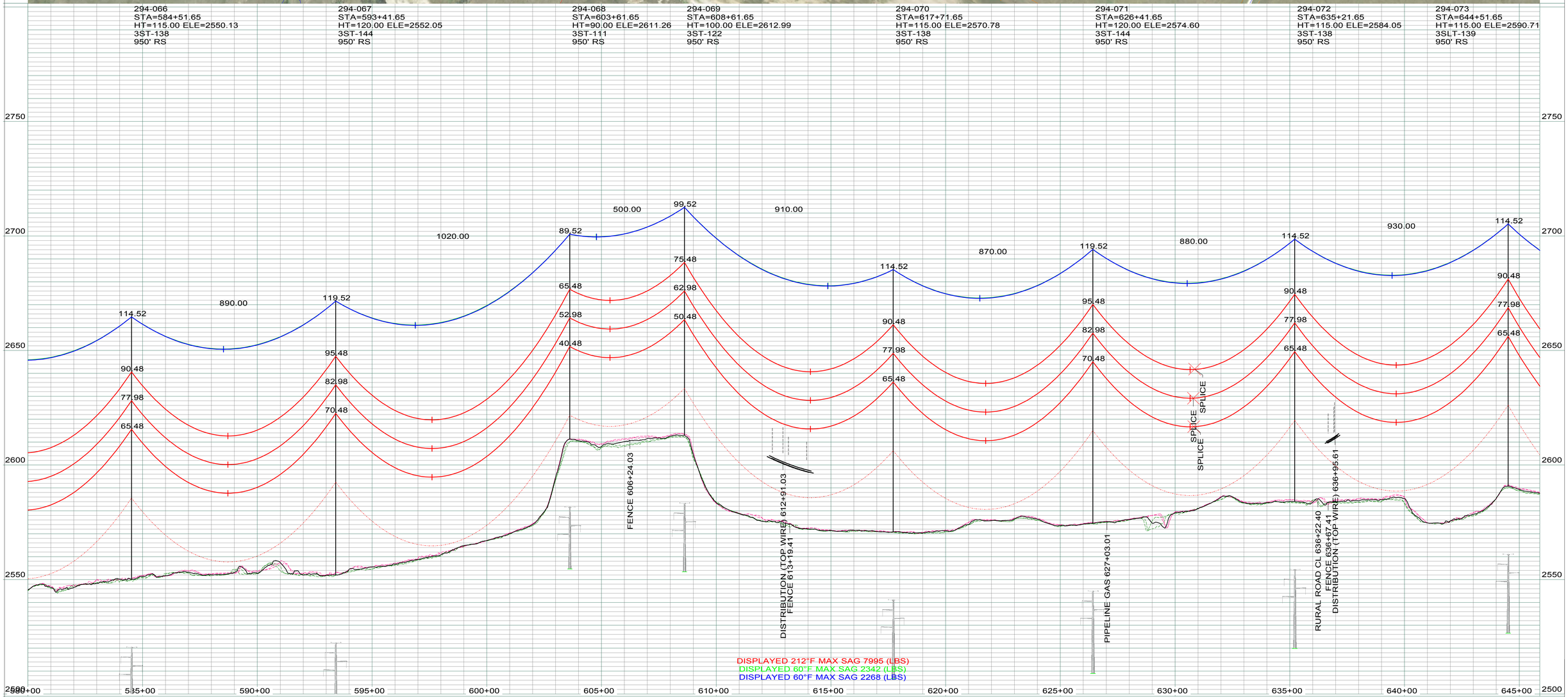
294-069
STA=608+61.65
HT=100.00 ELE=2612.99
3ST-122
950' RS

294-070
STA=617+71.65
HT=115.00 ELE=2570.78
3ST-138
950' RS

294-071
STA=626+41.65
HT=120.00 ELE=2574.60
3ST-144
950' RS

294-072
STA=635+21.65
HT=115.00 ELE=2584.05
3ST-138
950' RS

294-073
STA=644+51.65
HT=115.00 ELE=2590.71
3SLT-139
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10689	22104	30014	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2342	6826	10737	950'
OHGW (BLU)	7/16" EHS	2268	6139	9948	950'

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

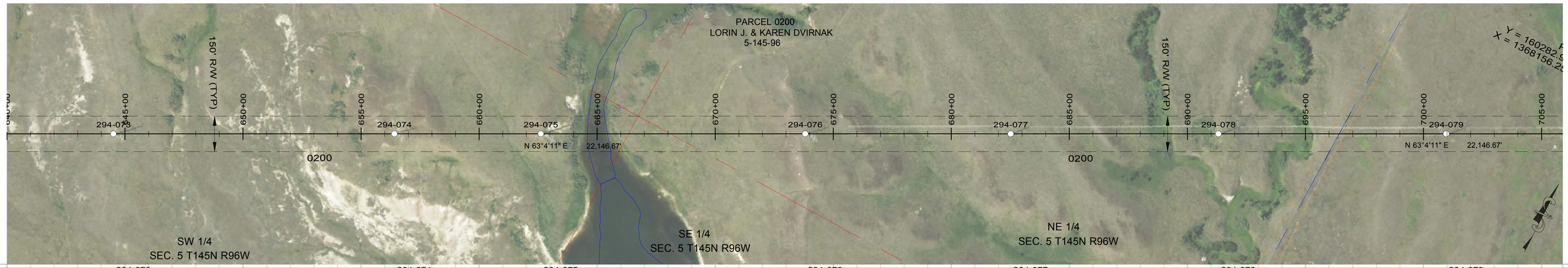
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 580+00 TO 645+90
STRUCTURE: 294-066 TO 294-073

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-012

REV. NO. 1



294-073
STA=644+51.65
HT=115.00 ELE=2590.71
3SLT-139
950' RS

294-074
STA=656+41.65
HT=100.00 ELE=2616.58
3ST-122
950' RS

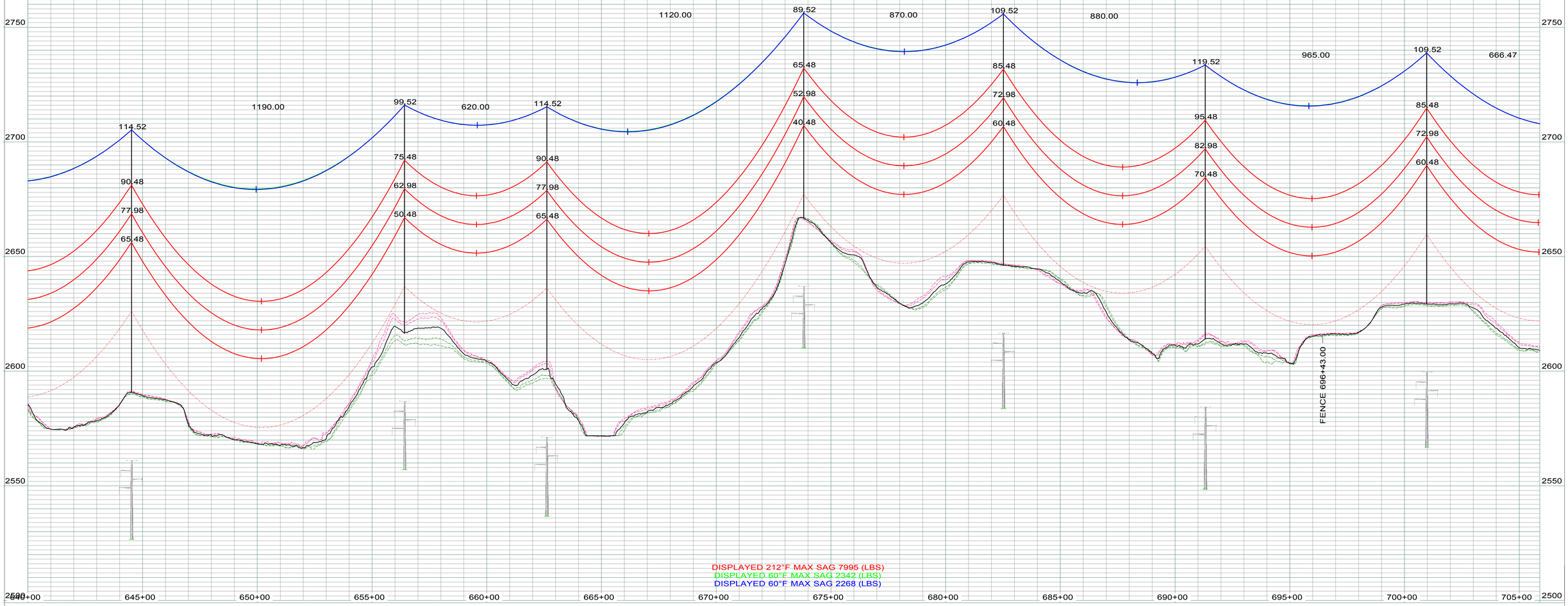
294-075
STA=662+61.65
HT=115.00 ELE=2600.84
3ST-138
950' RS

294-076
STA=673+81.65
HT=90.00 ELE=2666.74
3SLT-112
950' RS

294-077
STA=682+51.65
HT=110.00 ELE=2646.27
3ST-133
950' RS

294-078
STA=691+31.65
HT=120.00 ELE=2614.04
3ST-144
950' RS

294-079
STA=700+96.65
HT=110.00 ELE=2629.29
3ST-133
950' RS



DISPLAYED 212°F MAX SAG 7995 (LBS)
DISPLAYED 60°F MAX SAG 2342 (LBS)
DISPLAYED 60°F MAX SAG 2268 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10689	22104	30014	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2342	6826	10737	950'
OHGW (BLU)	7/16" EHS	2268	6139	9948	950'

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

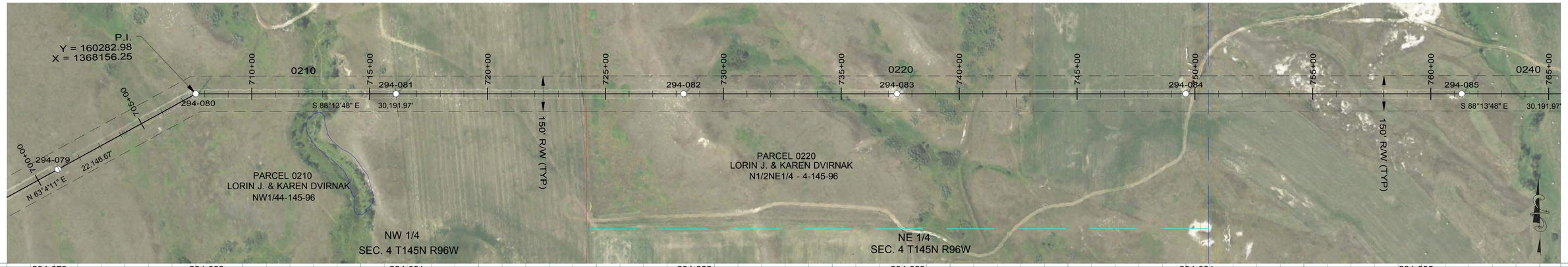
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 640+00 TO 705+90
STRUCTURE: 294-073 TO 294-079

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-013

REV. NO. 1



294-079
STA=700+96.65
HT=110.00 ELE=2629.29
3ST-133
950' RS

294-080
STA=707+63.12
HT=96.09 ELE=2611.14
3SDA30-095
OPGW SPLICE
END 950' RS, BEGIN 950' RS

294-081
STA=716+11.65
HT=115.00 ELE=2628.69
3SLT-139
950' RS

294-082
STA=728+31.65
HT=105.00 ELE=2672.64
3SLT-128
950' RS

294-083
STA=737+36.65
HT=120.00 ELE=2618.67
3SLT-145
950' RS

294-084
STA=749+61.65
HT=136.00 ELE=2552.88
3SLT2-135
950' RS

294-085
STA=761+31.65
HT=126.00 ELE=2538.99
3SLT2-125
950' RS

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10678	22085	29991	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2340	6824	10735	950'
OHGW (BLU)	7/16" EHS	2266	6137	9946	950'

DESIGN BY: CDB/GCC — DATE: 14-JUL
DRAWN BY: C. BAUER — DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON — DATE: 14-JUL
DRAFT CHK: — DATE:
APPROVED: G CHRISTENSON — DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

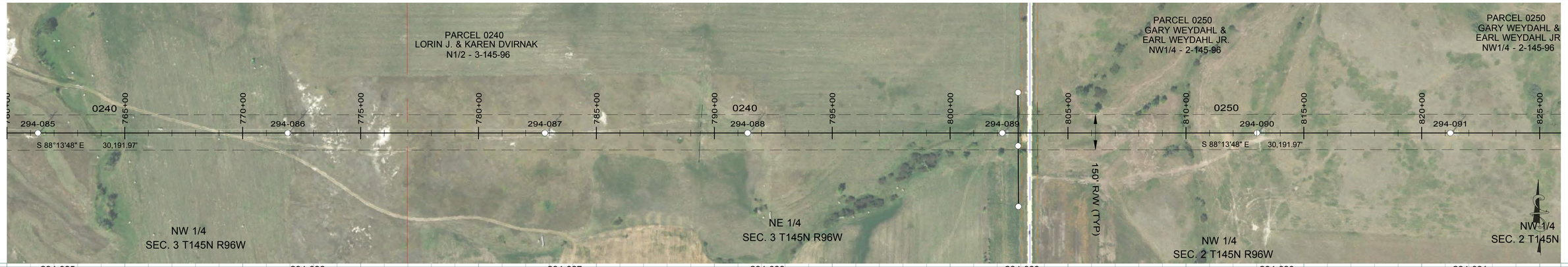
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 700+00 TO 765+51
STRUCTURE: 294-079 TO 294-085

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-014

REV. NO. 1



294-085
STA=761+31.65
HT=126.00 ELE=2538.99
3SLT2-125
950' RS

294-086
STA=771+91.65
HT=131.00 ELE=2529.81
3SLT2-130
950' RS

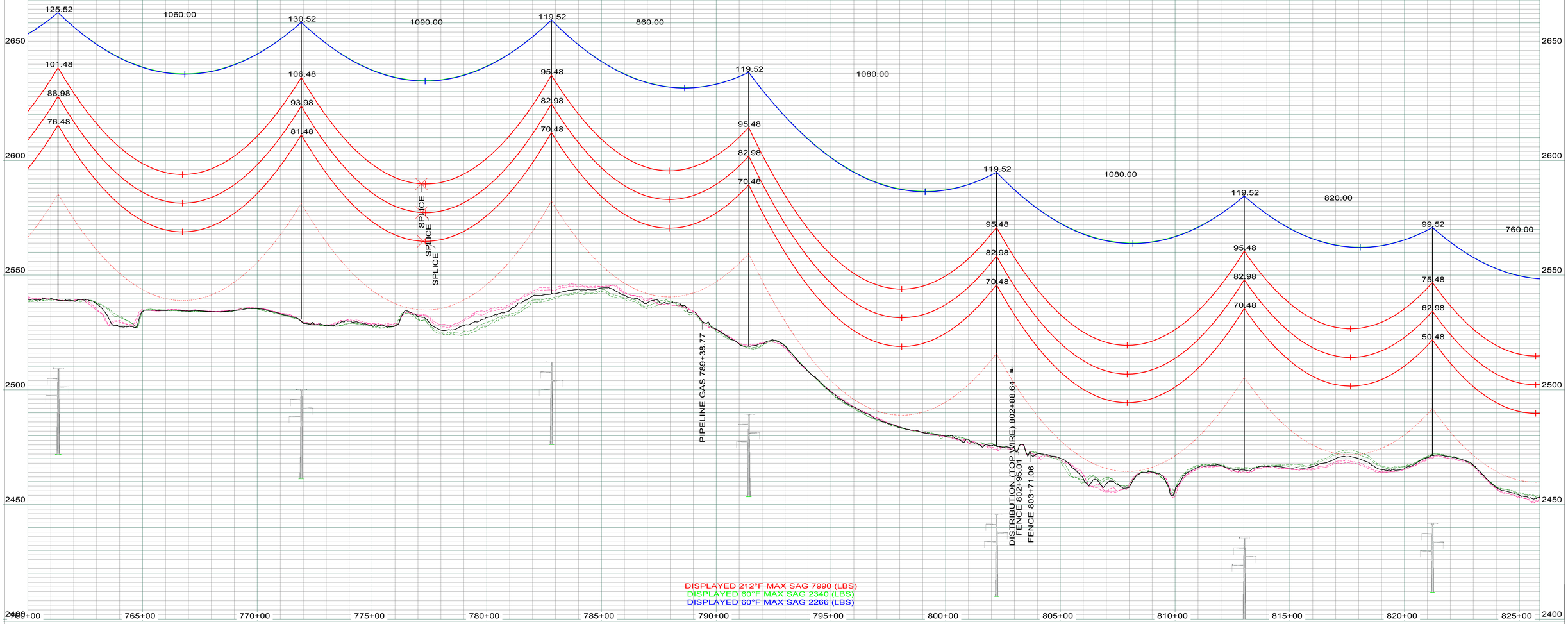
294-087
STA=782+81.65
HT=120.00 ELE=2541.80
3SLT-145
950' RS

294-088
STA=791+41.65
HT=120.00 ELE=2518.99
3ST-144
950' RS

294-089
STA=802+21.65
HT=120.00 ELE=2475.38
3SLT-145
950' RS

294-090
STA=813+01.65
HT=120.00 ELE=2465.02
3ST-144
950' RS

294-091
STA=821+21.65
HT=100.00 ELE=2471.31
3STOPGW-122
OPGW SPLICE
950' RS



DISPLAYED 212°F MAX SAG 7990 (LBS)
DISPLAYED 60°F MAX SAG 2340 (LBS)
DISPLAYED 60°F MAX SAG 2266 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10678	22085	29991	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2340	6824	10735	950'
OHGW (BLU)	7/16" EHS	2266	6137	9946	950'

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

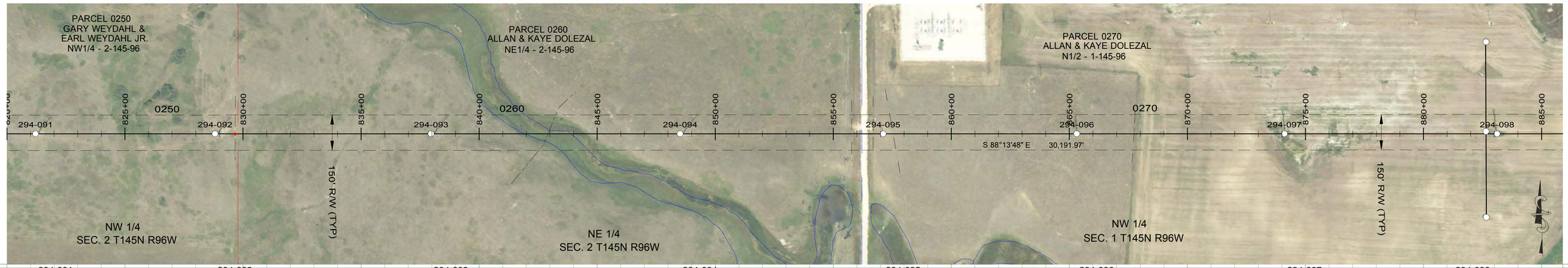
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 760+00 TO 825+90
STRUCTURE: 294-085 TO 294-091

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-015

REV. NO. 1



294-091
STA=821+21.65
HT=100.00 ELE=2471.31
3STOPGW-122
OPGW SPLICE
950' RS

294-092
STA=828+81.65
HT=100.00 ELE=2454.43
3ST-122
950' RS

294-093
STA=837+96.65
HT=105.00 ELE=2432.58
3ST-127
950' RS

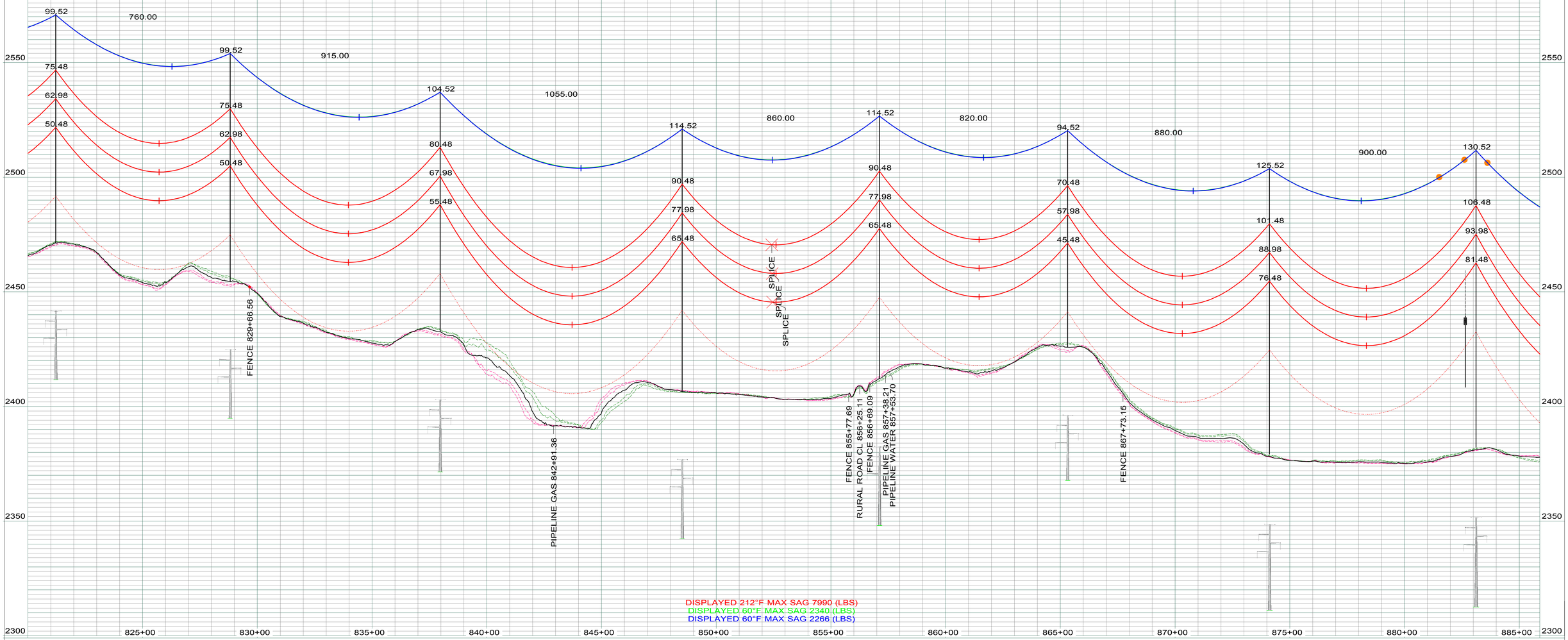
294-094
STA=848+51.65
HT=115.00 ELE=2406.51
3ST-138
950' RS

294-095
STA=857+11.65
HT=115.00 ELE=2412.17
3ST-138
950' RS

294-096
STA=865+31.65
HT=95.00 ELE=2425.84
3ST-116
950' RS

294-097
STA=874+11.65
HT=126.00 ELE=2378.21
3ST2-125
950' RS

294-098
STA=883+11.65
HT=131.00 ELE=2381.18
3SLT2-130
950' RS



DISPLAYED 212°F MAX SAG 7990 (LBS)
DISPLAYED 60°F MAX SAG 2340 (LBS)
DISPLAYED 60°F MAX SAG 2266 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10678	22085	29991	950`
OPGW (GRN)	AFL 0.571" 36 FIBER	2340	6824	10735	950`
OHGW (BLU)	7/16" EHS	2266	6137	9946	950`

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

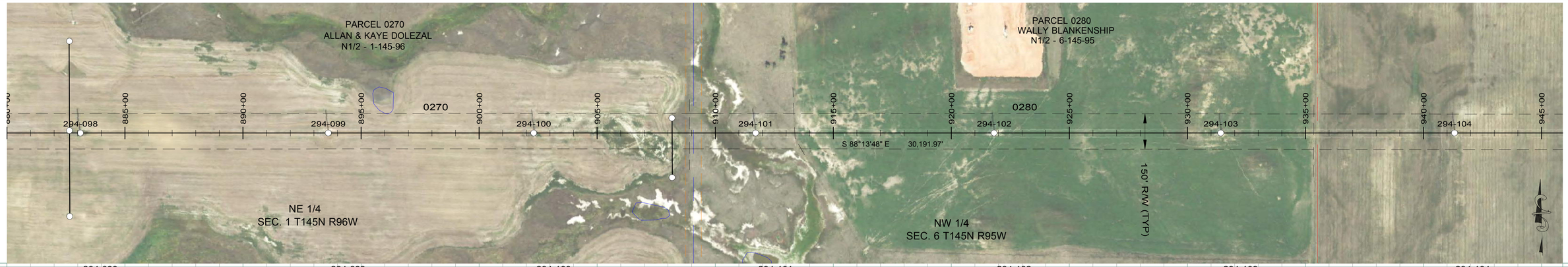
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 820+00 TO 885+90
STRUCTURE: 294-091 TO 294-098

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-016
REV. NO. 1



294-098
STA=883+11.65
HT=131.00 ELE=2381.18
3SLT2-130
950' RS

294-099
STA=893+61.65
HT=126.00 ELE=2364.26
3ST2-125
950' RS

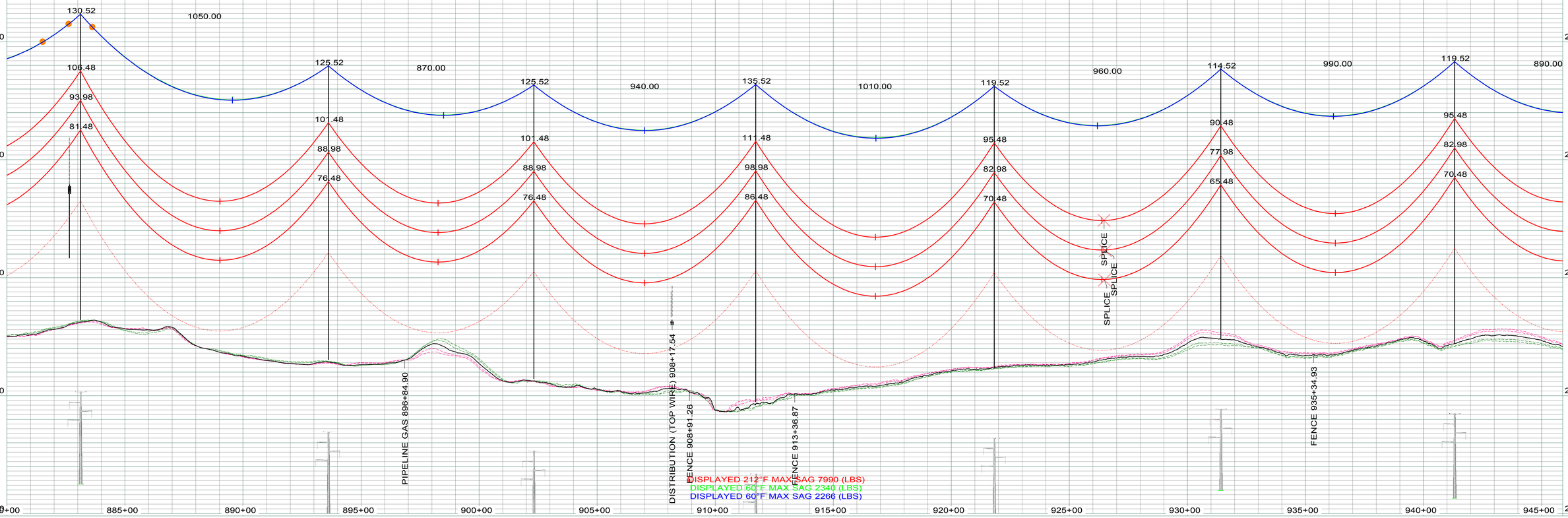
294-100
STA=902+31.65
HT=126.00 ELE=2356.16
3ST2-125
950' RS

294-101
STA=911+71.65
HT=136.00 ELE=2346.42
3SLT2-135
950' RS

294-102
STA=921+81.65
HT=120.00 ELE=2361.67
3ST-144
950' RS

294-103
STA=931+41.65
HT=115.00 ELE=2373.93
3ST-138
950' RS

294-104
STA=941+31.65
HT=120.00 ELE=2372.04
3ST-144
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10678	22085	29991	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2340	6824	10735	950'
OHGW (BLU)	7/16" EHS	2266	6137	9946	950'

		DATE
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

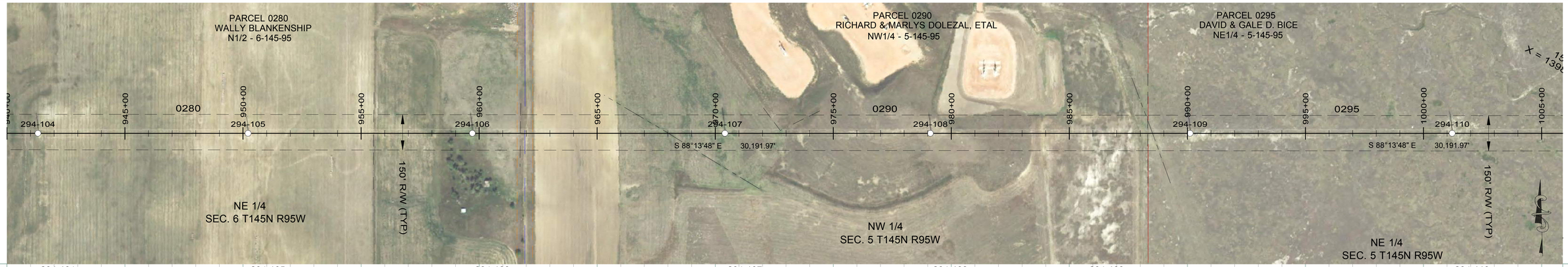
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 880+00 TO 945+90
STRUCTURE: 294-098 TO 294-104

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-017
REV. NO.: 1



294-104
STA=941+31.65
HT=120.00 ELE=2372.04
3ST-144
950' RS

294-105
STA=950+21.65
HT=100.00 ELE=2384.04
3ST-122
950' RS

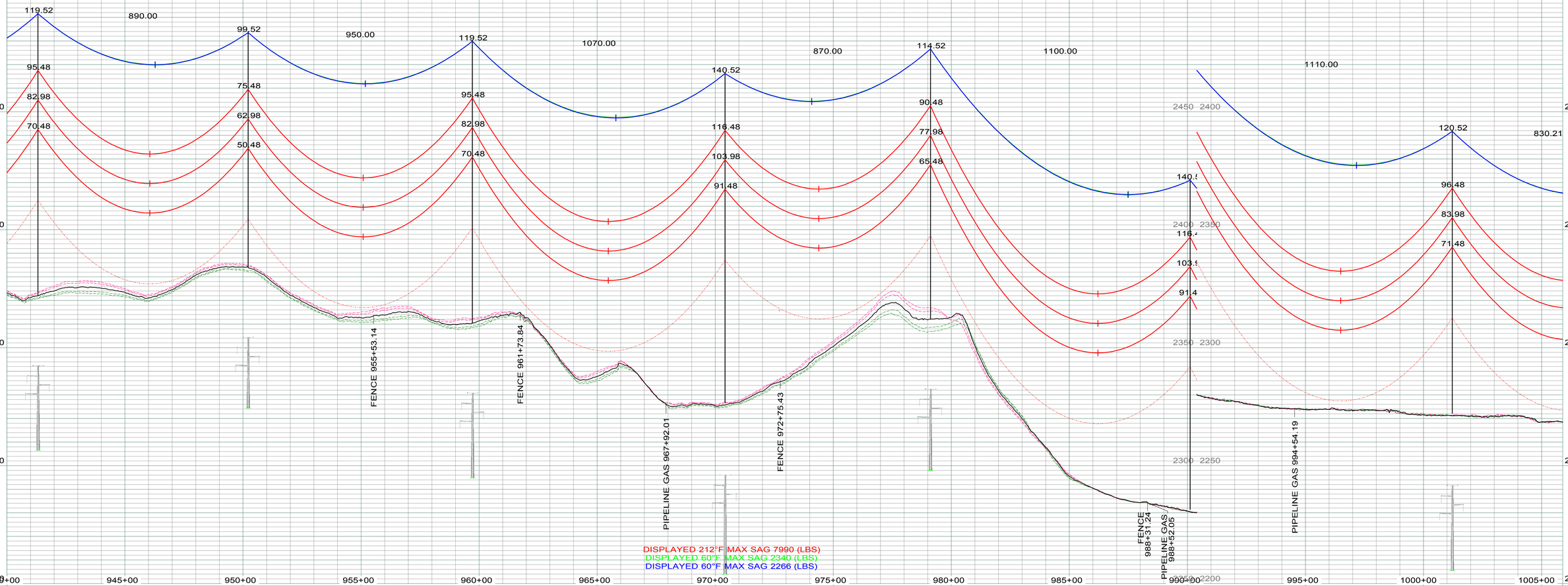
294-106
STA=959+71.65
HT=120.00 ELE=2360.40
3SLT-145
950' RS

294-107
STA=970+41.65
HT=141.00 ELE=2325.68
3ST2-140
950' RS

294-108
STA=979+11.65
HT=115.00 ELE=2362.10
3SLT-139
950' RS

294-109
STA=990+11.65
HT=141.00 ELE=2280.43
3ST2-140
950' RS

294-110
STA=1001+21.65
HT=121.00 ELE=2271.18
3ST2-120
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10678	22085	29991	950
OPGW (GRN)	AFL 0.571" 36 FIBER	2340	6824	10735	950
OHGW (BLU)	7/16" EHS	2266	6137	9946	950

		DATE
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

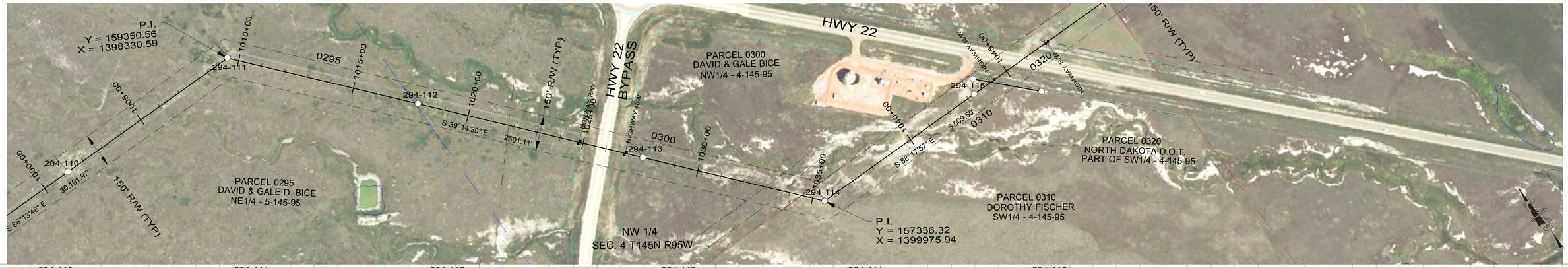
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 940+00 TO 1005+90
STRUCTURE: 294-104 TO 294-110

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-018

REV. NO.: 1



294-110
STA=1001+21.65
HT=121.00 ELE=2271.18
3ST2-120
950' RS

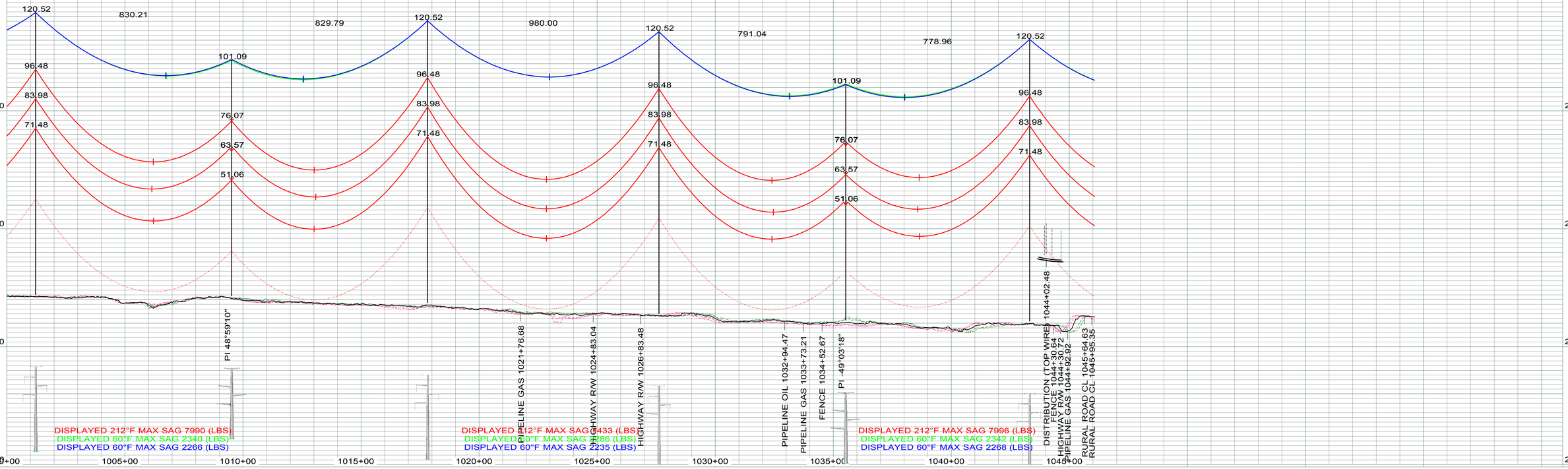
294-111
STA=1009+51.86
HT=101.09 ELE=2270.54
3SDA50-100
OPGW SPLICE
END 950' RS, BEGIN 850' RS

294-112
STA=1017+81.65
HT=121.00 ELE=2267.67
3ST2-120
850' RS

294-113
STA=1027+61.65
HT=121.00 ELE=2263.05
3ST2-120
850' RS

294-114
STA=1035+52.69
HT=101.09 ELE=2260.23
3SDA50-100
END 850' RS, BEGIN 950' RS

294-115
STA=1043+31.65
HT=121.00 ELE=2259.82
3ST2-120
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10244	21640	28972	850'
OPGW (GRN)	AFL 0.571" 36 FIBER	2286	6534	10157	850'
OHGW (BLU)	7/16" EHS	2235	5882	9429	850'

DESIGN BY: CDB/GCC — DATE: 14-JUL
DRAWN BY: C. BAUER — DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON — DATE: 14-JUL
DRAFT CHK: — DATE:
APPROVED: G CHRISTENSON — DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1000+00 TO 1046+07
STRUCTURE: 294-110 TO 294-115

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-019
REV. NO.: 2



294-115
STA=1043+31.65
HT=121.00 ELE=2259.82
3ST2-120
950' RS

294-116
STA=1052+61.65
HT=121.00 ELE=2254.68
3ST2-120
950' RS

294-117
STA=1062+31.65
HT=110.00 ELE=2266.42
3ST-133
950' RS

294-118
STA=1071+51.65
HT=115.00 ELE=2291.31
3ST-138
950' RS

294-119
STA=1079+16.65
HT=110.00 ELE=2342.12
3ST-133
950' RS

294-120
STA=1085+61.65
HT=130.00 ELE=2321.09
3ST2-130
950' RS

294-121
STA=1098+91.65
HT=130.00 ELE=2321.65
3SLT2-130
950' RS

294-122
STA=1109+11.65
HT=102.09 ELE=2335.91
3SDA90-1-101
END 950' RS,
BEGIN 500' SLACK SPAN

765.00 109.52 645.00 129.52 1330.00 129.52 1020.00
920.00 114.52 930.00 120.52 970.00 109.52
85.48 105.48 105.48
72.98 92.98 92.98
60.48 80.48 80.48
90.48
77.98
65.48
96.48 96.48 85.48
83.98 83.98 72.98
71.48 71.48 60.48
120.52

2450 2400 2350 2300 2250 2200

1040+00 1045+00 1050+00 1055+00 1060+00 1065+00 1070+00 1075+00 1080+00 1085+00 1090+00 1095+00 1100+00 1105+00

DISTRIBUTION (TOP WIRE) 1044+02.48
FENCE 1044+30.64
HIGHWAY R/W 1044+30.72
PIPELINE GAS 1044+92.92
RURAL ROAD CL 1045+64.63
RURAL ROAD CL 1045+95.35
HIGHWAY R/W 1047+08.24
FENCE 1047+11.57
FENCE 1060+56.72
FENCE 1076+74.23
DISTRIBUTION (TOP WIRE) 1078+11.57
PI 0°03'00"
FENCE 1103+14.10

DISPLAYED 212°F MAX SAG 7996 (LBS)
DISPLAYED 60°F MAX SAG 2342 (LBS)
DISPLAYED 60°F MAX SAG 2268 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10691	22113	30022	950`
OPGW (GRN)	AFL 0.571" 36 FIBER	2342	6826	10737	950`
OHGW (BLU)	7/16" EHS	2268	6139	9948	950`

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

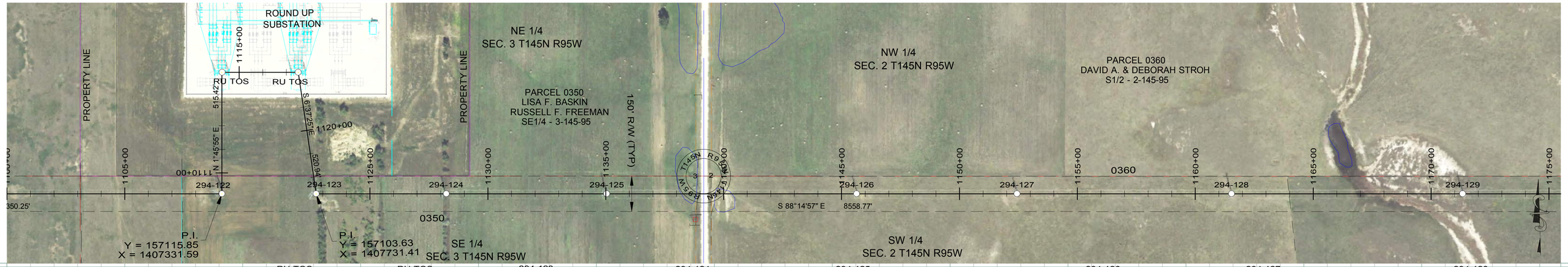
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1040+00 TO 1105+89
STRUCTURE: 294-115 TO 294-121

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-020
REV. NO. 1



294-122
STA=1109+11.65
HT=102.09 ELE=2335.91
3SDA90-1-101
END 950' RS,
BEGIN 500' SLACK SPAN

RU TOS
STA=1114+28.41
HT=85.00 ELE=2344.00
TOS
TO CC
END 500' SLACK SPAN

RU TOS
STA=1117+51.02
HT=85.00 ELE=2345.75
TOS
TO AVS
BEGIN 500' SLACK SPAN

294-123
STA=1122+71.90
HT=102.09 ELE=2334.01
3SDA90-1-101
END 500' SLACK SPAN,
BEGIN 850' RS

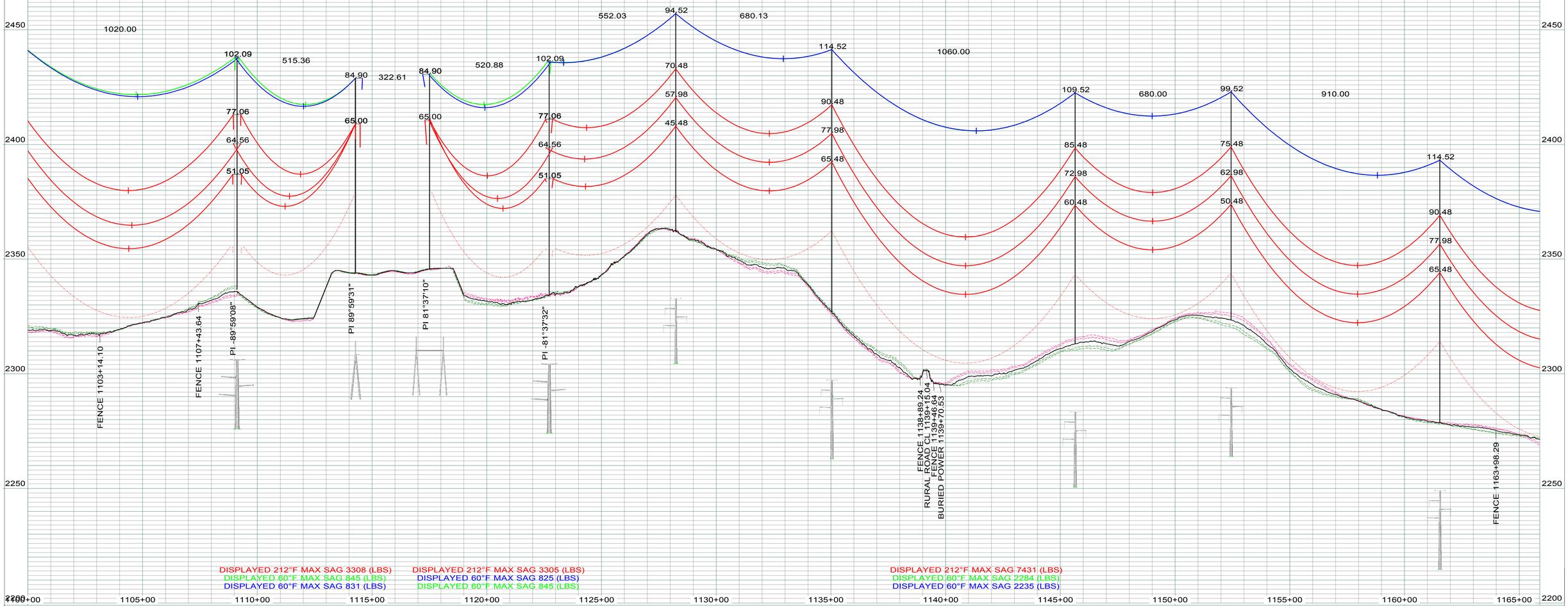
294-124
STA=1128+23.93
HT=95.00 ELE=2362.54
3ST-116
850' RS

294-125
STA=1135+04.06
HT=115.00 ELE=2326.88
3ST-138
850' RS

294-126
STA=1145+64.06
HT=110.00 ELE=2312.99
3ST-133
850' RS

294-127
STA=1152+44.06
HT=100.00 ELE=2323.45
3ST-122
850' RS

294-128
STA=1161+54.06
HT=115.00 ELE=2278.68
3ST-138
850' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10239	21621	28957	850'
OPGW (GRN)	AFL 0.571" 36 FIBER	2284	6532	10155	850'
OHGW (BLU)	7/16" EHS	2235	5880	9427	850'

DESIGN BY:	CDB/GCC	DATE: 14-JUL
DRAWN BY:	C. BAUER	DATE: 14-JUL
DESIGN CHK:	G. CHRISTENSON	DATE: 14-JUL
DRAFT CHK:		DATE:
APPROVED:	G CHRISTENSON	DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1100+00 TO 1165+90
STRUCTURE: 294-122 TO 294-128

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-021

REV. NO. 1



294-128
STA=1161+54.06
HT=115.00 ELE=2278.68
3ST-138
850' RS

294-129
STA=1171+34.06
HT=125.00 ELE=2266.05
3ST2-125
850' RS

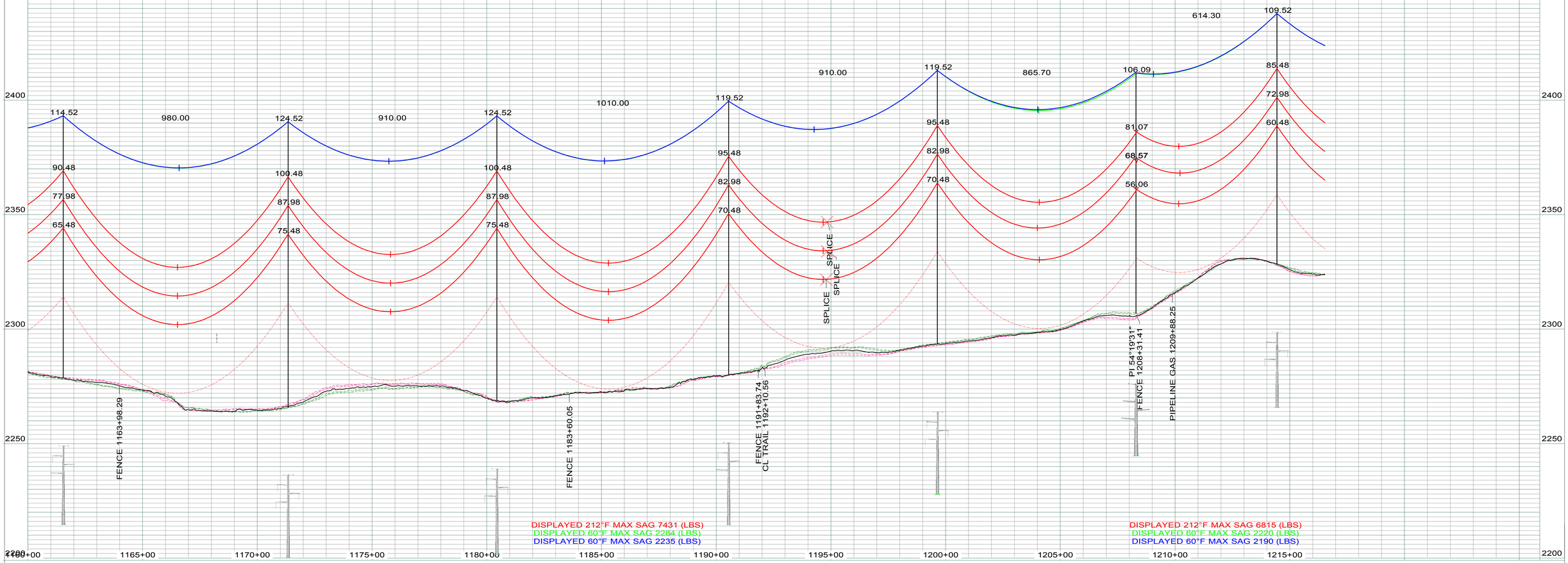
294-130
STA=1180+44.06
HT=125.00 ELE=2268.60
3ST2-125
850' RS

294-131
STA=1190+54.06
HT=120.00 ELE=2280.05
3ST-144
850' RS

294-132
STA=1199+64.06
HT=120.00 ELE=2293.46
3ST-144
850' RS

294-133
STA=1208+29.75
HT=106.09 ELE=2305.78
3SDA55-105
END 850' RS, BEGIN 750' RS

294-134
STA=1214+44.06
HT=110.00 ELE=2328.31
3ST-133
750' RS



DISPLAYED 212°F MAX SAG 7431 (LBS)
DISPLAYED 60°F MAX SAG 2284 (LBS)
DISPLAYED 60°F MAX SAG 2235 (LBS)

DISPLAYED 212°F MAX SAG 6815 (LBS)
DISPLAYED 60°F MAX SAG 2220 (LBS)
DISPLAYED 60°F MAX SAG 2190 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10239	21621	28957	850'
OPGW (GRN)	AFL 0.571" 36 FIBER	2284	6532	10155	850'
OHGW (BLU)	7/16" EHS	2235	5880	9427	850'

DESIGN BY: CDB/GCC — DATE: 14-JUL
DRAWN BY: C. BAUER — DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON — DATE: 14-JUL
DRAFT CHK: — DATE:
APPROVED: G CHRISTENSON — DATE: 14-JUL

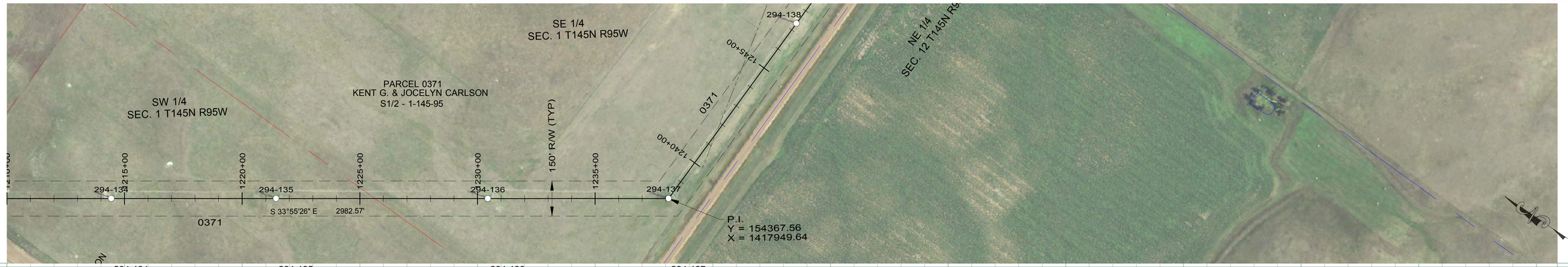
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1160+00 TO 1216+53
STRUCTURE: 294-128 TO 294-134

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-022
REV. NO. 1

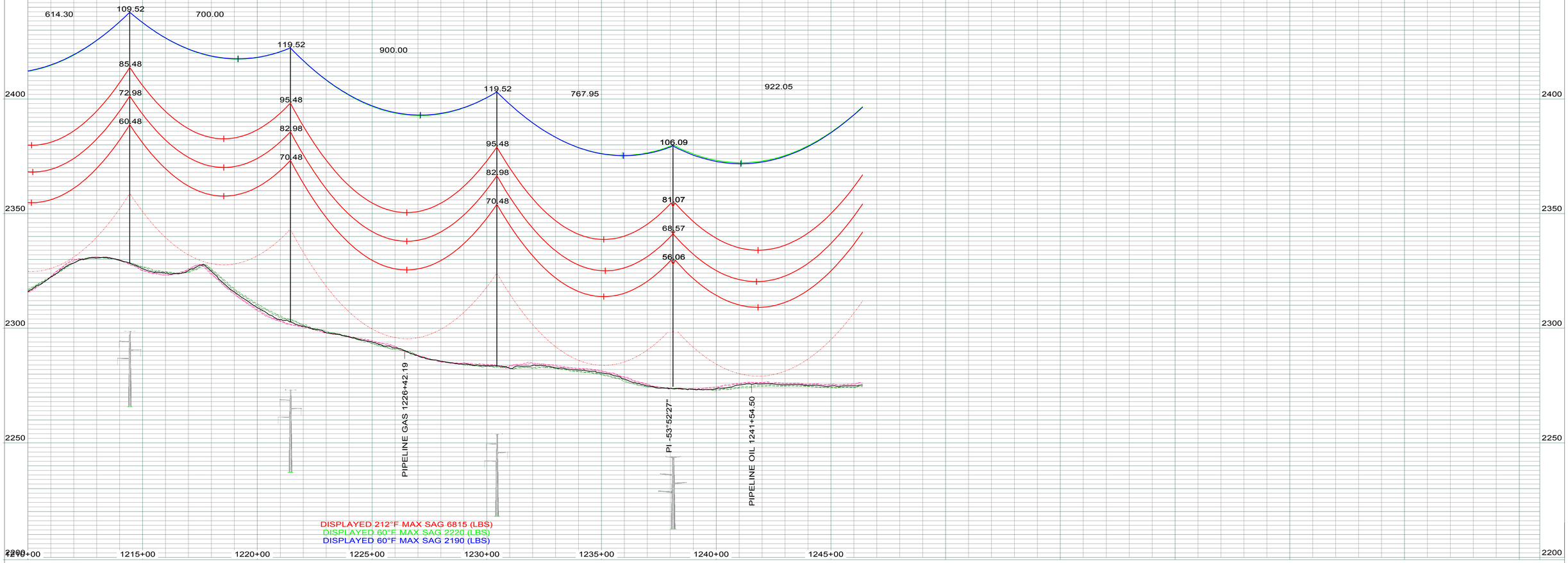


294-134
STA=1214+44.06
HT=110.00 ELE=2328.31
3ST-133
750' RS

294-135
STA=1221+44.06
HT=120.00 ELE=2302.73
3ST-144
750' RS

294-136
STA=1230+44.06
HT=120.00 ELE=2283.56
3ST-144
750' RS

294-137
STA=1238+12.00
HT=106.09 ELE=2273.59
3SDA55-105
OPGW SPLICE
END 750' RS, BEGIN 950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	9729	21065	27779	750'
OPGW (GRN)	AFL 0.571" 36 FIBER	2220	6210	9531	750'
OHGW (BLU)	7/16" EHS	2190	5595	8861	750'

DESIGN BY: CDB/GCC — DATE: 14-JUL
DRAWN BY: C. BAUER — DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON — DATE: 14-JUL
DRAFT CHK: — DATE:
APPROVED: G CHRISTENSON — DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

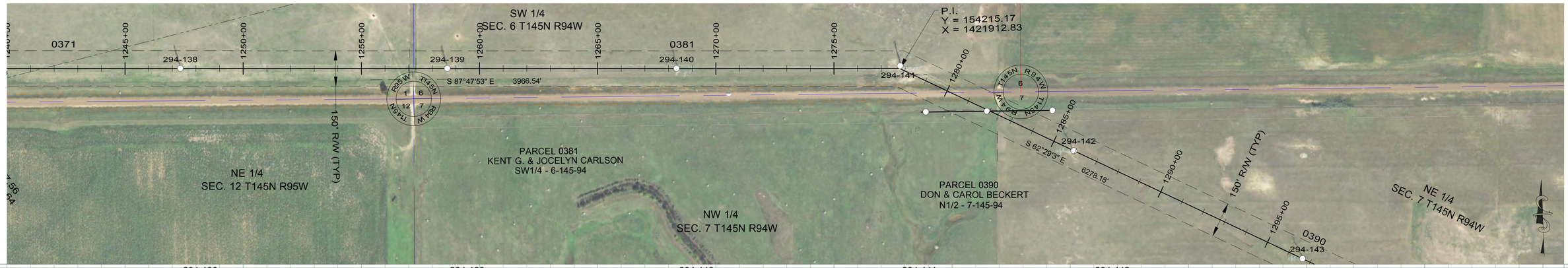
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1210+00 TO 1246+38
STRUCTURE: 294-134 TO 294-137

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-023

REV. NO. 1



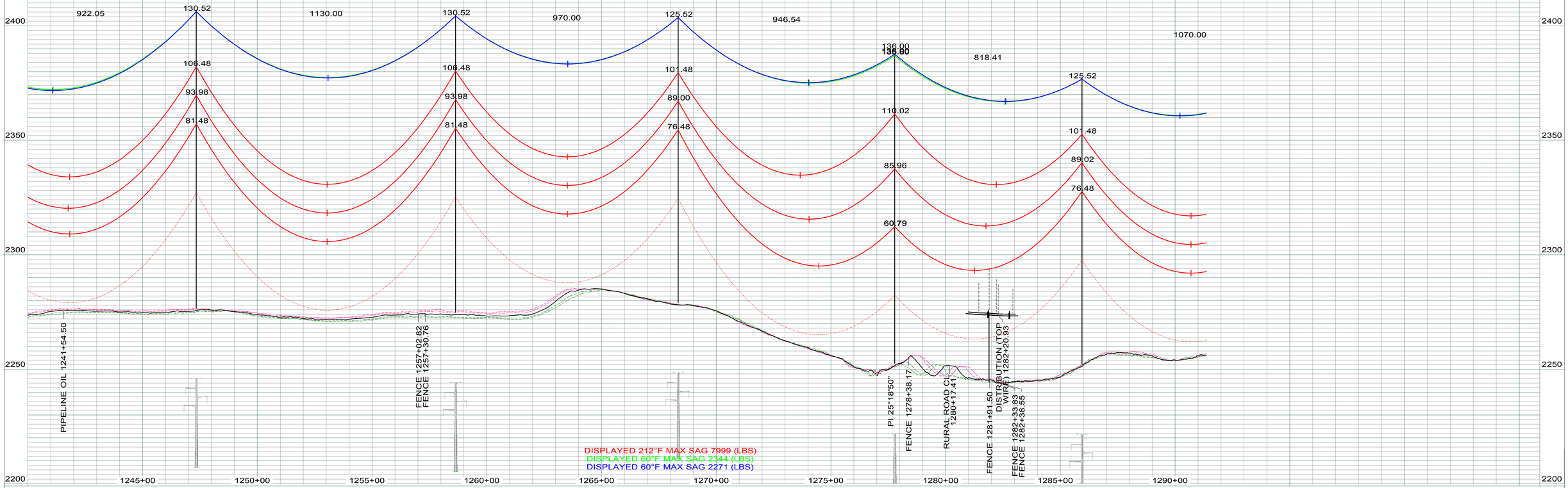
294-138
STA=1247+34.06
HT=131.00 ELE=2275.71
3SLT2-130
950' RS

294-139
STA=1258+64.06
HT=131.00 ELE=2273.84
3SLT2-130
950' RS

294-140
STA=1268+34.06
HT=126.00 ELE=2278.11
3ST2-125
950' RS

294-141
STA=1277+78.13
HT=136.00 ELE=2251.58
3SA30-135
OFFSET ADJUST=-11.00
950' RS

294-142
STA=1285+94.06
HT=126.00 ELE=2251.21
3ST2-125
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10699	22132	30037	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2344	6832	10741	950'
OHGW (BLU)	7/16" EHS	2271	6143	9952	950'

DESIGN BY: CDB/GCC — DATE: 14-JUL
DRAWN BY: C. BAUER — DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON — DATE: 14-JUL
DRAFT CHK: — DATE:
APPROVED: G CHRISTENSON — DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

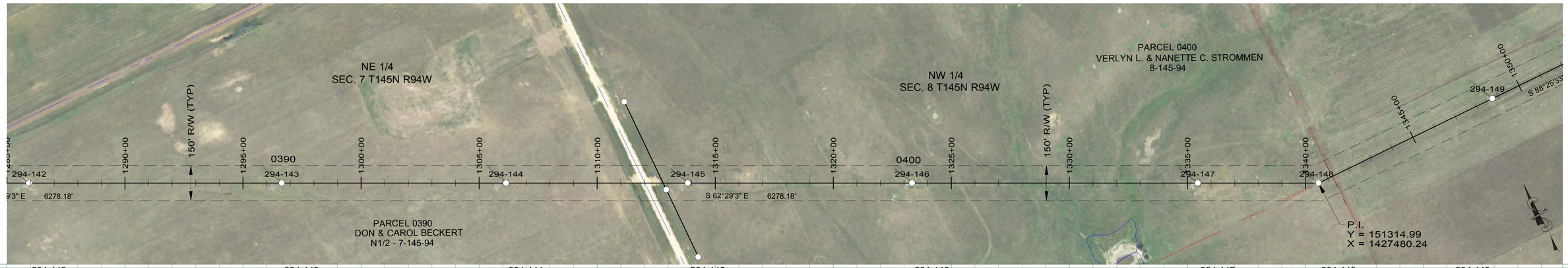
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1240+00 TO 1291+37
STRUCTURE: 294-138 TO 294-142

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-024

REV. NO. 1



294-142
STA=1285+94.06
HT=126.00 ELE=2251.21
3ST2-125
950' RS

294-143
STA=1296+64.06
HT=126.00 ELE=2271.46
3SLT2-125
950' RS

294-144
STA=1306+14.06
HT=126.00 ELE=2304.81
3ST2-125
950' RS

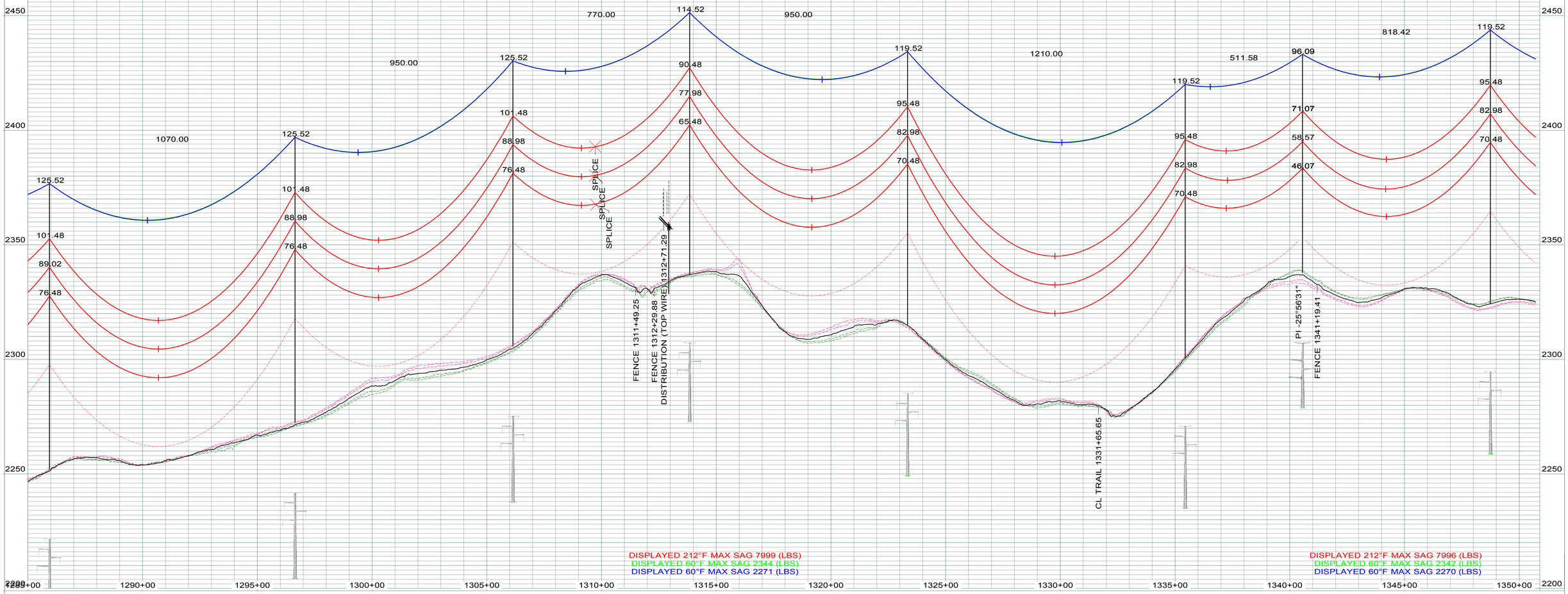
294-145
STA=1313+84.06
HT=115.00 ELE=2336.89
3ST-138
950' RS

294-146
STA=1323+34.06
HT=120.00 ELE=2314.83
3SLT-145
950' RS

294-147
STA=1335+44.06
HT=120.00 ELE=2300.53
3ST-144
950' RS

294-148
STA=1340+55.63
HT=96.09 ELE=2336.95
3SDA30-095
OPGW SPLICE
END 950' RS, BEGIN 950' RS

294-149
STA=1348+74.06
HT=120.00 ELE=2324.26
3ST-144
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10699	22132	30037	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2344	6832	10741	950'
OHGW (BLU)	7/16" EHS	2271	6143	9952	950'

		DATE:
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

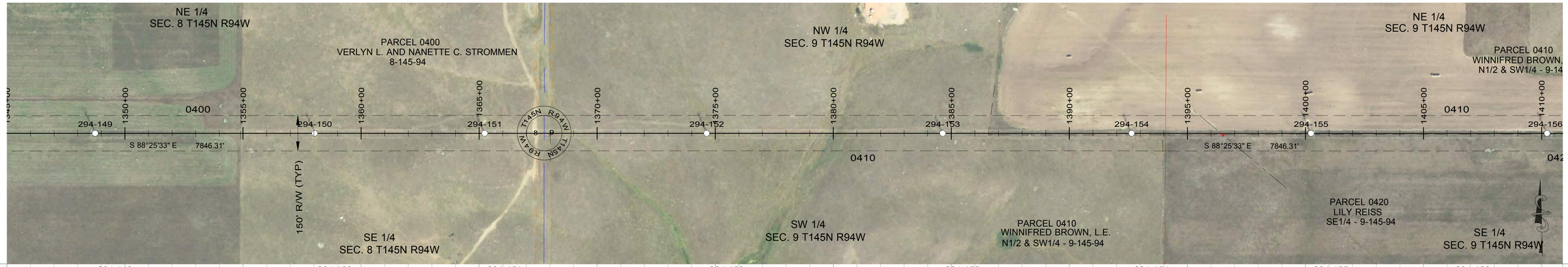
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1285+00 TO 1350+72
STRUCTURE: 294-142 TO 294-149

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-025

REV. NO. 1



294-149
STA=1348+74.06
HT=120.00 ELE=2324.26
3ST-144
950' RS

294-150
STA=1358+04.06
HT=110.00 ELE=2334.66
3ST-133
950' RS

294-151
STA=1365+24.06
HT=105.00 ELE=2322.66
3ST-127
950' RS

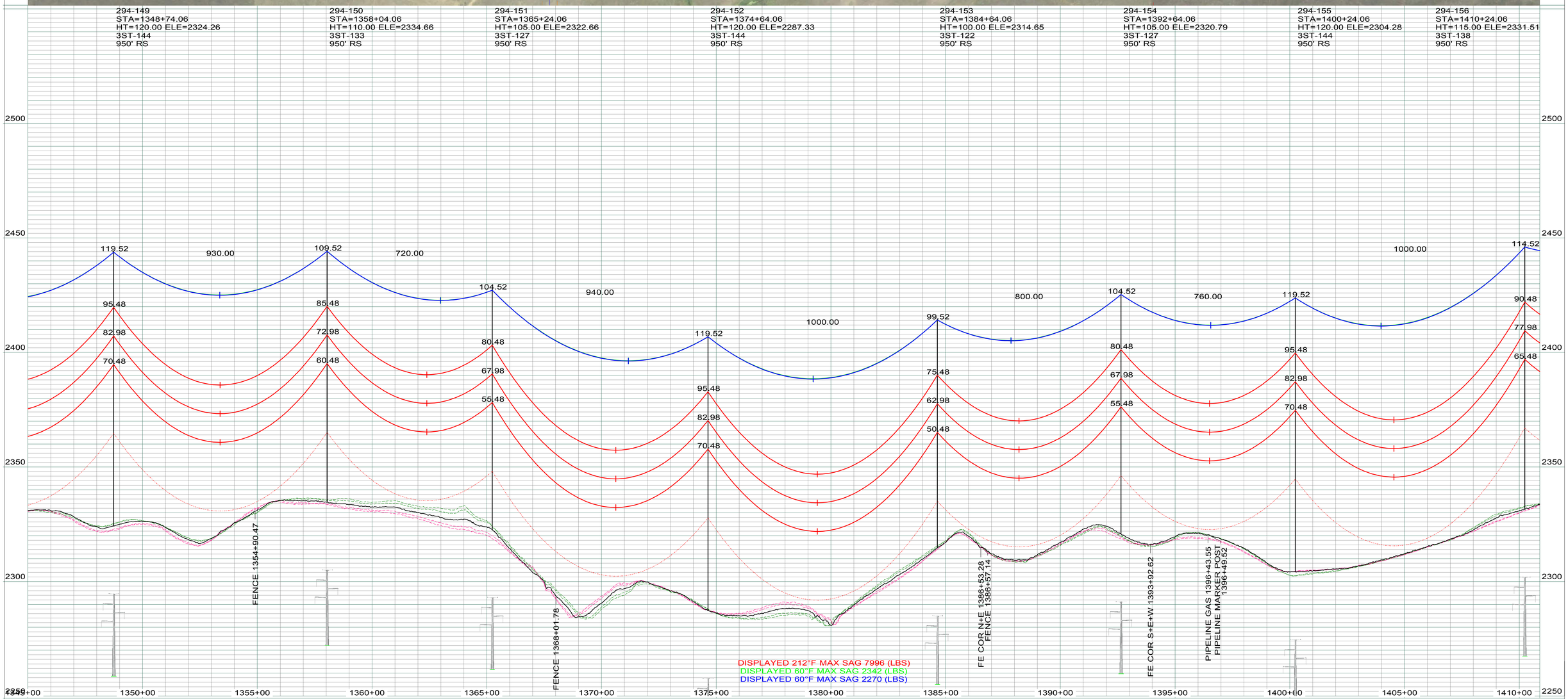
294-152
STA=1374+64.06
HT=120.00 ELE=2287.33
3ST-144
950' RS

294-153
STA=1384+64.06
HT=100.00 ELE=2314.65
3ST-122
950' RS

294-154
STA=1392+64.06
HT=105.00 ELE=2320.79
3ST-127
950' RS

294-155
STA=1400+24.06
HT=120.00 ELE=2304.28
3ST-144
950' RS

294-156
STA=1410+24.06
HT=115.00 ELE=2331.51
3ST-138
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10691	22113	30022	950`
OPGW (GRN)	AFL 0.571" 36 FIBER	2342	6830	10739	950`
OHGW (BLU)	7/16" EHS	2270	6141	9950	950`

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

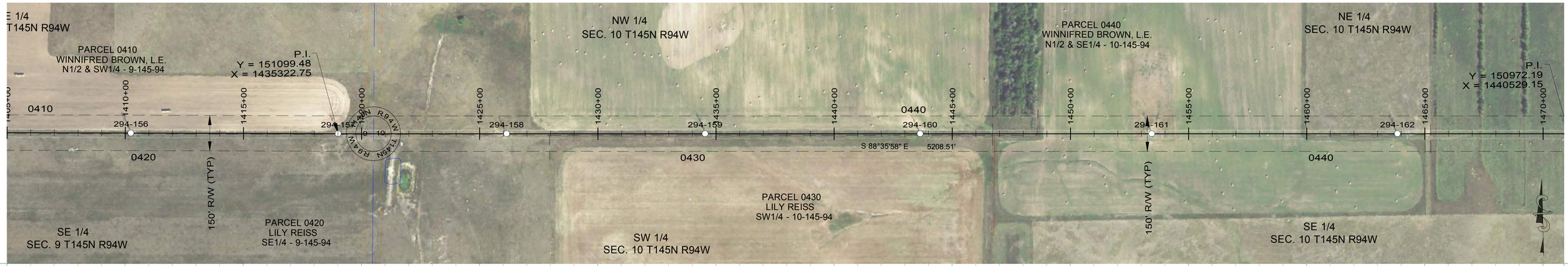
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1345+00 TO 1410+90
STRUCTURE: 294-149 TO 294-156

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-026

REV. NO. 1



294-156
STA=1410+24.06
HT=115.00 ELE=2331.51
3ST-138
950' RS

294-157
STA=1419+01.10
HT=115.00 ELE=2372.96
3ST-138
950' RS

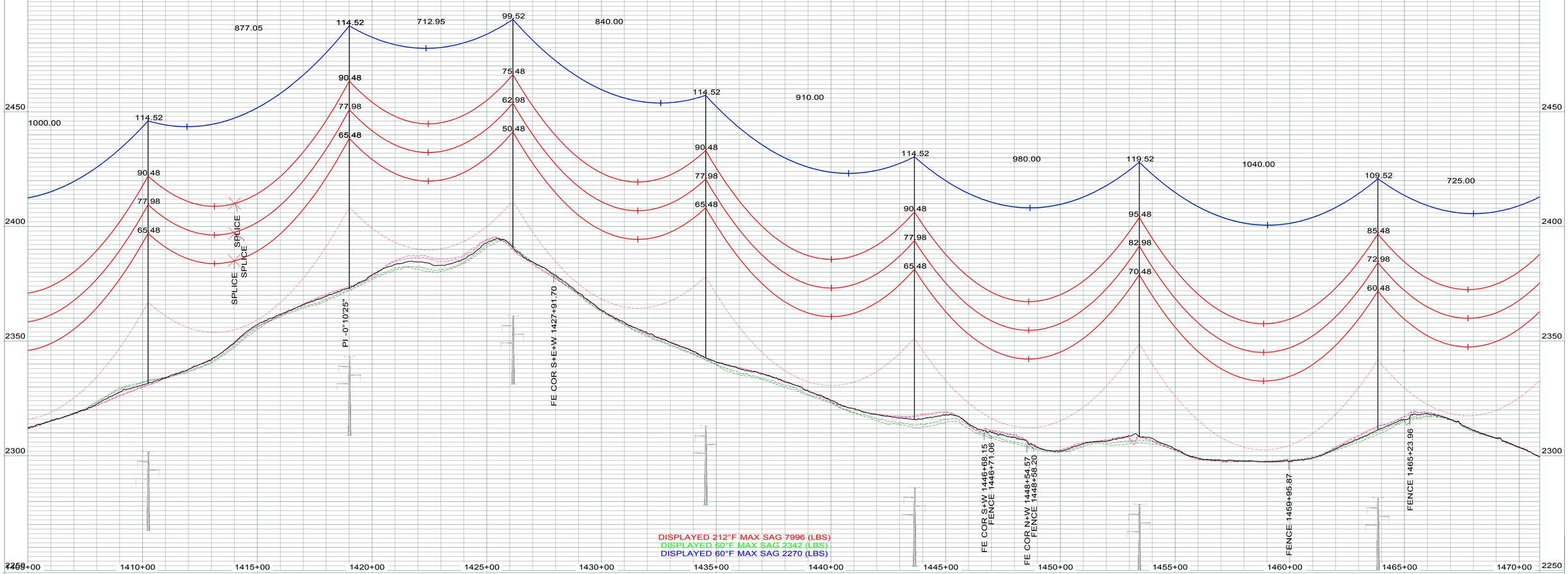
294-158
STA=1426+14.06
HT=100.00 ELE=2390.76
3ST-122
950' RS

294-159
STA=1434+54.06
HT=115.00 ELE=2342.68
3ST-138
950' RS

294-160
STA=1443+64.06
HT=115.00 ELE=2315.86
3ST-138
950' RS

294-161
STA=1453+44.06
HT=120.00 ELE=2308.50
3SLT-145
950' RS

294-162
STA=1463+84.06
HT=110.00 ELE=2311.31
3ST-133
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10691	22113	30022	950`
OPGW (GRN)	AFL 0.571" 36 FIBER	2342	6830	10739	950`
OHGW (BLU)	7/16" EHS	2270	6141	9950	950`

DESIGN BY: CDB/GCC — DATE: 14-JUL
DRAWN BY: C. BAUER — DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON — DATE: 14-JUL
DRAFT CHK: — DATE:
APPROVED: G CHRISTENSON — DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

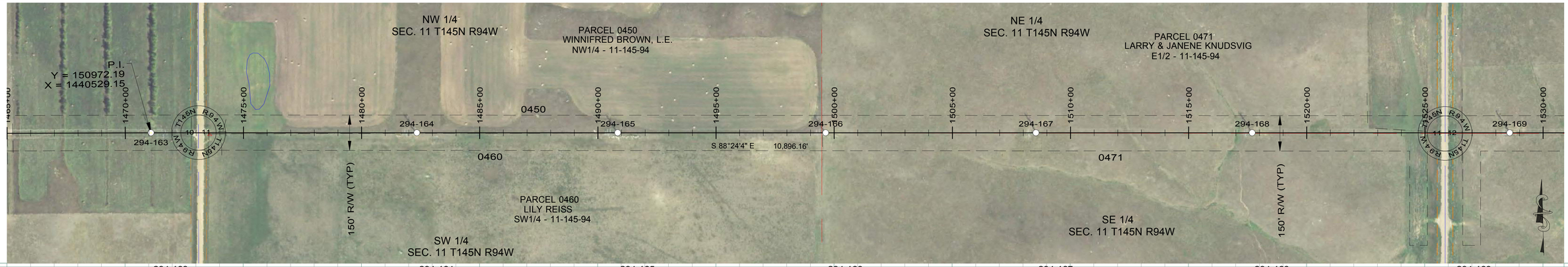
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1405+00 TO 1470+89
STRUCTURE: 294-156 TO 294-162

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-027

REV. NO. 1



294-163
STA=1471+09.06
HT=115.00 ELE=2299.42
3ST-138
950' RS

294-164
STA=1482+34.06
HT=105.00 ELE=2315.88
3ST-127
950' RS

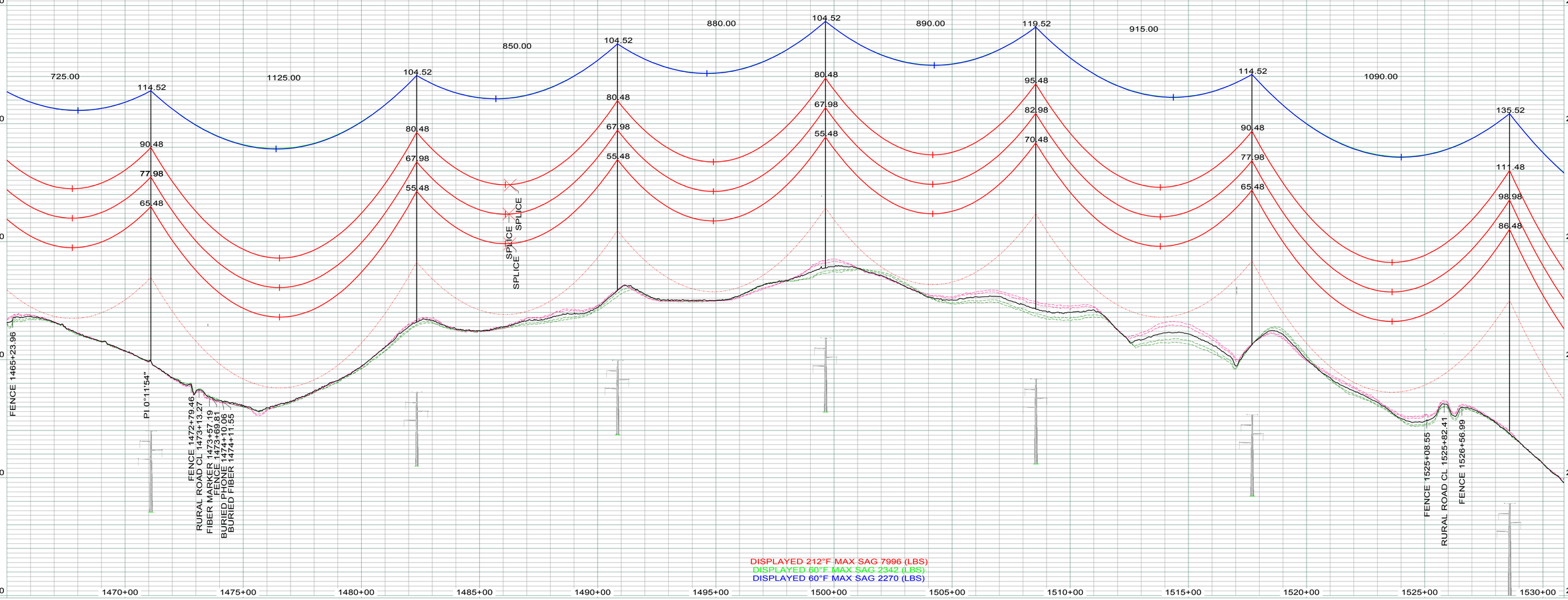
294-165
STA=1490+84.06
HT=105.00 ELE=2329.31
3ST-127
950' RS

294-166
STA=1499+64.06
HT=105.00 ELE=2338.85
3ST-127
950' RS

294-167
STA=1508+54.06
HT=120.00 ELE=2321.41
3ST-144
950' RS

294-168
STA=1517+69.06
HT=115.00 ELE=2306.36
3ST-138
950' RS

294-169
STA=1528+59.06
HT=136.00 ELE=2268.73
3SLT2-135
950' RS



DISPLAYED 212°F MAX SAG 7996 (LBS)
DISPLAYED 60°F MAX SAG 2342 (LBS)
DISPLAYED 60°F MAX SAG 2270 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10691	22113	30022	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2342	6830	10739	950'
OHGW (BLU)	7/16" EHS	2270	6141	9950	950'

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

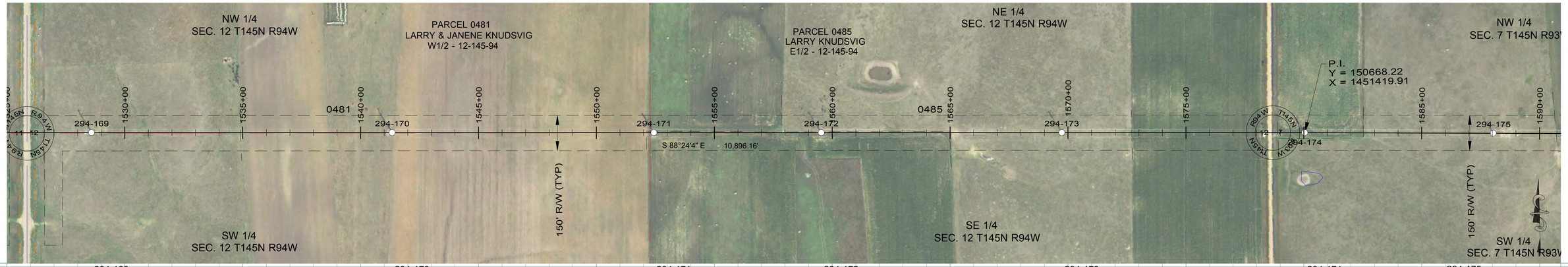
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1465+00 TO 1530+89
STRUCTURE: 294-163 TO 294-169

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-028
REV. NO. 1



294-169
STA=1528+59.06
HT=136.00 ELE=2268.73
3SLT2-135
950' RS

294-170
STA=1541+34.06
HT=141.00 ELE=2241.70
3SLT2-140
950' RS

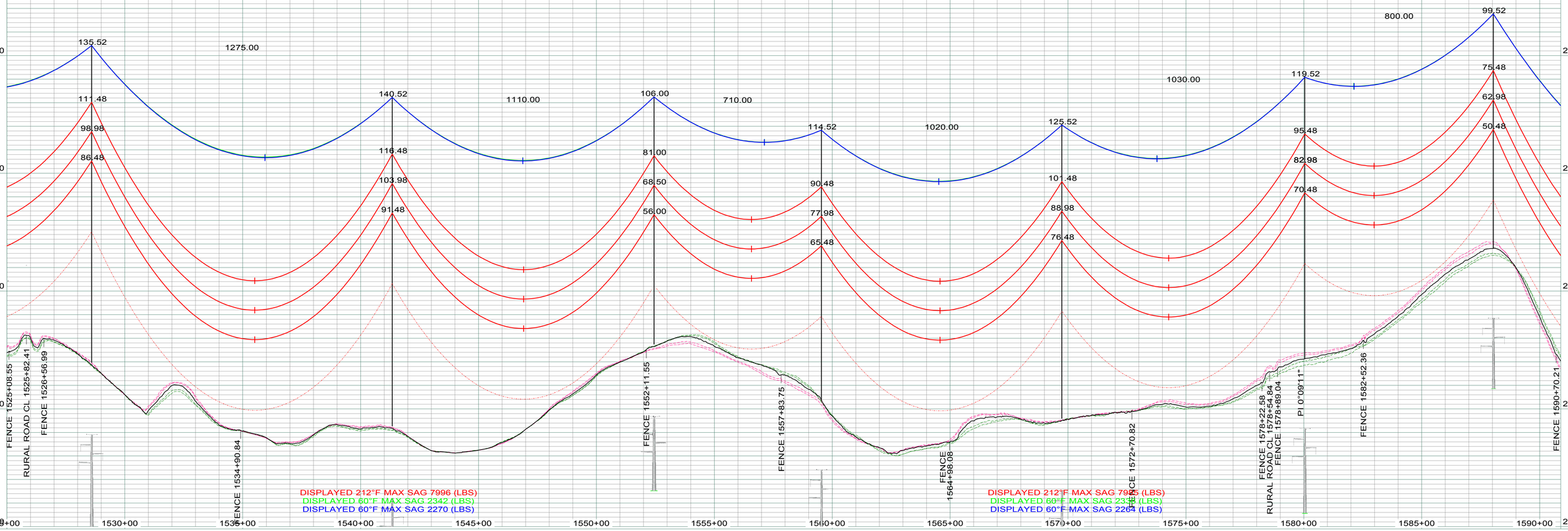
294-171
STA=1552+44.06
HT=106.00 ELE=2276.47
3SDT-105
OPGW SPLICE
END 950' RS; BEGIN 950' RS

294-172
STA=1559+54.06
HT=115.00 ELE=2253.79
3ST-138
950' RS

294-173
STA=1569+74.06
HT=126.00 ELE=2245.00
3ST2-125
950' RS

294-174
STA=1580+04.06
HT=120.00 ELE=2271.25
3ST-144
950' RS

294-175
STA=1588+04.06
HT=100.00 ELE=2318.17
3SLT-123
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10668	22057	29976	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2336	6818	10730	950'
OHGW (BLU)	7/16" EHS	2264	6133	9943	950'

DESIGN BY: CDB/GCC — DATE: 14-JUL
DRAWN BY: C. BAUER — DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON — DATE: 14-JUL
DRAFT CHK: — DATE:
APPROVED: G CHRISTENSON — DATE: 14-JUL

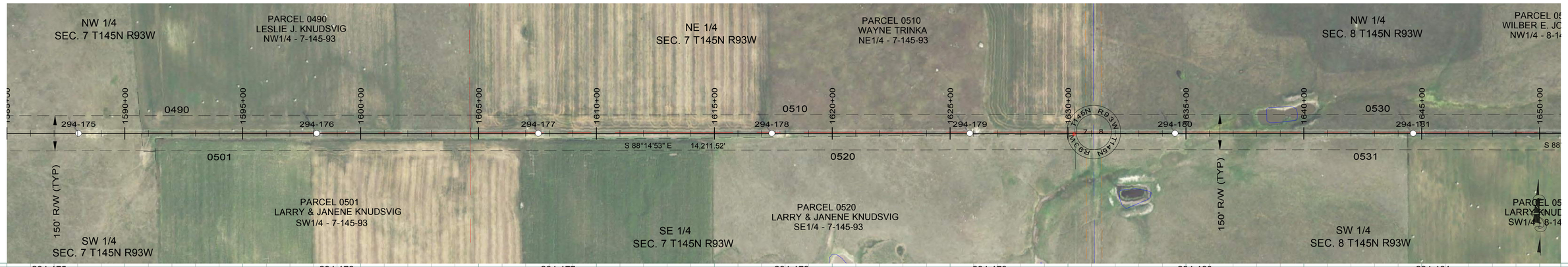
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1525+00 TO 1590+89
STRUCTURE: 294-169 TO 294-175

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-029
REV. NO.: 1



294-175
STA=1588+04.06
HT=100.00 ELE=2318.17
3SLT-123
950' RS

294-176
STA=1598+14.06
HT=126.00 ELE=2218.99
3ST2-125
950' RS

294-177
STA=1607+54.06
HT=110.00 ELE=2209.11
3ST-133
950' RS

294-178
STA=1617+44.06
HT=115.00 ELE=2210.58
3ST-138
950' RS

294-179
STA=1625+84.06
HT=105.00 ELE=2242.76
3ST-127
950' RS

294-180
STA=1634+54.06
HT=126.00 ELE=2237.06
3ST2-125
950' RS

294-181
STA=1644+64.06
HT=120.00 ELE=2256.51
3SLT-145
950' RS

DISPLAYED 212°F MAX SAG 7985 (LBS)
DISPLAYED 60°F MAX SAG 2336 (LBS)
DISPLAYED 60°F MAX SAG 2264 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10668	22057	29976	950`
OPGW (GRN)	AFL 0.571" 36 FIBER	2336	6818	10730	950`
OHGW (BLU)	7/16" EHS	2264	6133	9943	950`

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

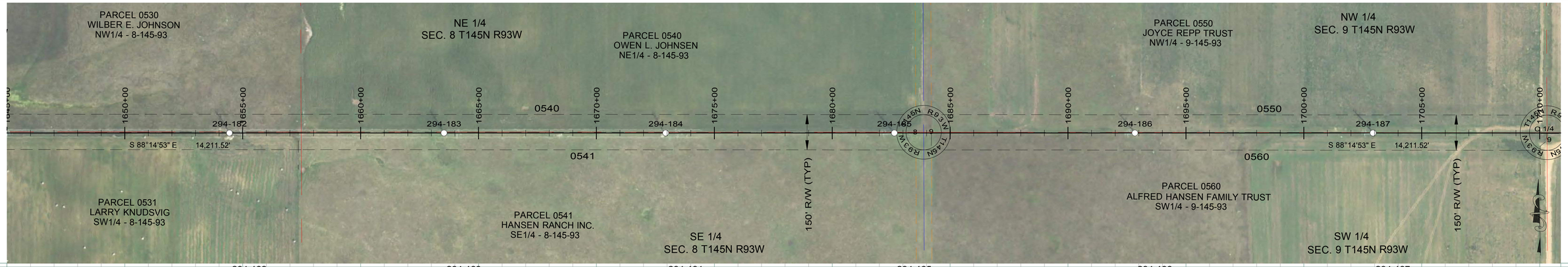
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1585+00 TO 1650+90
STRUCTURE: 294-175 TO 294-181

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-030
REV. NO. 1



294-182
STA=1654+44.06
HT=126.00 ELE=2268.07
3ST2-125
950' RS

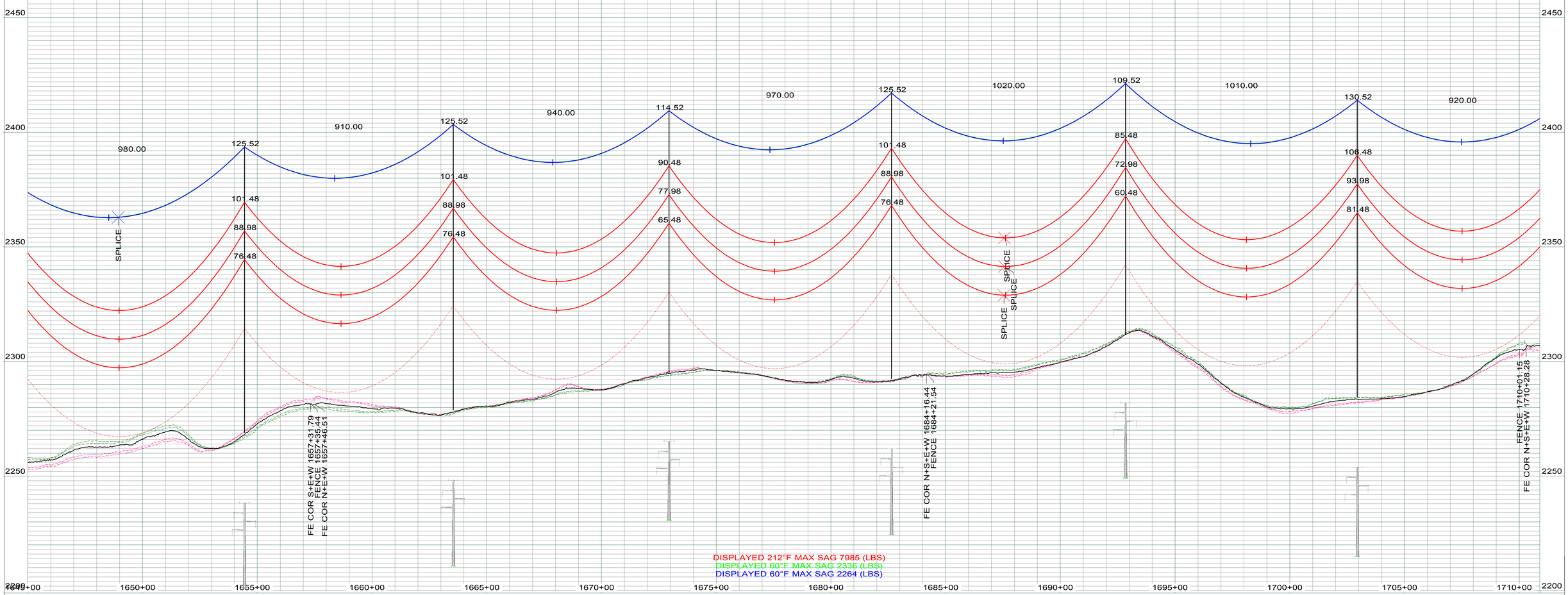
294-183
STA=1663+54.06
HT=126.00 ELE=2277.89
3ST2-125
950' RS

294-184
STA=1672+94.06
HT=115.00 ELE=2294.89
3ST-138
950' RS

294-185
STA=1682+64.06
HT=126.00 ELE=2291.61
3ST2-125
950' RS

294-186
STA=1692+84.06
HT=110.00 ELE=2311.76
3ST-133
950' RS

294-187
STA=1702+94.06
HT=131.00 ELE=2283.51
3ST2-130
950' RS



DISPLAYED 212°F MAX SAG 7985 (LBS)
DISPLAYED 60°F MAX SAG 2336 (LBS)
DISPLAYED 60°F MAX SAG 2264 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10668	22057	29976	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2336	6818	10730	950'
OHGW (BLU)	7/16" EHS	2264	6133	9943	950'

		DATE:
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

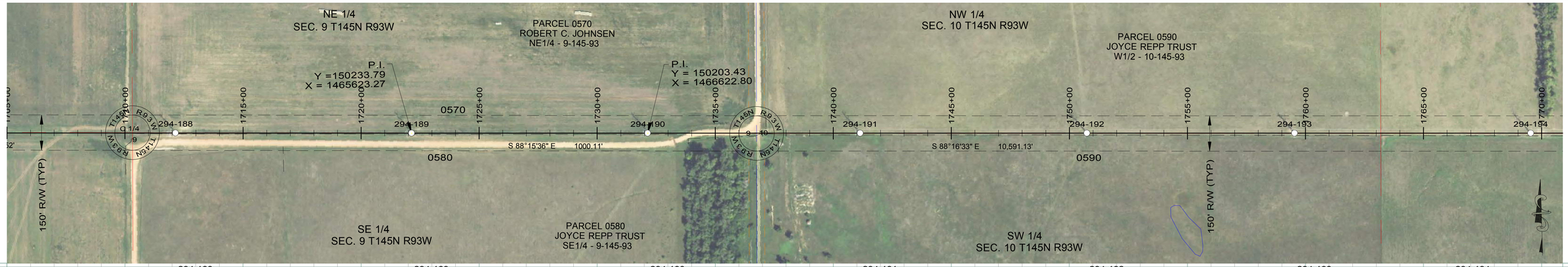
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1645+00 TO 1710+90
STRUCTURE: 294-182 TO 294-187

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-031

REV. NO. 1



294-188
STA=1712+14.06
HT=110.00 ELE=2305.27
3ST-133
950' RS

294-189
STA=1722+14.06
HT=120.00 ELE=2265.87
3SLT-145
950' RS

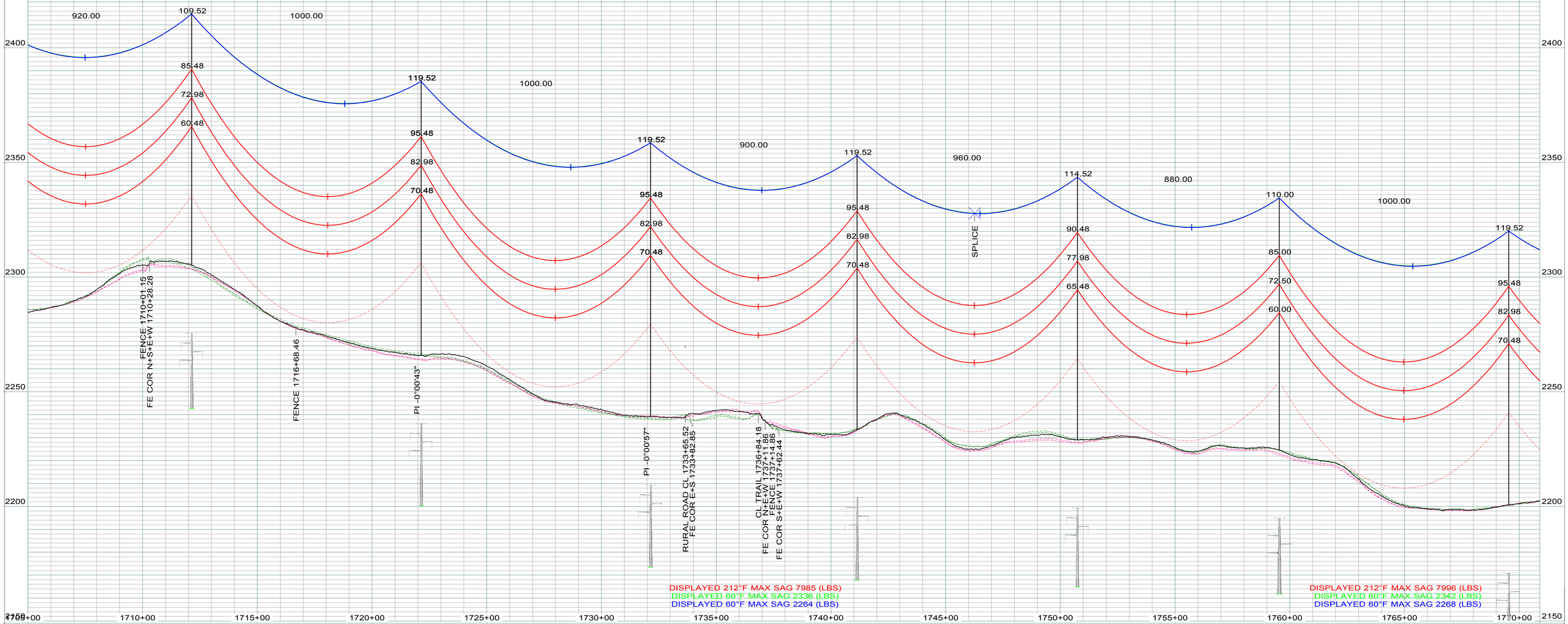
294-190
STA=1732+14.06
HT=120.00 ELE=2239.04
3ST-144
950' RS

294-191
STA=1741+14.06
HT=120.00 ELE=2233.47
3ST-144
950' RS

294-192
STA=1750+74.06
HT=115.00 ELE=2229.04
3ST-138
950' RS

294-193
STA=1759+54.06
HT=110.00 ELE=2224.50
3SDT-110
OPGW SPLICE
END 950' RS, BEGIN 950' RS

294-194
STA=1769+54.06
HT=120.00 ELE=2200.57
3ST-144
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10668	22057	29976	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2336	6818	10730	950'
OHGW (BLU)	7/16" EHS	2264	6133	9943	950'

		DATE
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

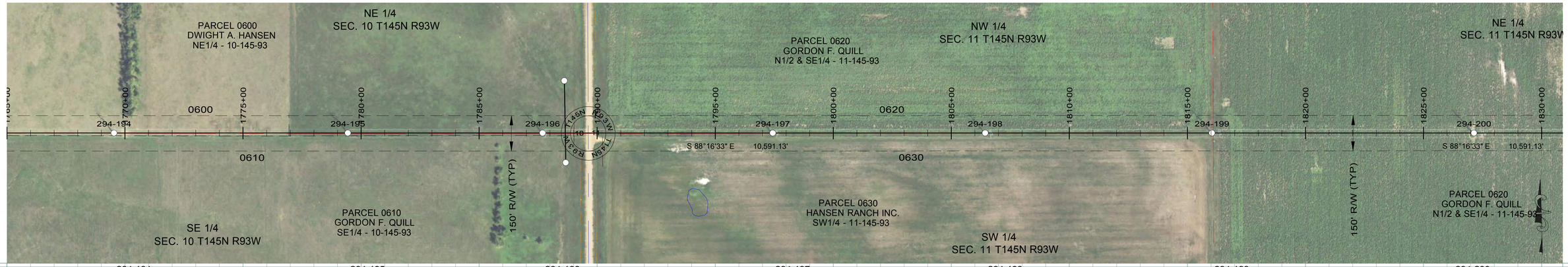
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1705+00 TO 1770+90
STRUCTURE: 294-188 TO 294-194

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-032

REV. NO. 1



294-194
STA=1769+54.06
HT=120.00 ELE=2200.57
3ST-144
950' RS

294-195
STA=1779+44.06
HT=120.00 ELE=2215.30
3ST-144
950' RS

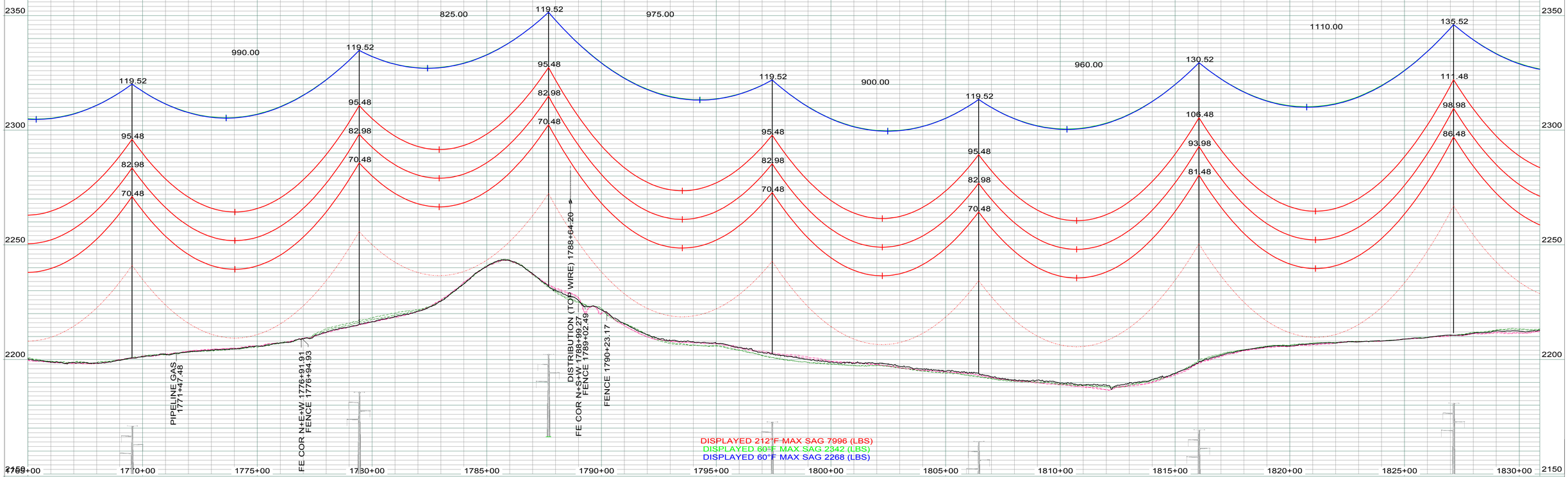
294-196
STA=1787+69.06
HT=120.00 ELE=2231.91
3ST-144
950' RS

294-197
STA=1797+44.06
HT=120.00 ELE=2202.37
3ST-144
950' RS

294-198
STA=1806+44.06
HT=120.00 ELE=2193.89
3ST-144
950' RS

294-199
STA=1816+04.06
HT=131.00 ELE=2198.95
3SLT2-130
950' RS

294-200
STA=1827+14.06
HT=136.00 ELE=2210.55
3SLT2-135
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10691	22113	30022	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2342	6830	10739	950'
OHGW (BLU)	7/16" EHS	2268	6139	9948	950'

DESIGN BY: CDB/GCC	DATE: 14-JUL	
DRAWN BY: C. BAUER	DATE: 14-JUL	
DESIGN CHK: G. CHRISTENSON	DATE: 14-JUL	
DRAFT CHK:	DATE:	
APPROVED: G CHRISTENSON	DATE: 14-JUL	

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

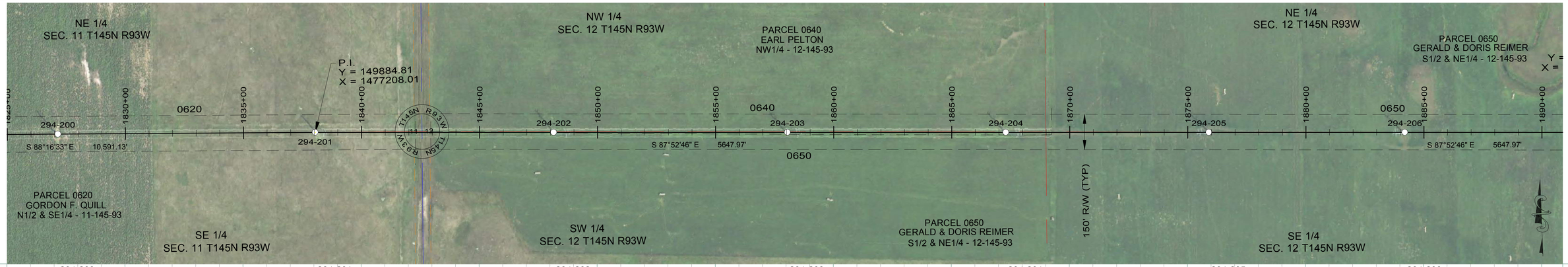
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1765+00 TO 1830+90
STRUCTURE: 294-194 TO 294-200

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-033

REV. NO. 1



294-200
STA=1827+14.06
HT=136.00 ELE=2210.55
3SLT2-135
950' RS

294-201
STA=1838+04.06
HT=100.00 ELE=2258.46
3SLT-123
950' RS

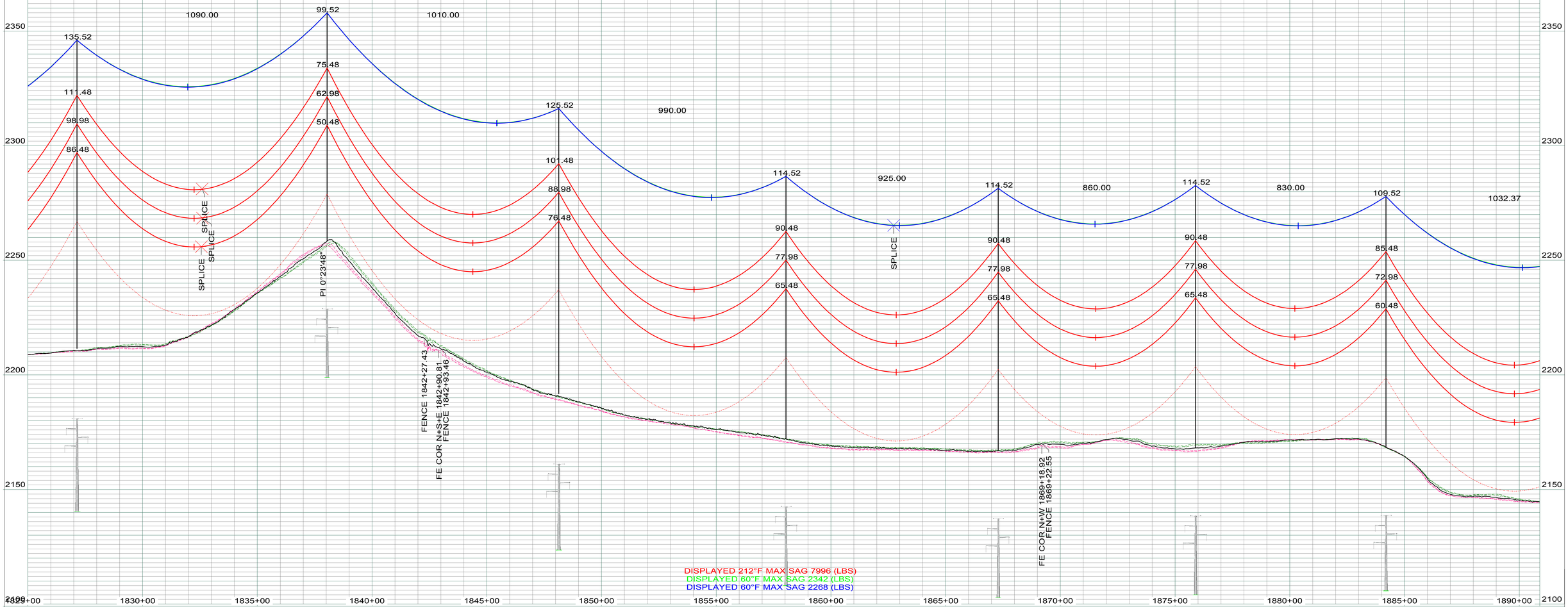
294-202
STA=1848+14.06
HT=126.00 ELE=2190.73
3ST2-125
950' RS

294-203
STA=1858+04.06
HT=115.00 ELE=2172.14
3ST-138
950' RS

294-204
STA=1867+29.06
HT=115.00 ELE=2166.91
3ST-138
950' RS

294-205
STA=1875+89.06
HT=115.00 ELE=2168.12
3ST-138
950' RS

294-206
STA=1884+19.06
HT=110.00 ELE=2168.35
3ST-133
950' RS



DISPLAYED 212°F MAX SAG 7996 (LBS)
DISPLAYED 60°F MAX SAG 2342 (LBS)
DISPLAYED 60°F MAX SAG 2268 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10691	22113	30022	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2342	6830	10739	950'
OHGW (BLU)	7/16" EHS	2268	6139	9948	950'

DESIGN BY:	CDB/GCC	DATE: 14-JUL
DRAWN BY:	C. BAUER	DATE: 14-JUL
DESIGN CHK:	G. CHRISTENSON	DATE: 14-JUL
DRAFT CHK:		DATE:
APPROVED:	G CHRISTENSON	DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

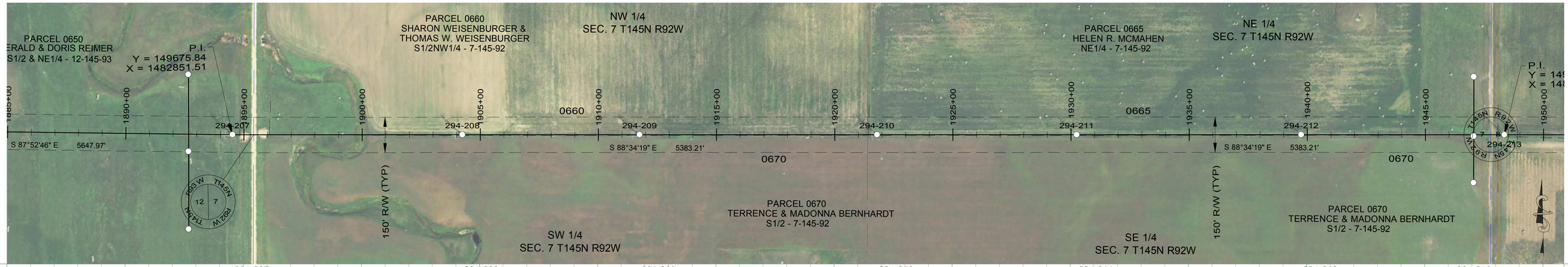
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1825+00 TO 1890+88
STRUCTURE: 294-200 TO 294-206

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-034

REV. NO. 1



294-207
STA=1894+51.43
HT=120.00 ELE=2144.06
3SLT-145
950' RS

294-208
STA=1904+24.06
HT=120.00 ELE=2143.10
3ST-144
950' RS

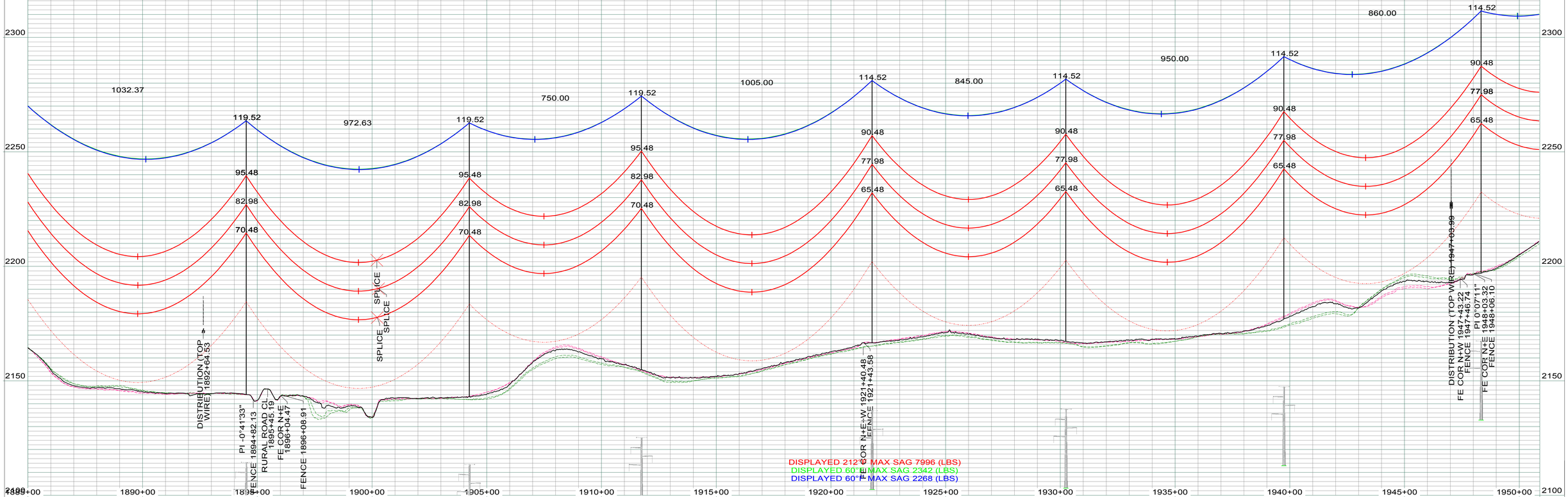
294-209
STA=1911+74.06
HT=120.00 ELE=2154.86
3ST-144
950' RS

294-210
STA=1921+79.06
HT=115.00 ELE=2166.62
3ST-138
950' RS

294-211
STA=1930+24.06
HT=115.00 ELE=2167.24
3ST-138
950' RS

294-212
STA=1939+74.06
HT=115.00 ELE=2177.07
3ST-138
950' RS

294-213
STA=1948+34.06
HT=115.00 ELE=2196.99
3ST-138
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10691	22113	30022	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2342	6830	10739	950'
OHGW (BLU)	7/16" EHS	2268	6139	9948	950'

		DATE
DESIGN BY: CDB/GCC		14-JUL
DRAWN BY: C. BAUER		14-JUL
DESIGN CHK: G. CHRISTENSON		14-JUL
DRAFT CHK:		
APPROVED: G CHRISTENSON		14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1885+00 TO 1950+86
STRUCTURE: 294-207 TO 294-213

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-035

REV. NO. 1



294-213
STA=1948+34.06
HT=115.00 ELE=2196.99
3ST-138
950' RS

294-214
STA=1956+34.06
HT=116.00 ELE=2229.40
3SDT-115
OPGW SPLICE
END 950' RS, BEGIN 900' RS

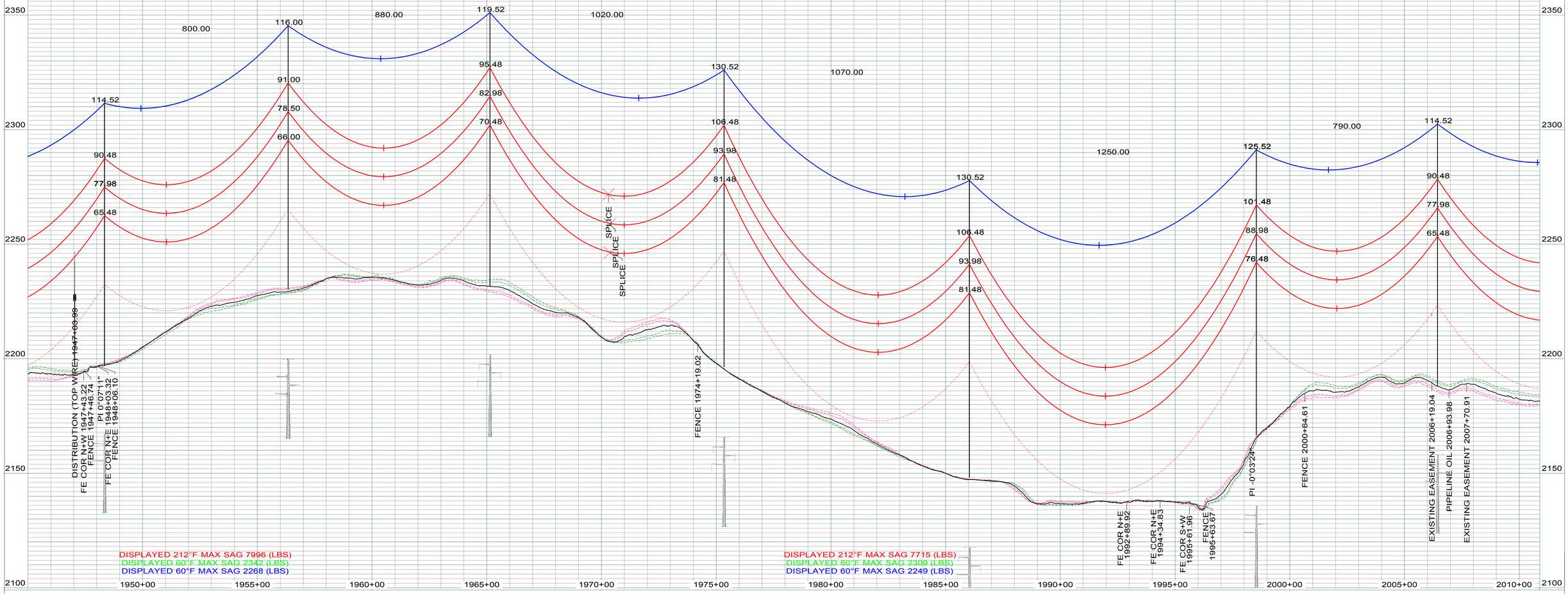
294-215
STA=1965+14.06
HT=120.00 ELE=2231.59
3ST-144
900' RS

294-216
STA=1975+34.06
HT=131.00 ELE=2195.47
3SLT2-130
900' RS

294-217
STA=1986+04.06
HT=131.00 ELE=2147.27
3SLT2-130
900' RS

294-218
STA=1998+54.06
HT=126.00 ELE=2165.67
3ST2-125
900' RS

294-219
STA=2006+44.06
HT=115.00 ELE=2187.94
3ST-138
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10459	21844	29483	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2309	6677	10446	900'
OHGW (BLU)	7/16" EHS	2249	6009	9691	900'

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

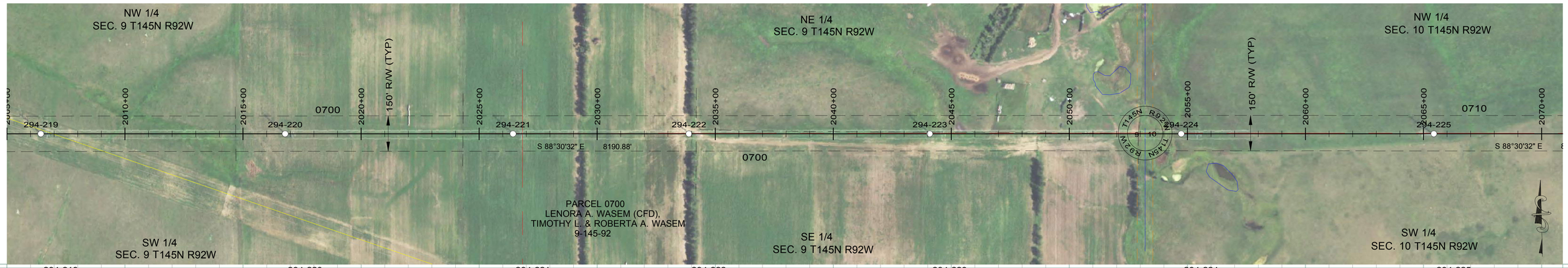
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1945+00 TO 2010+89
STRUCTURE: 294-213 TO 294-219

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-036

REV. NO. 1



294-219
STA=2006+44.06
HT=115.00 ELE=2187.94
3ST-138
900' RS

294-220
STA=2016+79.06
HT=120.00 ELE=2198.04
3SLT-145
900' RS

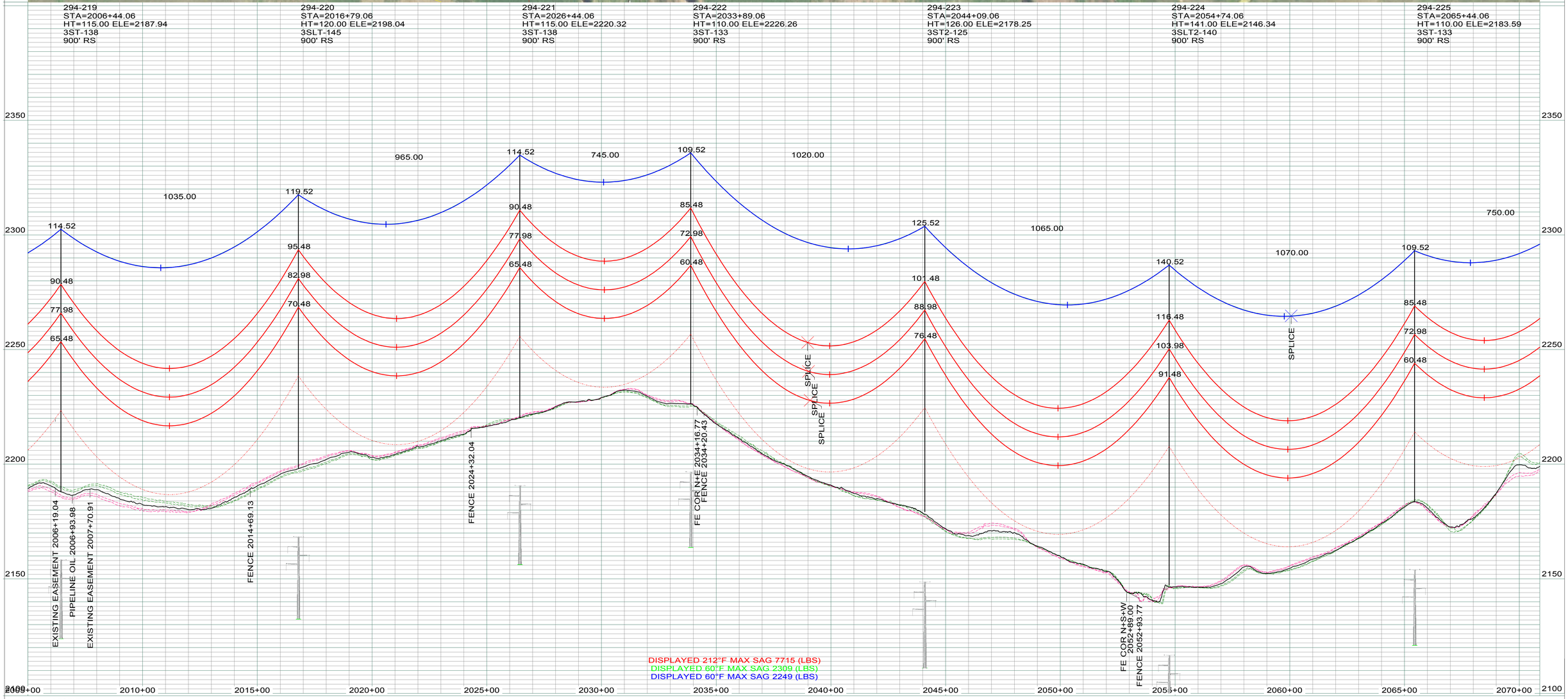
294-221
STA=2026+44.06
HT=115.00 ELE=2220.32
3ST-138
900' RS

294-222
STA=2033+89.06
HT=110.00 ELE=2226.26
3ST-133
900' RS

294-223
STA=2044+09.06
HT=126.00 ELE=2178.25
3ST2-125
900' RS

294-224
STA=2054+74.06
HT=141.00 ELE=2146.34
3SLT2-140
900' RS

294-225
STA=2065+44.06
HT=110.00 ELE=2183.59
3ST-133
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10459	21844	29483	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2309	6677	10446	900'
OHGW (BLU)	7/16" EHS	2249	6009	9691	900'

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

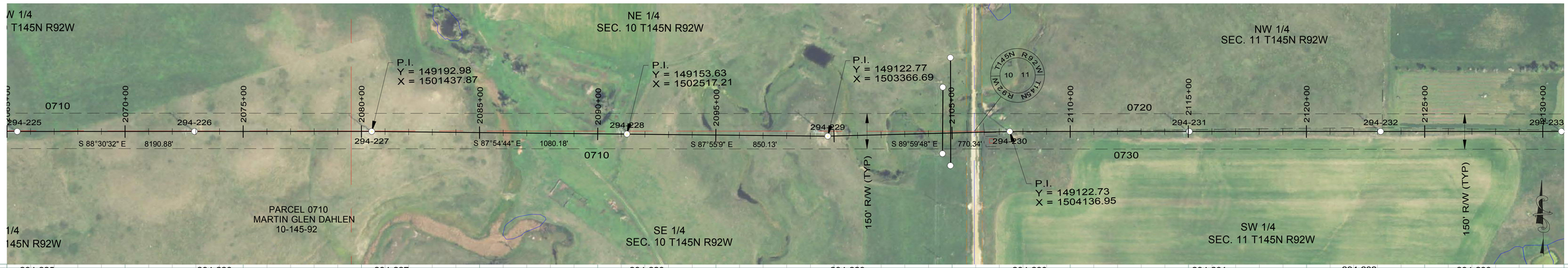
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2005+00 TO 2070+90
STRUCTURE: 294-219 TO 294-225

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-037
REV. NO. 1



294-225
STA=2065+44.06
HT=110.00 ELE=2183.59
3ST-133
900' RS

294-226
STA=2072+94.06
HT=105.00 ELE=2206.14
3ST-127
900' RS

294-227
STA=2080+44.06
HT=110.00 ELE=2190.44
3ST-133
900' RS

294-228
STA=2091+24.12
HT=115.00 ELE=2179.36
3ST-138
900' RS

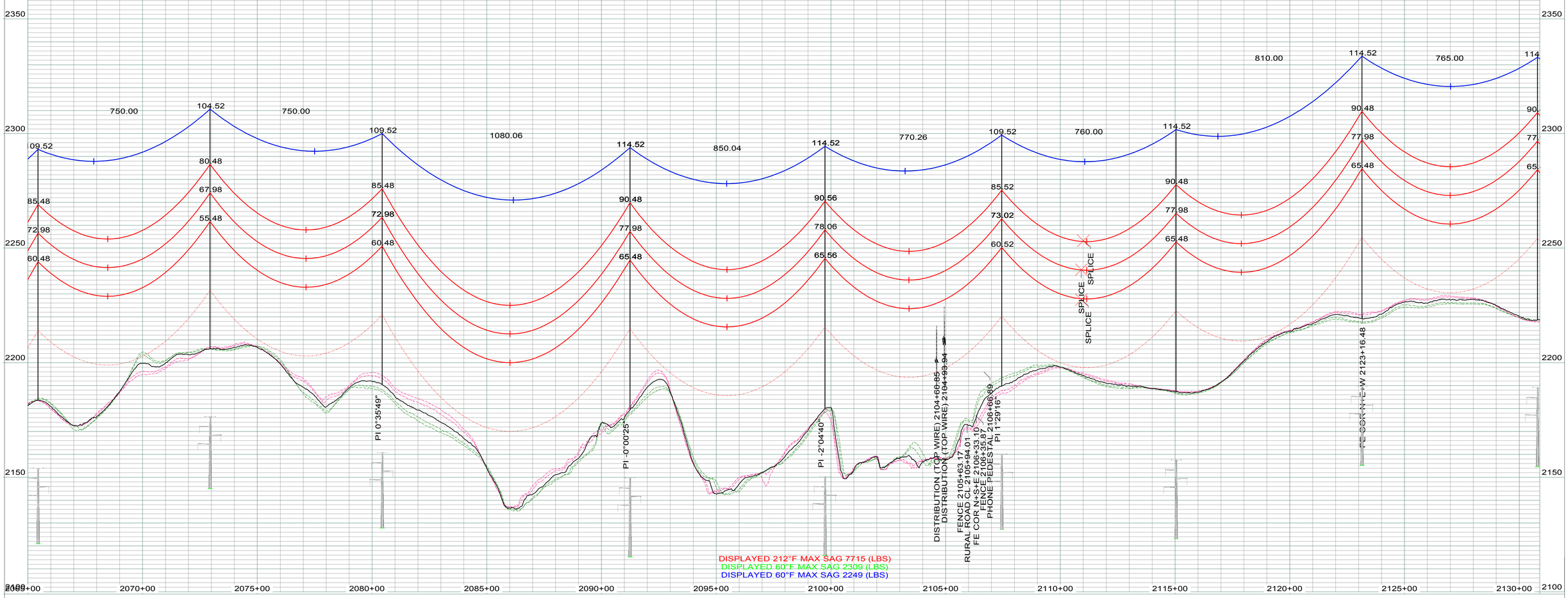
294-229
STA=2099+74.16
HT=115.00 ELE=2179.93
3ST-138
900' RS

294-230
STA=2107+44.42
HT=110.00 ELE=2189.80
3ST-133
900' RS

294-231
STA=2115+04.42
HT=115.00 ELE=2187.20
3ST-138
900' RS

294-232
STA=2123+14.42
HT=115.00 ELE=2219.25
3ST-138
900' RS

294-233
STA=2130+79.42
HT=115.00 ELE=2218.74
3ST-138
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10459	21844	29483	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2309	6677	10446	900'
OHGW (BLU)	7/16" EHS	2249	6009	9691	900'

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

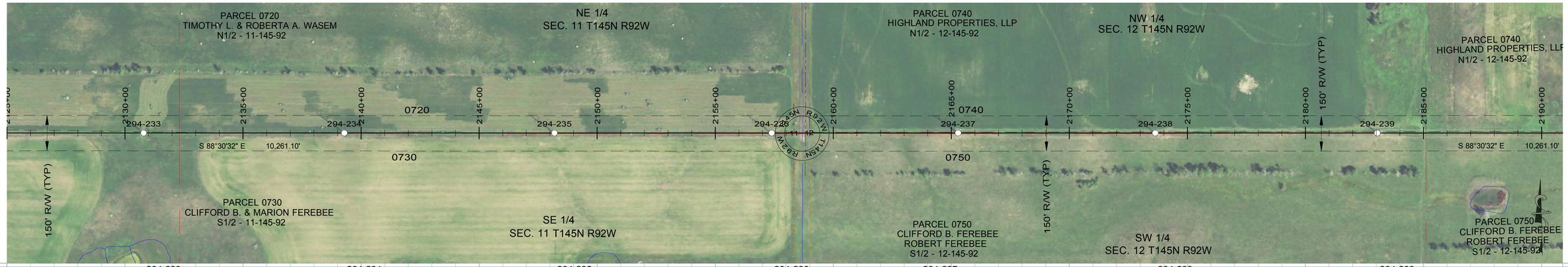
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2065+00 TO 2130+90
STRUCTURE: 294-225 TO 294-233

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-038
REV. NO. 1



294-233
STA=2130+79.42
HT=115.00 ELE=2218.74
3ST-138
900' RS

294-234
STA=2139+29.42
HT=115.00 ELE=2229.31
3ST-138
900' RS

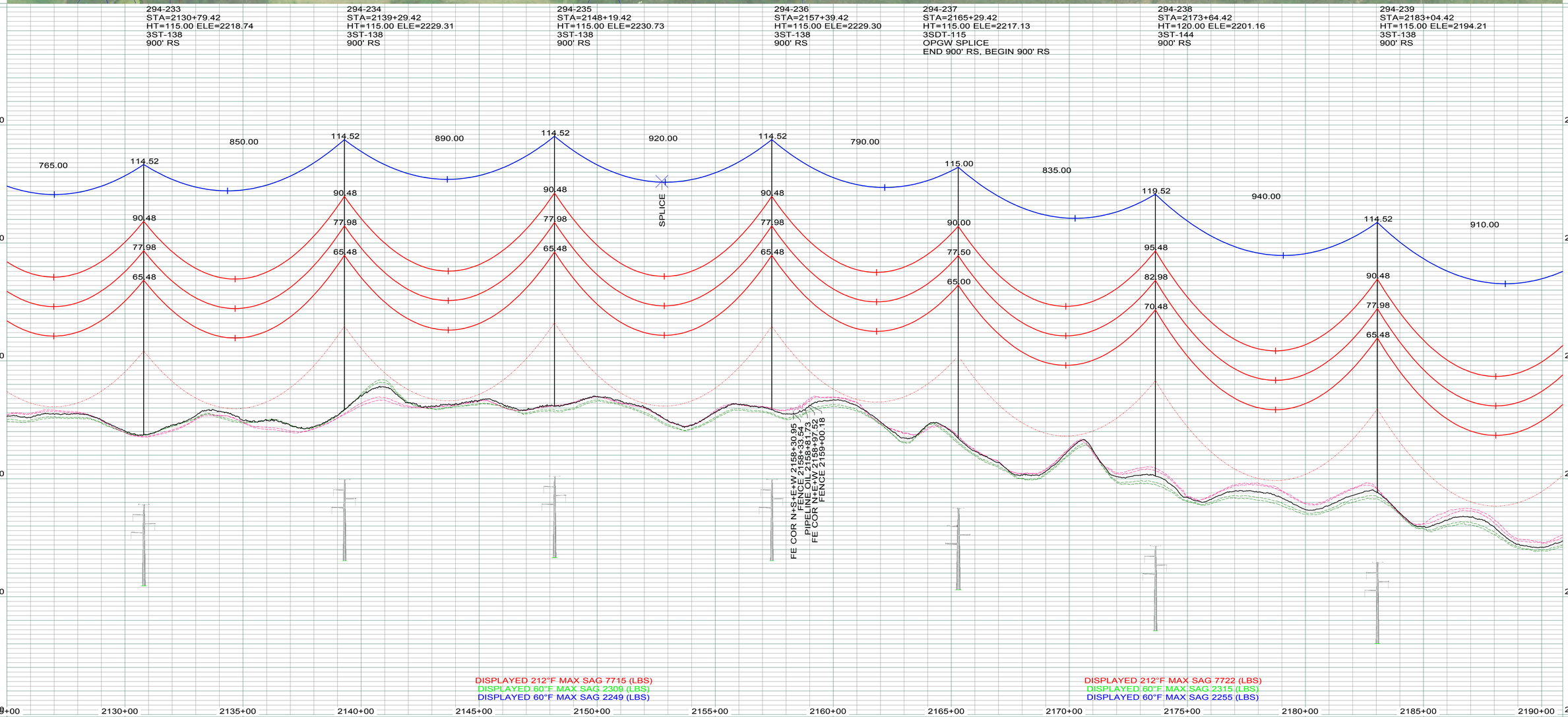
294-235
STA=2148+19.42
HT=115.00 ELE=2230.73
3ST-138
900' RS

294-236
STA=2157+39.42
HT=115.00 ELE=2229.30
3ST-138
900' RS

294-237
STA=2165+29.42
HT=115.00 ELE=2217.13
3SDT-115
OPGW SPLICE
END 900' RS, BEGIN 900' RS

294-238
STA=2173+64.42
HT=120.00 ELE=2201.16
3ST-144
900' RS

294-239
STA=2183+04.42
HT=115.00 ELE=2194.21
3ST-138
900' RS



DISPLAYED 212°F MAX SAG 7715 (LBS)
DISPLAYED 60°F MAX SAG 2309 (LBS)
DISPLAYED 60°F MAX SAG 2249 (LBS)

DISPLAYED 212°F MAX SAG 7722 (LBS)
DISPLAYED 60°F MAX SAG 2315 (LBS)
DISPLAYED 60°F MAX SAG 2255 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10459	21844	29483	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2309	6677	10446	900'
OHGW (BLU)	7/16" EHS	2249	6009	9691	900'

		DATE
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

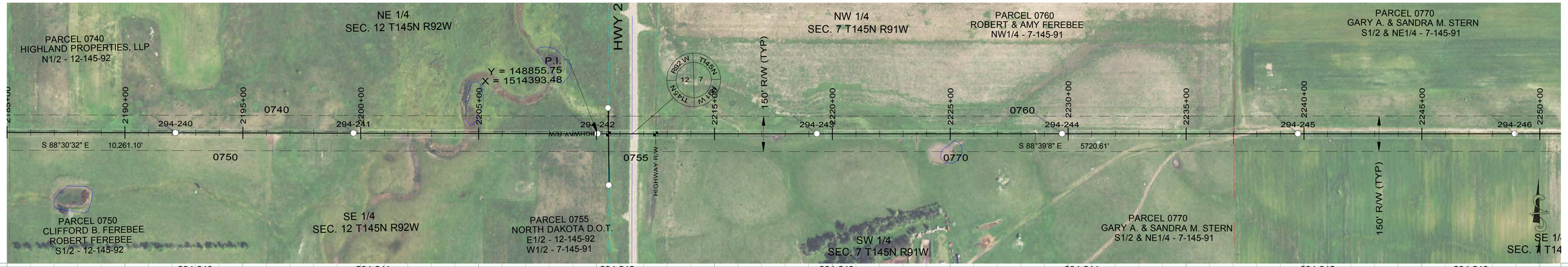
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2125+00 TO 2190+90
STRUCTURE: 294-233 TO 294-239

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-039
REV. NO.: 1



294-240
STA=2192+14.42
HT=115.00 ELE=2180.15
3ST-138
900' RS

294-241
STA=2199+69.42
HT=126.00 ELE=2154.90
3ST2-125
900' RS

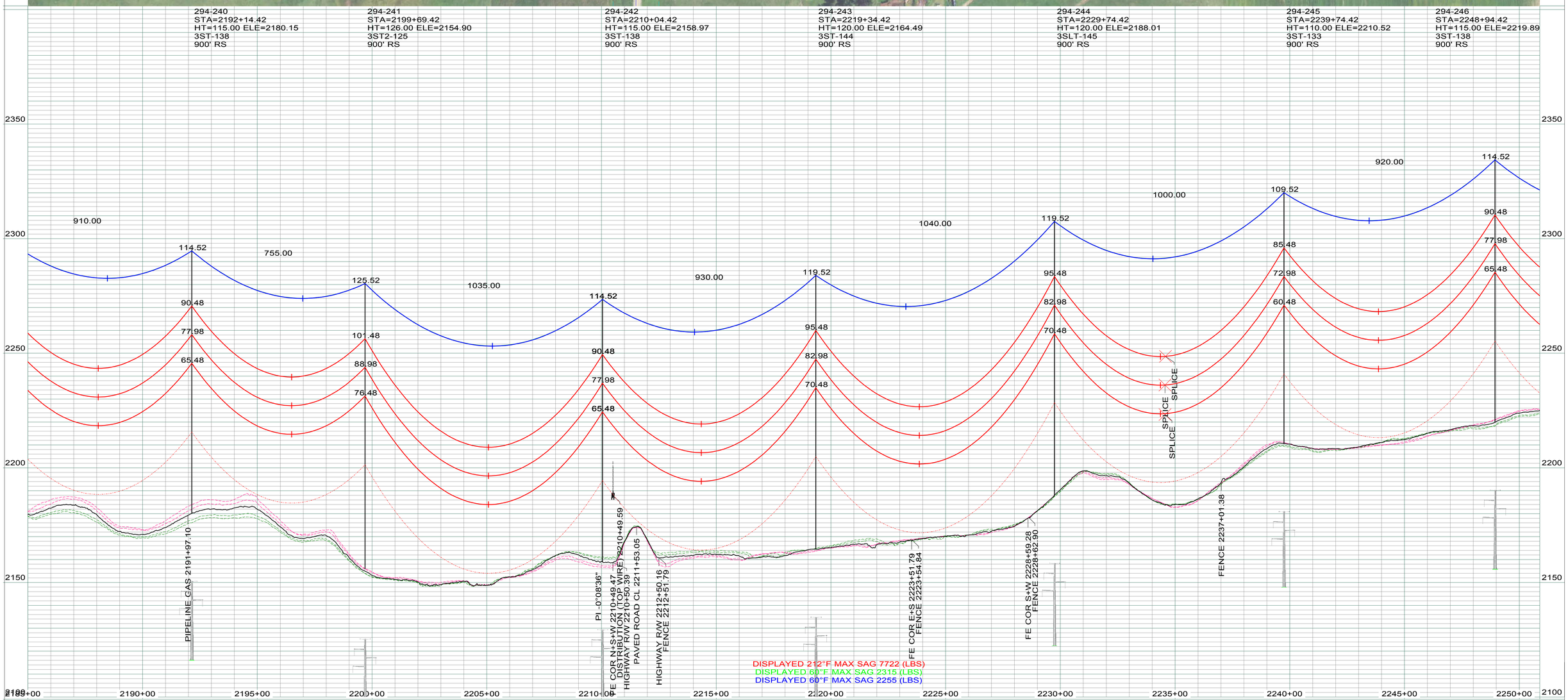
294-242
STA=2210+04.42
HT=115.00 ELE=2158.97
3ST-138
900' RS

294-243
STA=2219+34.42
HT=120.00 ELE=2164.49
3ST-144
900' RS

294-244
STA=2229+74.42
HT=120.00 ELE=2188.01
3SLT-145
900' RS

294-245
STA=2239+74.42
HT=110.00 ELE=2210.52
3ST-133
900' RS

294-246
STA=2248+94.42
HT=115.00 ELE=2219.89
3ST-138
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10475	21882	29513	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2315	6683	10452	900'
OHGW (BLU)	7/16" EHS	2255	6018	9696	900'

DESIGN BY:	CDB/GCC	DATE: 14-JUL
DRAWN BY:	C. BAUER	DATE: 14-JUL
DESIGN CHK:	G. CHRISTENSON	DATE: 14-JUL
DRAFT CHK:		DATE:
APPROVED:	G CHRISTENSON	DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

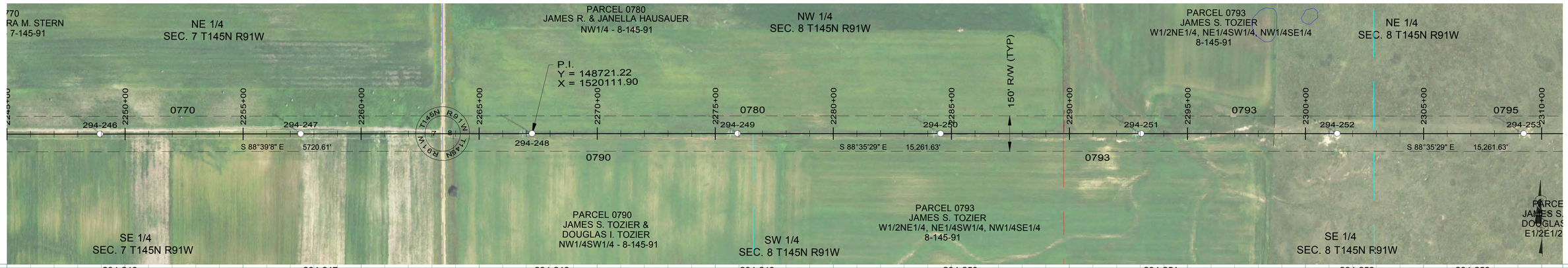
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2185+00 TO 2250+89
STRUCTURE: 294-240 TO 294-246

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-040

REV. NO. 1



294-246
STA=2248+94.42
HT=115.00 ELE=2219.89
3ST-138
900' RS

294-247
STA=2257+44.42
HT=120.00 ELE=2206.83
3ST-144
900' RS

294-248
STA=2267+24.42
HT=115.00 ELE=2208.38
3ST-138
900' RS

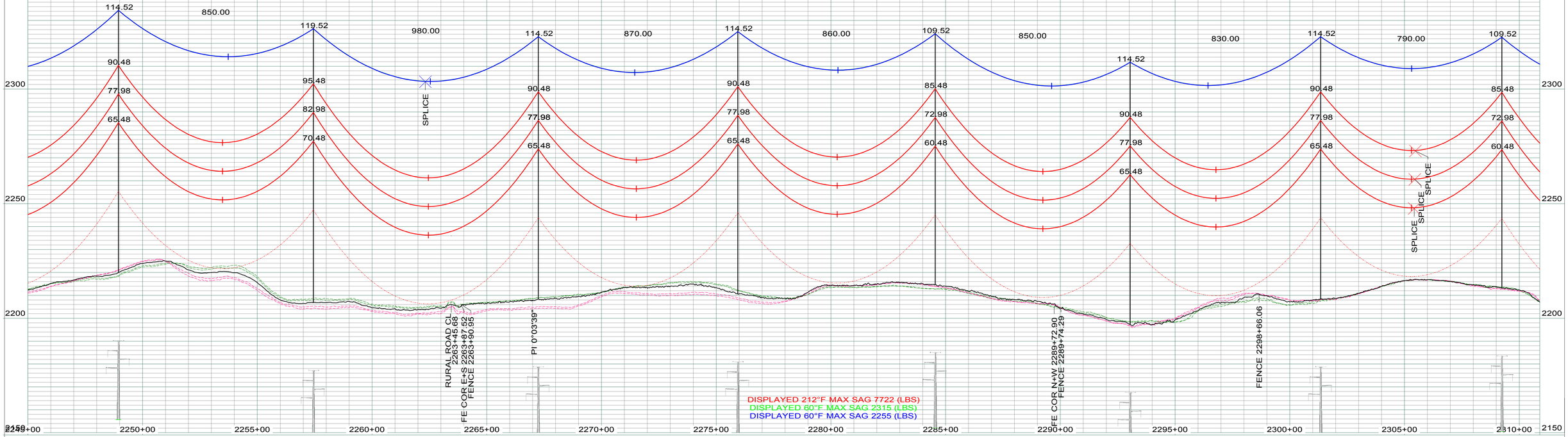
294-249
STA=2275+94.42
HT=115.00 ELE=2210.60
3ST-138
900' RS

294-250
STA=2284+54.42
HT=110.00 ELE=2214.67
3ST-133
900' RS

294-251
STA=2293+04.42
HT=115.00 ELE=2197.22
3ST-138
900' RS

294-252
STA=2301+34.42
HT=115.00 ELE=2208.38
3ST-138
900' RS

294-253
STA=2309+24.42
HT=110.00 ELE=2213.12
3ST-133
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10475	21882	29513	900`
OPGW (GRN)	AFL 0.571" 36 FIBER	2315	6683	10452	900`
OHGW (BLU)	7/16" EHS	2255	6018	9696	900`

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2245+00 TO 2310+89
STRUCTURE: 294-246 TO 294-253

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-041
REV. NO.: 1



294-253
STA=2309+24.42
HT=110.00 ELE=2213.12
3ST-133
900' RS

294-254
STA=2319+29.42
HT=120.00 ELE=2206.15
3ST-144
900' RS

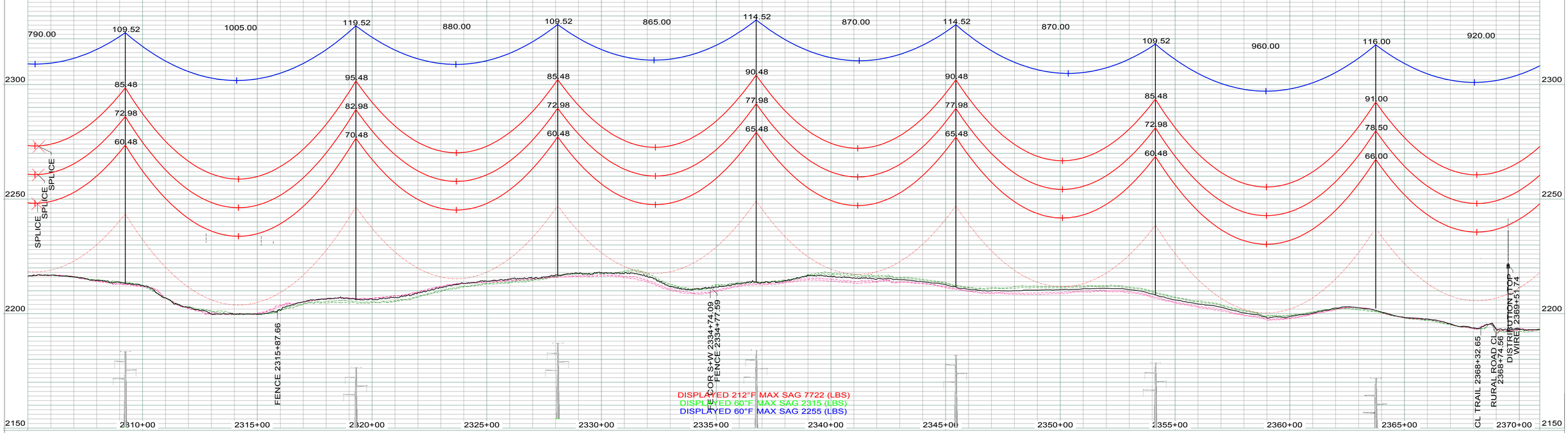
294-255
STA=2328+09.42
HT=110.00 ELE=2216.72
3ST-133
900' RS

294-256
STA=2336+74.42
HT=115.00 ELE=2213.72
3ST-138
900' RS

294-257
STA=2345+44.42
HT=115.00 ELE=2211.62
3ST-138
900' RS

294-258
STA=2354+14.42
HT=110.00 ELE=2208.15
3ST-133
900' RS

294-259
STA=2363+74.42
HT=116.00 ELE=2201.38
3SDT-115
OPGW SPLICE
END 900' RS, BEGIN 900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10475	21882	29513	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2315	6683	10452	900'
OHGW (BLU)	7/16" EHS	2255	6018	9696	900'

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

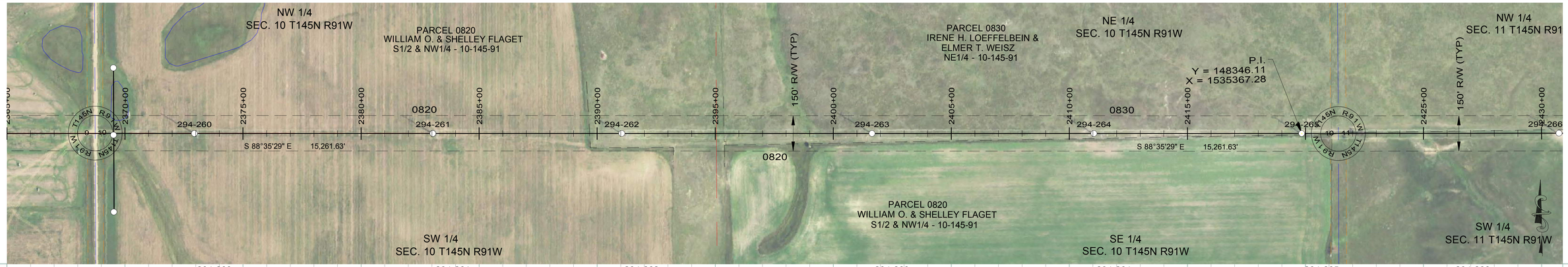
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2305+00 TO 2370+90
STRUCTURE: 294-253 TO 294-259

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-042
REV. NO. 1



294-260
STA=2372+94.42
HT=126.00 ELE=2196.76
3ST2-125
900' RS

294-261
STA=2383+04.42
HT=115.00 ELE=2209.66
3ST-138
900' RS

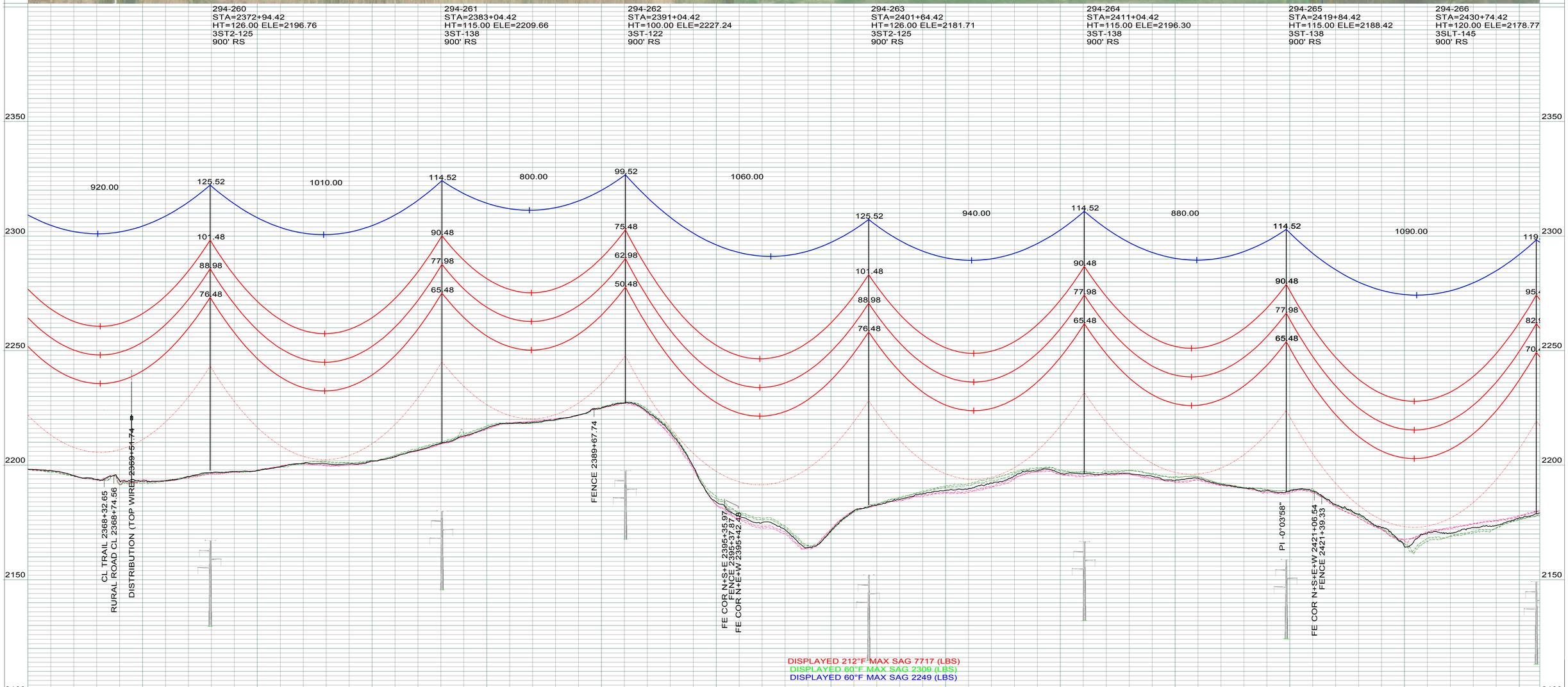
294-262
STA=2391+04.42
HT=100.00 ELE=2227.24
3ST-122
900' RS

294-263
STA=2401+64.42
HT=126.00 ELE=2181.71
3ST2-125
900' RS

294-264
STA=2411+04.42
HT=115.00 ELE=2196.30
3ST-138
900' RS

294-265
STA=2419+84.42
HT=115.00 ELE=2188.42
3ST-138
900' RS

294-266
STA=2430+74.42
HT=120.00 ELE=2178.77
3SLT-145
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10464	21854	29490	900`
OPGW (GRN)	AFL 0.571" 36 FIBER	2309	6677	10446	900`
OHGW (BLU)	7/16" EHS	2249	6009	9691	900`

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

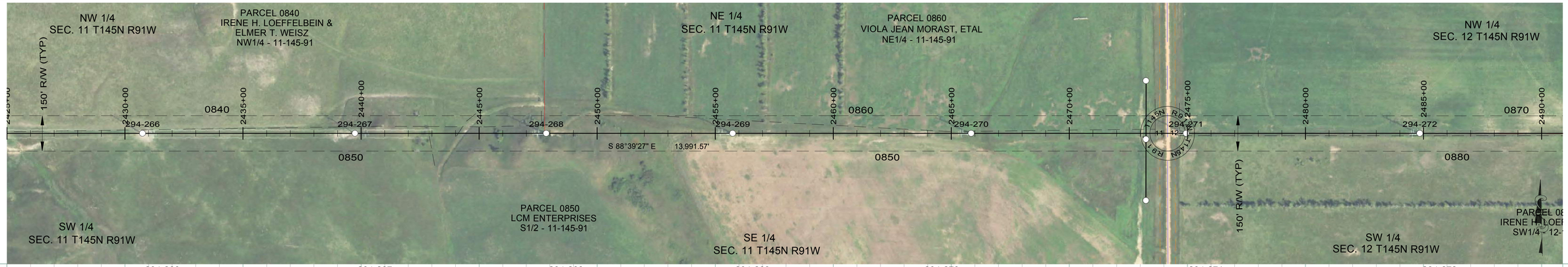
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2365+00 TO 2430+89
STRUCTURE: 294-260 TO 294-266

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-043

REV. NO. 1



294-266
STA=2430+74.42
HT=120.00 ELE=2178.77
3SLT-145
900' RS

294-267
STA=2439+74.42
HT=115.00 ELE=2197.55
3ST-138
900' RS

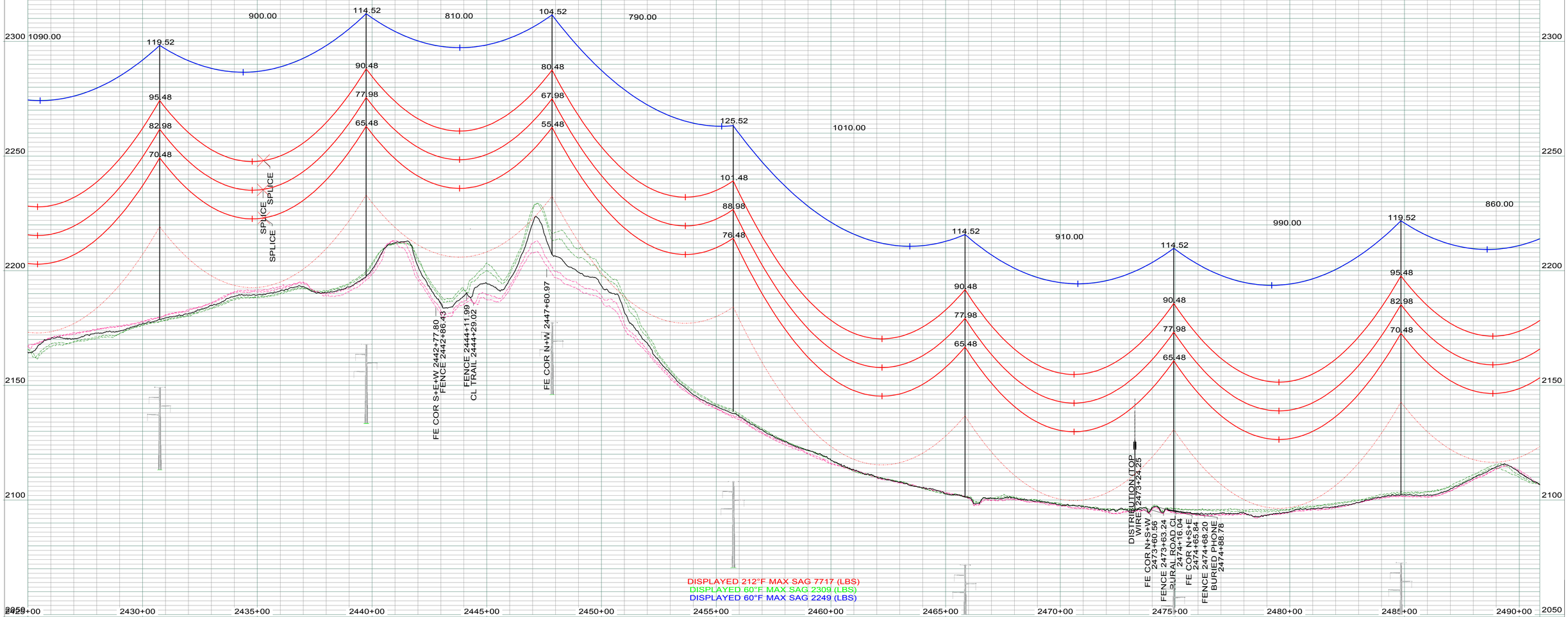
294-268
STA=2447+84.42
HT=105.00 ELE=2207.04
3ST-127
900' RS

294-269
STA=2455+74.42
HT=126.00 ELE=2137.71
3ST2-125
900' RS

294-270
STA=2465+84.42
HT=115.00 ELE=2101.26
3ST-138
900' RS

294-271
STA=2474+94.42
HT=115.00 ELE=2095.26
3ST-138
900' RS

294-272
STA=2484+84.42
HT=120.00 ELE=2102.27
3ST-144
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10464	21854	29490	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2309	6677	10446	900'
OHGW (BLU)	7/16" EHS	2249	6009	9691	900'

		DATE
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

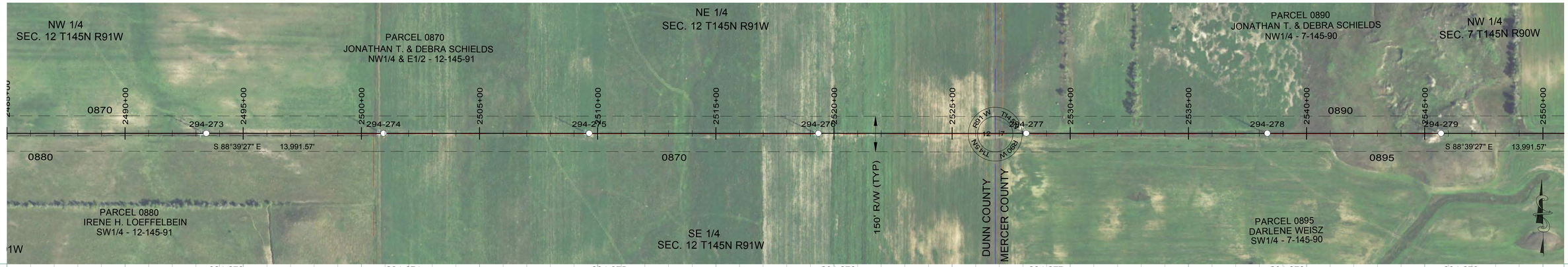
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: DUNN

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2425+00 TO 2490+90
STRUCTURE: 294-266 TO 294-272

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-044
REV. NO.: 1



294-273
STA=2493+44.42
HT=120.00 ELE=2110.53
3ST-144
900' RS

294-274
STA=2500+94.42
HT=115.00 ELE=2106.64
3ST-138
900' RS

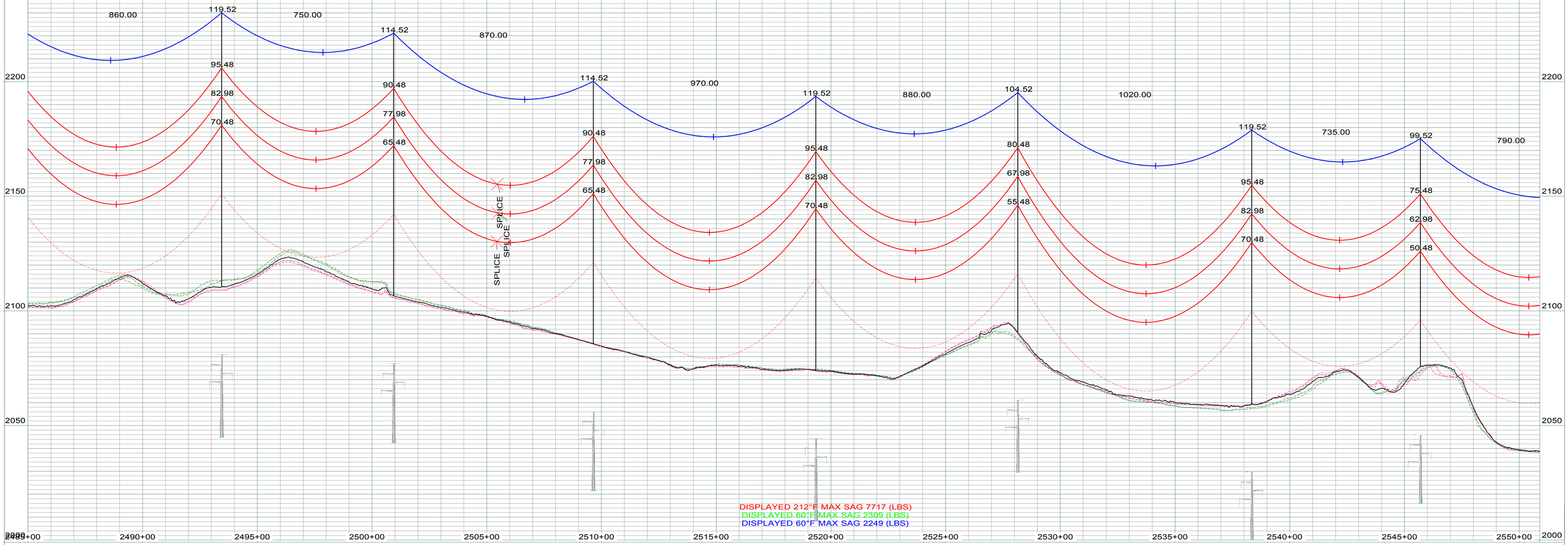
294-275
STA=2509+64.42
HT=115.00 ELE=2085.70
3ST-138
900' RS

294-276
STA=2519+34.42
HT=120.00 ELE=2074.03
3ST-144
900' RS

294-277
STA=2528+14.42
HT=105.00 ELE=2090.72
3ST-127
900' RS

294-278
STA=2538+34.42
HT=120.00 ELE=2059.35
3ST-144
900' RS

294-279
STA=2545+69.42
HT=100.00 ELE=2075.62
3ST-122
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10464	21854	29490	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2309	6677	10446	900'
OHGW (BLU)	7/16" EHS	2249	6009	9691	900'

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN BY: CDB/GCC	DATE: 14-JUL	FACILITY: TRANSMISSION SYSTEM MAINTENANCE
DRAWN BY: C. BAUER	DATE: 14-JUL	LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
DESIGN CHK: G. CHRISTENSON	DATE: 14-JUL	COUNTY: DUNN / MERCER
DRAFT CHK:	DATE:	
APPROVED: G CHRISTENSON	DATE: 14-JUL	

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2485+00 TO 2550+90
STRUCTURE: 294-273 TO 294-279

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-045

REV. NO. 1

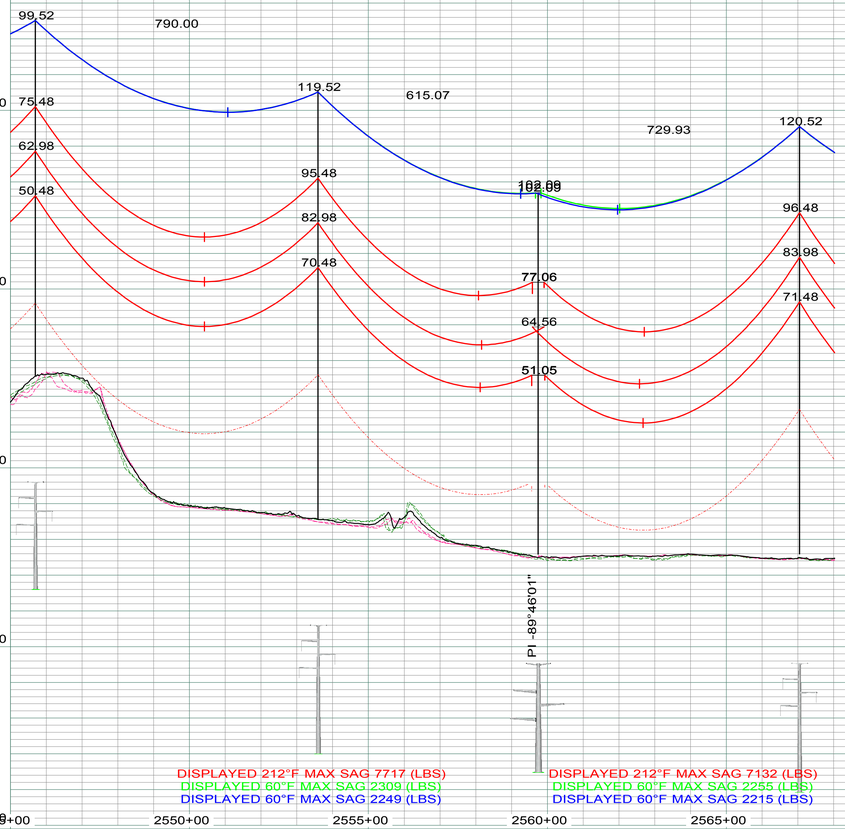


294-279
STA=2545+69.42
HT=100.00 ELE=2075.62
3ST-122
900' RS

294-280
STA=2553+59.42
HT=120.00 ELE=2035.59
3ST-144
900' RS

294-281
STA=2559+74.49
HT=102.09 ELE=2024.85
3SDA90-101
OPGW SPLICE
END 900' RS, BEGIN 800' RS

294-282
STA=2567+04.42
HT=121.00 ELE=2024.93
3ST2-120
800' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10464	21854	29490	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2309	6677	10446	900'
OHGW (BLU)	7/16" EHS	2249	6009	9691	900'

DESIGN BY: CDB/GCC — DATE: 14-JUL
DRAWN BY: C. BAUER — DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON — DATE: 14-JUL
DRAFT CHK: — DATE:
APPROVED: G CHRISTENSON — DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2545+00 TO 2568+03
STRUCTURE: 294-279 TO 294-282

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

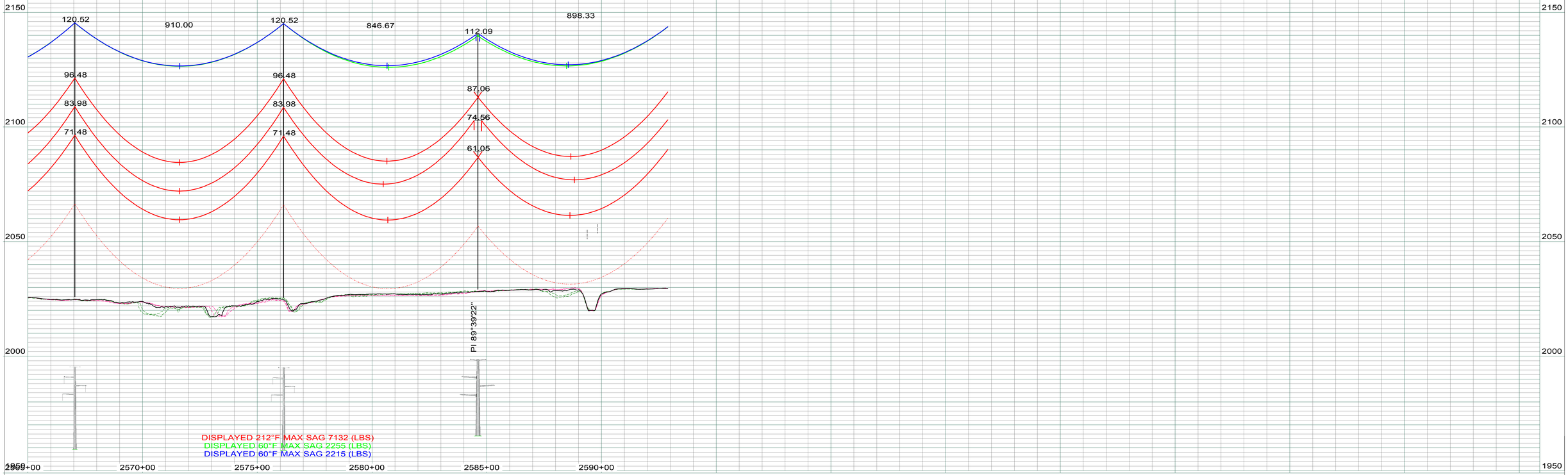
BASIN DRAWING NO.: 294-090-T3-046
REV. NO.: 2



294-282
STA=2567+04.42
HT=121.00 ELE=2024.93
3ST2-120
800' RS

294-283
STA=2576+14.42
HT=121.00 ELE=2024.57
3ST2-120
800' RS

294-284
STA=2584+61.10
HT=112.09 ELE=2028.20
3SDA90-111
END 800' RS, BEGIN 950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	9997	21368	28397	800'
OPGW (GRN)	AFL 0.571" 36 FIBER	2255	6376	9851	800'
OHGW (BLU)	7/16" EHS	2215	5741	9151	800'

		DATE
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

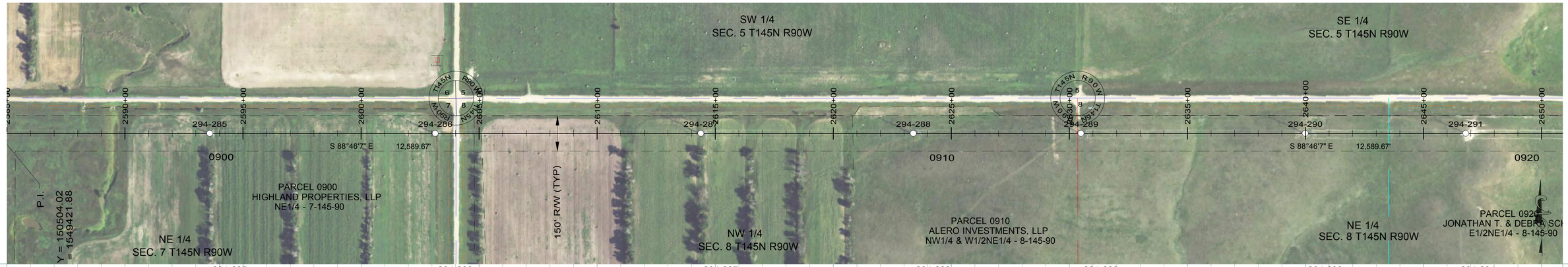
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2565+00 TO 2592+89
STRUCTURE: 294-282 TO 294-284

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-047
REV. NO.: 1



294-285
STA=2593+59.42
HT=120.00 ELE=2030.01
3ST-144
950' RS

294-286
STA=2603+14.42
HT=120.00 ELE=2029.91
3SLT-145
950' RS

294-287
STA=2614+39.42
HT=115.00 ELE=2054.83
3ST-138
950' RS

294-288
STA=2623+39.42
HT=110.00 ELE=2077.19
3ST-133
950' RS

294-289 950.00
STA=2630+49.42
HT=100.00 ELE=2123.21
3ST-122
950' RS

294-290
STA=2639+99.42
HT=105.00 ELE=2145.39
3ST-127
950' RS

294-291
STA=2646+79.42
HT=95.00 ELE=2155.75
3ST-116
950' RS

898.33 119.52 955.00 119.52 1125.00 900.00 710.00 680.00 94.52

95.48 82.98 70.48 95.48 82.98 70.48 114.52 90.48 77.98 65.48 109.52 85.48 72.98 60.48 99.52 75.48 62.98 50.48 104.52 80.48 67.98 55.48 70.48 57.98 45.48

SPLICE SPLICE SPLICE

FENCE 2603+20.68
RURAL ROAD CL 2604+03.06
FENCE 2604+79.92
BURIED POWER 2605+10.68
FENCE 2620+82.94

DISPLAYED 212°F MAX SAG 7994 (LBS)
DISPLAYED 60°F MAX SAG 2340 (LBS)
DISPLAYED 60°F MAX SAG 2268 (LBS)

2585+00 2590+00 2595+00 2600+00 2605+00 2610+00 2615+00 2620+00 2625+00 2630+00 2635+00 2640+00 2645+00 2650+00

2200 2150 2100 2050 2000 1950 2300 2250 2200 2150 2100 2050

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10684	22094	30006	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2340	6824	10735	950'
OHGW (BLU)	7/16" EHS	2268	6139	9948	950'

DESIGN BY: CDB/GCC — DATE: 14-JUL
DRAWN BY: C. BAUER — DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON — DATE: 14-JUL
DRAFT CHK: — DATE:
APPROVED: G CHRISTENSON — DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

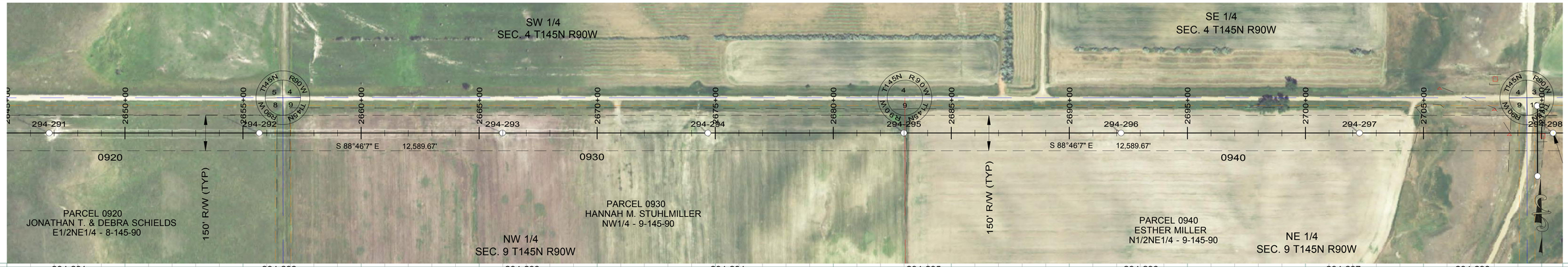
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2585+00 TO 2650+90
STRUCTURE: 294-285 TO 294-291

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-048

REV. NO. 1



294-291
STA=2646+79.42
HT=95.00 ELE=2155.75
3ST-116
950' RS

294-292
STA=2655+69.42
HT=120.00 ELE=2087.19
3ST-144
950' RS

294-293
STA=2665+99.42
HT=115.00 ELE=2070.93
3ST-138
950' RS

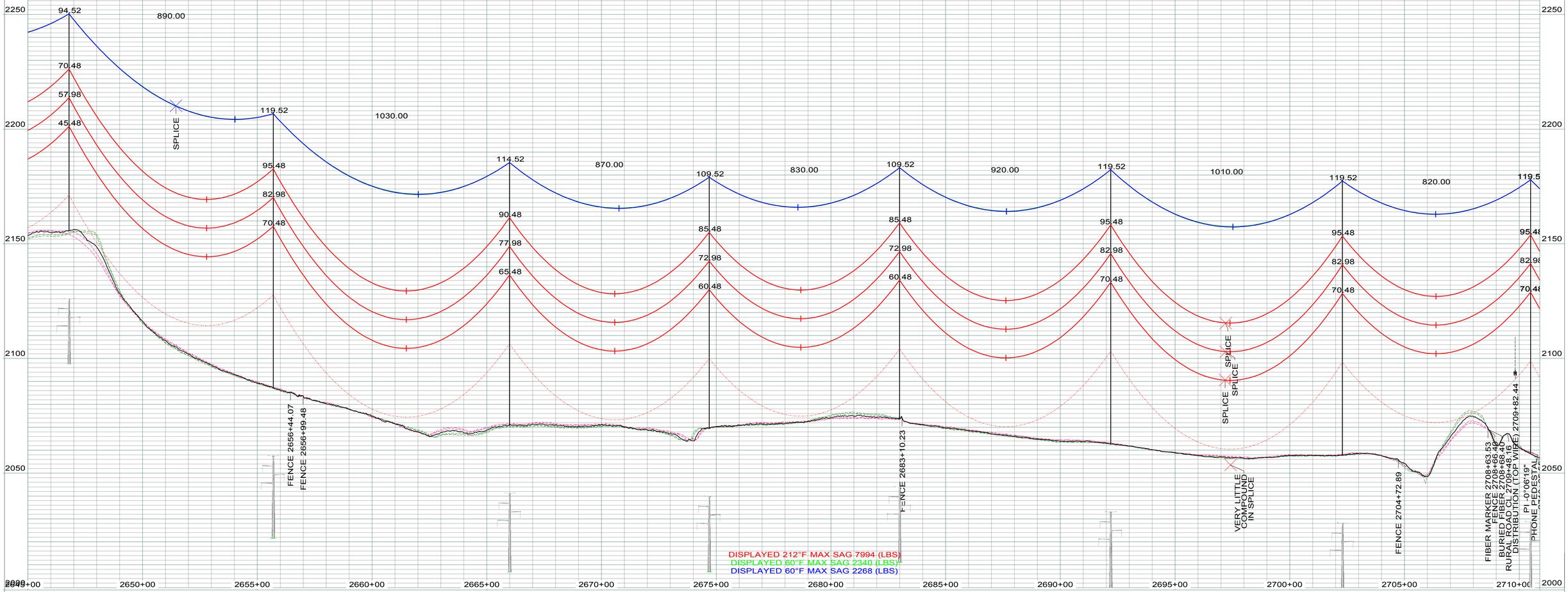
294-294
STA=2674+69.42
HT=110.00 ELE=2069.53
3ST-133
950' RS

294-295
STA=2682+99.42
HT=110.00 ELE=2073.67
3ST-133
950' RS

294-296
STA=2692+19.42
HT=120.00 ELE=2062.77
3ST-144
950' RS

294-297
STA=2702+29.42
HT=120.00 ELE=2057.87
3ST-144
950' RS

294-298
STA=2710+49.42
HT=120.00 ELE=2058.40
3SLT-145
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10684	22094	30006	950`
OPGW (GRN)	AFL 0.571" 36 FIBER	2340	6824	10735	950`
OHGW (BLU)	7/16" EHS	2268	6139	9948	950`

DESIGN BY: CDB/GCC — DATE: 14-JUL
DRAWN BY: C. BAUER — DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON — DATE: 14-JUL
DRAFT CHK: — DATE:
APPROVED: G CHRISTENSON — DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

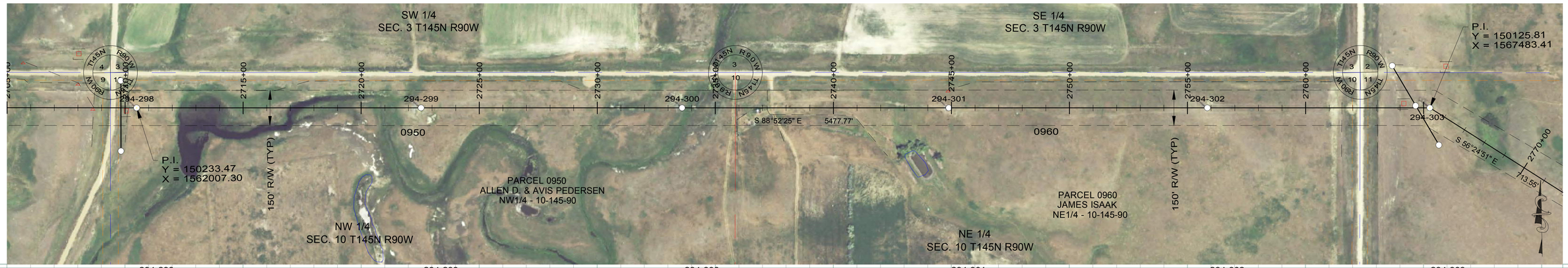
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2645+00 TO 2710+89
STRUCTURE: 294-291 TO 294-298

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-049

REV. NO. 1



294-298
STA=2710+49.42
HT=120.00 ELE=2058.40
3SLT-145
950' RS

294-299
STA=2722+54.42
HT=131.00 ELE=2054.14
3SLT2-130
950' RS

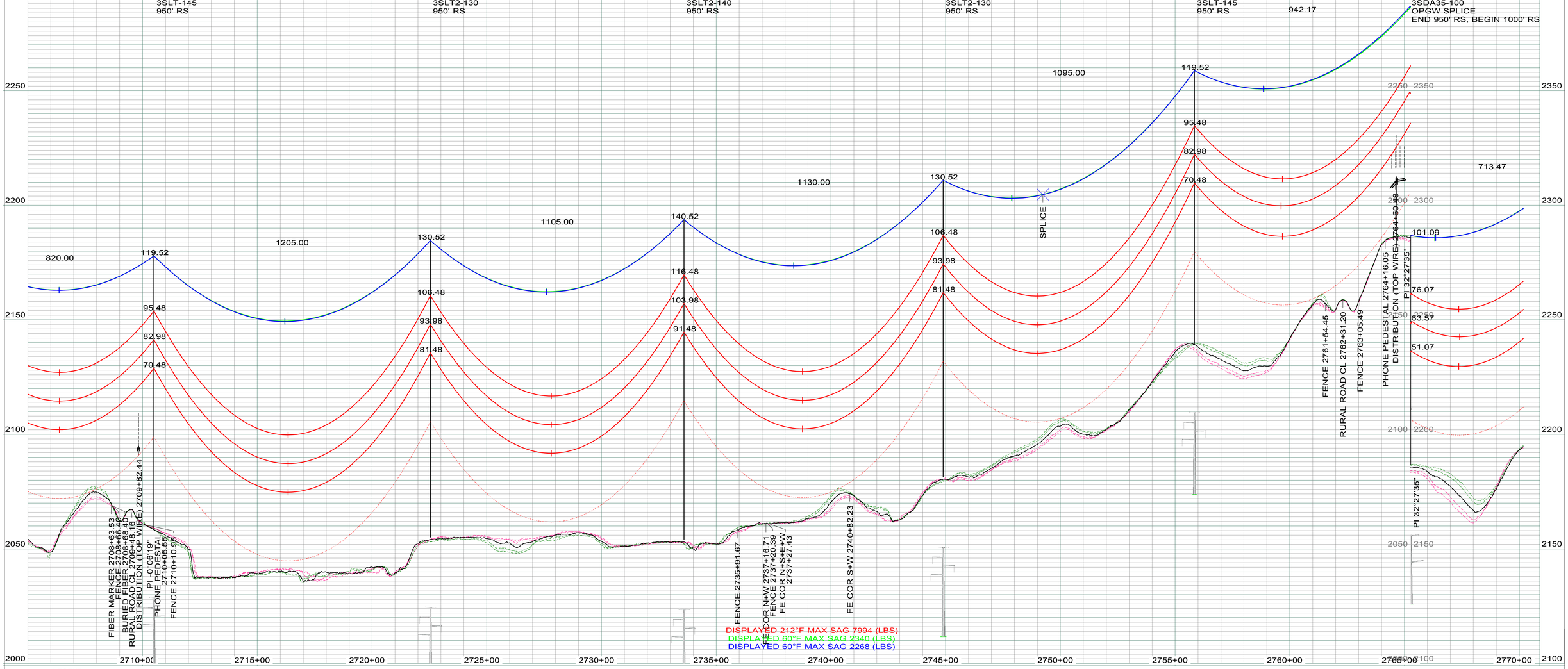
294-300
STA=2733+59.42
HT=141.00 ELE=2053.18
3SLT2-140
950' RS

294-301
STA=2744+89.42
HT=131.00 ELE=2080.39
3SLT2-130
950' RS

294-302
STA=2755+84.42
HT=120.00 ELE=2139.25
3SLT-145
950' RS

294-303
STA=2765+26.60
HT=101.09 ELE=2185.71
3SDA35-100
OPGW SPLICE
END 950' RS, BEGIN 1000' RS

942.17



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10684	22094	30006	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2340	6824	10735	950'
OHGW (BLU)	7/16" EHS	2268	6139	9948	950'

		DATE:
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

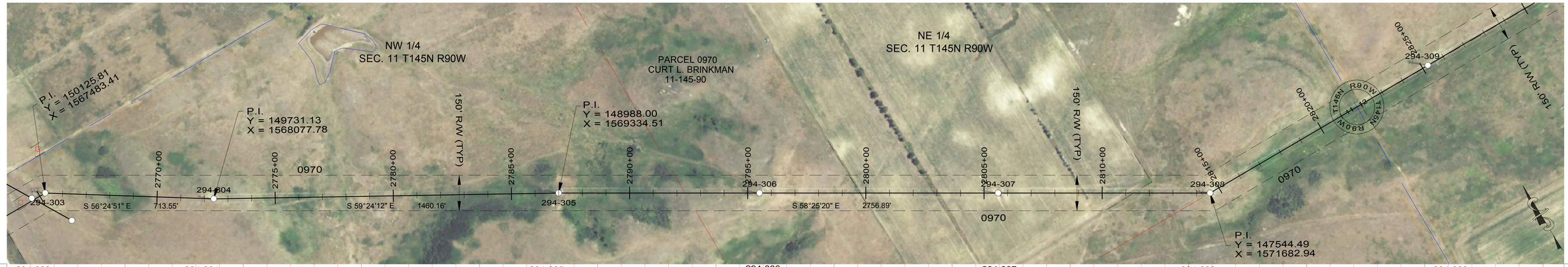
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2705+00 TO 2770+18
STRUCTURE: 294-298 TO 294-303

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-050
REV. NO.: 2



294-303
STA=2765+26.60
HT=101.09 ELE=2185.71
3SDA35-100
OPGW SPLICE
END 950' RS, BEGIN 1000' RS

294-304
STA=2772+40.07
HT=115.00 ELE=2203.23
3SLT-139
1000' RS

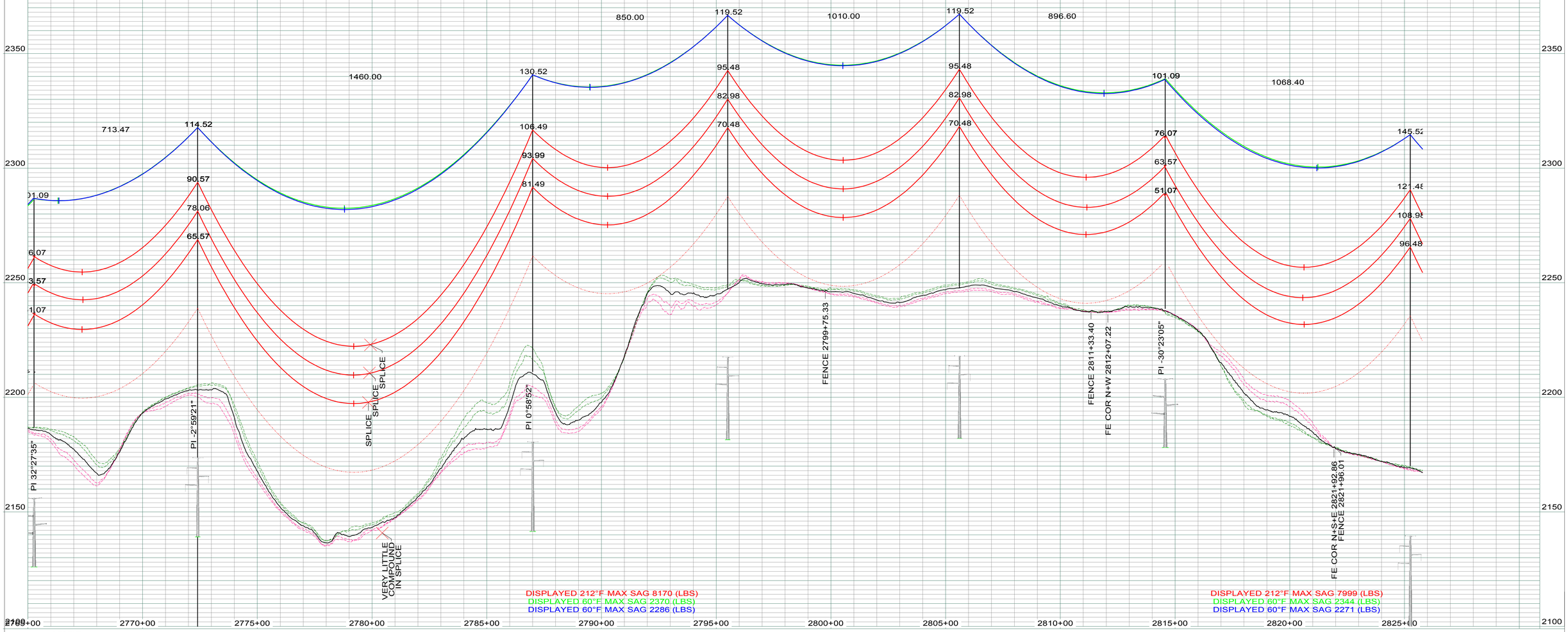
294-305
STA=2787+00.07
HT=131.00 ELE=2210.20
3SLT2-130
1000' RS

294-306
STA=2795+50.07
HT=120.00 ELE=2247.17
3ST-144
1000' RS

294-307
STA=2805+60.07
HT=120.00 ELE=2247.70
3ST-144
1000' RS

294-308
STA=2814+56.67
HT=101.09 ELE=2237.78
3SDA35-100
END 1000' RS, BEGIN 950' RS

294-309
STA=2825+25.07
HT=146.00 ELE=2169.10
3SLT2-145
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10706	21853	30094	1000'
OPGW (GRN)	AFL 0.571" 36 FIBER	2370	6972	11020	1000'
OHGW (BLU)	7/16" EHS	2286	6264	10198	1000'

		DATE
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

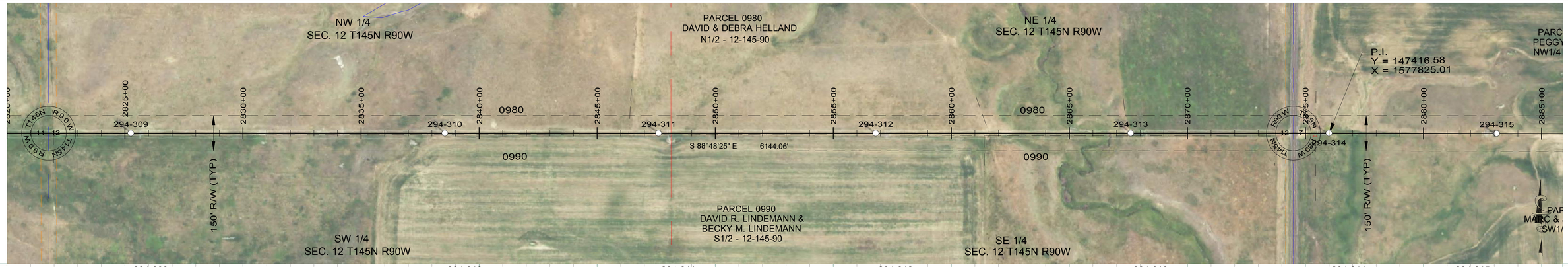
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2765+00 TO 2825+79
STRUCTURE: 294-303 TO 294-309

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-051

REV. NO. 2



294-309
STA=2825+25.07
HT=146.00 ELE=2169.10
3SLT2-145
950' RS

294-310
STA=2838+55.07
HT=120.00 ELE=2188.26
3SLT-145
950' RS

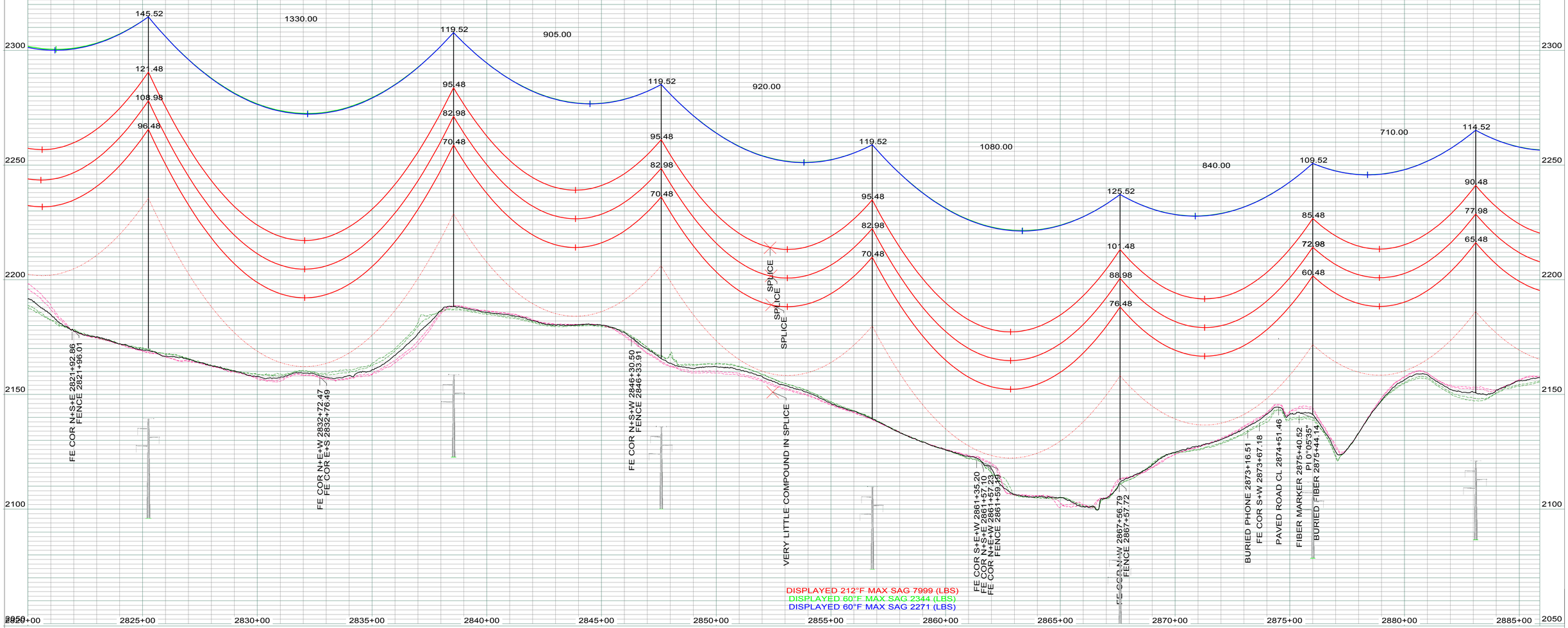
294-311
STA=2847+60.07
HT=120.00 ELE=2165.61
3ST-144
950' RS

294-312
STA=2856+80.07
HT=120.00 ELE=2139.35
3SLT-145
950' RS

294-313
STA=2867+60.07
HT=126.00 ELE=2111.68
3ST2-125
950' RS

294-314
STA=2876+00.07
HT=110.00 ELE=2141.22
3ST-133
950' RS

294-315
STA=2883+10.07
HT=115.00 ELE=2150.69
3ST-138
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10699	22132	30037	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2344	6832	10741	950'
OHGW (BLU)	7/16" EHS	2271	6143	9952	950'

		DATE
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

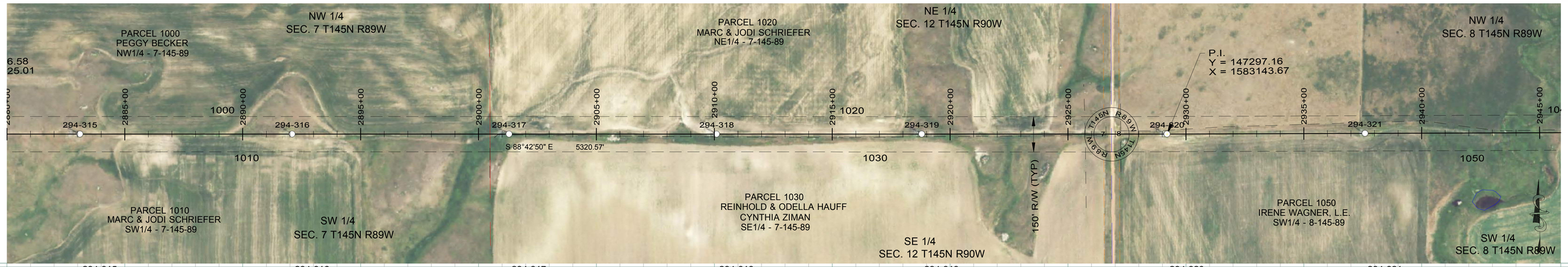
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2820+00 TO 2885+89
STRUCTURE: 294-309 TO 294-315

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-052

REV. NO. 1



294-315
STA=2883+10.07
HT=115.00 ELE=2150.69
3ST-138
950' RS

294-316
STA=2892+10.07
HT=95.00 ELE=2191.86
3ST-116
950' RS

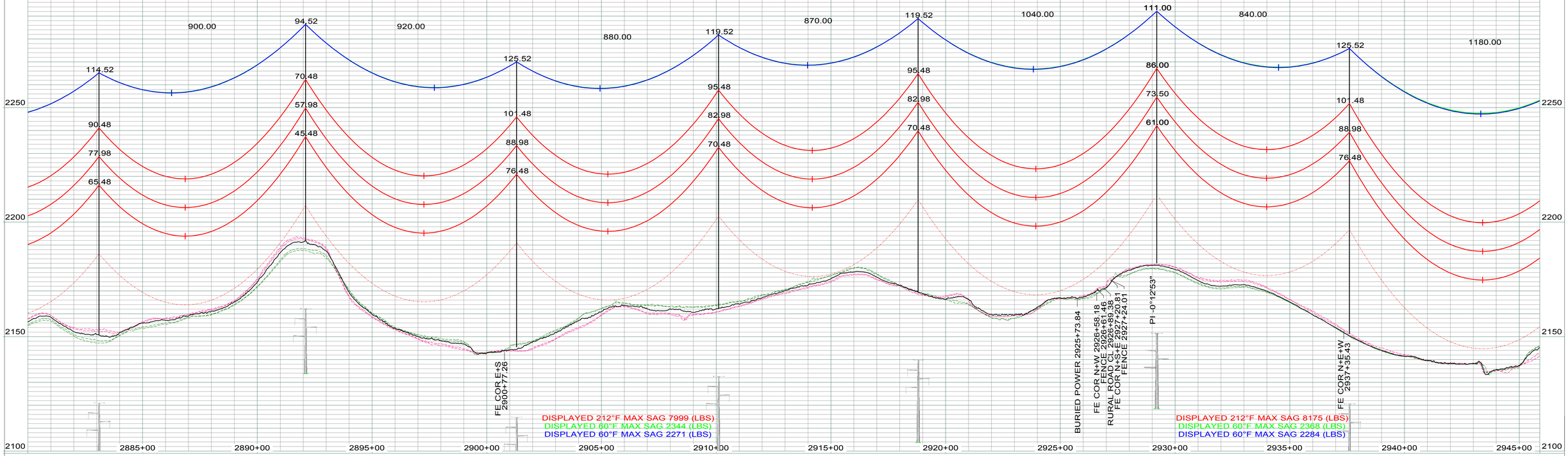
294-317
STA=2901+30.07
HT=126.00 ELE=2144.48
3ST2-125
950' RS

294-318
STA=2910+10.07
HT=120.00 ELE=2162.24
3ST-144
950' RS

294-319
STA=2918+80.07
HT=120.00 ELE=2169.39
3ST-144
950' RS

294-320
STA=2929+20.07
HT=111.00 ELE=2181.15
3SDT-110
OPGW SPLICE
END 950' RS, BEGIN 1000' RS

294-321
STA=2937+60.07
HT=126.00 ELE=2150.33
3ST2-125
1000' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10699	22132	30037	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2344	6832	10741	950'
OHGW (BLU)	7/16" EHS	2271	6143	9952	950'

		DATE
DESIGN BY: CDB/GCC		14-JUL
DRAWN BY: C. BAUER		14-JUL
DESIGN CHK: G. CHRISTENSON		14-JUL
DRAFT CHK:		
APPROVED: G CHRISTENSON		14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

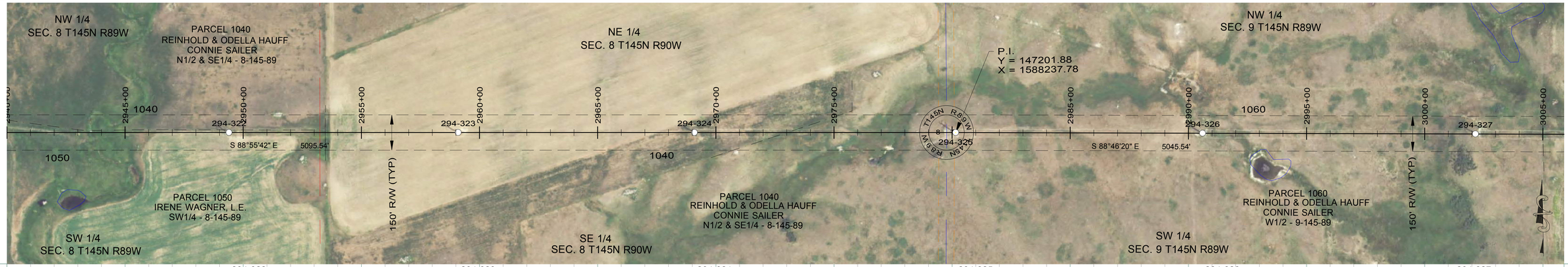
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2880+00 TO 2945+89
STRUCTURE: 294-315 TO 294-321

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-053

REV. NO. 1



294-322
STA=2949+40.07
HT=120.00 ELE=2159.95
3SLT-145
1000' RS

294-323
STA=2959+10.07
HT=115.00 ELE=2195.22
3ST-138
1000' RS

294-324
STA=2969+10.07
HT=126.00 ELE=2181.49
3SLT2-125
1000' RS

294-325
STA=2980+15.07
HT=120.00 ELE=2181.57
3SLT-145
1000' RS

294-326
STA=2990+60.07
HT=131.00 ELE=2179.50
3SLT2-130
1000' RS

294-327
STA=3002+15.07
HT=105.00 ELE=2254.40
3SLT-128
1000' RS

970.00 1000.00 1105.00 1045.00 1155.00

1180.00 114.52 125.52 119.52 130.52 104.52

119.52 90.48 101.48 95.48 106.48 80.48

95.48 77.98 88.98 82.98 93.98 67.98

82.98 65.48 76.48 70.48 81.48 55.48

70.48

2350 2300 2250 2200 2150 2100

2940+00 2945+00 2950+00 2955+00 2960+00 2965+00 2970+00 2975+00 2980+00 2985+00 2990+00 2995+00 3000+00 3005+00

FE COR SW 2953+43.53
FENCE 2953+47.49

FENCE 2973+01.30

PI 0°09'22"

SPLICE

SPLICE

VERY LITTLE COMPOUND IN SPLICE

FENCE 3004+99.30

DISPLAYED 212°F MAX SAG 8175 (LBS)
DISPLAYED 60°F MAX SAG 2368 (LBS)
DISPLAYED 60°F MAX SAG 2284 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10716	21881	30117	1000`
OPGW (GRN)	AFL 0.571" 36 FIBER	2368	6968	11017	1000`
OHGW (BLU)	7/16" EHS	2284	6262	10196	1000`

DESIGN BY:	CDB/GCC	DATE: 14-JUL
DRAWN BY:	C. BAUER	DATE: 14-JUL
DESIGN CHK:	G. CHRISTENSON	DATE: 14-JUL
DRAFT CHK:		DATE:
APPROVED:	G CHRISTENSON	DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

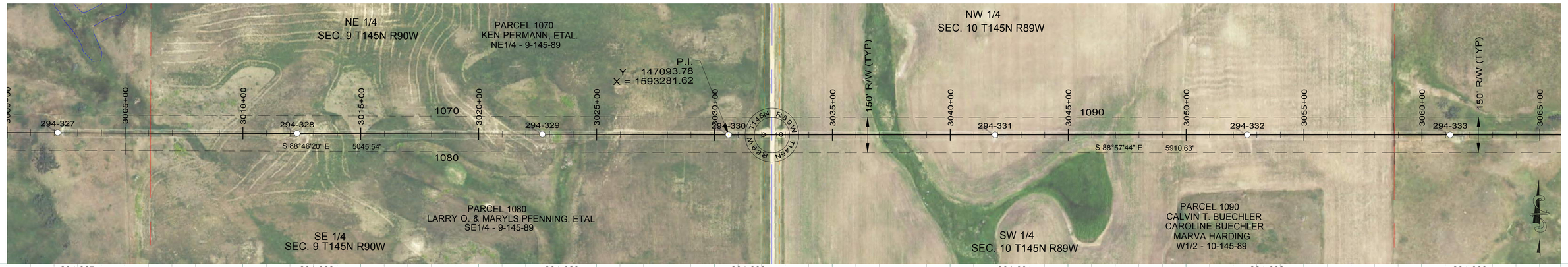
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2940+00 TO 3005+89
STRUCTURE: 294-322 TO 294-327

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-054

REV. NO. 1



294-327
STA=3002+15.07
HT=105.00 ELE=2254.40
3SLT-128
1000' RS

294-328
STA=3012+30.07
HT=100.00 ELE=2270.89
3SLT-123
1000' RS

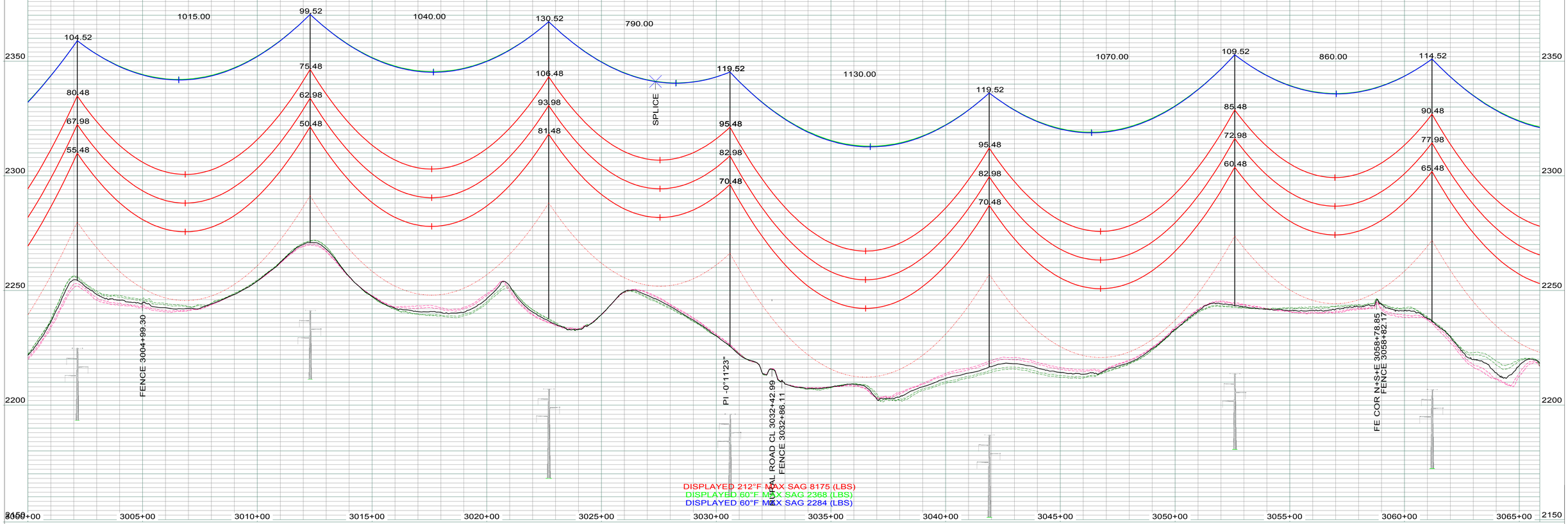
294-329
STA=3022+70.07
HT=131.00 ELE=2236.70
3ST2-130
1000' RS

294-330
STA=3030+60.07
HT=120.00 ELE=2225.74
3ST-144
1000' RS

294-331
STA=3041+90.07
HT=120.00 ELE=2216.62
3SLT-145
1000' RS

294-332
STA=3052+60.07
HT=110.00 ELE=2243.27
3ST-133
1000' RS

294-333
STA=3061+20.07
HT=115.00 ELE=2236.43
3ST-138
1000' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10716	21881	30117	1000'
OPGW (GRN)	AFL 0.571" 36 FIBER	2368	6968	11017	1000'
OHGW (BLU)	7/16" EHS	2284	6262	10196	1000'

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

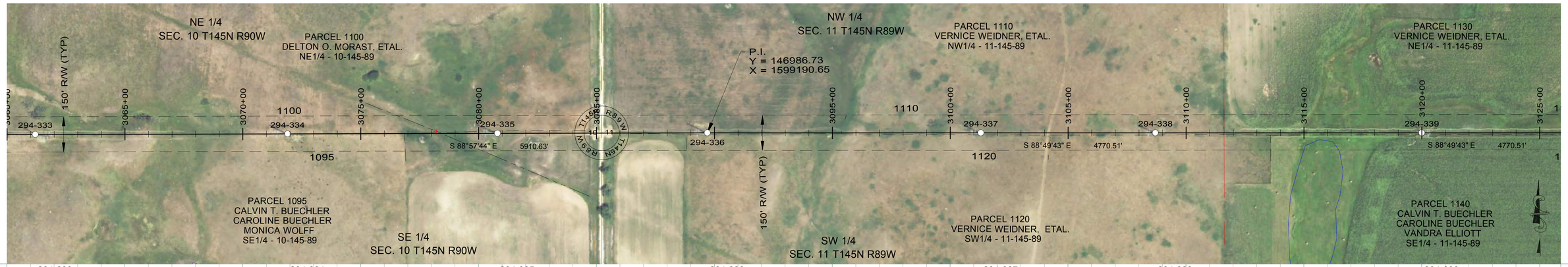
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3000+00 TO 3065+89
STRUCTURE: 294-327 TO 294-333

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-055

REV. NO. 1



294-333
STA=3061+20.07
HT=115.00 ELE=2236.43
3ST-138
1000' RS

294-334
STA=3071+90.07
HT=120.00 ELE=2219.39
3SLT-145
1000' RS

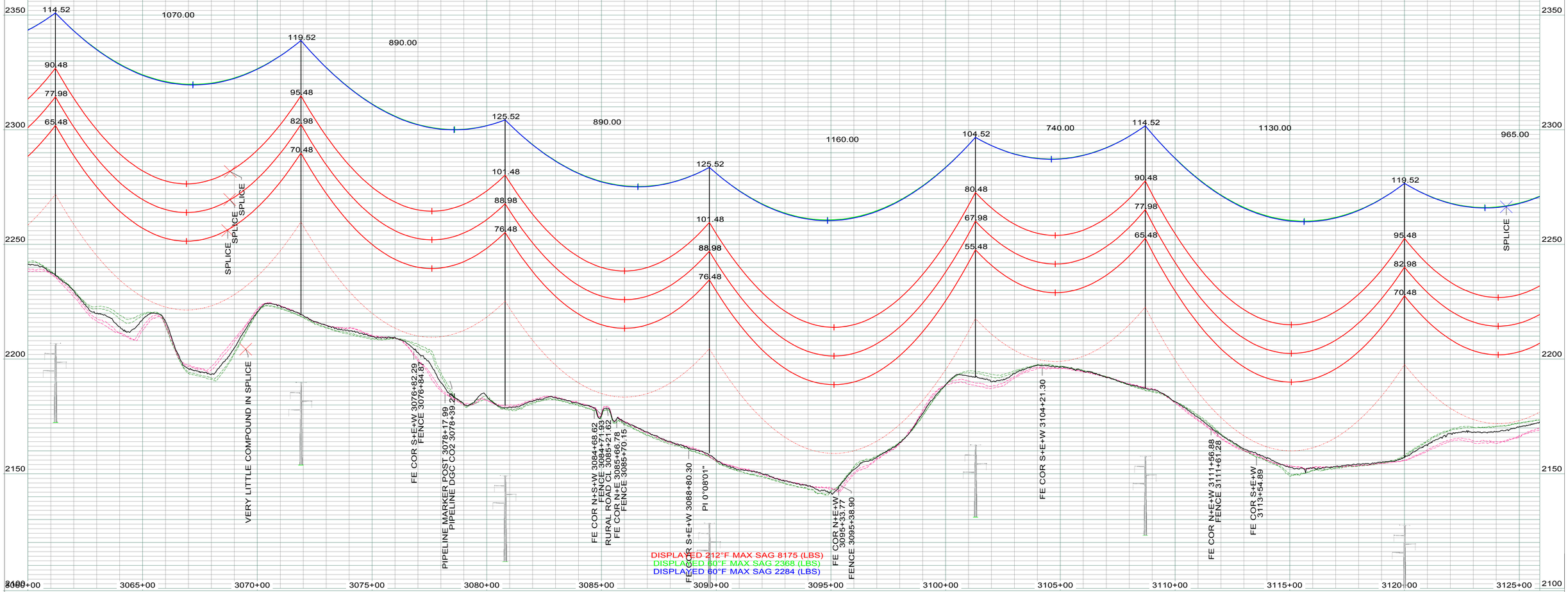
294-335
STA=3080+80.07
HT=126.00 ELE=2178.79
3ST2-125
1000' RS

294-336
STA=3089+70.07
HT=126.00 ELE=2158.07
3ST2-125
1000' RS

294-337
STA=3101+30.07
HT=105.00 ELE=2192.18
3ST-127
1000' RS

294-338
STA=3108+70.07
HT=115.00 ELE=2187.22
3ST-138
1000' RS

294-339
STA=3120+00.07
HT=120.00 ELE=2157.13
3SLT-145
1000' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10716	21881	30117	1000`
OPGW (GRN)	AFL 0.571" 36 FIBER	2368	6968	11017	1000`
OHGW (BLU)	7/16" EHS	2284	6262	10196	1000`

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

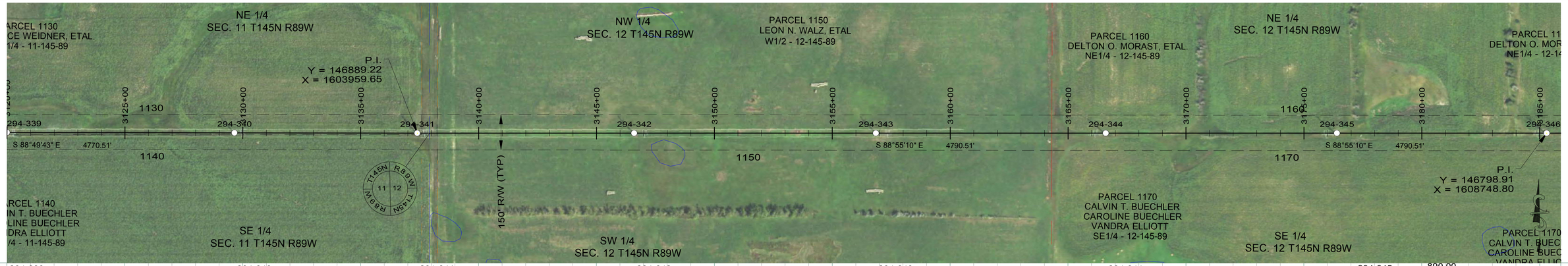
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3060+00 TO 3125+89
STRUCTURE: 294-333 TO 294-339

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-056

REV. NO. 1



294-339
STA=3120+00.07
HT=120.00 ELE=2157.13
3SLT-145
1000' RS

294-340
STA=3129+65.07
HT=110.00 ELE=2189.34
3ST-133
1000' RS

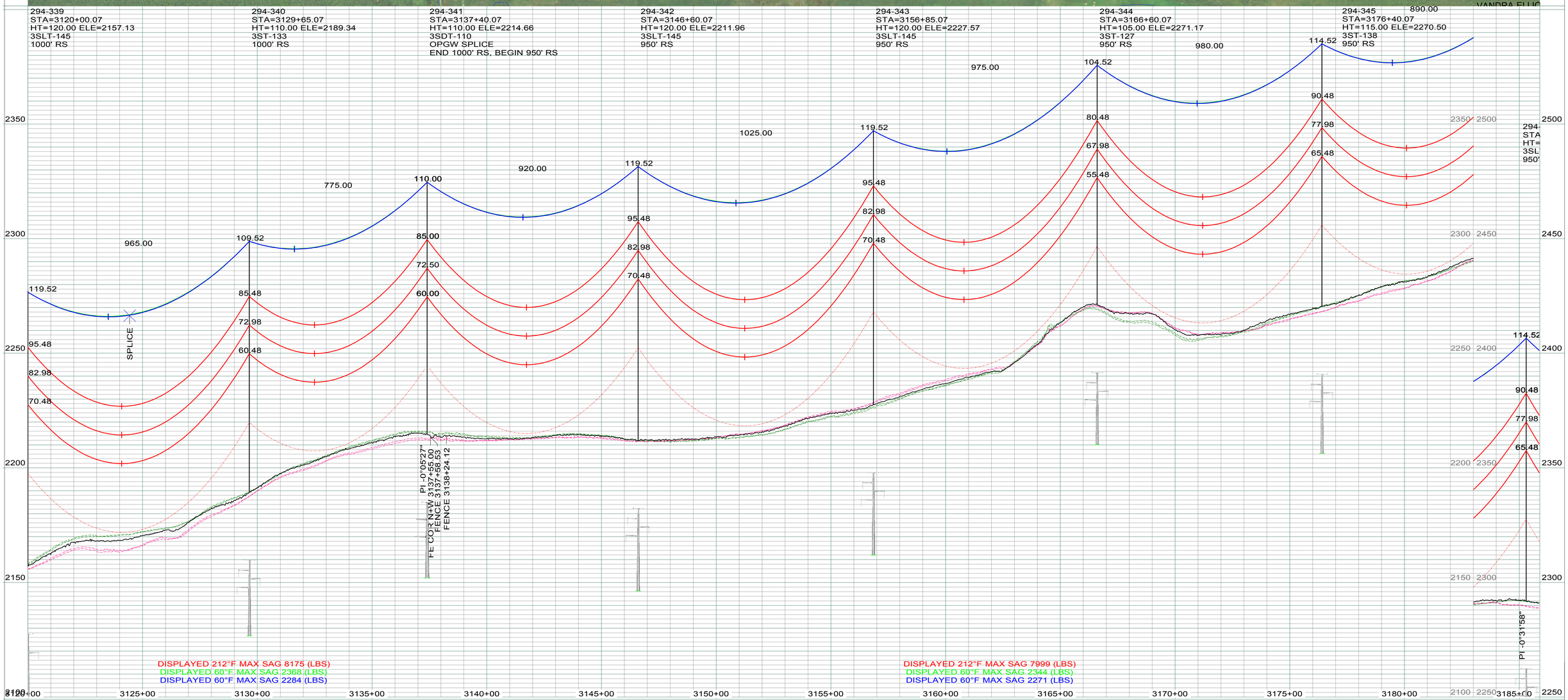
294-341
STA=3137+40.07
HT=110.00 ELE=2214.66
3SDT-110
OPGW SPLICE
END 1000' RS, BEGIN 950' RS

294-342
STA=3146+60.07
HT=120.00 ELE=2211.96
3SLT-145
950' RS

294-343
STA=3156+85.07
HT=120.00 ELE=2227.57
3SLT-145
950' RS

294-344
STA=3166+60.07
HT=105.00 ELE=2271.17
3ST-127
950' RS

294-345
STA=3176+40.07
HT=115.00 ELE=2270.50
3ST-138
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10699	22132	30037	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2344	6832	10741	950'
OHGW (BLU)	7/16" EHS	2271	6143	9952	950'

		DATE
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

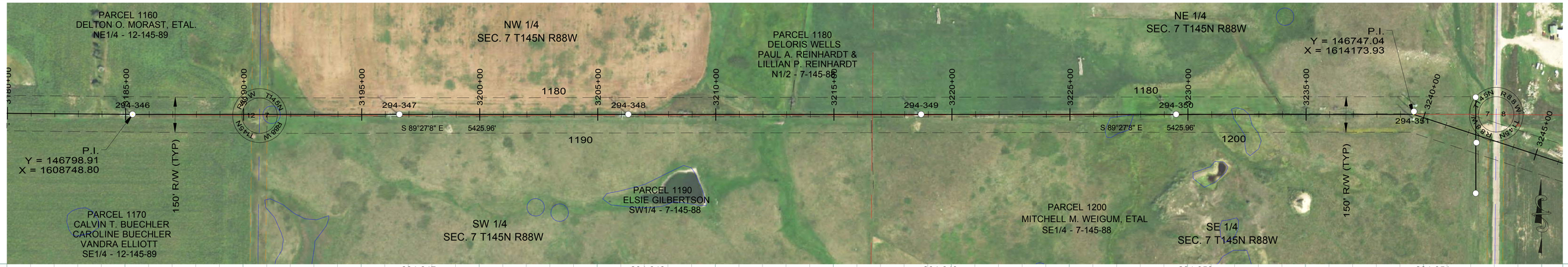
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3120+00 TO 3185+87
STRUCTURE: 294-339 TO 294-346

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-057
REV. NO.: 1



294-346
STA=3185+30.07
HT=115.00 ELE=2292.07
3SLT-139
950' RS

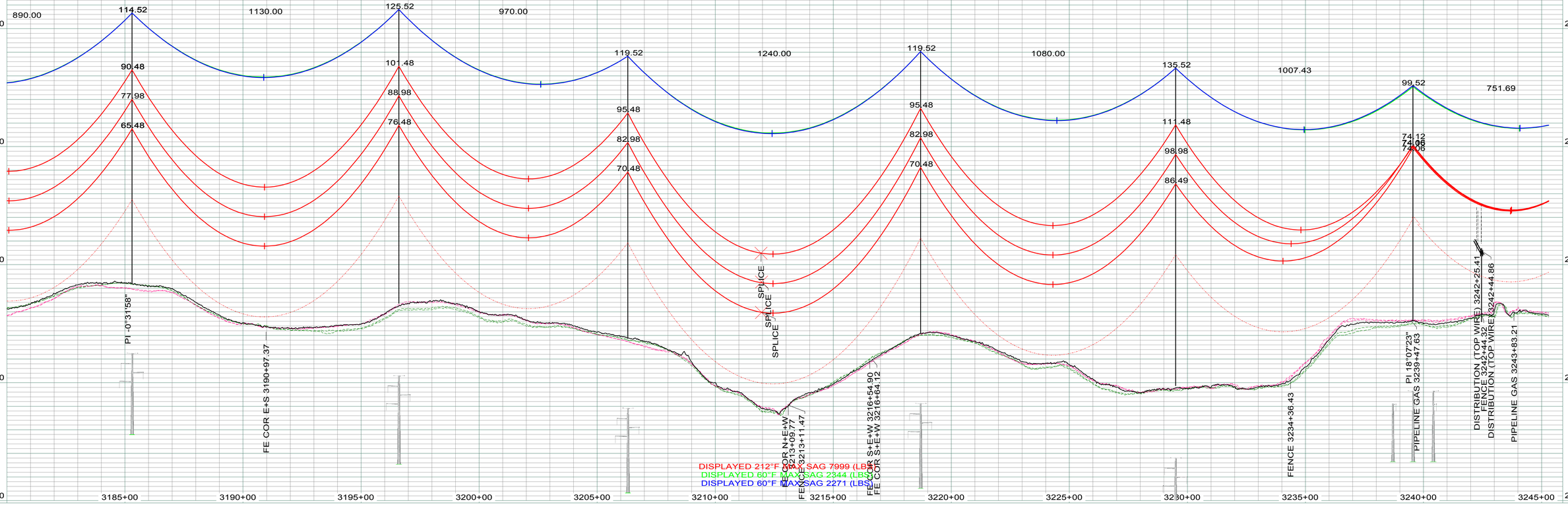
294-347
STA=3196+60.07
HT=126.00 ELE=2282.57
3SLT2-125
950' RS

294-348
STA=3206+30.07
HT=120.00 ELE=2268.81
3SLT-145
950' RS

294-349
STA=3218+70.07
HT=120.00 ELE=2270.77
3SLT-145
950' RS

294-350
STA=3229+50.07
HT=136.00 ELE=2247.73
3SLT2-135
950' RS

294-351
STA=3239+55.46
HT=100.00 ELE=2276.12
3TPA20-100
OFFSET ADJUST=-12.50
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10699	22132	30037	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2344	6832	10741	950'
OHGW (BLU)	7/16" EHS	2271	6143	9952	950'

		DATE:
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

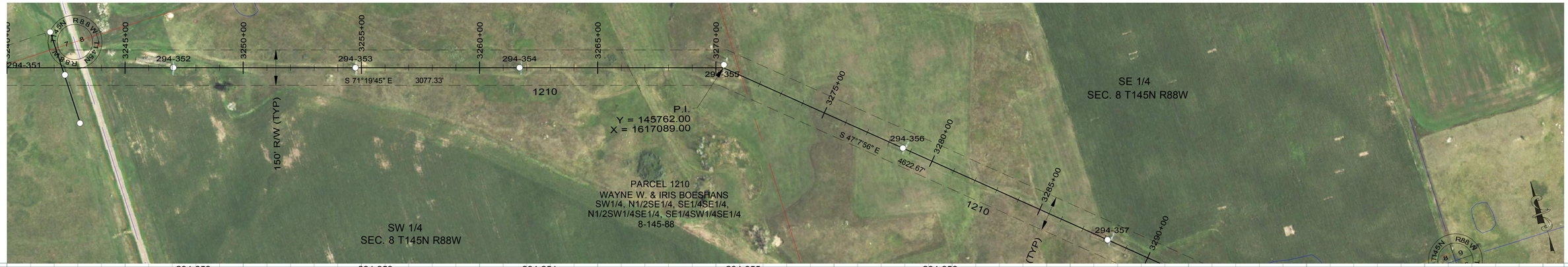
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3180+00 TO 3245+30
STRUCTURE: 294-346 TO 294-351

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-058
REV. NO.: 1



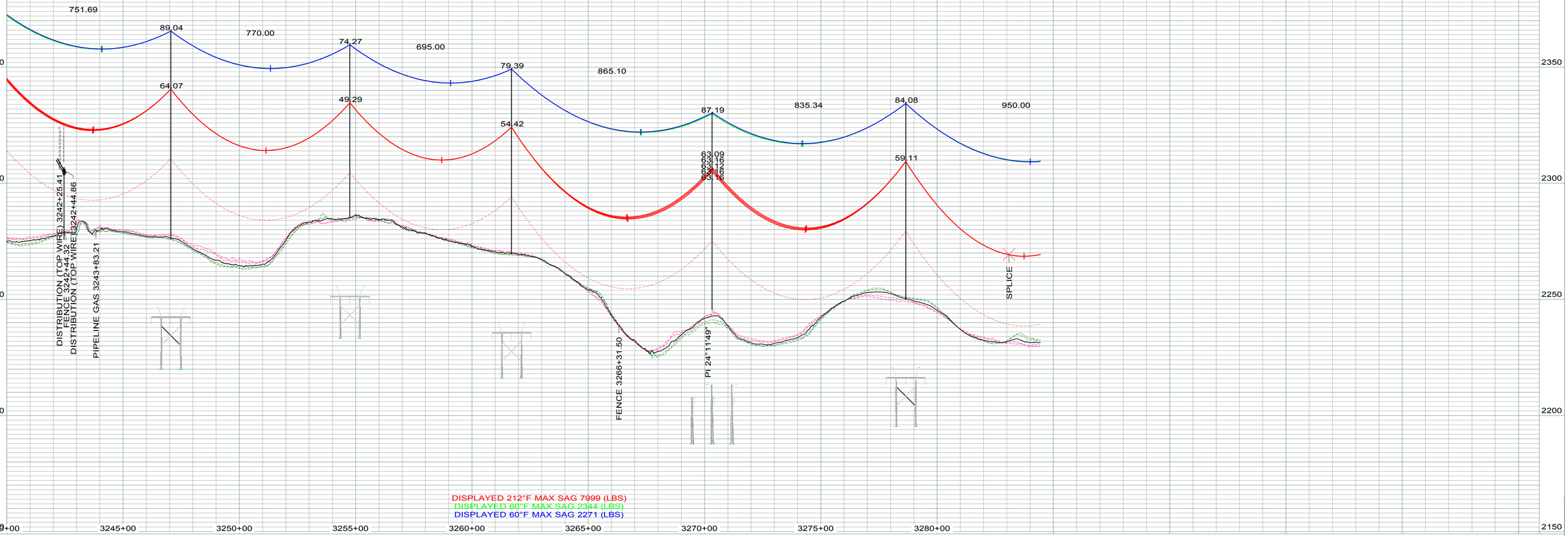
294-352
STA=3247+05.07
HT=89.54 ELE=2276.48
3HS-107
950' RS

294-353
STA=3254+75.07
HT=74.77 ELE=2285.36
3HS-091
950' RS

294-354
STA=3261+70.07
HT=79.89 ELE=2269.77
3HS-096
950' RS

294-355
STA=3270+32.45
HT=87.68 ELE=2242.91
3TPA25-085
OFFSET ADJUST=-12.55
950' RS

294-356
STA=3278+65.07
HT=84.58 ELE=2250.33
3HS-102
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10699	22132	30037	950`
OPGW (GRN)	AFL 0.571" 36 FIBER	2344	6832	10741	950`
OHGW (BLU)	7/16" EHS	2271	6143	9952	950`

DESIGN BY: CDB/GCC — DATE: 14-JUL
DRAWN BY: C. BAUER — DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON — DATE: 14-JUL
DRAFT CHK: — DATE:
APPROVED: G CHRISTENSON — DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

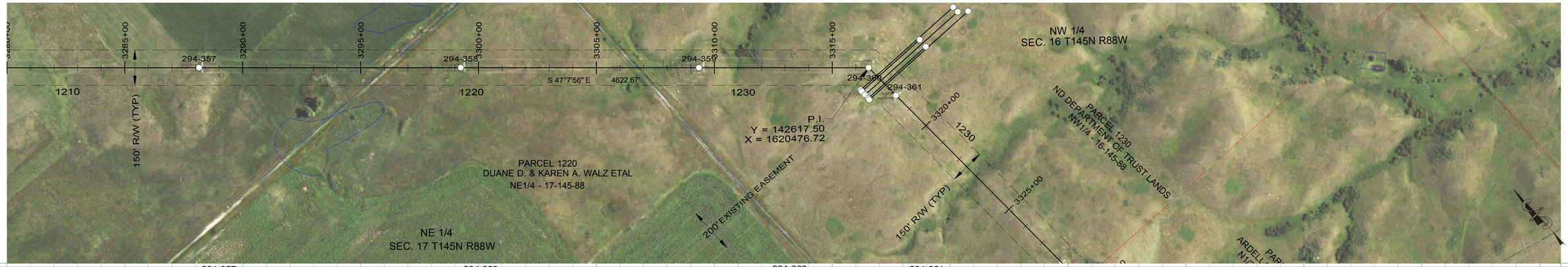
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3240+00 TO 3284+44
STRUCTURE: 294-352 TO 294-356

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-059

REV. NO. 1



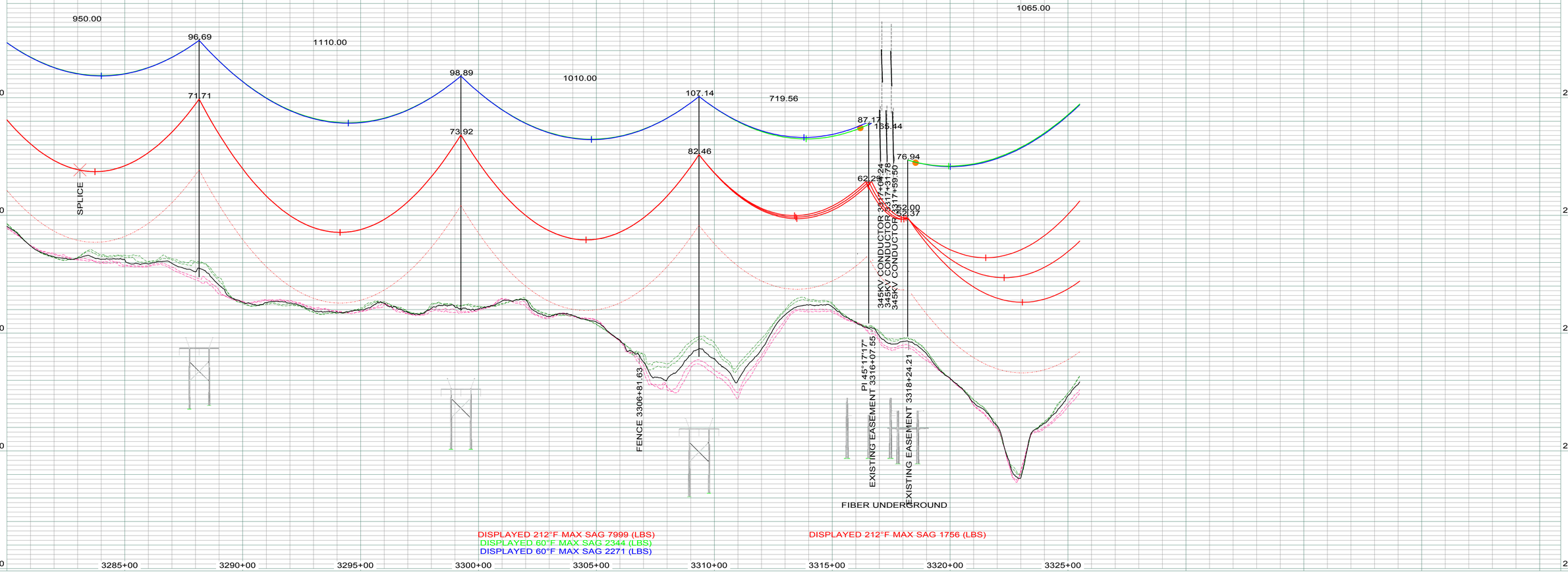
294-357
STA=3288+15.07
HT=97.19 ELE=2227.67
3HSL-118L-113R
950' RS

294-358
STA=3299+25.07
HT=99.39 ELE=2210.29
3HS-118
950' RS

294-359
STA=3309+35.07
HT=107.64 ELE=2193.39
3HS-129L-124R
950' RS

294-360
STA=3316+54.63
HT=87.29 ELE=2201.98
3TPD50-085
OPGW SPLICE
END 950' RS,
BEGIN 160' SLACK SPAN

294-361
STA=3318+20.07
HT=77.00 ELE=2196.60
3HD-075
OPGW SPLICE
END 160' SLACK SPAN,
BEGIN 1050' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10699	22132	30037	950'
OPGW (GRN)	AFL 0.571" 36 FIBER	2344	6832	10741	950'
OHGW (BLU)	7/16" EHS	2271	6143	9952	950'

		DATE
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		
APPROVED:	G CHRISTENSON	14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

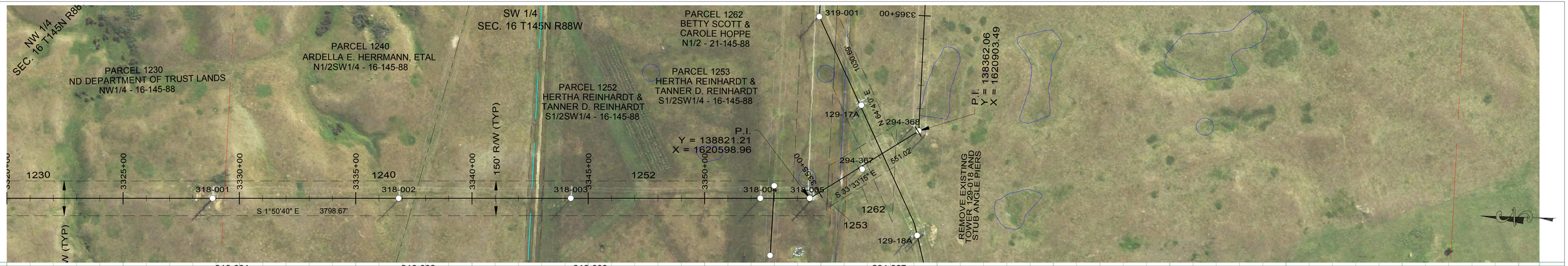
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3280+00 TO 3325+50
STRUCTURE: 294-357 TO 294-361

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-060

REV. NO. 1



318-001
STA=3328+85.07
HT=131.00 ELE=2208.47
3-3DSD03/25-130
END 1050' RS, BEGIN 750' RS

318-002
STA=3336+85.07
HT=146.00 ELE=2194.86
3-3DST-145
750' RS

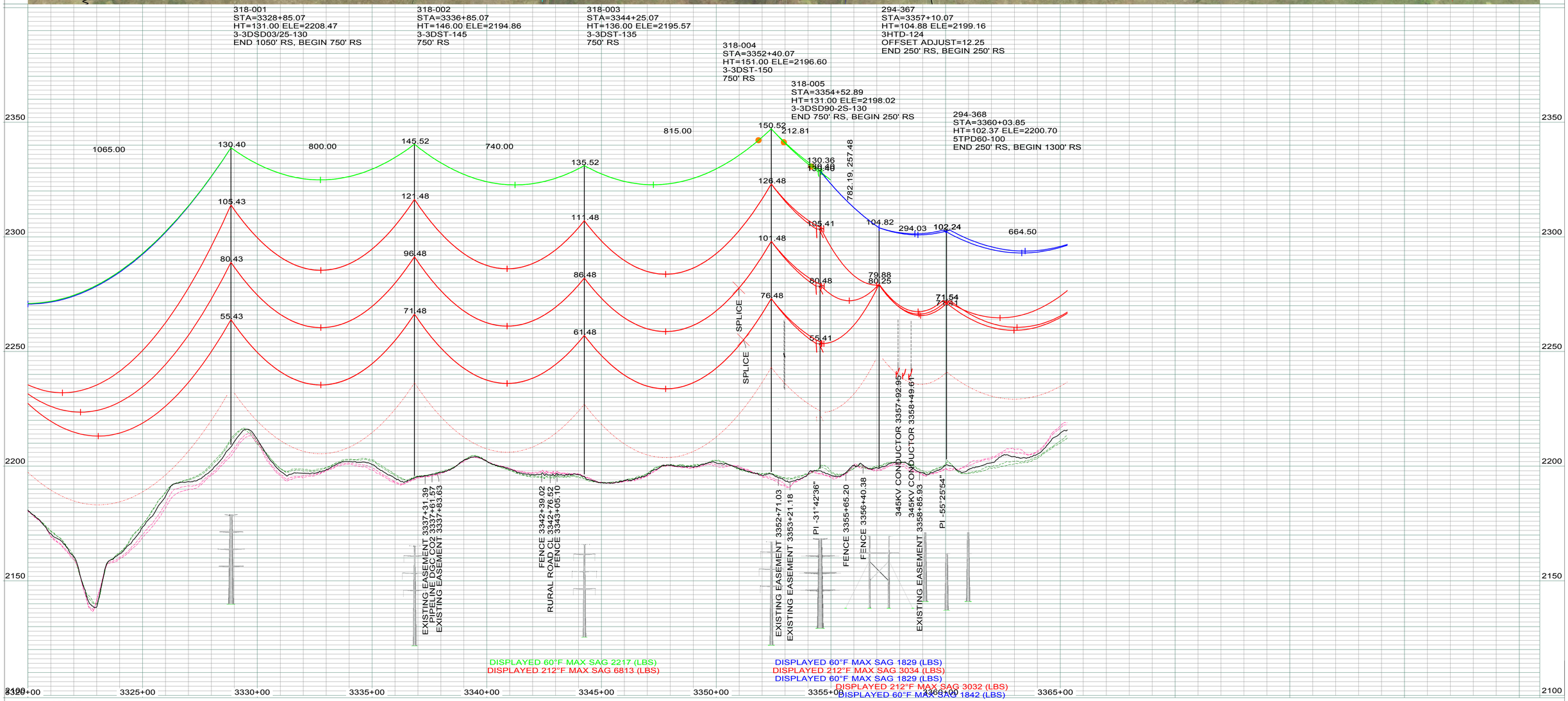
318-003
STA=3344+25.07
HT=136.00 ELE=2195.57
3-3DST-135
750' RS

318-004
STA=3352+40.07
HT=151.00 ELE=2196.60
3-3DST-150
750' RS

318-005
STA=3354+52.89
HT=131.00 ELE=2198.02
3-3DSD90-2S-130
END 750' RS, BEGIN 250' RS

294-367
STA=3357+10.07
HT=104.88 ELE=2199.16
3HTD-124
OFFSET ADJUST=12.25
END 250' RS, BEGIN 250' RS

294-368
STA=3360+03.85
HT=102.37 ELE=2200.70
5TPD60-100
END 250' RS, BEGIN 1300' RS



DISPLAYED 60°F MAX SAG 2217 (LBS)
DISPLAYED 212°F MAX SAG 6813 (LBS)
DISPLAYED 60°F MAX SAG 1829 (LBS)
DISPLAYED 212°F MAX SAG 3034 (LBS)
DISPLAYED 60°F MAX SAG 1829 (LBS)
DISPLAYED 212°F MAX SAG 3032 (LBS)
DISPLAYED 60°F MAX SAG 1842 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	9724	21046	27763	750`
OPGW (GRN)	AFL 0.571" 36 FIBER	2217	6206	9529	750`
OHGW (BLU)	7/16" EHS	-	-	-	-

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

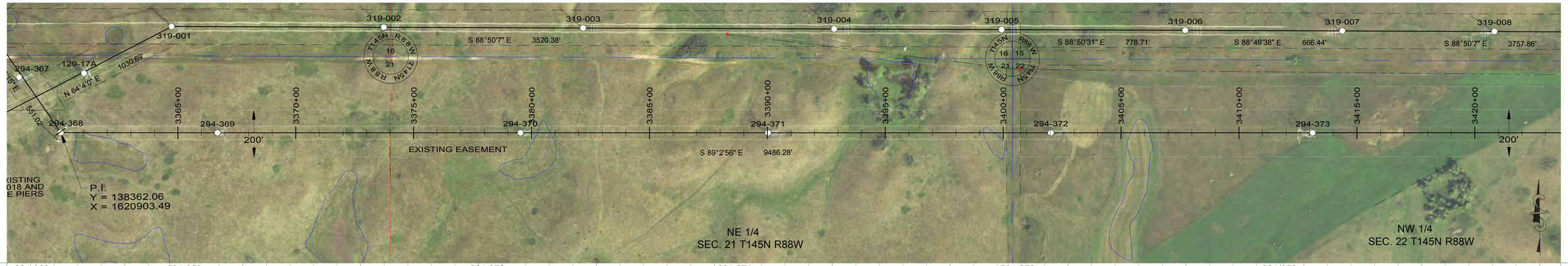
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3320+00 TO 3365+31
STRUCTURE: 318-001 TO 294-368

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-061
REV. NO. 2



294-368
STA=3360+03.85
HT=102.37 ELE=2200.70
5TPD60-100
END 250' RS, BEGIN 1300' RS

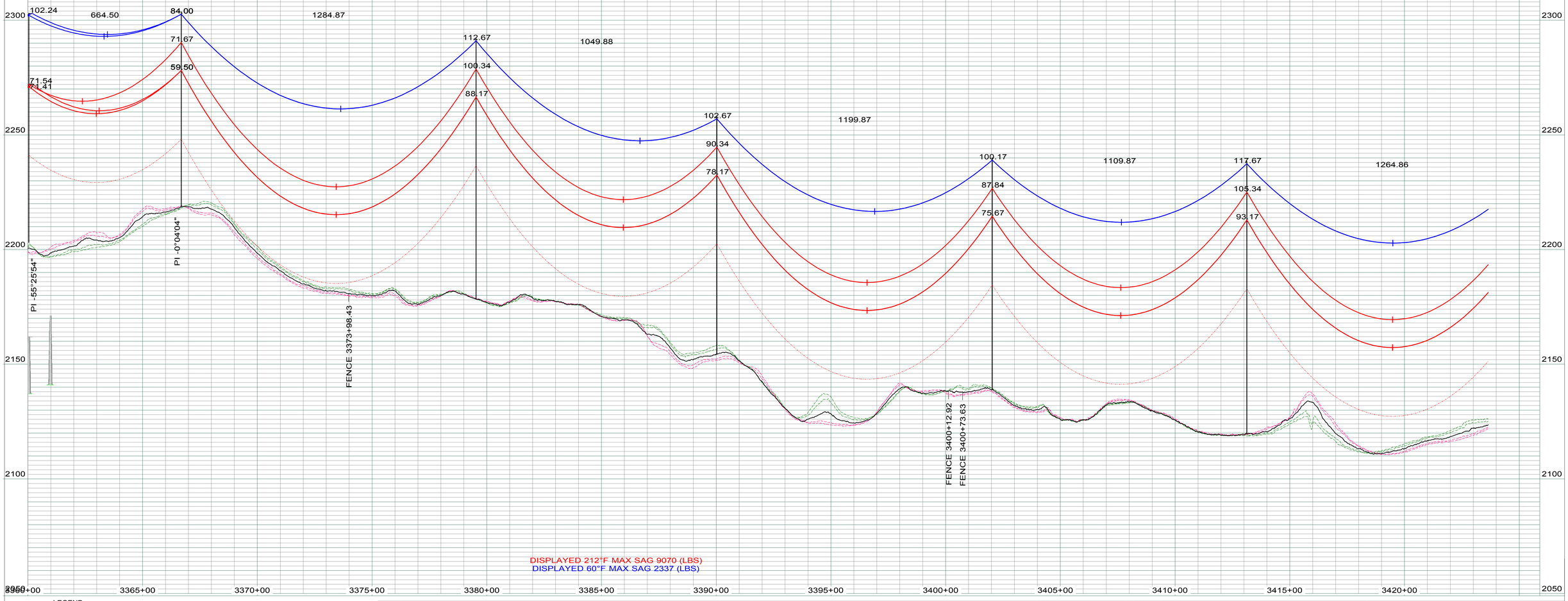
294-369
STA=3366+68.35
HT=85.00 ELE=2218.66
5T2(85)
OFFSET ADJUST=0.01
1300' RS
OLD NUMBER 129-017

294-370
STA=3379+53.21
HT=113.67 ELE=2178.39
5T2(100)
OFFSET ADJUST=0.01
1300' RS
OLD NUMBER 129-016

294-371
STA=3390+03.10
HT=103.67 ELE=2154.36
5T2(90)
OFFSET ADJUST=0.01
1300' RS
OLD NUMBER 129-015

294-372
STA=3402+02.97
HT=101.17 ELE=2138.88
5T2(87.5)
OFFSET ADJUST=0.01
1300' RS
OLD NUMBER 129-014

294-373
STA=3413+12.84
HT=118.67 ELE=2119.75
5T2(105)
OFFSET ADJUST=0.01
1300' RS
OLD NUMBER 129-013



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	(2) 2306.2 MCM 76/19 ACSR	10982 X 2	21346 X 2	31047 X 2	1300`
OPGW (GRN)	---	---	---	---	---
OHGW (BLU)	7/16" EHS	2337	6865	11477	1300`

		DATE:
DESIGN BY:	CDB/GCC	14-JUL
DRAWN BY:	C. BAUER	14-JUL
DESIGN CHK:	G. CHRISTENSON	14-JUL
DRAFT CHK:		DATE:
APPROVED:	G CHRISTENSON	14-JUL

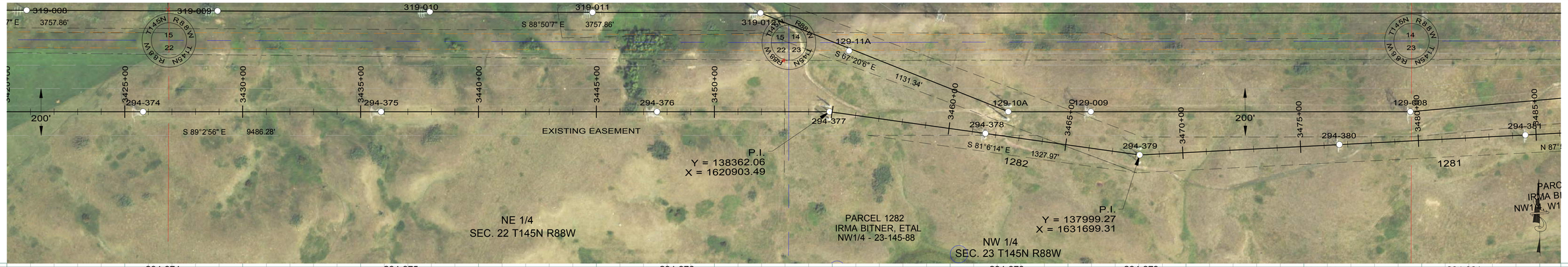
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3360+00 TO 3423+65
STRUCTURE: 294-368 TO 294-373

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 294-090-T3-062
REV. NO.: 2



294-374
STA=3425+77.70
HT=93.67 ELE=2143.92
5T2(080)
OFFSET ADJUST=0.00
1300' RS
OLD NUMBER 129-012

294-375
STA=3435+87.60
HT=116.17 ELE=2157.75
5T2(102.5)
OFFSET ADJUST=0.01
1300' RS
OLD NUMBER 129-011

294-376
STA=3447+57.47
HT=153.67 ELE=2191.90
5TM2(140)
OFFSET ADJUST=0.00
1300' RS
OLD NUMBER 129-010

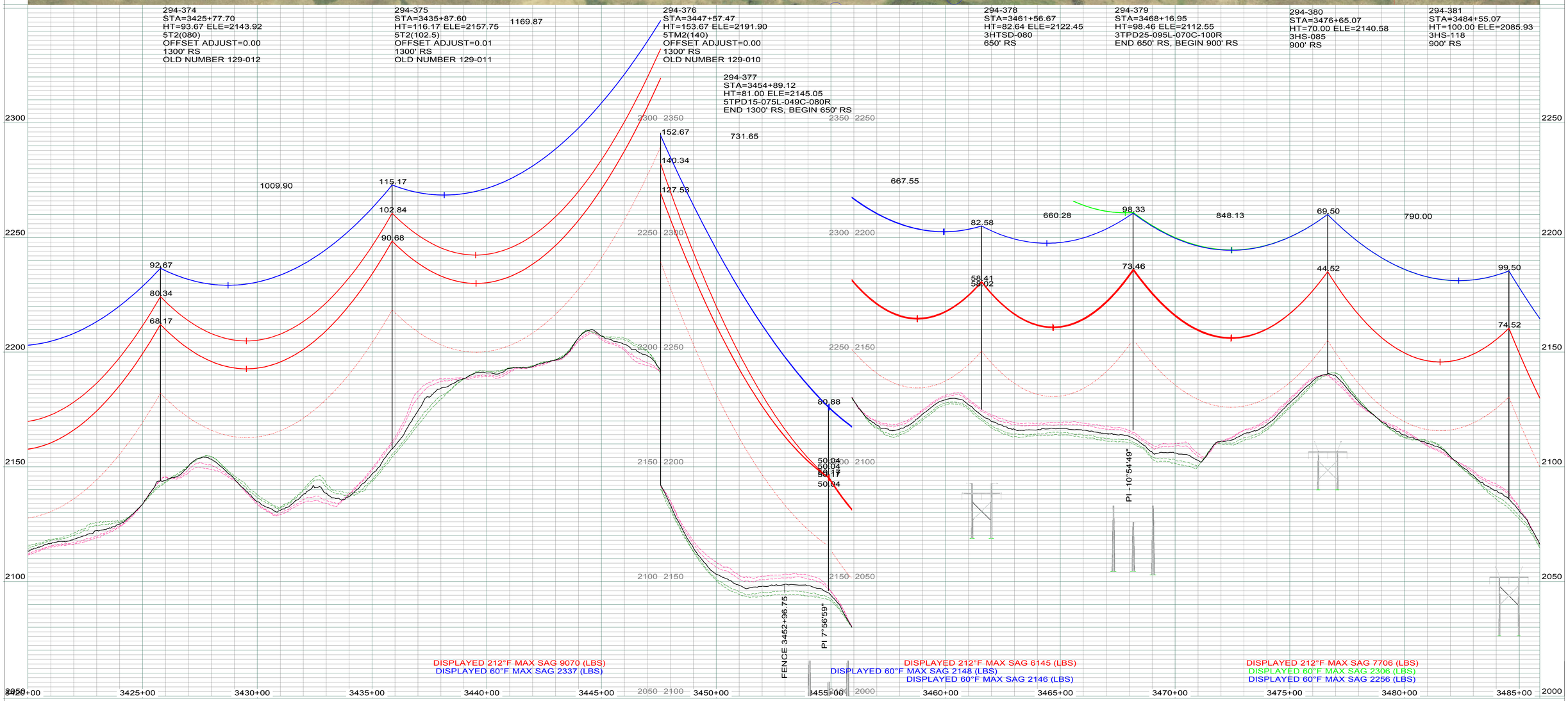
294-377
STA=3454+89.12
HT=81.00 ELE=2145.05
5TPD15-075L-049C-080R
END 1300' RS, BEGIN 650' RS

294-378
STA=3461+56.67
HT=82.64 ELE=2122.45
3HTSD-080
650' RS

294-379
STA=3468+16.95
HT=98.46 ELE=2112.55
3TPD25-095L-070C-100R
END 650' RS, BEGIN 900' RS

294-380
STA=3476+65.07
HT=70.00 ELE=2140.58
3HS-085
900' RS

294-381
STA=3484+55.07
HT=100.00 ELE=2085.93
3HS-118
900' RS



DISPLAYED 212°F MAX SAG 9070 (LBS)
DISPLAYED 60°F MAX SAG 2337 (LBS)

DISPLAYED 212°F MAX SAG 6145 (LBS)
DISPLAYED 60°F MAX SAG 2148 (LBS)
DISPLAYED 60°F MAX SAG 2146 (LBS)

DISPLAYED 212°F MAX SAG 7706 (LBS)
DISPLAYED 60°F MAX SAG 2306 (LBS)
DISPLAYED 60°F MAX SAG 2256 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	(2) 2306.2 MCM 76/19 ACSR	10982 X 2	21346 X 2	31047 X 2	1300'
OPGW (GRN)	---	---	---	---	---
OHGW (BLU)	7/16" EHS	2337	6865	11477	1300'

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SV	01/2018

DESIGN BY: CDB/GCC DATE: 14-JUL
DRAWN BY: C. BAUER DATE: 14-JUL
DESIGN CHK: G. CHRISTENSON DATE: 14-JUL
DRAFT CHK: DATE:
APPROVED: G CHRISTENSON DATE: 14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

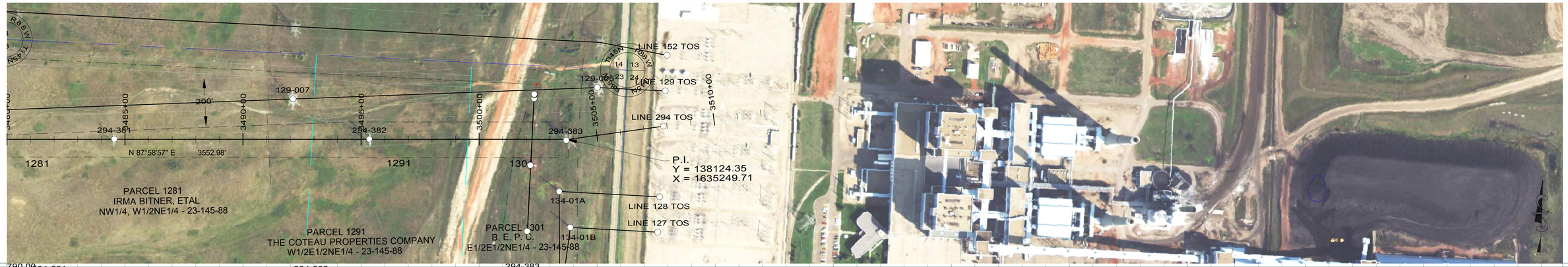
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3420+00 TO 3485+90
STRUCTURE: 294-374 TO 294-381

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-063

REV. NO. 2



294-381
STA=3484+55.07
HT=100.00 ELE=2085.93
3HS-118
900' RS

294-382
STA=3495+35.07
HT=111.50 ELE=1997.99
3HD1-110
END 900' RS, BEGIN 800' RS
OPGW SPLICE

294-383
STA=3503+69.55
HT=116.27 ELE=1963.11
DDT-90
OFFSET ADJUST=4.80
END 800' RS,
BEGIN 400' SLACK SPAN
OLD NUMBER 134-001

LINE 294 TOS
STA=3507+84.51
HT=85.00 ELE=1935.34
TOS
END 400' SLACK SPAN
OPGW SPLICE

790.00
99.50
74.52
1080.00
111.44
834.49
86.87
86.50
116.27
415.54
101.27
76.27
84.90
65.00

FENCE 3491+06.71
SHOVEL CROSSING
54' CLEARANCE @ 60 DEGREES F
FENCE 3501+62.57
DISTRIBUTION (TOP WIRE) 3502+23.48
PIPELINE DGC CO2 3502+62.13
PI -7°47'20"
PIPELINE WATER
3504+19.33
BURIED POWER
3505+65.83
RURAL ROAD CL
3505+86.48
RURAL ROAD CL
3506+93.25
PI 0°00'00"
RURAL ROAD CL
3505+99.56

DISPLAYED 212°F MAX SAG 7706 (LBS)
DISPLAYED 60°F MAX SAG 2306 (LBS)
DISPLAYED 60°F MAX SAG 2256 (LBS)

DISPLAYED 212°F MAX SAG 7126 (LBS)
DISPLAYED 60°F MAX SAG 2252 (LBS)
DISPLAYED 60°F MAX SAG 2237 (LBS)

DISPLAYED 212°F MAX SAG 3003 (LBS)
DISPLAYED 60°F MAX SAG 789 (LBS)
DISPLAYED 60°F MAX SAG 774 (LBS)

2150
2100
2050
2000
1950
1900
3480+00
3485+00
3490+00
3495+00
3500+00
3505+00
3510+00

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SV	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV (RED)	2312 MCM 76/19 ACSR THRASHER	10443	21797	29436	900'
OPGW (GRN)	AFL 0.571" 36 FIBER	2306	6669	10441	900'
OHGW (BLU)	7/16" EHS	2256	6083	9850	900'

		DATE
DESIGN BY: CDB/GCC		14-JUL
DRAWN BY: C. BAUER		14-JUL
DESIGN CHK: G. CHRISTENSON		14-JUL
DRAFT CHK:		
APPROVED: G CHRISTENSON		14-JUL

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 294-345KV LINE - CHARLIE CREEK SUB TO AVS SWITCHYARD
COUNTY: MERCER

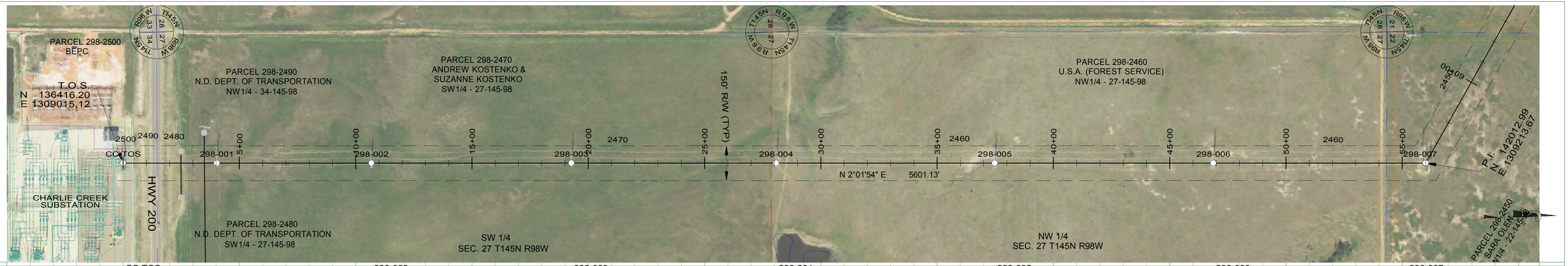
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3480+00 TO 3510+86
STRUCTURE: 294-381 TO LINE 294 TOS

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 294-090-T3-064

REV. NO. 2



CC TOS
STA=0+00.00
HT=87.10 ELE=2666.19
TOS
END 550' RS
SLACK
OPGW SPLICE

298-001
STA=4+02.92
HT=124.83 ELE=2675.71
3HS1-146
550' RS
SLACK

298-002
STA=10+67.92
HT=87.33 ELE=2656.26
3HD-085
END 550' RS SLACK, BEGIN 900' RS

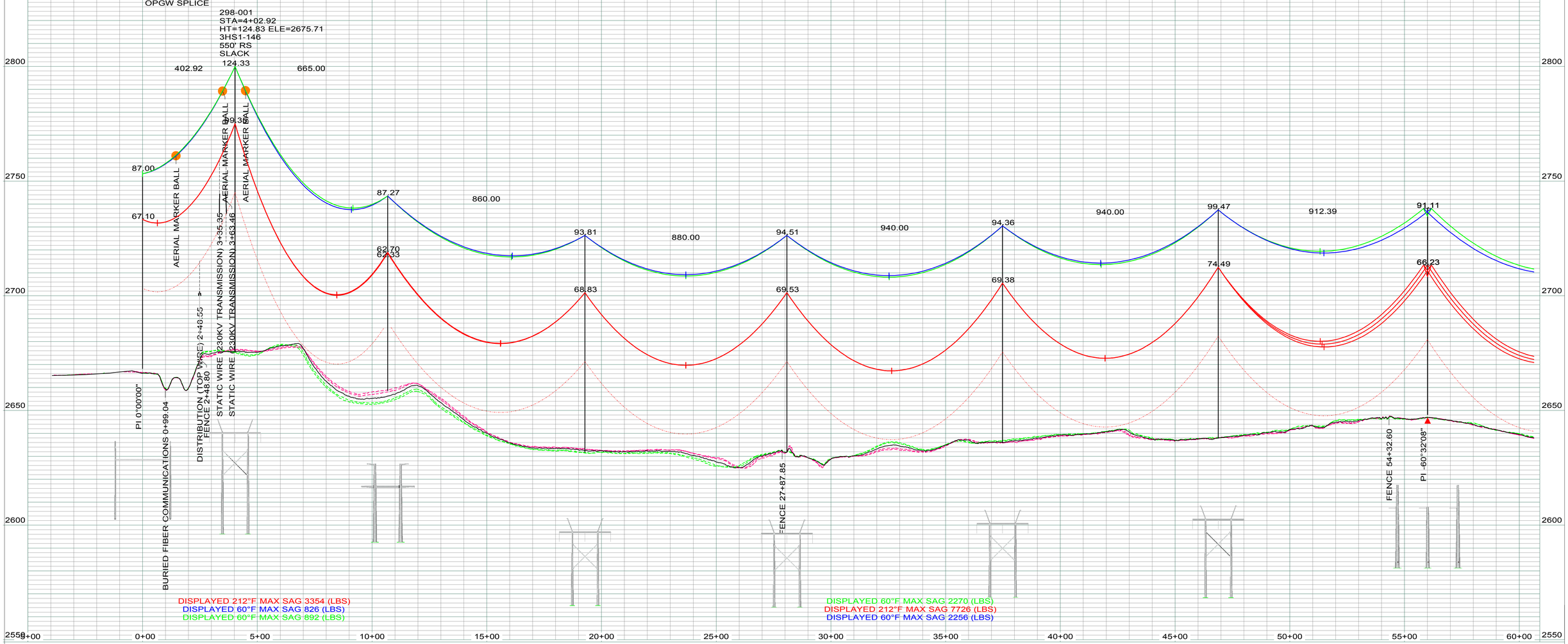
298-003
STA=19+27.92
HT=94.31 ELE=2632.50
3HS-113
900' RS

298-004
STA=28+07.92
HT=95.01 ELE=2631.83
3HS-113
900' RS

298-005
STA=37+47.92
HT=94.86 ELE=2636.10
3HS-113
900' RS

298-006
STA=46+87.92
HT=99.97 ELE=2637.96
3HS-118
900' RS

298-007
STA=56+00.31
HT=91.23 ELE=2646.98
3TPD65-090
END 900' RS, BEGIN 1050' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10487	21910	29536	900`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2270	6466	10270	900`
OHGW	7/16-INCH EHS	2256	6020	9700	900`

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

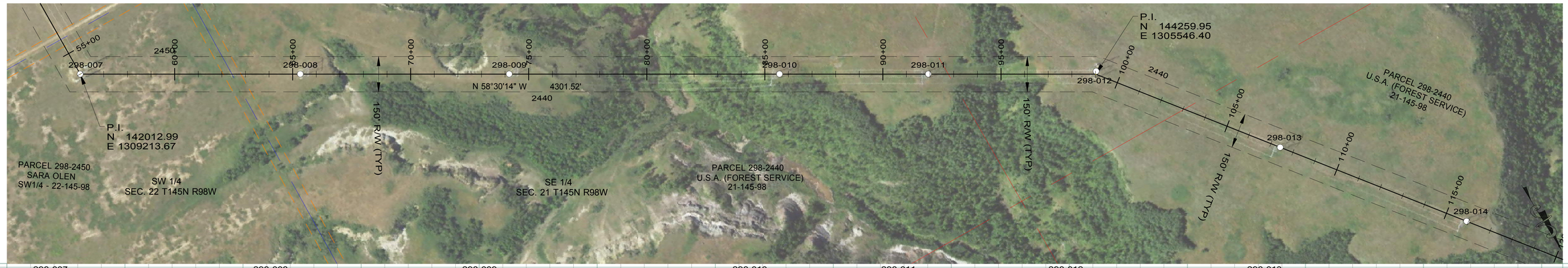
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: -5+00 TO 60+64
STRUCTURE: CC TOS TO 298-007

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-001
REV. NO. 1



298-007
STA=56+00.31
HT=91.23 ELE=2646.98
3TPD65-090
END 900' RS, BEGIN 1050' RS

298-008
STA=65+32.68
HT=90.08 ELE=2632.43
3HS-107
1050' RS

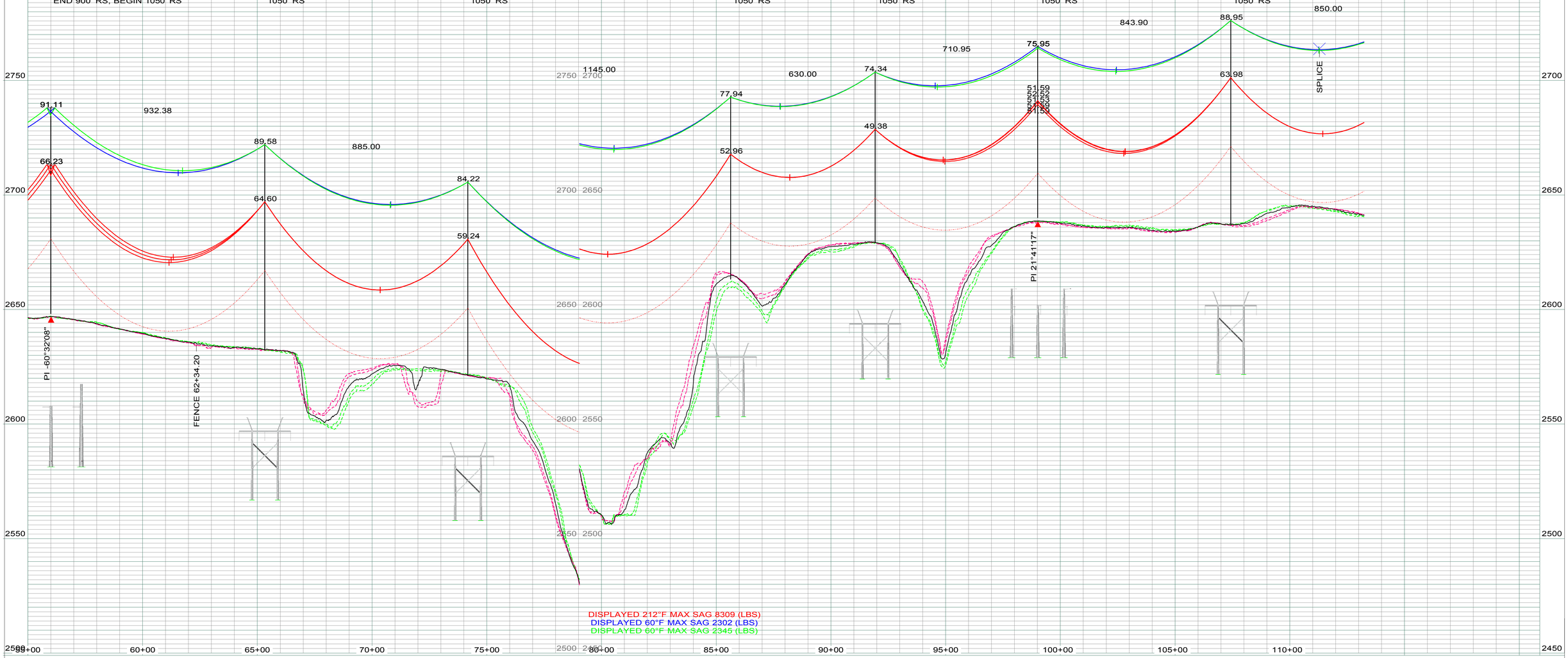
298-009
STA=74+17.68
HT=84.72 ELE=2621.45
3HS-102
1050' RS

298-010
STA=85+62.68
HT=78.44 ELE=2614.82
3HS-096
1050' RS

298-011
STA=91+92.68
HT=74.84 ELE=2629.30
3HS-091
1050' RS

298-012
STA=99+01.20
HT=76.42 ELE=2638.66
3TPA25-M-075
1050' RS

298-013
STA=107+42.68
HT=89.45 ELE=2637.24
3HS-107
1050' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
	IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.				
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10673	21515	30068	1050`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2345	6869	11084	1050`
OHGW	7/16-INCH EHS	2302	6386	10441	1050`

DESIGN BY:	GCC/CDB	DATE: 2013-2014
DRAWN BY:	C. BAUER	DATE: 2013-2014
DESIGN CHK:	GCC	DATE: FALL2014
DRAFT CHK:	CLK	DATE: NOV2014
APPROVED:	G CHRISTENSON	DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

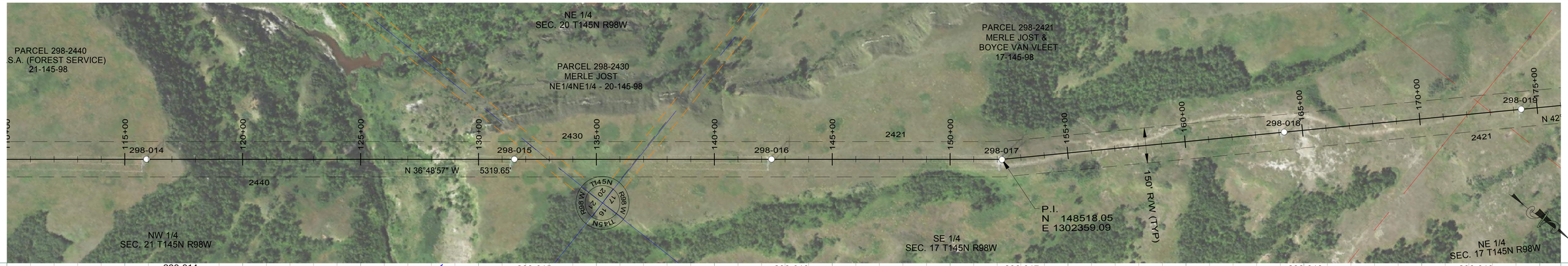
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

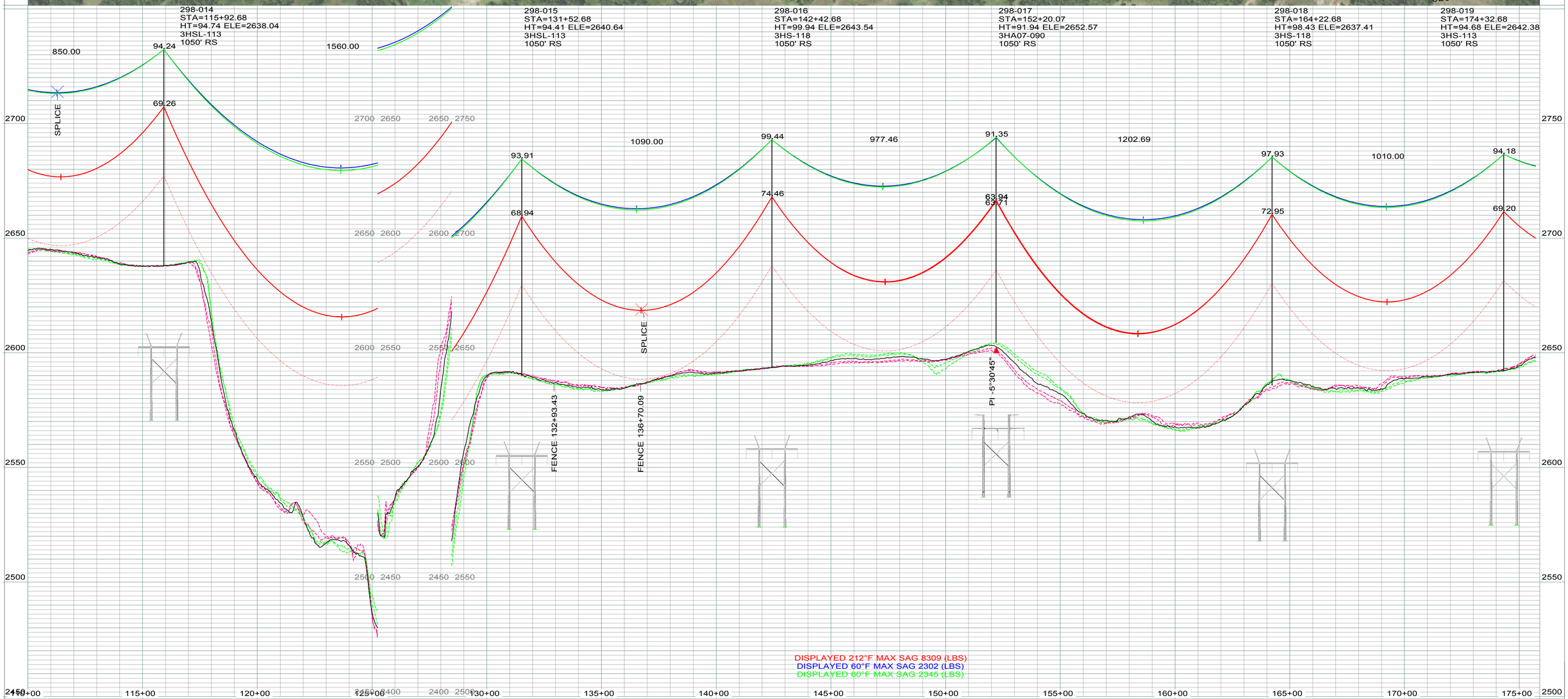
PLAN AND PROFILE
STATION: 55+00 TO 113+24
STRUCTURE: 298-007 TO 298-013

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-002

REV. NO. 2





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10673	21515	30068	1050'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2345	6869	11084	1050'
OHGW	7/16-INCH EHS	2302	6386	10441	1050'

DESIGN BY:	GCC/CDB	DATE: 2013-2014
DRAWN BY:	C. BAUER	DATE: 2013-2014
DESIGN CHK:	GCC	DATE: FALL2014
DRAFT CHK:	CLK	DATE: NOV2014
APPROVED:	G CHRISTENSON	DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

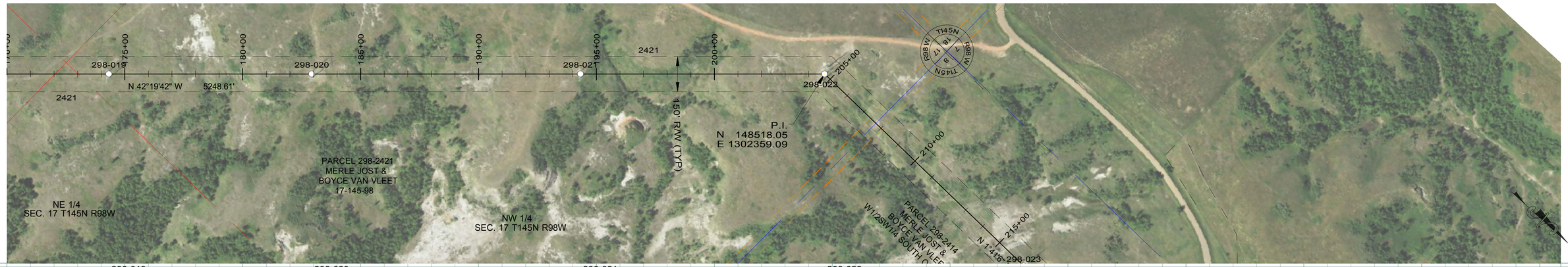
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 110+00 TO 175+72
STRUCTURE: 298-014 TO 298-019

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-003

REV. NO. 1

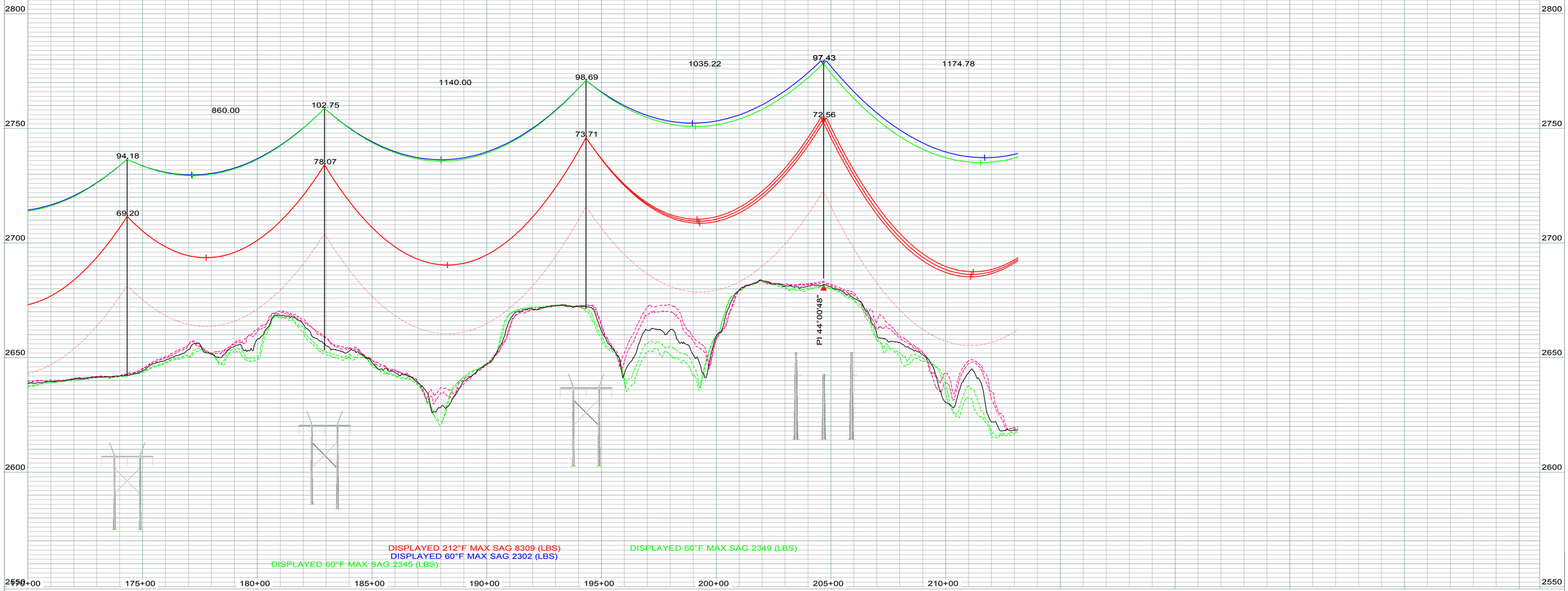


298-019
STA=174+32.68
HT=94.68 ELE=2642.38
3HS-113
1050' RS

298-020
STA=182+92.68
HT=103.25 ELE=2656.00
3HS-119L-124R
1050' RS

298-021
STA=194+32.68
HT=99.19 ELE=2672.26
3HS-118
OPGW SPLICE
1050' RS

298-022
STA=204+67.91
HT=97.56 ELE=2681.97
3TPD45-095
OPGW SPLICE
END 1050' RS, BEGIN 900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10673	21515	30068	1050'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2345	6869	11084	1050'
OHGW	7/16-INCH EHS	2302	6386	10441	1050'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

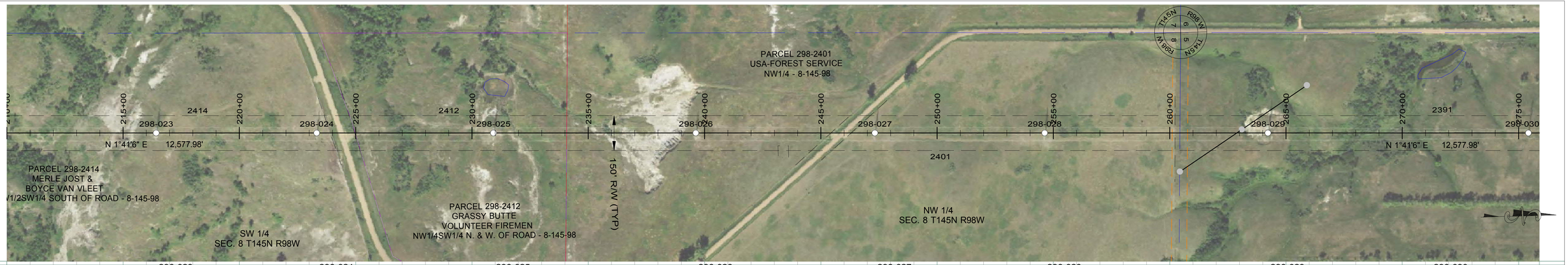
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 170+00 TO 213+15
STRUCTURE: 298-019 TO 298-022

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-004

REV. NO. 1



298-023
STA=216+42.68
HT=79.85 ELE=2677.67
3HS-096
900' RS

298-024
STA=223+32.68
HT=69.78 ELE=2681.77
3HS-085
900' RS

298-025
STA=230+92.68
HT=103.65 ELE=2624.68
3HS-124
900' RS

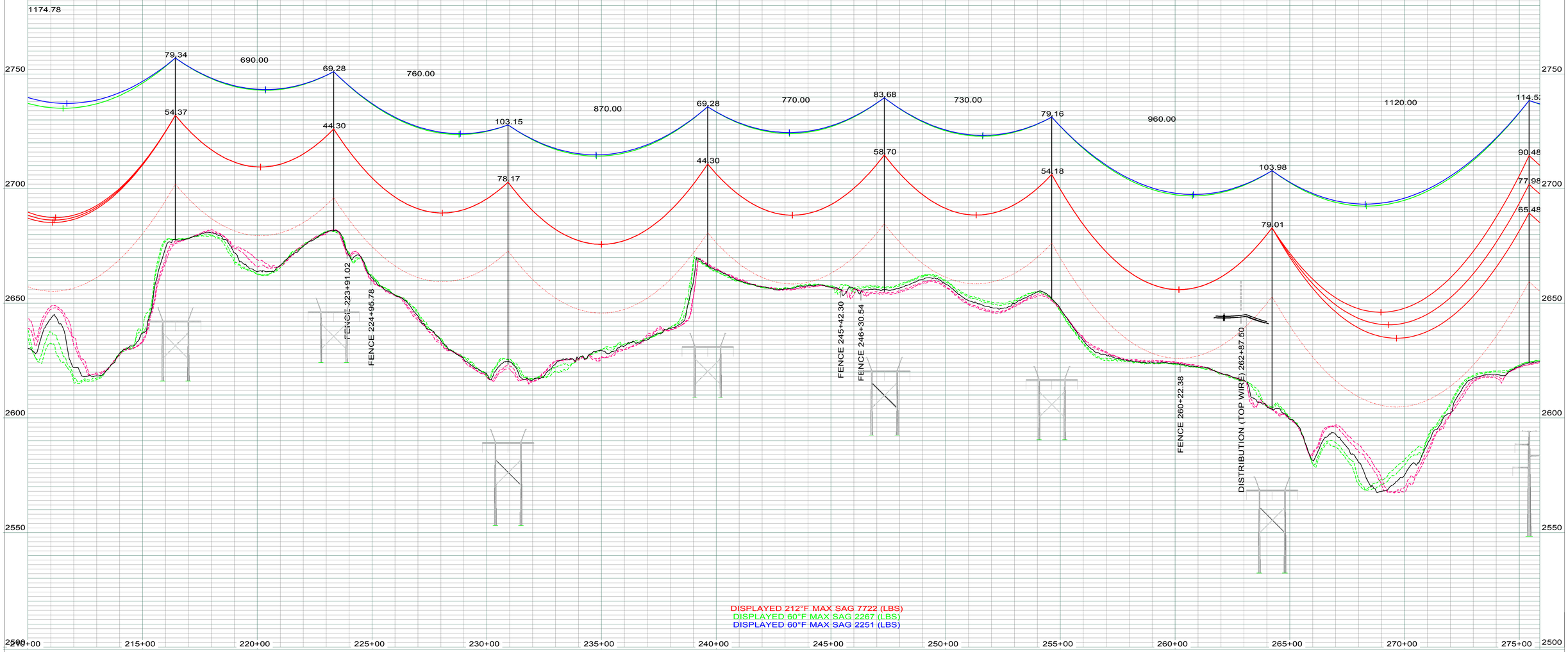
298-026
STA=239+62.68
HT=69.78 ELE=2666.48
3HS-085
900' RS

298-027
STA=247+32.68
HT=84.18 ELE=2656.00
3HS-102
900' RS

298-028
STA=254+62.68
HT=79.66 ELE=2652.09
3HS-096
900' RS

298-029
STA=264+22.68
HT=104.48 ELE=2603.91
3HS-124
900' RS

298-030
STA=275+42.68
HT=115.00 ELE=2623.97
3ST-138
900' RS



DISPLAYED 212°F MAX SAG 7722 (LBS)
DISPLAYED 60°F MAX SAG 2267 (LBS)
DISPLAYED 60°F MAX SAG 2251 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10475	21882	29513	900'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2267	6462	10266	900'
OHGW	7/16-INCH EHS	2251	6012	9692	900'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

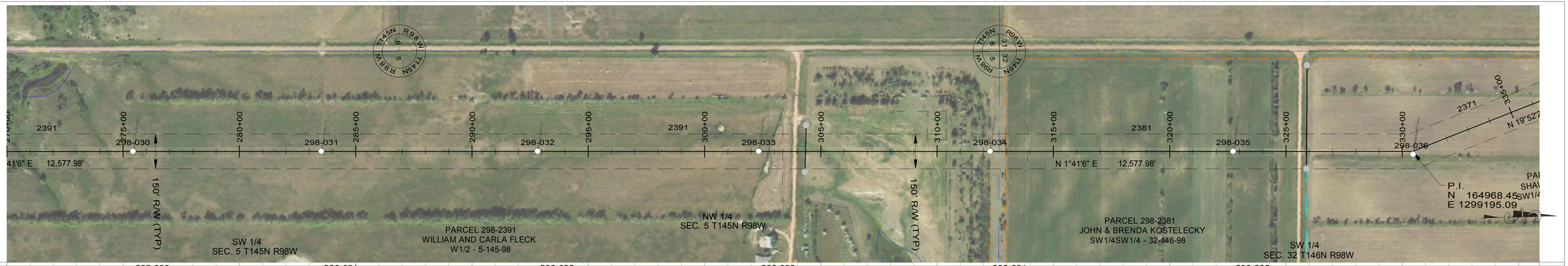
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 210+00 TO 275+90
STRUCTURE: 298-023 TO 298-030

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-005
REV. NO. 1



298-030
STA=275+42.68
HT=115.00 ELE=2623.97
3ST-138
900' RS

298-031
STA=283+52.68
HT=115.00 ELE=2653.23
3ST-138
900' RS

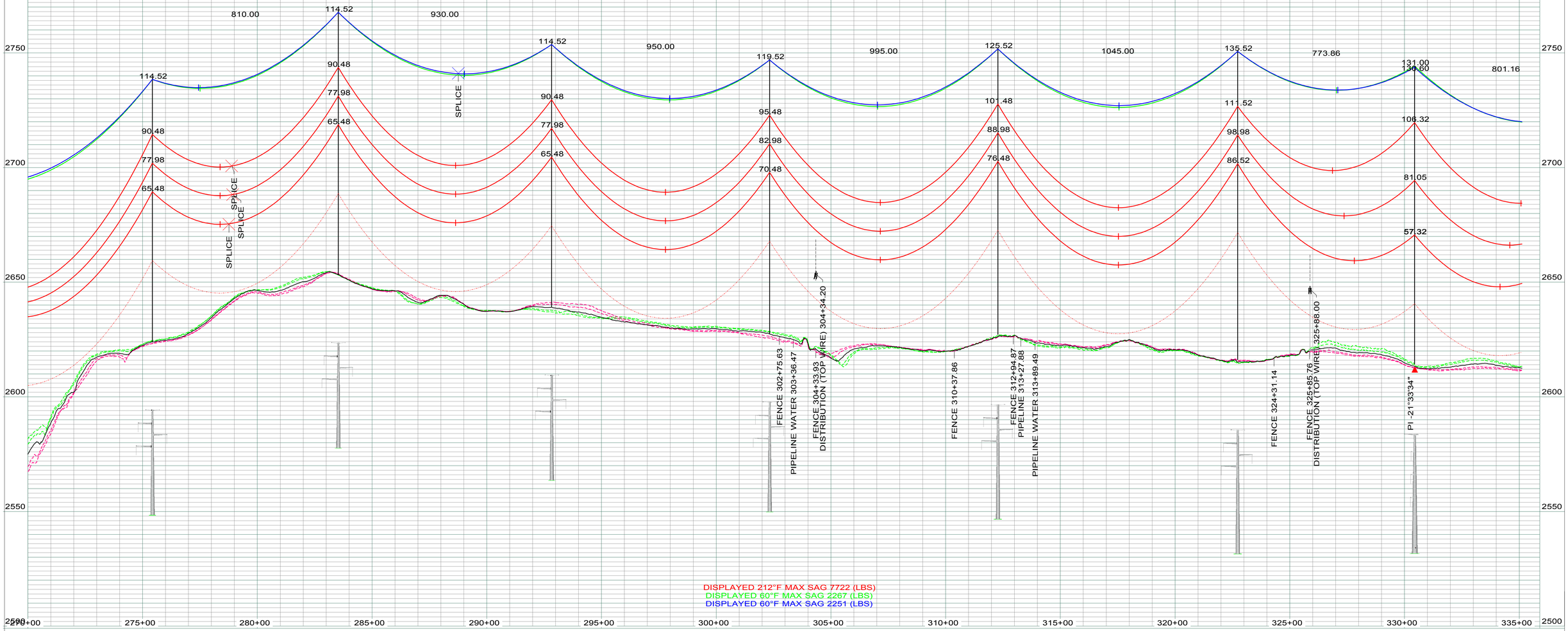
298-032
STA=292+82.68
HT=115.00 ELE=2639.15
3ST-138
900' RS

298-033
STA=302+32.68
HT=120.00 ELE=2627.42
3SLT-145
900' RS

298-034
STA=312+27.68
HT=126.00 ELE=2626.25
3ST2-125
900' RS

298-035
STA=322+72.68
HT=136.00 ELE=2615.19
3ST2-135
900' RS

298-036
STA=330+44.03
HT=131.00 ELE=2613.34
3SA25-130
900' RS



DISPLAYED 212°F MAX SAG 7722 (LBS)
DISPLAYED 60°F MAX SAG 2267 (LBS)
DISPLAYED 60°F MAX SAG 2251 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
	IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.				
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10475	21882	29513	900`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2267	6462	10266	900`
OHGW	7/16-INCH EHS	2251	6012	9692	900`

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

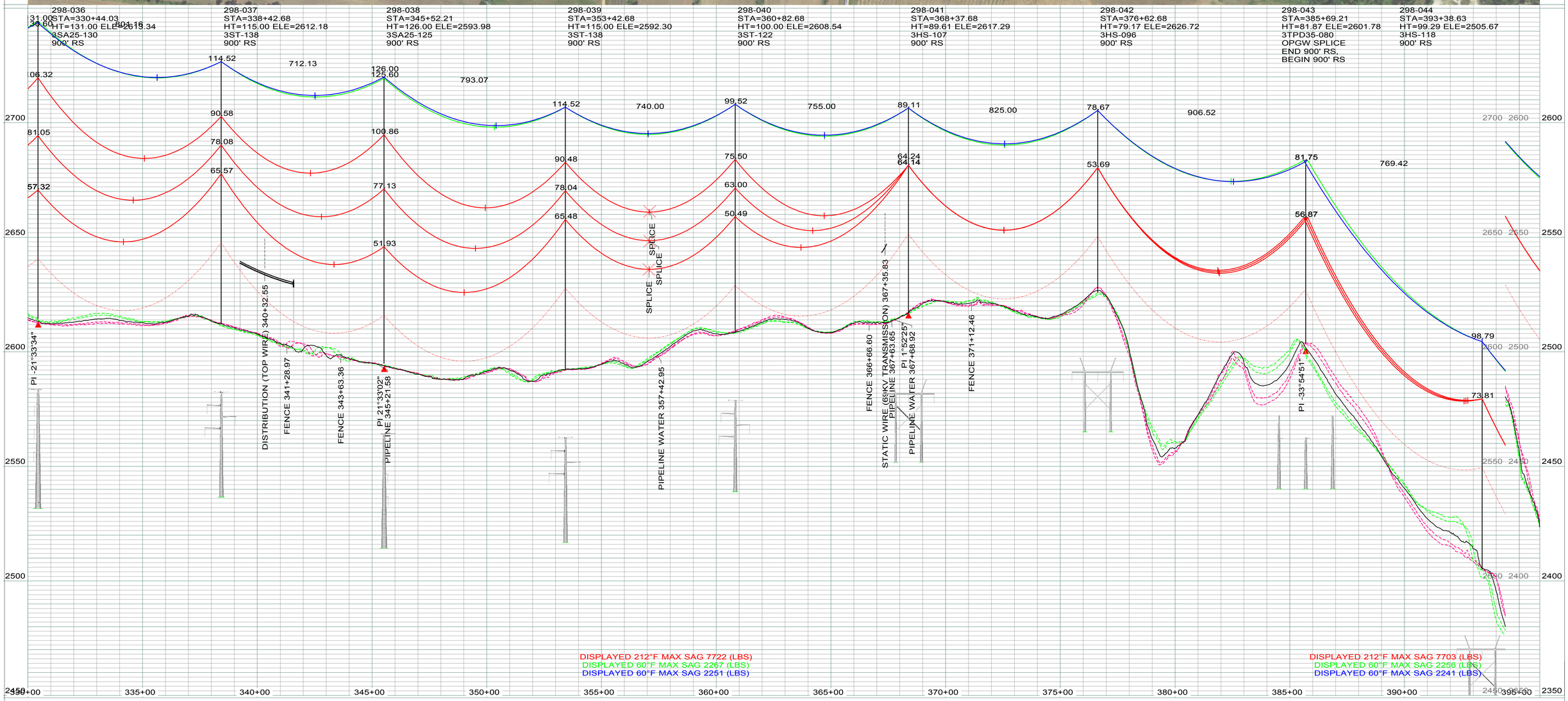
PLAN AND PROFILE
STATION: 270+00 TO 335+12
STRUCTURE: 298-030 TO 298-036

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-006

REV. NO. 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10475	21882	29513	900'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2267	6462	10266	900'
OHGW	7/16-INCH EHS	2251	6012	9692	900'

DESIGN BY:	GCC/CDB	DATE: 2013-2014
DRAWN BY:	C. BAUER	DATE: 2013-2014
DESIGN CHK:	GCC	DATE: FALL2014
DRAFT CHK:	CLK	DATE: NOV2014
APPROVED:	G CHRISTENSON	DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

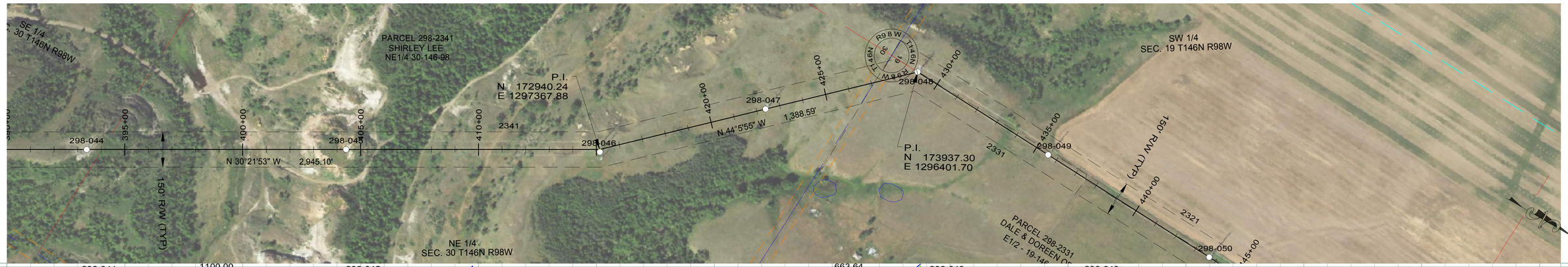
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

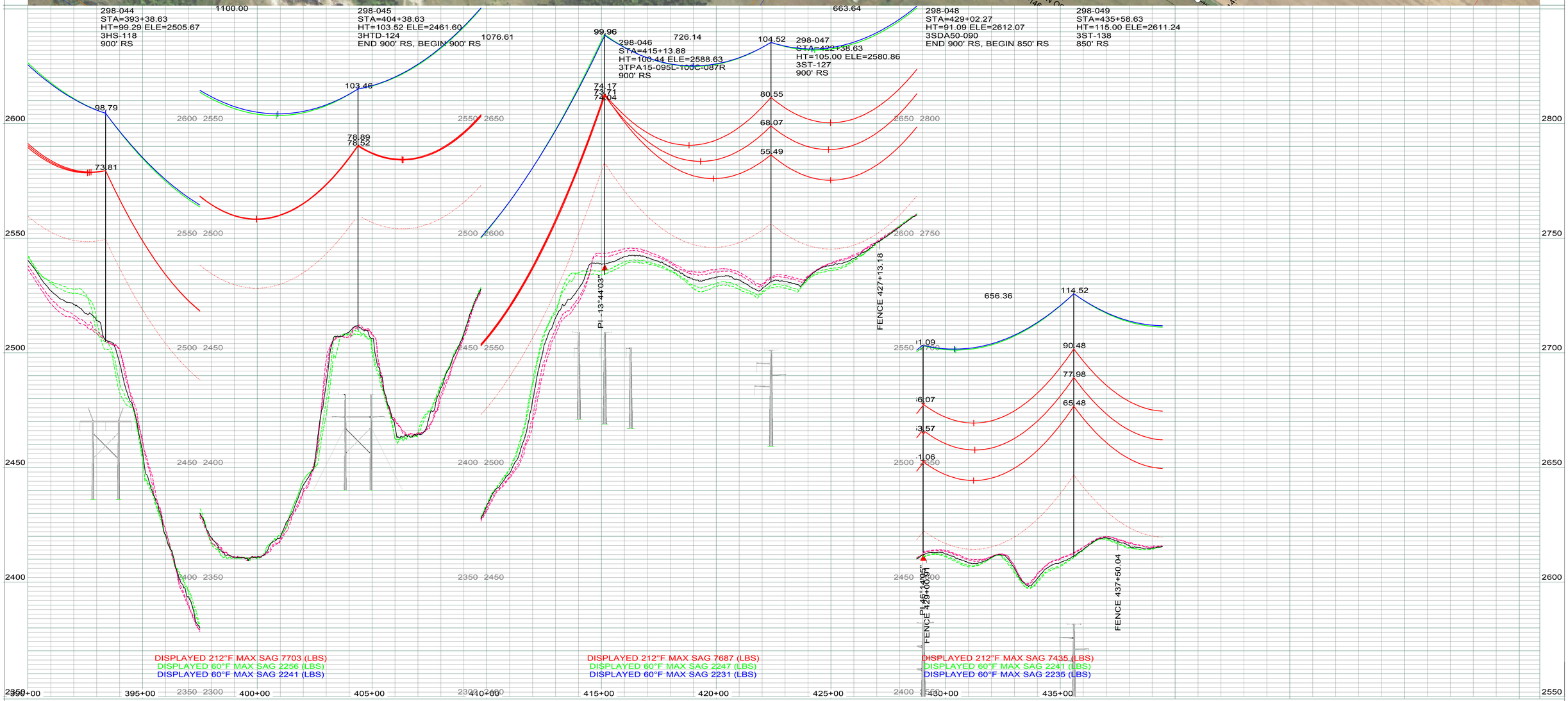
PLAN AND PROFILE
STATION: 330+00 TO 395+90
STRUCTURE: 298-036 TO 298-044

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-007

REV. NO. 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10397	21683	29344	900`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2247	6432	10238	900`
OHGW	7/16-INCH EHS	2231	5982	9665	900`

		DATE:
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

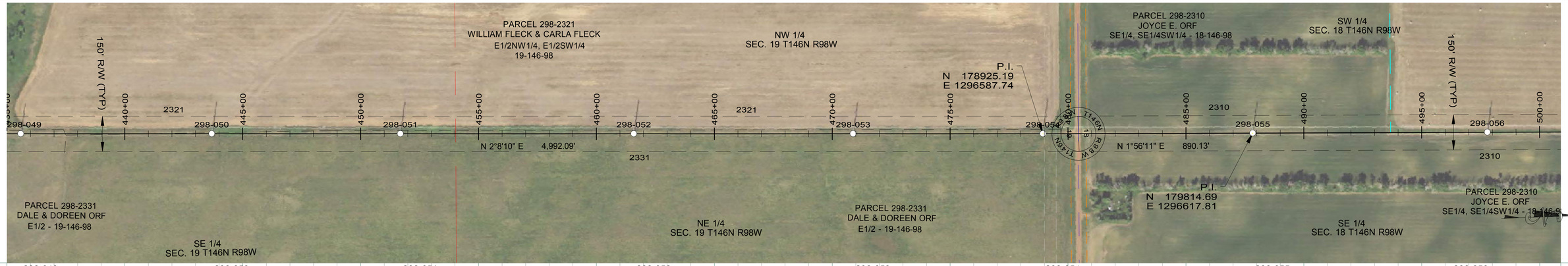
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 390+00 TO 439+45
STRUCTURE: 298-044 TO 298-049

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-008

REV. NO. 1



298-049
STA=435+58.63
HT=115.00 ELE=2611.24
3ST-138
850' RS

298-050
STA=443+68.63
HT=120.00 ELE=2607.59
3ST-144
850' RS

298-051
STA=451+68.63
HT=115.00 ELE=2605.33
3ST-138
850' RS

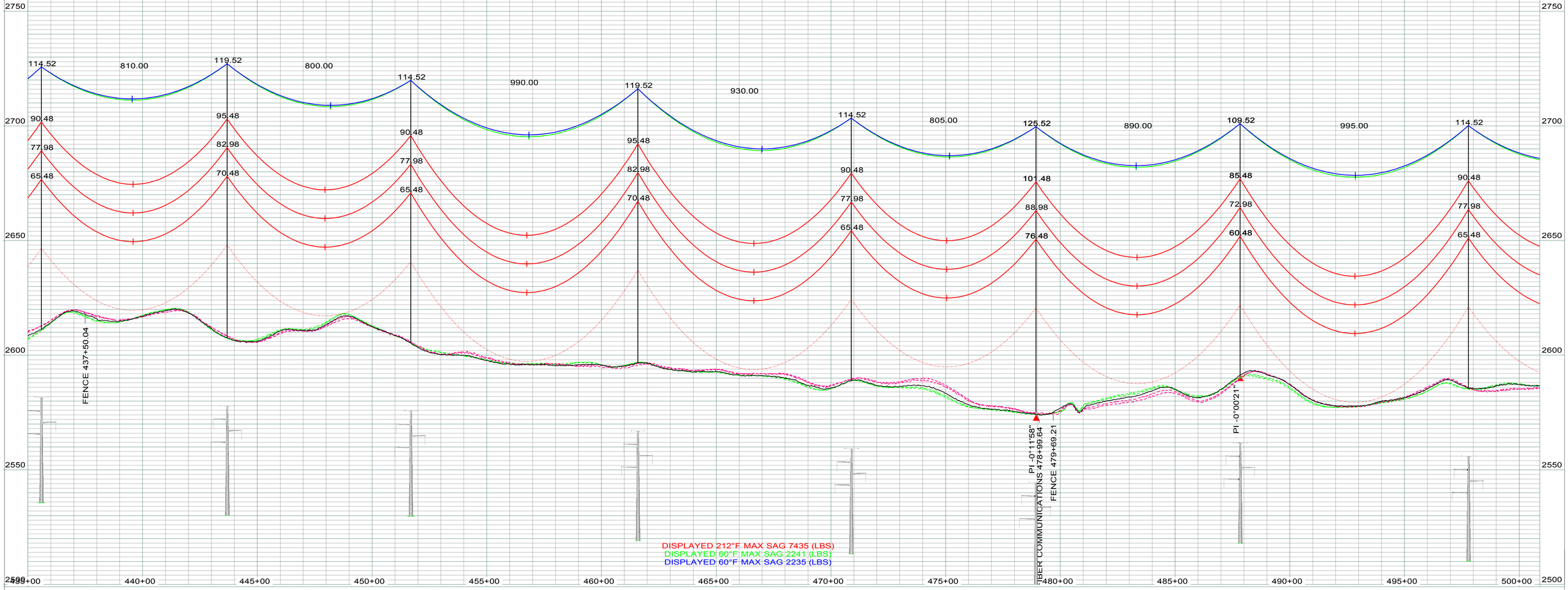
298-052
STA=461+58.63
HT=120.00 ELE=2596.69
3ST-144
850' RS

298-053
STA=470+88.63
HT=115.00 ELE=2588.89
3ST-138
850' RS

298-054
STA=478+93.63
HT=126.00 ELE=2574.15
3ST2-125
850' RS

298-055
STA=487+83.63
HT=110.00 ELE=2591.49
3ST-133
850' RS

298-056
STA=497+78.63
HT=115.00 ELE=2585.61
3ST-138
850' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10247	21640	28972	850`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2241	6320	9978	850`
OHGW	7/16-INCH EHS	2235	5882	9429	850`

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

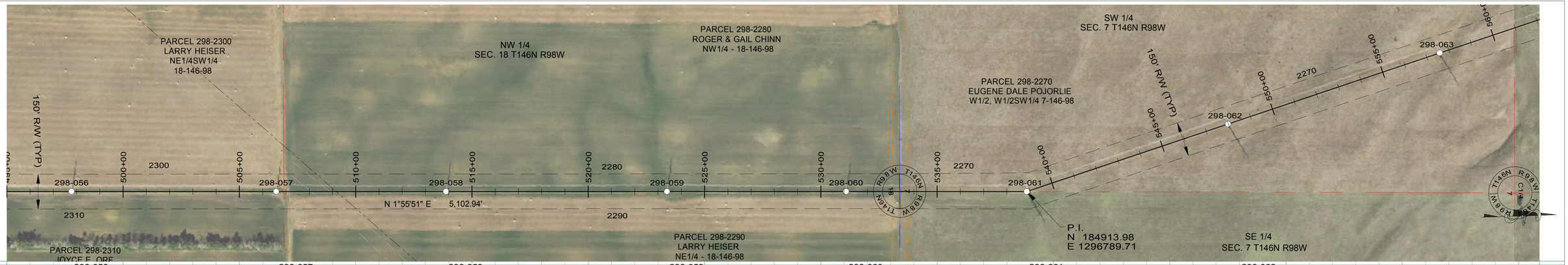
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 435+00 TO 500+89
STRUCTURE: 298-049 TO 298-056

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-009

REV. NO. 2



298-056
STA=497+78.63
HT=115.00 ELE=2585.61
3ST-138
850' RS

298-057
STA=506+58.63
HT=115.00 ELE=2589.90
3ST-138
850' RS

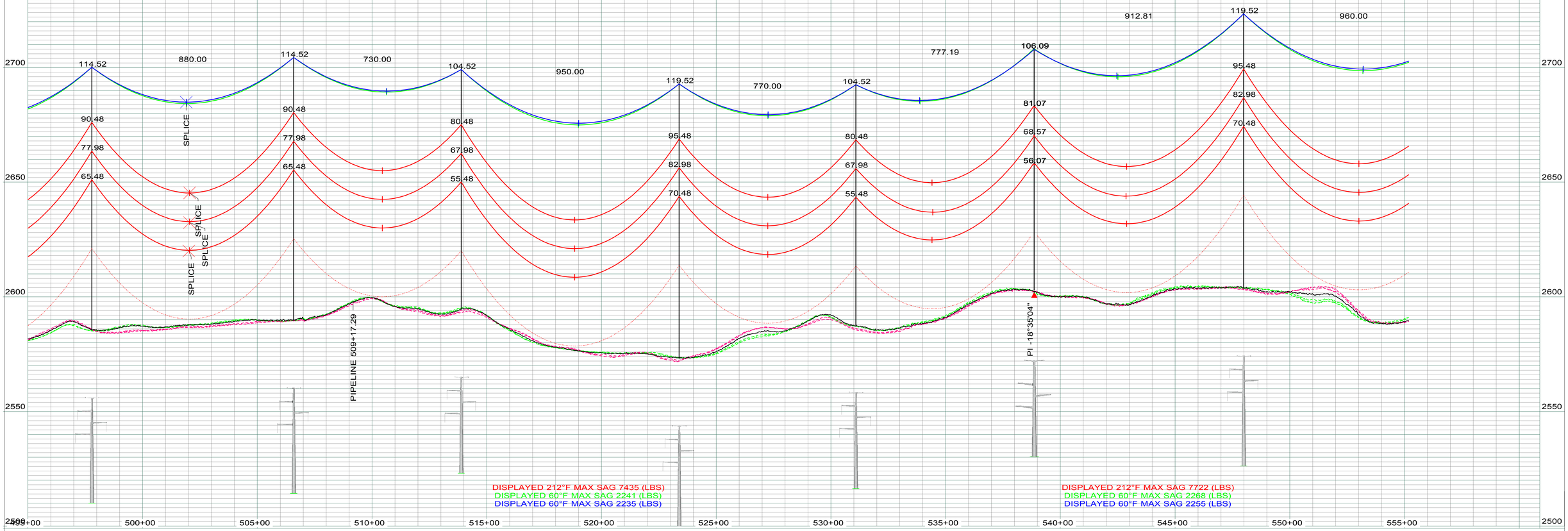
298-058
STA=513+88.63
HT=105.00 ELE=2594.62
3ST-127
850' RS

298-059
STA=523+38.63
HT=120.00 ELE=2573.33
3ST-144
850' RS

298-060
STA=531+08.63
HT=105.00 ELE=2588.01
3ST-127
850' RS

298-061
STA=538+85.82
HT=106.09 ELE=2601.99
3SDA20-105
OPGW SPLICE
END 850' RS, BEGIN 900' RS

298-062
STA=547+98.63
HT=120.00 ELE=2603.89
3ST-144
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10247	21640	28972	850'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2241	6320	9978	850'
OHGW	7/16-INCH EHS	2235	5882	9429	850'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

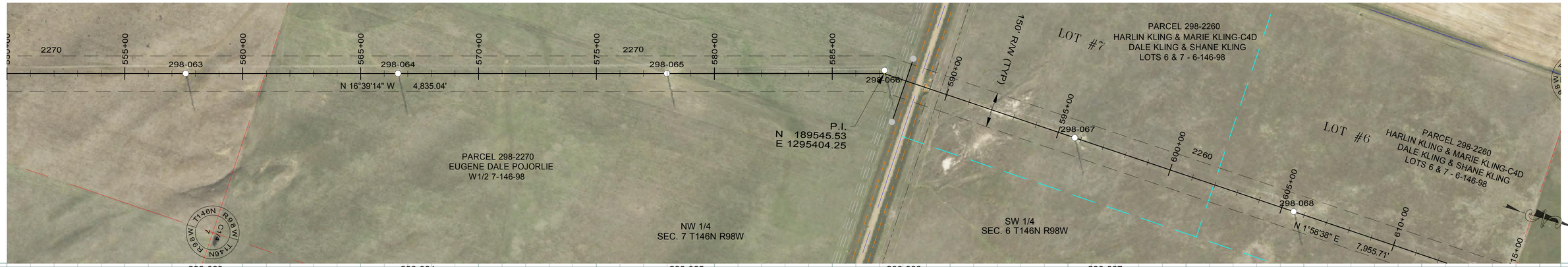
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 495+00 TO 555+18
STRUCTURE: 298-056 TO 298-062

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-010

REV. NO. 2



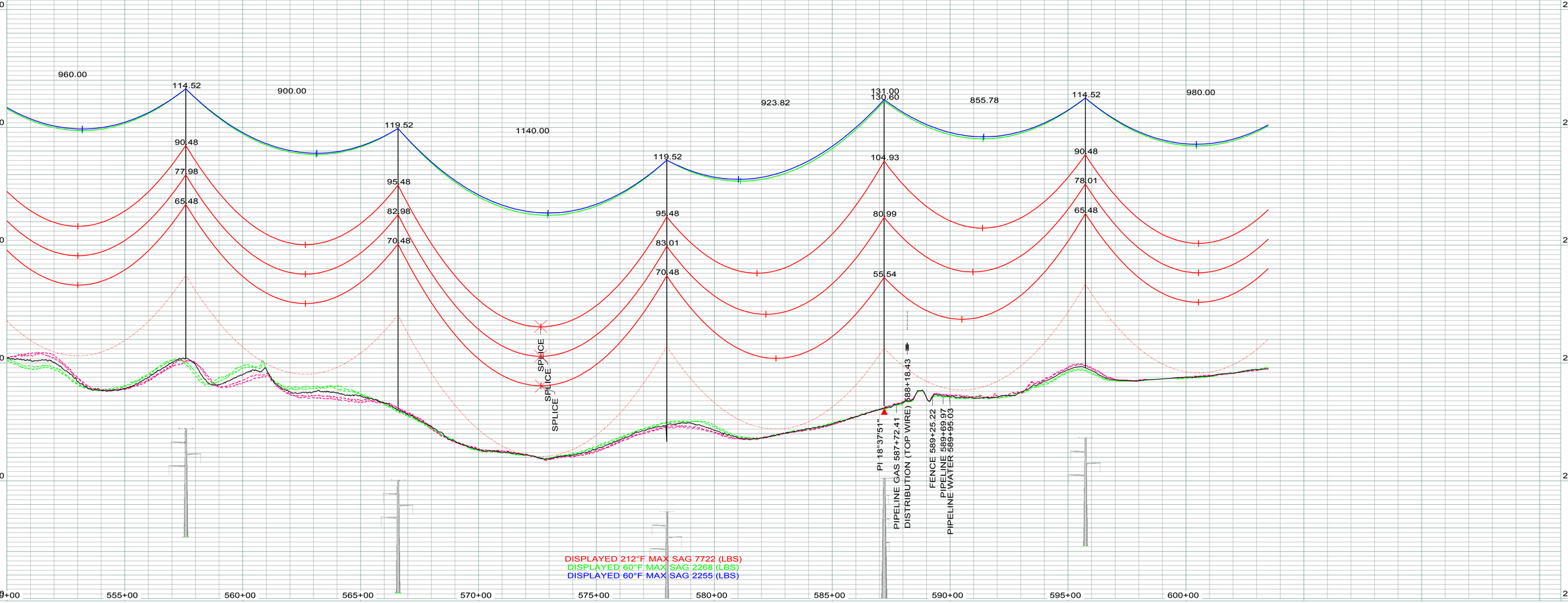
298-063
STA=557+58.63
HT=115.00 ELE=2601.85
3ST-138
900' RS

298-064
STA=566+58.63
HT=120.00 ELE=2580.02
3SLT-145
900' RS

298-065
STA=577+98.63
HT=120.00 ELE=2566.59
3SLT-145
900' RS

298-066
STA=587+20.15
HT=131.00 ELE=2580.84
3SA20-130
900' RS

298-067
STA=595+73.63
HT=115.00 ELE=2597.95
3ST-138
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10480	21892	29521	900'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2268	6464	10268	900'
OHGW	7/16-INCH EHS	2255	6018	9696	900'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

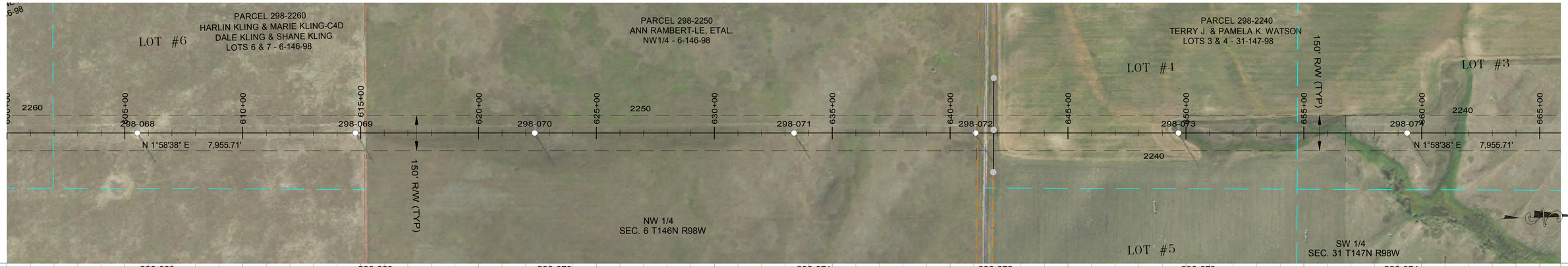
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 550+00 TO 603+48
STRUCTURE: 298-063 TO 298-067

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-011

REV. NO. 1



298-068
STA=605+53.63
HT=115.00 ELE=2601.29
3ST-138
900' RS

298-069
STA=614+78.63
HT=115.00 ELE=2617.44
3ST-138
900' RS

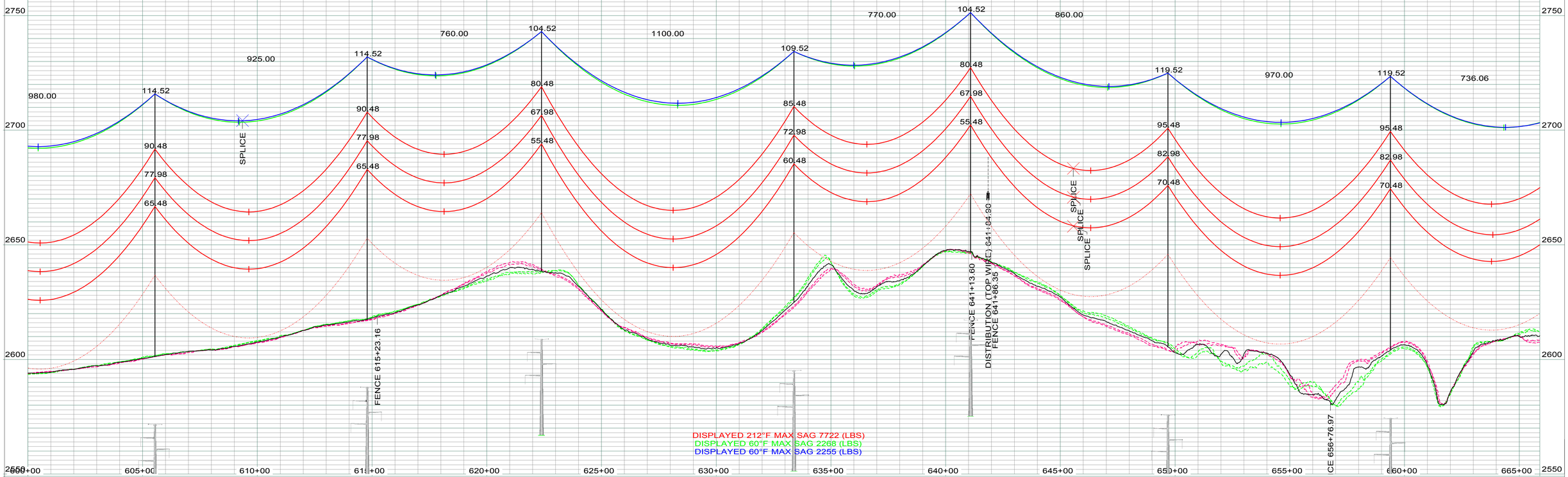
298-070
STA=622+38.63
HT=105.00 ELE=2638.53
3ST-127
900' RS

298-071
STA=633+38.63
HT=110.00 ELE=2624.87
3ST-133
900' RS

298-072
STA=641+08.63
HT=105.00 ELE=2646.81
3ST-127
900' RS

298-073
STA=649+68.63
HT=120.00 ELE=2605.42
3ST-144
900' RS

298-074
STA=659+38.63
HT=120.00 ELE=2604.02
3ST-144
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10480	21892	29521	900'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2268	6464	10268	900'
OHGW	7/16-INCH EHS	2255	6018	9696	900'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

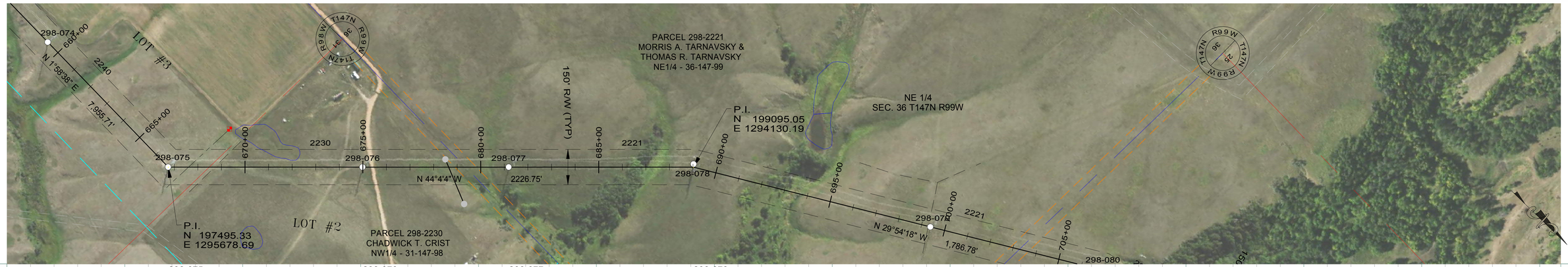
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 600+00 TO 665+90
STRUCTURE: 298-068 TO 298-074

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-012
REV. NO.: 2

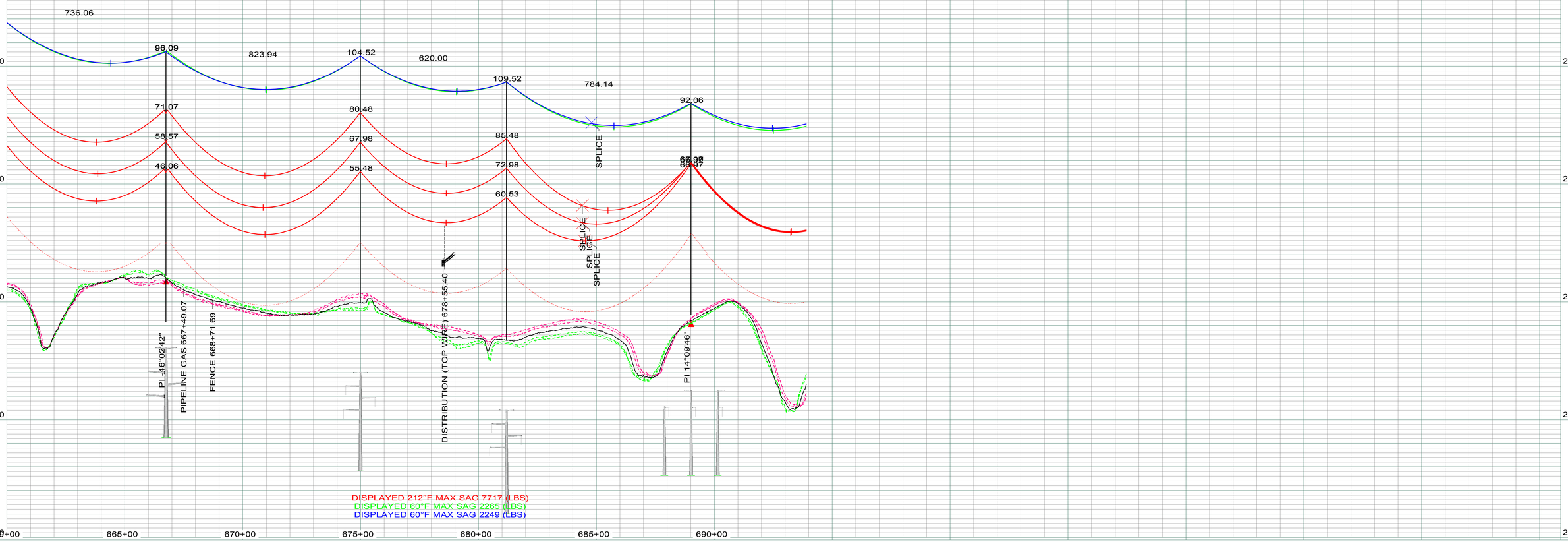


298-075
STA=666+74.69
HT=96.09 ELE=2610.21
3SDA50-095
OPGW SPLICE
END 900' RS, BEGIN 900' RS

298-076
STA=674+98.63
HT=105.00 ELE=2599.83
3ST-127
900' RS

298-077
STA=681+18.63
HT=110.00 ELE=2583.74
3ST-133
900' RS

298-078
STA=689+01.11
HT=92.54 ELE=2592.07
3TPA15-090
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10464	21854	29490	900'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2265	6458	10262	900'
OHGW	7/16-INCH EHS	2249	6009	9691	900'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

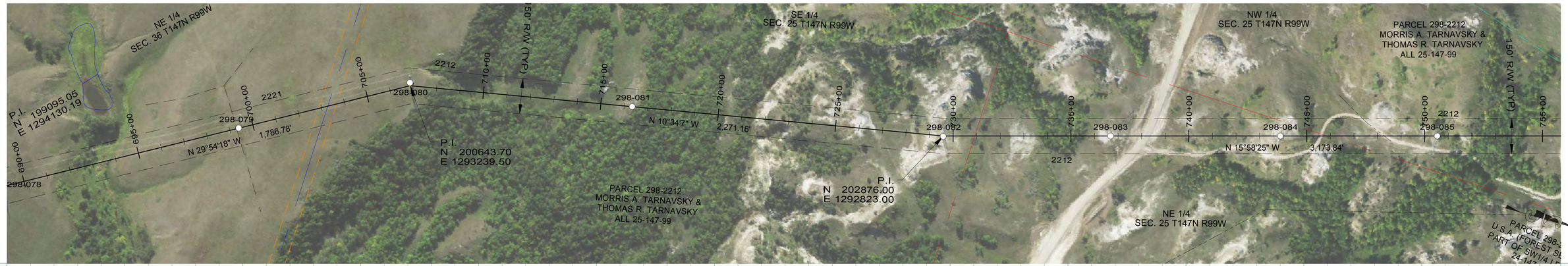
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 660+00 TO 693+90
STRUCTURE: 298-075 TO 298-078

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-013
REV. NO.: 1





DISPLAYED 212°F MAX SAG 7717 (LBS)
DISPLAYED 60°F MAX SAG 2265 (LBS)
DISPLAYED 60°F MAX SAG 2249 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
3	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10464	21854	29490	900'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2265	6458	10262	900'
OHGW	7/16-INCH EHS	2249	6009	9691	900'

DESIGN BY:	GCC/CDB	DATE: 2013-2014
DRAWN BY:	C. BAUER	DATE: 2013-2014
DESIGN CHK:	GCC	DATE: FALL2014
DRAFT CHK:	CLK	DATE: NOV2014
APPROVED:	G CHRISTENSON	DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

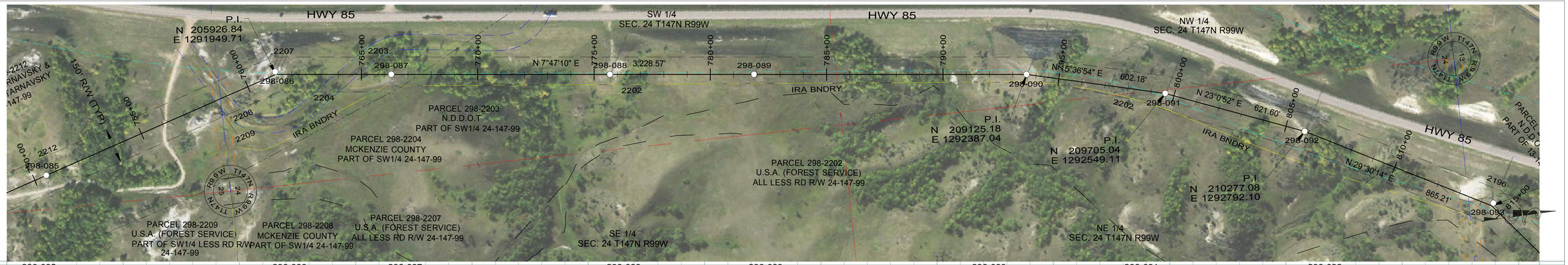
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 690+00 TO 755+77
STRUCTURE: 298-079 TO 298-085

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-014

REV. NO. 3



298-085
STA=750+53.63
HT=103.16 ELE=2540.29
3HS-119L-124R
900' RS

298-086
STA=761+31.82
HT=82.12 ELE=2607.42
3TPA25-080-W
900' RS

298-087
STA=766+28.63
HT=120.00 ELE=2545.11
3ST-144-W
900' RS

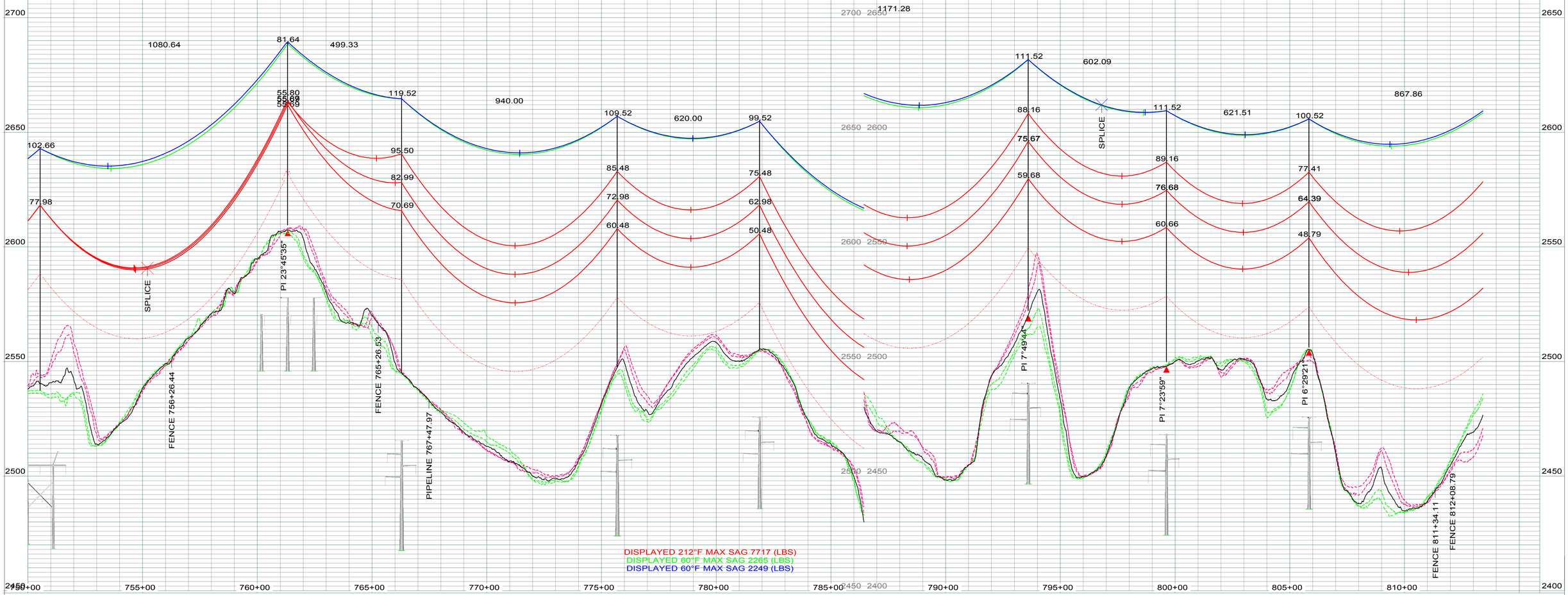
298-088
STA=775+68.63
HT=110.00 ELE=2547.49
3ST-133-W
900' RS

298-089
STA=781+88.63
HT=100.00 ELE=2555.32
3ST-122-W
900' RS

298-090
STA=793+59.91
HT=112.00 ELE=2520.20
3SA07R-110-W
900' RS

298-091
STA=799+62.00
HT=112.00 ELE=2497.92
3SA07R-110-W
900' RS

298-092
STA=805+83.51
HT=101.00 ELE=2505.28
3SA07R-100-W
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10464	21854	29490	900`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2265	6458	10262	900`
OHGW	7/16-INCH EHS	2249	6009	9691	900`

DESIGN BY: GCC/CDB
DRAWN BY: C. BAUER
DESIGN CHK: GCC
DRAFT CHK: CLK
APPROVED: G CHRISTENSON

DATE: 2013-2014
DATE: 2013-2014
DATE: FALL2014
DATE: NOV2014
DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

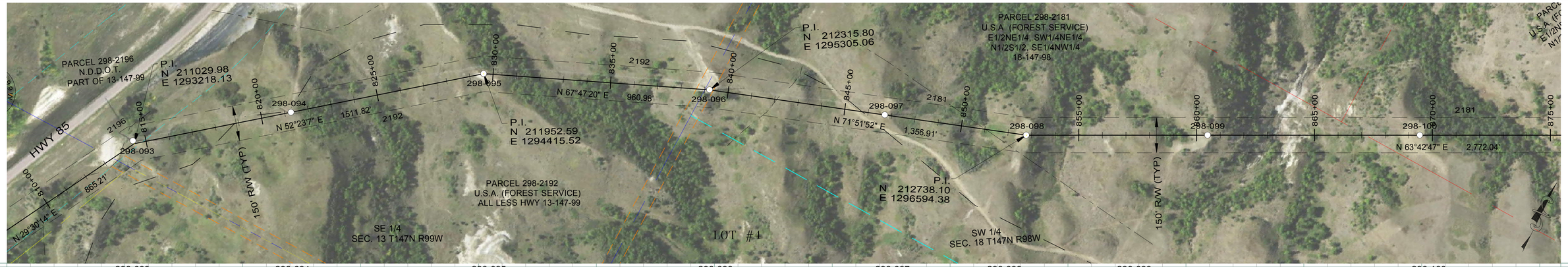
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

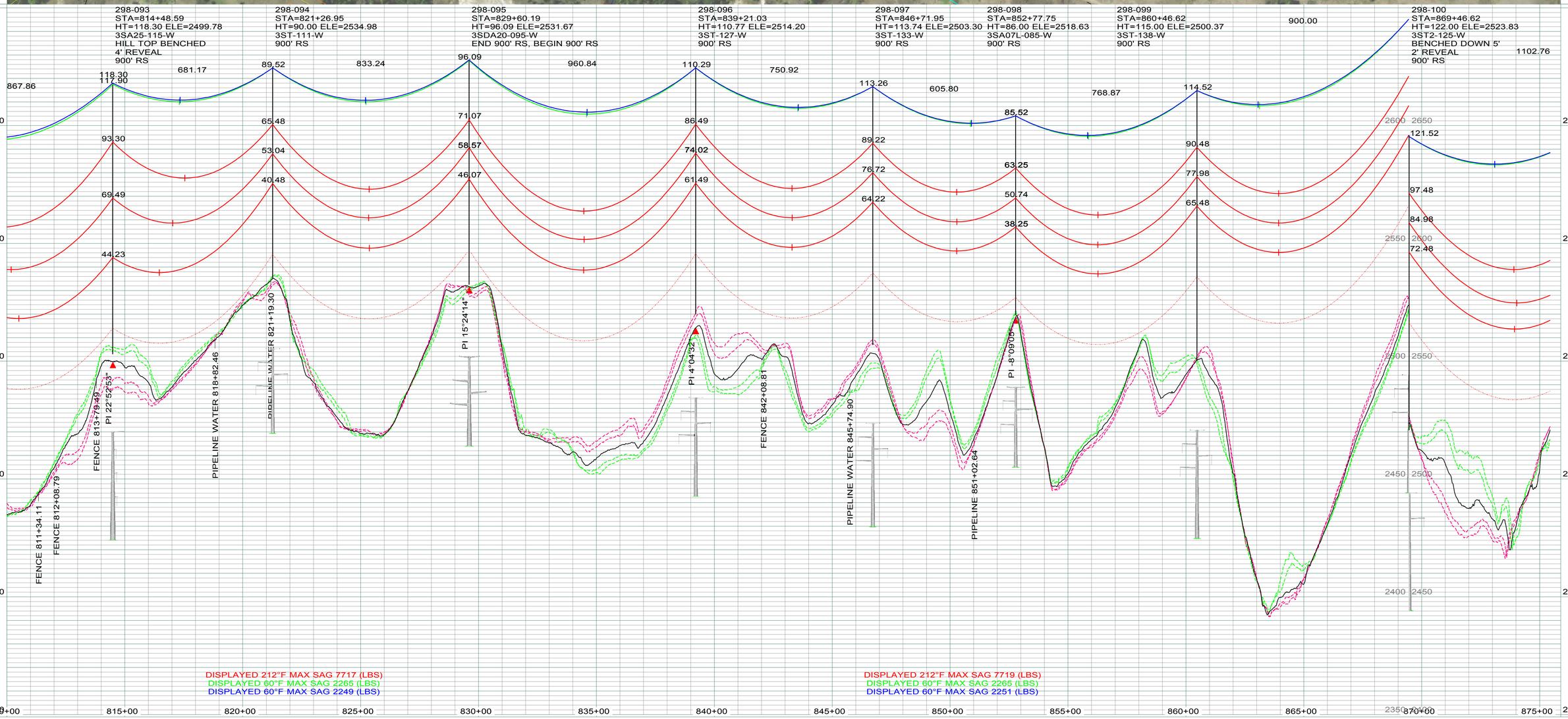
PLAN AND PROFILE
STATION: 750+00 TO 813+42
STRUCTURE: 298-085 TO 298-092

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-015

REV. NO. 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10469	21863	29498	900'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2265	6460	10264	900'
OHGW	7/16-INCH EHS	2251	6009	9691	900'

DESIGN BY:	GCC/CDB	DATE:	2013-2014
DRAWN BY:	C. BAUER	DATE:	2013-2014
DESIGN CHK:	GCC	DATE:	FALL2014
DRAFT CHK:	CLK	DATE:	NOV2014
APPROVED:	G CHRISTENSON	DATE:	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

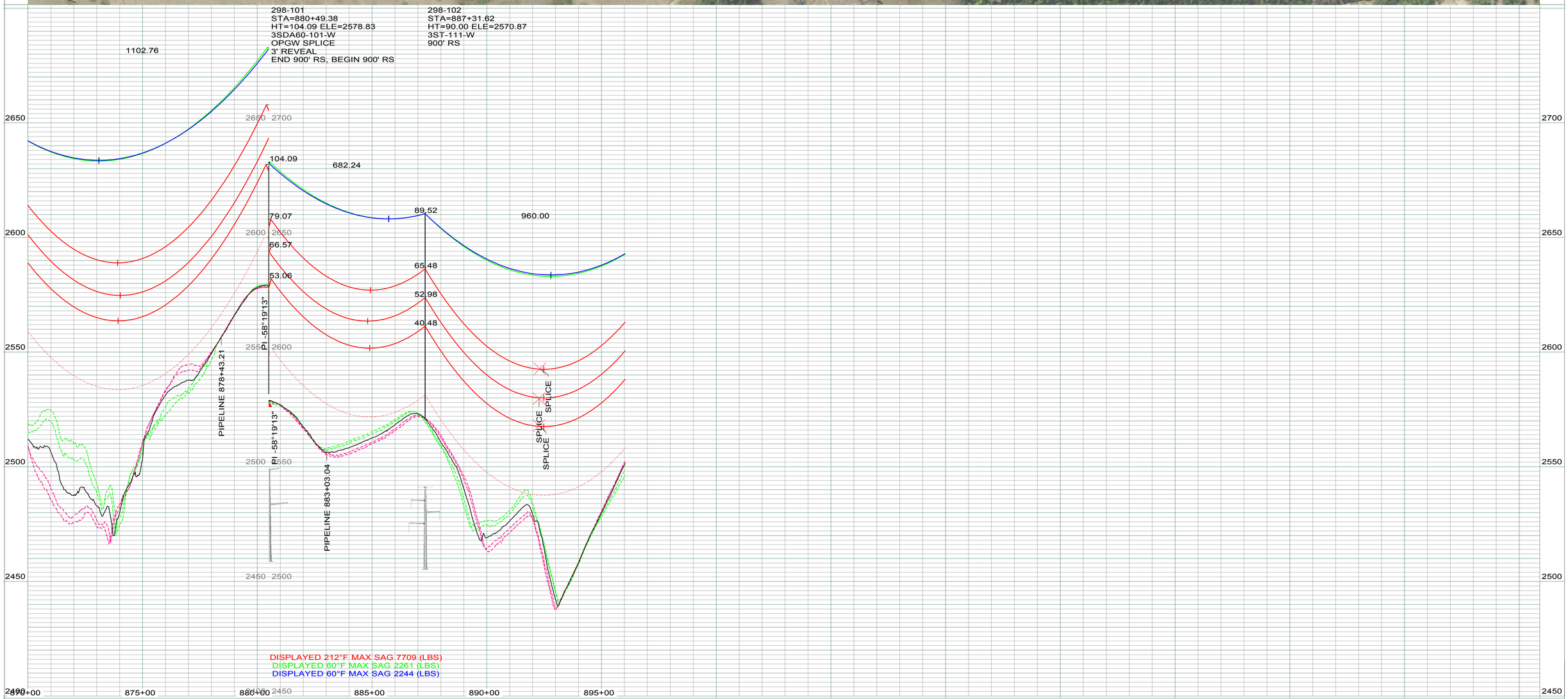
PLAN AND PROFILE
STATION: 810+00 TO 875+44
STRUCTURE: 298-093 TO 298-100

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-016

REV. NO.: 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10469	21863	29498	900'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2265	6460	10264	900'
OHGW	7/16-INCH EHS	2251	6009	9691	900'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

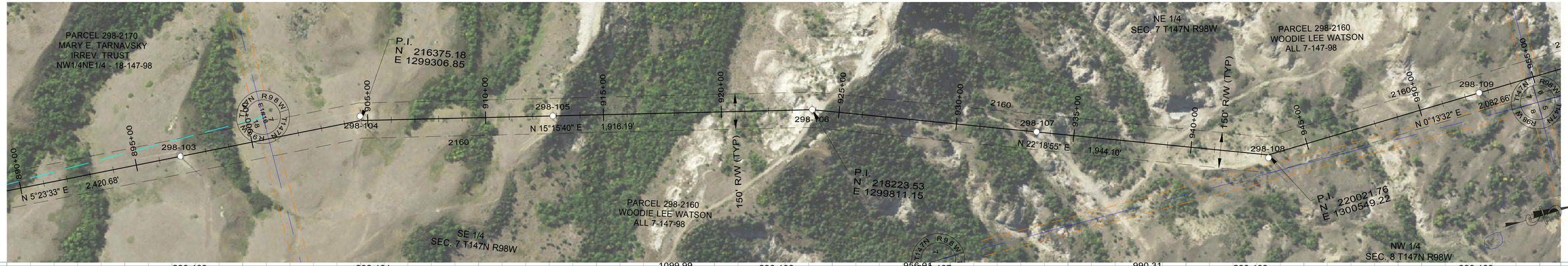
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 870+00 TO 896+03
STRUCTURE: 298-101 TO 298-102

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-017

REV. NO. 1



298-103
STA=896+91.62
HT=86.38 ELE=2562.82
3ST-111-W
HILL BENCHED DOWN 4'
900' RS

298-104
STA=904+69.70
HT=77.00 ELE=2559.94
3TPA10-075-W
900' RS

298-105
STA=912+85.62
HT=62.24 ELE=2545.63
3HS-079-W
HILL BENCHED DOWN 3'
900' RS

298-106
STA=923+85.62
HT=87.00 ELE=2450.69
3HD10-085-W
END 900' RS, BEGIN 1000' RS

298-107
STA=933+41.62
HT=90.30 ELE=2213.54
3HTD-103L-113R-W
END 1000' RS, BEGIN 1000' RS

298-108
STA=943+29.42
HT=75.62 ELE=2098.17
3TPA25-075-W
HILL BENCHED
1000' RS

298-109
STA=952+61.62
HT=84.69 ELE=2055.28
3HSL-102-W
1000' RS

960.00
779.88
817.71
1099.99
990.31
934.72
85.91
61.86
49.36
36.89
76.52
52.30
51.97
36.76
61.74
86.94
62.37
62.00
90.24
65.30
65.67
75.14
51.53
51.68
84.19
59.22
SPLICE
PI 9°52'08"
PI 7°03'16"
PI -22°05'23"

DISPLAYED 212°F MAX SAG 7709 (LBS)
DISPLAYED 60°F MAX SAG 2261 (LBS)
DISPLAYED 60°F MAX SAG 2244 (LBS)

DISPLAYED 212°F MAX SAG 7873 (LBS)
DISPLAYED 60°F MAX SAG 2256 (LBS)
DISPLAYED 60°F MAX SAG 2218 (LBS)

DISPLAYED 212°F MAX SAG 8070 (LBS)
DISPLAYED 60°F MAX SAG 2297 (LBS)
DISPLAYED 60°F MAX SAG 2263 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10446	21806	29444	900`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2261	6452	10257	900`
OHGW	7/16-INCH EHS	2244	6001	9683	900`

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

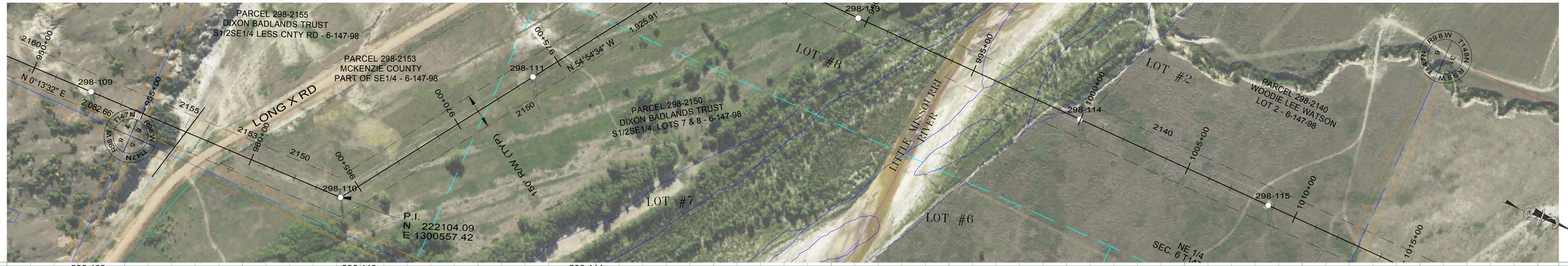
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 890+00 TO 955+34
STRUCTURE: 298-103 TO 298-109

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

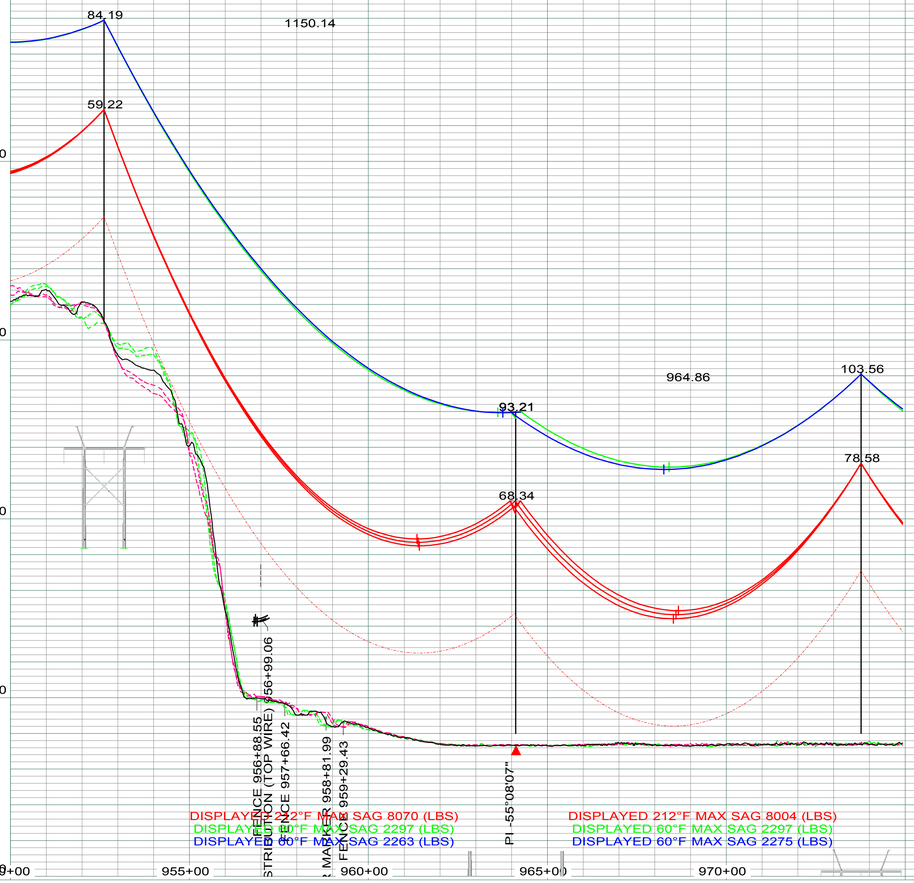
BASIN DRAWING NO.: 298-090-T3-018
REV. NO.: 1



298-109
STA=952+61.62
HT=84.69 ELE=2055.28
3HSL-102-W
1000' RS

298-110
STA=964+11.77
HT=93.34 ELE=1936.66
3TPD60-090-W
END 1000' RS, BEGIN 950' RS

298-111
STA=973+76.62
HT=104.06 ELE=1936.94
3HS2-100-W
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10496	21339	29630	1000'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2297	6702	10786	1000'
OHGW	7/16-INCH EHS	2263	6228	10167	1000'

		DATE:
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 950+00 TO 974+92
STRUCTURE: 298-109 TO 298-111

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

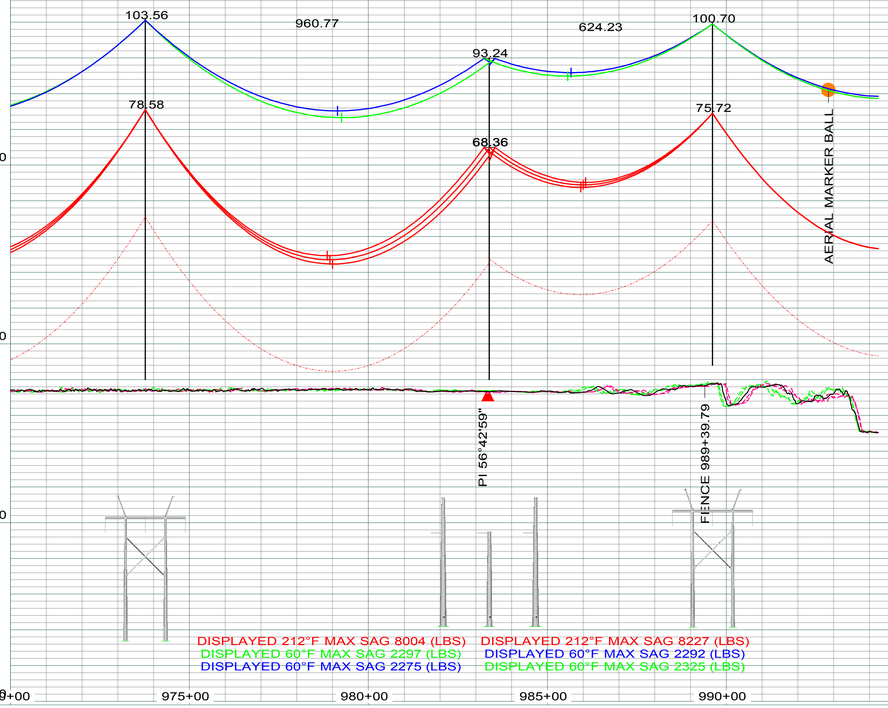
BASIN DRAWING NO.: 298-090-T3-019
REV. NO.: 1



298-111
STA=973+76.62
HT=104.06 ELE=1936.94
3HS2-100-W
950' RS

298-112
STA=983+37.39
HT=93.36 ELE=1936.64
3TPD60-090-W
END 950' RS, BEGIN 1000' RS

298-113
STA=989+61.62
HT=101.20 ELE=1938.80
3HS2-095-W
1000' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10709	22160	30059	950'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2297	6606	10550	950'
OHGW	7/16-INCH EHS	2275	6149	9957	950'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

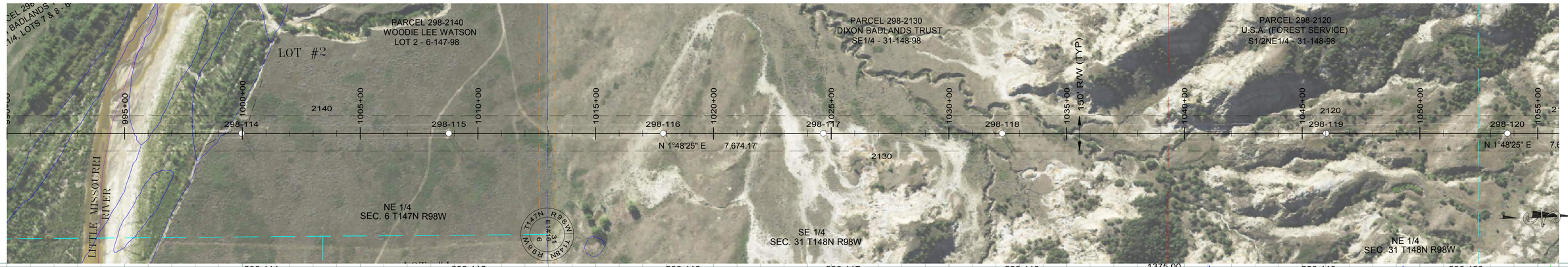
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 970+00 TO 994+24
STRUCTURE: 298-111 TO 298-113

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-020
REV. NO.: 1



298-114
STA=999+96.62
HT=90.18 ELE=1956.03
3HS-107-W
1000' RS

298-115
STA=1008+76.62
HT=94.49 ELE=1959.72
3HS-113-W
1000' RS

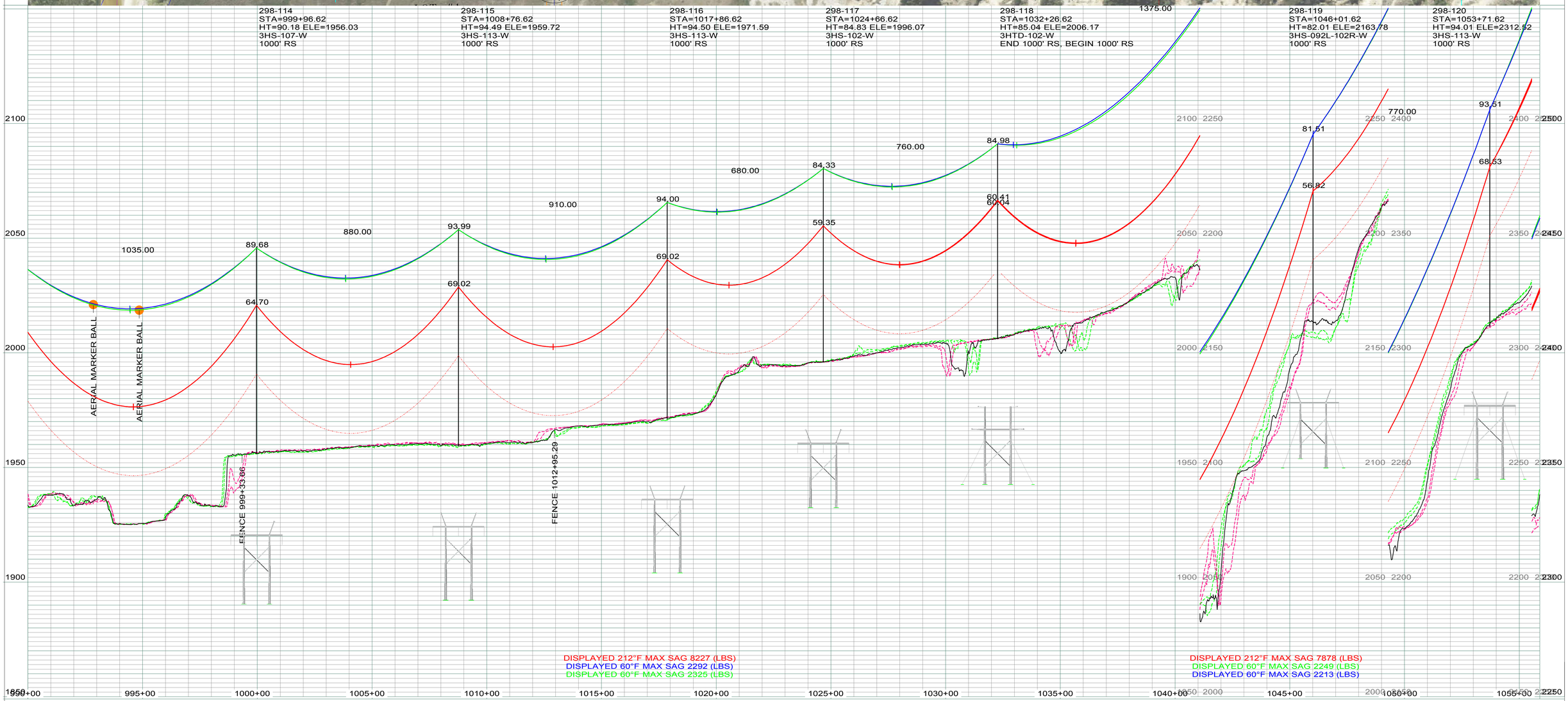
298-116
STA=1017+86.62
HT=94.50 ELE=1971.59
3HS-113-W
1000' RS

298-117
STA=1024+66.62
HT=84.83 ELE=1996.07
3HS-102-W
1000' RS

298-118
STA=1032+26.62
HT=85.04 ELE=2006.17
3HTD-102-W
END 1000' RS, BEGIN 1000' RS

298-119
STA=1046+01.62
HT=82.01 ELE=2163.78
3HS-092L-102R-W
1000' RS

298-120
STA=1053+71.62
HT=94.01 ELE=2312.52
3HS-113-W
1000' RS



DISPLAYED 212°F MAX SAG 8227 (LBS)
DISPLAYED 60°F MAX SAG 2292 (LBS)
DISPLAYED 60°F MAX SAG 2325 (LBS)

DISPLAYED 212°F MAX SAG 7878 (LBS)
DISPLAYED 60°F MAX SAG 2249 (LBS)
DISPLAYED 60°F MAX SAG 2213 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10825	22155	30357	1000'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2325	6746	10826	1000'
OHGW	7/16-INCH EHS	2292	6274	10207	1000'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

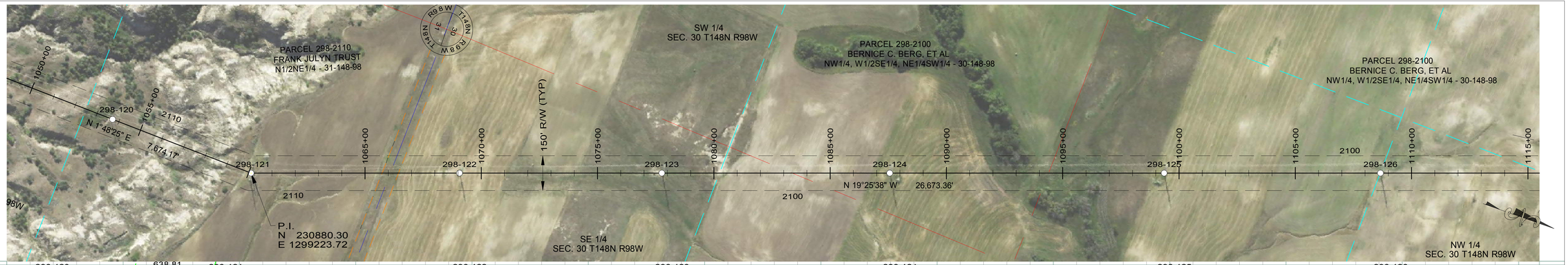
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

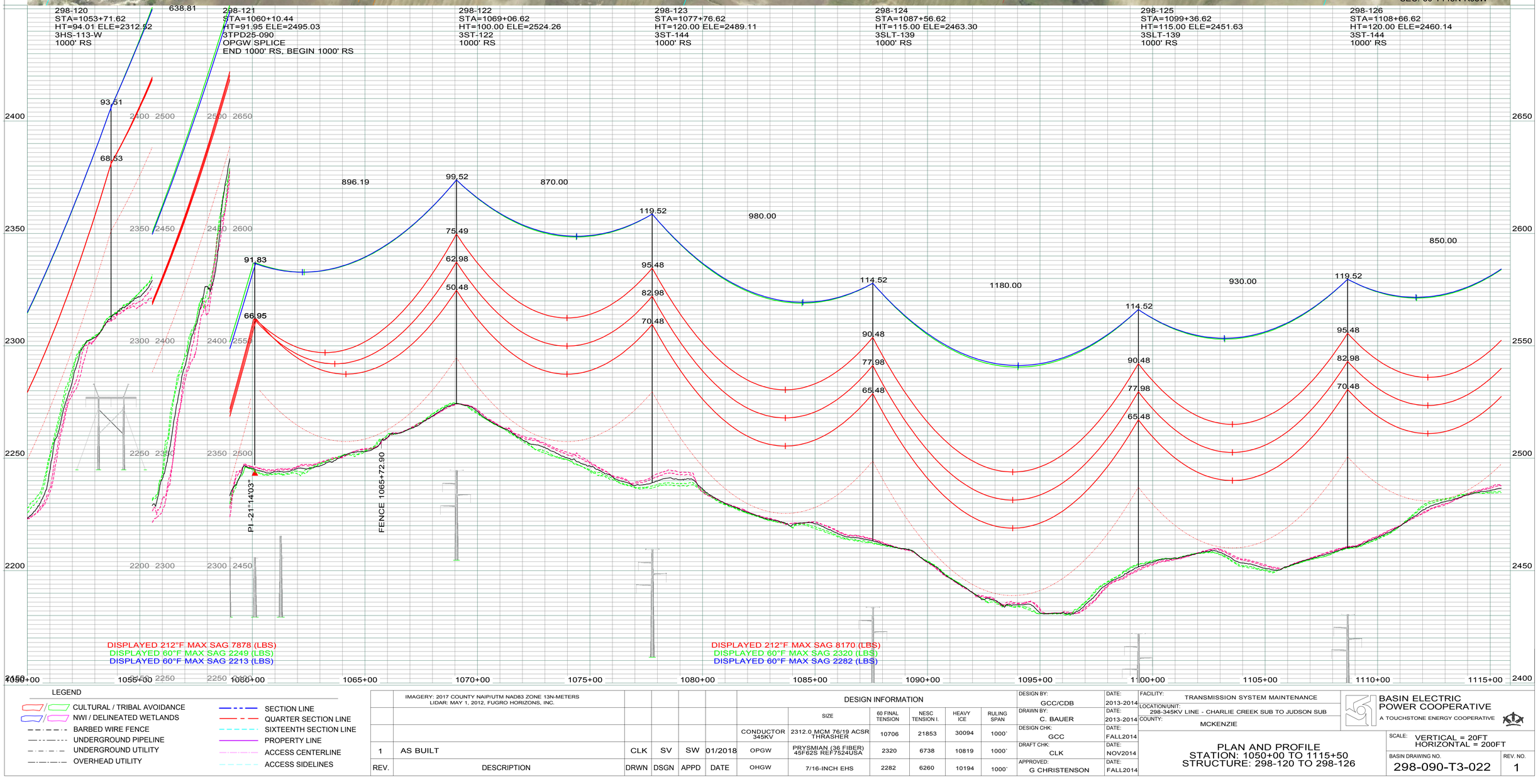
PLAN AND PROFILE
STATION: 990+00 TO 1055+90
STRUCTURE: 298-114 TO 298-120

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-021

REV. NO. 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10706	21853	30094	1000'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2320	6738	10819	1000'
OHGW	7/16-INCH EHS	2282	6260	10194	1000'

		DATE:
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

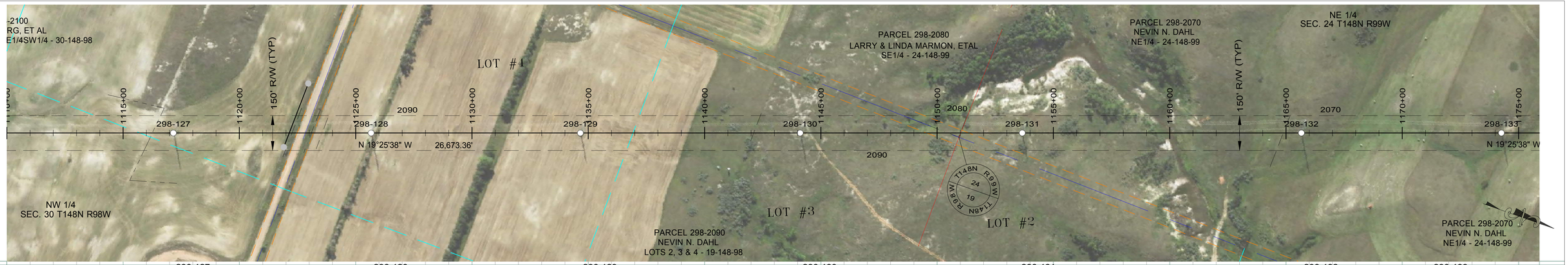
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1050+00 TO 1115+50
STRUCTURE: 298-120 TO 298-126

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-022

REV. NO. 1



298-127
STA=1117+16.62
HT=115.00 ELE=2483.17
3ST-138
1000' RS

298-128
STA=1125+66.62
HT=120.00 ELE=2461.46
3ST-144
1000' RS

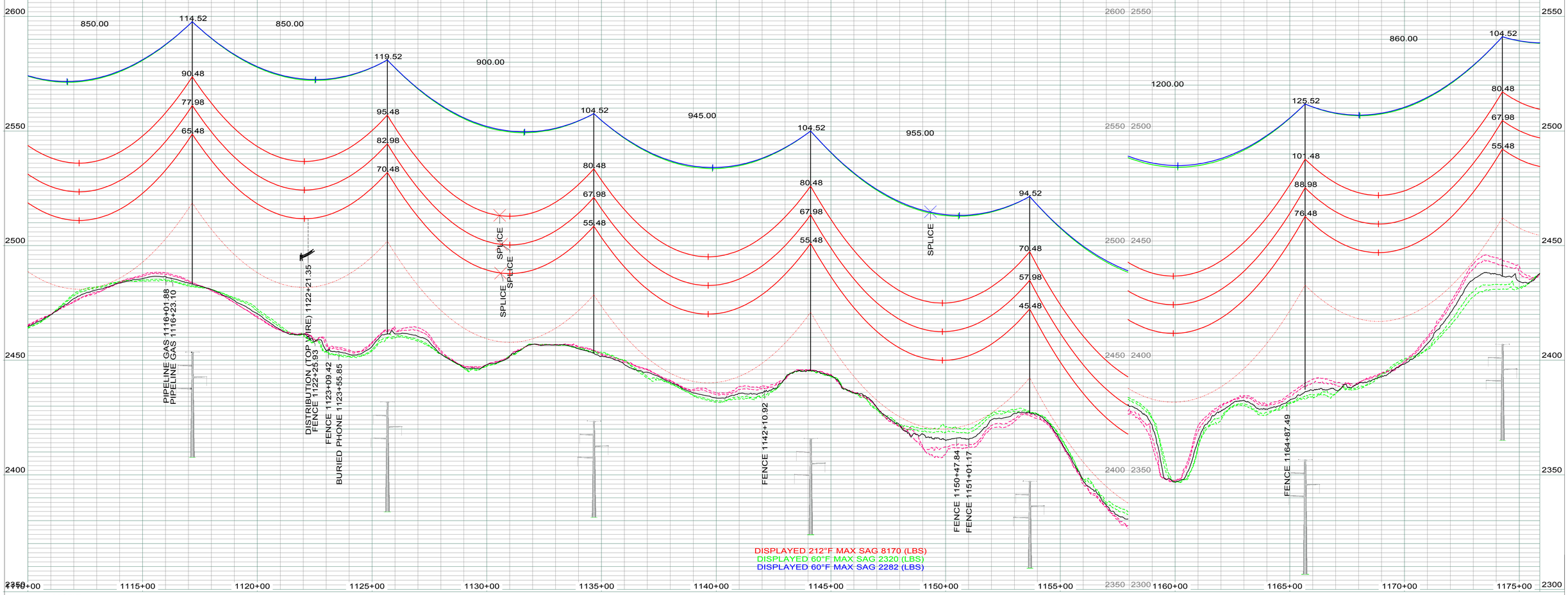
298-129
STA=1134+66.62
HT=105.00 ELE=2453.06
3ST-127
1000' RS

298-130
STA=1144+11.62
HT=105.00 ELE=2445.50
3ST-127
1000' RS

298-131
STA=1153+66.62
HT=95.00 ELE=2426.90
3SLT-117
1000' RS

298-132
STA=1165+66.62
HT=126.00 ELE=2386.26
3ST2-125
1000' RS

298-133
STA=1174+26.62
HT=105.00 ELE=2436.60
3ST-127
1000' RS



DISPLAYED 212°F MAX SAG 8170 (LBS)
DISPLAYED 60°F MAX SAG 2320 (LBS)
DISPLAYED 60°F MAX SAG 2282 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10706	21853	30094	1000'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2320	6738	10819	1000'
OHGW	7/16-INCH EHS	2282	6260	10194	1000'

DESIGN BY: GCC/CDB
DRAWN BY: C. BAUER
DESIGN CHK: GCC
DRAFT CHK: CLK
APPROVED: G CHRISTENSON

DATE: 2013-2014
DATE: 2013-2014
DATE: FALL2014
DATE: NOV2014
DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

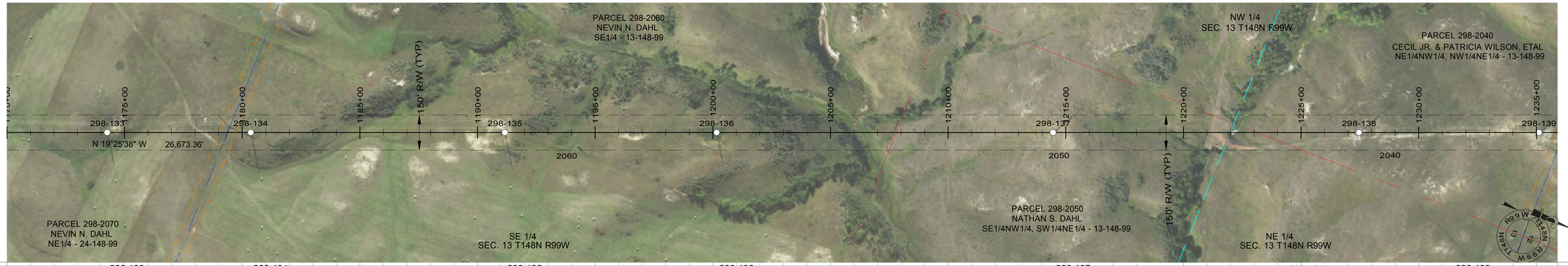
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1110+00 TO 1175+90
STRUCTURE: 298-127 TO 298-133

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-023

REV. NO. 2



298-133
STA=1174+26.62
HT=105.00 ELE=2436.60
3ST-127
1000' RS

298-134
STA=1180+36.62
HT=105.00 ELE=2450.45
3STOPGW-127
OPGW SPLICE
1000' RS

298-135
STA=1191+16.62
HT=115.00 ELE=2412.94
3ST-138
1000' RS

298-136
STA=1200+16.62
HT=120.00 ELE=2377.38
3SLT-145
1000' RS

298-137
STA=1214+46.62
HT=110.00 ELE=2407.02
3SLT-134
1000' RS

298-138
STA=1227+46.62
HT=115.00 ELE=2418.39
3SLT-139
1000' RS

298-139
STA=1235+11.62
HT=95.00 ELE=2438.79
3ST-116
1000' RS

610.00 1080.00 900.00 1300.00 765.00

104.52 104.52 114.52 109.52 114.52 94.52

80.48 67.98 55.48 90.48 77.98 65.48 85.48 72.98 60.48 90.48 77.98 65.48 70.48 57.98 45.48

95.48 82.98 70.48

1430.00

2550 2500 2450 2400 2350 2300 2250

FENCE 1179+36.92
FENCE 1179+93.78
FENCE 1182+82.09
FENCE 1192+95.25
SPLICE
SPLICE
SPLICE
FENCE 1207+68.21
FENCE 1221+98.32

DISPLAYED 60°F MAX SAG 2320 (LBS)
DISPLAYED 212°F MAX SAG 8170 (LBS)
DISPLAYED 60°F MAX SAG 2282 (LBS)
DISPLAYED 60°F MAX SAG 2316 (LBS)

1170+00 1175+00 1180+00 1185+00 1190+00 1195+00 1200+00 1205+00 1210+00 1215+00 1220+00 1225+00 1230+00 1235+00

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10706	21853	30094	1000'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2316	6732	10813	1000'
OHGW	7/16-INCH EHS	2282	6260	10194	1000'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

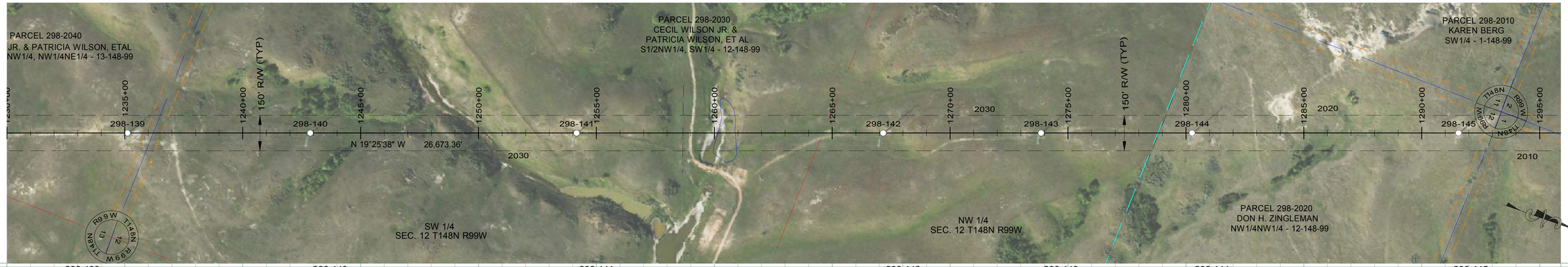
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

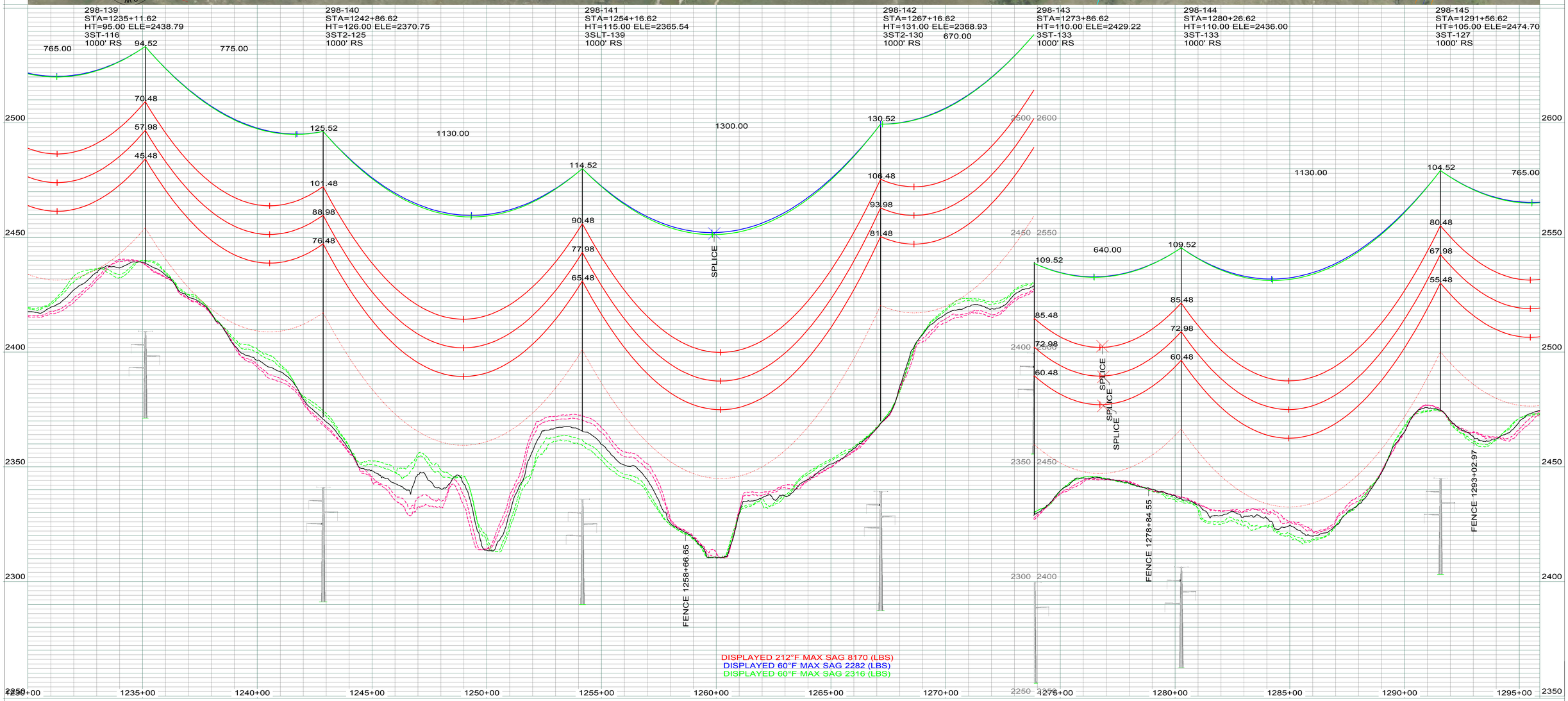
PLAN AND PROFILE
STATION: 1170+00 TO 1235+90
STRUCTURE: 298-133 TO 298-139

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-024

REV. NO. 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10706	21853	30094	1000'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2316	6732	10813	1000'
OHGW	7/16-INCH EHS	2282	6260	10194	1000'

		DATE:
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

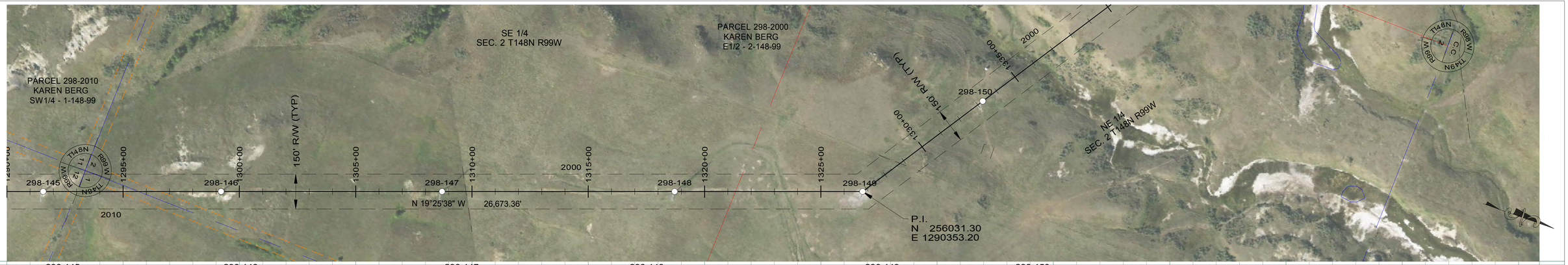
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1230+00 TO 1295+90
STRUCTURE: 298-139 TO 298-145

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-025

REV. NO. 1



298-145
STA=1291+56.62
HT=105.00 ELE=2474.70
3ST-127
1000' RS

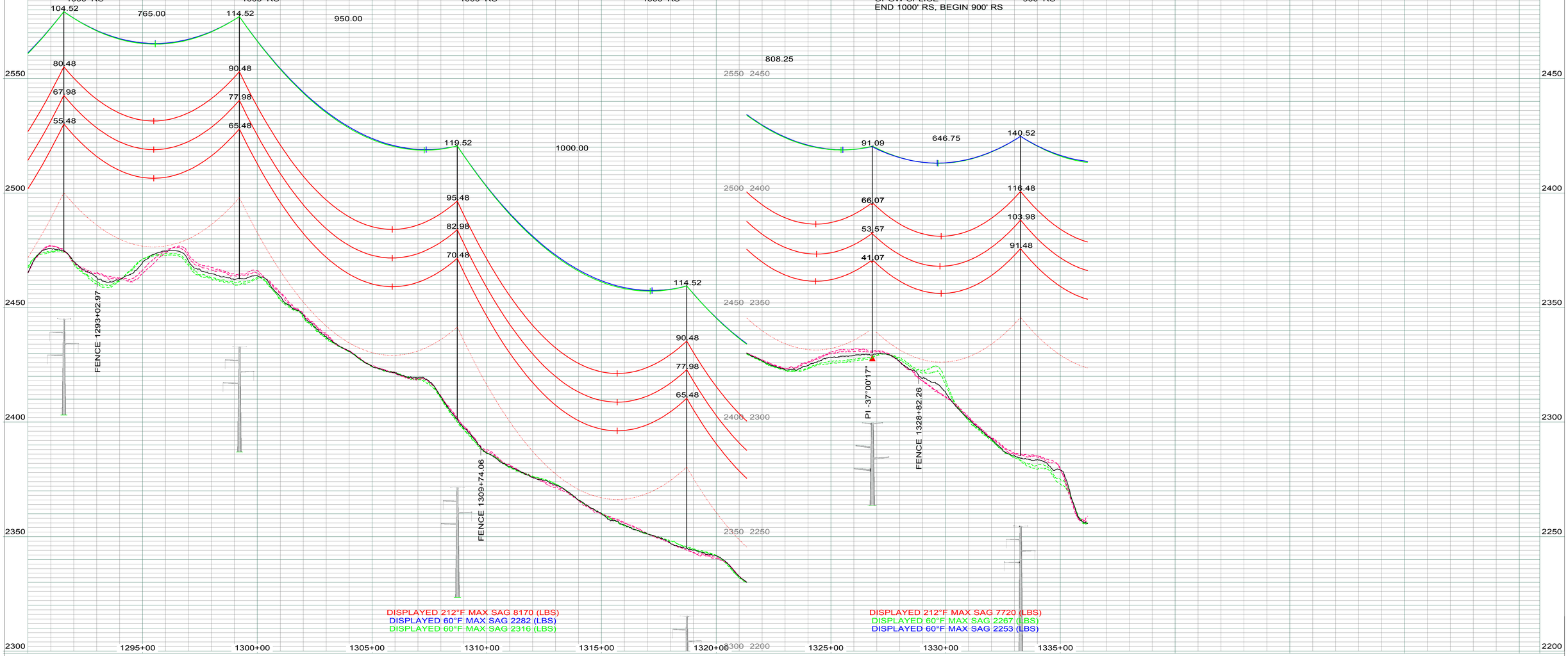
298-146
STA=1299+21.62
HT=115.00 ELE=2462.53
3ST-138
1000' RS

298-147
STA=1308+71.62
HT=120.00 ELE=2401.05
3ST-144
1000' RS

298-148
STA=1318+71.62
HT=115.00 ELE=2344.91
3ST-138
1000' RS

298-149
STA=1326+79.88
HT=91.09 ELE=2329.29
3SDA40-090
OPGW SPLICE
END 1000' RS, BEGIN 900' RS

298-150
STA=1333+26.62
HT=141.00 ELE=2284.27
3ST2-140
900' RS



DISPLAYED 212°F MAX SAG 8170 (LBS)
DISPLAYED 60°F MAX SAG 2282 (LBS)
DISPLAYED 60°F MAX SAG 2316 (LBS)

DISPLAYED 212°F MAX SAG 7720 (LBS)
DISPLAYED 60°F MAX SAG 2267 (LBS)
DISPLAYED 60°F MAX SAG 2253 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10706	21853	30094	1000'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2316	6732	10813	1000'
OHGW	7/16-INCH EHS	2282	6260	10194	1000'

DESIGN BY:	GCC/CDB	DATE: 2013-2014
DRAWN BY:	C. BAUER	DATE: 2013-2014
DESIGN CHK:	GCC	DATE: FALL2014
DRAFT CHK:	CLK	DATE: NOV2014
APPROVED:	G CHRISTENSON	DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

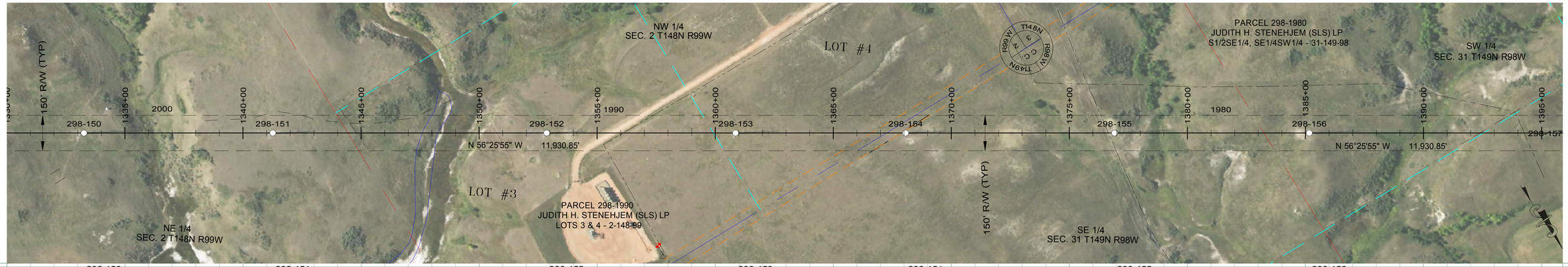
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1290+00 TO 1336+18
STRUCTURE: 298-145 TO 298-150

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-026

REV. NO. 1



298-150
STA=1333+26.62
HT=141.00 ELE=2284.27
3ST2-140
900' RS

298-151
STA=1341+26.62
HT=105.00 ELE=2326.23
3ST-127
900' RS

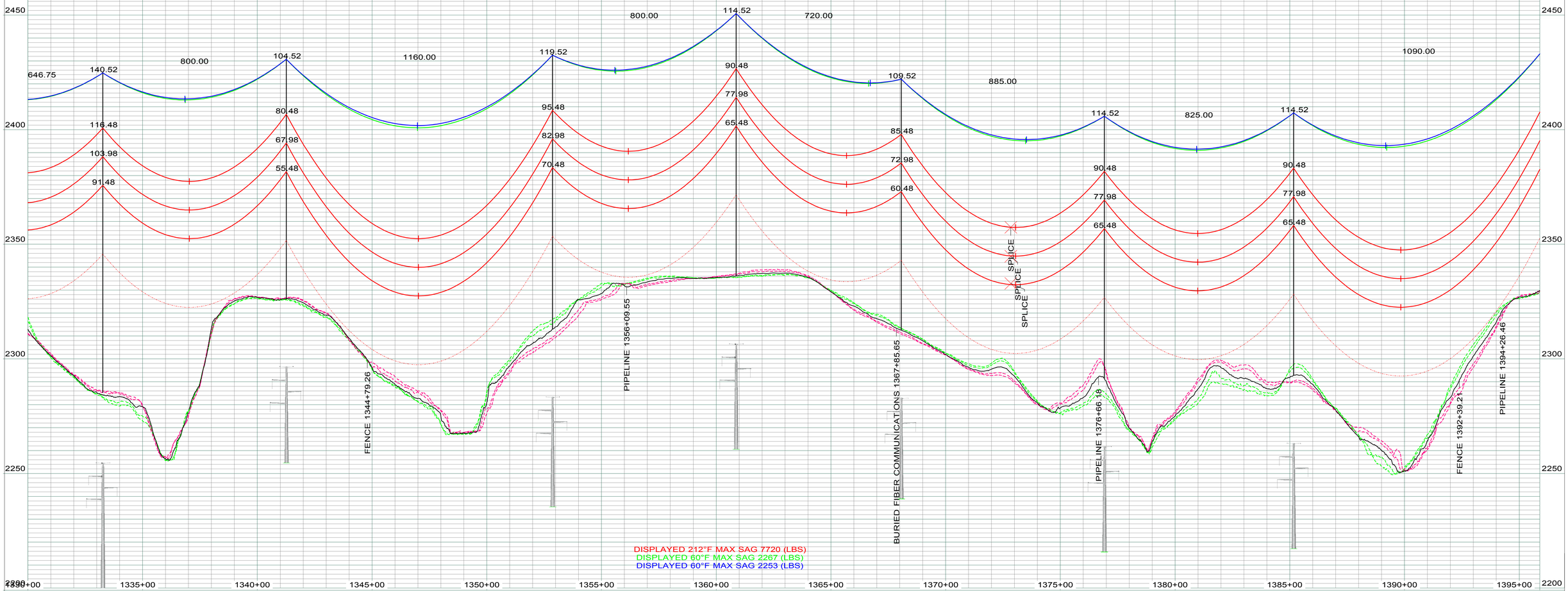
298-152
STA=1352+86.62
HT=120.00 ELE=2313.00
3ST-144
900' RS

298-153
STA=1360+86.62
HT=115.00 ELE=2336.17
3ST-138
900' RS

298-154
STA=1368+06.62
HT=110.00 ELE=2312.52
3ST-133
900' RS

298-155
STA=1376+91.62
HT=115.00 ELE=2291.37
3ST-138
900' RS

298-156
STA=1385+16.62
HT=115.00 ELE=2292.78
3ST-138
900' RS



DISPLAYED 212°F MAX SAG 7720 (LBS)
DISPLAYED 60°F MAX SAG 2267 (LBS)
DISPLAYED 60°F MAX SAG 2253 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
3	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10472	21873	29506	900'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2267	6462	10266	900'
OHGW	7/16-INCH EHS	2253	6014	9694	900'

DESIGN BY: GCC/CDB	DATE: 2013-2014	FACILITY: TRANSMISSION SYSTEM MAINTENANCE
DRAWN BY: C. BAUER	DATE: 2013-2014	LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
DESIGN CHK: GCC	DATE: FALL2014	COUNTY: MCKENZIE
DRAFT CHK: CLK	DATE: NOV2014	
APPROVED: G CHRISTENSON	DATE: FALL2014	

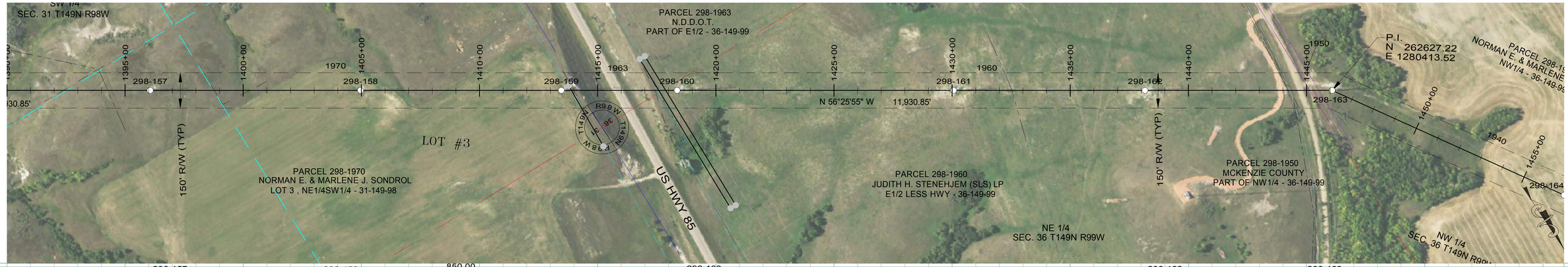
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1330+00 TO 1395+90
STRUCTURE: 298-150 TO 298-156

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-027

REV. NO. 3



298-157
STA=1396+06.62
HT=105.00 ELE=2330.62
3ST-127
900' RS

298-158
STA=1404+96.62
HT=115.00 ELE=2350.55
3ST-138
900' RS

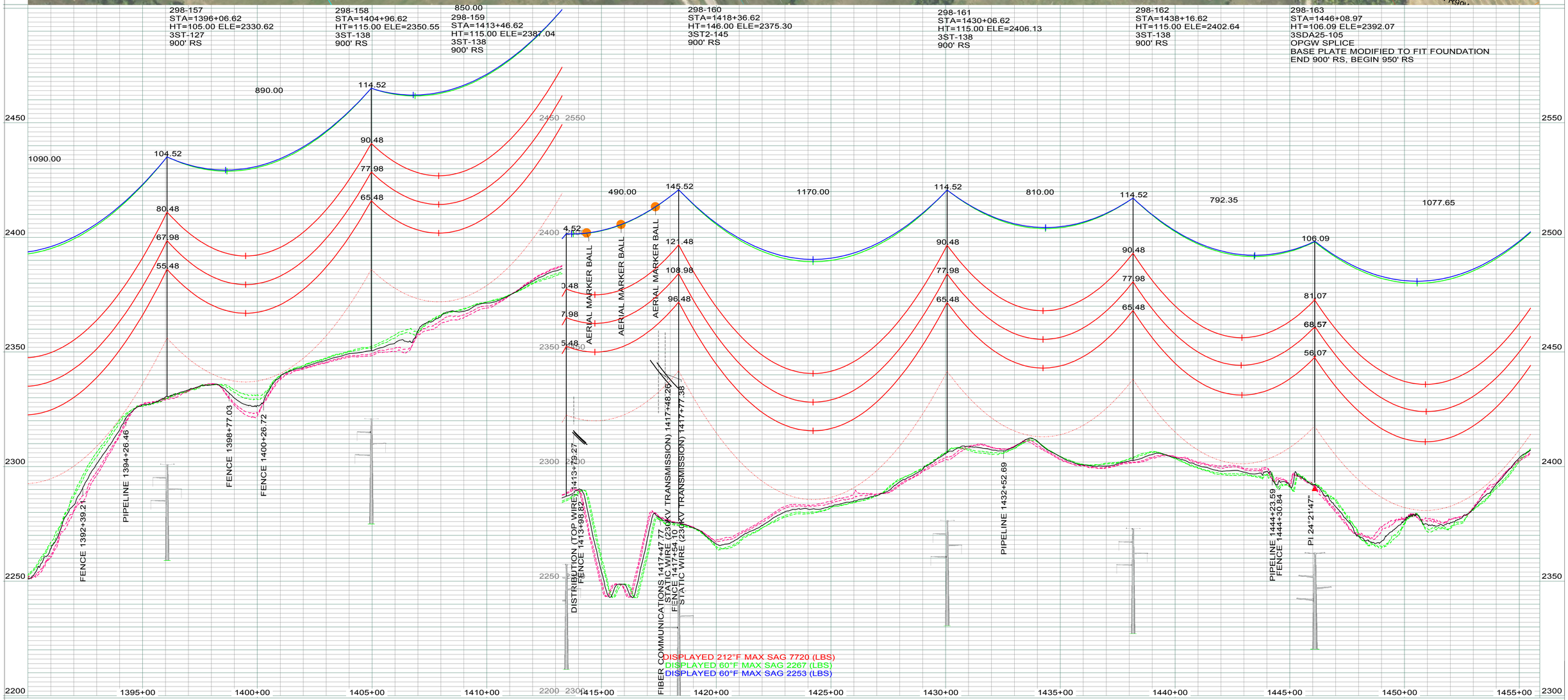
298-159
STA=1413+46.62
HT=115.00 ELE=2387.04
3ST-138
900' RS

298-160
STA=1418+36.62
HT=146.00 ELE=2375.30
3ST2-145
900' RS

298-161
STA=1430+06.62
HT=115.00 ELE=2406.13
3ST-138
900' RS

298-162
STA=1438+16.62
HT=115.00 ELE=2402.64
3ST-138
900' RS

298-163
STA=1446+08.97
HT=106.09 ELE=2392.07
3SDA25-105
OPGW SPLICE
BASE PLATE MODIFIED TO FIT FOUNDATION
END 900' RS, BEGIN 950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10472	21873	29506	900`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2267	6462	10266	900`
OHGW	7/16-INCH EHS	2253	6014	9694	900`

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

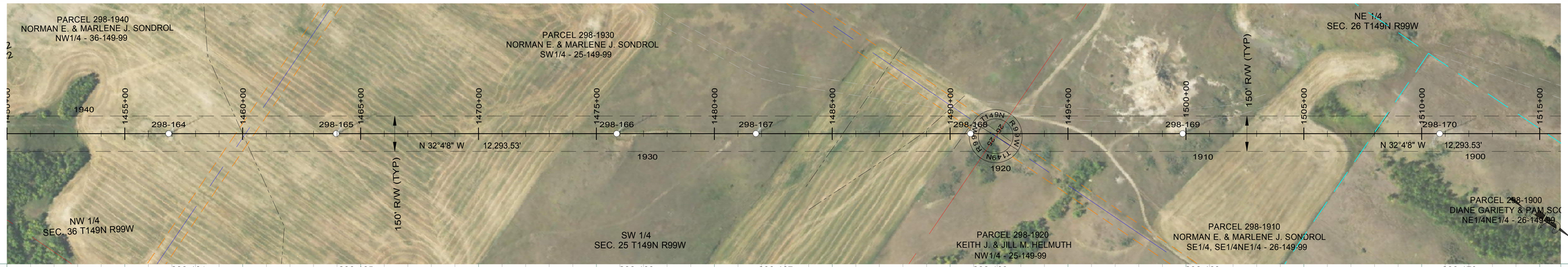
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1390+00 TO 1455+50
STRUCTURE: 298-157 TO 298-163

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-028

REV. NO. 1



298-164
STA=1456+86.62
HT=105.00 ELE=2411.54
3ST-127
950' RS

298-165
STA=1463+96.62
HT=115.00 ELE=2400.96
3ST-138
950' RS

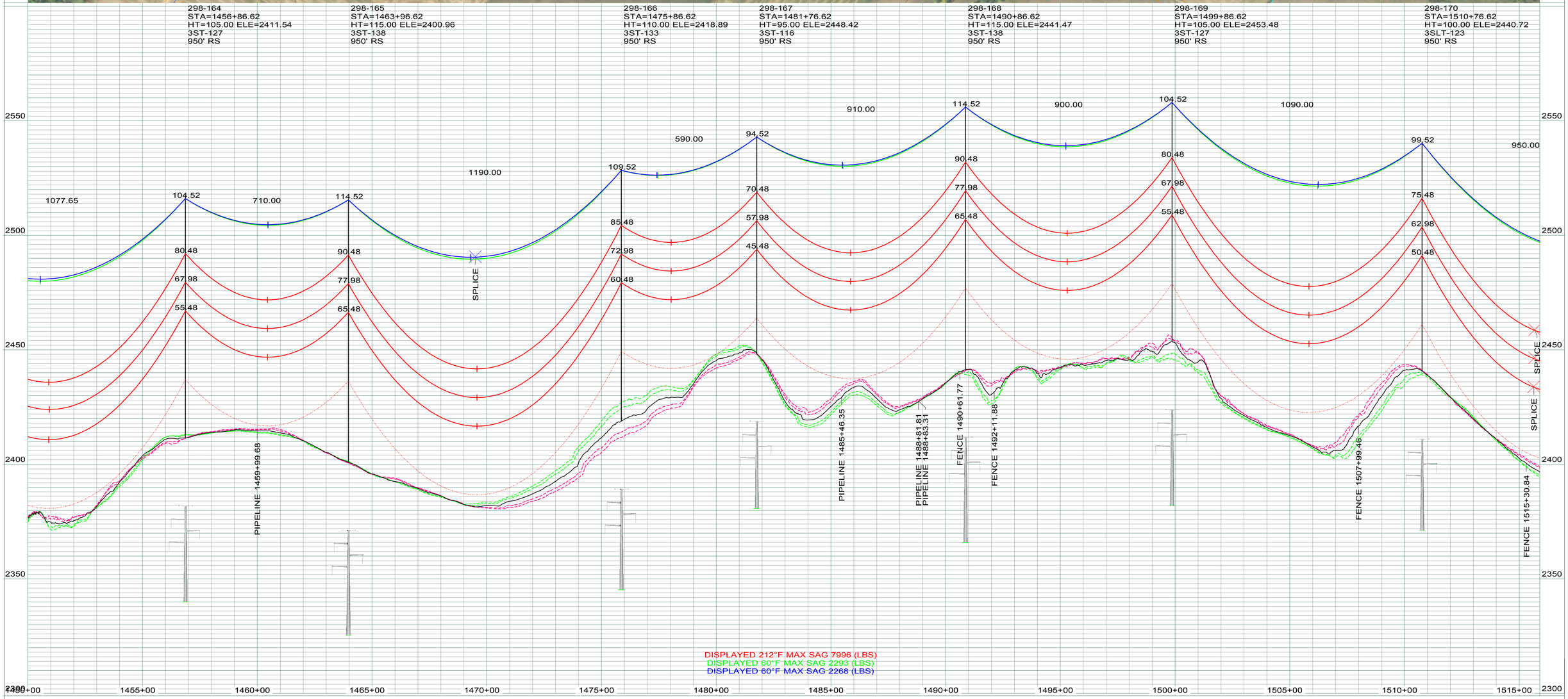
298-166
STA=1475+86.62
HT=110.00 ELE=2418.89
3ST-133
950' RS

298-167
STA=1481+76.62
HT=95.00 ELE=2448.42
3ST-116
950' RS

298-168
STA=1490+86.62
HT=115.00 ELE=2441.47
3ST-138
950' RS

298-169
STA=1499+86.62
HT=105.00 ELE=2453.48
3ST-127
950' RS

298-170
STA=1510+76.62
HT=100.00 ELE=2440.72
3SLT-123
950' RS



DISPLAYED 212°F MAX SAG 7996 (LBS)
DISPLAYED 60°F MAX SAG 2293 (LBS)
DISPLAYED 60°F MAX SAG 2268 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10691	22113	30022	950`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2293	6600	10546	950`
OHGW	7/16-INCH EHS	2268	6139	9948	950`

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

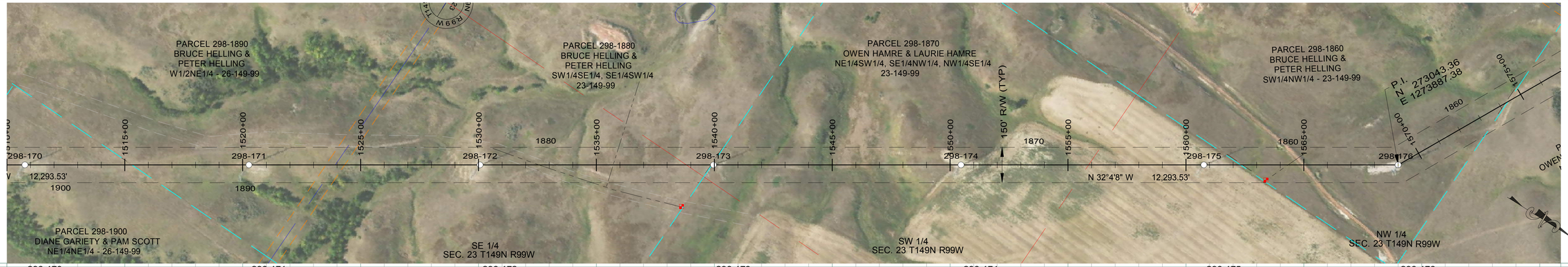
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1450+00 TO 1515+90
STRUCTURE: 298-164 TO 298-170

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-029

REV. NO. 1



298-170
STA=1510+76.62
HT=100.00 ELE=2440.72
3SLT-123
950' RS

298-171
STA=1520+26.62
HT=131.00 ELE=2367.11
3ST2-130
950' RS

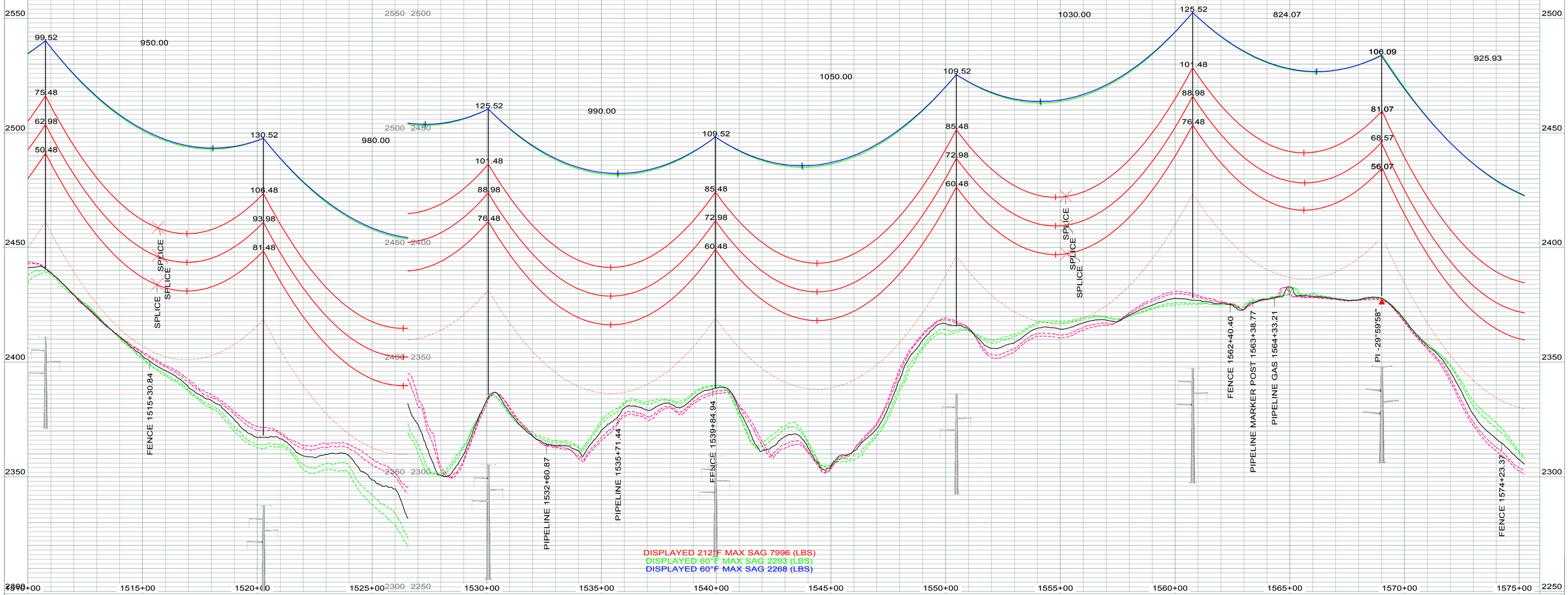
298-172
STA=1530+06.62
HT=126.00 ELE=2334.91
3ST2-125
950' RS

298-173
STA=1539+96.62
HT=110.00 ELE=2338.71
3ST-133
950' RS

298-174
STA=1550+46.62
HT=110.00 ELE=2365.97
3SLT-134
950' RS

298-175
STA=1560+76.62
HT=126.00 ELE=2377.01
3ST2-125
950' RS

298-176
STA=1569+00.70
HT=106.09 ELE=2377.88
3SDA35-105
OPGW SPLICE
END 950' RS, BEGIN 900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10691	22113	30022	950'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2293	6600	10546	950'
OHGW	7/16-INCH EHS	2268	6139	9948	950'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

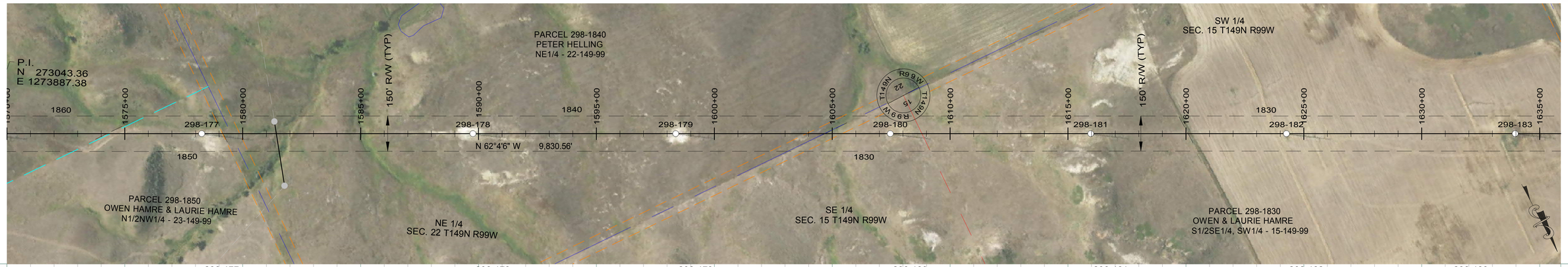
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1510+00 TO 1575+23
STRUCTURE: 298-170 TO 298-176

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-030

REV. NO. 1



298-177
STA=1578+26.62
HT=136.00 ELE=2282.61
3SLT2-135
900' RS

298-178
STA=1589+76.62
HT=110.00 ELE=2287.55
3ST-133
900' RS

298-179
STA=1598+36.62
HT=110.00 ELE=2293.20
3ST-133
900' RS

298-180
STA=1607+46.62
HT=120.00 ELE=2280.81
3ST-144
900' RS

298-181
STA=1615+96.62
HT=95.00 ELE=2340.86
3ST-116
900' RS

298-182
STA=1624+26.62
HT=115.00 ELE=2267.97
3ST-138
900' RS

298-183
STA=1633+96.62
HT=110.00 ELE=2225.01
3ST-133
900' RS

925.93 1150.00 850.00 830.00 970.00

135.52 111.48 98.98 86.48 109.52 85.48 72.98 60.48 860.00 109.52 85.48 72.98 60.48 910.00 119.52 95.48 82.98 70.48 94.52 70.48 57.98 45.48 114.52 90.48 77.98 65.48 109.52 85.48 72.98 60.48

2450 2400 2350 2300 2250 2200 2150

1570+00 1575+00 1580+00 1585+00 1590+00 1595+00 1600+00 1605+00 1610+00 1615+00 1620+00 1625+00 1630+00 1635+00

FENCE 1574+23.37
FENCE 1579+17.42
DISTRIBUTION (TOP WIRE) 1581+40.19
FENCE 1604+68.87
FENCE 1620+09.09

DISPLAYED 212°F MAX SAG 7710 (LBS)
DISPLAYED 60°F MAX SAG 2261 (LBS)
DISPLAYED 60°F MAX SAG 2246 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10449	21816	29459	900`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2261	6452	10257	900`
OHGW	7/16-INCH EHS	2246	6003	9685	900`

DESIGN BY: GCC/CDB
DRAWN BY: C. BAUER
DESIGN CHK: GCC
DRAFT CHK: CLK
APPROVED: G CHRISTENSON

DATE: 2013-2014
DATE: 2013-2014
DATE: FALL2014
DATE: NOV2014
DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

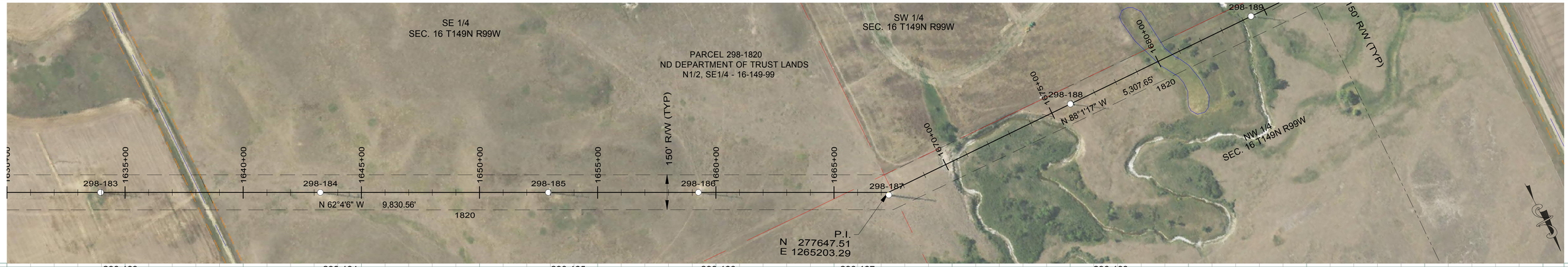
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1570+00 TO 1635+90
STRUCTURE: 298-177 TO 298-183

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-031

REV. NO. 1



298-183
STA=1633+96.62
HT=110.00 ELE=2225.01
3ST-133
900' RS

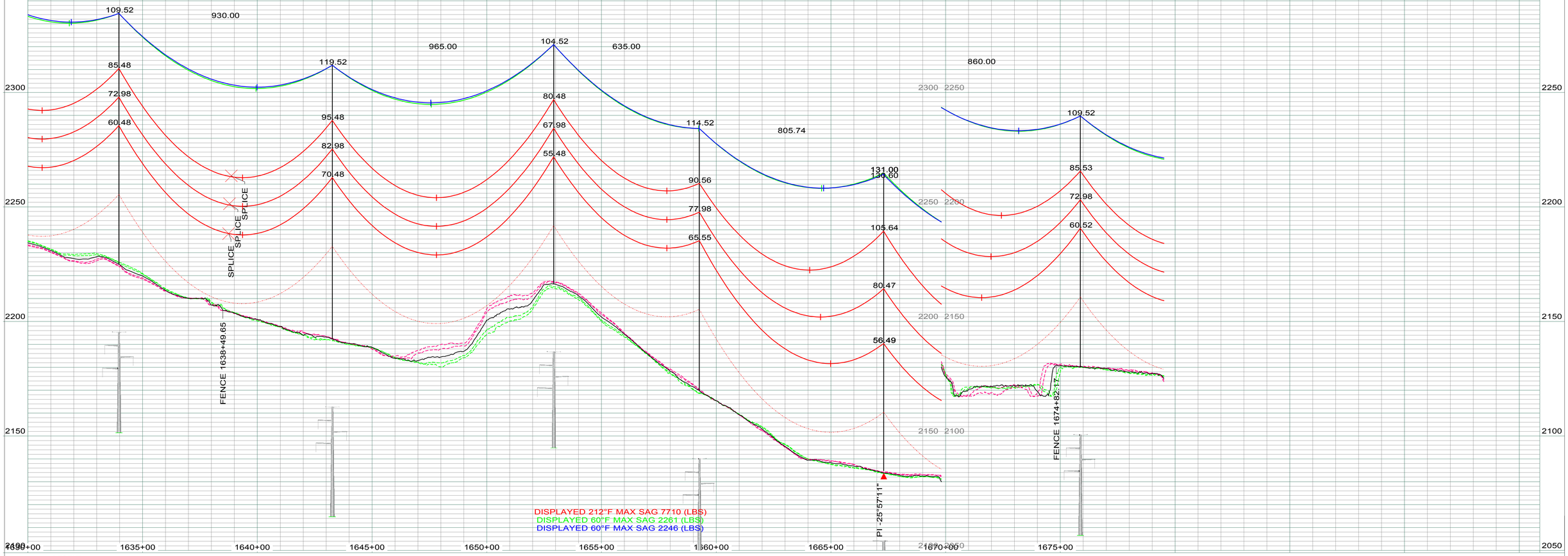
298-184
STA=1643+26.62
HT=120.00 ELE=2192.34
3ST-144
900' RS

298-185
STA=1652+91.62
HT=105.00 ELE=2216.42
3ST-127
164990.000
900' RS

298-186
STA=1659+26.62
HT=115.00 ELE=2169.76
3ST-138
1656+30 ORIGINAL
900' RS

298-187
STA=1667+29.82
HT=131.00 ELE=2133.86
3SA30-130
900' RS

298-188
STA=1675+87.28
HT=110.00 ELE=2130.19
3ST-133
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10449	21816	29459	900'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2261	6452	10257	900'
OHGW	7/16-INCH EHS	2246	6003	9685	900'

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

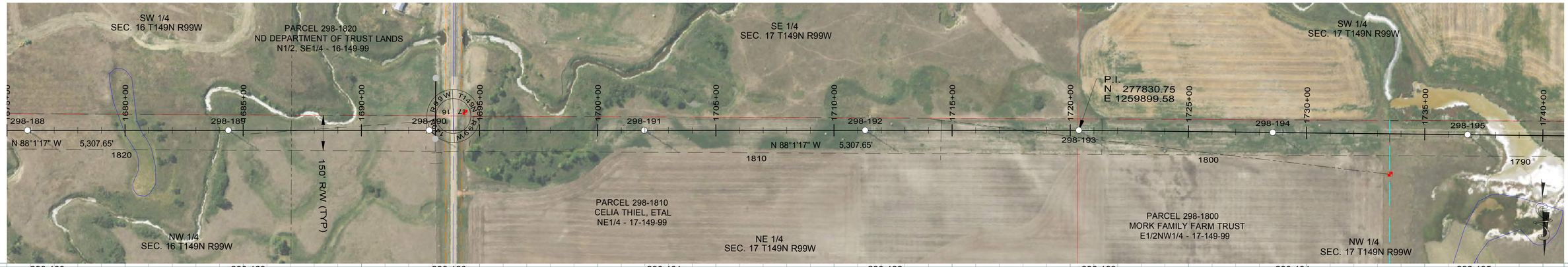
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1630+00 TO 1679+52
STRUCTURE: 298-183 TO 298-188

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-032
REV. NO.: 2



298-188
STA=1675+87.28
HT=110.00 ELE=2130.19
3ST-133
900' RS

298-189
STA=1684+37.28
HT=110.00 ELE=2124.07
3ST-133
900' RS

298-190
STA=1692+87.28
HT=115.00 ELE=2126.44
3ST-138
900' RS

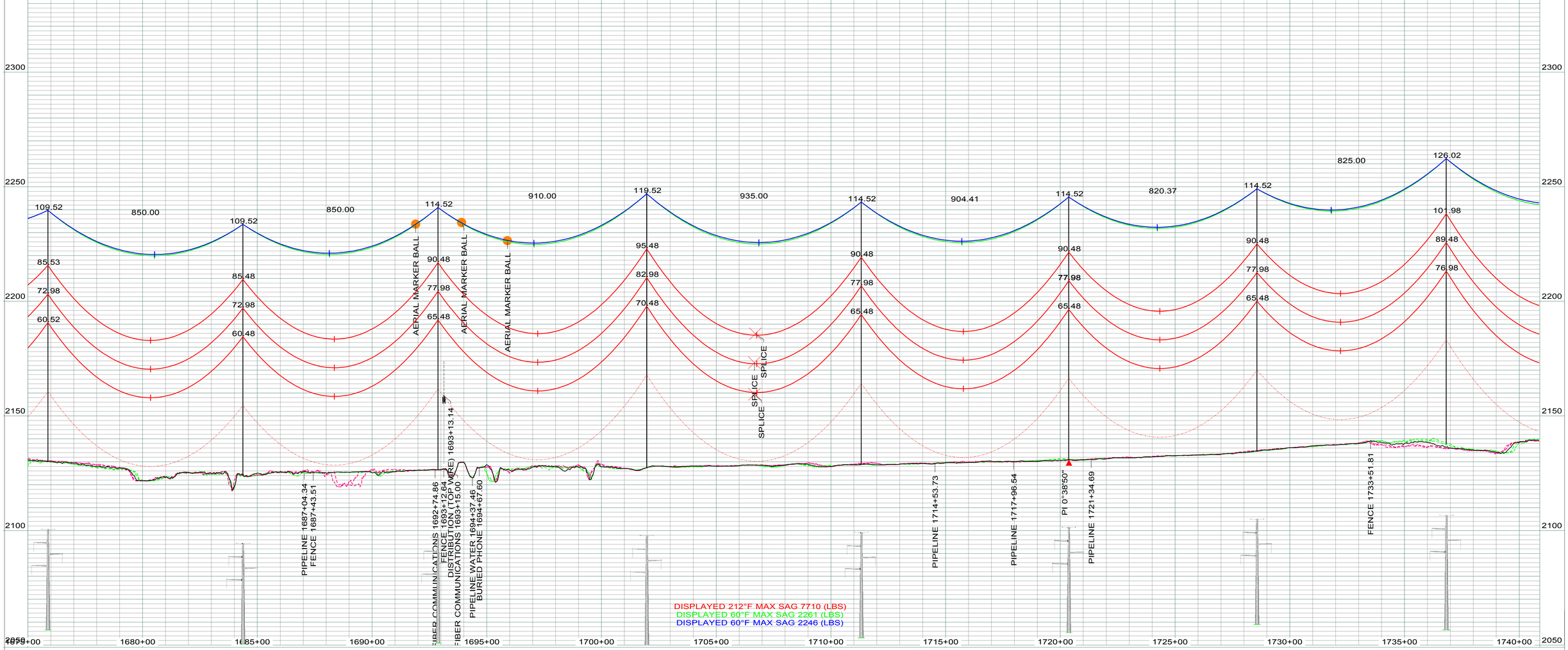
298-191
STA=1701+97.28
HT=120.00 ELE=2127.41
3ST-144
900' RS

298-192
STA=1711+32.28
HT=115.00 ELE=2128.79
3ST-138
900' RS

298-193
STA=1720+36.69
HT=115.00 ELE=2131.01
3ST-138
900' RS

298-194
STA=1728+57.06
HT=115.00 ELE=2134.60
3ST-138
900' RS

298-195
STA=1736+82.07
HT=126.50 ELE=2136.27
3ST2-125
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
3	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10449	21816	29459	900'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2261	6452	10257	900'
OHGW	7/16-INCH EHS	2246	6003	9685	900'

		DATE
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

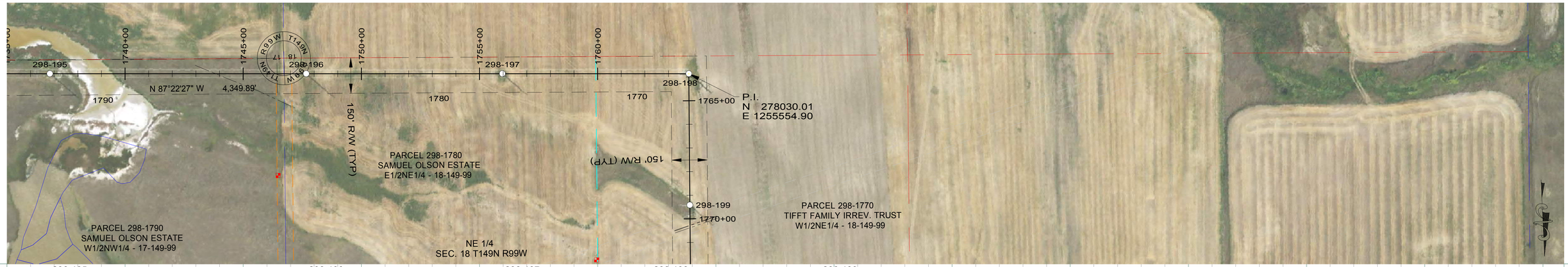
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1675+00 TO 1740+86
STRUCTURE: 298-188 TO 298-195

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-033

REV. NO. 3



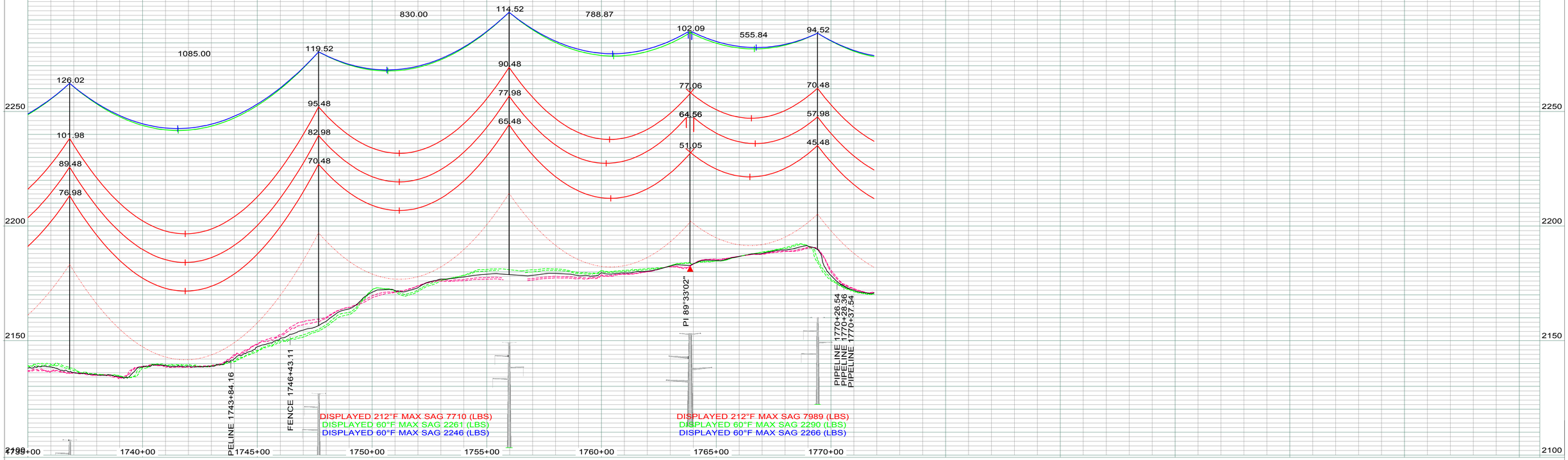
298-195
STA=1736+82.07
HT=126.50 ELE=2136.27
3ST2-125
900' RS

298-196
STA=1747+67.07
HT=120.00 ELE=2156.55
3ST-144
900' RS

298-197
STA=1755+97.07
HT=115.00 ELE=2178.82
3ST-138
900' RS

298-198
STA=1763+85.94
HT=102.09 ELE=2182.78
3SDA90-101
OPGW SPLICE
END 900' RS, BEGIN 950' RS

298-199
STA=1769+41.78
HT=95.00 ELE=2189.71
3ST-116
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10449	21816	29459	900'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2261	6452	10257	900'
OHGW	7/16-INCH EHS	2246	6003	9685	900'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

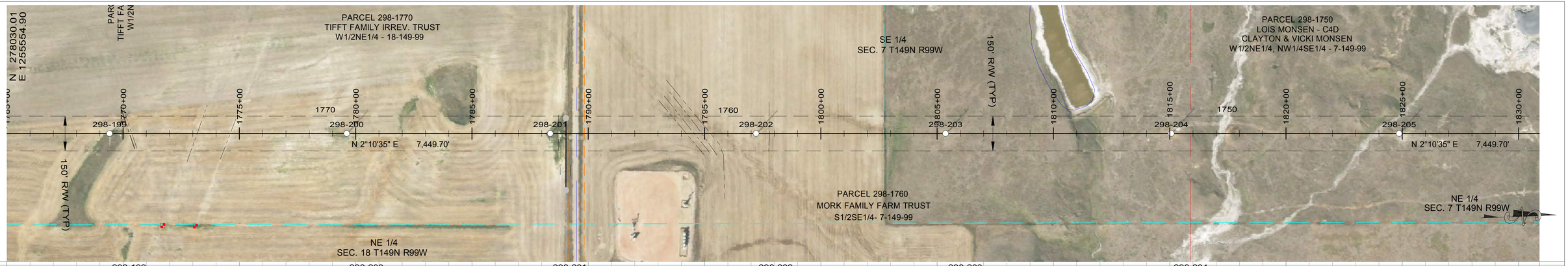
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1735+00 TO 1771+88
STRUCTURE: 298-195 TO 298-199

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-034

REV. NO. 2



298-199
STA=1769+41.78
HT=95.00 ELE=2189.71
3ST-116
950' RS

298-200
STA=1779+61.78
HT=105.00 ELE=2208.61
3ST-127
950' RS

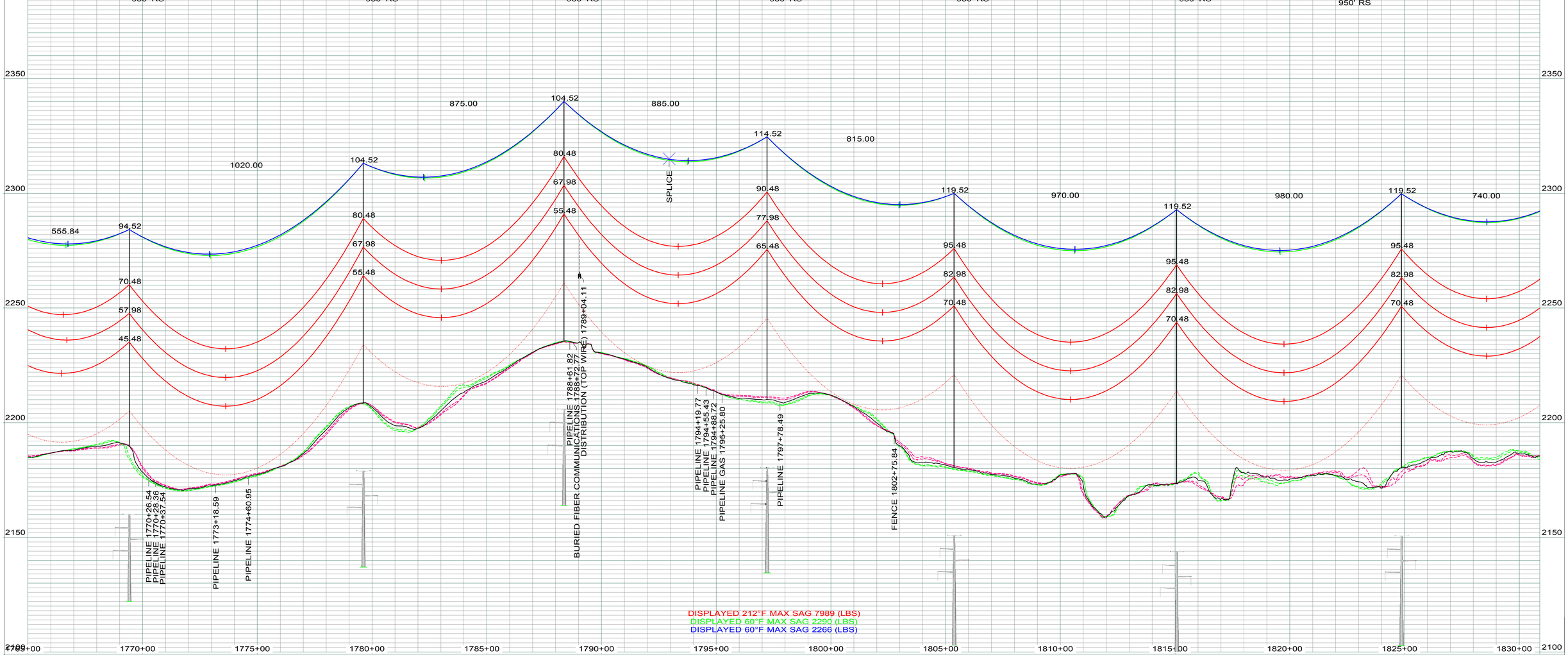
298-201
STA=1788+36.78
HT=105.00 ELE=2235.56
3ST-127
950' RS

298-202
STA=1797+21.78
HT=115.00 ELE=2210.11
3ST-138
950' RS

298-203
STA=1805+36.78
HT=120.00 ELE=2180.50
3ST-144
950' RS

298-204
STA=1815+06.77
HT=120.00 ELE=2173.38
3ST-144
950' RS

298-205
STA=1824+86.78
HT=120.00 ELE=2180.30
3ST-144
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
3	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10673	22075	29984	950'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2290	6596	10541	950'
OHGW	7/16-INCH EHS	2266	6135	9945	950'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

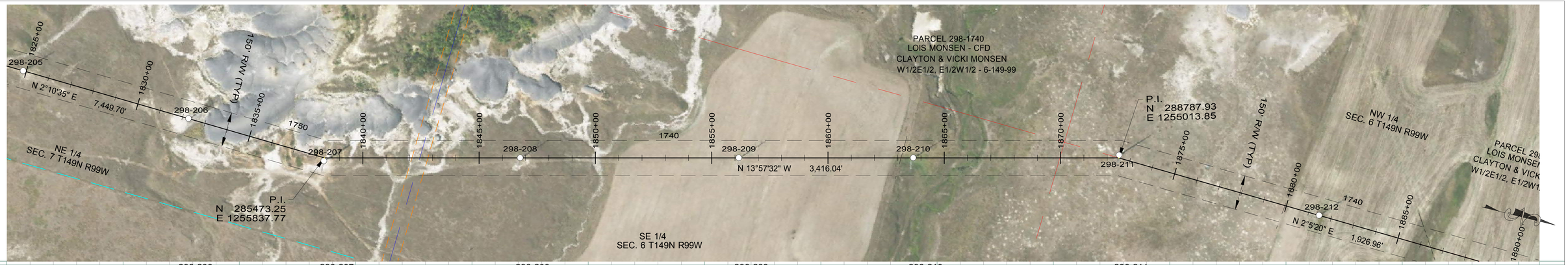
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1765+00 TO 1830+90
STRUCTURE: 298-199 TO 298-205

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-035

REV. NO. 3



298-206
STA=1832+26.78
HT=115.00 ELE=2184.96
3ST-138
950' RS

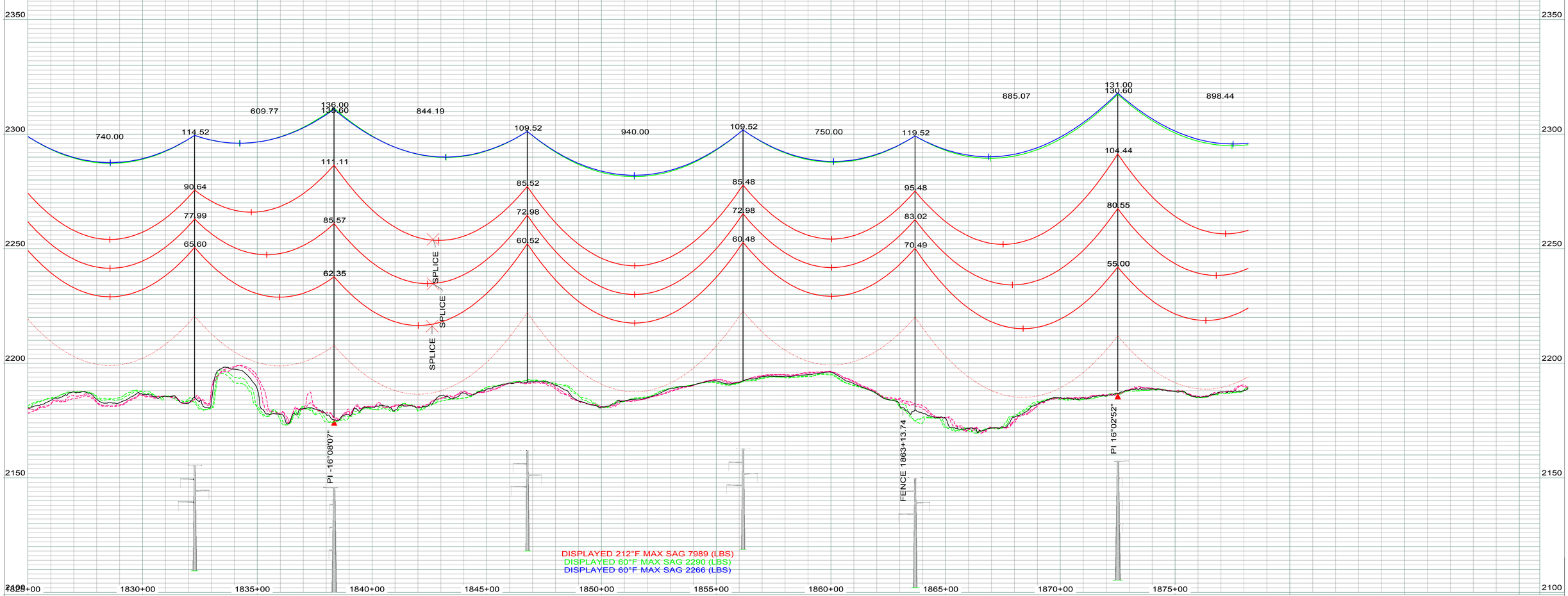
298-207
STA=1838+34.55
HT=136.00 ELE=2175.43
3SA20-135
950' RS

298-208
STA=1846+76.77
HT=110.00 ELE=2191.67
3ST-133
950' RS

298-209
STA=1856+16.78
HT=110.00 ELE=2192.32
3ST-133
950' RS

298-210
STA=1863+66.78
HT=120.00 ELE=2179.69
3ST-144
950' RS

298-211
STA=1872+50.09
HT=131.00 ELE=2187.00
3SA20-130
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10673	22075	29984	950`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2290	6596	10541	950`
OHGW	7/16-INCH EHS	2266	6135	9945	950`

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

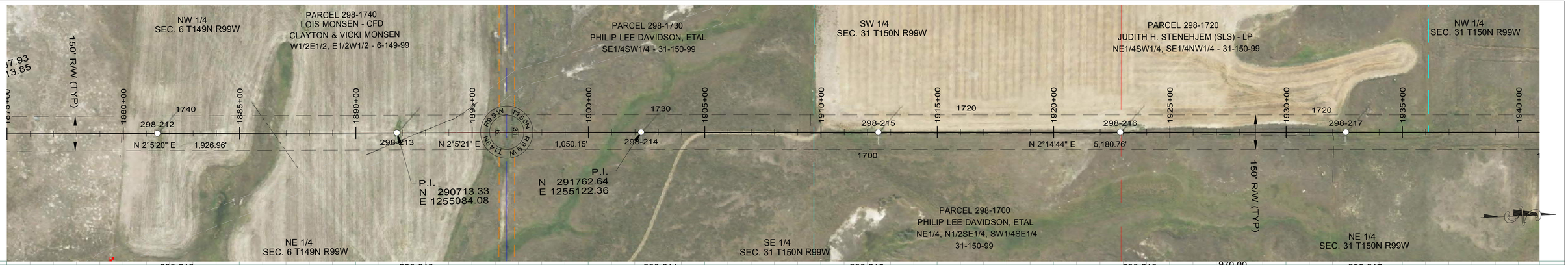
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1825+00 TO 1878+18
STRUCTURE: 298-206 TO 298-211

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-036

REV. NO. 1



298-212
STA=1881+46.78
HT=120.00 ELE=2189.84
3ST-144
950' RS

298-213
STA=1891+76.78
HT=120.00 ELE=2195.38
3SLT-145
950' RS

298-214
STA=1902+26.78
HT=126.00 ELE=2195.63
3ST2-125
950' RS

298-215
STA=1912+46.77
HT=126.00 ELE=2221.09
3ST2-125
950' RS

298-216
STA=1922+86.78
HT=120.00 ELE=2259.86
3SLT-145
950' RS

298-217
STA=1932+56.78
HT=136.00 ELE=2280.65
3SLT2-135
950' RS

970.00
1040.00
1200.00
898.44
1030.00
1020.00
1050.00
119.52
95.48
83.00
70.48
125.52
101.48
88.98
76.48
111.48
98.98
86.48
SPLICE
SPLICE
SPLICE
FENCE 1879+93.85
PIPELINE 1886+45.38
PI 0°00'01"
PIPELINE 1892+74.15
FENCE 1896+71.28
PI 0°09'23"
FENCE 1909+55.96

2350 2450
2300 2400
2250 2350
2200 2300
2150 2250
2100 2200

2350
2300
2250
2200
2150
2100
2450
2400
2350
2300
2250
2200

1875+00 1880+00 1885+00 1890+00 1895+00 1900+00 1905+00 1910+00 1915+00 1920+00 1925+00 1930+00 1935+00 1940+00

DISPLAYED 212°F MAX SAG 7989 (LBS)
DISPLAYED 60°F MAX SAG 2290 (LBS)
DISPLAYED 60°F MAX SAG 2266 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10673	22075	29984	950'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2290	6596	10541	950'
OHGW	7/16-INCH EHS	2266	6135	9945	950'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

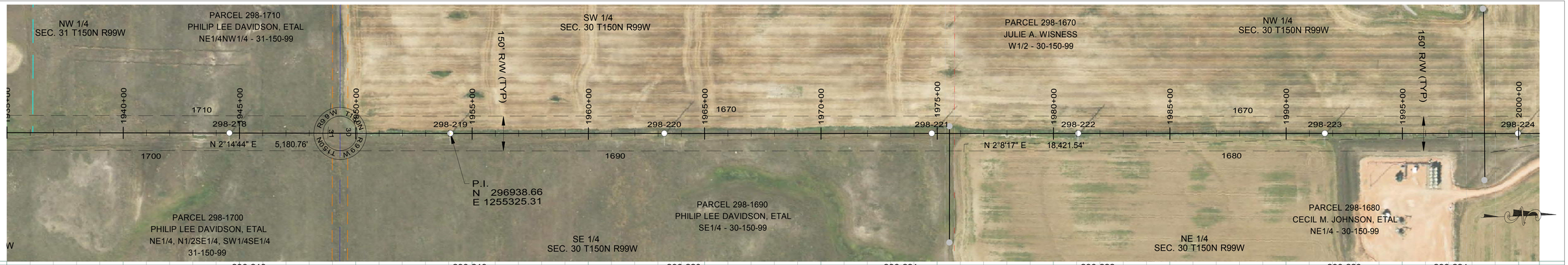
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1875+00 TO 1940+89
STRUCTURE: 298-212 TO 298-217

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-037

REV. NO. 1



298-218
STA=1944+56.78
HT=115.00 ELE=2358.53
3SLT-139
950' RS

298-219
STA=1954+06.78
HT=120.00 ELE=2370.81
3ST-144
950' RS

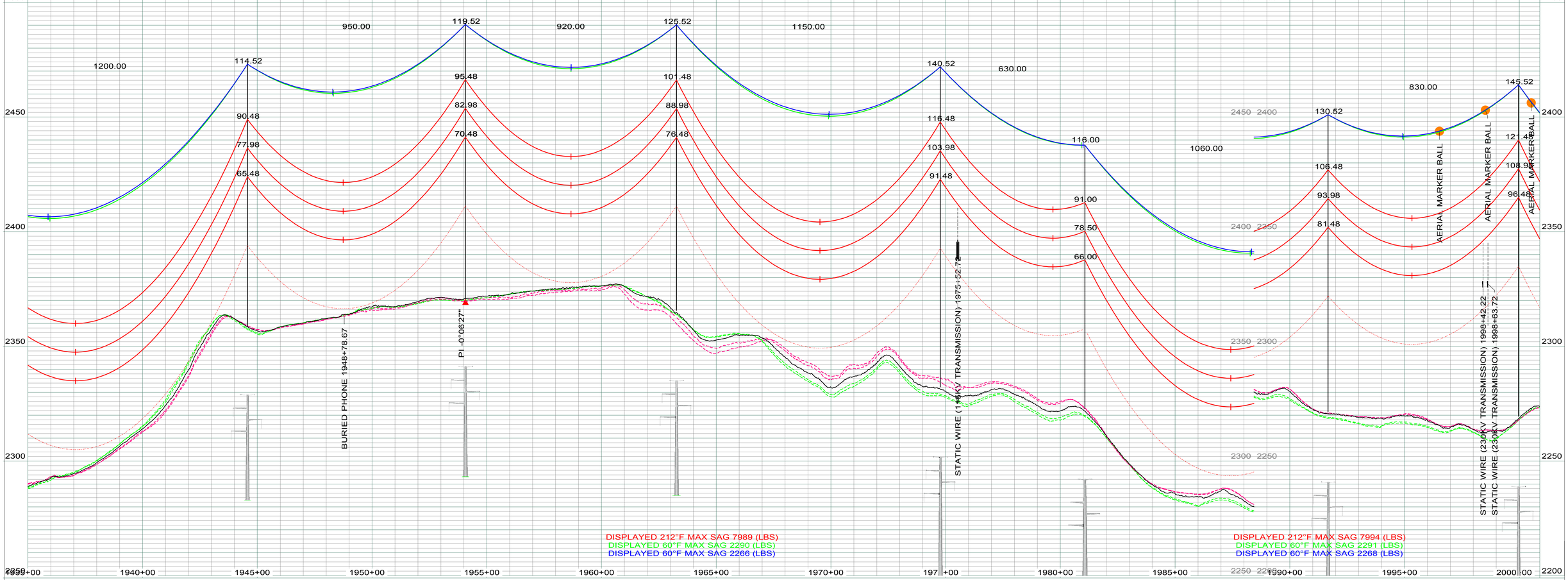
298-220
STA=1963+26.78
HT=126.00 ELE=2364.67
3SLT2-125
950' RS

298-221
STA=1974+76.78
HT=141.00 ELE=2331.35
3ST2-140
950' RS

298-222
STA=1981+06.77
HT=116.00 ELE=2321.71
3SDT-115
OPGW SPLICE
END 950' RS, BEGIN 950' RS

298-223
STA=1991+66.78
HT=131.00 ELE=2270.49
3ST2-130
950' RS

298-224
STA=1999+96.77
HT=146.00 ELE=2268.49
3ST2-145
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10673	22075	29984	950`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2290	6596	10541	950`
OHGW	7/16-INCH EHS	2266	6135	9945	950`

		DATE:
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

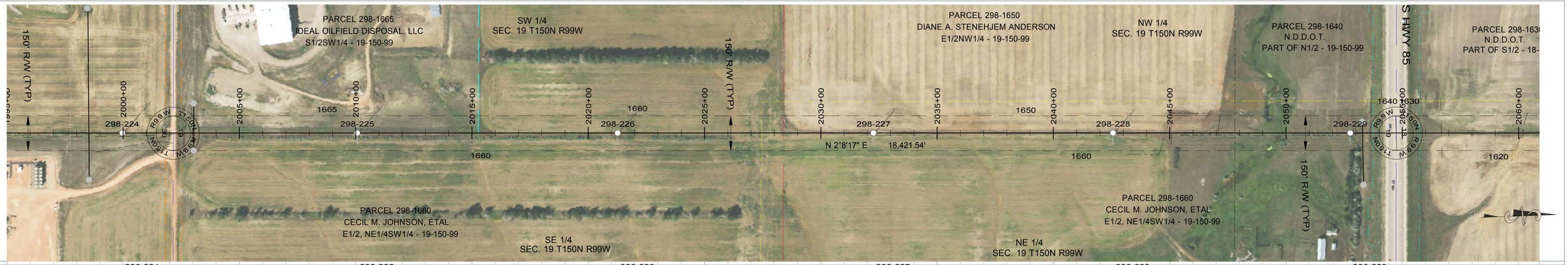
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1935+00 TO 2000+89
STRUCTURE: 298-218 TO 298-224

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-038
REV. NO. 1



298-224
STA=1999+96.77
HT=146.00 ELE=2268.49
3ST2-145
950' RS

298-225
STA=2010+06.78
HT=120.00 ELE=2244.18
3SLT-145
950' RS

298-226
STA=2021+26.78
HT=120.00 ELE=2231.95
3SLT-145
950' RS

298-227
STA=2032+26.78
HT=115.00 ELE=2221.97
3SLT-139
950' RS

298-228
STA=2042+56.78
HT=115.00 ELE=2207.96
3ST-138
950' RS

298-229
STA=2052+76.78
HT=126.00 ELE=2189.99
3ST2-125
950' RS

AERIAL MARKER BALL
AERIAL MARKER BALL
AERIAL MARKER BALL
AERIAL MARKER BALL
AERIAL MARKER BALL
AERIAL MARKER BALL
STATIC WIRE (230KV TRANSMISSION) 1998+42.22
STATIC WIRE (230KV TRANSMISSION) 1998+63.72
PIPELINE 2002+61.87
PIPELINE 2002+86.53
BURIED FIBER COMMUNICATIONS 2002+96.38
DISTRIBUTION (TOP WIRE) 2003+03.98
PIPELINE 2027+44.76
FENCE 2028+62.80
PIPELINE 2044+81.94
FENCE 2045+08.55
PIPELINE 2045+20.24
FENCE 2047+07.71
PIPELINE 2047+80.15
SPLICE
SPLICE
DISTRIBUTION (TOP WIRE) 2053+28.89
PIPELINE WATER 2054+15.82
BURIED FIBER COMMUNICATIONS 2056+68.50
BURIED PHONE 2060+11.66

DISPLAYED 212°F MAX SAG 7994 (LBS)
DISPLAYED 60°F MAX SAG 2291 (LBS)
DISPLAYED 60°F MAX SAG 2268 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10684	22094	30006	950'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2291	6598	10544	950'
OHGW	7/16-INCH EHS	2268	6139	9948	950'

		DATE:
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

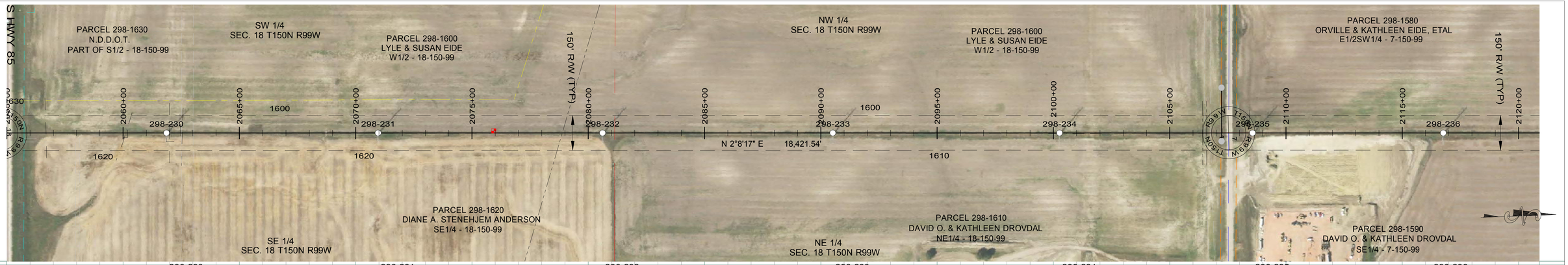
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 1995+00 TO 2060+90
STRUCTURE: 298-224 TO 298-229

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-039

REV. NO. 1



298-230
STA=2061+86.78
HT=120.00 ELE=2198.13
3ST-144
950' RS

298-231
STA=2070+96.78
HT=120.00 ELE=2203.32
3ST-144
950' RS

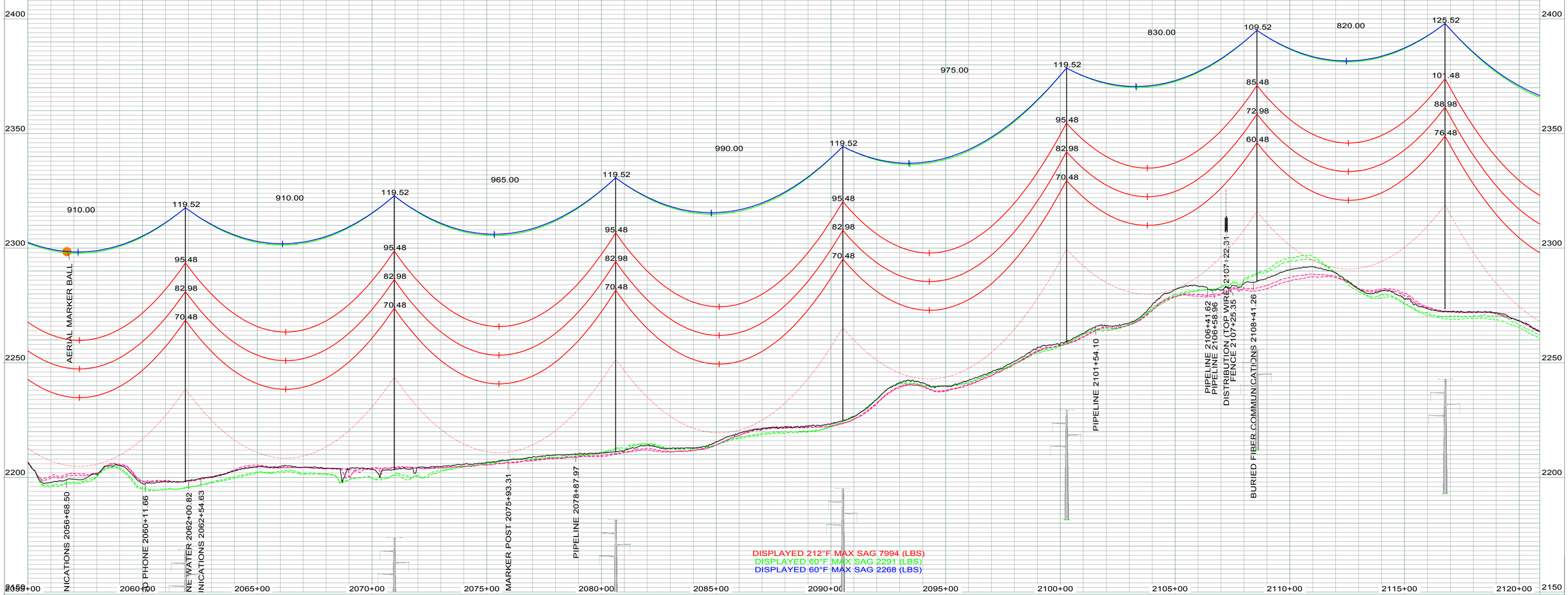
298-232
STA=2080+61.78
HT=120.00 ELE=2211.20
3ST-144
950' RS

298-233
STA=2090+51.77
HT=120.00 ELE=2224.85
3ST-144
950' RS

298-234
STA=2100+26.78
HT=120.00 ELE=2259.09
3ST-144
950' RS

298-235
STA=2108+56.78
HT=110.00 ELE=2285.52
3ST-133
950' RS

298-236
STA=2116+76.78
HT=126.00 ELE=2272.47
3ST2-125
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10684	22094	30006	950'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2291	6598	10544	950'
OHGW	7/16-INCH EHS	2268	6139	9948	950'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

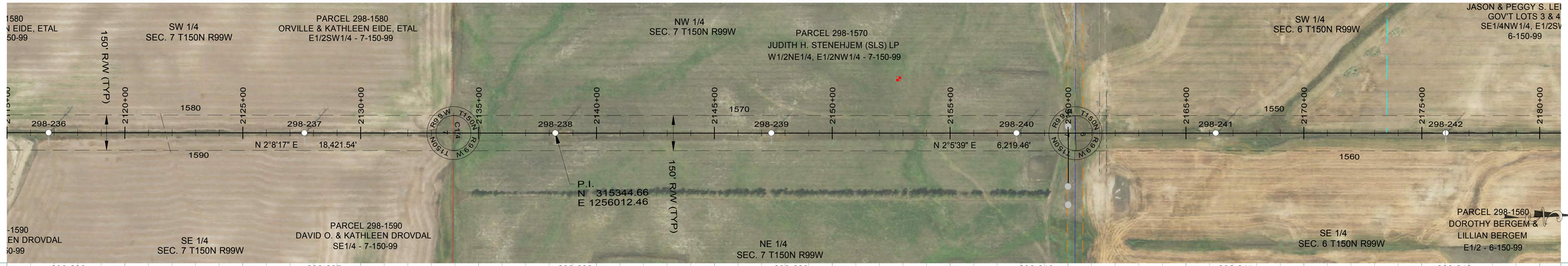
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2055+00 TO 2120+90
STRUCTURE: 298-230 TO 298-236

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-040
REV. NO.: 1



298-236
STA=2116+76.78
HT=126.00 ELE=2272.47
3ST2-125
950' RS

298-237
STA=2127+61.78
HT=120.00 ELE=2260.12
3SLT-145
950' RS

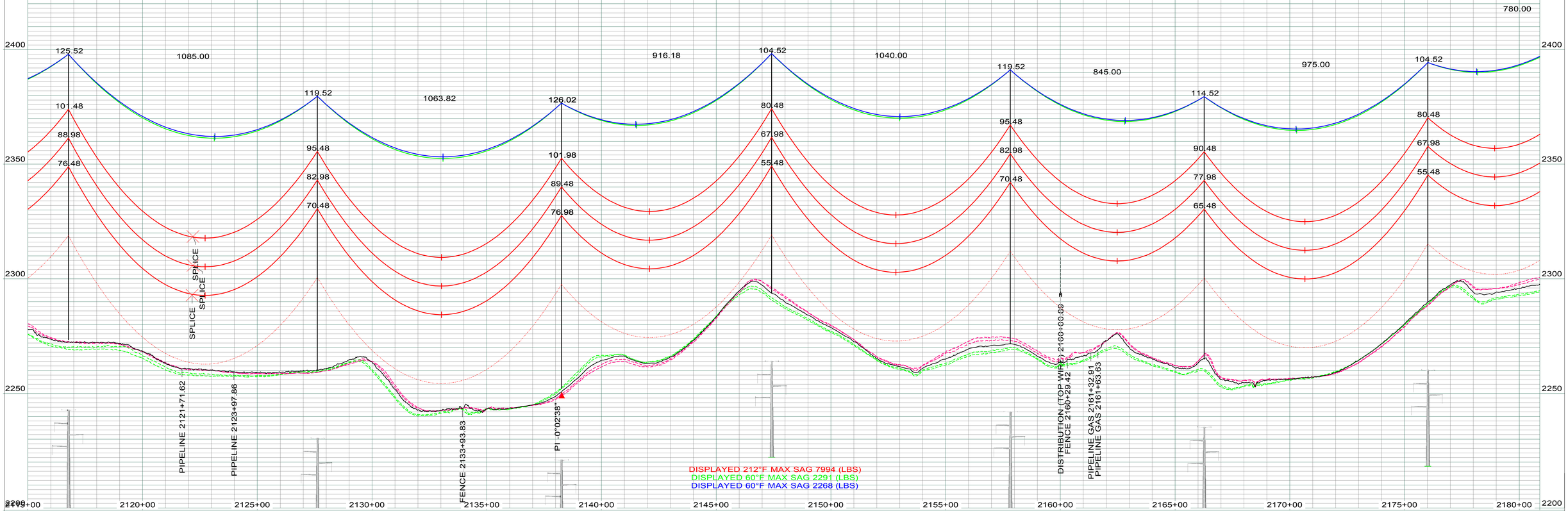
298-238
STA=2138+25.60
HT=126.50 ELE=2250.63
3ST2-125
950' RS

298-239
STA=2147+41.78
HT=105.00 ELE=2293.76
3ST-127
950' RS

298-240
STA=2157+81.78
HT=120.00 ELE=2271.63
3ST-144
950' RS

298-241
STA=2166+26.78
HT=115.00 ELE=2264.97
3ST-138
950' RS

298-242
STA=2176+01.78
HT=105.00 ELE=2289.83
3ST-127
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10684	22094	30006	950'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2291	6598	10544	950'
OHGW	7/16-INCH EHS	2268	6139	9948	950'

		DATE
DESIGN BY: GCC/CDB		2013-2014
DRAWN BY: C. BAUER		2013-2014
DESIGN CHK: GCC		FALL2014
DRAFT CHK: CLK		NOV2014
APPROVED: G CHRISTENSON		FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

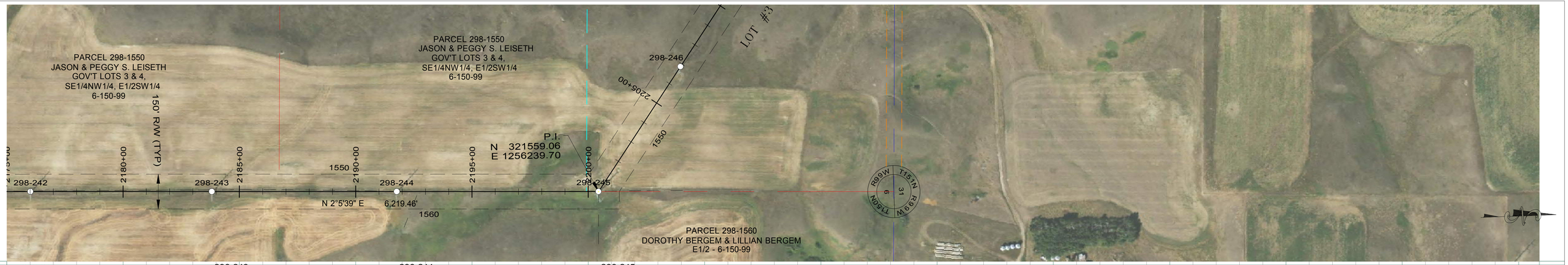
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2115+00 TO 2180+90
STRUCTURE: 298-236 TO 298-242

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-041

REV. NO. 1



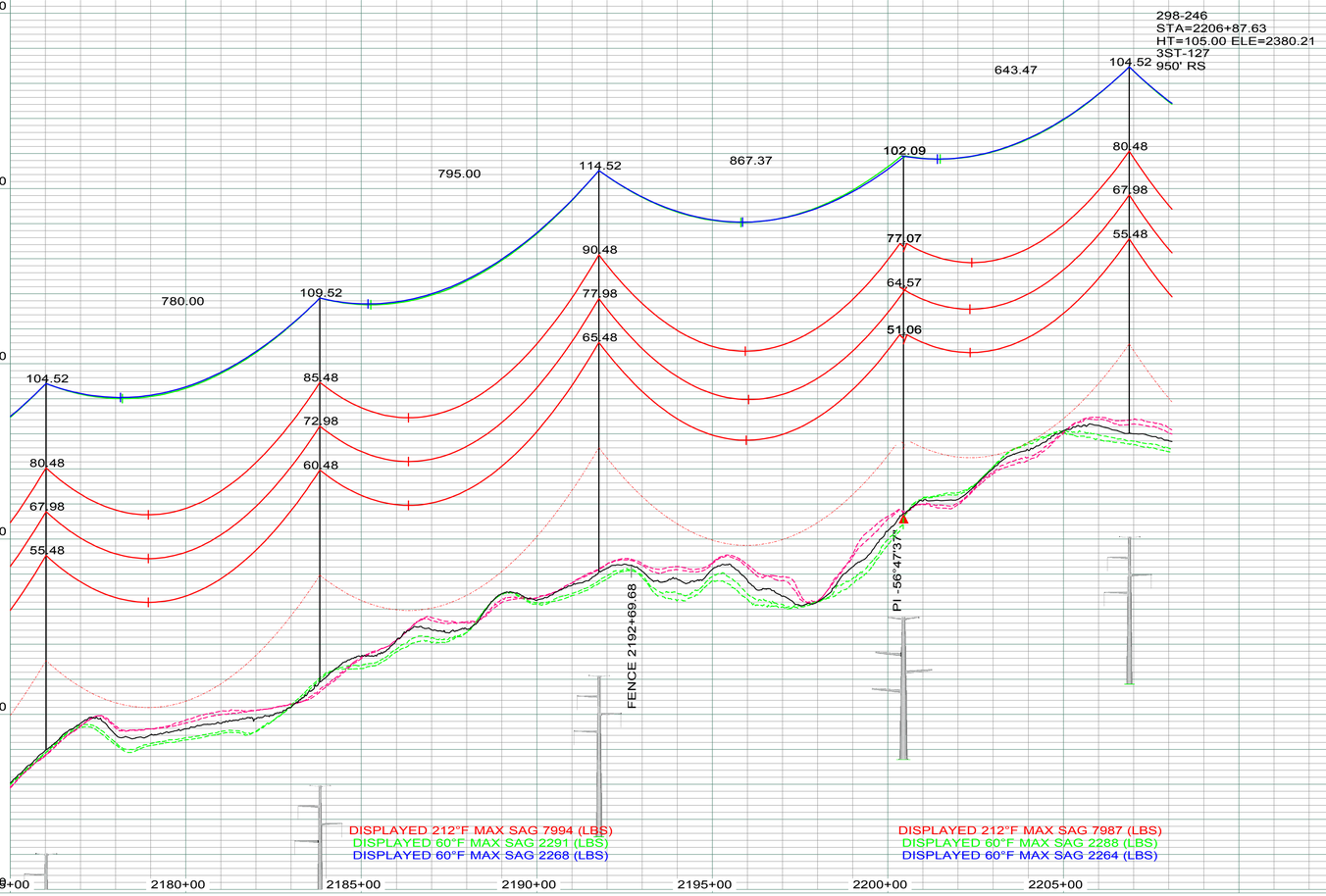
298-242
STA=2176+01.78
HT=105.00 ELE=2289.83
3ST-127
950' RS

298-243
STA=2183+81.78
HT=110.00 ELE=2309.22
3ST-133
950' RS

298-244
STA=2191+76.78
HT=115.00 ELE=2340.62
3ST-138
950' RS

298-245
STA=2200+44.15
HT=102.09 ELE=2357.24
3SDA60-101
OPGW SPLICE
END 950' RS, BEGIN 950' RS

298-246
STA=2206+87.63
HT=105.00 ELE=2380.21
3ST-127
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10684	22094	30006	950`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2291	6598	10544	950`
OHGW	7/16-INCH EHS	2268	6139	9948	950`

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

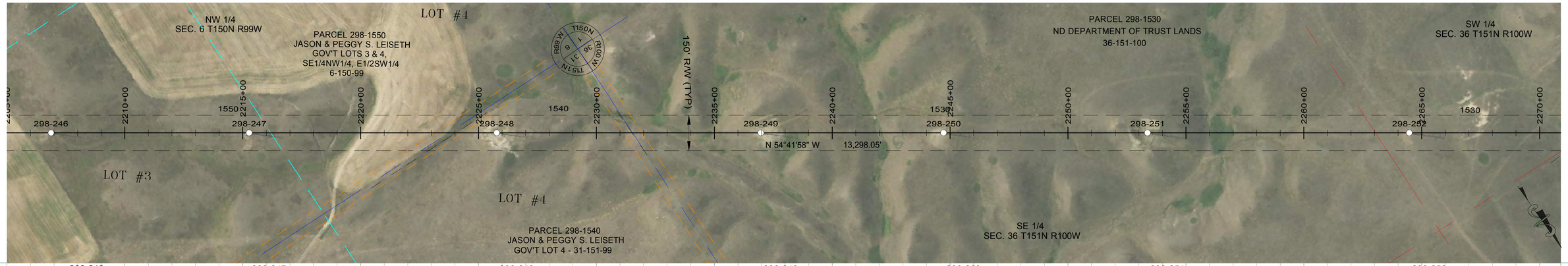
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2175+00 TO 2208+09
STRUCTURE: 298-242 TO 298-246

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-042

REV. NO. 1



298-246
STA=2206+87.63
HT=105.00 ELE=2380.21
3ST-127
950' RS

298-247
STA=2215+27.63
HT=110.00 ELE=2356.47
3ST-133
950' RS

298-248
STA=2225+77.63
HT=115.00 ELE=2305.84
3SLT-139
950' RS

298-249
STA=2236+97.63
HT=110.00 ELE=2292.15
3ST-133
950' RS

298-250
STA=2244+72.63
HT=90.00 ELE=2301.07
3ST-111
950' RS

298-251
STA=2253+37.63
HT=115.00 ELE=2275.09
3ST-138
950' RS

298-252
STA=2264+47.63
HT=126.00 ELE=2265.43
3ST2-125
950' RS

840.00 1050.00 1120.00 775.00 865.00 1110.00 860.00

104.52 80.48 67.98 55.48
109.52 85.48 72.98 60.48
114.52 90.48 77.98 65.48
109.52 85.48 72.98 60.48
89.52 65.48 52.98 40.48
114.52 90.48 77.98 65.48
125.52 101.48 88.98 76.48

2450 2400 2350 2300 2250 2200

2210+00 2215+00 2220+00 2225+00 2230+00 2235+00 2240+00 2245+00 2250+00 2255+00 2260+00 2265+00 2270+00

FENCE 2224+04.78

FENCE 2231+50.98

DISPLAYED 212°F MAX SAG 7987 (LBS)
DISPLAYED 60°F MAX SAG 2288 (LBS)
DISPLAYED 60°F MAX SAG 2264 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10673	22066	29984	950'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2288	6592	10537	950'
OHGW	7/16-INCH EHS	2264	6134	9943	950'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

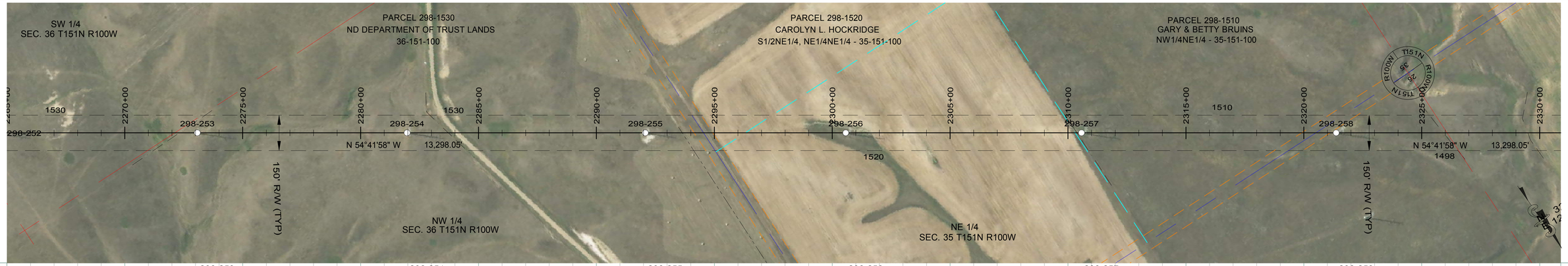
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2205+00 TO 2270+90
STRUCTURE: 298-246 TO 298-252

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-043

REV. NO. 2



298-253
STA=2273+07.63
HT=115.00 ELE=2258.18
3ST-138
950' RS

298-254
STA=2281+97.63
HT=126.00 ELE=2264.36
3ST2-125
950' RS

298-255
STA=2292+07.63
HT=110.00 ELE=2349.00
3SLT-134
950' RS

298-256
STA=2300+57.63
HT=126.00 ELE=2313.45
3ST2-125
950' RS

298-257
STA=2310+57.63
HT=110.00 ELE=2329.49
3SLT-134
950' RS

298-258
STA=2321+37.63
HT=136.00 ELE=2283.25
3SLT2-135
950' RS

2450 2400 2350 2300 2250 2200 2150

1010.00 850.00 1000.00 1080.00 1202.63

860.00 890.00

109.52 125.52 85.48 72.98 60.48 101.48 88.98 76.48 114.52 90.48 77.98 65.48 135.52 111.48 99.01 86.48

SPLICE

PIPELINE 2293+64.36

FENCE 2310+37.70

FENCE 2272+29.51

FENCE 2283+71.45

FENCE 2325+91.87

FENCE 2329+50.36

DISPLAYED 212°F MAX SAG 7987 (LBS)
DISPLAYED 60°F MAX SAG 2288 (LBS)
DISPLAYED 60°F MAX SAG 2264 (LBS)

2265+00 2270+00 2275+00 2280+00 2285+00 2290+00 2295+00 2300+00 2305+00 2310+00 2315+00 2320+00 2325+00 2330+00

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10673	22066	29984	950`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2288	6592	10537	950`
OHGW	7/16-INCH EHS	2264	6134	9943	950`

		DATE:
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

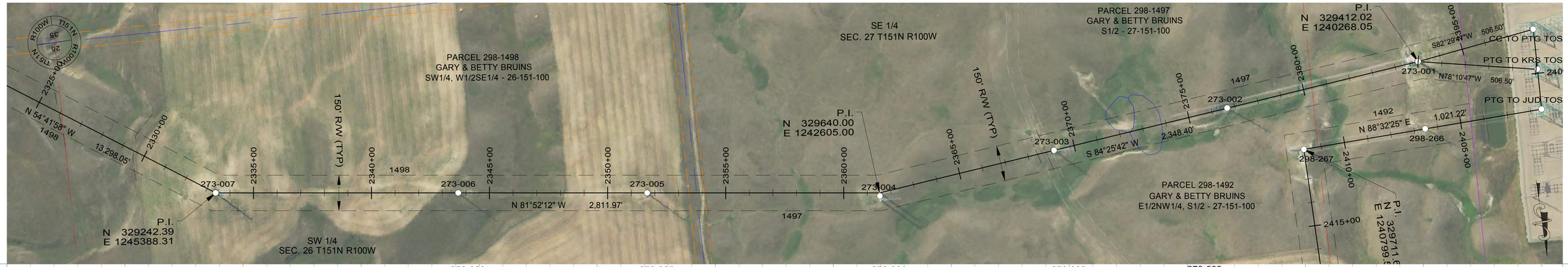
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

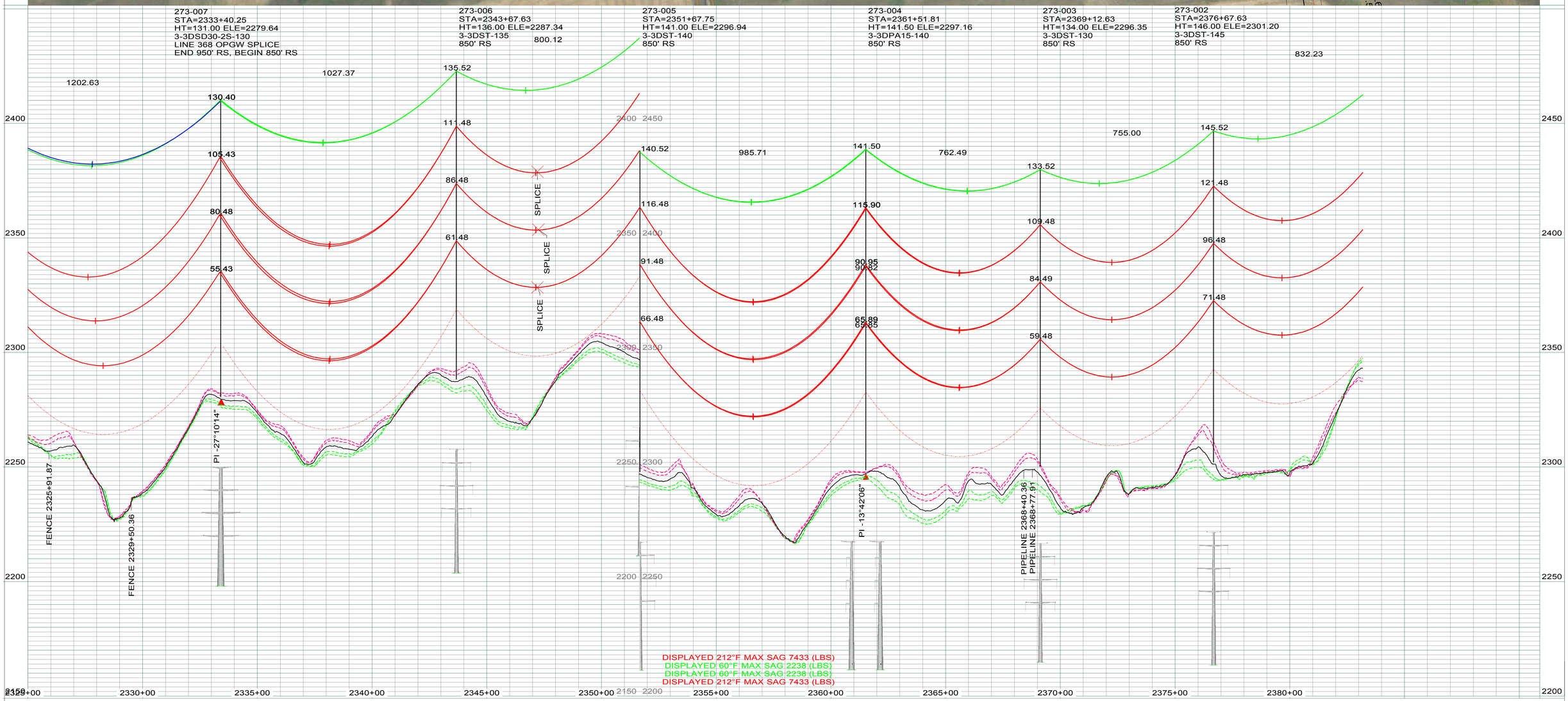
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2265+00 TO 2330+90
STRUCTURE: 298-253 TO 298-258

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-044
REV. NO.: 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
4	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10244	21631	28965	850'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2238	6314	9974	850'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2238	6314	9974	850'

		DATE
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2325+00 TO 2383+18
STRUCTURE: 273-007 TO 273-002

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-045

REV. NO. 4



273-001
STA=2384+99.86
HT=135.00 ELE=2346.64
3-3DSD30-2S-135
END 850' RS,
BEGIN 500' SLACK SPAN
OPGW SPLICE

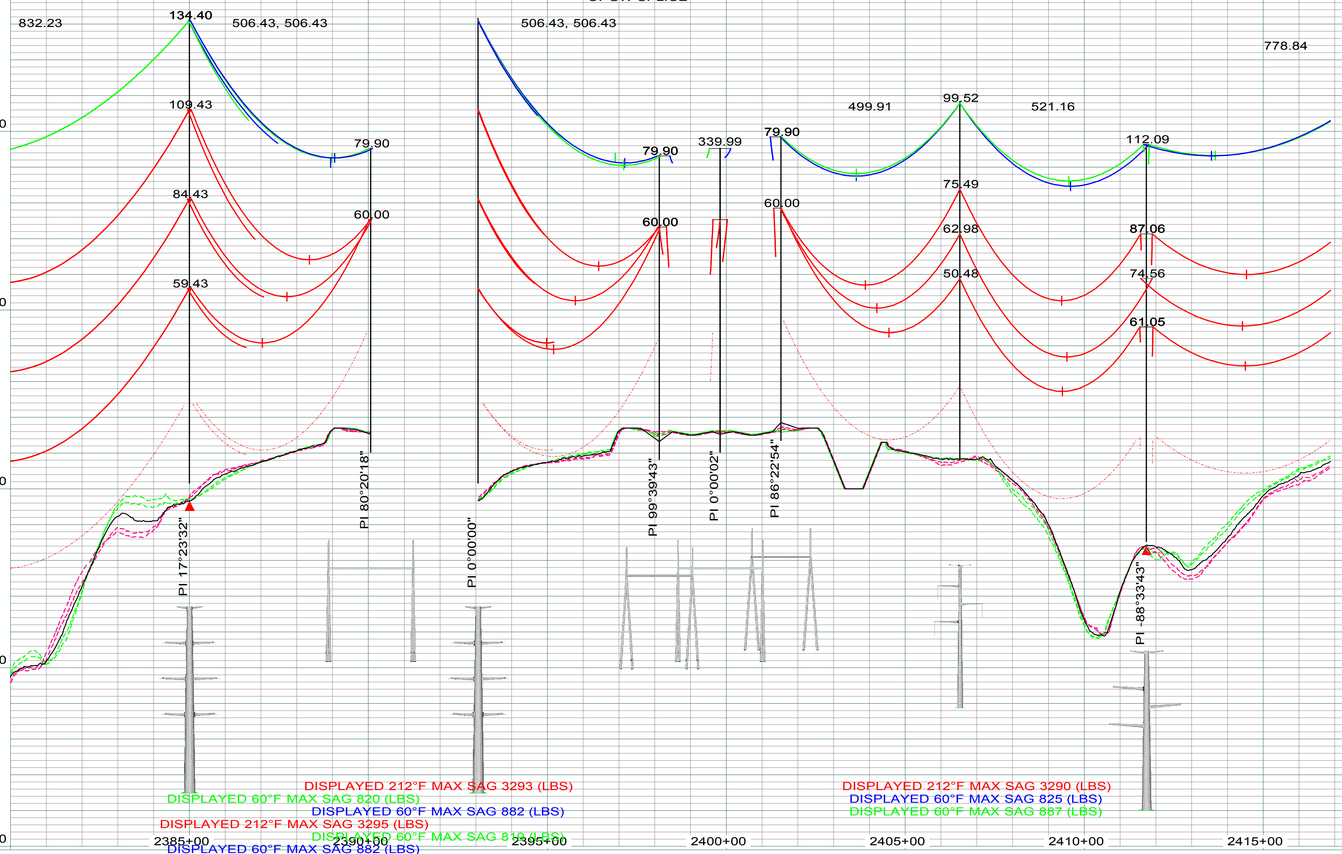
PTG TO JUD TOS
STA=2401+52.72
HT=80.00 ELE=2368.53
TOS
END 500' SLACK SPAN
OPGW SPLICE

298-266
STA=2406+52.63
HT=100.00 ELE=2358.32
3ST1-122
500' SLACK SPAN

298-267
STA=2411+73.79
HT=112.09 ELE=2334.26
3SDA90-111
END 500' SLACK SPAN,
BEGIN 900' RS

PTG TO KRS TOS
STA=2390+06.29
HT=80.00 ELE=2365.28
TOS
END 500' SLACK SPAN
OPGW SPLICE

CC TO PTG TOS
STA=2398+12.73
HT=80.00 ELE=2363.23
TOS
END 500' SLACK SPAN
OPGW SPLICE



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	3901	7385	11820	500'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	887	3092	5663	500'
OHGW	7/16-INCH EHS	825	2512	5158	500'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

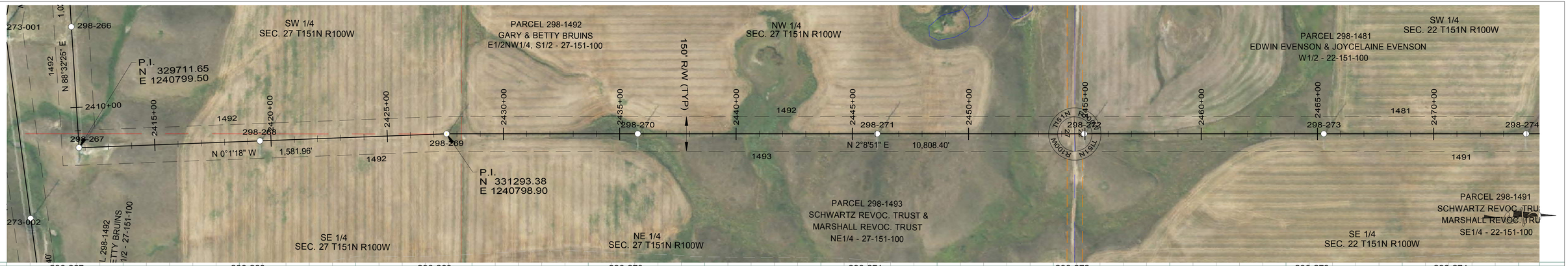
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2380+00 TO 2416+88
STRUCTURE: 273-001 TO 298-267

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-046
REV. NO. 1



298-267
STA=2411+73.79
HT=112.09 ELE=2334.26
3SDA90-111
END 500' SLACK SPAN,
BEGIN 900' RS

298-268
STA=2419+52.63
HT=110.00 ELE=2365.37
3ST-133
900' RS

298-269
STA=2427+55.52
HT=110.00 ELE=2367.57
3ST-133
900' RS

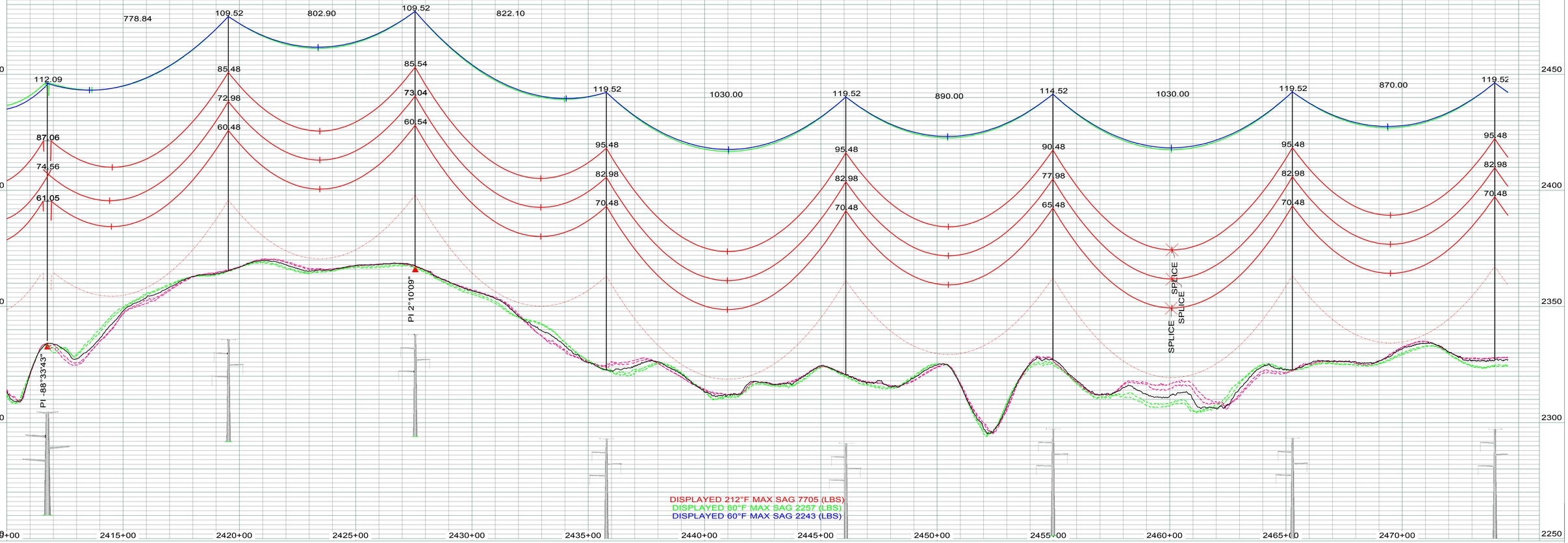
298-270
STA=2435+77.63
HT=120.00 ELE=2322.68
3ST-144
900' RS

298-271
STA=2446+07.63
HT=120.00 ELE=2320.73
3ST-144
900' RS

298-272
STA=2454+97.63
HT=115.00 ELE=2326.92
3ST-138
900' RS

298-273
STA=2465+27.63
HT=120.00 ELE=2322.91
3ST-144
900' RS

298-274
STA=2473+97.63
HT=120.00 ELE=2326.82
3ST-144
900' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10438	21787	29429	900'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2257	6446	10251	900'
OHGW	7/16-INCH EHS	2243	5999	9682	900'

		DATE:
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

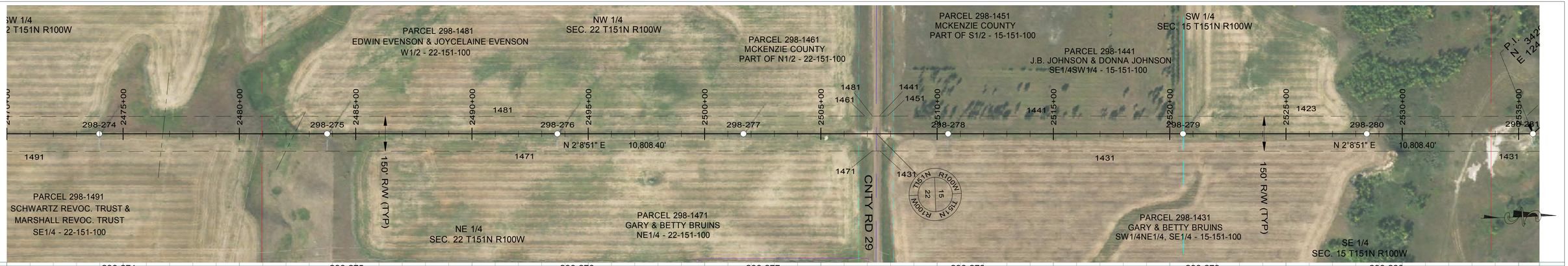
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2410+00 TO 2474+54
STRUCTURE: 298-267 TO 298-274

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-047

REV. NO. 1



298-274
STA=2473+97.63
HT=120.00 ELE=2326.82
3ST-144
900' RS

298-275
STA=2483+77.63
HT=131.00 ELE=2325.82
3SLT2-130
900' RS

298-276
STA=2493+67.63
HT=126.00 ELE=2363.35
3ST2-125
900' RS

298-277
STA=2501+67.63
HT=115.00 ELE=2399.29
3ST-138
900' RS

298-278
STA=2510+47.63
HT=126.00 ELE=2392.04
3ST2-125
900' RS

298-279
STA=2520+57.63
HT=120.00 ELE=2394.71
3ST-144
900' RS

298-280
STA=2528+47.63
HT=100.00 ELE=2406.15
3ST-122
900' RS

714.71

298-281
STA=2535+62.34
HT=101.09 ELE=2331.57
3SDA45-100
OPGW SPLICE
END 900' RS,
BEGIN 1050' RS

SPLICE

PIPELINE 2476+67.87
PIPELINE 2480+49.65
PIPELINE 2480+58.51
PIPELINE 2482+38.05

PI 43°17'33"

DISPLAYED 212°F MAX SAG 7705 (LBS)
DISPLAYED 60°F MAX SAG 2257 (LBS)
DISPLAYED 60°F MAX SAG 2243 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
	IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.				
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10438	21787	29429	900`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2257	6446	10251	900`
OHGW	7/16-INCH EHS	2243	5999	9682	900`

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

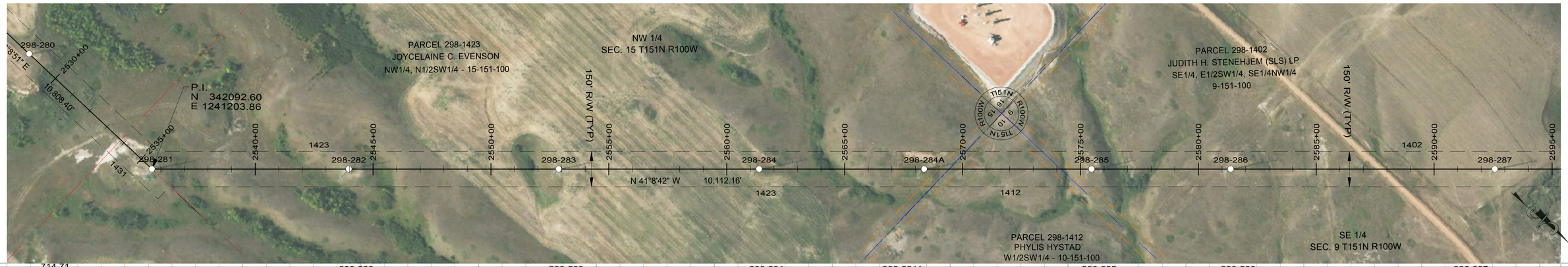
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2470+00 TO 2535+62
STRUCTURE: 298-274 TO 298-281

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-048
REV. NO.: 1



714.71

298-281
STA=2535+62.34
HT=101.09 ELE=2331.57
3SDA45-100
OPGW SPLICE
END 900' RS,
BEGIN 1050' RS

298-282
STA=2543+97.63
HT=110.00 ELE=2307.57
3ST-133
1050' RS

298-283
STA=2552+87.63
HT=105.00 ELE=2299.44
3ST-127
1050' RS

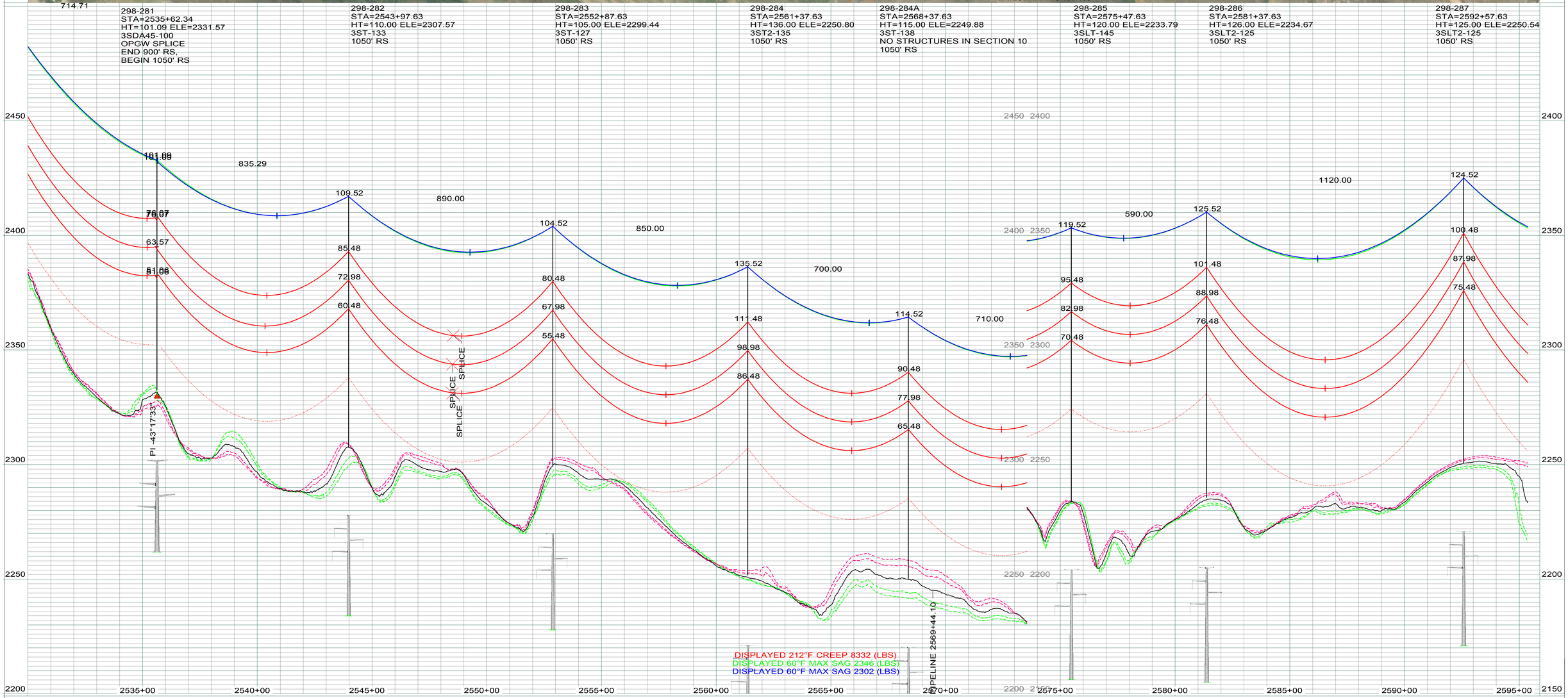
298-284
STA=2561+37.63
HT=136.00 ELE=2250.80
3ST2-135
1050' RS

298-284A
STA=2568+37.63
HT=115.00 ELE=2249.88
3ST-138
NO STRUCTURES IN SECTION 10
1050' RS

298-285
STA=2575+47.63
HT=120.00 ELE=2233.79
3SLT-145
1050' RS

298-286
STA=2581+37.63
HT=126.00 ELE=2234.67
3SLT2-125
1050' RS

298-287
STA=2592+57.63
HT=125.00 ELE=2250.54
3SLT2-125
1050' RS



DISPLAYED 212°F CREEP 8332 (LBS)
DISPLAYED 60°F MAX SAG 2346 (LBS)
DISPLAYED 60°F MAX SAG 2302 (LBS)

PIPELINE 2569+44.10

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
	IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.				
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10723	21629	30173	1050'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2346	6873	11088	1050'
OHGW	7/16-INCH EHS	2302	6386	10441	1050'

DESIGN BY:	GCC/CDB	DATE: 2013-2014
DRAWN BY:	C. BAUER	DATE: 2013-2014
DESIGN CHK:	GCC	DATE: FALL2014
DRAFT CHK:	CLK	DATE: NOV2014
APPROVED:	G CHRISTENSON	DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

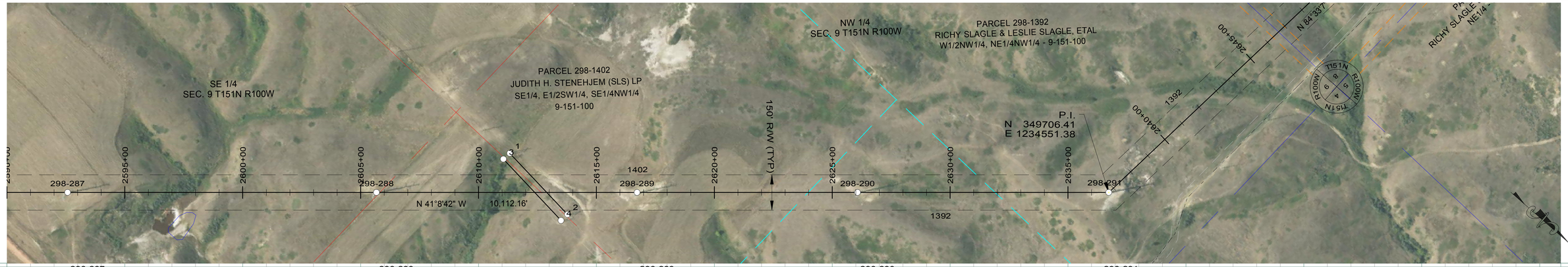
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2530+00 TO 2595+37
STRUCTURE: 298-281 TO 298-287

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-049

REV. NO. 2



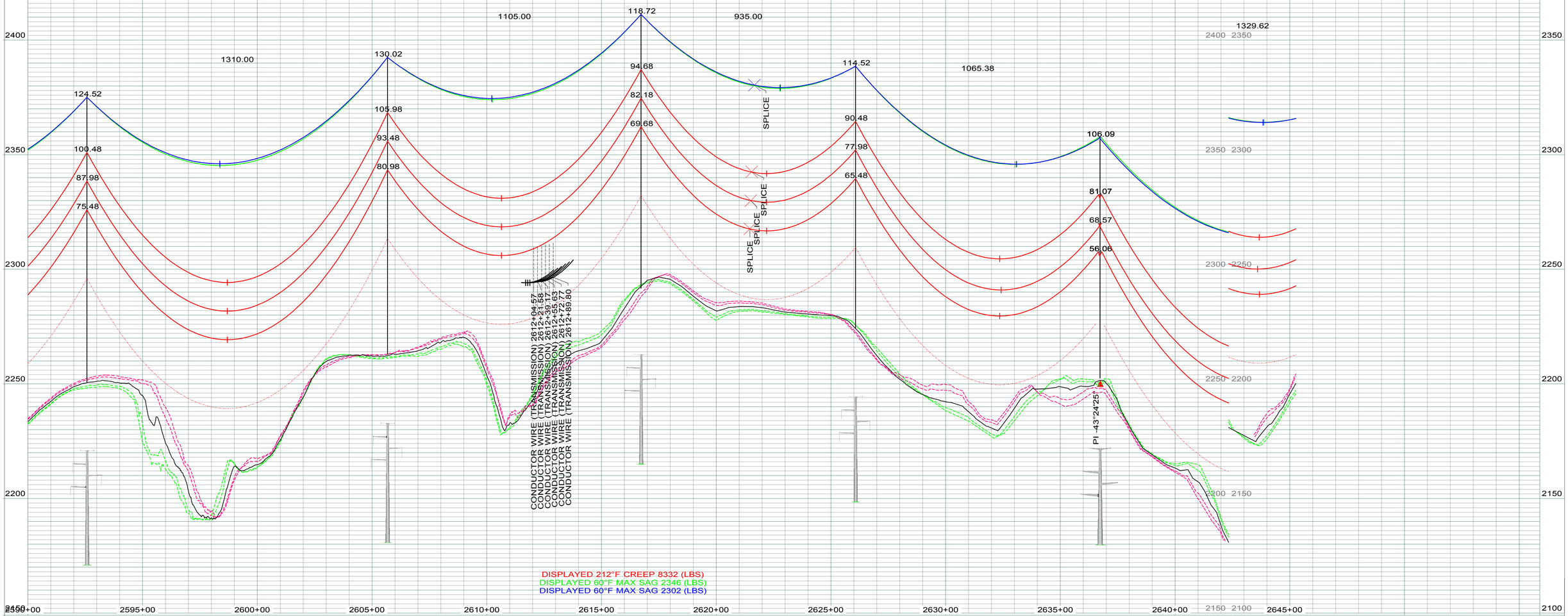
298-287
STA=2592+57.63
HT=125.00 ELE=2250.54
3SLT2-125
1050' RS

298-288
STA=2605+67.63
HT=130.50 ELE=2262.43
3SLT2-130
1050' RS

298-289
STA=2616+72.63
HT=119.20 ELE=2292.52
3SLT-145
1050' RS

298-290
STA=2626+07.63
HT=115.00 ELE=2274.09
3SLT-139
1050' RS

298-291
STA=2636+73.00
HT=106.09 ELE=2251.51
3SDA45-105
END 1050' RS, BEGIN 1200' RS



DISPLAYED 212°F CREEP 8332 (LBS)
DISPLAYED 60°F MAX SAG 2346 (LBS)
DISPLAYED 60°F MAX SAG 2302 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10723	21629	30173	1050'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2346	6873	11088	1050'
OHGW	7/16-INCH EHS	2302	6386	10441	1050'

DESIGN BY: GCC/CDB	DATE: 2013-2014	
DRAWN BY: C. BAUER	DATE: 2013-2014	
DESIGN CHK: GCC	DATE: FALL2014	
DRAFT CHK: CLK	DATE: NOV2014	
APPROVED: G CHRISTENSON	DATE: FALL2014	

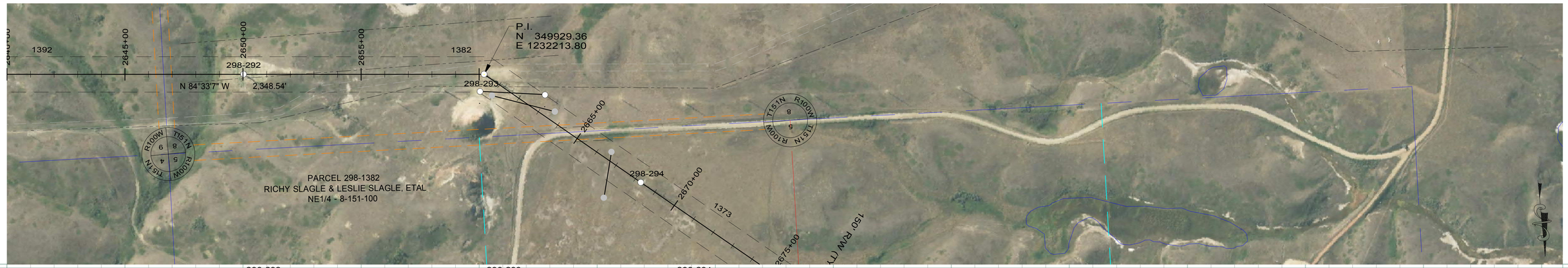
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2590+00 TO 2645+27
STRUCTURE: 298-287 TO 298-291

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

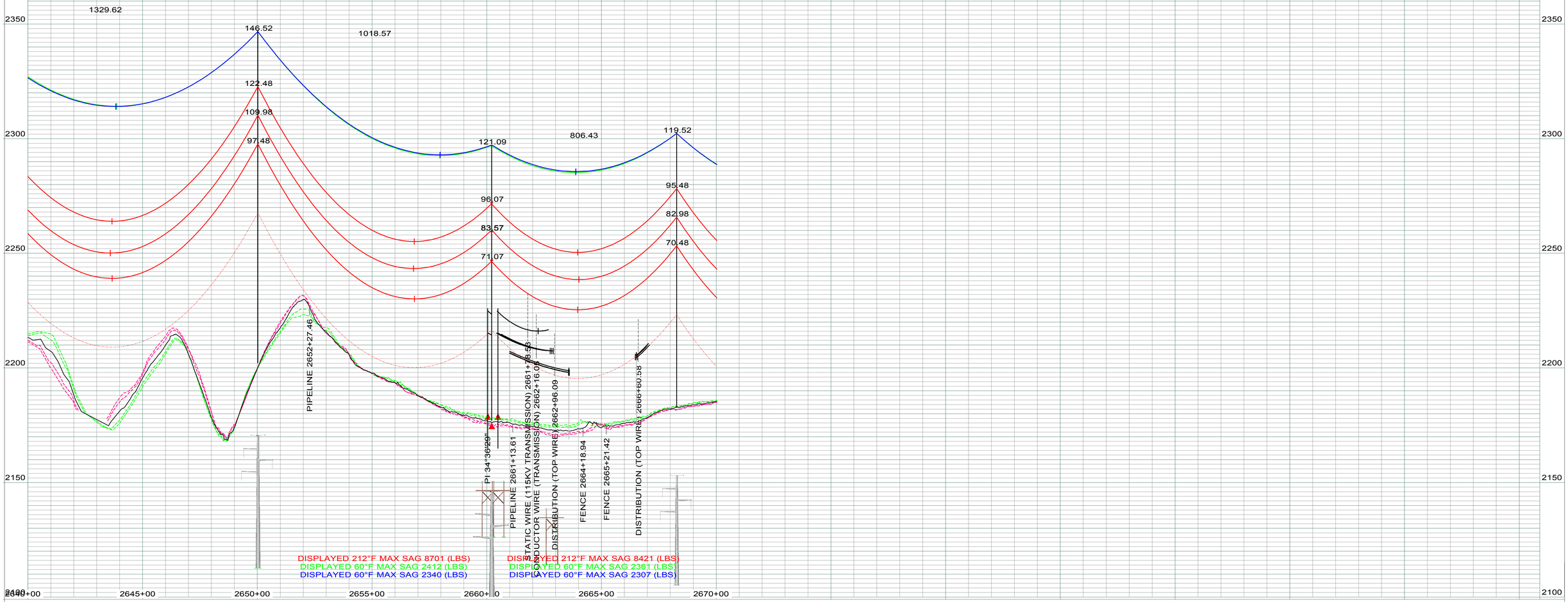
BASIN DRAWING NO.: 298-090-T3-050
REV. NO.: 1



298-292
STA=2650+02.63
HT=147.00 ELE=2200.26
3SLT2-145
2-FT REVEAL
1200' RS

298-293
STA=2660+21.19
HT=121.09 ELE=2176.06
3SDA35-120
END 1200' RS, BEGIN 1100' RS

298-294
STA=2668+27.63
HT=120.00 ELE=2182.79
3ST-144
1100' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10674	20876	30166	1200'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2412	7235	11835	1200'
OHGW	7/16-INCH EHS	2340	6714	11110	1200'

DESIGN BY: GCC/CDB	DATE: 2013-2014	FACILITY: TRANSMISSION SYSTEM MAINTENANCE
DRAWN BY: C. BAUER	DATE: 2013-2014	LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
DESIGN CHK: GCC	DATE: FALL2014	COUNTY: MCKENZIE
DRAFT CHK: CLK	DATE: NOV2014	
APPROVED: G CHRISTENSON	DATE: FALL2014	

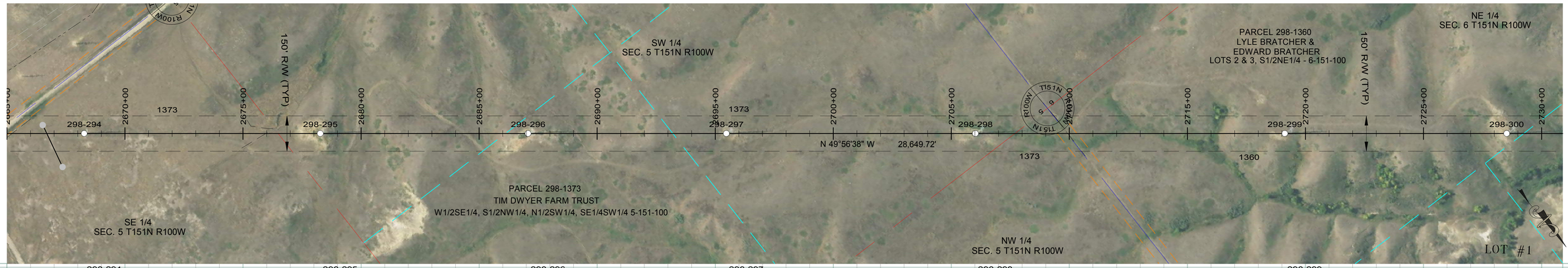
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2640+00 TO 2670+03
STRUCTURE: 298-292 TO 298-294

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-051

REV. NO. 2



298-294
STA=2668+27.63
HT=120.00 ELE=2182.79
3ST-144
1100' RS

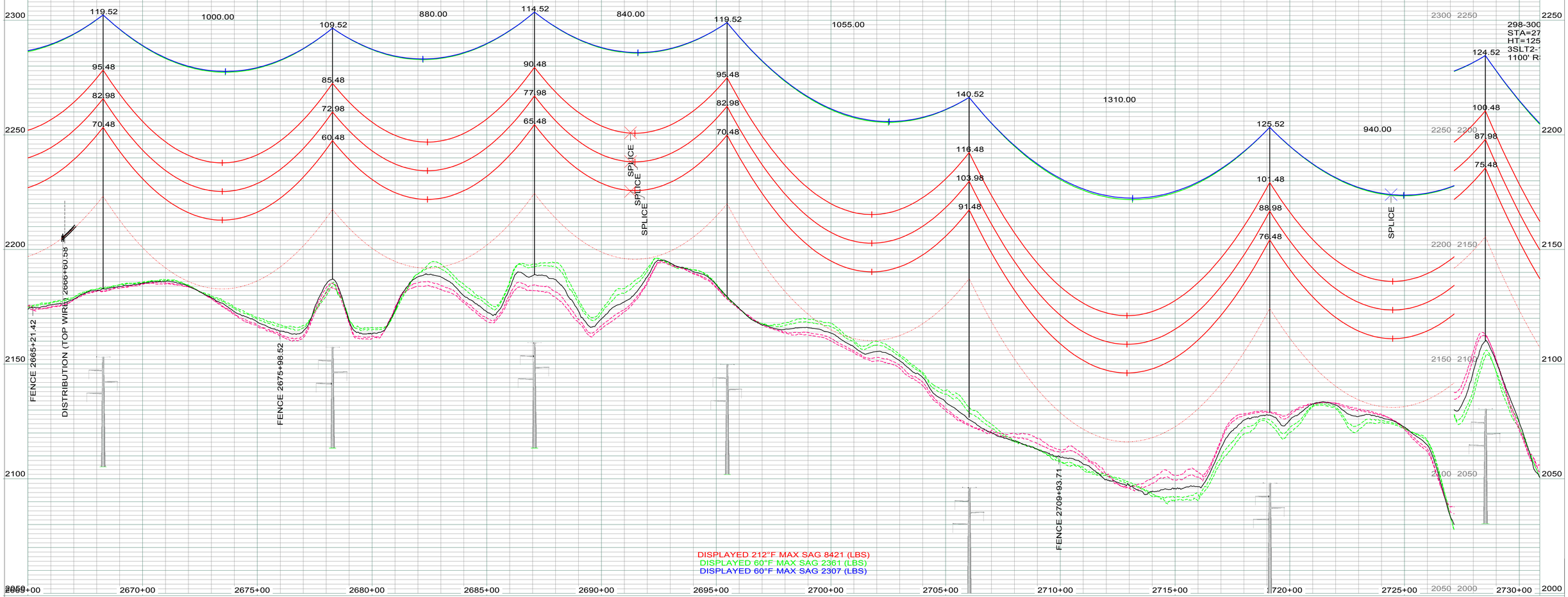
298-295
STA=2678+27.63
HT=110.00 ELE=2187.02
3ST-133
1100' RS

298-296
STA=2687+07.63
HT=115.00 ELE=2189.03
3ST-138
1100' RS

298-297
STA=2695+47.63
HT=120.00 ELE=2179.47
3ST-144
1100' RS

298-298
STA=2706+02.63
HT=141.00 ELE=2125.81
3SLT2-140
1100' RS

298-299
STA=2719+12.63
HT=126.00 ELE=2127.78
3SLT2-125
1100' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10618	21144	29973	1100'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2361	6982	11330	1100'
OHGW	7/16-INCH EHS	2307	6486	10658	1100'

DESIGN BY:	GCC/CDB	DATE: 2013-2014
DRAWN BY:	C. BAUER	DATE: 2013-2014
DESIGN CHK:	GCC	DATE: FALL2014
DRAFT CHK:	CLK	DATE: NOV2014
APPROVED:	G CHRISTENSON	DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

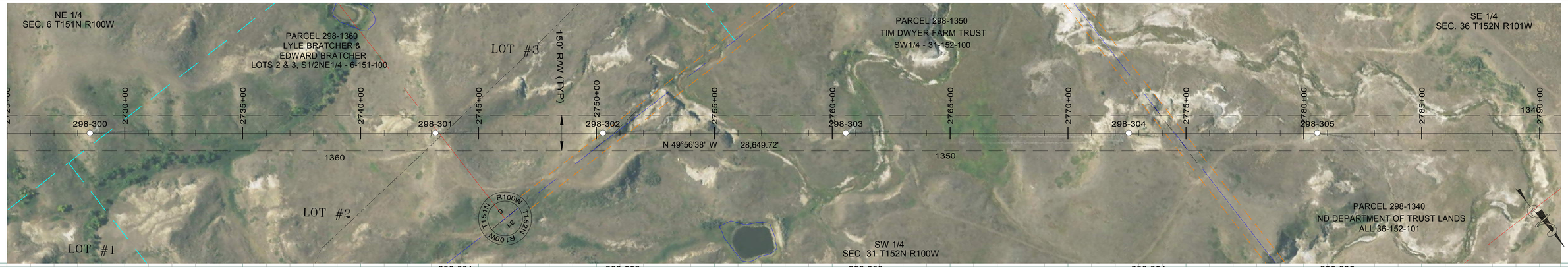
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2665+00 TO 2730+90
STRUCTURE: 298-294 TO 298-300

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-052

REV. NO.: 1



298-300
STA=2728+52.63
HT=125.00 ELE=2110.08
3SLT2-125
1100' RS

298-301
STA=2743+17.63
HT=90.00 ELE=2118.17
3SLT-112
1100' RS

298-302
STA=2750+27.63
HT=115.00 ELE=2067.90
3ST-138
1100' RS

298-303
STA=2760+57.63
HT=121.00 ELE=1978.23
3SDT-120
OPGW SPLICE
END 1100' RS, BEGIN 1000' RS

298-304
STA=2772+57.63
HT=105.00 ELE=2028.35
3SLT-128
1000' RS

298-305
STA=2780+57.63
HT=120.00 ELE=1966.80
3ST-144
1000' RS

1465.00 710.00 1030.00 1200.00 800.00 1120.00

124.52 100.48 87.98 75.48
89.52 65.48 52.98 40.48
114.52 90.48 77.98 65.48
121.00 96.00 83.50 71.00
104.52 80.48 67.98 55.48
119.52 95.48 82.98 70.48

PIPELINE 2743+53.34
FENCE 2750+73.70
FENCE 2774+51.17

DISPLAYED 212°F MAX SAG 8421 (LBS)
DISPLAYED 60°F MAX SAG 2361 (LBS)
DISPLAYED 60°F MAX SAG 2307 (LBS)

DISPLAYED 212°F MAX SAG 8178 (LBS)
DISPLAYED 60°F MAX SAG 2316 (LBS)
DISPLAYED 60°F MAX SAG 2284 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10721	21900	30132	1000`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2316	6734	10815	1000`
OHGW	7/16-INCH EHS	2284	6262	10196	1000`

		DATE
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

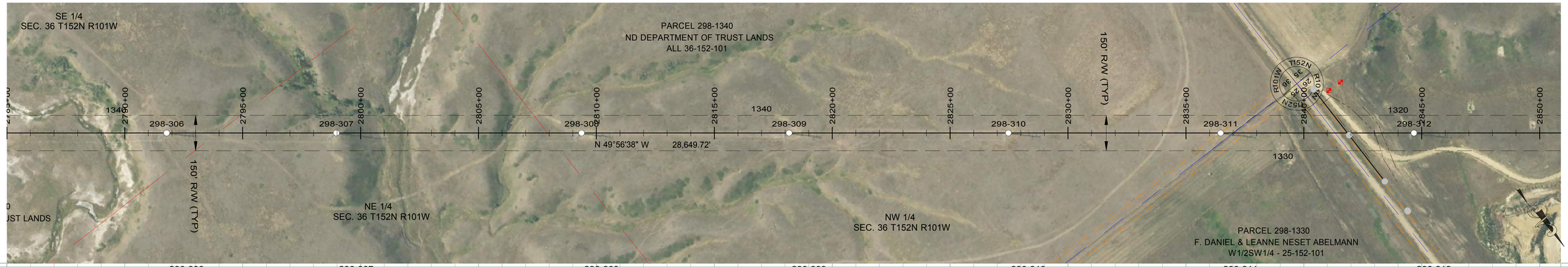
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2725+00 TO 2790+90
STRUCTURE: 298-300 TO 298-305

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-053

REV. NO. 1



298-306
STA=2791+77.63
HT=105.00 ELE=1994.85
3ST-127
1000' RS

298-307
STA=2798+97.63
HT=126.00 ELE=1979.71
3ST2-125
1000' RS

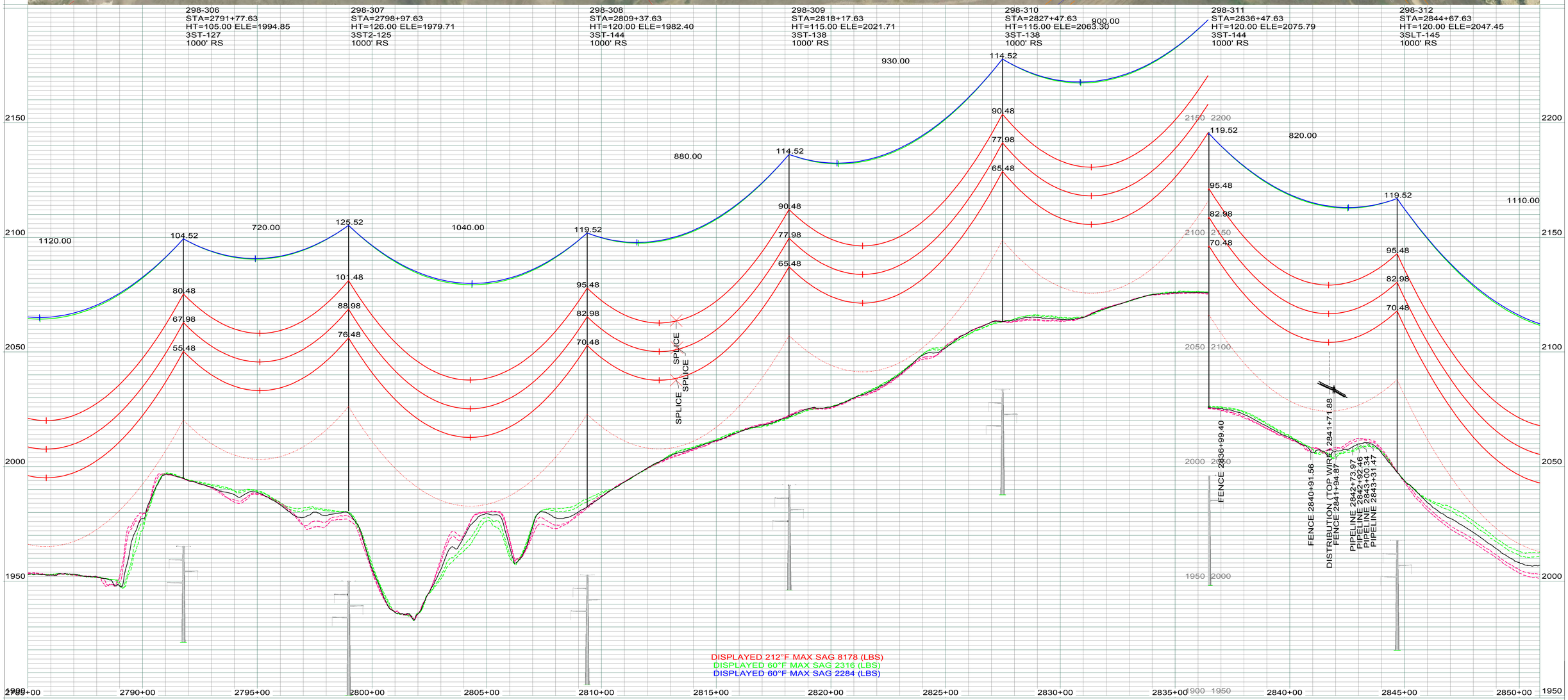
298-308
STA=2809+37.63
HT=120.00 ELE=1982.40
3ST-144
1000' RS

298-309
STA=2818+17.63
HT=115.00 ELE=2021.71
3ST-138
1000' RS

298-310
STA=2827+47.63
HT=115.00 ELE=2063.30
3ST-138
1000' RS

298-311
STA=2836+47.63
HT=120.00 ELE=2075.79
3ST-144
1000' RS

298-312
STA=2844+67.63
HT=120.00 ELE=2047.45
3SLT-145
1000' RS



DISPLAYED 212°F MAX SAG 8178 (LBS)
DISPLAYED 60°F MAX SAG 2316 (LBS)
DISPLAYED 60°F MAX SAG 2284 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10721	21900	30132	1000'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2316	6734	10815	1000'
OHGW	7/16-INCH EHS	2284	6262	10196	1000'

DESIGN BY:	GCC/CDB
DRAWN BY:	C. BAUER
DESIGN CHK:	GCC
DRAFT CHK:	CLK
APPROVED:	G CHRISTENSON
DATE:	2013-2014
DATE:	2013-2014
DATE:	FALL2014
DATE:	NOV2014
DATE:	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

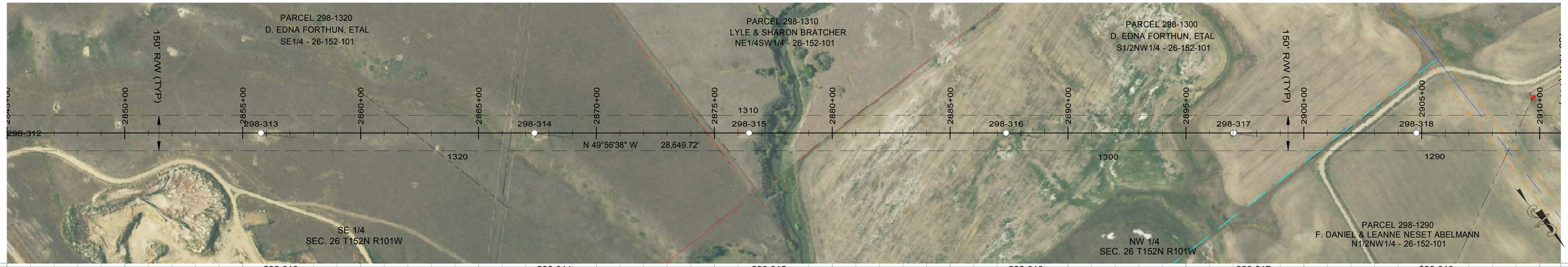
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2785+00 TO 2850+90
STRUCTURE: 298-306 TO 298-312

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-054

REV. NO. 1



298-313
STA=2855+77.63
HT=126.00 ELE=1991.27
3SLT2-125
1000' RS

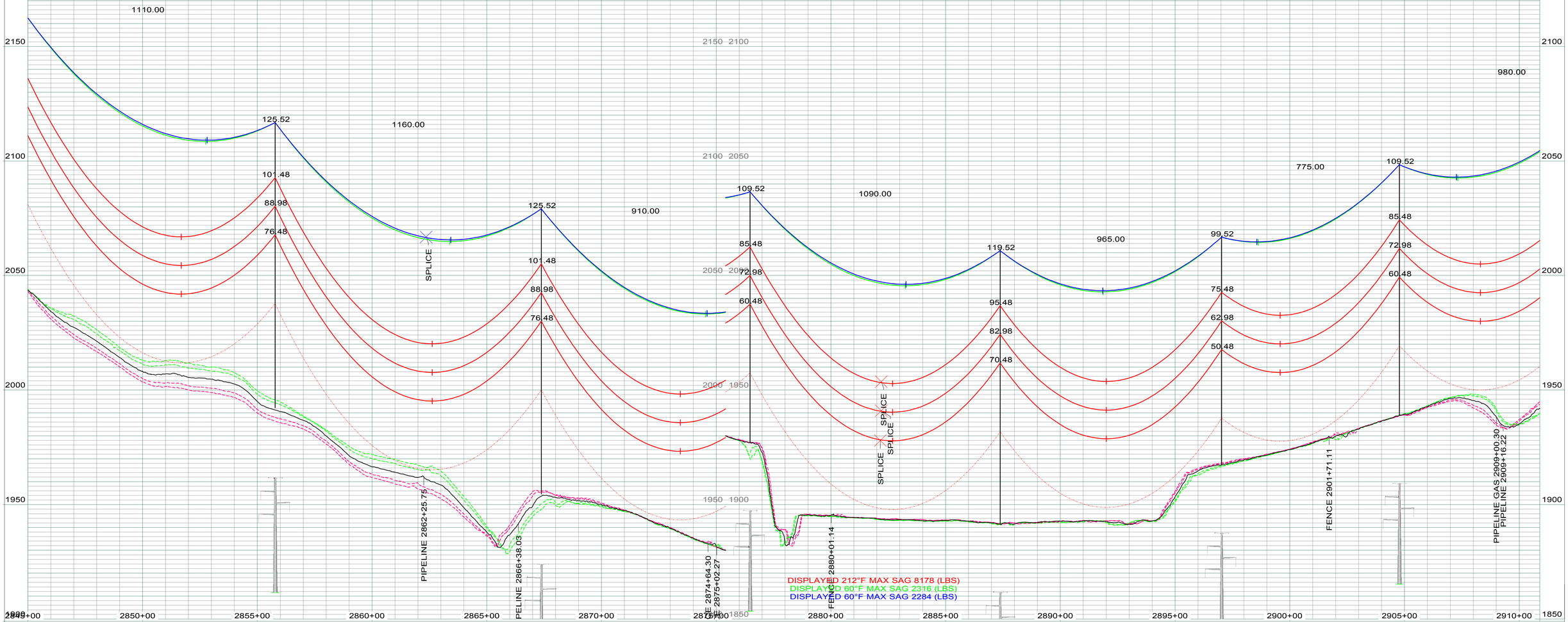
298-314
STA=2867+37.63
HT=126.00 ELE=1953.61
3ST2-125
1000' RS

298-315
STA=2876+47.63
HT=110.00 ELE=1927.03
3ST-133
1000' RS

298-316
STA=2887+37.63
HT=120.00 ELE=1891.34
3SLT-145
1000' RS

298-317
STA=2897+02.63
HT=100.00 ELE=1917.24
3ST-122
1000' RS

298-318
STA=2904+77.63
HT=110.00 ELE=1938.85
3ST-133
1000' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10721	21900	30132	1000'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2316	6734	10815	1000'
OHGW	7/16-INCH EHS	2284	6262	10196	1000'

		DATE
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

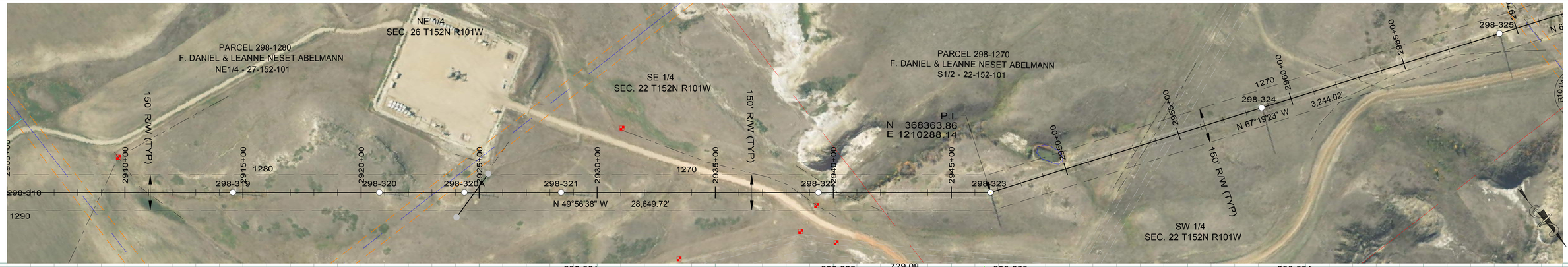
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2845+00 TO 2910+90
STRUCTURE: 298-313 TO 298-318

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-055
REV. NO.: 1



298-319
STA=2914+57.63
HT=110.00 ELE=1980.23
3ST-133
1000' RS

298-320
STA=2920+77.63
HT=95.00 ELE=2025.81
3ST-116
1000' RS

298-320A
STA=2924+37.63
HT=110.00 ELE=2012.84
3ST-133
1000' RS

298-321
STA=2928+47.63
HT=115.00 ELE=2001.02
3ST-138
1000' RS

298-322
STA=2939+37.63
HT=136.00 ELE=2015.31
3ST2-135
1000' RS

298-323
STA=2946+66.71
HT=101.09 ELE=2102.35
3SDA20-100
OPGW SPLICE
END 1000' RS, BEGIN 950' RS

298-324
STA=2958+69.66
HT=140.00 ELE=2134.04
3SLT2-140
950' RS

DISPLAYED 212°F MAX SAG 8178 (LBS)
DISPLAYED 60°F MAX SAG 2316 (LBS)
DISPLAYED 60°F MAX SAG 2284 (LBS)

DISPLAYED 212°F MAX SAG 7983 (LBS)
DISPLAYED 60°F MAX SAG 2288 (LBS)
DISPLAYED 60°F MAX SAG 2264 (LBS)

DISTRIBUTION (TOP WIRE) 2924+94.07
RAILROAD CL 2937+53.78
PIPELINE GAS 2938+52.74
PIPELINE 2938+55.15
PIPELINE MARKER POST 2939+29.55
FENCE 2940+19.97
PI -17°22'45"
PIPELINE 2962+52.49
PIPELINE OIL 2962+80.33
PIPELINE 2962+95.19
PIPELINE OIL 2953+36.57
PIPELINE GAS 2953+86.27
PIPELINE GAS 2909+00.30
PIPELINE 2909+16.22
FENCE 2910+94.48

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10721	21900	28821	1000'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2316	6734	10587	1000'
OHGW	7/16-INCH EHS	2284	6262	10022	1000'

		DATE:
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

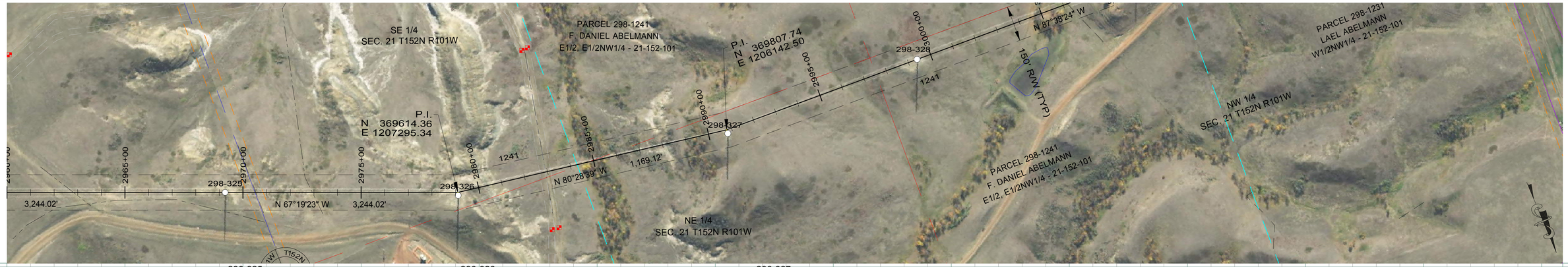
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2905+00 TO 2964+01
STRUCTURE: 298-319 TO 298-324

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-056

REV. NO. 2





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10663	22038	28576	950'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2288	6592	10305	950'
OHGW	7/16-INCH EHS	2264	6133	9764	950'

DESIGN BY: GCC/CDB	DATE: 2013-2014	FACILITY: TRANSMISSION SYSTEM MAINTENANCE
DRAWN BY: C. BAUER	DATE: 2013-2014	LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
DESIGN CHK: GCC	DATE: FALL2014	COUNTY: MCKENZIE
DRAFT CHK: CLK	DATE: NOV2014	
APPROVED: G CHRISTENSON	DATE: FALL2014	

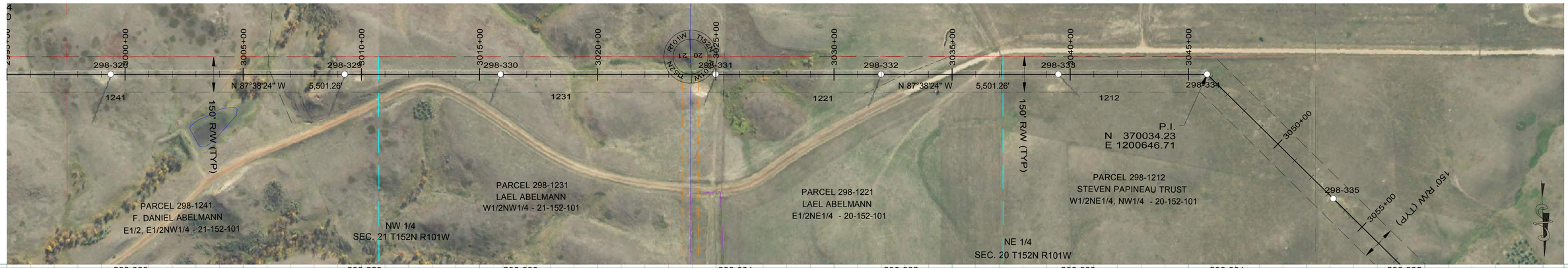
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

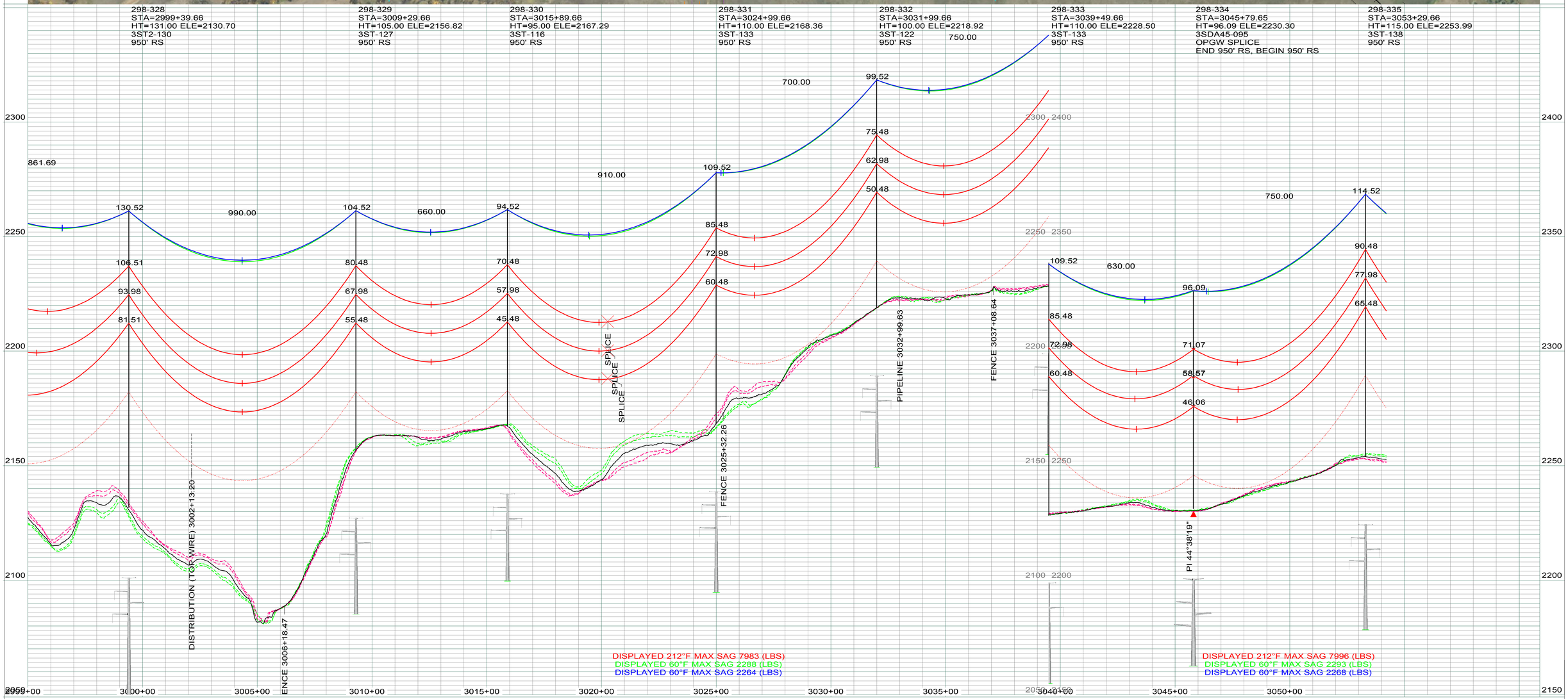
PLAN AND PROFILE
STATION: 2960+00 TO 2998+20
STRUCTURE: 298-325 TO 298-327

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-057

REV. NO.: 1





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10663	22038	29961	950`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2288	6592	10537	950`
OHGW	7/16-INCH EHS	2264	6133	9943	950`

DESIGN BY:	GCC/CDB	DATE: 2013-2014
DRAWN BY:	C. BAUER	DATE: 2013-2014
DESIGN CHK:	GCC	DATE: FALL2014
DRAFT CHK:	CLK	DATE: NOV2014
APPROVED:	G CHRISTENSON	DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

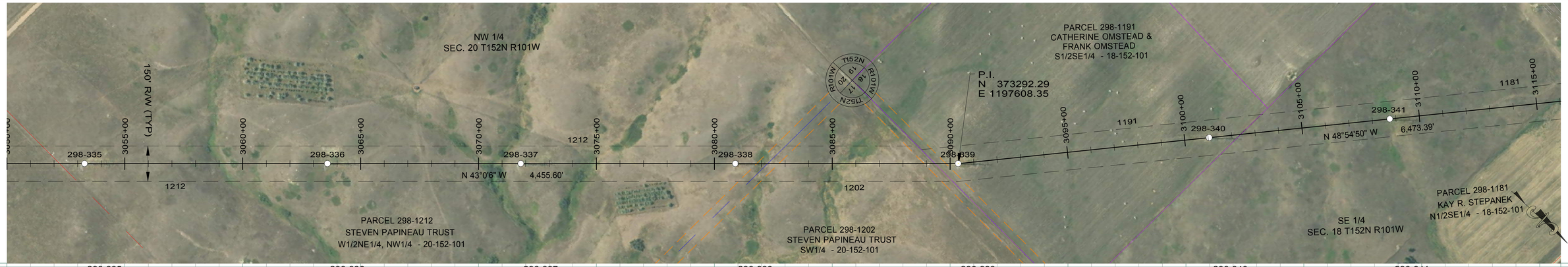
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 2995+00 TO 3054+21
STRUCTURE: 298-328 TO 298-335

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-058

REV. NO. 1



298-335
STA=3053+29.66
HT=115.00 ELE=2253.99
3ST-138
950' RS

298-336
STA=3063+59.66
HT=115.00 ELE=2245.31
3ST-138
950' RS

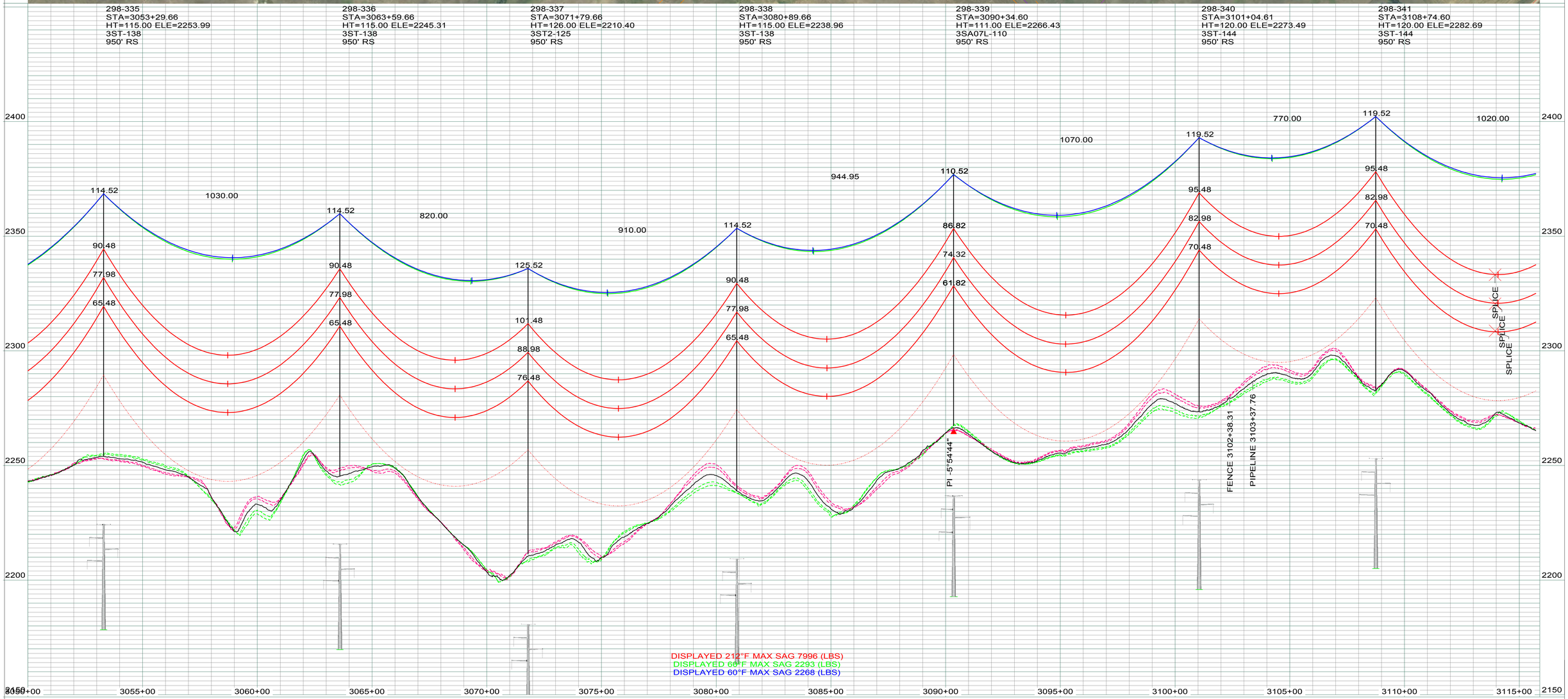
298-337
STA=3071+79.66
HT=126.00 ELE=2210.40
3ST2-125
950' RS

298-338
STA=3080+89.66
HT=115.00 ELE=2238.96
3ST-138
950' RS

298-339
STA=3090+34.60
HT=111.00 ELE=2266.43
3SA07L-110
950' RS

298-340
STA=3101+04.61
HT=120.00 ELE=2273.49
3ST-144
950' RS

298-341
STA=3108+74.60
HT=120.00 ELE=2282.69
3ST-144
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10691	22113	30022	950'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2293	6600	10546	950'
OHGW	7/16-INCH EHS	2268	6139	9948	950'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

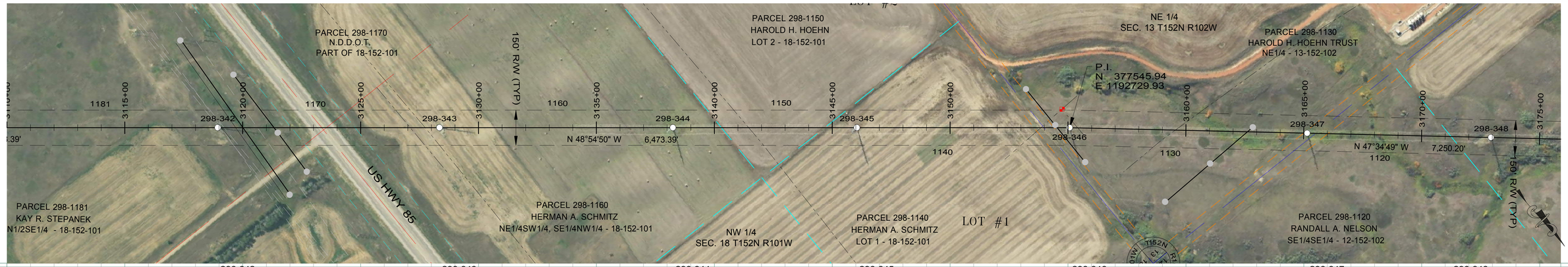
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3050+00 TO 3115+72
STRUCTURE: 298-335 TO 298-341

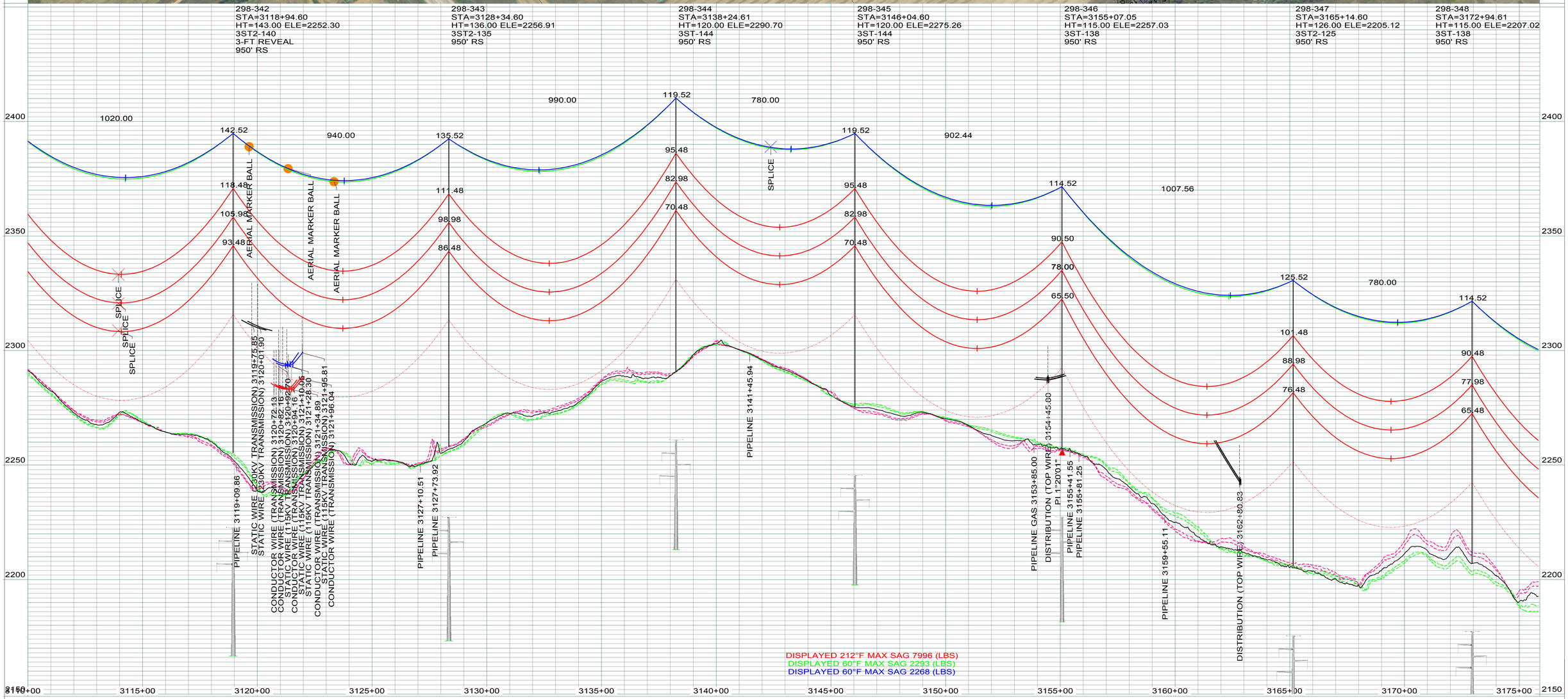
SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-059

REV. NO. 1



298-342	298-343	298-344	298-345	298-346	298-347	298-348
STA=3118+94.60	STA=3128+34.60	STA=3138+24.61	STA=3146+04.60	STA=3155+07.05	STA=3165+14.60	STA=3172+94.61
HT=143.00 ELE=2252.30	HT=136.00 ELE=2256.91	HT=120.00 ELE=2290.70	HT=120.00 ELE=2275.26	HT=115.00 ELE=2257.03	HT=126.00 ELE=2205.12	HT=115.00 ELE=2207.02
3ST2-140	3ST2-135	3ST-144	3ST-144	3ST-138	3ST2-125	3ST-138
3-FT REVEAL	950' RS	950' RS	950' RS	950' RS	950' RS	950' RS
950' RS						



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
	IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.				
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10691	22113	30022	950'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2293	6600	10546	950'
OHGW	7/16-INCH EHS	2268	6139	9948	950'

DESIGN BY:	GCC/CDB	DATE: 2013-2014
DRAWN BY:	C. BAUER	DATE: 2013-2014
DESIGN CHK:	GCC	DATE: FALL2014
DRAFT CHK:	CLK	DATE: NOV2014
APPROVED:	G CHRISTENSON	DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

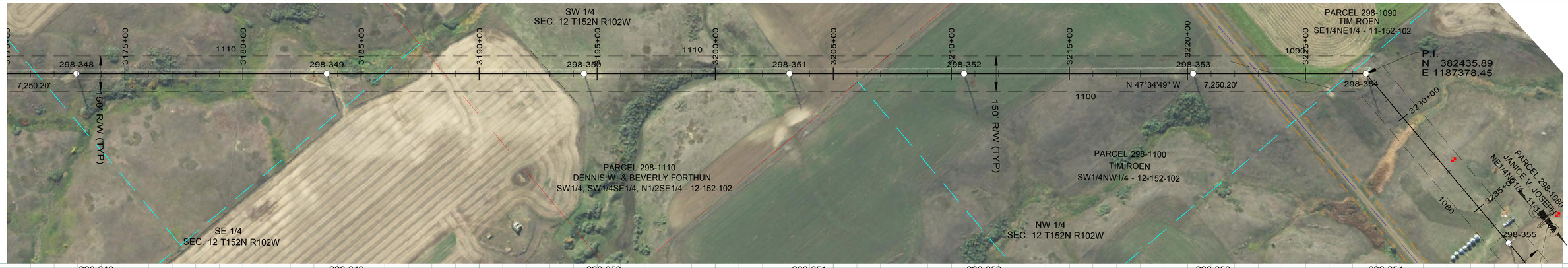
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3110+00 TO 3175+83
STRUCTURE: 298-342 TO 298-348

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-060

REV. NO. 2



298-348
STA=3172+94.61
HT=115.00 ELE=2207.02
3ST-138
950' RS

298-349
STA=3183+54.60
HT=141.00 ELE=2175.46
3SLT2-140
950' RS

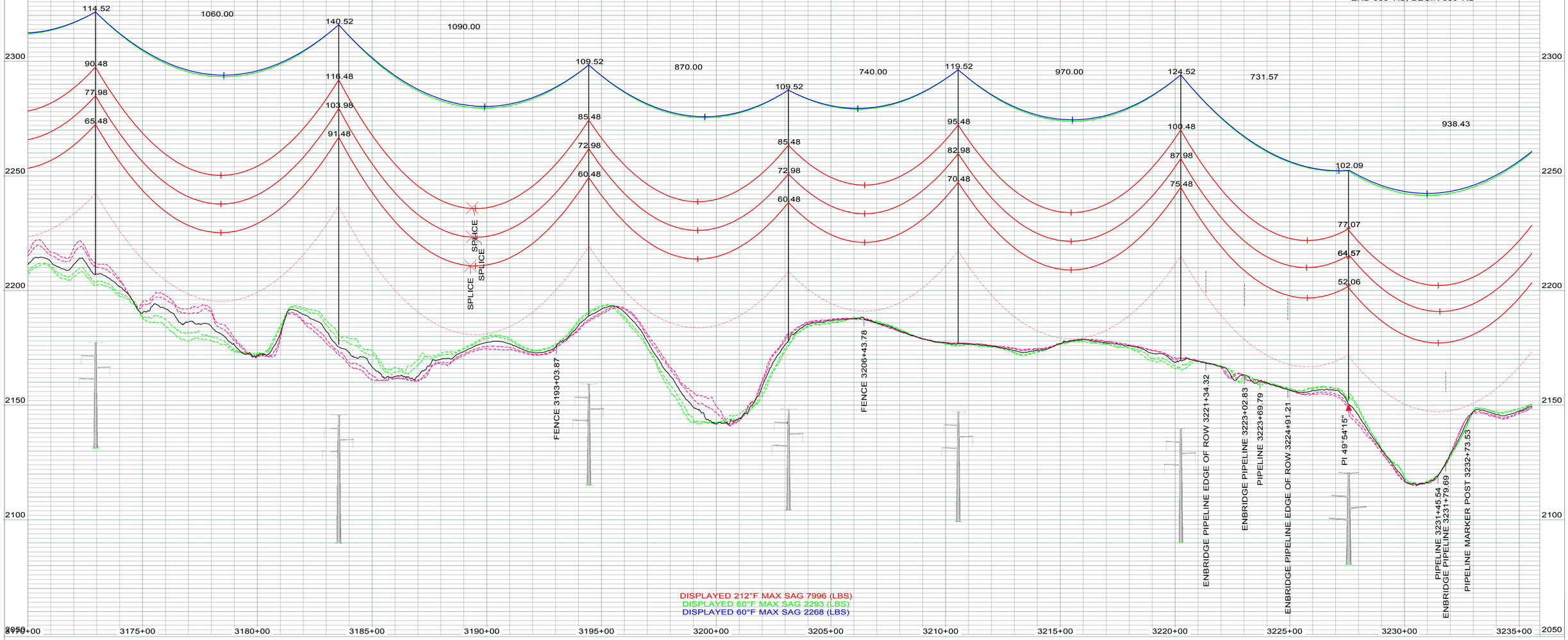
298-350
STA=3194+44.60
HT=110.00 ELE=2188.88
3ST-133
950' RS

298-351
STA=3203+14.61
HT=110.00 ELE=2177.95
3ST-133
950' RS

298-352
STA=3210+54.60
HT=120.00 ELE=2176.82
3ST-144
950' RS

298-353
STA=3220+24.61
HT=125.00 ELE=2169.57
3ST-150
950' RS

298-354
STA=3227+56.18
HT=102.09 ELE=2150.30
3SDA50-100
OPGW SPLICE
2 FT REVEAL
END 950' RS, BEGIN 950' RS



DISPLAYED 212°F MAX SAG 7996 (LBS)
DISPLAYED 60°F MAX SAG 2293 (LBS)
DISPLAYED 60°F MAX SAG 2268 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10691	22113	30022	950'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2293	6600	10546	950'
OHGW	7/16-INCH EHS	2268	6139	9948	950'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

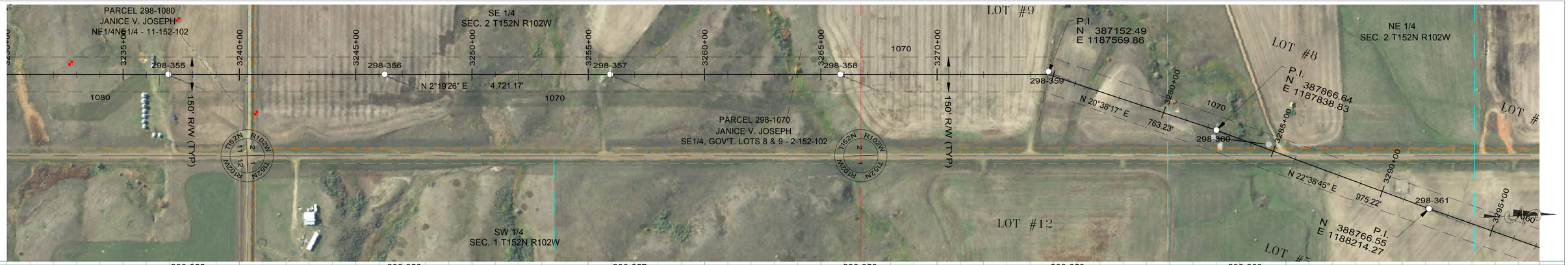
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3170+00 TO 3235+55
STRUCTURE: 298-348 TO 298-354

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-061

REV. NO. 1



298-355
STA=3236+94.61
HT=120.00 ELE=2154.09
3ST-144
950' RS

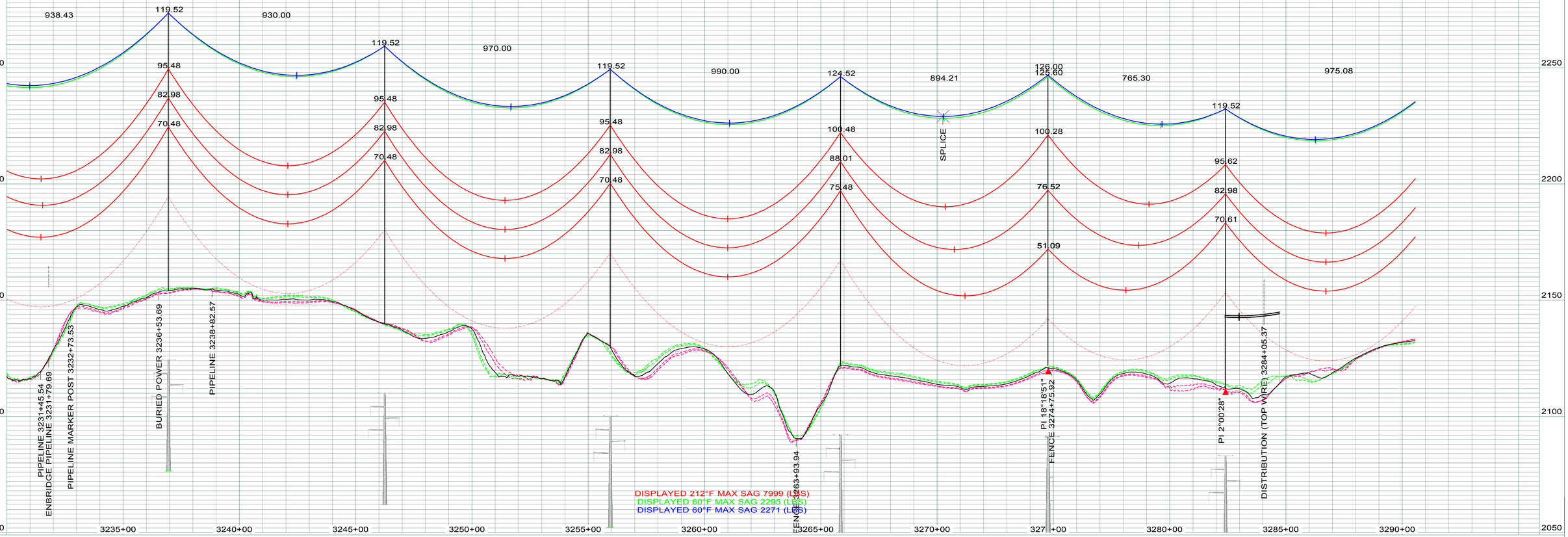
298-356
STA=3246+24.60
HT=120.00 ELE=2139.79
3ST-144
950' RS

298-357
STA=3255+94.61
HT=120.00 ELE=2129.88
3ST-144
950' RS

298-358
STA=3265+84.60
HT=125.00 ELE=2121.72
3ST2-125
950' RS

298-359
STA=3274+76.66
HT=126.00 ELE=2120.93
3SA20-125
950' RS

298-360
STA=3282+39.78
HT=120.00 ELE=2112.78
3ST-144
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
3	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10699	22132	30037	950`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2295	6604	10548	950`
OHGW	7/16-INCH EHS	2271	6143	9952	950`

		DATE
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

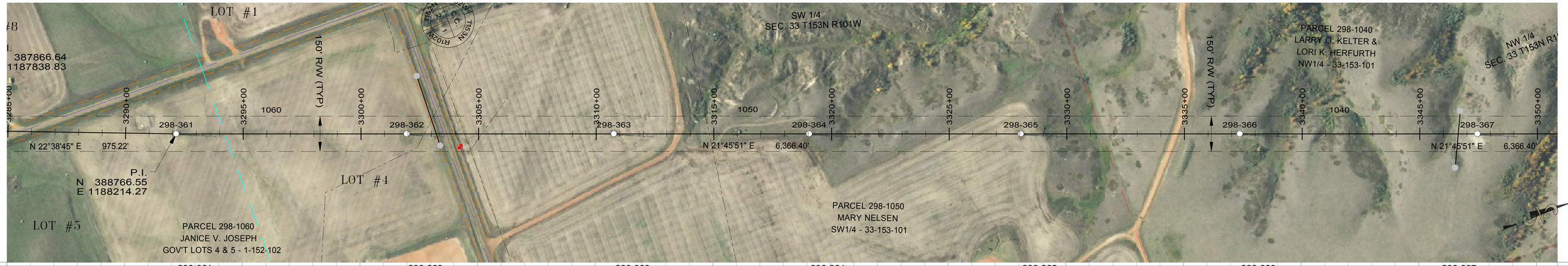
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3230+00 TO 3290+56
STRUCTURE: 298-355 TO 298-360

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-062

REV. NO. 3



298-361
STA=3292+14.87
HT=115.00 ELE=2135.15
3ST-138
950' RS

298-362
STA=3301+94.87
HT=115.00 ELE=2165.11
3ST-138
950' RS

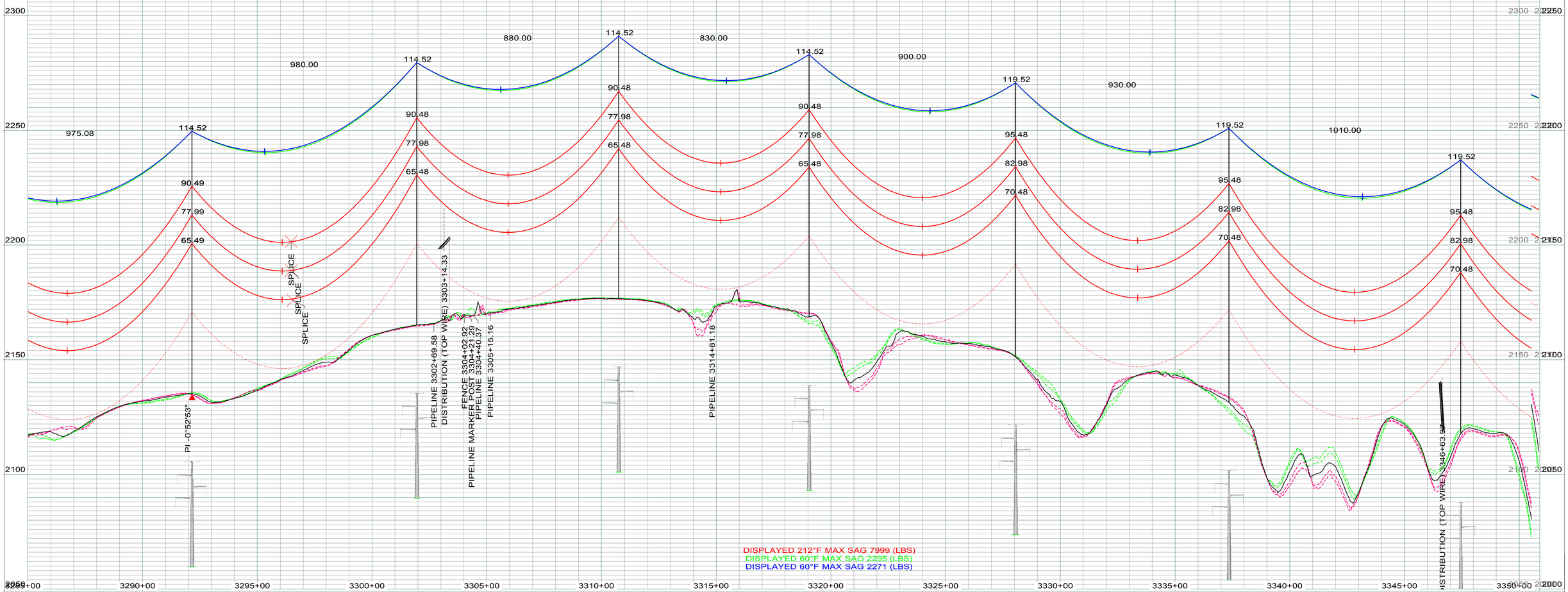
298-363
STA=3310+74.87
HT=115.00 ELE=2176.64
3ST-138
950' RS

298-364
STA=3319+04.87
HT=115.00 ELE=2168.57
3ST-138
950' RS

298-365
STA=3328+04.87
HT=120.00 ELE=2151.27
3ST-144
950' RS

298-366
STA=3337+34.87
HT=120.00 ELE=2131.43
3ST-144
950' RS

298-367
STA=3347+44.87
HT=120.00 ELE=2117.64
3ST-144
950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10699	22132	30037	950'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2295	6604	10548	950'
OHGW	7/16-INCH EHS	2271	6143	9952	950'

		DATE:
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

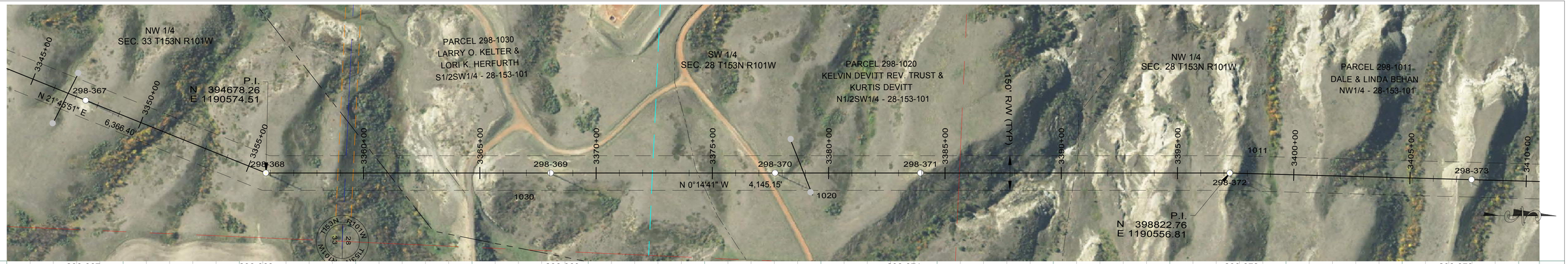
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

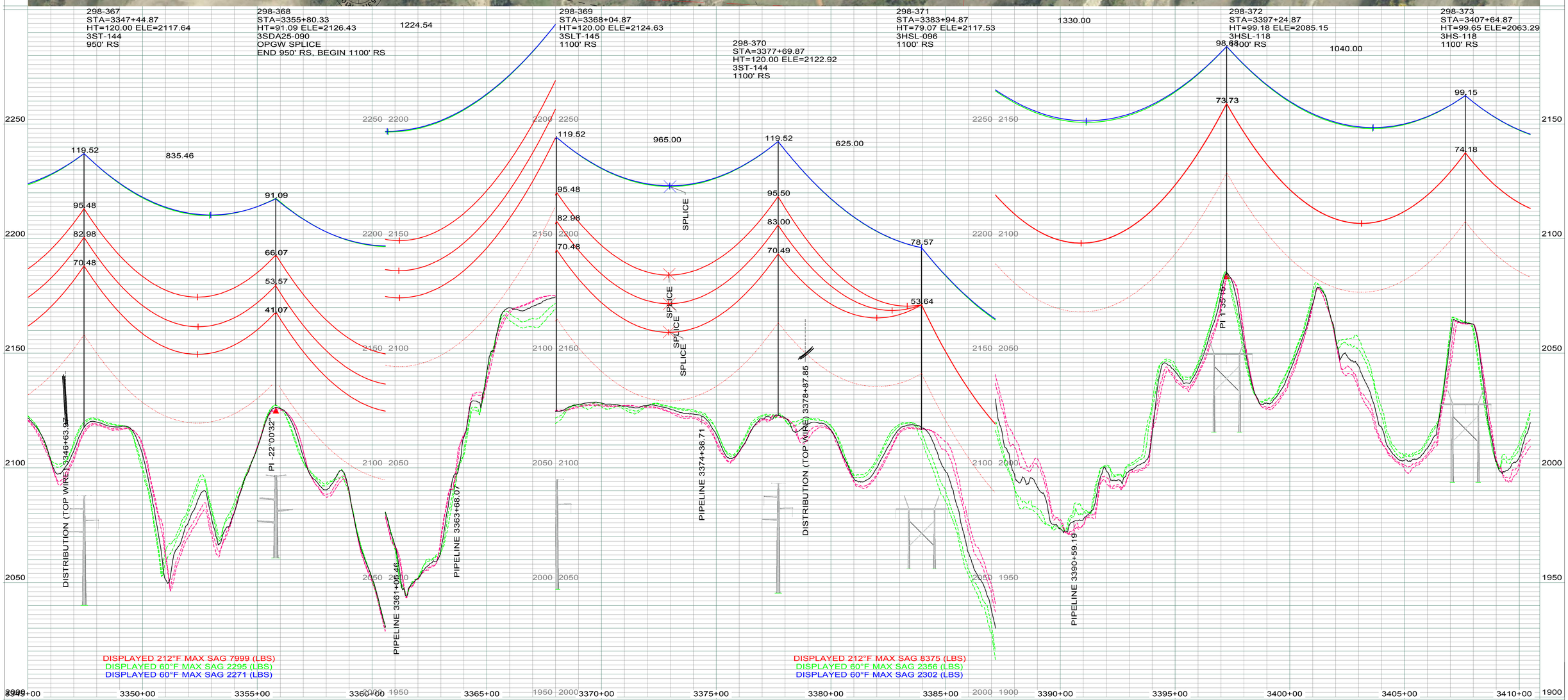
PLAN AND PROFILE
STATION: 3285+00 TO 3350+85
STRUCTURE: 298-361 TO 298-367

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-063

REV. NO. 2





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
3	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10532	20937	29779	1100'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2356	6974	11322	1100'
OHGW	7/16-INCH EHS	2302	6475	10650	1100'

		DATE
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

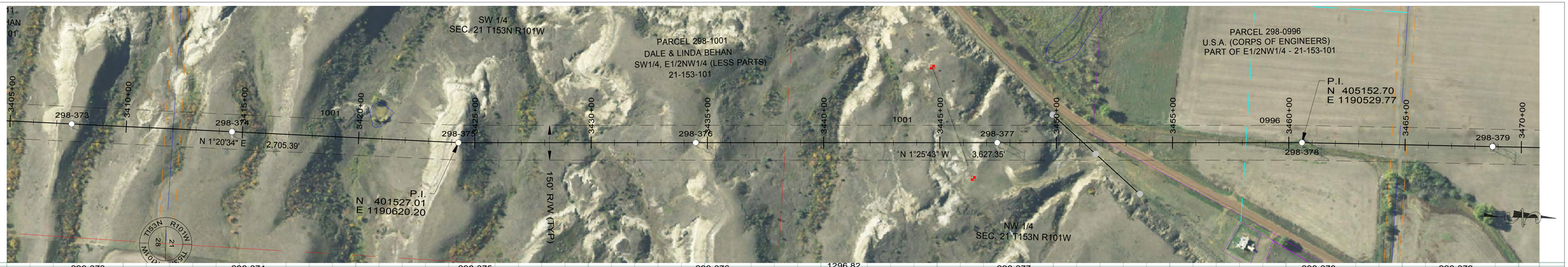
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3345+00 TO 3410+48
STRUCTURE: 298-367 TO 298-373

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-064
REV. NO.: 3



298-373
STA=3407+64.87
HT=99.65 ELE=2063.29
3HS-118
1100' RS

298-374
STA=3414+54.86
HT=89.14 ELE=2057.09
3HS-107
1100' RS

298-375
STA=3424+29.86
HT=75.11 ELE=2054.15
3HS-091
1100' RS

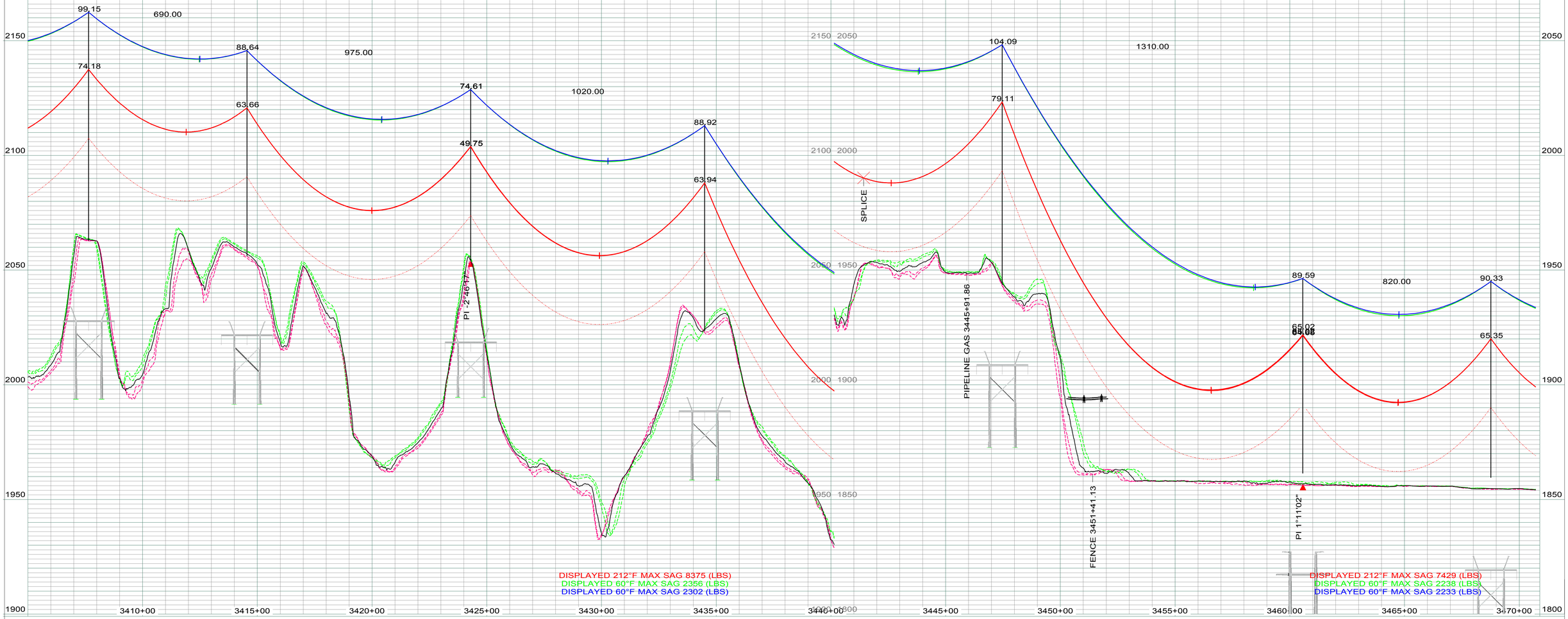
298-376
STA=3434+49.86
HT=89.42 ELE=2024.09
3HSL-107
1100' RS

1296.82

298-377
STA=3447+46.68
HT=104.59 ELE=1944.22
3HSL-124
1100' RS

298-378
STA=3460+56.68
HT=89.65 ELE=1856.77
3HD-085-W
END 1100' RS,
BEGIN 850' RS

298-379
STA=3468+76.68
HT=90.83 ELE=1854.74
3HS2-085-W
850' RS



DISPLAYED 212°F MAX SAG 8375 (LBS)
DISPLAYED 60°F MAX SAG 2356 (LBS)
DISPLAYED 60°F MAX SAG 2302 (LBS)

DISPLAYED 212°F MAX SAG 7429 (LBS)
DISPLAYED 60°F MAX SAG 2238 (LBS)
DISPLAYED 60°F MAX SAG 2233 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
3	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10532	20937	29779	1100'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2356	6974	11322	1100'
OHGW	7/16-INCH EHS	2302	6475	10650	1100'

DESIGN BY:	GCC/CDB	DATE: 2013-2014
DRAWN BY:	C. BAUER	DATE: 2013-2014
DESIGN CHK:	GCC	DATE: FALL2014
DRAFT CHK:	CLK	DATE: NOV2014
APPROVED:	G CHRISTENSON	DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3405+00 TO 3470+71
STRUCTURE: 298-373 TO 298-379

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

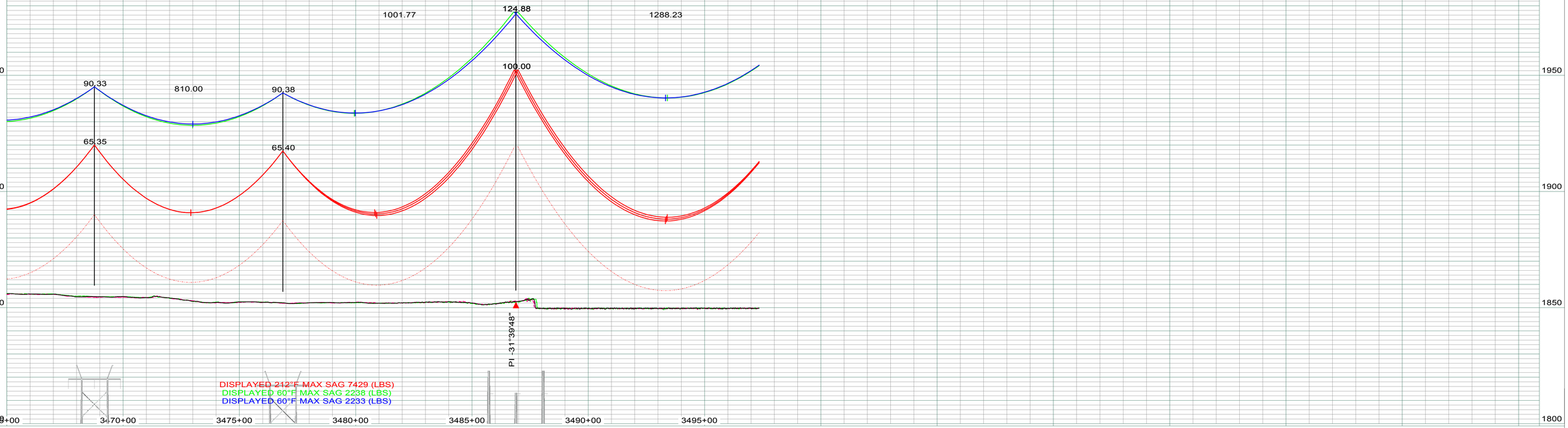
BASIN DRAWING NO.: 298-090-T3-065
REV. NO.: 3



298-379
STA=3468+76.68
HT=90.83 ELE=1854.74
3HS2-085-W
850' RS

298-380
STA=3476+86.68
HT=90.88 ELE=1852.06
3HS2-085-W
850' RS

298-381
STA=3486+88.45
HT=125.00 ELE=1852.42
3TPD35-120-W
OPGW SPLICE
END 850' RS, BEGIN 1000' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	9895	20728	28188	850'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2238	6314	9974	850'
OHGW	7/16-INCH EHS	2233	5878	9425	850'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

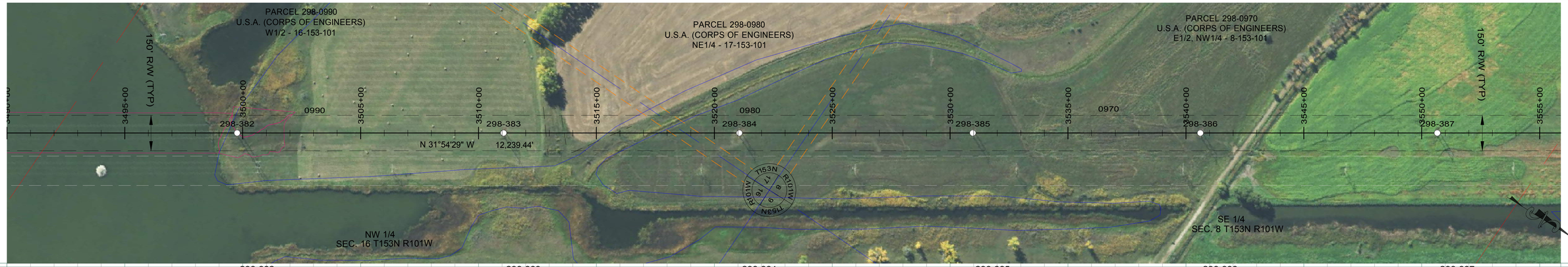
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3465+00 TO 3497+35
STRUCTURE: 298-379 TO 298-381

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-066
REV. NO.: 2



298-382
STA=3499+76.68
HT=125.94 ELE=1851.07
3HSL2-120-W
1000' RS

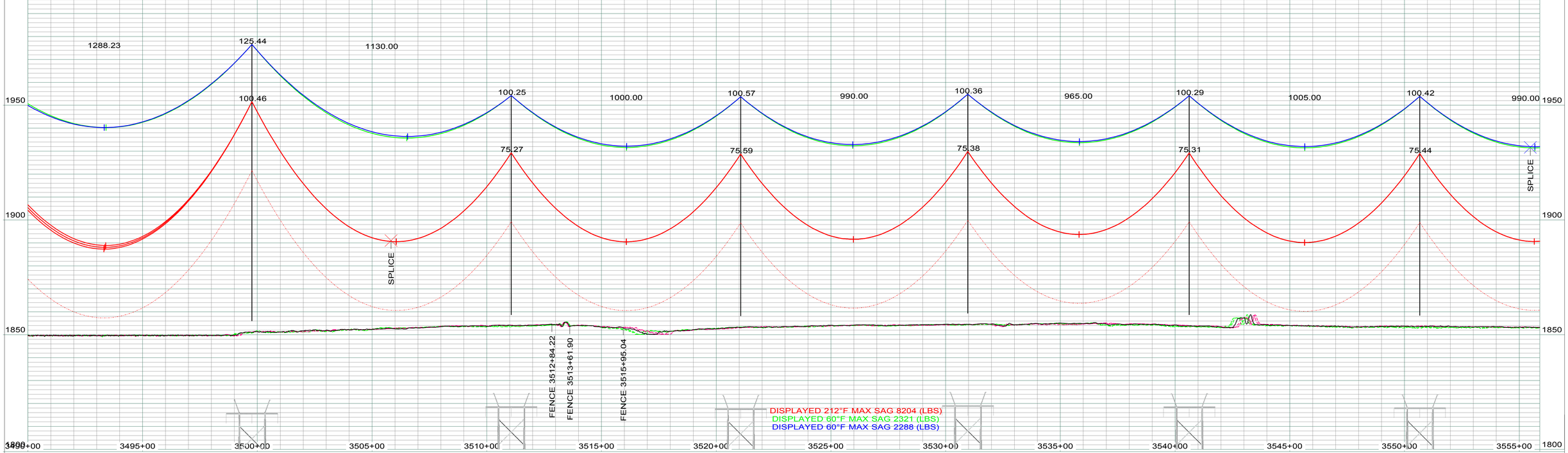
298-383
STA=3511+06.68
HT=100.75 ELE=1853.99
3HS2-095-W
1000' RS

298-384
STA=3521+06.68
HT=101.07 ELE=1853.17
3HS2-095-W
1000' RS

298-385
STA=3530+96.68
HT=100.86 ELE=1854.50
3HS2-095-W
1000' RS

298-386
STA=3540+61.68
HT=100.79 ELE=1853.89
3HS2-095-W
1000' RS

298-387
STA=3550+66.68
HT=100.92 ELE=1853.51
3HS2-095-W
1000' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10776	22032	30252	1000'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2321	6742	10823	1000'
OHGW	7/16-INCH EHS	2288	6268	10201	1000'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

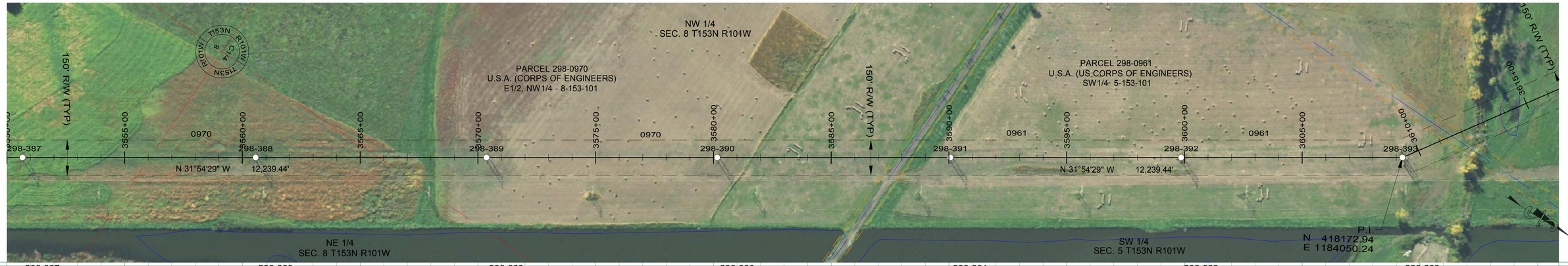
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3490+00 TO 3555+90
STRUCTURE: 298-382 TO 298-387

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-067

REV. NO. 2



298-387
STA=3550+66.68
HT=100.92 ELE=1853.51
3HS2-095-W
1000' RS

298-388
STA=3560+56.68
HT=100.53 ELE=1852.74
3HS2-095-W
1000' RS

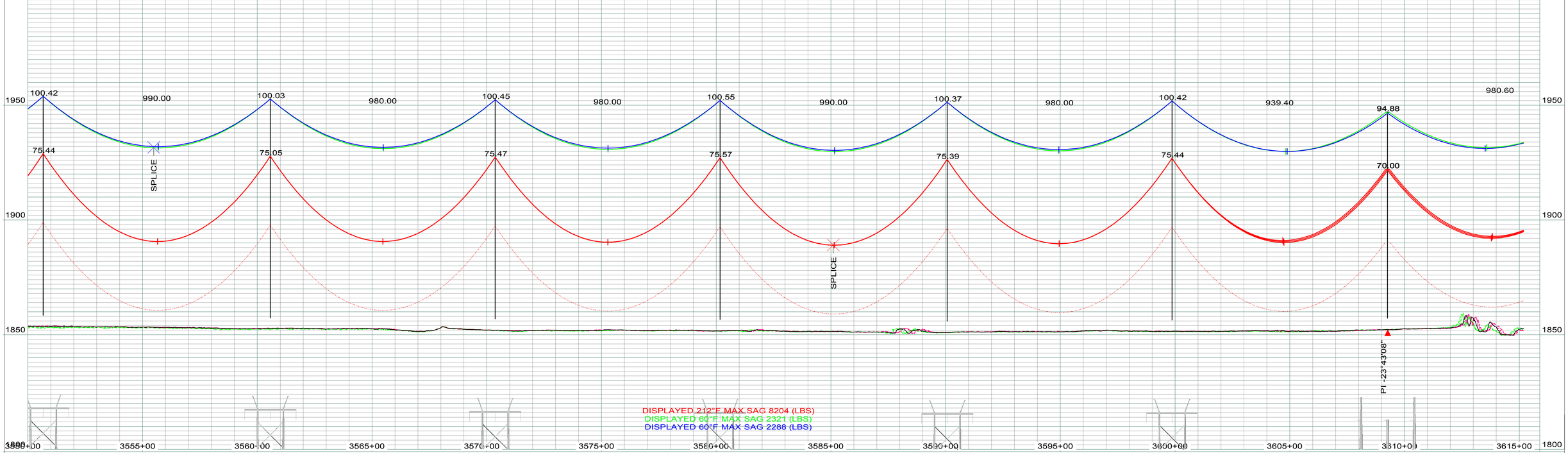
298-389
STA=3570+36.68
HT=100.95 ELE=1851.97
3HS2-095-W
1000' RS

298-390
STA=3580+16.68
HT=101.05 ELE=1851.59
3HS2-095-W
1000' RS

298-391
STA=3590+06.68
HT=100.87 ELE=1851.00
3HS2-095-W
1000' RS

298-392
STA=3599+86.68
HT=100.92 ELE=1851.48
3HS2-095-W
1000' RS

298-393
STA=3609+26.08
HT=95.00 ELE=1852.19
R-3TPD30-090-W
OPGW SPLICE
END 1000' RS, BEGIN 1250' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10776	22032	30252	1000'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2321	6742	10823	1000'
OHGW	7/16-INCH EHS	2288	6268	10201	1000'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE

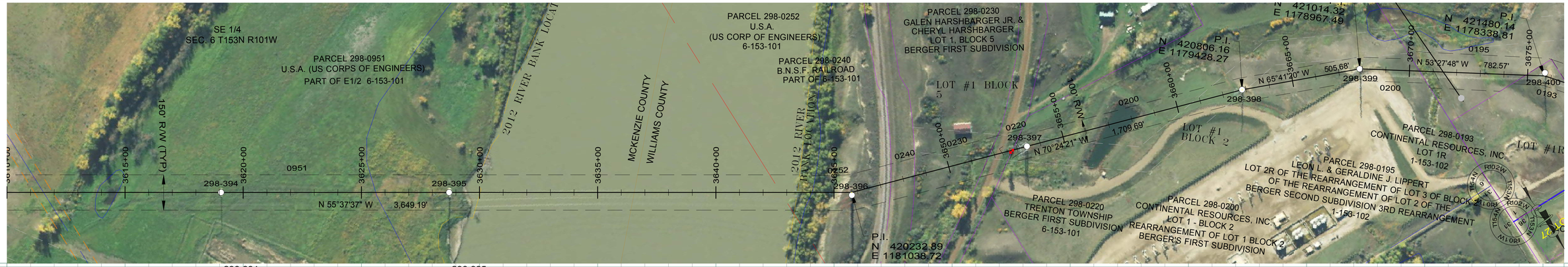
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3550+00 TO 3615+19
STRUCTURE: 298-387 TO 298-393

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-068

REV. NO. 1



298-394
STA=3619+06.68
HT=105.94 ELE=1851.99
R-3HS2-100-W
1250' RS

298-395
STA=3628+71.68
HT=163.10 ELE=1854.69
R-3HSL2-155-W
1250' RS

298-396
STA=3645+74.73
HT=147.74 ELE=1900.09
R-3TPA15-145L-145C-132R-W
1250' RS

298-397
STA=3653+42.44
HT=96.73 ELE=1872.03
R-3HD-095
END 1250' RS, BEGIN 800' RS

298-398
STA=3662+84.17
HT=116.00 ELE=1925.99
3SA07R-115
800' RS

965.00
162.64
137.89
137.14
980.60
105.44
80.46
1704.63
147.03
121.18
769.33
96.67
71.73
72.10
941.73
115.52
505.61
92.42
79.23
63.62
AERIAL MARKER BALL
AERIAL MARKER BALL
AERIAL MARKER BALL
AERIAL MARKER BALL
AERIAL MARKER BALL
SPLICE
PI 14°46'44"
PI 4°43'01"
RAILROAD CL 3647+22.61
FENCE 3651+72.27
FIRE HYDRANT 3652+67.40
PIPELINE WARNER 3652+73.92
LINE MARKER POST 3652+73.99
FENCE 3652+84.83
CH WIRE 1860.5 3636+68.23
DISPLAYED 60°F MAX SAG 2343 (LBS)
DISPLAYED 60°F MAX SAG 2424 (LBS)
DISPLAYED 212°F MAX SAG 8731 (LBS)
DISPLAYED 212°F MAX SAG 7119 (LBS)
DISPLAYED 60°F MAX SAG 2199 (LBS)
DISPLAYED 60°F MAX SAG 2202 (LBS)
2050
2000
1950
1900
1850
1800
3610+00
3615+00
3620+00
3625+00
3630+00
3635+00
3640+00
3645+00
3650+00
3655+00
3660+00
3665+00

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
1	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10534	20377	29866	1250'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2376	7244	11971	1250'
OHGW	7/16-INCH EHS	2343	6799	11305	1250'

		DATE
DESIGN BY:	GCC/CDB	2013-2014
DRAWN BY:	C. BAUER	2013-2014
DESIGN CHK:	GCC	FALL2014
DRAFT CHK:	CLK	NOV2014
APPROVED:	G CHRISTENSON	FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE / WILLIAMS

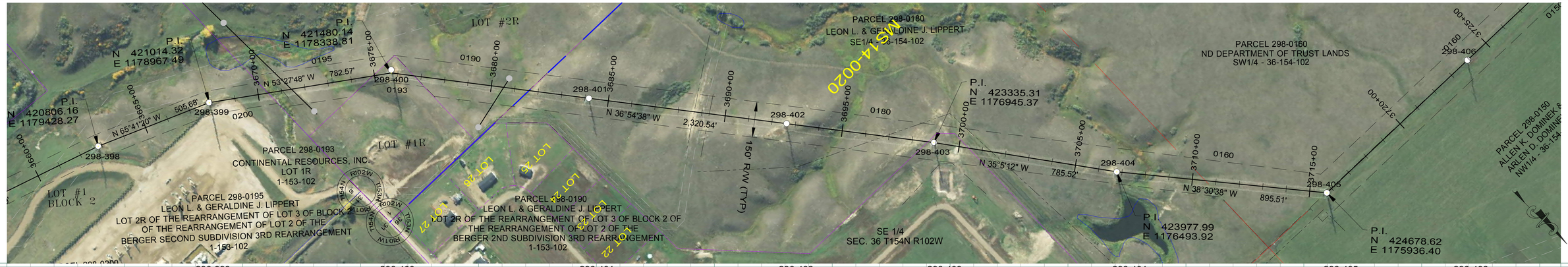
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3610+00 TO 3667+02
STRUCTURE: 298-394 TO 298-398

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-069

REV. NO. 1



298-398
STA=3662+84.17
HT=116.00 ELE=1925.99
3SA07R-115
800' RS

298-399
STA=3667+89.78
HT=131.00 ELE=1945.90
3SA15-130
800' RS

298-400
STA=3675+72.24
HT=121.00 ELE=1969.12
3SA20-120
800' RS

298-401
STA=3684+17.44
HT=110.00 ELE=1997.06
3ST-133
800' RS

298-402
STA=3692+62.44
HT=105.00 ELE=1995.72
3ST-127
800' RS

298-403
STA=3698+92.44
HT=110.00 ELE=1991.58
3ST-133
800' RS

298-404
STA=3706+77.83
HT=131.00 ELE=1993.41
3ST2-130
800' RS

298-405
STA=3715+73.22
HT=111.09 ELE=2007.05
3SDA55-110
OPGW SPLICE
END 800' RS,
BEGIN 800' RS

298-406
STA=3723+93.21
HT=115.00 ELE=2006.39
3ST-138
800' RS

505.61 784.39 847.13 845.00 630.00 785.40 895.38 820.00

SPLICE

PI 4°43'01"
PI 12°13'33"
PI 16°33'10"
PI 1°49'27"
PI -3°25'27"
PI -49°03'37"

FENCE 3671+01.62
DISTRIBUTION (TOP WIRE) 3671+39.78
FENCE 3674+92.82
FENCE 3676+73.15
DISTRIBUTION (TOP WIRE) 3680+53.94
FENCE 3681+55.84
PIPELINE 3688+50.40
PIPELINE OIL 3688+67.41
PIPELINE 3689+15.34
PIPELINE GAS 3689+32.39
PIPELINE 3696+81.94
PIPELINE 3701+28.28
FENCE 3710+37.15
FENCE 3715+69.47

DISPLAYED 212°F MAX SAG 7119 (LBS)
DISPLAYED 60°F MAX SAG 2199 (LBS)
DISPLAYED 60°F MAX SAG 2202 (LBS)

DISPLAYED 212°F MAX SAG 7132 (LBS)
DISPLAYED 60°F MAX SAG 2209 (LBS)
DISPLAYED 60°F MAX SAG 2215 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	9966	21282	28326	800`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2199	6149	9662	800`
OHGW	7/16-INCH EHS	2202	5725	9138	800`

DESIGN BY: GCC/CDB
DRAWN BY: C. BAUER
DESIGN CHK: GCC
DRAFT CHK: CLK
APPROVED: G CHRISTENSON

DATE: 2013-2014
DATE: 2013-2014
DATE: FALL2014
DATE: NOV2014
DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE / WILLIAMS

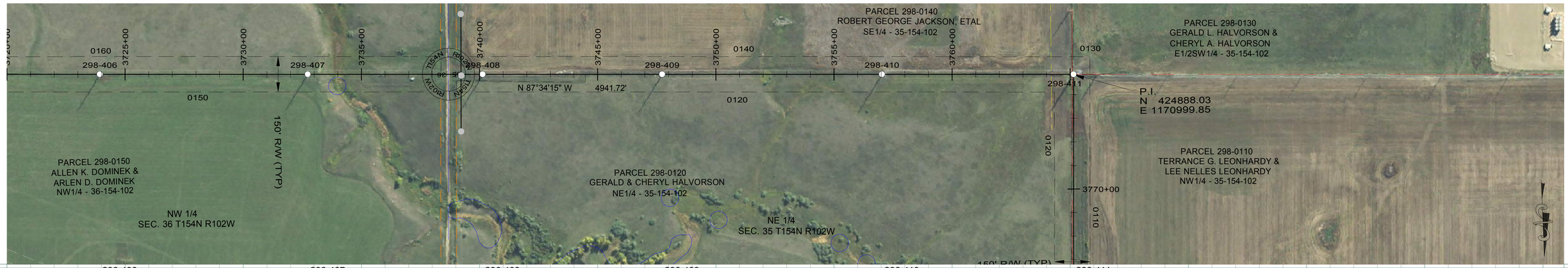
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3660+00 TO 3724+29
STRUCTURE: 298-398 TO 298-406

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-070

REV. NO. 2



298-406
STA=3723+93.21
HT=115.00 ELE=2006.39
3ST-138
800' RS

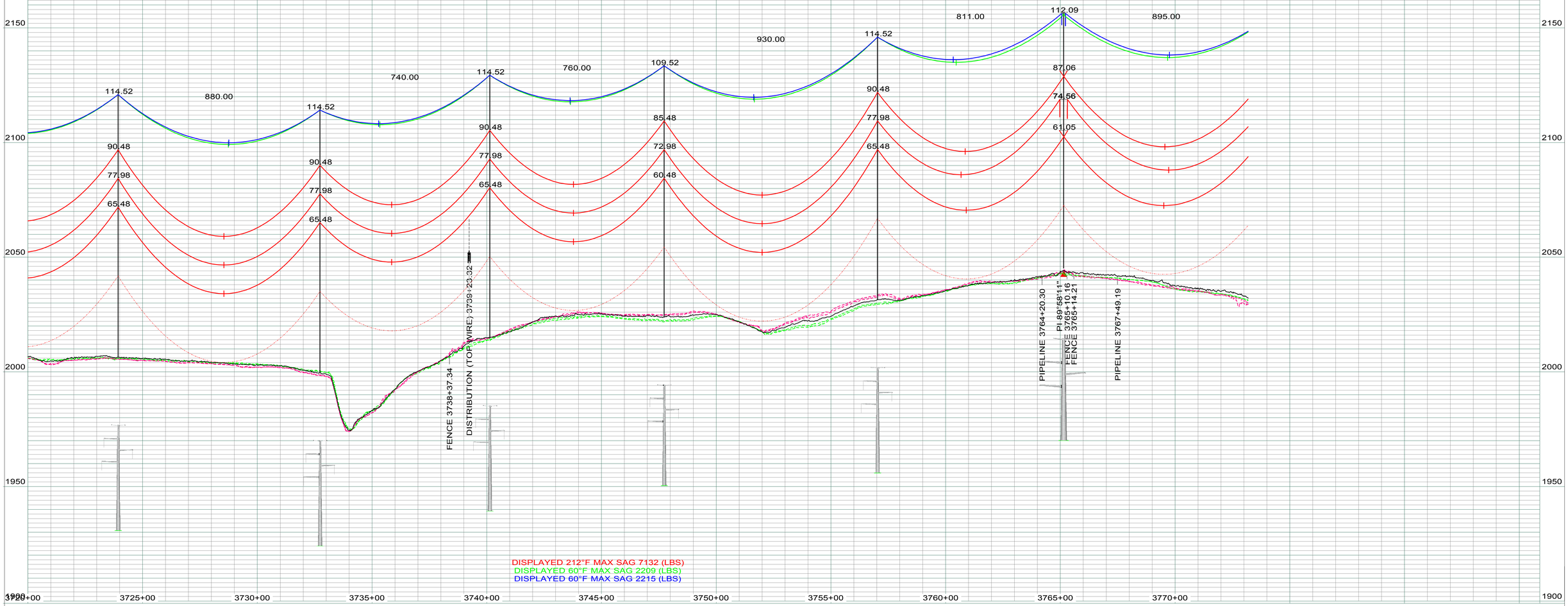
298-407
STA=3732+73.21
HT=115.00 ELE=1999.65
3ST-138
800' RS

298-408
STA=3740+13.21
HT=115.00 ELE=2014.86
3ST-138
800' RS

298-409
STA=3747+73.21
HT=110.00 ELE=2023.96
3ST-133
800' RS

298-410
STA=3757+03.21
HT=115.00 ELE=2031.49
3ST-138
800' RS

298-411
STA=3765+14.20
HT=112.09 ELE=2044.24
3SDA90-111
END 800' RS, BEGIN 950' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
	IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.				
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	9997	21368	28397	800'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2209	6165	9675	800'
OHGW	7/16-INCH EHS	2215	5741	9151	800'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE / WILLIAMS

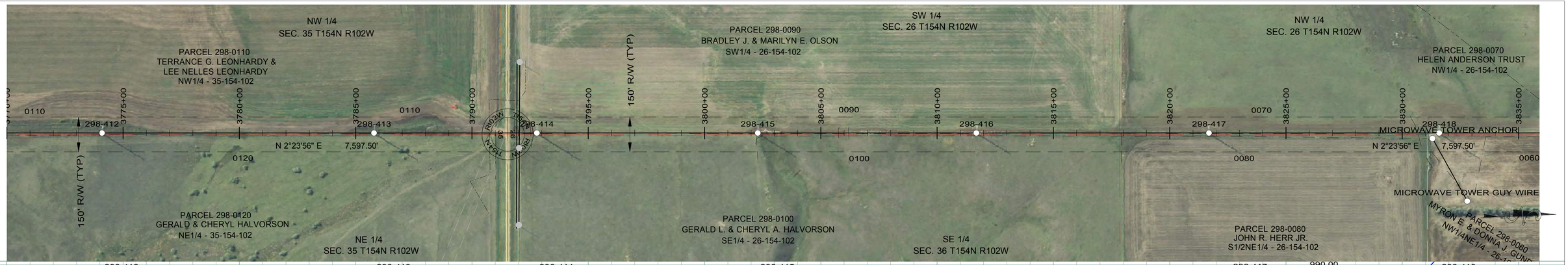
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

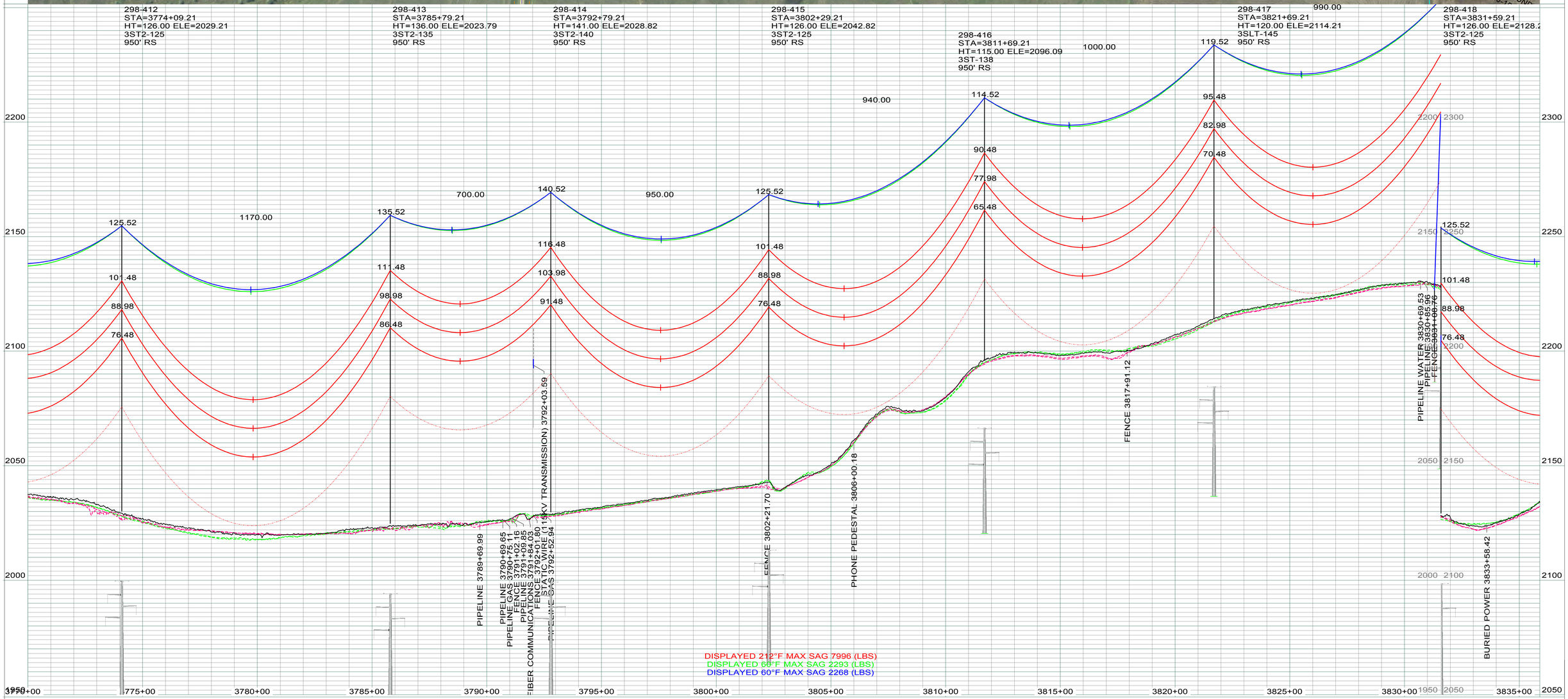
PLAN AND PROFILE
STATION: 3720+00 TO 3773+19
STRUCTURE: 298-406 TO 298-411

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-071

REV. NO. 2





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10691	22113	30022	950`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2293	6600	10546	950`
OHGW	7/16-INCH EHS	2268	6139	9948	950`

DESIGN BY:	GCC/CDB	DATE: 2013-2014
DRAWN BY:	C. BAUER	DATE: 2013-2014
DESIGN CHK:	GCC	DATE: FALL2014
DRAFT CHK:	CLK	DATE: NOV2014
APPROVED:	G CHRISTENSON	DATE: FALL2014

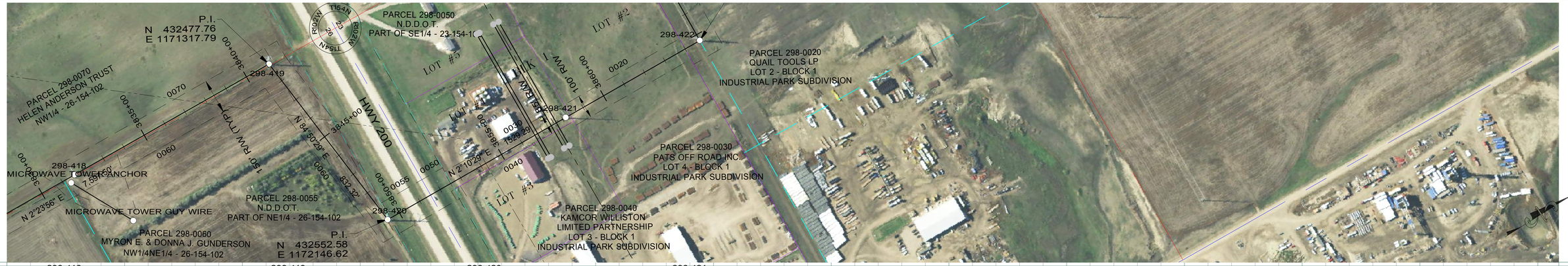
FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE / WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3770+00 TO 3835+90
STRUCTURE: 298-412 TO 298-418

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-072
REV. NO.: 2

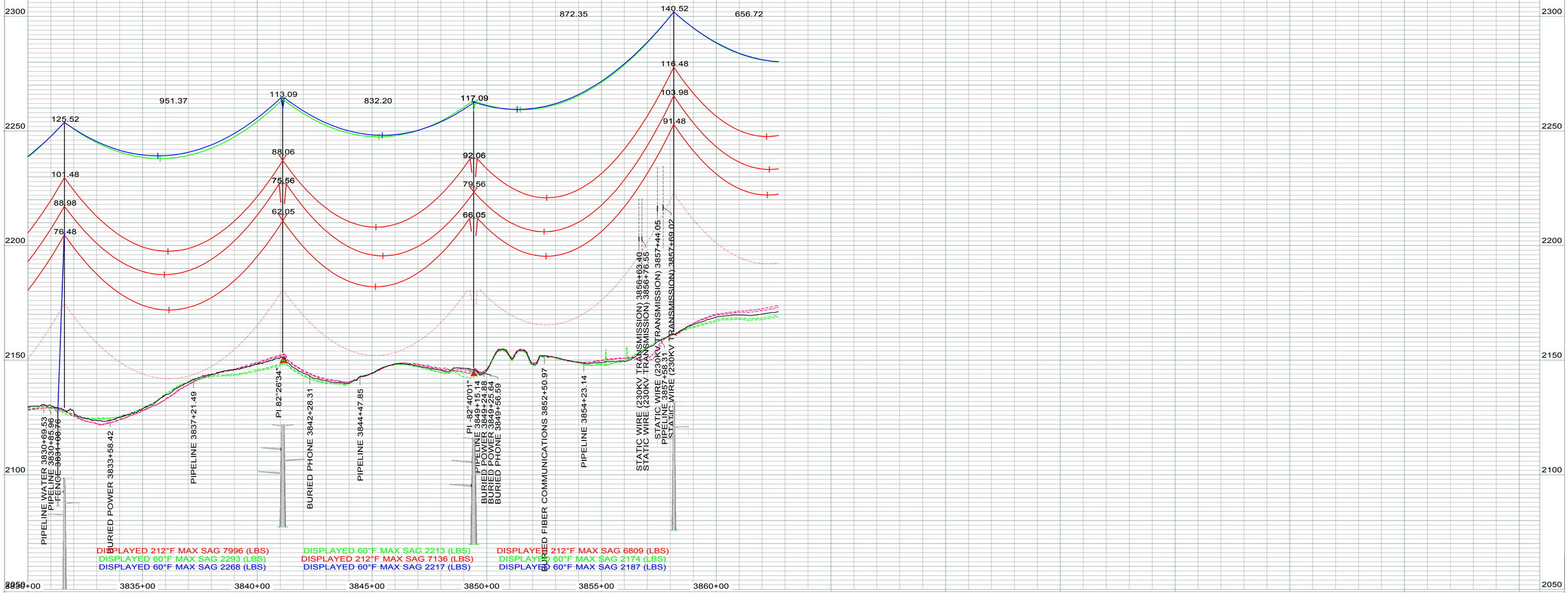


298-418
STA=3831+59.21
HT=126.00 ELE=2128.23
3ST2-125
950' RS

298-419
STA=3841+10.58
HT=113.09 ELE=2151.42
3SDA90-111
2-FT REVEAL
END 950' RS, BEGIN 800' RS

298-420
STA=3849+42.78
HT=117.09 ELE=2145.85
3SDA90-116
OPGW SPLICE
END 800' RS, BEGIN 750' RS

298-421
STA=3858+15.13
HT=141.00 ELE=2161.43
3ST2-140
750' RS



LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
3	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	10005	21387	28413	800'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2213	6169	9679	800'
OHGW	7/16-INCH EHS	2217	5746	9155	800'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE / WILLIAMS

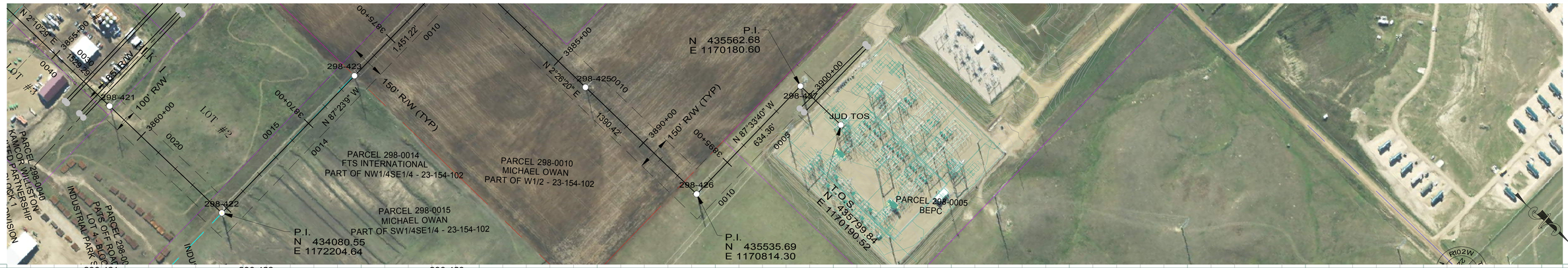
BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

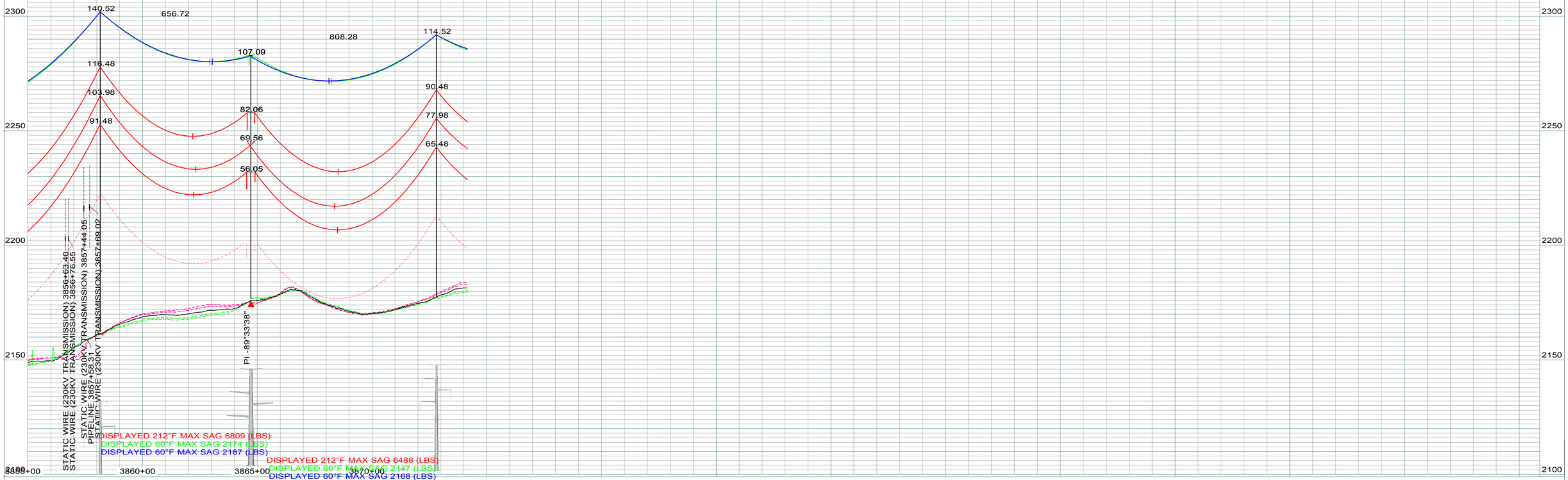
PLAN AND PROFILE
STATION: 3830+00 TO 3862+72
STRUCTURE: 298-418 TO 298-421

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-073

REV. NO. 3





LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
- BARBED WIRE FENCE
- UNDERGROUND PIPELINE
- UNDERGROUND UTILITY
- OVERHEAD UTILITY
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPERTY LINE
- ACCESS CENTERLINE
- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
2	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	9713	21027	27747	750`
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2174	6001	9361	750`
OHGW	7/16-INCH EHS	2187	5590	8858	750`

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE / WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3855+00 TO 3874+16
STRUCTURE: 298-421 TO 298-423

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO. 298-090-T3-074

REV. NO. 2



298-423
STA=3872+80.13
HT=115.00 ELE=2177.39
3ST-138
140 FT
700' RS

298-424
STA=3879+22.86
HT=97.09 ELE=2195.38
3SDA90-096
END 700' RS, BEGIN 700' RS

298-425
STA=3886+60.13
HT=110.00 ELE=2184.73
3ST-133
140 FT
700' RS

298-426
STA=3893+13.08
HT=97.09 ELE=2201.65
3SDA90-096
END 700' RS, BEGIN 600' RS

298-427
STA=3899+47.35
HT=137.09 ELE=2200.88
3SDA90-1-136
END 600' RS, BEGIN 240' RS SLACK

JUD TOS
STA=3901+84.72
HT=86.00 ELE=2203.74
TOS
END 240' RS SLACK
OPGW SPLICE

2350
2300
2250
2200
2150
2100

114.52
642.73
97.09
737.27
109.52
652.95
97.09
634.27
137.09
237.37
112.06
99.56
85.90
86.05
66.00
90.48
77.98
65.48
72.06
59.56
46.05
85.48
72.98
60.48
72.06
59.56
46.05

PI 89°49'29"
PI -90°00'00"
PI 89°57'21"
PI 0°00'00"

STATIC WIRE (115KV TRANSMISSION) 3900+13.37
STATIC WIRE (115KV TRANSMISSION) 3900+36.89

3870+00
3875+00
3880+00
3885+00
3890+00
3895+00
3900+00

DISPLAYED 212°F MAX SAG 6488 (LBS)
DISPLAYED 60°F MAX SAG 2147 (LBS)
DISPLAYED 60°F MAX SAG 2168 (LBS)

DISPLAYED 212°F MAX SAG 6490 (LBS)
DISPLAYED 60°F MAX SAG 2147 (LBS)
DISPLAYED 60°F MAX SAG 2168 (LBS)

DISPLAYED 212°F MAX SAG 5782 (LBS)
DISPLAYED 60°F MAX SAG 2067 (LBS)
DISPLAYED 60°F MAX SAG 2101 (LBS)

DISPLAYED 212°F MAX SAG 2223 (LBS)
DISPLAYED 60°F MAX SAG 723 (LBS)
DISPLAYED 60°F MAX SAG 700 (LBS)

LEGEND

- CULTURAL / TRIBAL AVOIDANCE
- NWI / DELINEATED WETLANDS
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- ACCESS SIDELINES

IMAGERY: 2017 COUNTY NAIP/UTM NAD83 ZONE 13N-METERS
LIDAR: MAY 1, 2012, FUGRO HORIZONS, INC.

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE
3	AS BUILT	CLK	SV	SW	01/2018

DESIGN INFORMATION

	SIZE	60 FINAL TENSION	NESC TENSION I.	HEAVY ICE	RULING SPAN
CONDUCTOR 345KV	2312.0 MCM 76/19 ACSR THRASHER	9454	20770	27148	700'
OPGW	PRYSMIAN (36 FIBER) 45F62S REF7524USA	2147	5845	9046	700'
OHGW	7/16-INCH EHS	2168	5443	8563	700'

DESIGN BY: GCC/CDB — DATE: 2013-2014
DRAWN BY: C. BAUER — DATE: 2013-2014
DESIGN CHK: GCC — DATE: FALL2014
DRAFT CHK: CLK — DATE: NOV2014
APPROVED: G CHRISTENSON — DATE: FALL2014

FACILITY: TRANSMISSION SYSTEM MAINTENANCE
LOCATION/UNIT: 298-345KV LINE - CHARLIE CREEK SUB TO JUDSON SUB
COUNTY: MCKENZIE / WILLIAMS

BASIN ELECTRIC POWER COOPERATIVE
A TOUCHSTONE ENERGY COOPERATIVE

PLAN AND PROFILE
STATION: 3870+00 TO 3902+06
STRUCTURE: 298-423 TO JUD TOS

SCALE: VERTICAL = 20FT
HORIZONTAL = 200FT

BASIN DRAWING NO.: 298-090-T3-075
REV. NO.: 3