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Record Drawings

for

Wind Turbine Generators, Access Roads, Drainage and Erosion Control

for

Bison 4 Wind Project
Oliver County, North Dakota

NO.	DATE	REVISION	SHEETS
1	09/04/13	Owner Comments	T.01–02, C.10–11,20,21,27,53–57,90
2	10/09/13	Owner Comments	T.01–02, C.03–04,08,11,98–100,103,106–108
3	02/28/14	Owner Comments	T.01–02,C.1–2,4,9,12–13,16,18,34–35,40–41,60,86–87,102–104,106–107,109
4	10/03/14	Record Drawings	ALL
5	12/22/14	Updated Record Drawings	ALL

Data Set Information

BASE FILE	FILE NAME	PROVIDER	DATE
TURBINE ARRAY	1-A As-Built Table 8-8-14 FINAL COORDINATES.xlsx	WESTWOOD	09/30/2014
ALTA/CADASTRAL	Bison 4 Cadastral Ownership Drawing 9-4-13.DWG	ULTEIG	09/04/2013
LAND CONTROL	Bison 4 Landowner Shapefiles	MINNESOTA POWER	05/06/2013
TOPO	Additional LiDAR	MINNESOTA POWER	06/04/2013
SUPPLEMENTAL TOPO	Bison 4 Ground Topo Data.dwg	ULTEIG	06/27/2013
COLLECTOR LINES	Bison_4_Collector_Layout_7-31-13.shp	STANTEC	07/31/2013
SUBSTATION TOPO	Laydown – TriCounty Substation LiDAR	MINNESOTA POWER	06/18/2013
WETLANDS	Wetlands.zip	WEST	06/21/2013
CULTURAL AREAS	7122013_50ft Site Avoidance on eligible sites.idx	BEAVER CREEK ARCHAEOLOGY, INC.	06/24/2013

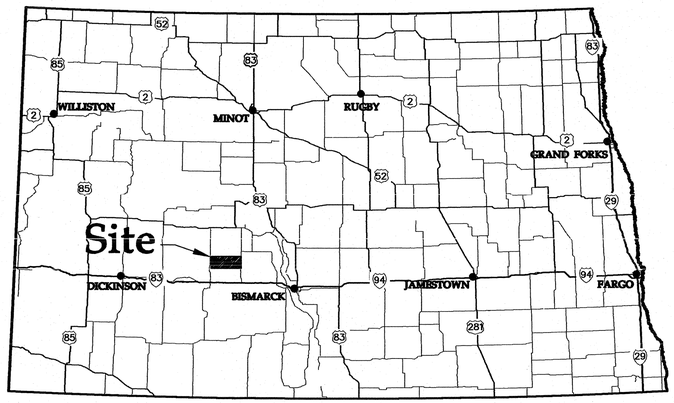
**INFORMATION SHOWN ON PLAN SET DOES NOT REFLECT CADASTRAL SURVEY, ISSUED FOR CONSTRUCTION PLAN SET TO PROVIDE FINAL CADASTRAL PROVIDED INFORMATION.

***PROPOSED CONTOURS AND PROFILES SHOWN ARE THE DESIGNED CONTOURS AND DESIGN PROFILES. THEY DO NOT REFLECT AS BUILT INFORMATION.

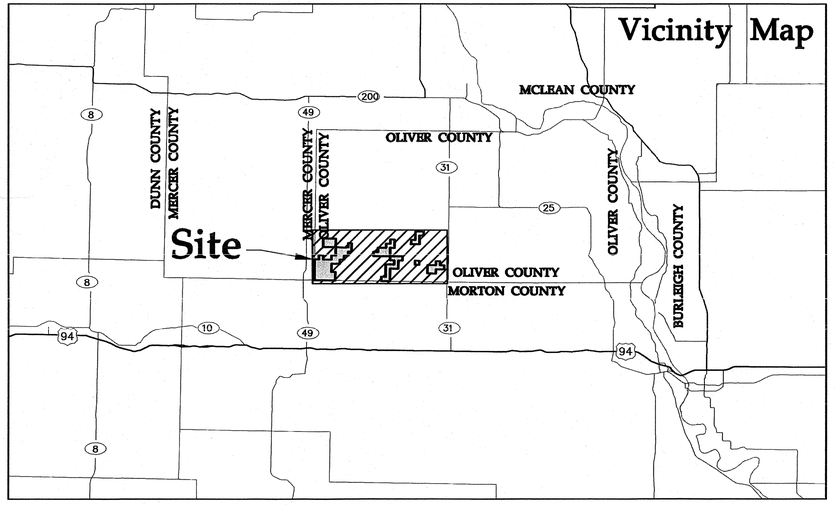
PROJECT CONTACT INFORMATION:

TITLE	COMPANY	NAME	CONTACT NUMBER
OWNER	MINNESOTA POWER	MATT FREUDENRICH	(320) 635-5033
PROJECT MANAGER	WESTWOOD	DAN BECKMANN	(952) 906-7424
CIVIL ENGINEER OF RECORD	WESTWOOD	WILL HUSTON	(320) 229-2324
ELECTRICAL ENGINEER OF RECORD	STANTEC	---	---
STRUCTURAL ENGINEER OF RECORD	RRC	---	---

State Map



Vicinity Map



Westwood Professional Services, Inc.
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Eden Prairie, MN 55344

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FAX 952-937-5822
TOLL FREE 1-888-937-5150

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Designed: MPG
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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
DATE 12/22/14
NORTH DAKOTA

Bison 4 Wind Project
Oliver County, North Dakota

Cover

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. DATE OCT. 3, 2014

Record Drawings

Date: 12/22/2014
Sheet: T.01

0001265CVF01.dwg

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SHEET LIST TABLE

SHEET NUMBER	SHEET TITLE	SHEET REV	SHEET NUMBER	SHEET TITLE	SHEET REV
T.01	COVER	5	C.55	ROAD W444 STA. 24+00 TO 48+00	5
T.02	SHEET INDEX	5	C.56	ROAD W444 STA. 48+00 TO 72+00	5
C.01	OVERALL SITE PLAN–WEST	5	C.57	ROAD W444 STA. 72+00 TO 95+88	5
C.02	OVERALL SITE PLAN–EAST	5	C.58	ROAD W454 STA. 0+00 TO 24+00	5
~~C.03~~	~~TURBINE DELIVERY FLOW PLAN–WEST~~	~~5~~	C.59	ROAD W454 STA. 24+00 TO 33+45	5
~~C.04~~	~~TURBINE DELIVERY FLOW PLAN–EAST~~	~~5~~	C.60	ROAD W453 STA. 0+00 TO 9+09	5
~~C.05~~	~~ALLOWED TRAFFIC ROUTE PLAN–WEST~~	~~5~~	C.61	25TH ST SW STA. 0+00 TO 24+00	5
~~C.06~~	~~ALLOWED TRAFFIC ROUTE PLAN–EAST~~	~~5~~	C.62	25TH ST SW STA. 24+00 TO 48+00	5
C.07	CONSTRUCTION DETAILS	5	C.63	25TH ST SW STA. 48+00 TO 74+44	5
C.08	CONSTRUCTION DETAILS	5	C.64	ROAD W455 STA. 0+00 TO 24+00	5
C.09	CONSTRUCTION DETAILS	5	C.65	ROAD W455 STA. 24+00 TO 40+56	5
C.10	CONSTRUCTION DETAILS	5	C.66	ROAD E432 STA. 0+00 TO 9+18	5
C.11	CONSTRUCTION NOTES	5	C.67	ROAD E426 STA. 0+00 TO 24+00	5
~~C.12~~	~~CRANE ROUTING 1~~	~~5~~	C.68	ROAD E426 STA. 24+00 TO 48+00	5
~~C.13~~	~~CRANE ROUTING 2~~	~~5~~	C.69	ROAD E426 STA. 48+00 TO 72+00	5
~~C.14~~	~~CRANE ROUTING 3~~	~~5~~	C.70	ROAD E426 STA. 72+00 TO 96+00	5
~~C.15~~	~~CRANE ROUTING 4~~	~~5~~	C.71	ROAD E426 STA. 96+00 TO 120+00	5
~~C.16~~	~~CRANE ROUTING 5~~	~~5~~	C.72	ROAD E426 STA. 120+00 TO 127+06	5
~~C.17~~	~~CRANE ROUTING 6~~	~~5~~	C.73	ROAD E429 STA. 0+00 TO 6+54	5
~~C.18~~	~~CRANE ROUTING 7~~	~~5~~	C.74	27TH ST SW STA. 0+00 TO 24+00	5
C.19	ROAD W433 STA. 0+00 TO 7+15	5	C.75	27TH ST SW STA. 24+00 TO 48+00	5
C.20	60TH AVE SW STA. 0+00 TO 24+00	5	C.76	27TH ST SW STA. 48+00 TO 72+19	5
C.21	60TH AVE SW STA. 24+00 TO 48+00	5	C.77	ROAD E419 STA. 0+00 TO 25+72	5
C.22	60TH AVE SW STA. 48+00 TO 72+00	5	C.78	ROAD E420 STA. 0+00 TO 6+15	5
C.23	60TH AVE SW STA. 72+00 TO 96+00	5	C.79	50TH AVE SW STA. 0+00 TO 23+00	5
C.24	60TH AVE SW STA. 96+00 TO 105+39	5	C.80	50TH AVE SW STA. 23+00 TO 26+81	5
C.25	ROAD W458 STA. 0+00 TO 23+49	5	C.81	ROAD E421 STA. 0+00 TO 23+00	5
C.26	ROAD W460 STA. 0+00 TO 7+61	5	C.82	ROAD E421 STA. 23+00 TO 30+45	5
C.27	60TH AVE SW & ROADWMET	5	C.83	ROAD E425 STA. 0+00 TO 24+00	5
C.28	ROAD W461 STA. 0+00 TO 7+30	5	C.84	ROAD E425 STA. 24+00 TO 48+00	5
C.29	ROAD W462 STA. 0+00 TO 8+03	5	C.85	ROAD E425 STA. 48+00 TO 67+04	5
C.30	ROAD W464 STA. 0+00 TO 14+39	5	C.86	ROAD E418 STA. 0+00 TO 7+27	5
C.31	ROAD W463 STA. 0+00 TO 9+86	5	C.87	ROAD E417 STA. 0+00 TO 18+32	5
C.32	59TH AVE SW STA. 0+00 TO 24+00	5	C.88	30TH ST SW STA. 0+00 TO 22+53	5
C.33	59TH AVE SW STA. 24+00 TO 48+00	5	C.89	ROAD E416 STA. 0+00 TO 24+00	5
C.34	59TH AVE SW STA. 48+00 TO 72+00	5	C.90	ROAD E416 STA. 24+00 TO 37+09	5
C.35	59TH AVE SW STA. 72+00 TO 96+00	5	C.91	ROAD E408 STA. 0+00 TO 12+91	5
C.36	59TH AVE SW STA. 96+00 TO 106+05	5	C.92	ROAD E409 STA. 0+00 TO 13+14	5
C.37	ROAD W438 STA. 0+00 TO 24+00	5	C.93	ROAD E414 STA. 0+00 TO 24+00	5
C.38	ROAD W438 STA. 24+00 TO 43+59	5	C.94	ROAD E414 STA. 24+00 TO 48+00	5
C.39	ROAD W446 STA. 0+00 TO 5+42	5	C.95	ROAD E414 STA. 48+00 TO 70+52	5
C.40	ROAD W445 STA. 0+00 TO 10+12	5	C.96	ROAD E411 STA. 0+00 TO 6+92	5
C.41	ROAD W452 STA. 0+00 TO 9+82	5	C.97	ROAD E412 STA. 0+00 TO 5+59	5
C.42	ROAD W459 STA. 0+00 TO 22+97	5	C.98	46TH AVE SW STA. 0+00 TO 24+00	5
C.43	ROAD W434 STA. 0+00 TO 8+14	5	C.99	46TH AVE SW STA. 24+00 TO 48+00	5
C.44	30TH ST SW STA. 0+00 TO 24+00	5	C.100	46TH AVE SW STA. 48+00 TO 52+76	5
C.45	30TH ST SW STA. 24+00 TO 41+57	5	C.101	ROAD E401 STA. 0+00 TO 21+10	5
C.46	ROAD W437 STA. 0+00 TO 24+00	5	C.102	28TH ST SW STA. 0+00 TO 24+00	5
C.47	ROAD W437 STA. 24+00 TO 44+30	5	C.103	28TH ST SW STA. 24+00 TO 48+00	5
C.48	ROAD W435 STA. 0+00 TO 19+59	5	C.104	28TH ST SW STA. 48+00 TO 52+46	5
C.49	58TH AVE SW STA. 0+00 TO 22+67	5	C.105	ROAD E403 STA. 0+00 TO 15+43	5
C.50	ROAD W447 STA. 0+00 TO 9+35	5	C.106	ROAD E404 STA. 0+00 TO 7+87	5
C.51	ROAD W450 STA. 0+00 TO 24+00	5	C.107	ROAD E406 STA. 0+00 TO 24+00	5
C.52	ROAD W450 STA. 24+00 TO 40+85	5	C.108	ROAD E406 STA. 24+00 TO 36+37	5
C.53	ROAD W451 STA. 0+00 TO 8+42	5	C.109	ROAD E407 STA. 0+00 TO 16+19	5
C.54	ROAD W444 STA. 0+00 TO 24+00	5			

Turbine Number	"HARN/ND, North Dakota State Planes, South Zone, US Foot As Built Location"		UTM Zone 14N As Built Location		Latitude/Longitude As Built Location		As Built Top of Concrete Elevation
	Easting	Northing	WGS84_East	WGS84_North	Lat	Long	
401	1725062.68	490141.09	311803.040	5208863.384	47.006518	-101.475797	2287.1
402	1726344.92	490509.11	312195.984	5208968.047	47.007571	-101.470676	2306.0
403	1728442.03	490476.99	312834.937	5208945.988	47.007553	-101.462269	2288.9
404	1729736.56	491173.91	313233.551	5209150.817	47.009507	-101.457114	2309.2
405	1730404.86	492335.94	313444.030	5209501.058	47.012716	-101.454492	2244.5
406	1730365.52	494047.80	313442.056	5210023.016	47.017408	-101.454733	2233.7
407	1732753.34	490490.90	314148.982	5208925.007	47.007735	-101.444989	2253.1
408	1715128.02	506492.34	308870.926	5213904.997	47.051002	-101.516463	2323.8
409	1717532.60	506510.48	309603.889	5213896.438	47.051137	-101.506818	2293.7
410	1717753.05	508029.23	309679.973	5214358.026	47.055308	-101.506012	2320.2
411	1718533.87	509057.96	309923.975	5214666.981	47.058156	-101.502932	2325.1
412	1718158.84	510819.41	309819.996	5215206.025	47.062972	-101.504527	2347.0
413	1719139.17	511894.68	310125.076	5215527.996	47.065955	-101.500649	2334.5
414	1720333.40	512393.40	310491.969	5215672.994	47.067363	-101.495883	2338.2
415	1697941.57	482781.47	303494.030	5206778.965	46.985365	-101.584089	2298.3
416	1698823.93	483815.57	303769.010	5207088.983	46.988234	-101.580611	2324.5
417	1698846.08	485735.49	303786.991	5207674.016	46.993498	-101.580628	2316.2
418	1699445.32	487164.61	303977.992	5208106.087	46.997439	-101.578306	2285.3
419	1698414.27	490464.89	303683.052	5209117.995	47.006448	-101.582620	2288.9
420	1699878.36	491096.55	304132.982	5209301.948	47.008235	-101.576786	2291.6
421	1703948.45	490505.47	305370.019	5209097.977	47.006767	-101.560441	2398.9
422	1704621.80	491830.97	305583.000	5209498.028	47.010426	-101.557814	2316.1
423	1705032.49	492993.67	305714.975	5209849.994	47.013629	-101.556231	2310.1
424	1706175.29	495515.72	306078.042	5210611.978	47.020585	-101.551785	2278.2
425	1707418.04	496238.55	306461.042	5210825.010	47.022612	-101.546841	2272.4
426	1692664.42	497874.22	301973.951	5211409.914	47.026542	-101.606083	2373.3
427	1693926.12	499493.24	302367.980	5211895.984	47.031030	-101.601115	2375.0
428	1694922.39	500745.50	302678.965	5212271.818	47.034501	-101.597190	2365.0
429	1696670.00	500792.72	303211.888	5212275.977	47.034697	-101.590185	2303.0
430	1697514.13	502124.54	303476.966	5212676.951	47.038381	-101.586874	2316.5
431	1699465.93	502593.83	304074.593	5212808.551	47.039741	-101.579073	2313.9
432	1700029.51	503734.80	304253.047	5213152.998	47.042890	-101.576875	2276.6
433	1654585.72	482556.51	290278.039	5206964.019	46.982977	-101.757768	2317.4
434	1658984.41	484738.54	291631.546	5207603.374	46.989151	-101.740285	2368.7
435	1661874.42	484940.49	292513.612	5207648.017	46.989829	-101.728718	2353.8
436	1663779.64	484708.04	293092.967	5207566.018	46.989273	-101.721070	2359.6
437	1664371.71	485825.01	293279.968	5207903.006	46.992361	-101.718768	2329.3
438	1662555.92	489879.48	292750.243	5209149.443	47.003399	-101.726297	2314.2
439	1670023.28	497679.03	295071.960	5211483.019	47.025097	-101.696847	2378.7
440	1671387.32	498587.71	295493.037	5211751.991	47.027645	-101.691433	2350.7
441	1672045.66	500181.94	295703.037	5212234.050	47.032043	-101.688890	2341.9
442	1673452.72	500714.29	296135.021	5212388.066	47.033561	-101.683281	2369.5
443	1674502.81	502016.81	296462.715	5212778.917	47.037175	-101.679148	2342.5
444	1674984.61	503348.01	296617.365	5213181.836	47.040845	-101.677296	2344.4
445	1659206.58	488973.91	291724.055	5208893.028	47.000772	-101.739662	2355.4
446	1660594.48	490152.16	292153.988	5209244.038	47.004062	-101.734175	2339.2
447	1662814.78	493606.78	292850.965	5210284.015	47.013628	-101.725492	2327.7
448	1663941.29	494579.80	293200.023	5210573.995	47.016344	-101.721038	2339.9
449	1665910.30	495297.17	293804.380	5210781.118	47.018394	-101.713189	2370.0
450	1666236.69	496520.34	293911.026	5211152.029	47.021762	-101.711956	2368.8
451	1668347.80	497289.41	294558.996	5211374.076	47.023959	-101.703540	2407.7
452	1657636.01	488405.58	291242.010	5208728.993	46.999146	-101.745920	2351.5
453	1659384.29	504816.98	291871.020	5213720.999	47.044214	-101.739952	2262.2
454	1661229.09	505105.07	292435.008	5213797.997	47.045083	-101.732572	2293.0
455	1664793.36	505203.27	293521.974	5213807.036	47.045505	-101.718282	2310.7
456	1665021.25	506838.06	293601.018	5214303.986	47.049997	-101.717470	2301.8
457	1665787.03	507965.17	293841.032	5214643.037	47.053119	-101.714468	2275.2
458	1654922.63	486877.22	290406.014	5208279.024	46.994837	-101.756695	2329.3
459	1656139.84	487389.56	290780.026	5208428.063	46.996295	-101.751851	2339.0
460	1653702.06	491154.86	290059.020	5209590.018	47.006511	-101.761861	2326.8
461	1655109.09	491864.39	290492.043	5209798.048	47.008518	-101.756268	2345.2
462	1655813.76	493091.72	290714.018	5210168.019	47.011913	-101.753522	2393.3
463	1657281.63	493536.63	291164.036	5210295.031	47.013197	-101.747667	2343.8
464	1657103.97	495947.78	291124.006	5211031.002	47.019800	-101.748532	2314.7

Westwood Professional Services, Inc.
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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

REGISTERED PROFESSIONAL ENGINEER
MICHAEL P. GOSSMAN
LICENSED
DATE 12/22/14
NORTH DAKOTA

Bison 4 Wind Project

Oliver County, North Dakota

Sheet Index

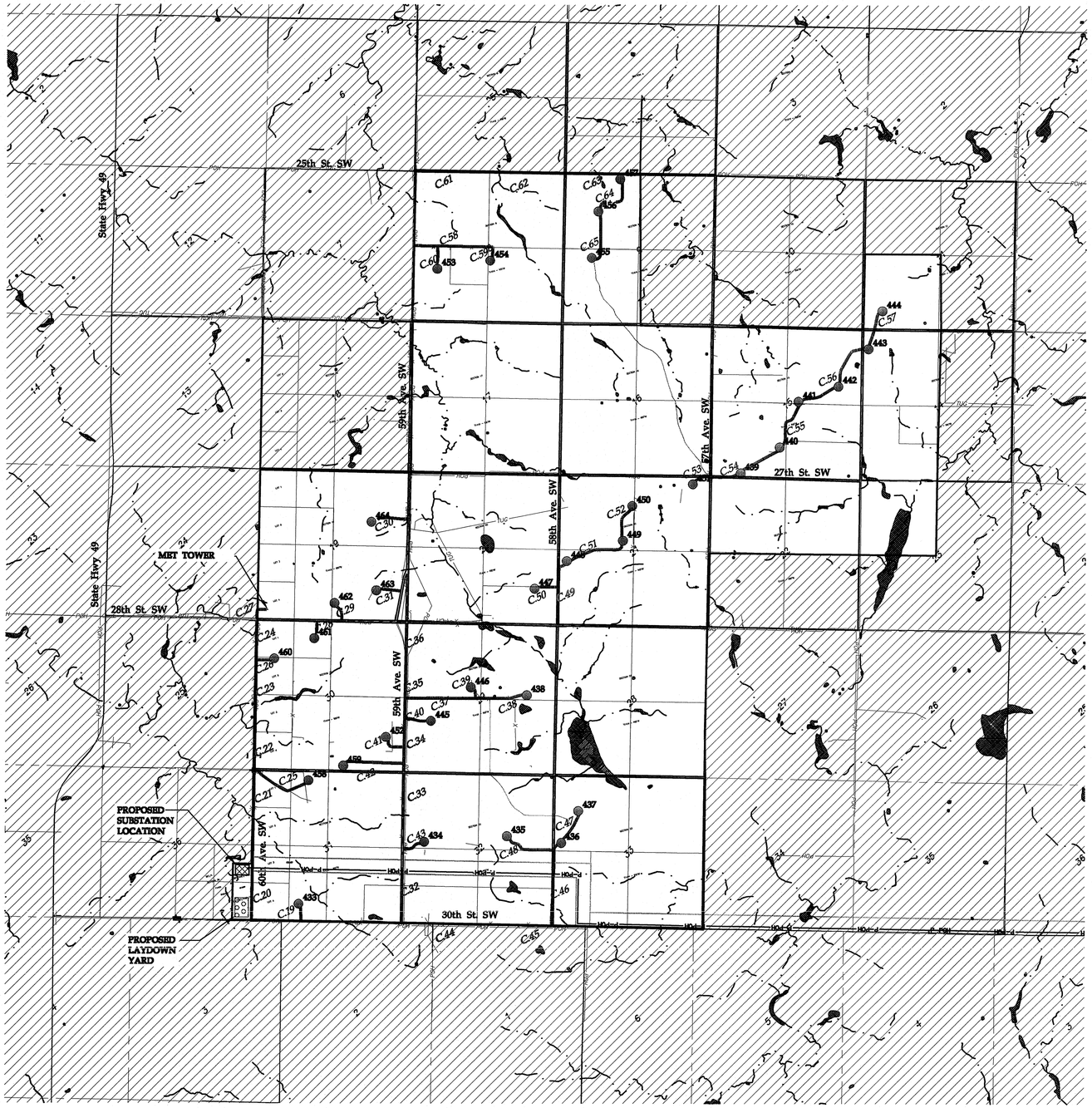
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Record Drawings

Date: 12/22/2014
Sheet: T.02

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUDSON
PE-6310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- PROPOSED TURBINE LOCATION
- PROPOSED ALTERNATE TURBINE LOCATION
- D46 PROPOSED TURBINE NUMBER
- CONSTRUCTED ACCESS ROADS
- C.50 PROPOSED ACCESS ROAD REFERENCE NUMBER
- COUNTY ROAD/SECTION LINE ROAD IMPROVEMENT
- C.30 COUNTY ROAD/SECTION LINE ROAD IMROVEMENT REFERENCE NUMBER
- EXISTING ROADS
- CRANE PATH
- OUTSIDE OF PROJECT BOUNDARY

Bison 4 Wind Project

Oliver County, North Dakota

Overall Site Plan-West

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. DATE OCT. 3, 2014

N

0' 2200' 4400' 6600'

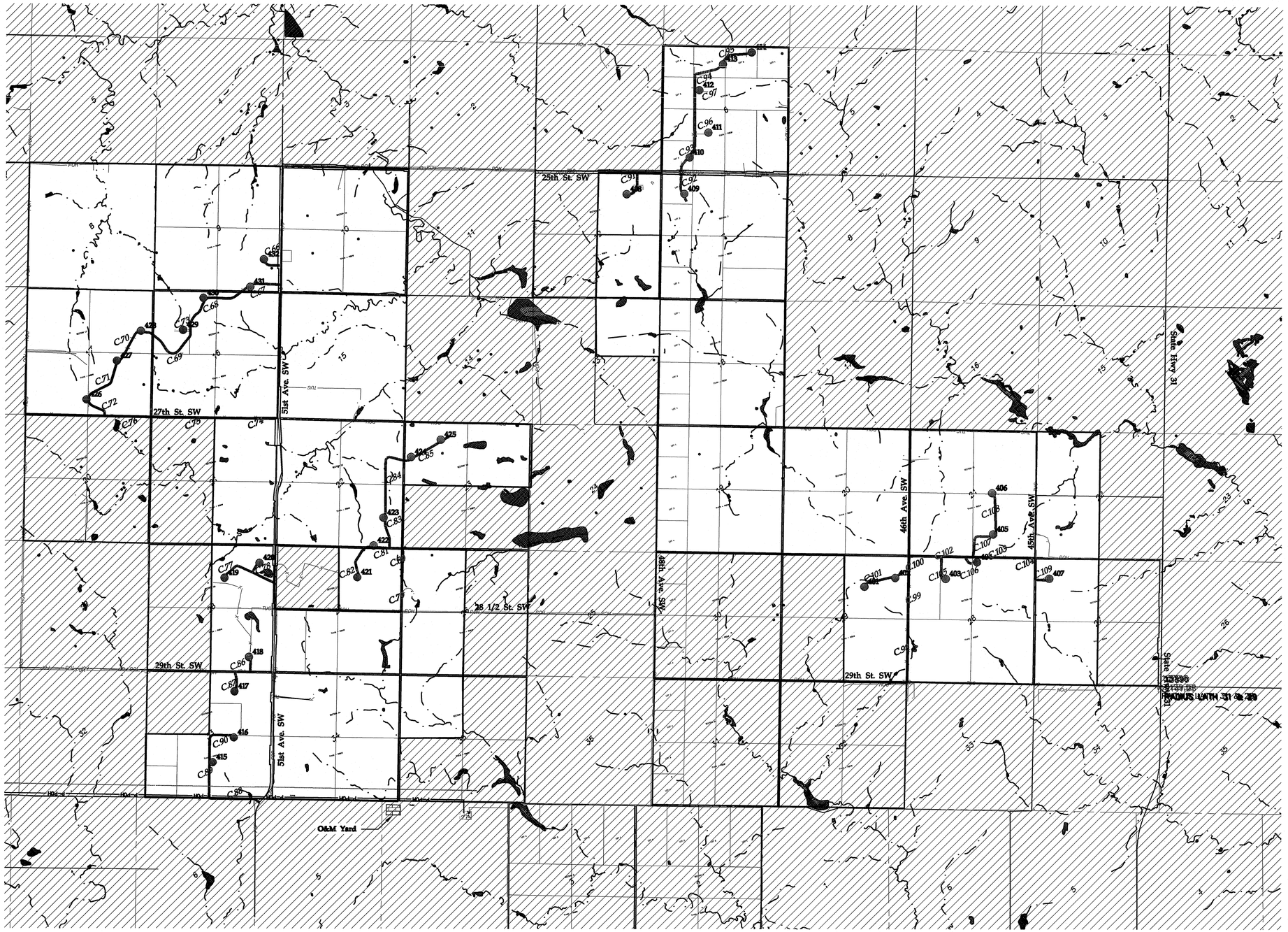
Record Drawings

Date: 12/22/2014

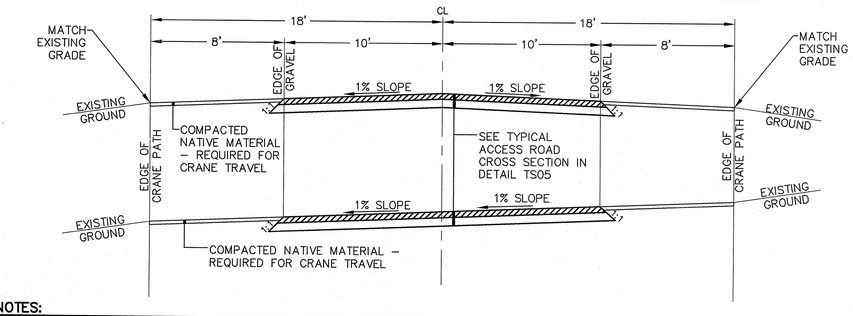
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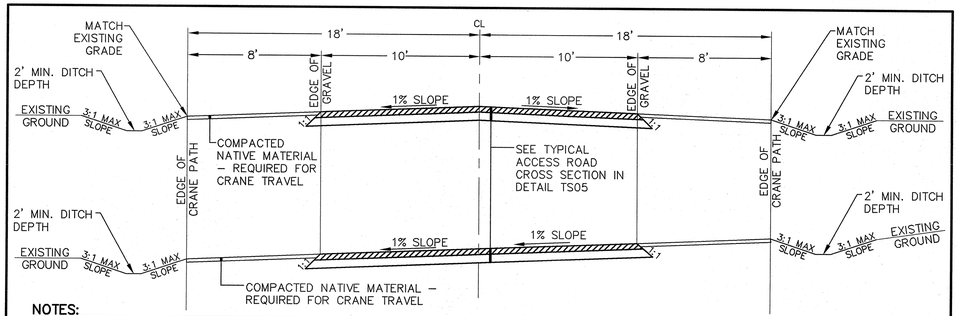
NOTES:

1. CONTRACTOR SHALL CONSTRUCT CROSS-SLOPE ROAD SECTION WHERE ACCESS ROADS ARE CONSTRUCTED ON A SIDE SLOPE, AND WHERE OTHERWISE NOTED ON PLANS, TO ENSURE THAT ROADS AND SHOULDERS REMAIN WELL DRAINED AT ALL TIMES.
2. MAXIMUM CROSS SLOPE FOR CRANE TRAVEL IS 1.0%
3. ROADS TO GENERALLY FOLLOW EXISTING CONTOURS EXCEPT IF GRADES EXCEED TURBINE DELIVERY VEHICLE CAPABILITIES, IF THIS OCCURS GENERAL CONTRACTOR MAY PROVIDE ASSIST VEHICLE OR MODIFY GRADE.
4. CONTRACTOR SHALL HAVE FLEXIBILITY IN ADJUSTING FINISHED GRADE TO MINIMIZE EXCESS EXCAVATION PROVIDED THAT SAID ADJUSTMENTS RESULT IN COMPLIANCE WITH ALL TRANSMISSION LINE CLEARANCES AND SIEMENS REQUIREMENTS FOR ROADWAYS TO ACCOMMODATE TURBINE DELIVERY AND CRANE MOVEMENTS AND EFFECTIVE DRAINAGE OF ROADWAY AND DITCHES.

TYPICAL TURBINE ACCESS ROAD WITH CRANE PATH

LAST REVISED: 06/28/13

RD01A



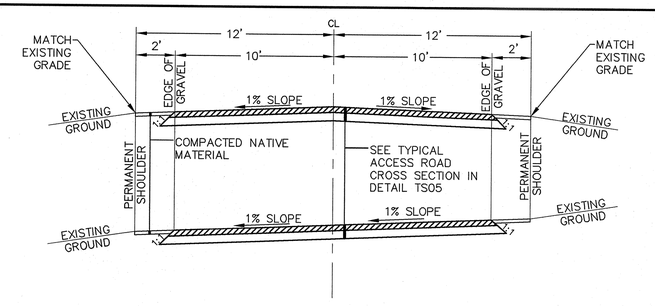
NOTES:

1. CONTRACTOR SHALL CONSTRUCT CROSS-SLOPE ROAD SECTION WHERE ACCESS ROADS ARE CONSTRUCTED ON A SIDE SLOPE, AND WHERE OTHERWISE NOTED ON PLANS, TO ENSURE THAT ROADS AND SHOULDERS REMAIN WELL DRAINED AT ALL TIMES.
2. MAXIMUM CROSS SLOPE FOR CRANE TRAVEL IS 1.0%
3. ROADS TO GENERALLY FOLLOW EXISTING CONTOURS EXCEPT IF GRADES EXCEED TURBINE DELIVERY VEHICLE CAPABILITIES, IF THIS OCCURS GENERAL CONTRACTOR MAY PROVIDE ASSIST VEHICLE OR MODIFY GRADE.
4. ROAD DITCHES TO BE CONSTRUCTED AS IDENTIFIED ON THE PLANS OR AS NEEDED TO PROVIDE POSITIVE DRAINAGE NEAR THE ROADS.
5. CONTRACTOR SHALL HAVE FLEXIBILITY IN ADJUSTING FINISHED GRADE TO MINIMIZE EXCESS EXCAVATION PROVIDED THAT SAID ADJUSTMENTS RESULT IN COMPLIANCE WITH ALL TRANSMISSION LINE CLEARANCES AND SIEMENS REQUIREMENTS FOR ROADWAYS TO ACCOMMODATE TURBINE DELIVERY AND CRANE MOVEMENTS AND EFFECTIVE DRAINAGE OF ROADWAY AND DITCHES.

TYPICAL TURBINE ACCESS ROAD WITH CRANE PATH AND ROAD DITCH

LAST REVISED: 06/28/13

RD01B



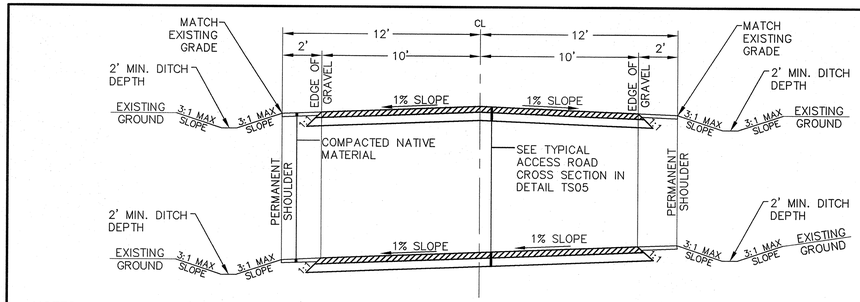
NOTES:

1. CONTRACTOR SHALL CONSTRUCT CROSS-SLOPE ROAD SECTION WHERE ACCESS ROADS ARE CONSTRUCTED ON A SIDE SLOPE, AND WHERE OTHERWISE NOTED ON PLANS, TO ENSURE THAT ROADS AND SHOULDERS REMAIN WELL DRAINED AT ALL TIMES.
2. MAXIMUM CROSS SLOPE FOR CRANE TRAVEL IS 1.0%
3. ROADS TO GENERALLY FOLLOW EXISTING CONTOURS EXCEPT IF GRADES EXCEED TURBINE DELIVERY VEHICLE CAPABILITIES, IF THIS OCCURS GENERAL CONTRACTOR MAY PROVIDE ASSIST VEHICLE OR MODIFY GRADE.
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TYPICAL TURBINE ACCESS ROAD WITH 2 FOOT SHOULDERS

LAST REVISED: 06/28/13

RD01C



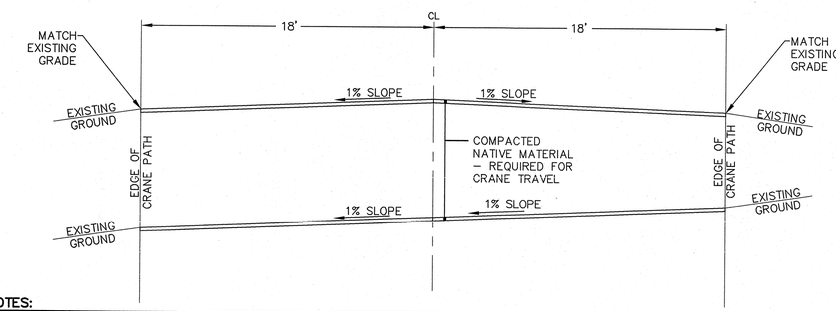
NOTES:

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2. MAXIMUM CROSS SLOPE FOR CRANE TRAVEL IS 1.0%
3. ROADS TO GENERALLY FOLLOW EXISTING CONTOURS EXCEPT IF GRADES EXCEED TURBINE DELIVERY VEHICLE CAPABILITIES, IF THIS OCCURS GENERAL CONTRACTOR MAY PROVIDE ASSIST VEHICLE OR MODIFY GRADE.
4. ROAD DITCHES TO BE CONSTRUCTED AS IDENTIFIED ON THE PLANS OR AS NEEDED TO PROVIDE POSITIVE DRAINAGE NEAR THE ROADS.
5. CONTRACTOR SHALL HAVE FLEXIBILITY IN ADJUSTING FINISHED GRADE TO MINIMIZE EXCESS EXCAVATION PROVIDED THAT SAID ADJUSTMENTS RESULT IN COMPLIANCE WITH ALL TRANSMISSION LINE CLEARANCES AND SIEMENS REQUIREMENTS FOR ROADWAYS TO ACCOMMODATE TURBINE DELIVERY AND CRANE MOVEMENTS AND EFFECTIVE DRAINAGE OF ROADWAY AND DITCHES.

TYPICAL TURBINE ACCESS ROAD WITH 2 FOOT SHOULDERS AND ROAD DITCH

LAST REVISED: 06/28/13

RD01D



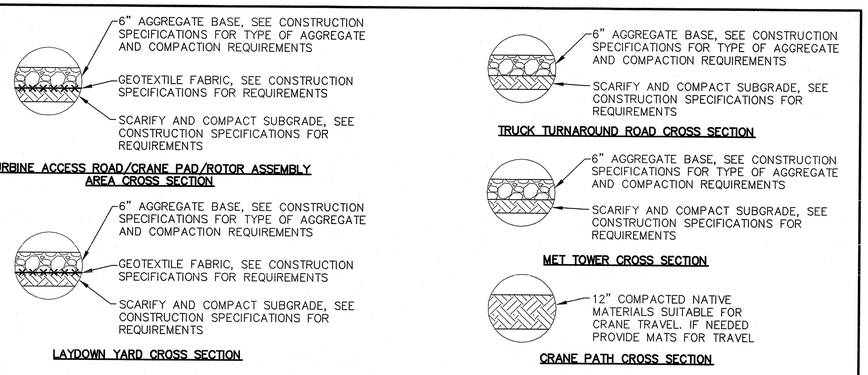
NOTES:

1. CONTRACTOR SHALL CONSTRUCT CROSS-SLOPE CRANE SECTION WHERE CRANE PATHS ARE CONSTRUCTED ON A SIDE SLOPE
2. MAXIMUM CROSS SLOPE FOR CRANE TRAVEL IS 1.0%
3. CRANE PATHS TO GENERALLY FOLLOW EXISTING CONTOURS EXCEPT IF GRADES EXCEED SAFE CRANE TRAVEL CAPABILITIES, IF THIS OCCURS GENERAL CONTRACTOR MAY MODIFY GRADE.
4. CONTRACTOR SHALL HAVE FLEXIBILITY IN ADJUSTING FINISHED GRADE TO MINIMIZE EXCESS EXCAVATION PROVIDED THAT SAID ADJUSTMENTS RESULT IN COMPLIANCE WITH ALL TRANSMISSION LINE CLEARANCES AND SIEMENS REQUIREMENTS FOR ROADWAYS TO ACCOMMODATE TURBINE DELIVERY AND CRANE MOVEMENTS AND EFFECTIVE DRAINAGE OF ROADWAY AND DITCHES.

TYPICAL CRANE TRAVEL PATH

LAST REVISED: 06/28/13

CW01



NOTE:
STRUCTURAL SECTIONS SHOWN ARE THE MINIMUM THICKNESS REQUIREMENTS DURING NORMAL FIELD CONDITIONS. THE SECTIONS MAY NEED TO BE INCREASED BASED ON ACTUAL FIELD CONDITIONS AT THE TIME OF CONSTRUCTION. CONDITIONS INCLUDE BUT ARE NOT LIMITED TO CONSTRUCTION DURING THE FREEZE/THAW CYCLE, UNUSUALLY WET PERIODS, OR IN LOW/WET AREAS.

TYPICAL STRUCTURAL CROSS SECTIONS

LAST REVISED: 03/29/12

TS05

Westwood Professional Services, Inc.
7699 Anagram Drive
Eden Prairie, MN 55344

PHONE 952-937-5150
FAX 952-937-5822
TOLL FREE 1-888-937-5150

www.westwoodps.com

REGISTERED PROFESSIONAL ENGINEER
WILLIAM D. HISTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions

#	DATE	DESCRIPTION
2	10/09/13	Owner Comments/Field Changes
3	02/28/14	Owner Comments
4	10/03/14	Record Drawings
5	12/22/14	Updated Record Drawings

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project

Oliver County, North Dakota

Construction Details

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. *DATE* OCT. 3, 2014

Record Drawings

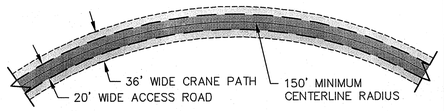
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Sheet: **C.07**

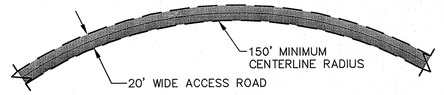
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ACCESS ROAD WITH CRANE PATH WHERE APPLICABLE



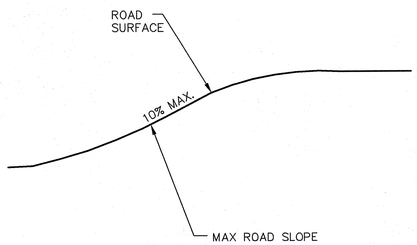
ACCESS ROAD WITHOUT CRANE PATH



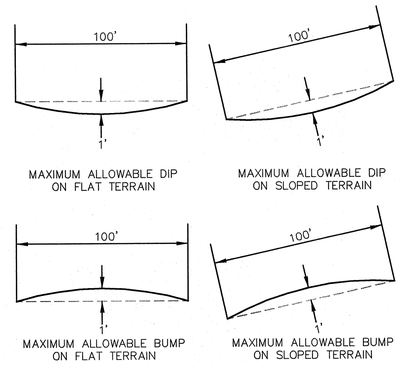
NOTE:

1. SOME RADII MAY REQUIRE ADDITIONAL SOIL COMPACTION OR GRAVEL OUTSIDE OF THE WIDTH SHOWN ABOVE TO ACCOMMODATE TRACTORS OR TRAILERS TRACKING OFF THE ACCESS ROAD.

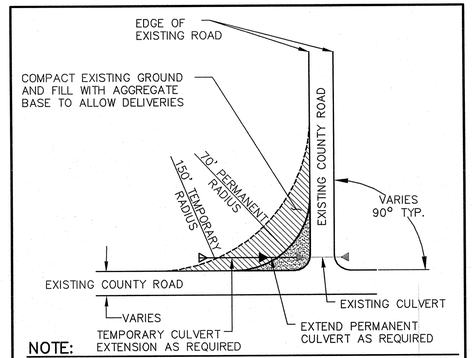
Westwood	MINIMUM RADIUS FOR TURBINE ACCESS ROAD	LAST REVISED: 06/28/13 RD02



Westwood	MAXIMUM VERT. SLOPE FOR TURBINE ACCESS ROAD/CRANE TRAVEL PATH	LAST REVISED: 06/28/13 RD03



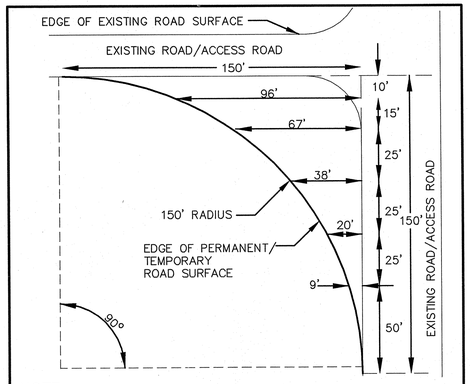
Westwood	MAXIMUM DEFLECTION FOR TURBINE ACCESS ROAD	LAST REVISED: 06/28/13 RD04



NOTE:

1. SEE PLANS FOR LOCATIONS OF COUNTY ROAD INTERSECTION WIDENING.
2. UPON DELIVERY VEHICLE COMPLETION, TEMPORARY INTERSECTION WIDENING TO BE REMOVED AT PUBLIC ROAD INTERSECTION IMPROVEMENTS AND ALL DISTURBED AREA RESTORED TO NATIVE CONDITIONS.

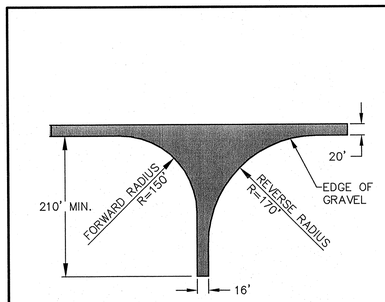
Westwood	COUNTY ROAD TYPICAL INTERSECTION WIDENING	LAST REVISED: 06/28/13 RD05



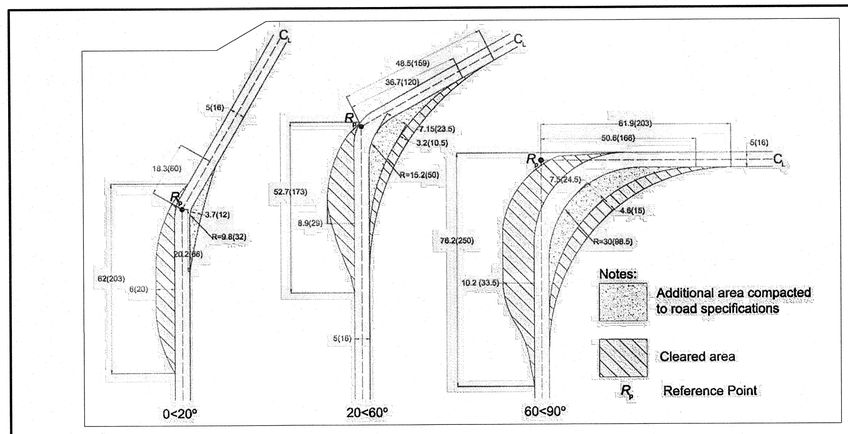
NOTE:

1. UPON DELIVERY VEHICLE COMPLETION, TEMPORARY INTERSECTION WIDENING TO BE REMOVED AND ALL DISTURBED AREA RESTORED.

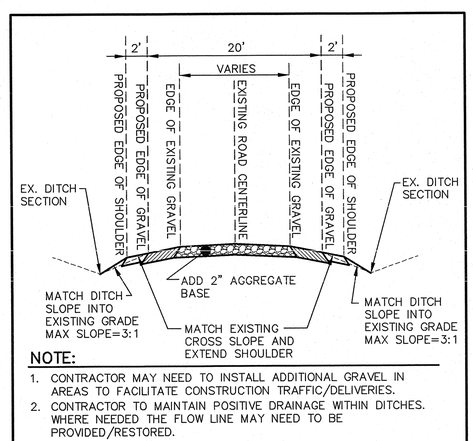
Westwood	INTERSECTION WIDENING DIMENSIONS	LAST REVISED: 06/28/13 RD06



Westwood	TEMPORARY DELIVERY VEHICLE TURNAROUND	LAST REVISED: 07/17/13 RD07



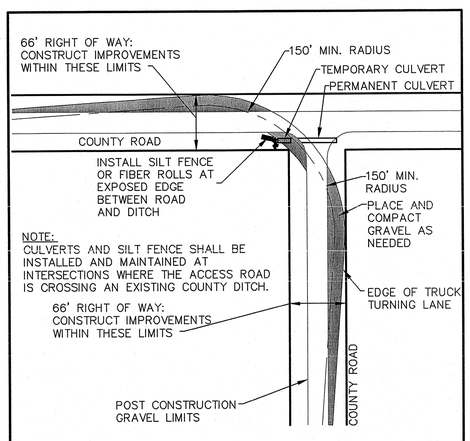
	ACCESS ROAD BENDS AND CROSSES	LAST REVISED: 06/28/13 RD30



NOTE:

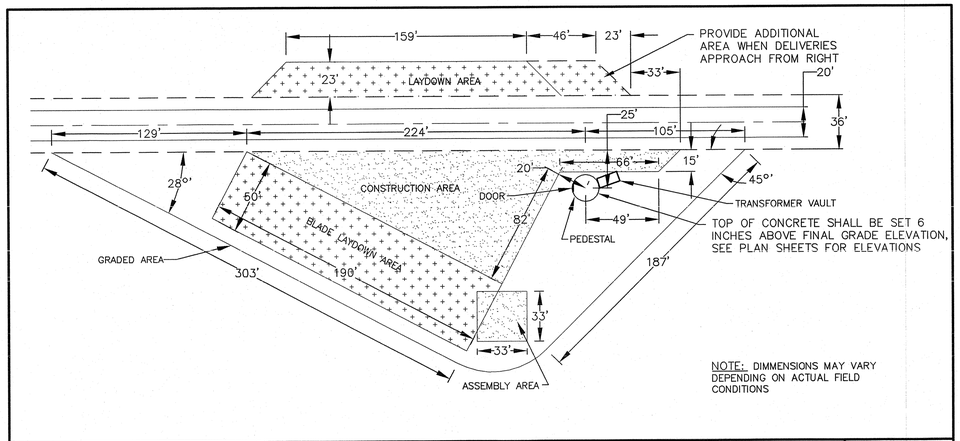
1. CONTRACTOR MAY NEED TO INSTALL ADDITIONAL GRAVEL IN AREAS TO FACILITATE CONSTRUCTION TRAFFIC/DELIVERIES.
2. CONTRACTOR TO MAINTAIN POSITIVE DRAINAGE WITHIN DITCHES. WHERE NEEDED THE FLOW LINE MAY NEED TO BE PROVIDED/RESTORED.

Westwood	PUBLIC ROAD IMPROVEMENTS	LAST REVISED: 07/01/13 RD10



NOTE:
CULVERTS AND SILT FENCE SHALL BE INSTALLED AND MAINTAINED AT INTERSECTIONS WHERE THE ACCESS ROAD IS CROSSING AN EXISTING COUNTY DITCH.

Westwood	COUNTY ROAD INTERSECTION IMPROVEMENT–B	LAST REVISED: 07/17/13 RD11



NOTE: DIMMENSIONS MAY VARY DEPENDING ON ACTUAL FIELD CONDITIONS

Westwood	TYPICAL WTG SITE PLAN	LAST REVISED: 07/02/13 TS01

Westwood Professional Services, Inc.
7699 Anagram Drive
Eden Prairie, MN 55344

PHONE 952-937-5150
FAX 952-937-5822
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www.westwoodps.com

REGISTERED PROFESSIONAL ENGINEER
WILLIAM E. HINSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions:

#	DATE	DESCRIPTION
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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project

Oliver County, North Dakota

Construction Details

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. DATE OCT. 3, 2014

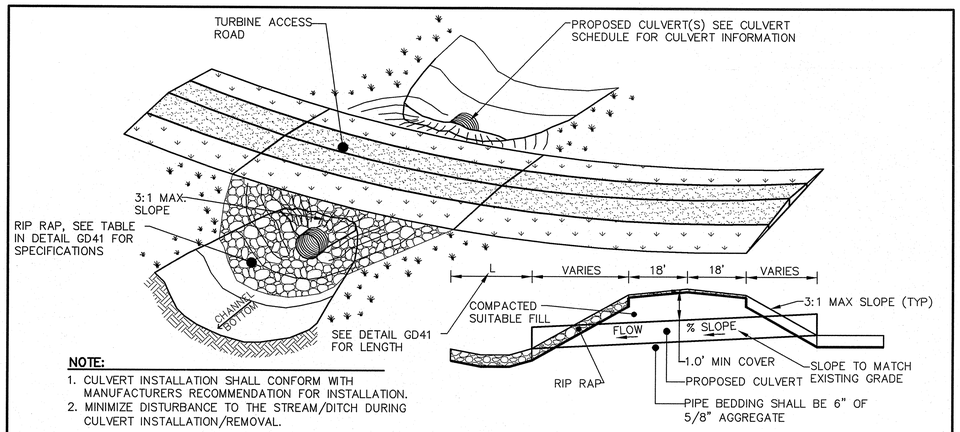
Record Drawings

Date: 12/22/2014

Sheet: C.08

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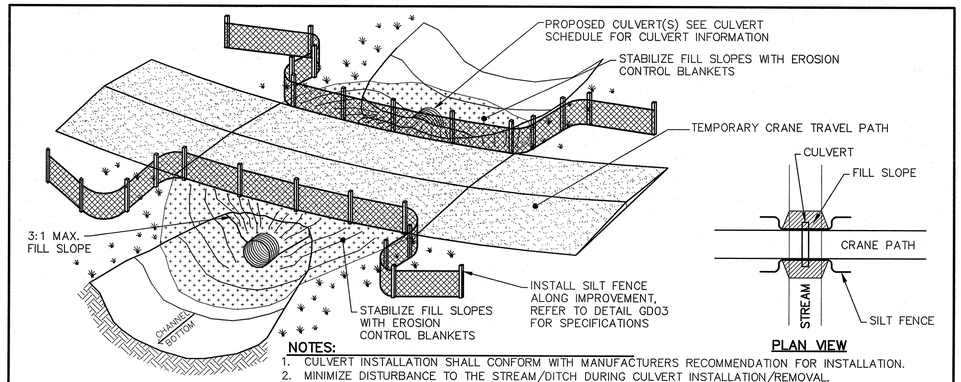
NOTE:

1. CULVERT INSTALLATION SHALL CONFORM WITH MANUFACTURERS RECOMMENDATION FOR INSTALLATION.
2. MINIMIZE DISTURBANCE TO THE STREAM/DITCH DURING CULVERT INSTALLATION/REMOVAL.

TYPICAL TURBINE ACCESS ROAD STREAM CROSSING

LAST REVISED: 08/06/13

RD12



PLAN VIEW

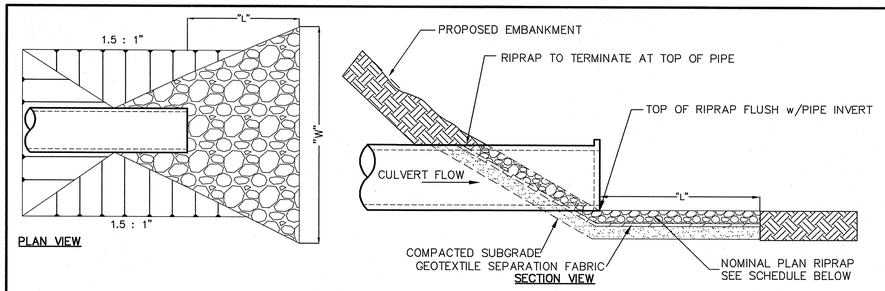
NOTES:

1. CULVERT INSTALLATION SHALL CONFORM WITH MANUFACTURERS RECOMMENDATION FOR INSTALLATION.
2. MINIMIZE DISTURBANCE TO THE STREAM/DITCH DURING CULVERT INSTALLATION/REMOVAL.
3. RIP RAP WITH GEOTEXTILE FABRIC MAY BE SUBSTITUTED FOR THE EROSION CONTROL BLANKETS WHERE NEEDED.
4. UPON REMOVAL OF TEMPORARY STREAM CROSSING, THE DISTURBED AREA SHALL BE RESTORED TO NATIVE CONDITIONS. REFER TO THE PROJECT SWPPP.

TYPICAL TEMPORARY CRANE TRAVEL PATH STREAM CROSSING WITH EROSION CONTROL BLANKETS

LAST REVISED: 07/01/13

RD13



PLAN VIEW

SECTION VIEW

SCHEDULE FOR RIPRAP				
CULVERT DIAMETER (D)	LENGTH (L)	WIDTH (W)	STONE ds_{50}	RIPRAP THICKNESS
12"	4'	6'	6"	18"
18"	6'	8.5'	6"	18"
24"	10'	13'	10"	24"
30"	13'	16'	10"	24"
36"	18'	21'	14"	31"

NOTE:

1. RIPRAP GRADATION AND PLACEMENT – THE RIPRAP GRADATION SHALL BE A WELL–GRADED MIX FROM 1.5 TIMES THE D_{50} SIZE TO 25 PERCENT OF THE D SIZE OR TO DEPARTMENT OF TRANSPORTATION STANDARDS. THE RIPRAP STONES SHALL BE CAREFULLY PLACED WORKING FROM THE TOE OF THE SLOPED UPWARD. THE STONES SHOULD BE LOWERED TO THE SLOPE AND NOT BE ALLOWED TO DROP MORE THAN 12 INCHES ONTO THE GEOTEXTILE. THE FINISHED SURFACE SHALL BE A RELATIVELY SMOOTH UNIFORMLY SLOPED SURFACE.

PIPE/CULVERT OUTLET APRON FOR ENERGY DISSIPATION

LAST REVISED: 08/06/13

GD41

As Built Culvert Schedule				
Culvert Location	Length	Size	Inlet Elev.	Outlet Elev.
19th St Replacement	50	24		
25th St E. end East of 24" pipe	40	42		
25th St Field Entrance	30	12	Field Approach	
25th St Field Entrance E. of 455	90	12	Field Approach	
25th St Field Entrance N. of road	40	12	Field Approach	
25th St Field Entrance S. of road	40	12	Field Approach	
25th St. East end near 57th	40	24		
30th St SW	20	24		
419 Access RD N. of 419 tower	60	18		
C25-1	180	36	2202.65	2203.71
C25-1A	40	18	2231.35	2230.63
C25-1B	40	18	2255.75	2255.48
C25-2	100	30	2235.30	2233.60
C25-A	75	18	2211.21	2210.00
C25-B	40	18	2209.86	2208.21
C27-1	45	18	2264.63	2264.60
C27-2	55	18	2292.57	2290.30
C27-3	50	12	2311.25	2310.98
C27-4	40	12	2318.15	2317.66
C27-A	50	12	2274.63	2271.30
C28-1	120	24	2241.41	2238.14
C28-2	45	18	2236.11	2233.78
C28-A	40	12	2244.31	2243.74
C28-B	40	12	2245.12	2243.39
C28-C	40	12	2257.96	2254.72
C28-D	40	12	2270.29	2268.39
C28-E	80	12	2285.82	2281.53

As Built Culvert Schedule				
Culvert Location	Length	Size	Inlet Elev.	Outlet Elev.
C459-1	50	12	2342.60	2341.81
C459-2	50	12	2342.62	2341.88
C46-1	140	18	2193.22	2189.14
C461-1	220	18	2338.06	2334.96
C46-2	40	24	2180.54	2180.34
C46-3	40	18	2201.26	2200.77
C464-1	400	36	2263.71	2260.82
C464-2	140	18	2305.42	2303.51
C50-1	120	12	2280.39	2277.00
C50-2	80	18	2276.98	2267.76
C50-3	180	18	2267.97	2267.61
Road 444 near 441	30	12	Field Approach	
Road 444 near 441	30	12	Field Approach	
Tri- County Substation North Entrance	106	18		
Tri- County Substation South Entrance	67	18		
Tri-Cnty Laydown Yard East Entrance	70	18		
Tri-Cnty Laydown Yard South Entrance	60	18		

As Built Culvert Schedule				
Culvert Location	Length	Size	Inlet Elev.	Outlet Elev.
C403-1	40	12	2249.66	2248.95
C406-1	65	18	2260.35	2255.62
C407-1	55	18	2241.81	2241.13
C408-1	175	18	2269.59	2268.54
C409-1	220	18	2304.68	2297.07
C409-2	60	24	2290.84	2287.93
C411-1	210	18	2305.94	2302.22
C414-1	225	18	2304.77	2296.39
C414-2	130	24	2299.87	2296.29
C414-3	240	30	2290.09	2285.49
C414-4	70	24	2317.79	2313.36
C414-5	65	24	2313.80	2308.05
C414-6	60	24	2305.08	2302.51
C416-1	60	12	2254.01	2253.70
C416-2	74	18	2290.65	2288.84
C416-3	80	18	2288.69	2286.18
C417-1	80	12	2310.62	2308.20
C419-1	40	12	2268.18	2268.14
C421-1	60	18	2287.91	2286.67
C421-2	180	18	2288.81	2280.58
C425-1	200	36	2218.11	2216.99
C425-2	40	18	2294.91	2293.47
C425-3	60	12	2296.51	2295.73
C426-2	100	24	2287.80	2285.02
C426-3	80	18	2284.54	2284.06
C426-4	50	12	2293.26	2292.02
C426-5	50	12	2345.33	2344.82

As Built Culvert Schedule				
Culvert Location	Length	Size	Inlet Elev.	Outlet Elev.
C426-6	60	12	2366.34	2365.29
C426-7	60	12	2335.99	2335.05
C432-1	40	12	2266.44	2265.24
C433-1	60	24	2304.57	2300.88
C434-1	60	18	2350.95	2349.55
C435-1	60	12	2341.01	2338.66
C437-2	180	30	2287.86	2287.51
C437-3	60	24	2323.69	2323.04
C438-1	240	30	2304.69	2302.93
C438-2	40	12	2320.92	2320.05
C438-3	60	12	2325.72	2325.20
C438-4	70	12	2336.99	2336.23
C444-1	65	18	2378.46	2377.22
C444-2	80	18	2329.98	2329.54
C444-4	75	18	2329.16	2327.40
C444-7	60	12	2330.00	2329.76
C445-1	40	18	2344.34	2344.23
C450-1	60	18	2323.30	2322.78
C451-1	80	18	2397.17	2393.09
C452-1	60	12	2348.56	2346.97
C453-1	80	24	2252.44	2250.10
C454-1	60	18	2277.87	2274.60
C454-2	60	24	2275.47	2272.75
C454-3	100	18	2223.56	2222.86
C455-1	60	24	2269.65	2267.77
C455-2	180	24	2283.14	2281.96
C458-1	50	12	2293.41	2292.91

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HILSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions:

#	DATE	DESCRIPTION
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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project

Oliver County, North Dakota

Construction Details

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. DATE OCT. 3, 2014

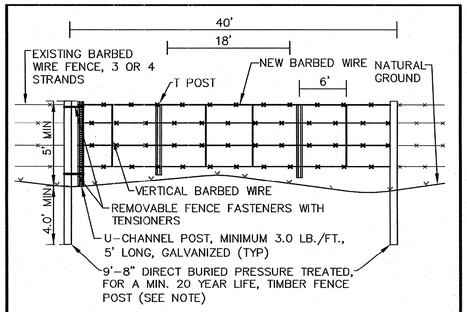
Record Drawings

Date: 12/22/2014

Sheet: C.09

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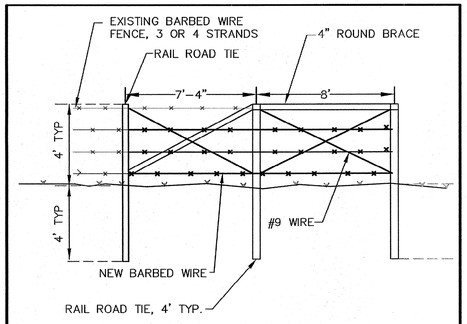
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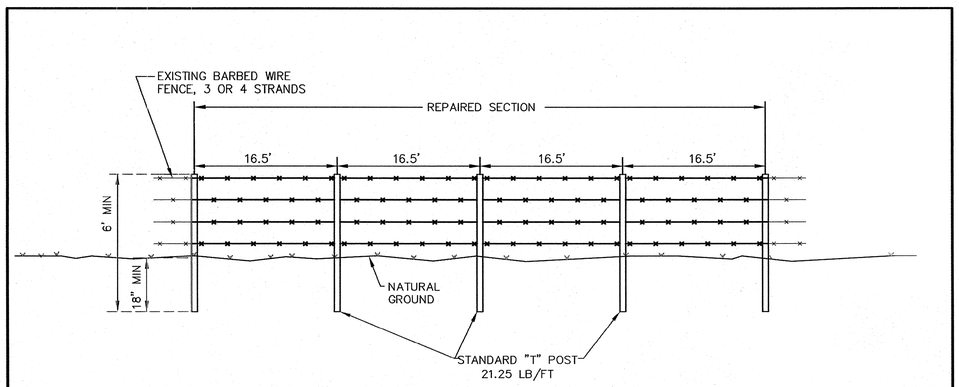
NOTE:

1. TO BE USED AT UNDERGROUND POWER COLLECTION CROSSINGS
2. ALL FITTINGS, HARDWARE AND OTHER APPURTENANCES SHALL BE FABRICATED AND FITTED IN ACCORDANCE WITH THE MANUFACTURES RECOMMENDATIONS

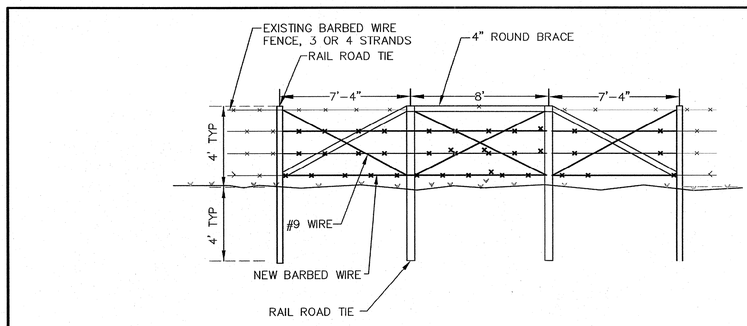
	BARBWIRE GATE	LAST REVISED: 01/02/08 FN02



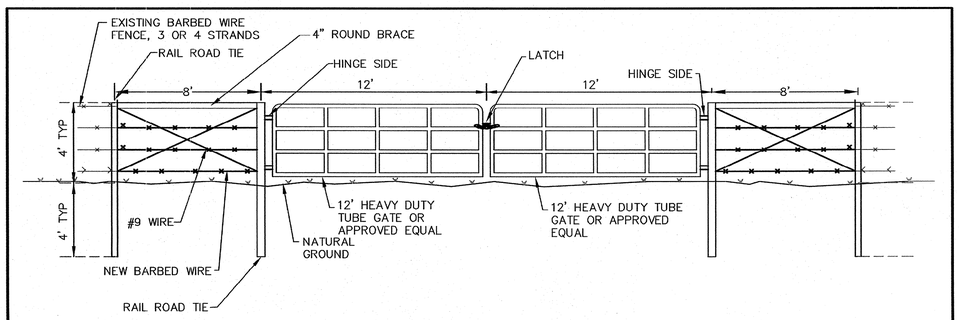
	CORNER BRACING	LAST REVISED: 07/02/13 FN04



	TYPICAL STRAIGHT FENCING	LAST REVISED: 07/02/13 FN03



	HALF MILE BRACING	LAST REVISED: 07/02/13 FN05



NOTES:

1. BRACING SHALL BE CONSTRUCTED ON EACH END OF THE GATE.
2. GATES ARE ONLY REQUIRED TO CONTAIN LIVESTOCK.
3. CONTRACTOR TO MATCH NUMBER OF WIRES WITH WHAT EXISTS AT CROSSING.

	TYPICAL DOUBLE GATE	LAST REVISED: 07/02/13 GA04

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ROAD DESIGN PARAMETERS

1. TWO TRAFFIC CONDITIONS WERE EVALUATED AND ANALYZED FOR USE OF THE ROAD: (1.1) CONDITIONS DURING CONSTRUCTION OF THE PROJECT, AND (1.2) MAINTENANCE TRAFFIC (DURING WIND FARM OPERATION) CONSISTING OF LIGHT DUTY TRUCKS.
   - 1.1. THE CONSTRUCTION CONDITION ASSUMES: AN AVERAGE SUBGRADE CBR VALUE OF 1.8; AN AVERAGE AGGREGATE CBR VALUE OF 9; A MAXIMUM AXLE LOAD OF 25 KIPS; A TIRE PRESSURE OF 80 PSI; 800 AXLE PASSES; AND MAXIMUM ALLOWABLE RUT DEPTHS OF 1.5 INCHES.
   - 1.2. THE MAINTENANCE CONDITION ASSUMES: AN AVERAGE SUBGRADE CBR VALUE OF 1.8; AN AVERAGE AGGREGATE CBR VALUE OF 9; MAXIMUM AXLE LOAD OF 3.5 KIPS; A TIRE PRESSURE OF 65 PSI; 2000 AXLE PASSES; AND MAXIMUM ALLOWABLE RUT DEPTHS OF 3 INCHES.
2. PERIODIC ROADWAY MAINTENANCE SHOULD BE EXPECTED OVER THE LIFE OF THE PERMANENT FACILITY IN PARTICULAR DURING AND AFTER RAINFALL EVENTS AND SNOW MELTS. PROPER DRAINAGE SHOULD ALSO BE MAINTAINED ALONG THE ROADWAYS.

SPECIAL PROVISIONS FOR GRADING AND EROSION CONTROL

THE CONTRACTOR SHALL PROVIDE EROSION CONTROL MEASURES AS PLANNED AND SPECIFIED ON THE BISON 4 STORM WATER POLLUTION PREVENTION PLAN.

PRODUCTS

1. ROAD BASE SHALL MEET THE REQUIREMENTS OF NDDOT SPEC 716.03 CLASS 13 OR CLASS 5. SEE TABLE 1 FOR GRADATION.
2. ROAD SUBGRADE, SHOULDERS AND CRANE PADS SHALL CONSIST OF COMPACTED NATIVE SOILS.
3. GEOTEXTILE FABRIC FOR ROAD BASE MATERIAL SEPARATION AND REINFORCEMENT SHALL BE TENCATE MIRAFI 500X OR APPROVED EQUAL. IF FIELD CONDITIONS REQUIRE THE USE OF A STRONGER GEOTEXTILE FABRIC, THE MATERIAL SHALL BE MIRAFI HP270 OR APPROVED EQUAL.
4. GEOTEXTILE FABRIC FOR CULVERT RIP RAP APRONS SHALL BE TENCATE MIRAFI 140N OR APPROVED EQUAL.
5. RIP RAP: RIP RAP SHALL MEET REQUIREMENTS OF NDDOT SPEC 708.04 AND SHALL CONSIST OF EITHER FIELD STONE OR QUARRY STONE.
6. SEED: SEED SHALL MEET THE REQUIREMENTS OF NDDOT SPEC 708.02. SEED SHALL BE CLASS IV IN CROP AREAS AND CLASS II FOR ALL OTHER AREAS.

EXECUTION

1. CLEARING AND GRUBBING
   - 1.1. THE CONTRACTOR SHALL BE REQUIRED AS NECESSARY TO FACILITATE CONSTRUCTION OPERATIONS, TO REMOVE ALL TREES, STUMPS, BRUSH, AND DEBRIS WITHIN THE GRADING AREAS SHOWN ON THE PLANS. THE CONTRACTOR IS TO REMOVE ONLY THOSE TREES WHICH ARE DESIGNATED BY THE OWNERS REPRESENTATIVE FOR REMOVAL, AND SHALL EXERCISE EXTREME CARE AROUND EXISTING TREES TO BE SAVED.
2. TOPSOIL STRIPPING
   - 2.1. TOPSOIL SHALL BE STRIPPED FROM ALL ROADWAY AREAS THROUGH THE ROOT ZONE AND ORGANICS. SEE GEOTECHNICAL REPORT FOR THICKNESS. TOPSOIL SHALL NOT BE STRIPPED OUTSIDE OF THE DESIGNATED DISTURBANCE AREAS.
   - 2.2. ANY TOPSOIL, THAT HAS BEEN STRIPPED, SHALL BE RE-SPREAD OR STOCKPILED WITHIN GRADING AREAS AS DESIGNATED ON THE PLANS AND/OR USED AS FILL OUTSIDE OF THE DISTURBANCE AREAS, AS DIRECTED BY THE ENGINEER. ALL TOPSOIL SHALL BE REDISTRIBUTED TO THE LAND OWNERS PROPERTY OF WHERE IT ORIGINATED FROM.
3. SUBGRADE PREPARATION
   - 3.1. ALL ROAD SUBGRADE SHALL BE COMPACTED AS IDENTIFIED IN THE REQUIREMENTS SECTION.
   - 3.2. THE CONTRACTOR SHALL APPLY WATER OR DRYING TECHNIQUES AS NEEDED TO MEET THE REQUIREMENTS IN SECTION 3.1. NO ADDITIONAL PAYMENT WILL BE MADE FOR SOIL MANIPULATION.
   - 3.3. IN THE CASE WHEN THE REQUIRED COMPACTION CANNOT BE REACHED THROUGH SOIL MANIPULATION, THE CONTRACTOR SHALL SUSPEND WORK TO ALLOW THE SUBGRADE TO RECOVER. NO ADDITIONAL PAYMENTS WILL BE MADE DUE TO SUSPENSION OF WORK.
4. EMBANKMENT CONSTRUCTION.
   - 4.1. EMBANKMENT CONSTRUCTION SHALL BE COMPACTED AS IDENTIFIED IN THE REQUIREMENTS SECTION.
   - 4.2. EMBANKMENT CONSTRUCTION SHALL CONSIST OF THE PLACING OF SUITABLE FILL MATERIAL, AFTER TOPSOIL STRIPPING, ABOVE THE EXISTING GRADE. GENERALLY, EMBANKMENTS SHALL HAVE COMPACTED SUPPORT SLOPES OF ONE FOOT HORIZONTAL TO ONE FOOT VERTICAL. THE MATERIAL FOR EMBANKMENT CONSTRUCTION SHALL BE OBTAINED FROM THE ACCESS ROAD EXCAVATION (SEE GEOTECHNICAL REPORT FOR RESTRICTIONS), OR ANY SUITABLE, APPROVED SOIL OBTAINED OFFSITE BY CONTRACTOR, AS DIRECTED OR APPROVED BY THE ENGINEER. THIS MATERIAL SHALL BE PLACED IN LIFTS NOT TO EXCEED LOOSE LIFTS OF 12 INCHES PRIOR TO COMPACTION
   - 4.3. SIDE SLOPES FOR PERMANENTLY STABILIZED SLOPES GREATER THAN 3:1 WILL NOT BE PERMITTED, UNLESS OTHERWISE NOTED ON THE PLAN.
5. FEMA FLOODPLAIN.
   - 5.1. NO PERMANENT FILL MATERIAL WILL BE PLACED WITHIN THE LIMITS OF THE 100-YEAR FLOOD PLAIN.
   - 5.2. POST CONSTRUCTION CONDITIONS WILL BE BROUGHT BACK TO EXISTING GRADE, NO BLOCKAGE OF EXISTING DRAINAGE PATHS ARE ALLOWED DURING CONSTRUCTION.
   - 5.3. THE CONTRACTOR SHALL, UPON REMOVAL OF TEMPORARY CONSTRUCTION ACTIVITIES, RESTORE ALL DISTRUBED AREAS TO PRE-CONSTRUCTION CONDITIONS.

TESTING REQUIREMENTS:

DEFINITIONS

1. TESTING SHALL BE PERFORMED BY MN POWER.
2. SUBMIT TESTING AND INSPECTION RECORDS SPECIFIED TO THE CIVIL ENGINEER OF RECORD FOR REVIEW.
   - 2.1. THE ENGINEER WILL REVIEW THE TESTING AND INSPECTION RECORDS TO CHECK CONFORMANCE WITH THE DRAWINGS AND SPECIFICATIONS. THE ENGINEER'S REVIEW DOES NOT RELIEVE THE CONSTRUCTION CONTRACTOR FROM THE RESPONSIBILITY FOR CORRECTING DEFECTIVE WORK.
3. PROOF ROLLING:
   - 3.1. PROOF-ROLLING SHALL BE PERFORMED IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER OR QUALIFIED GEOTECHNICAL REPRESENTATIVE USING A FULLY LOADED TANDEM AXLE DUMP TRUCK WITH A MINIMUM GROSS WEIGHT OF 25 TONS. PROOF-ROLLING ACCEPTANCE STANDARDS INCLUDE NO RUTTING GREATER THAN 1.5 INCHES, AND NO "PUMPING" OF THE SOIL BEHIND THE LOADED TRUCK.
4. SIEVE ANALYSIS:
   - 4.1. SIEVE ANALYSIS SHALL BE CONDUCTED IN ACCORDANCE WITH AASHTO T27
5. PROCTOR:
   - 5.1. PROCTORS SHALL BE DETERMINED IN ACCORDANCE WITH ASTM D698
6. ATTERBERG LIMITS:
   - 6.1. ATTERBERG LIMITS SHALL BE DETERMINED IN ACCORDANCE WITH AASHTO T89 AND T90
7. MOISTURE DENSITY (NUCLEAR DENSITY):
   - 7.1. MOISTURE DENSITY TESTING SHALL BE DONE IN ACCORDANCE WITH AASHTO T310

REQUIREMENTS

1. FILL MATERIAL:
   - 1.1. SOILS USED AS FILL MATERIAL SHALL BE TESTED FOR GRAIN SIZE ANALYSIS, MOISTURE CONTENT, ATTERBERG LIMITS ON FINES CONTENT, AND PROCTOR TESTS.
2. COMPACTED SUBGRADE:
   - 2.1. SCARIFY TO A MINIMUM DEPTH OF 12 INCHES, MOISTURE CONDITION AND RECOMPACT SOILS.
   - 2.2. PROVIDE 1 MOISTURE DENSITY COMPACTION TESTS PER 500 LF PER 1 FOOT VERTICAL LIFT. COMPACTED SUBGRADE MUST ACHIEVE A MINIMUM OF 97% MAXIMUM DRY DENSITY AT ±2% OF OPTIMUM MOISTURE CONTENT.
   - 2.3. THE ENTIRE SUBGRADE SHALL BE PROOF-ROLLED PRIOR TO THE PLACEMENT OF THE AGGREGATE BASE TO IDENTIFY AREAS OF UNSTABLE SUBGRADE.
3. STRUCTURAL FILL:
   - 3.1. IN ROADWAY AND CRANE PAD FILL AREAS PROVIDE 1 MOISTURE DENSITY COMPACTION TEST EVERY 250 FEET FOR EVERY 1 FOOT VERTICAL LIFT. AGGREGATE BASE MUST BE COMPACTED TO A MINIMUM OF 97% MAXIMUM DRY DENSITY AT ±2% OF OPTIMUM MOISTURE CONTENT.
4. AGGREGATE BASE:
   - 4.1. PROVIDE 1 MOISTURE DENSITY COMPACTION TEST FOR EVERY 500 L.F. OF ROAD LENGTH. AGGREGATE BASE MUST BE COMPACTED TO A MINIMUM OF 98% MAXIMUM DRY DENSITY AT ±2% OF OPTIMUM MOISTURE CONTENT.
   - 4.2. PROVIDE 1 SIEVE ANALYSIS PER 2500 CY OF ROAD BASE PLACED.
   - 4.3. AGGREGATE BASE SHALL BE PROOF-ROLLED OVER THE ENTIRE LENGTH IF SUBGRADE PROOF ROLL DID NOT PASS AND THE CONTRACTOR IS ALLOWED TO CONTINUE WITH CONSTRUCTION.
     - 4.3.1. IF PROOF ROLLING DETERMINES THAT THE ROAD IS UNSTABLE, ADDITIONAL AGGREGATE SHALL BE ADDED UNTIL THE UNSTABLE SECTION IS ABLE TO PASS A PROOF ROLL.
5. CRANE TRAVEL SHOULDERS:
   - 5.1. PROVIDE 1 STATIC CONE PENETROMETER (SCP) TEST EVERY 500 LF.
   - 5.2. CRANE TRAVEL SHOULDERS SHALL BE PROOF-ROLLED OVER THE ENTIRE LENGTH.
   - 5.3. SCARIFY AND COMPACT EXISTING SOILS TO A DEPTH OF 6-INCHES AND TO A MINIMUM OF 97% MAXIMUM DRY DENSITY AT ±2% OF OPTIMUM MOISTURE CONTENT.
6. CRANE PADS:
   - 6.1. SUBGRADE SHALL BE SCARIFIED 18-24 INCHES, MOISTURE DENSITY COMPACTION TESTING SHALL BE PERFORMED AT A MINIMUM OF 2 PER CRANE PAD PER 1 FOOT OF FILL. CRANE PAD SUBGRADE MUST BE COMPACTED TO A MINIMUM OF 97% MAXIMUM DRY DENSITY AT -1% TO 2% OF OPTIMUM MOISTURE CONTENT.
   - 6.2. STRUCTURAL FILL SHOULD BE COMPACTED TO A MINIMUM OF 98% MAXIMUM DRY DENSITY AT ±2% OF OPTIMUM MOISTURE CONTENT.
   - 6.3. ALL CRANE PADS SHALL BE PROOF ROLLED PRIOR TO UTILIZATION
   - 6.4. CRANE PADS SHALL BE 6 INCHES OF AGGREGATE UNDERLAIN WITH A GEOTEXTILE FABRIC. PAD SHALL BE GRADED LEVEL.
7. COLLECTION LINE:
   - 7.1. REFER TO THE ELECTRICAL DRAWINGS FOR TESTING SPECIFICATIONS.
8. WIND TURBINE FOUNDATIONS:
   - 8.1. REFER TO THE STRUCTURAL DRAWINGS FOR TESTING SPECIFICATIONS.

GENERAL NOTES:

1. THE PLANIMETRIC FEATURES, GROUND SURFACE CONTOURS (AT TWO-FOOT VERTICAL INTERVALS) AND ELEVATIONS ARE BASED ON A DTM SURFACE PROVIDED BY MN POWER. THE CONTOURS DISPLAYED WERE GENERATED BY WESTWOOD ARE BASED ON A 5-FOOT CONTOUR INTERVAL ACCURACY PER THE NATIONAL MAPPING ACCURACY STANDARDS.
2. THE ELEVATIONS (IF APPLICABLE) ON THESE CONSTRUCTION DRAWINGS WERE PREPARED FROM AERIAL PHOTOGRAPHY DATA, NOT ACTUAL FIELD SURVEYING. AS SUCH, THE ACCURACY OF THE ELEVATIONS AND CONTOURS IS NOT AS HIGH AS INFORMATION GATHERED USING CONVENTIONAL FIELD SURVEYING PROCEDURES. THE CONTRACTOR MAY FIND THAT GROUND ELEVATIONS DETERMINED DURING FIELD STAKING WILL VARY FROM THE GROUND ELEVATIONS SHOWN ON THE DRAWINGS. IN THE EVENT WHERE ELEVATIONS VARY GREATLY, AND DRAINAGE MAY BE AN ISSUE, THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OR PROJECT ENGINEER OF POTENTIAL DRAINAGE CONCERNS.
3. WHERE SECTION OR SUBSECTION MONUMENTS ARE ENCOUNTERED, THE OWNER SHALL BE NOTIFIED BEFORE SUCH MONUMENTS ARE REMOVED. THE CONTRACTOR SHALL PROTECT AND CAREFULLY PRESERVE ALL PROPERTY MARKERS AND MONUMENTS UNTIL THE OWNER, AN AUTHORIZED SURVEYOR OR AGENT HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION.
4. EFFORTS SHALL BE MADE TO MINIMIZE SOIL DISTURBANCE TO AREAS OUTSIDE OF THE ROAD GRADING LIMITS, CRANE PATHS, ELECTRICAL COLLECTION, PROJECT FACILITIES AND TURBINE SITES. DISTURBANCE SHALL BE LIMITED TO THE CORRIDORS SHOWN ON THE PLANS.
5. FINALIZE GRADING AROUND THE BASE OF TURBINES IN ACCORDANCE WITH DETAIL TS-03. TYPICAL ERECTION AREAS ARE SHOWN ON THE CONSTRUCTION DRAWINGS. THE CONTRACTOR SHALL MAKE ALL EFFORTS TO KEEP ACTIVITIES WITHIN THE ERECTION AREAS SHOWN ON THE PLANS BUT IT IS UNDERSTOOD THAT SOME ACTIVITIES THAT WILL NOT REQUIRE GRADING OR SOIL DISTURBANCE MAY EXTEND BEYOND THE DEFINED LIMITS. DURING THE ERECTION OF THE ROTOR, TRUCKS AND/OR FORKLIFTS MAY EXTEND BEYOND THESE LIMITS.
6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING DRAINAGE THROUGHOUT THE CONSTRUCTION OF THIS PROJECT. CONSTRUCTION ACTIVITIES SHALL NOT BLOCK THE NATURAL OR MANMADE CREEKS OR DRAINAGE SWALES CAUSING RAINWATER TO POND. ADDITIONAL CULVERTS IN EXCESS OF THOSE ON THE PLANS MAY BE REQUIRED DUE TO CONSTRUCTION ACTIVITIES.
7. ANY FACILITIES REMOVED TO ALLOW FOR CONSTRUCTION (MAILBOXES, SIGNS, FENCES, ETC.) SHALL BE REPLACED BY THE CONTRACTOR IN A CONDITION AS GOOD AS PRE-EXISTING.
8. THE CONTRACTOR SHALL NOTIFY 811-ONE CALL AT LEAST 48 HOURS BEFORE EXCAVATION ACTIVITIES COMMENCE.
9. WHILE BUILDING THE ROADS AND EXCAVATING THE TURBINE FOUNDATIONS, EXCESS SOIL WILL RESULT. THE CONTRACTOR SHALL DISPOSE OF THIS EXCESS SOIL IN AN APPROVED MANNER. NO TOPSOIL WILL BE ALLOWED TO LEAVE THE PROPERTY FROM WHICH IT WAS DUG. EXCESS TOPSOIL SHALL BE DISTRIBUTED INTO A THIN LAYER ON LAND IMMEDIATELY ADJACENT TO WHERE THE TOPSOIL ORIGINATED. WHILE DOING SO, THE CONTRACTOR SHALL AVOID CAUSING RIDGES OR MOUNDS THAT WOULD MAKE IT DIFFICULT FOR STORM WATER RUNOFF TO DRAIN. THE FINAL SURFACE OF THE DISTURBED TOPSOIL SHALL BE SMOOTH AND FOLLOW THE NATURAL CONTOUR OF THE LAND.
10. TEMPORARY INTERSECTION WIDENING SHALL, UPON COMPLETION OF ALL PROJECT CONSTRUCTION OR UPON NOTIFICATION OF THE ENGINEER, BE REMOVED AND THE AREA RESTORED TO ITS ORIGINAL LINES AND GRADES WITH THE UPPER FOOT OF THE RESTORED GROUND BEING TOPSOIL, EXCEPT WHERE REQUESTED BY THE TOWNSHIP OR COUNTY TO PERMANENTLY REMAIN. DISTURBED AREAS OUTSIDE OF THE FINAL ROADWAY SHALL BE SEEDED AND MULCHED.
11. TURBINE SETBACKS ARE NOT IDENTIFIED ON THE CONSTRUCTION PLANS. IT SHALL BE THE RESPONSIBILITY OF THE OWNER TO ENSURE THAT ALL TURBINE SETBACKS MEET PROJECT REQUIREMENTS.
12. DELINEATED WETLANDS AND WATERBODIES WERE PROVIDED BY MN POWER.
13. PROPOSED UNDERGROUND/OVERHEAD POWER COLLECTION LINES SHOWN ON THE CIVIL DOCUMENTS ARE FOR REFERENCE ONLY. REFER TO THE ELECTRICAL PLANS FOR SPECIFIC LOCATIONS AND CONSTRUCTION DETAILS.
14. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL REFERENCE THE FINAL GEOTECHNICAL REPORT PREPERED BY RENWEABLE RESOURCE CONSULTANTS, LLC AND BE FAMILIAR WITH ALL THE REPORTS FINDINGS AND RECOMMENDATIONS.
15. CONTRACTOR SHALL PROTECT EXISTING UTILITIES AND RELOCATE AS REQUIRED IN COORDINATION WITH UTILITY AND LANDOWNER.

STORM WATER DESIGN PARAMETERS

1. PERMANENT AND TEMPORARY CULVERTS HAVE BEEN DESIGNED TO CONVEY STORM WATER RUNOFF THROUGH THE PROJECT. IN MOST LOCATIONS, THE DOWNSTREAM CULVERT WAS UTILIZED IN THE SIZING OF THE STRUCTURE, AS THIS WILL BE THE RESTRICTING STRUCTURE OF THE UPSTREAM DRAINAGE AREA.
2. CULVERT SIZING FOR STREAMS WERE BASED ON A 25-YEAR 24-HOUR STORM EVENT IN STREAM WATERSHEDS.
3. CONTRACTOR TO MONITOR CROSSINGS AFTER ALL RAIN EVENTS. CONTRACTOR TO REMOVE DEBRIS INHIBITING STREAM/DITCH FLOW. IF THE TEMPORARY CROSSING IS CAUSING LOCALIZED FLOODING THE TEMPORARY CROSSING SHALL BE REMOVED IMMEDIATELY TO ENSURE UPSTREAM IMPACTS ARE MINIMIZED
4. LOW WATER CROSSINGS HAVE BEEN DESIGNED TO ALLOW NATURAL DRAINAGE TO OCCUR POST CONSTRUCTION OF THE ACCESS ROADS. IT IS ANTICIPATED THAT DURING "HEAVY" RAIN STORM EVENTS AND DURING THE FREEZE/THAW CYCLE, SOME ACCESS ROADS WILL BE IMPASSABLE DUE TO THE SEASONAL ENVIRONMENTAL CONDITIONS. MAINTENANCE OF THE ACCESS ROADS MAY BE REQUIRED DUE TO THE NATURAL DRAINAGE.
5. WHEN INSTALLING DRAINAGE CULVERTS, THE CONTRACTOR SHALL SUMP THE FLOW LINE ELEVATION 6" BELOW THE EXISTING GRADE OF THE DITCH. FURTHER, A MINIMUM COVER OF 12" SHALL BE PROVIDED OVER ALL CULVERTS. THE CONTRACTOR SHALL VERIFY WITH PIPE SUPPLIER THAT THE MINIMUM COVER SHOWN IS ADEQUATE FOR CONSTRUCTION EQUIPMENT LOADING.
6. ALL PERMANENT PIPE CULVERTS SHALL BE INSTALLED PER NORTH DAKOTA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND SHALL BE MANUFACTURED OF CORRUGATED POLYETHYLENE PIPE.
7. ALL TEMPORARY PIPE CULVERTS SHALL BE INSTALLED PER NORTH DAKOTA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND MAY BE REUSED CORRUGATED METAL PIPE OR HIGH DENSITY POLYETHELENE PIPE. CONTRACTOR SHALL REMOVE OF FOLLOWING CONSTRUCTION.
8. ANTICIPATED CULVERTS HAVE BEEN SHOWN ON THE CONSTRUCTION PLAN, ADDITIONAL CULVERTS MAY NEED TO BE INSTALLED IN AREAS WHERE CONCENTRATED FLOW IS EXPECTED DUE TO CONSTRUCTION ACTIVITIES.

TABLE 1: AGGREGATE GRADATION

	CLASS 5	CLASS 13
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING
1"	(100)	(100)
3/4"	(90-100)	(70-100)
No. 4	(35-70)	(38-75)
No. 8		(22-62)
No. 30	(16-40)	(12-45)
No. 200	(4-10)	(7-15)
SHALE[1]	12%	12%
L.A. ABRASION[1]	50%	50%
FRACTURED FACES[2]	10%	10%

[1] MAXIMUM ALLOWABLE PERCENTAGES
[2] MINIMUM WEIGHT PERCENTAGE ALLOWABLE FOR THE PORTION OF THE AGGREGATE RETAINED ON A NO. 4 SIEVE HAVING AT LEAST 1 FRACTURED FACE FOR CLASSES 4, 5, 13, 27, 29, 31, AND 33, AND AT LEAST 2 FRACTURED FACES FOR CLASS 7.

TABLE 2: TESTING SCHEDULE SUMMARY

LOCATION		TEST	FREQUENCY	REQUIREMENT
STRUCTURAL FILL		GRAIN SIZE ANALYSIS, MOISTURE CONTENT, ATTERBERG LIMITS ON FINES CONTENT, AND PROCTOR	1 PER MAJOR SOIL TYPE	
COMPACTED SUBGRADE		PROOF-ROLL	ENTIRE LENGTH	NO RUTTING GREATER THAN 1.5 INCHES, AND NO "PUMPING" OF THE SOIL BEHIND THE LOADED TRUCK
		MOISTURE DENSITY TEST (NUCLEAR DENSITY)	1 EVERY 500 LF OF ROAD EVERY 1 FOOT VERTICAL LIFT	A MINIMUM OF 97% MAXIMUM DRY DENSITY AT ±2% OF OPTIMUM MOISTURE CONTENT
STRUCTURAL FILL		MOISTURE DENSITY TEST (NUCLEAR DENSITY)	1 EVERY 250 LF OF ROAD EVERY 1 FOOT VERTICAL LIFT	A MINIMUM OF 97% MAXIMUM DRY DENSITY AT ±2% OF OPTIMUM MOISTURE CONTENT.
AGGREGATE BASE		MOISTURE DENSITY TEST (NUCLEAR DENSITY)	1 EVERY 500 LF OF ROAD	A MINIMUM OF 98% MAXIMUM DRY DENSITY AT ±2% OF OPTIMUM MOISTURE CONTENT.
		SIEVE ANALYSIS	1 PER 2500 CY	SEE TABLE 1
		PROOF-ROLL	WHERE SUBGRADE TEST FAILED	NO RUTTING GREATER THAN 1.5 INCHES, AND NO "PUMPING" OF THE SOIL BEHIND THE LOADED TRUCK
CRANE SHOULDERS		STATIC CONE PENETROMETER (SCP)	1 EVERY 500 LF OF ROAD	MINIMUM 4180 PSF
		PROOF-ROLL	ENTIRE LENGTH	NO RUTTING GREATER THAN 1.5 INCHES, AND NO "PUMPING" OF THE SOIL BEHIND THE LOADED TRUCK
CRANE PADS	SUBRADE	MOISTURE DENSITY TEST (NUCLEAR DENSITY)	2 PER PAD	A MINIMUM OF 97% MAXIMUM DRY DENSITY AT -1% TO 2% OF OPTIMUM MOISTURE CONTENT
	STRUCTURAL FILL	MOISTURE DENSITY TEST (NUCLEAR DENSITY)	2 PER PAD	A MINIMUM OF 98% MAXIMUM DRY DENSITY AT ±2% OF OPTIMUM MOISTURE CONTENT.
		PROOF-ROLL	ENTIRE LENGTH	NO RUTTING GREATER THAN 1.5 INCHES, AND NO "PUMPING" OF THE SOIL BEHIND THE LOADED TRUCK

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REGISTERED PROFESSIONAL ENGINEER — WILLIAM P. HUSTON — PE-8319 — DATE 12/22/14 — NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions:

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5	12/22/14	Updated Record Drawings

Prepared for:
minnesota power
AN ALLETE COMPANY
30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project
Oliver County, North Dakota

Construction Notes

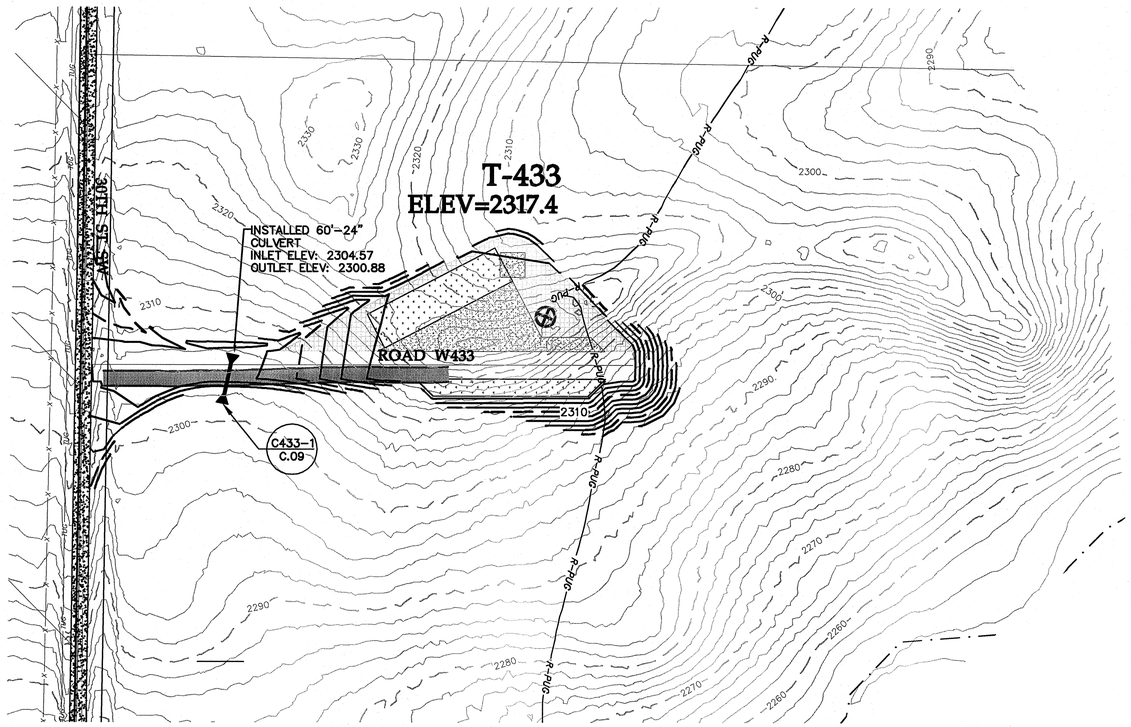
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CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. DATE OCT. 3, 2014

Record Drawings

Date: 12/22/2014
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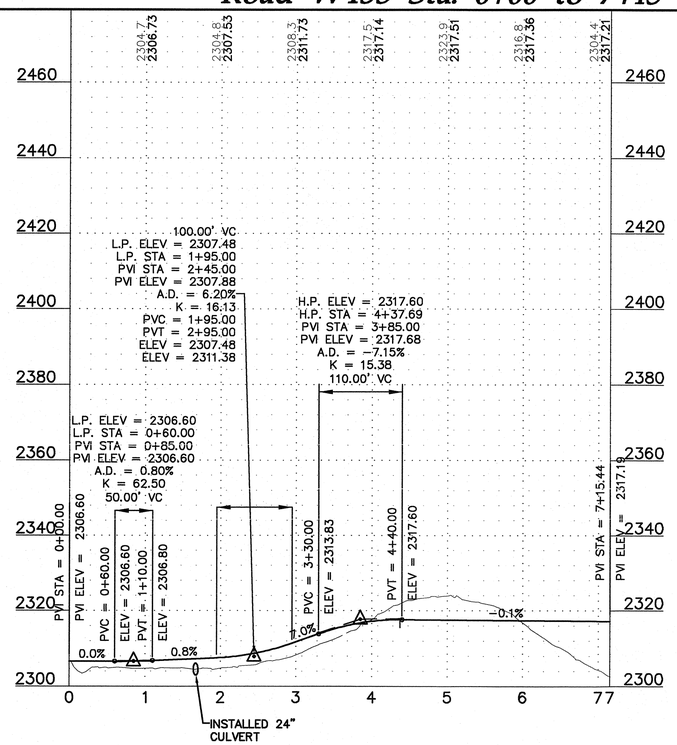
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20' 0 10' 20'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM R. HUSTEN
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions:

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Prepared for:

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AN ALLETE COMPANY

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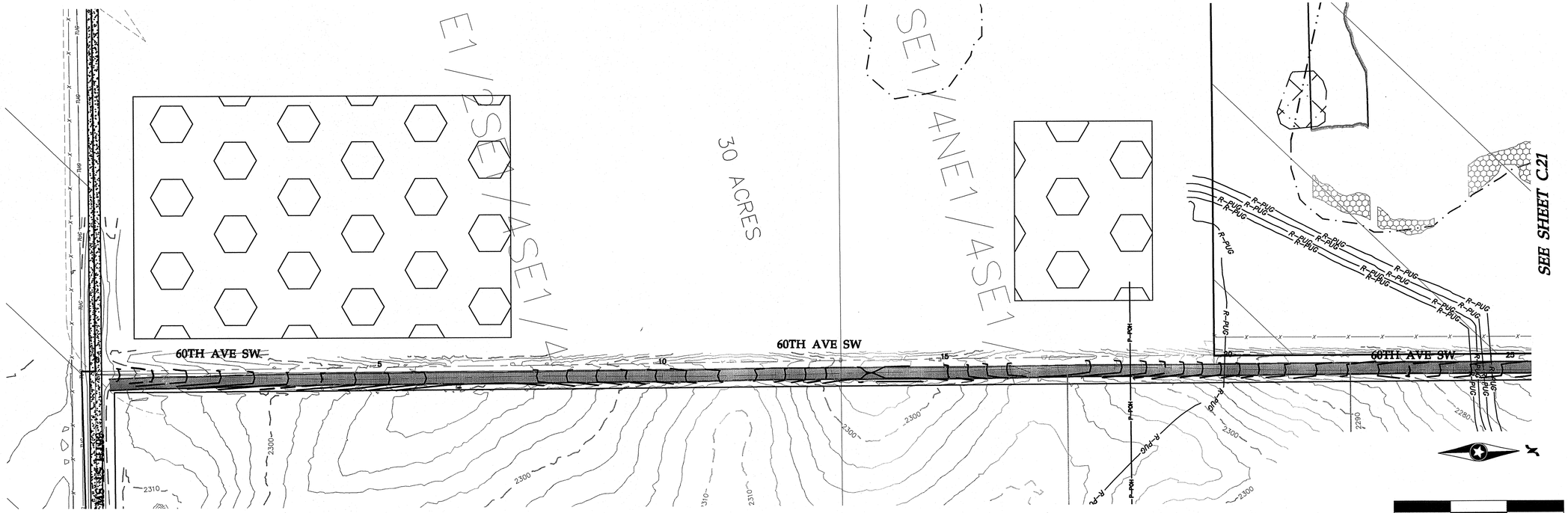
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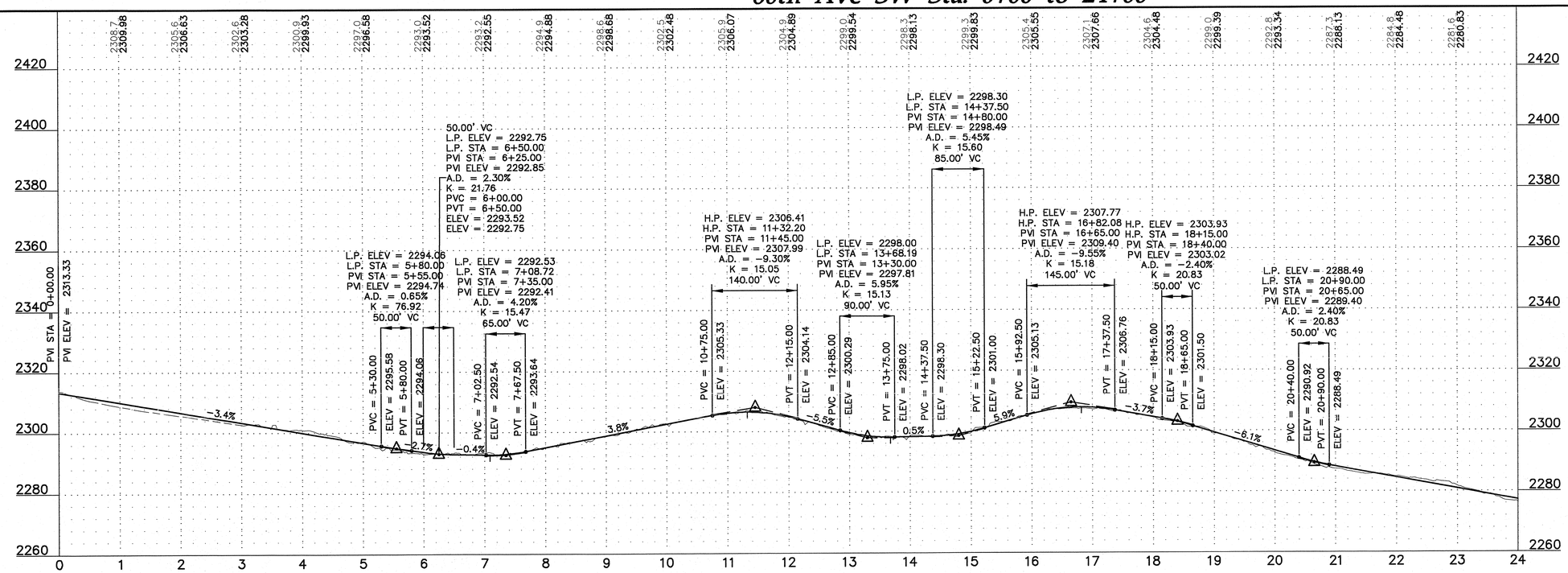
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DATE 12/22/14
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Bison 4 Wind Project

Oliver County, North Dakota

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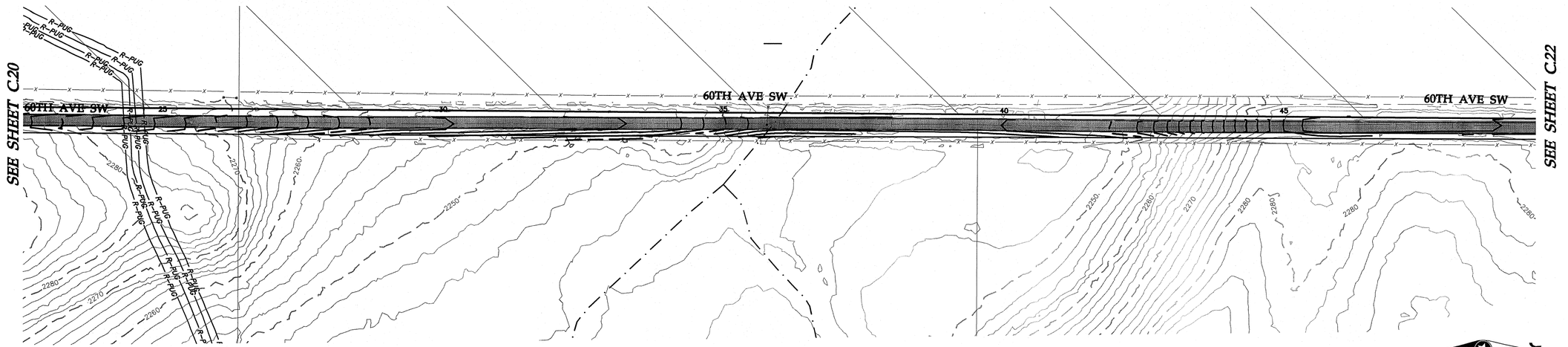
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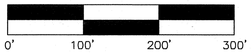
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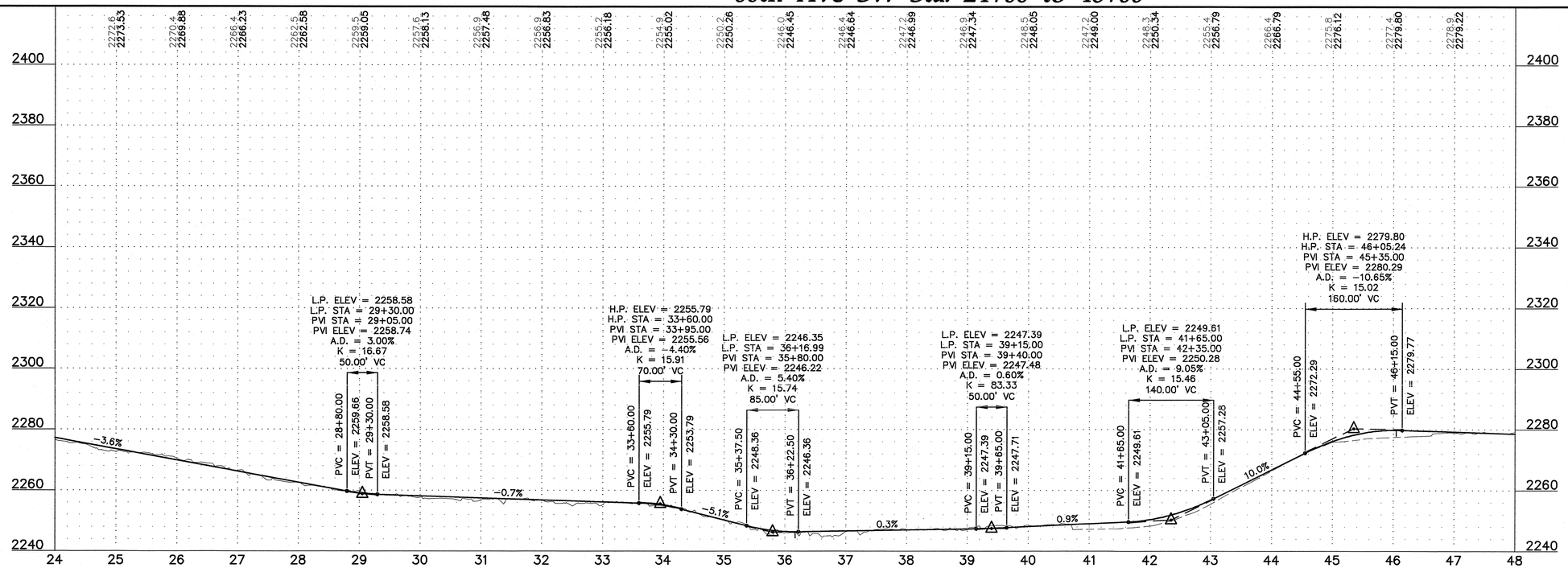
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
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Bison 4 Wind Project

Oliver County, North Dakota

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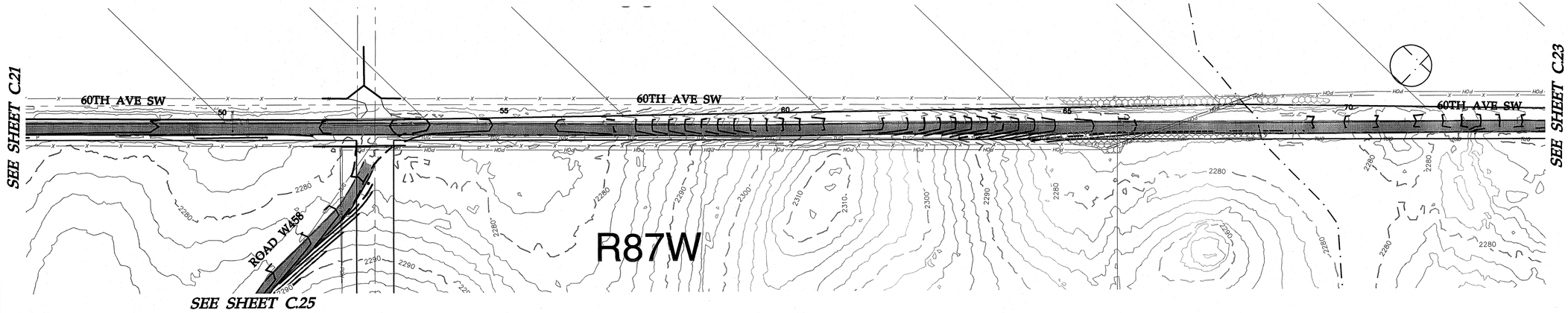
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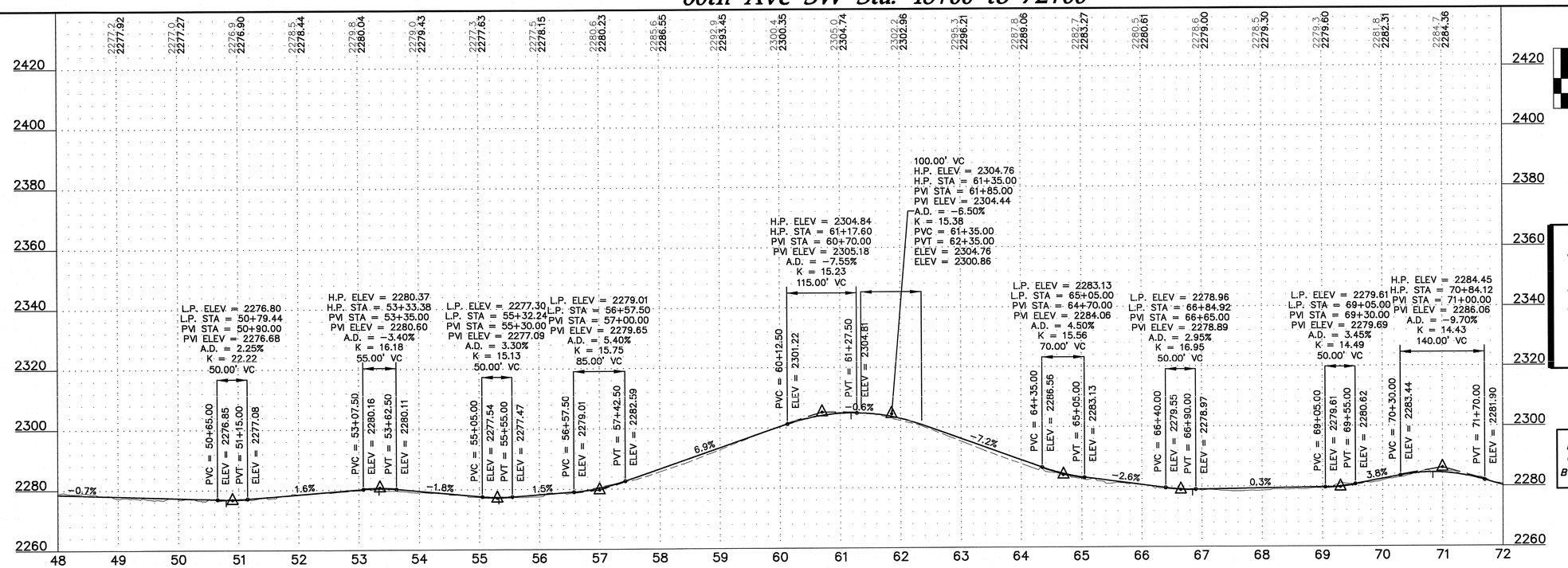
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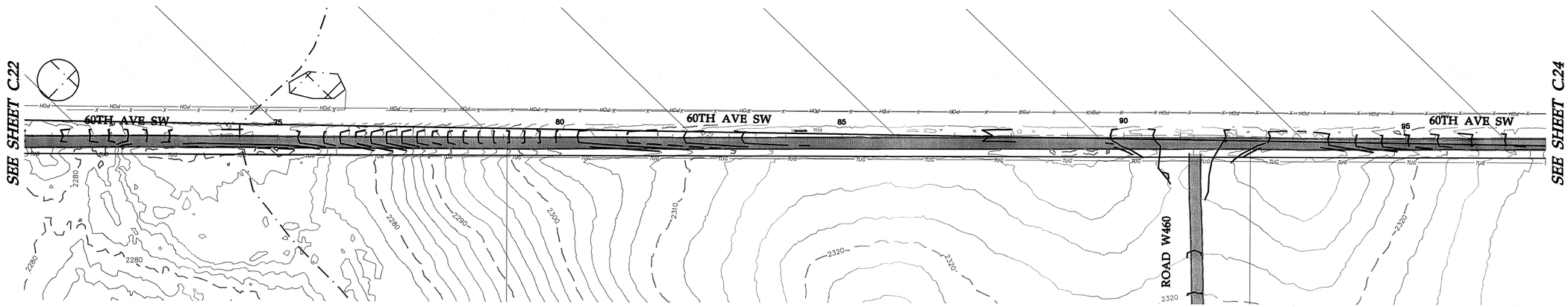
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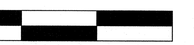
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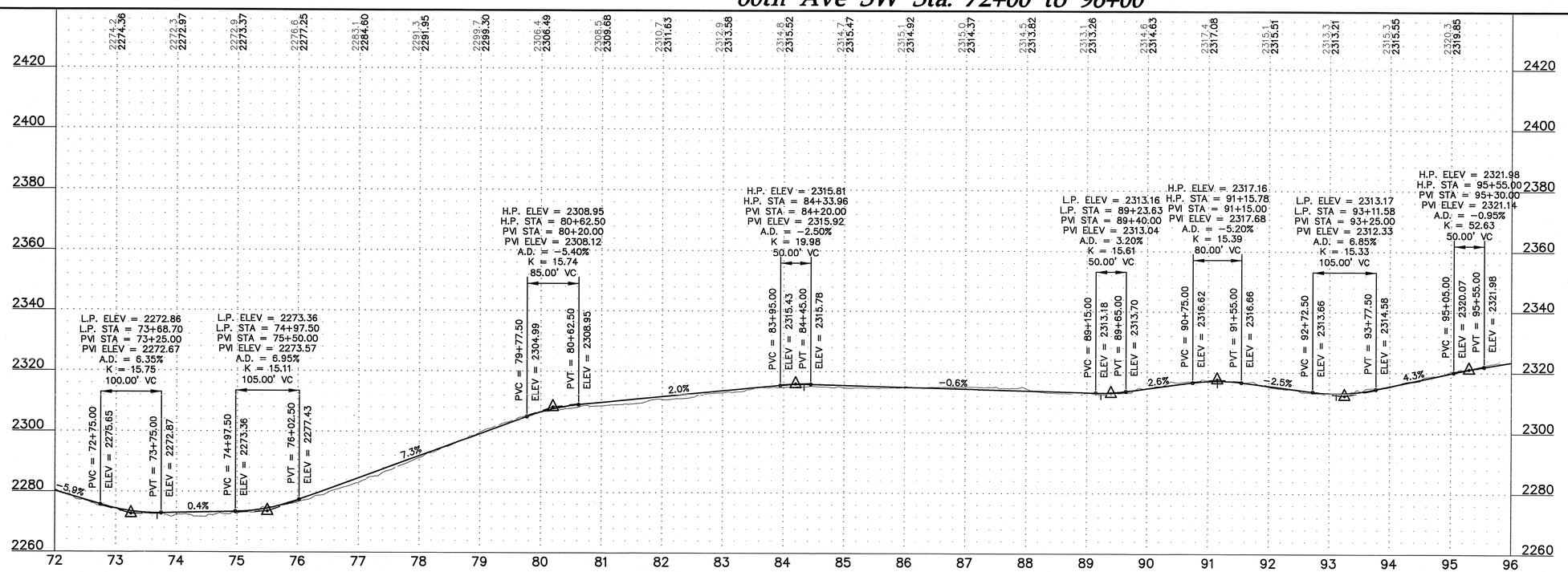
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM G. HUSTON
E-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
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Bison 4 Wind Project

Oliver County, North Dakota

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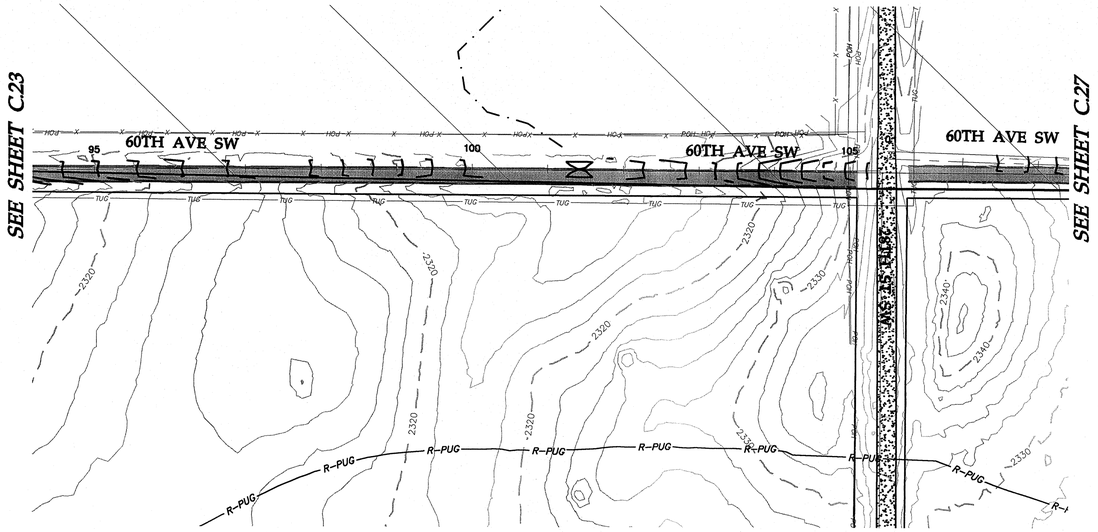
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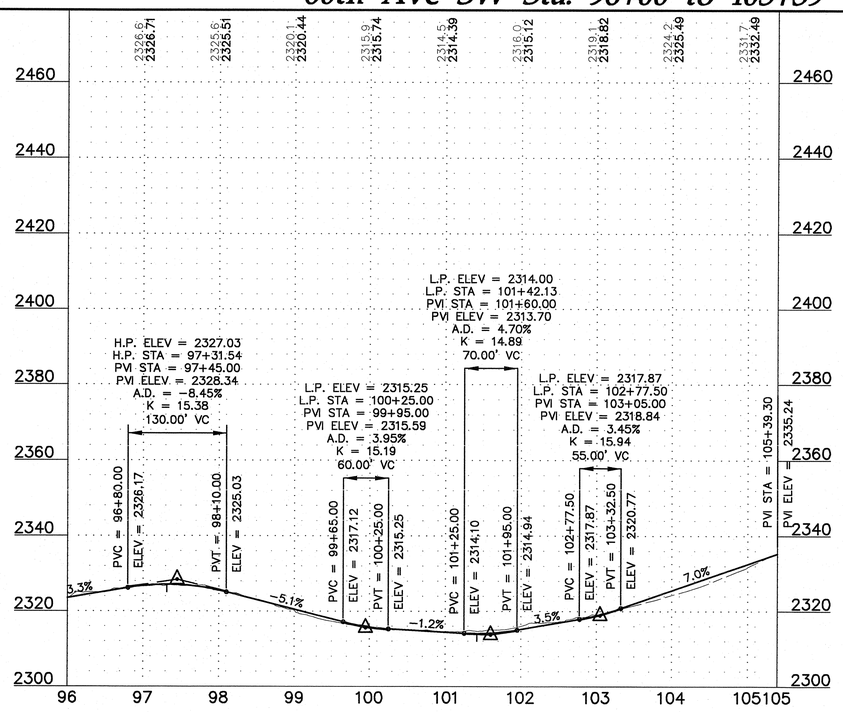
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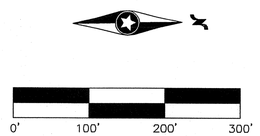
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM A. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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Bison 4 Wind Project

Oliver County, North Dakota

60th Ave SW Sta. 96+00 to 105+39

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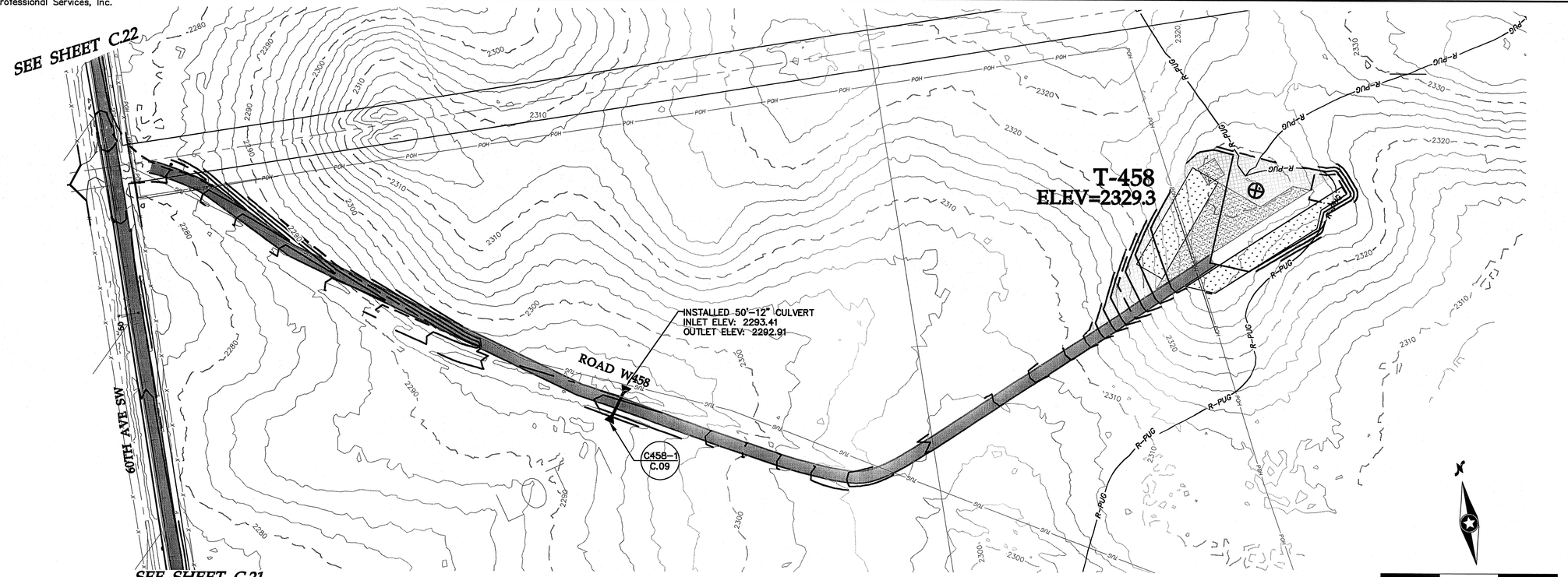
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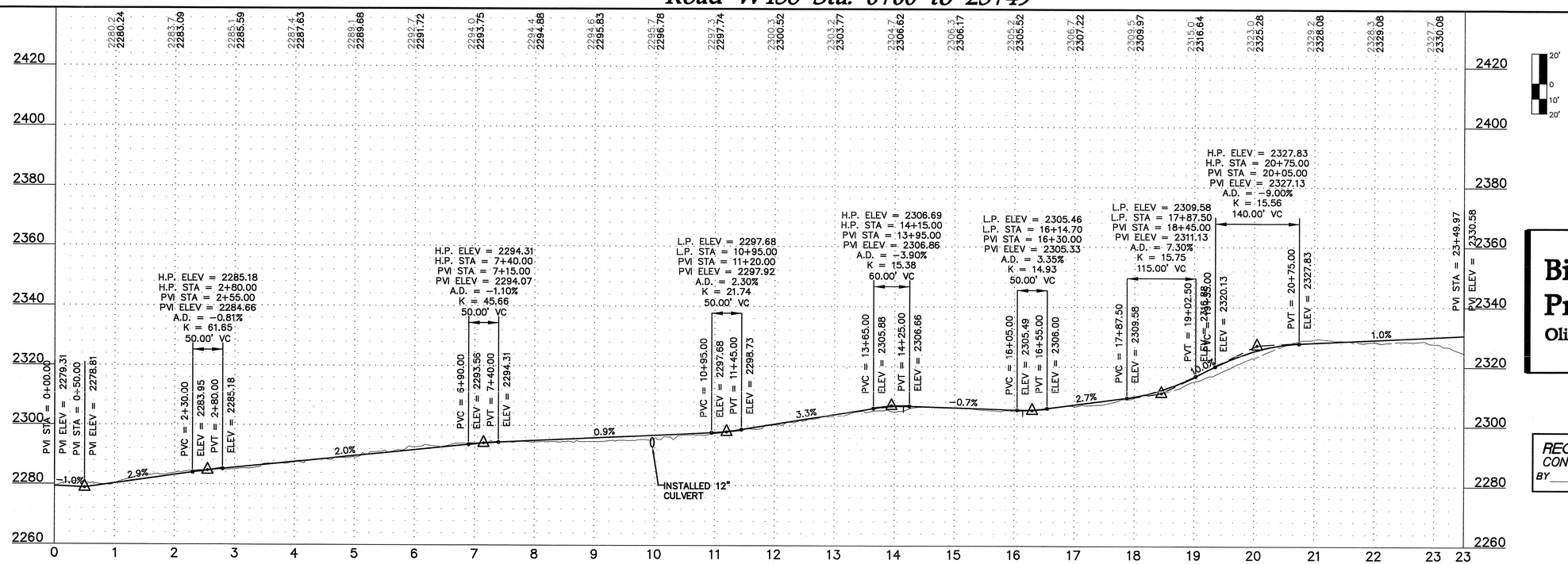
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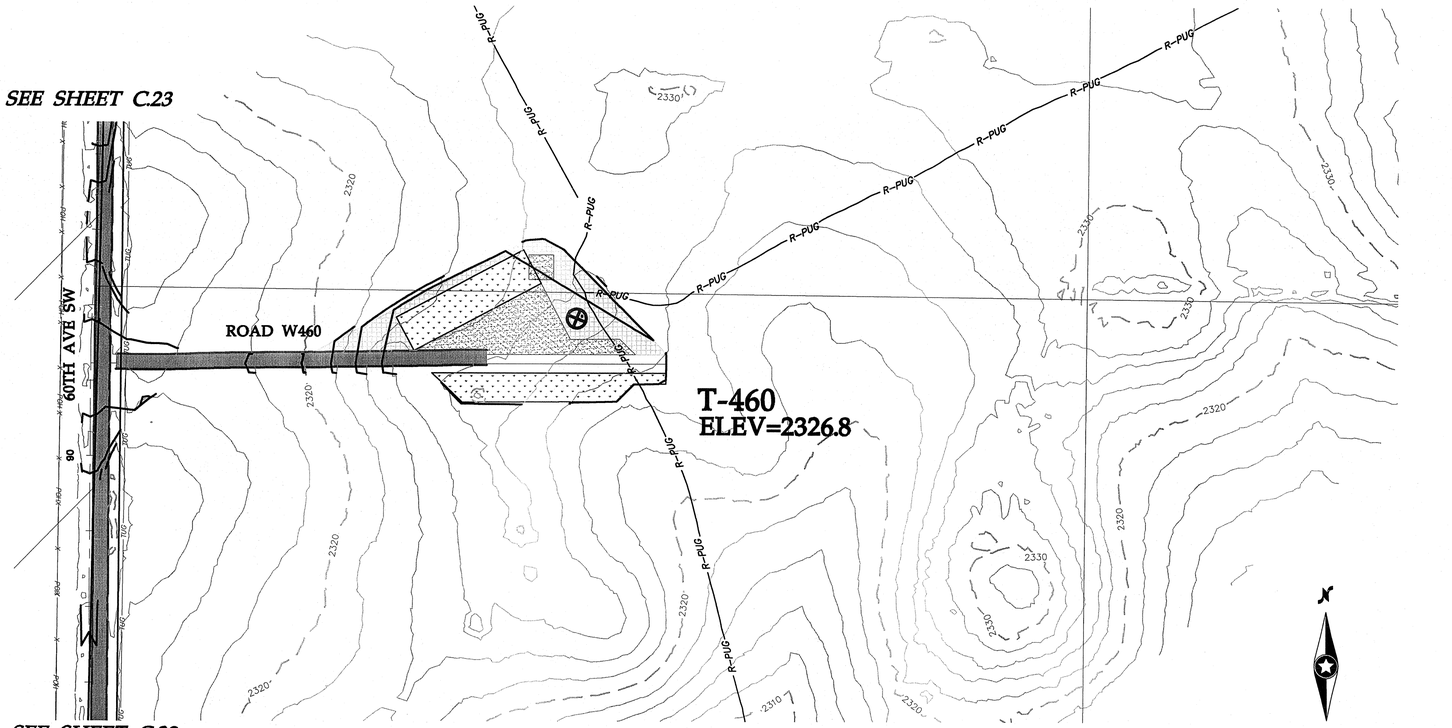
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Date: **12/22/2014**

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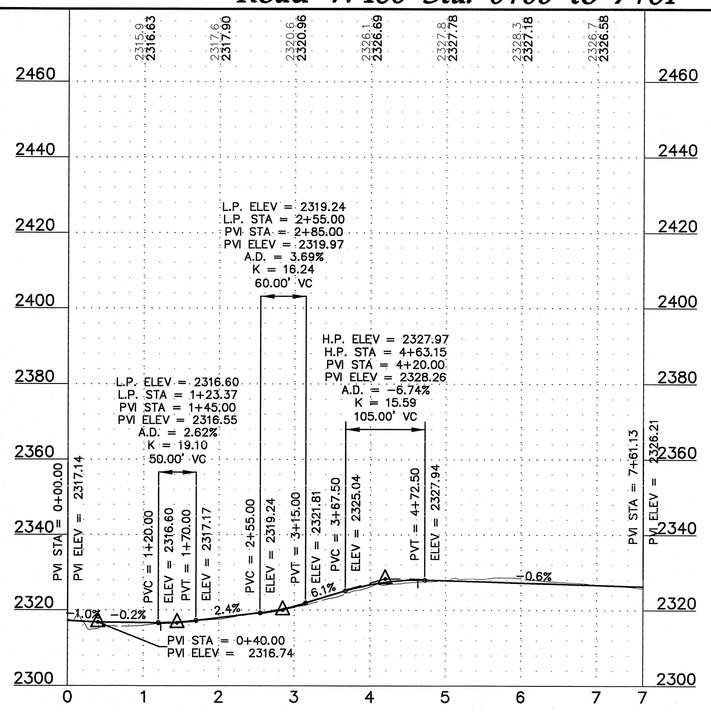
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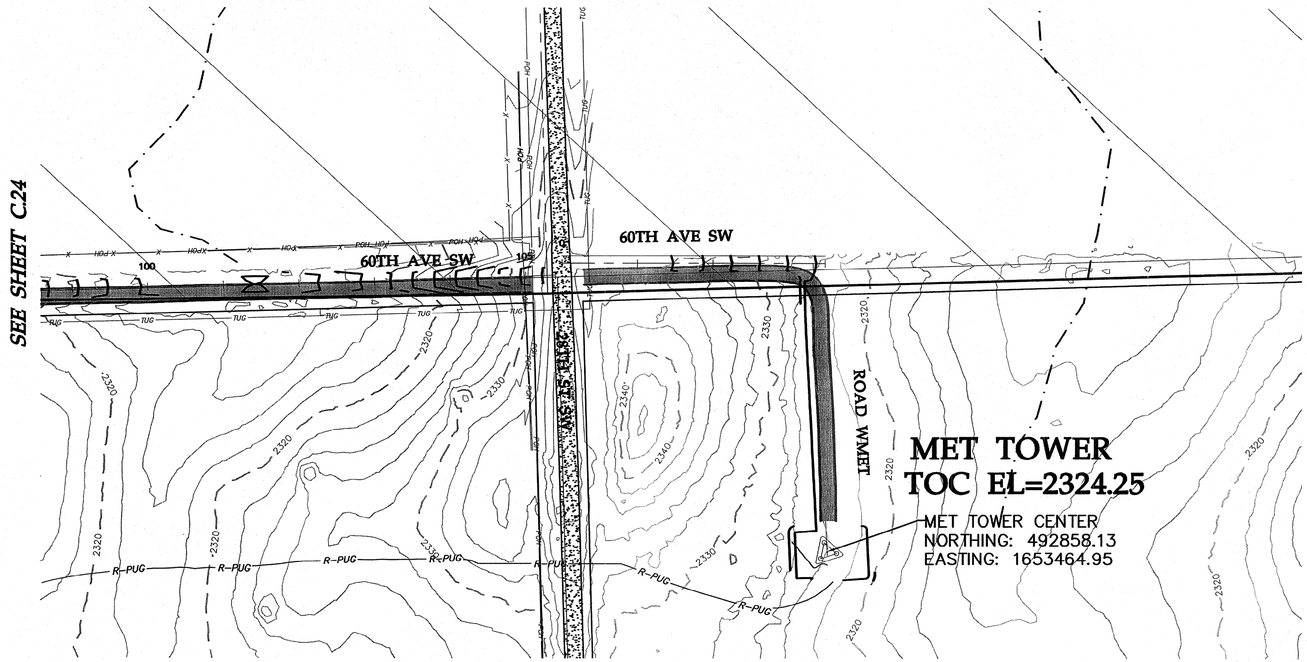
Record Drawings

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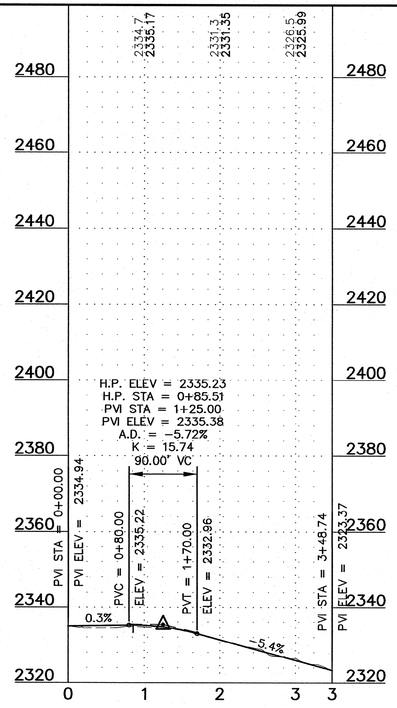
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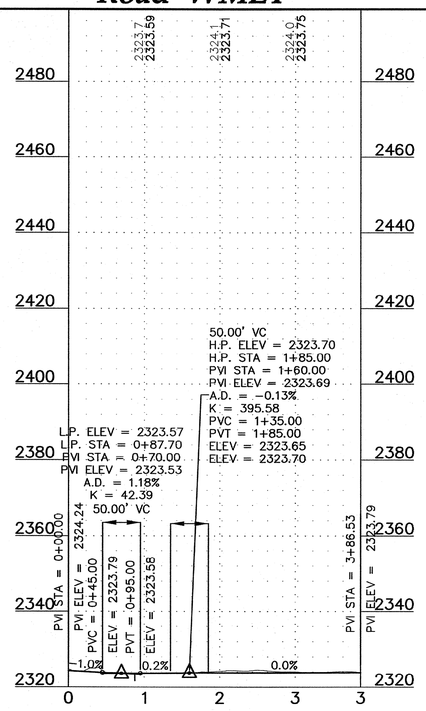




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- P-POH — PROPOSED OVERHEAD POWER
- PROPOSED OVERHEAD RIGHT OF WAY
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- CONSTRUCTED CULVERT
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- WIND PROJECT EASEMENT
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- EXISTING STREAM
- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

60th Ave SW & RoadWMET

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. DATE OCT. 3, 2014

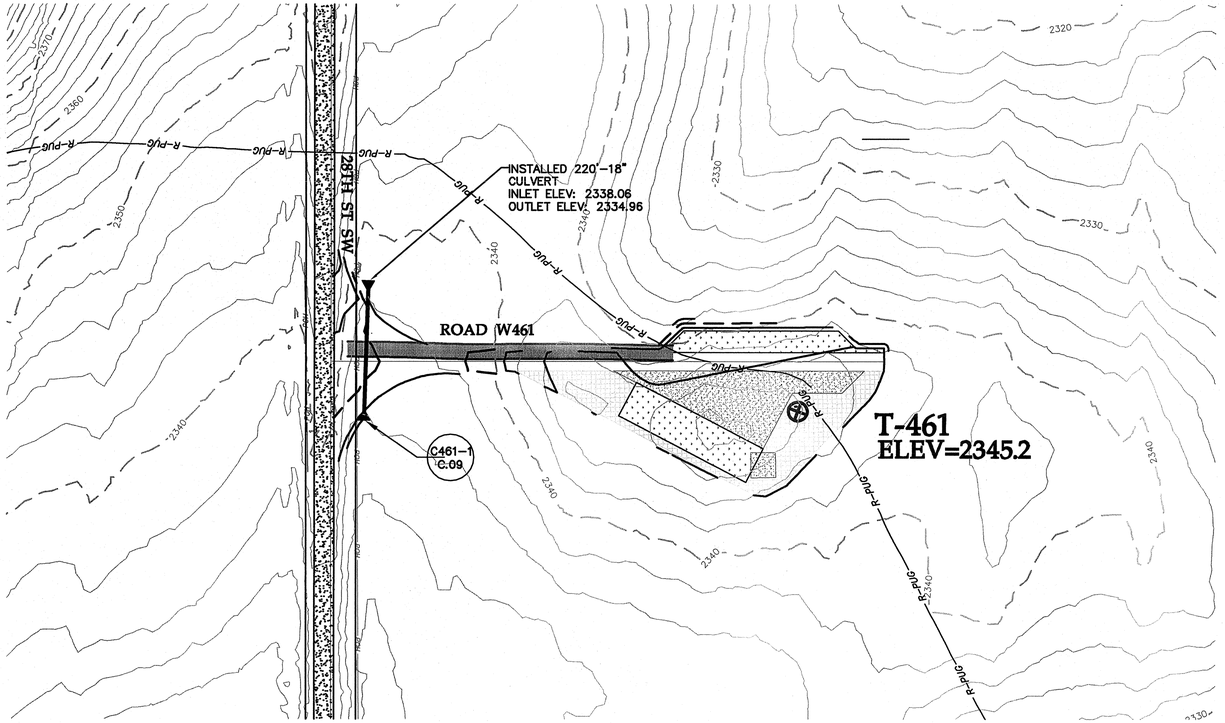
Record Drawings

Date: 12/22/2014

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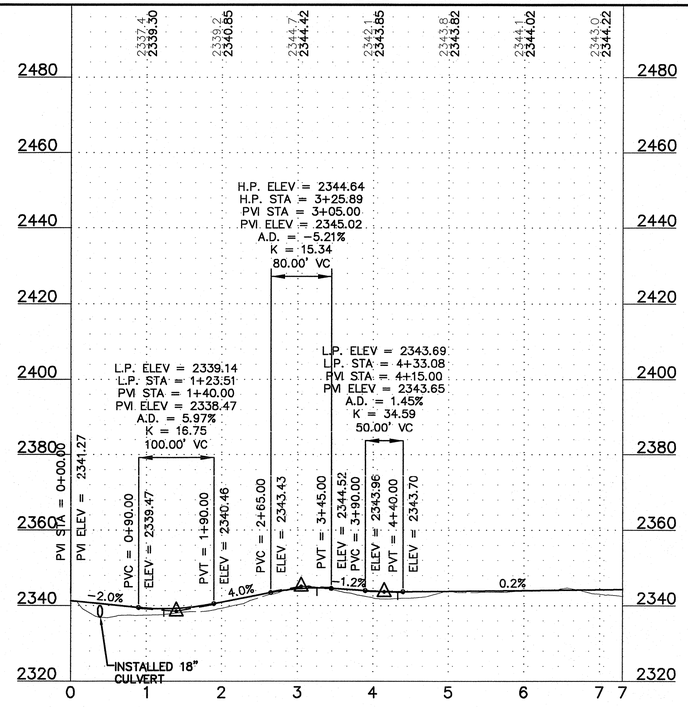
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0' 100' 200' 300'

20' 0 10' 20'

Road W461 Sta. 0+00 to 7+30



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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. LESTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions:

#	DATE	DESCRIPTION
2	10/09/13	Owner Comments/Field Changes
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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- CONSTRUCTED TURBINE LOCATION
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Bison 4 Wind Project

Oliver County, North Dakota

Road W461 Sta. 0+00 to 7+30

RECORD DRAWINGS
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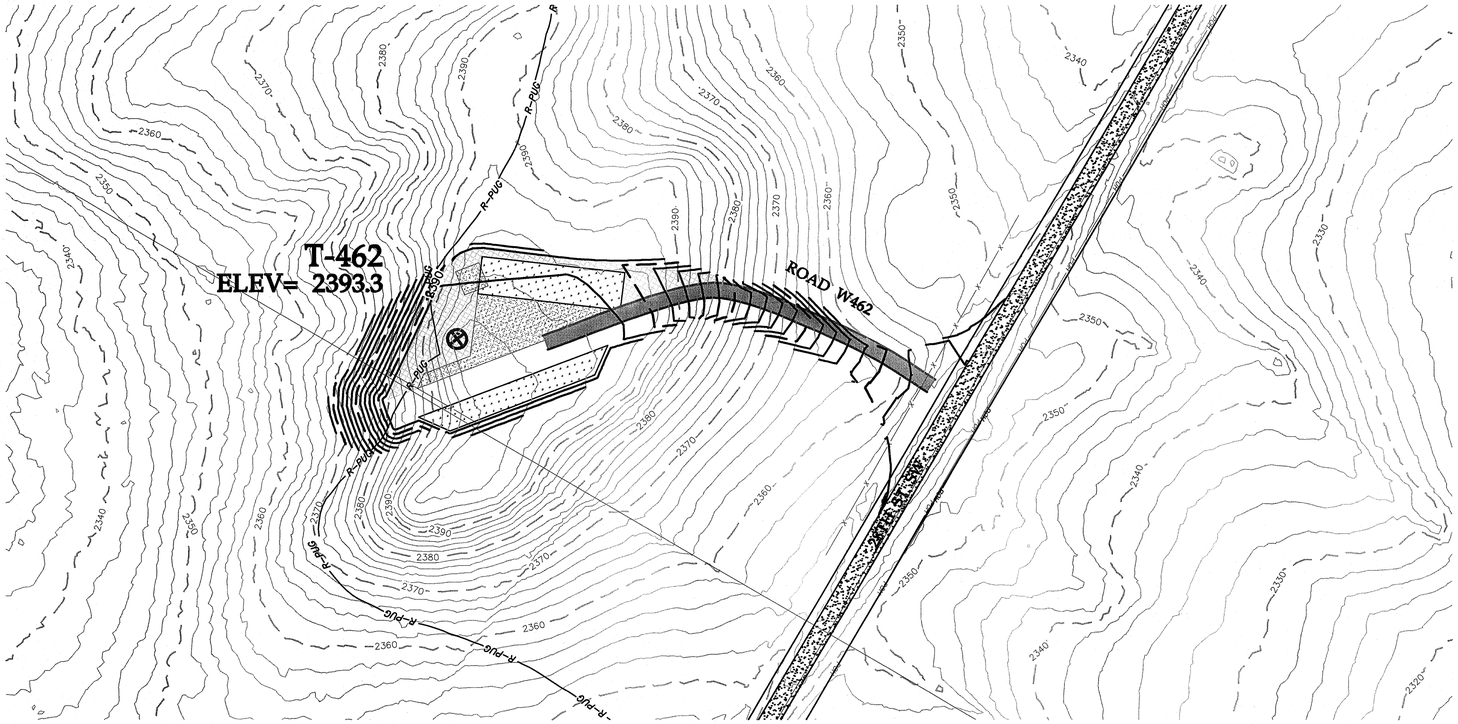
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Sheet: C.28

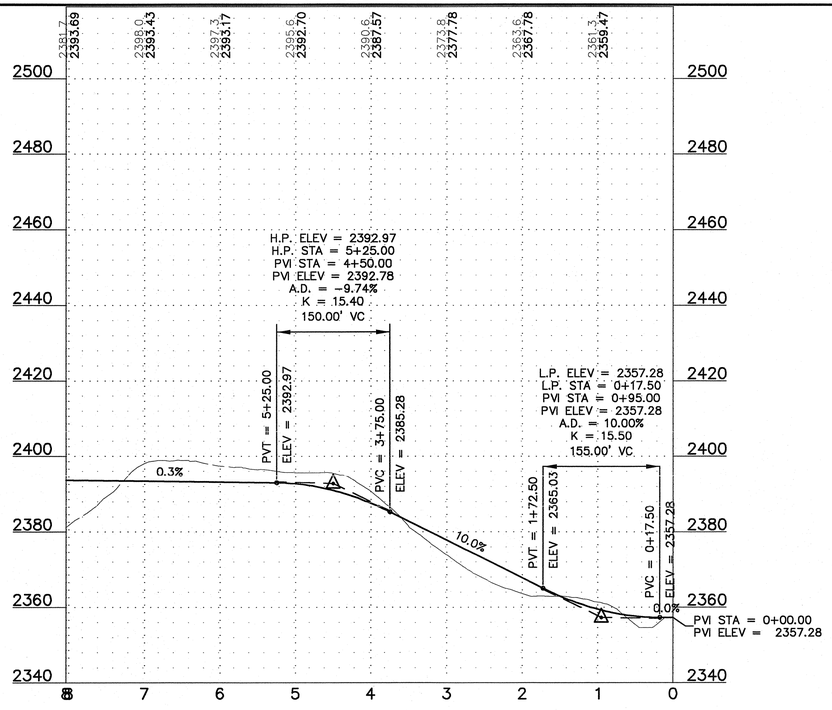
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
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DATE 12/22/14
NORTH DAKOTA

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Drawn:	MPG
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Prepared for:

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AN ALLETE COMPANY

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Bison 4 Wind Project

Oliver County, North Dakota

Road W462 Sta. 0+00 to 8+03

RECORD DRAWINGS
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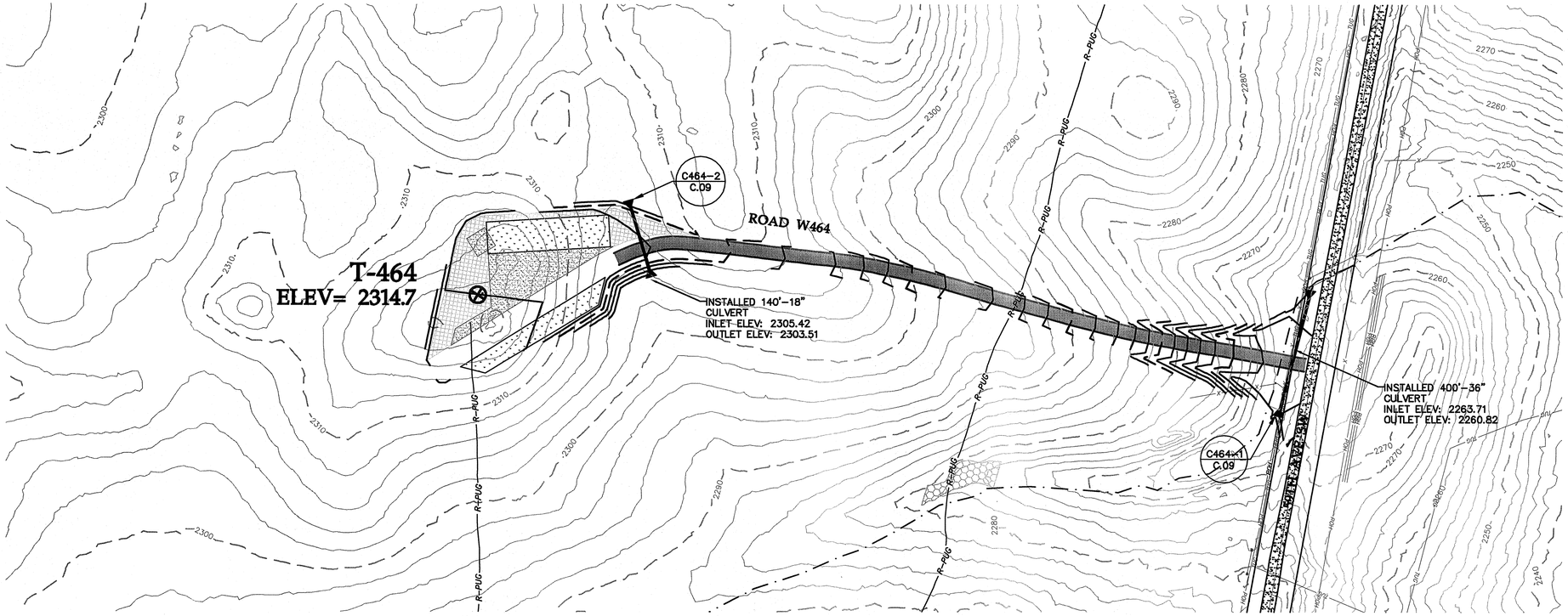
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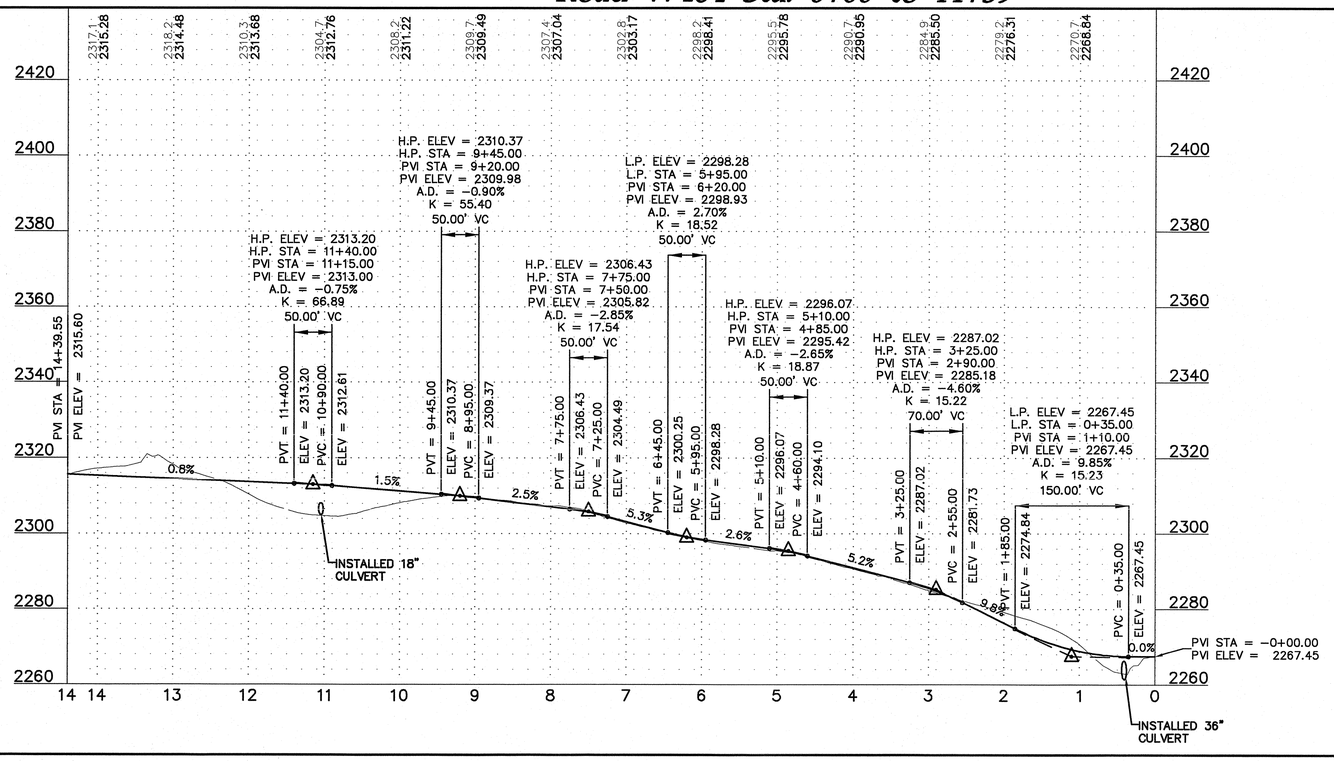
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HASTON
PE-8910
DATE 12/22/14
NORTH DAKOTA

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Drawn:	MPG
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Prepared for:

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AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

Road W464 Sta. 0+00 to 14+39

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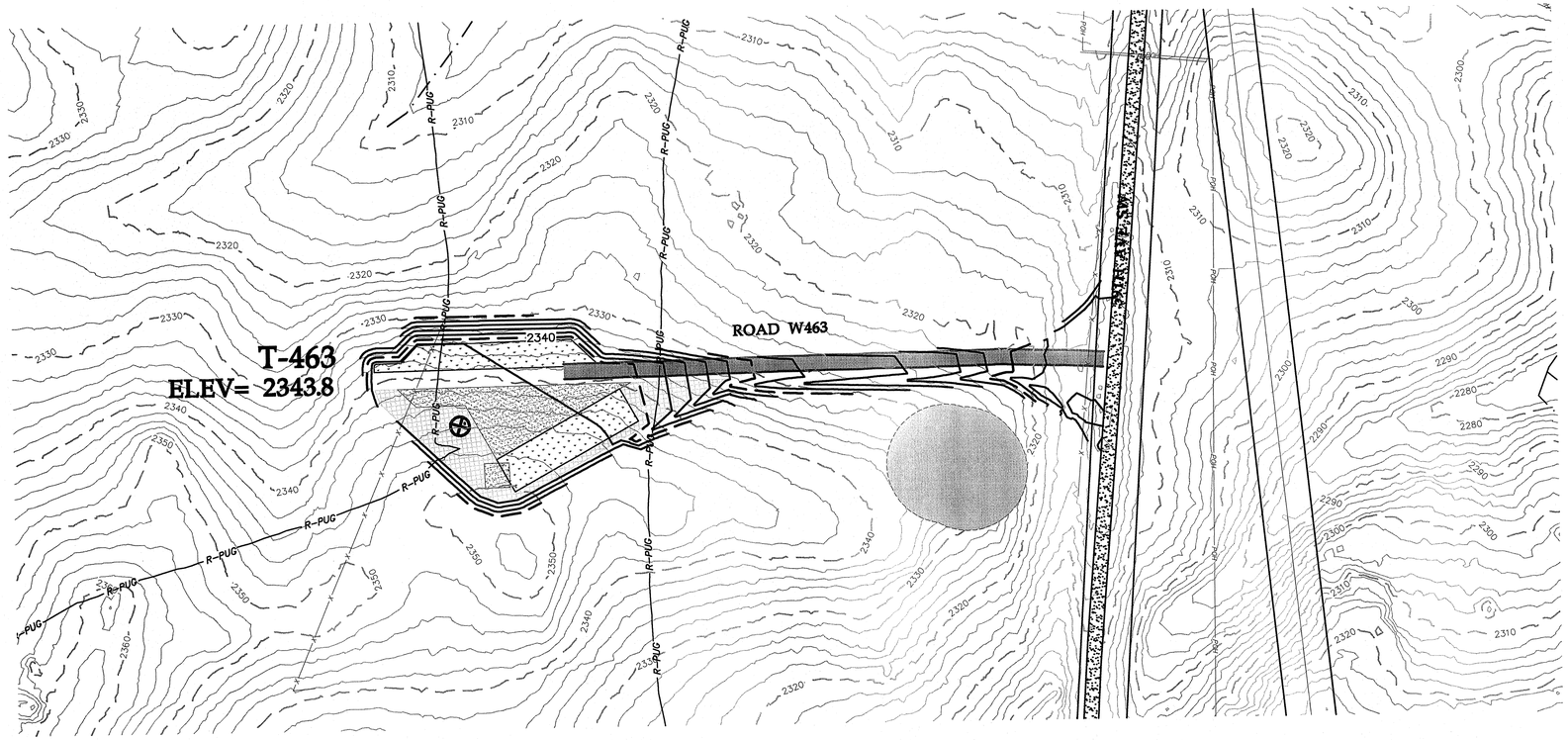
Record Drawings

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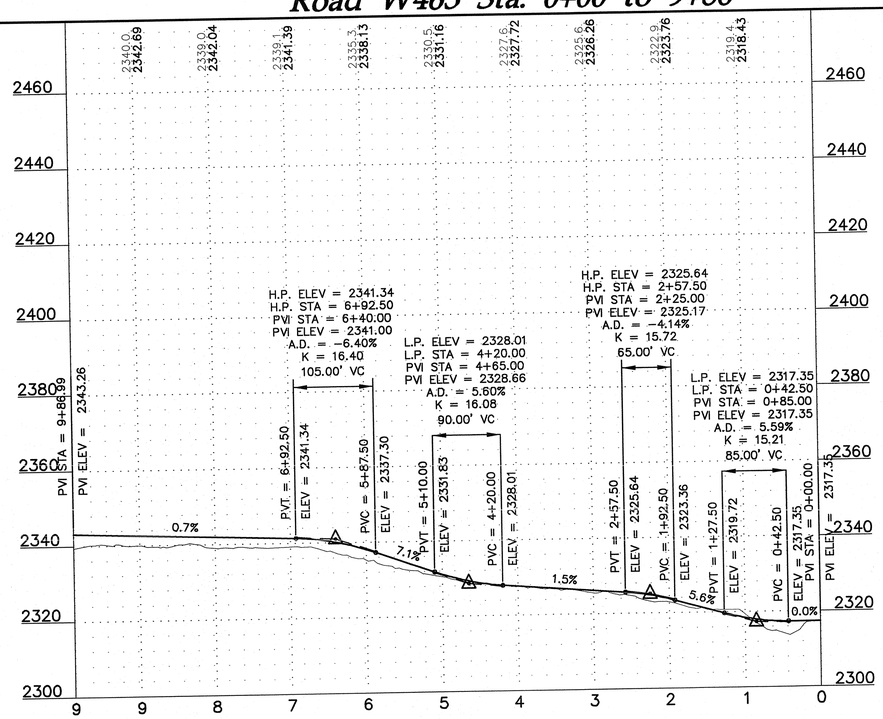
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20' 0 10' 20'

LEGEND:

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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Drawn:	MPG
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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project

Oliver County, North Dakota

Road W463 Sta. 0+00 to 9+86

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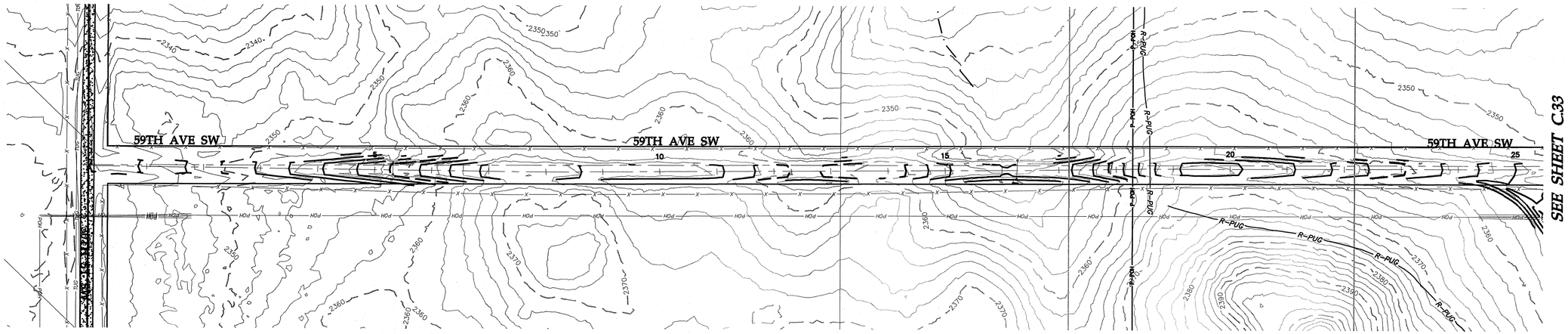
Record Drawings

Date: 12/22/2014

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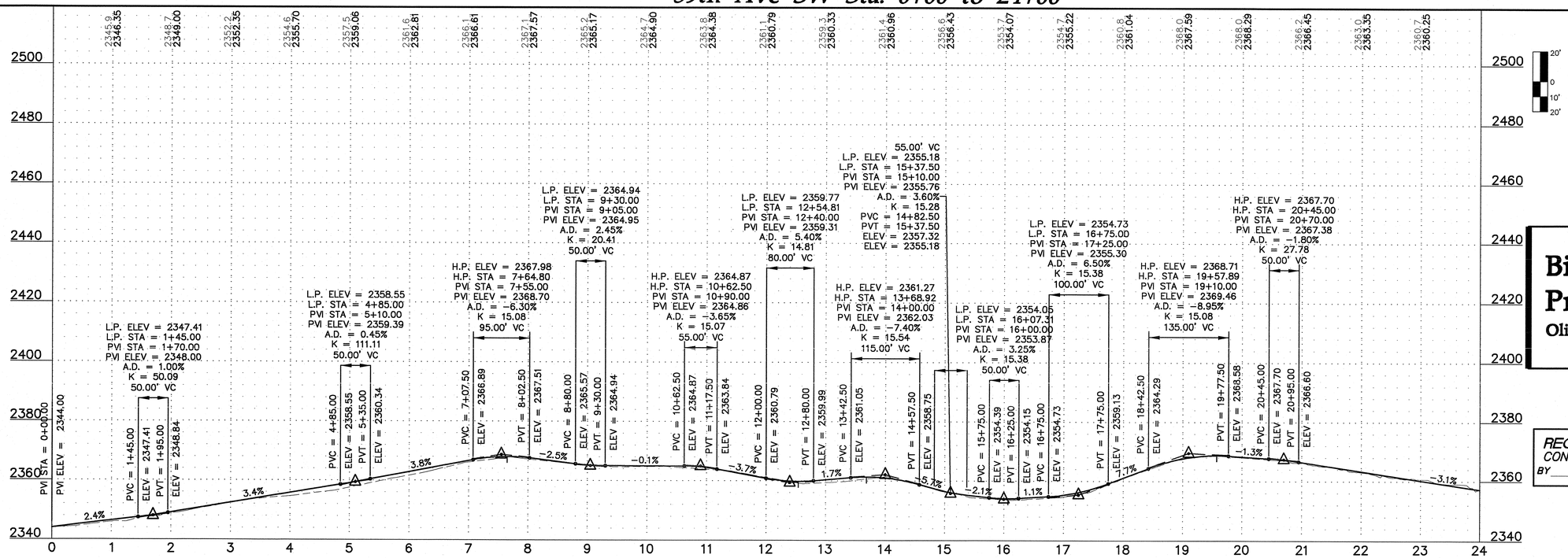
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20' 0 10' 20'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM R. HUDSON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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minnesota power
AN ALLETE COMPANY

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Duluth, Minnesota 55802

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Oliver County, North Dakota

59th Ave SW Sta. 0+00 to 24+00

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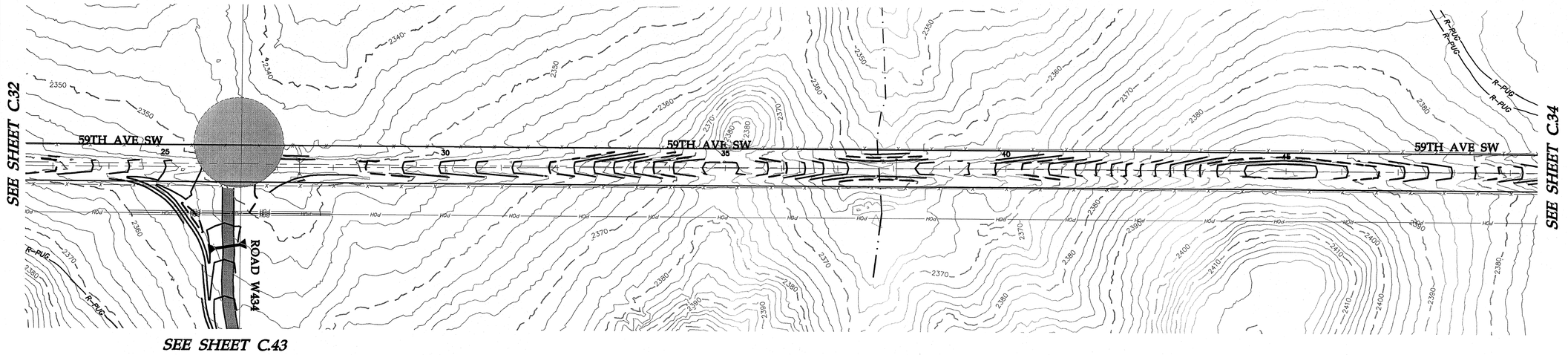
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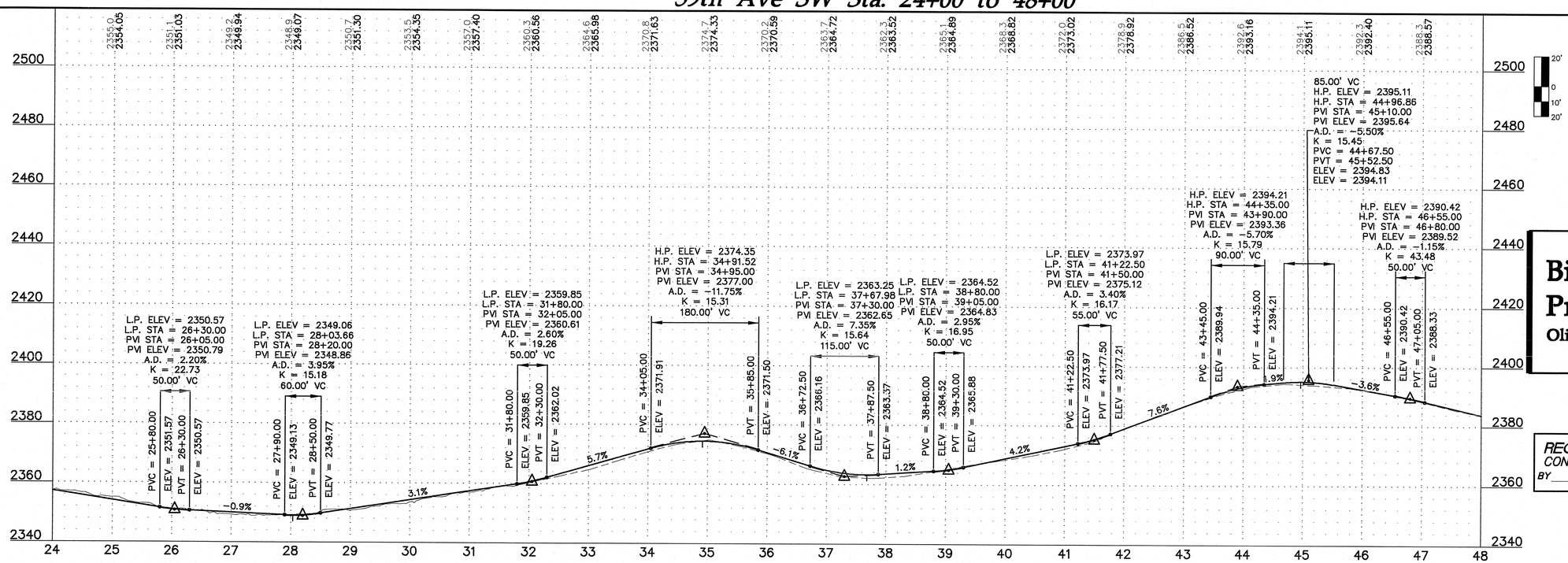
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WILLIAM P. HILTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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Drawn:	MPG
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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

59th Ave SW Sta. 24+00 to ~~48+00~~

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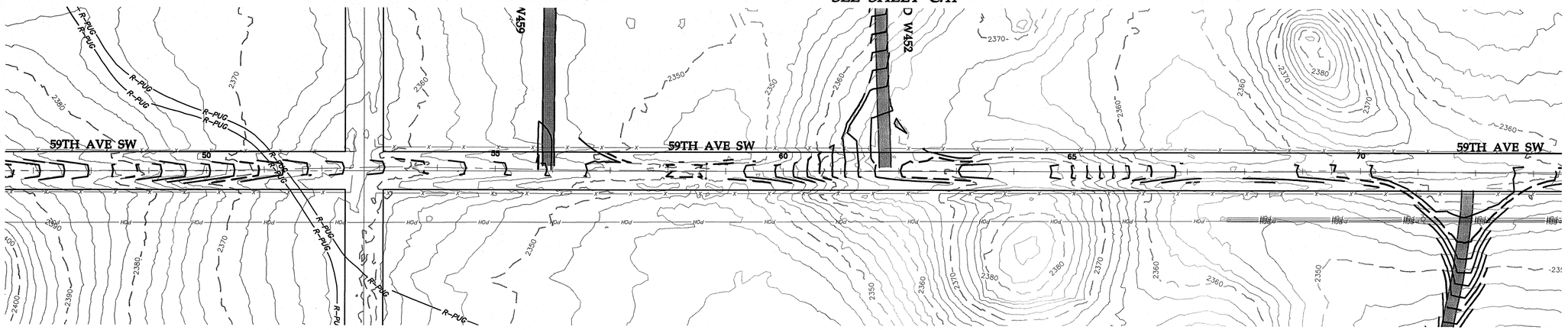
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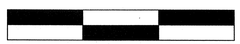
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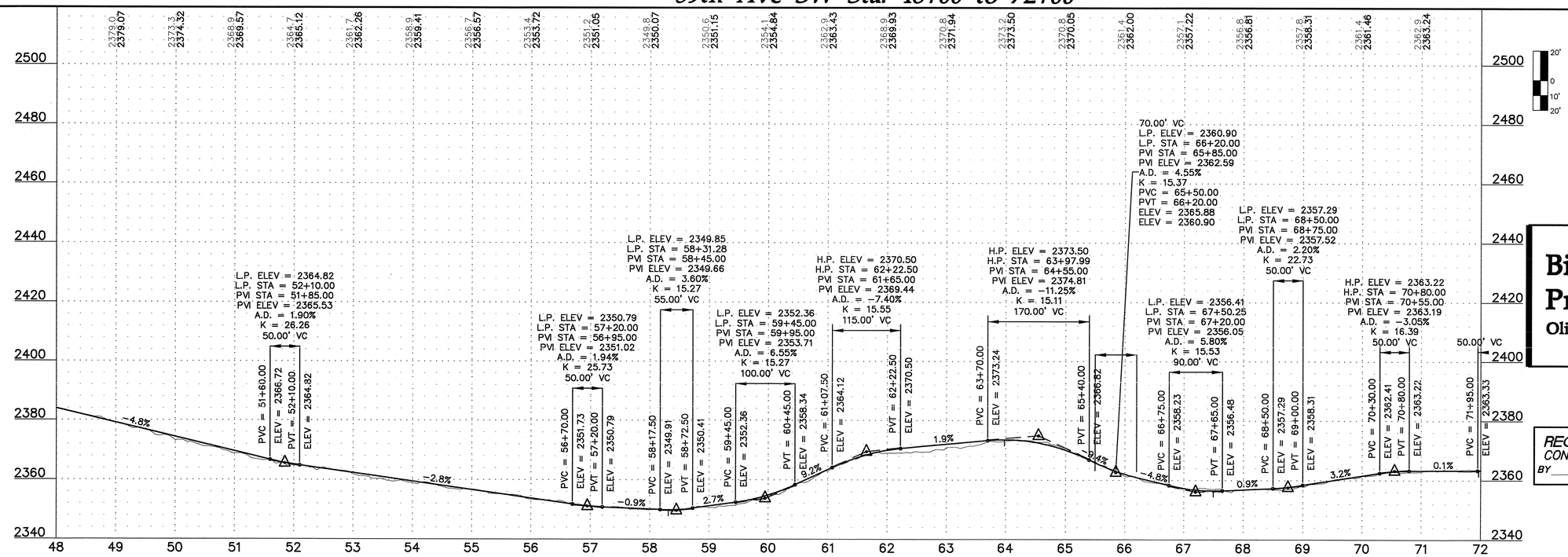
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM M. HILSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

59th Ave SW Sta. 48+00 to 72+00

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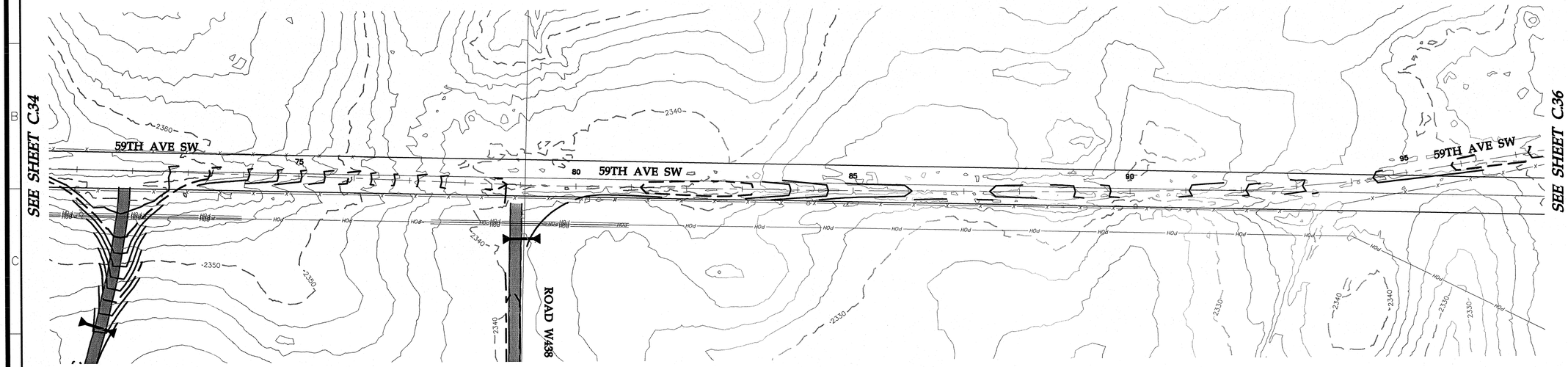
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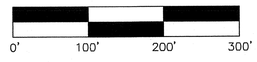
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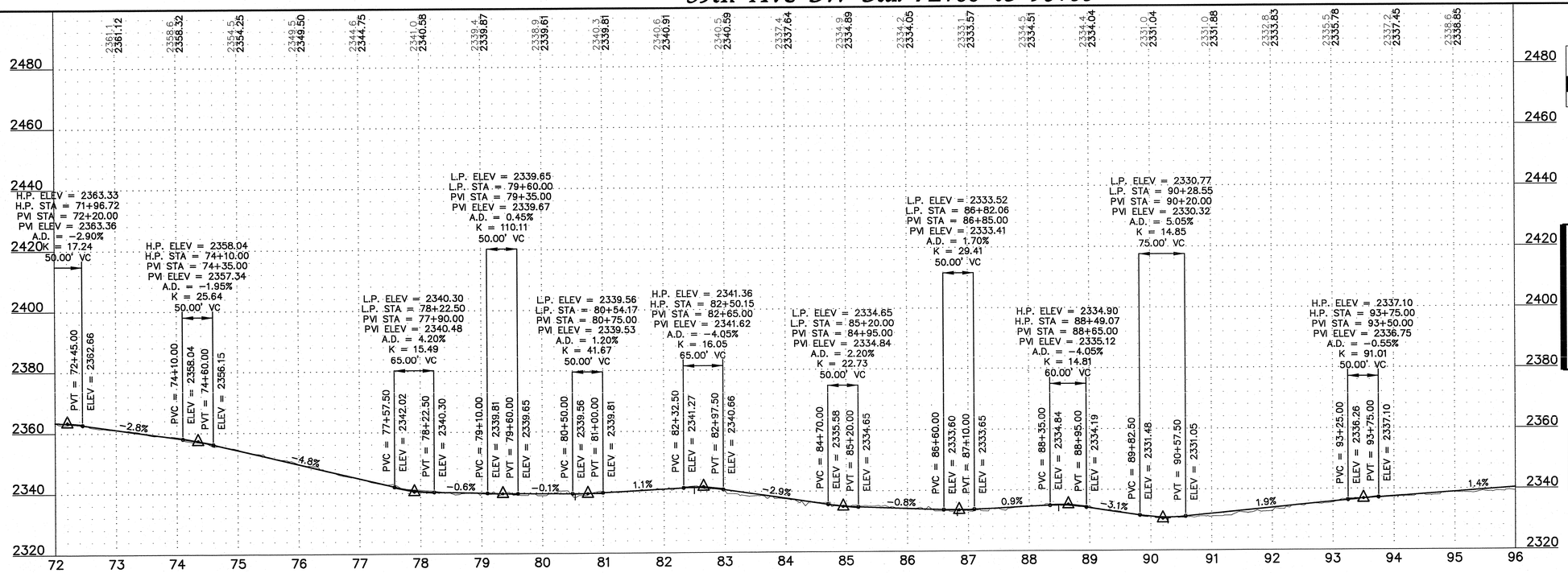
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. BOTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
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minnesota power
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Bison 4 Wind Project

Oliver County, North Dakota

59th Ave SW Sta. 72+00 to 96+00

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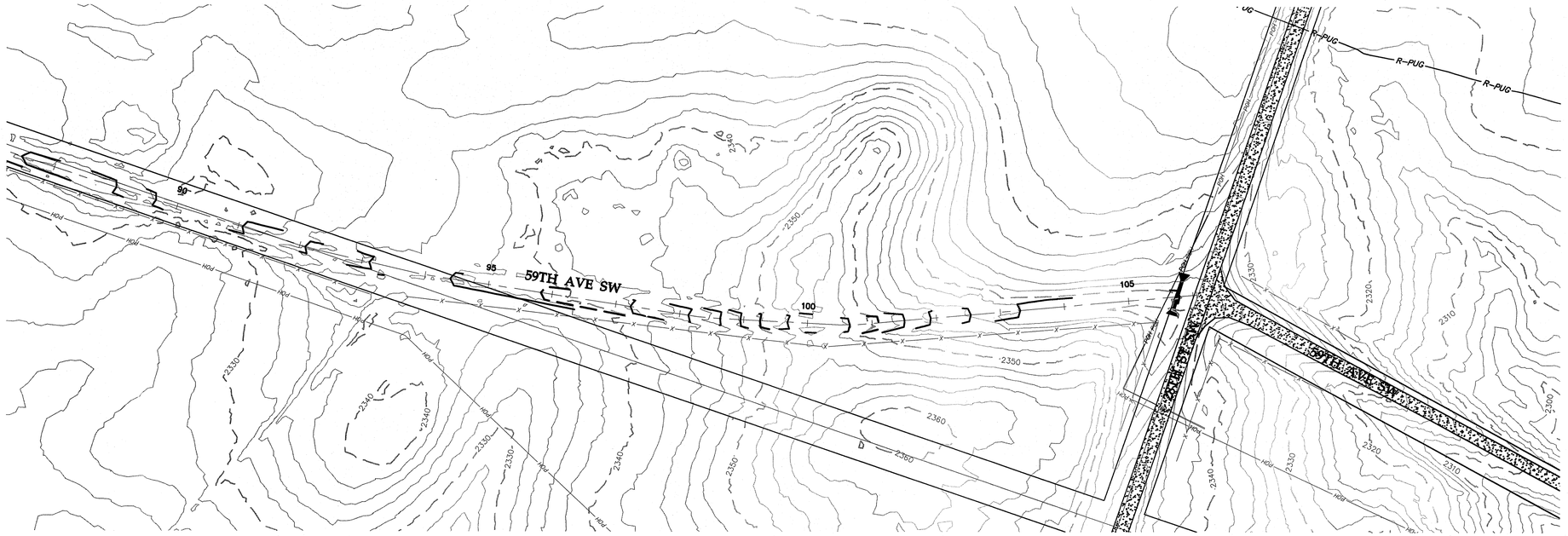
Record Drawings

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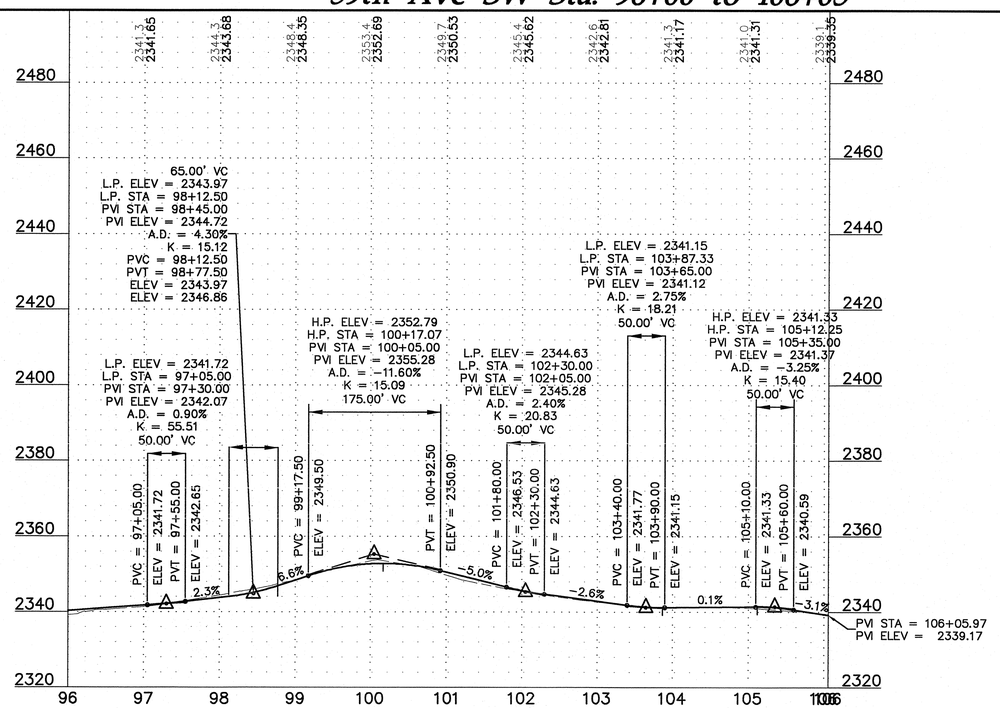
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- EXISTING 2' CONTOURS
- POH — EXISTING OVERHEAD POWER
- EXISTING STREAM
- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

59th Ave SW Sta. 96+00 to 106+05

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. *DATE* OCT. 3, 2014

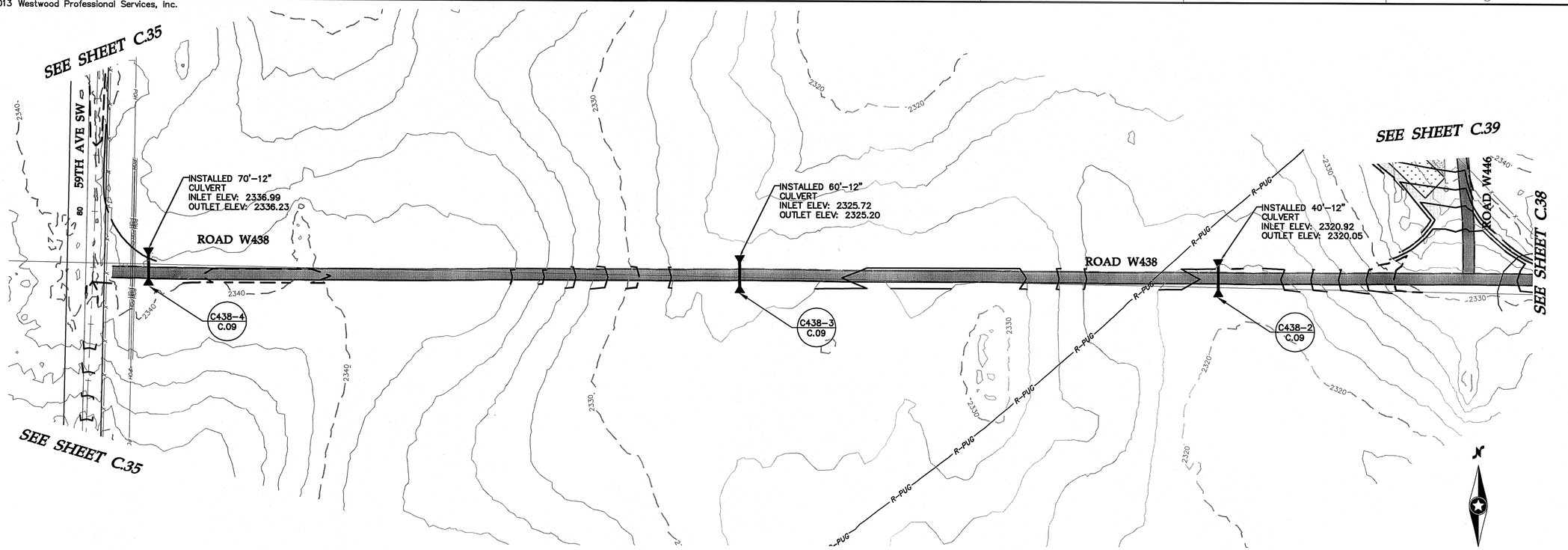
Record Drawings

Date: 12/22/2014

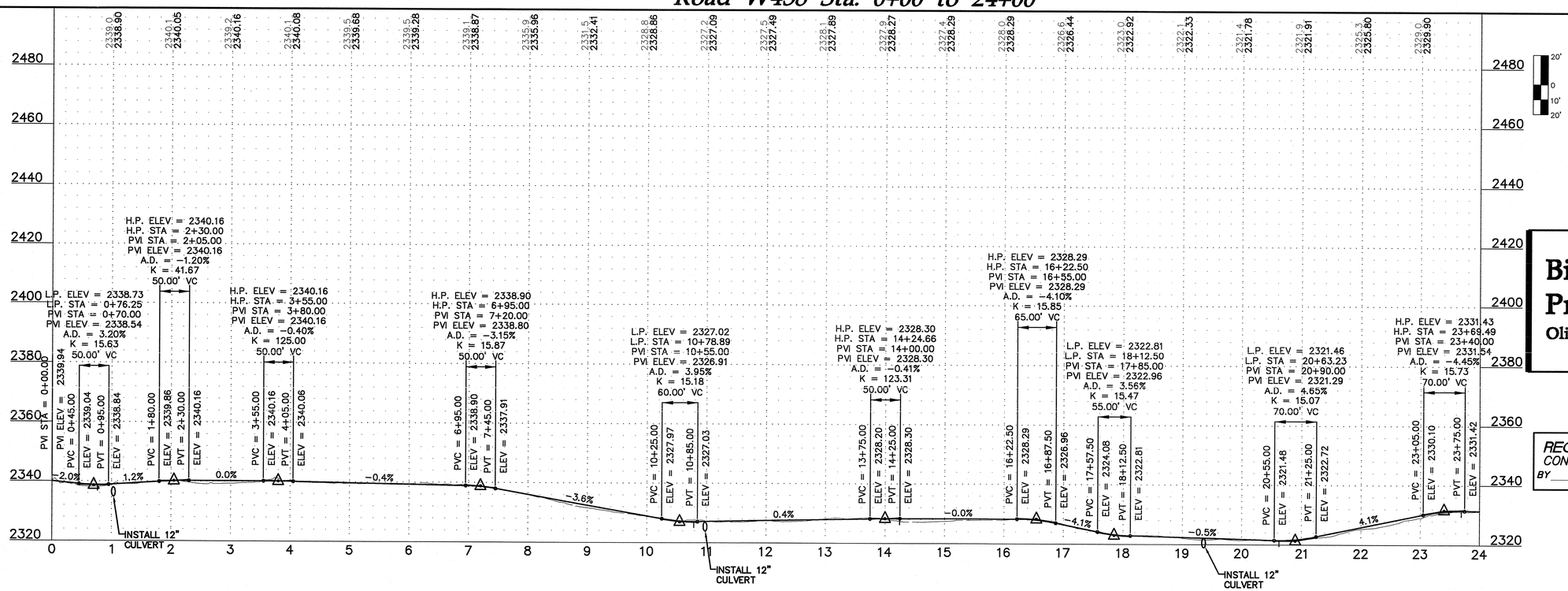
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Road W438 Sta. 0+00 to 24+00



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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSEN
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions:

#	DATE	DESCRIPTION
2	10/09/13	Owner Comments/Field Changes
3	02/28/14	Owner Comments
4	10/03/14	Record Drawings
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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- CONSTRUCTED TURBINE LOCATION
- T-XX — FINAL TURBINE NUMBER
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- 3000 — PROPOSED 10' CONTOURS
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Bison 4 Wind Project

Oliver County, North Dakota

Road W438 Sta. 0+00 to 24+00

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BY WESTWOOD P.S. DATE OCT. 3, 2014

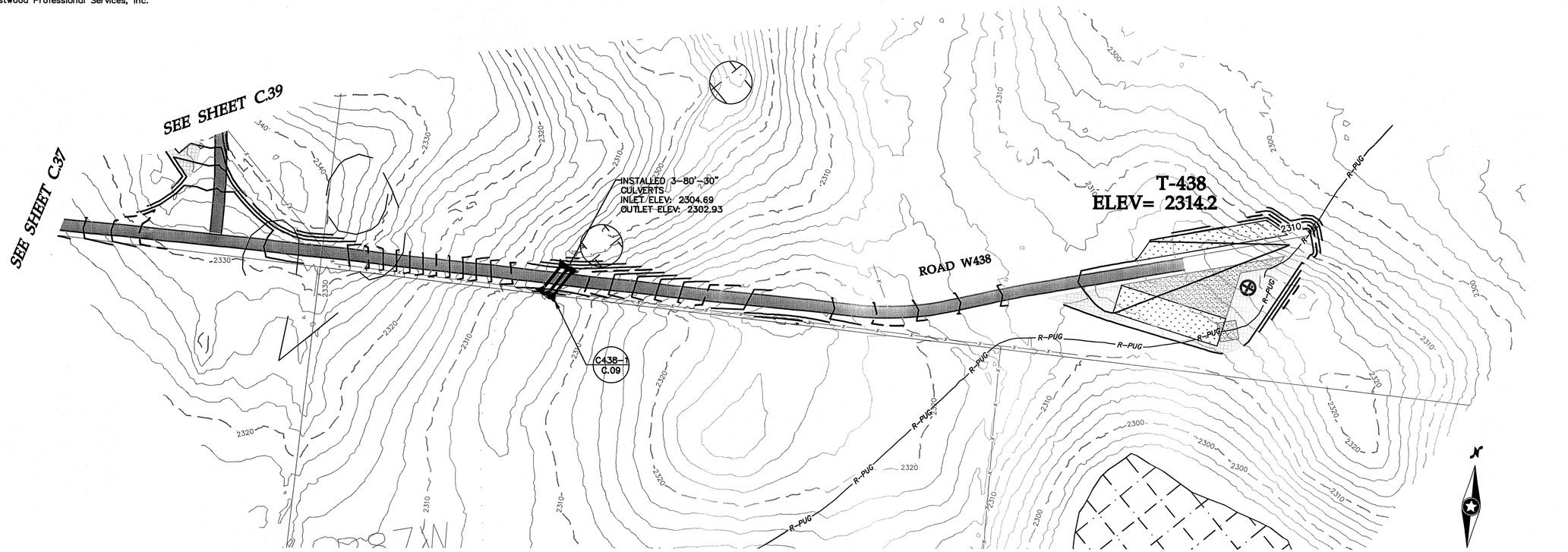
Record Drawings

Date: 12/22/2014

Sheet: C.37

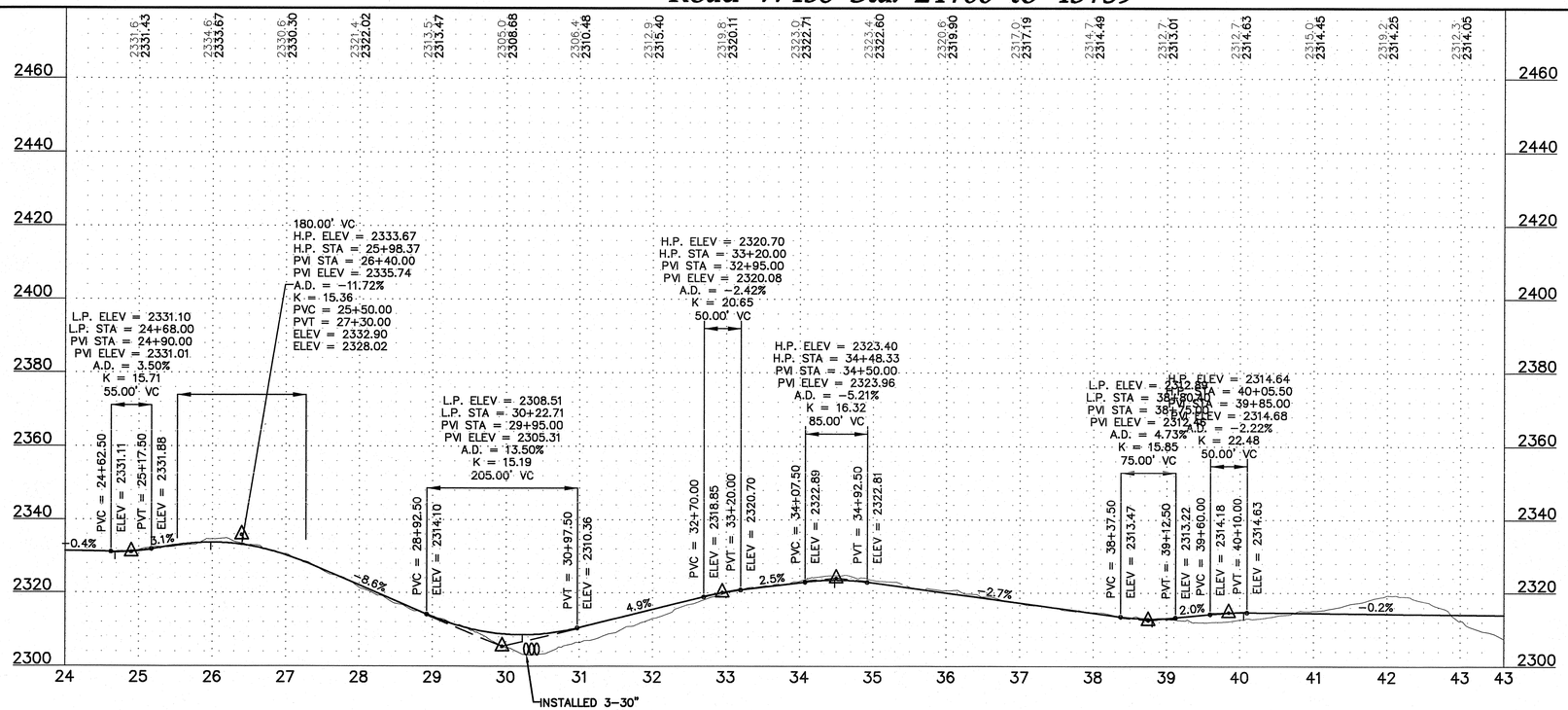
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0' 100' 200' 300'

Road W438 Sta. 24+00 to 43+59



20' 0 10' 20'

Westwood

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WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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minnesota power
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Bison 4 Wind Project

Oliver County, North Dakota

Road W438 Sta. 24+00 to 43+59

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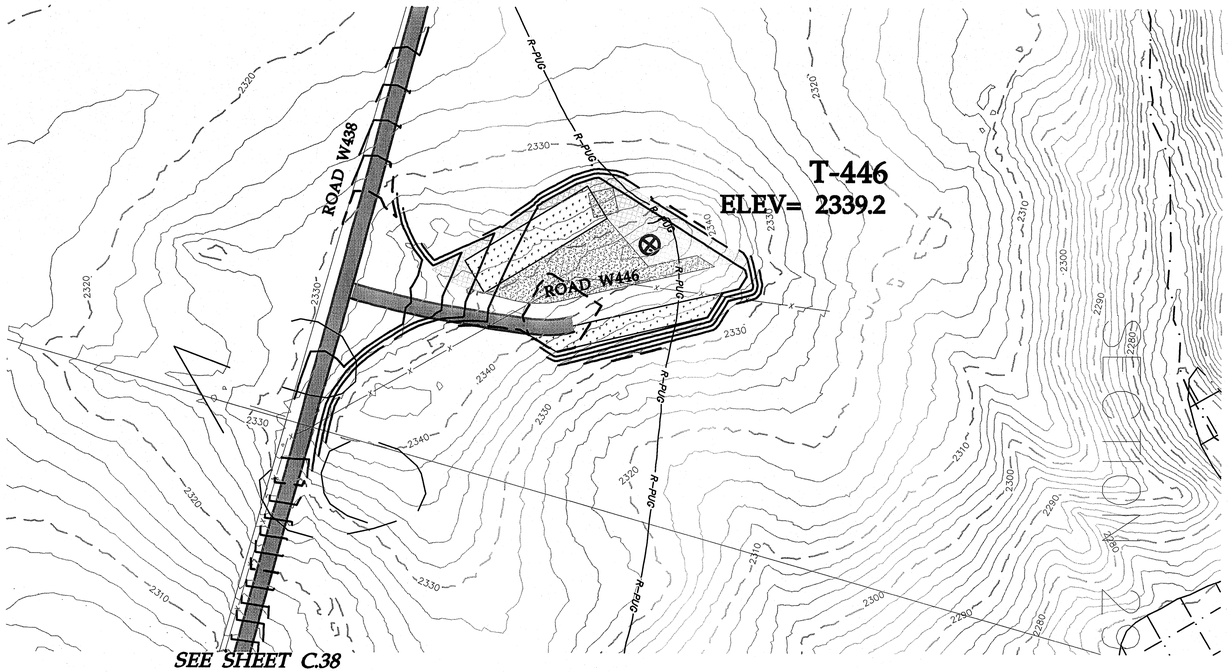
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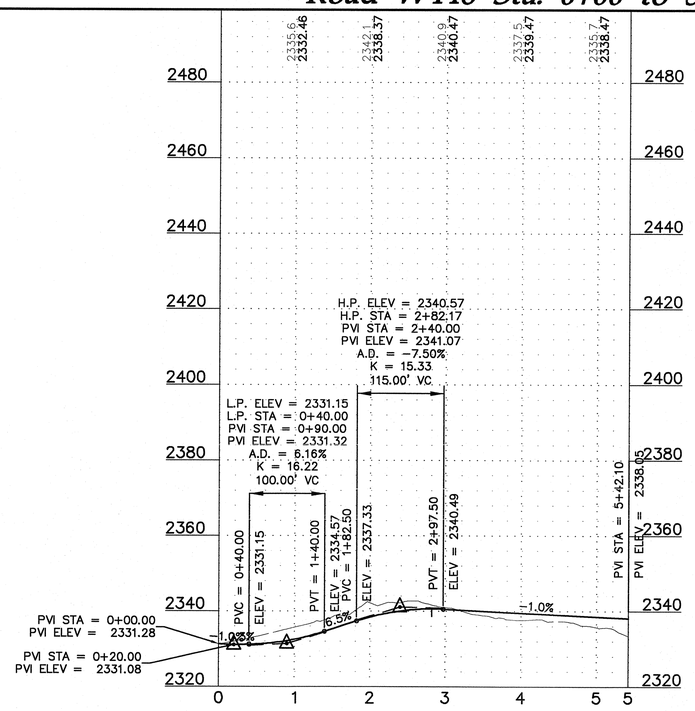
SEE SHEET C.37



SEE SHEET C.38

0' 100' 200' 300'

Road W446 Sta. 0+00 to 5+42



20' 0 10' 20'

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Bison 4 Wind Project

Oliver County, North Dakota

Road W446 Sta. 0+00 to 5+42

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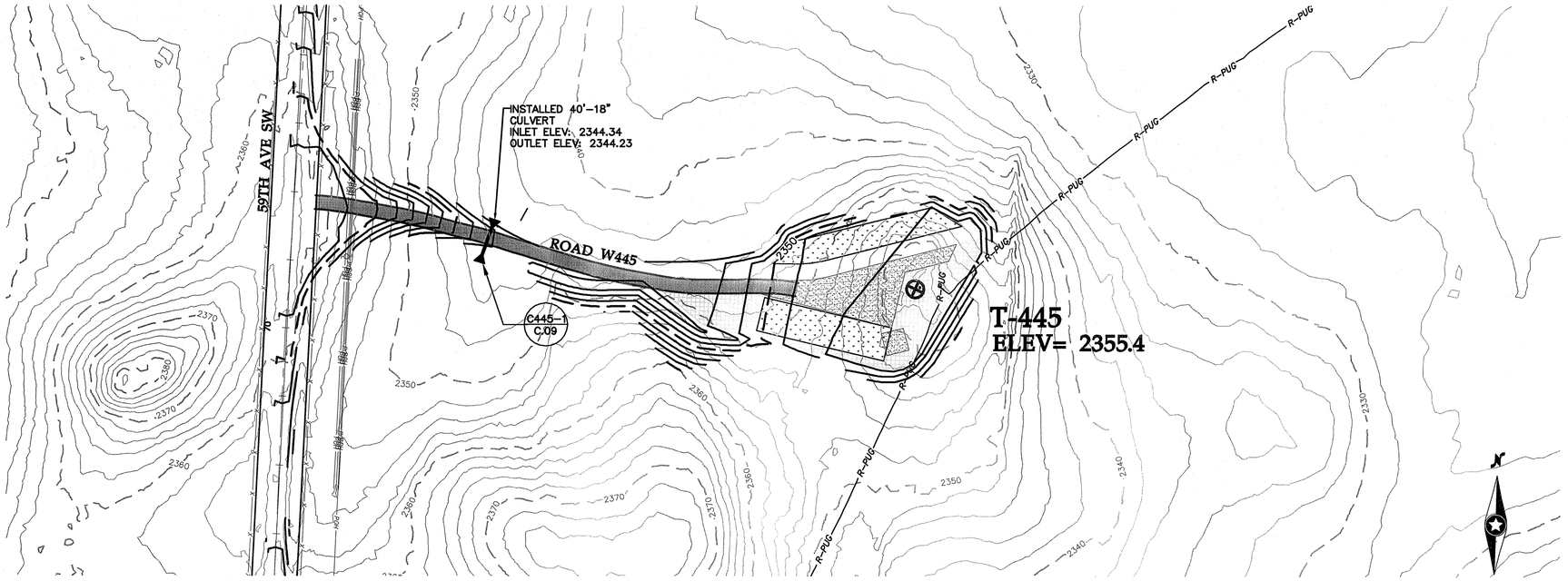
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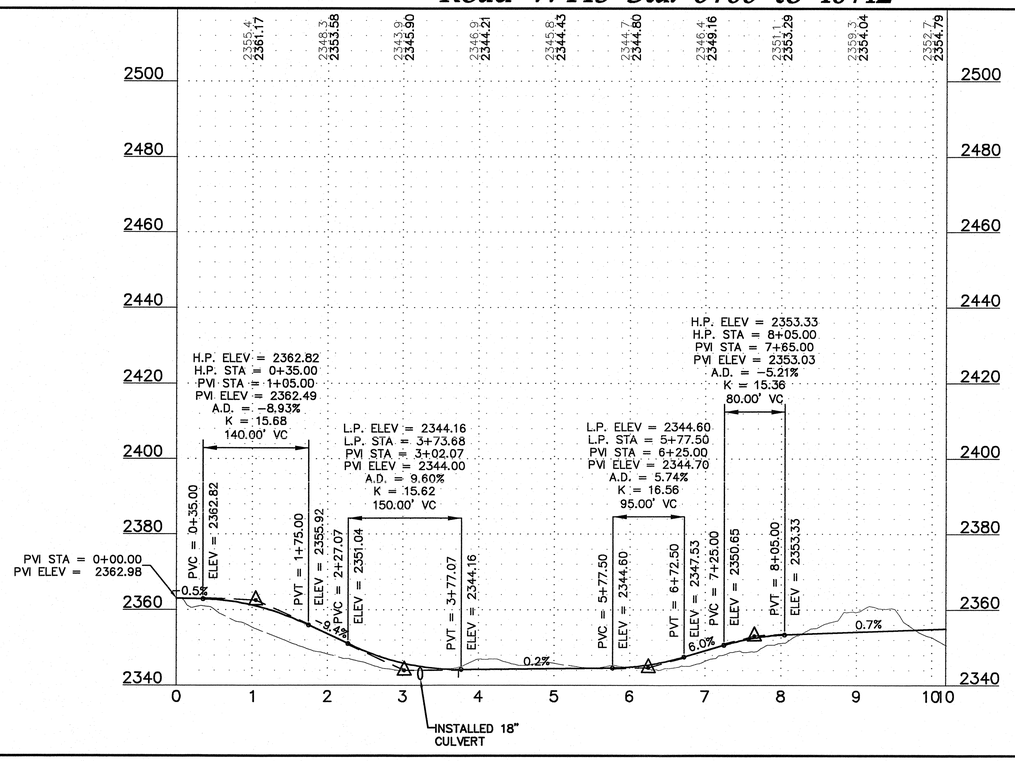
SEE SHEET C.35



SEE SHEET C.34

0' 100' 200' 300'

Road W445 Sta. 0+00 to 10+12



20' 0 10' 20'

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PE-8310
DATE 12/22/14
NORTH DAKOTA

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minnesota power
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Bison 4 Wind Project

Oliver County, North Dakota

Road W445 Sta. 0+00 to 10+12

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CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. DATE OCT. 3, 2014

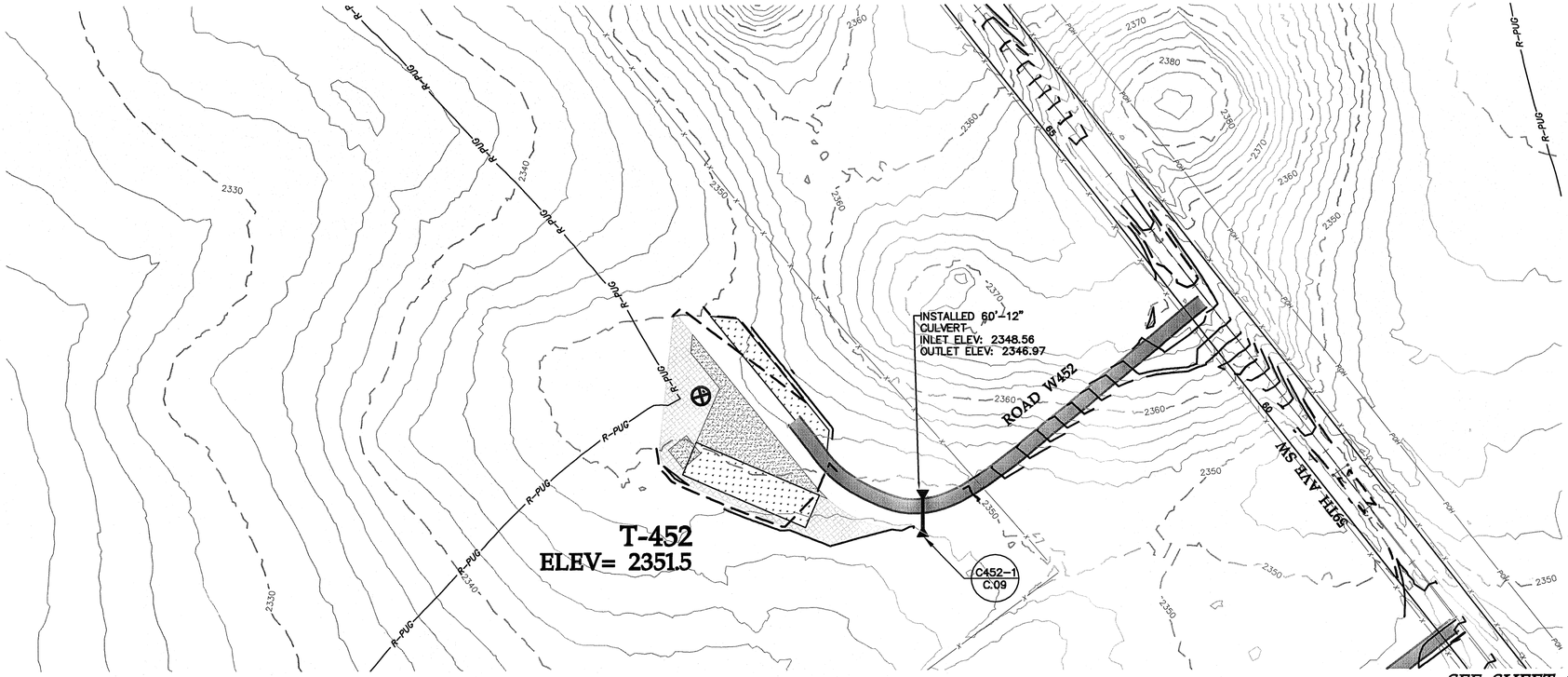
Record Drawings

Date: 12/22/2014
Sheet: C.40

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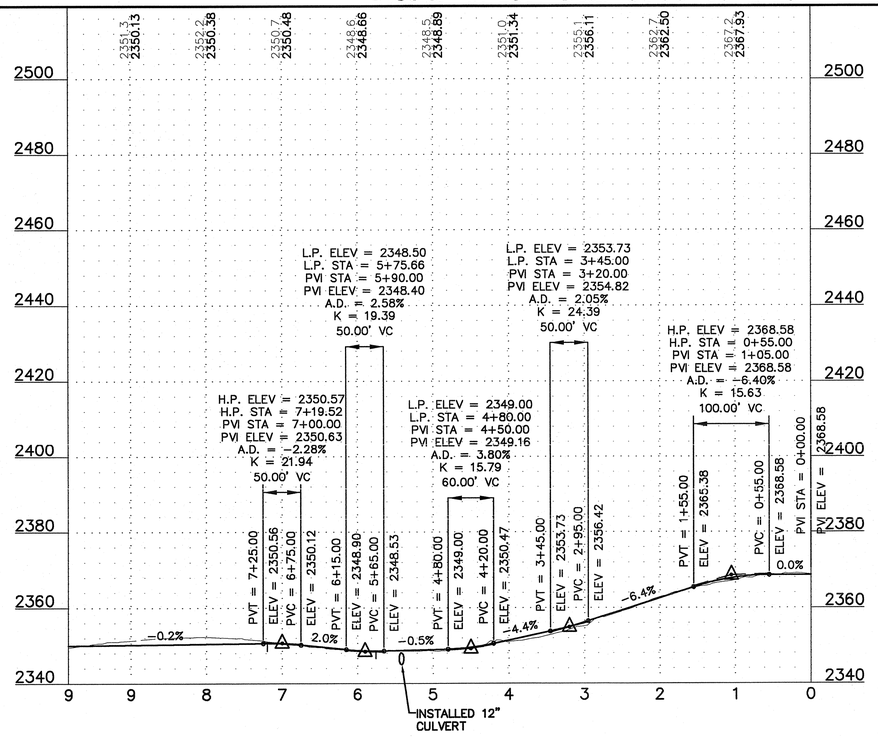
SEE SHEET C.34



SEE SHEET C.34

0' 100' 200' 300'

Road W452 Sta. 0+00 to 9+82



20' 0 10' 20'

LEGEND:

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TOLL FREE 1-888-937-5150

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM R. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project

Oliver County, North Dakota

Road W452 Sta. 0+00 to 9+82

RECORD DRAWINGS
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BY WESTWOOD P.S. DATE OCT. 3, 2014

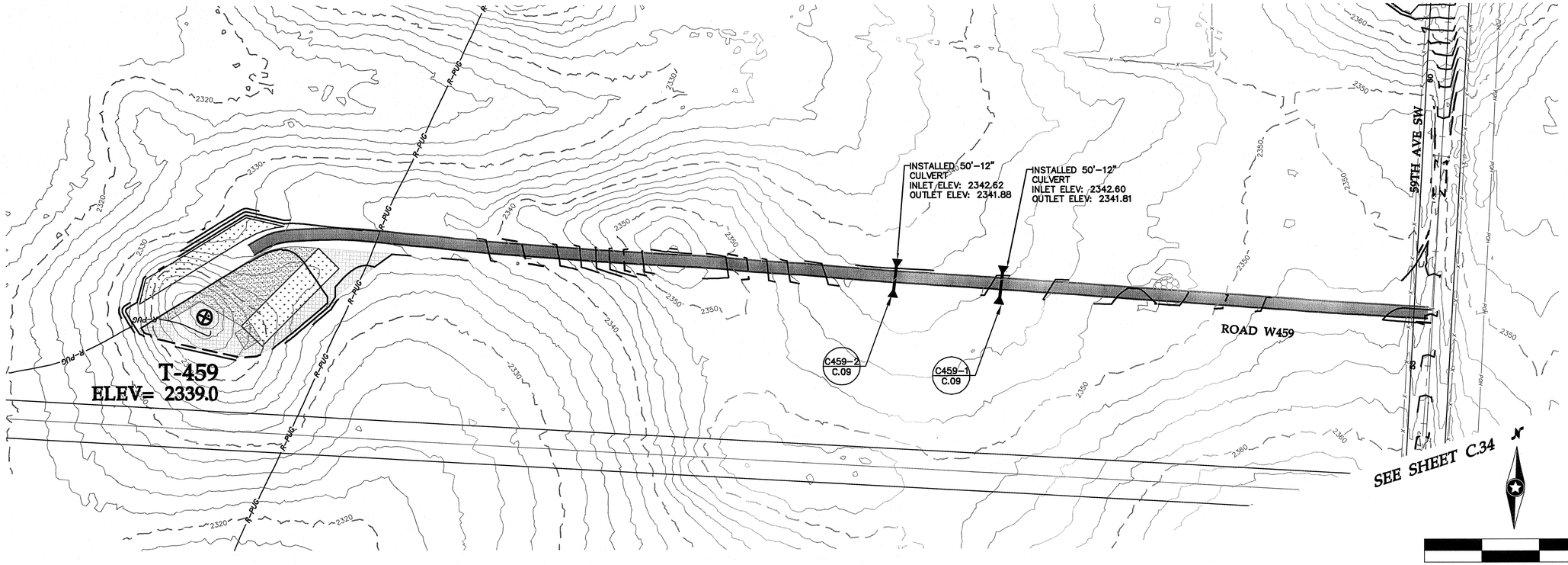
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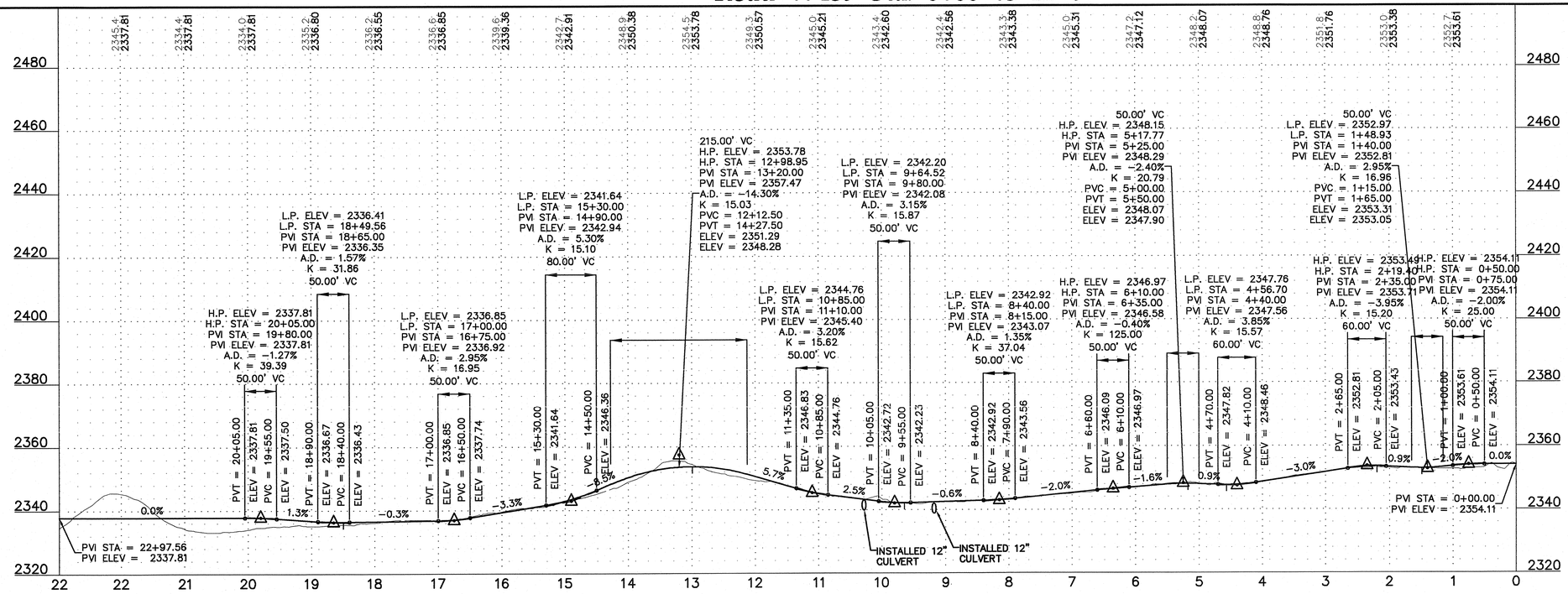
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Road W459 Sta. 0+00 to 22+97



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REGISTERED PROFESSIONAL ENGINEER
WILLIAM F. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

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Prepared for:
minnesota power
AN ALLETE COMPANY
30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

Road W459 Sta. 0+00 to 22+97

RECORD DRAWINGS
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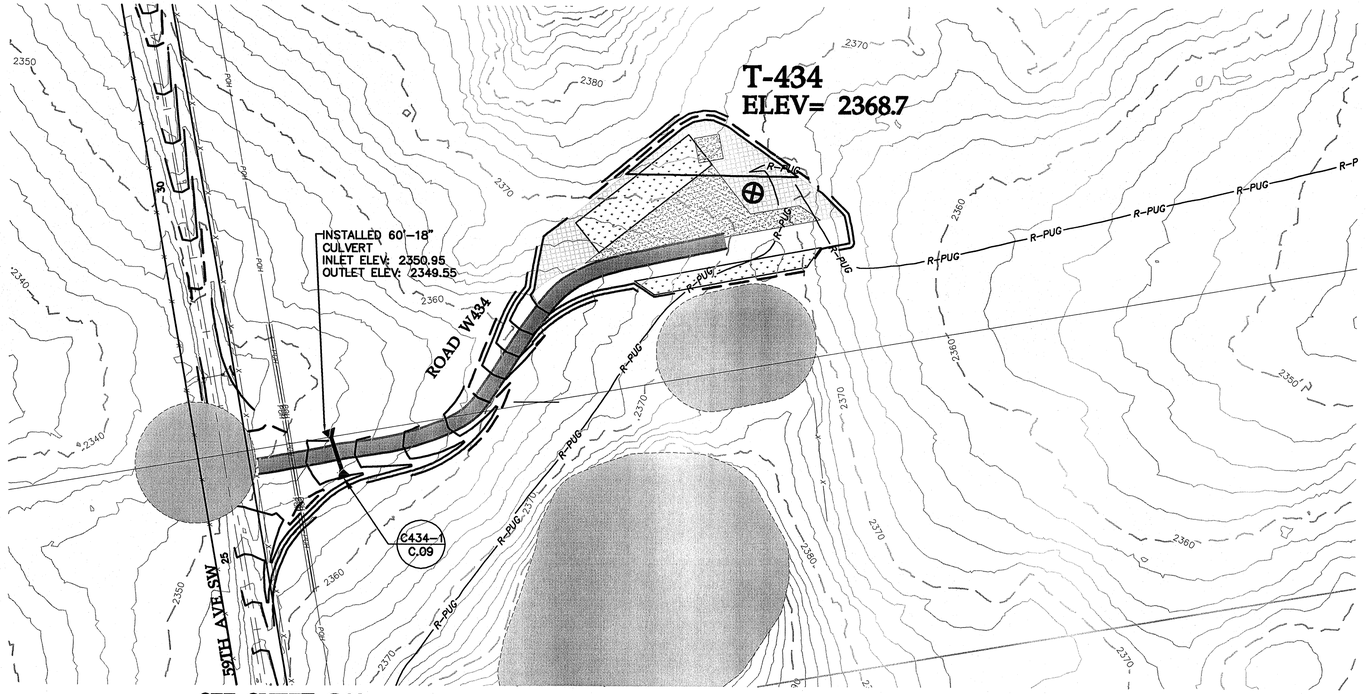
Record Drawings

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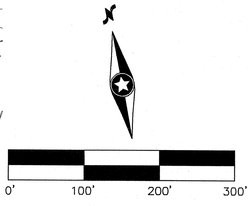
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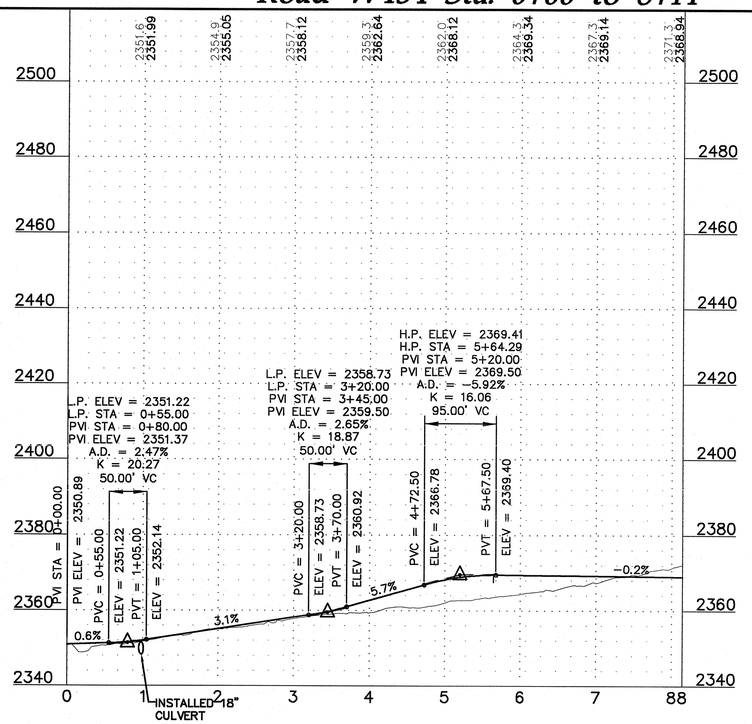
SEE SHEET C.33



SEE SHEET C.32



Road W434 Sta. 0+00 to 8+14





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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
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Drawn:	MPG
Record Drawing by/date:	

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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
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Bison 4 Wind Project

Oliver County, North Dakota

Road W434 Sta. 0+00 to 8+14

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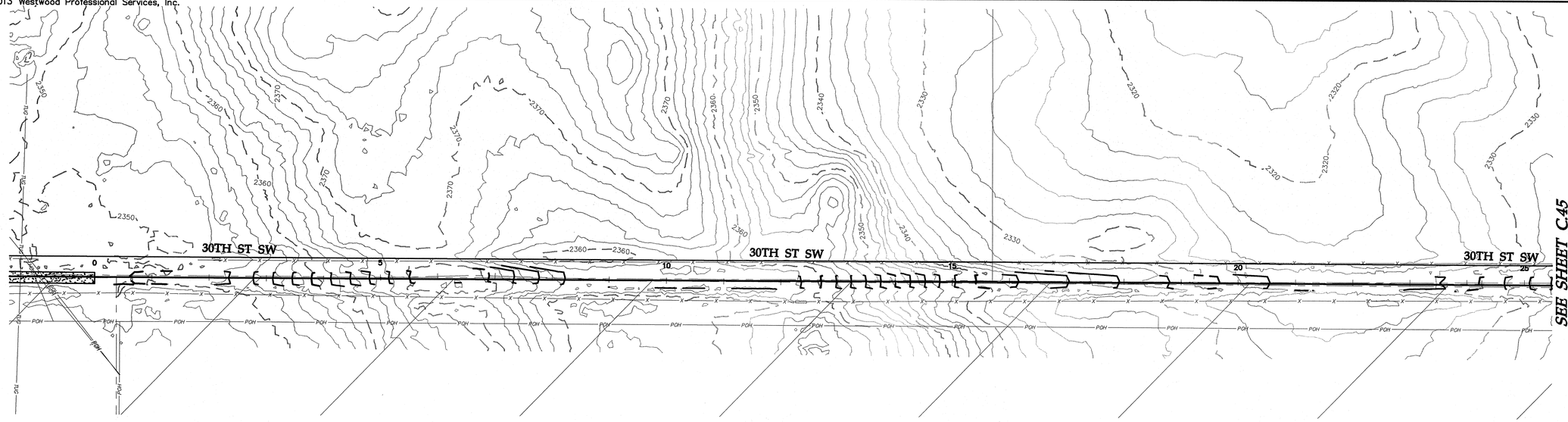
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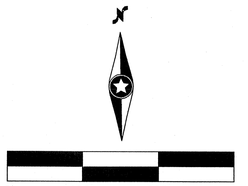
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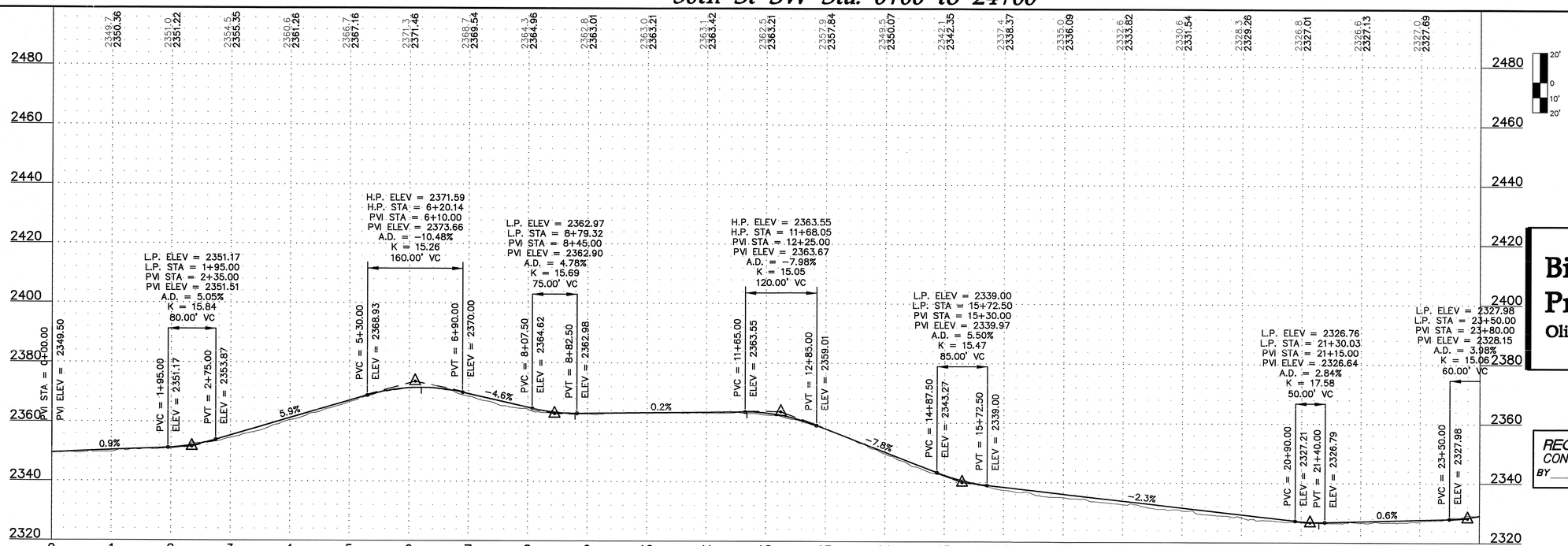
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30th St SW Sta. 0+00 to 24+00



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WILLIAM C. HASKIN
PE-8310
DATE 12/22/14
NORTH DAKOTA

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Bison 4 Wind Project

Oliver County, North Dakota

30th St SW Sta. 0+00 to 24+00

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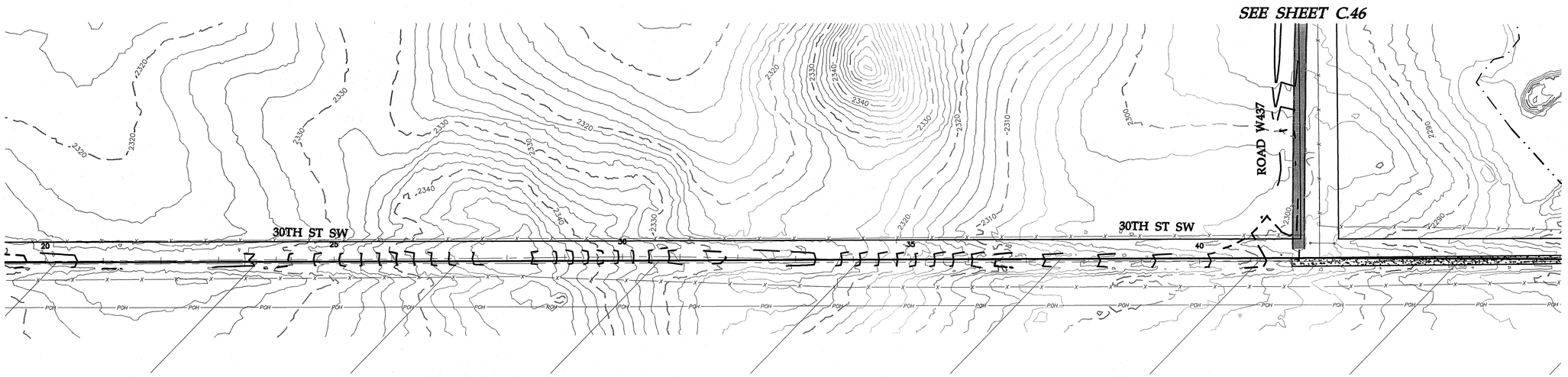
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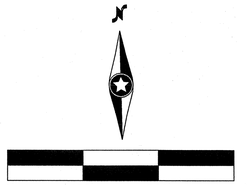
Date: **12/22/2014**

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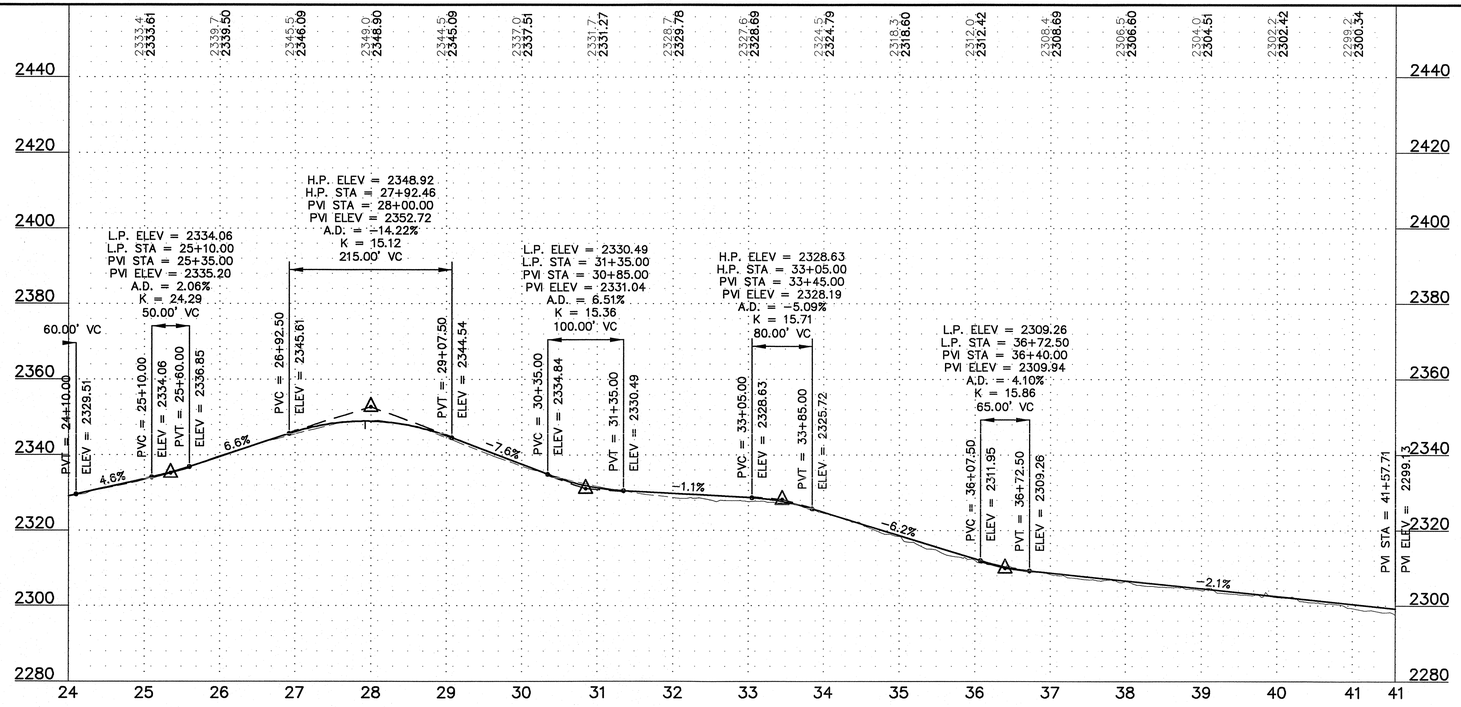
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30th St SW Sta. 24+00 to 41+57.71





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- R-PUG — CONSTRUCTED UNDERGROUND ELECTRICAL COLLECTION
- CONSTRUCTED CULVERT
- CONSTRUCTION EASEMENT
- WIND PROJECT EASEMENT
- 4000 — EXISTING 10' CONTOURS
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- EXISTING STREAM
- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

30th St SW Sta. 24+00 to 41+57.71

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. *DATE* OCT. 3, 2014

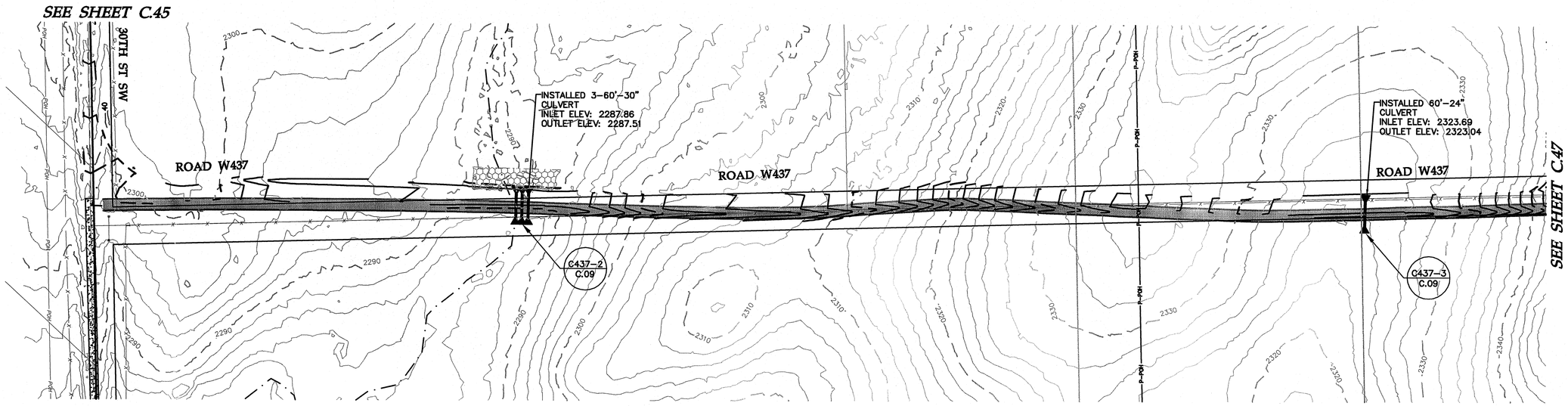
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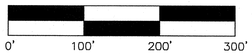
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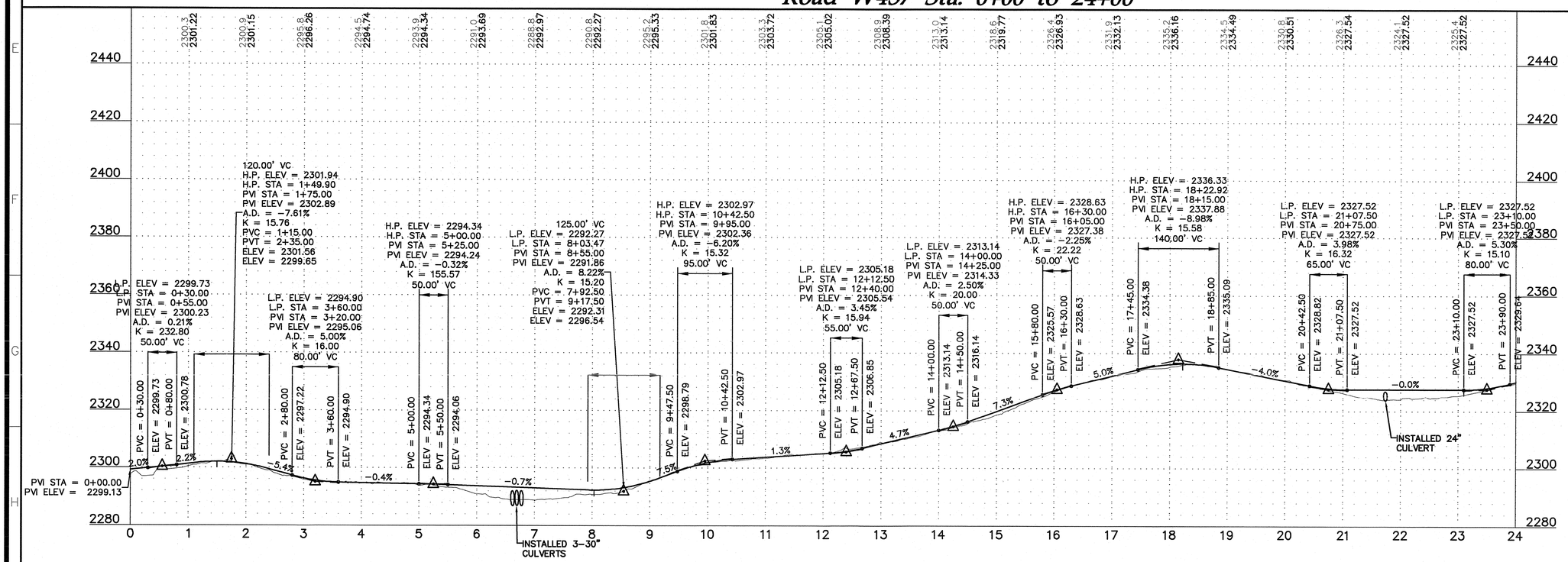
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HESTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions:

#	DATE	DESCRIPTION
2	10/09/13	Owner Comments/Field Changes
3	02/28/14	Owner Comments
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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

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Bison 4 Wind Project

Oliver County, North Dakota

Road W437 Sta. 0+00 to 24+00

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CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. *DATE* OCT. 3, 2014

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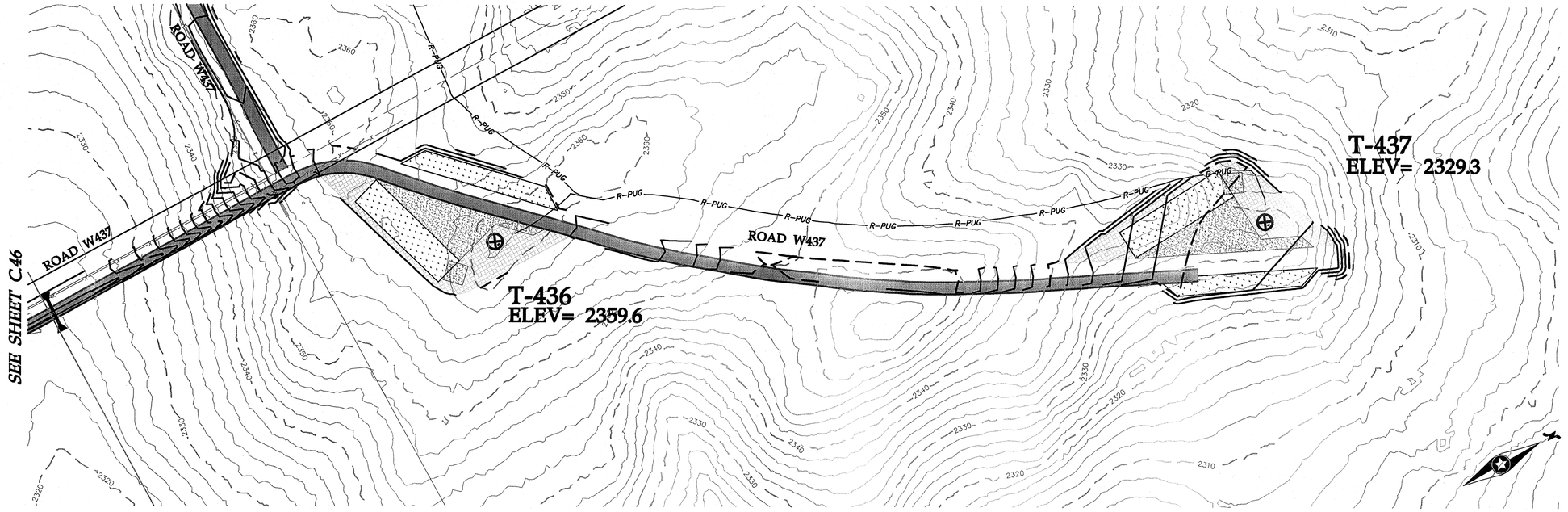
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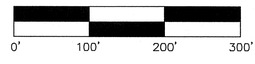
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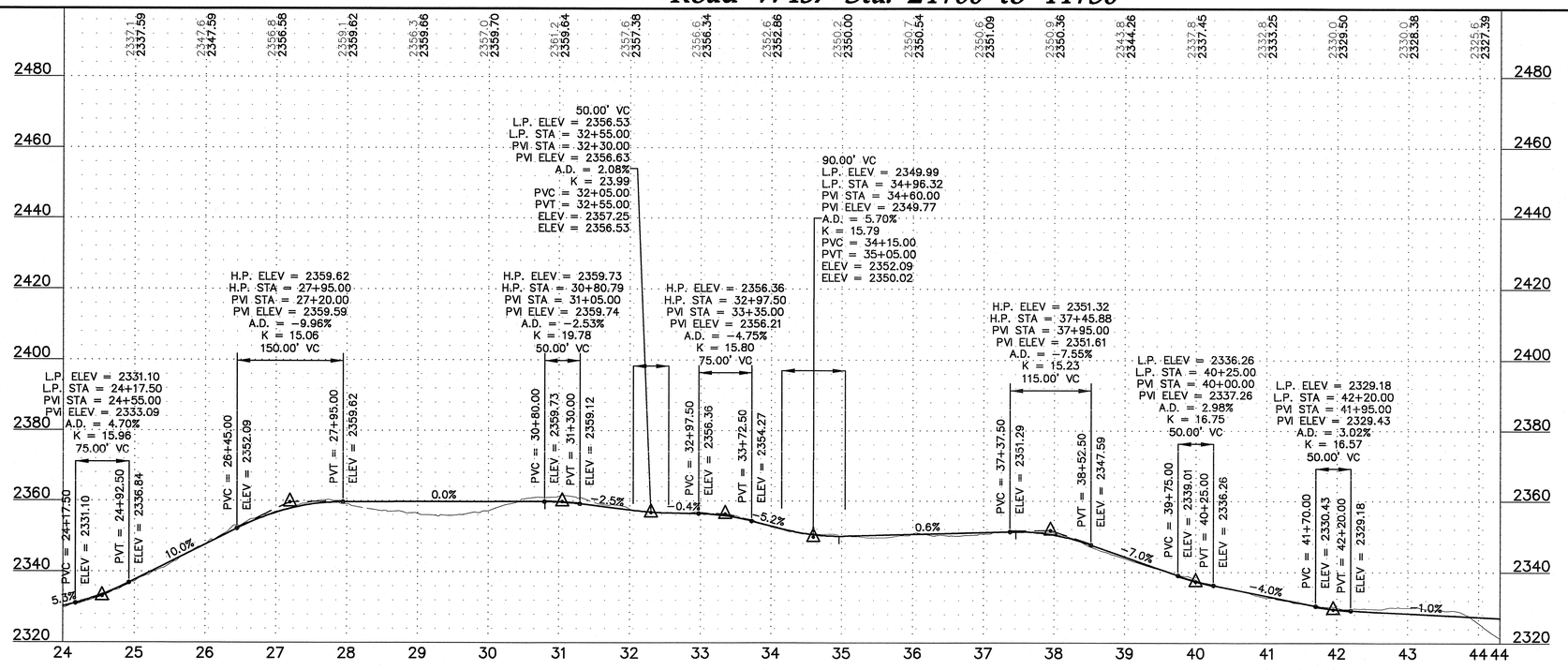
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. GRESTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

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BY WESTWOOD P.S. DATE OCT. 3, 2014

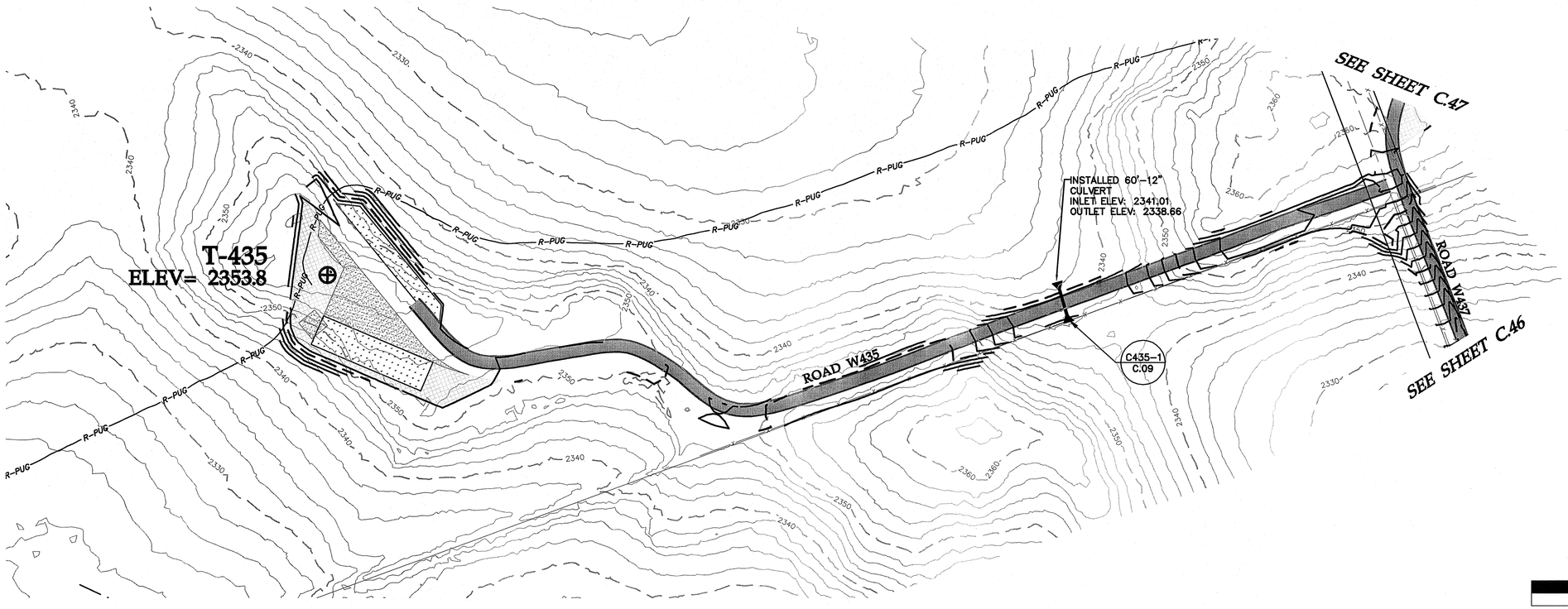
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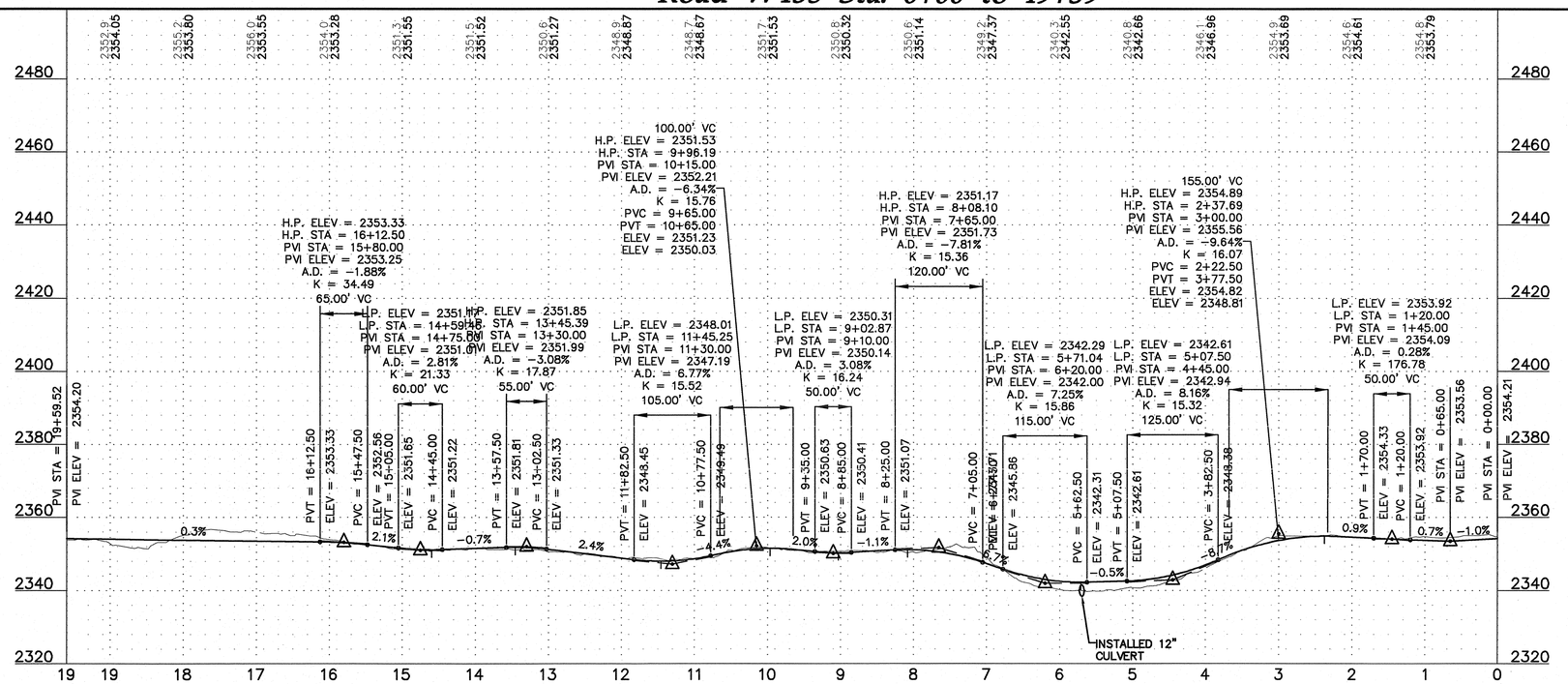
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0' 100' 200' 300'

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20' 0 10' 20'

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NORTH DAKOTA

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Prepared for:

minnesota power
AN ALLETE COMPANY

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Bison 4 Wind Project

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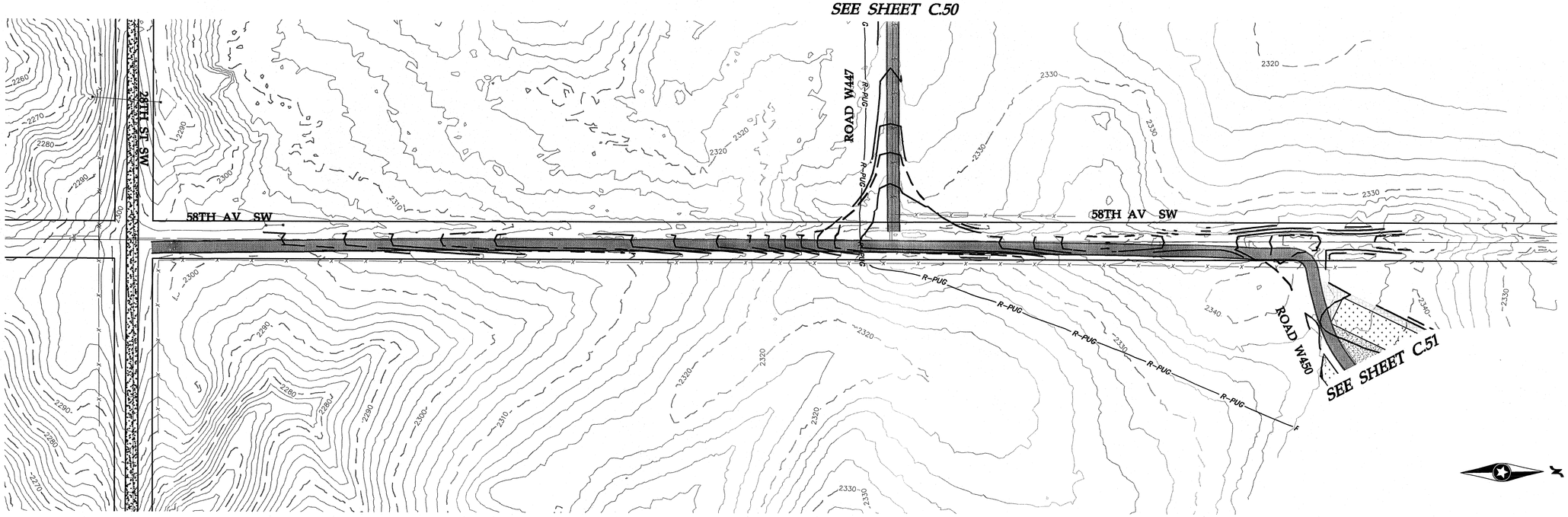
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Date: **12/22/2014**

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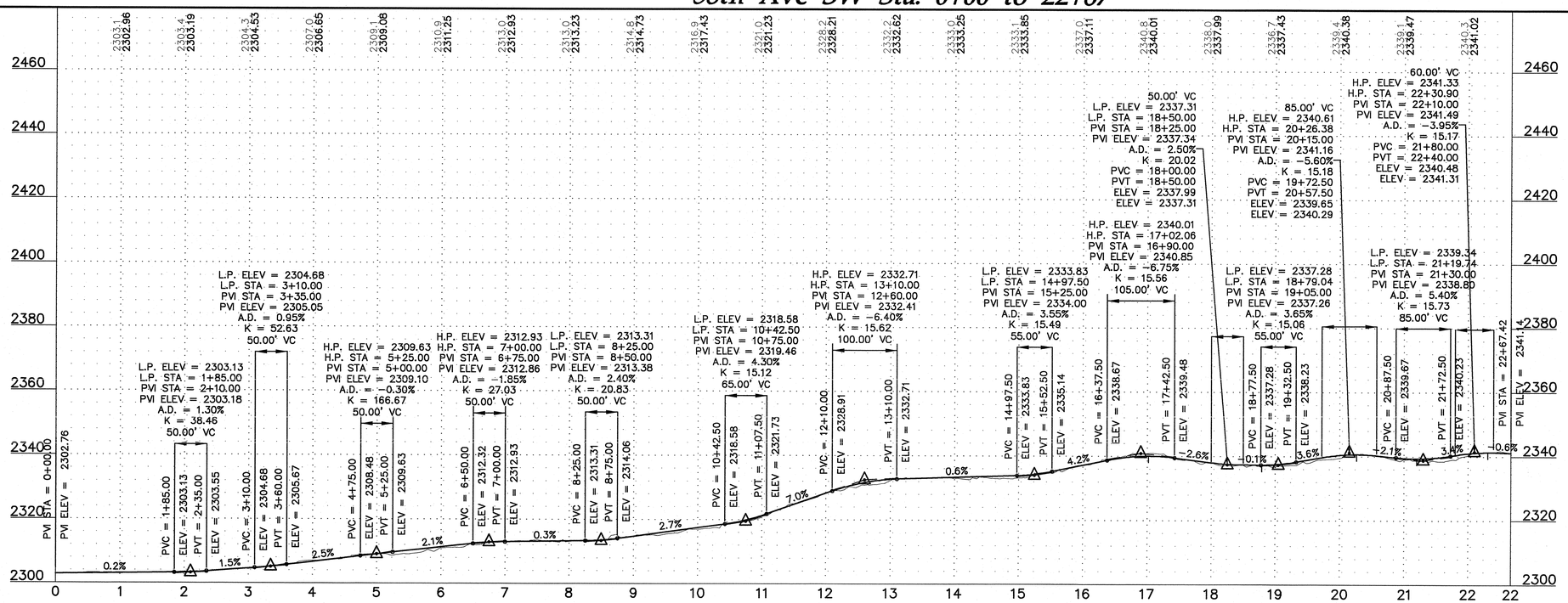
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58th Ave SW Sta. 0+00 to 22+67



20' 0 10' 20'

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WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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AN ALLETE COMPANY

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Bison 4 Wind Project

Oliver County, North Dakota

58th Ave SW Sta. 0+00 to 22+67

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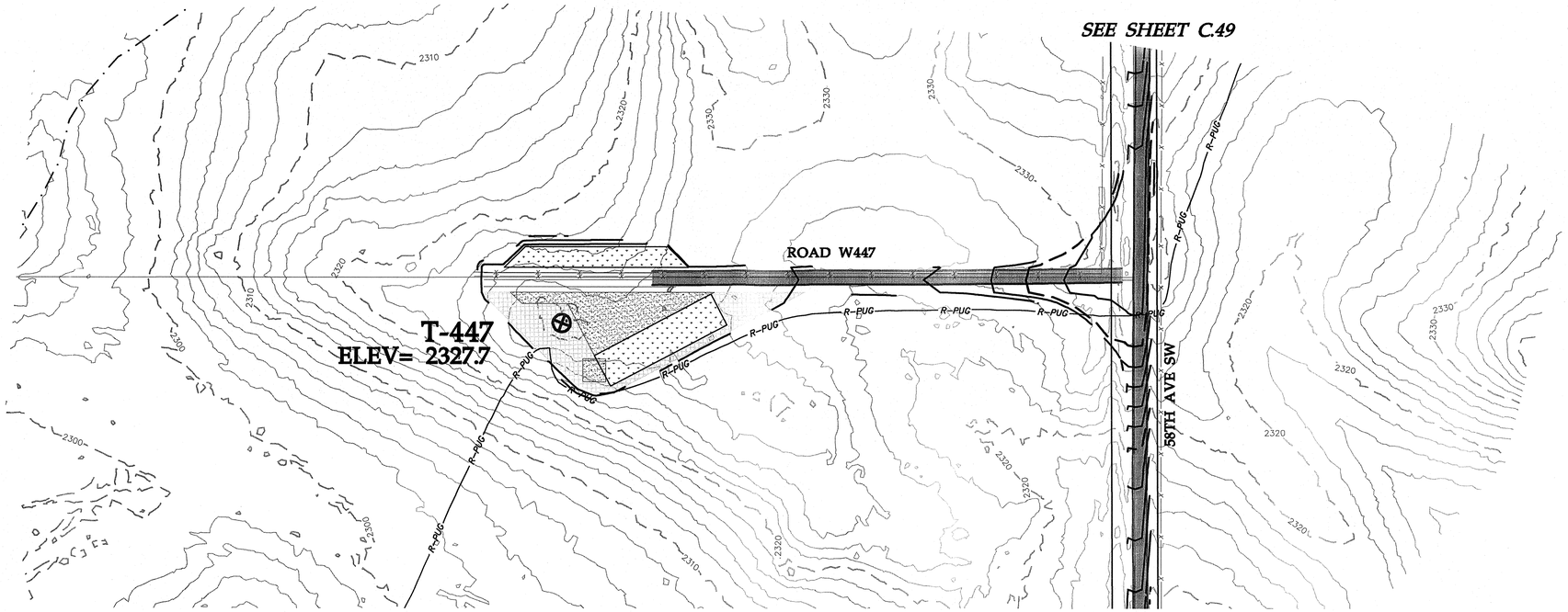
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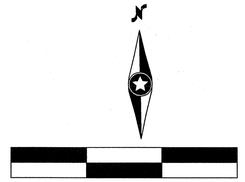
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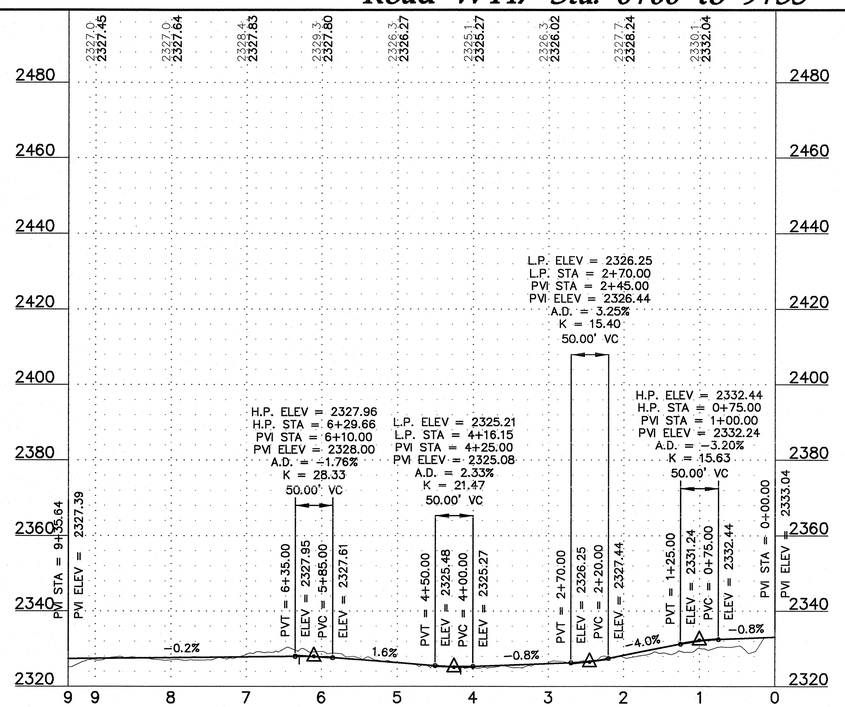
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WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
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Record Drawing by/date:	

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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

Road W447 Sta. 0+00 to 9+35

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. DATE OCT. 3, 2014

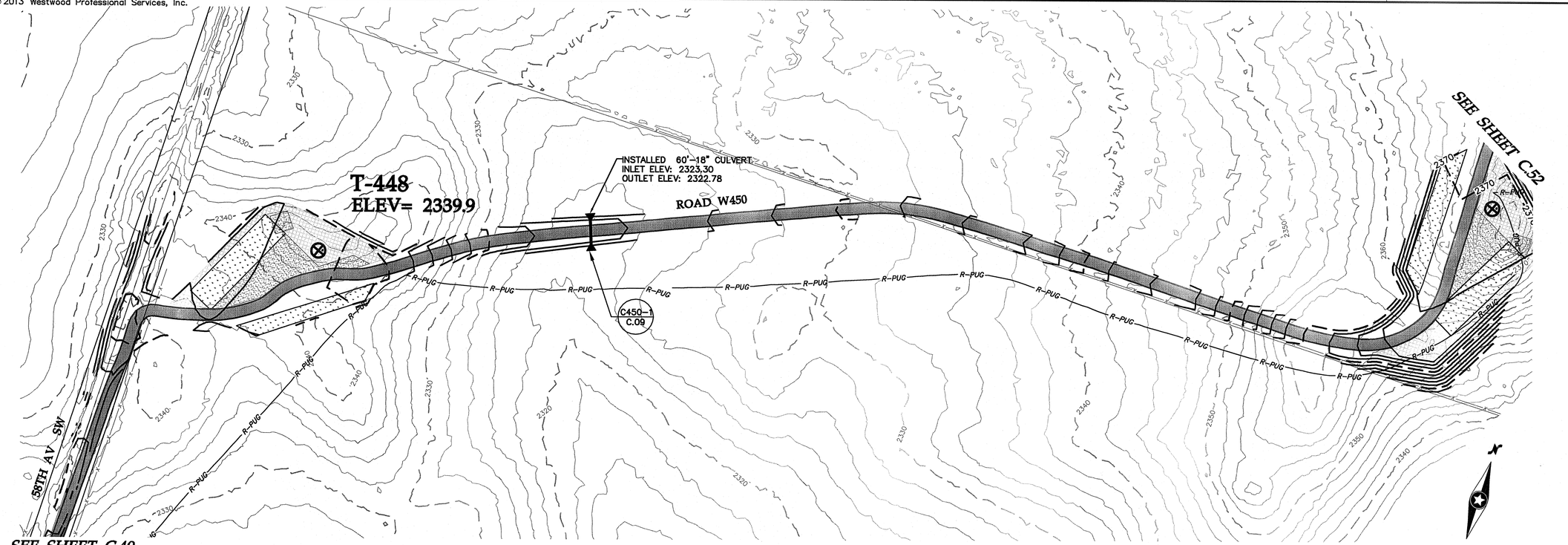
Record Drawings

Date: 12/22/2014

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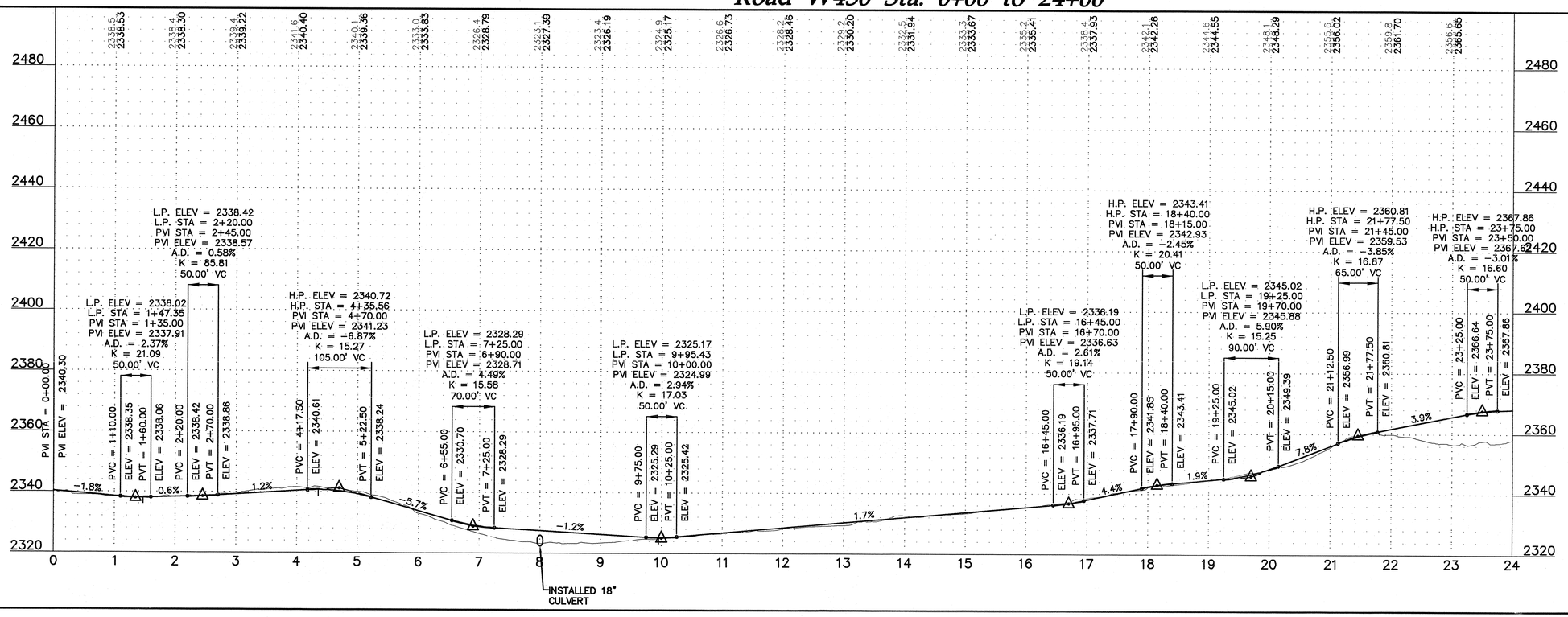
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0' 100' 200' 300'

Road W450 Sta. 0+00 to 24+00



20' 0 10' 20'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM M. HELGOON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
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Prepared for:
minnesota power
AN ALLETE COMPANY
30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

Road W450 Sta. 0+00 to 24+00

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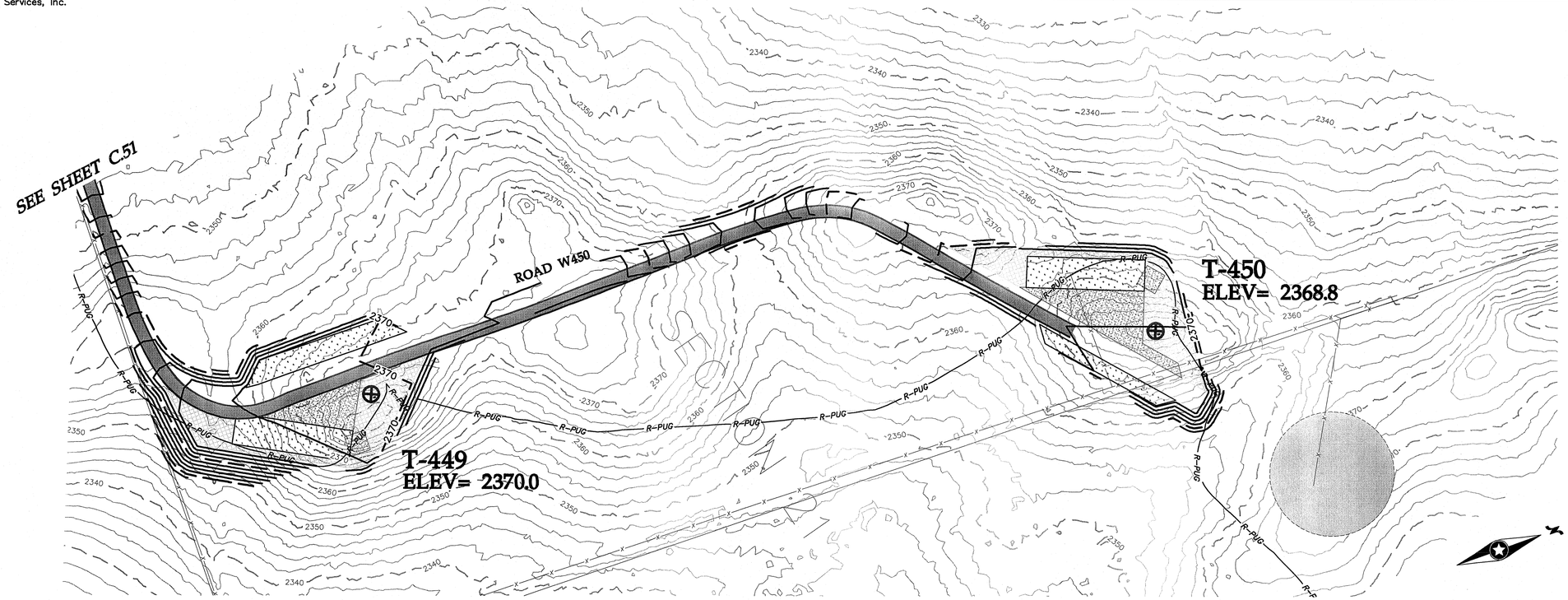
Record Drawings

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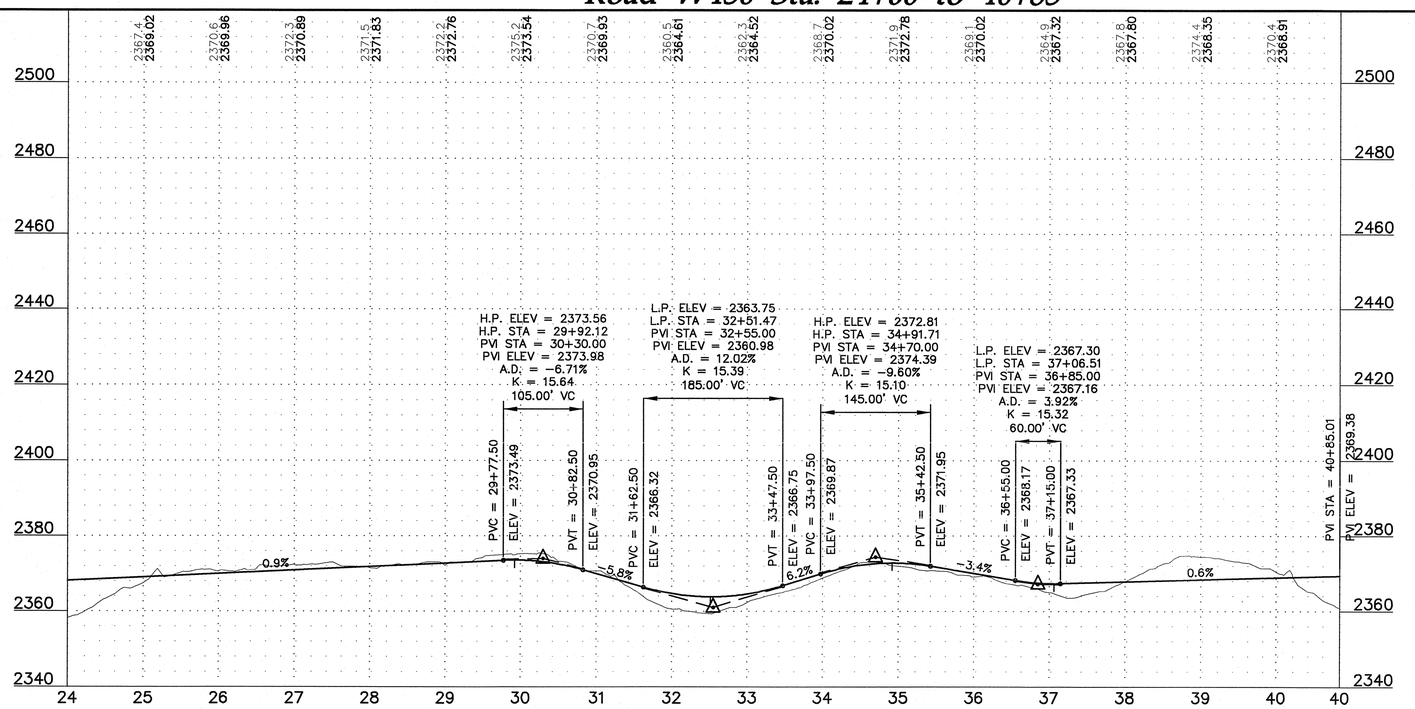
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PE-8310
DATE 12/22/14
NORTH DAKOTA

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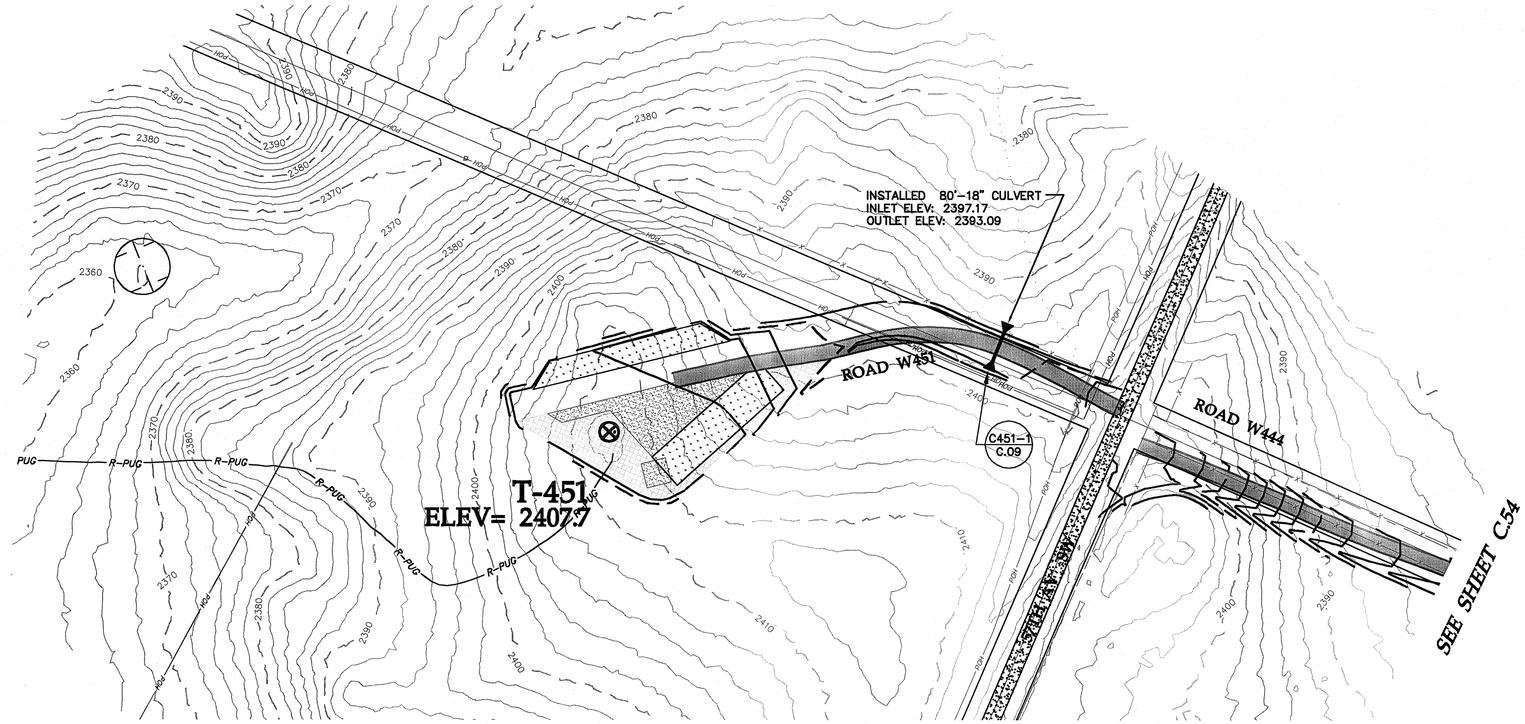
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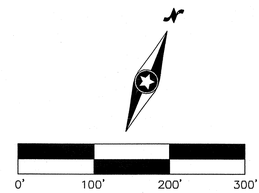
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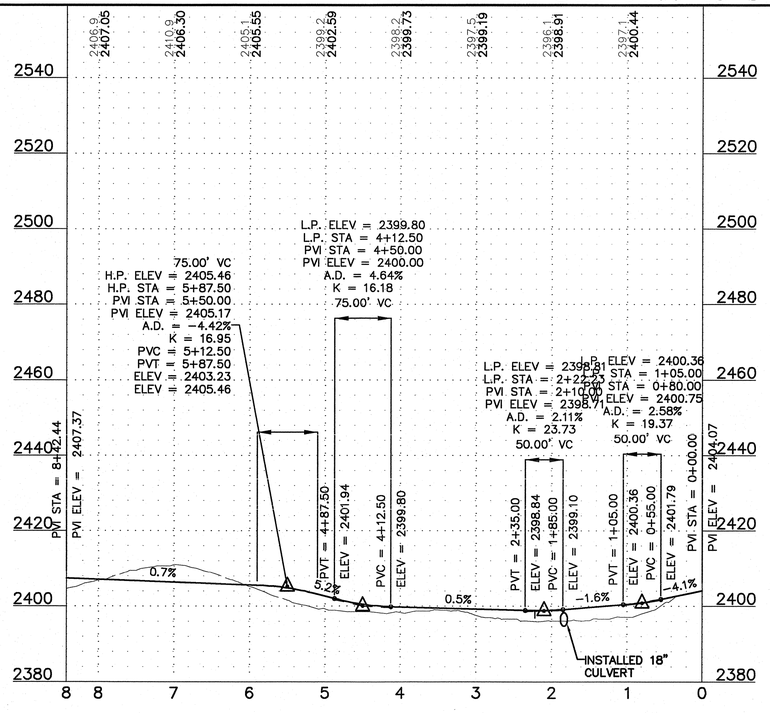
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HESTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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Prepared for:

minnesota power
AN ALLETE COMPANY

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Bison 4 Wind Project

Oliver County, North Dakota

Road W451 Sta. 0+00 to 8+42

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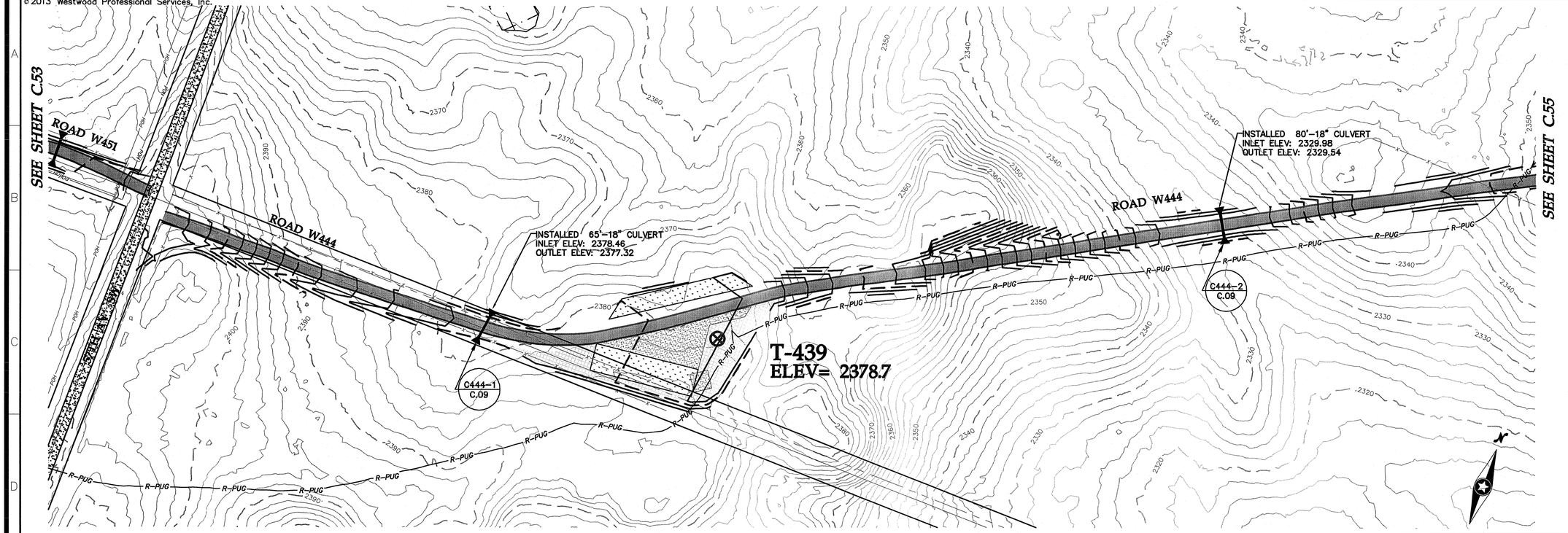
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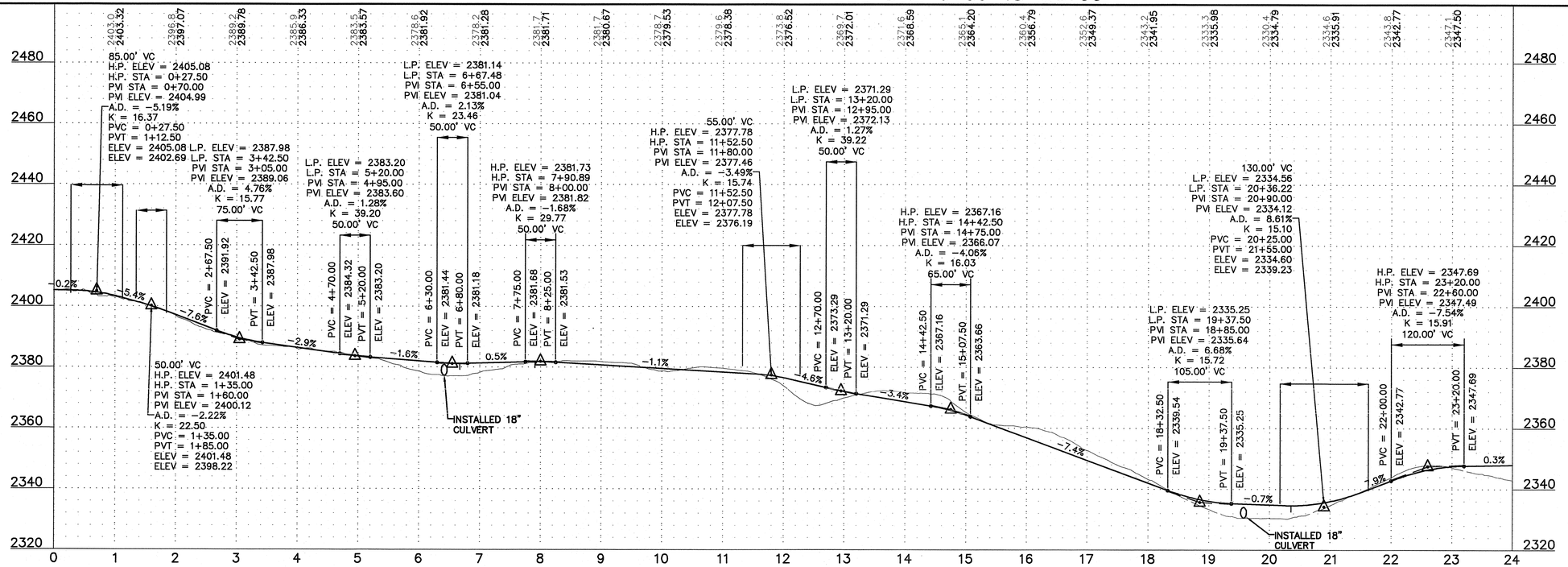
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REGISTERED PROFESSIONAL ENGINEER
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PE-6310
NORTH DAKOTA
DATE 12/22/14

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5	12/22/14	Updated Record Drawings

Prepared for:
minnesota power
AN ALLETE COMPANY
30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

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- EXISTING STREAM
- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

Road W444 Sta. 0+00 to 24+00

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. *DATE* OCT. 3, 2014

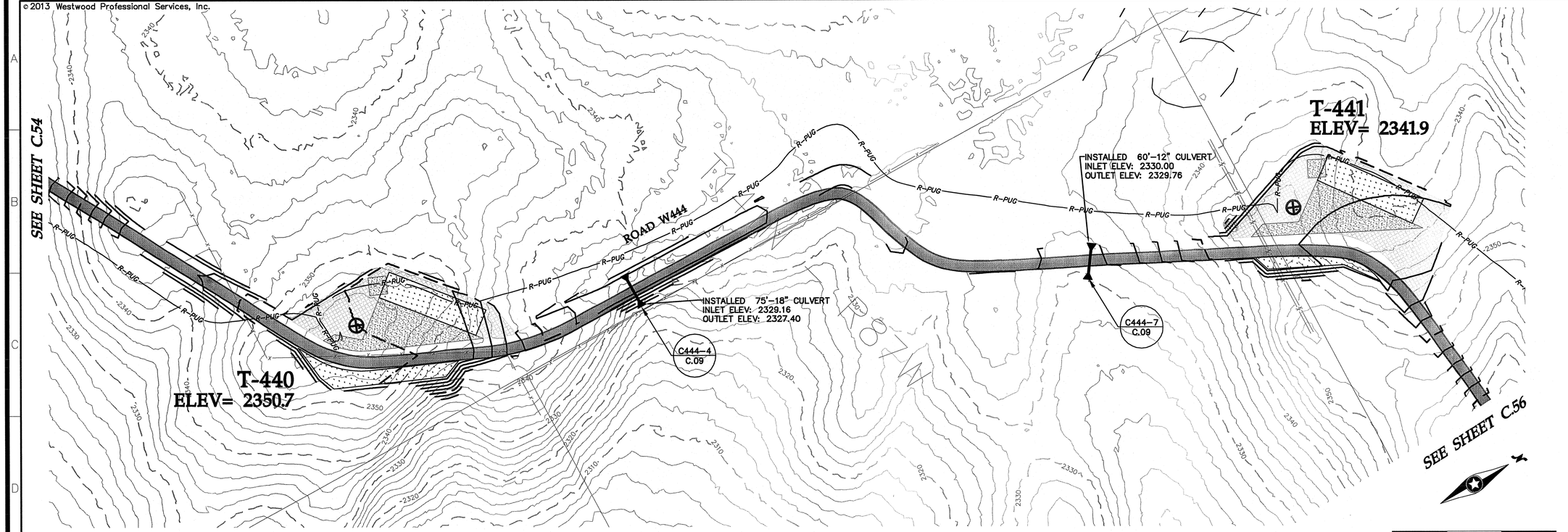
Record Drawings

Date: **12/22/2014**

Sheet: **C.54**

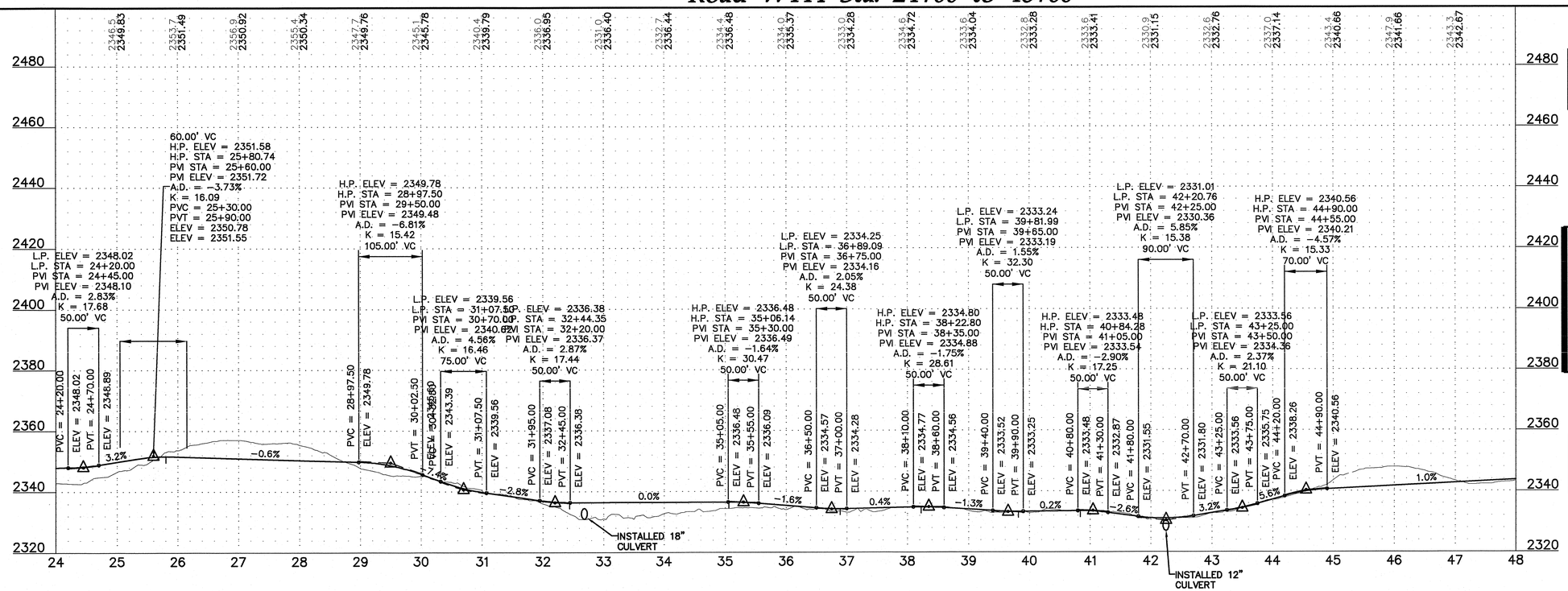
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM R. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions: #	DATE	DESCRIPTION
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Prepared for:

minnesota power
AN ALLETE COMPANY

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Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

Road W444 Sta. 24+00 to 48+00

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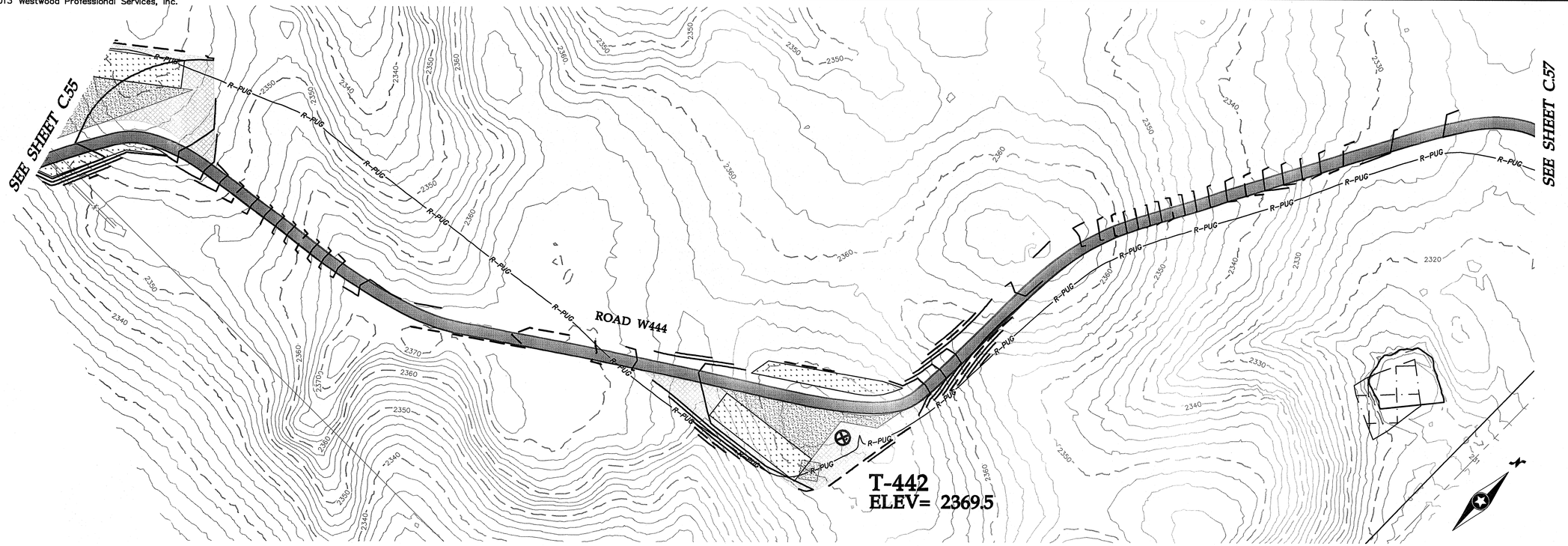
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Date: 12/22/2014

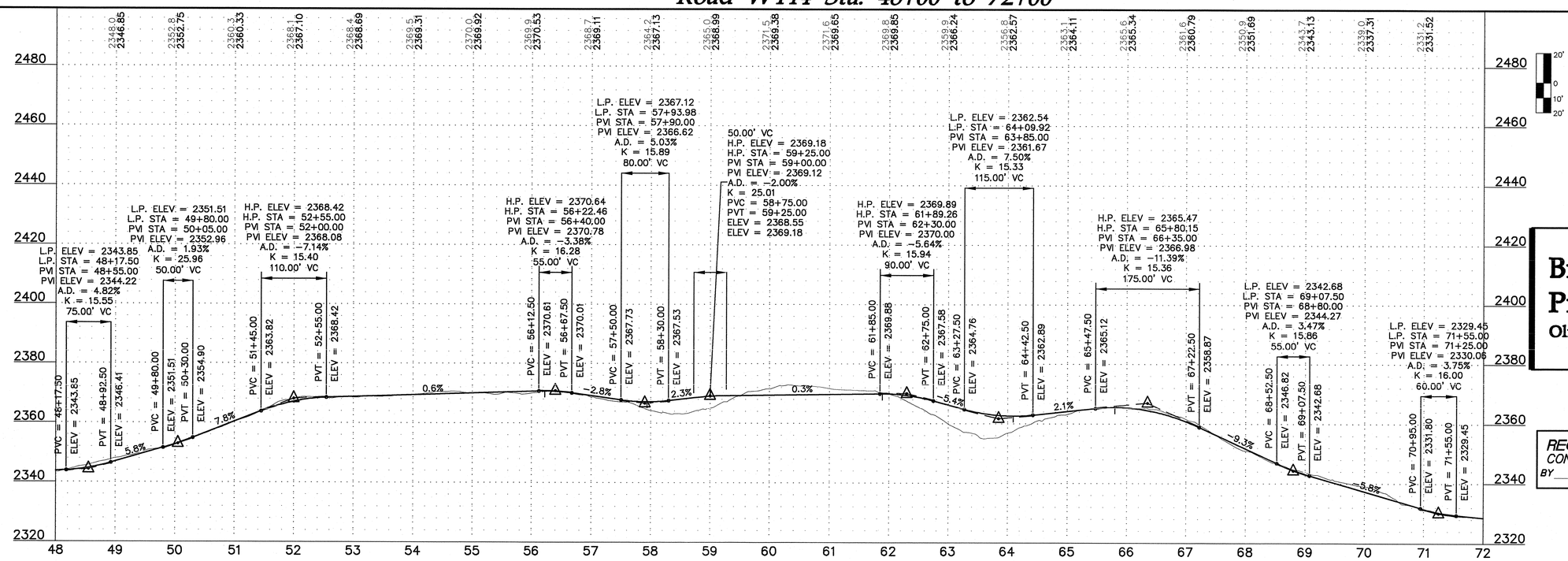
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM D. HILSON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

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Bison 4 Wind Project

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Road W444 Sta. 48+00 to 72+00

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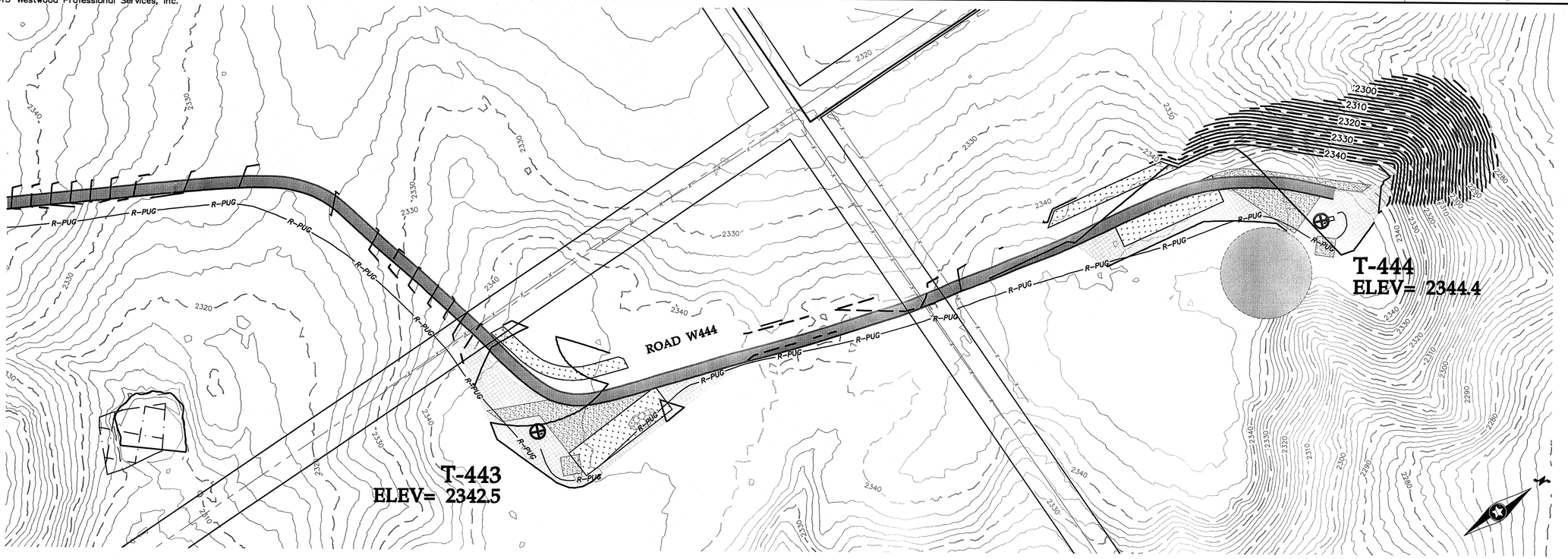
Record Drawings

Date: 12/22/2014
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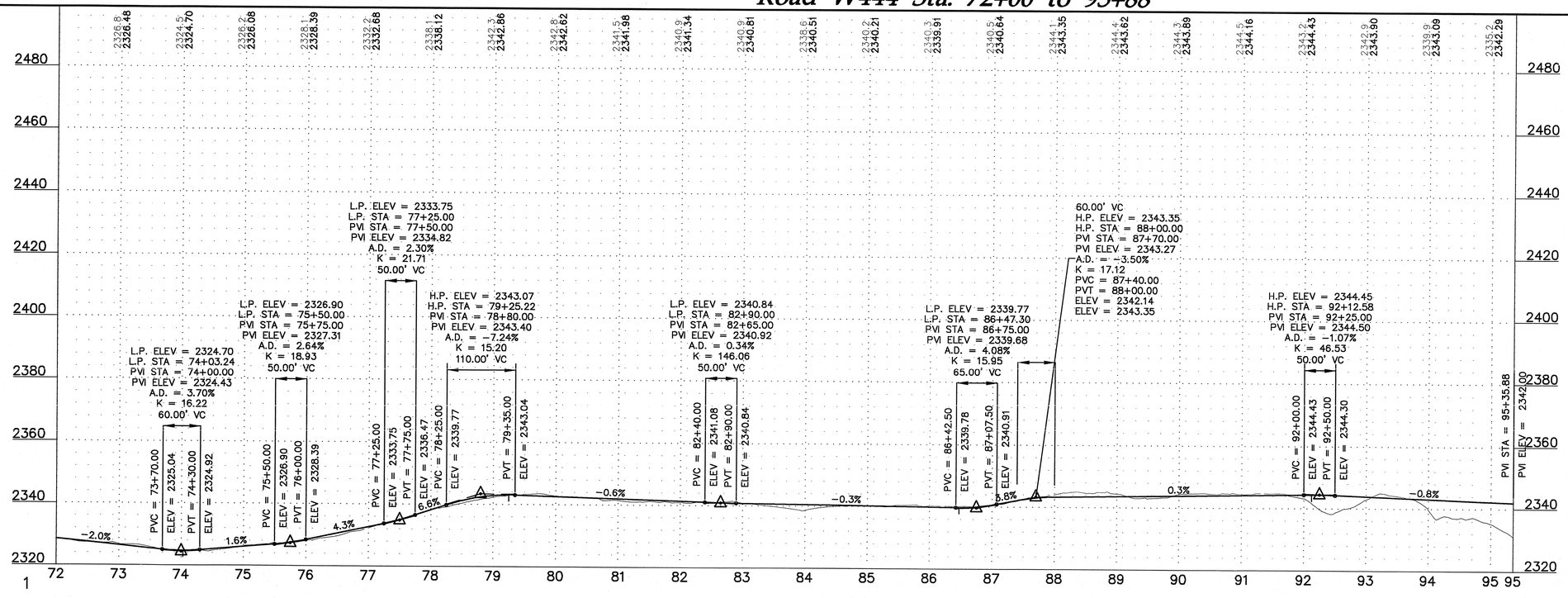
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20' 0 10' 20'

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DATE 12/22/14
NORTH DAKOTA

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Bison 4 Wind Project

Oliver County, North Dakota

Road W444 Sta. 72+00 to 95+88

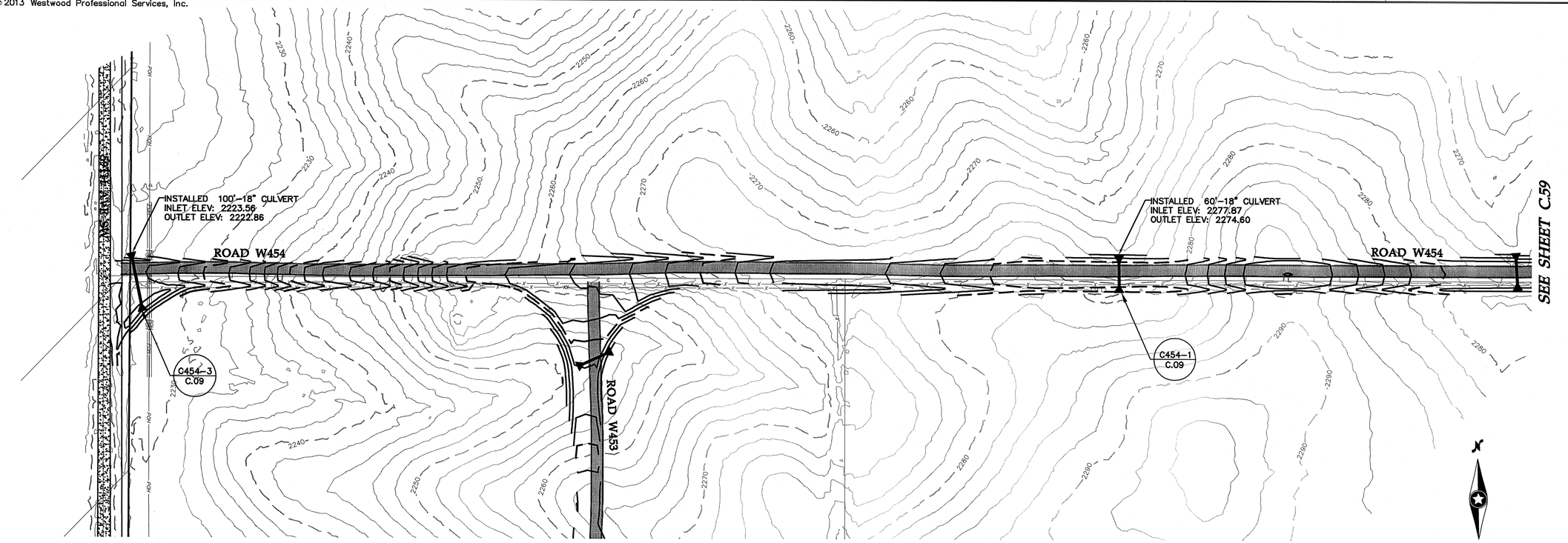
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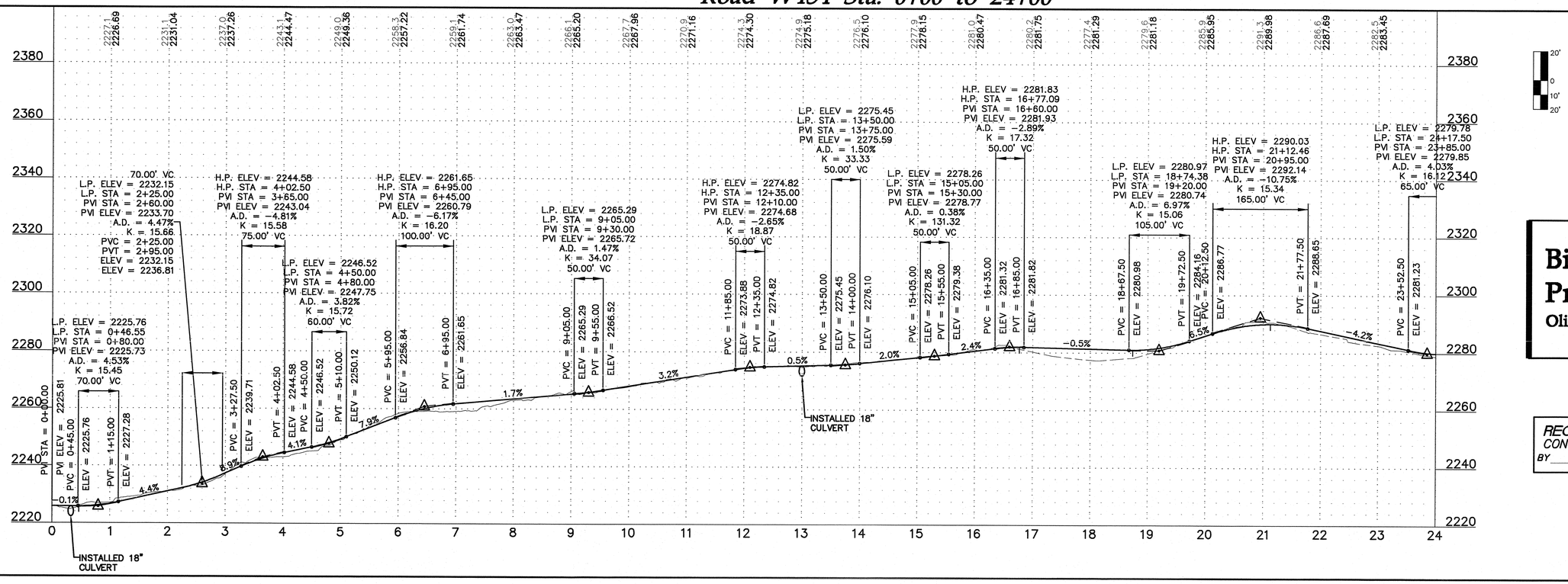
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Bison 4 Wind Project

Oliver County, North Dakota

Road W454 Sta. 0+00 to 24+00

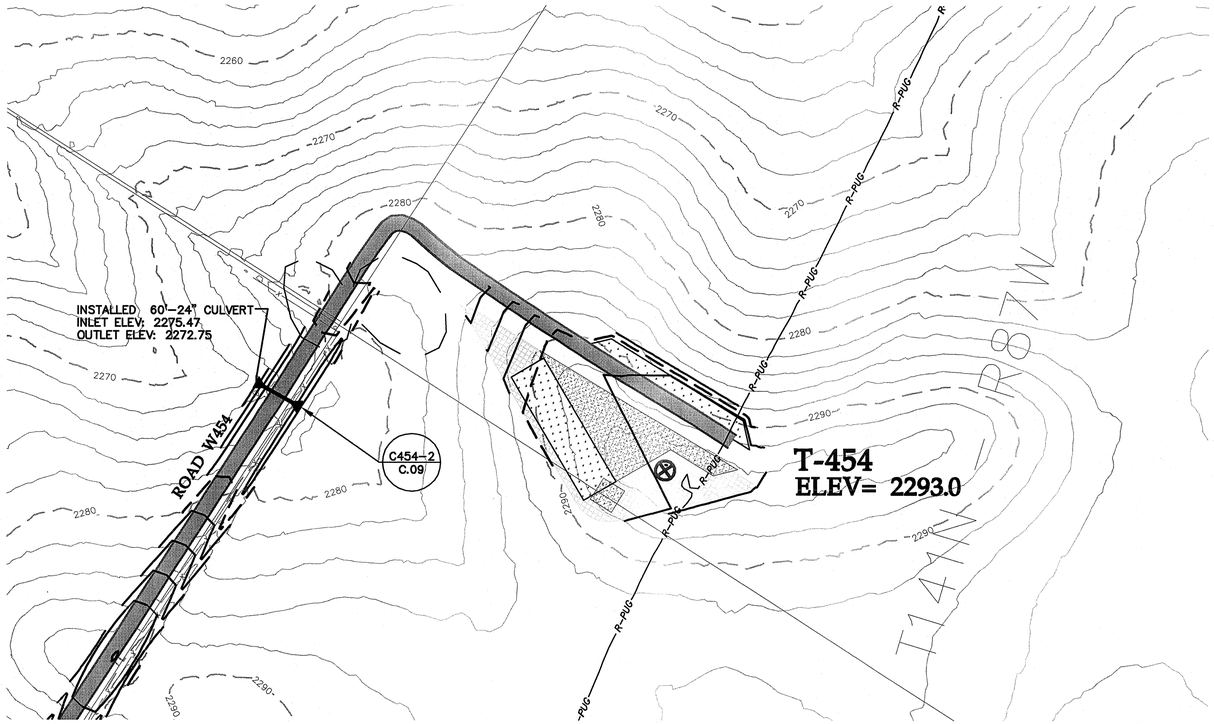
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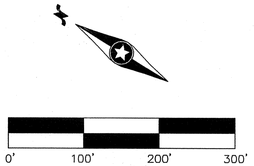
Record Drawings

Date: 12/22/2014
Sheet: C.58

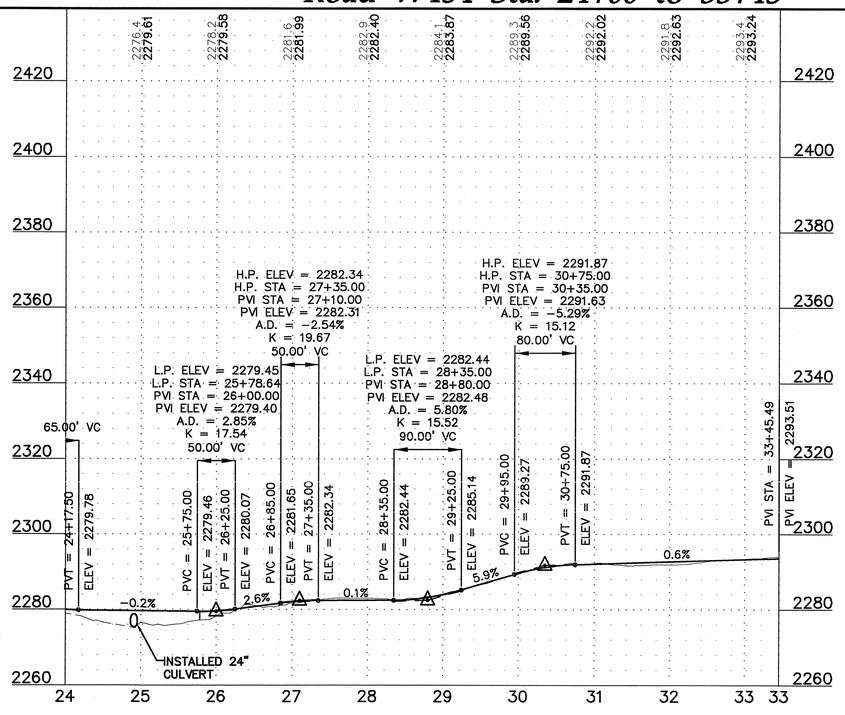
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM F. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

Road W454 Sta. 24+00 to 33+45

RECORD DRAWINGS
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BY WESTWOOD P.S. DATE OCT. 3, 2014

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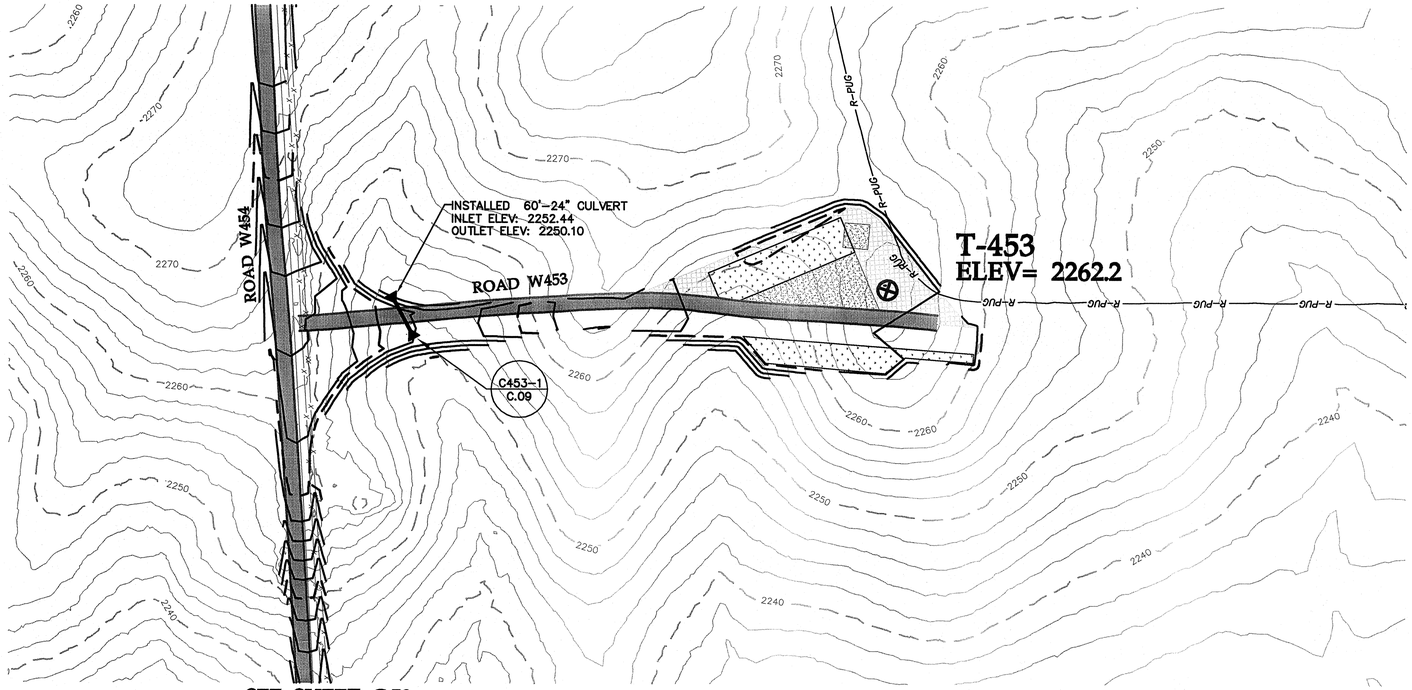
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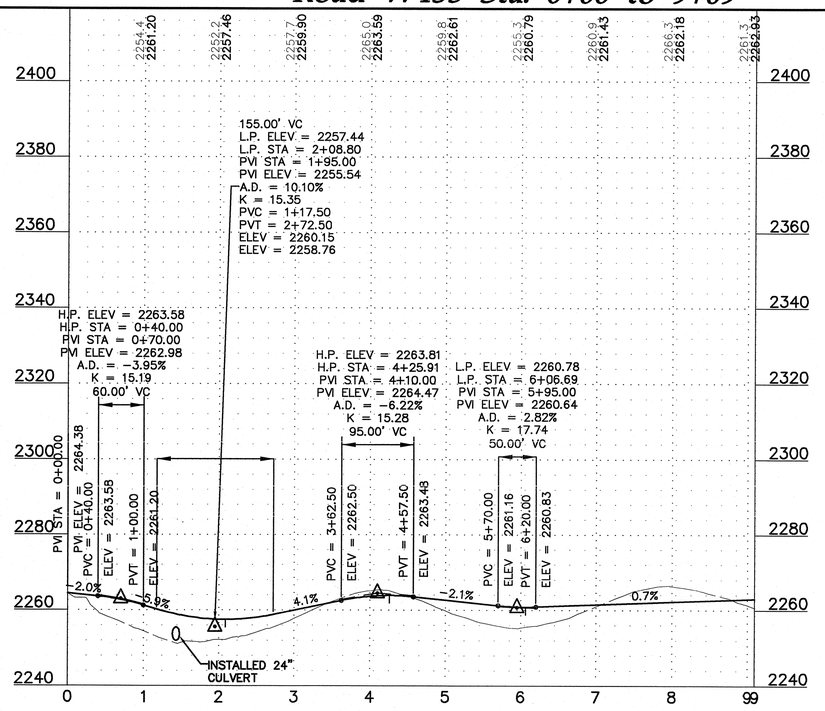
SEE SHEET C.58



SEE SHEET C.58

0' 100' 200' 300'

Road W453 Sta. 0+00 to 9+09



20' 0 10' 20'

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PE-8310
DATE 12/22/14
NORTH DAKOTA

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minnesota power
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Bison 4 Wind Project

Oliver County, North Dakota

Road W453 Sta. 0+00 to 9+09

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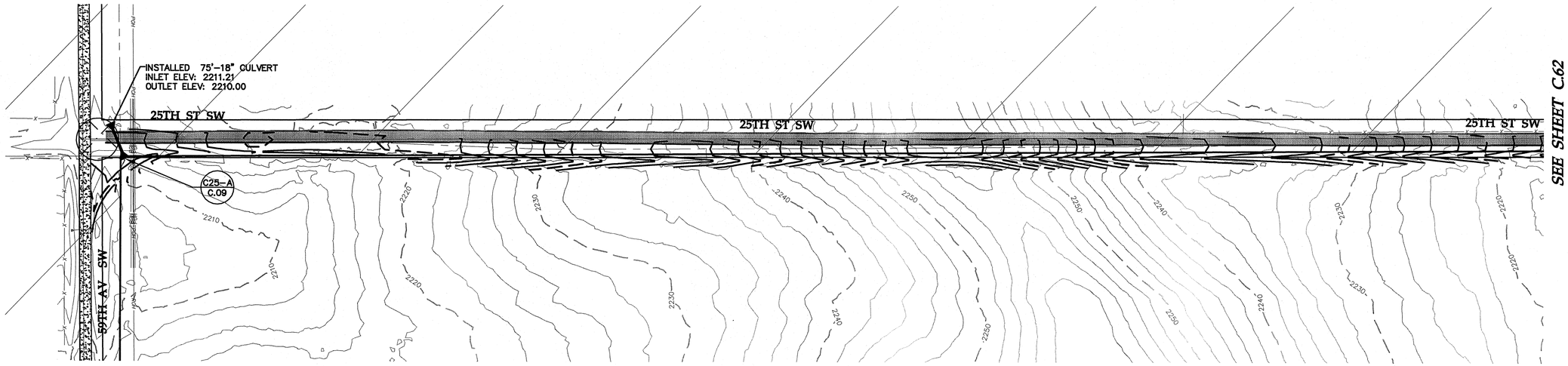
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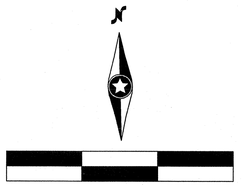
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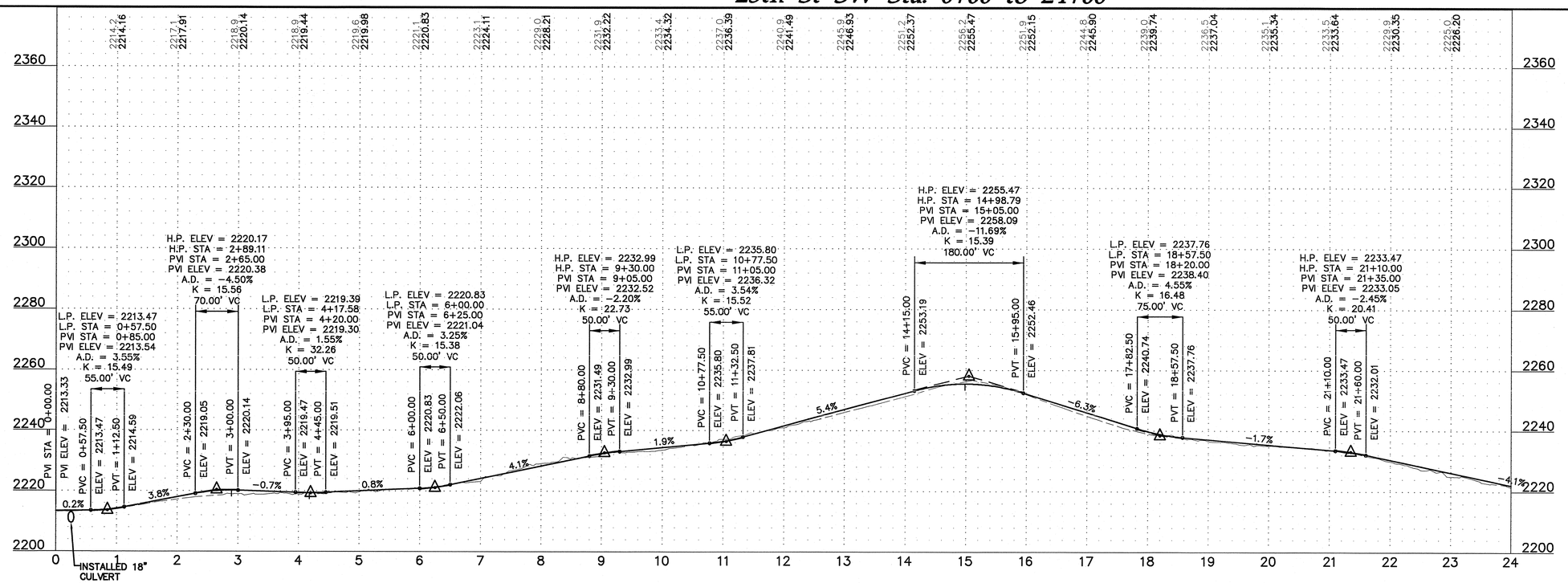
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25th St SW Sta. 0+00 to 24+00





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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HILSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
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Bison 4 Wind Project

Oliver County, North Dakota

25th St SW Sta. 0+00 to 24+00

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BY WESTWOOD P.S. *DATE* OCT. 3, 2014

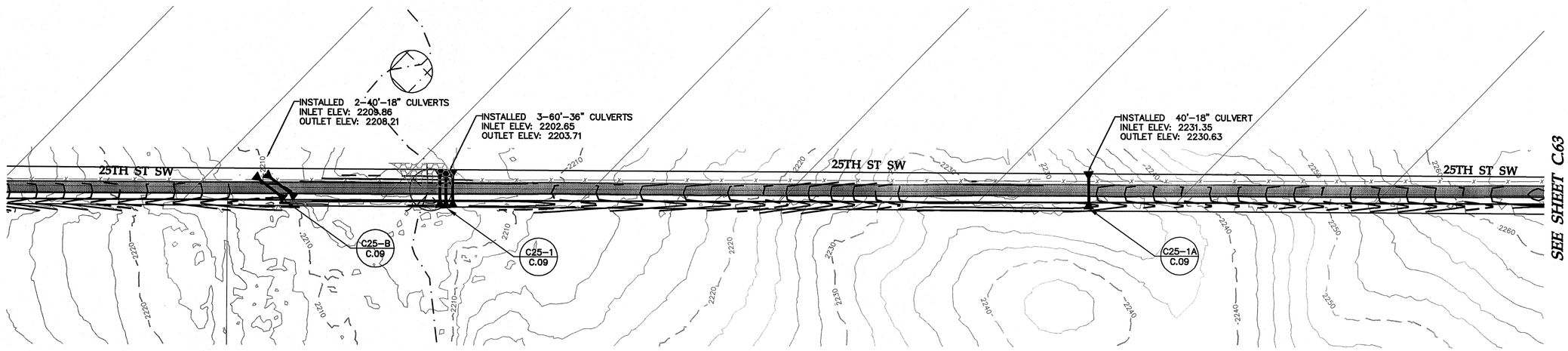
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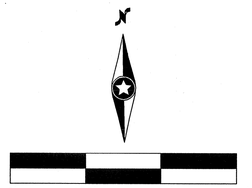
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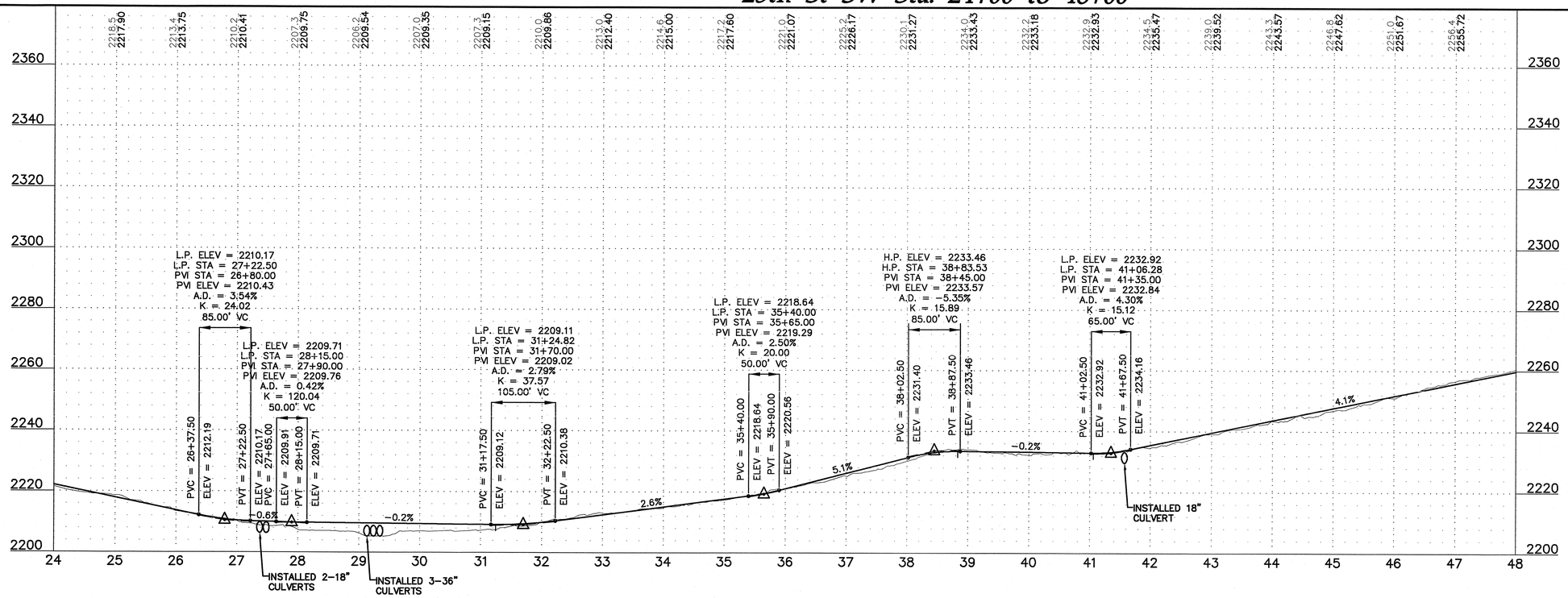
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PE-8310
DATE 12/22/14
NORTH DAKOTA

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Bison 4 Wind Project

Oliver County, North Dakota

25th St SW Sta. 24+00 to 48+00

RECORD DRAWINGS
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BY WESTWOOD P.S. *DATE* OCT. 3, 2014

Record Drawings

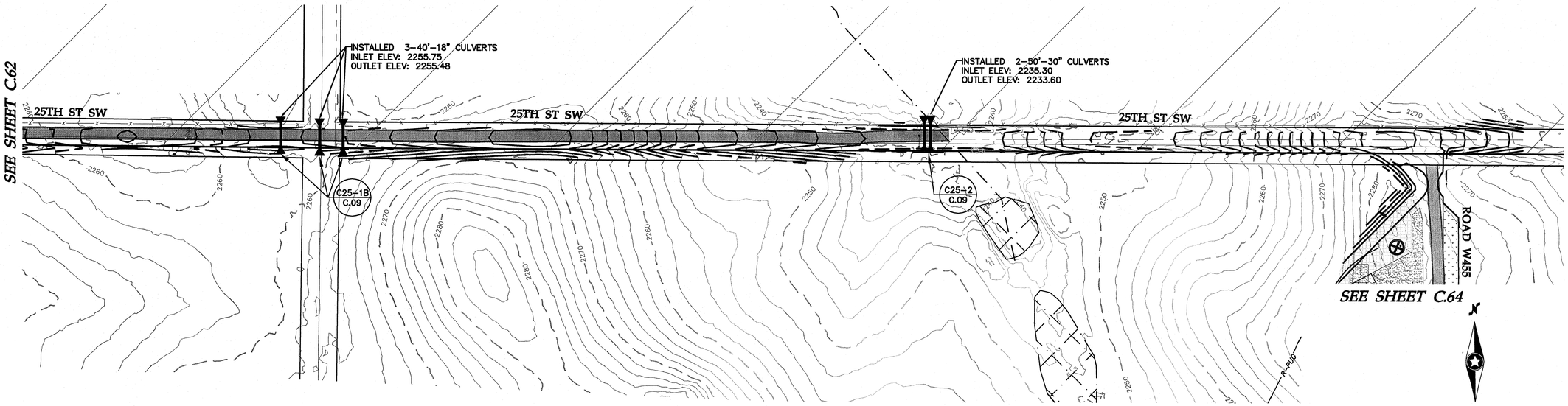
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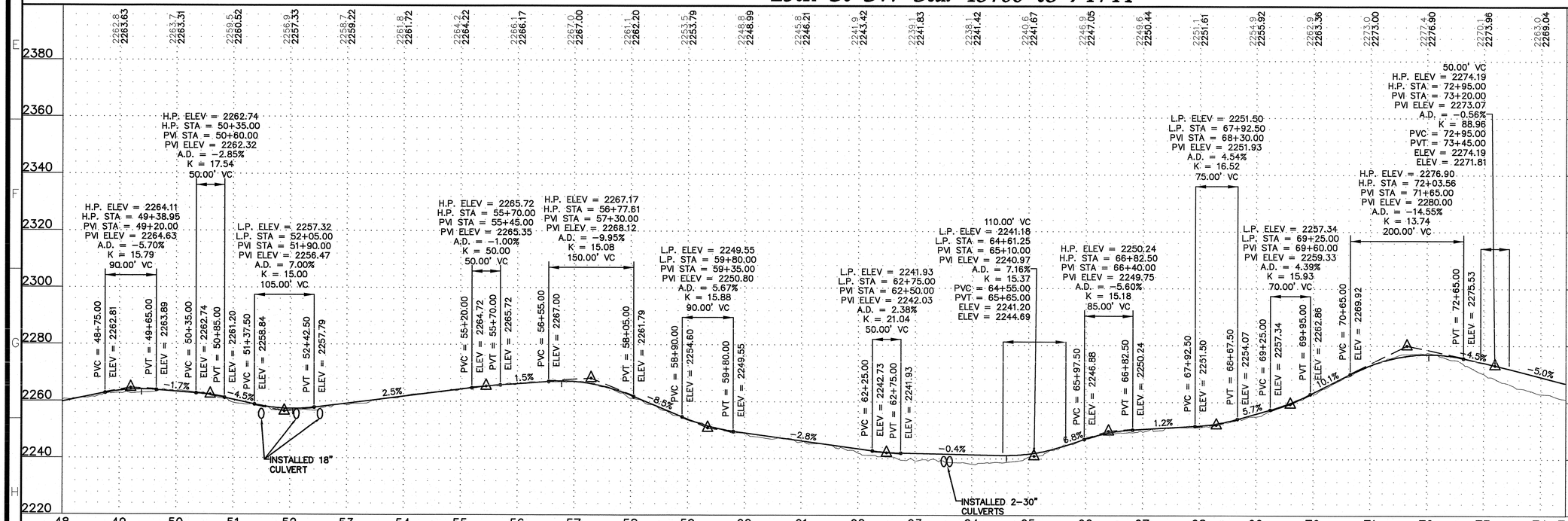
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3	02/28/14	Owner Comments
4	10/03/14	Record Drawings
5	12/22/14	Updated Record Drawings

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- CONSTRUCTED TURBINE LOCATION
- T-XX — FINAL TURBINE NUMBER
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- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

25th St SW Sta. 48+00 to 74+44

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. DATE OCT. 3, 2014

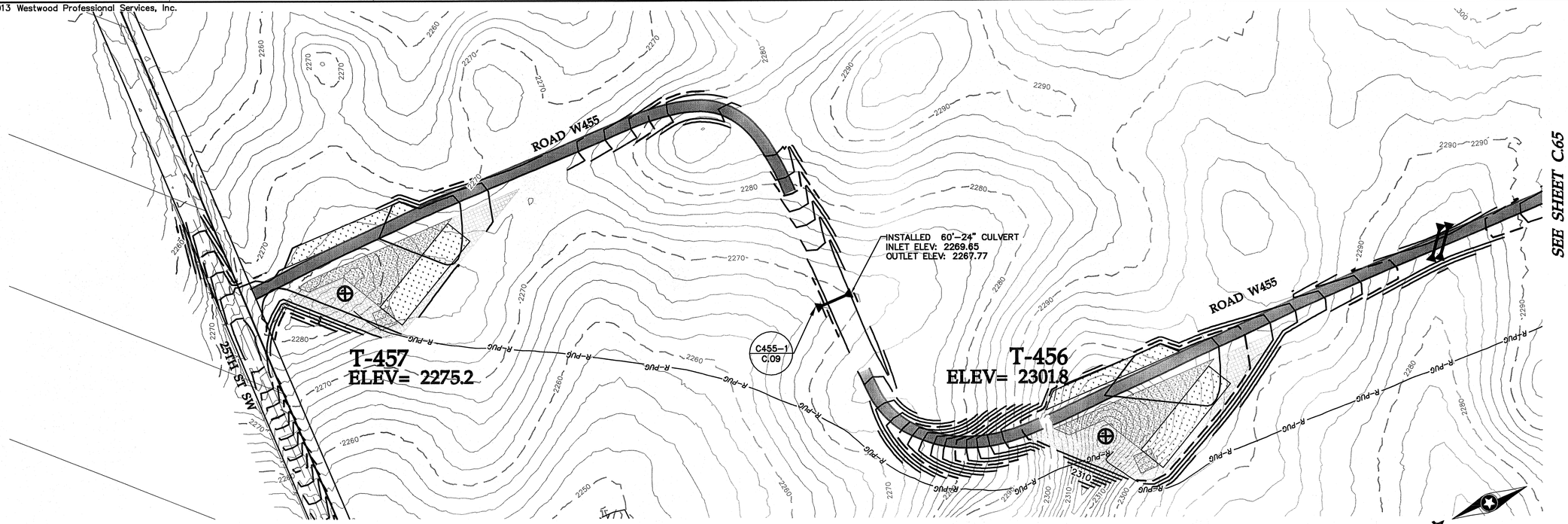
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Date: 12/22/2014

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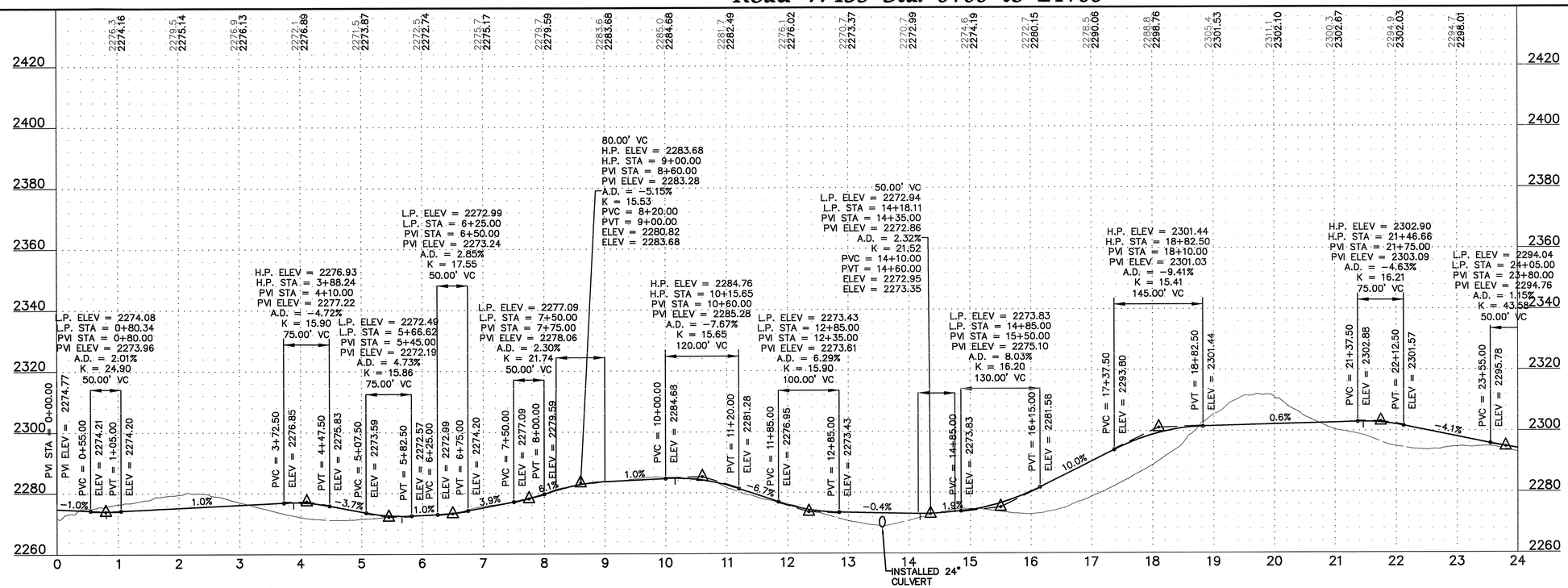
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0' 100' 200' 300'

Road W455 Sta. 0+00 to 24+00



20' 0 10' 20'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM A. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

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Bison 4 Wind Project

Oliver County, North Dakota

Road W455 Sta. 0+00 to 24+00

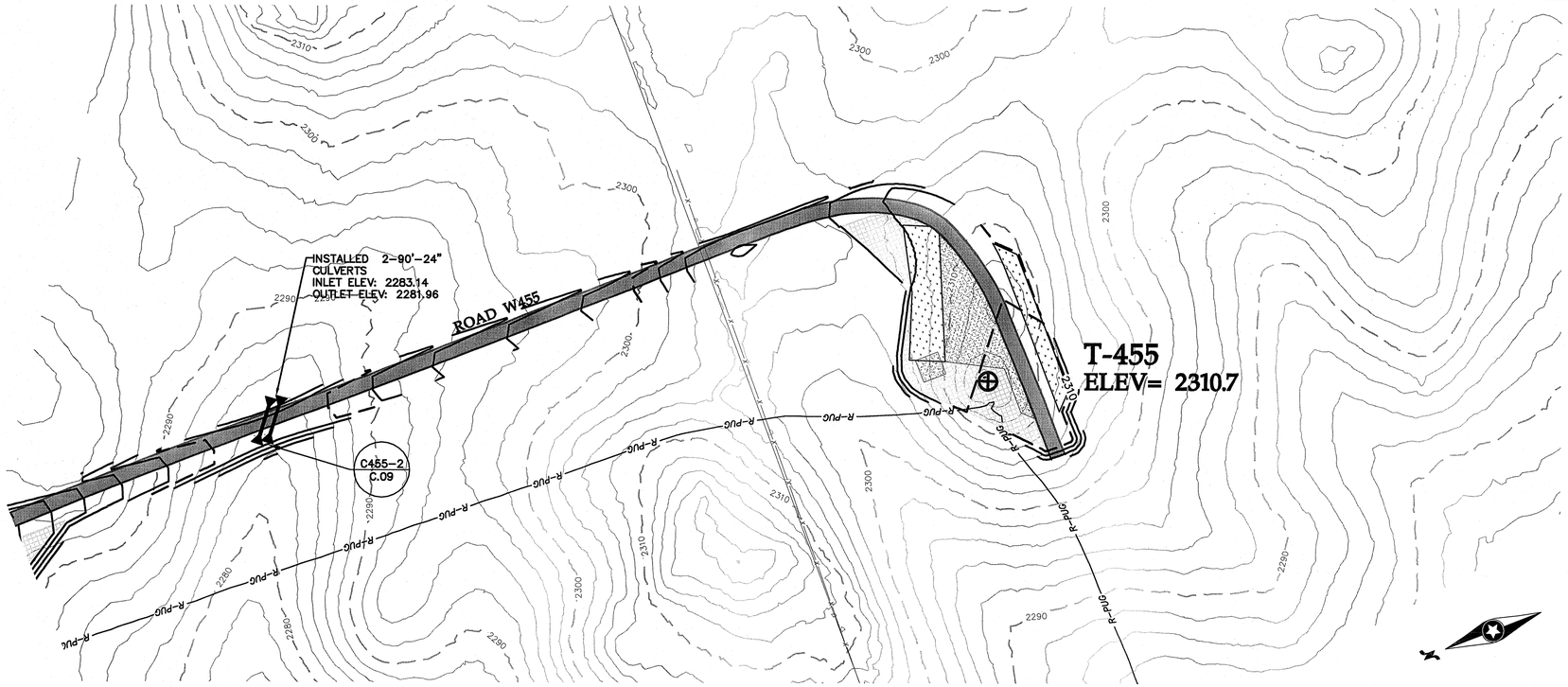
RECORD DRAWINGS
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Record Drawings

Date: 12/22/2014
Sheet: C.64

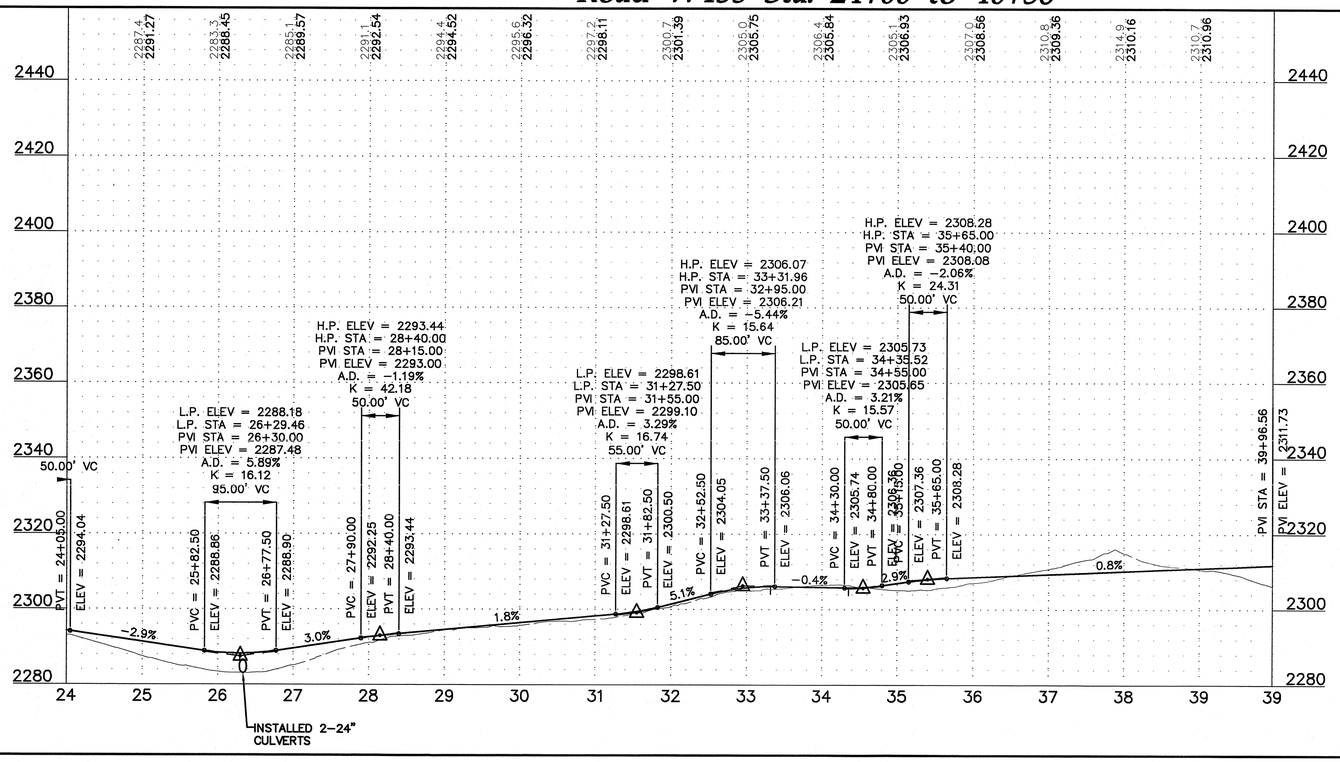
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0' 100' 200' 300'

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20' 0 10' 20'

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WILLIAM P. HAYZEN
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DATE 12/22/14
NORTH DAKOTA

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Bison 4 Wind Project

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Road W455 Sta. 24+00 to 40+56

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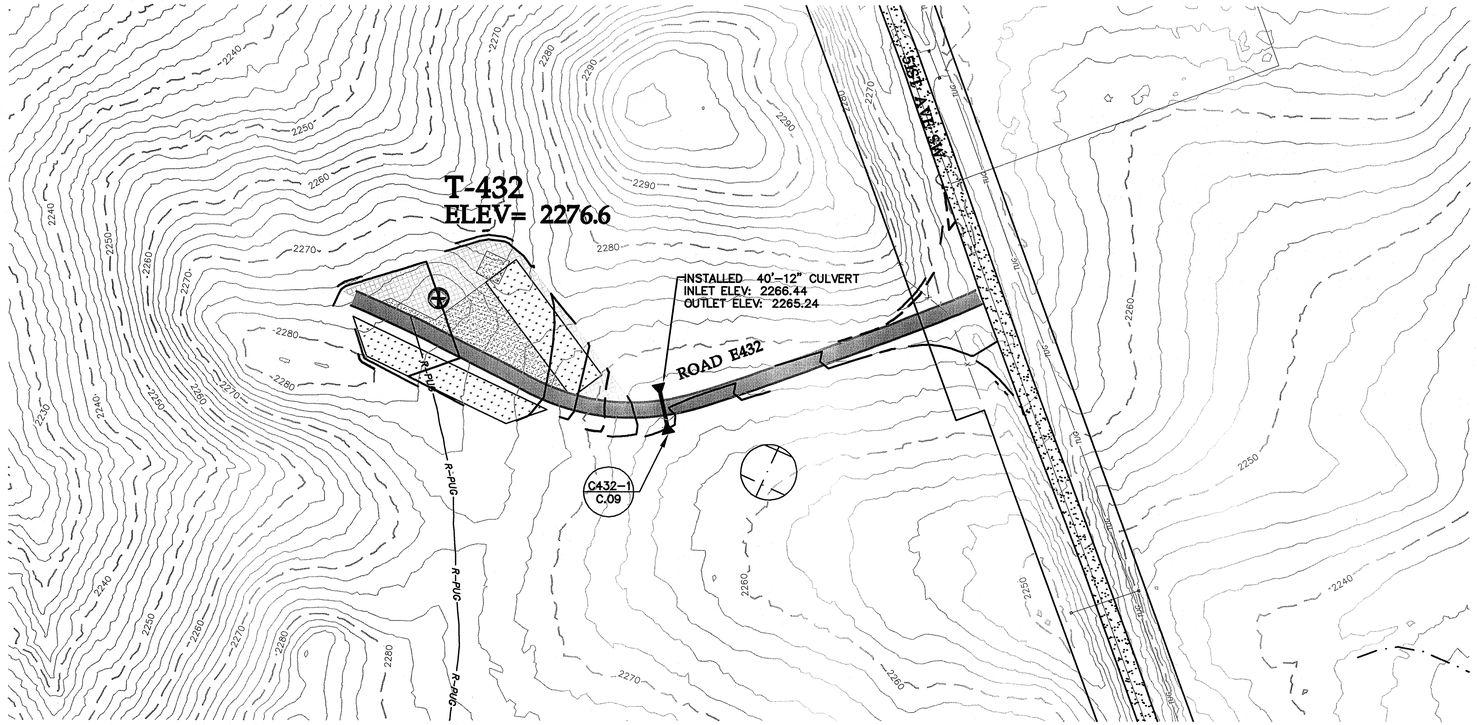
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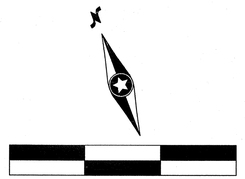
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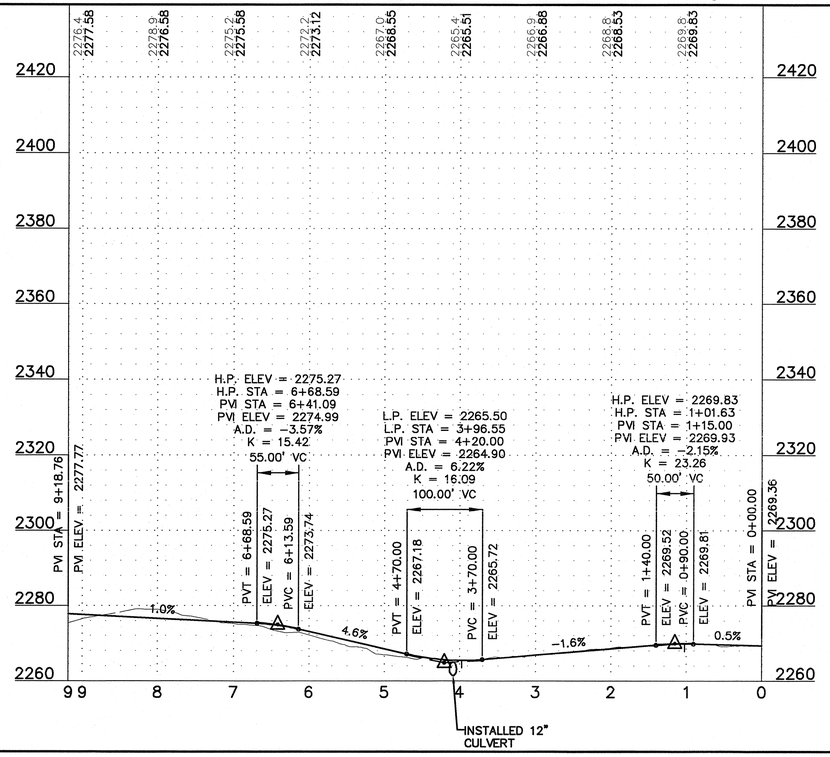
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM A. HASTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
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minnesota power
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Bison 4 Wind Project

Oliver County, North Dakota

Road E432 Sta. 0+00 to 9+18

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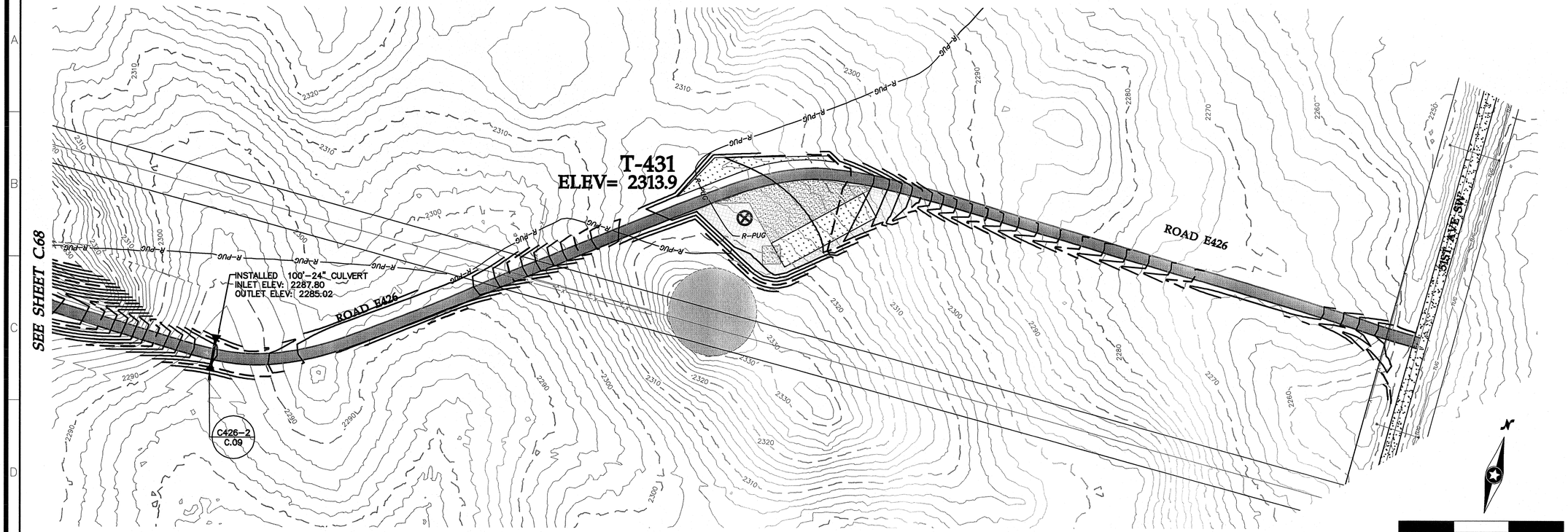
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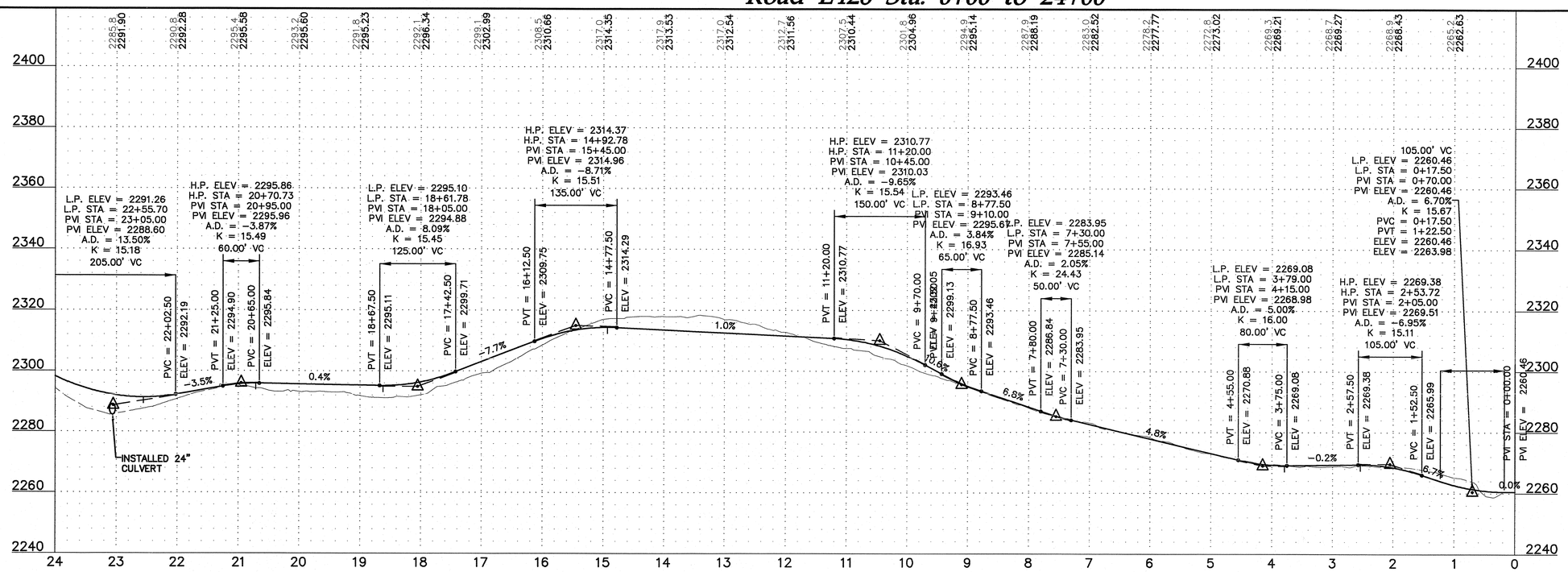
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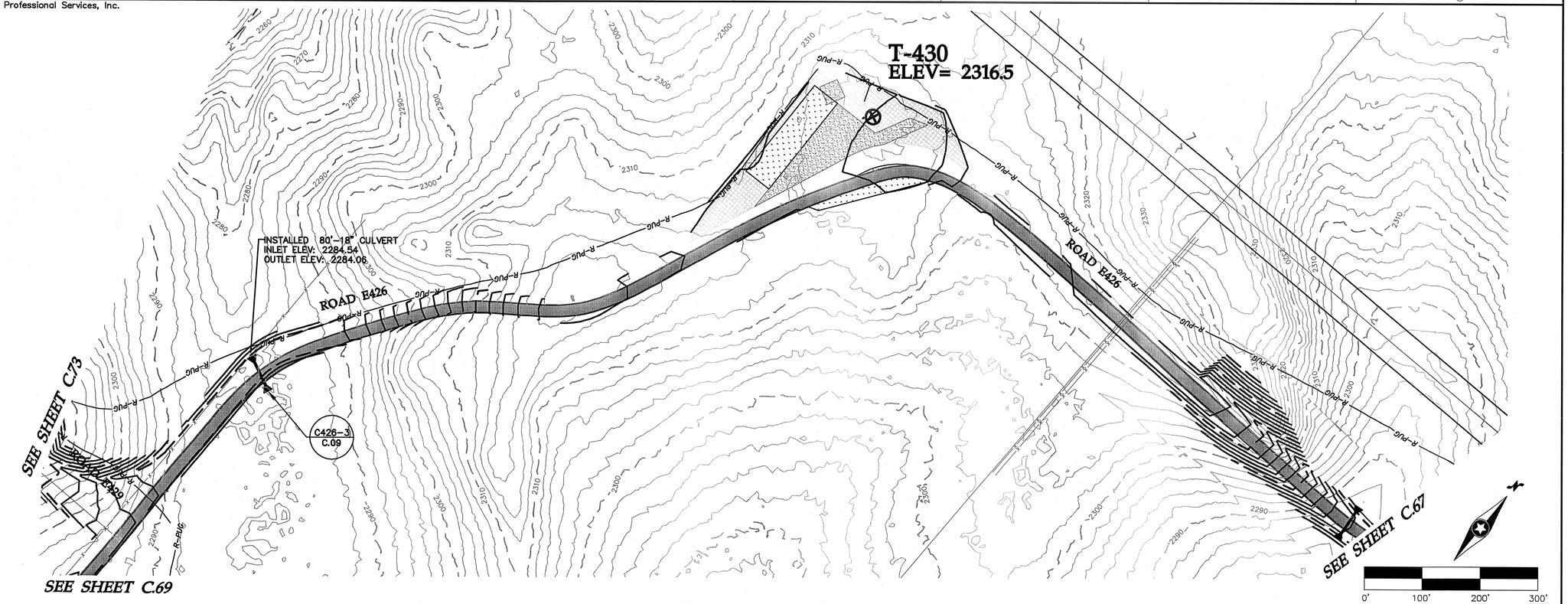
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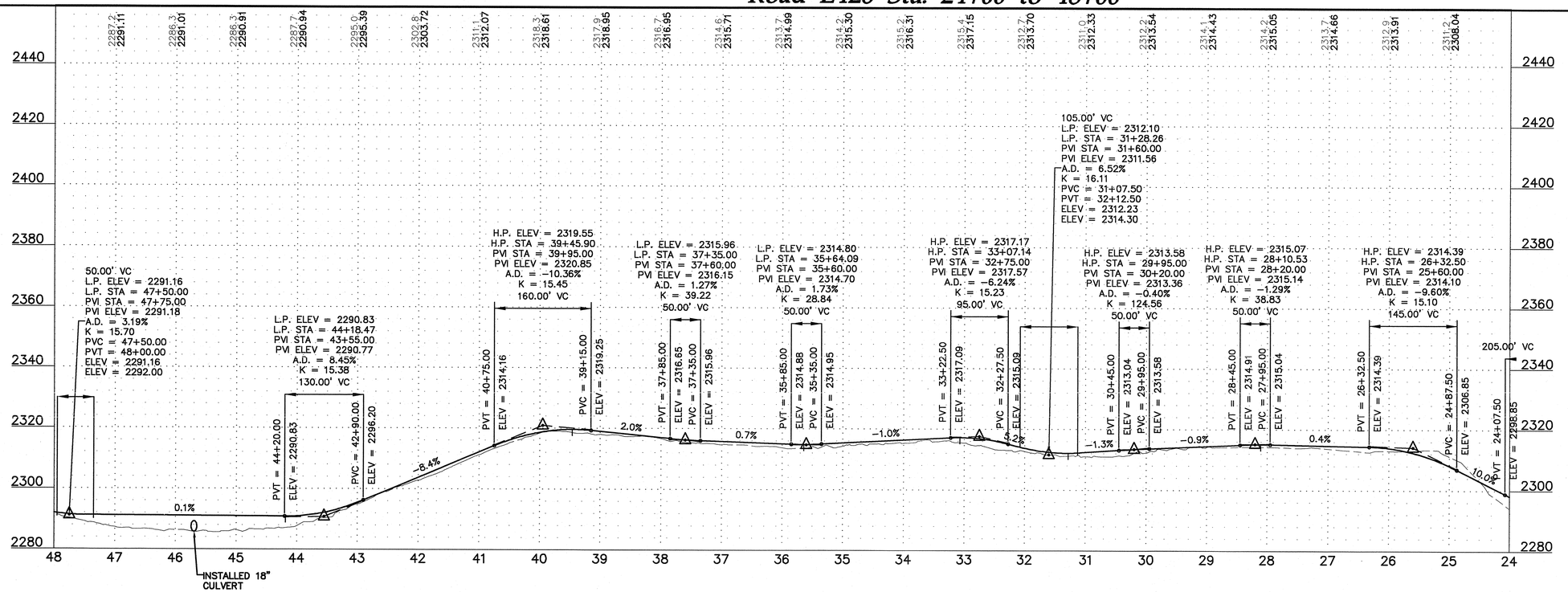
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HILTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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AN ALLETE COMPANY
30 West Superior Street
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Bison 4 Wind Project

Oliver County, North Dakota

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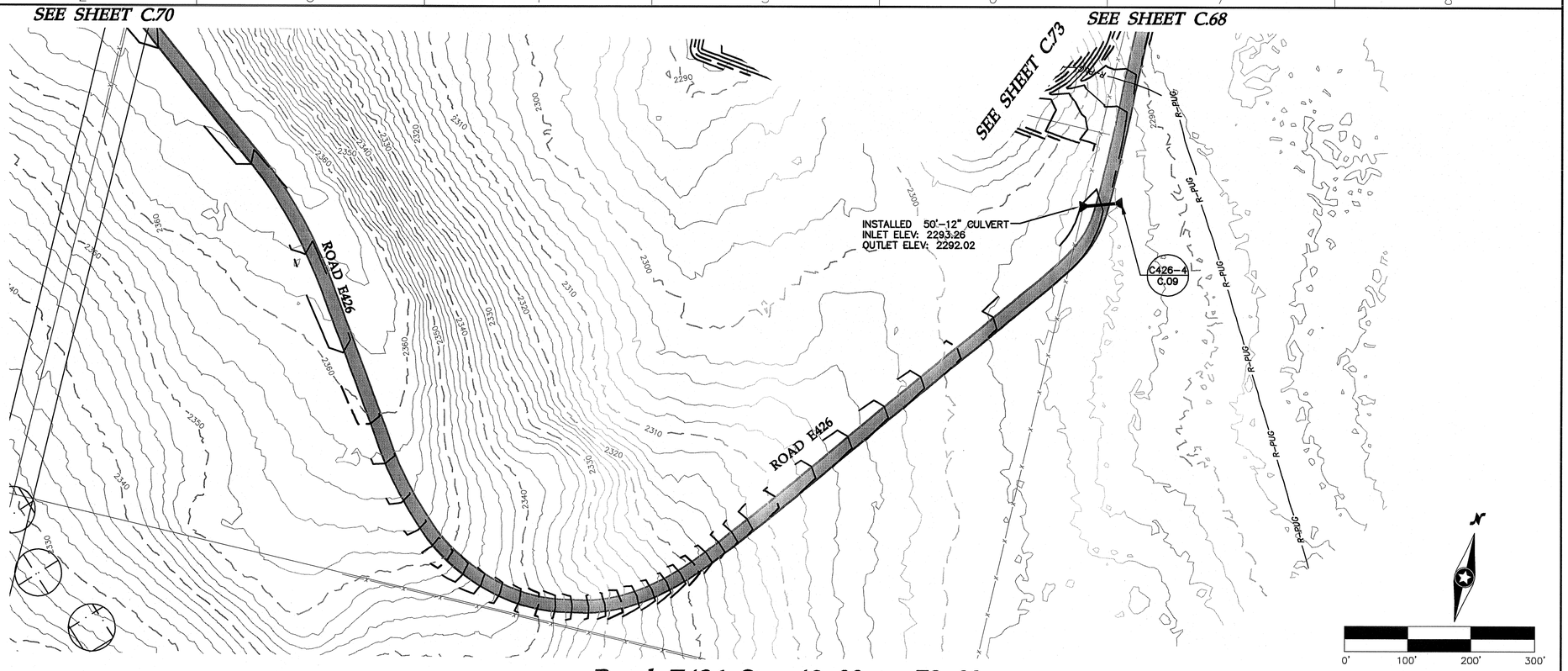
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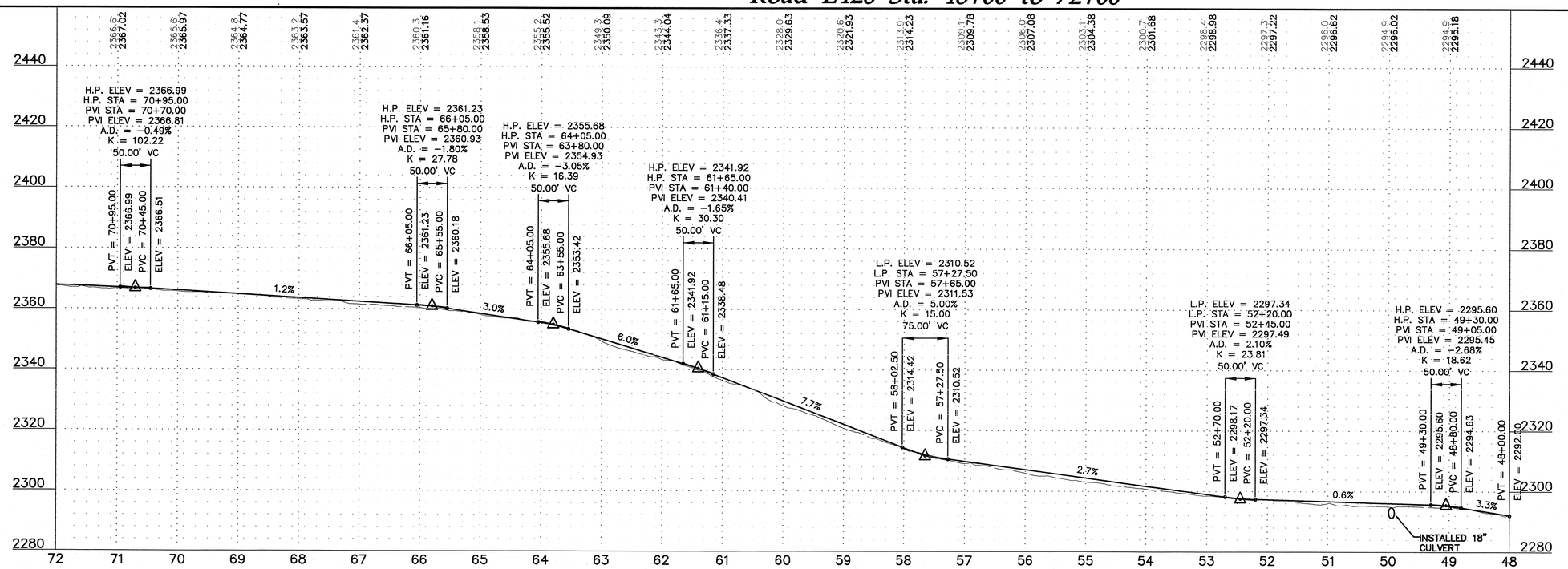
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. BRISTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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Drawn:	MPG
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Bison 4 Wind Project

Oliver County, North Dakota

Road E426 Sta. 48+00 to 72+00

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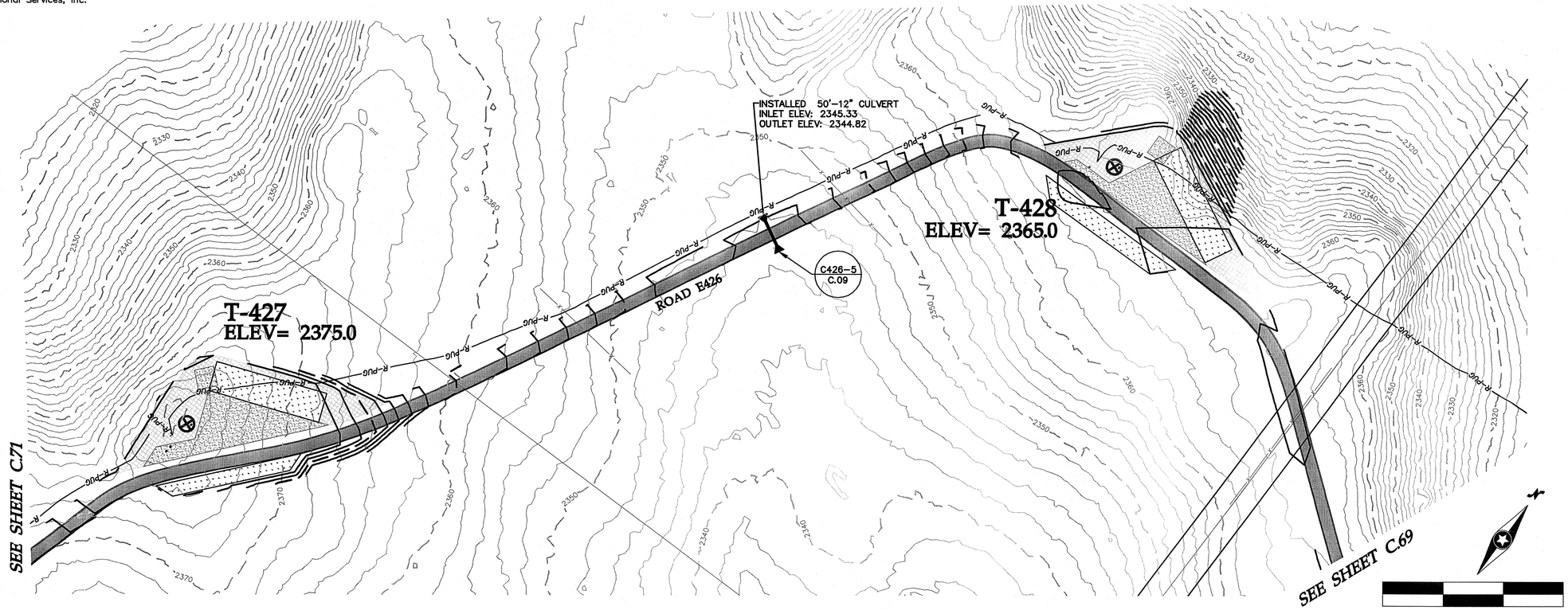
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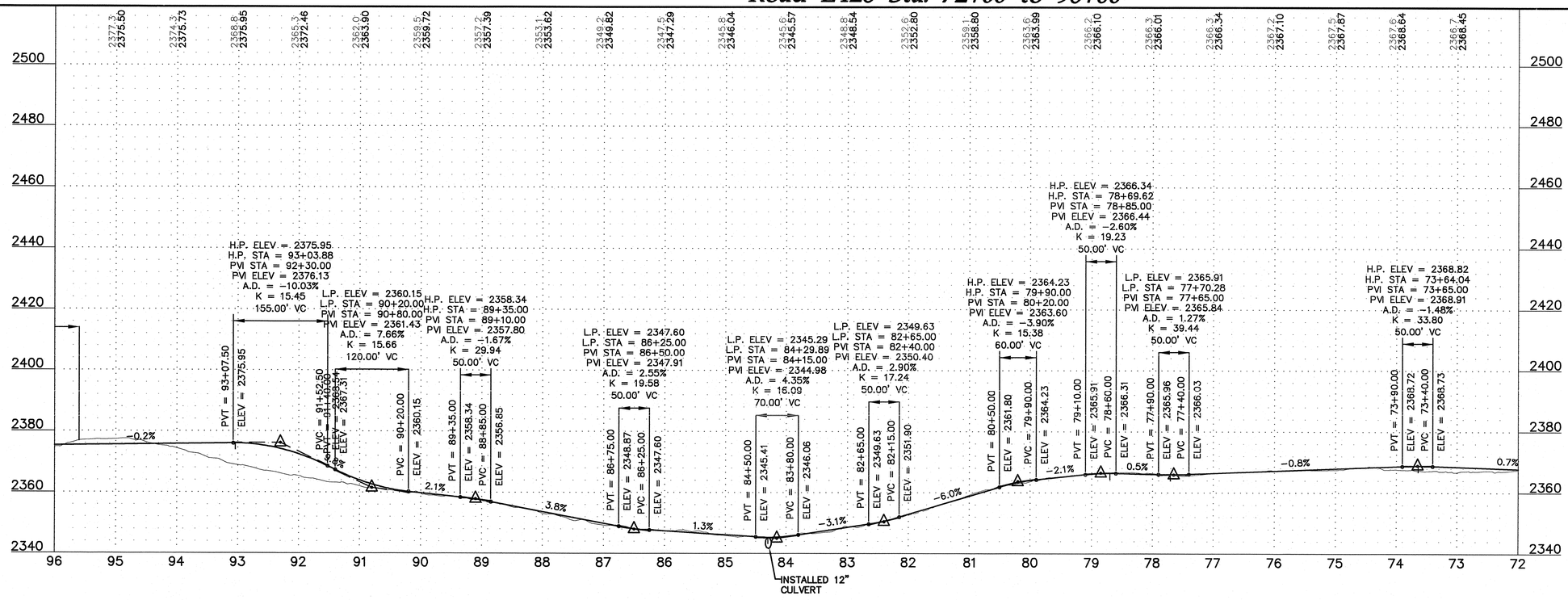
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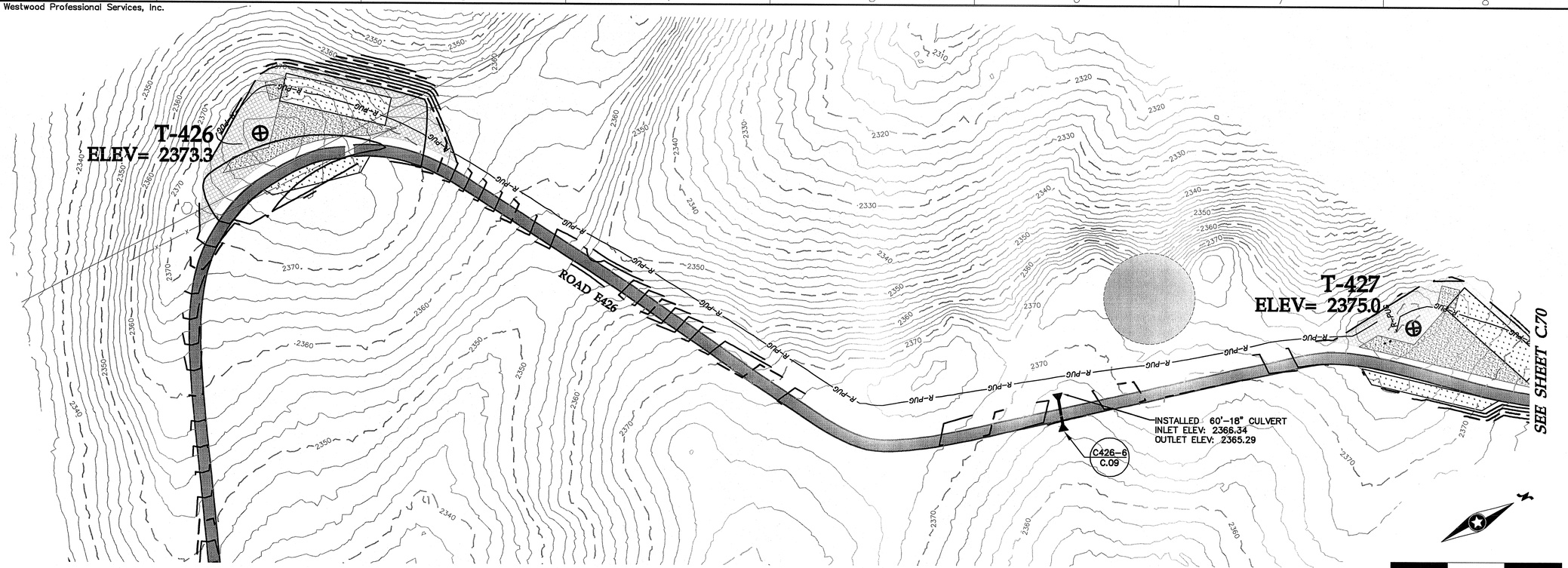
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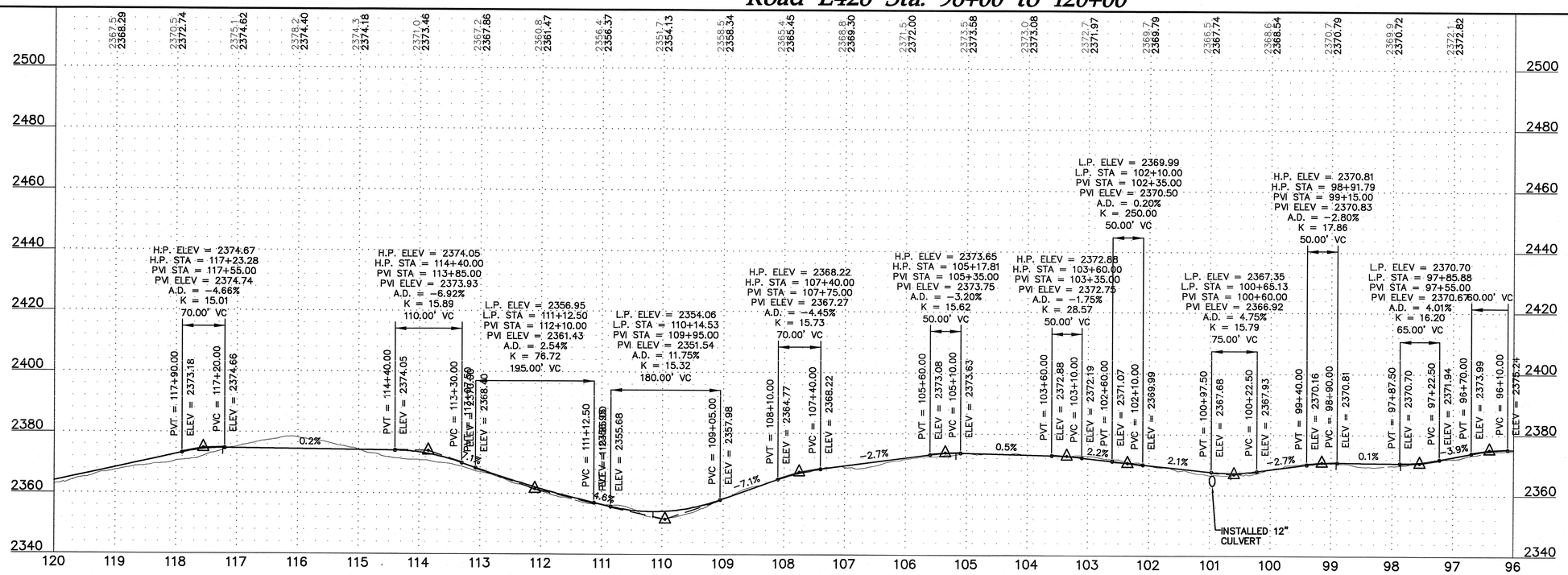
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Road E426 Sta. 96+00 to 120+00

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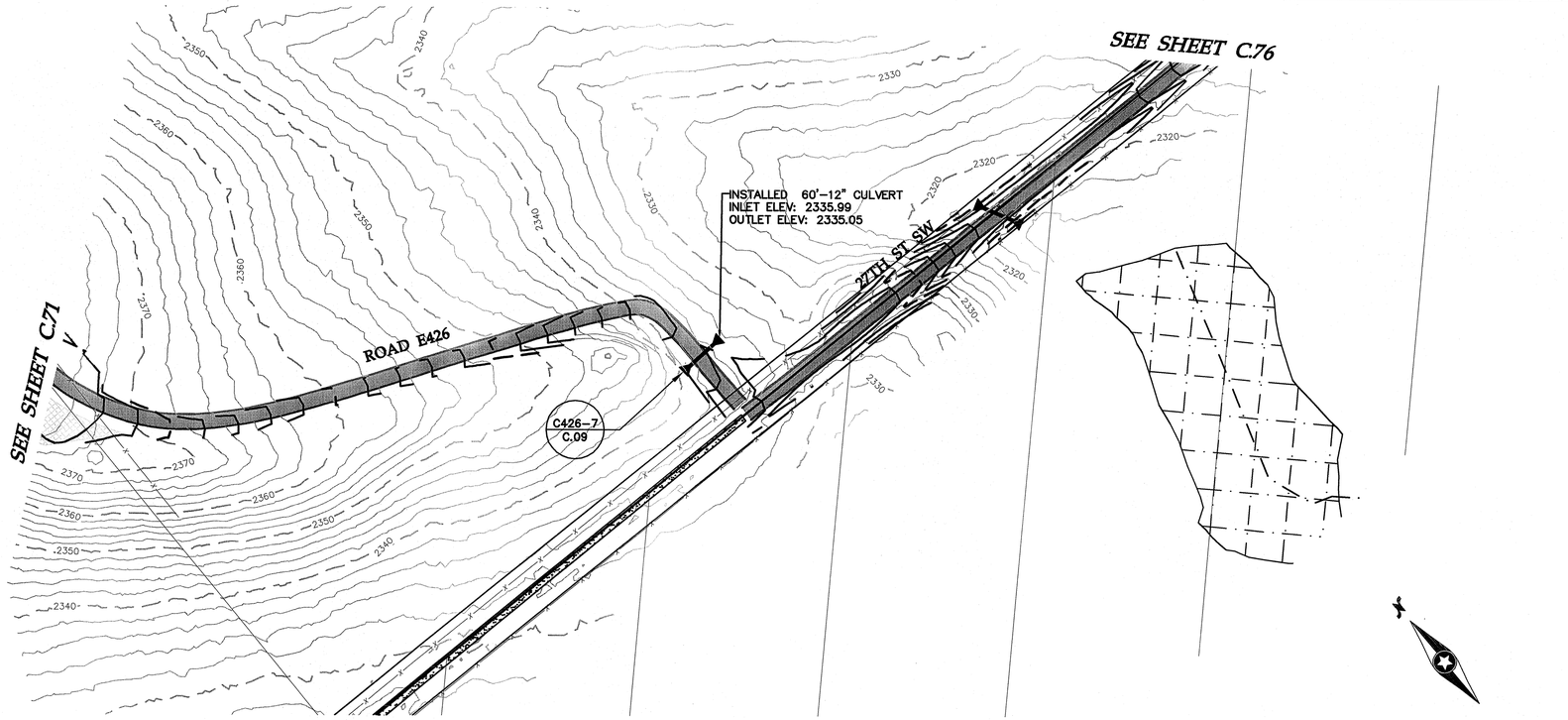
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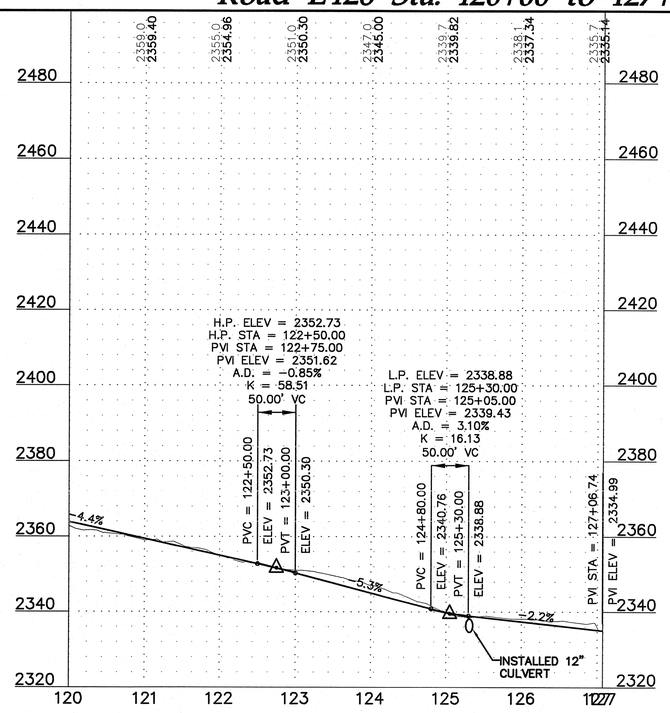
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PE-8310
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Road E426 Sta. 120+00 to 127+06

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. *DATE* OCT. 3, 2014

Record Drawings

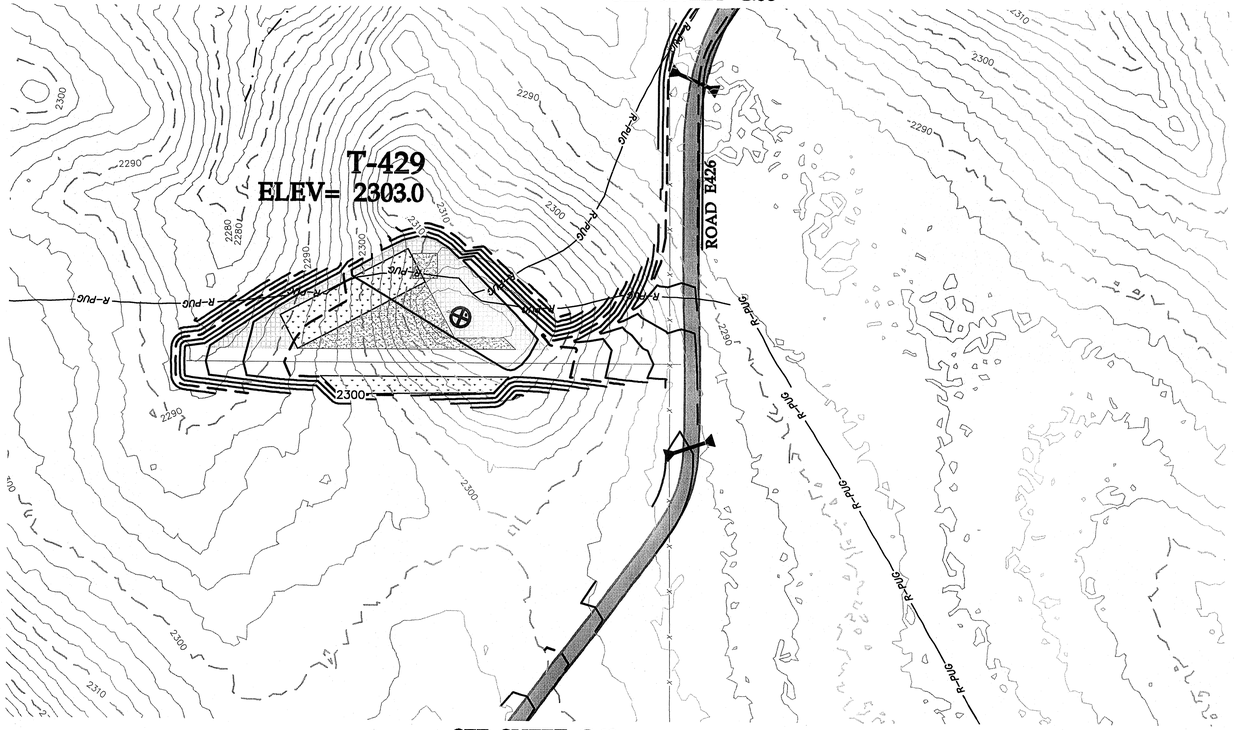
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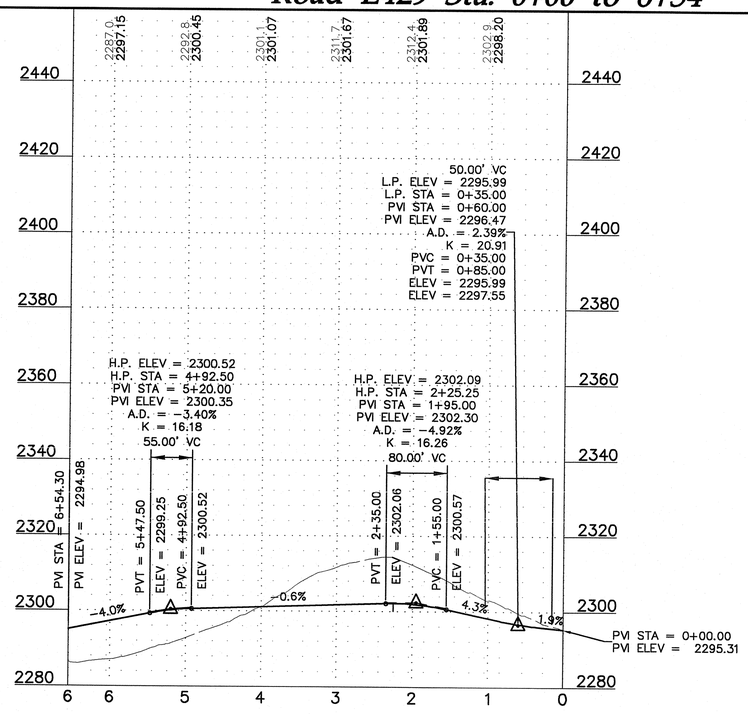
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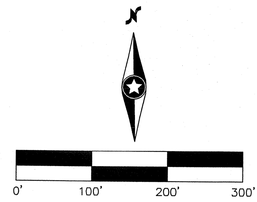
SEE SHEET C.68



SEE SHEET C.69

Road E429 Sta. 0+00 to 6+54







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Westwood

REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions:

#	DATE	DESCRIPTION
2	10/09/13	Owner Comments/Field Changes
3	02/28/14	Owner Comments
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5	12/22/14	Updated Record Drawings

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- CONSTRUCTED TURBINE LOCATION
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- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

Road E429 Sta. 0+00 to 6+54

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. DATE OCT. 3, 2014

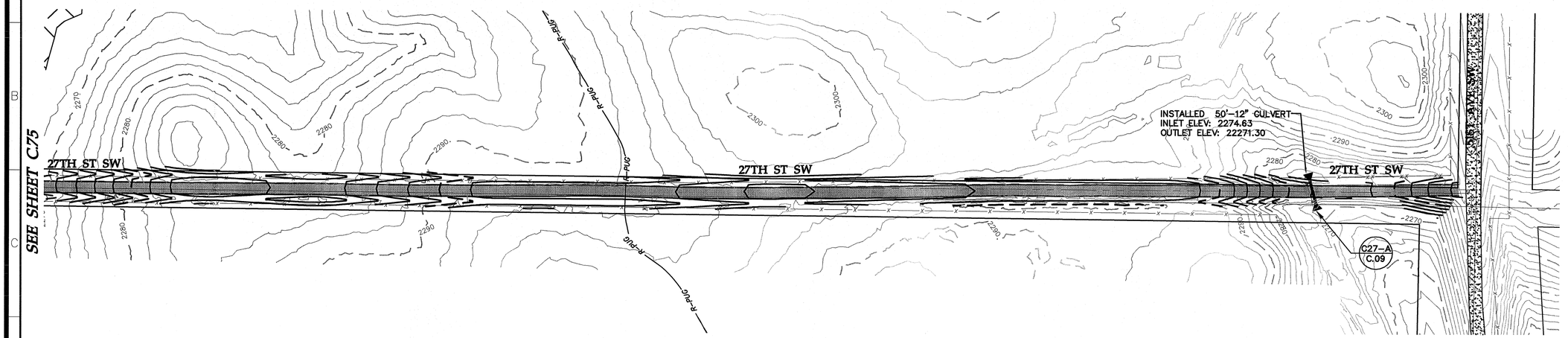
Record Drawings

Date: 12/22/2014

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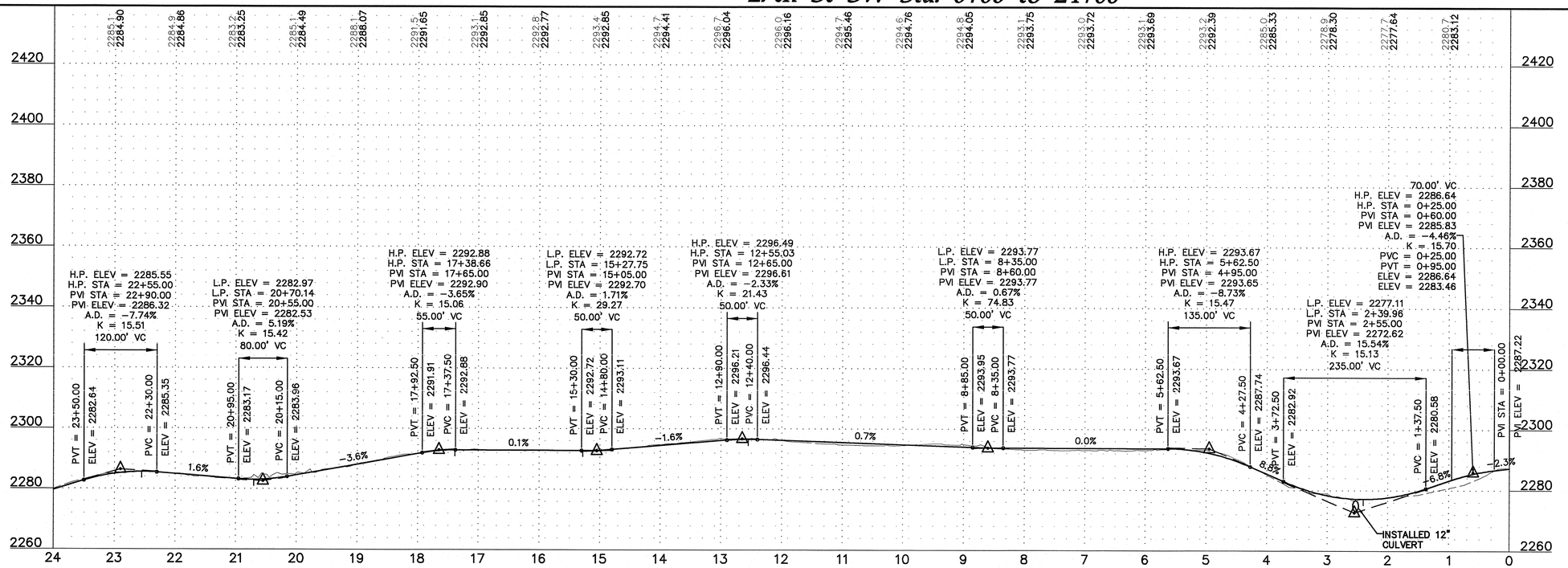
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0' 100' 200' 300'

27th St SW Sta. 0+00 to 24+00



20' 0 10' 20'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUDSON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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Drawn:	MPG
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minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

27th St SW Sta. 0+00 to 24+00

RECORD DRAWINGS
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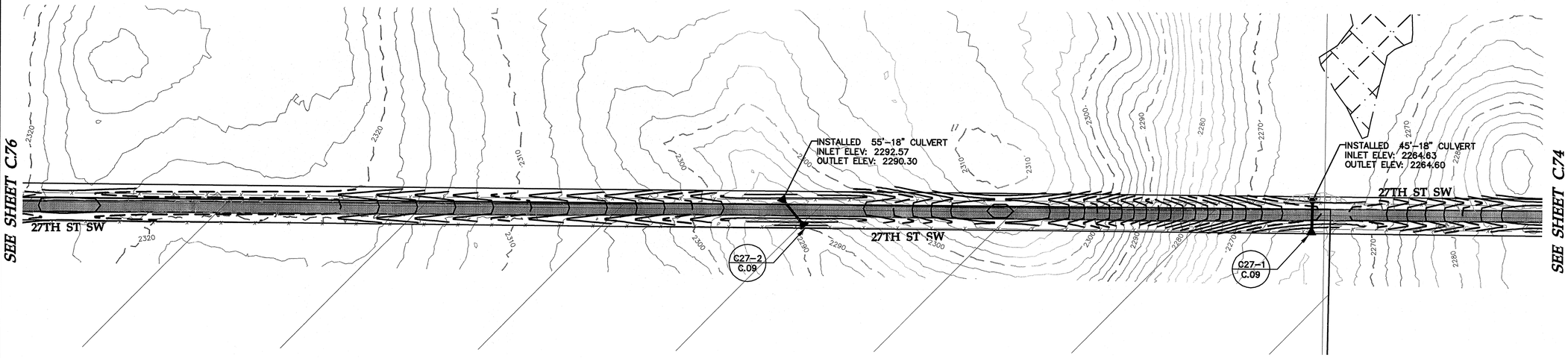
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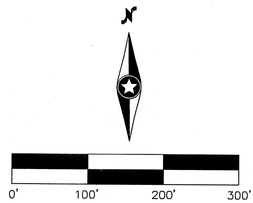
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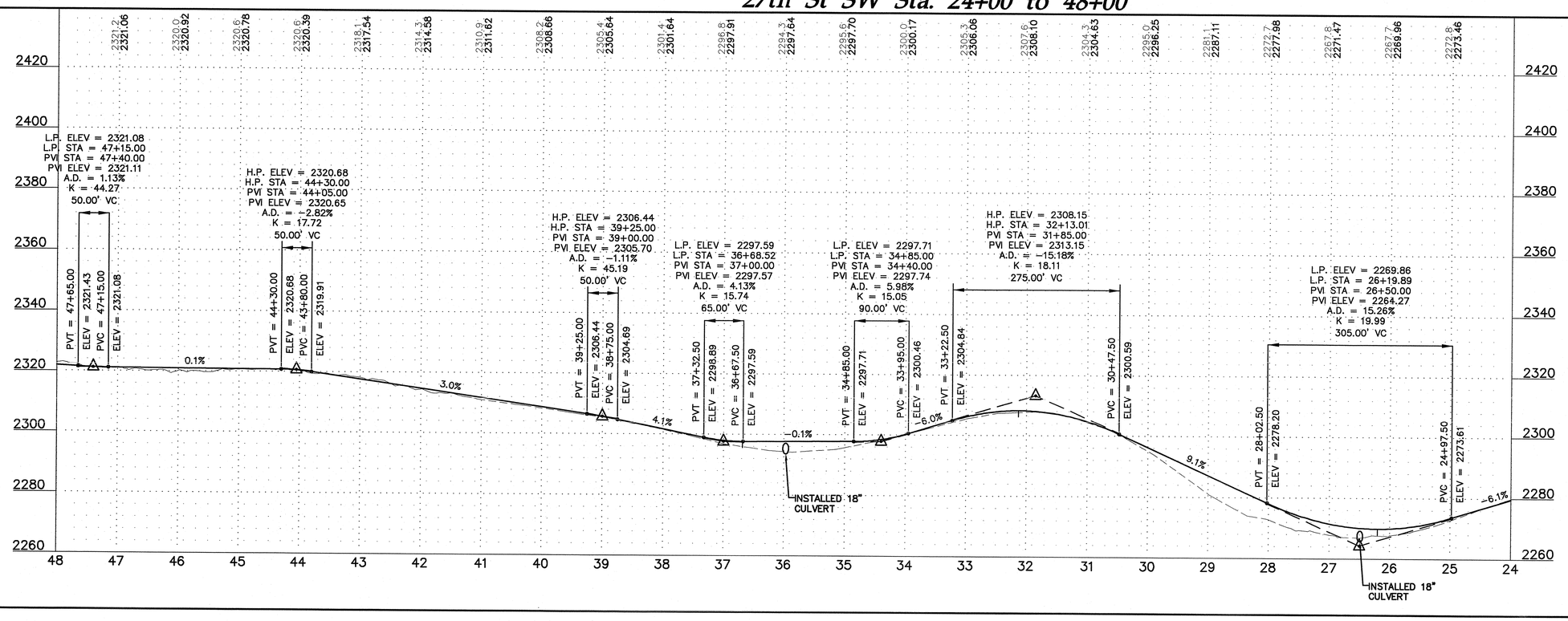
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27th St SW Sta. 24+00 to 48+00





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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
18310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

27th St SW Sta. 24+00 to 48+00

RECORD DRAWINGS
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BY WESTWOOD P.S. *DATE* OCT. 3, 2014

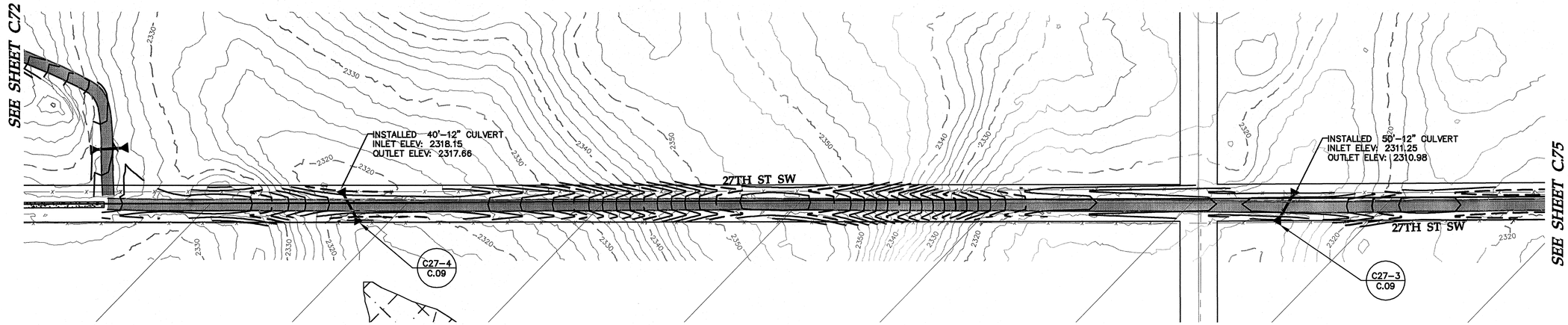
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Date: 12/22/2014

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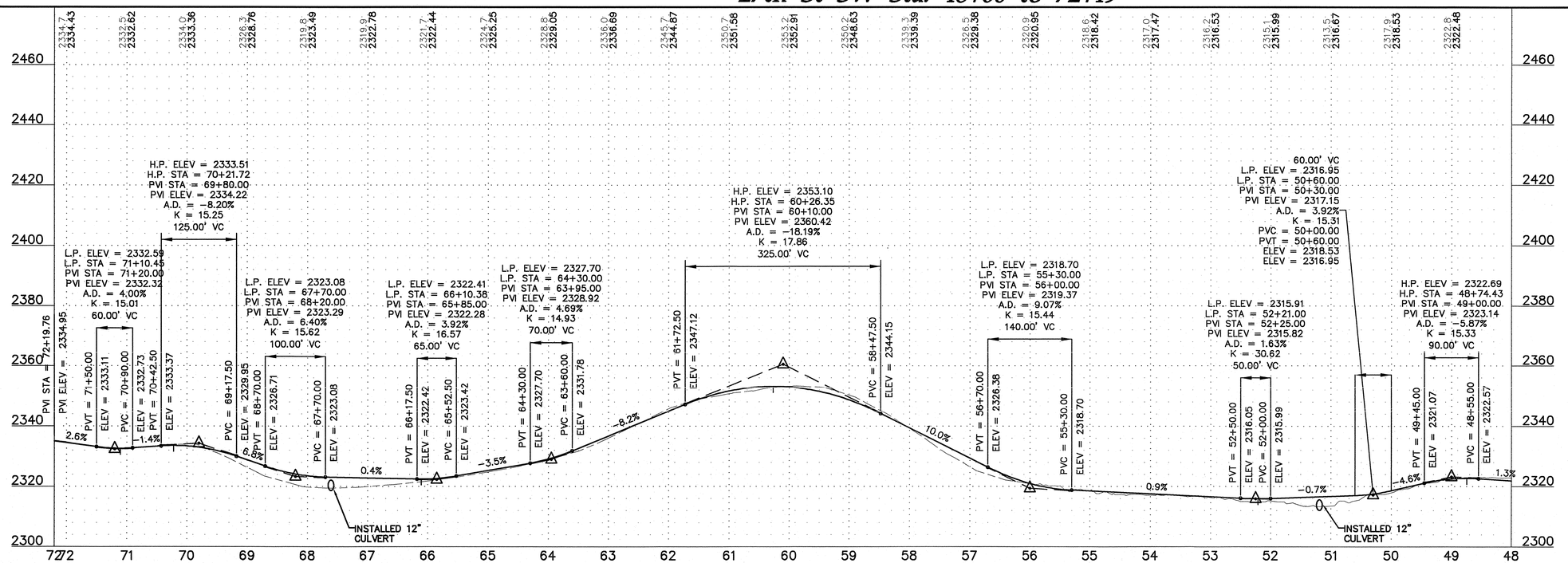
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WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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Bison 4 Wind Project

Oliver County, North Dakota

27th St SW Sta. 48+00 to 72+19

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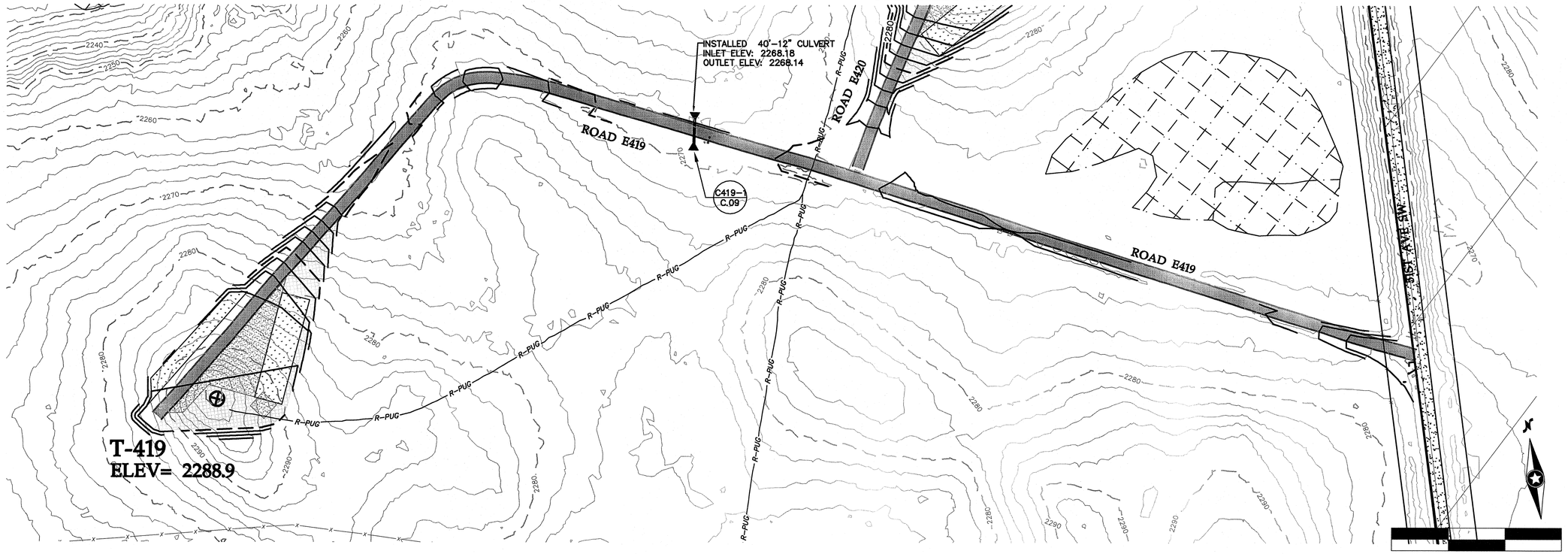
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Date: 12/22/2014
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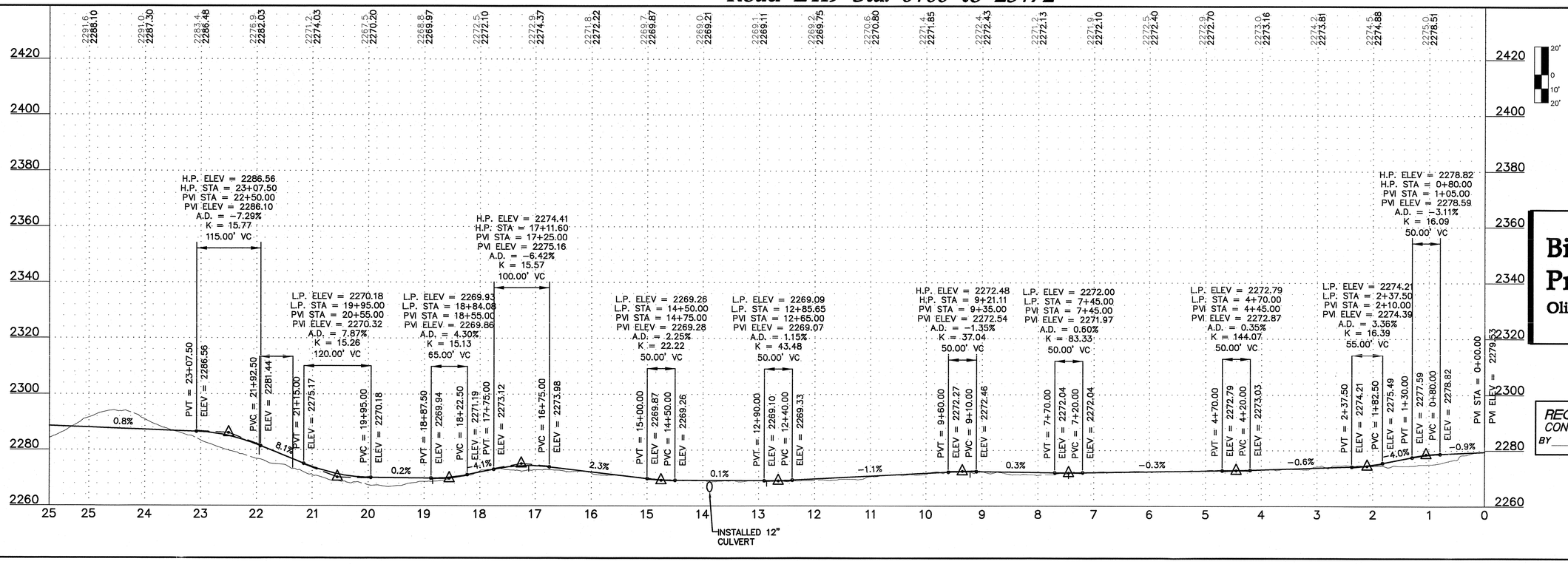
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WILLIAM A. HUSTON
PE-8310
DATE 12/22/14
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Bison 4 Wind Project

Oliver County, North Dakota

Road E419 Sta. 0+00 to 25+72

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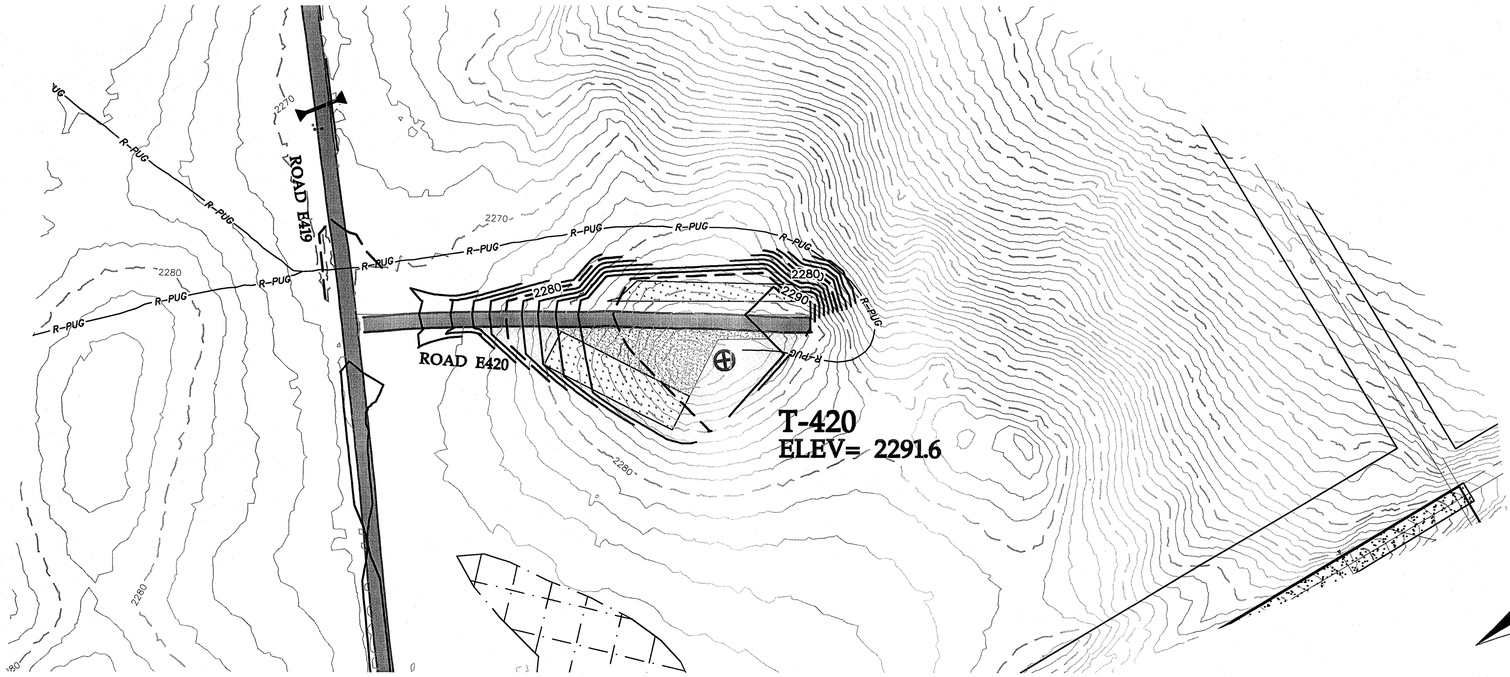
Record Drawings

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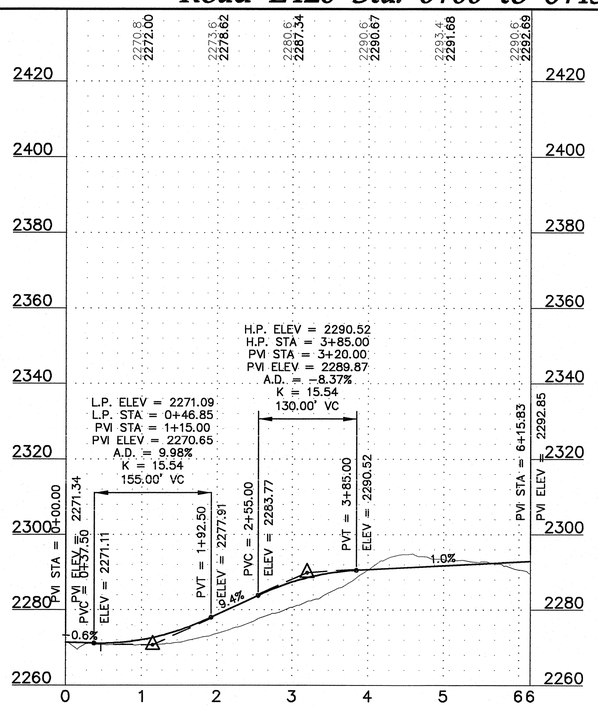
SEE SHEET C.77



SEE SHEET C.77

0' 100' 200' 300'

Road E420 Sta. 0+00 to 6+15



20' 0 10' 20'

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WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
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Prepared for:

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AN ALLETE COMPANY

30 West Superior Street
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Bison 4 Wind Project

Oliver County, North Dakota

Road E420 Sta. 0+00 to 6+15

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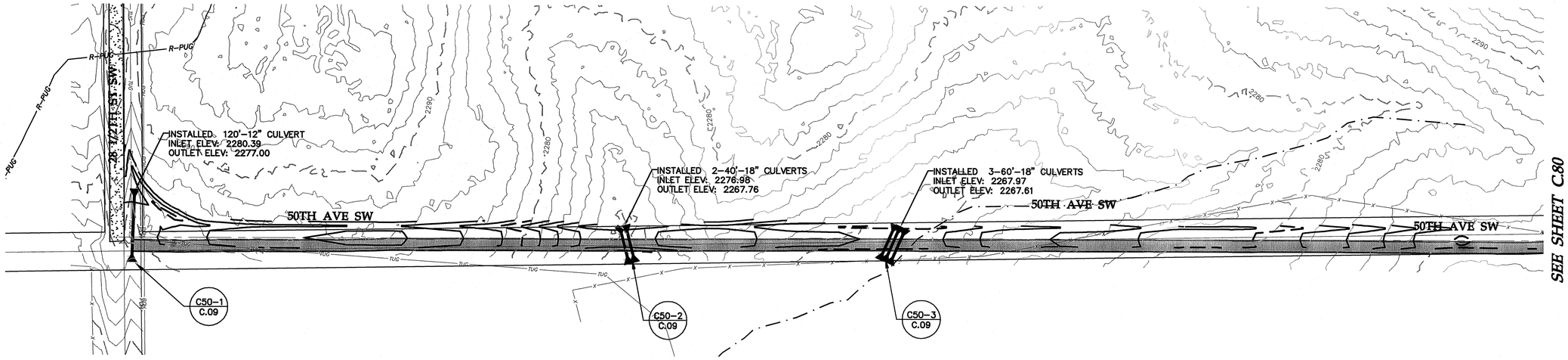
Record Drawings

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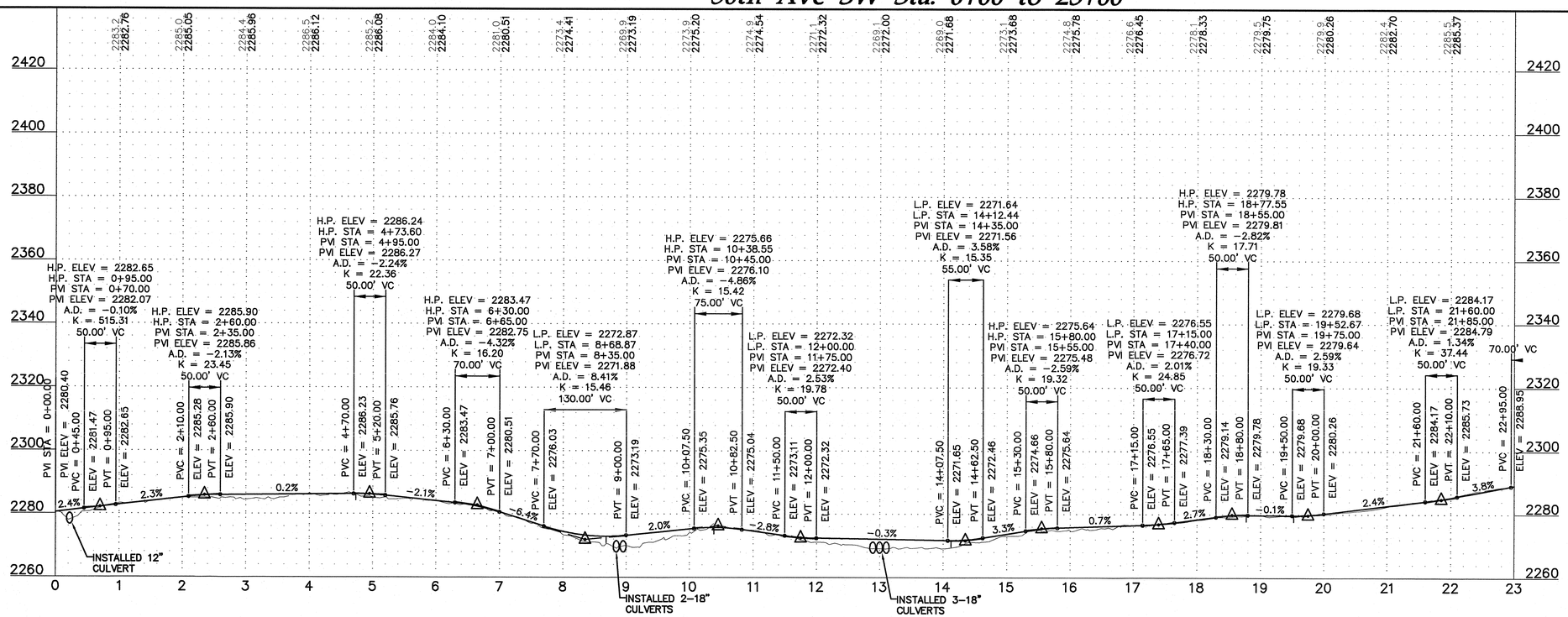
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50th Ave SW Sta. 0+00 to 23+00





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Bison 4 Wind Project

Oliver County, North Dakota

50th Ave SW Sta. 0+00 to 23+00

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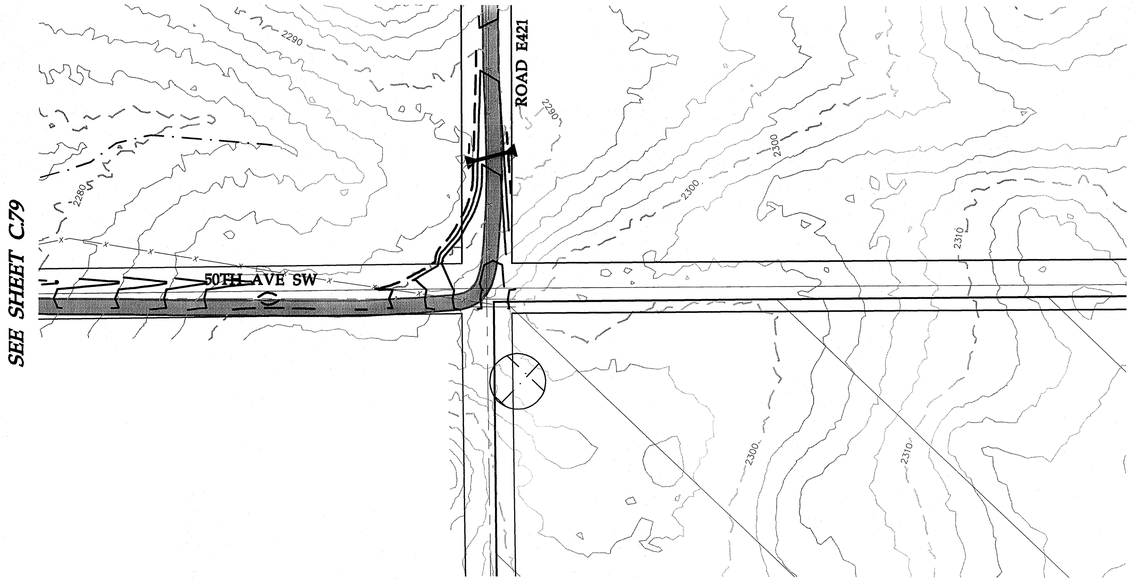
Date: **12/22/2014**

Sheet: **C.79**

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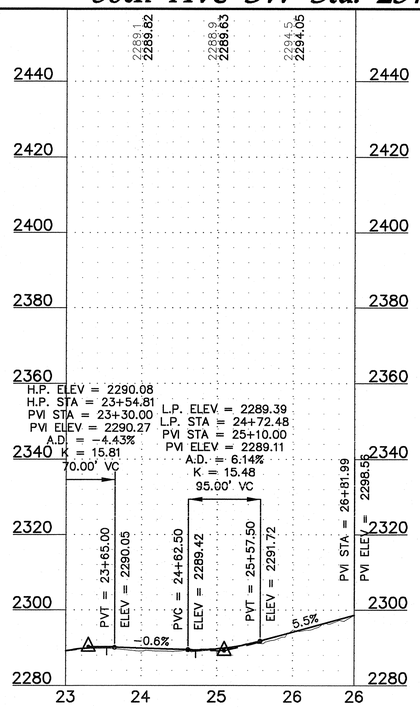
SEE SHEET C.81



SEE SHEET C.79

0' 100' 200' 300'

50th Ave SW Sta. 23+00 to 26+81



20' 0 10' 20'

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Eden Prairie, MN 55344

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project

Oliver County, North Dakota

50th Ave SW Sta. 23+00 to 26+81

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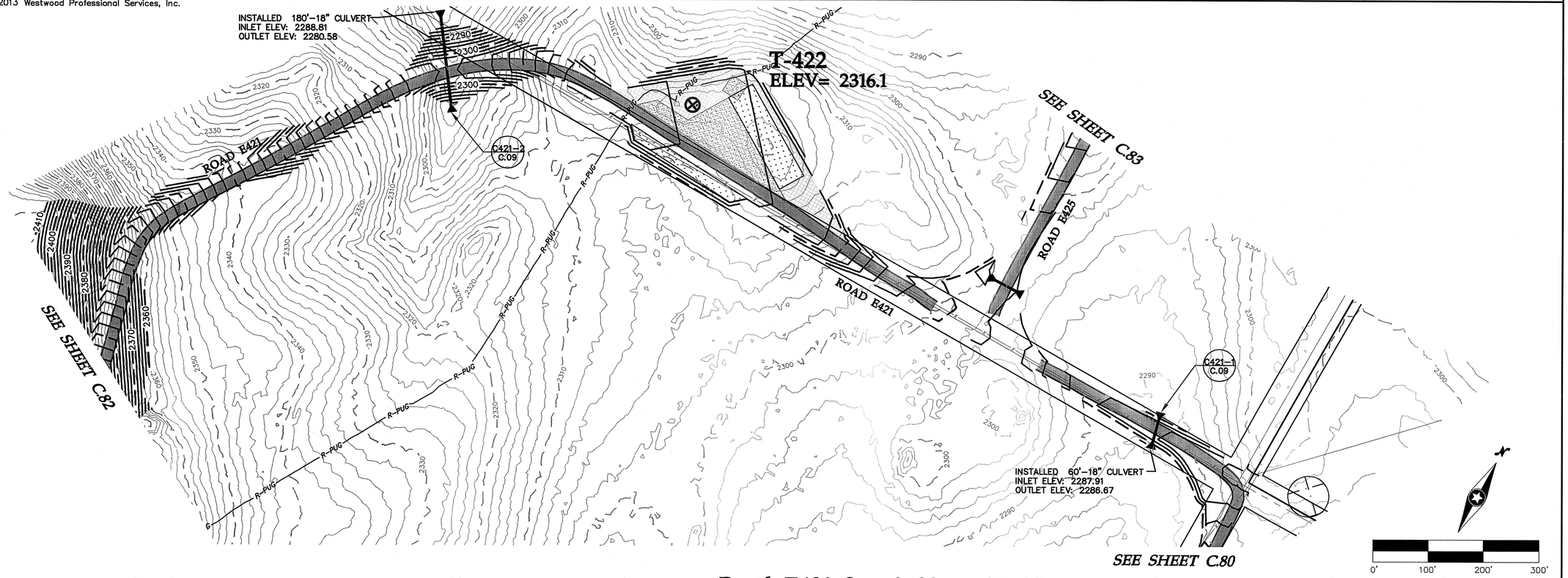
Record Drawings

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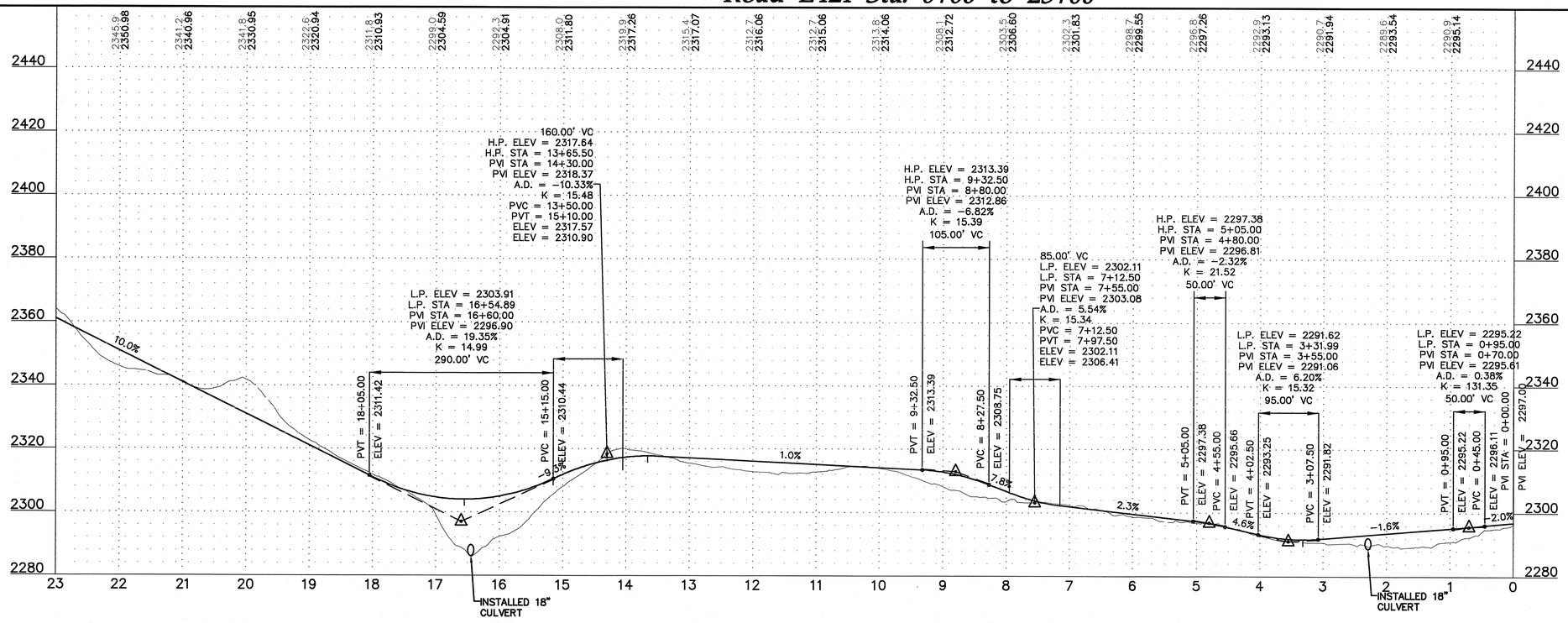
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Road E421 Sta. 0+00 to 23+00



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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HILLESTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
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BY WESTWOOD P.S. *DATE* OCT. 3, 2014

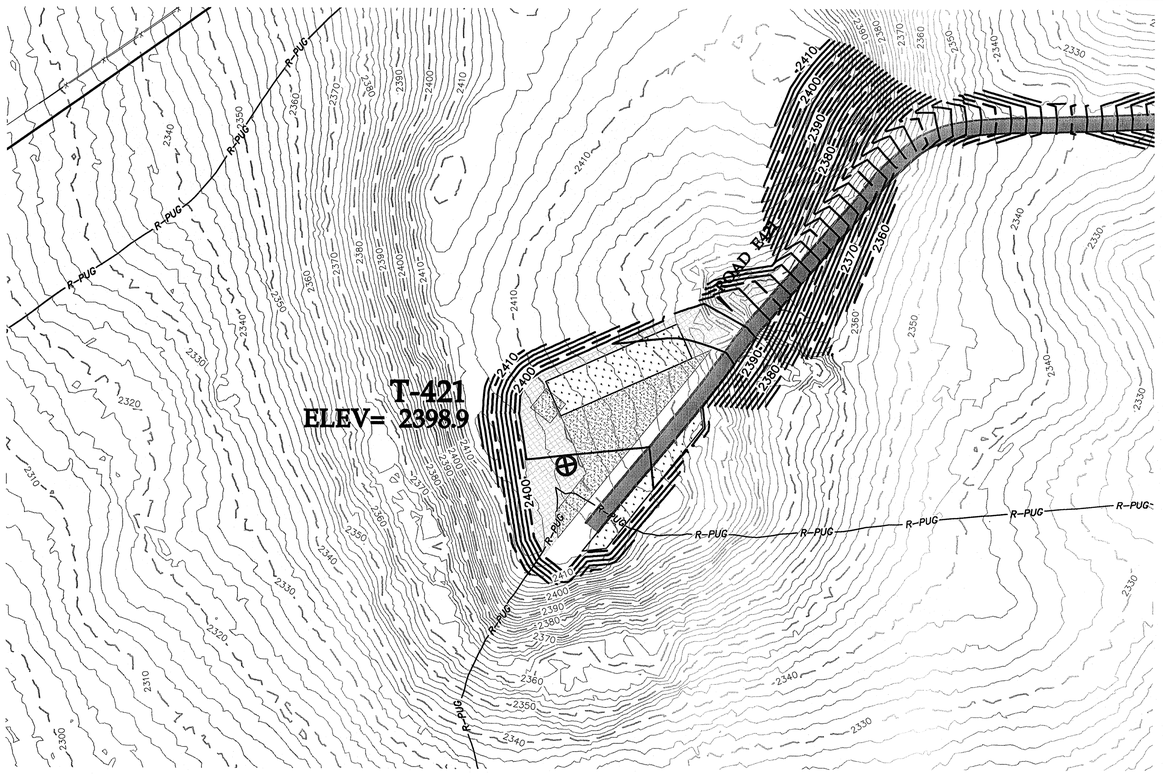
Record Drawings

Date: 12/22/2014

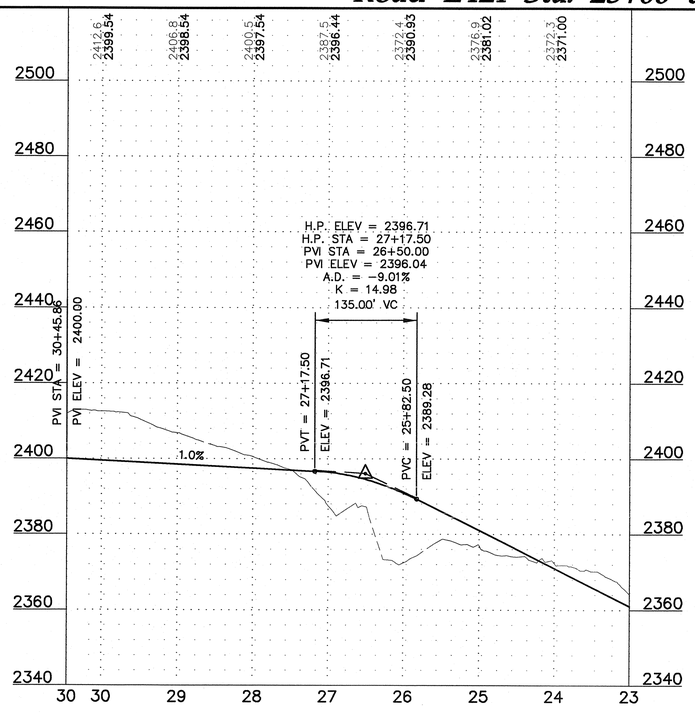
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. GRASTON
PE-8810
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions:

#	DATE	DESCRIPTION
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3	02/28/14	Owner Comments
4	10/03/14	Record Drawings
5	12/22/14	Updated Record Drawings

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

0' 100' 200' 300'

20' 0 10' 20'

LEGEND:

- CONSTRUCTED TURBINE LOCATION
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- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

Road E421 Sta. 23+00 to 30+45

RECORD DRAWINGS
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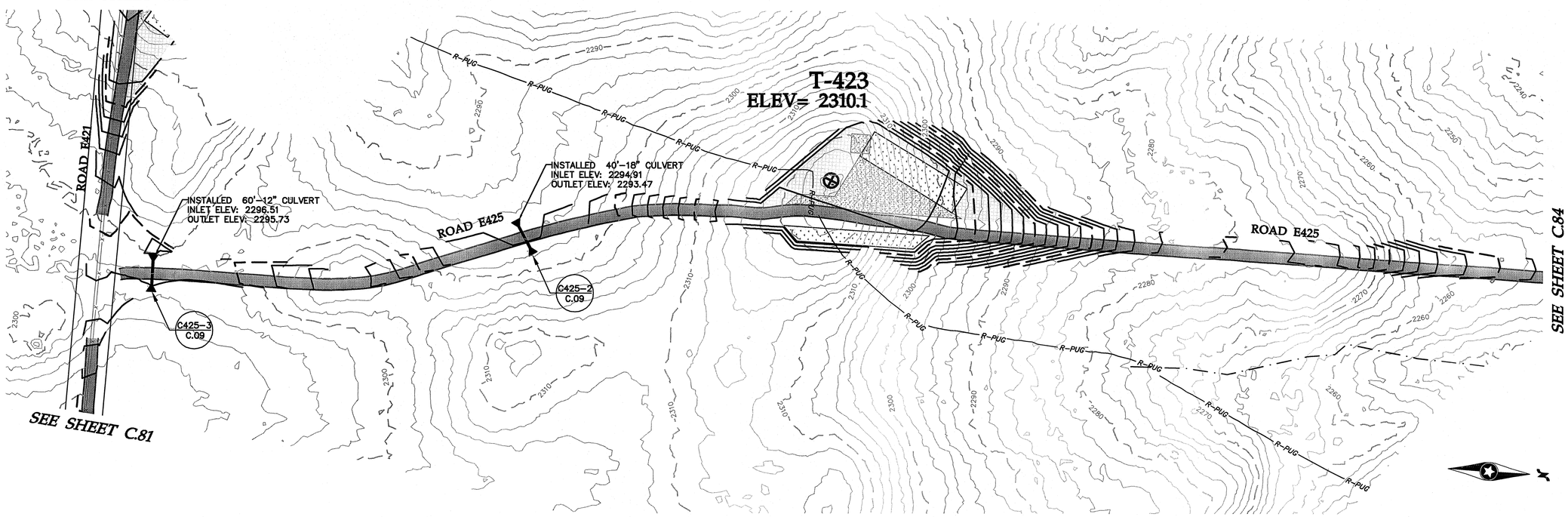
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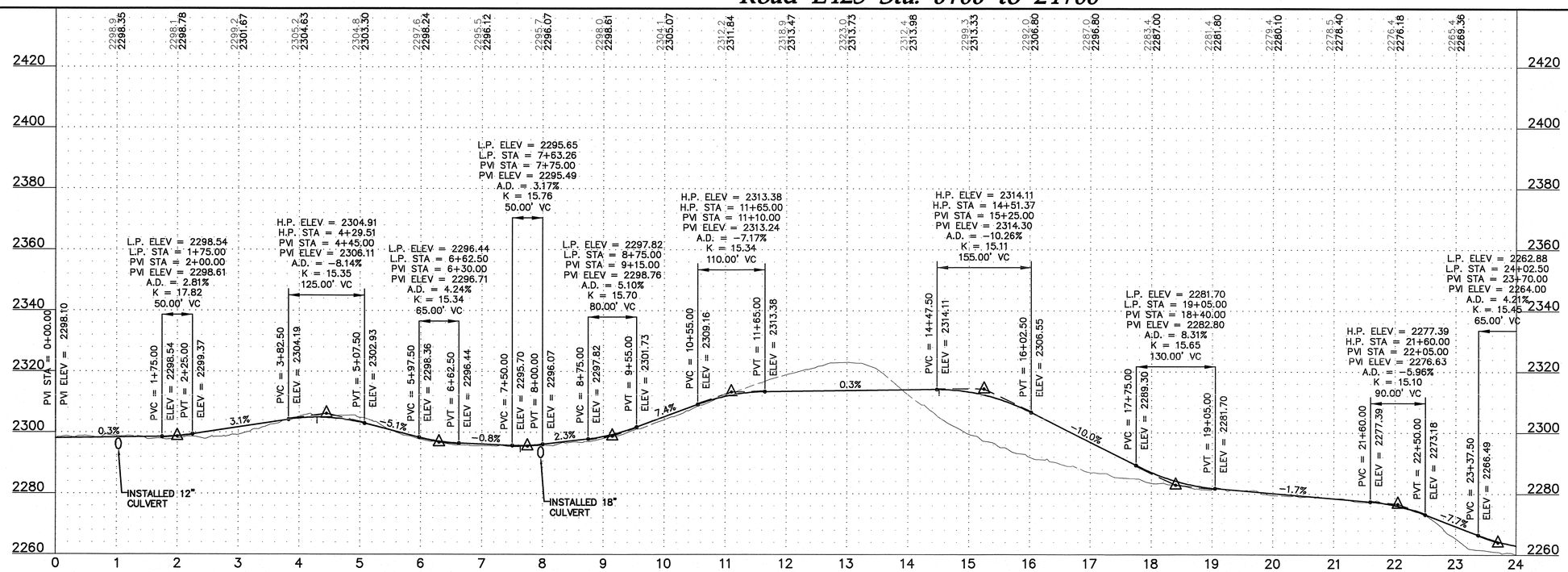
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0' 100' 200' 300'

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20' 0 10' 20'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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Bison 4 Wind Project

Oliver County, North Dakota

Road E425 Sta. 0+00 to 24+00

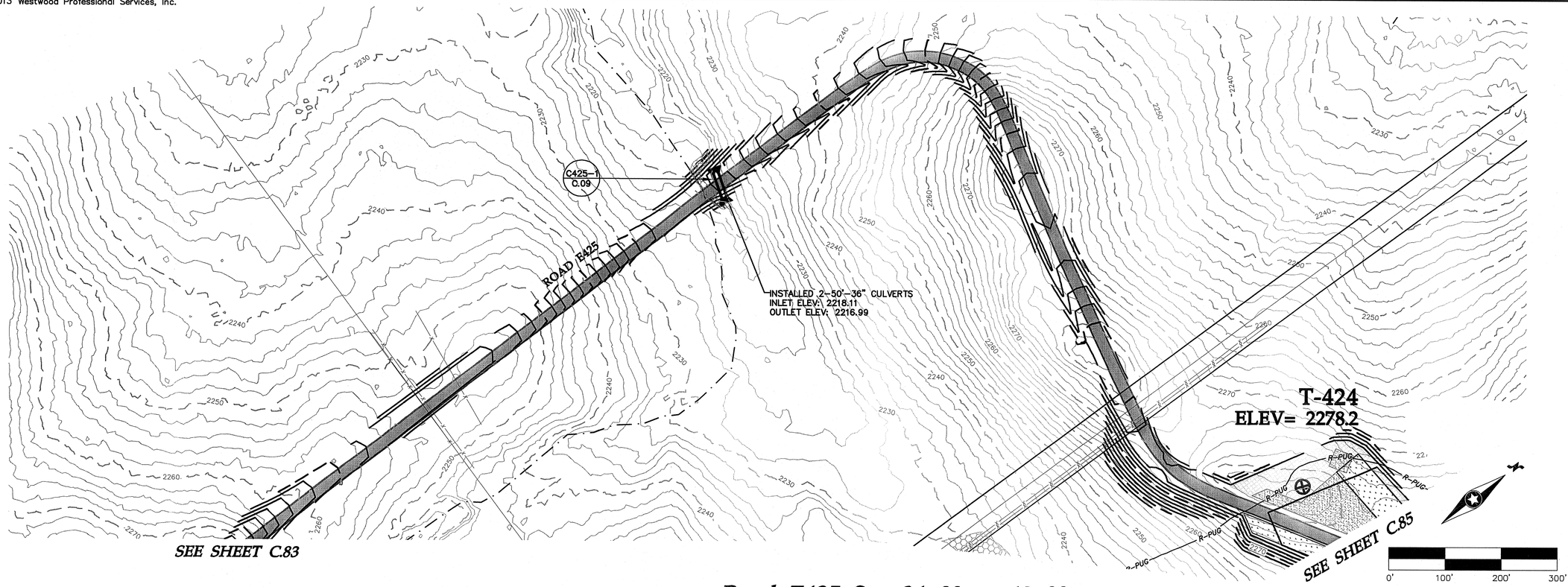
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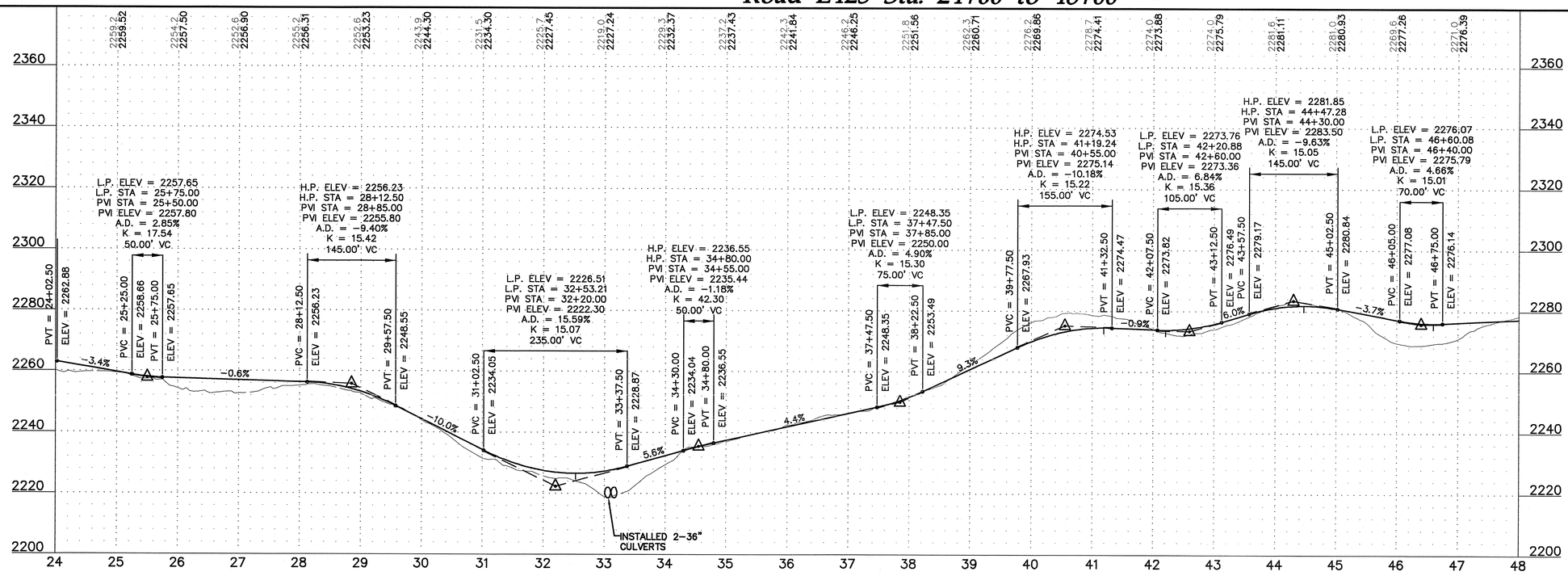
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Bison 4 Wind Project

Oliver County, North Dakota

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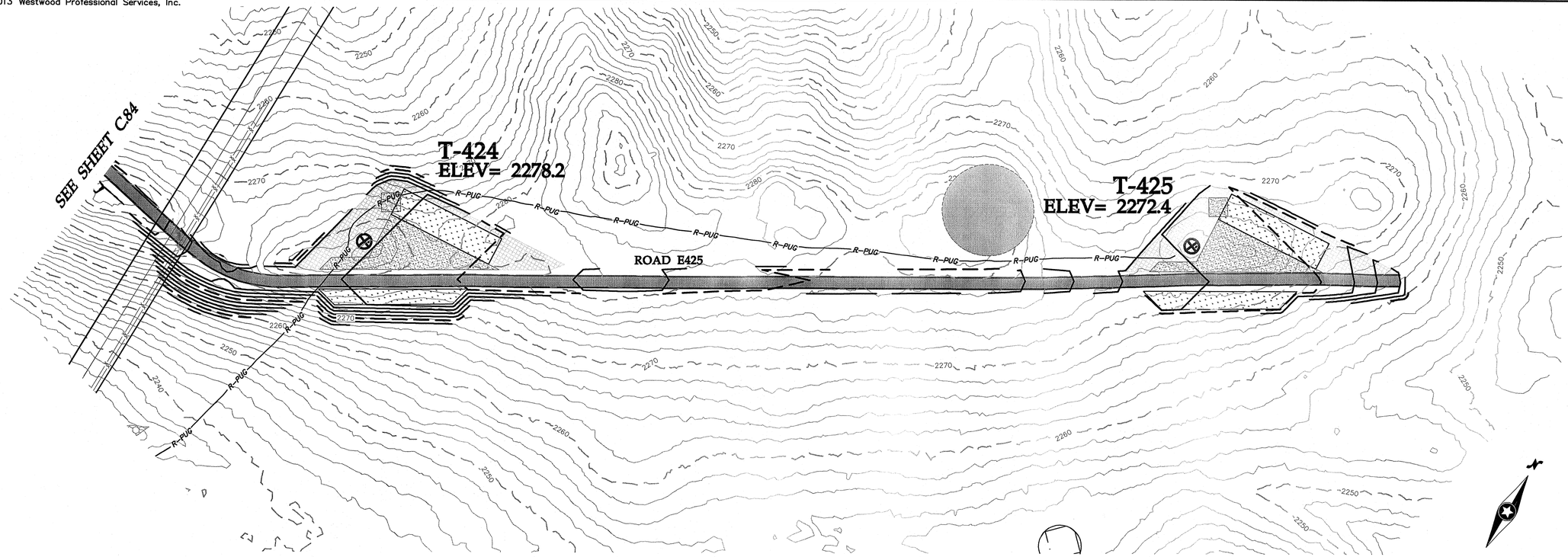
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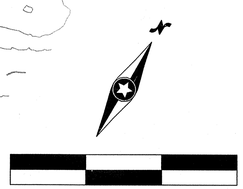
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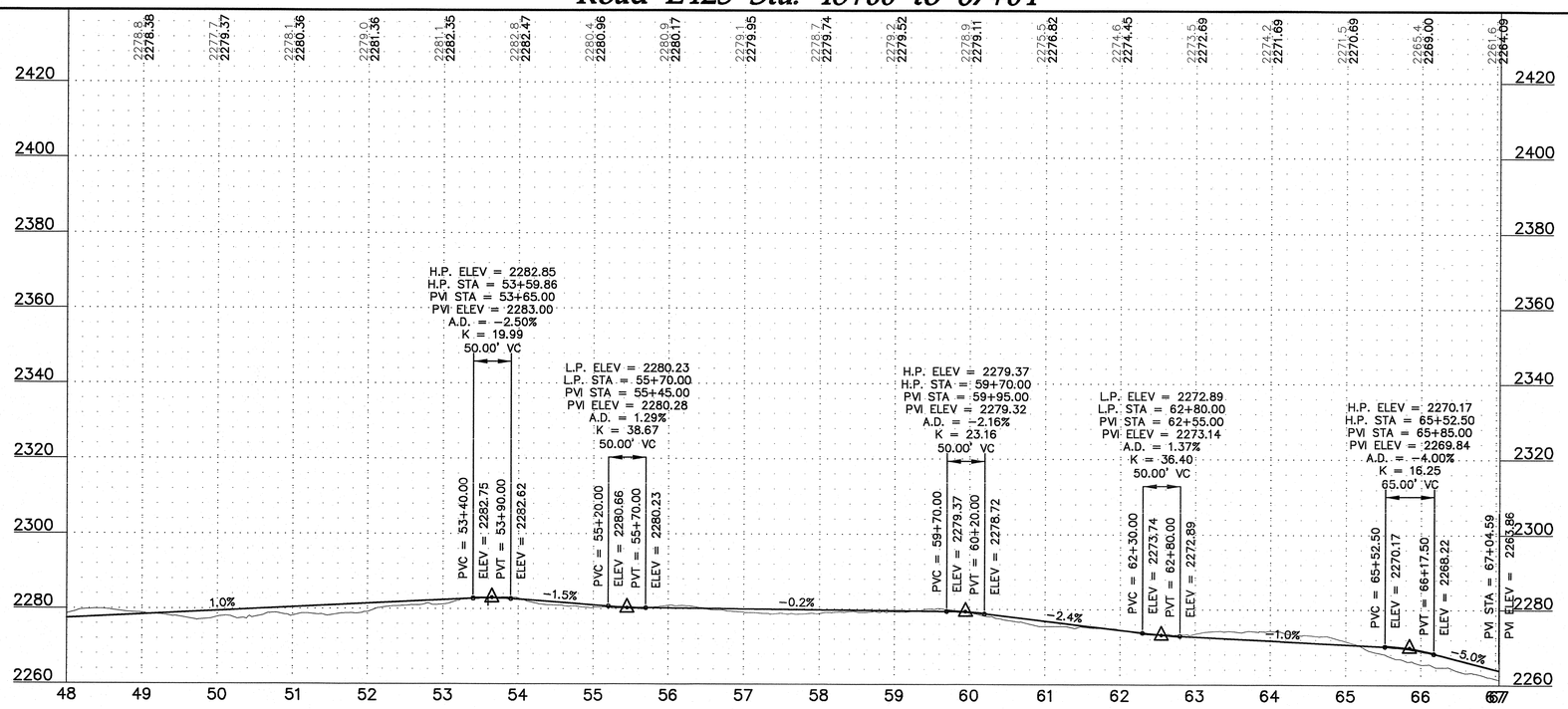
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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Drawn:	MPG
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minnesota power
AN ALLETE COMPANY

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Bison 4 Wind Project

Oliver County, North Dakota

Road E425 Sta. 48+00 to 67+04

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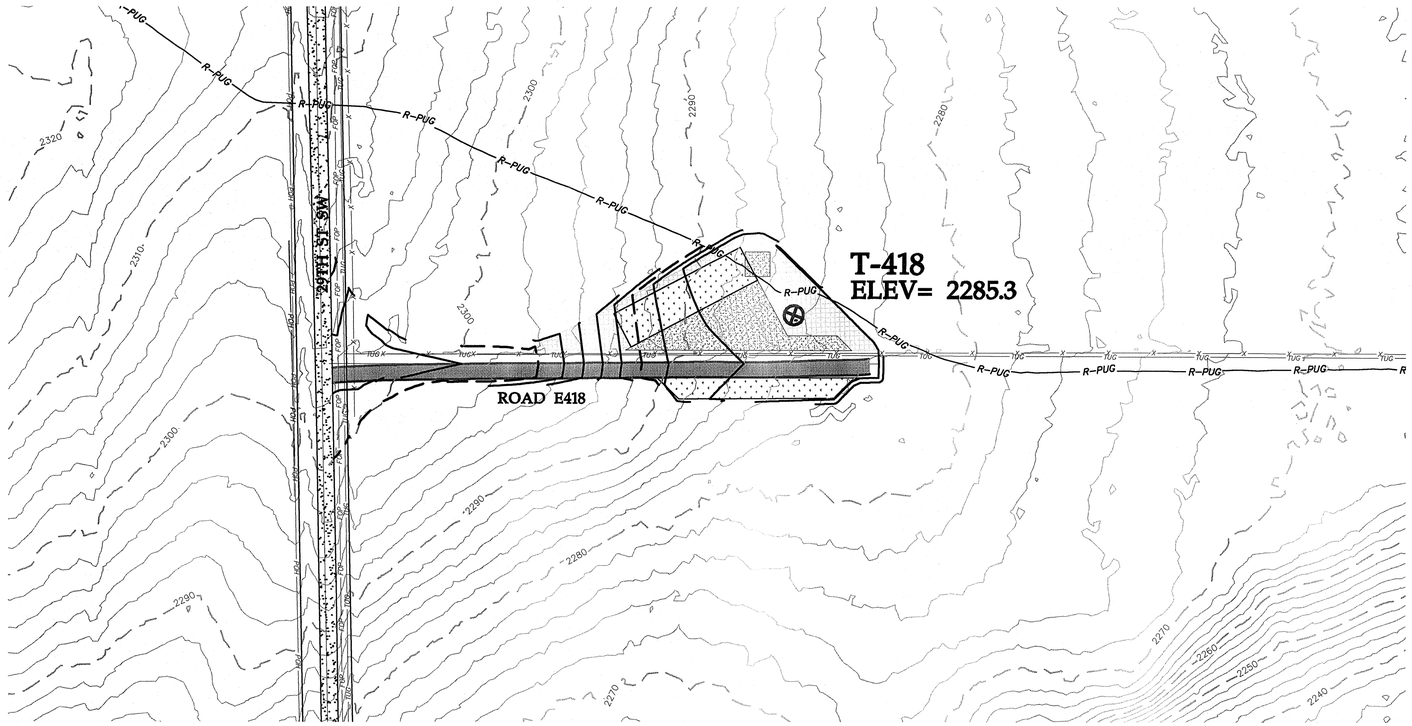
Record Drawings

Date: 12/22/2014

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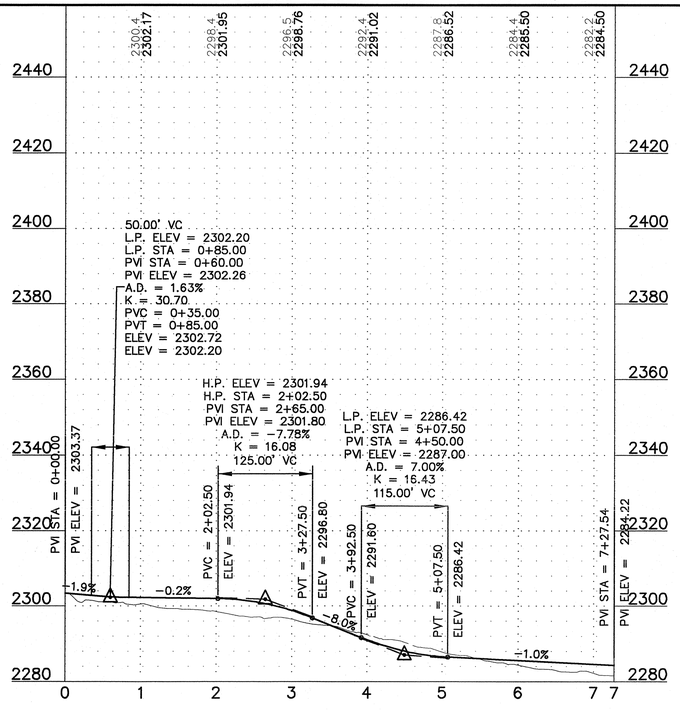
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0' 100' 200' 300'

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20' 0 10' 20'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM M. HUGGINS
PE-8310
DATE 12/22/14
NORTH DAKOTA

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Oliver County, North Dakota

Road E418 Sta. 0+00 to 7+27

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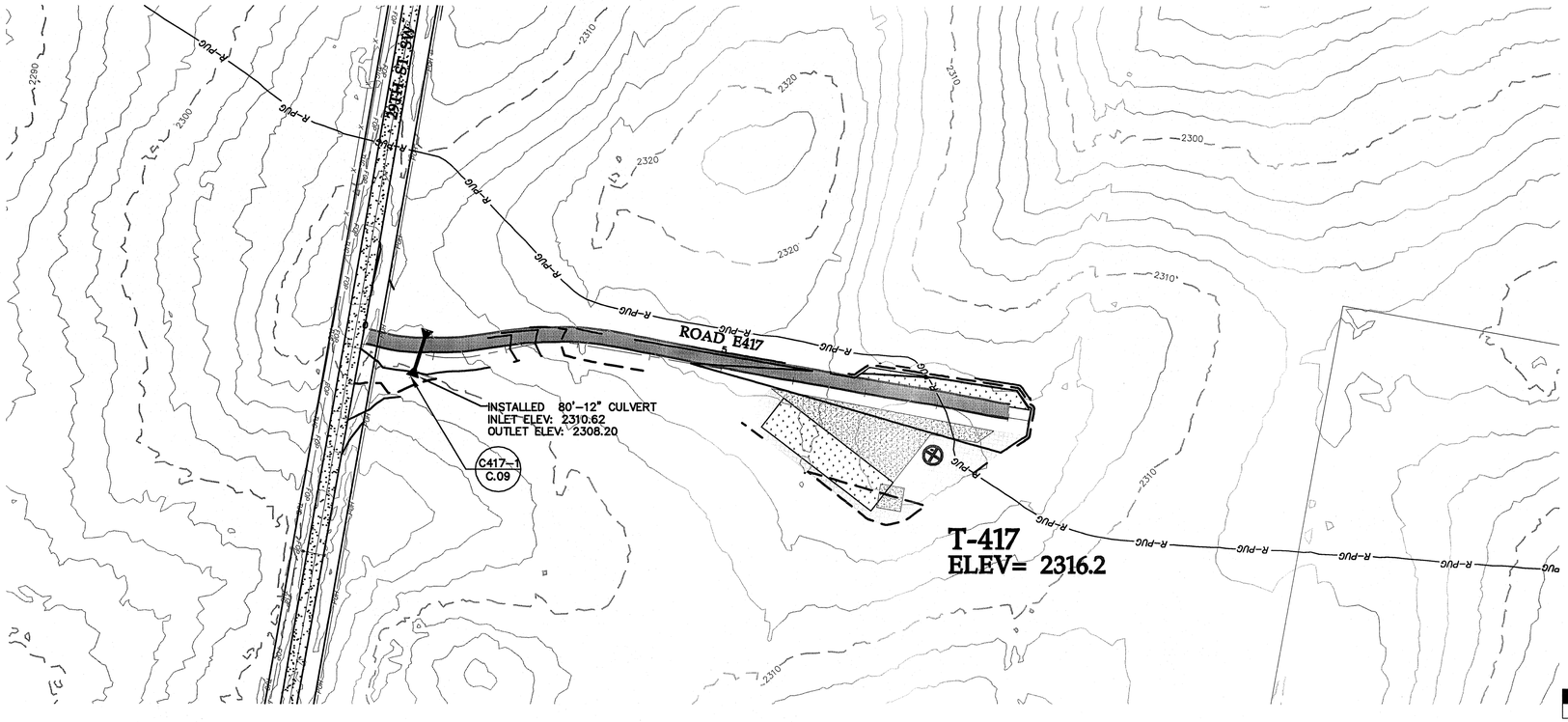
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Date: **12/22/2014**

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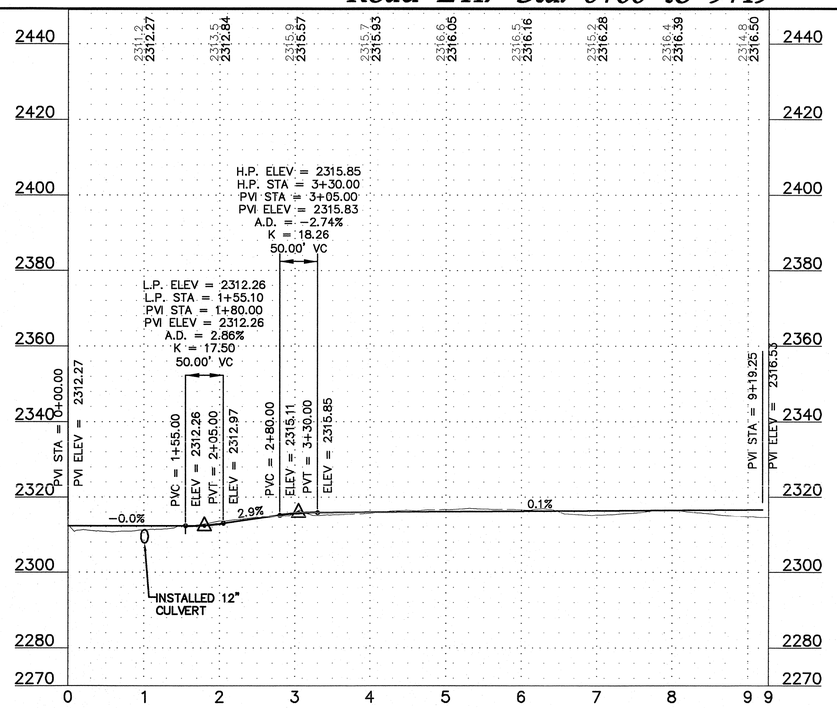
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0' 100' 200' 300'

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20' 0 10' 20'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HILTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
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Prepared for:

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AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

Road E417 Sta. 0+00 to 9+19

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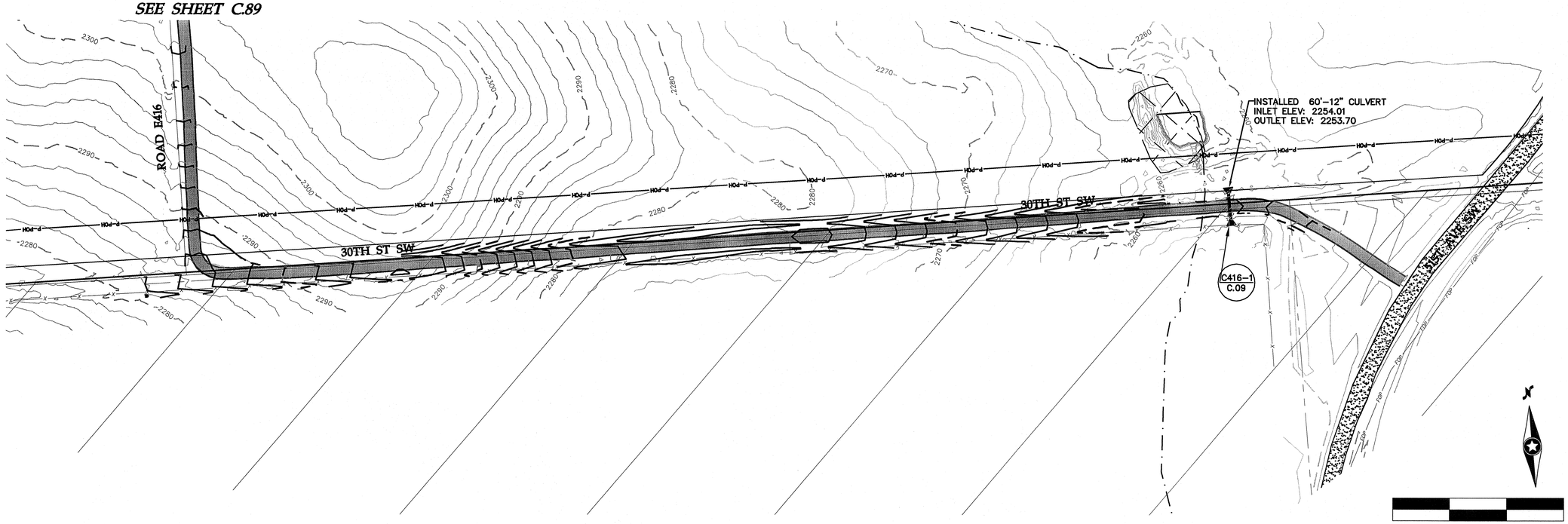
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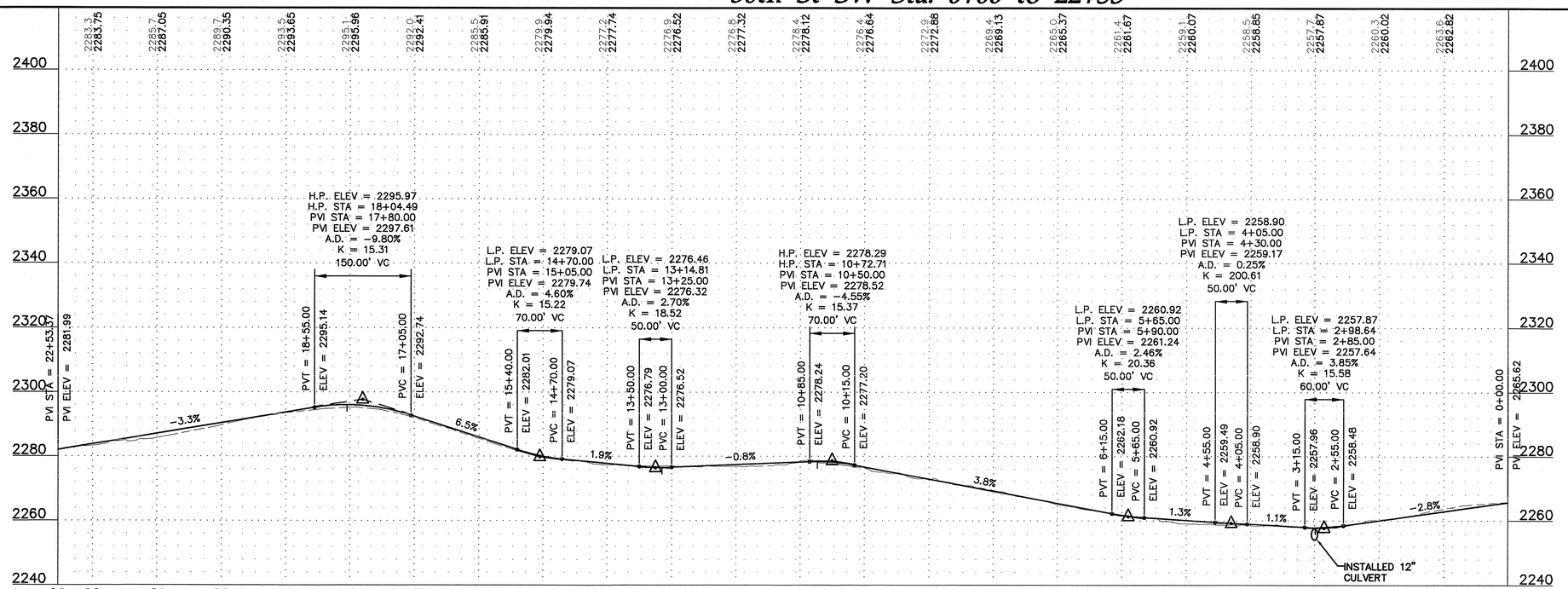
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30th St SW Sta. 0+00 to 22+53



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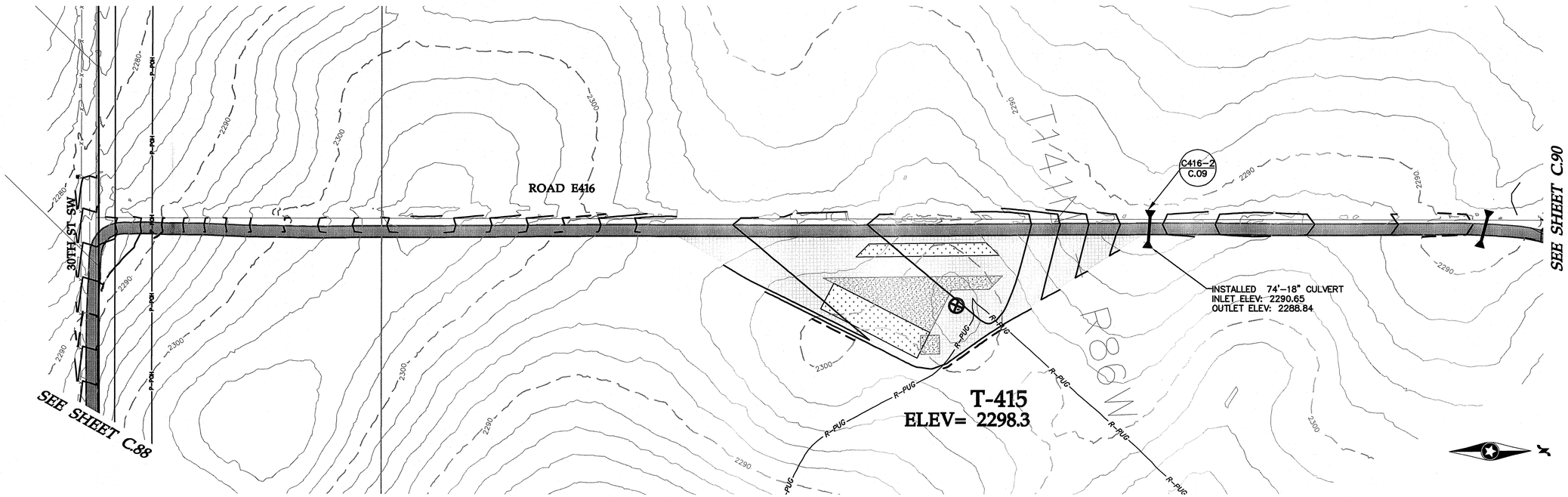
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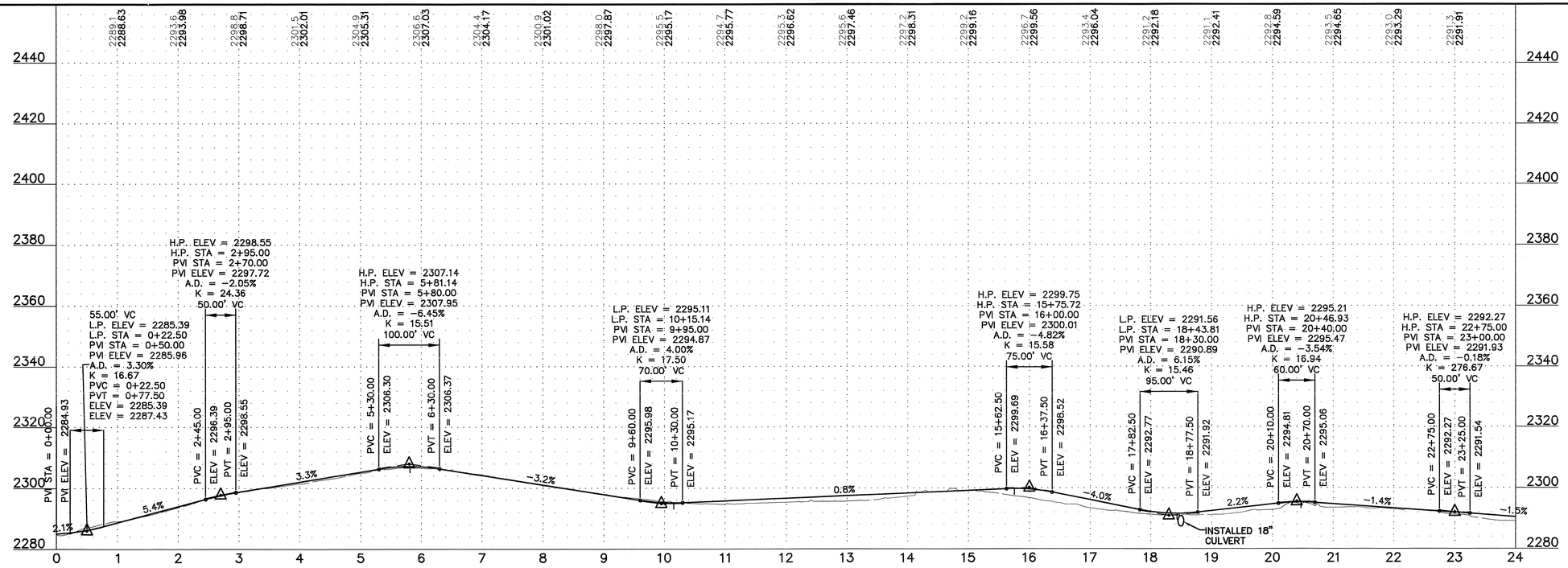
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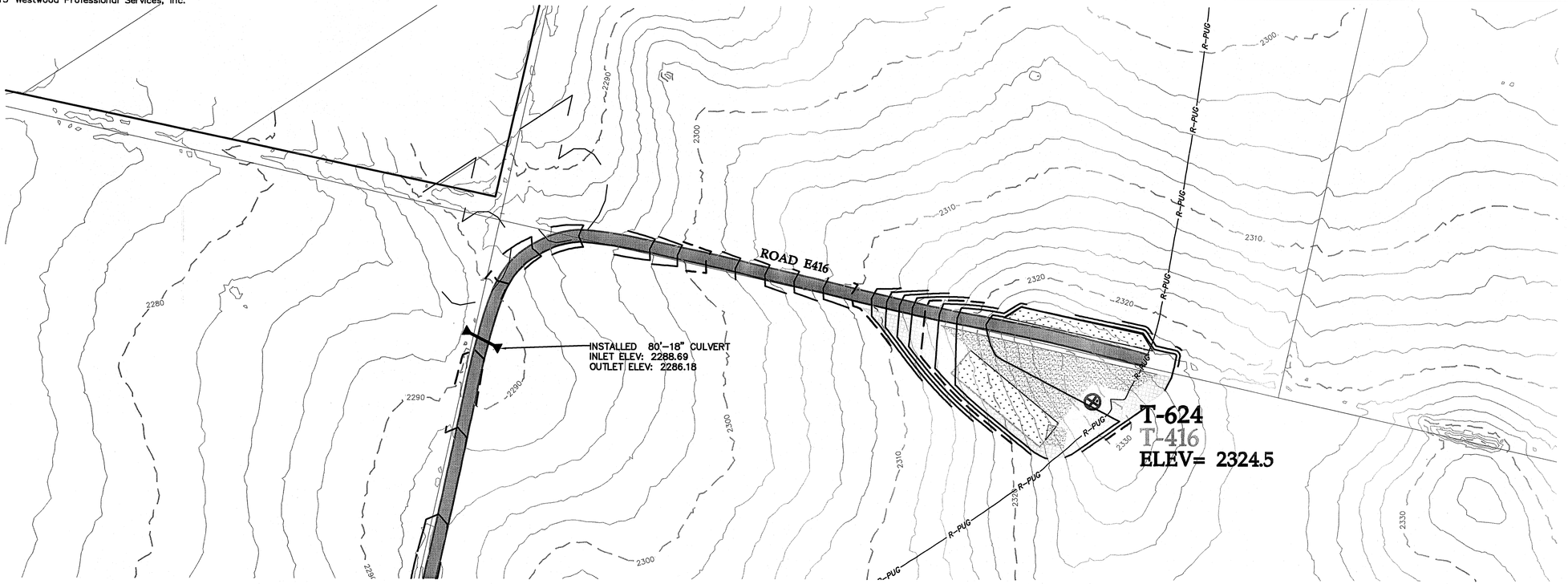
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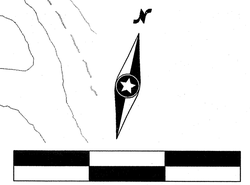
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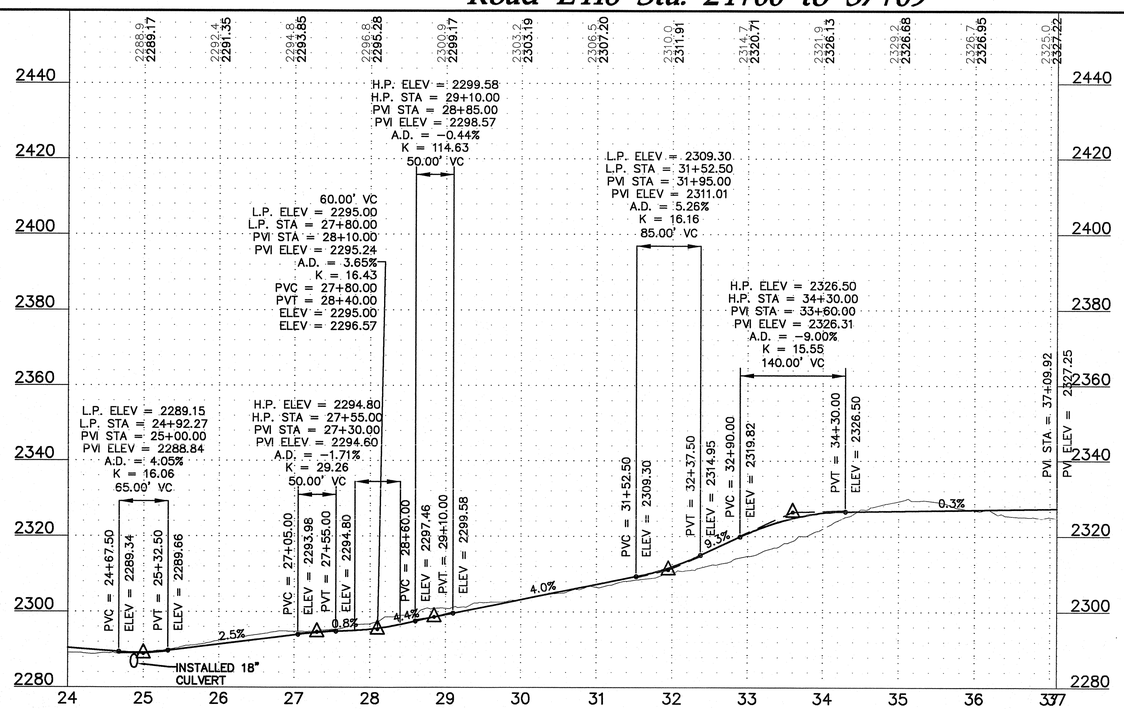
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BY WESTWOOD P.S. *DATE* OCT. 3, 2014

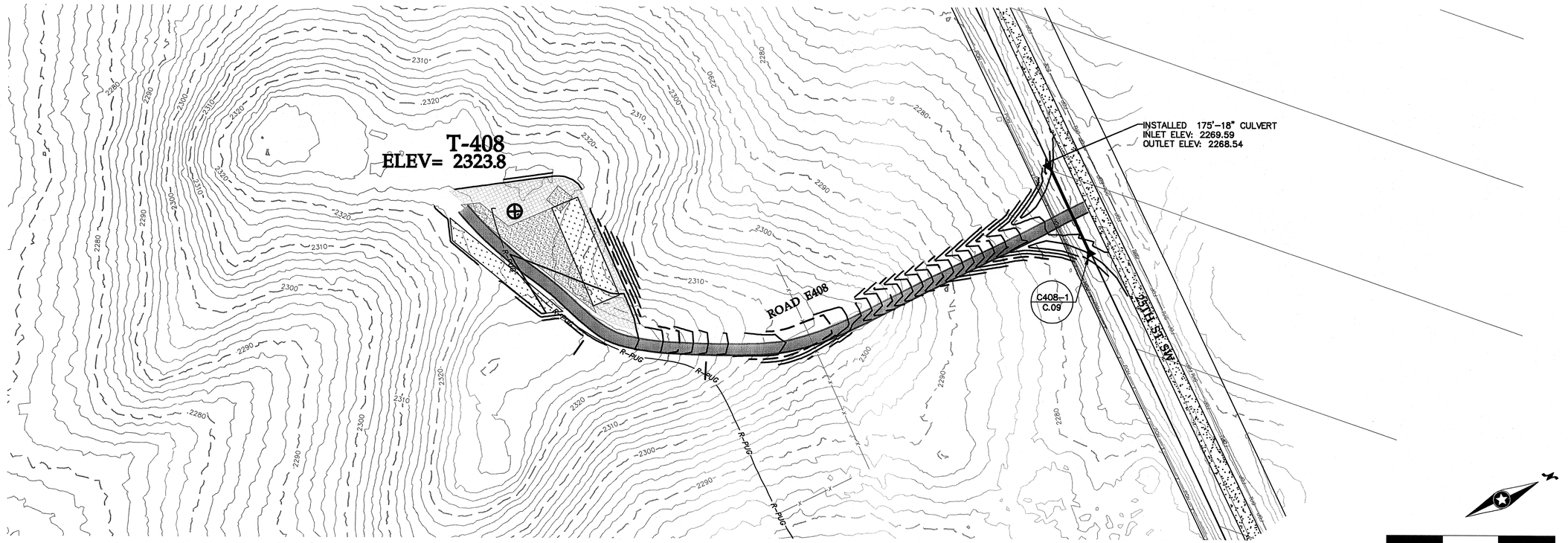
Record Drawings

Date: 12/22/2014

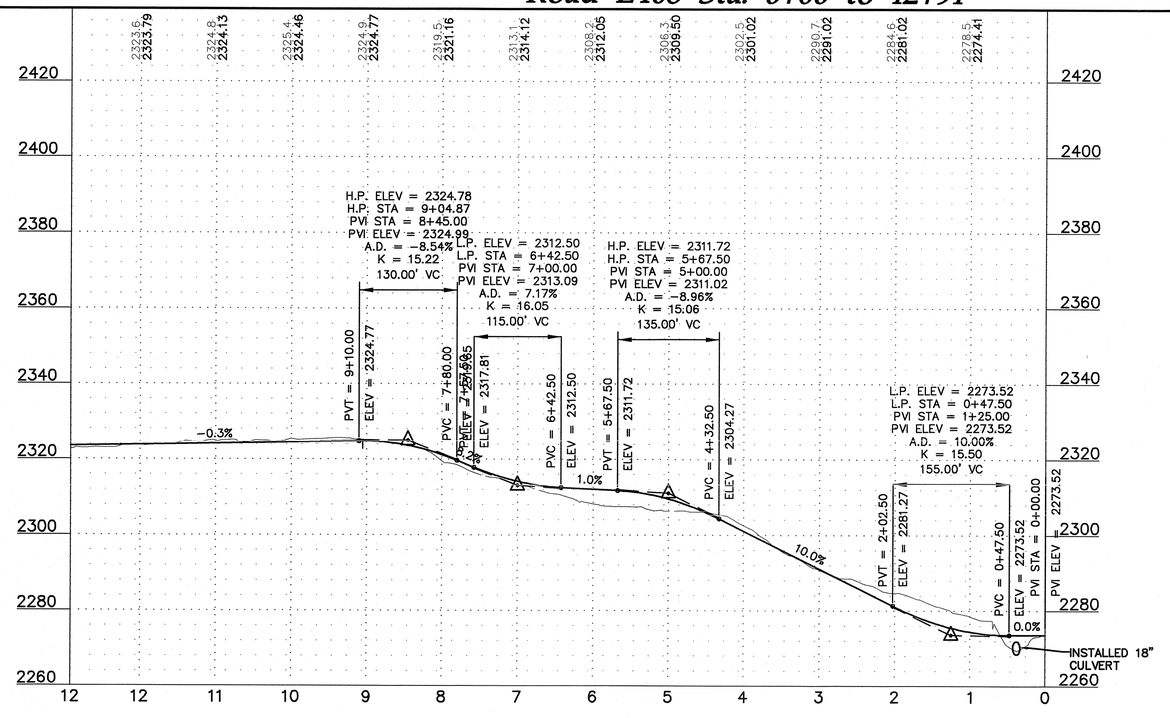
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM A. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions:

#	DATE	DESCRIPTION
2	10/09/13	Owner Comments/Field Changes
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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- CONSTRUCTED TURBINE LOCATION
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Bison 4 Wind Project

Oliver County, North Dakota

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RECORD DRAWINGS
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BY WESTWOOD P.S. *DATE* OCT. 3, 2014

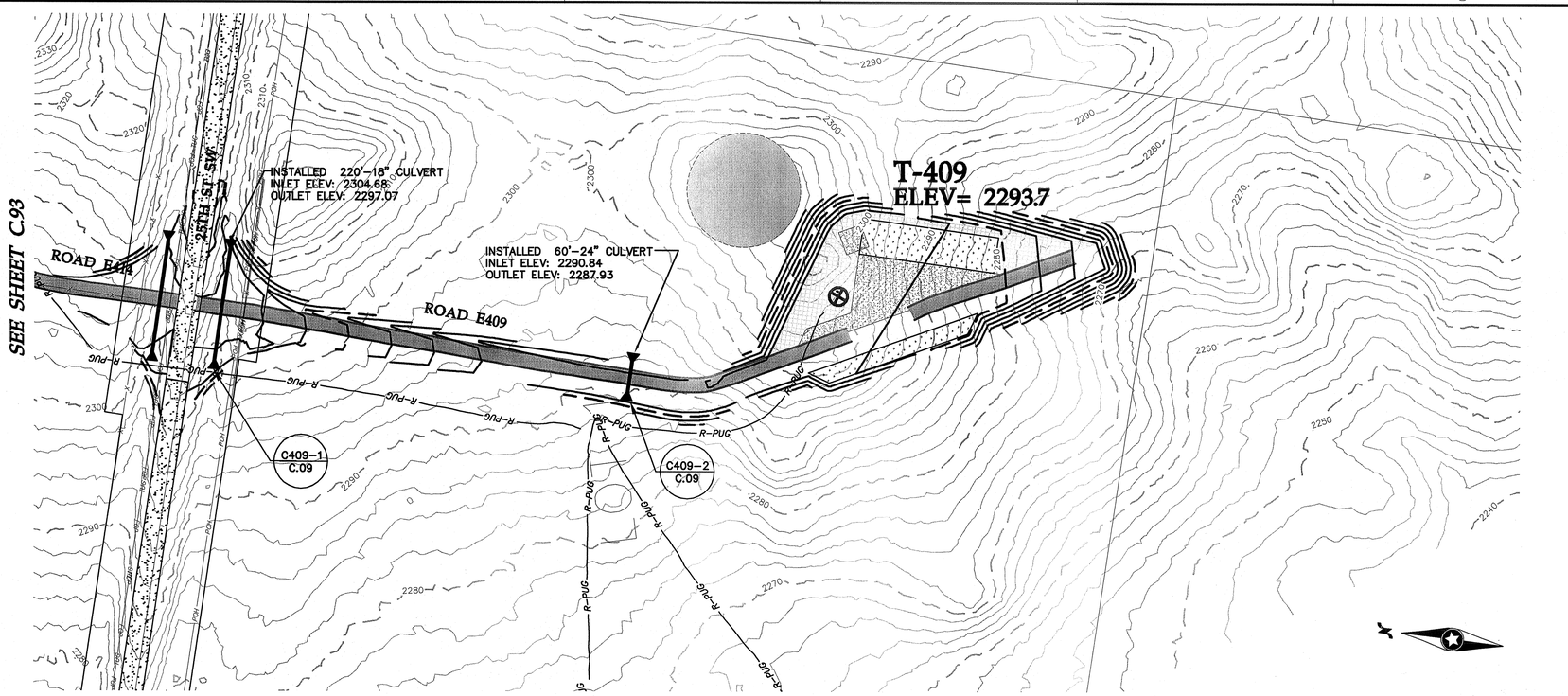
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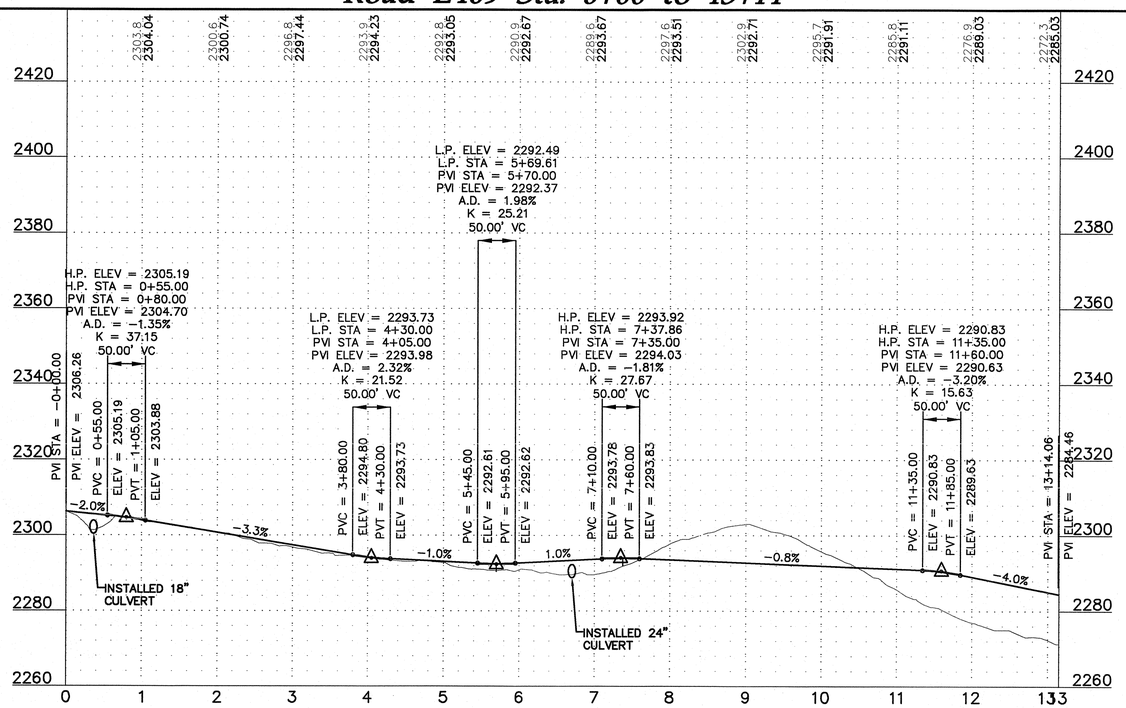
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0' 100' 200' 300'

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20' 0 10' 20'

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PE-8310
DATE 12/22/14
NORTH DAKOTA

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Oliver County, North Dakota

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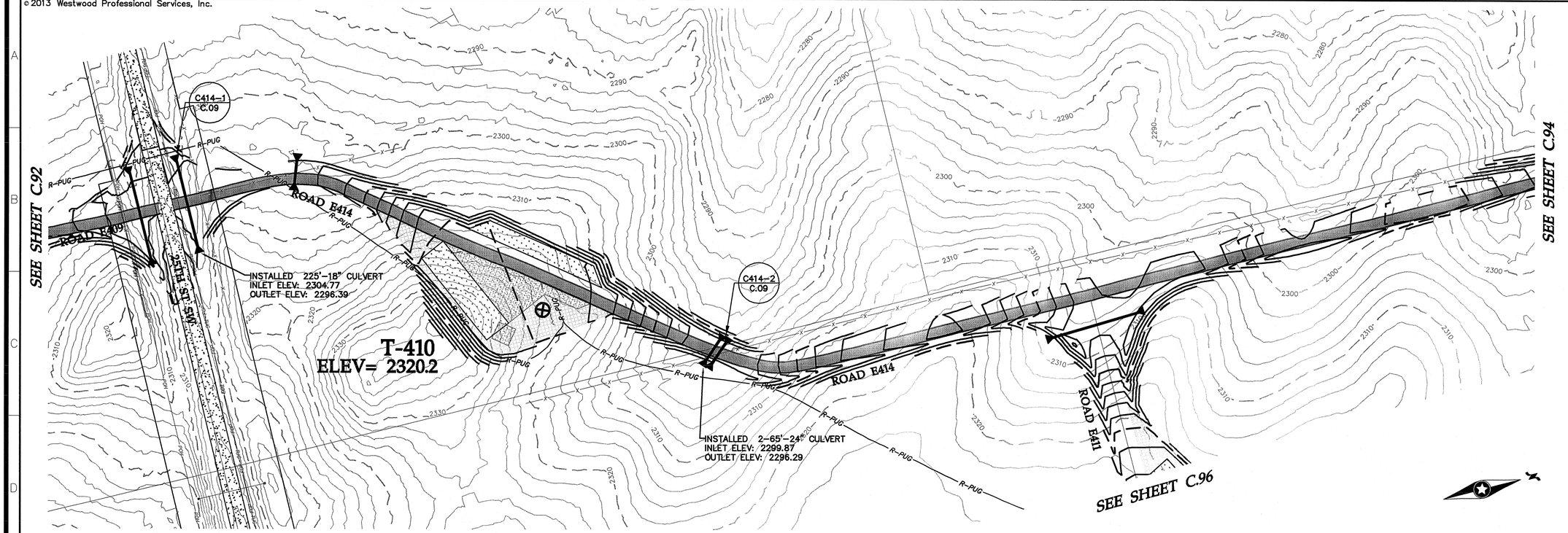
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Date: **12/22/2014**

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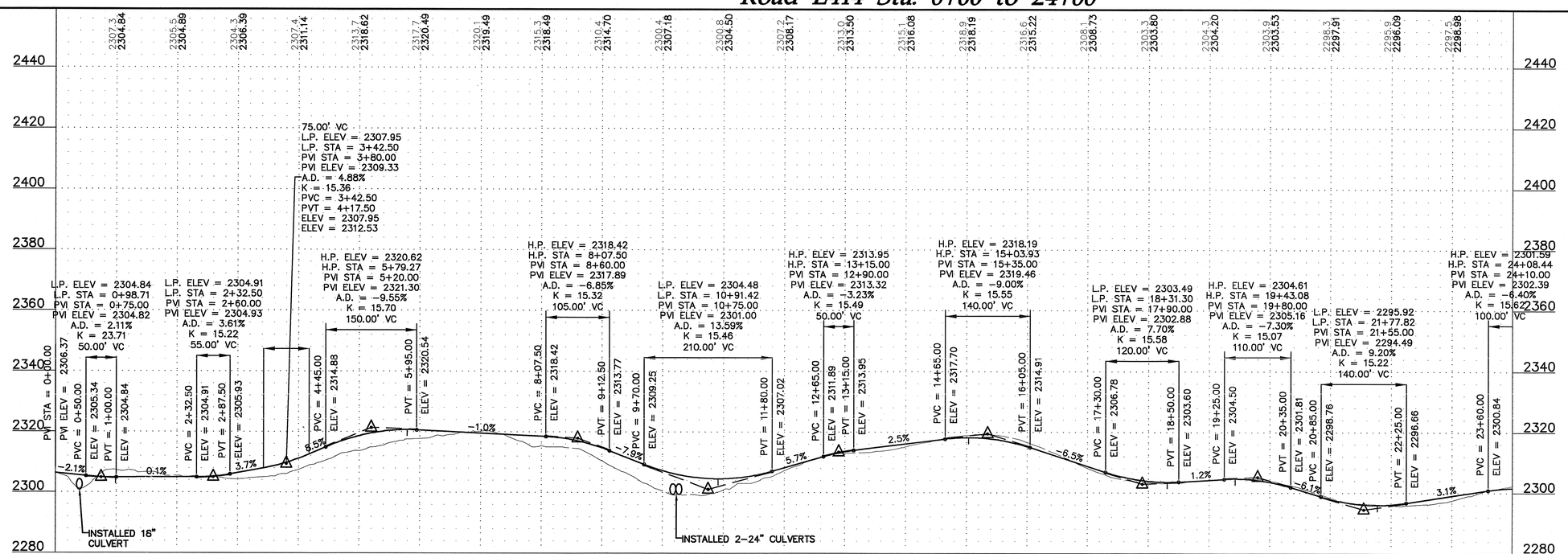
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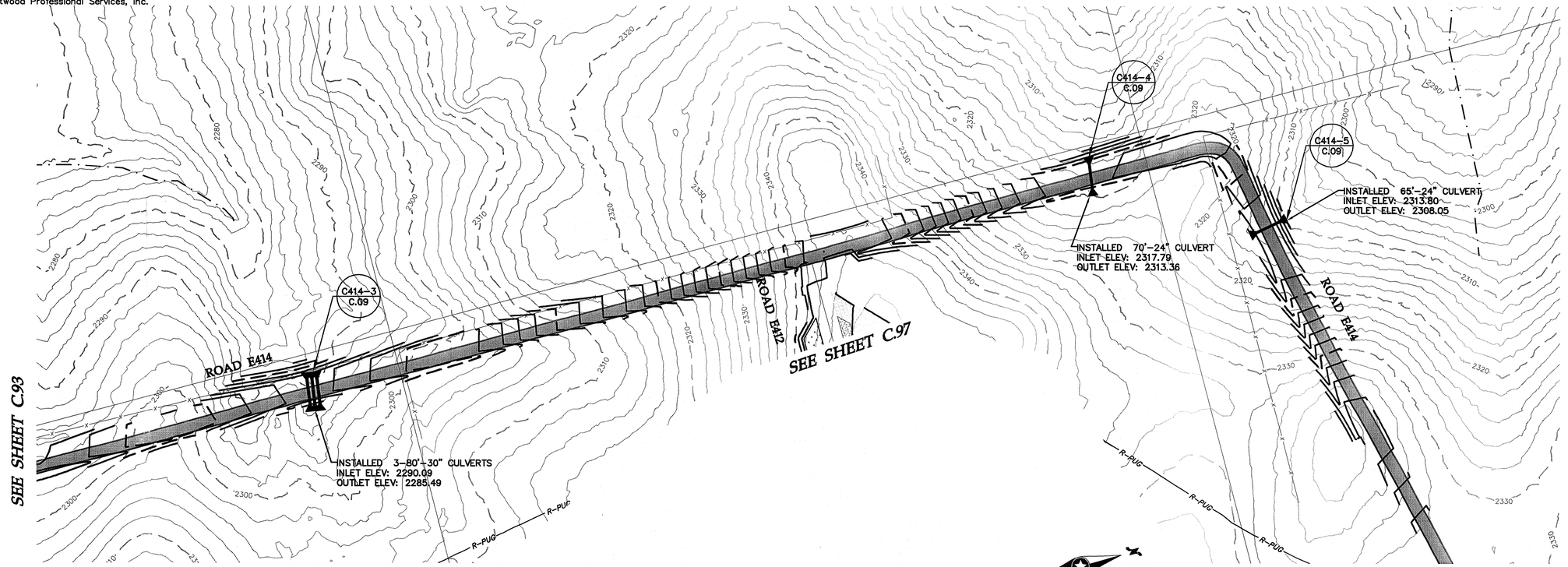
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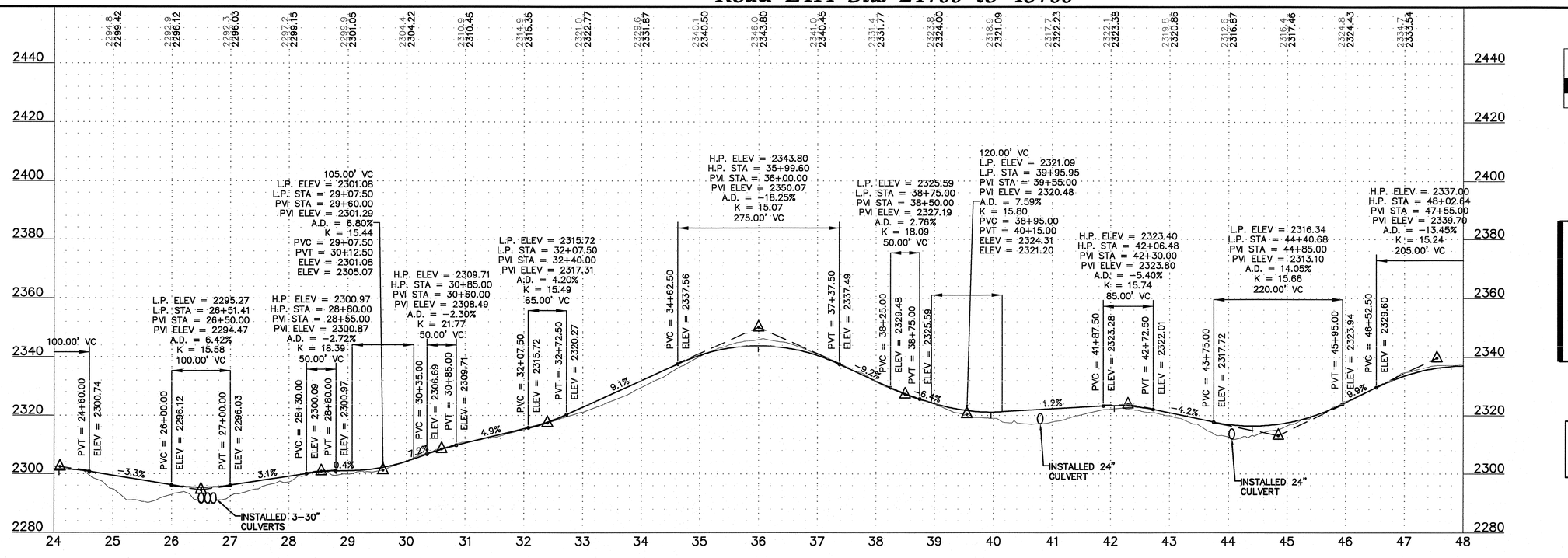
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Road E414 Sta. 24+00 to 48+00

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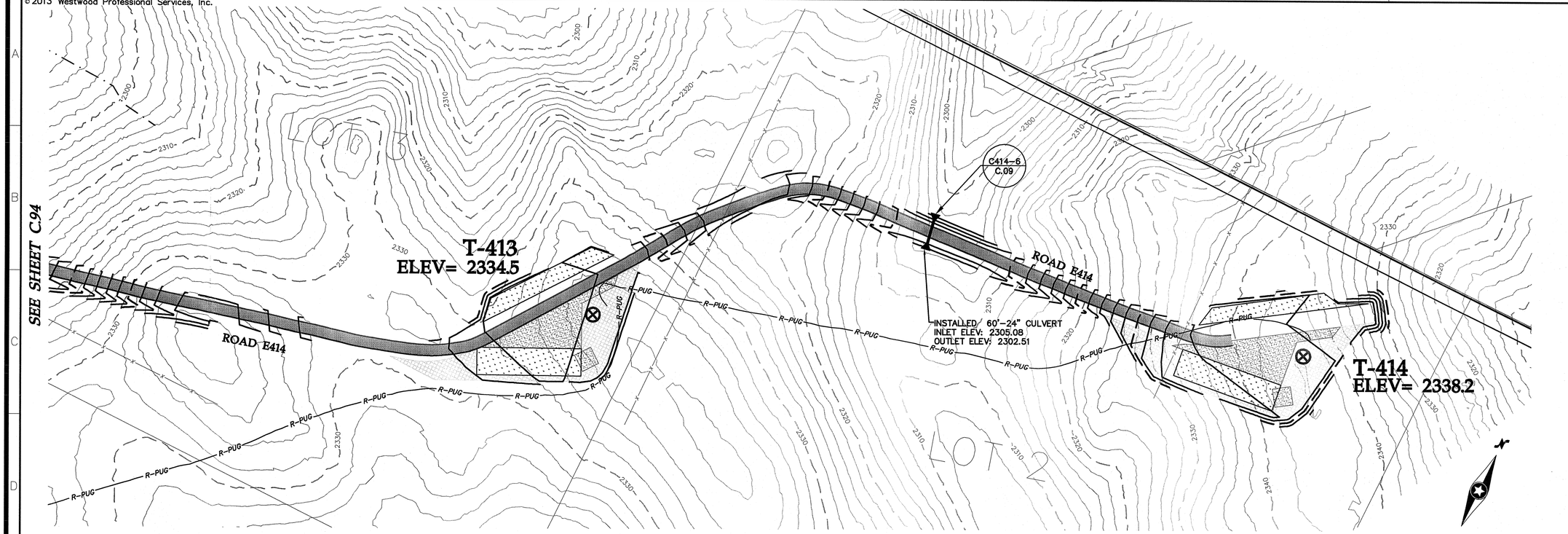
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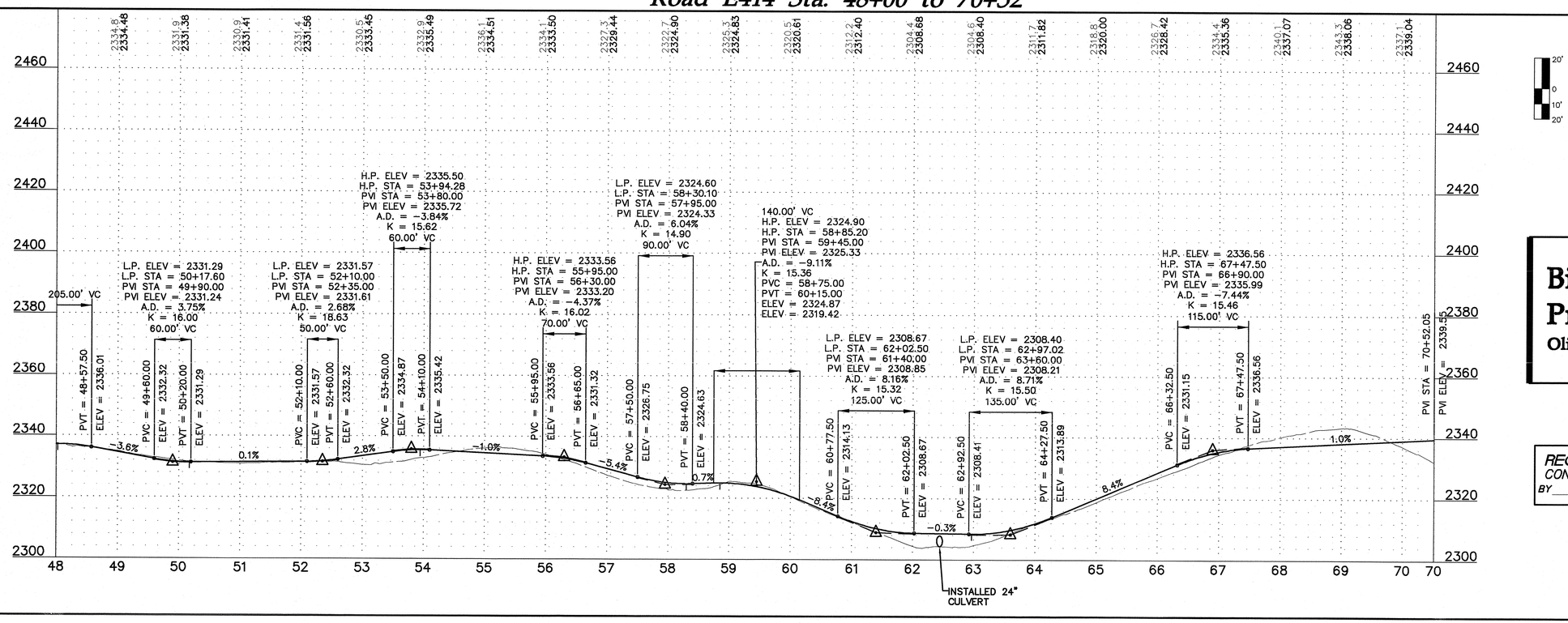
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Oliver County, North Dakota

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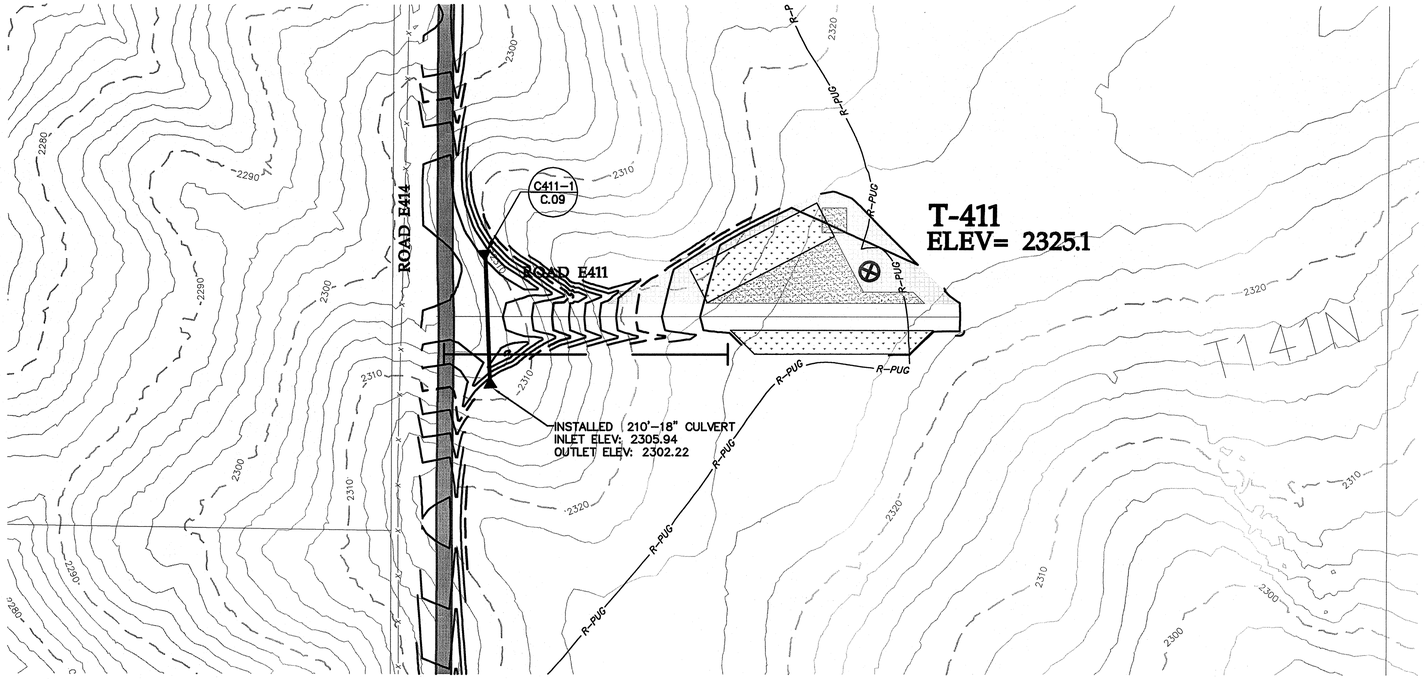
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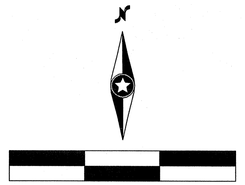
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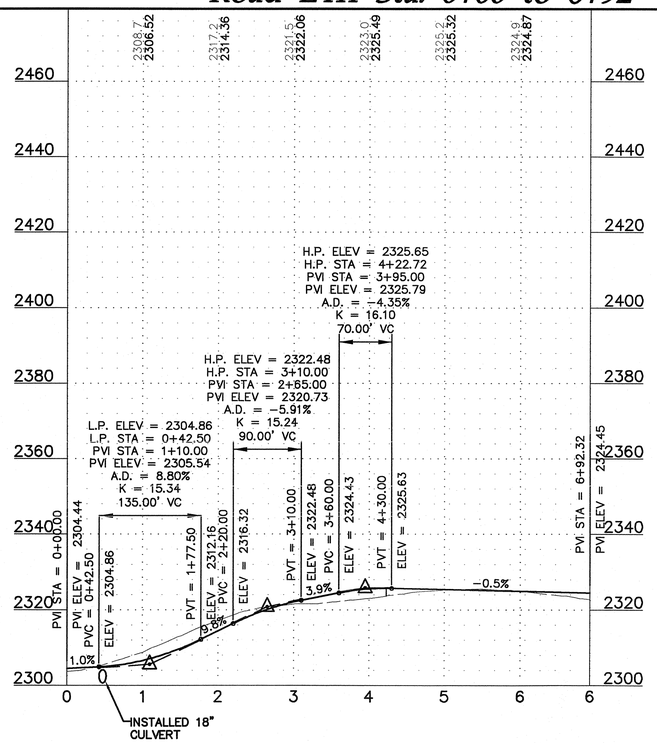
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Road E411 Sta. 0+00 to 6+92





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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
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Prepared for:

minnesota power
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30 West Superior Street
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Bison 4 Wind Project

Oliver County, North Dakota

Road E411 Sta. 0+00 to 6+92

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BY WESTWOOD P.S. *DATE* OCT. 3, 2014

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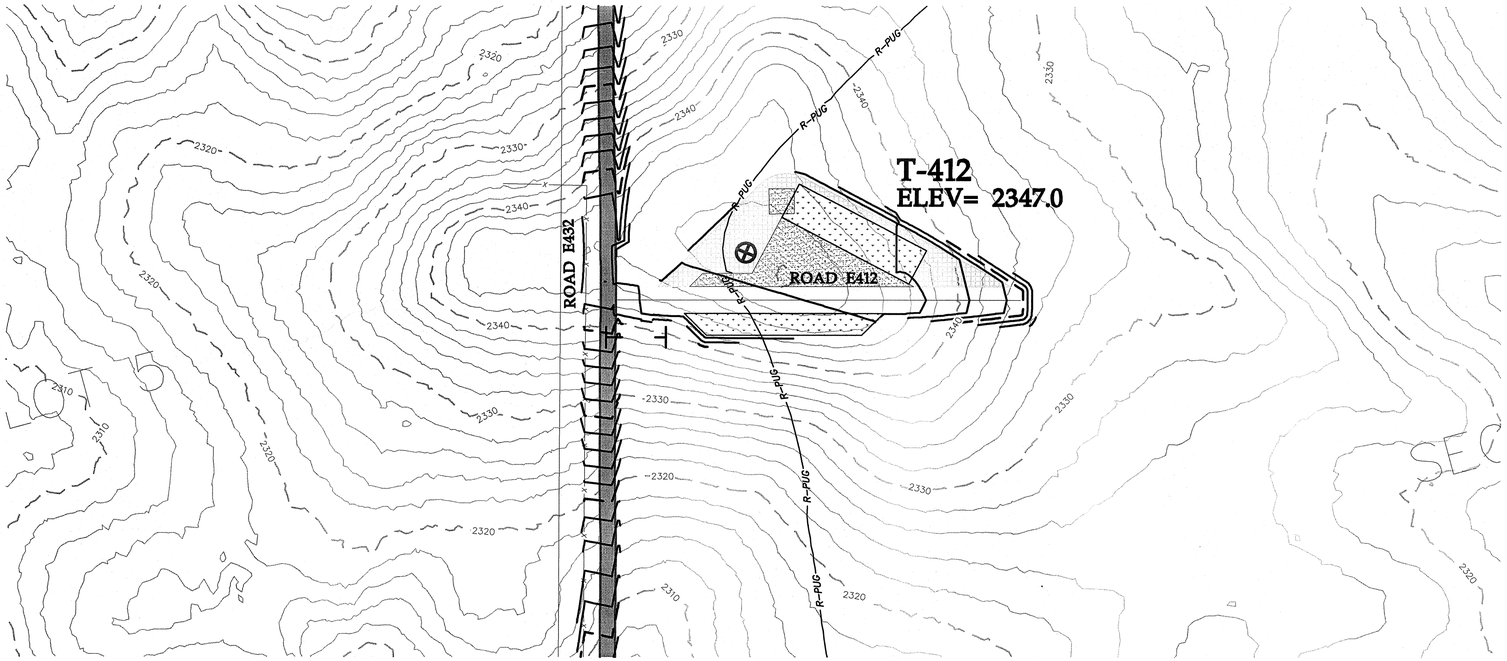
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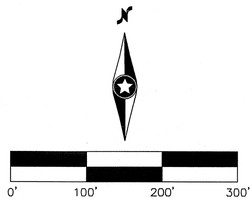
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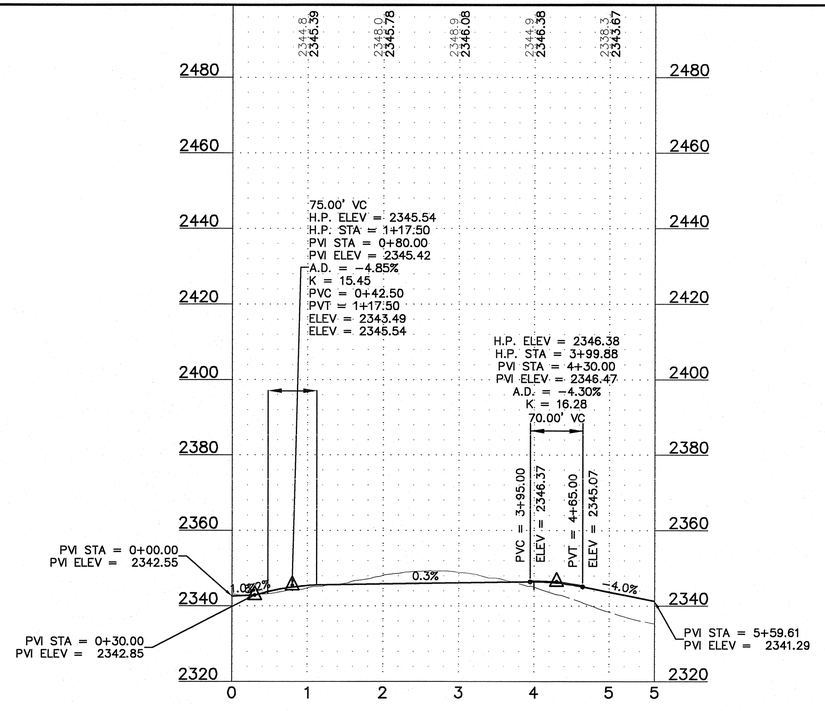
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SEE SHEET C.94



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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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minnesota power
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20' 0 10' 20'

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Oliver County, North Dakota

Road E412 Sta. 0+00 to 5+59

RECORD DRAWINGS
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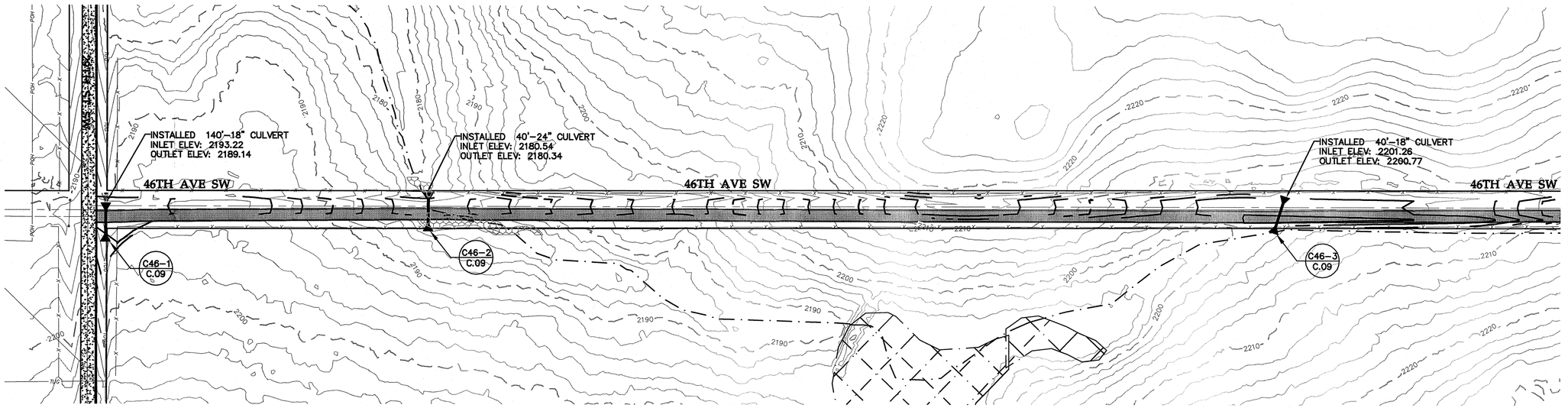
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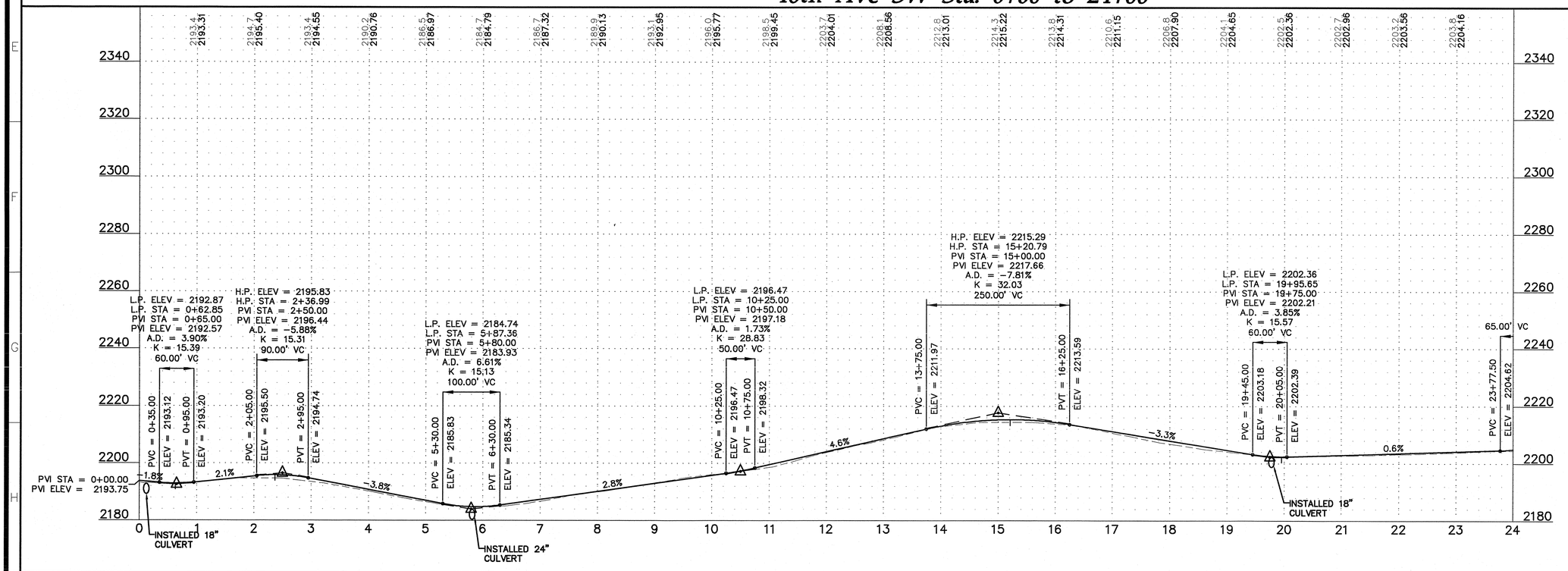
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20' 0 10' 20'

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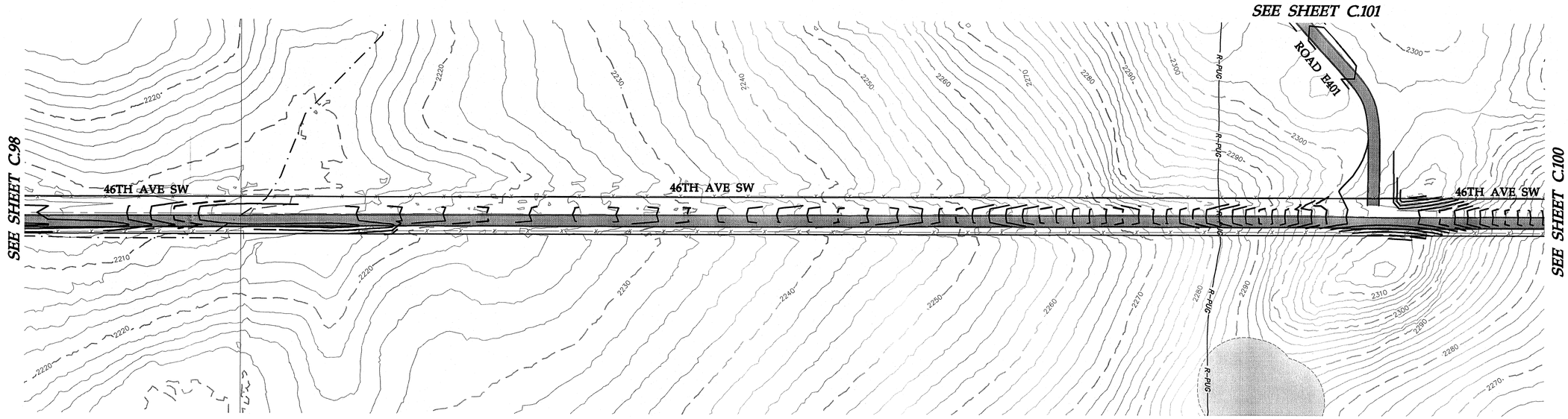
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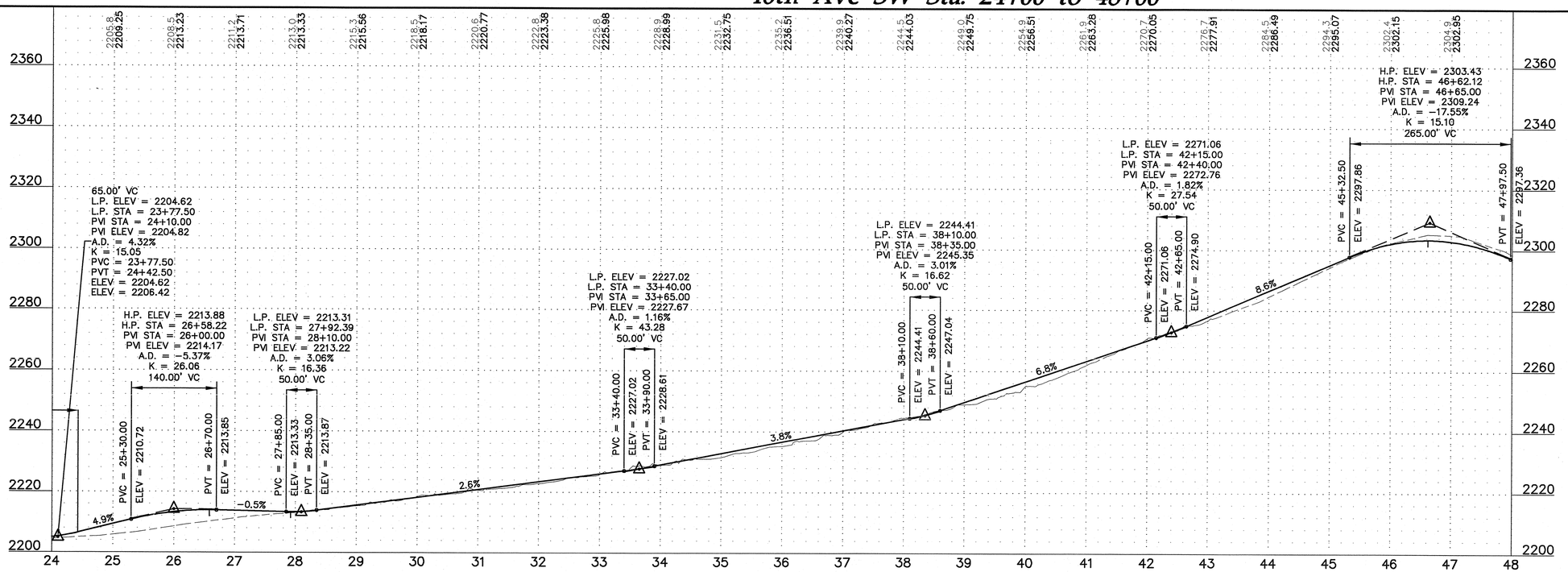
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BY WESTWOOD P.S. *DATE* OCT. 3, 2014

Record Drawings

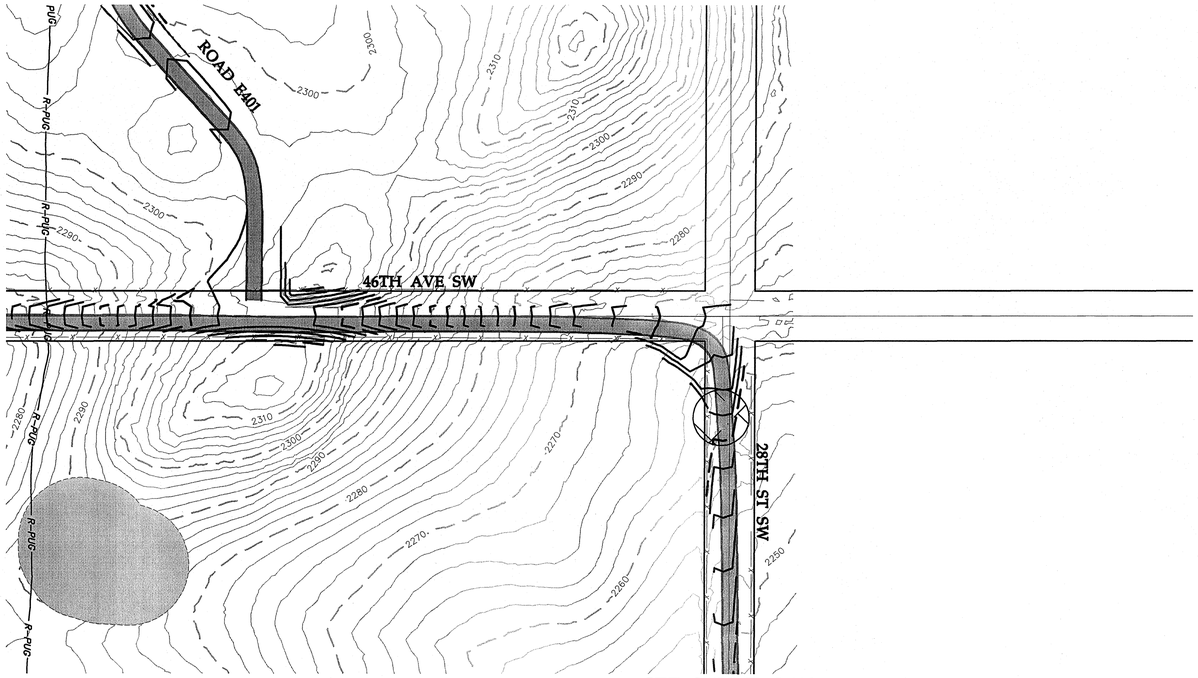
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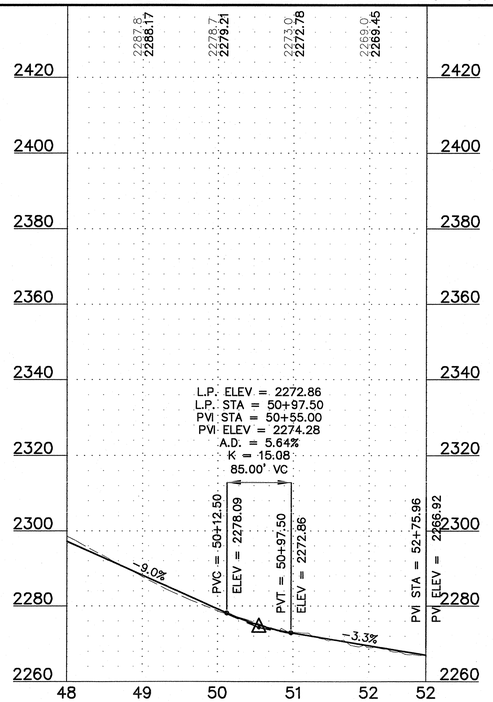
SEE SHEET C.101



SEE SHEET C.102

0' 100' 200' 300'

46th Ave SW Sta. 48+00 to 52+76



20' 0 10' 20'

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Eden Prairie, MN 55344

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. BRISTON
PE-8319
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions:

#	DATE	DESCRIPTION
2	10/09/13	Owner Comments/Field Changes
3	02/28/14	Owner Comments
4	10/03/14	Record Drawings
5	12/22/14	Updated Record Drawings

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- CONSTRUCTED TURBINE LOCATION
- T-XX FINAL TURBINE NUMBER
- CONSTRUCTED ACCESS ROADS
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- CONSTRUCTED CULVERT
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- WIND PROJECT EASEMENT
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- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

46th Ave SW Sta. 48+00 to 52+76

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. *DATE* OCT. 3, 2014

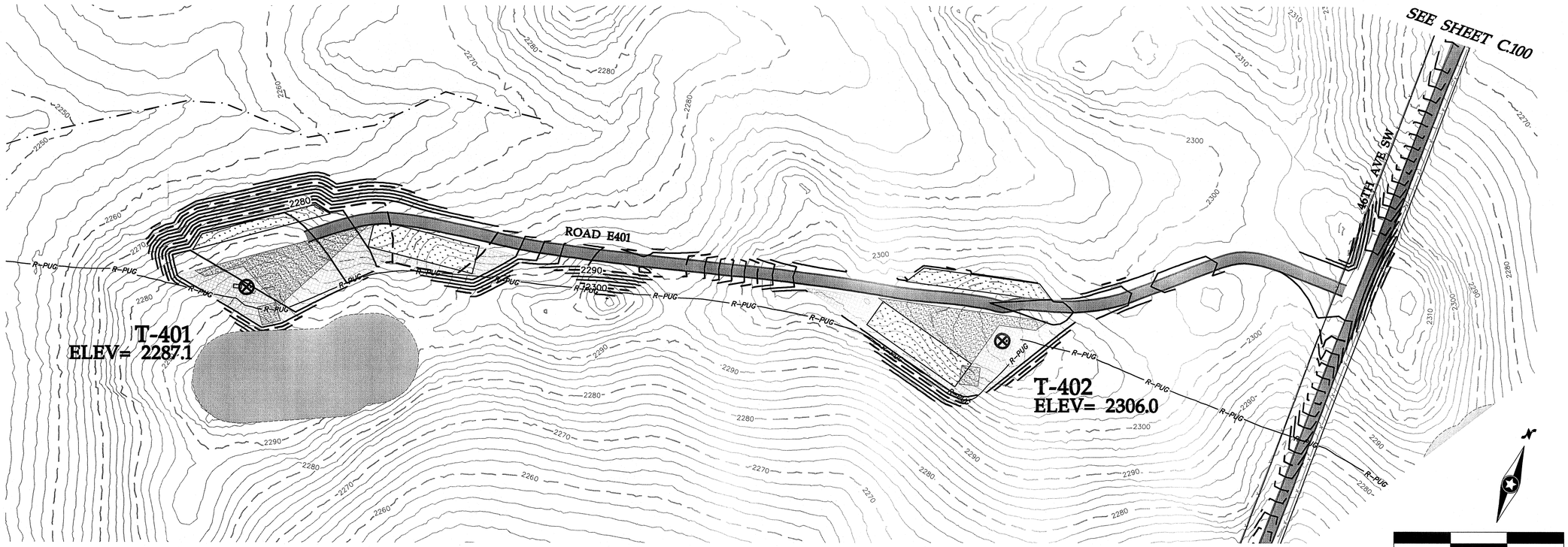
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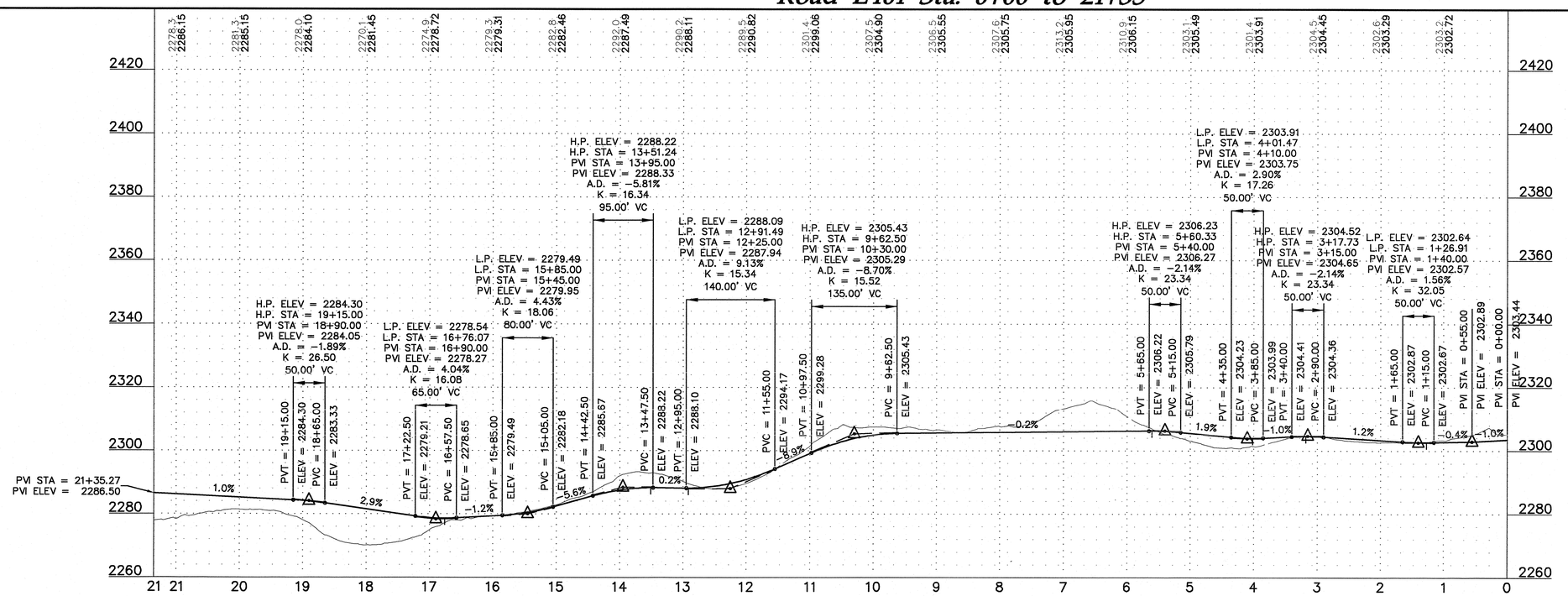
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUDSON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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minnesota power
AN ALLETE COMPANY

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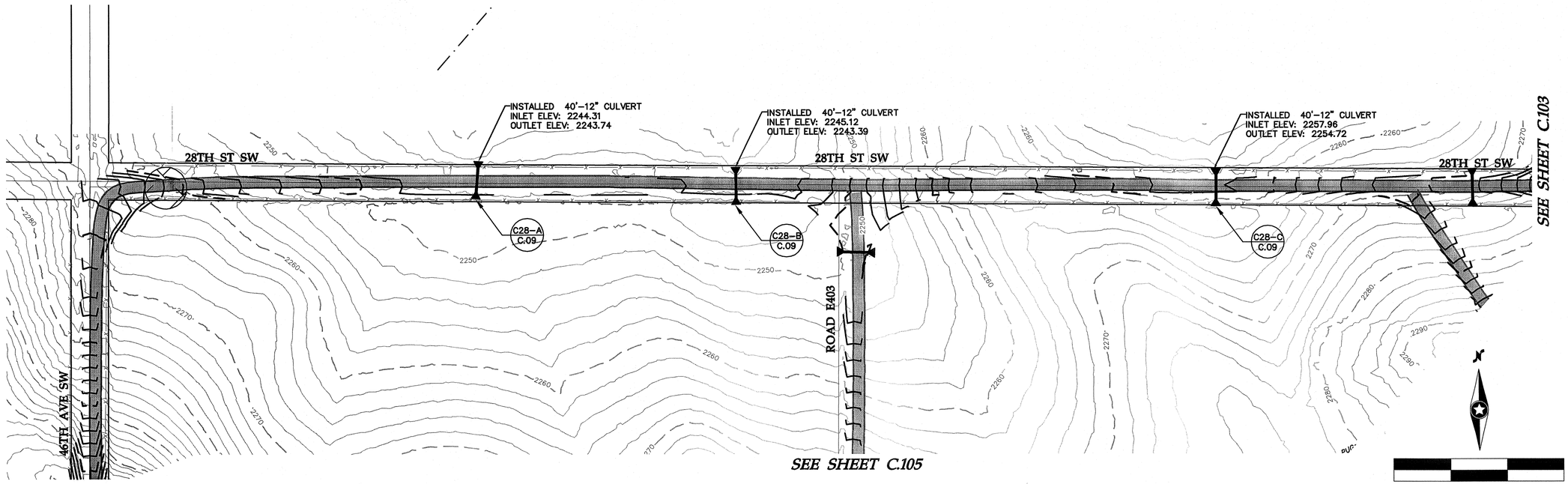
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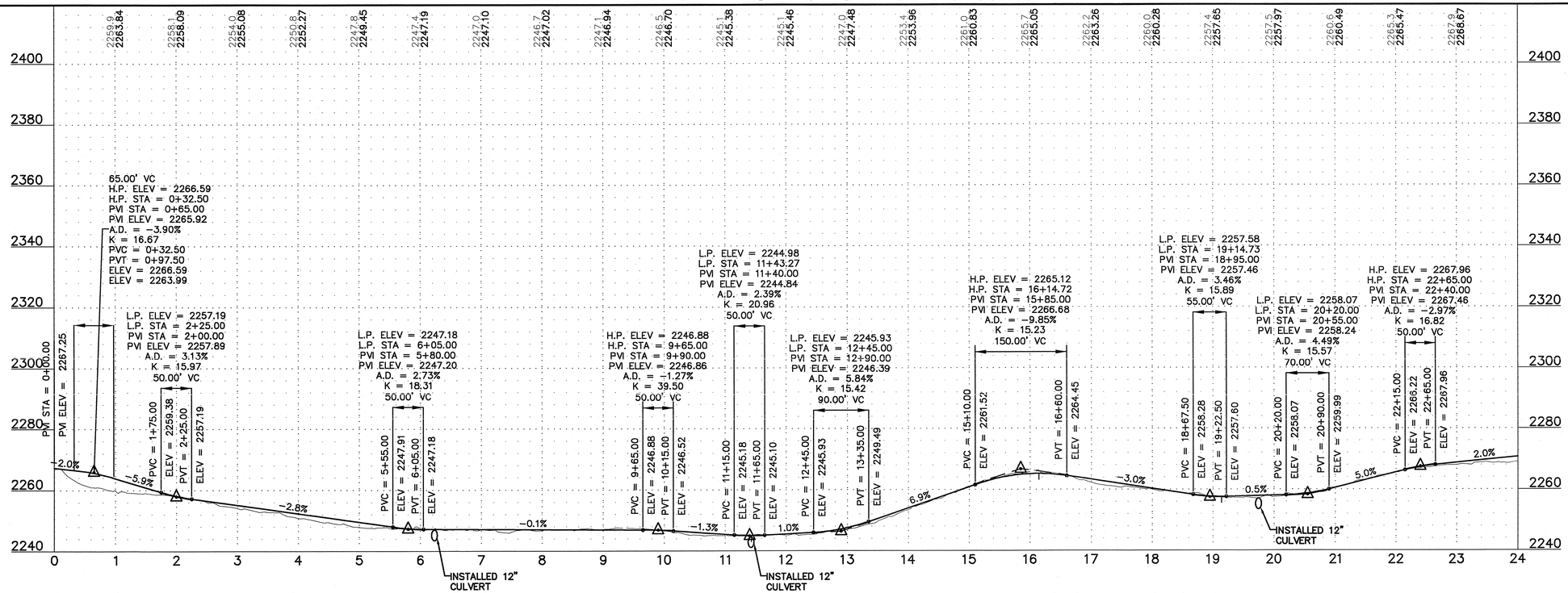
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28th St SW Sta. 0+00 to 24+00



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Bison 4 Wind Project

Oliver County, North Dakota

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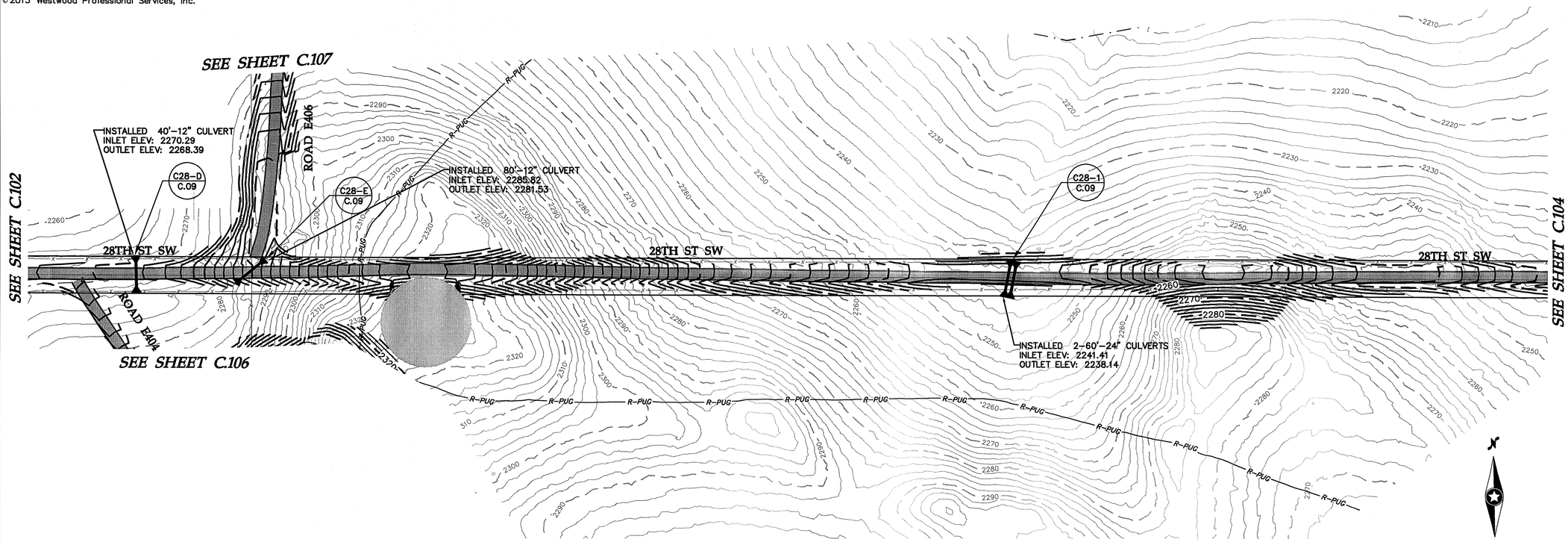
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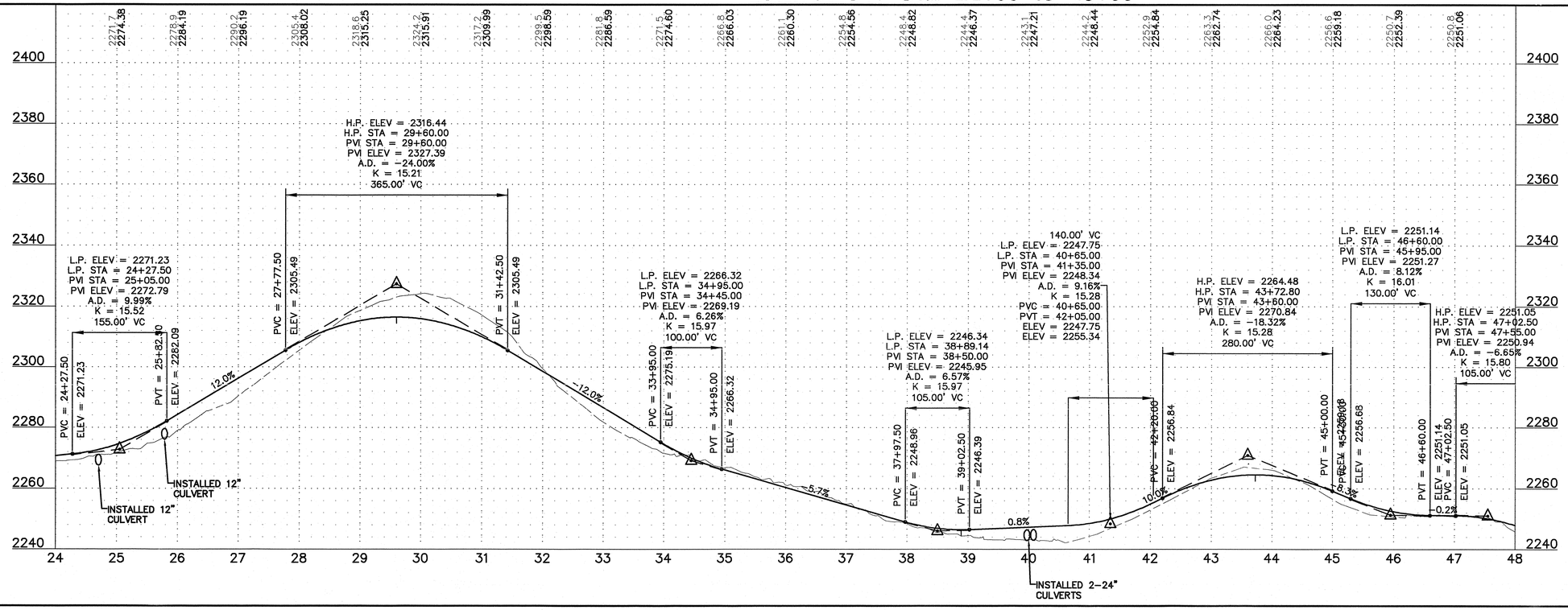
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28th St SW Sta. 24+00 to 48+00

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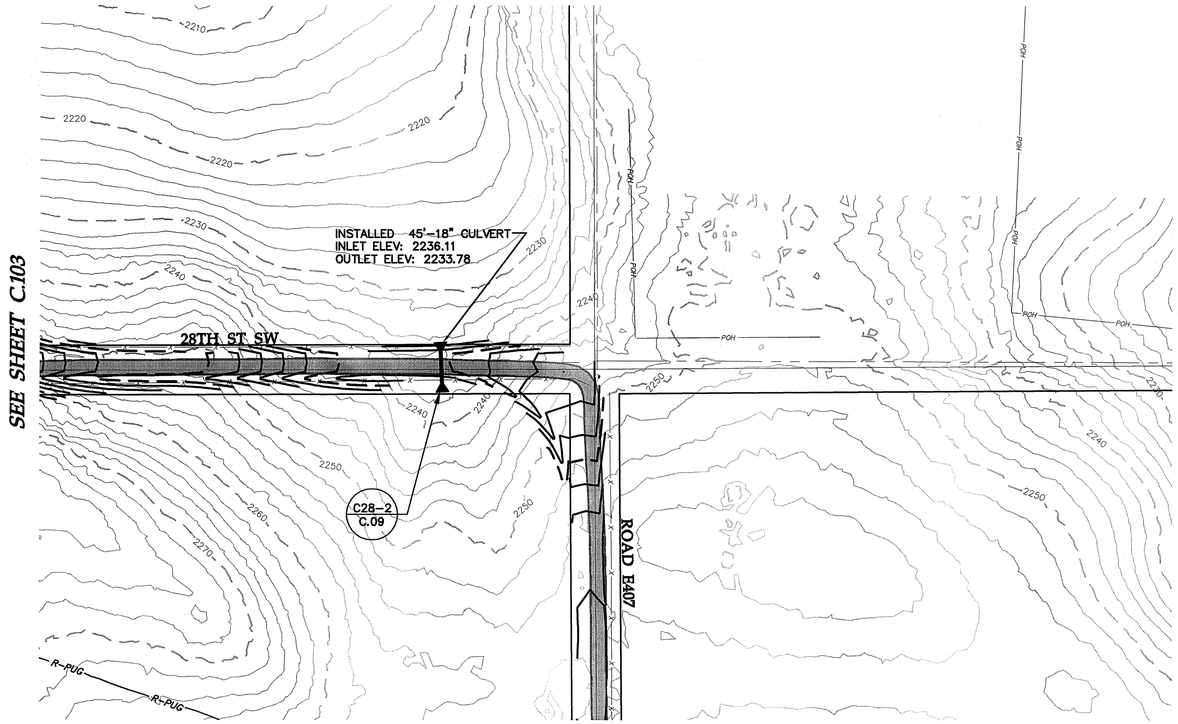
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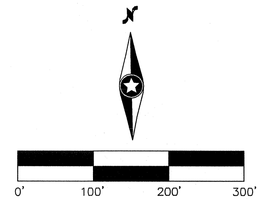
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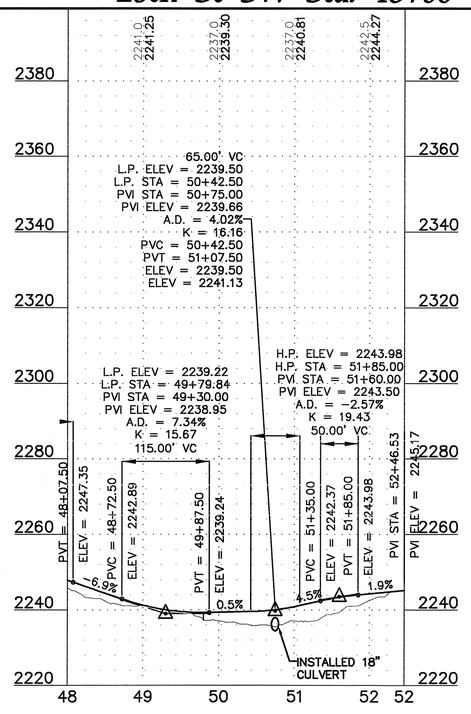
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM B. HUDSON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

28th St SW Sta. 48+00 to 52+46

RECORD DRAWINGS
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BY WESTWOOD P.S. *DATE* OCT. 3, 2014

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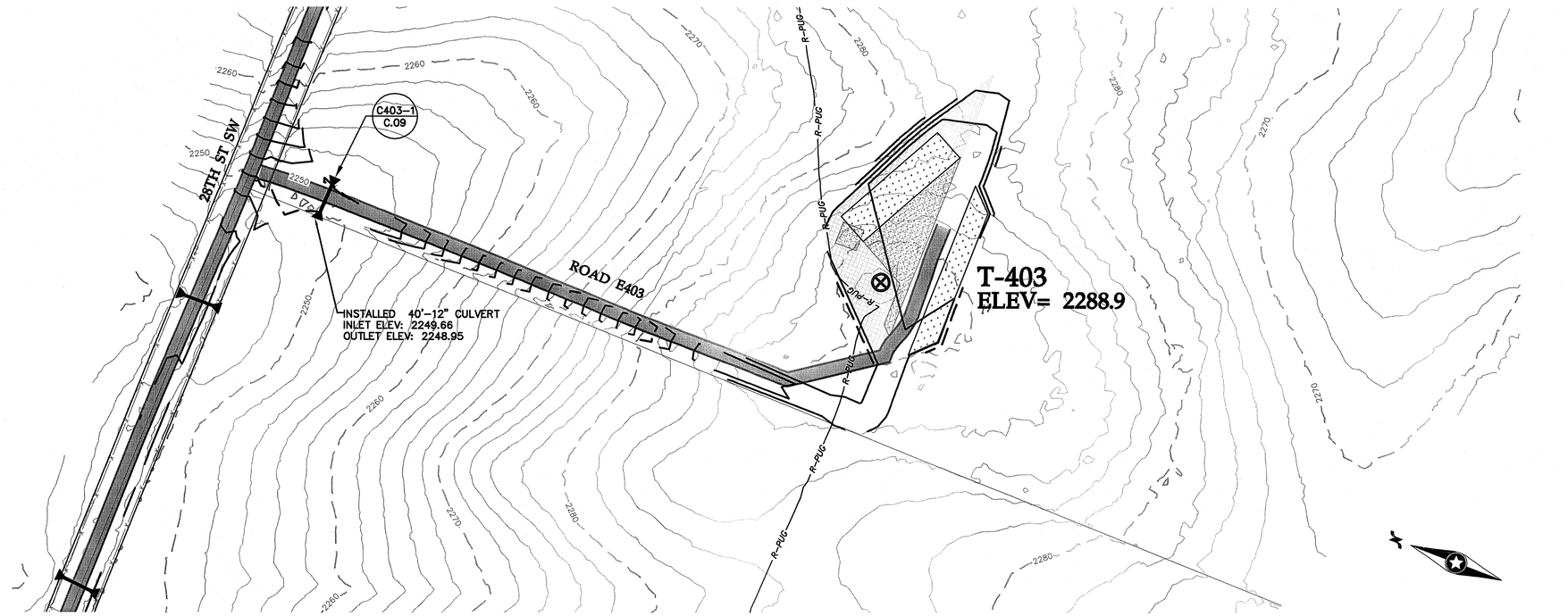
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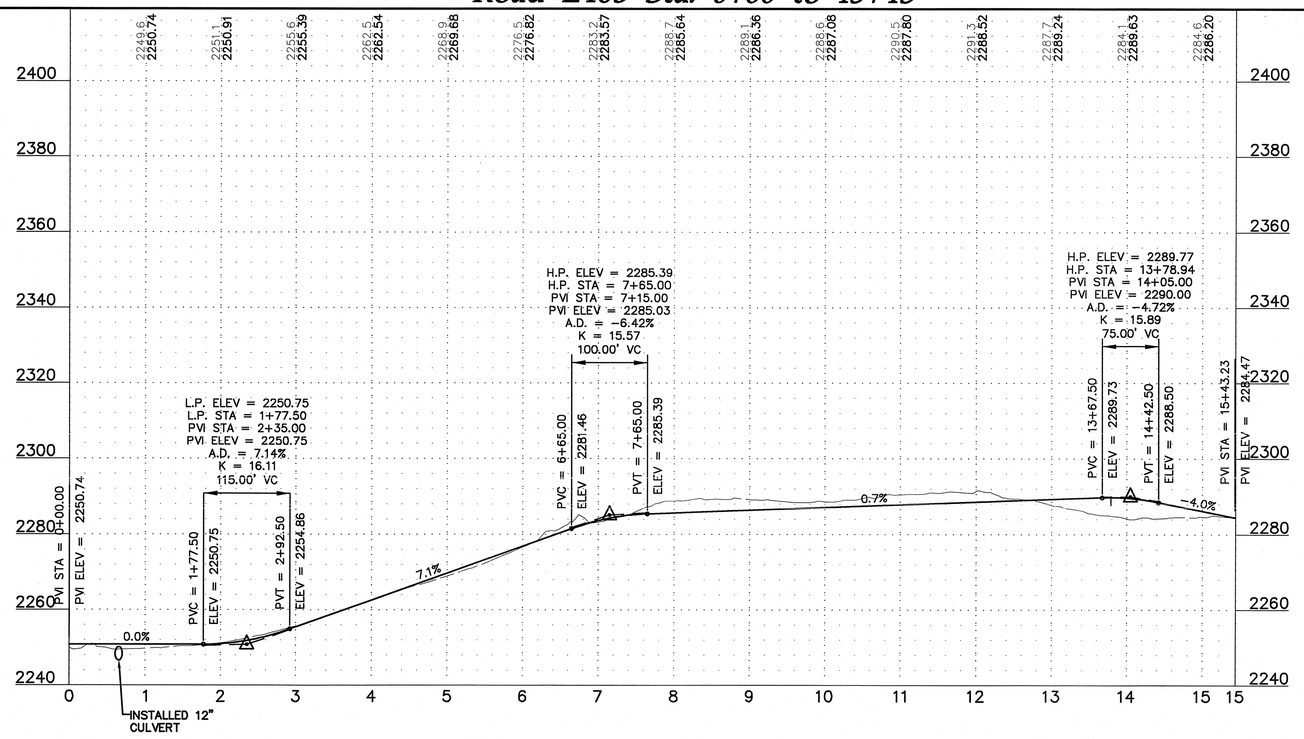
SEE SHEET C.102



SEE SHEET C.102

0' 100' 200' 300'

Road E403 Sta. 0+00 to 15+43



20' 0 10' 20'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

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AN ALLETE COMPANY

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Bison 4 Wind Project

Oliver County, North Dakota

Road E403 Sta. 0+00 to 15+43

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BY WESTWOOD P.S. *DATE* OCT. 3, 2014

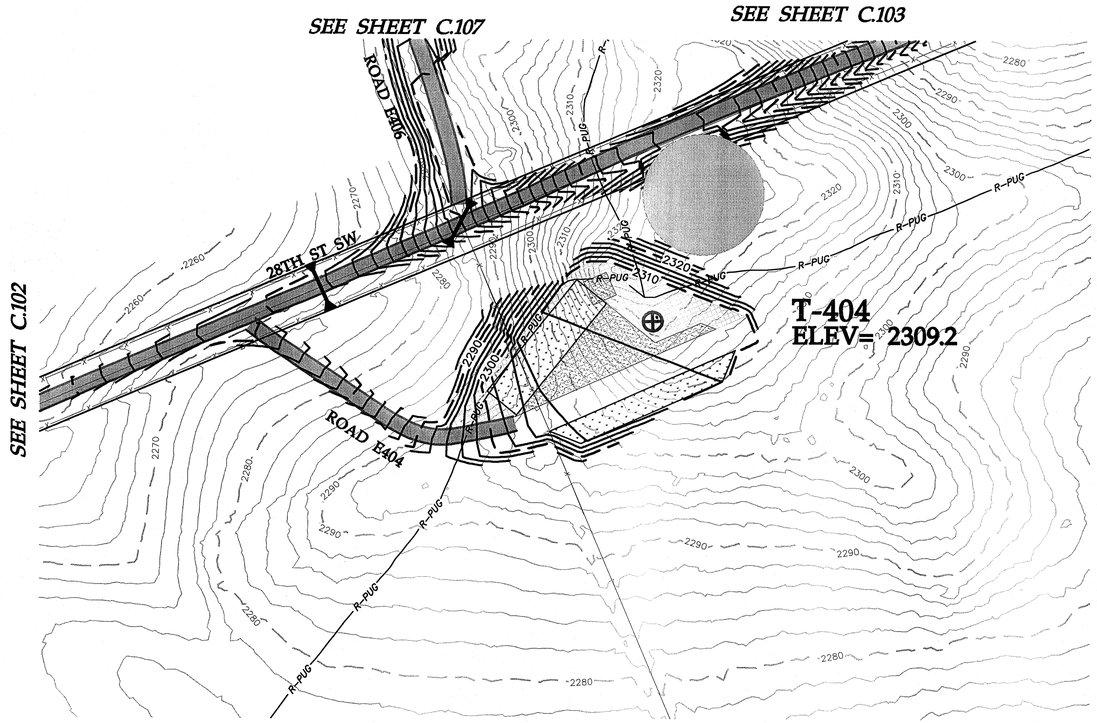
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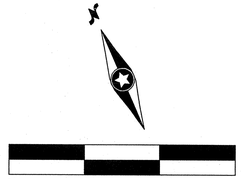
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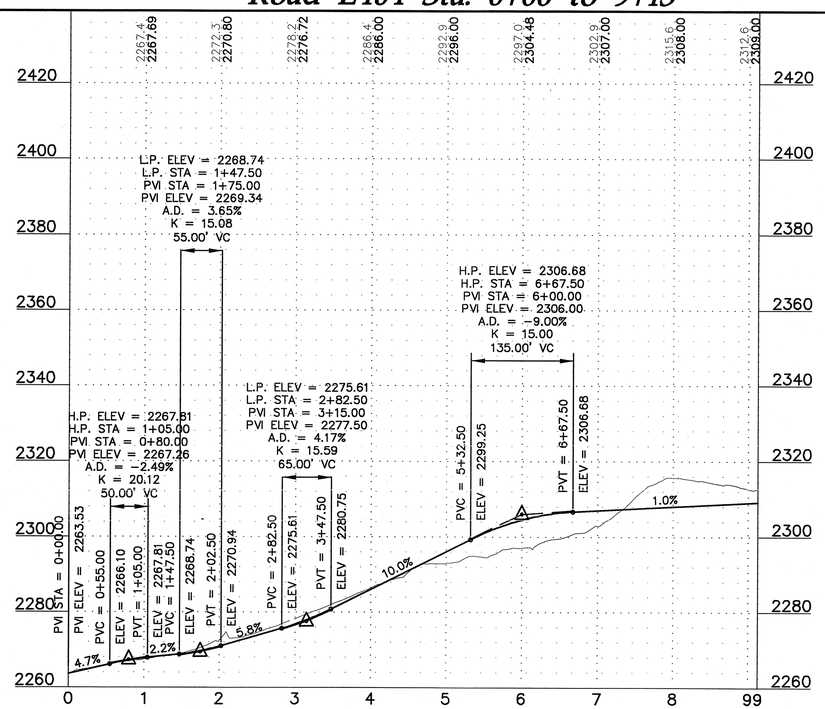
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
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Prepared for:

minnesota power
AN ALLETE COMPANY

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Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

Road E404 Sta. 0+00 to 9+13

RECORD DRAWINGS
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BY WESTWOOD P.S. *DATE* OCT. 3, 2014

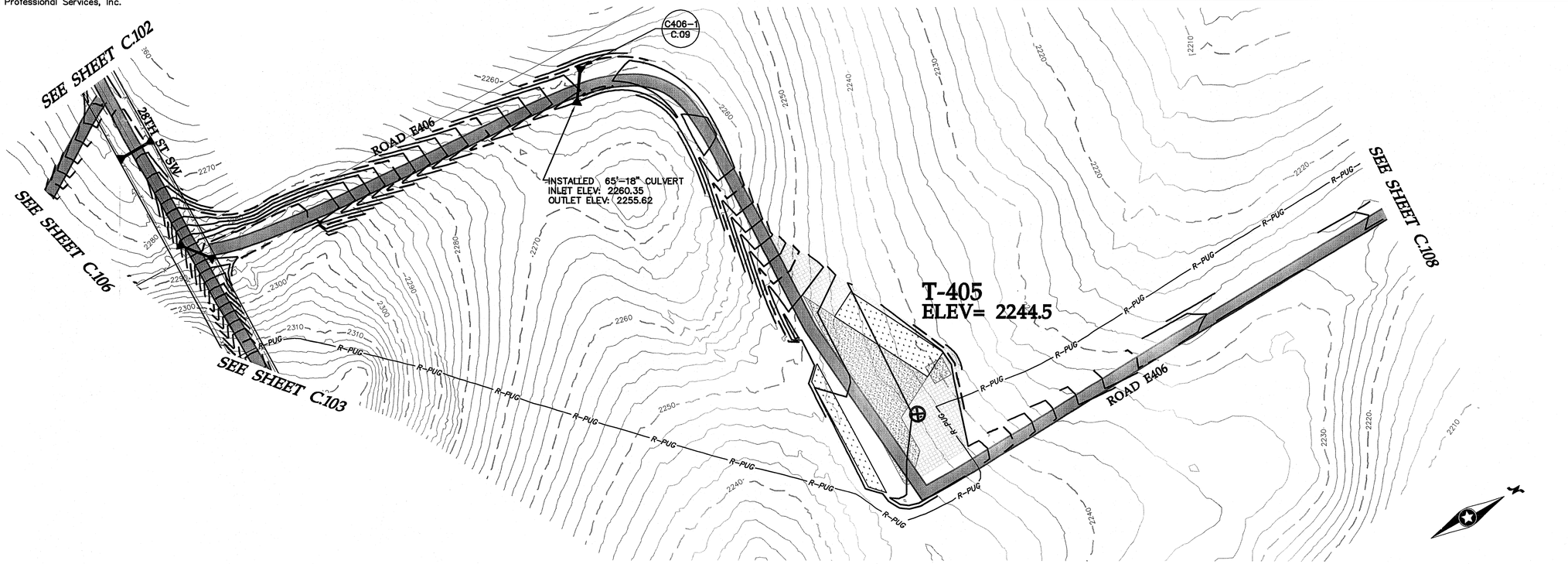
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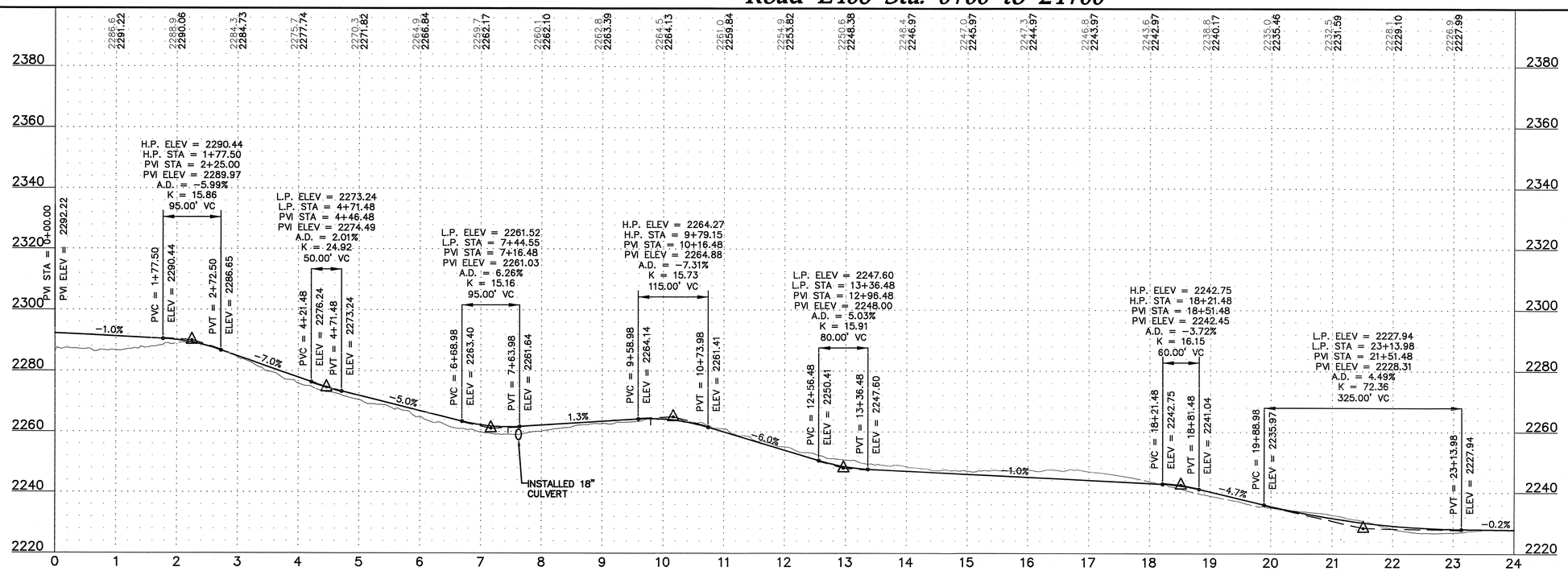
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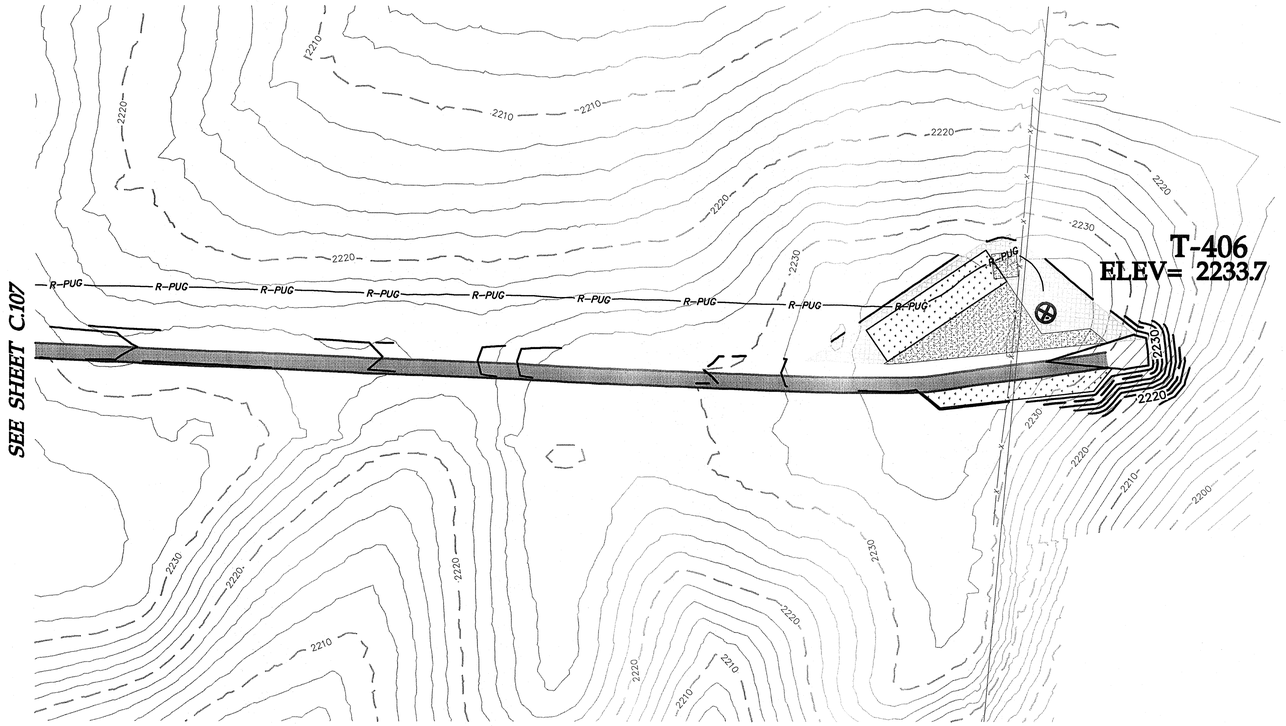
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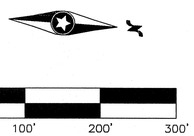
Date: **12/22/2014**

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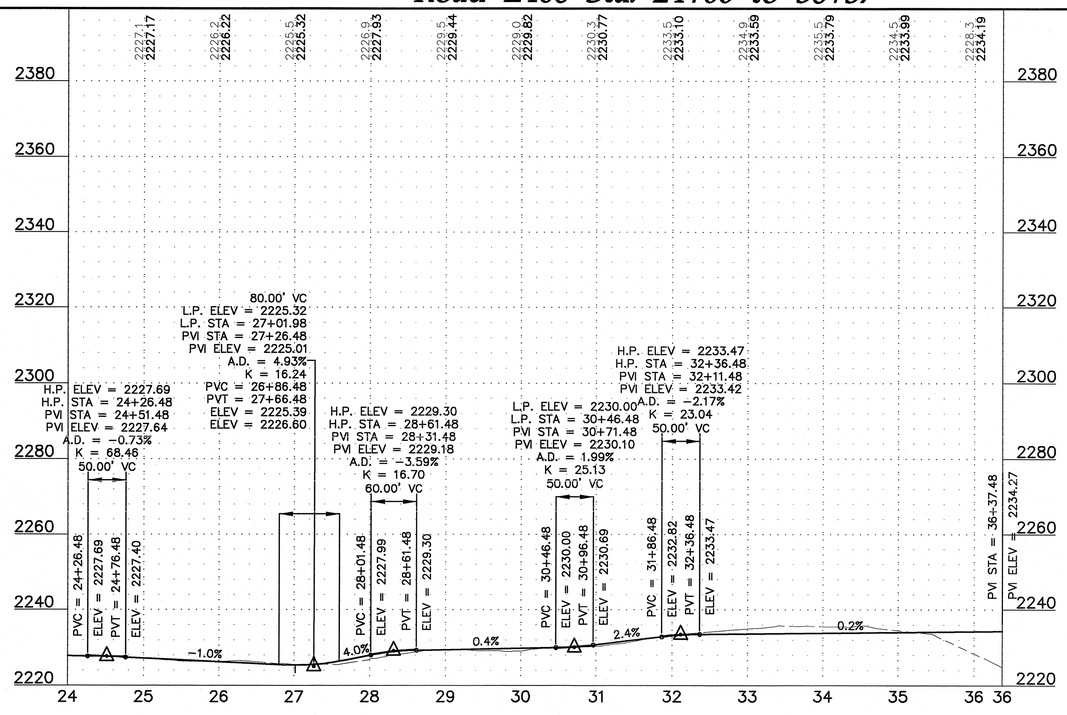
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Bison 4 Wind Project

Oliver County, North Dakota

Road E406 Sta. 24+00 to 36+37

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CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. DATE OCT. 3, 2014

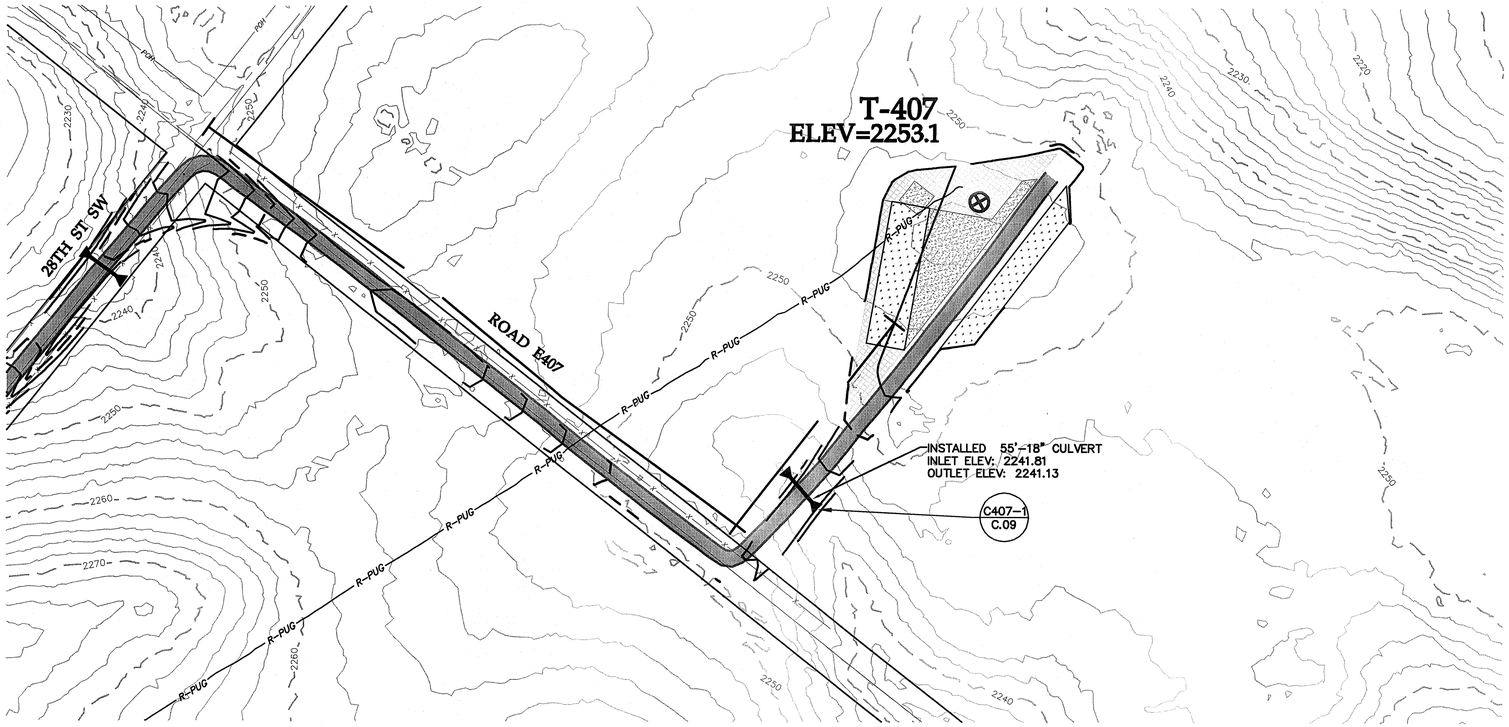
Record Drawings

Date: 12/22/2014

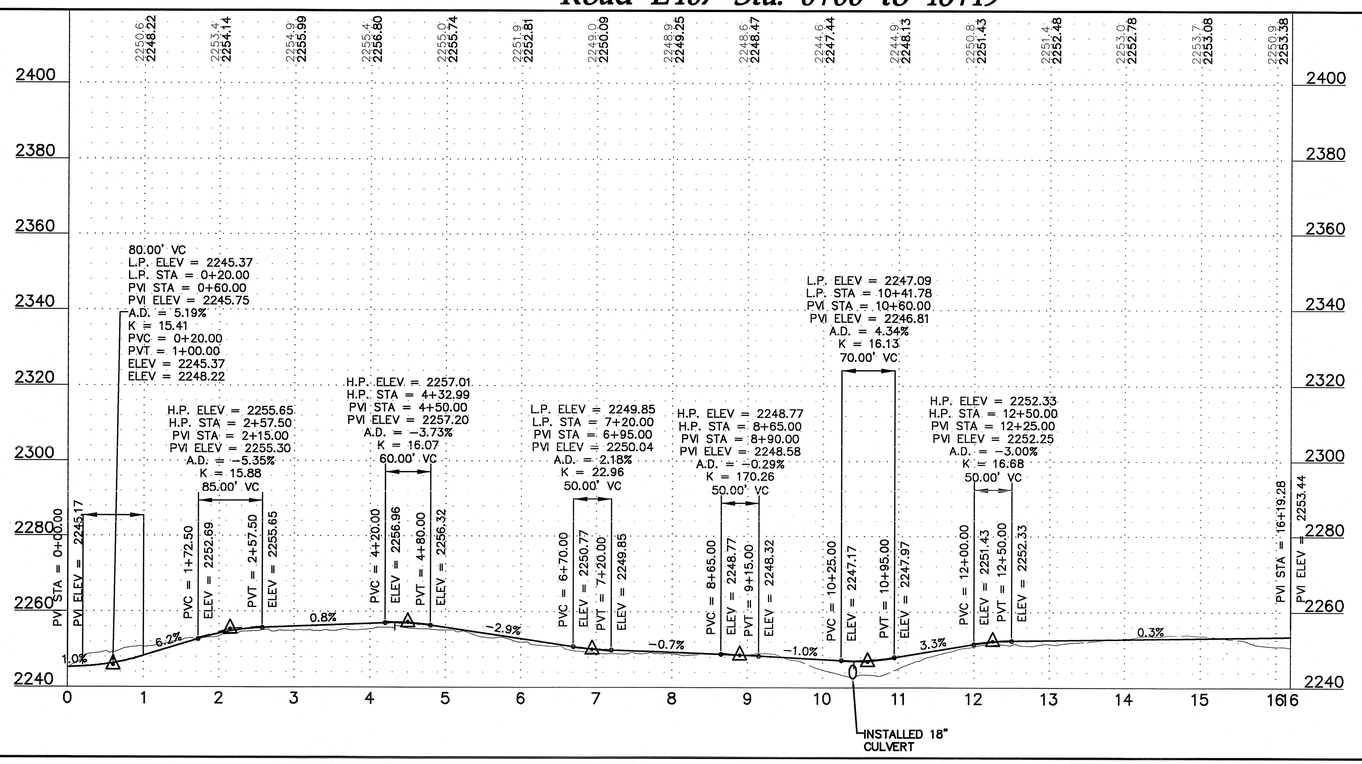
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Road E407 Sta. 0+00 to 16+19





Westwood Professional Services, Inc.
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Eden Prairie, MN 55344

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 12/22/14
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions:

#	DATE	DESCRIPTION
2	10/09/13	Owner Comments/Field Changes
3	02/28/14	Owner Comments
4	10/03/14	Record Drawings
5	12/22/14	Updated Record Drawings

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- CONSTRUCTED TURBINE LOCATION
- T-XX — FINAL TURBINE NUMBER
- CONSTRUCTED ACCESS ROADS
- 3000 — PROPOSED 10' CONTOURS
- PROPOSED 2' CONTOURS
- P-POH — PROPOSED OVERHEAD POWER
- PROPOSED OVERHEAD RIGHT OF WAY
- R-PUG — CONSTRUCTED UNDERGROUND ELECTRICAL COLLECTION
- CONSTRUCTED CULVERT
- CONSTRUCTION EASEMENT
- WIND PROJECT EASEMENT
- 4000 — EXISTING 10' CONTOURS
- EXISTING 2' CONTOURS
- POH — EXISTING OVERHEAD POWER
- EXISTING STREAM
- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

Road E407 Sta. 0+00 to 16+19

RECORD DRAWINGS
CONFORMING TO CONSTRUCTION RECORDS.
BY WESTWOOD P.S. DATE OCT. 3, 2014

Record Drawings

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