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Issued for Construction Civil Plans

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

Data Set Information

BASE FILE	FILE NAME	PROVIDER	DATE
TURBINE ARRAY	2013–06–21 Final Turbine Array	WESTWOOD*	06/12/2013
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

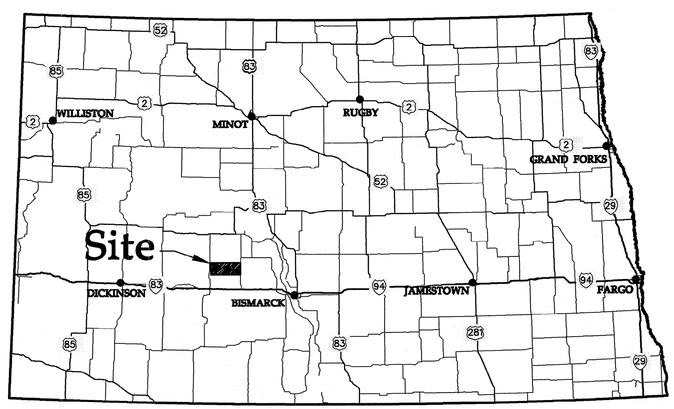
*PROVIDED FINAL TURBINE ARRAY TO MINNESOTA POWER AFTER VERIFICATION FROM METEOROLOGICAL AND SURVEYED BY ULTEIG FOR FINAL EXISTING GROUND ELEVATIONS AT TURBINE CENTER.

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

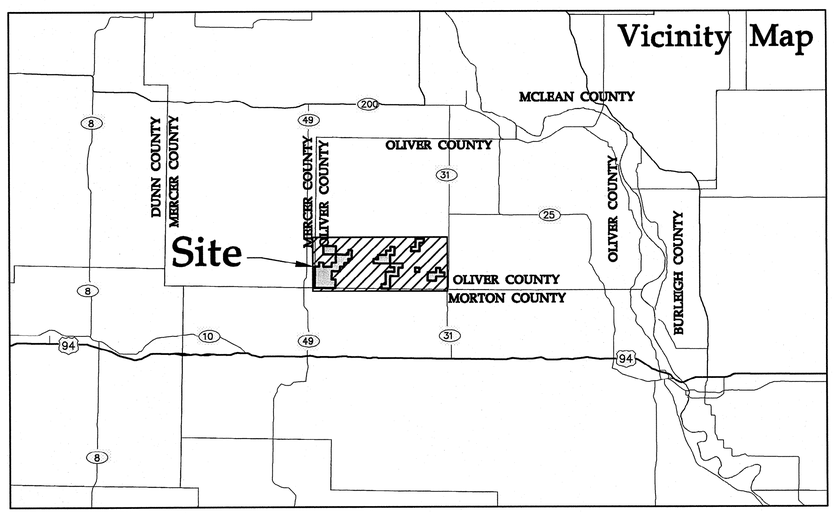
PROJECT CONTACT INFORMATION:

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



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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

Bison 4 Wind Project
Oliver County, North Dakota

Cover

Issued for Construction

Date: 08/09/2013
Sheet: T.01

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SHEET LIST TABLE

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

New TURB_NUM	Old TURB_NUM	HARN/ND, North Dakota State Planes, South Zone, US Foot Easting	Northing	Ground Elevation	UTM Zone 14N WGS84_East	WGS84_Nort	Latitude/Longitude Lat	Long	Proposed Ground Elevation	Proposed Top of Concrete Elevation
401	401 E	1725062.81	490141.14	2288.91	311803.080	5208863.399	47.006518	-101.475796	2286.3	2286.8
402	402 E	1726344.97	490508.96	2314.98	312196.000	5208968.000	47.007570	-101.470676	2305.4	2305.9
403	403 E	1728442.23	490477.03	2292.18	312835.000	5208946.000	47.007553	-101.462268	2287.8	2288.3
404	404 E	1729736.69	491174.03	2320.94	313233.593	5209150.852	47.009508	-101.457114	2308.6	2309.1
405	405 E 1B	1730404.77	492335.74	2243.84	313444.000	5209501.000	47.012715	-101.454493	2243.8	2244.3
406	406 E	1730365.34	494047.75	2235.75	313442.000	5210023.000	47.017407	-101.454734	2233.4	2233.9
407	407 E	1732753.40	490490.88	2253.32	314149.000	5208925.000	47.007735	-101.444989	2252.5	2253.0
408	426 E	1715128.27	506492.36	2325.09	308871.000	5213905.000	47.051002	-101.516462	2323.2	2323.7
409	427 E	1717532.70	506510.27	2303.43	309603.919	5213896.375	47.051136	-101.506818	2293.0	2293.5
410	428 E	1717753.14	508029.15	2321.06	309680.000	5214358.000	47.055308	-101.506012	2319.5	2320.0
411	429 E	1718533.95	509058.02	2325.46	309924.000	5214667.000	47.058156	-101.502932	2324.4	2324.9
412	430 E	1718158.85	510819.33	2349.03	309820.000	5215206.000	47.062972	-101.504527	2346.4	2346.9
413	431 E	1719138.92	511894.69	2337.10	310125.000	5215528.000	47.065955	-101.500650	2333.8	2334.3
414	432 E	1720333.50	512393.42	2343.46	310492.000	5215673.000	47.067364	-101.495882	2337.6	2338.1
415	425 E	1697941.47	482781.58	2303.19	303494.000	5206779.000	46.985366	-101.584090	2297.9	2298.4
416	424 E	1698823.90	483815.62	2330.75	303769.000	5207089.000	46.988234	-101.580611	2326.1	2326.6
417	423 E	1698846.11	485735.43	2317.03	303787.000	5207674.000	46.993498	-101.580628	2315.3	2315.8
418	422 E	1699445.36	487164.33	2283.95	303978.000	5208106.000	46.997438	-101.578308	2284.7	2285.2
419	421 E	1698414.10	490464.90	2300.18	303683.000	5209118.000	47.006449	-101.582620	2288.4	2288.9
420	420 E	1699878.42	491096.72	2300.60	304133.000	5209302.000	47.008236	-101.576786	2291.1	2291.6
421	419 E	1703948.39	490505.54	2411.04	305370.000	5209098.000	47.006767	-101.560441	2398.2	2398.7
422	418 E	1704621.80	491830.88	2317.79	305583.000	5209498.000	47.010425	-101.557814	2315.5	2316.0
423	417 E	1705032.57	492993.69	2323.71	305715.000	5209850.000	47.013629	-101.556230	2314.4	2314.9
424	416 E	1706175.15	495515.79	2283.94	306078.000	5210612.000	47.020585	-101.551786	2277.7	2278.2
425	415 E	1707417.91	496238.52	2278.72	306461.000	5210825.000	47.022612	-101.546842	2271.7	2272.2
426	411 E	1692664.58	497874.50	2378.48	301974.000	5211410.000	47.026543	-101.606082	2373.8	2374.3
427	410 E	1693926.18	499493.30	2379.45	302368.000	5211896.000	47.031030	-101.601115	2374.9	2375.4
428	409 E	1694922.49	500746.10	2367.59	302679.000	5212272.000	47.034503	-101.597190	2365.4	2365.9
429	408 E	1696670.37	500792.81	2317.15	303212.000	5212276.000	47.034698	-101.590184	2302.3	2302.8
430	412 E	1697514.24	502124.70	2316.12	303477.000	5212677.000	47.038381	-101.586874	2316.1	2316.6
431	413 E	1699466.15	502594.02	2317.80	304074.660	5212808.607	47.039742	-101.579072	2317.2	2317.7
432	414 E	1700029.36	503734.80	2280.37	304253.000	5213153.000	47.042890	-101.576876	2276.0	2276.5
433	433 E	1654585.60	482556.45	2326.44	290278.000	5206904.000	46.982977	-101.757768	2316.7	2317.2
434	435 E	1658984.21	484738.48	2370.89	291631.485	5207603.357	46.989151	-101.740285	2368.2	2368.7
435	437 E	1661874.28	484940.48	2356.63	292513.569	5207648.017	46.989829	-101.728719	2353.2	2353.7
436	438 E	1663779.75	484707.98	2363.30	293093.000	5207566.000	46.989273	-101.721070	2359.1	2359.6
437	439 E	1664371.82	485824.99	2330.74	293280.000	5207903.000	46.992360	-101.718767	2328.8	2329.3
438	443 E	1662555.75	489879.27	2318.84	292750.188	5209149.380	47.003398	-101.726297	2313.6	2314.1
439	449 E	1670023.41	497678.98	2381.42	295072.000	5211483.000	47.025097	-101.696846	2378.1	2378.6
440	450 E	1671387.19	498587.74	2357.24	295493.000	5211752.000	47.027645	-101.691434	2350.1	2350.6
441	451 E	1672045.54	500181.77	2346.27	295703.000	5212234.000	47.032043	-101.688891	2341.3	2341.8
442	452 E	1673452.65	500714.07	2372.04	296135.000	5212388.000	47.033561	-101.683281	2369.1	2369.6
443	453 E	1674502.87	502016.74	2343.32	296462.735	5212778.896	47.037175	-101.679148	2341.9	2342.4
444	454 E	1674984.62	503347.90	2345.22	296617.367	5213181.804	47.040844	-101.677296	2343.8	2344.3
445	441 1A	1659206.40	488973.81	2362.46	291724.000	5208893.000	47.000772	-101.739663	2354.8	2355.3
446	442 E	1660594.52	490152.03	2344.63	292154.000	5209244.000	47.004062	-101.734174	2338.6	2339.1
447	444 E	1662814.89	493606.74	2330.01	292851.000	5210284.000	47.013628	-101.725492	2327.0	2327.5
448	445 E	1663941.21	494579.82	2344.97	293200.000	5210574.000	47.016344	-101.721038	2339.4	2339.9
449	446 E	1665910.30	495297.26	2378.16	293804.380	5210781.146	47.018395	-101.713189	2369.4	2369.9
450	447 1B	1666236.60	496520.25	2380.13	293911.000	5211152.000	47.021761	-101.711957	2368.1	2368.6
451	448 E	1668347.82	497289.16	2413.55	294559.000	5211374.000	47.023958	-101.703540	2407.1	2407.6
452	436 1A	1657635.97	488405.60	2351.34	291242.000	5208729.000	46.999146	-101.745920	2350.9	2351.4
453	455 E	1659384.22	504816.98	2266.82	291871.000	5213721.000	47.044214	-101.739953	2261.5	2262.0
454	456 E	1661229.07	505105.08	2295.01	292435.000	5213798.000	47.045083	-101.732572	2292.2	2292.7
455	457 E	1664793.45	505203.15	2316.67	293522.000	5213807.000	47.045505	-101.718282	2310.2	2310.7
456	458 E	1665021.20	506838.11	2322.27	293601.000	5214304.000	47.049997	-101.717470	2301.2	2301.7
457	459 E	1665786.93	507965.04	2283.99	293841.000	5214643.000	47.053119	-101.714669	2274.4	2274.9
458	440 E	1654922.58	486877.14	2331.22	290406.000	5208279.000	46.994837	-101.756695	2328.7	2329.2
459	474 A	1656139.76	487389.35	2349.38	290780.000	5208428.000	46.996294	-101.751851	2338.4	2338.9
460	461 E	1653702.00	491154.80	2328.40	290059.000	5209590.000	47.006511	-101.761861	2326.3	2326.8
461	462 E	1655108.95	491864.23	2346.17	290492.000	5209798.000	47.008517	-101.756268	2344.7	2345.2
462	463 E	1655813.70	493091.66	2399.22	290714.000	5210168.000	47.011913	-101.753522	2392.8	2393.3
463	464 E	1657281.51	493536.52	2345.74	291164.000	5210295.000	47.013197	-101.747667	2343.2	2343.7
464	460 E	1657103.95	495947.78	2318.67	291124.000	5211031.000	47.019800	-101.748532	2314.0	2314.5

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM R. HINSON
PE-8310
DATE 10/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
1	09/04/13	Owner Comments
2	10/09/13	Owner Comments/Field Changes

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project

Oliver County, North Dakota

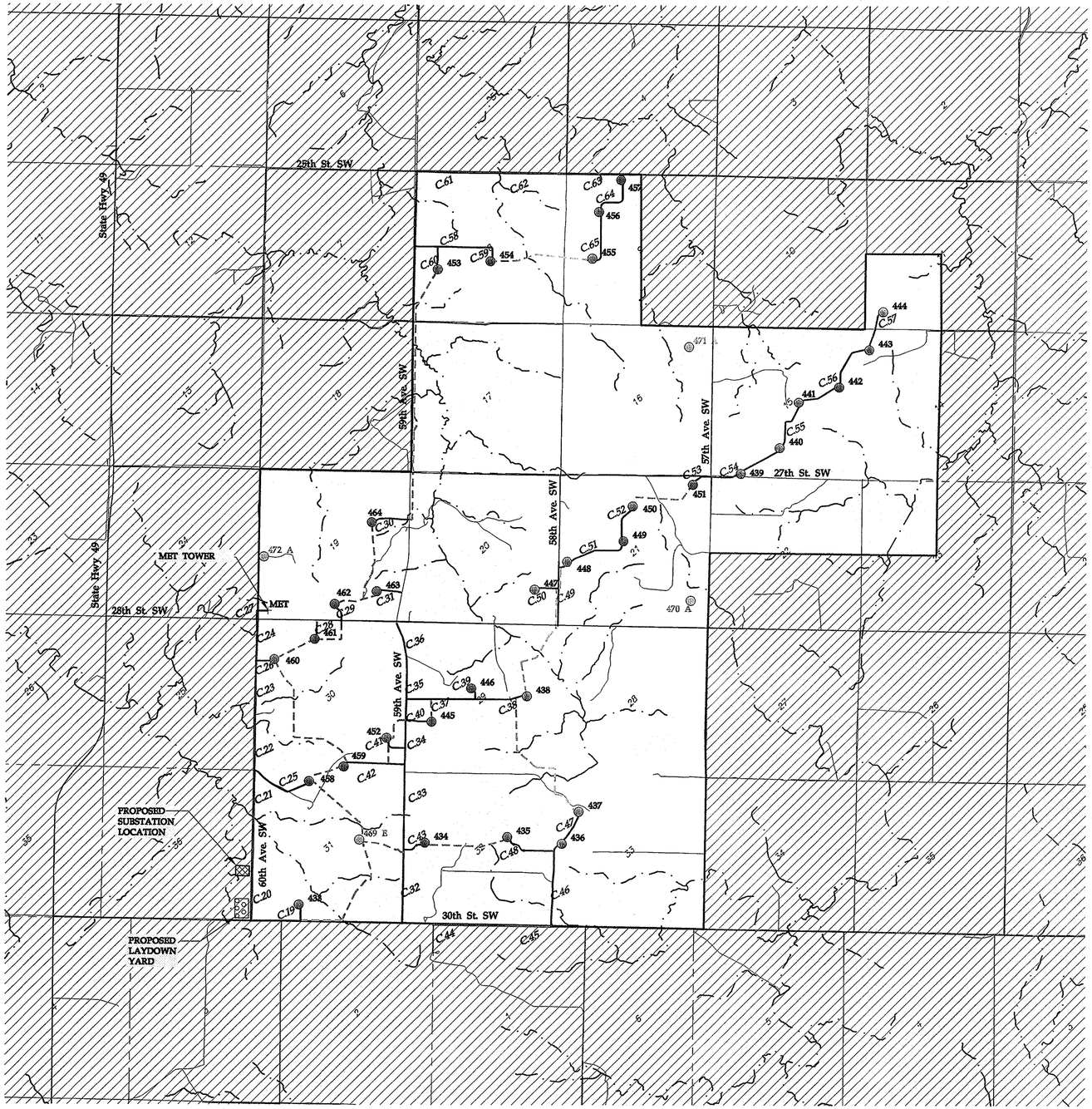
Sheet Index

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Date: 08/09/2013
Sheet: T.02

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0' 2200' 4400' 6600'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

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
- PROPOSED ACCESS ROADS
- C50 PROPOSED ACCESS ROAD REFERENCE NUMBER
- COUNTY ROAD/SECTION LINE ROAD IMPROVEMENT
- C30 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

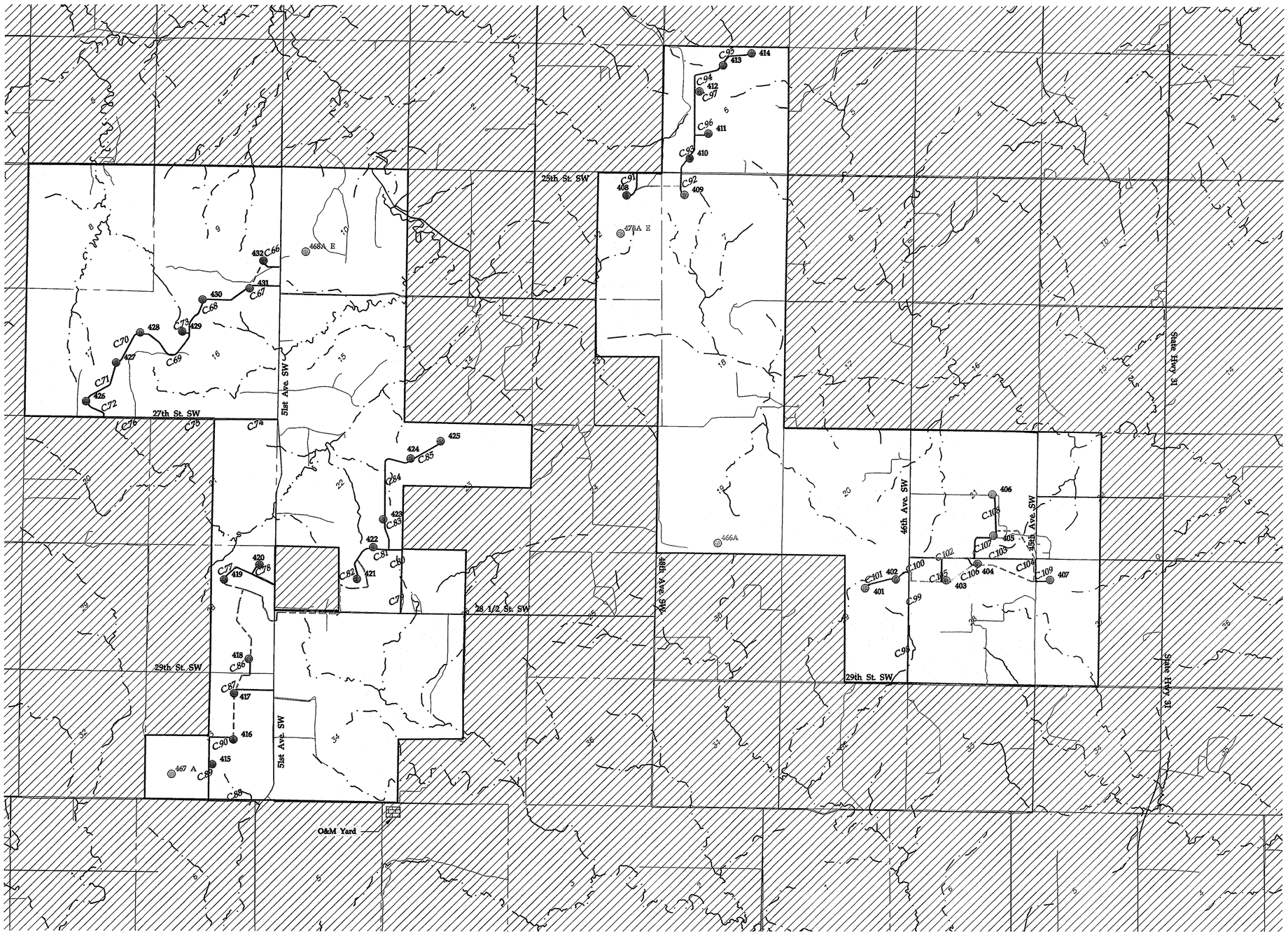
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Date: 08/09/2013

Sheet: C.01

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0' 2200' 4400' 6600'

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 E. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

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
- PROPOSED ACCESS ROADS
- C105 — PROPOSED ACCESS ROAD REFERENCE NUMBER
- COUNTY ROAD/SECTION LINE ROAD IMPROVEMENT
- C30 — 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-East

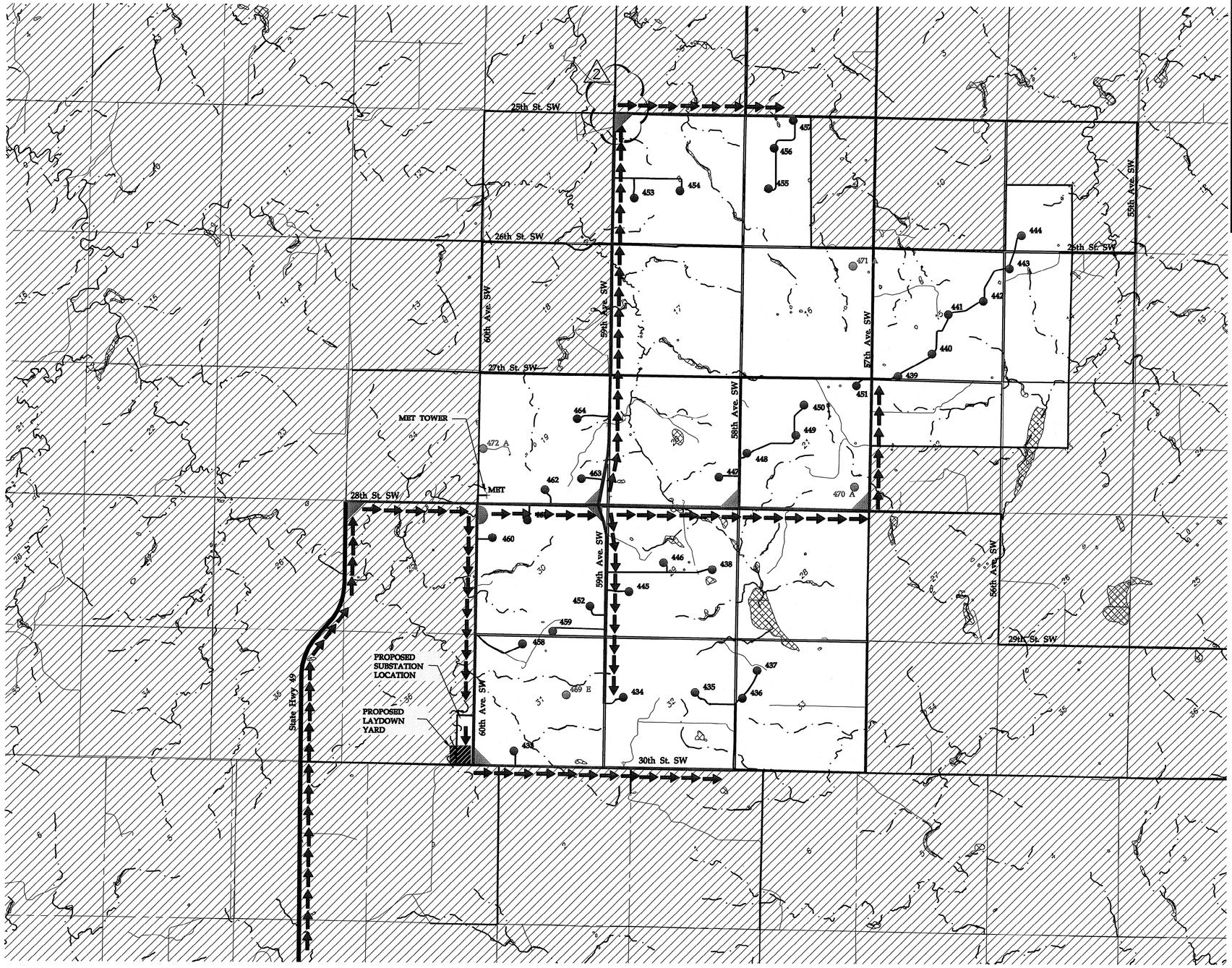
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Legend:

KEY	TYPE
	BITUMINOUS DELIVERY ROUTE
	GRAVEL DELIVERY ROUTE
	EX. ROAD NOT USED FOR DELIVERIES
	PROPOSED ACCESS ROADS
	APPROXIMATE WETLANDS (SOURCE – NWI)
	EXISTING STREAM
	PROPOSED TURBINE LOCATION
	PROPOSED ALTERNATE TURBINE LOCATION
D46	PROPOSED TURBINE NUMBER
	EXISTING INTERSECTION IMPROVEMENT
	PROPOSED TURNAROUND
	OUT OF PROJECT BOUNDARY
	DELIVERY FLOW DIRECTION – TURBINES

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSSON
PE-8310
DATE 10/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
1	09/04/13	Owner Comments
2	10/09/13	Owner Comments/Field Changes

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project

Oliver County, North Dakota

Turbine Delivery Flow Plan-West

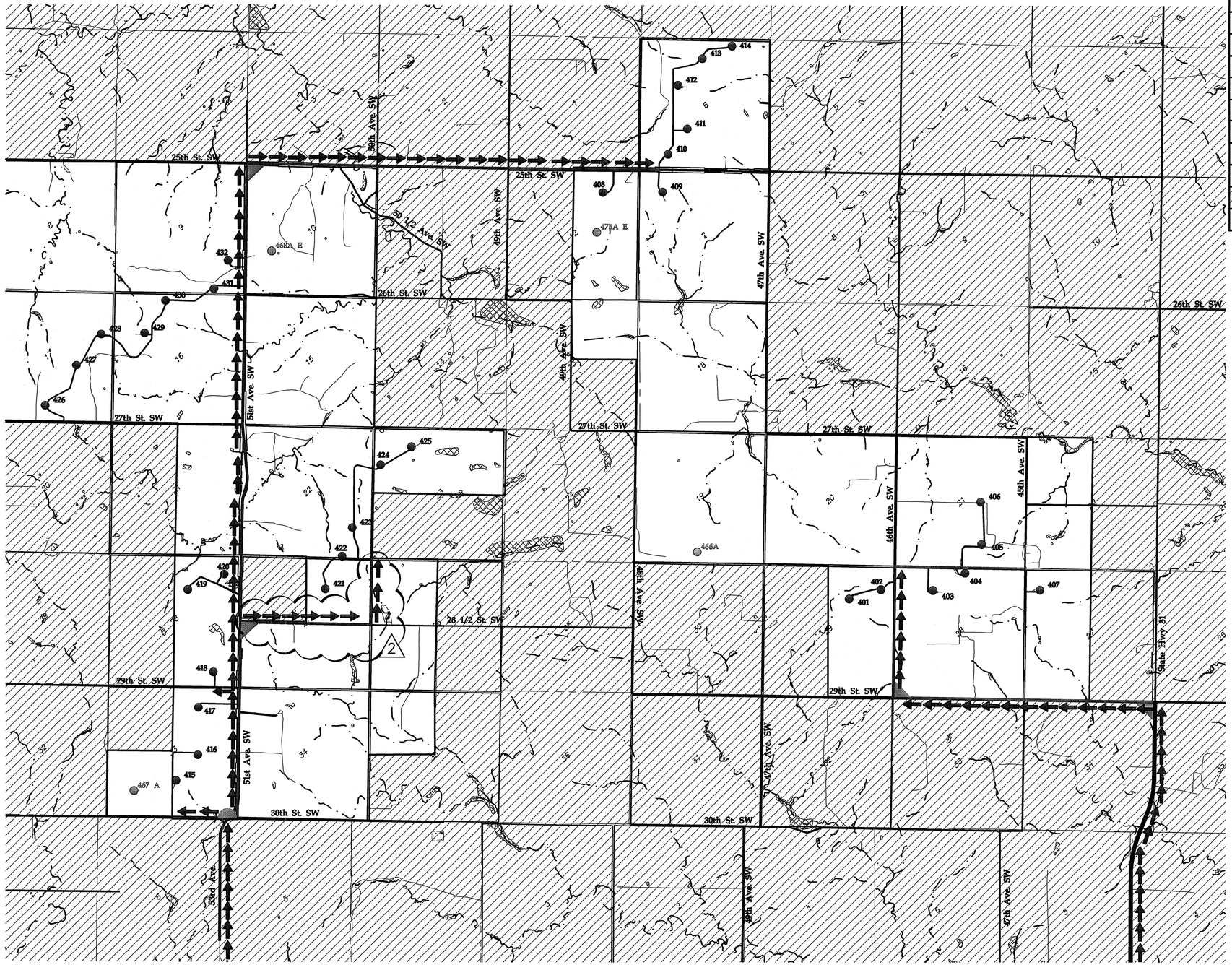
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Date: 08/09/2013
Sheet: C.03

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Legend:

KEY	TYPE
	BITUMINOUS DELIVERY ROUTE
	GRAVEL DELIVERY ROUTE
	EX. ROAD NOT USED FOR DELIVERIES
	PROPOSED ACCESS ROADS
	APPROXIMATE WETLANDS (SOURCE – NWI)
	EXISTING STREAM
	PROPOSED TURBINE LOCATION
	PROPOSED ALTERNATE TURBINE LOCATION
D46	PROPOSED TURBINE NUMBER
	EXISTING INTERSECTION IMPROVEMENT
	PROPOSED TURNAROUND
	OUT OF PROJECT BOUNDARY
	DELIVERY FLOW DIRECTION – TURBINES



0' 2200' 4400' 6600'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM F. HUSTON
PE-8310
DATE 10/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
1	09/04/13	Owner Comments
2	10/09/13	Owner Comments/Field Changes

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project

Oliver County, North Dakota

Turbine Delivery Flow Plan-East

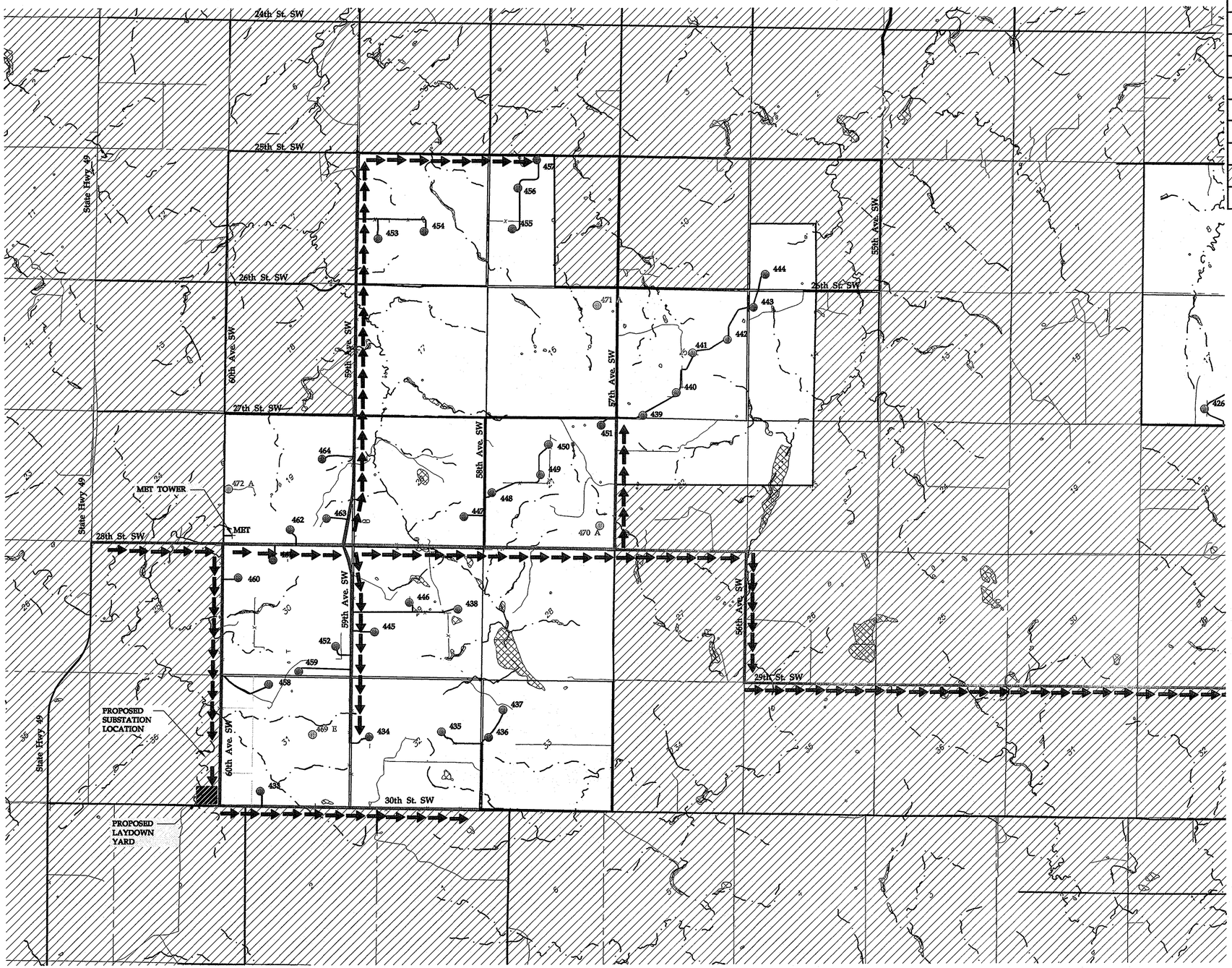
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Date: 08/09/2013

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Legend:

KEY	TYPE
	BITUMINOUS DELIVERY ROUTE
	GRAVEL DELIVERY ROUTE
	EX. ROAD NOT USED FOR DELIVERIES
	PROPOSED ACCESS ROADS
	APPROXIMATE WETLANDS (SOURCE – NWI)
	EXISTING STREAM
	PROPOSED TURBINE LOCATION
	PROPOSED ALTERNATE TURBINE LOCATION
D46	PROPOSED TURBINE NUMBER
	EXISTING INTERSECTION IMPROVEMENT
	OUT OF PROJECT BOUNDARY
	ALLOWED TRAFFIC ROUTE

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM B. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project

Oliver County, North Dakota

Allowed Traffic Route Plan-West

0' 2200' 4400' 6600'

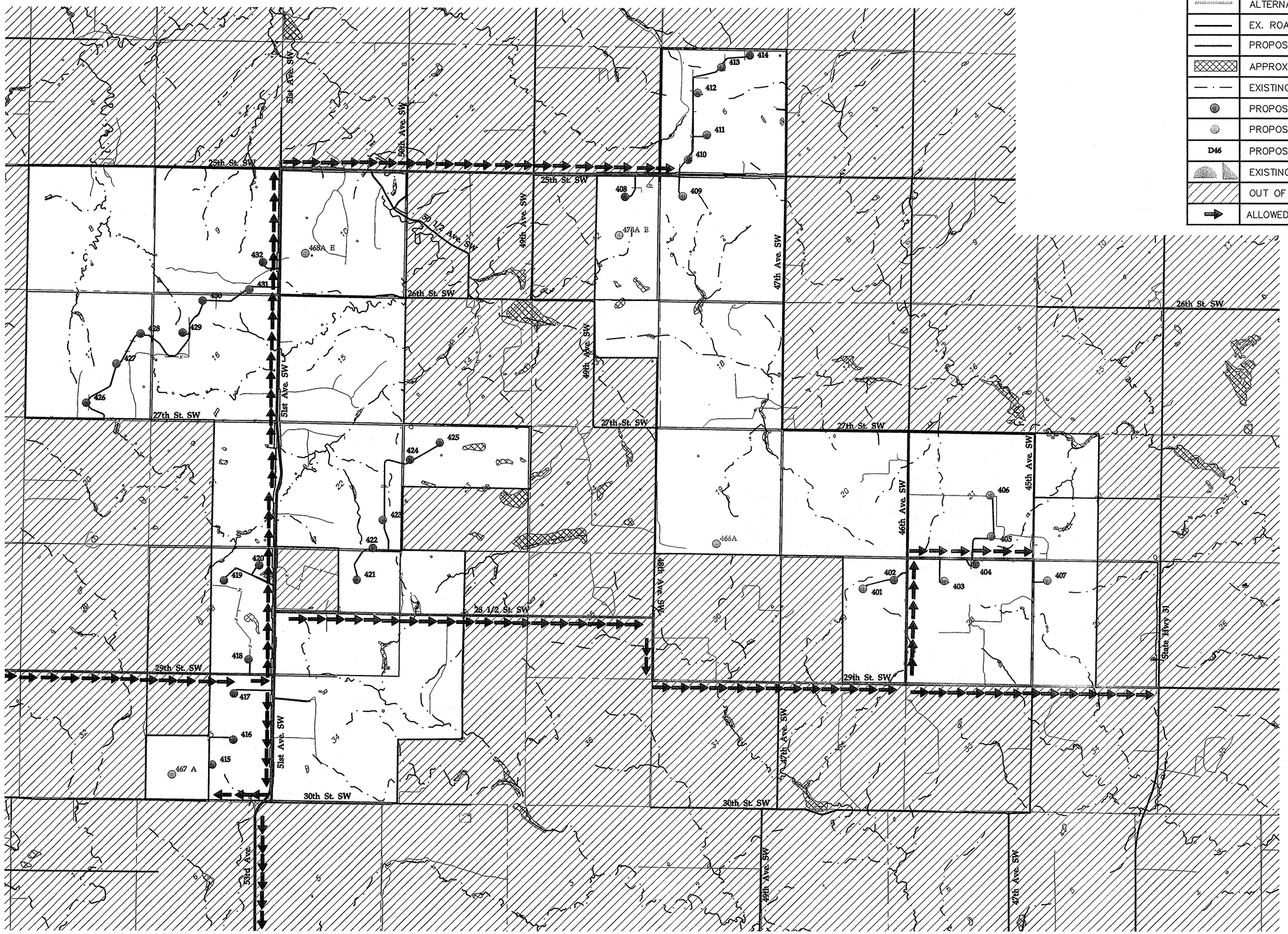
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Date: 08/09/2013

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Legend:

KEY	TYPE
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	GRAVEL DELIVERY ROUTE
	ALTERNATE GRAVEL DELIVERY ROUTE
	EX. ROAD NOT USED FOR DELIVERIES
	PROPOSED ACCESS ROADS
	APPROXIMATE WETLANDS (SOURCE – NWI)
	EXISTING STREAM
	PROPOSED TURBINE LOCATION
	PROPOSED ALTERNATE TURBINE LOCATION
D46	PROPOSED TURBINE NUMBER
	EXISTING INTERSECTION IMPROVEMENT
	OUT OF PROJECT BOUNDARY
	ALLOWED TRAFFIC ROUTE

N

0' 2200' 4400' 6600'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project

Oliver County, North Dakota

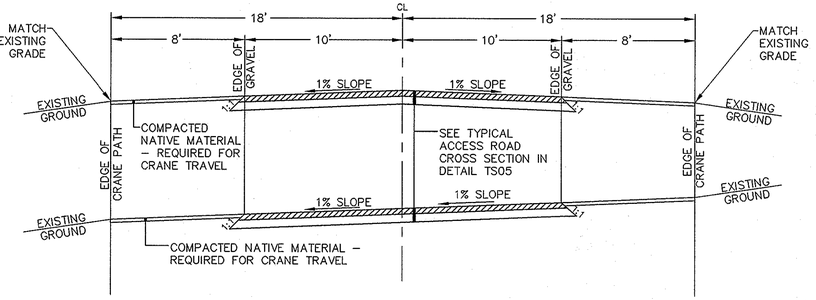
Allowed Traffic Route Plan-East

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Sheet: C.06

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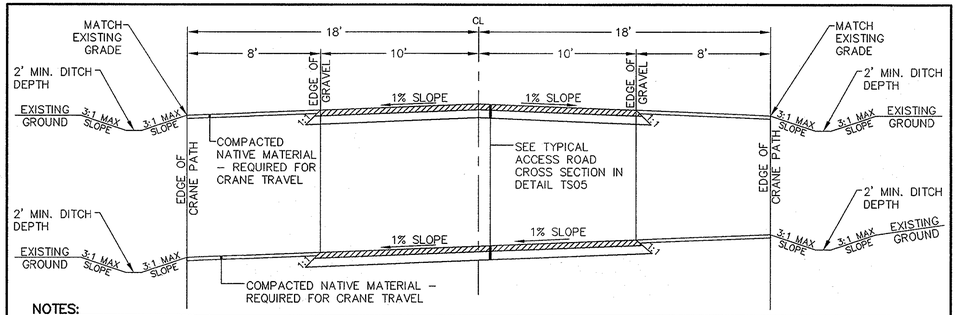
NOTES:

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



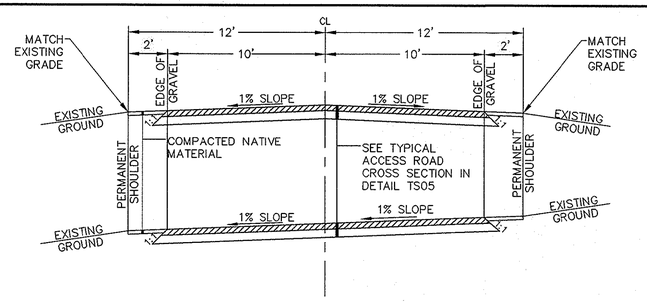
NOTES:

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



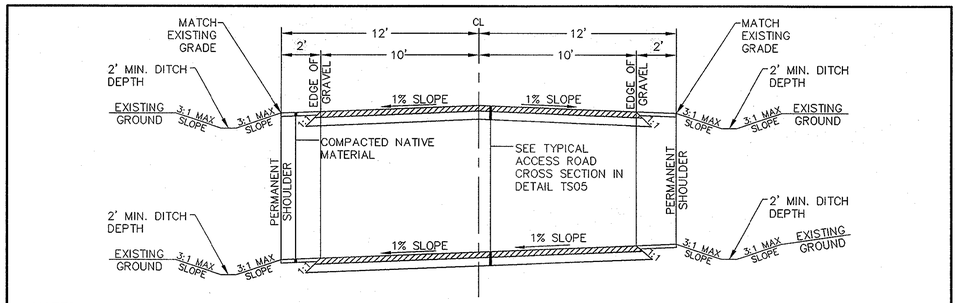
NOTES:

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.
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 2 FOOT SHOULDERS

LAST REVISED: 06/28/13

RD01C



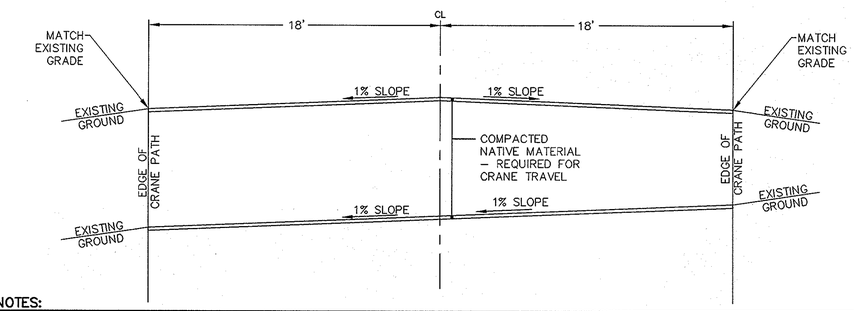
NOTES:

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 2 FOOT SHOULDERS AND ROAD DITCH

LAST REVISED: 06/28/13

RD01D



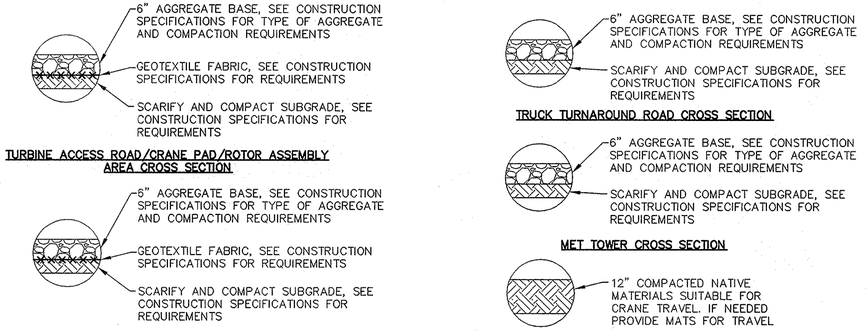
NOTES:

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

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 2/6/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
-	-	-

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project

Oliver County, North Dakota

Construction Details

Issued for Construction

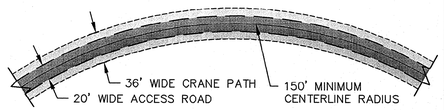
Date: 08/09/2013

Sheet: C.07

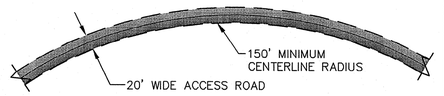
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ACCESS ROAD WITH CRANE PATH WHERE APPLICABLE



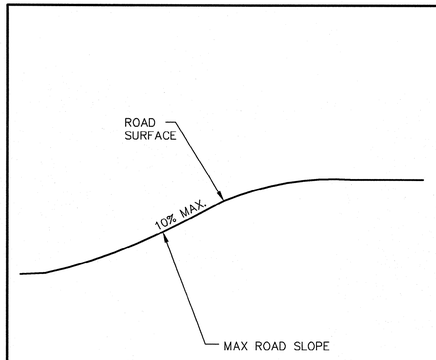
ACCESS ROAD WITHOUT CRANE PATH



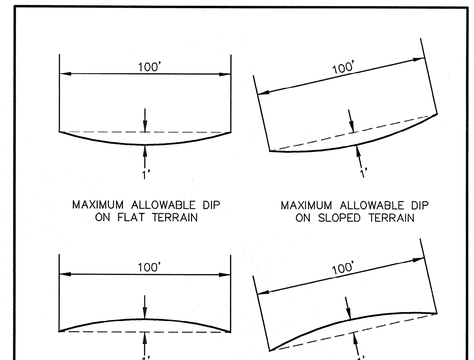
NOTE:

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.

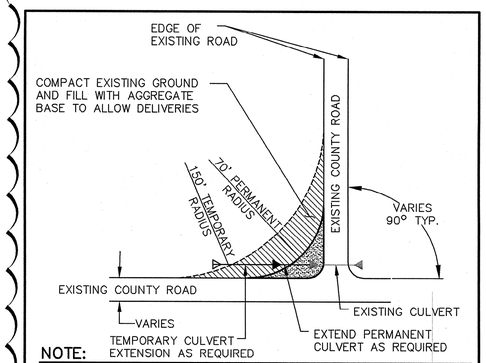
Westwood	MINIMUM RADIUS FOR TURBINE ACCESS ROAD	LAST REVISED: 06/28/13 RD02



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



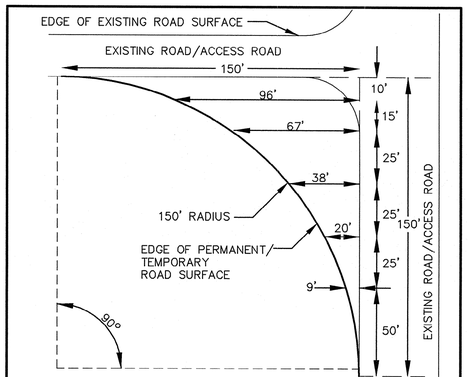
Westwood	MAXIMUM DEFLECTION FOR TURBINE ACCESS ROAD	LAST REVISED: 06/28/13 RD04



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.

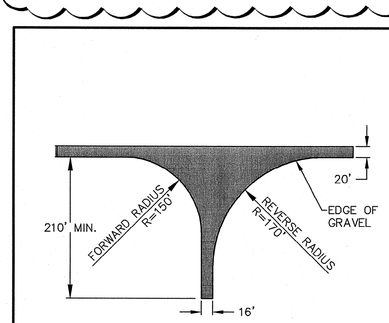
Westwood	COUNTY ROAD TYPICAL INTERSECTION WIDENING	LAST REVISED: 06/28/13 RD05



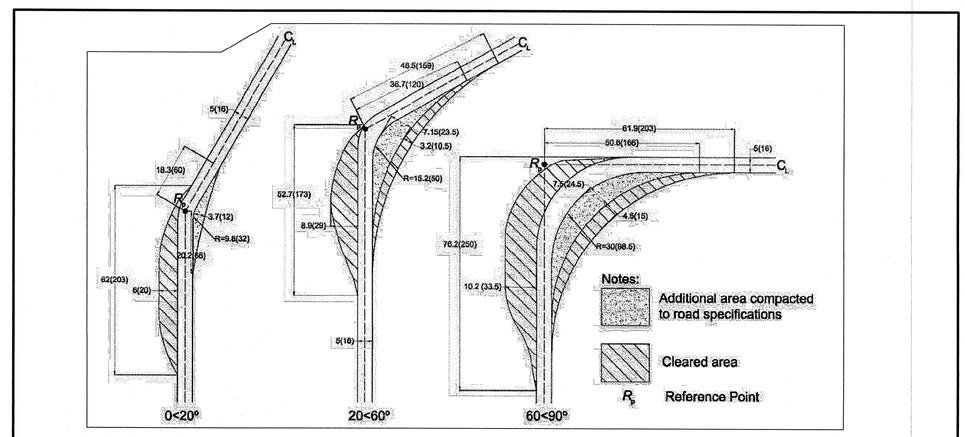
NOTE:

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

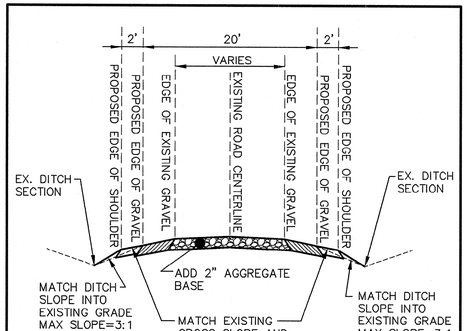
Westwood	INTERSECTION WIDENING DIMENSIONS	LAST REVISED: 06/28/13 RD06



Westwood	TEMPORARY DELIVERY VEHICLE TURNAROUND	LAST REVISED: 06/28/13 RD07



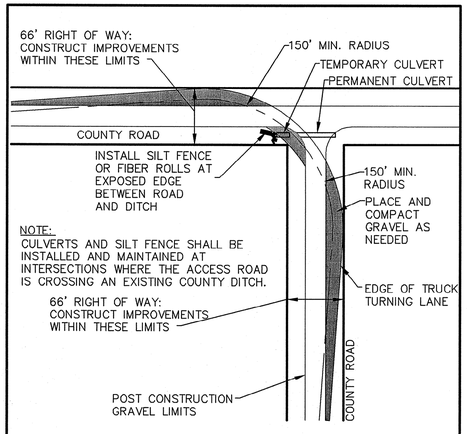
	ACCESS ROAD BENDS AND CROSSES	LAST REVISED: 06/28/13 RD30



NOTE:

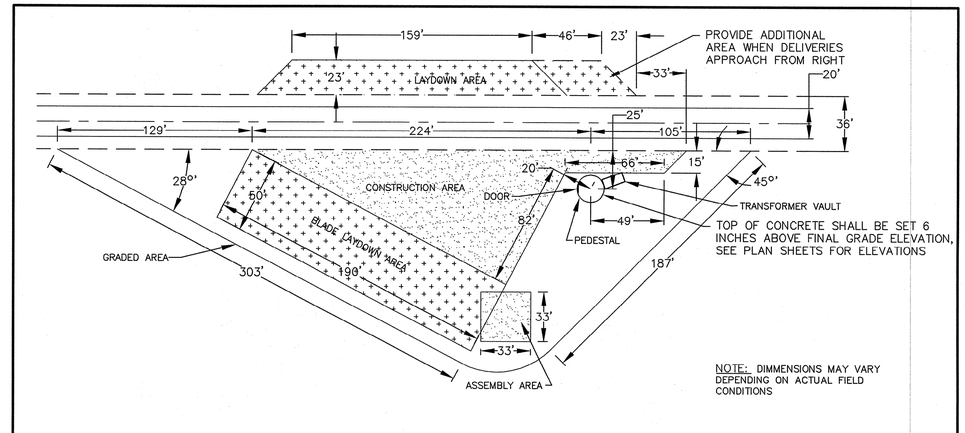
1. CONTRACTOR MAY NEED TO INSTALL ADDITIONAL GRAVEL IN AREAS TO FACILITATE CONSTRUCTION TRAFFIC/DELIVERIES.
2. CONTRACTOR TO MAINTAIN POSITIVE DRAINAGE WITHIN DITCHES. WHERE NEEDED THE FLOW LINE MAY NEED TO BE PROVIDED/RESTORED.

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.
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Eden Prairie, MN 55344

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

www.westwoodps.com

REGISTERED PROFESSIONAL ENGINEER — WILLIAM R. HUSTON — PE-8310 — DATE 10/9/13 — NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
1	09/04/13	Owner Comments
2	10/09/13	Owner Comments/Field Changes

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AN ALLETE COMPANY

30 West Superior Street
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Bison 4 Wind Project

Oliver County, North Dakota

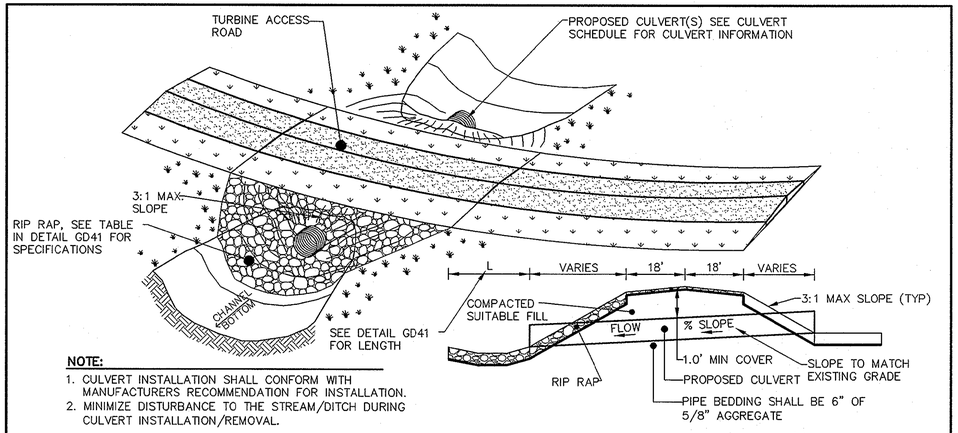
Construction Details

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Date: 08/09/2013
Sheet: C.08

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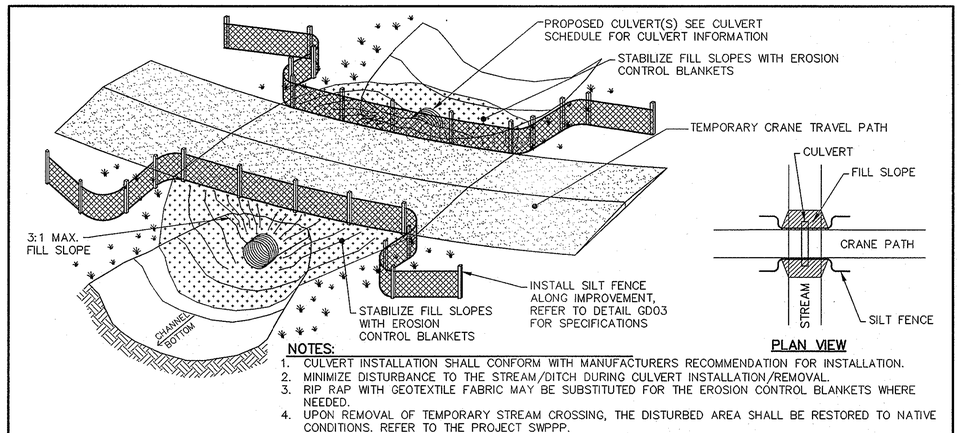
NOTE:

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

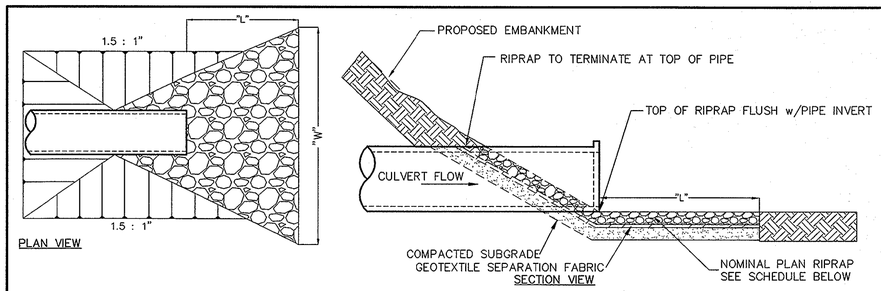
NOTES:

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

Proposed Culvert Schedule

Culvert ID	Station	Quantity (ea)	Size (in)	Permanent Length (ft)	Culvert ID	Station	Quantity (ea)	Size (in)	Permanent Length (ft)
C433-1	1+50	1	24	60	C426-2	22+95	1	24	65
C461-1	0+10	1	18	220	C426-3	45+50	1	18	65
C464-1	0+40	2	36	175	C27-1	26+20	1	24	45
C464-2	11+00	1	18	135	C27-2	40+00	1	18	55
C463-1	0+50	1	18	145	C27-3	51+10	1	18	50
C59-1	25+60	1	24	105	C27-4	67+70	2	24	55
C438-1	30+30	3	30	75	C50-1	0+25	1	12	45
C437-1	0+10	1	18	130	C50-2	9+05	2	18	40
C437-2	7+20	3	30	45	C50-3	14+00	3	18	55
C437-3	21+95	1	24	40	C421-1	2+00	1	18	55
C435-1	5+60	1	12	60	C421-2	16+55	1	18	140
C447-1	0+30	1	18	200	C421-3	26+15	1	24	180
C450-1	8+50	1	18	65	C425-1	33+05	2	36	100
C451-1	2+15	1	18	55	C417-1	0+65	1	18	140
C444-1	6+60	1	18	65	C408-1	0+40	1	18	175
C444-2	19+90	1	18	85	C409-1	0+30	1	18	220
C444-3	24+30	1	12	70	C409-2	6+60	1	24	55
C444-4	33+10	1	18	75	C414-1	0+40	1	18	225
C444-5	58+50	1	12	150	C414-2	10+60	2	24	65
C444-6	63+60	1	18	85	C414-3	26+50	3	30	75
C454-1	18+20	1	18	70	C414-4	40+90	1	24	70
C454-2	25+20	2	24	70	C414-5	44+15	1	24	65
C453-1	1+60	1	24	80	C414-6	62+25	1	24	60
C25-1	29+90	4	36	55	C411-1	0+90	1	18	210
C25-2	63+60	2	30	50	C28-1	40+10	2	24	60
C455-1	13+55	1	24	65	C28-2	50+50	1	18	45
C455-2	26+40	2	24	65	C406-1	7+65	1	18	65
C426-1	18+65	1	18	55	C407-1	10+55	1	18	55

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM B. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

Bison 4 Wind Project

Oliver County, North Dakota

Construction Details

Issued for Construction

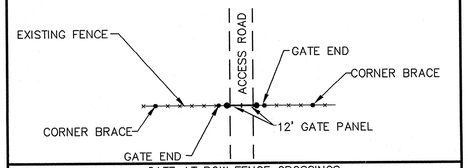
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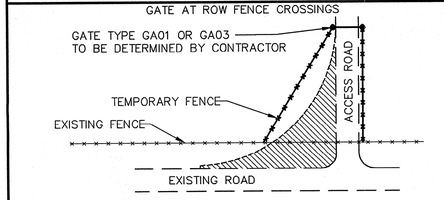
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WTG GATE FENCE CROSSINGS

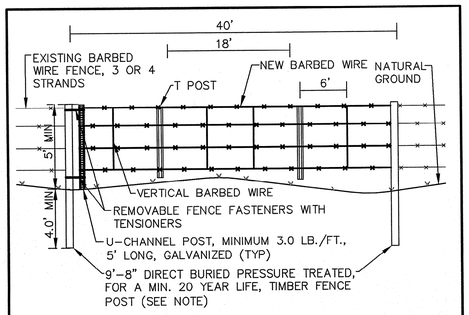


GATE AT ROW FENCE CROSSINGS



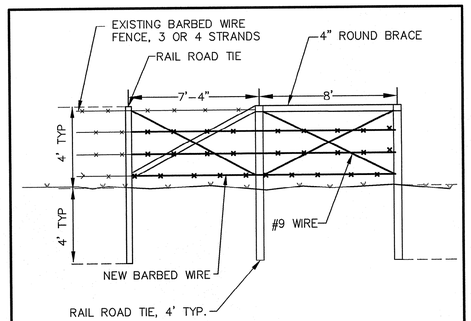
NOTE:
1. FOLLOWING TURBINE CONSTRUCTION TRAFFIC, THE TEMPORARY FENCE AND GATE SHALL BE REMOVED AND REINSTALLED TO MATCH THE PRECONSTRUCTION CONFIGURATION.

Westwood	GATE AT ROW/FIELD FENCE CROSSINGS	LAST REVISED: 07/02/13 FN01

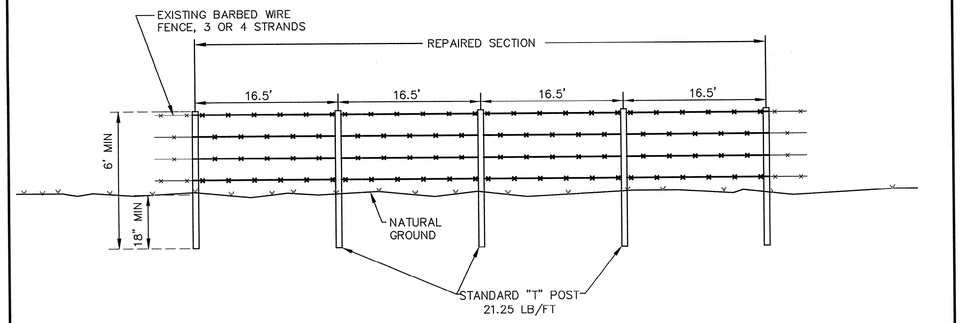


NOTE:
1. TO BE USED AT UNDERGROUND POWER COLLECTION CROSSINGS
2. ALL FITTINGS, HARDWARE AND OTHER APPURTENANCES SHALL BE FABRICATED AND FITTED IN ACCORDANCE WITH THE MANUFACTURES RECOMMENDATIONS

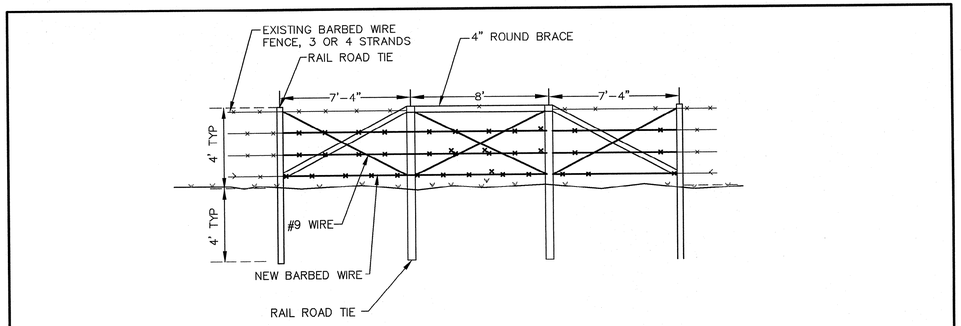
Westwood	BARBWIRE GATE	LAST REVISED: 01/02/08 FN02



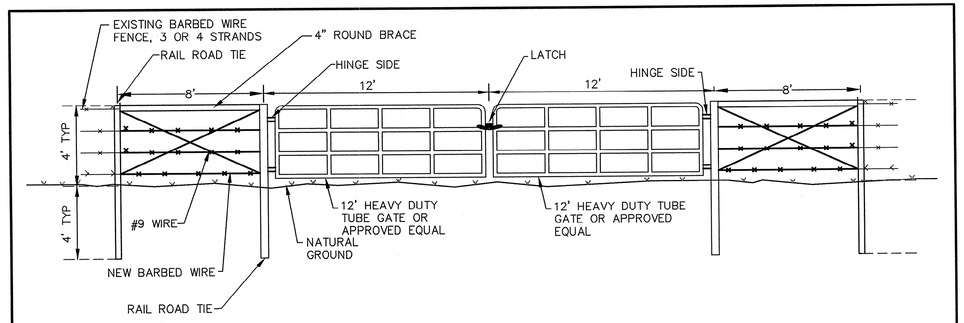
Westwood	CORNER BRACING	LAST REVISED: 07/02/13 FN04



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



Westwood	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.

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

1

Gate Schedule

Gate ID	Detail	Station	Gate ID	Detail	Station
G458-1	GA04	0+97	G426-1	GA04	1+16
G462-1	GA04	1+62	G426-2	GA04	16+82
G464-1	GA04	1+71	G426-3	GA04	28+36
G463-1	GA04	1+58	G426-4	GA04	51+16
G438-1	GA04	1+74	G426-5	GA04	72+99
G438-2	GA04	26+48	G426-6	GA04	83+08
G445-1	GA04	1+80	G426-7	GA04	87+92
G452-1	GA04	1+79	G426-8	GA04	125+95
G452-2	GA04	4+15	G50-1	GA04	16+60
G459-1	GA04	1+58	G50-2	GA04	25+12
G434-1	GA04	1+72	G425-1	GA04	26+79
G437-1	GA04	1+60	G425-2	GA04	27+45
G437-2	GA04	25+04	G425-3	GA04	45+62
G447-1	GA04	2+00	G418-1	GA04	1+65
G450-1	GA04	1+30	G408-1	GA04	1+75
G450-2	GA04	13+15	G409-1	GA04	1+85
G451-1	GA04	1+60	G414-1	GA04	1+85
G444-1	GA04	30+95	G414-2	GA04	11+13
G444-2	GA04	37+60	G414-3	GA04	28+18
G444-3	GA04	44+77	G414-4	GA04	42+38
G444-4	GA04	78+25	G414-5	GA04	58+50
G444-5	GA04	86+55	G414-6	GA04	67+05
G444-6	GA04	87+20	G401-1	GA04	0+92
G453-1	GA04	2+00	G403-1	GA04	1+80
G455-1	GA04	32+85	G404-1	GA04	2+10
G432-1	GA04	1+76	G407-1	GA04	10+80

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 9/4/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
1	09/04/13	Owner Comments

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

Bison 4 Wind Project

Oliver County, North Dakota

Construction Details

Issued for Construction

Date: 08/09/2013
Sheet: C.10

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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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WILLIAM E. HUSTON
PE-8310
DATE 10/9/13
NORTH DAKOTA

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1	09/04/13	Owner Comments
2	10/09/13	Owner Comments/Field Changes

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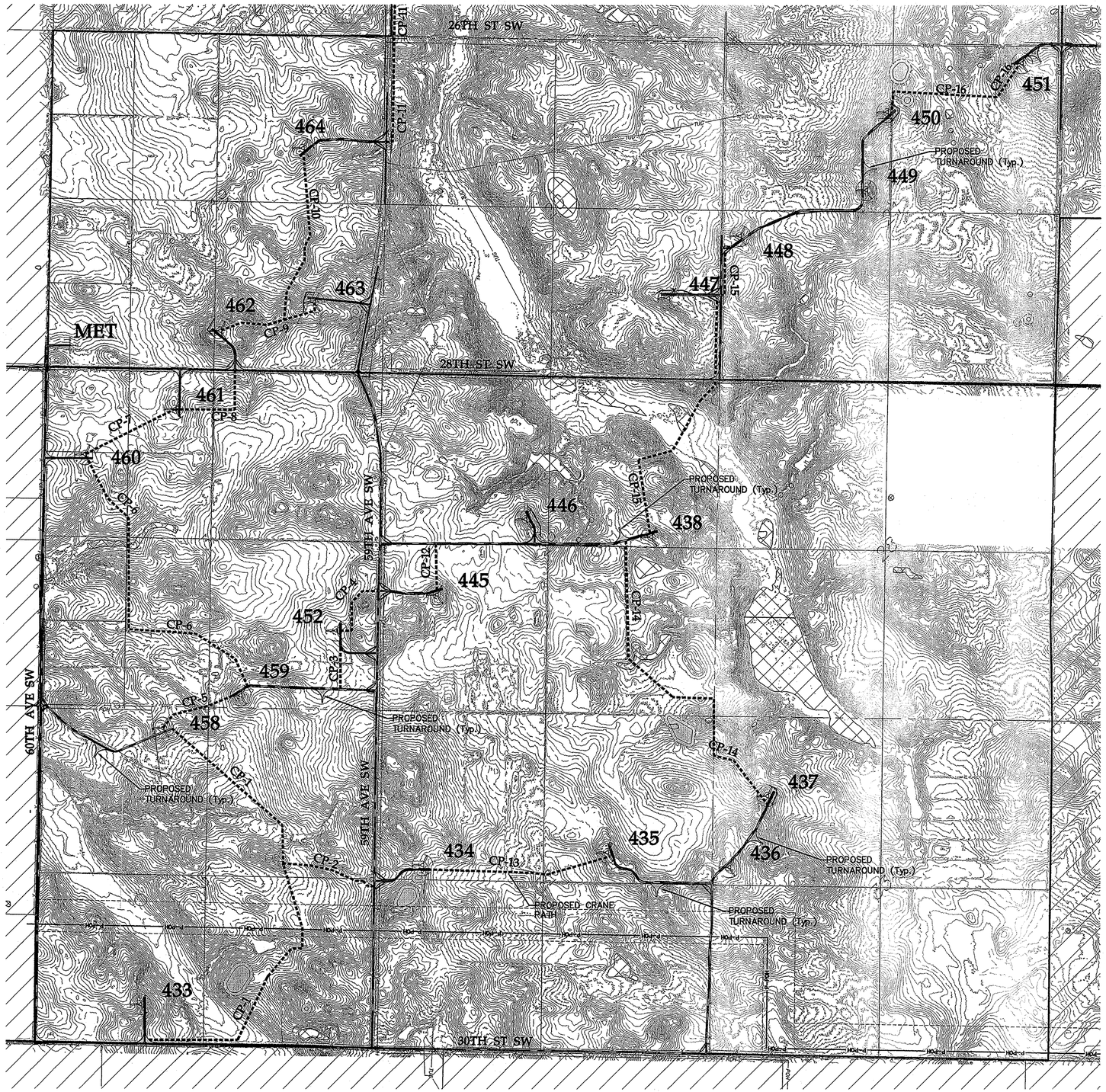
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LEGEND:

- TURBINE LOCATION
- T-XX TURBINE NUMBER
- PROPOSED ACCESS ROADS
- PROPOSED CRANE PATHS
- P-POH PROPOSED OVERHEAD POWER
- P-PUG PROPOSED UNDERGROUND COLLECTION SYSTEM
- EXISTING 10' CONTOURS
- EXISTING 2' CONTOURS
- POH EXISTING OVERHEAD POWER
- TUC EXISTING TELEPHONE LINE
- OUT OF PROJECT BOUNDARY
- EXISTING STREAM
- FIELD DELINEATED WETLAND
- NWI WETLAND
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Crane Routing-1

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- T-XX TURBINE NUMBER
- PROPOSED ACCESS ROADS
- PROPOSED CRANE PATHS
- P-POH PROPOSED OVERHEAD POWER
- P-PUG PROPOSED UNDERGROUND COLLECTION SYSTEM
- EXISTING 10' CONTOURS
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- POH EXISTING OVERHEAD POWER
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Crane Routing-2

N

0' 900' 1800' 2700

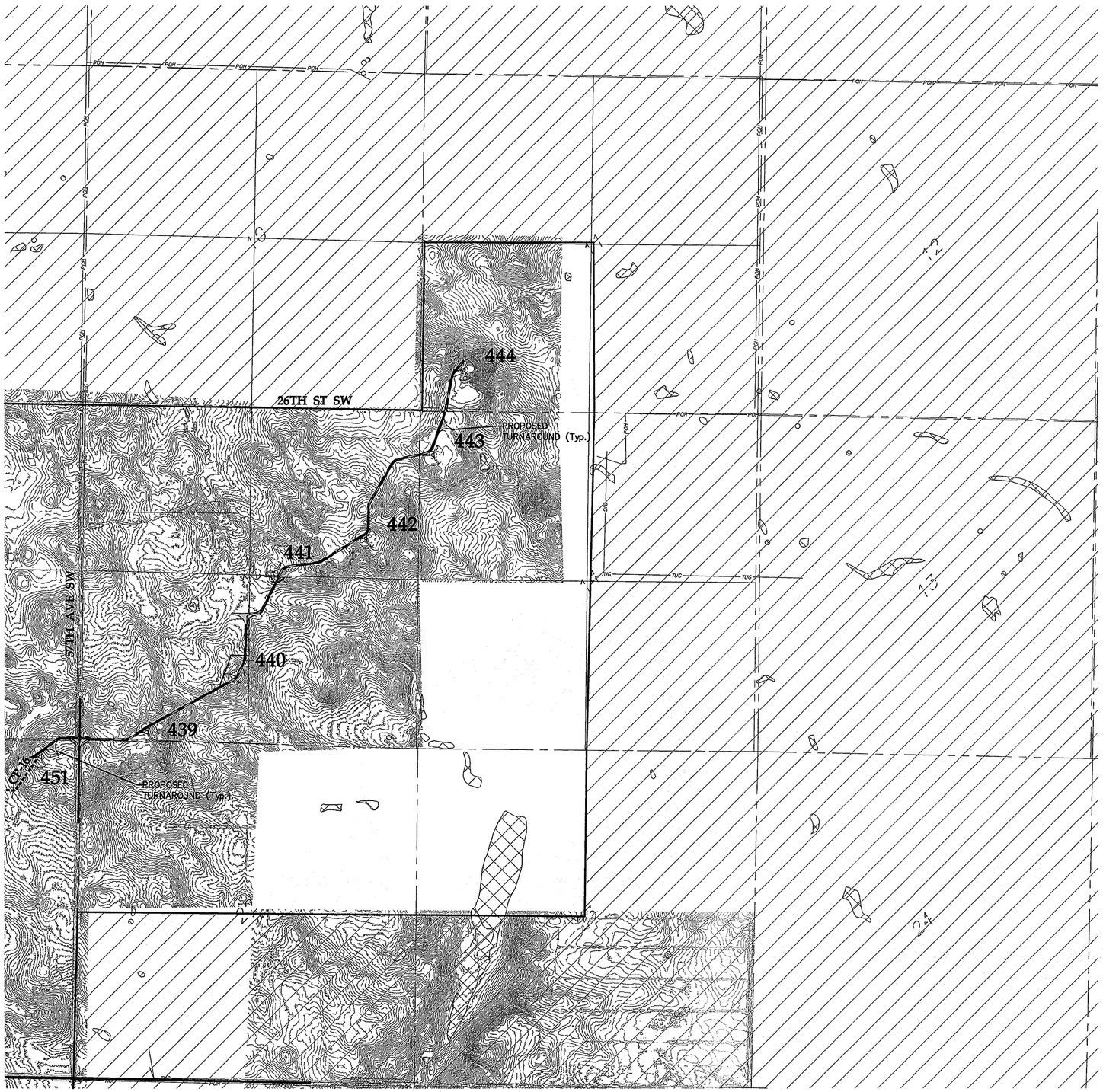
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- T-XX — TURBINE NUMBER
- PROPOSED ACCESS ROADS
- PROPOSED CRANE PATHS
- P–PDH — PROPOSED OVERHEAD POWER
- P–PUG — PROPOSED UNDERGROUND COLLECTION SYSTEM
- EXISTING 10' CONTOURS
- EXISTING 2' CONTOURS
- PDH — EXISTING OVERHEAD POWER
- TUG — EXISTING TELEPHONE LINE
- OUT OF PROJECT BOUNDARY
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Crane Routing-3

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- T-XX — TURBINE NUMBER
- PROPOSED ACCESS ROADS
- PROPOSED CRANE PATHS
- P--POH — PROPOSED OVERHEAD POWER
- P--PUG — PROPOSED UNDERGROUND COLLECTION SYSTEM
- EXISTING 10' CONTOURS
- EXISTING 2' CONTOURS
- POH — EXISTING OVERHEAD POWER
- TUG — EXISTING TELEPHONE LINE
- OUT OF PROJECT BOUNDARY
- EXISTING STREAM
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Crane Routing-4

0' 900' 1800' 2700

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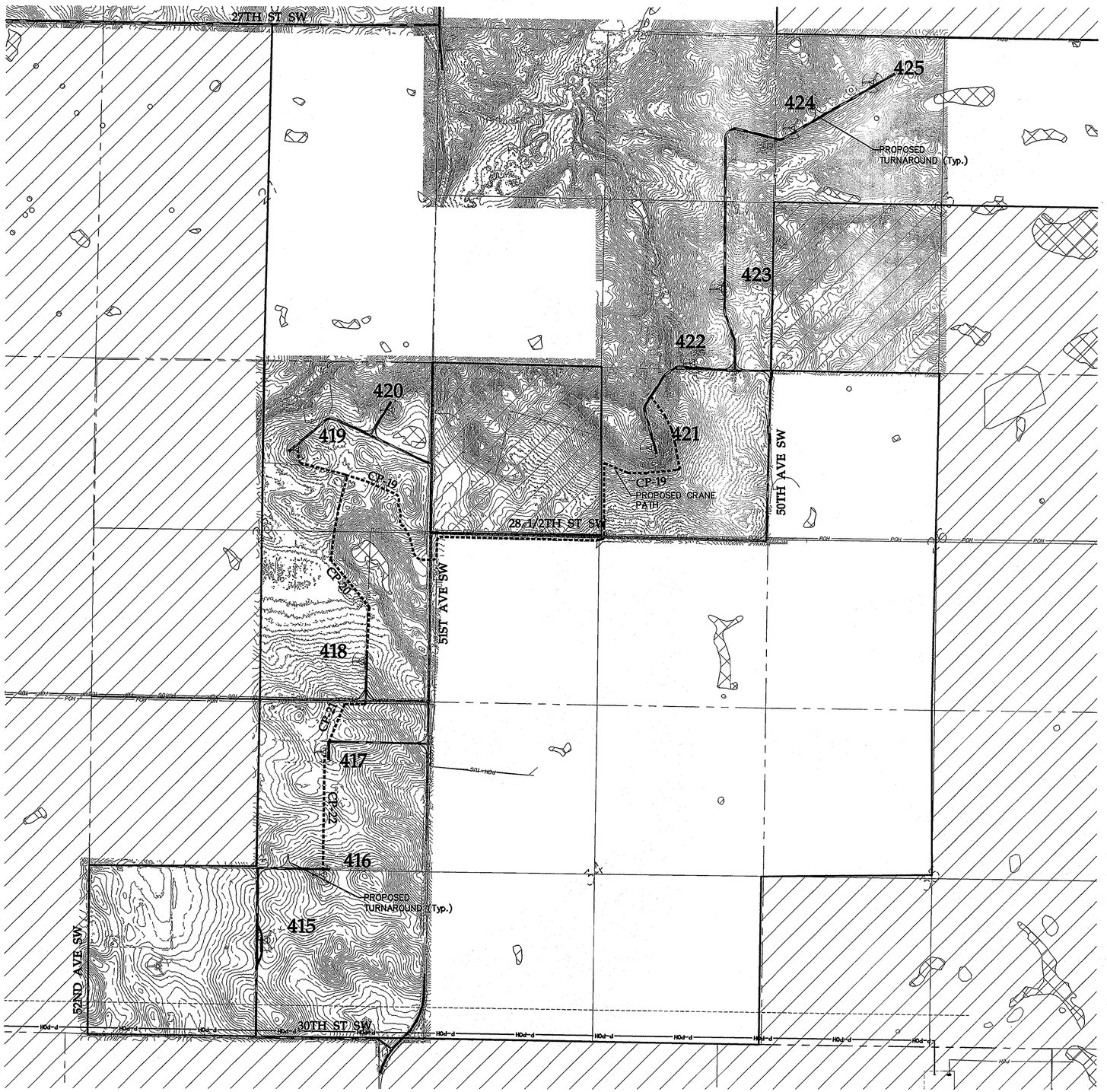
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- TURBINE LOCATION
- T-XX — TURBINE NUMBER
- PROPOSED ACCESS ROADS
- PROPOSED CRANE PATHS
- P-POH — PROPOSED OVERHEAD POWER
- P-PUG — PROPOSED UNDERGROUND COLLECTION SYSTEM
- EXISTING 10' CONTOURS
- EXISTING 2' CONTOURS
- POH — EXISTING OVERHEAD POWER
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Crane Routing-5

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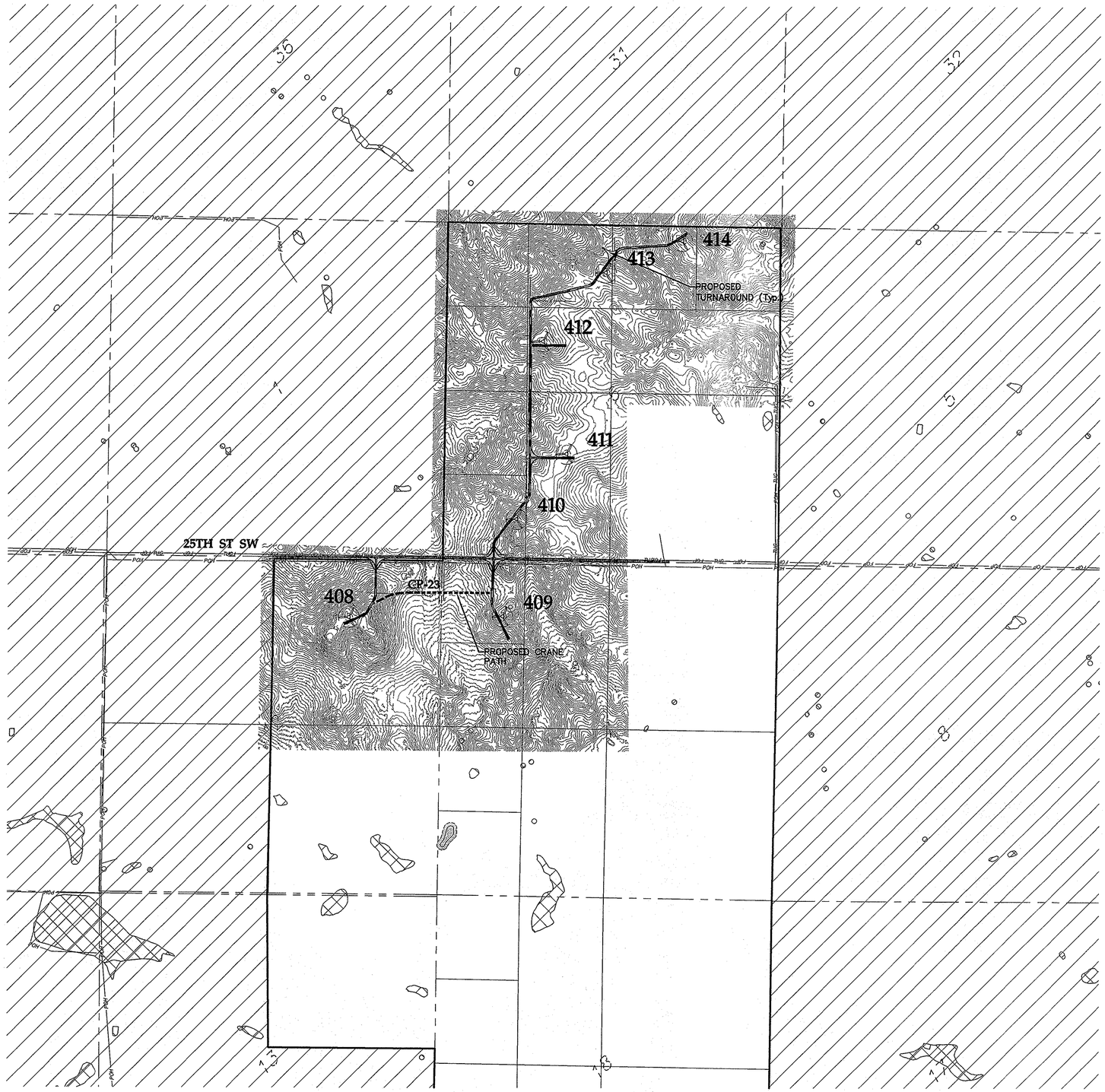
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- T-XX TURBINE NUMBER
- PROPOSED ACCESS ROADS
- PROPOSED CRANE PATHS
- P-POH PROPOSED OVERHEAD POWER
- P-PUG PROPOSED UNDERGROUND COLLECTION SYSTEM
- EXISTING 10' CONTOURS
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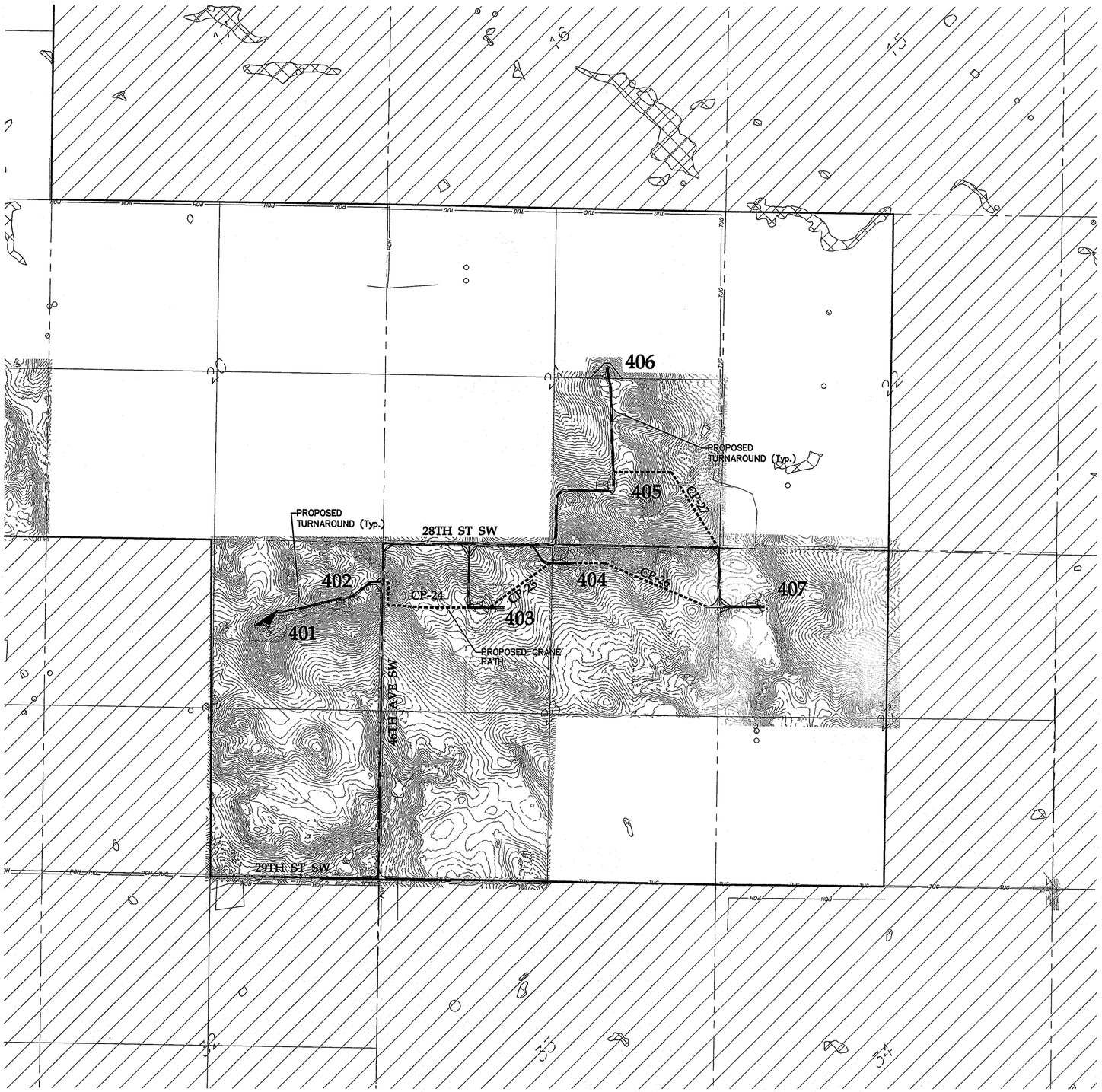
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- PROPOSED ACCESS ROADS
- PROPOSED CRANE PATHS
- P-POH — PROPOSED OVERHEAD POWER
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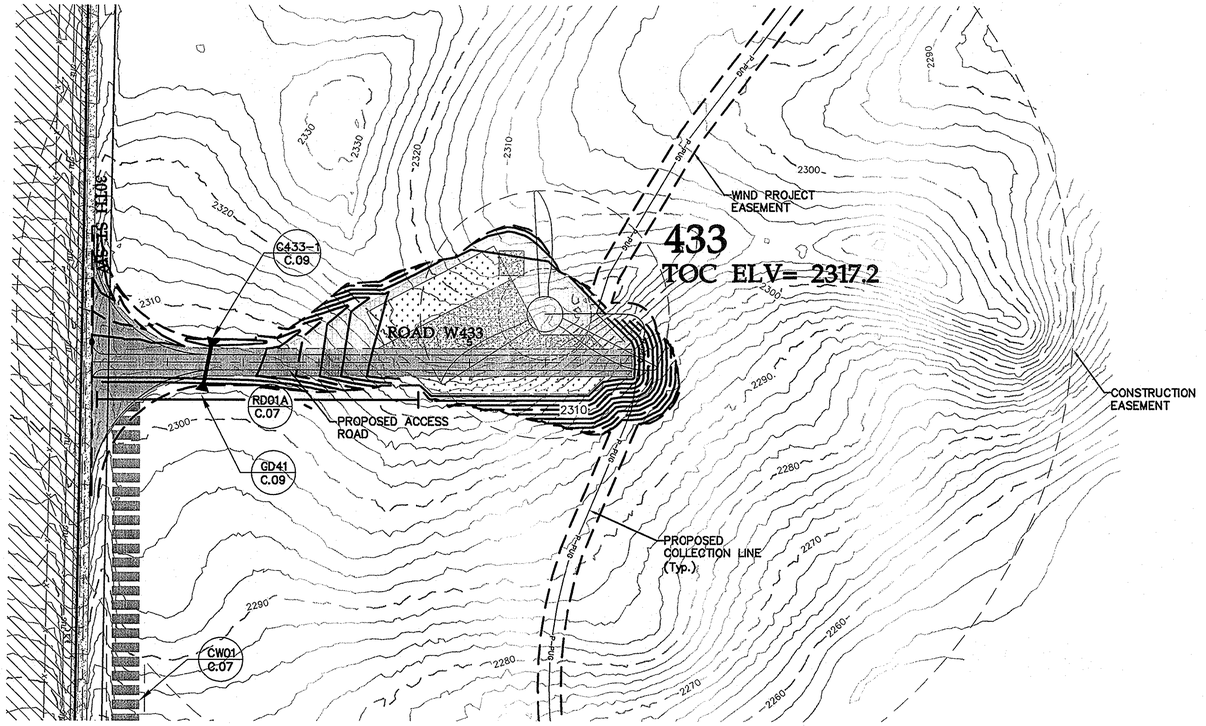
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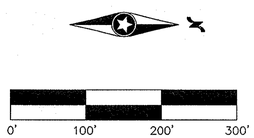
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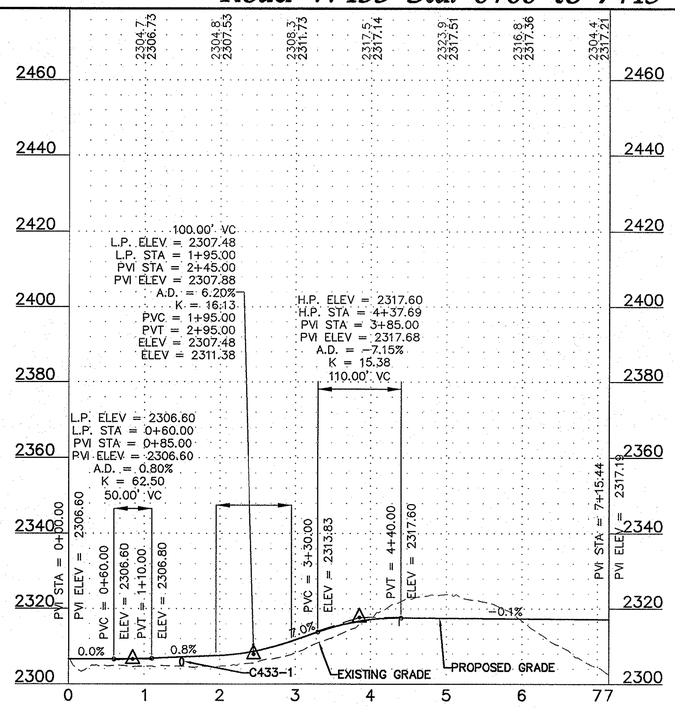
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AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- TURBINE LOCATION
- T-XX — TURBINE NUMBER
- PROPOSED ACCESS ROADS
- 3000 — PROPOSED 10' CONTOURS
- PROPOSED 2' CONTOURS
- P-POH — PROPOSED OVERHEAD POWER
- PROPOSED OVERHEAD RIGHT OF WAY
- P-PUG — PROPOSED UNDERGROUND ELECTRICAL COLLECTION
- PROPOSED CRANE PATH
- PROPOSED CULVERT
- C432-1 — CULVERT ID
- PROPOSED FENCE CROSSING/GATE
- G432-1 — GATE ID
- PROPOSED FENCE
- CONSTRUCTION EASEMENT
- WIND PROJECT EASEMENT
- TURBINE GRAVEL AREA
- TURBINE LAYDOWN AREA
- TURBINE PAD AREA
- EXISTING GRAVEL SURFACE
- 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

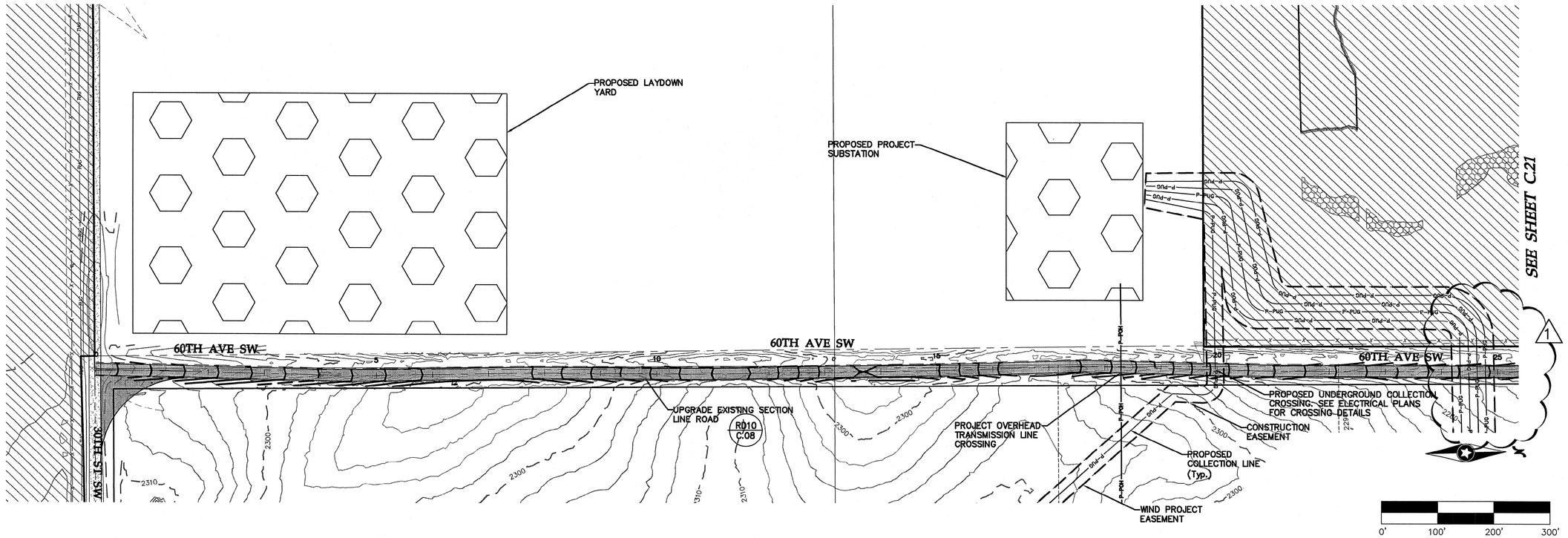
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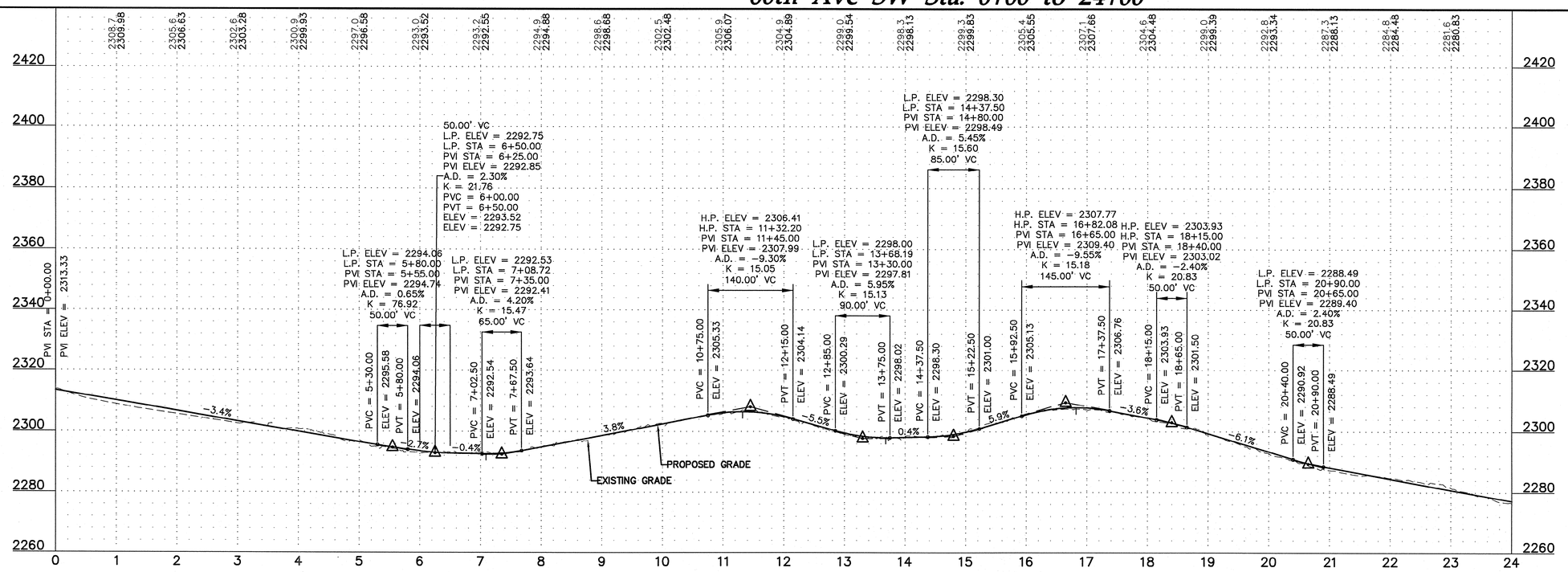
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 9/4/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
1	09/04/13	Owner Comments

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- TURBINE LOCATION
- T-XX — TURBINE NUMBER
- PROPOSED ACCESS ROADS
- 3000 — PROPOSED 10' CONTOURS
- PROPOSED 2' CONTOURS
- P-POH — PROPOSED OVERHEAD POWER
- PROPOSED OVERHEAD RIGHT OF WAY
- P-PUG — PROPOSED UNDERGROUND ELECTRICAL COLLECTION
- PROPOSED CRANE PATH
- PROPOSED CULVERT
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- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

60th Ave SW Sta. 0+00 to 24+00

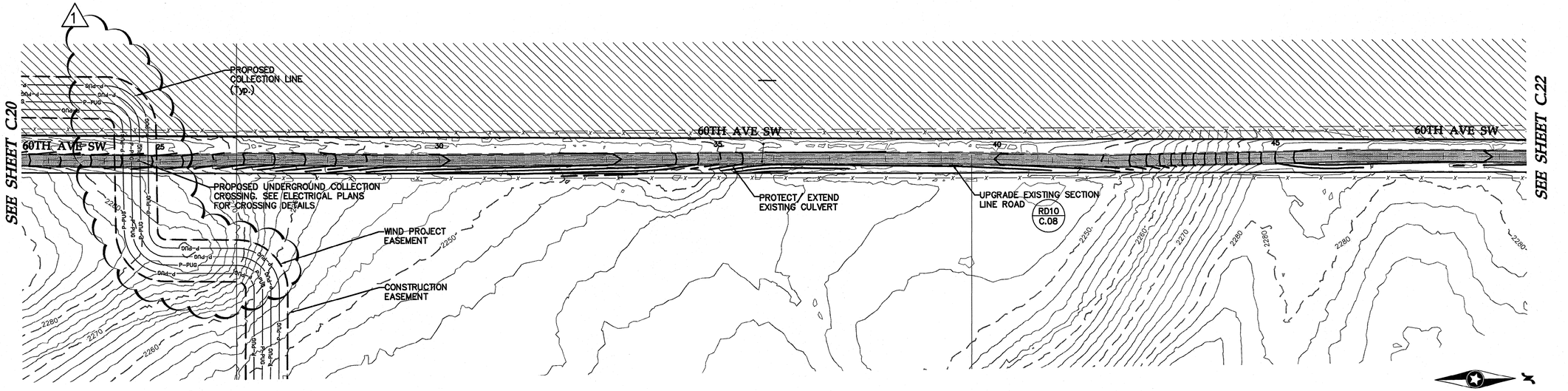
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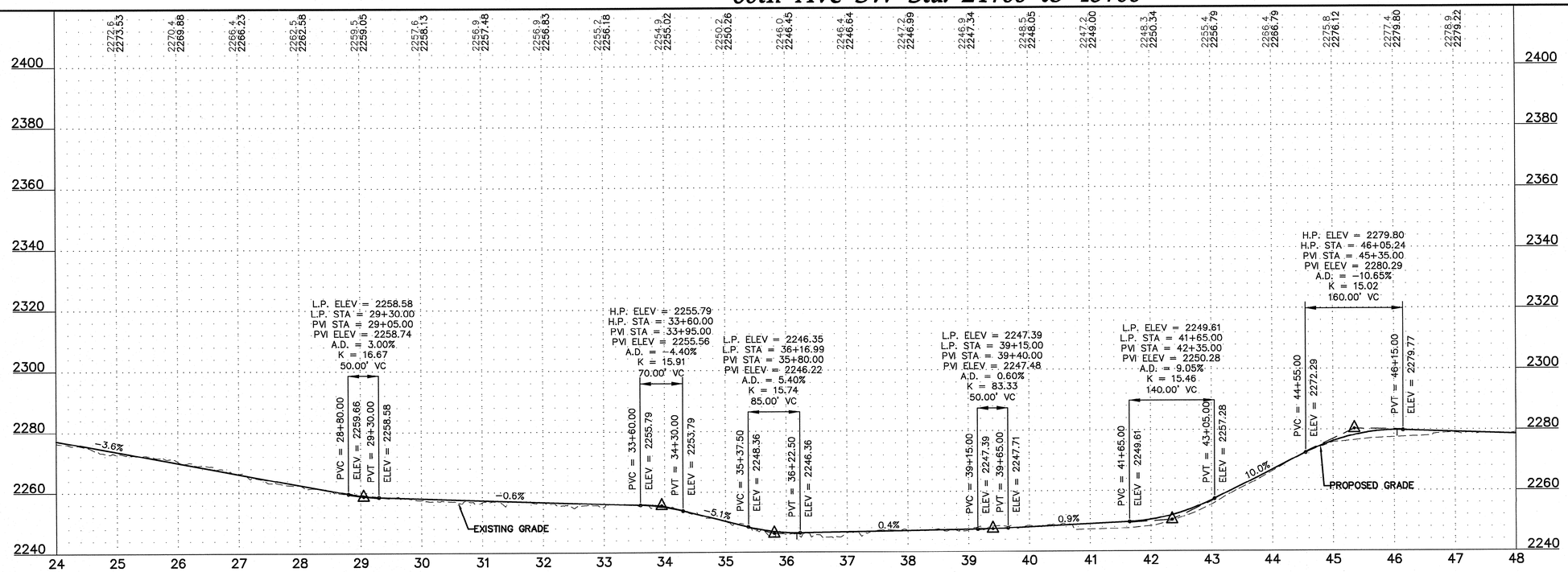
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM M. HUSTON
PE-8310
DATE 4/4/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
1	09/04/13	Owner Comments

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

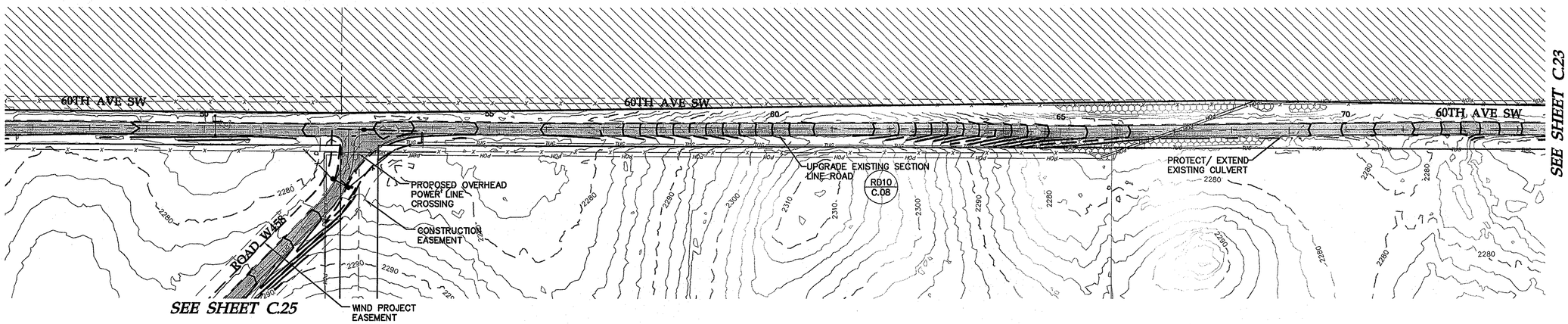
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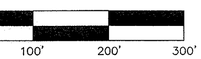
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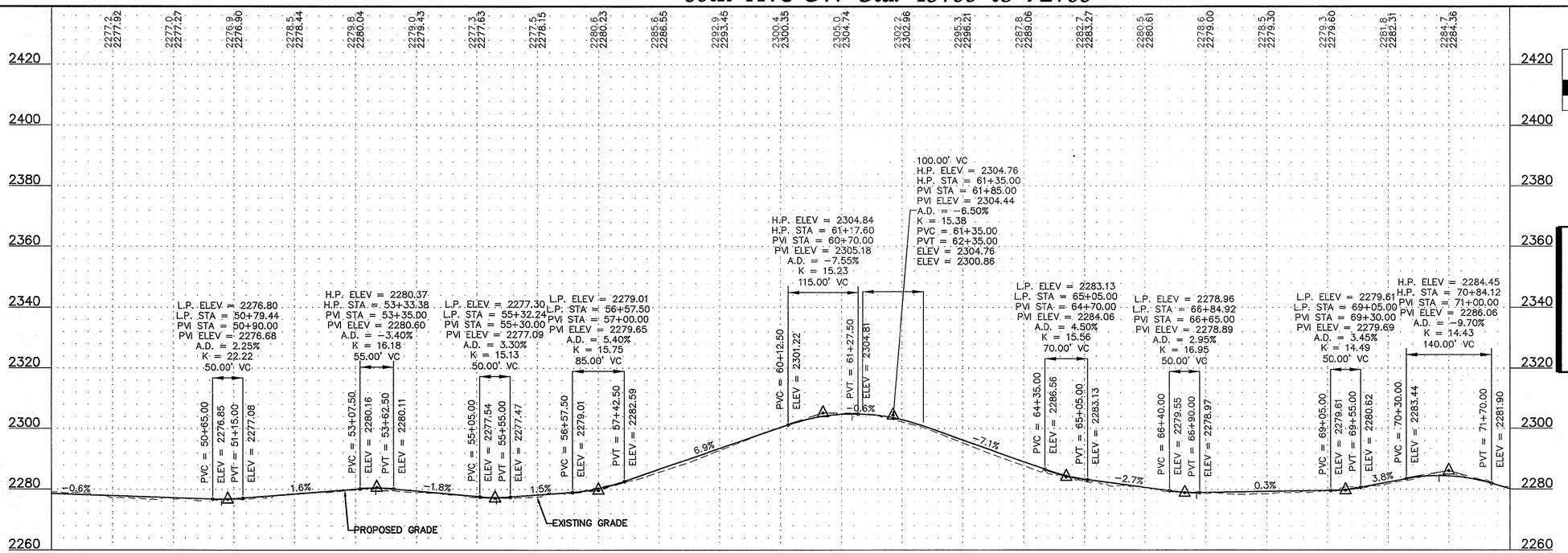
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

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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

60th Ave SW Sta. 48+00 to 72+00

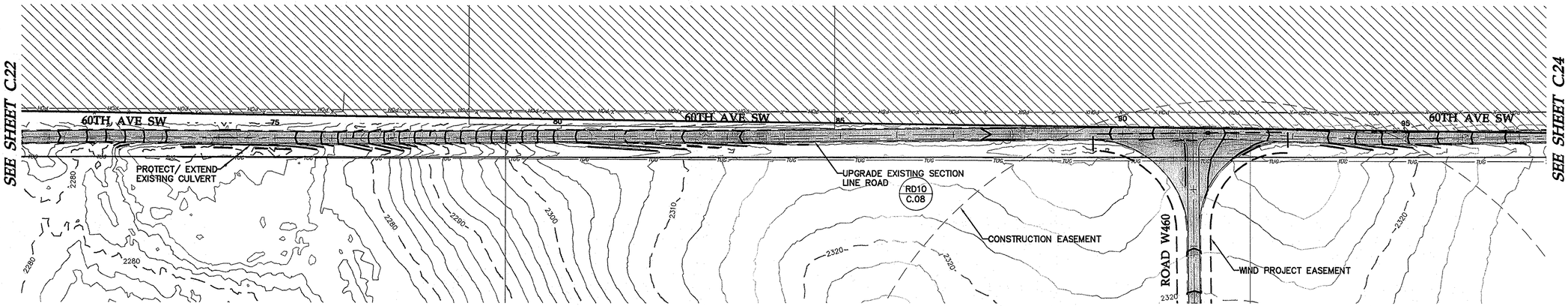
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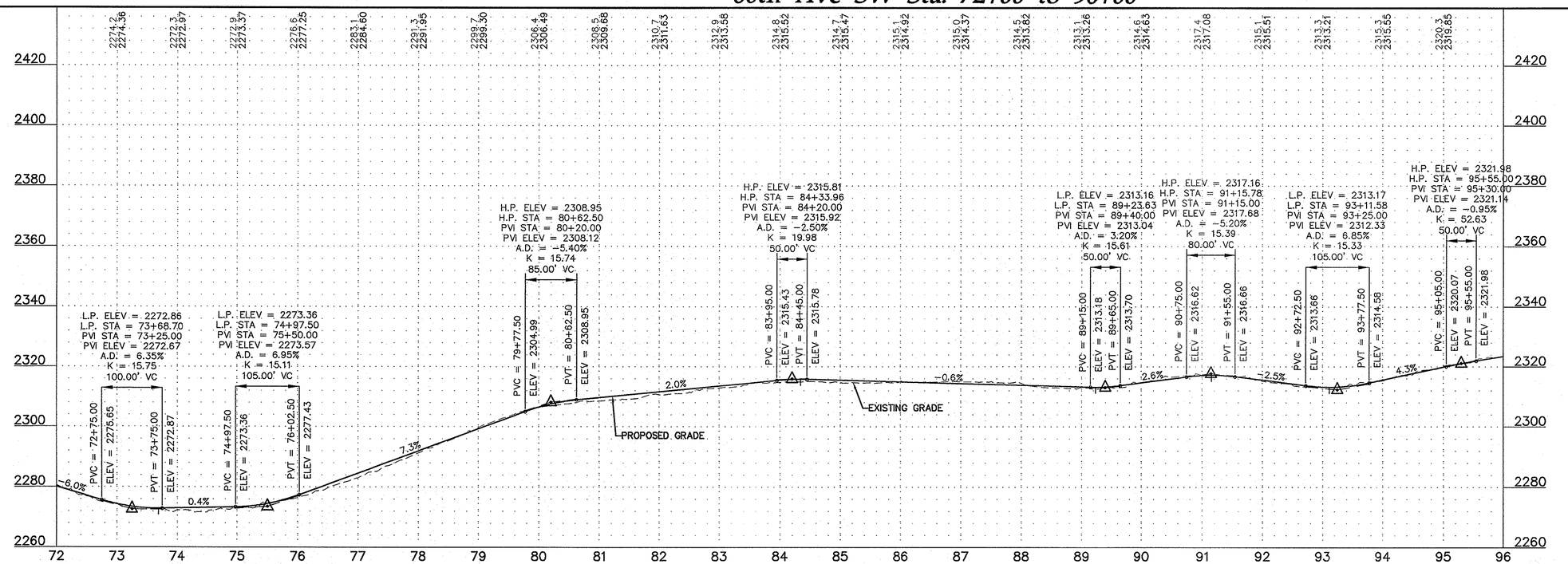
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0' 100' 200' 300'

60th Ave SW Sta. 72+00 to 96+00



20' 0 10' 20'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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Checked:	ADC
Drawn:	MPG
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minnesota power
AN ALLETE COMPANY

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Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

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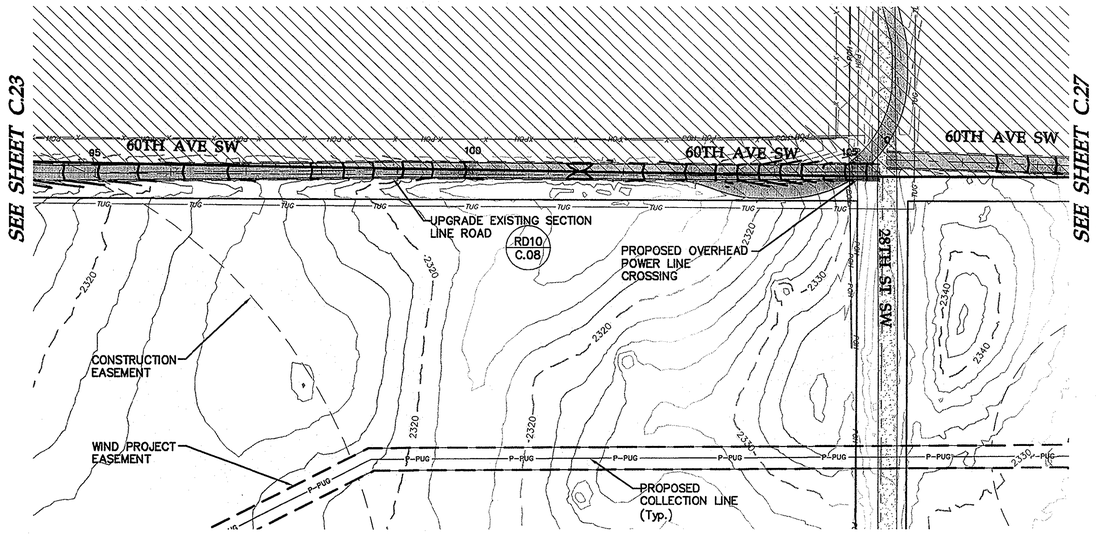
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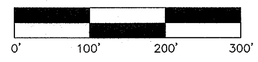
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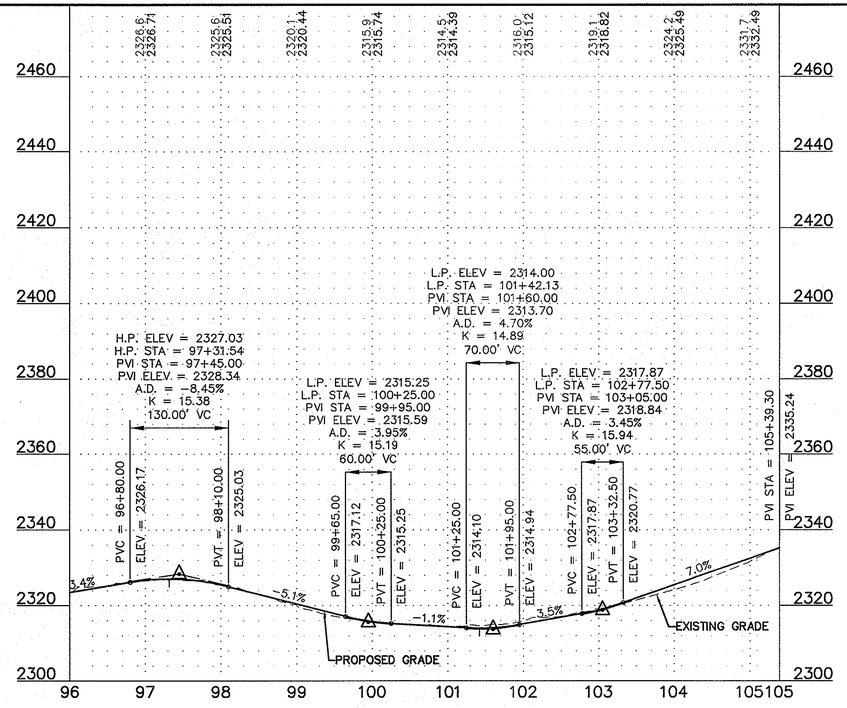
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM G. HUDSON
E-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
.	.	.

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

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- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

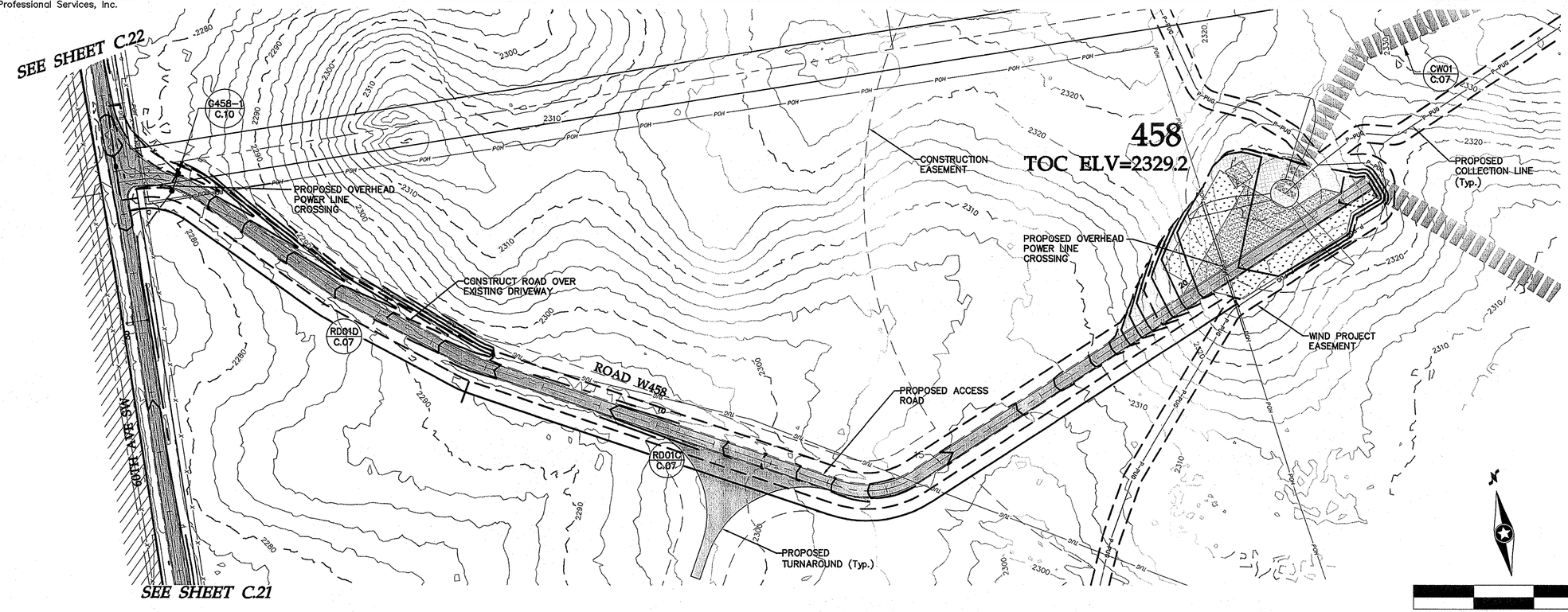
60th Ave SW Sta. 96+00 to 105+39

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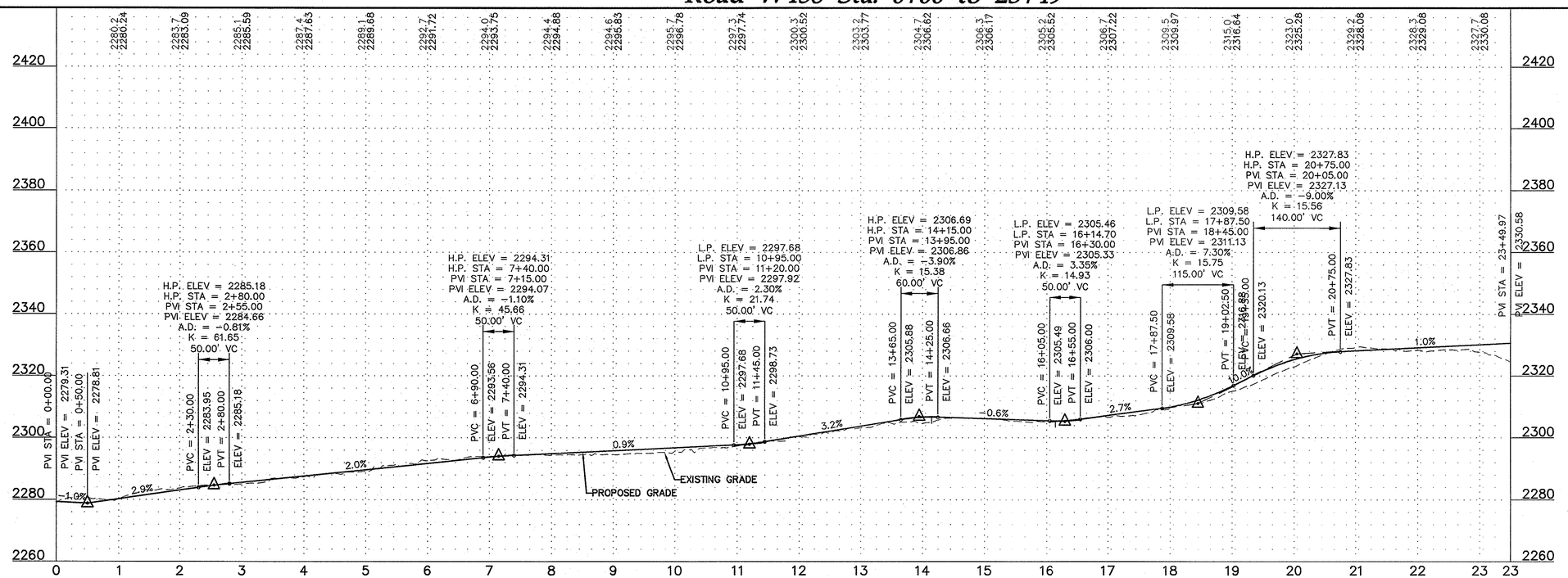
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Road W458 Sta. 0+00 to 23+49



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REGISTERED PROFESSIONAL ENGINEER
WILLIAM A. HUSTON
PE-8210
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

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 W458 Sta. 0+00 to 23+49

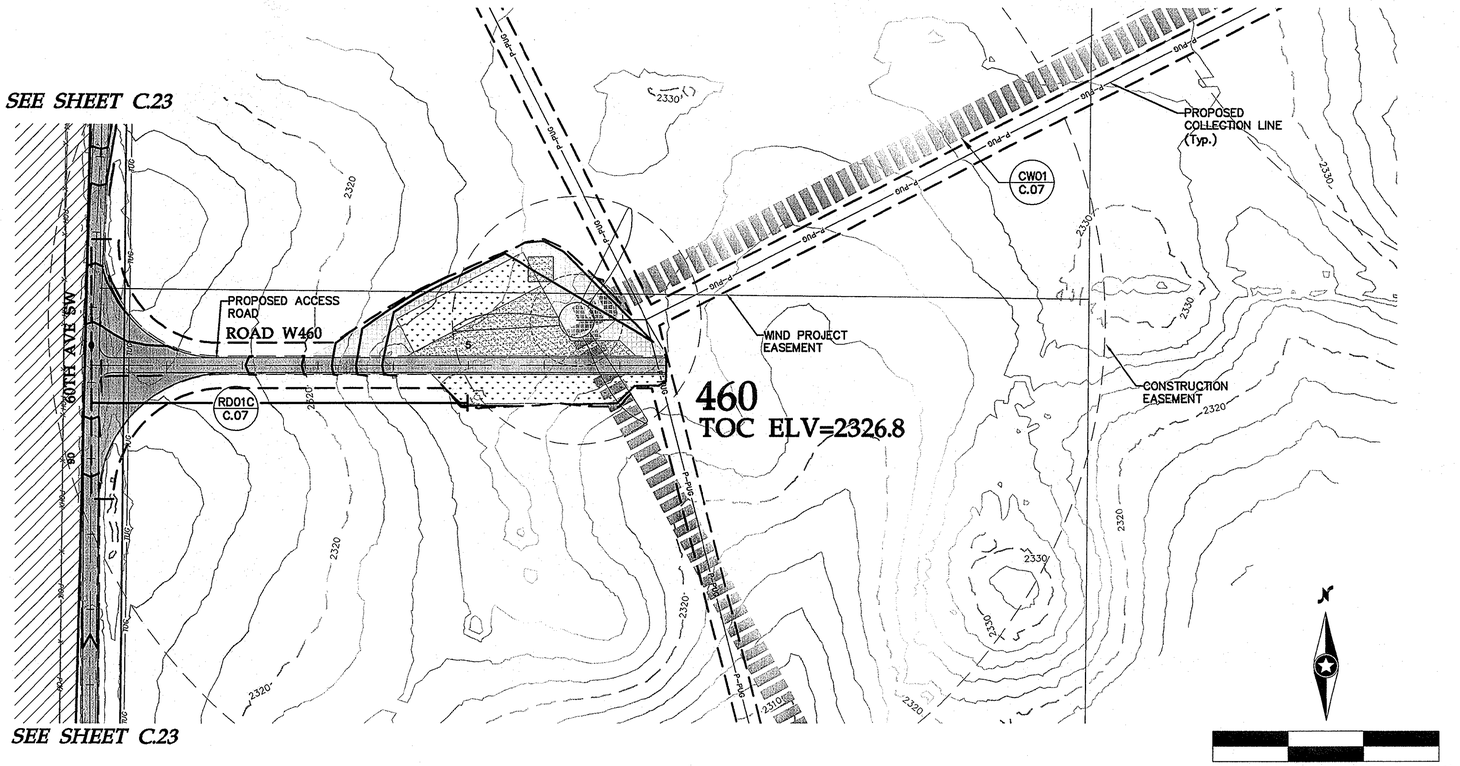
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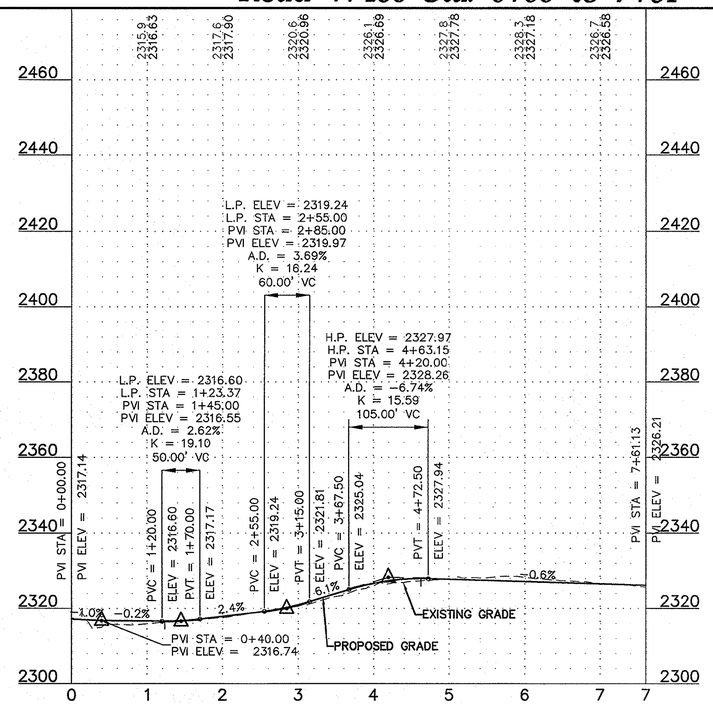
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DATE 8/9/13
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AN ALLETE COMPANY

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Bison 4 Wind Project

Oliver County, North Dakota

Road W460 Sta. 0+00 to 7+61

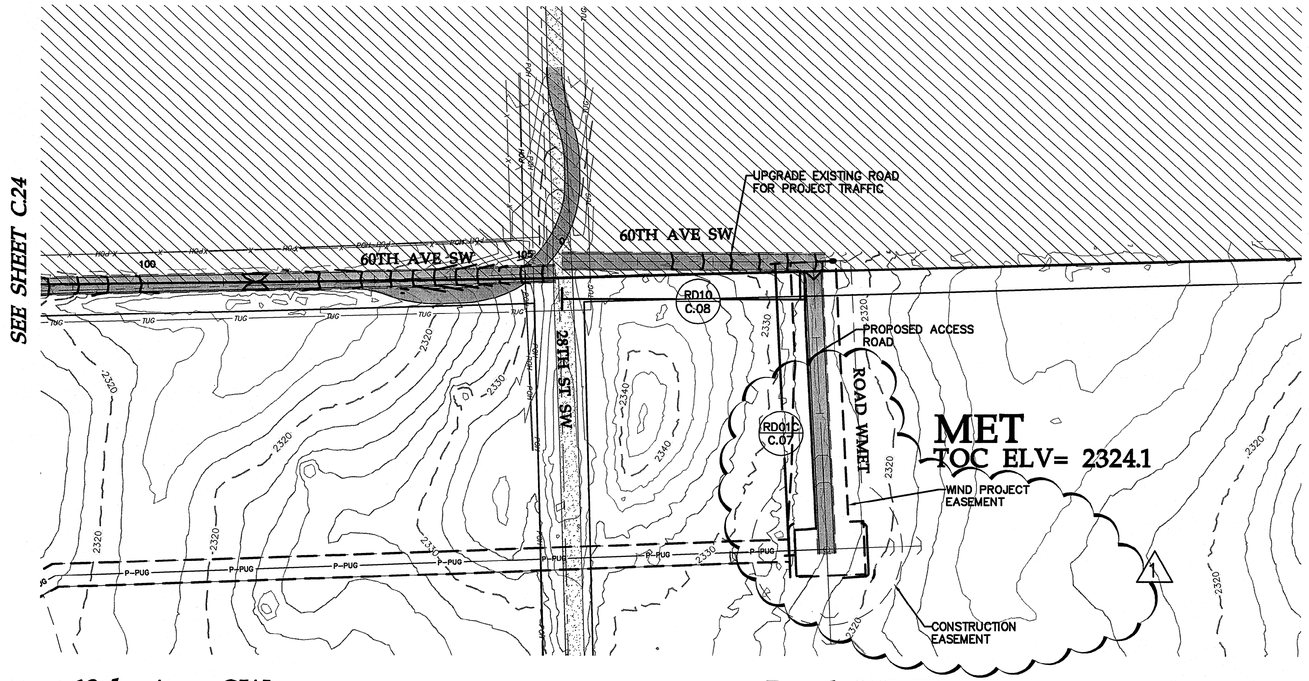
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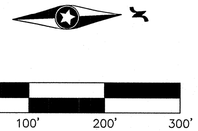
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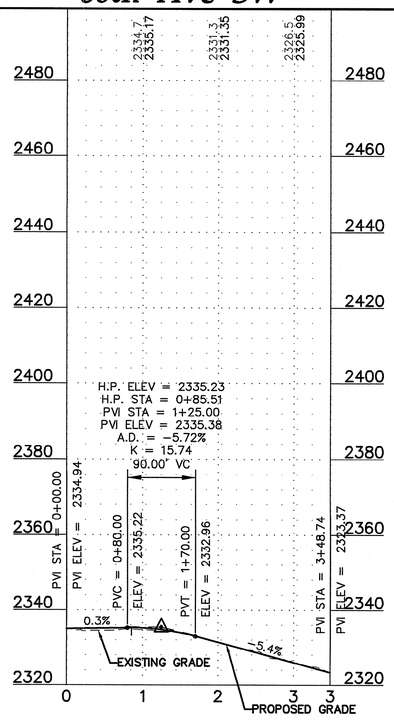
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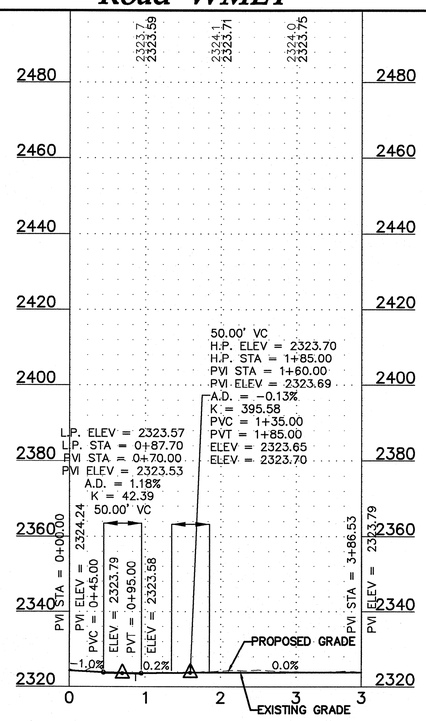




60th Ave SW



Road WMET





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Eden Prairie, MN 55344

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM F. HUSTON
PE-8319
DATE 9/4/13
NORTH DAKOTA

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minnesota power
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Bison 4 Wind Project

Oliver County, North Dakota

60th Ave SW & RoadWMET

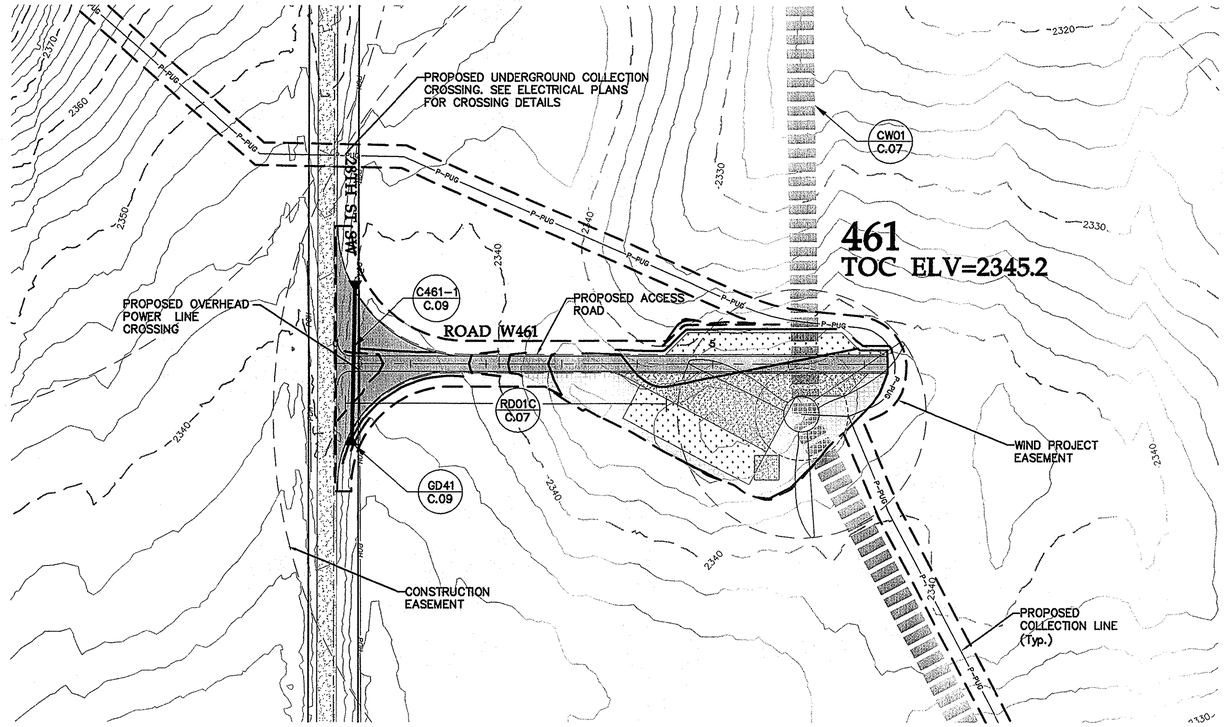
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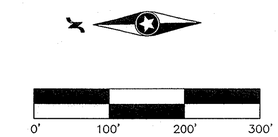
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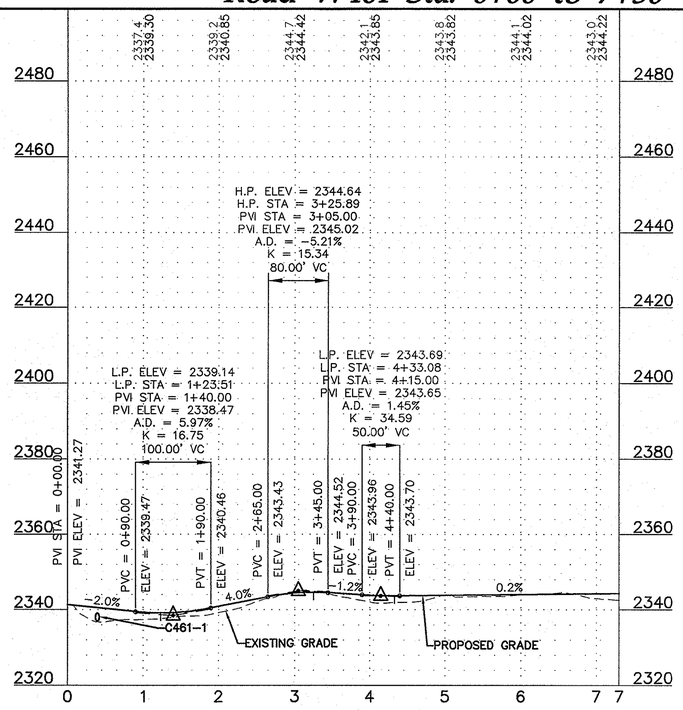
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Road W461 Sta. 0+00 to 7+30





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REGISTERED PROFESSIONAL ENGINEER
WILLIAM F. HUSTON
PE-8310
DATE 8/9/13
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

Road W461 Sta. 0+00 to 7+30

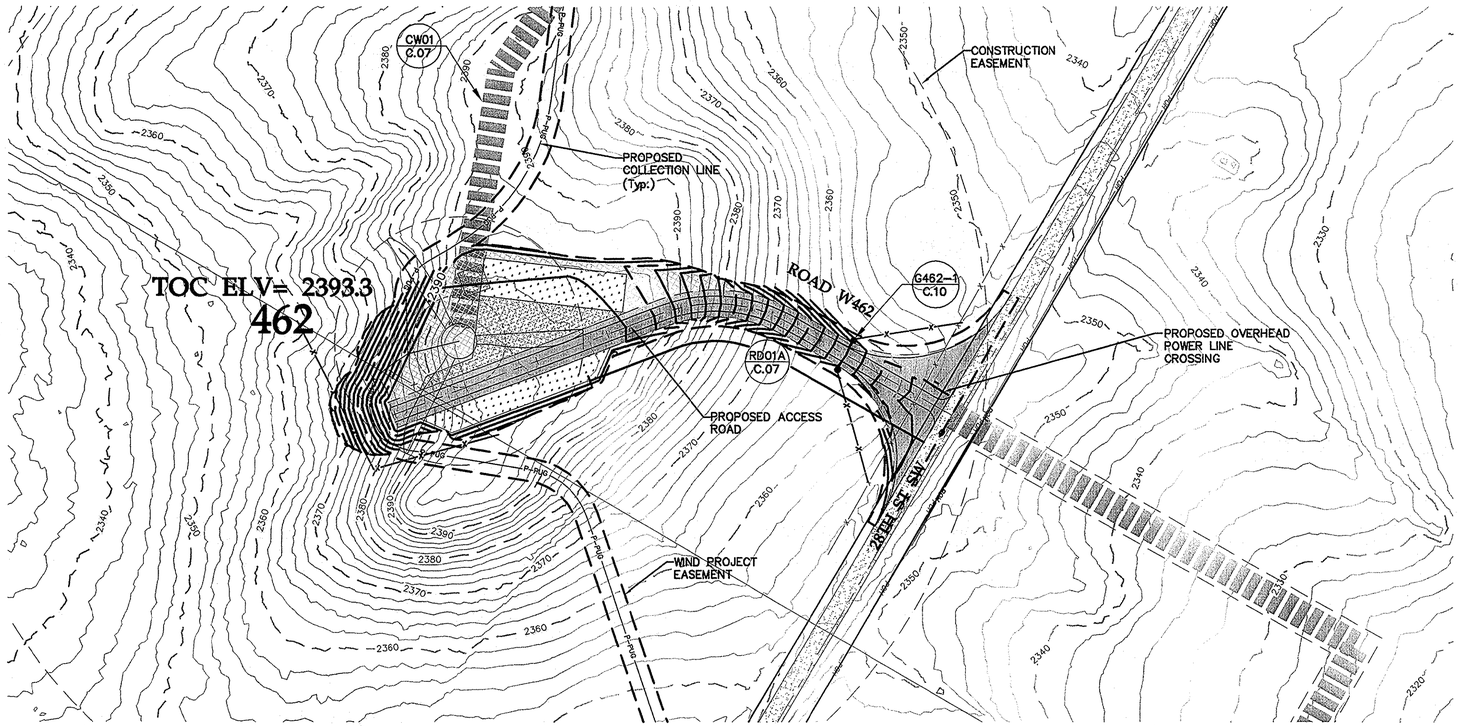
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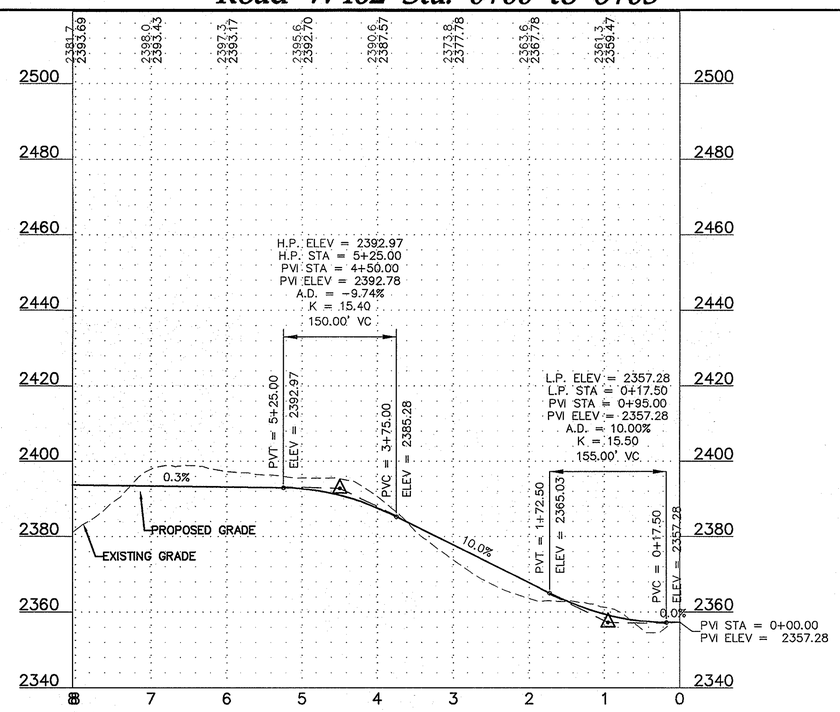
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0' 100' 200' 300'

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20' 0 10' 20'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- TURBINE LOCATION
- T-XX — TURBINE NUMBER
- PROPOSED ACCESS ROADS
- 3000 — PROPOSED 10' CONTOURS
- PROPOSED 2' CONTOURS
- P-POH — PROPOSED OVERHEAD POWER
- PROPOSED OVERHEAD RIGHT OF WAY
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- PROPOSED CRANE PATH
- PROPOSED CULVERT
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- EXISTING STREAM
- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

Road W462 Sta. 0+00 to 8+03

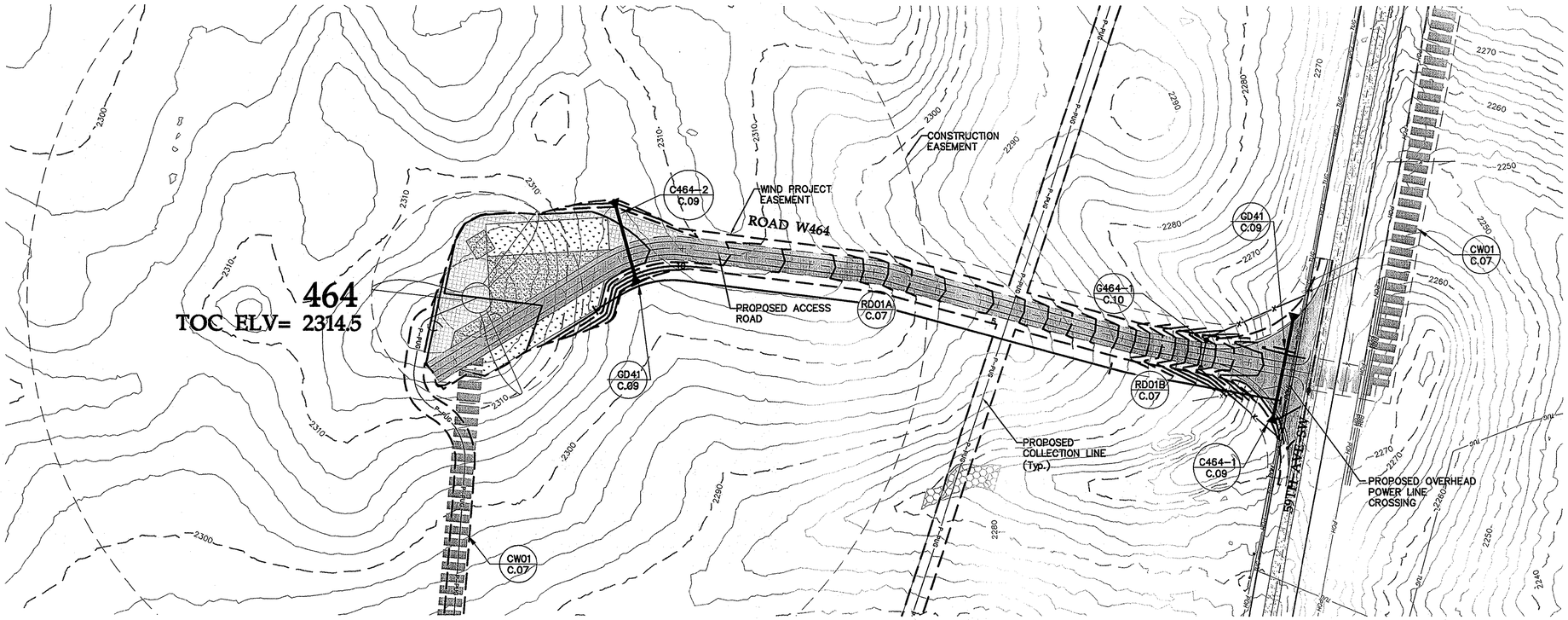
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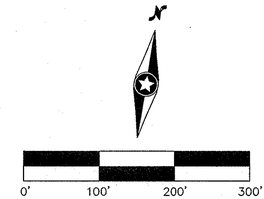
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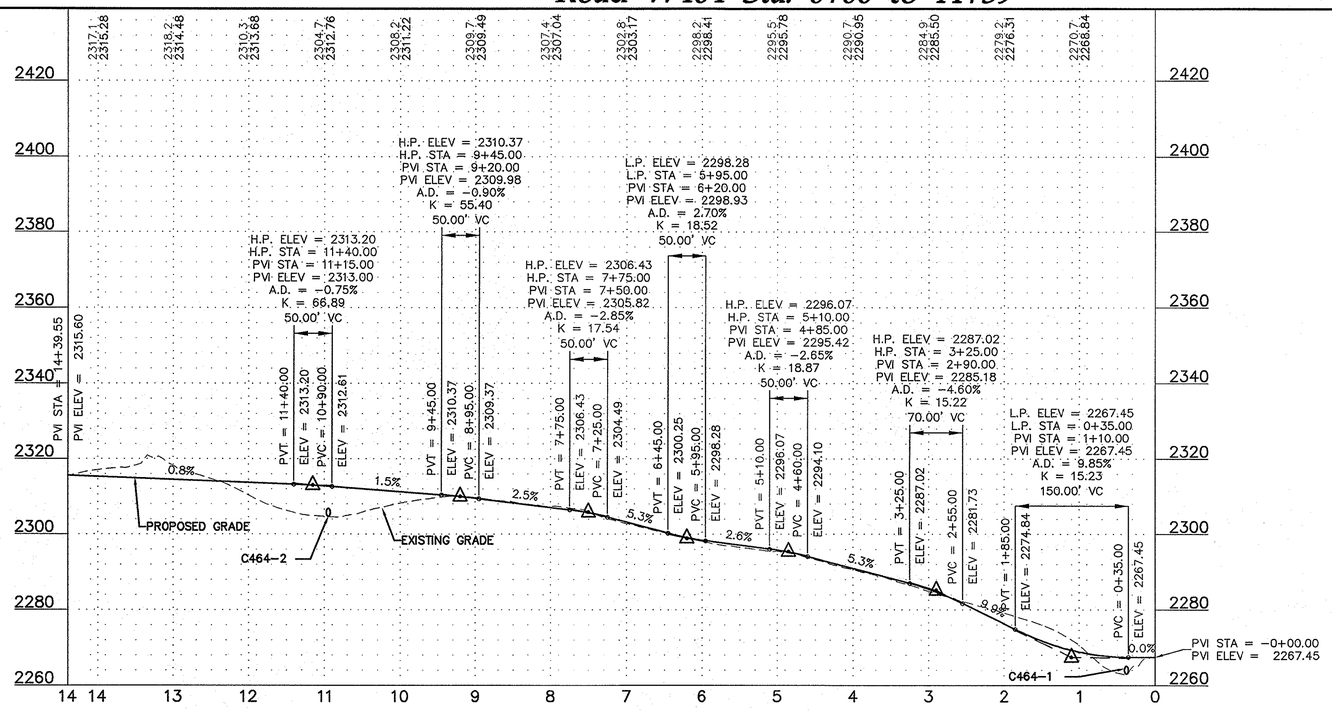
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM F. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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 W464 Sta. 0+00 to 14+39

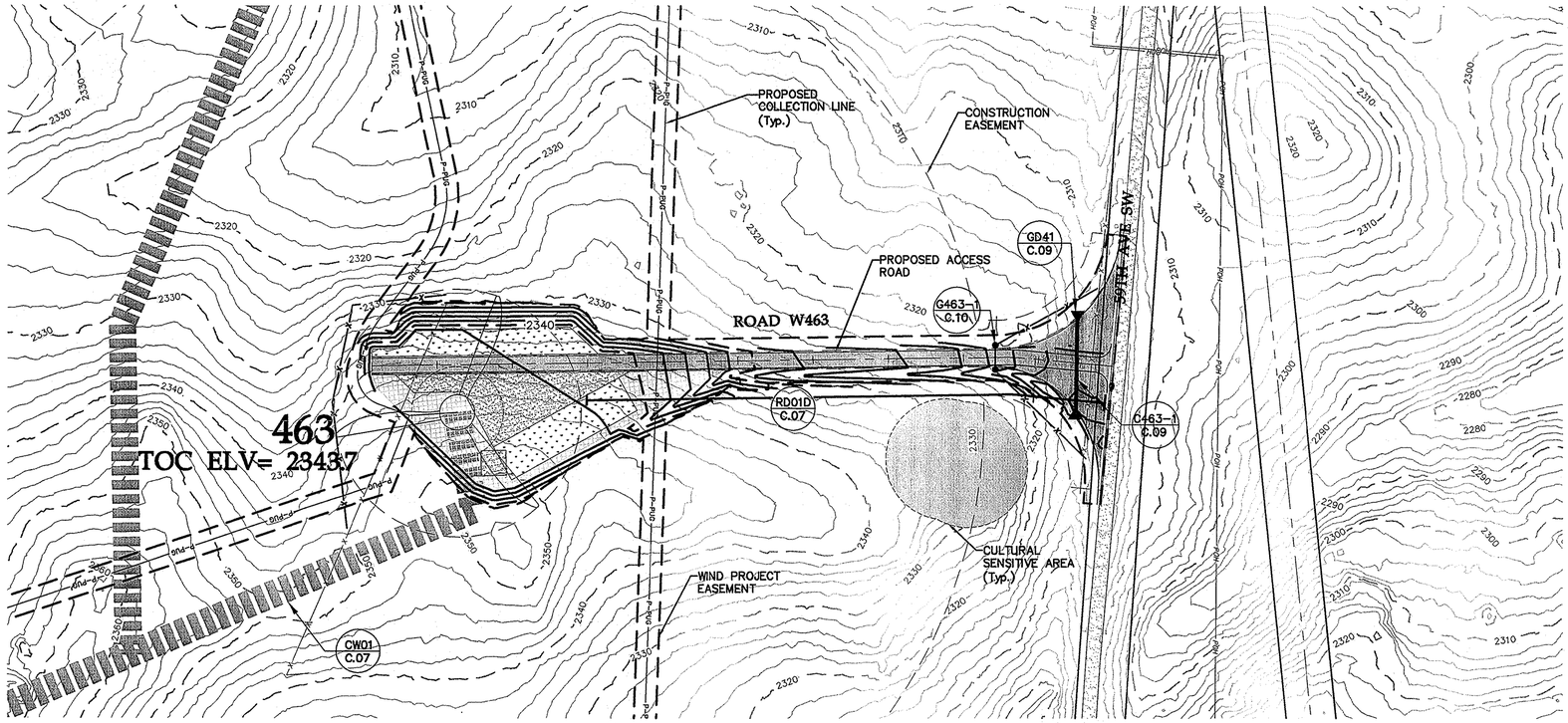
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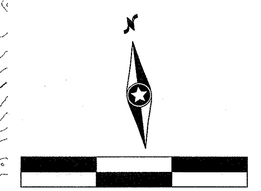
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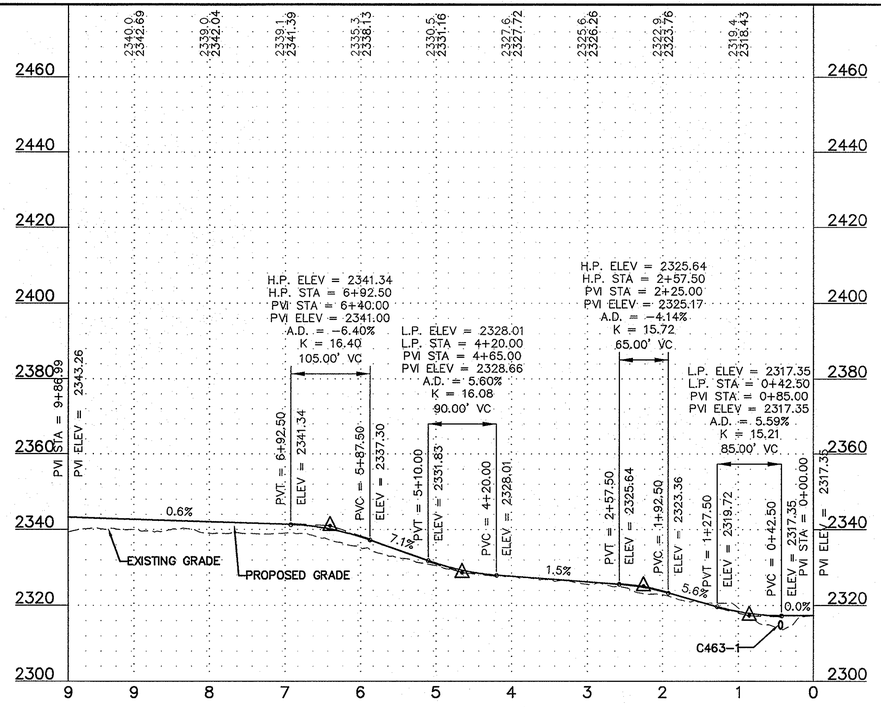
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM B. HUDSON
PE-8310
DATE 8/9/13
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
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Revisions:

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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 W463 Sta. 0+00 to 9+86

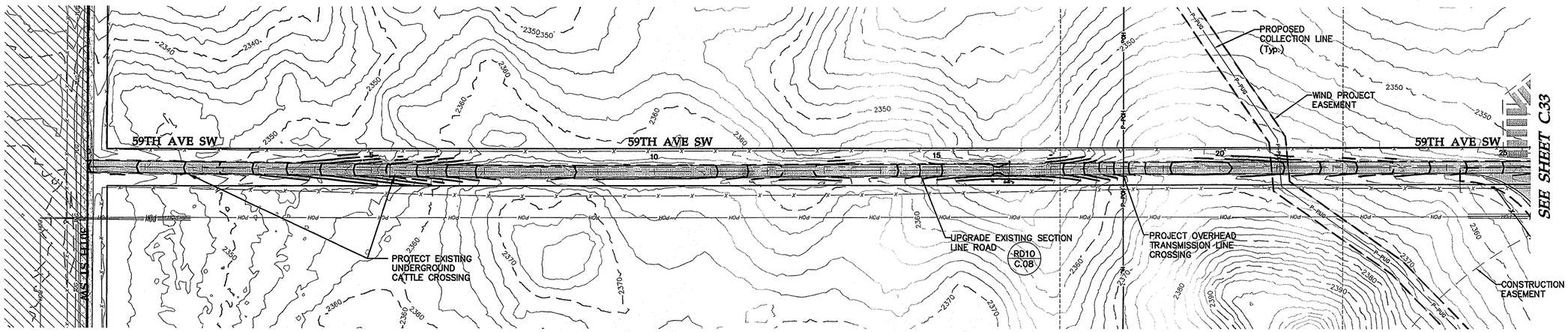
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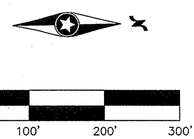
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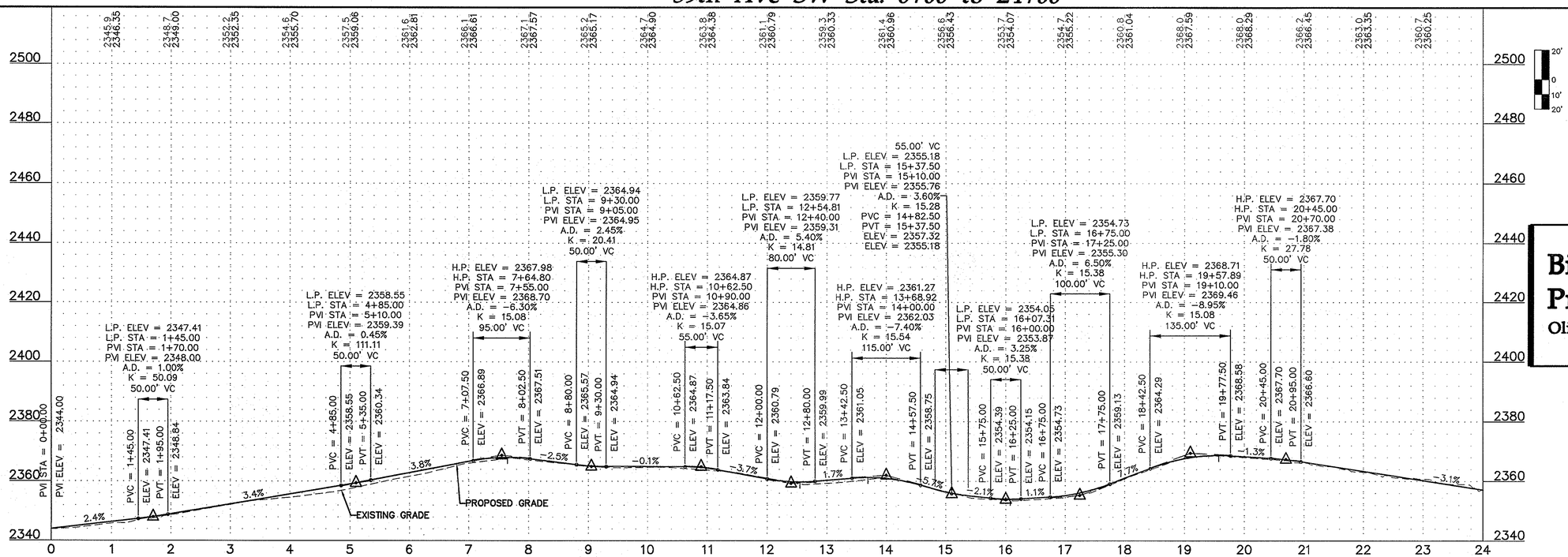
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM M. HUSTON
PE-8310
DATE 8/8/13
NORTH DAKOTA

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

Revisions:

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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. 0+00 to 24+00

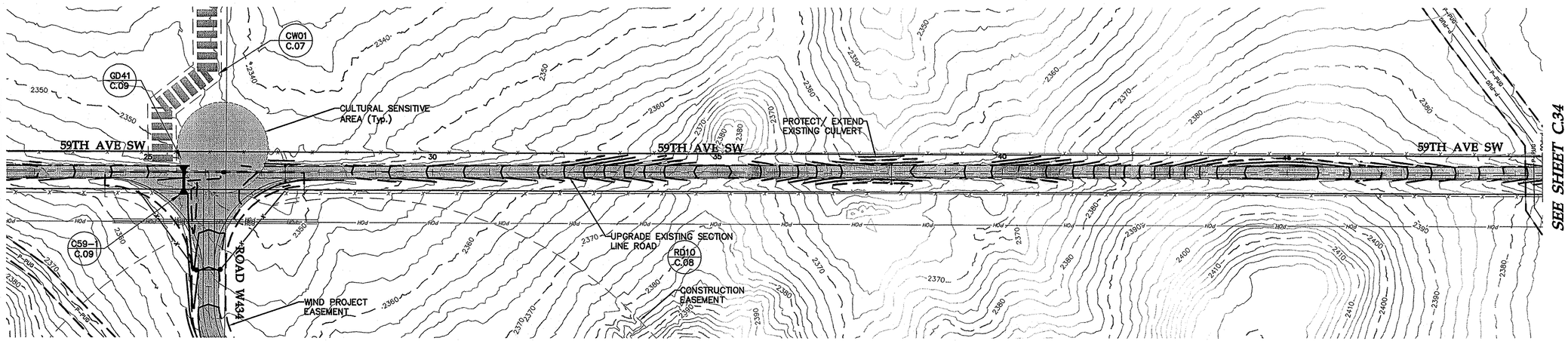
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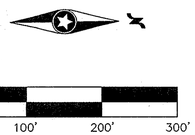
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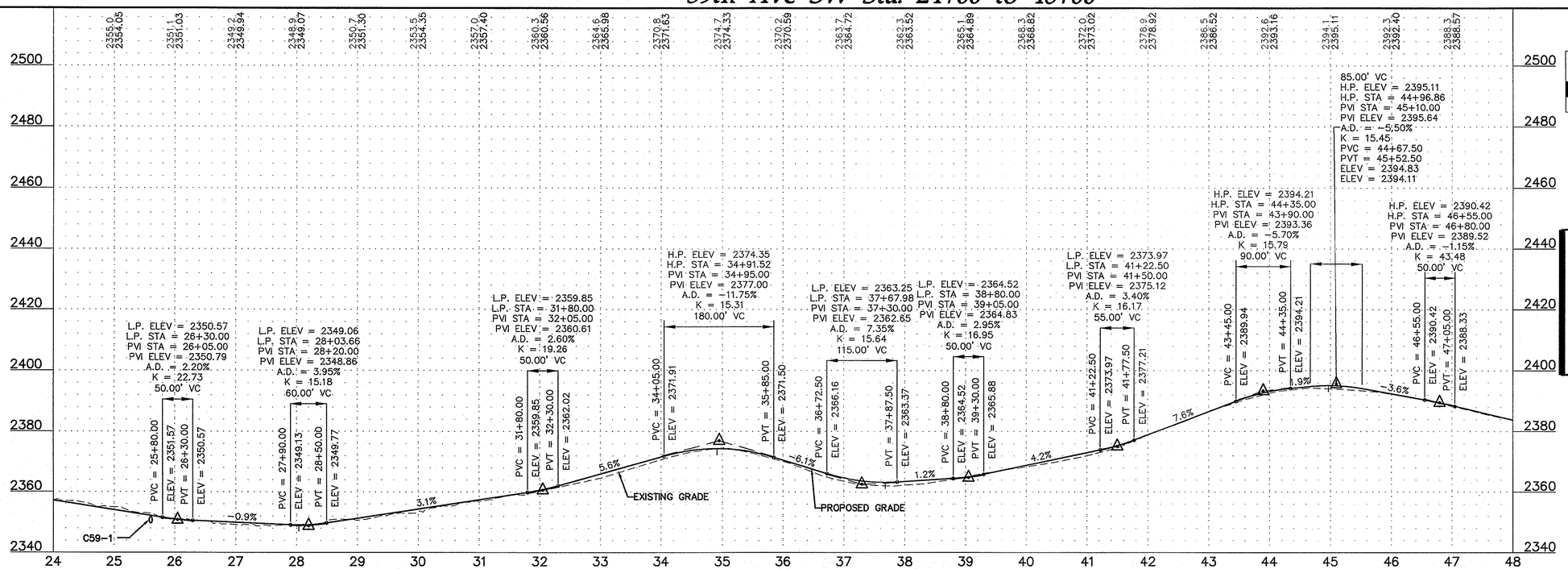
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 2/1/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

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

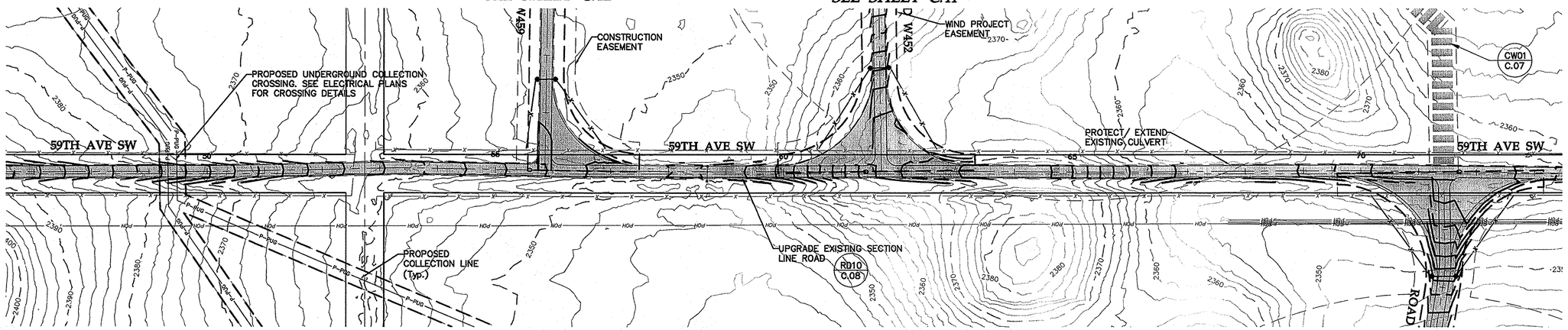
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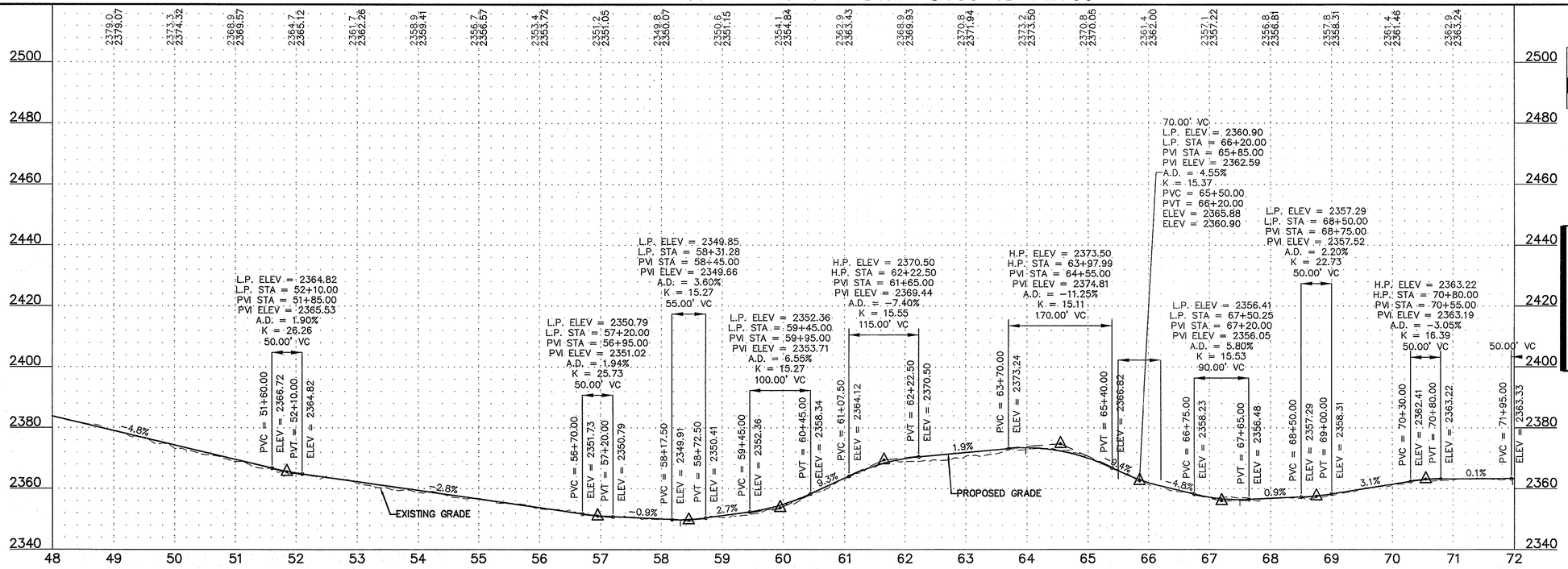
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PE-8310
DATE 8/9/13
NORTH DAKOTA

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Bison 4 Wind Project

Oliver County, North Dakota

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

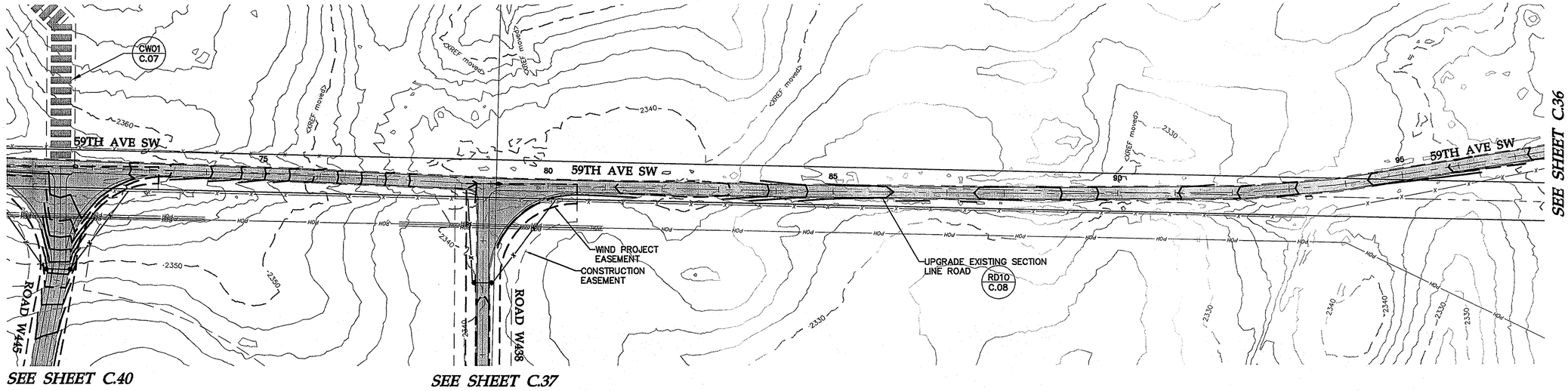
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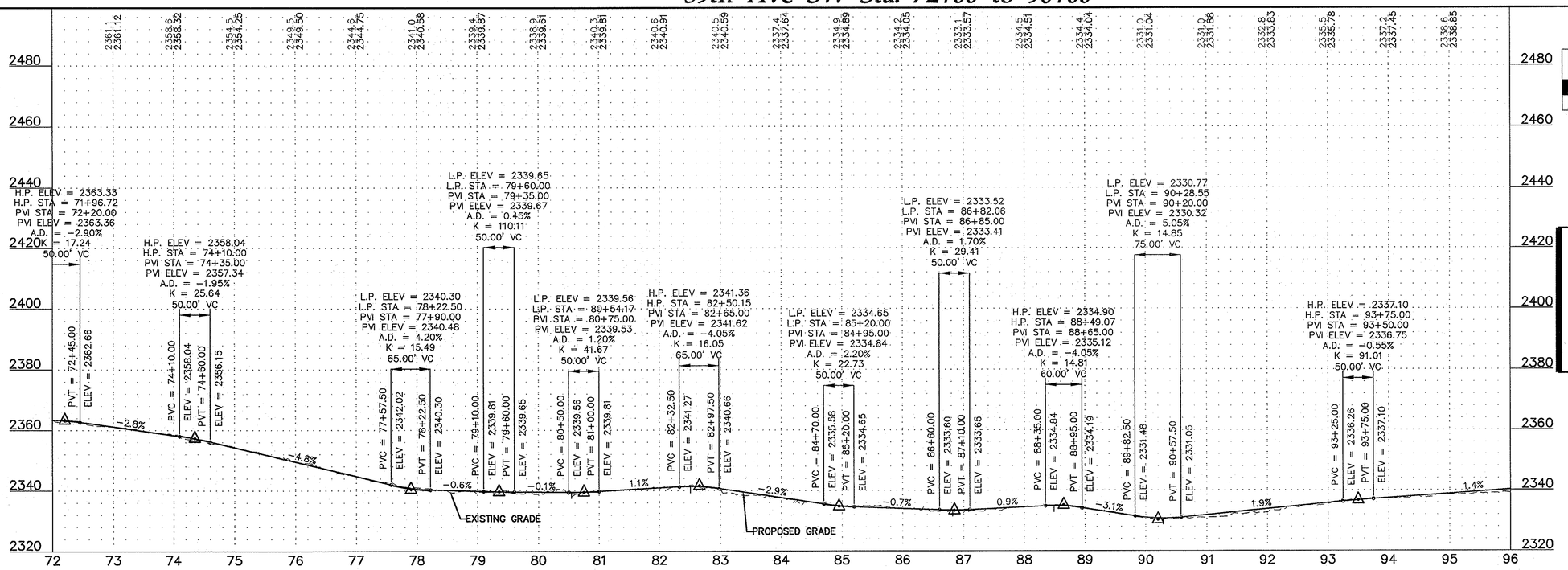
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Oliver County, North Dakota

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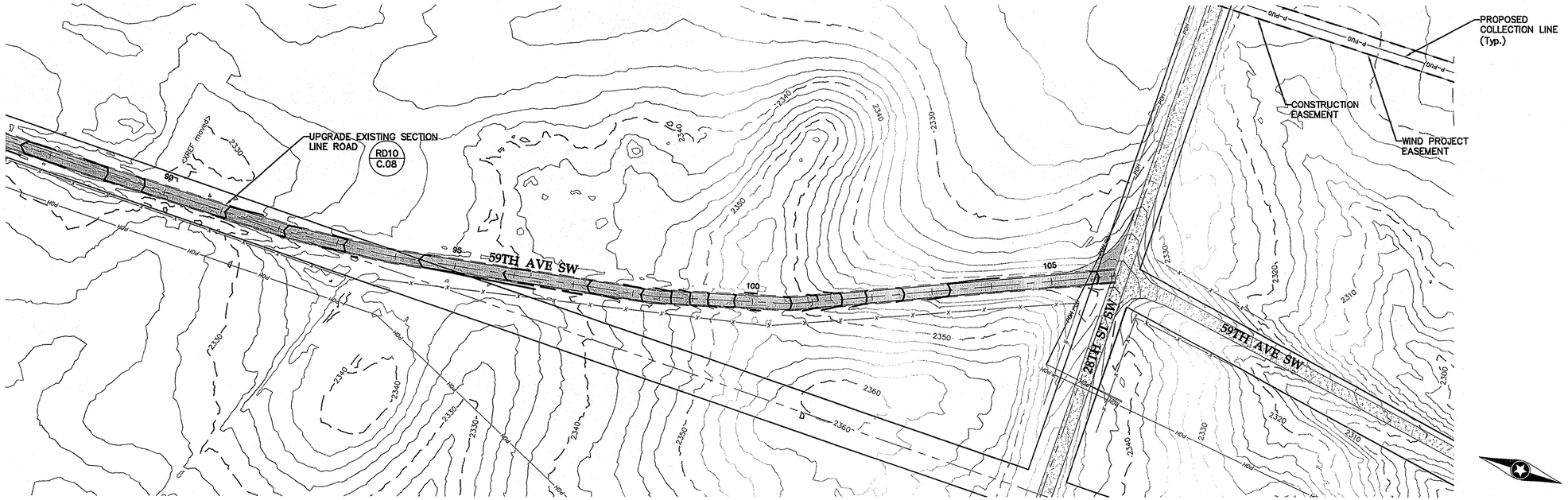
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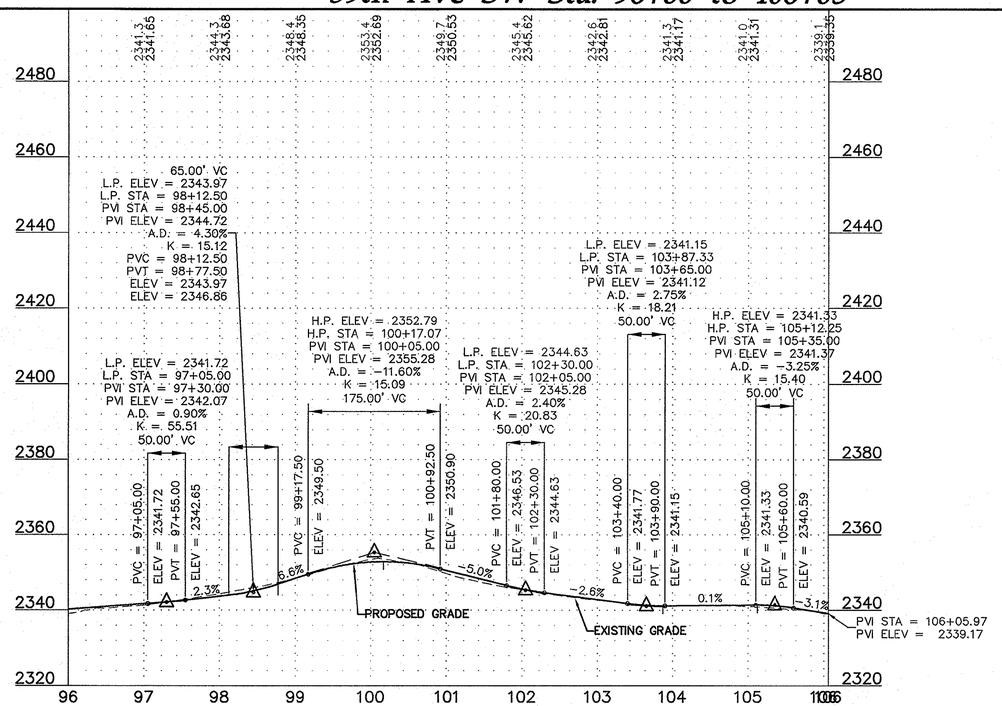
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59th Ave SW Sta. 96+00 to 106+05



20' 0 10' 20'

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Oliver County, North Dakota

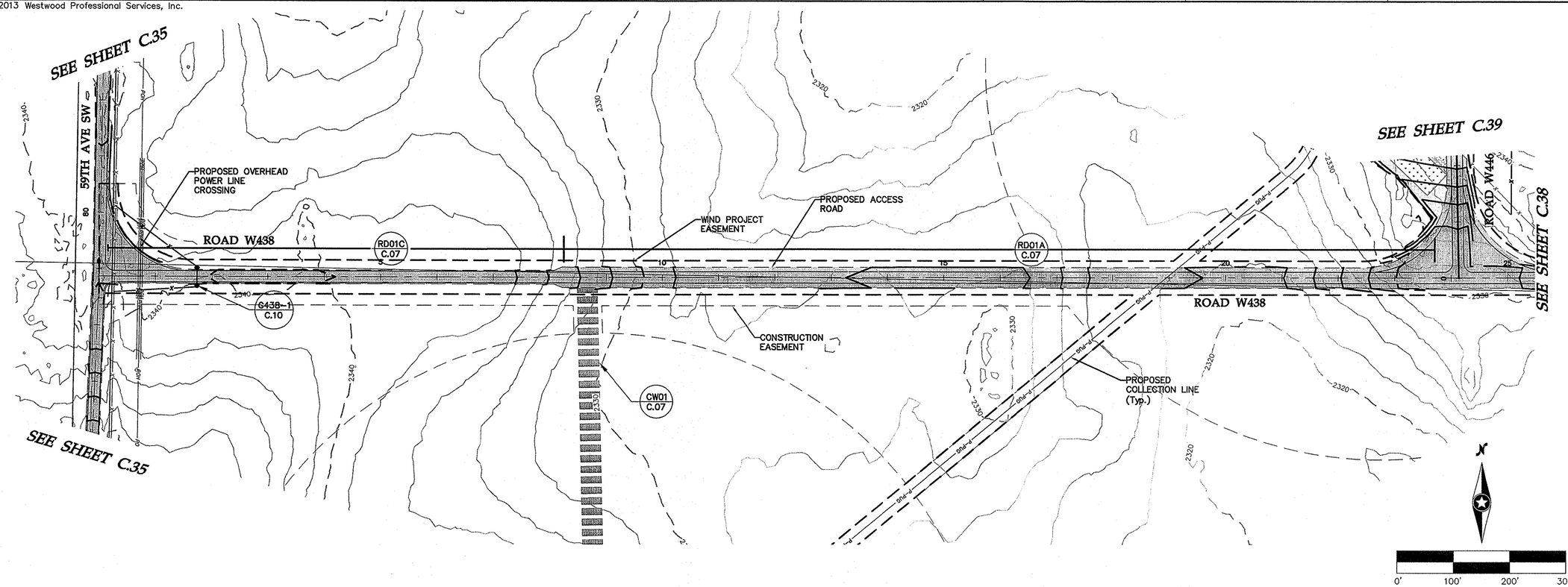
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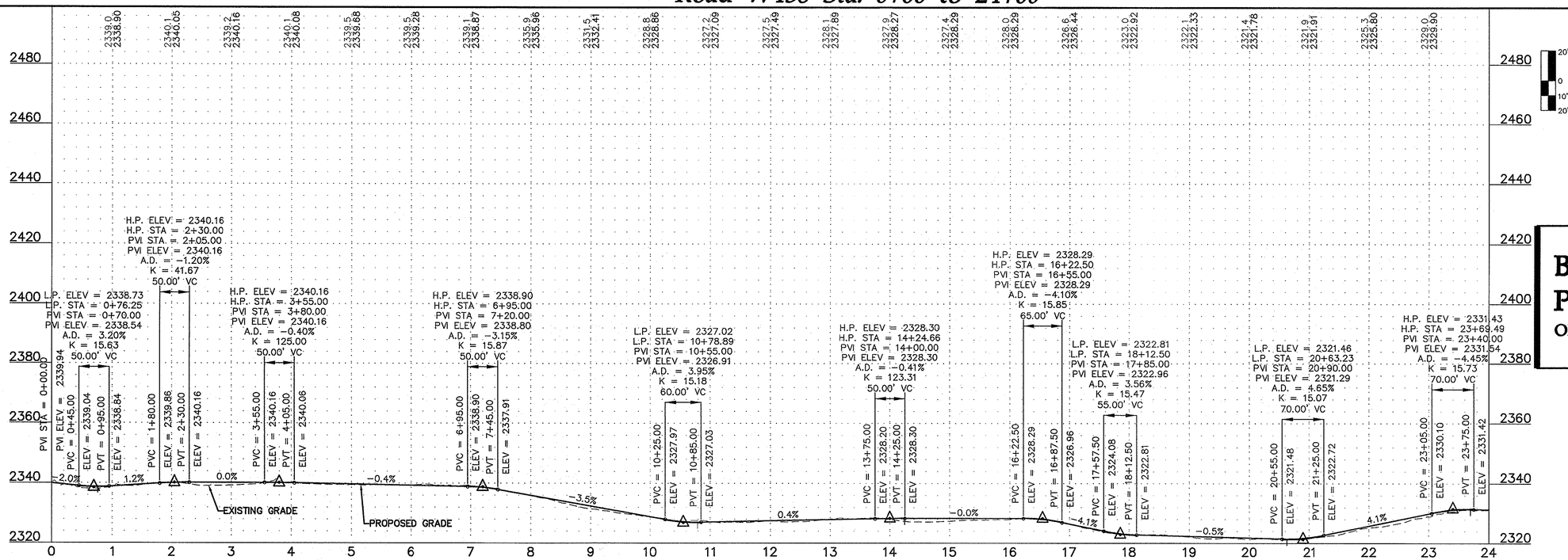
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Oliver County, North Dakota

Road W438 Sta. 0+00 to 24+00

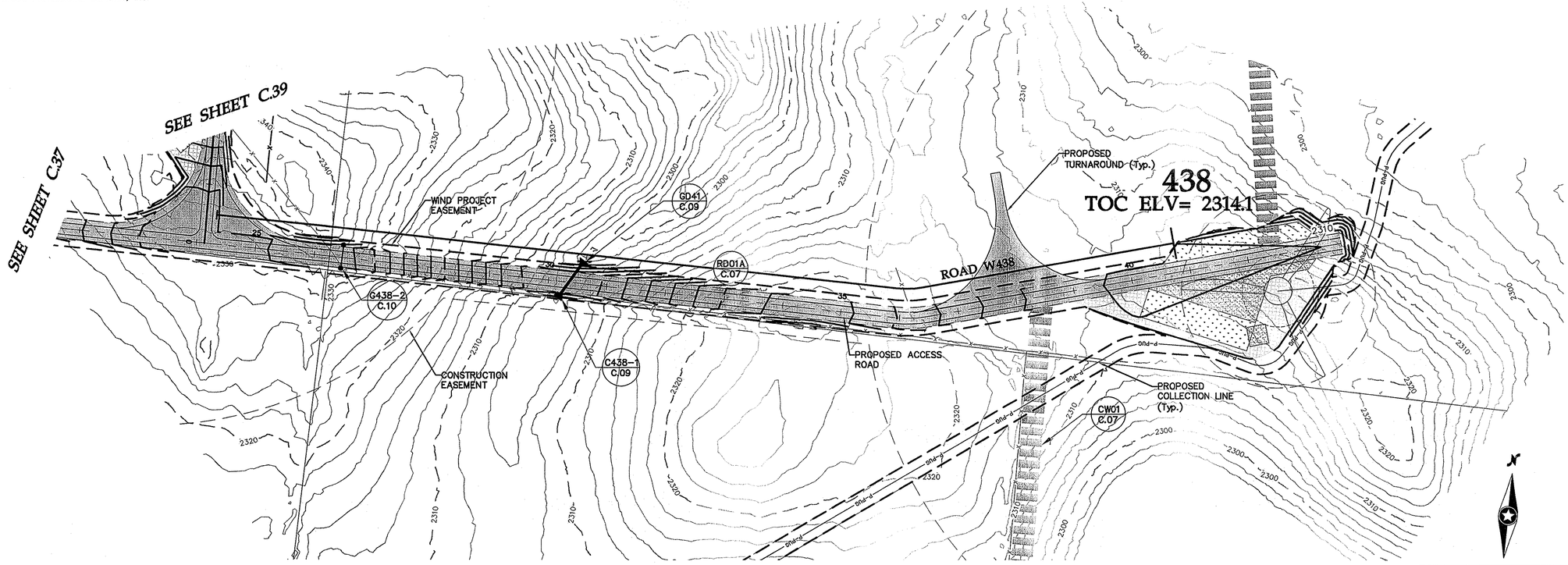
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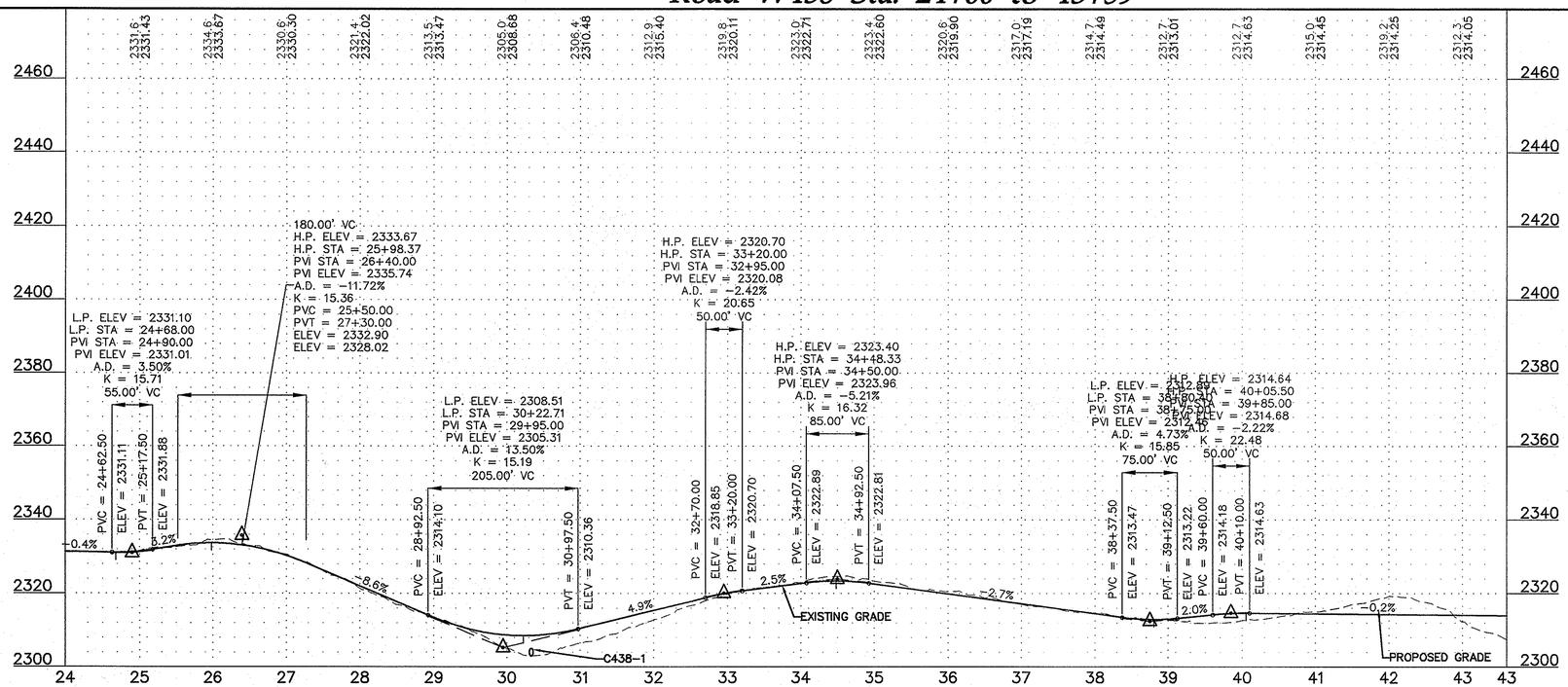
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM E. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

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

LEGEND:

- TURBINE LOCATION
- T-XX TURBINE NUMBER
- PROPOSED ACCESS ROADS
- 3000 PROPOSED 10' CONTOURS
- PROPOSED 2' CONTOURS
- P-POH PROPOSED OVERHEAD POWER
- PROPOSED OVERHEAD RIGHT OF WAY
- P-PUG PROPOSED UNDERGROUND ELECTRICAL COLLECTION
- PROPOSED CRANE PATH
- PROPOSED CULVERT
- C432-1 CULVERT ID
- PROPOSED FENCE CROSSING/GATE
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- WIND PROJECT EASEMENT
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- EXISTING 2' CONTOURS
- P-OH EXISTING OVERHEAD POWER
- EXISTING STREAM
- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

Road W438 Sta. 24+00 to 43+59

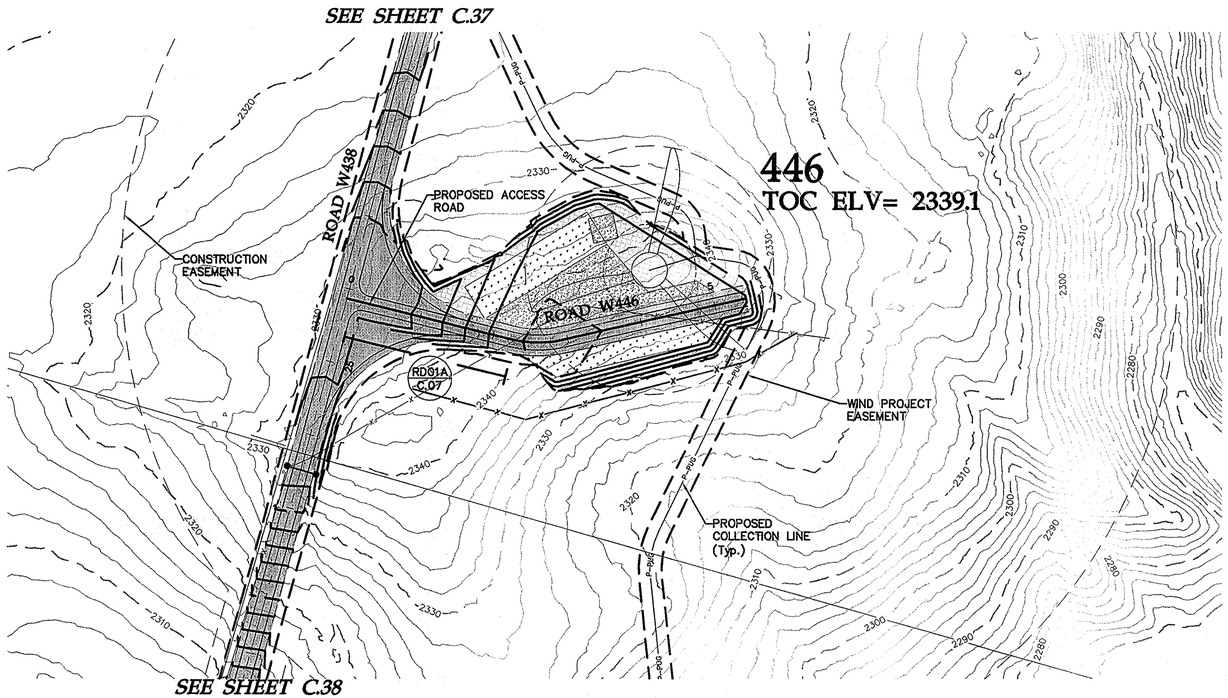
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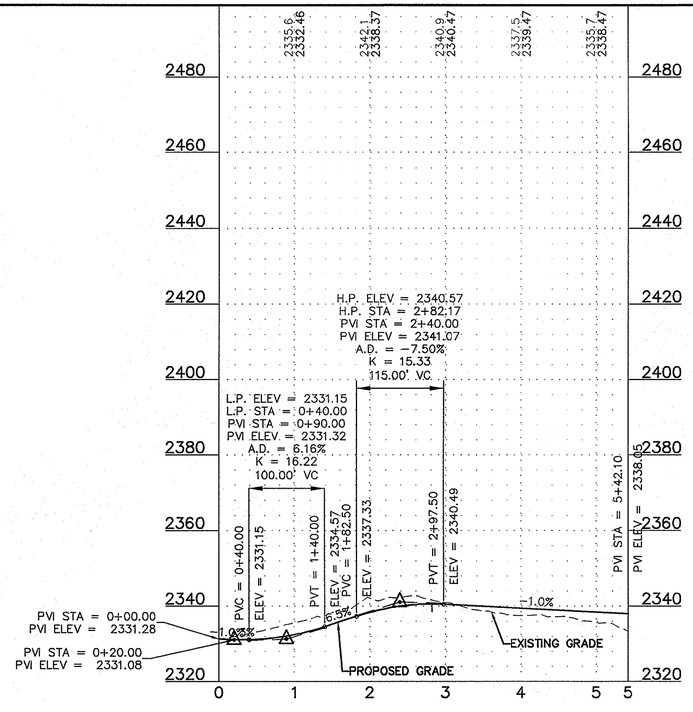
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30 West Superior Street
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Bison 4 Wind Project

Oliver County, North Dakota

Road W446 Sta. 0+00 to 5+42

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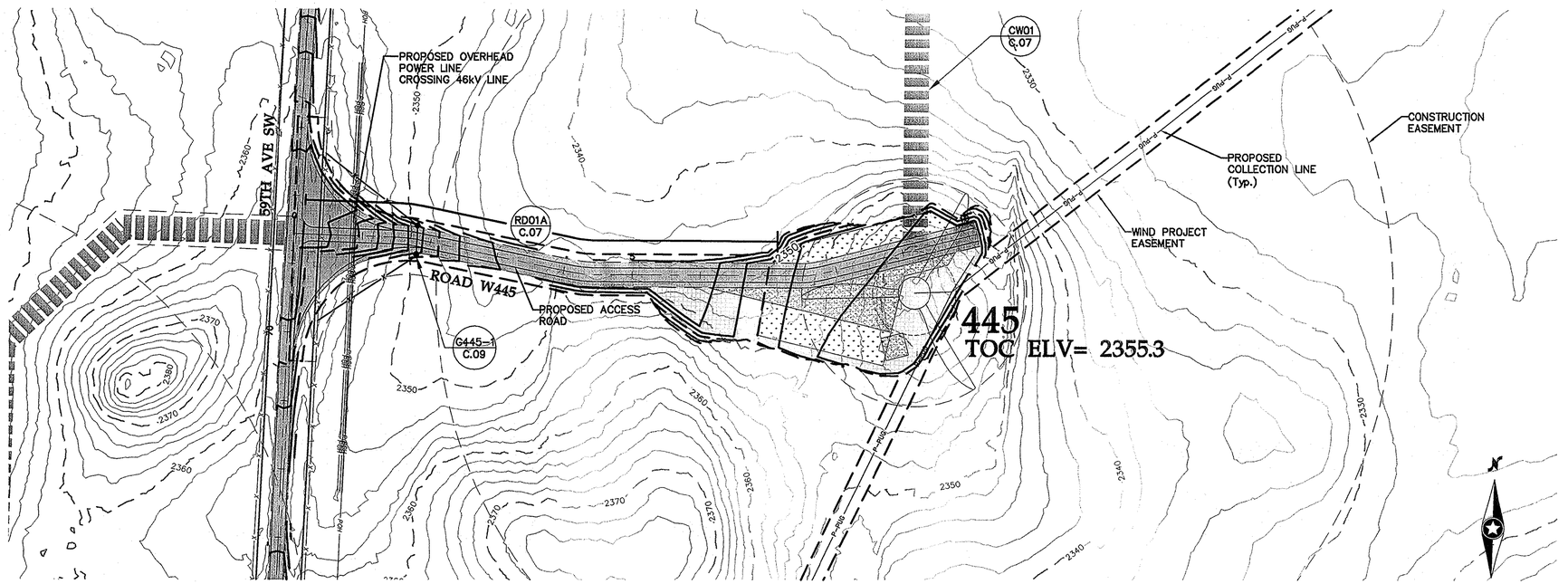
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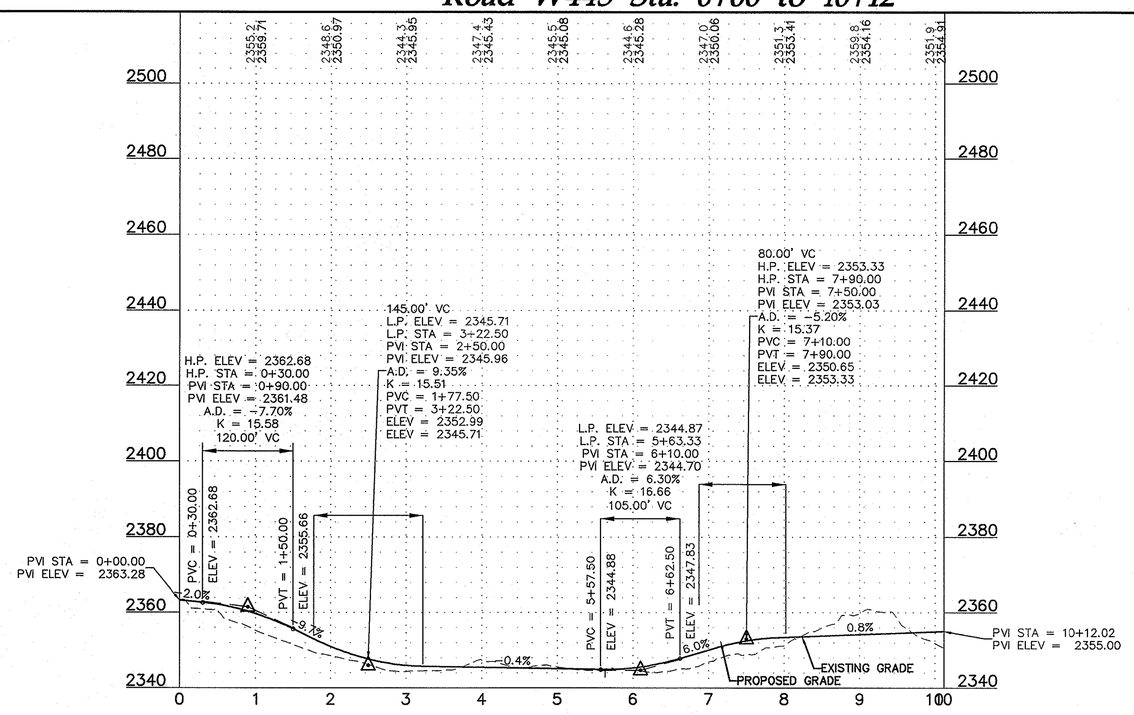
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Road W445 Sta. 0+00 to 10+12



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WILLIAM R. HUDSON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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Record Drawing by/date:

Revisions:

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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 W445 Sta. 0+00 to 10+12

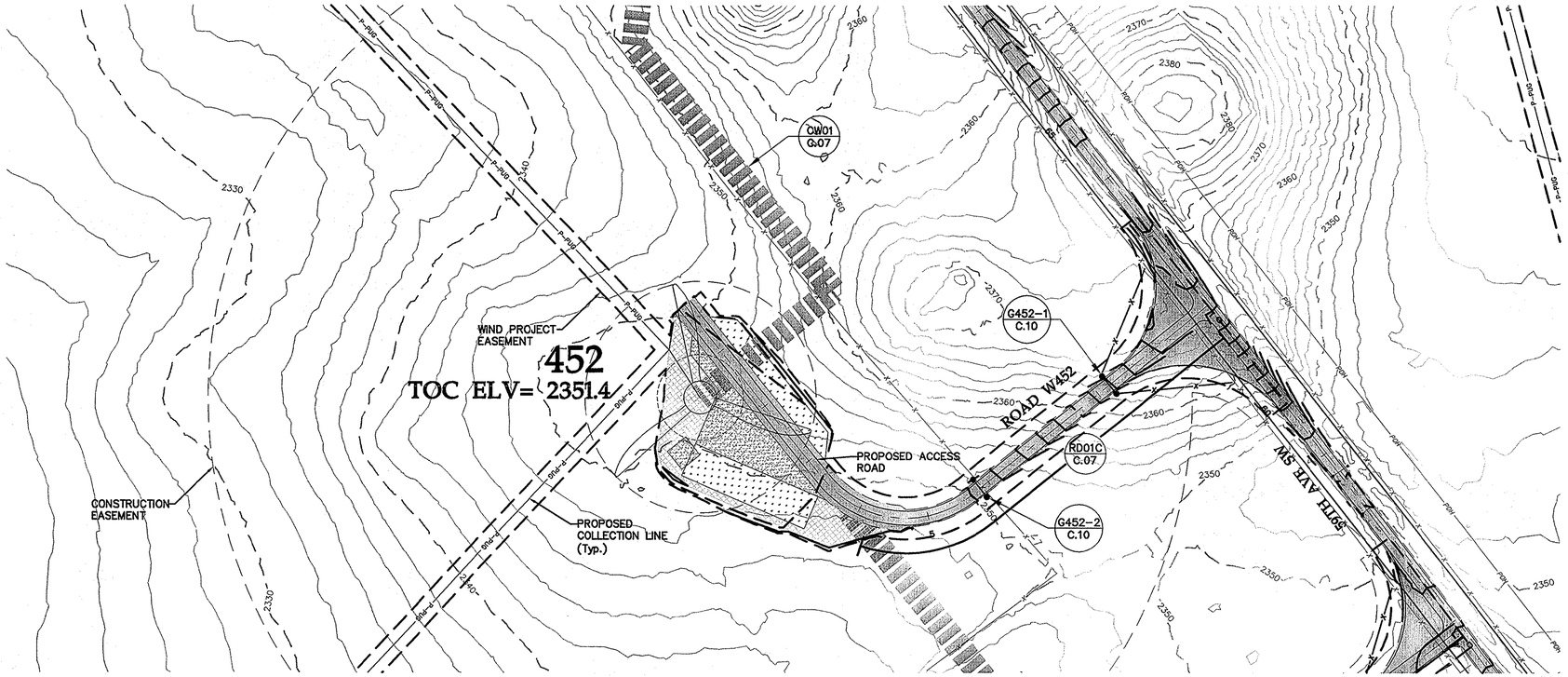
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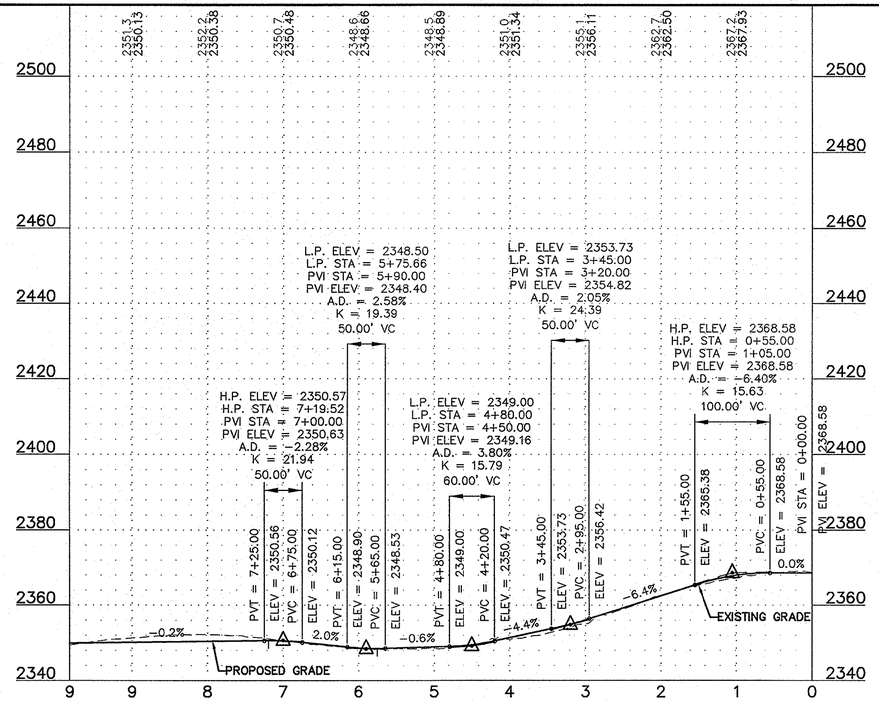
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SEE SHEET C.34

0' 100' 200' 300'

Road W452 Sta. 0+00 to 9+82



20' 0 10' 20'

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PE-8310
DATE 8/9/13
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Bison 4 Wind Project

Oliver County, North Dakota

Road W452 Sta. 0+00 to 9+82

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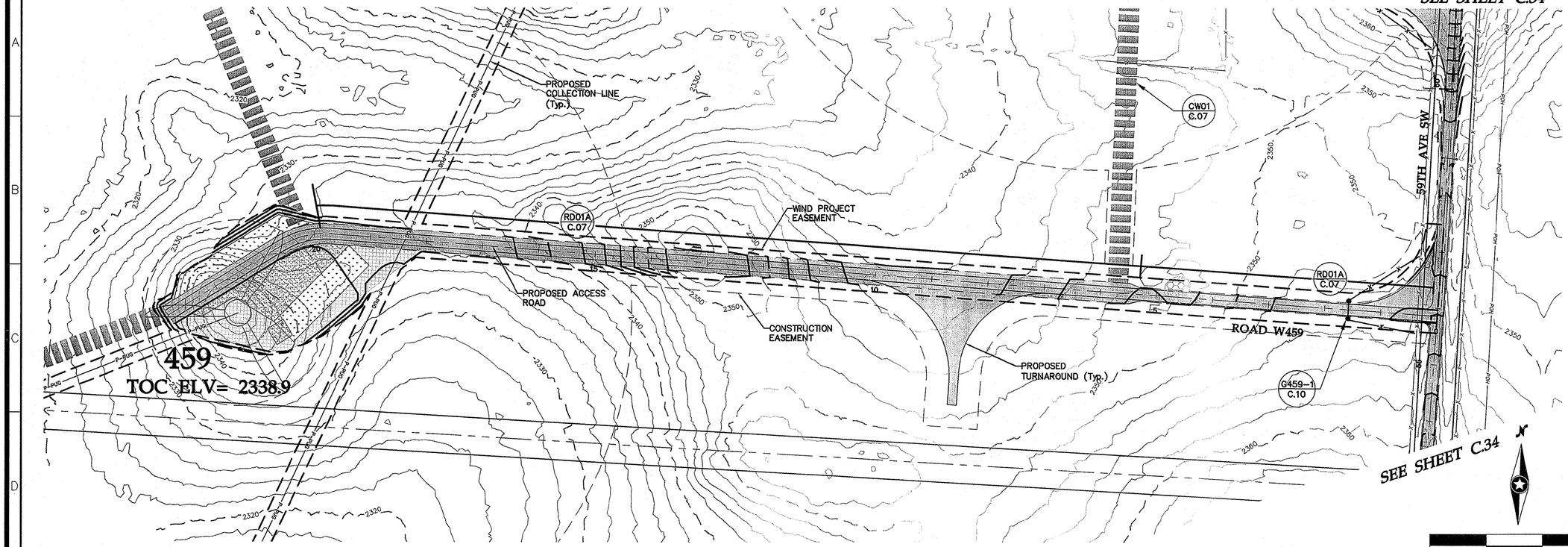
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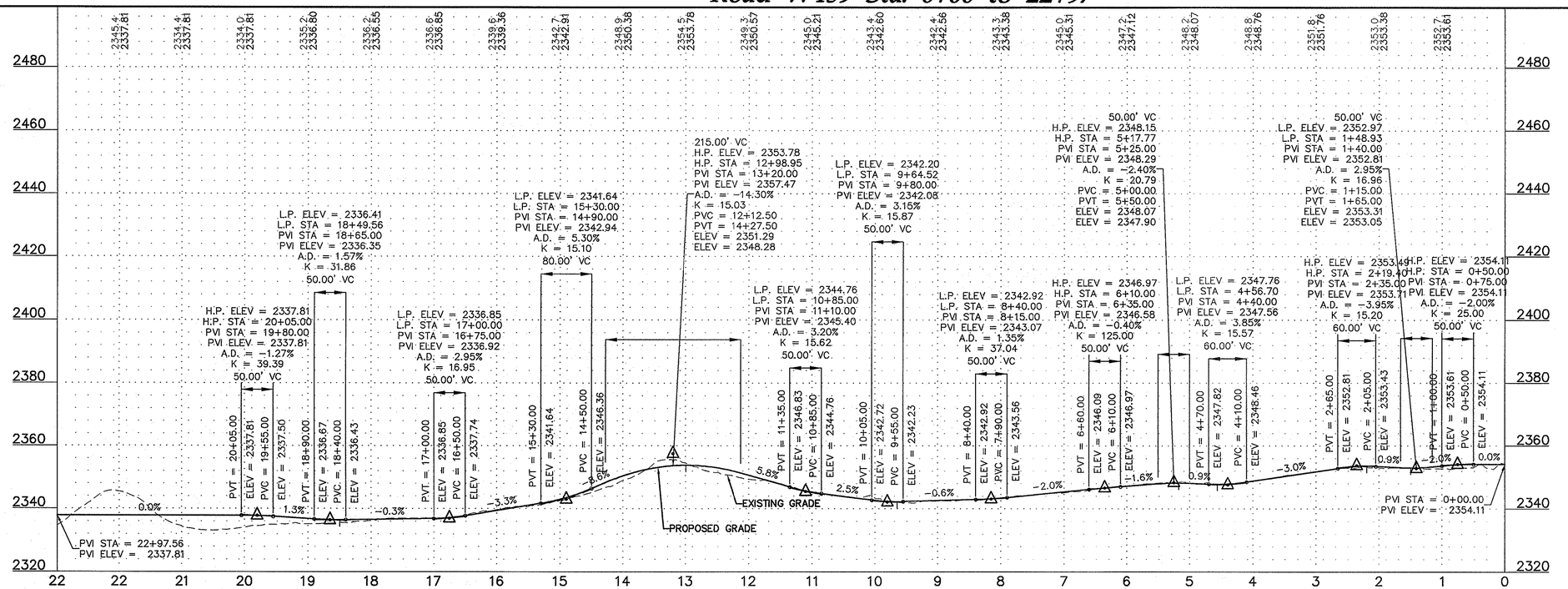
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REGISTERED PROFESSIONAL ENGINEER
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NORTH DAKOTA

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Oliver County, North Dakota

Road W459 Sta. 0+00 to 22+97

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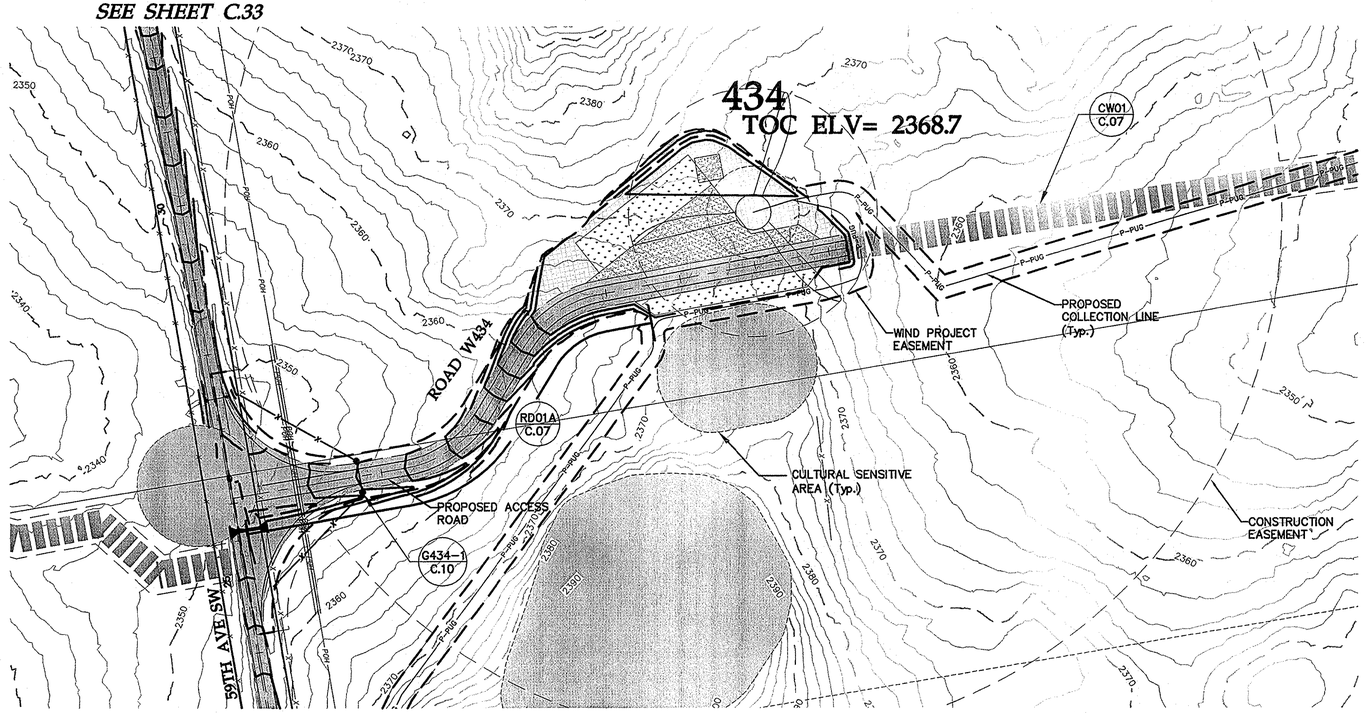
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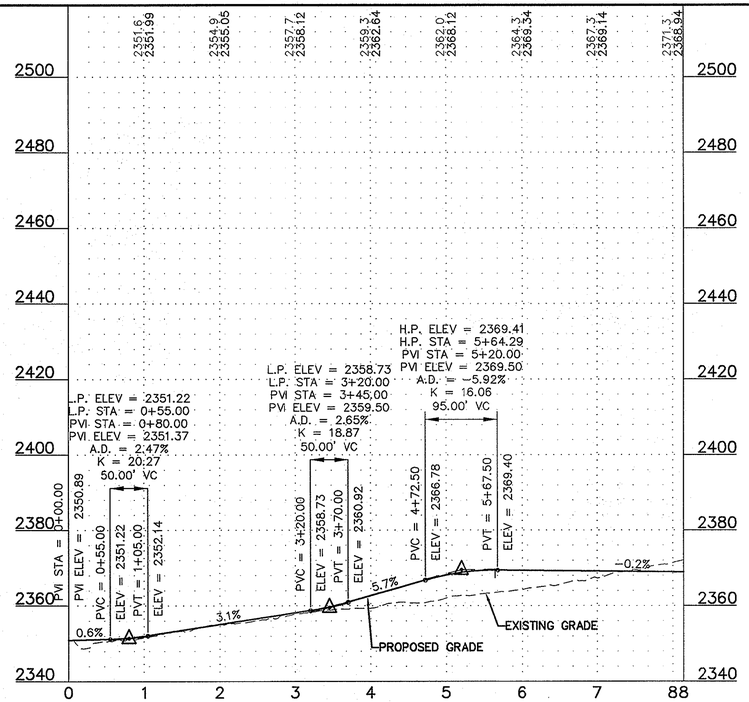
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SEE SHEET C.32



Road W434 Sta. 0+00 to 8+14





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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

Designed:	MPG
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Record Drawing by/date:	

Revisions:

#	DATE	DESCRIPTION

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 W434 Sta. 0+00 to 8+14

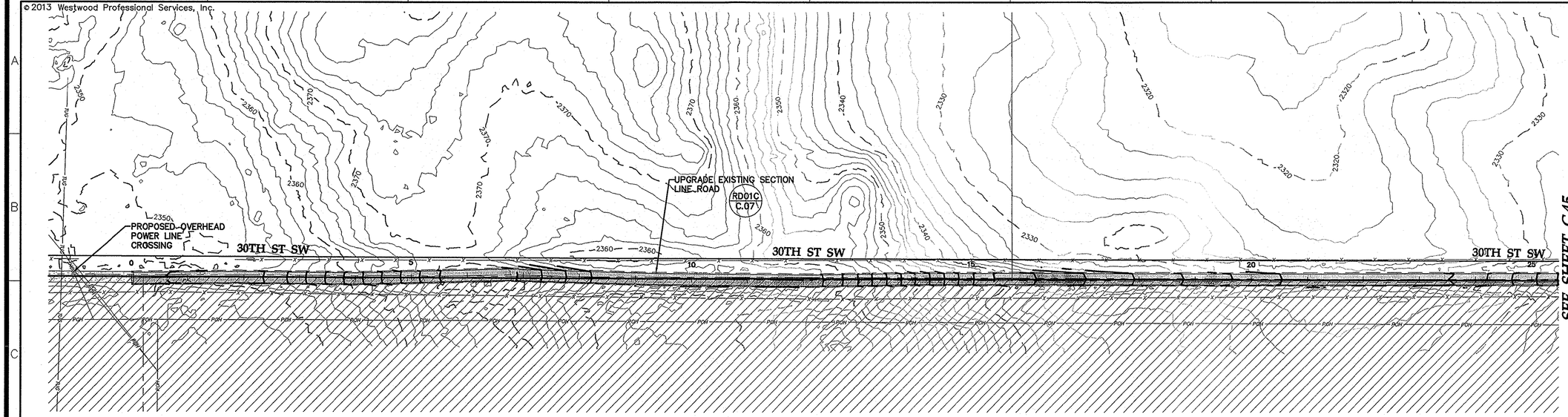
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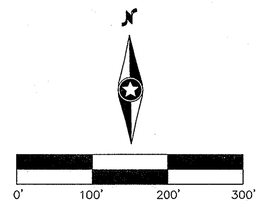
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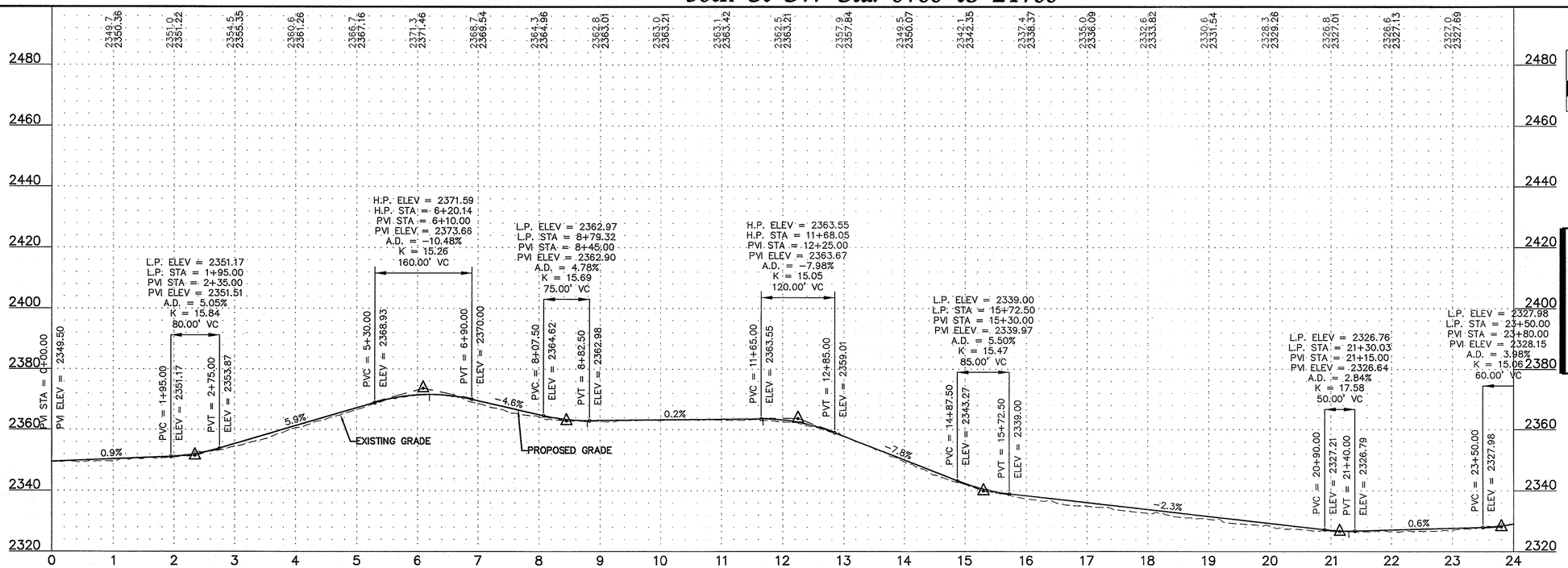
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30th St SW Sta. 0+00 to 24+00





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REGISTERED PROFESSIONAL ENGINEER
WILLIAM B. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

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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

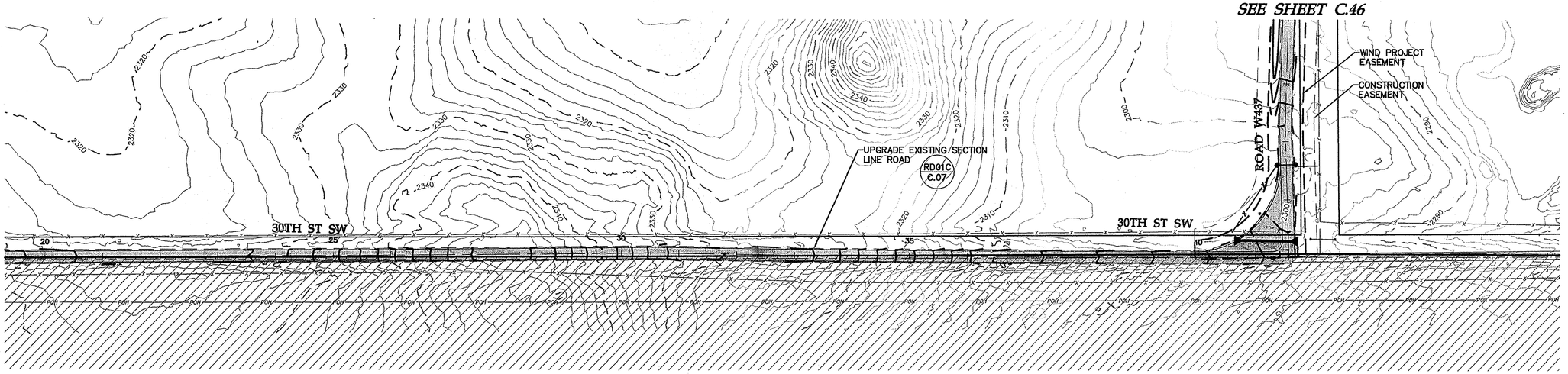
30th St SW Sta. 0+00 to 24+00

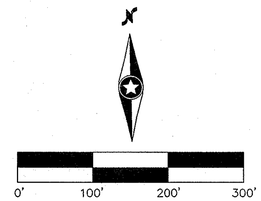
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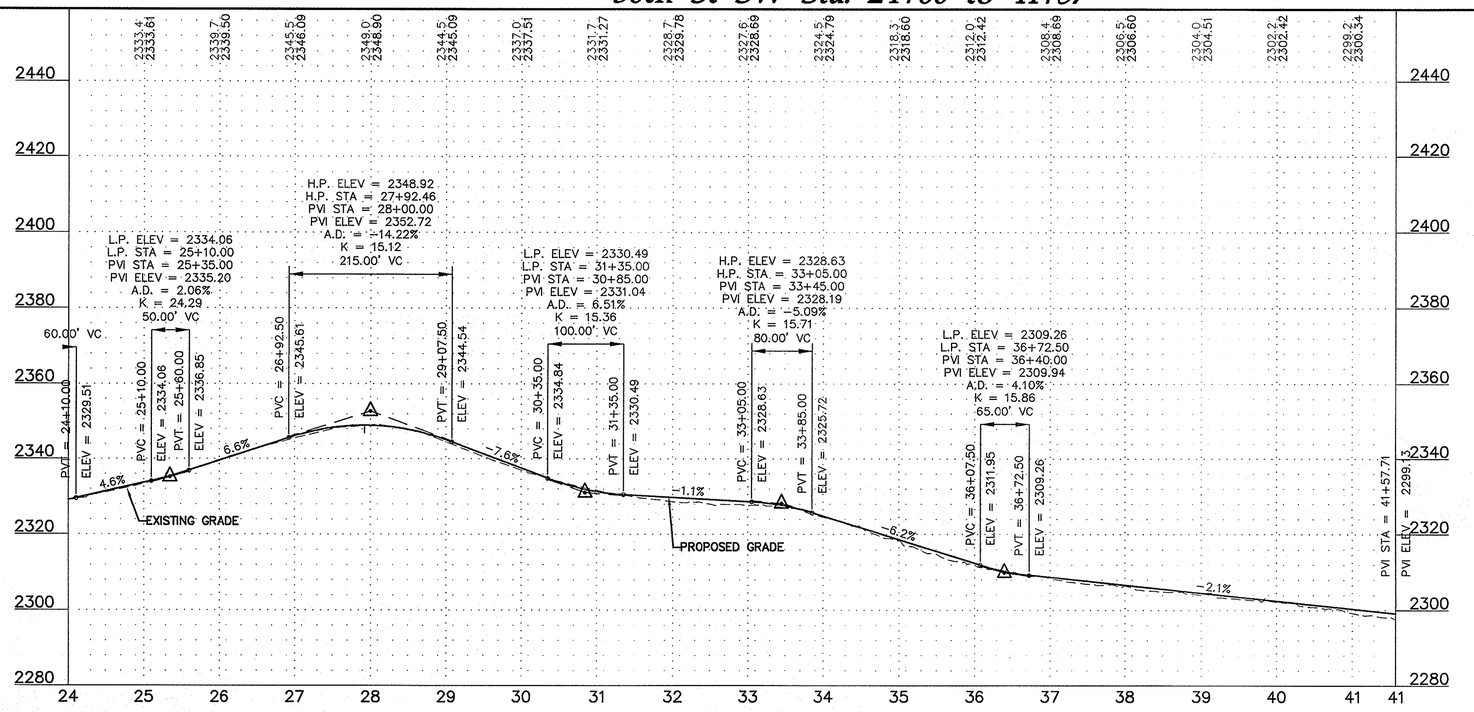
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PE-8310
DATE 8/8/13
NORTH DAKOTA

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Bison 4 Wind Project

Oliver County, North Dakota

30th St SW Sta. 24+00 to 41+57

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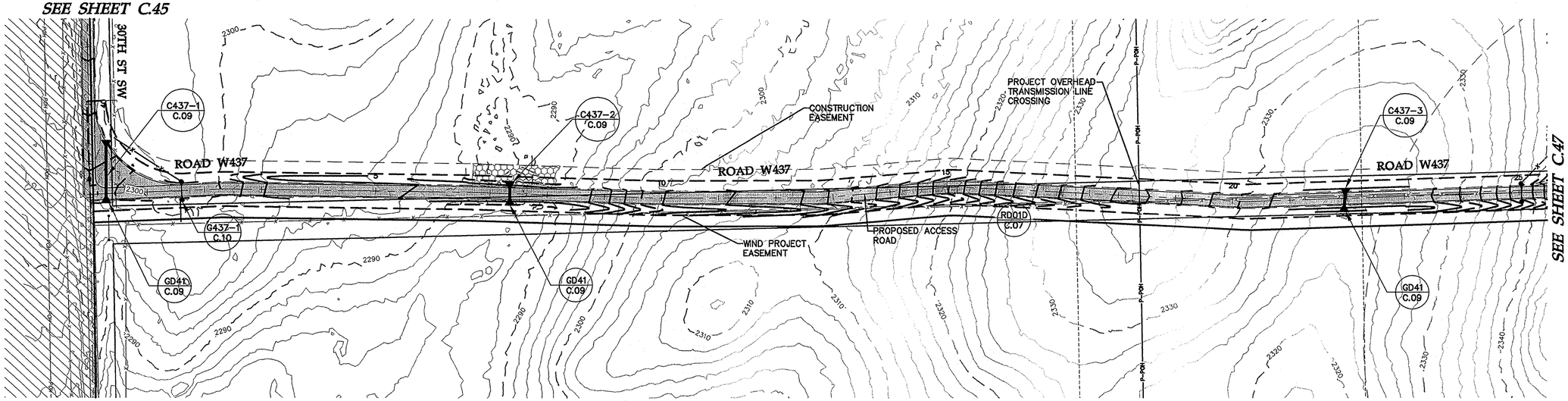
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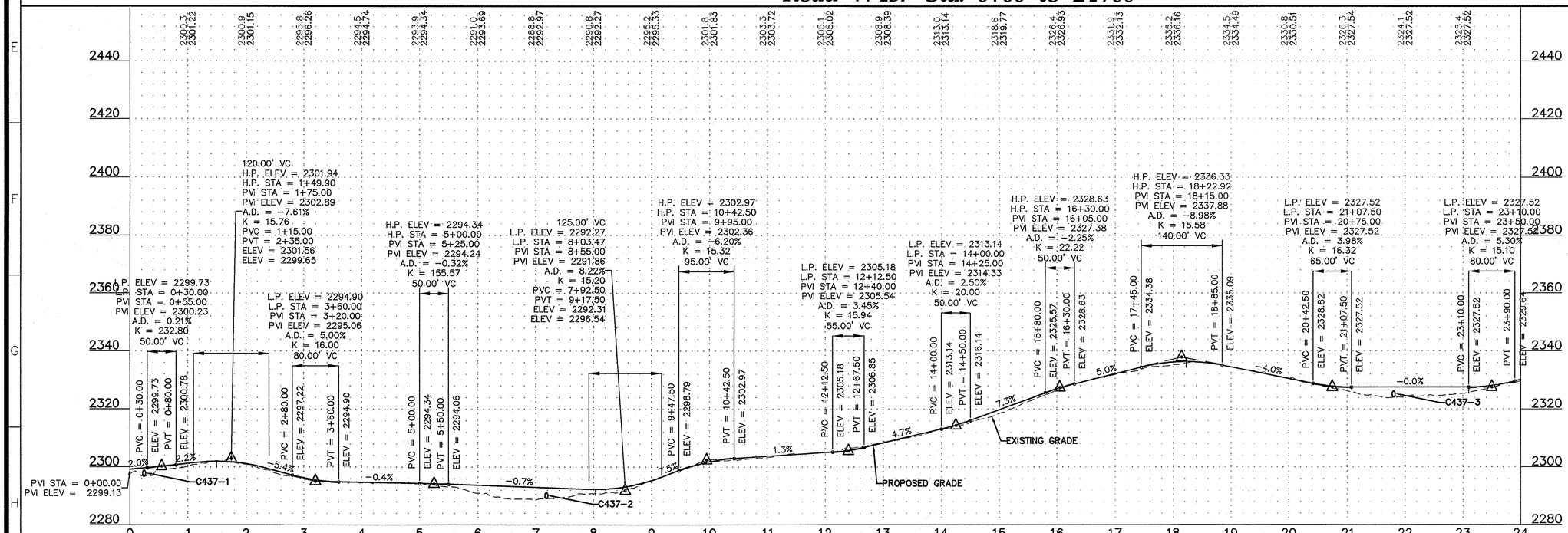
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0' 100' 200' 300'

Road W437 Sta. 0+00 to 24+00



20' 0 10' 20'

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Road W437 Sta. 0+00 to 24+00

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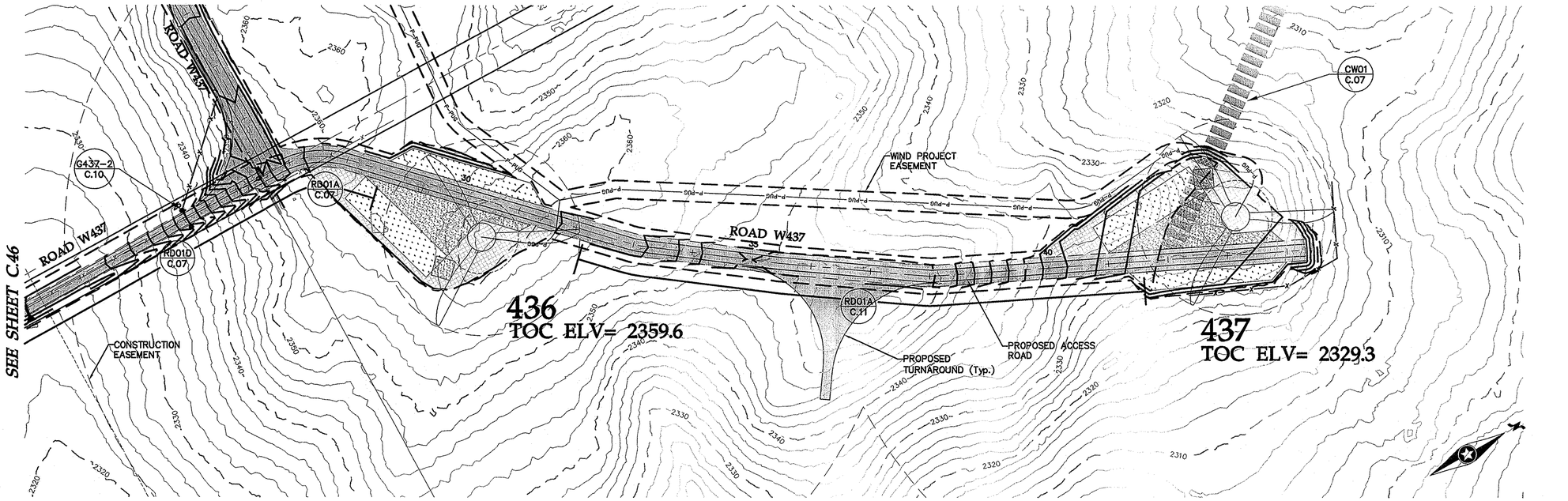
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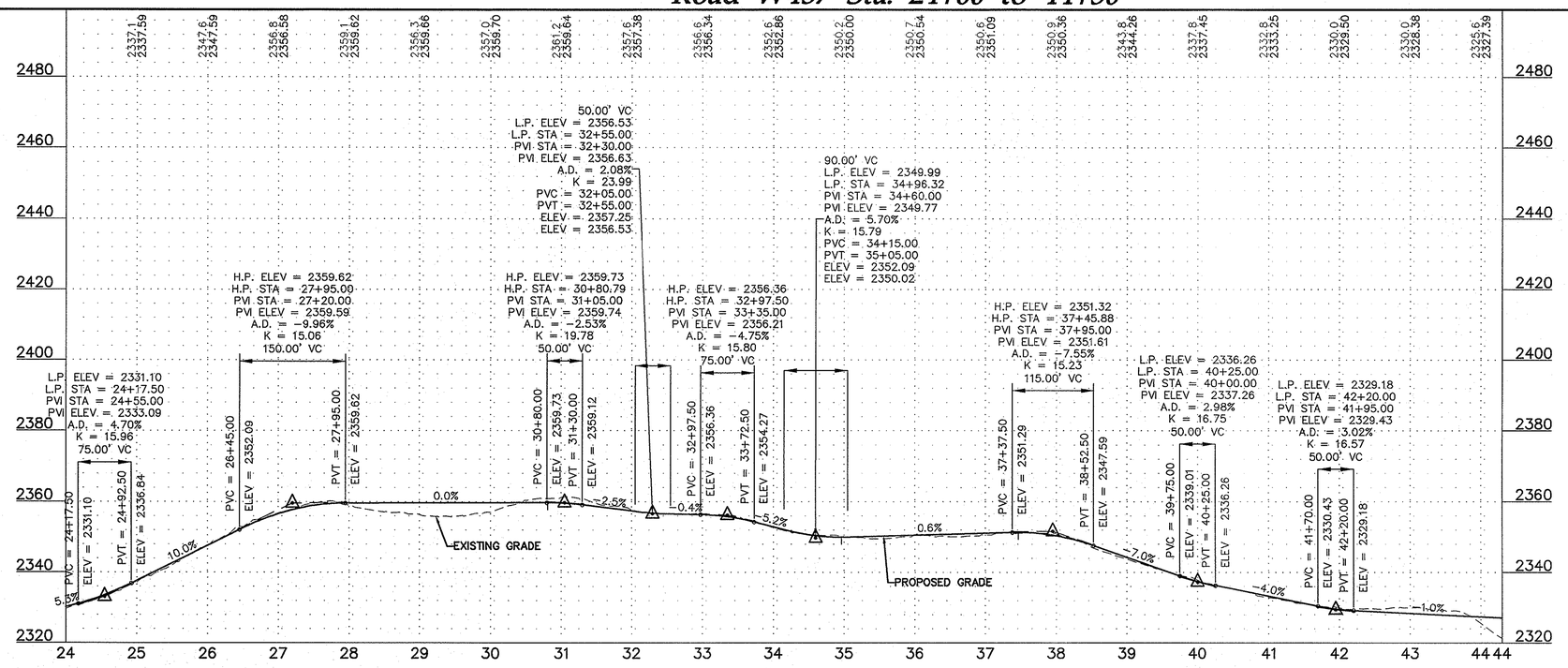
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM D. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

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

LEGEND:

- TURBINE LOCATION
- T-XX TURBINE NUMBER
- PROPOSED ACCESS ROADS
- 3000 PROPOSED 10' CONTOURS
- PROPOSED 2' CONTOURS
- P-POH PROPOSED OVERHEAD POWER
- PROPOSED OVERHEAD RIGHT OF WAY
- P-PUG PROPOSED UNDERGROUND ELECTRICAL COLLECTION
- PROPOSED CRANE PATH
- PROPOSED CULVERT
- C432-1 CULVERT ID
- PROPOSED FENCE
- CROSSING/GATE
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- WIND PROJECT EASEMENT
- TURBINE GRAVEL AREA
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- EXISTING GRAVEL SURFACE
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- EXISTING 2' CONTOURS
- P0H EXISTING OVERHEAD POWER
- EXISTING STREAM
- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

Road W437 Sta. 24+00 to 44+30

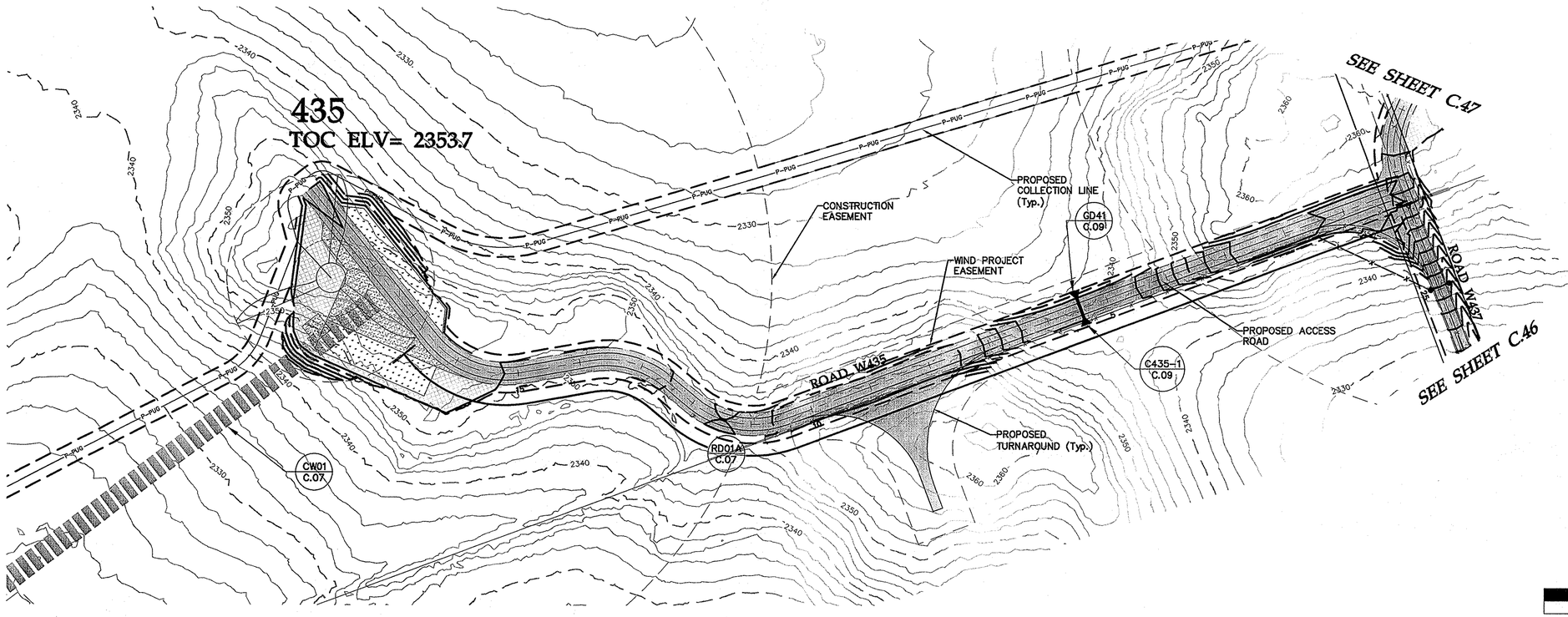
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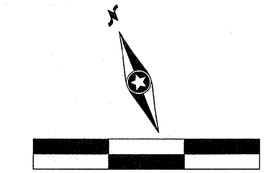
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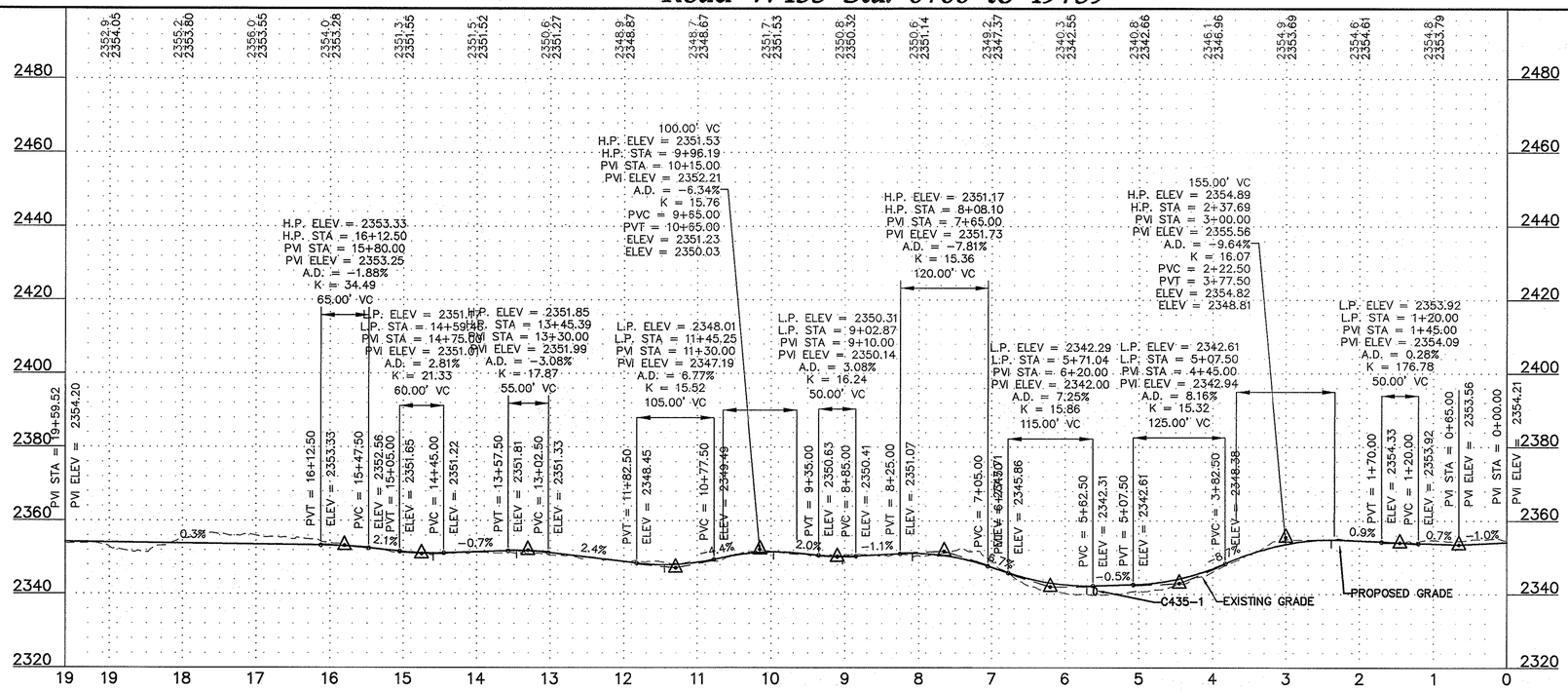
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM A. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

Designed:	MPG
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Drawn:	MPG
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Revisions:

#	DATE	DESCRIPTION

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 W435 Sta. 0+00 to 19+59

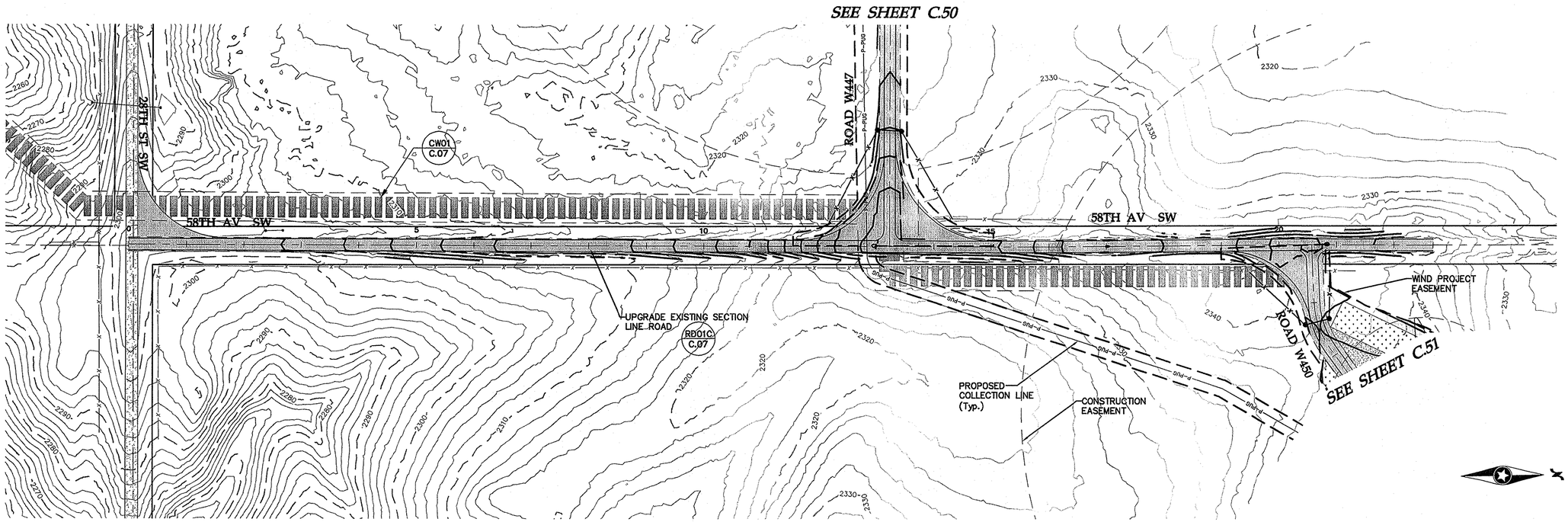
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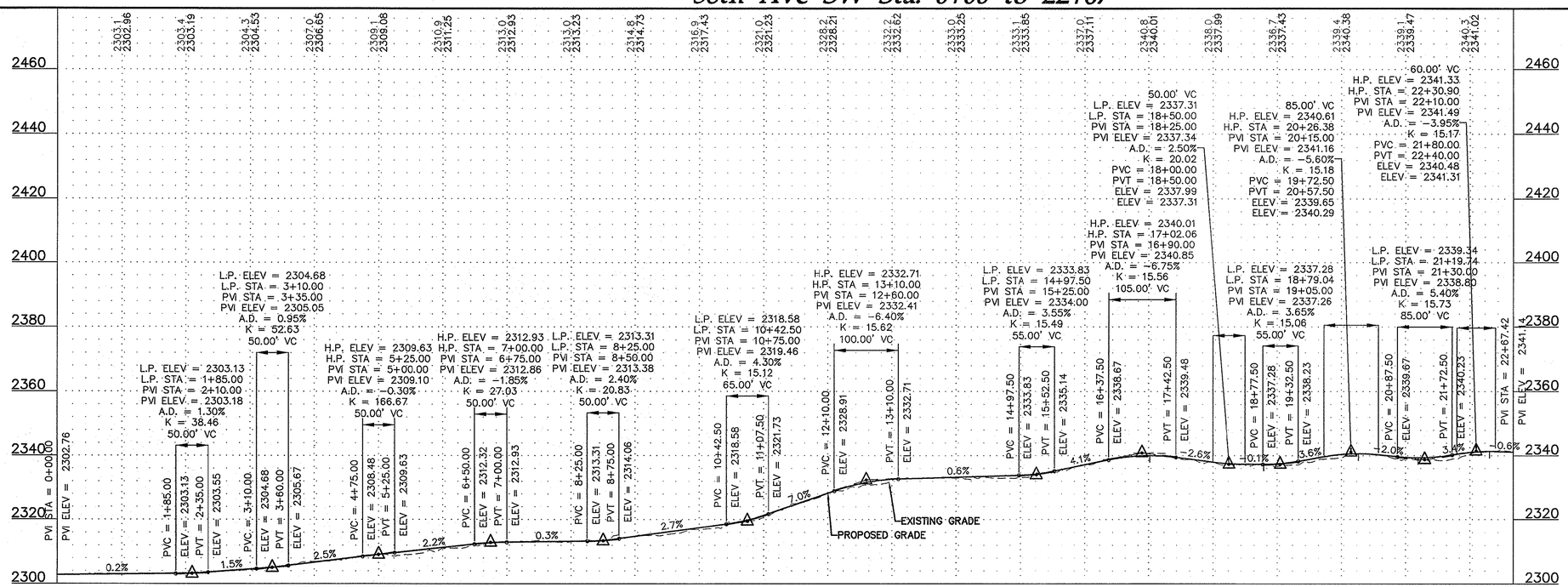
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58th Ave SW Sta. 0+00 to 22+67



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Prepared for:

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30 West Superior Street
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Bison 4 Wind Project

Oliver County, North Dakota

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

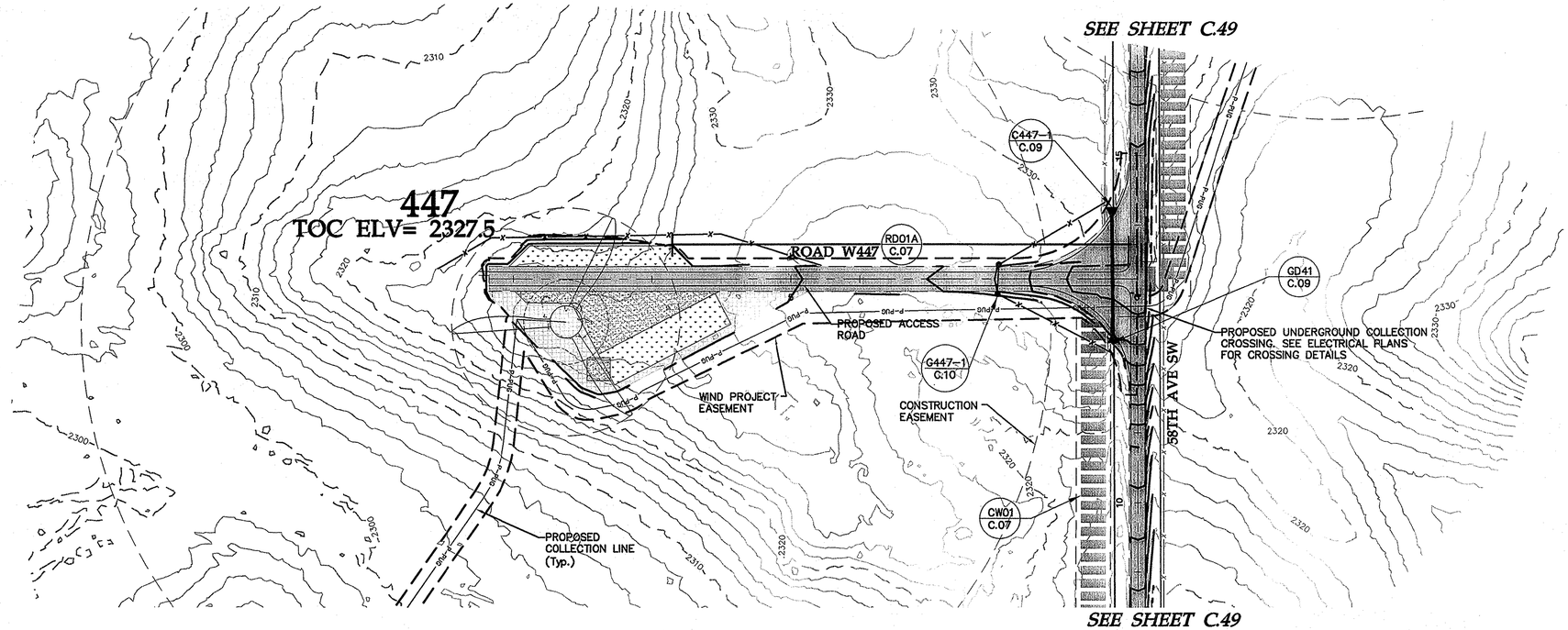
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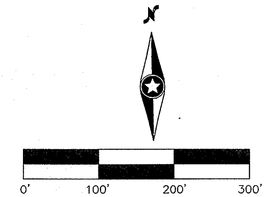
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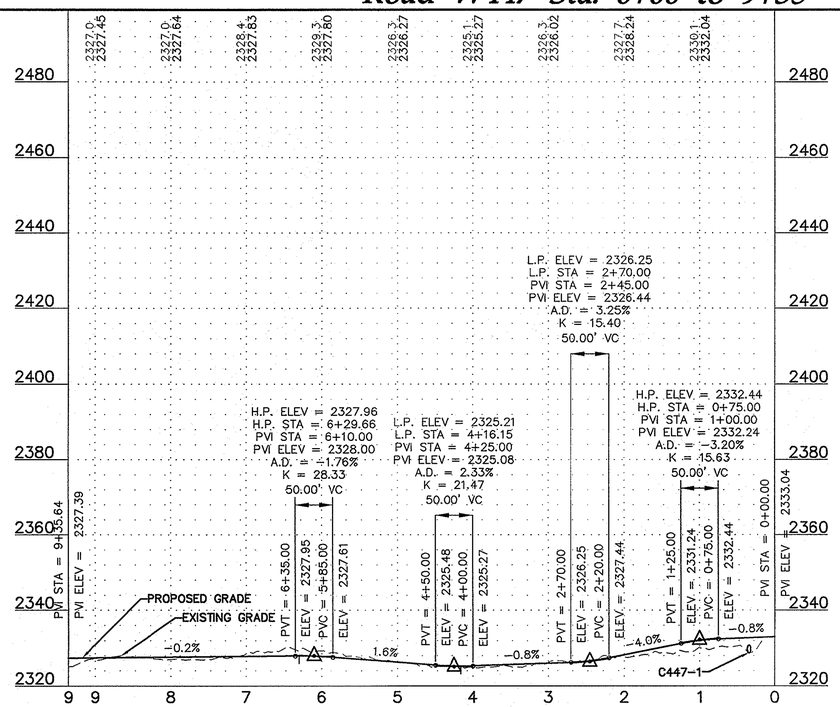
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM H. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

Designed:	MPG
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Drawn:	MPG
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Revisions:

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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

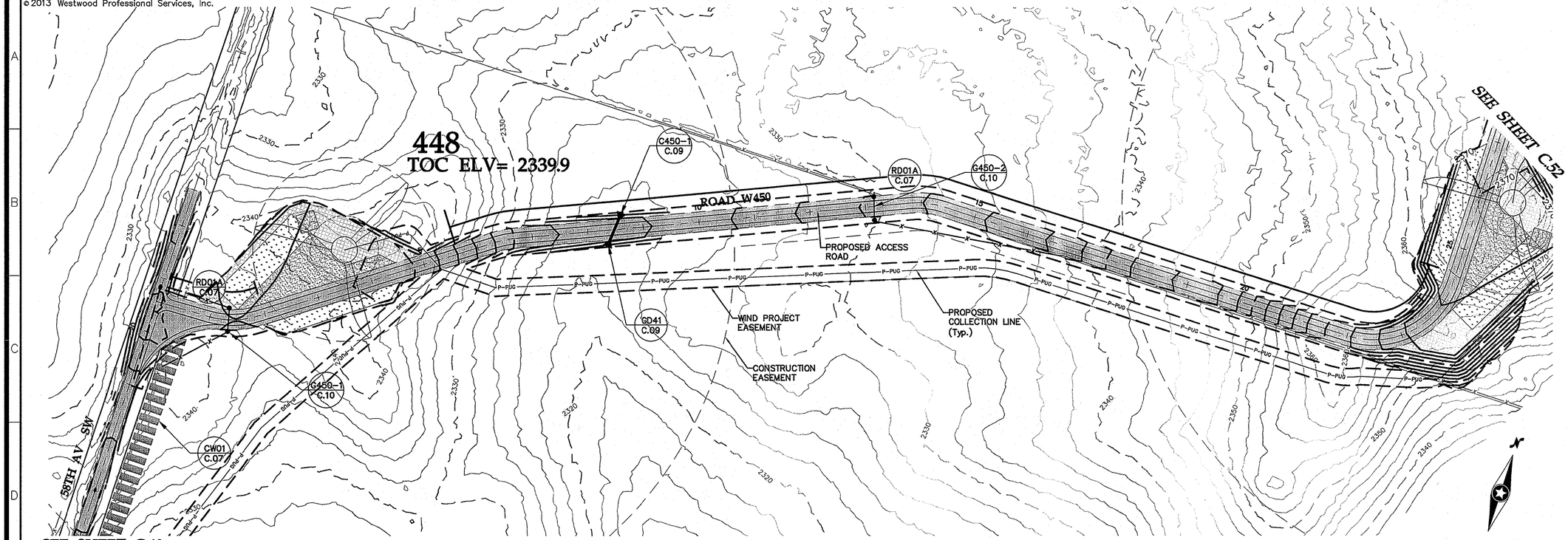
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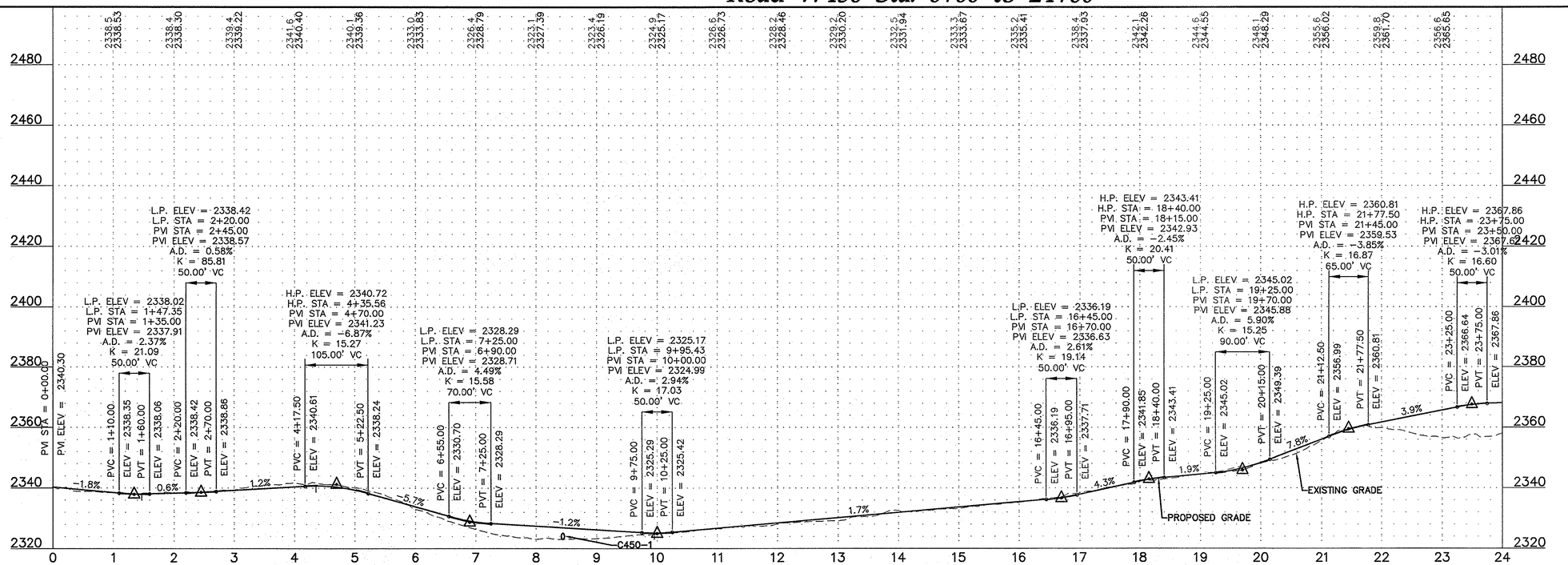
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REGISTERED PROFESSIONAL ENGINEER
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PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Road W450 Sta. 0+00 to 24+00

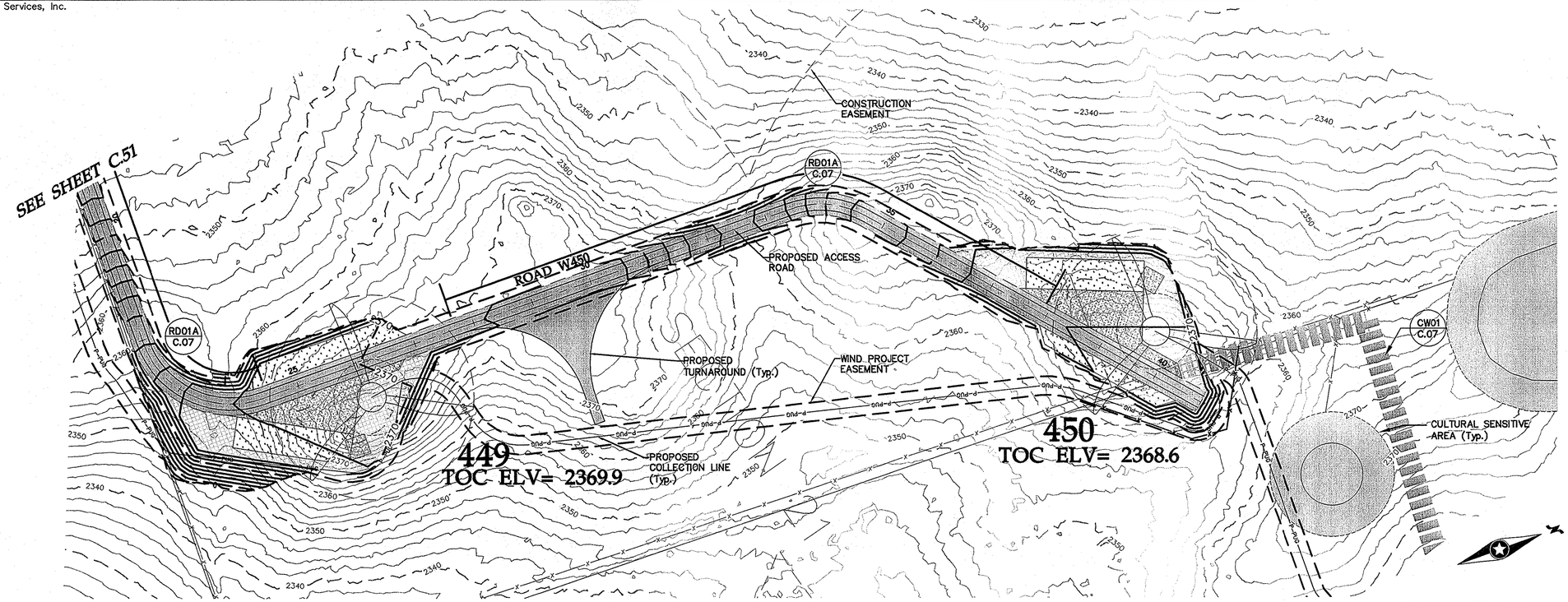
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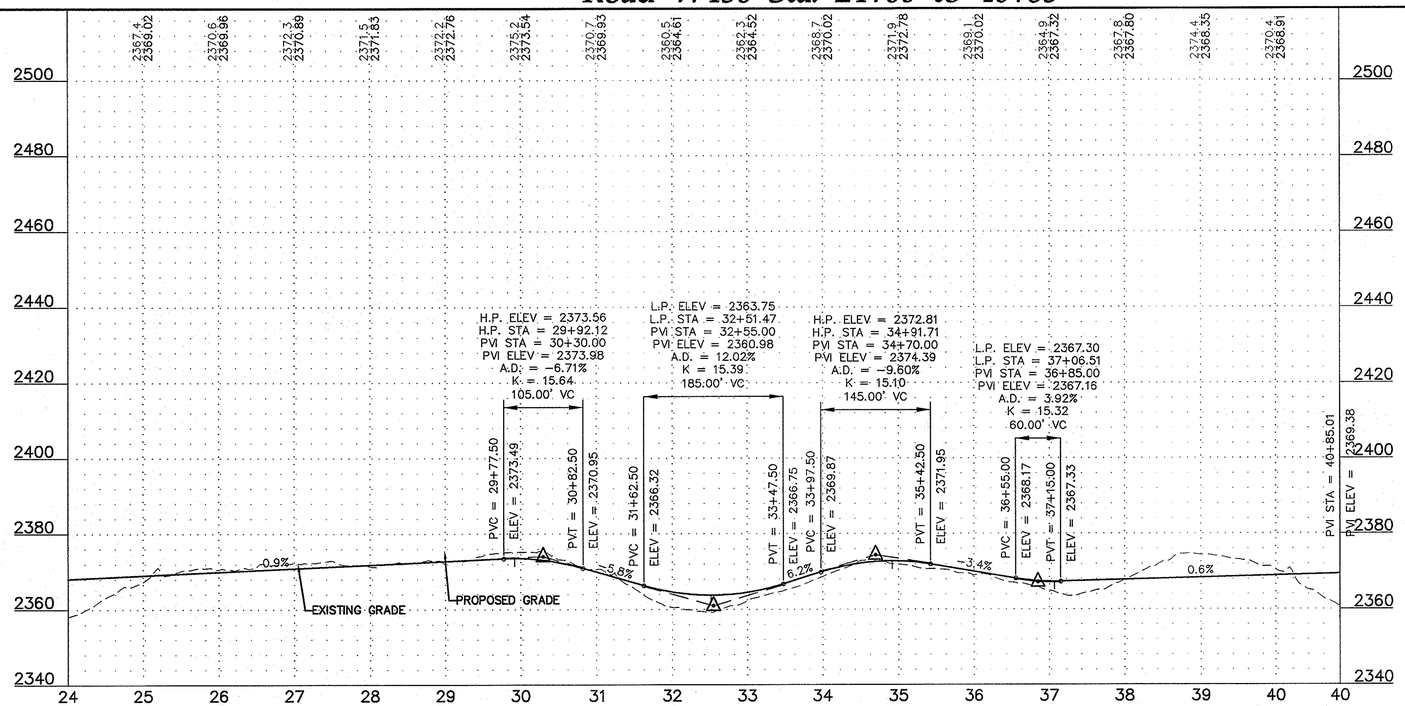
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0' 100' 200' 300'

Road W450 Sta. 24+00 to 40+85



0' 10' 20'

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

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

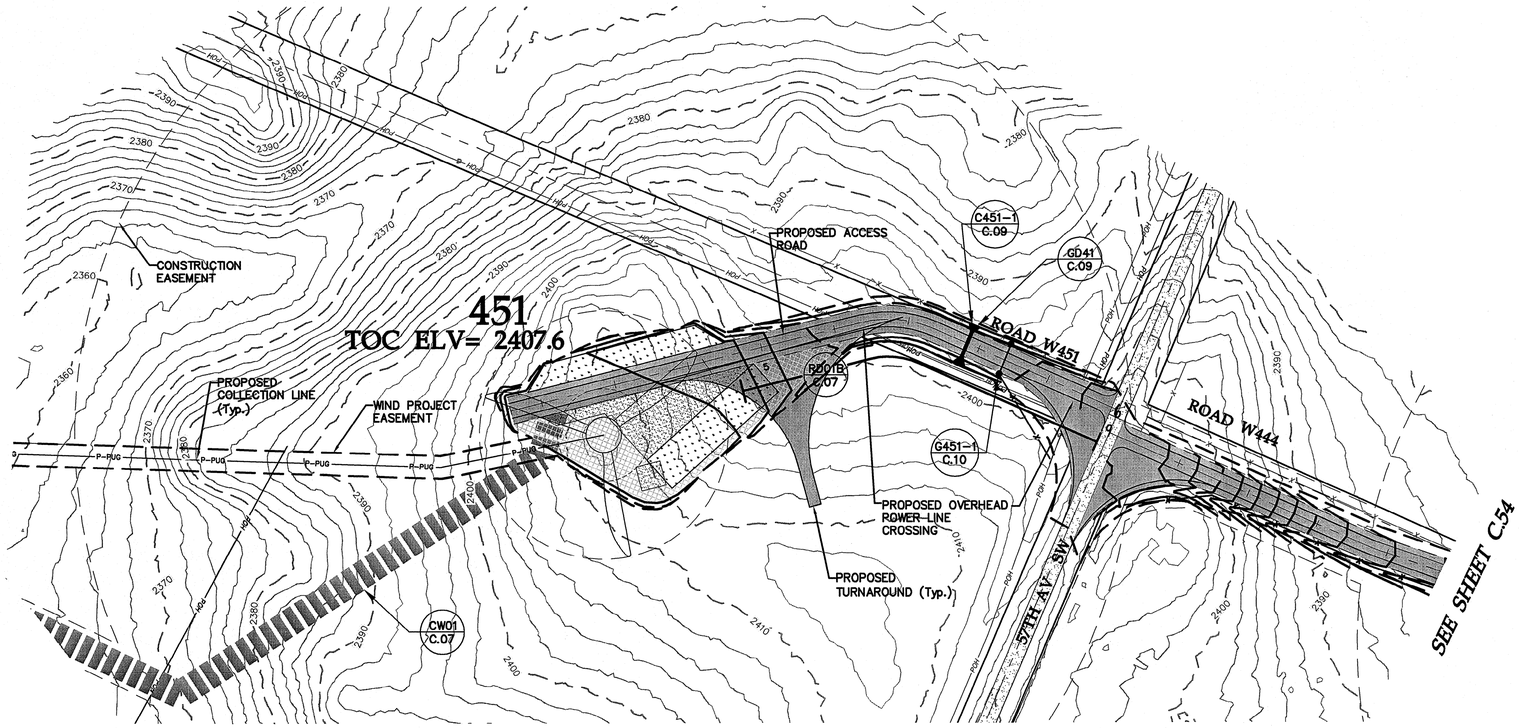
Road W450 Sta. 24+00 to 40+85

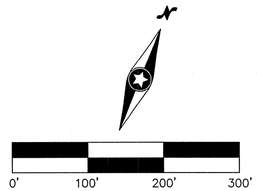
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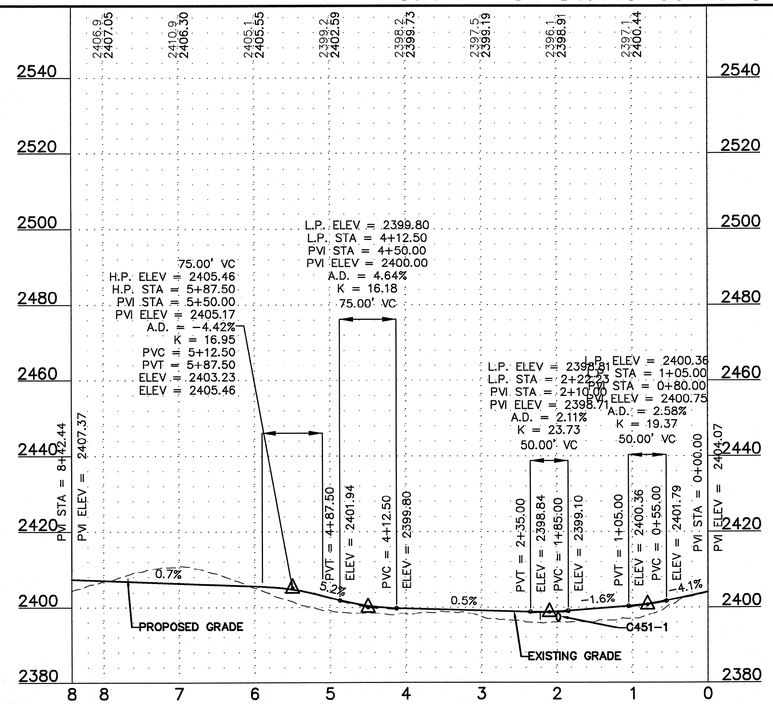
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Road W451 Sta. 0+00 to 8+42





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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 8/4/13
NORTH DAKOTA

Designed:	MPG
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Record Drawing by/date:	

Revisions:

#	DATE	DESCRIPTION
1	09/04/13	Owner Comments

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- TURBINE LOCATION
- T-XX — TURBINE NUMBER
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- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

Road W451 Sta. 0+00 to 8+42

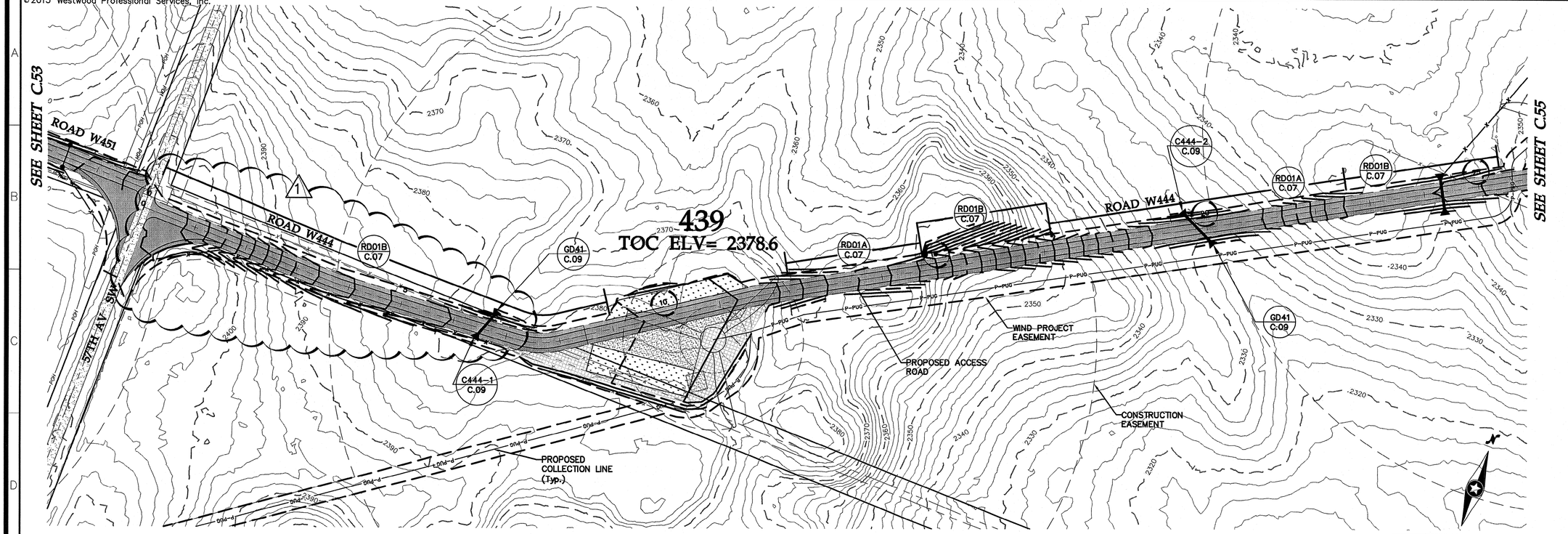
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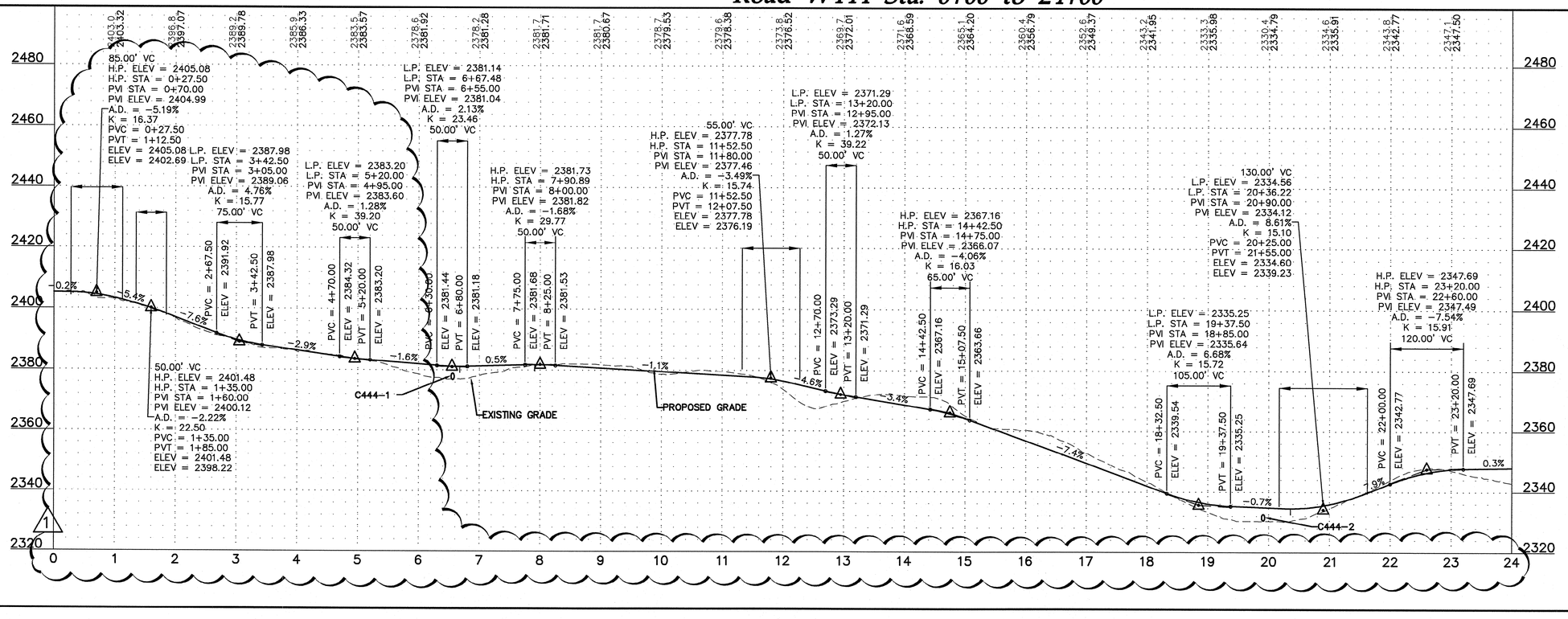
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PE-8310
DATE 9/4/13
NORTH DAKOTA

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20' 0 10' 20'

Bison 4 Wind Project

Oliver County, North Dakota

Road W444 Sta. 0+00 to 24+00

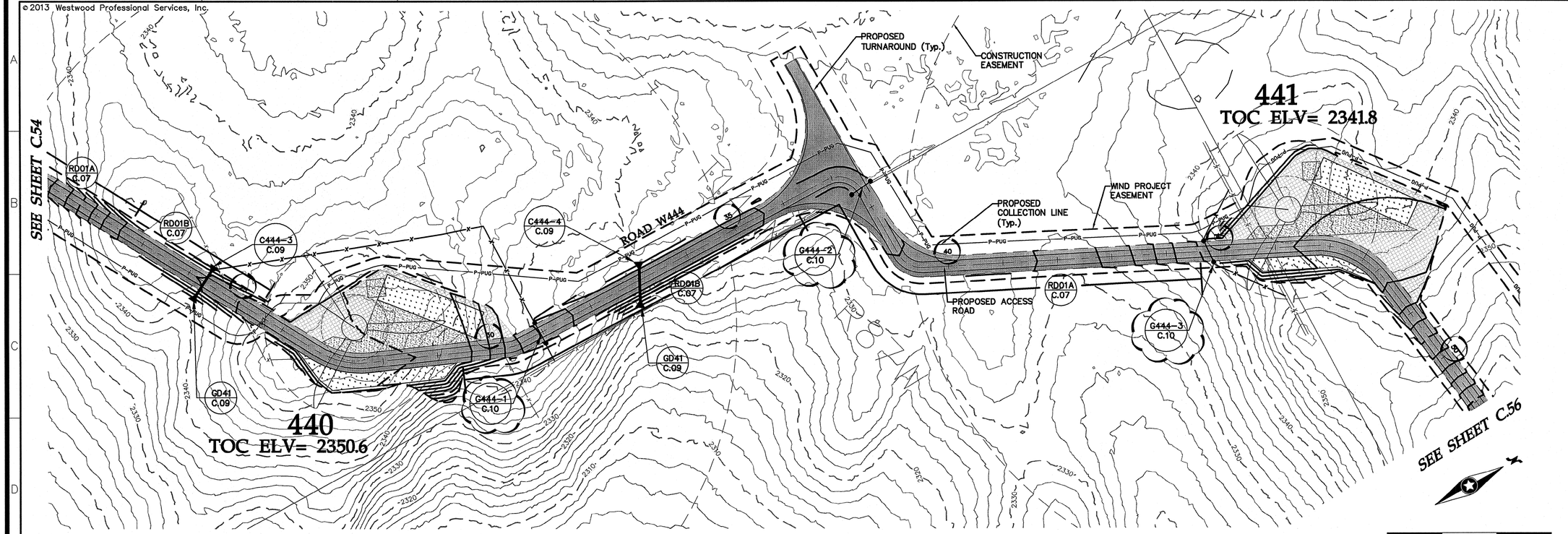
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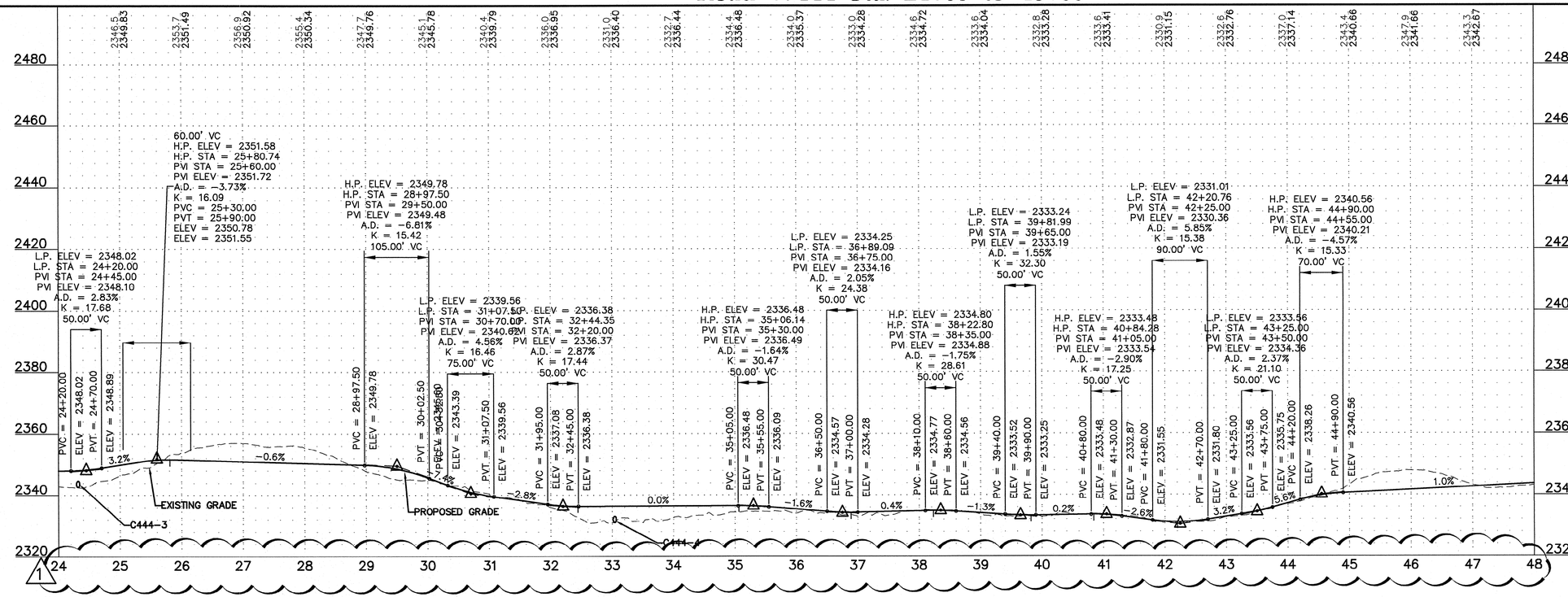
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0' 100' 200' 300'

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Bison 4 Wind Project

Oliver County, North Dakota

Road W444 Sta. 24+00 to 48+00

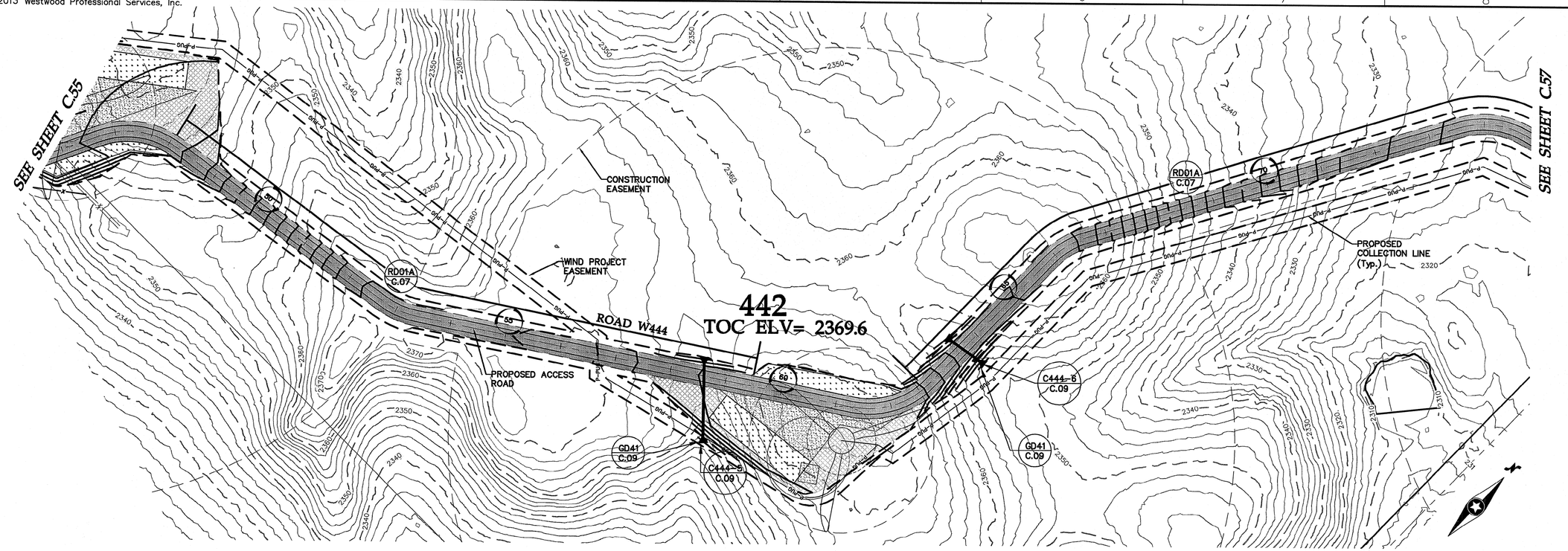
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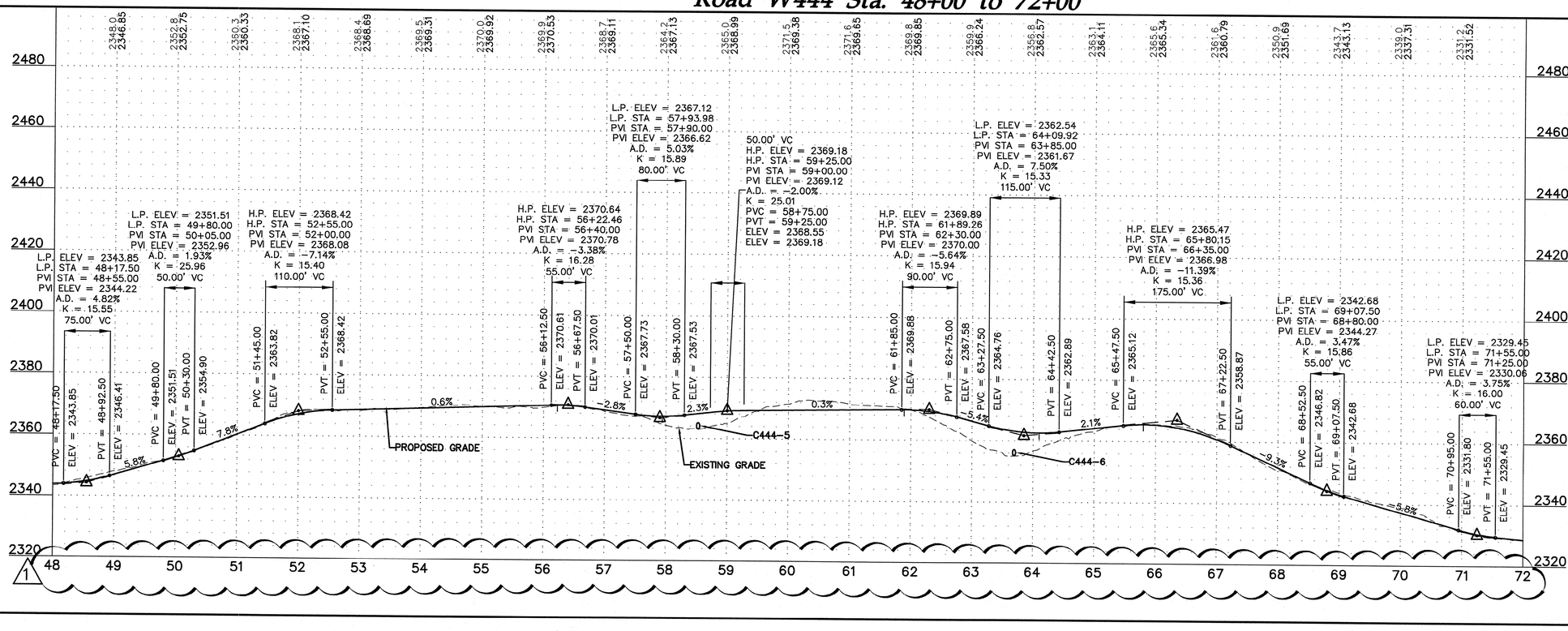
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 9/4/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
1	09/04/13	Owner Comments

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- TURBINE LOCATION
- T-XX — TURBINE NUMBER
- PROPOSED ACCESS ROADS
- 3000 — PROPOSED 10' CONTOURS
- PROPOSED 2' CONTOURS
- P-POH — PROPOSED OVERHEAD POWER
- PROPOSED OVERHEAD RIGHT OF WAY
- P-PUG — PROPOSED UNDERGROUND ELECTRICAL COLLECTION
- PROPOSED CRANE PATH
- PROPOSED CULVERT
- C432-1 — CULVERT ID
- PROPOSED FENCE CROSSING/GATE
- G432-1 — GATE ID
- PROPOSED FENCE
- CONSTRUCTION EASEMENT
- WIND PROJECT EASEMENT
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- EXISTING STREAM
- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

Road W444 Sta. 48+00 to 72+00

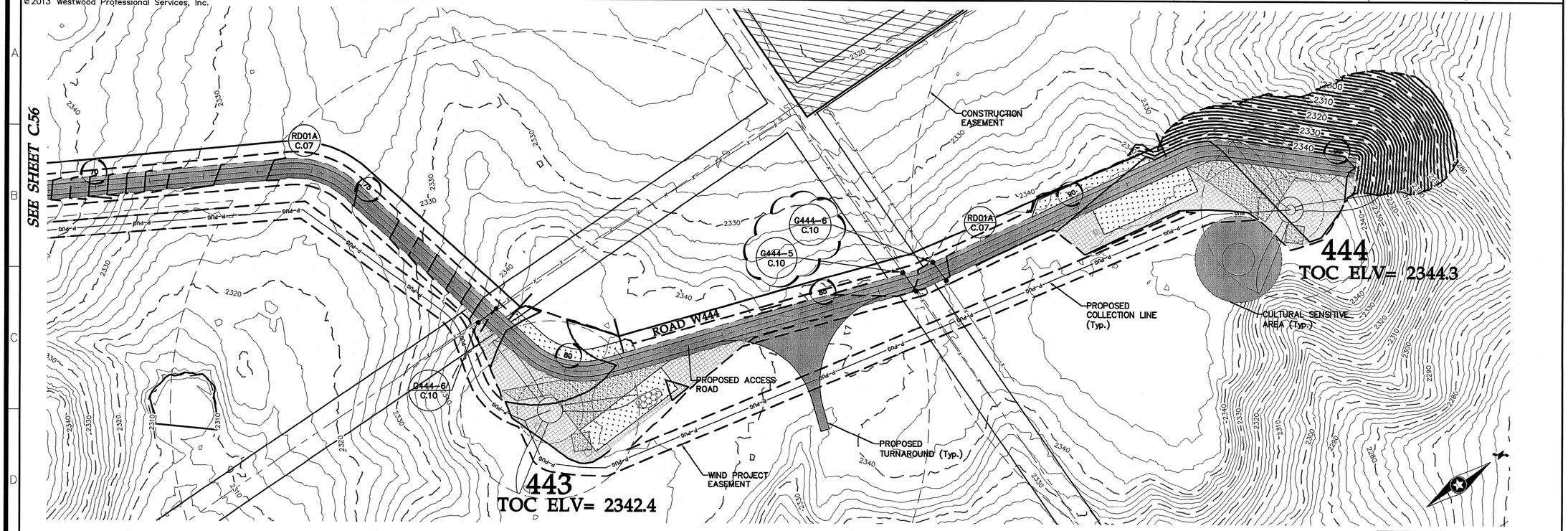
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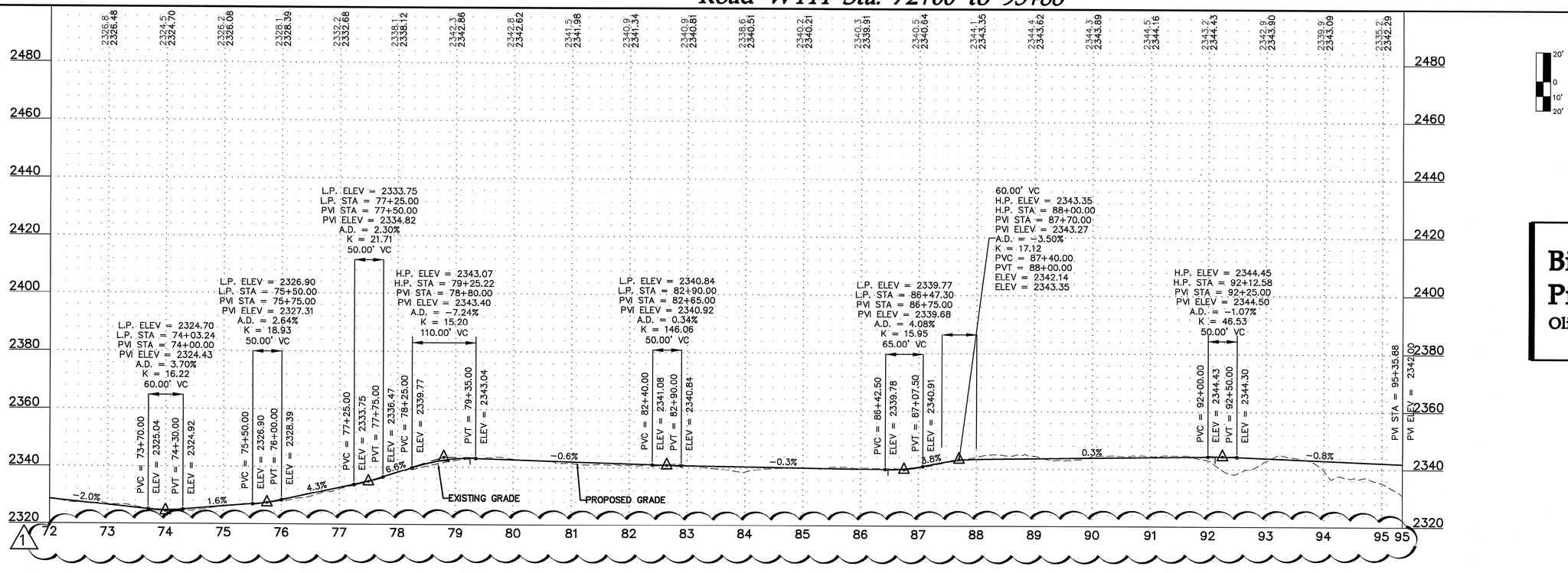
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM A. HUSTON
PE-8310
DATE 9/4/13
NORTH DAKOTA

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Revisions:

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1	09/04/13	Owner Comments

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 W444 Sta. 72+00 to 95+88

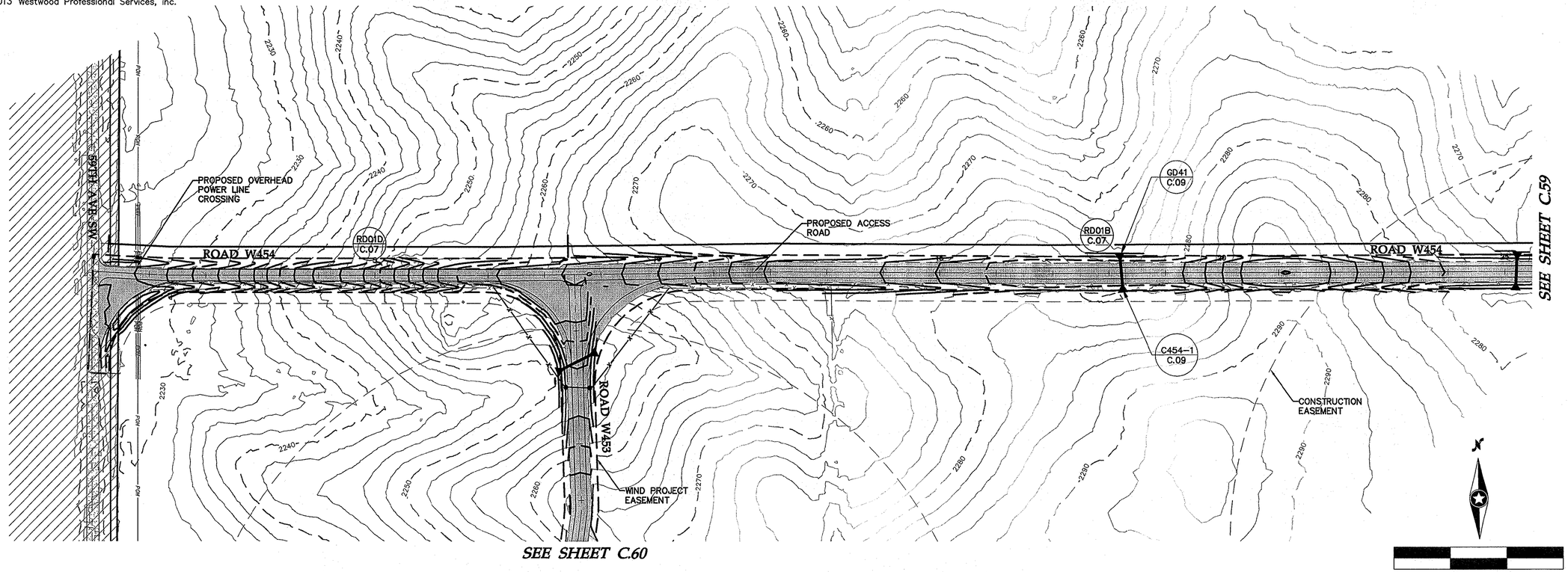
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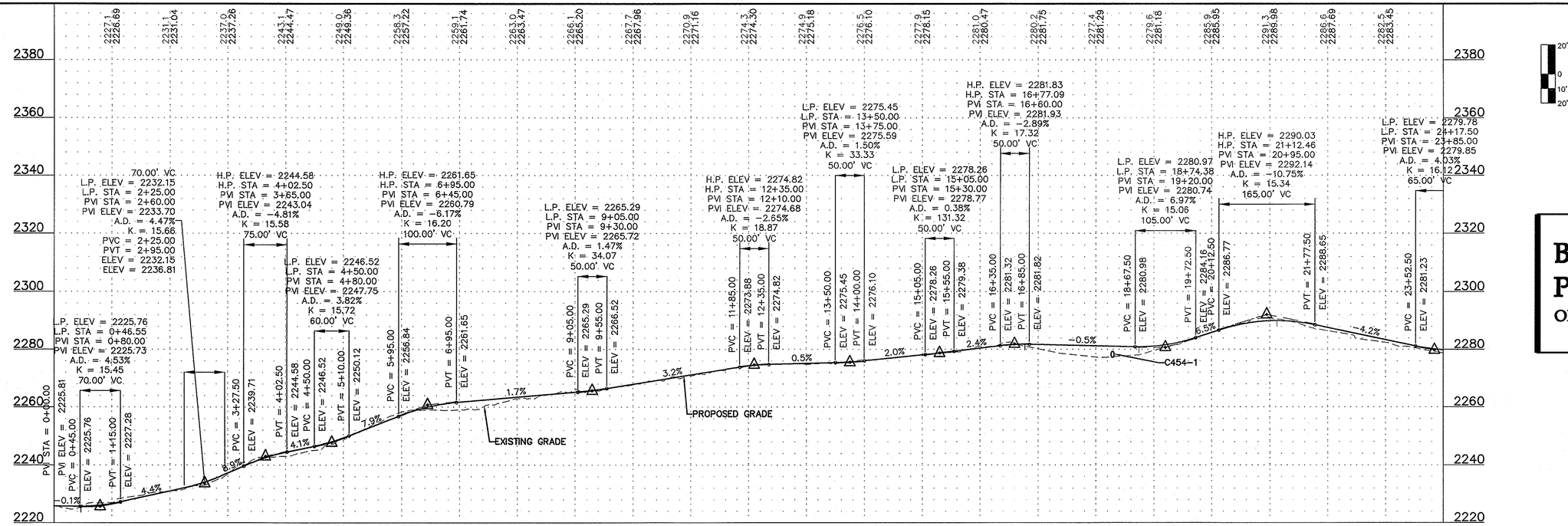
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PE-9310
DATE 8/9/13
NORTH DAKOTA

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AN ALLETE COMPANY

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Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

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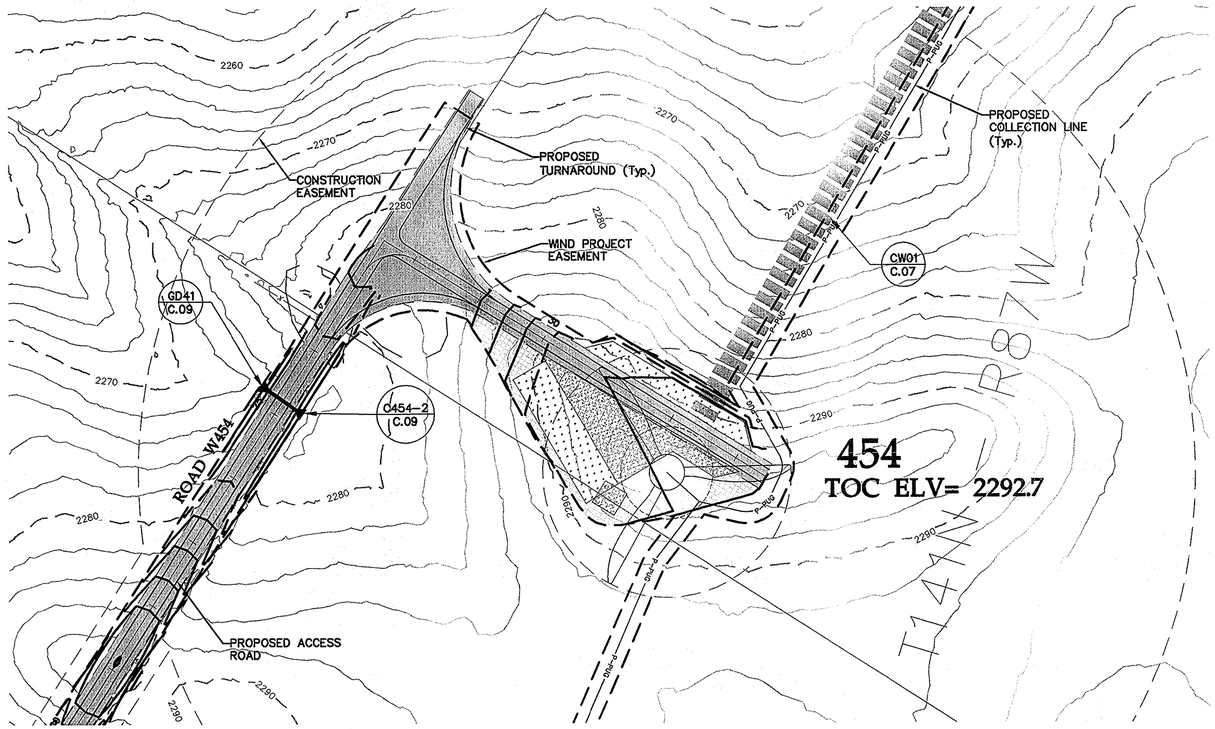
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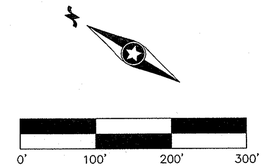
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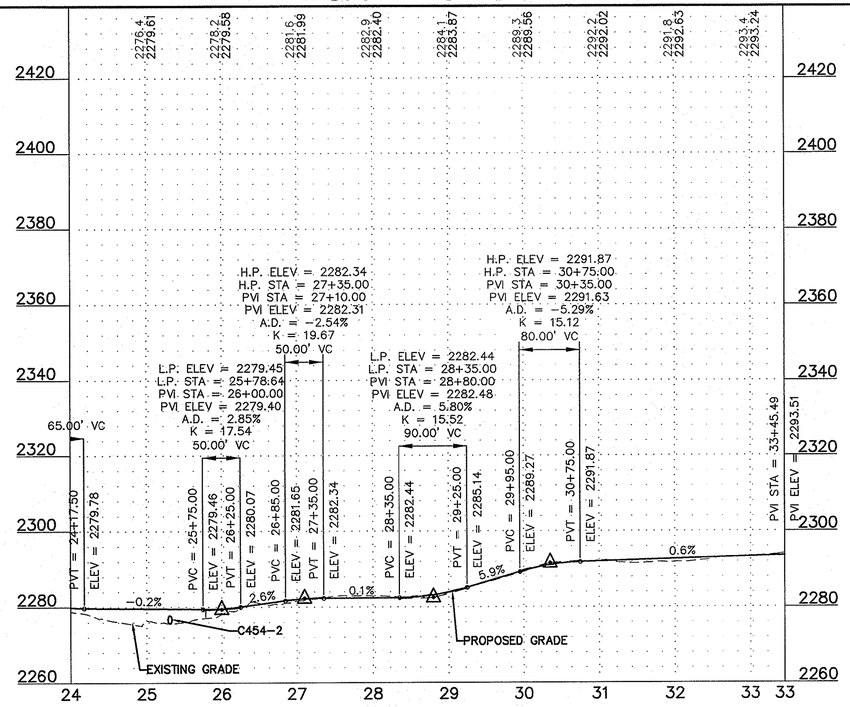
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM K. HUSSON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

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- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

Road W454 Sta. 24+00 to 33+45

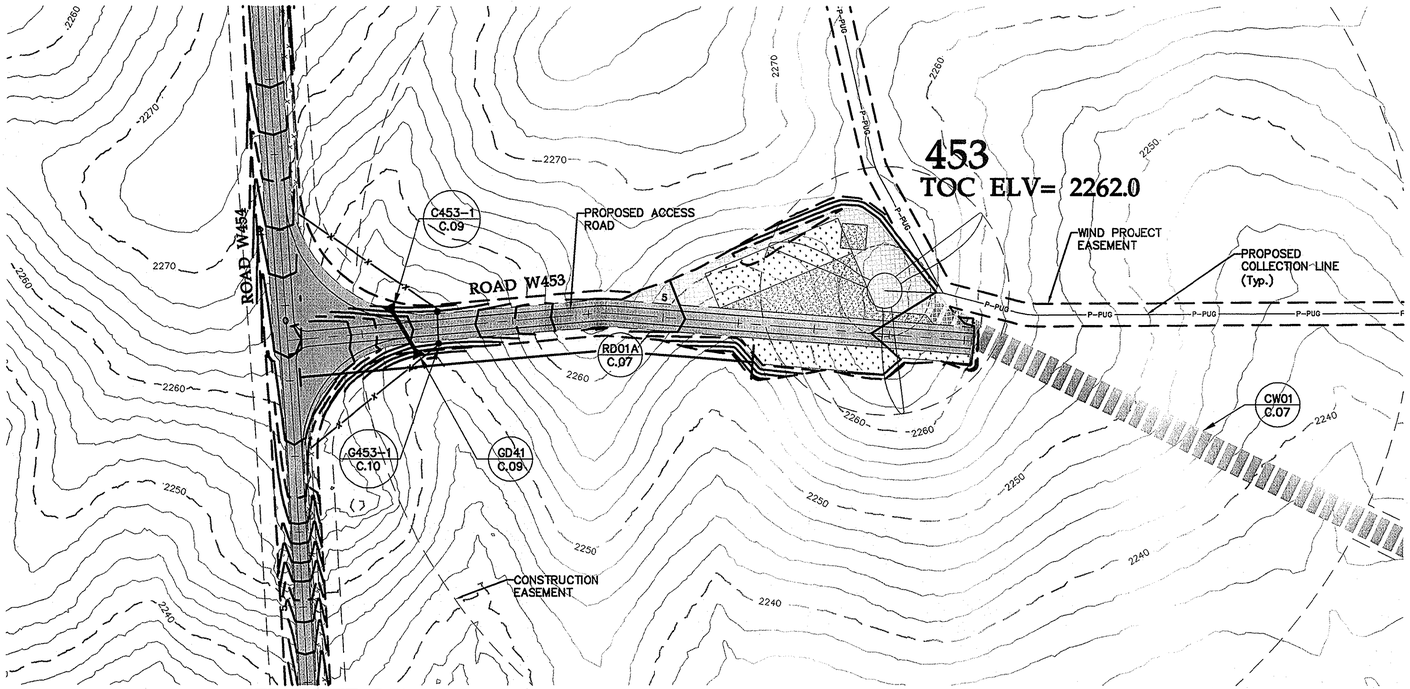
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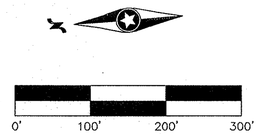
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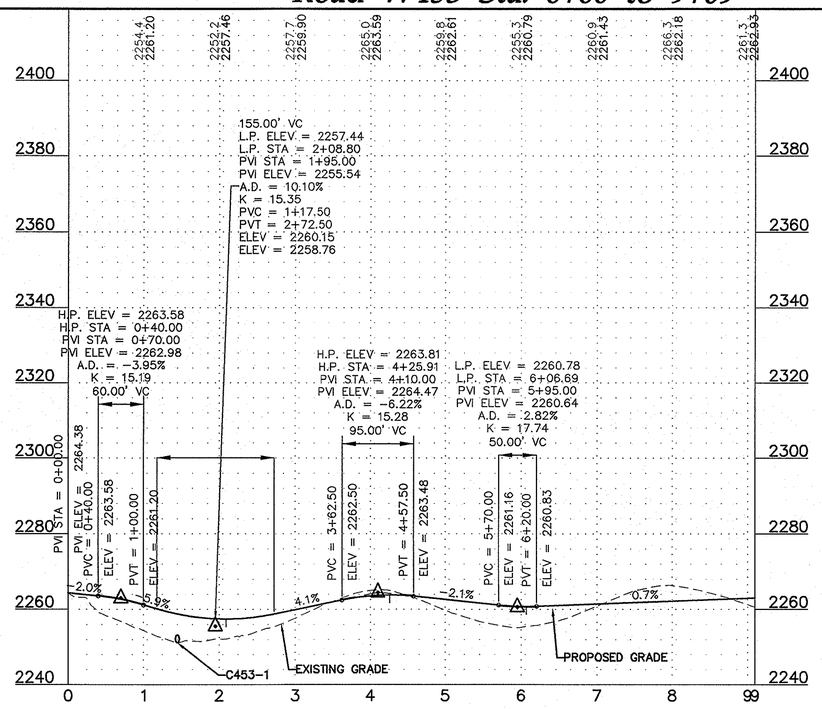
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SEE SHEET C.58



Road W453 Sta. 0+00 to 9+09





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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HOUSTON
PE-8310
DATE 7/24/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

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- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

Road W453 Sta. 0+00 to 9+09

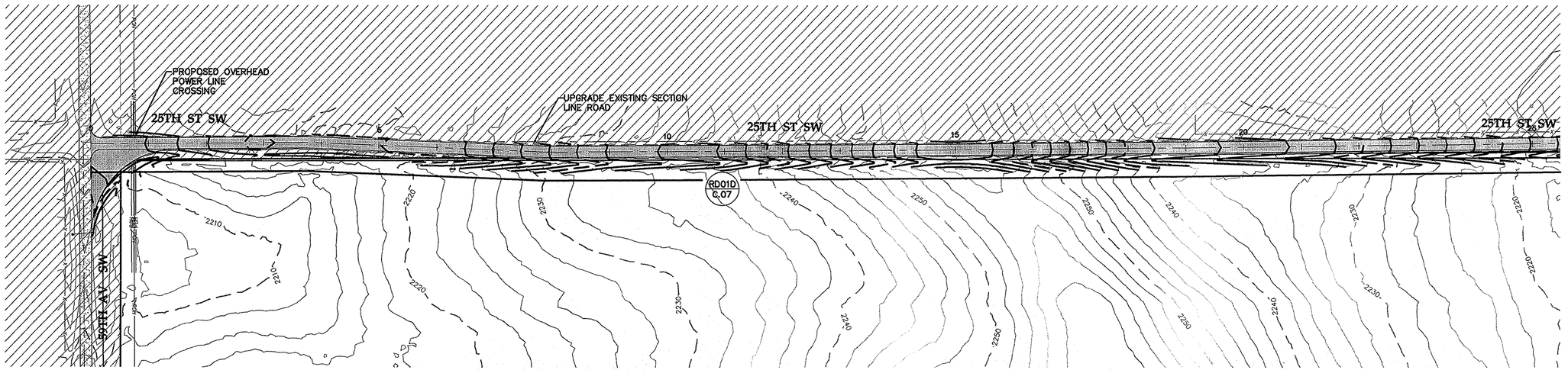
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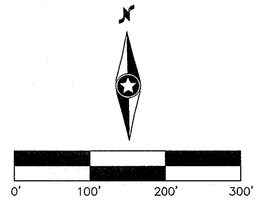
Date: 08/09/2013

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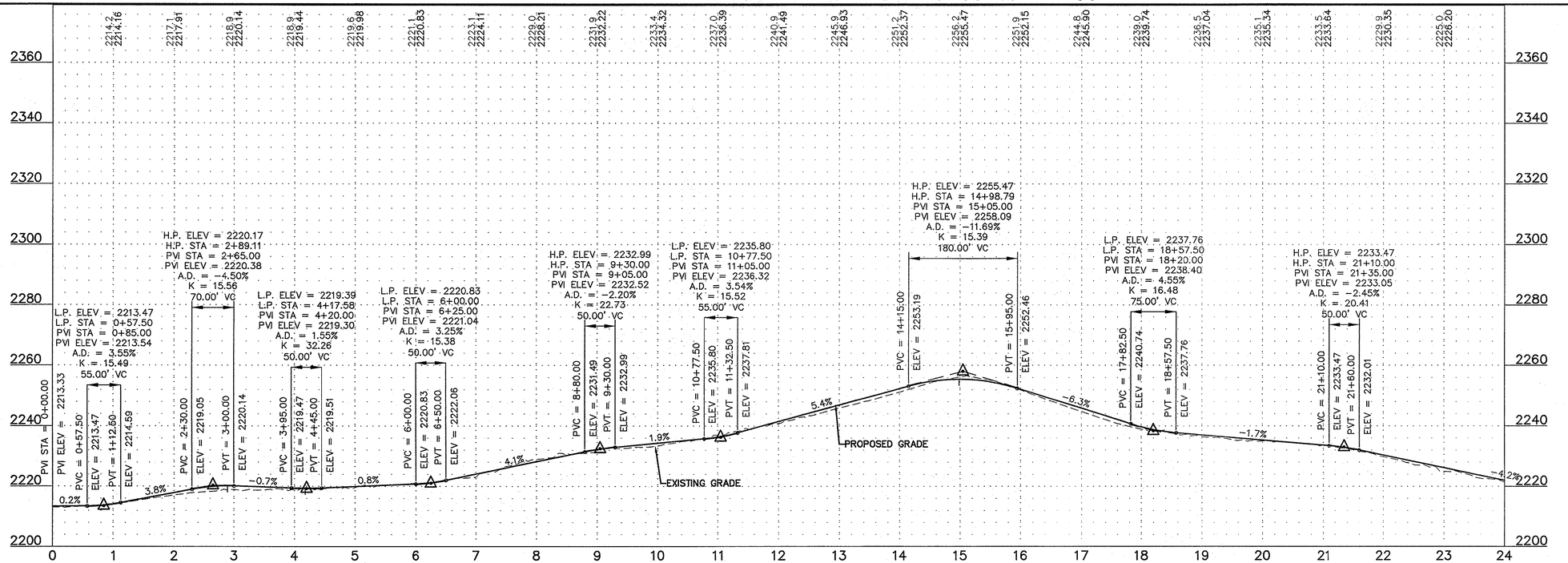
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25th St SW Sta. 0+00 to 24+00





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REGISTERED PROFESSIONAL ENGINEER
WILLIAM A. HUDSON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
.	.	.

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

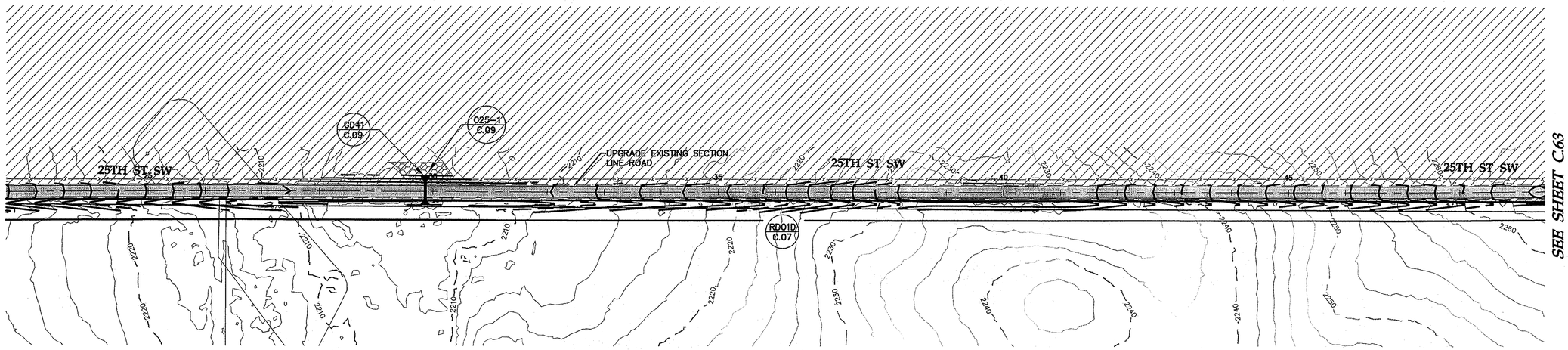
25th St SW Sta. 0+00 to 24+00

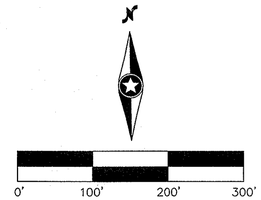
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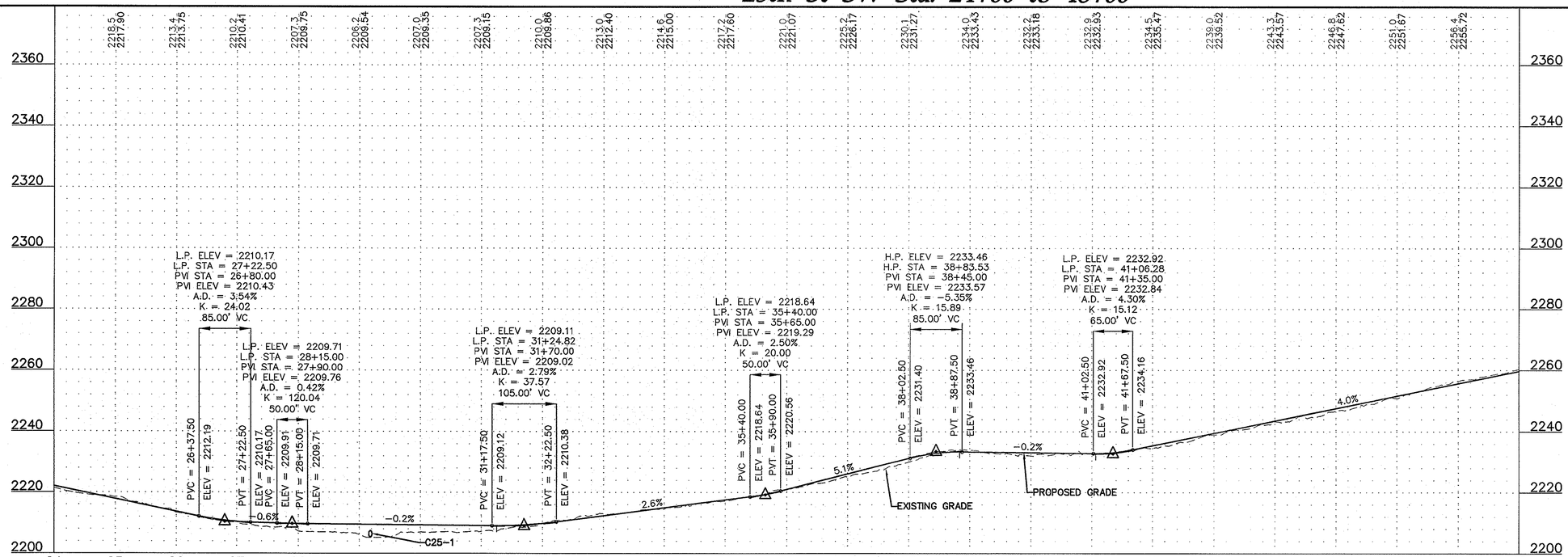
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM G. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
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Revisions:

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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

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

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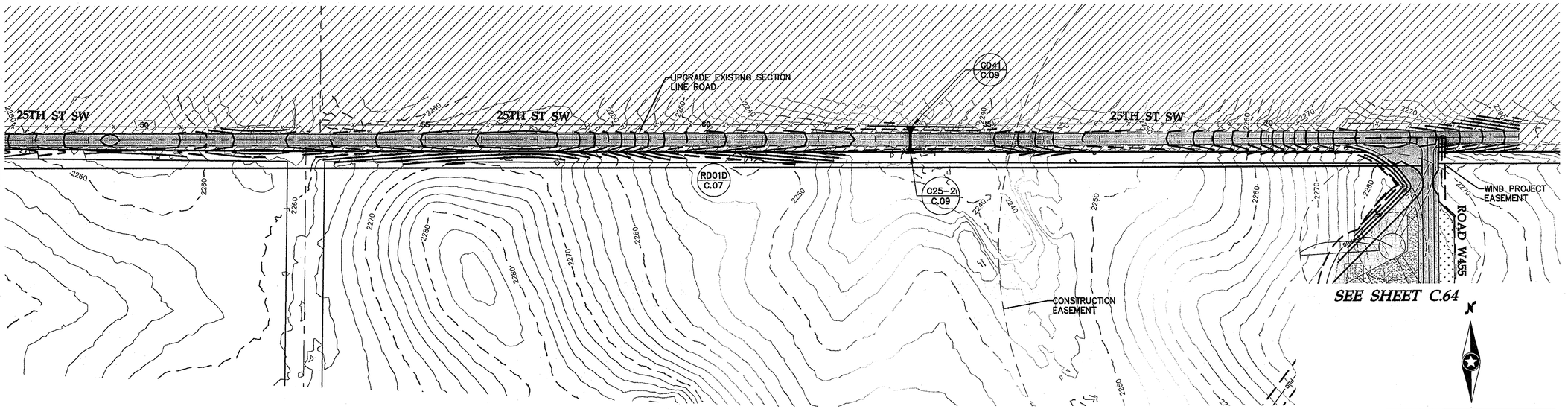
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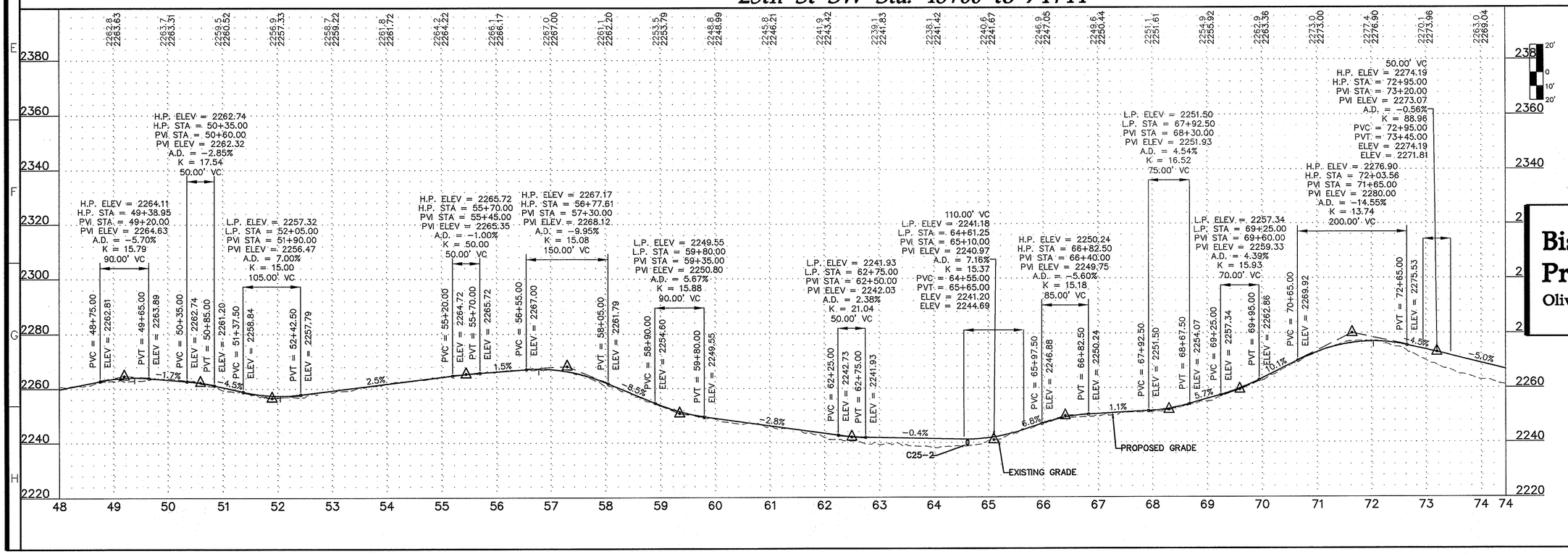
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WILLIAM P. HUSTON
PE-8310
DATE 9/6/13
NORTH DAKOTA

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Bison 4 Wind Project

Oliver County, North Dakota

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

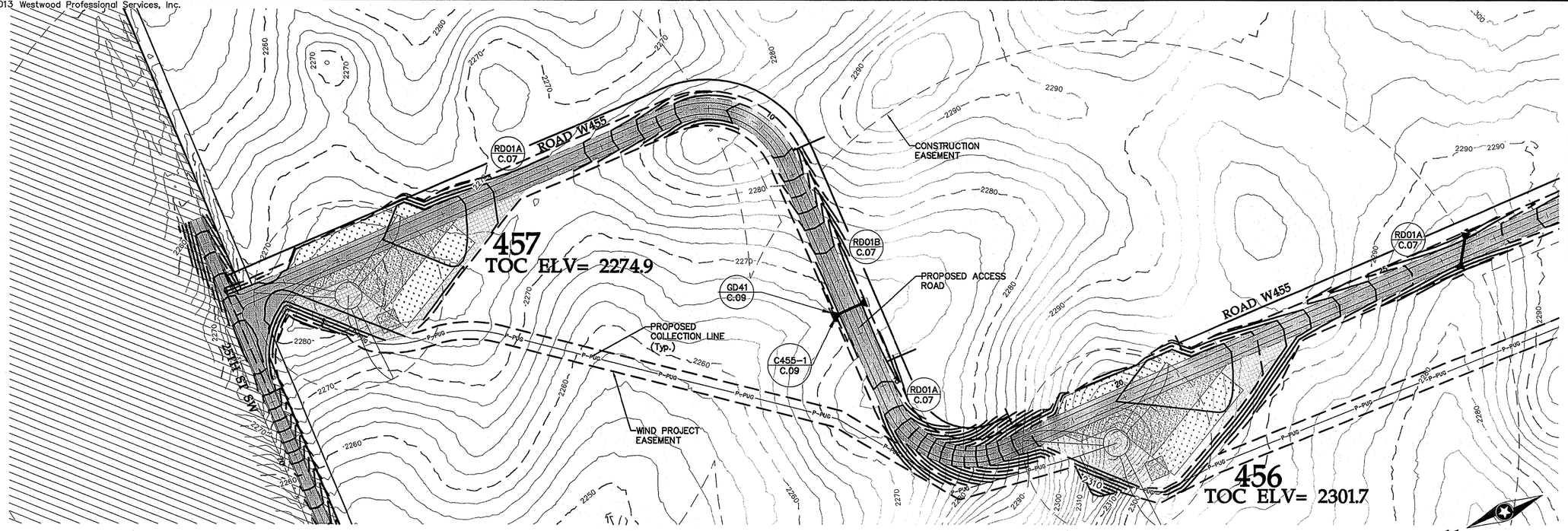
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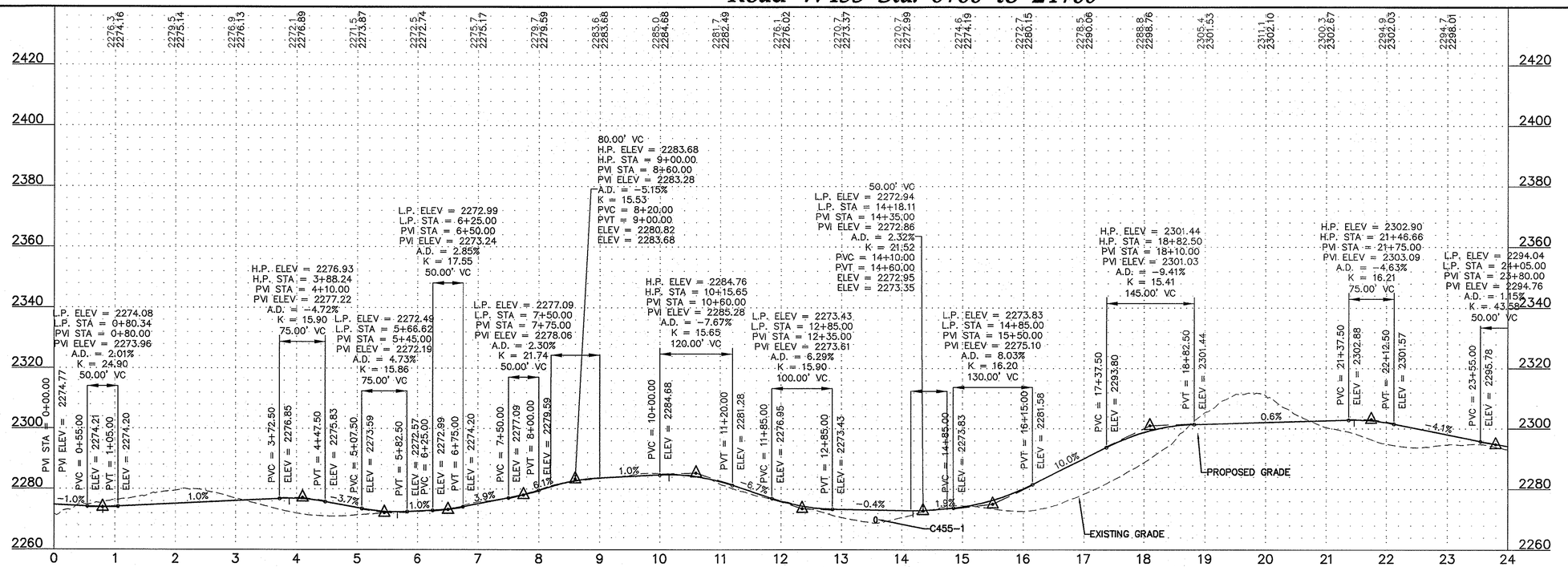
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- 4000 EXISTING 10' CONTOURS
- EXISTING 2' CONTOURS
- POH EXISTING OVERHEAD POWER
- EXISTING STREAM
- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

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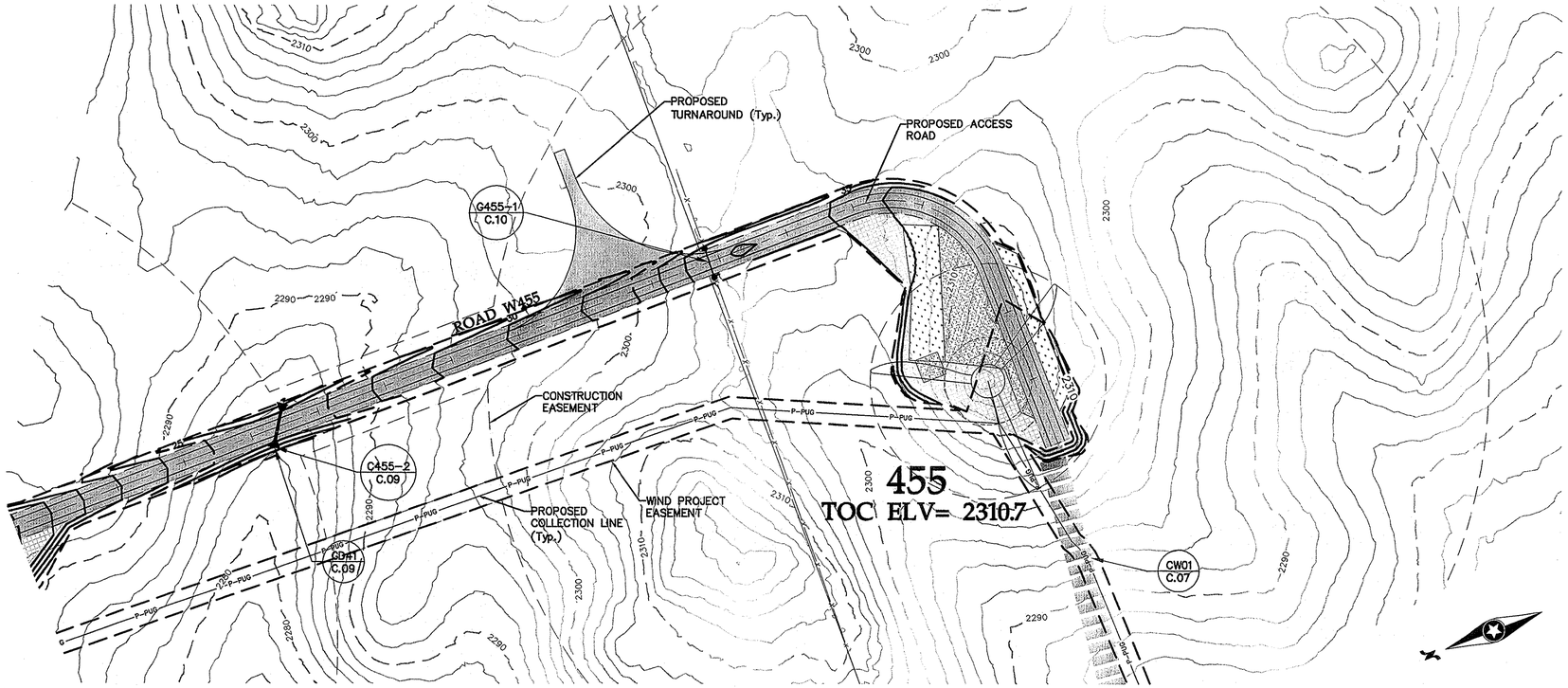
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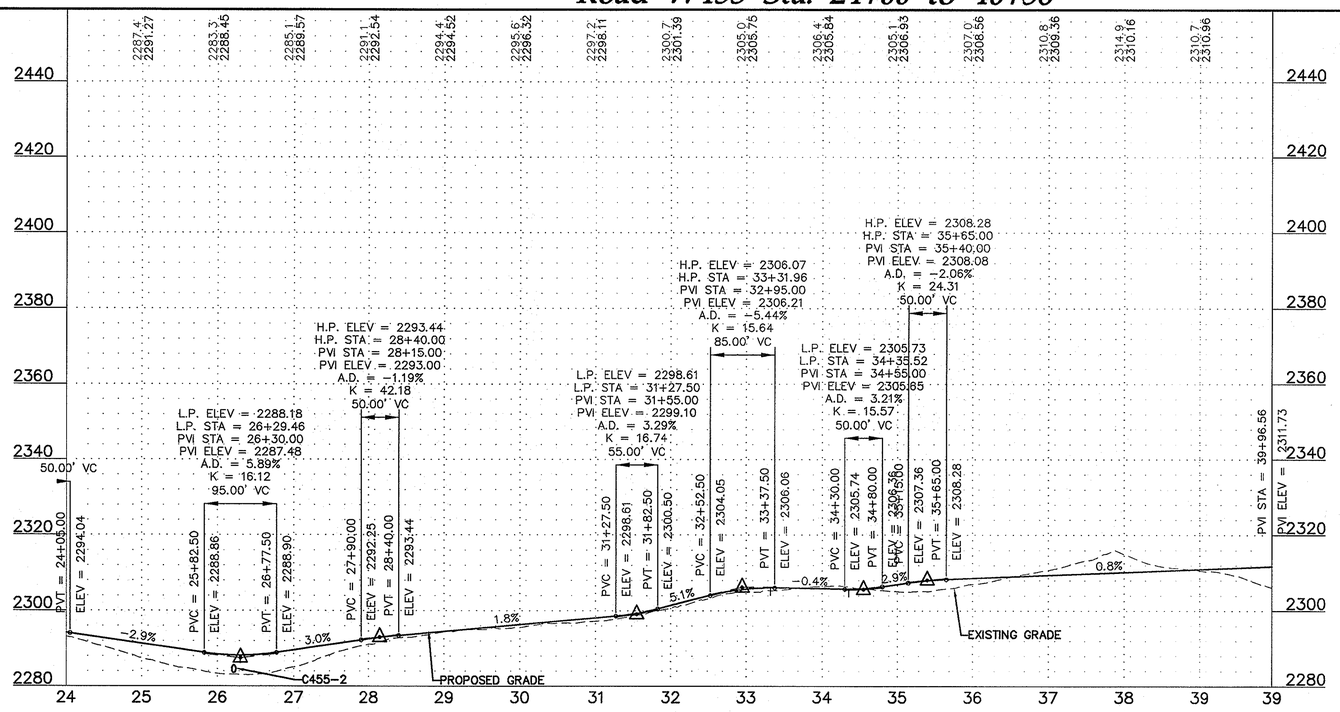
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0' 100' 200' 300'

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20' 0 10' 20'

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WILLIAM J. HAMILTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

Designed:	MPG
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Revisions:

#	DATE	DESCRIPTION

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- TURBINE LOCATION
- T-XX TURBINE NUMBER
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Bison 4 Wind Project

Oliver County, North Dakota

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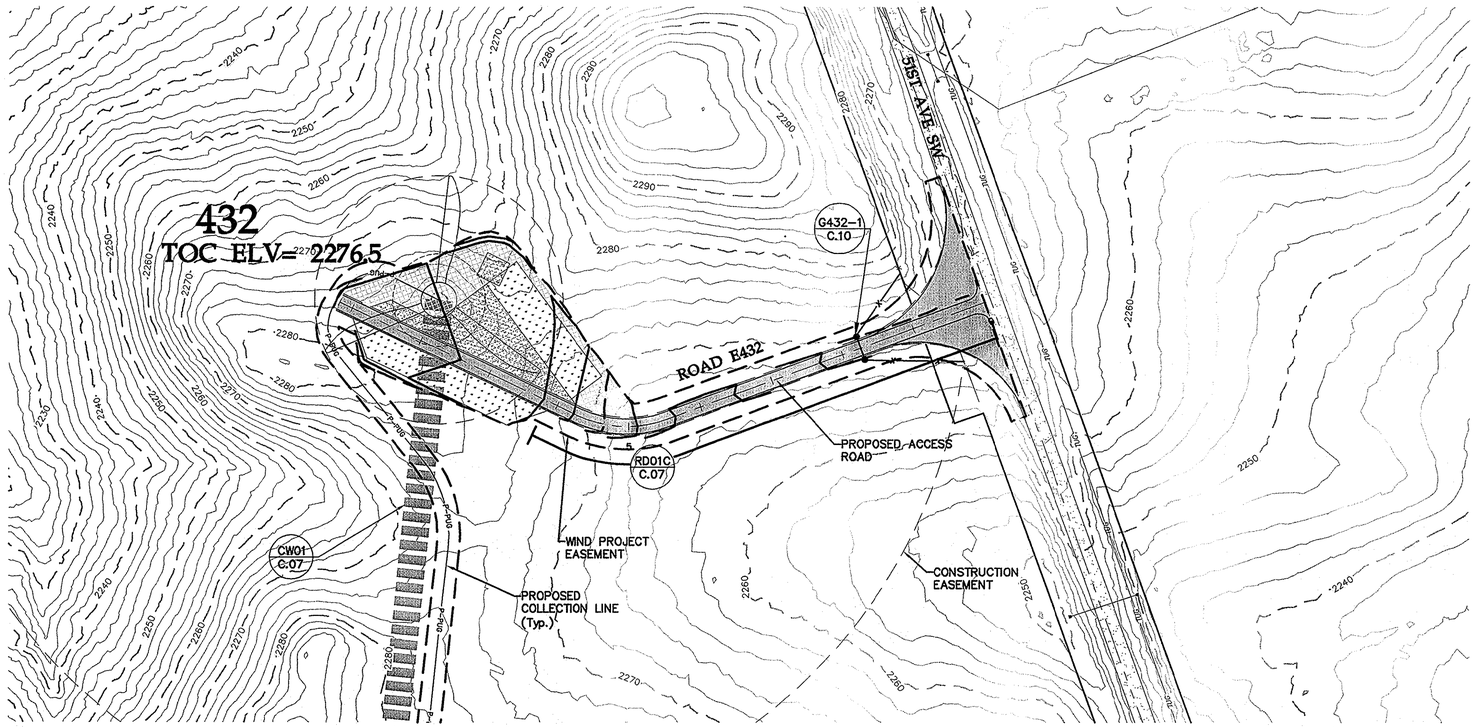
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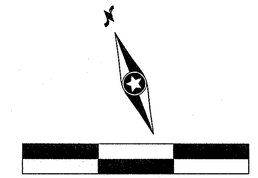
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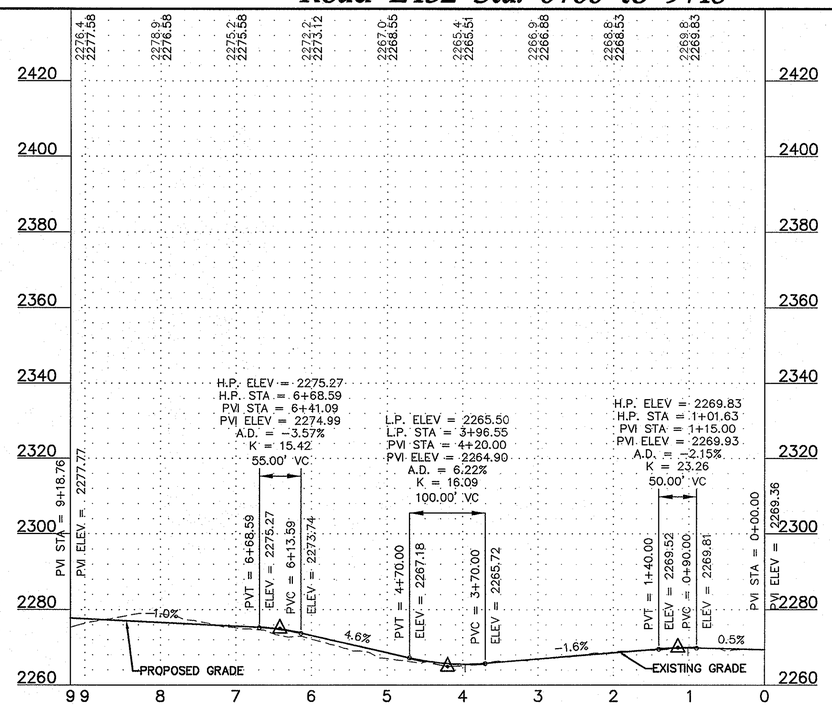
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PE-8310
DATE 8/9/13
NORTH DAKOTA

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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 E432 Sta. 0+00 to 9+18

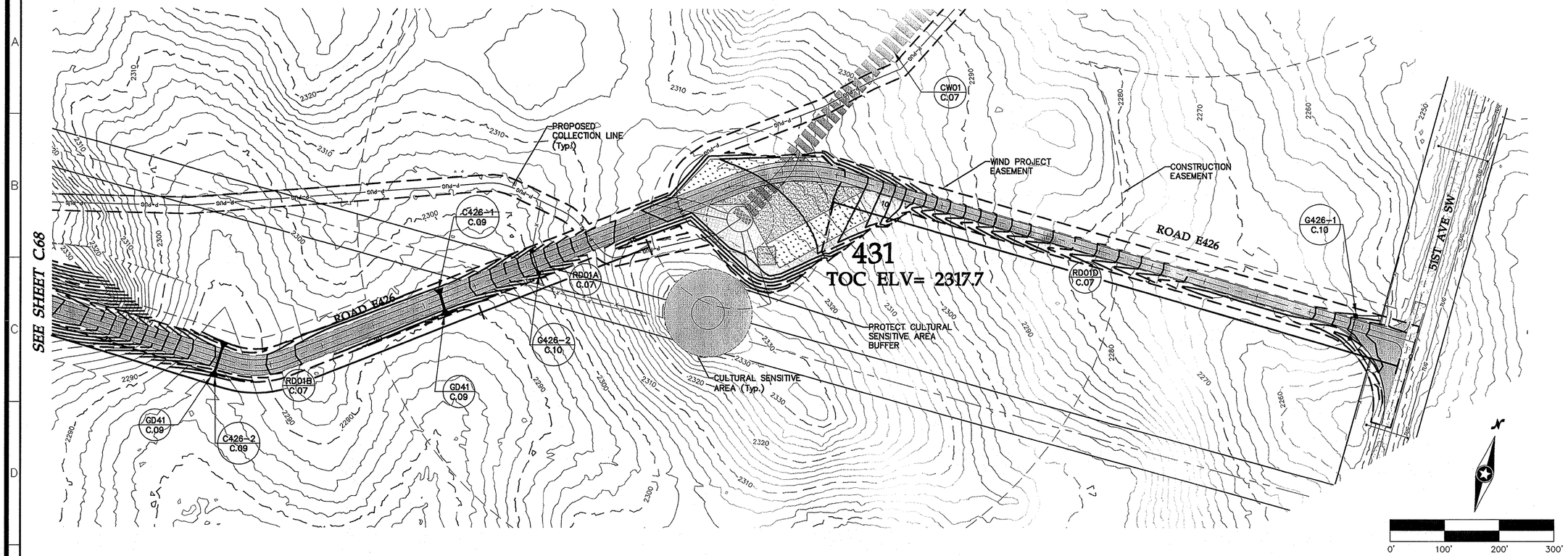
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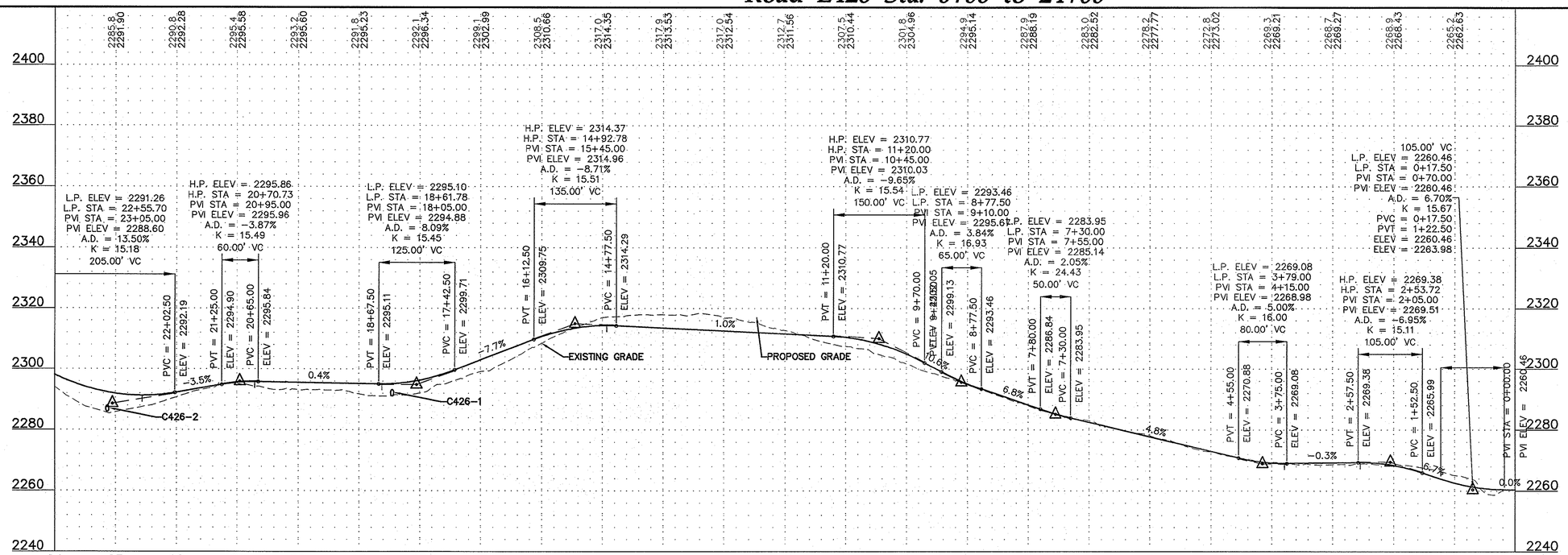
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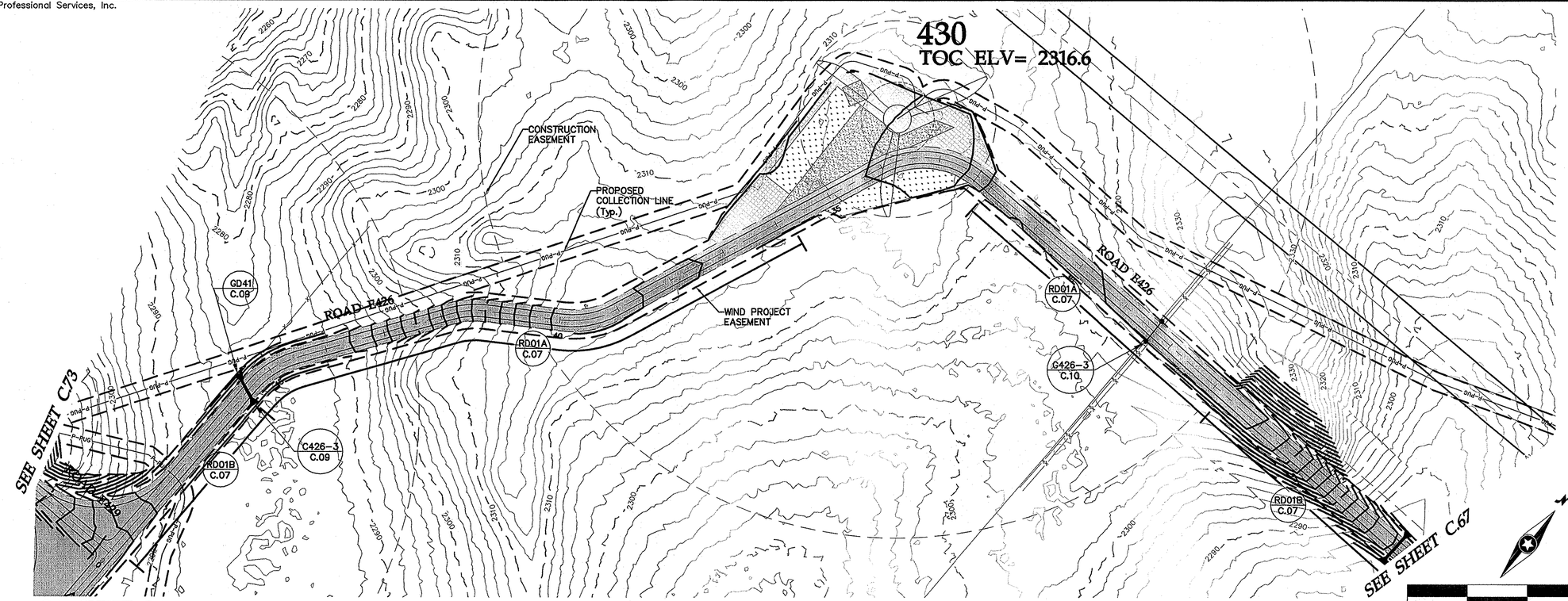
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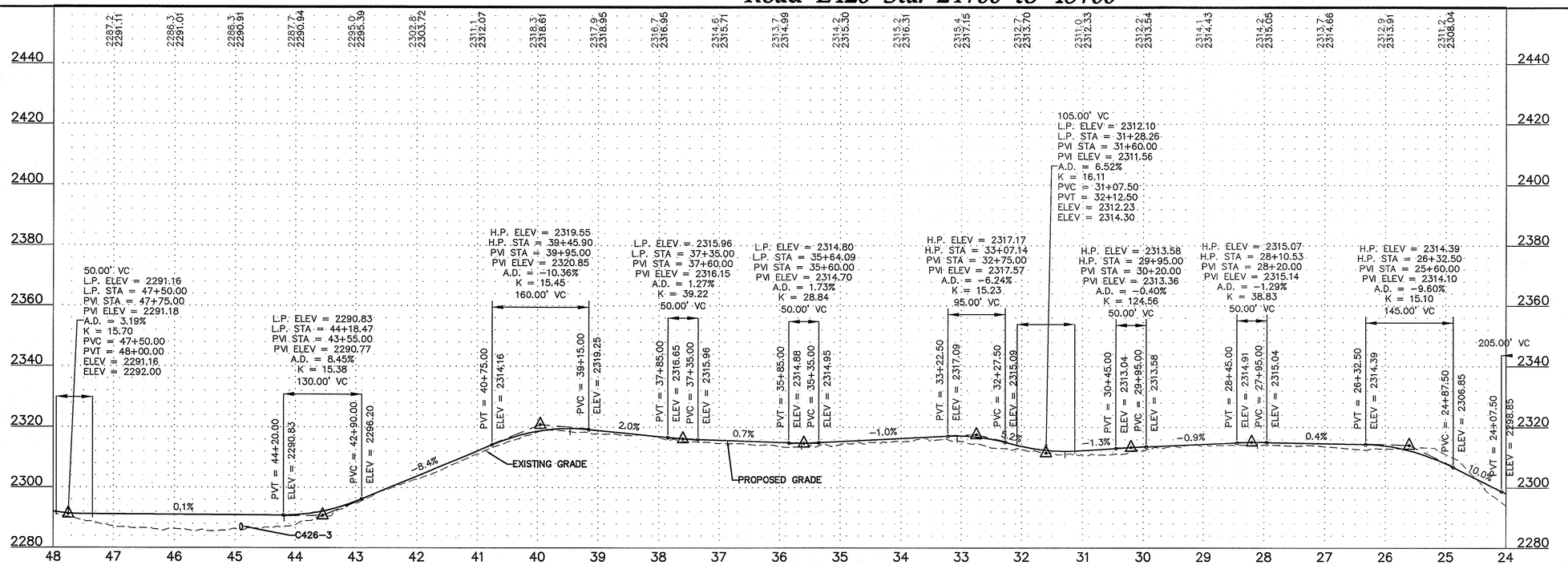
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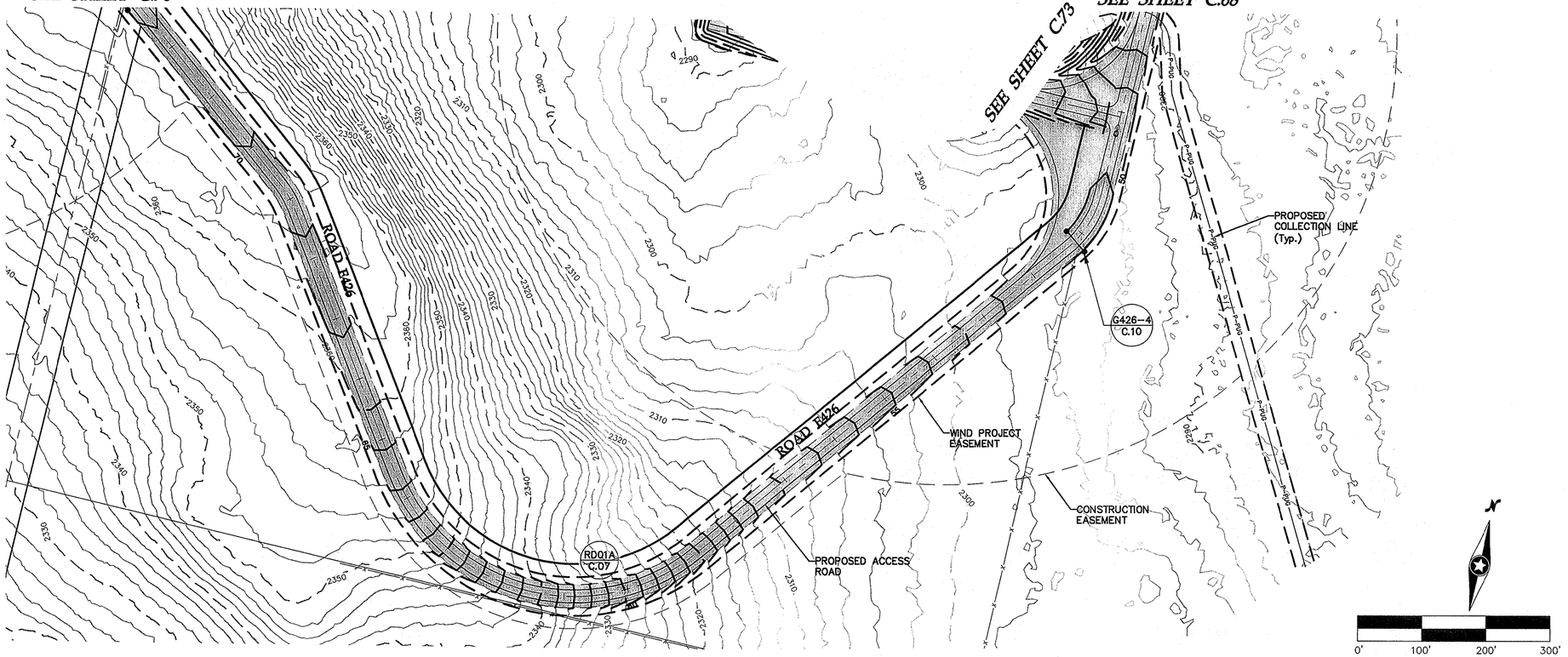
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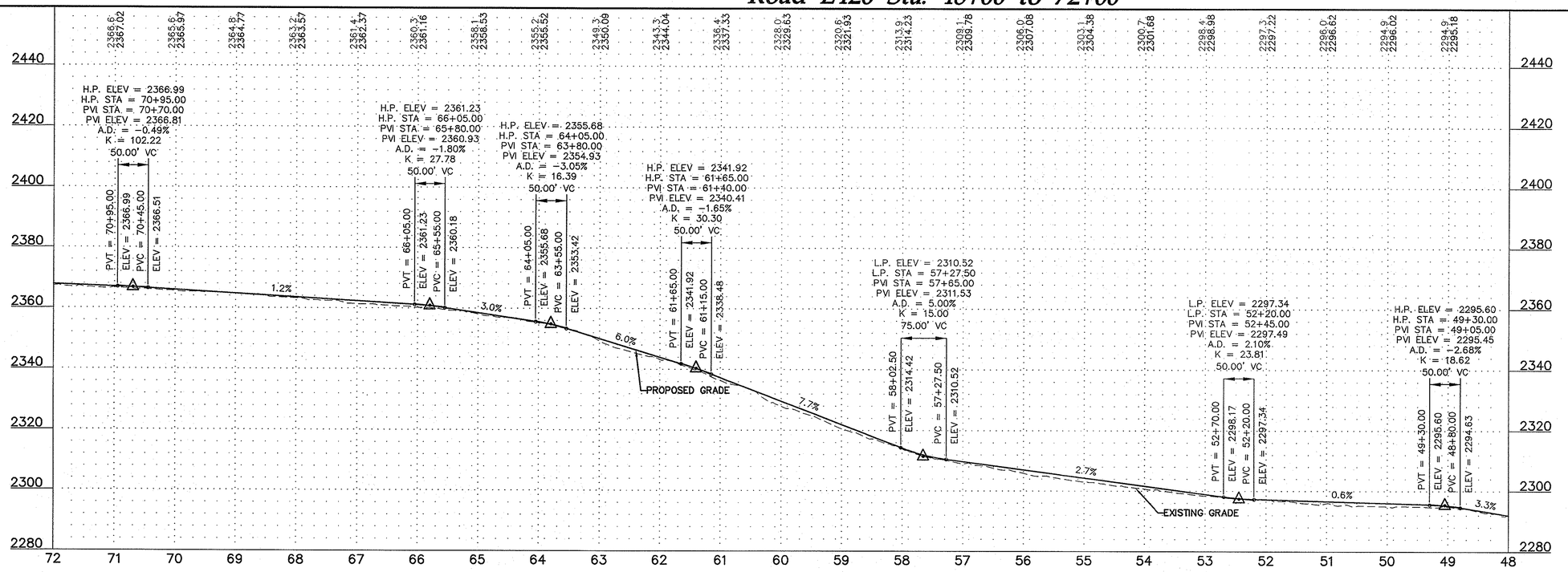
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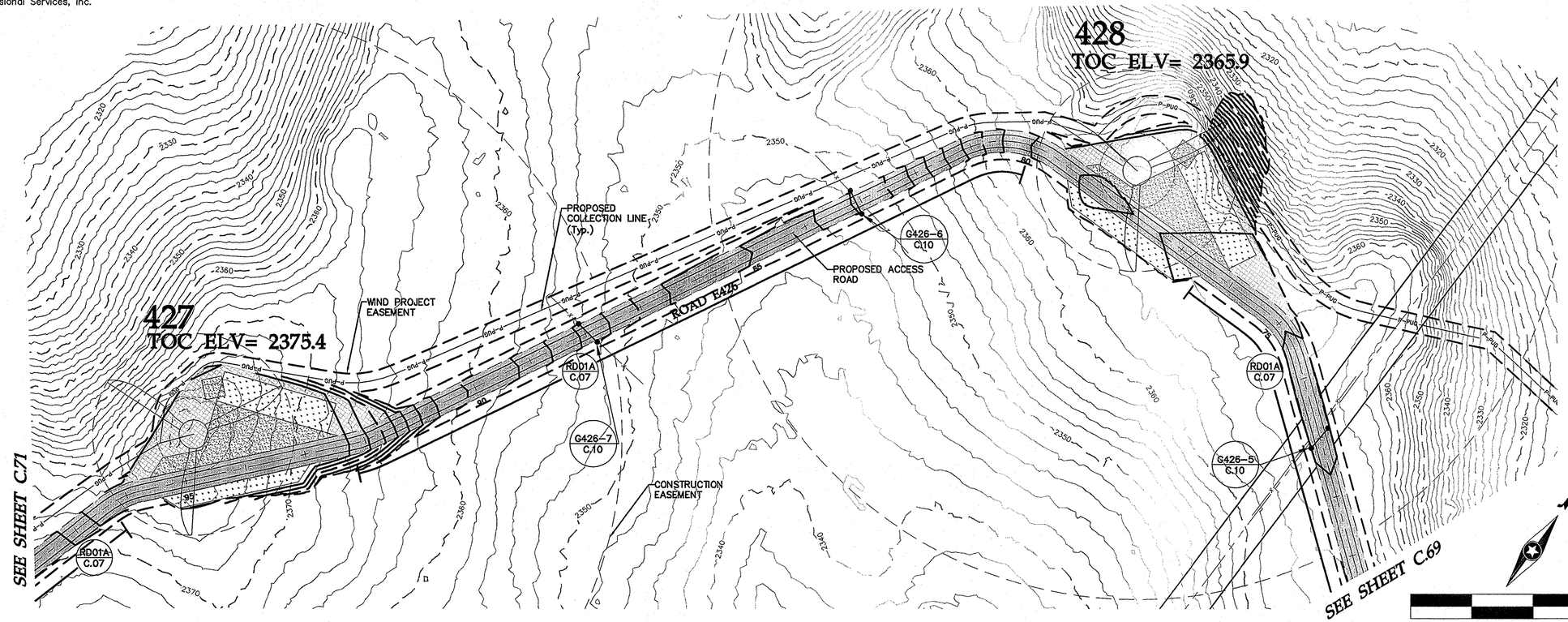
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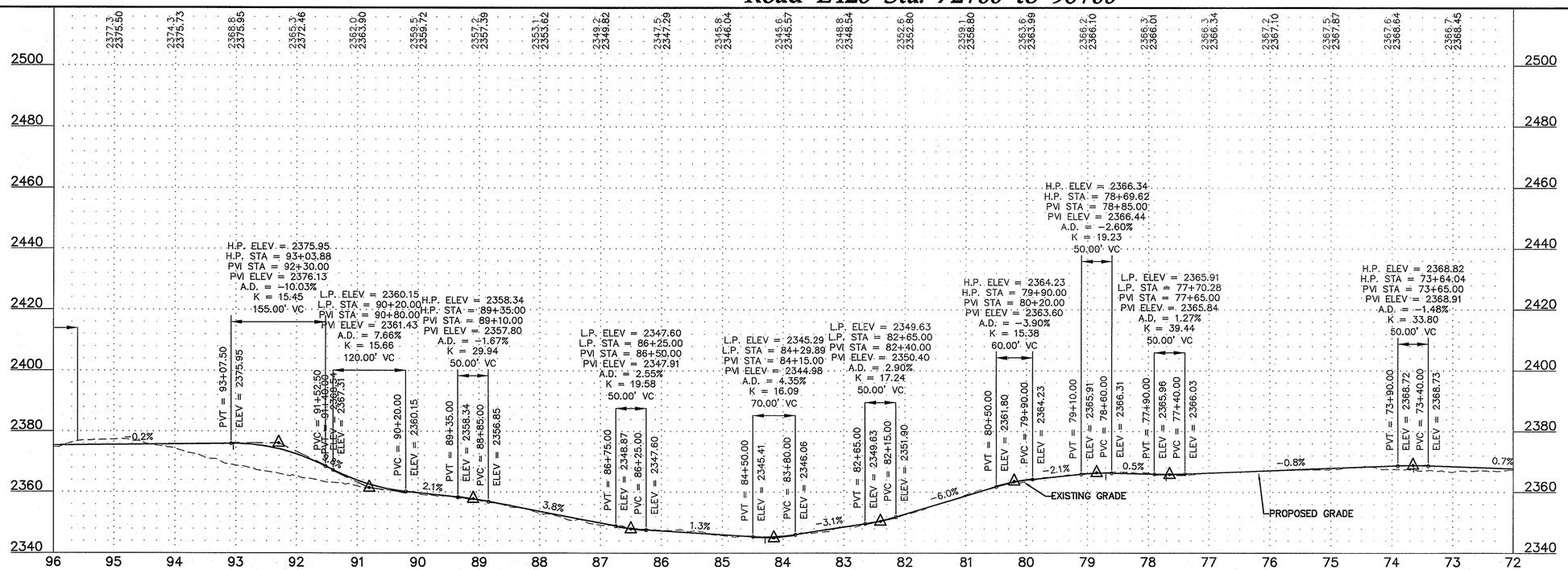
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Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

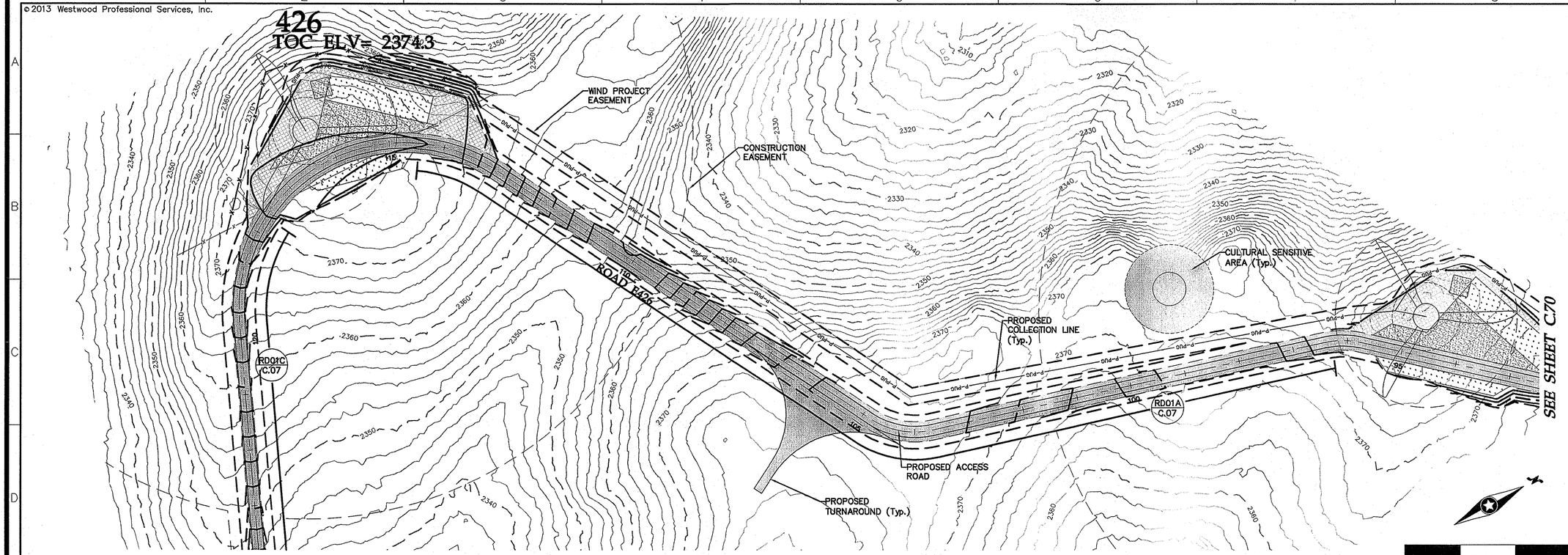
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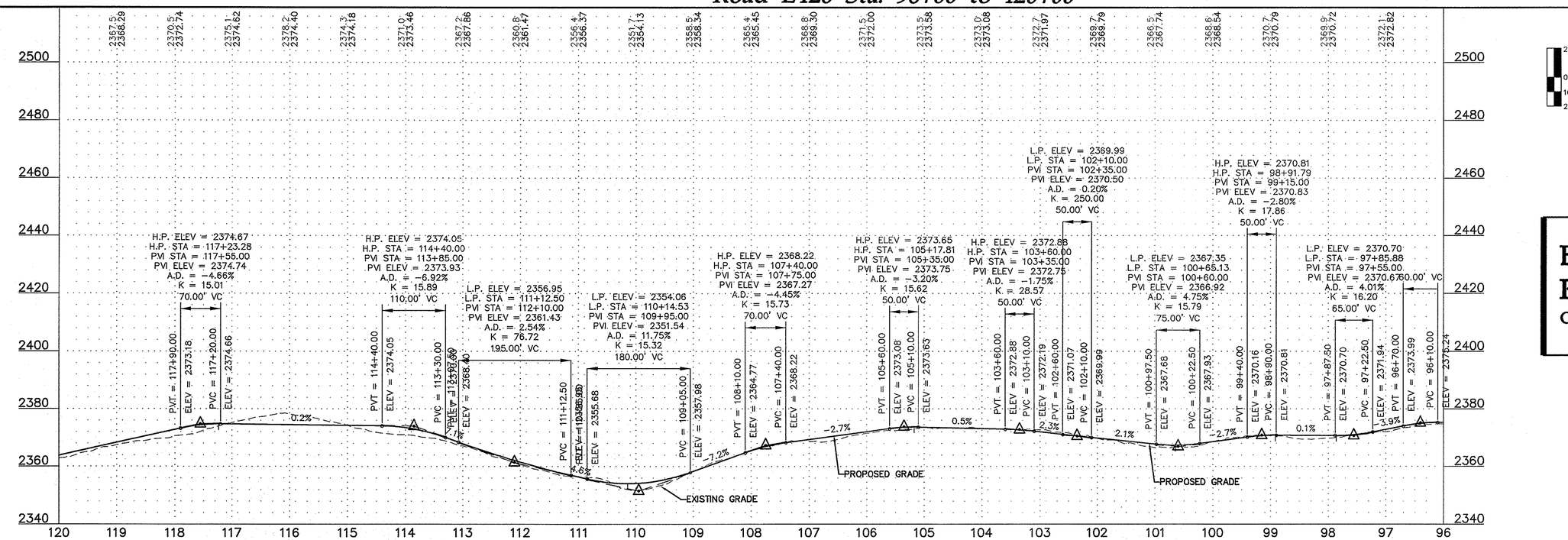
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AN ALLETE COMPANY

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Oliver County, North Dakota

Road E426 Sta. 96+00 to 120+00

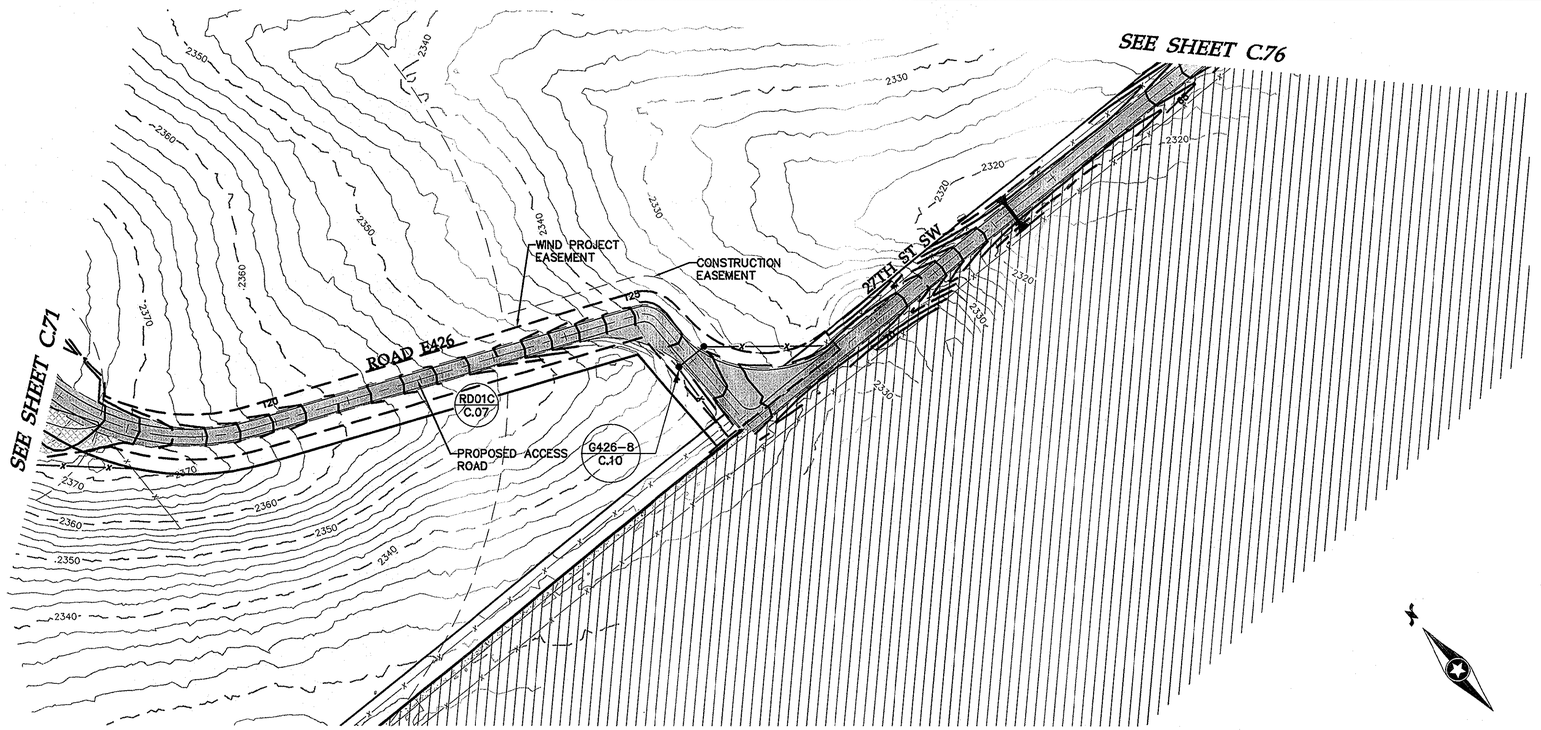
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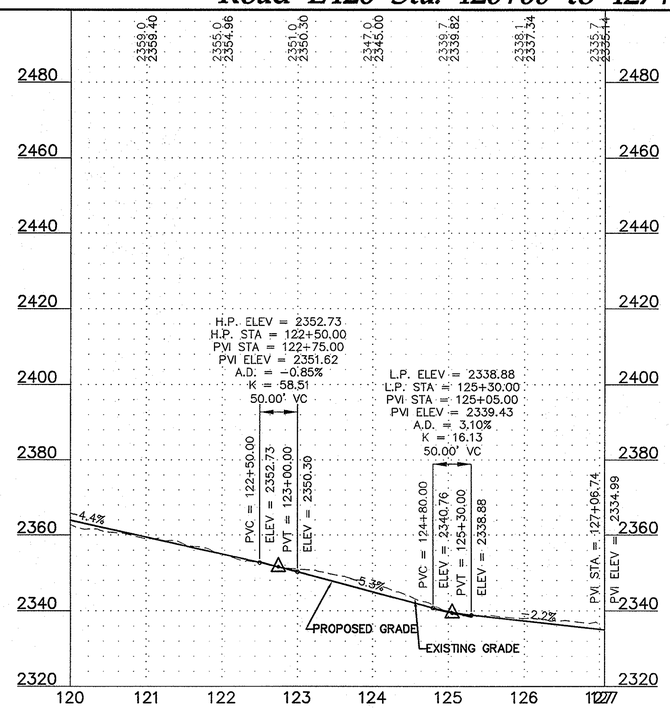
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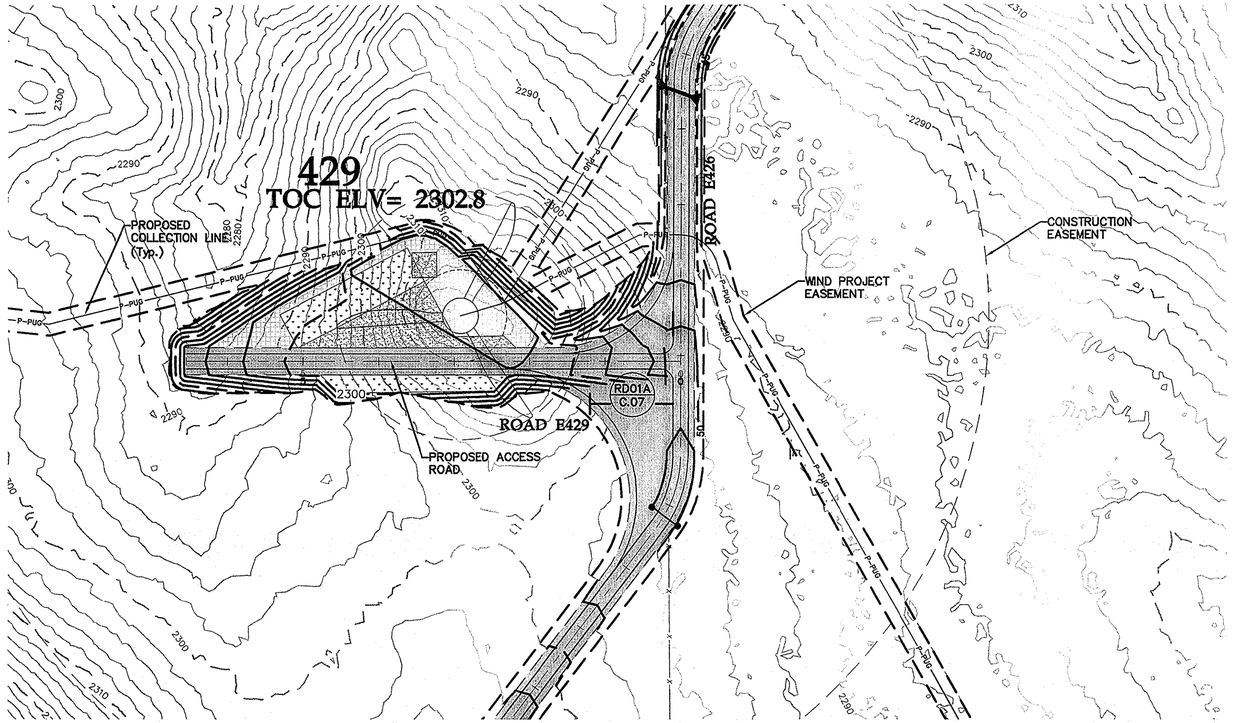
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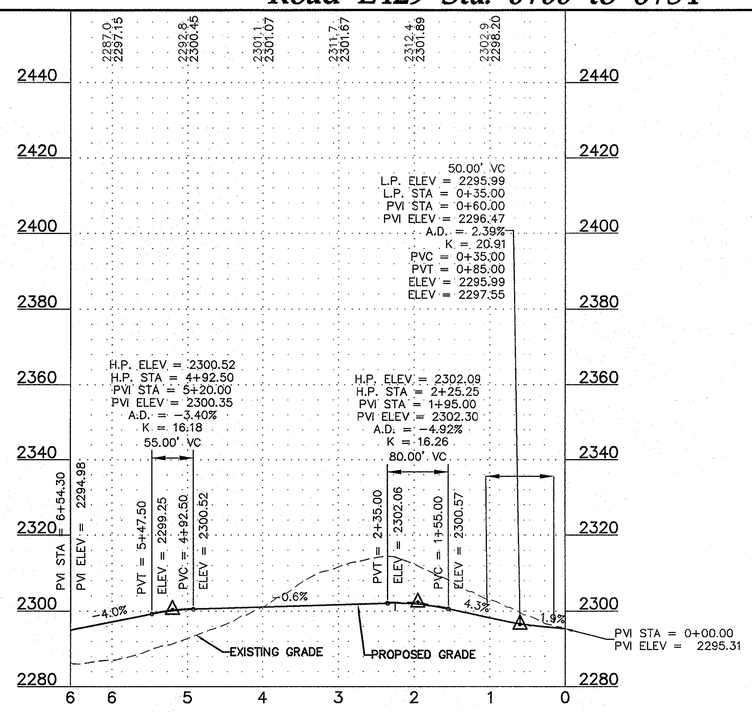
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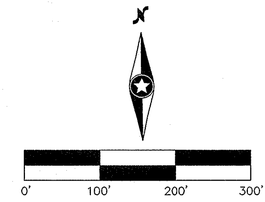
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DATE 8/9/13
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Oliver County, North Dakota

Road E429 Sta. 0+00 to 6+54

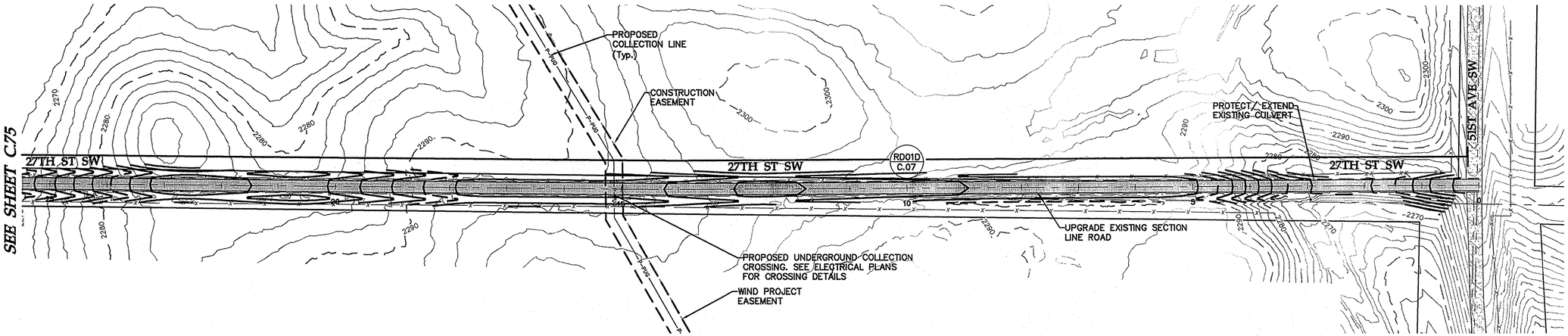
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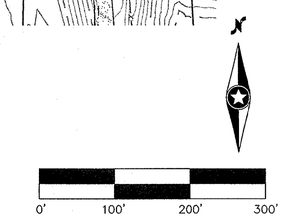
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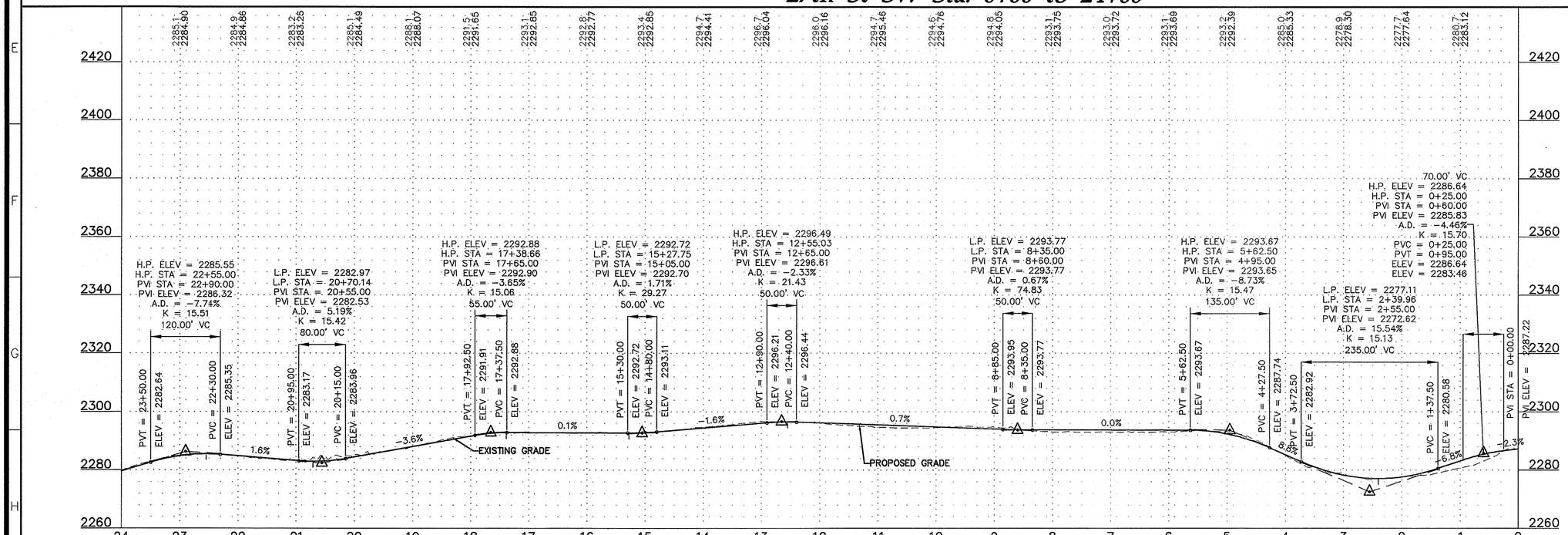
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WILLIAM P. HUSTON
PE-9510
DATE 8/8/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- TURBINE LOCATION
- T-XX TURBINE NUMBER
- PROPOSED ACCESS ROADS
- 3000 PROPOSED 10' CONTOURS
- PROPOSED 2' CONTOURS
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- EXISTING STREAM
- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

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

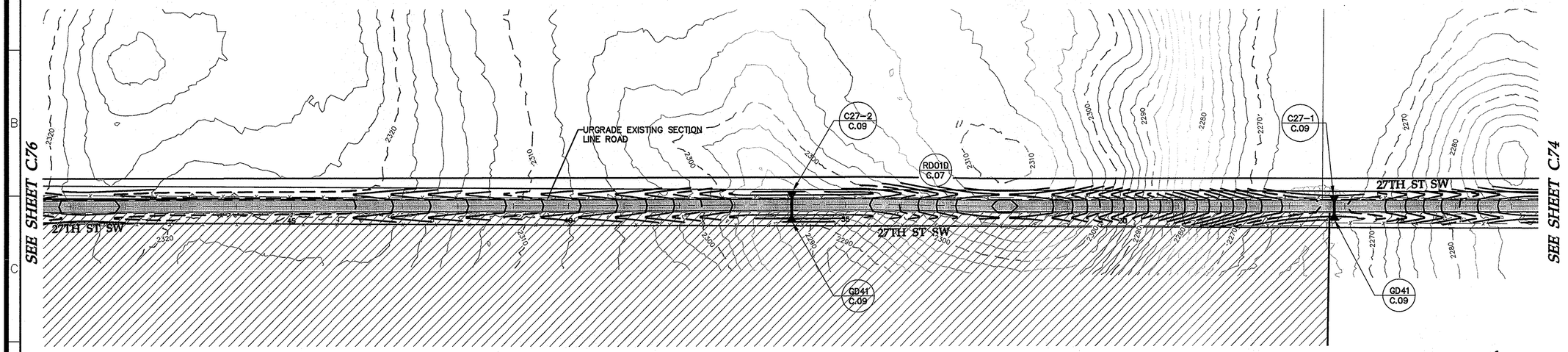
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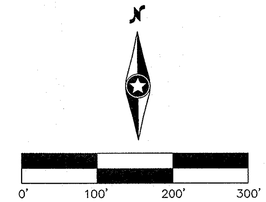
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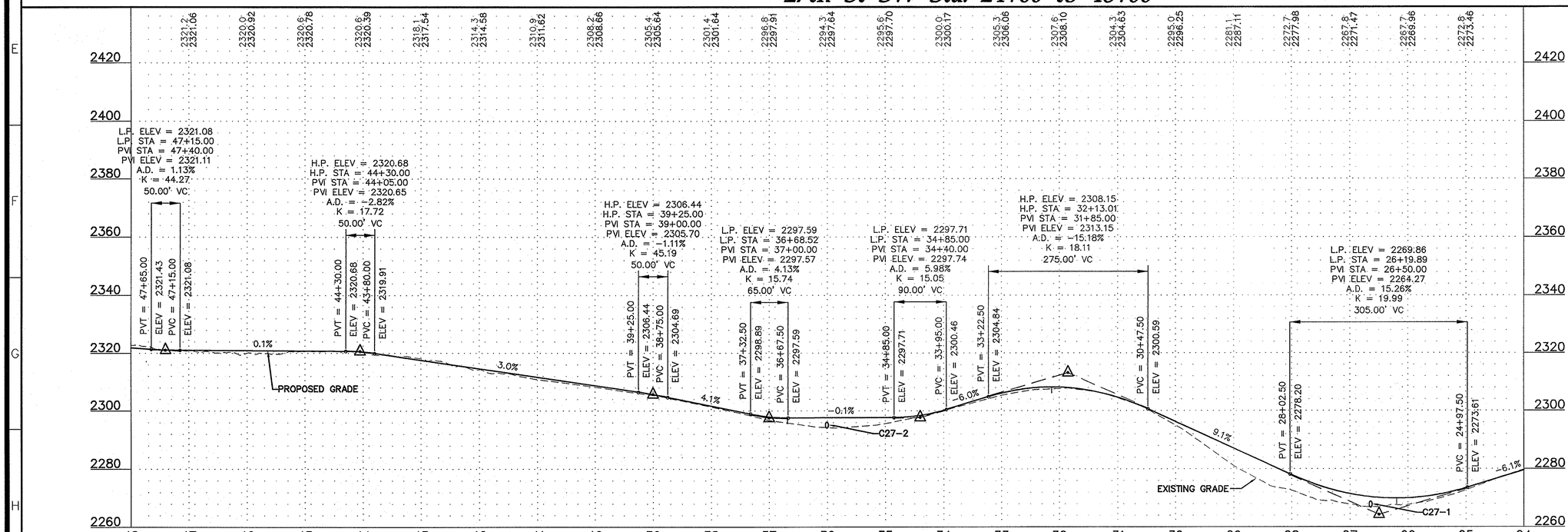
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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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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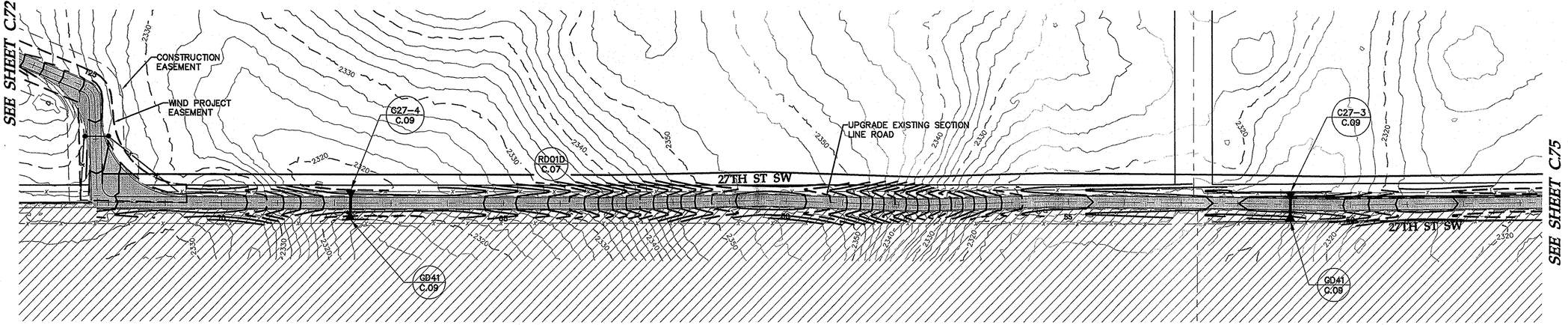
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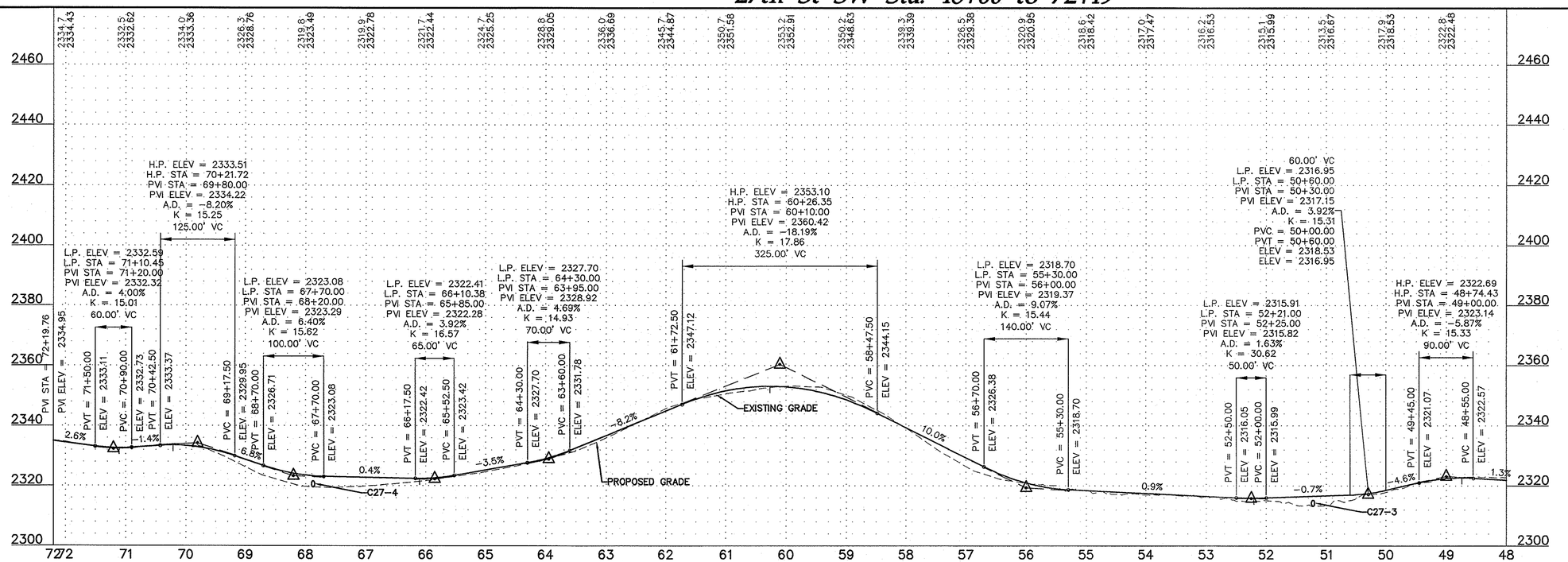
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0' 100' 200' 300'

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20' 0 10' 20'

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DATE 9/4/13
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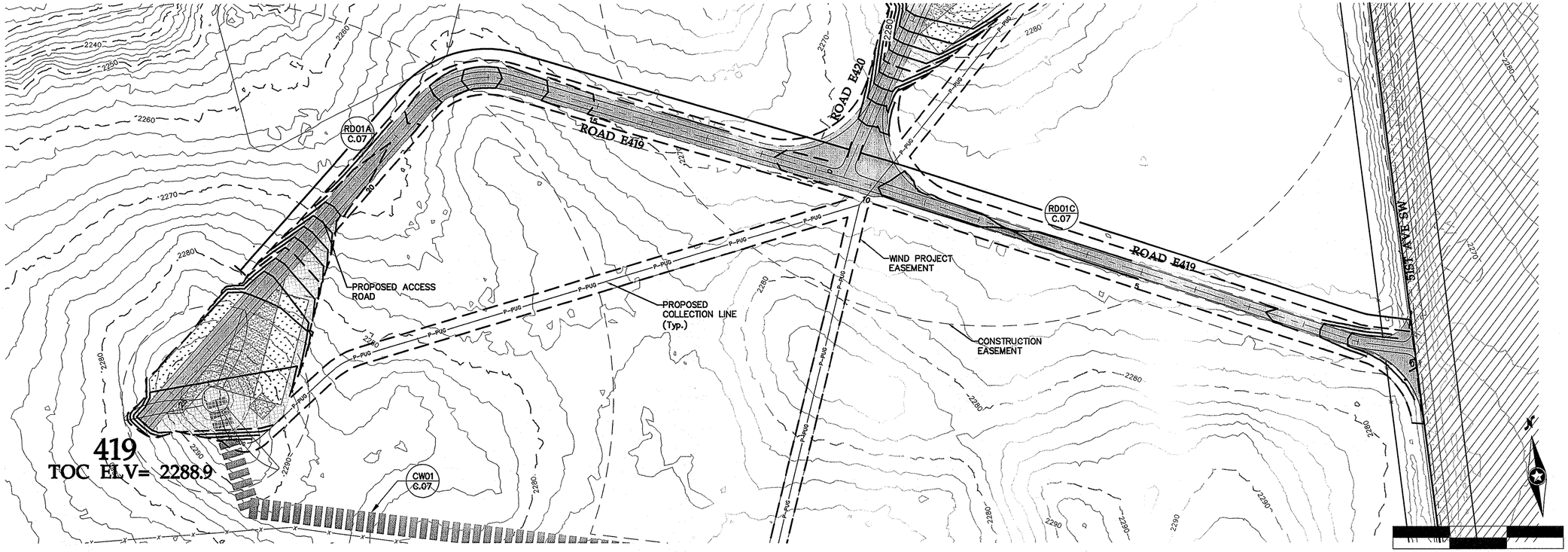
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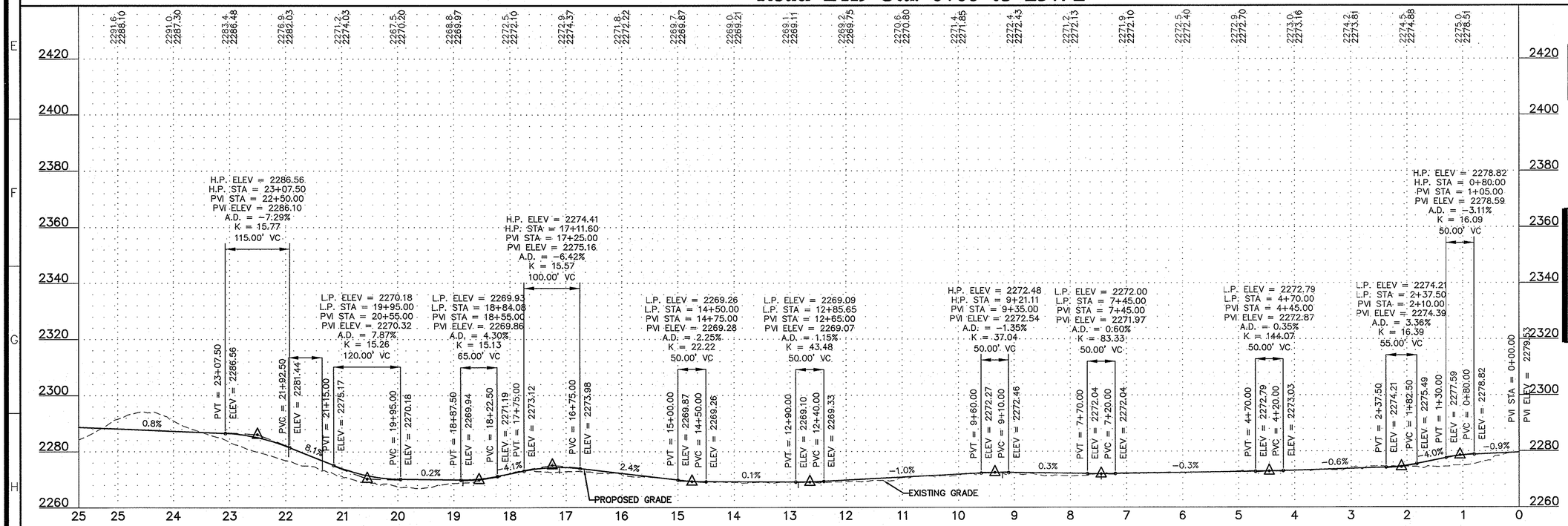
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Bison 4 Wind Project

Oliver County, North Dakota

Road E419 Sta. 0+00 to 25+72

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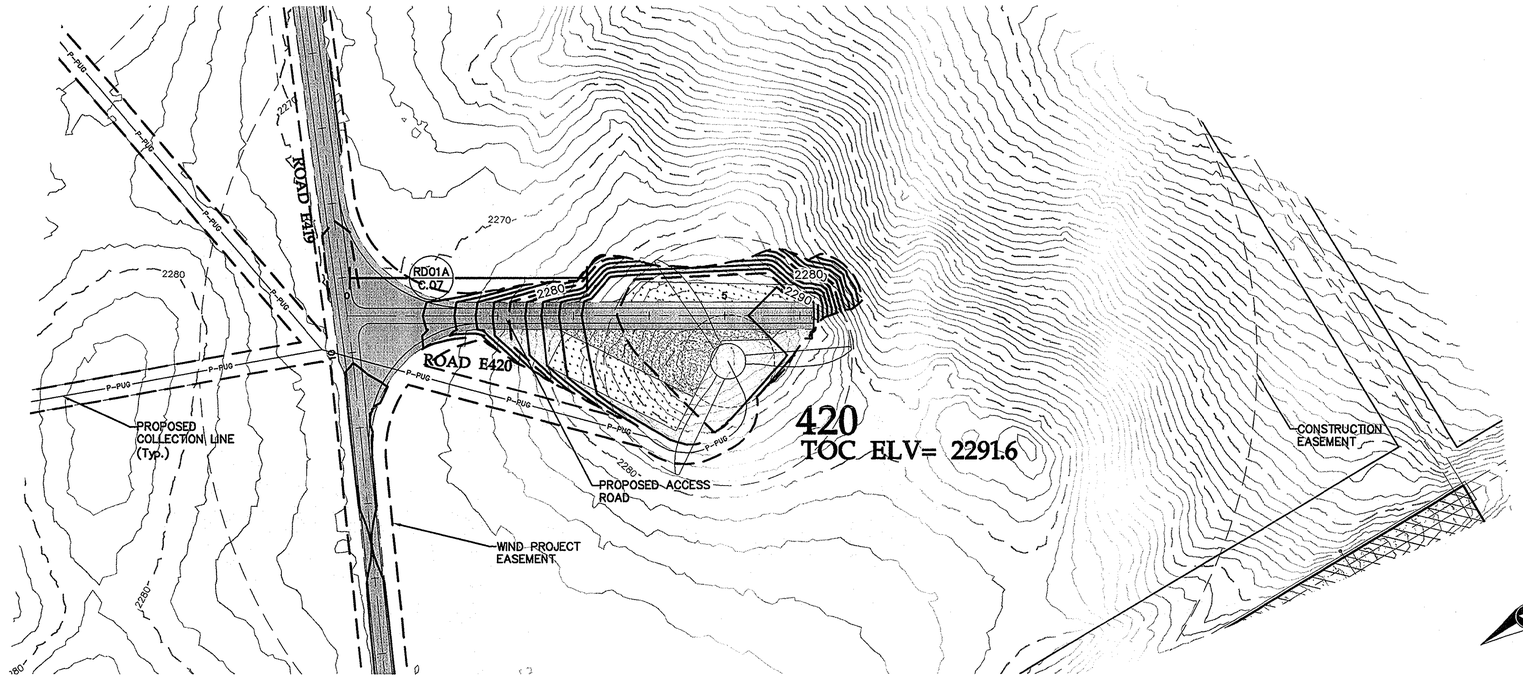
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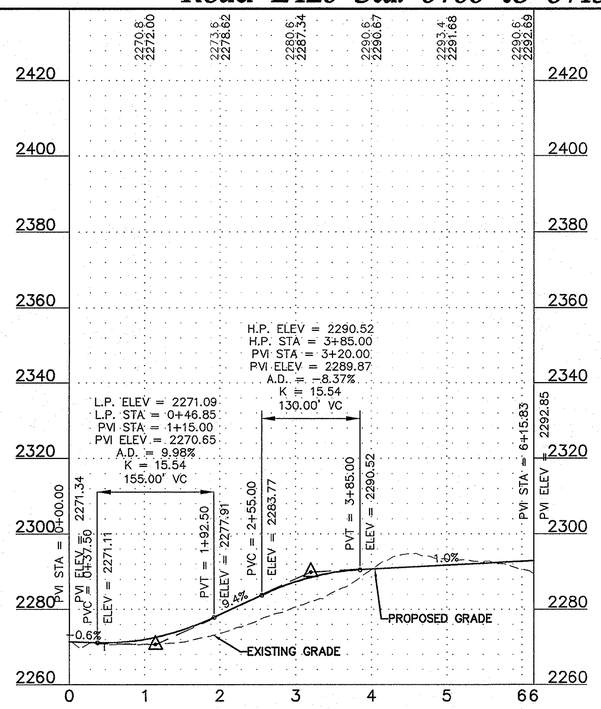
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0' 100' 200' 300'

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DATE 8/9/13
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Bison 4 Wind Project

Oliver County, North Dakota

Road E420 Sta. 0+00 to 6+15

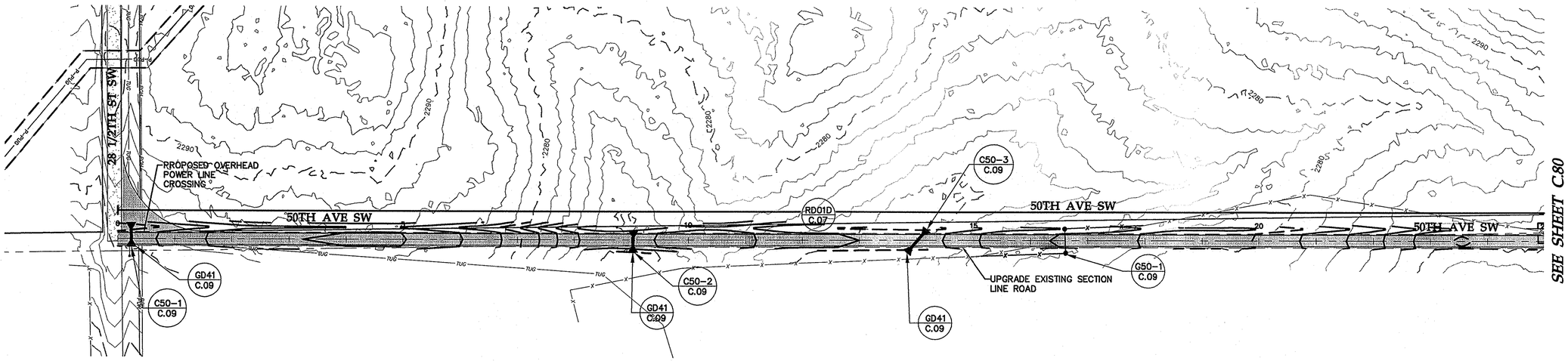
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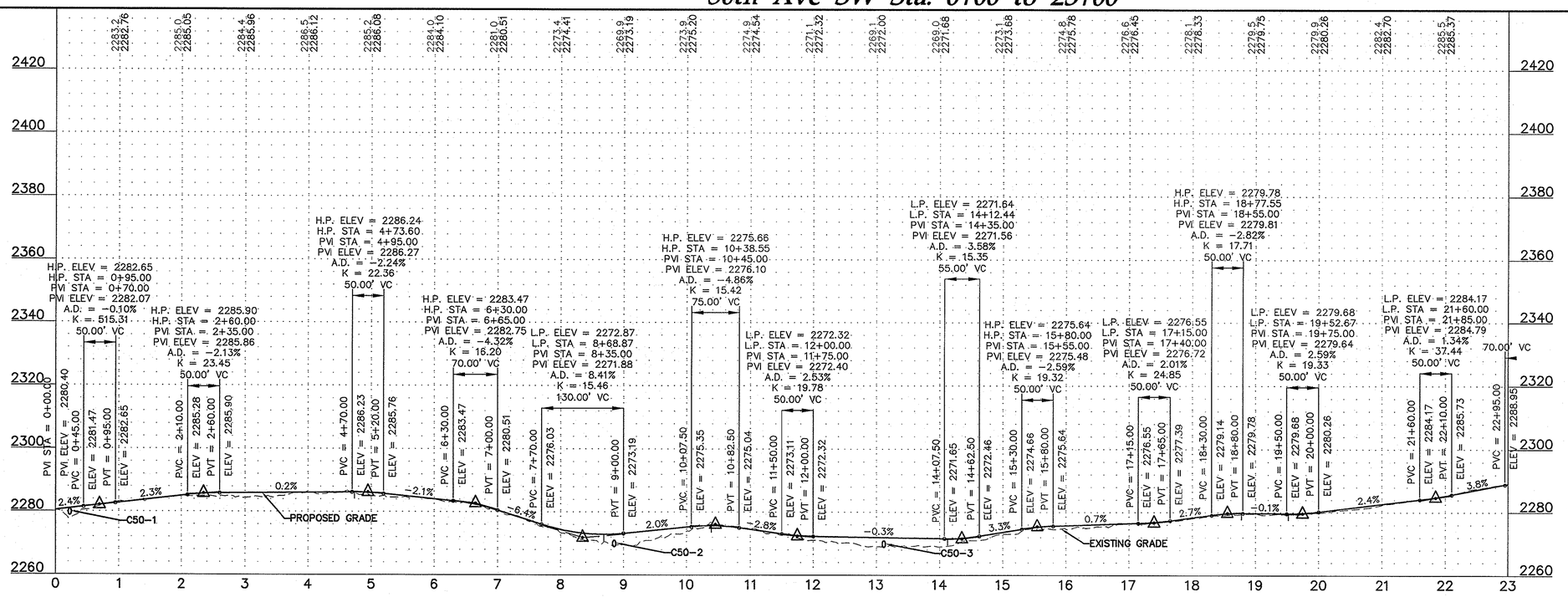
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20' 0 10' 20'

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DATE 8/9/13
NORTH DAKOTA

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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

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

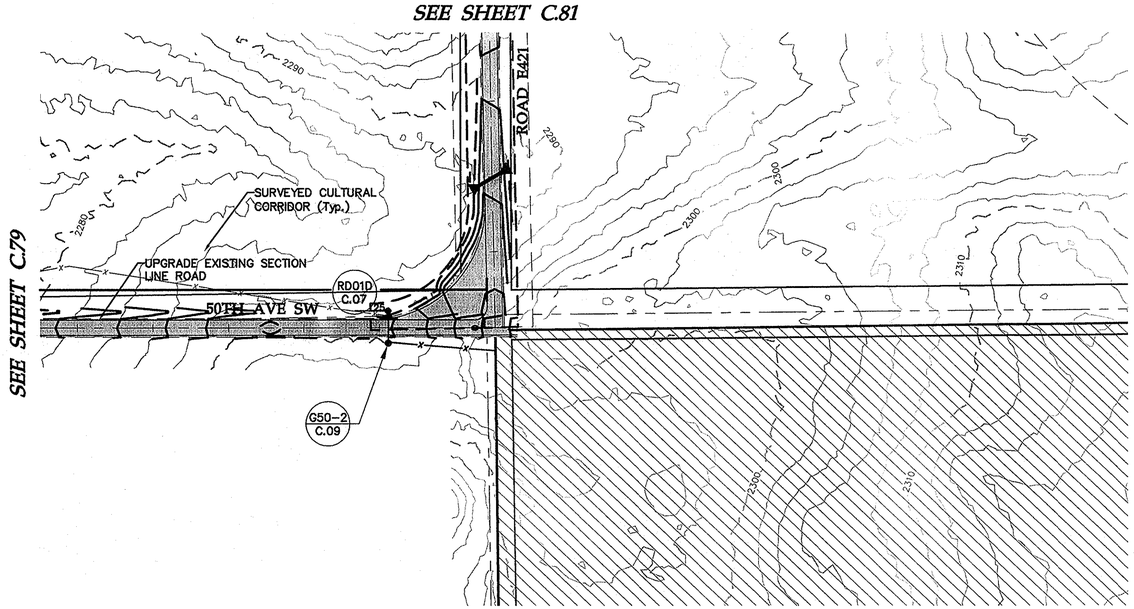
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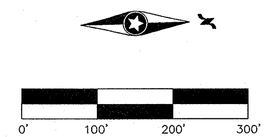
Date: 08/09/2013

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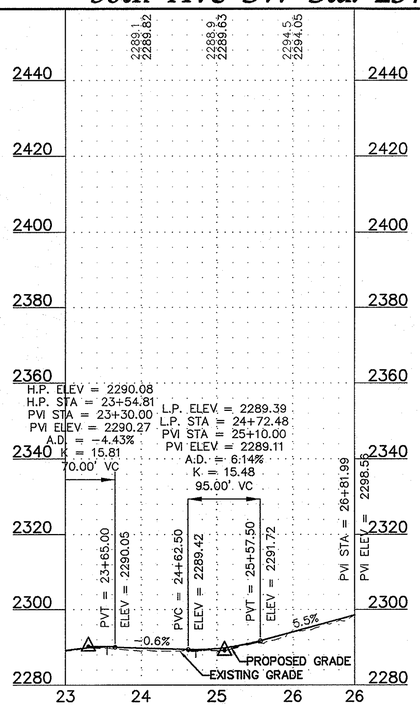
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WILLIAM E. HALSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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Checked: ADC
Drawn: MPG
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Revisions:

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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

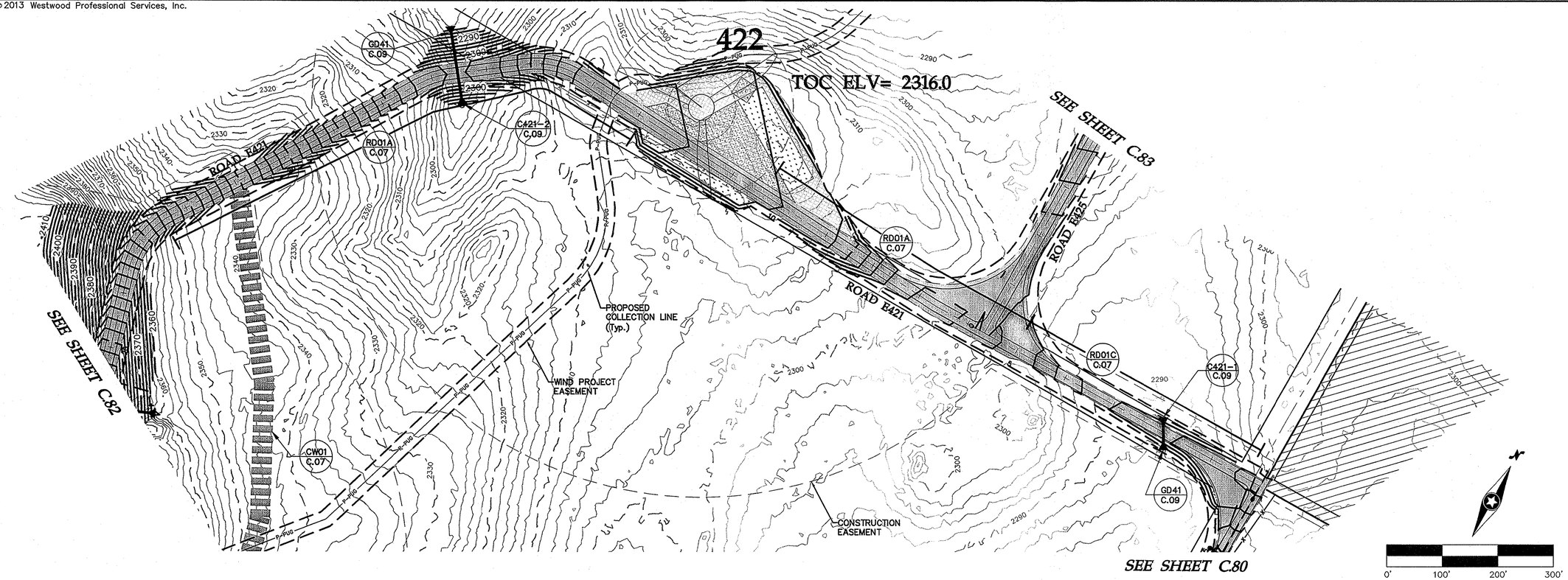
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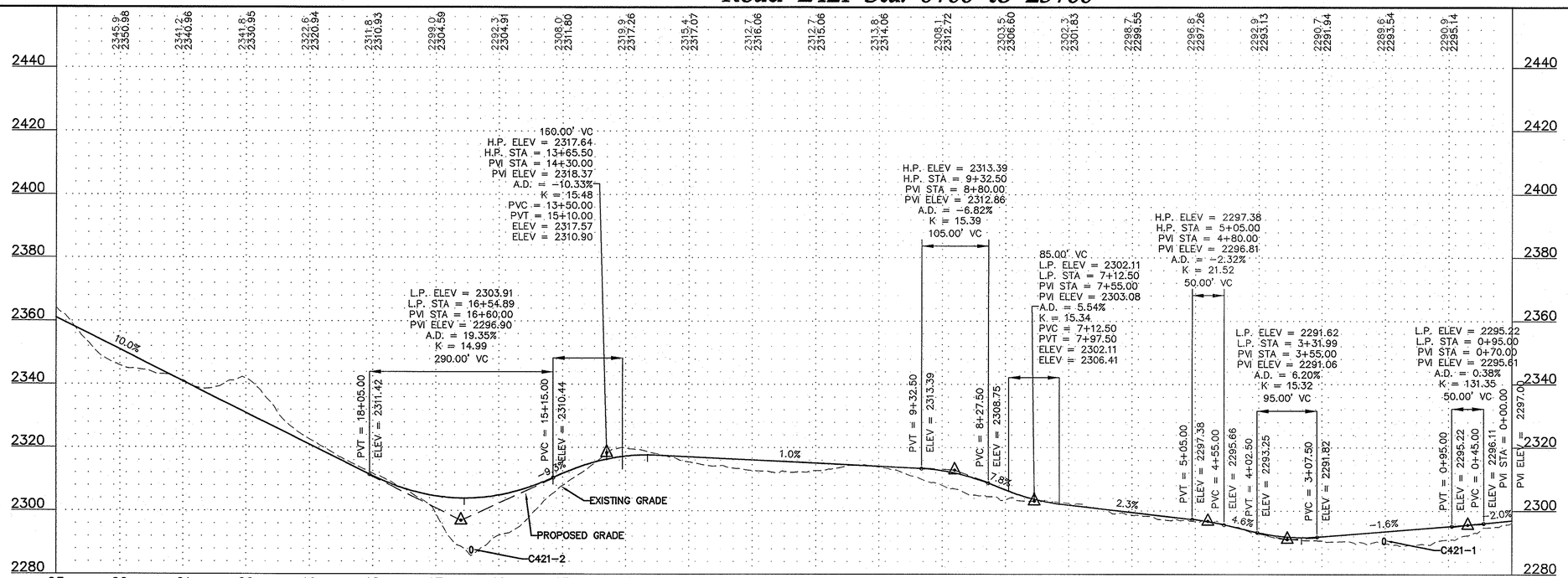
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PE-8310
DATE 4/9/13
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20' 0 10' 20'

Bison 4 Wind Project

Oliver County, North Dakota

Road E421 Sta. 0+00 to 23+00

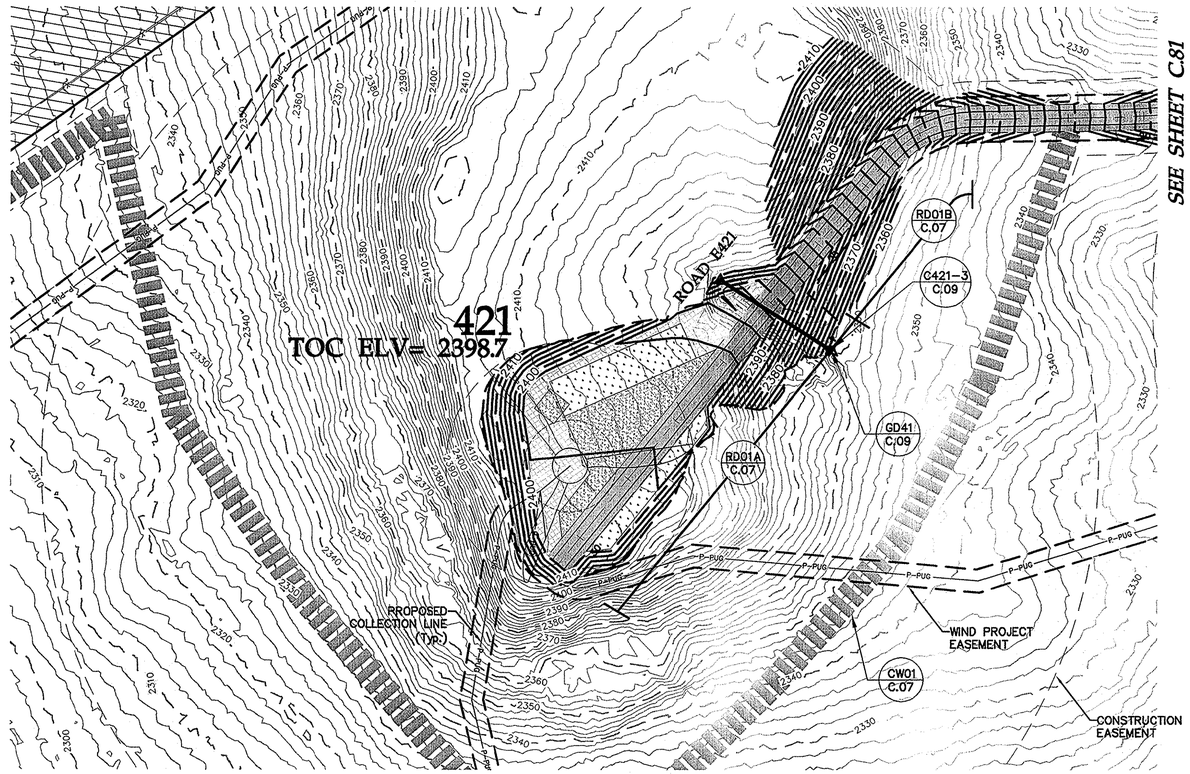
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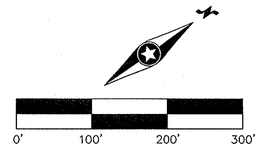
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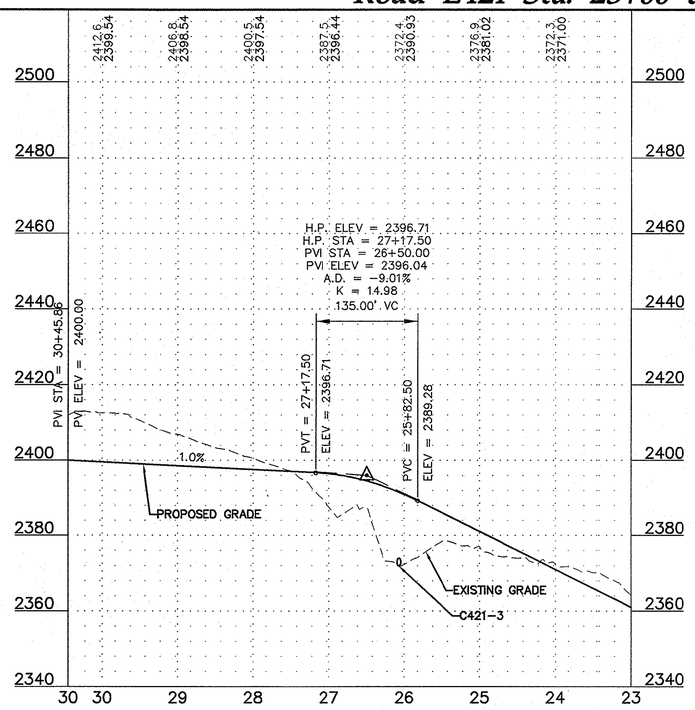
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- TURBINE GRAVEL AREA
- TURBINE LAYDOWN AREA
- TURBINE PAD AREA
- EXISTING GRAVEL SURFACE
- 4000 EXISTING 10' CONTOURS
- EXISTING 2' CONTOURS
- POH EXISTING OVERHEAD POWER
- EXISTING STREAM
- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

Road E421 Sta. 23+00 to 30+45

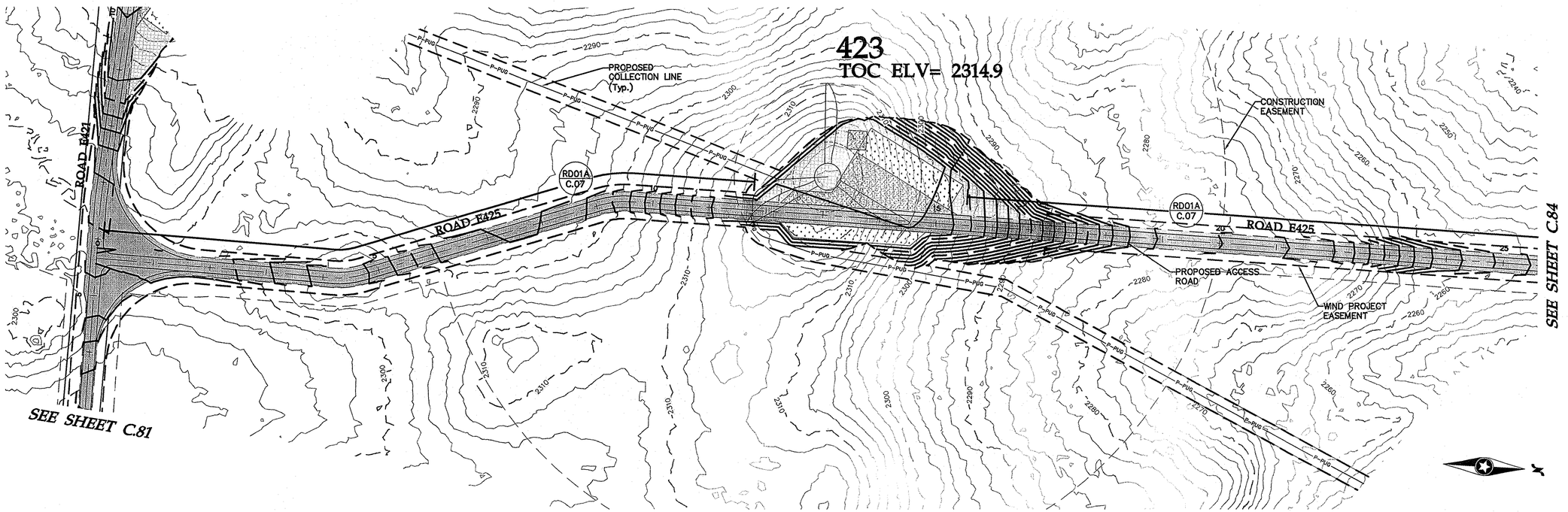
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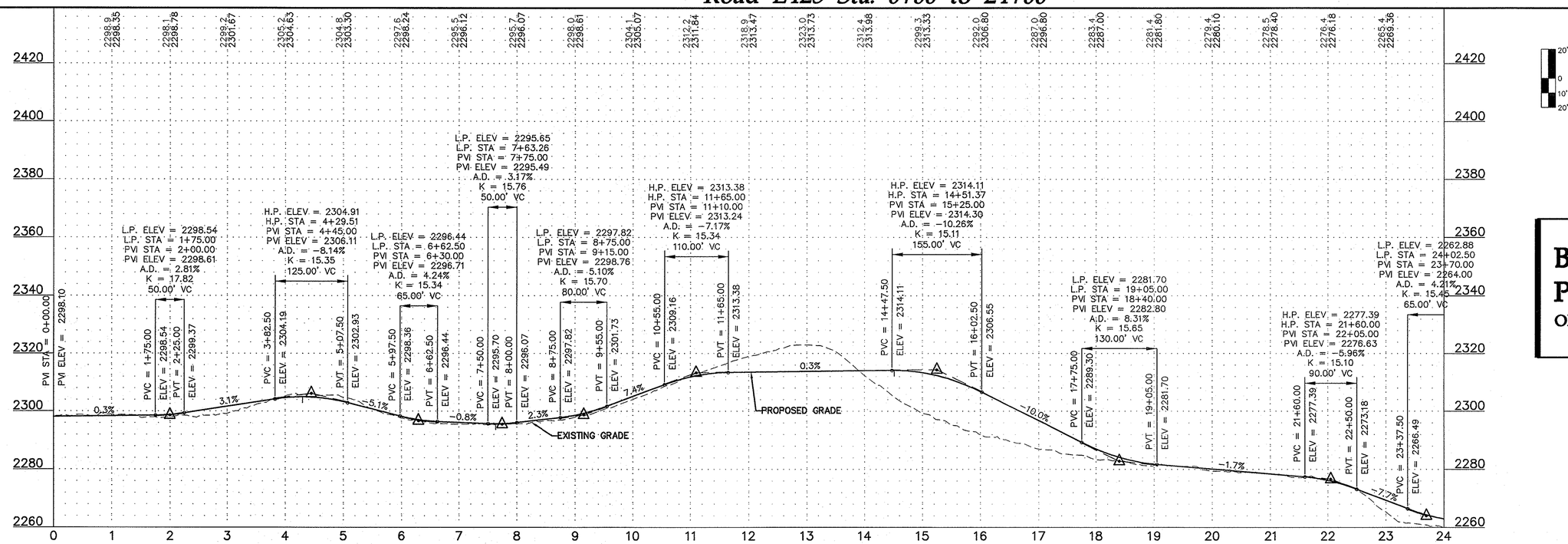
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM M. WILSON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

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

LEGEND:

- TURBINE LOCATION
- T-XX — TURBINE NUMBER
- PROPOSED ACCESS ROADS
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- PROPOSED 2' CONTOURS
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- PROPOSED OVERHEAD
- RIGHT OF WAY
- P-PUG — PROPOSED UNDERGROUND ELECTRICAL COLLECTION
- PROPOSED CRANE PATH
- PROPOSED CULVERT
- C432-1 — CULVERT ID
- PROPOSED FENCE
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Bison 4 Wind Project

Oliver County, North Dakota

Road E425 Sta. 0+00 to 24+00

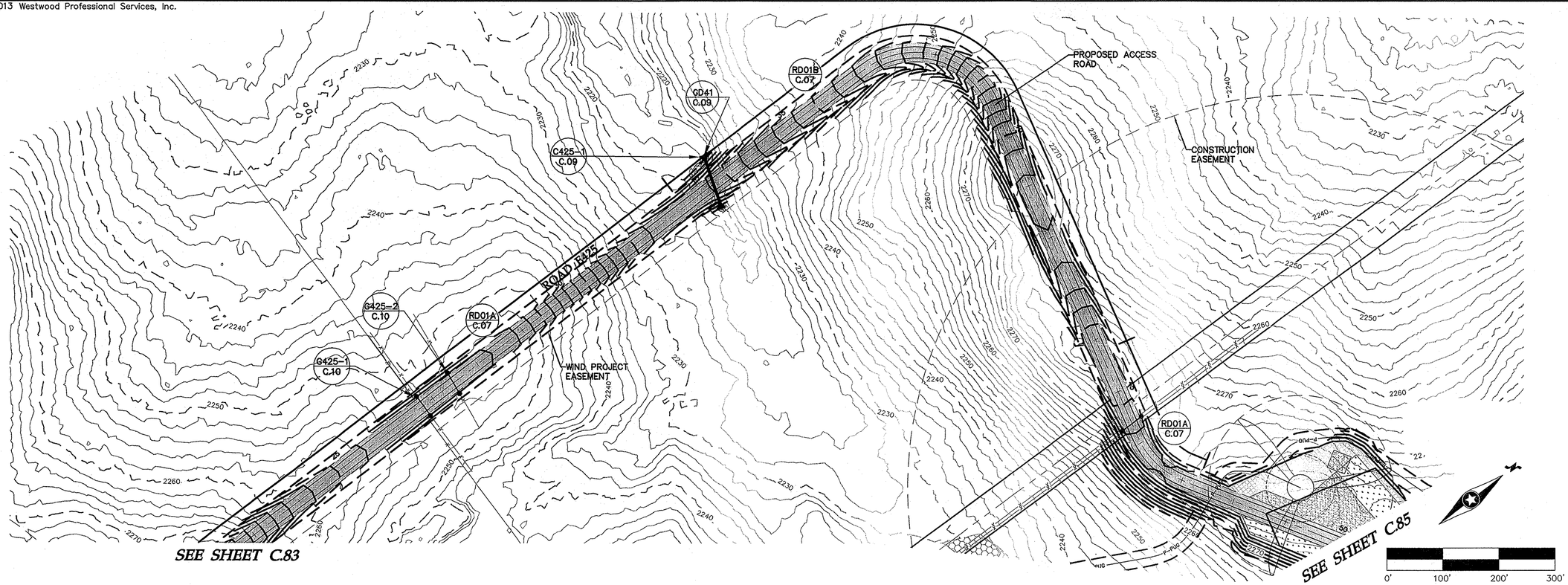
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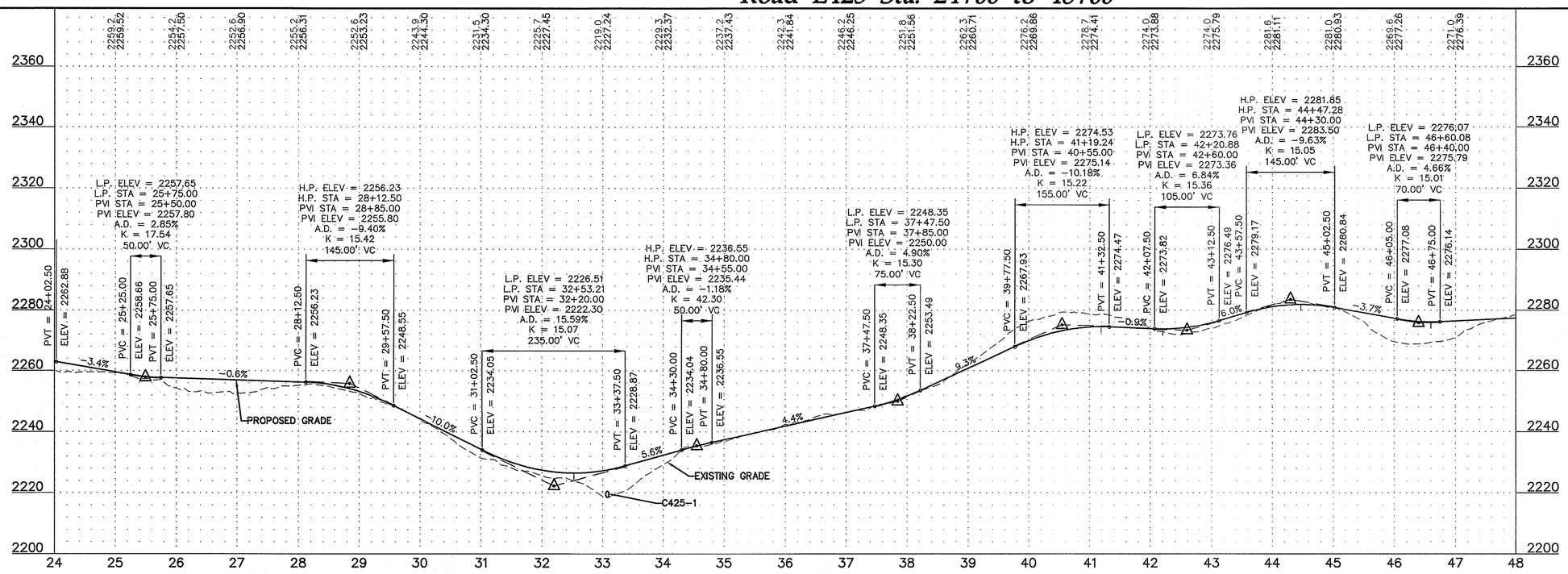
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WILLIAM P. HOUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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Revisions:

#	DATE	DESCRIPTION

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 E425 Sta. 24+00 to 48+00

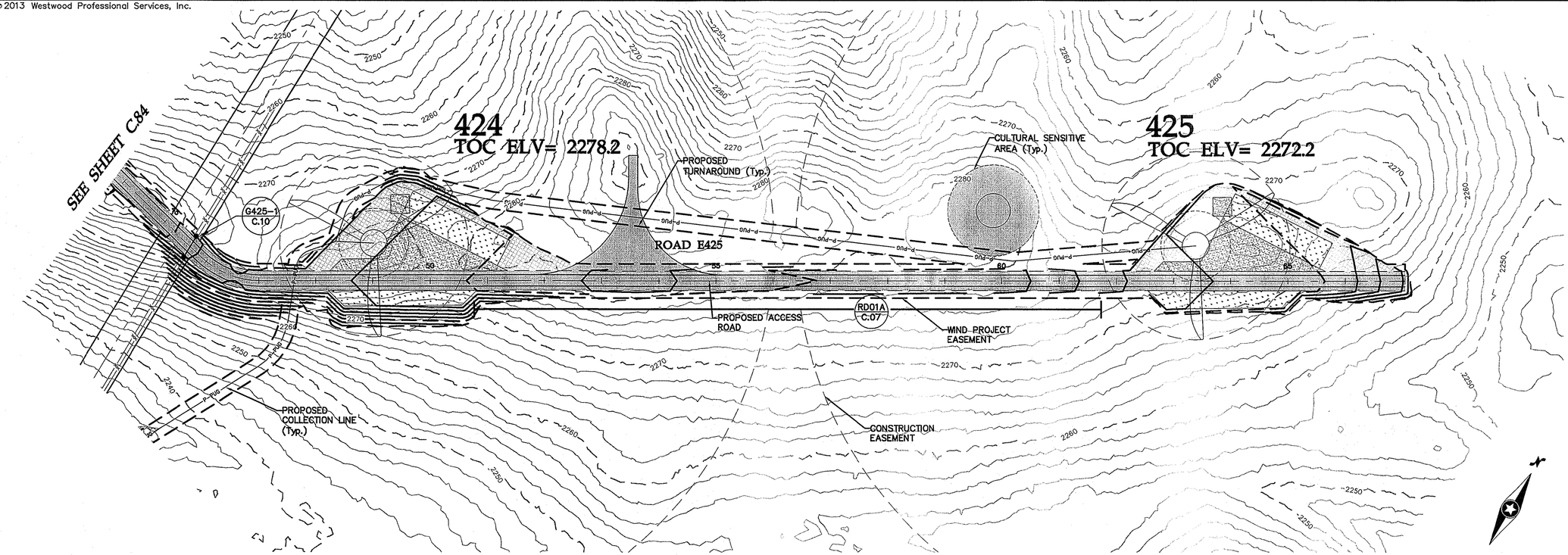
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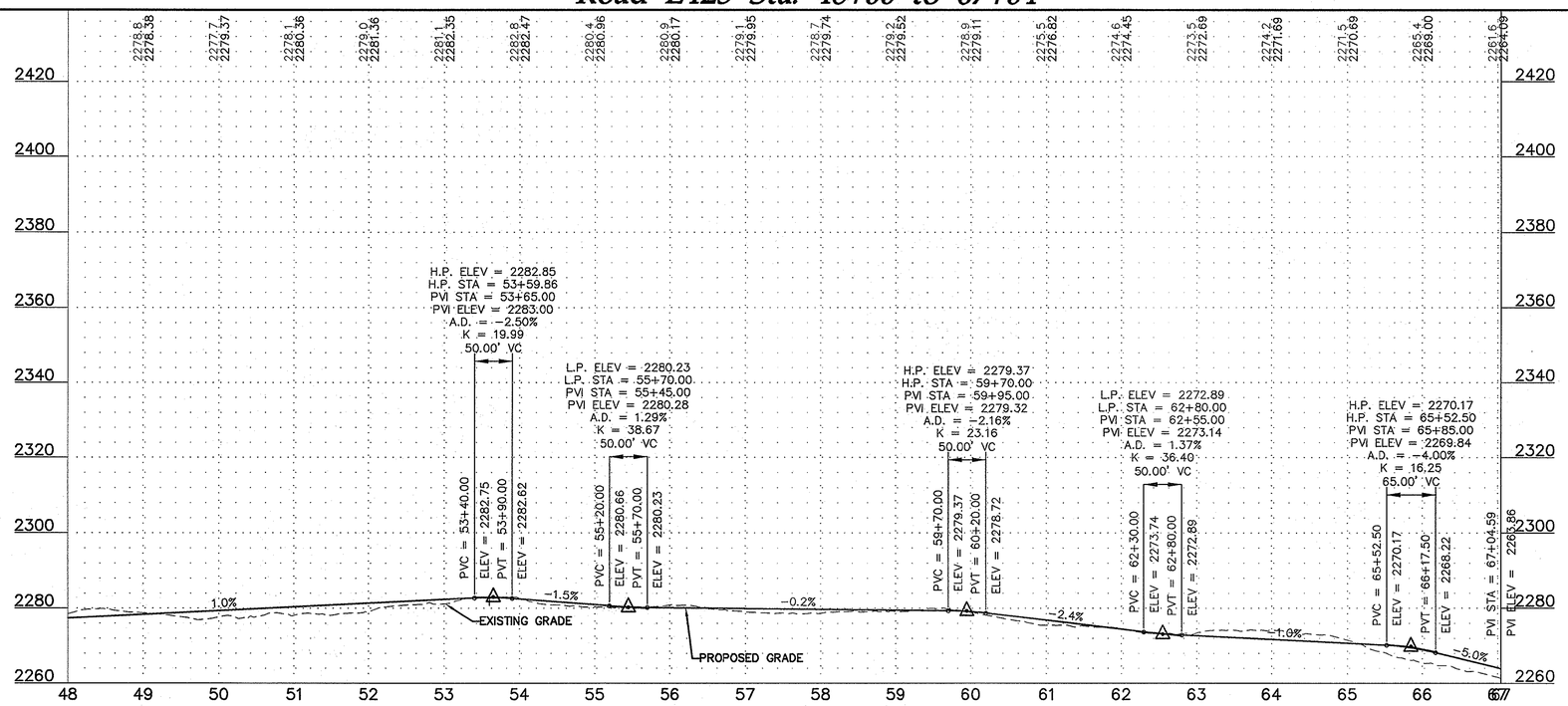
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NORTH DAKOTA

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Revisions:

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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 E425 Sta. 48+00 to 67+04

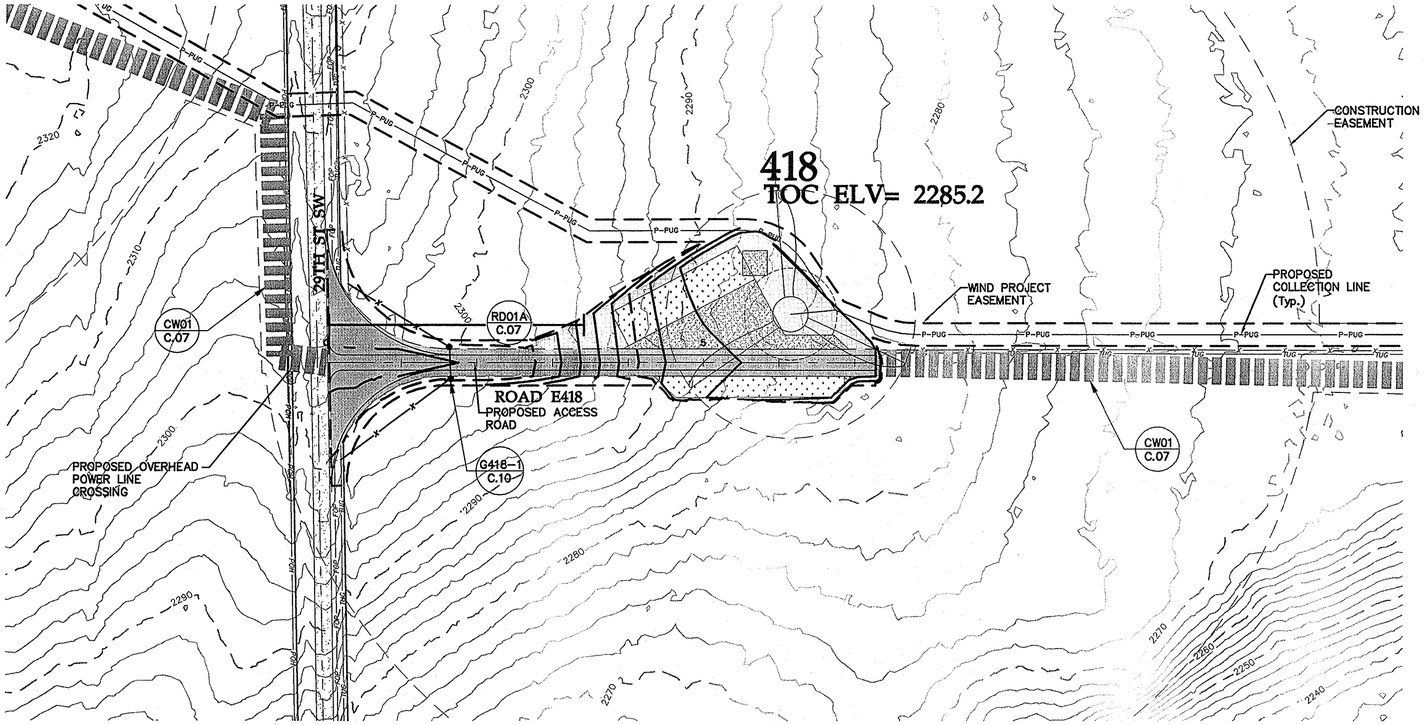
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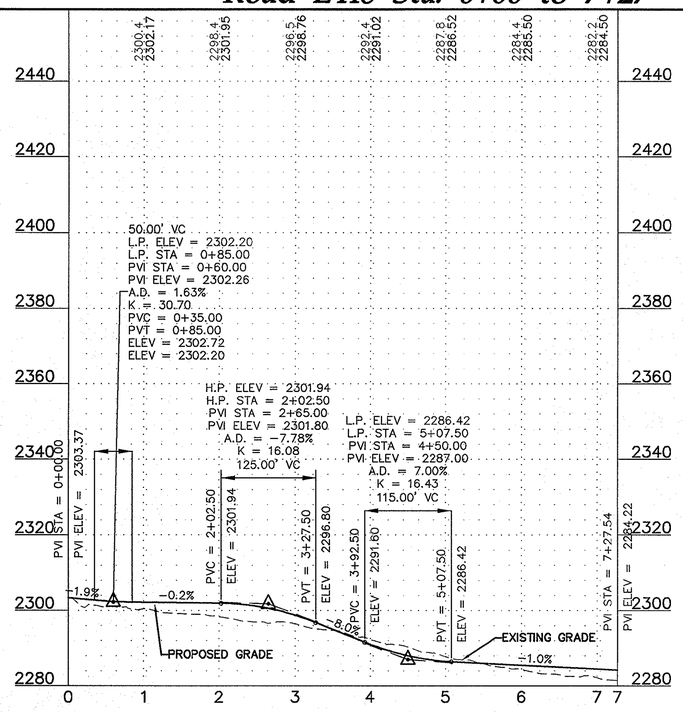
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0' 100' 200' 300'

Road E418 Sta. 0+00 to 7+27



20' 0 10' 20'

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PE-8310
DATE 8/9/13
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
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Revisions:

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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 E418 Sta. 0+00 to 7+27

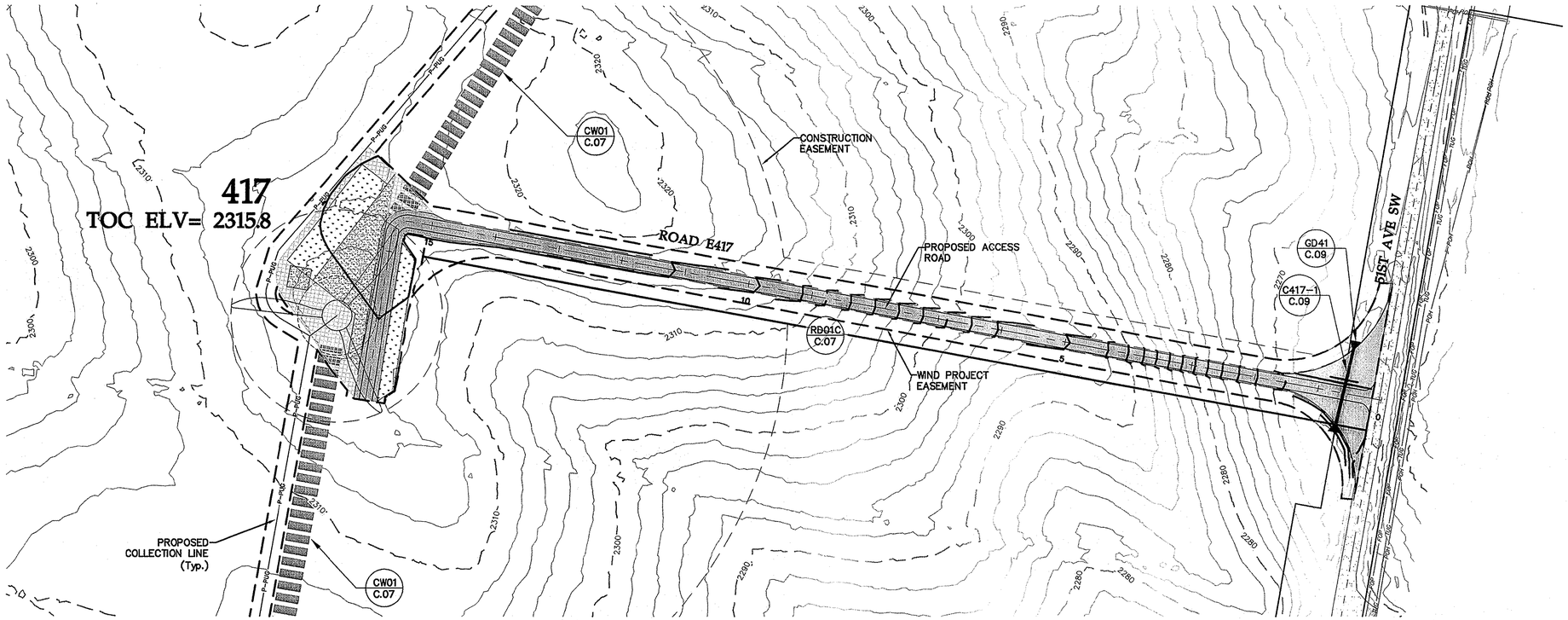
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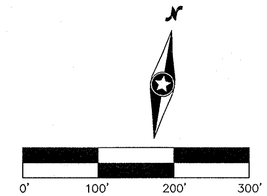
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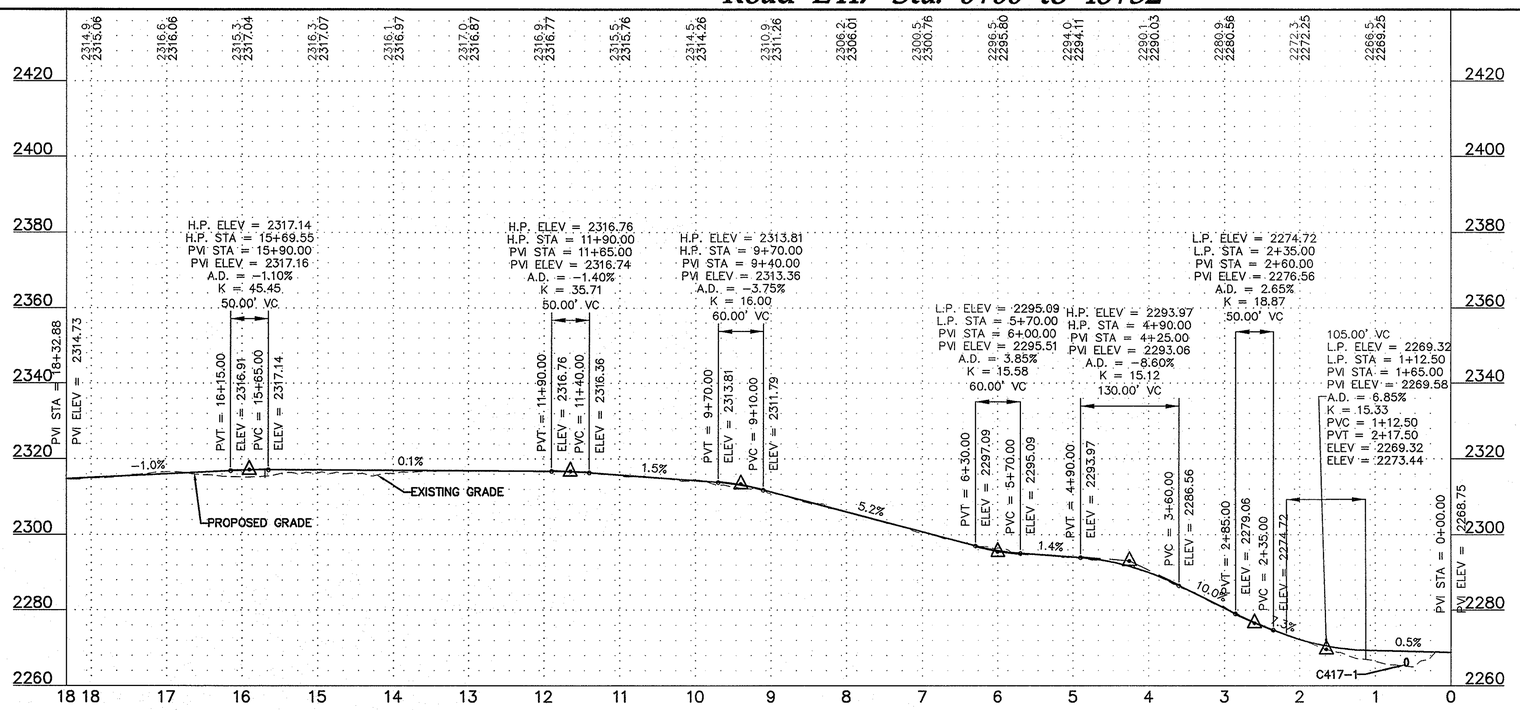
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

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 E417 Sta. 0+00 to 18+32

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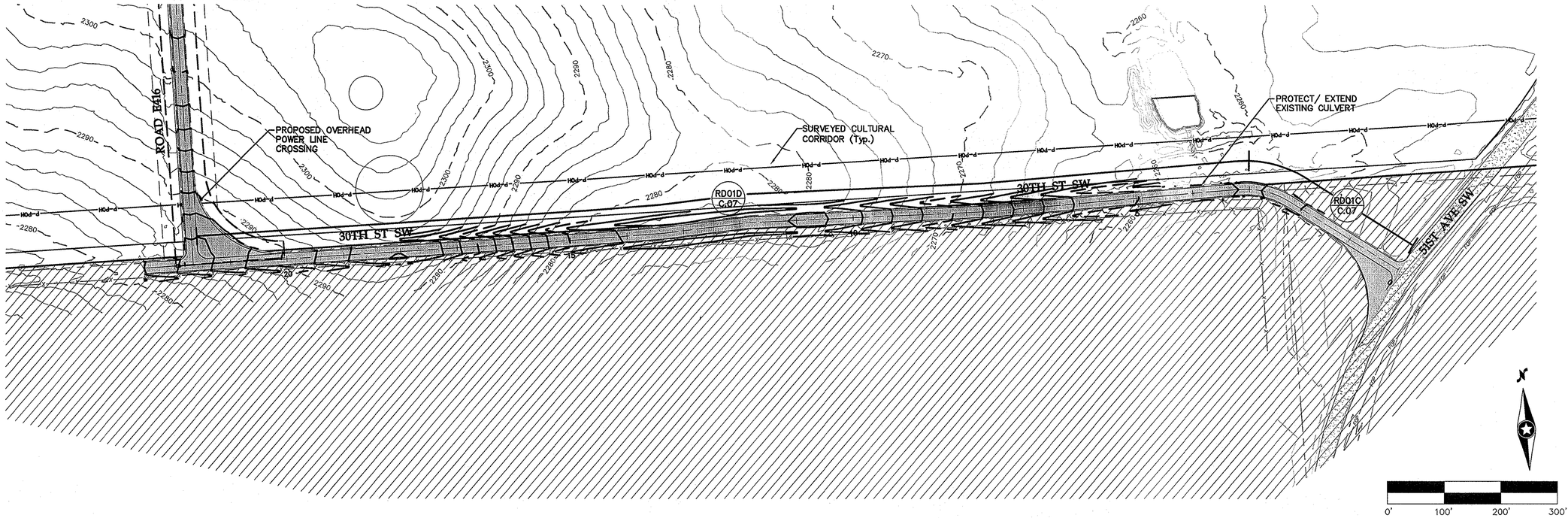
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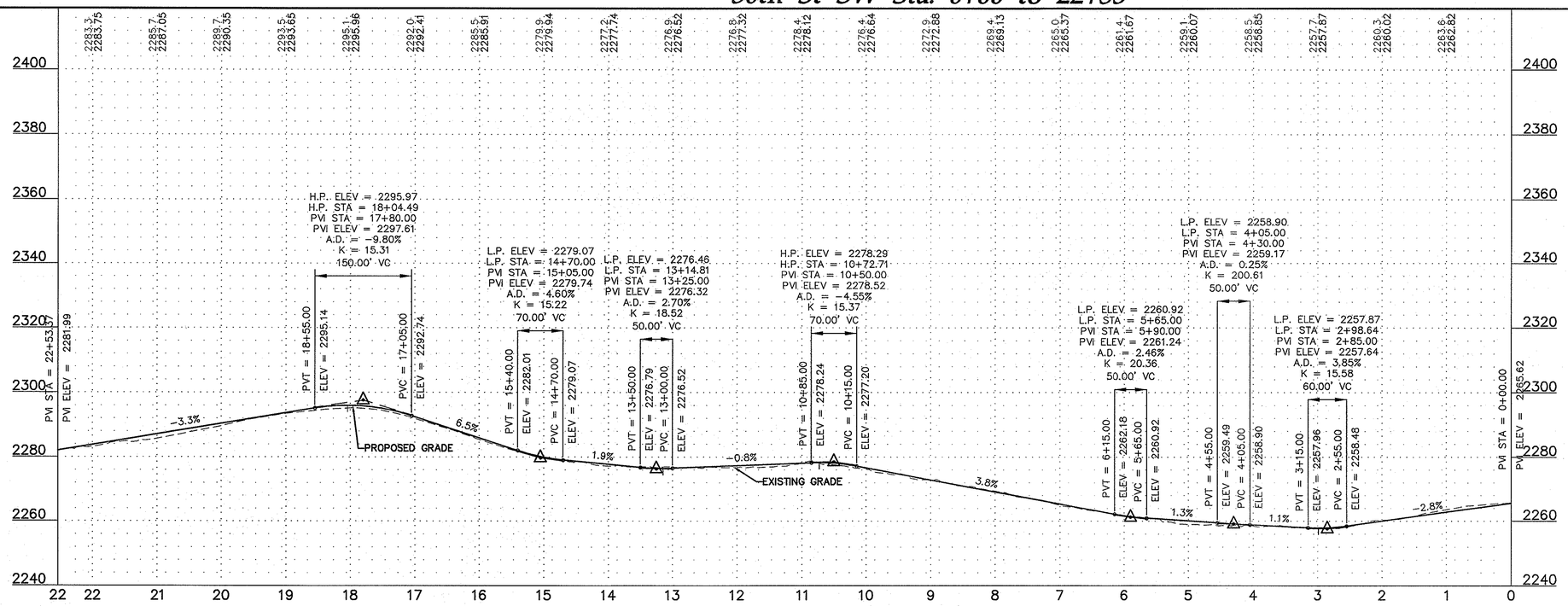
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SEE SHEET C.89



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



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WILLIAM M. HILSTON
PE-8310
DATE 12/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- TURBINE LOCATION
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Bison 4 Wind Project

Oliver County, North Dakota

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

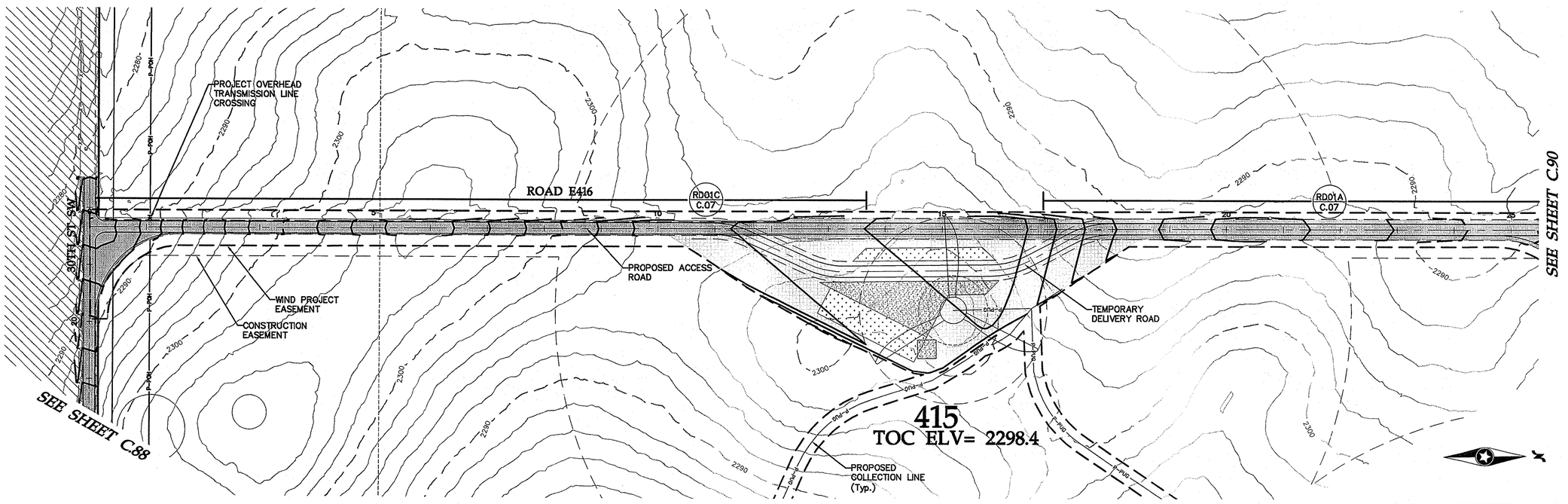
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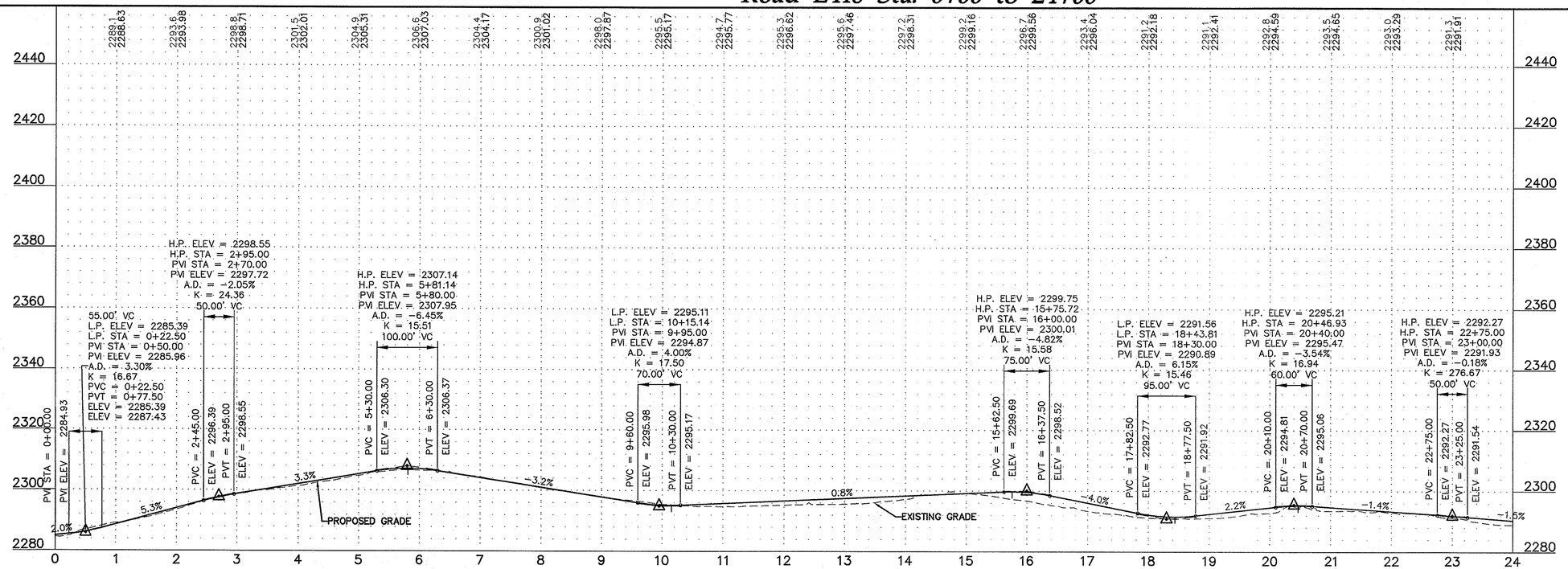
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WILLIAM P. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

Designed:	MPG
Checked:	ADC
Drawn:	MPG
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Revisions:

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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 E416 Sta. 0+00 to 24+00

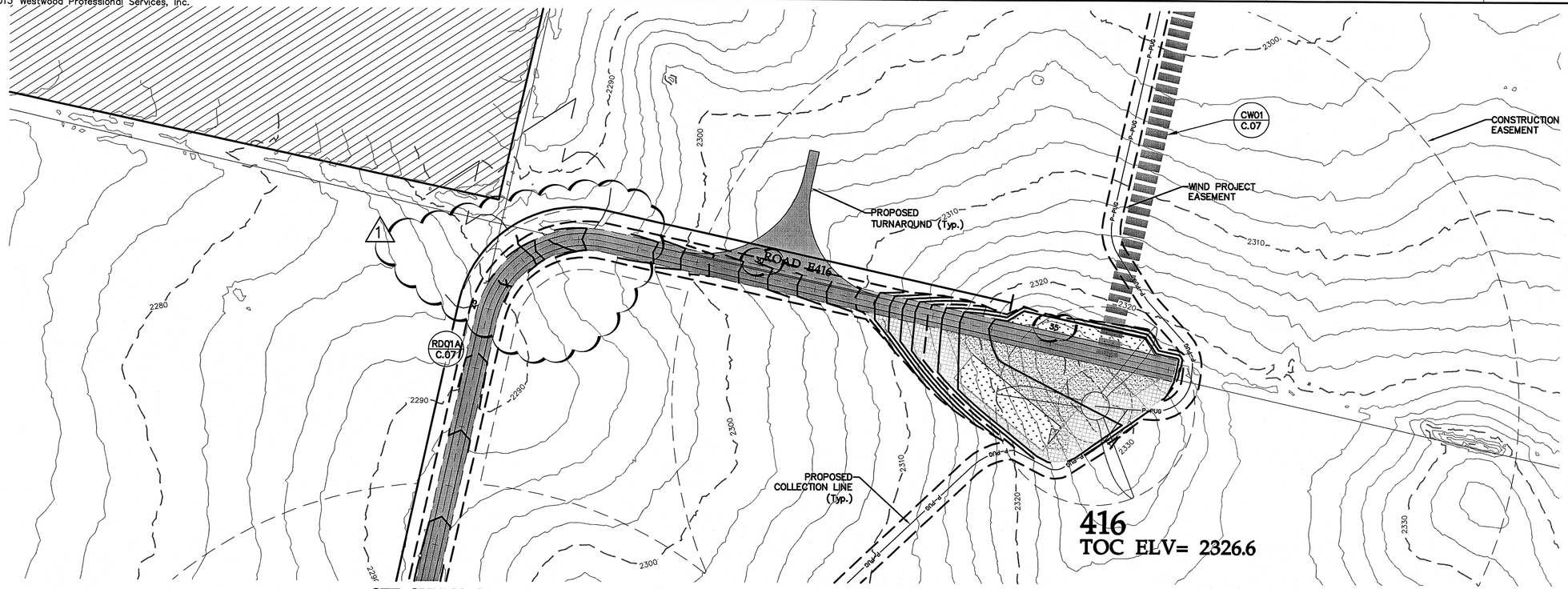
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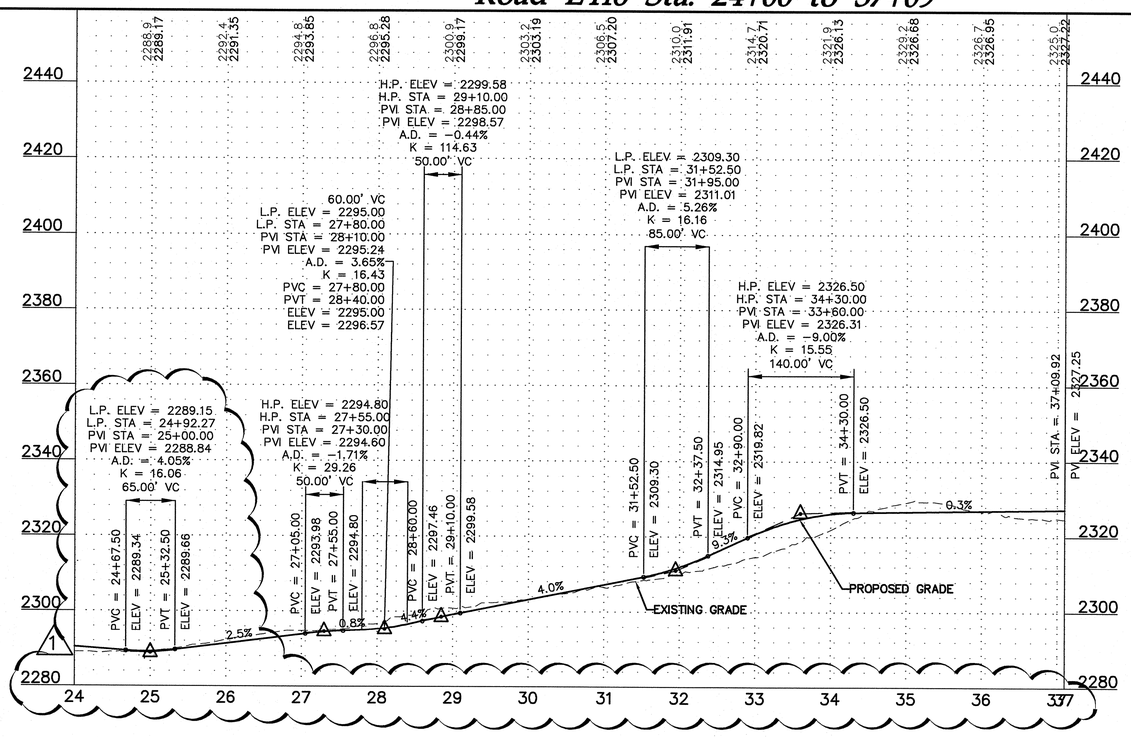
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REGISTERED PROFESSIONAL ENGINEER
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PE-8310
DATE 9/4/13
NORTH DAKOTA

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30 West Superior Street
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20' 0 10' 20'

Bison 4 Wind Project

Oliver County, North Dakota

Road E416 Sta. 24+00 to 37+09

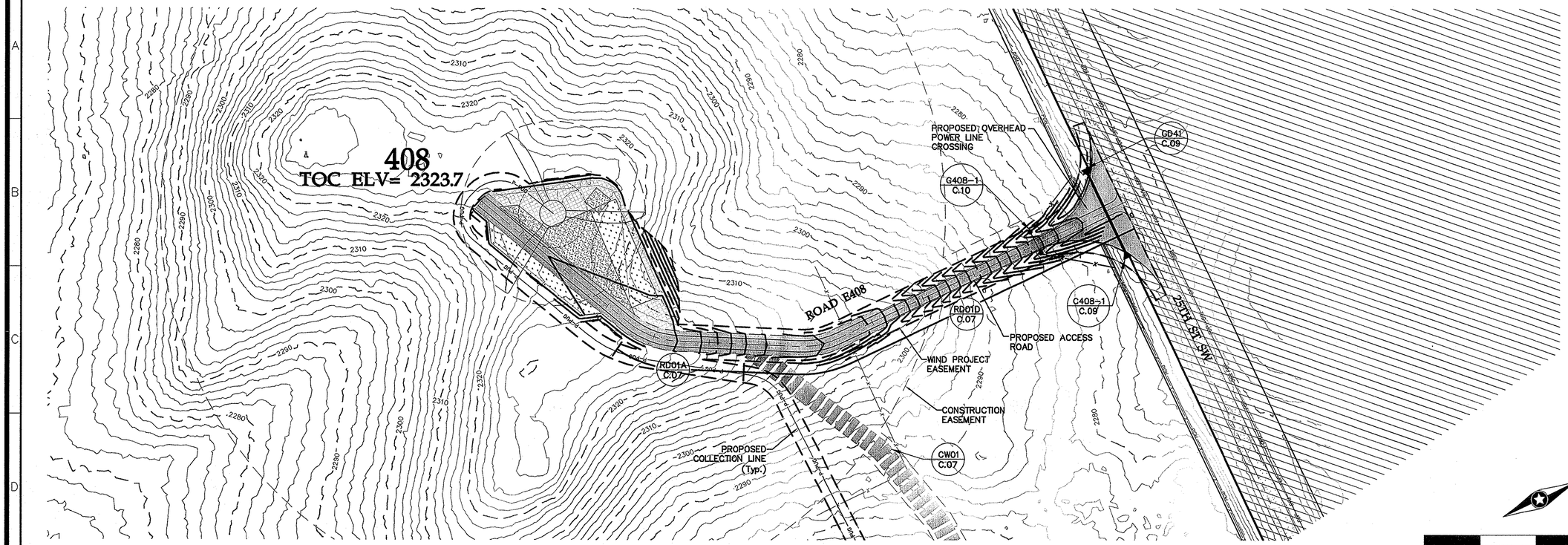
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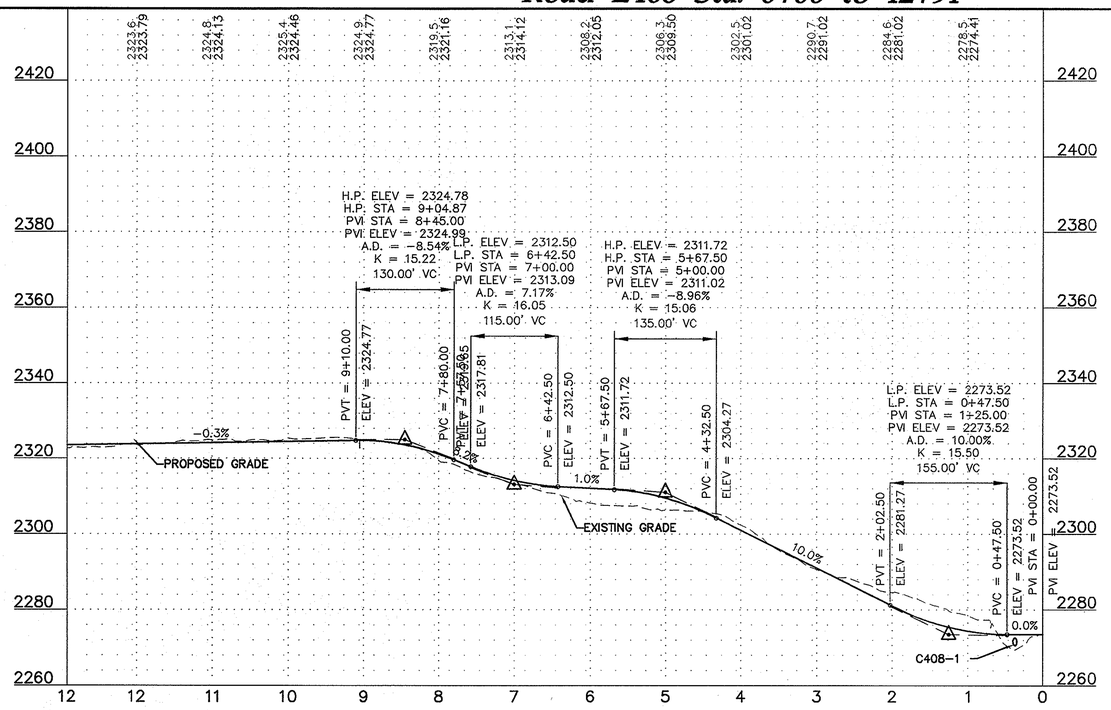
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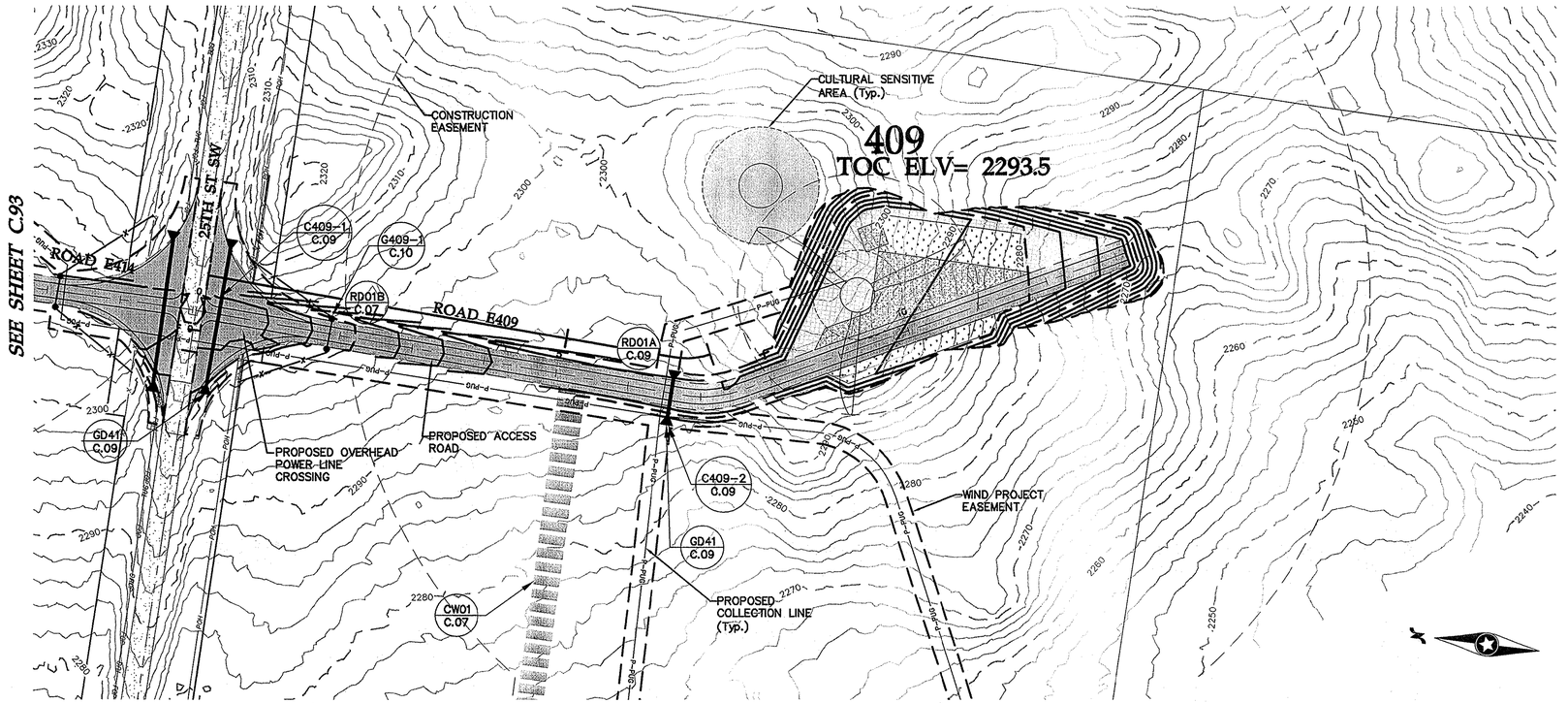
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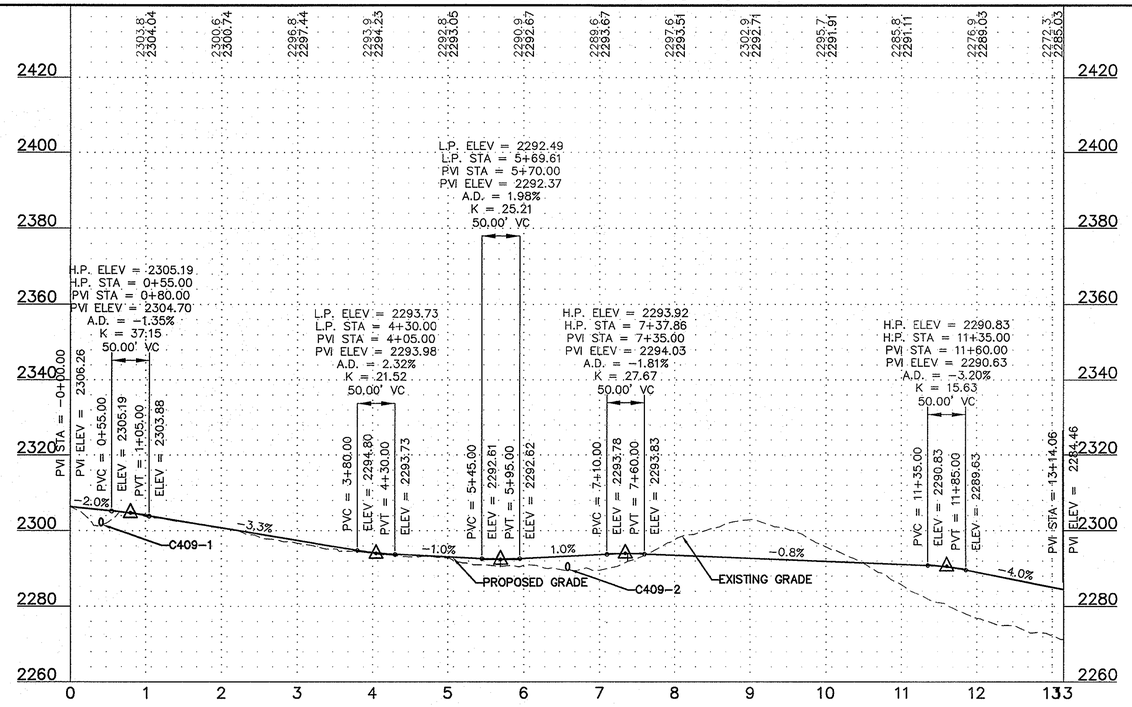
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM M. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- TURBINE LOCATION
- T-XX TURBINE NUMBER
- PROPOSED ACCESS ROADS
- 3000 PROPOSED 10' CONTOURS
- PROPOSED 2' CONTOURS
- P-POH PROPOSED OVERHEAD POWER
- PROPOSED OVERHEAD RIGHT OF WAY
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- EXISTING STREAM
- EXISTING WETLAND
- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

Road E409 Sta. 0+00 to 13+14

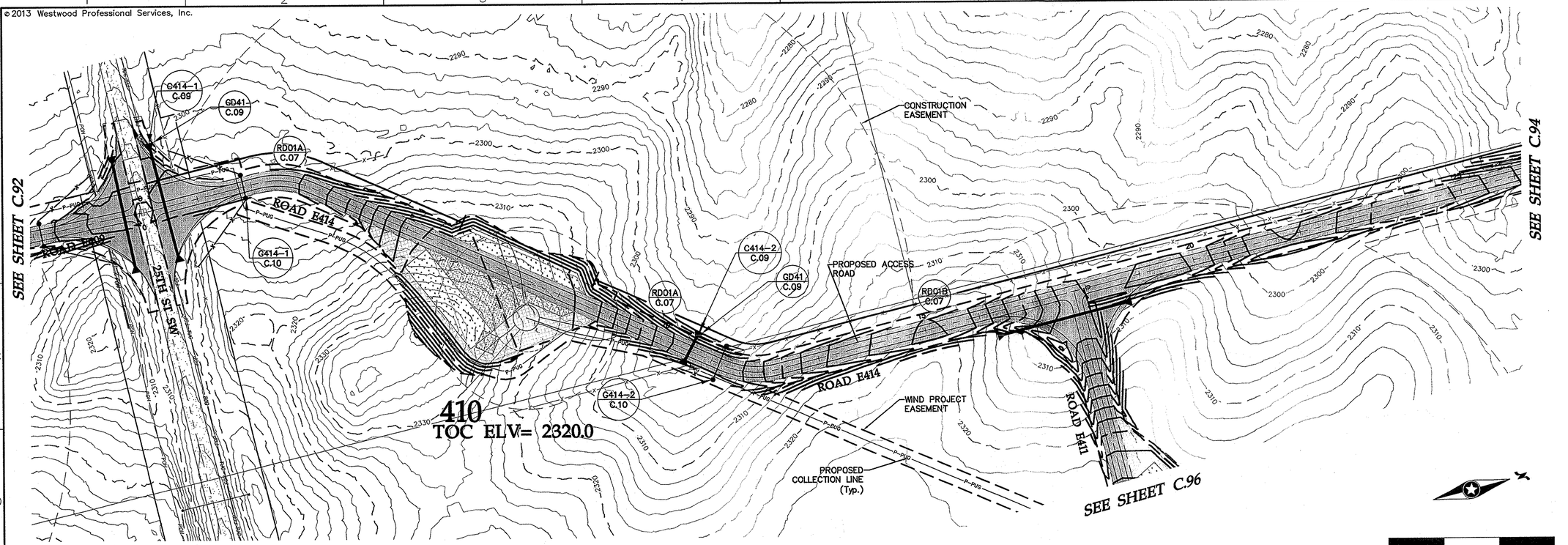
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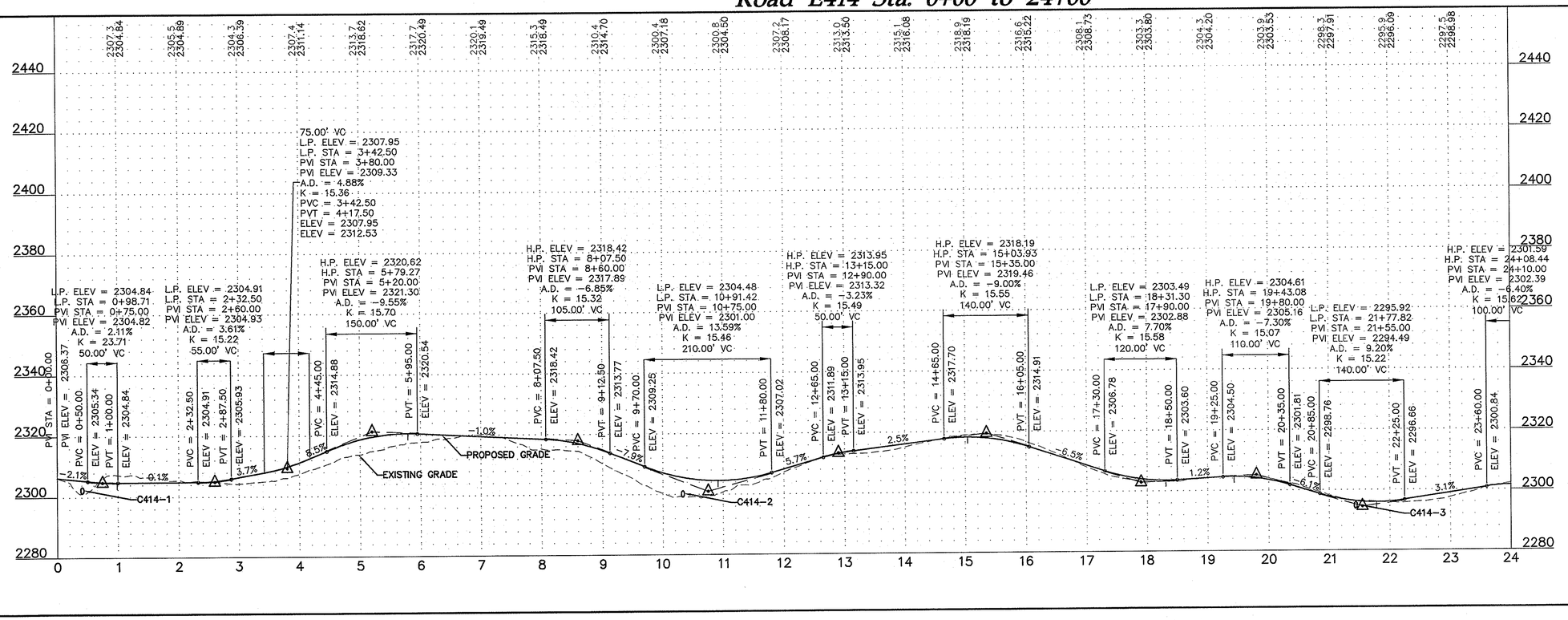
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30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

Road E414 Sta. 0+00 to 24+00

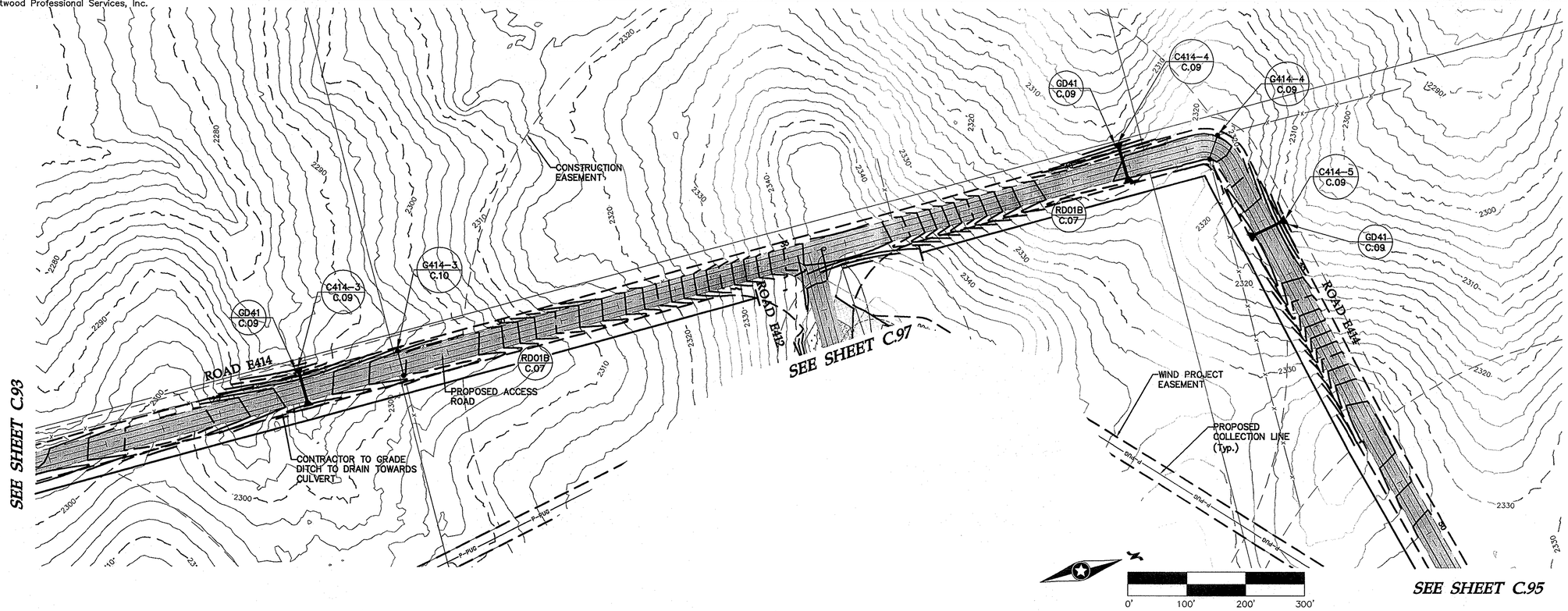
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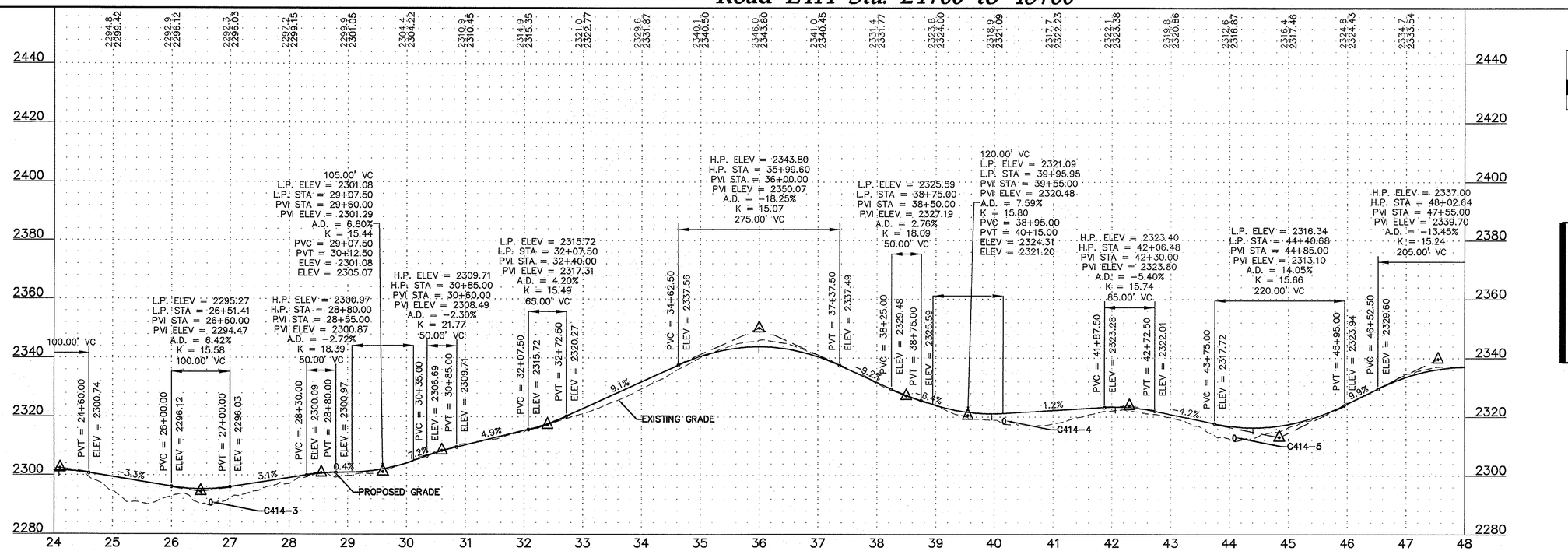
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Bison 4 Wind Project

Oliver County, North Dakota

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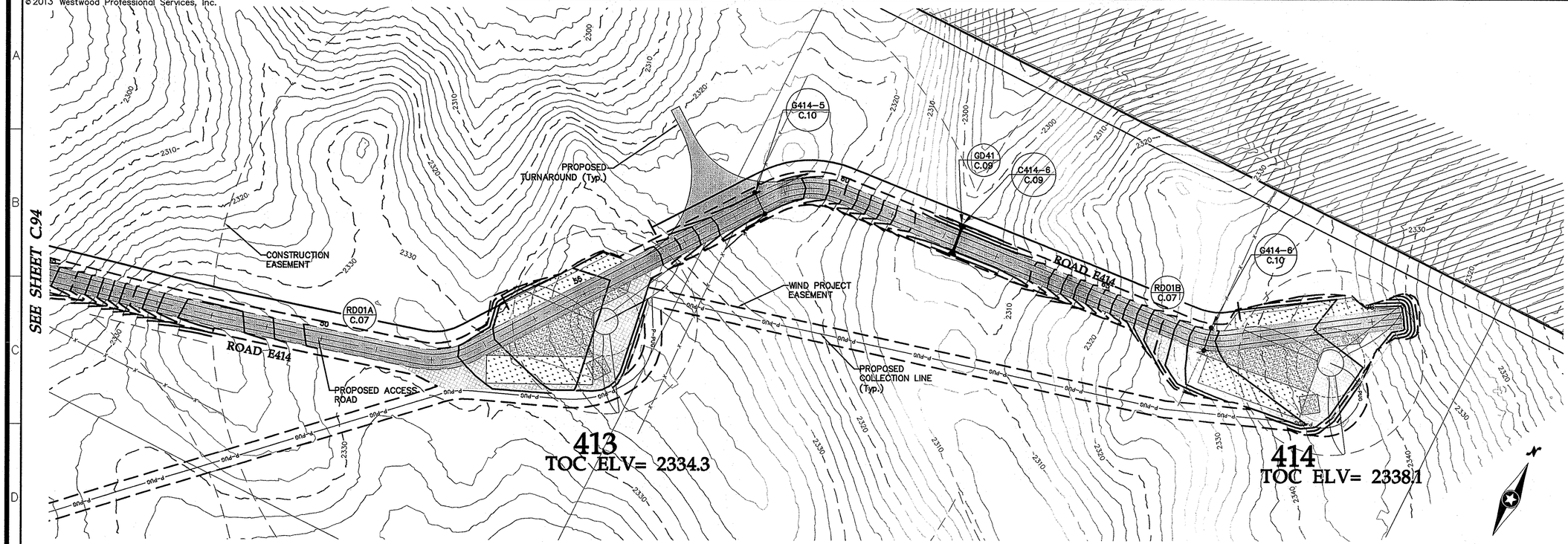
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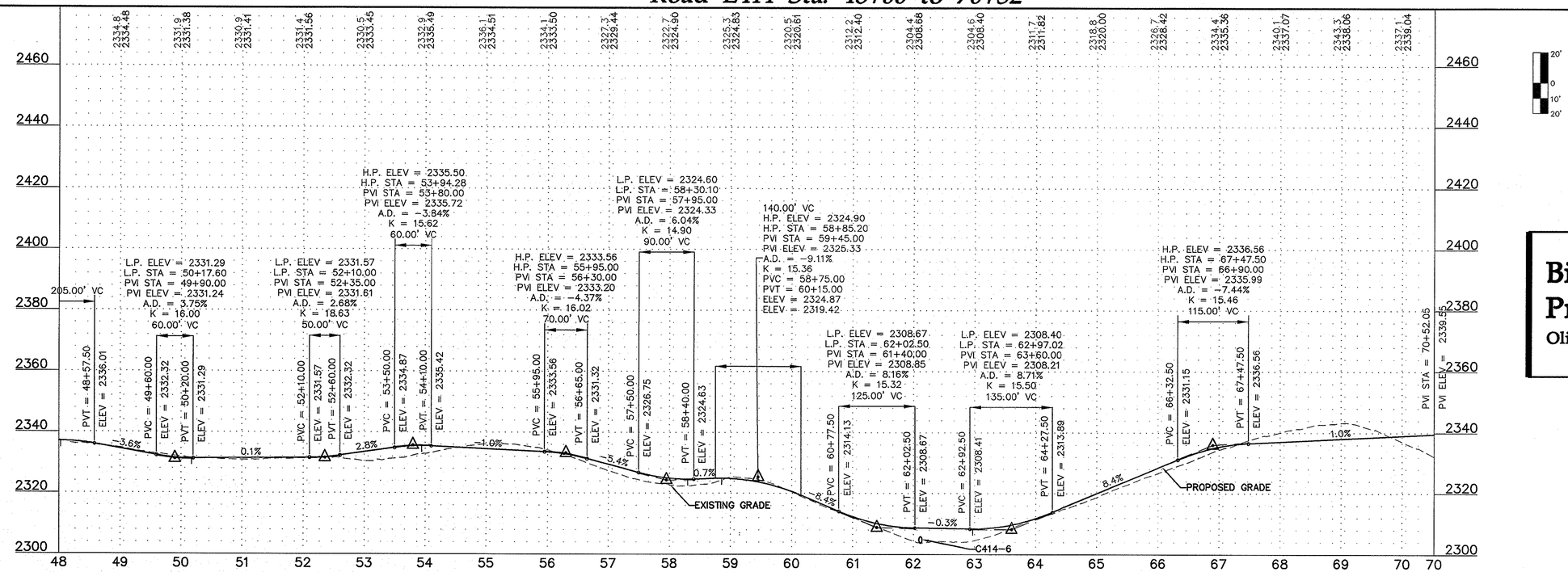
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WILLIAM P. HUSTON
PE-8310
DATE 5/1/13
NORTH DAKOTA

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Drawn:	MPG
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Revisions:

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Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

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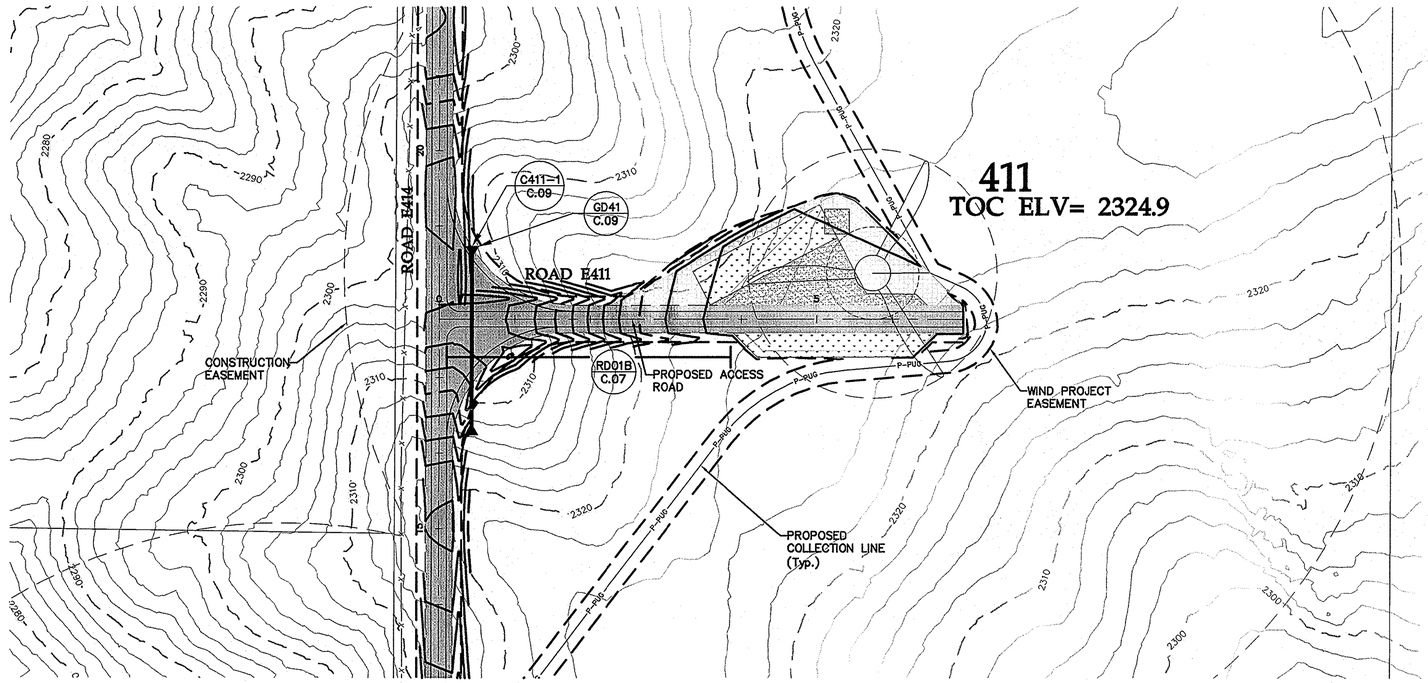
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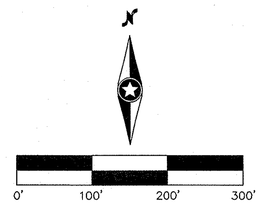
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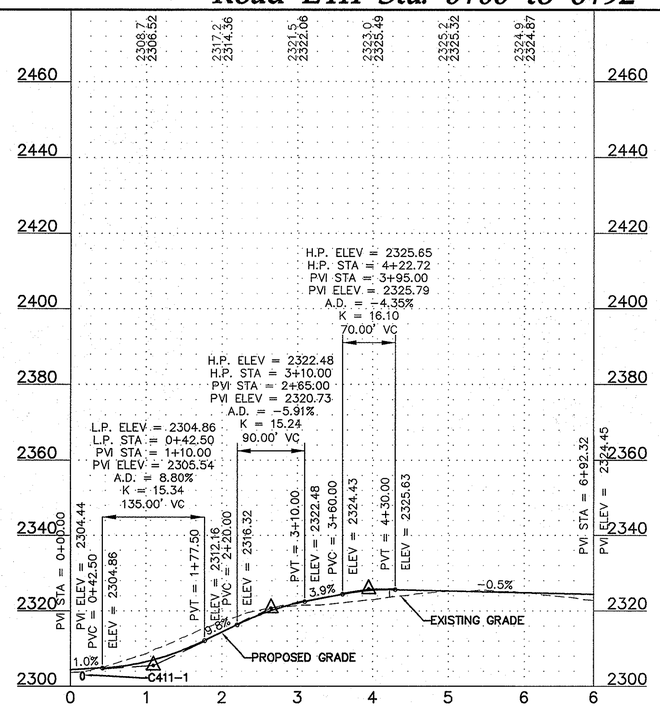
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
.	.	.

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 E411 Sta. 0+00 to 6+92

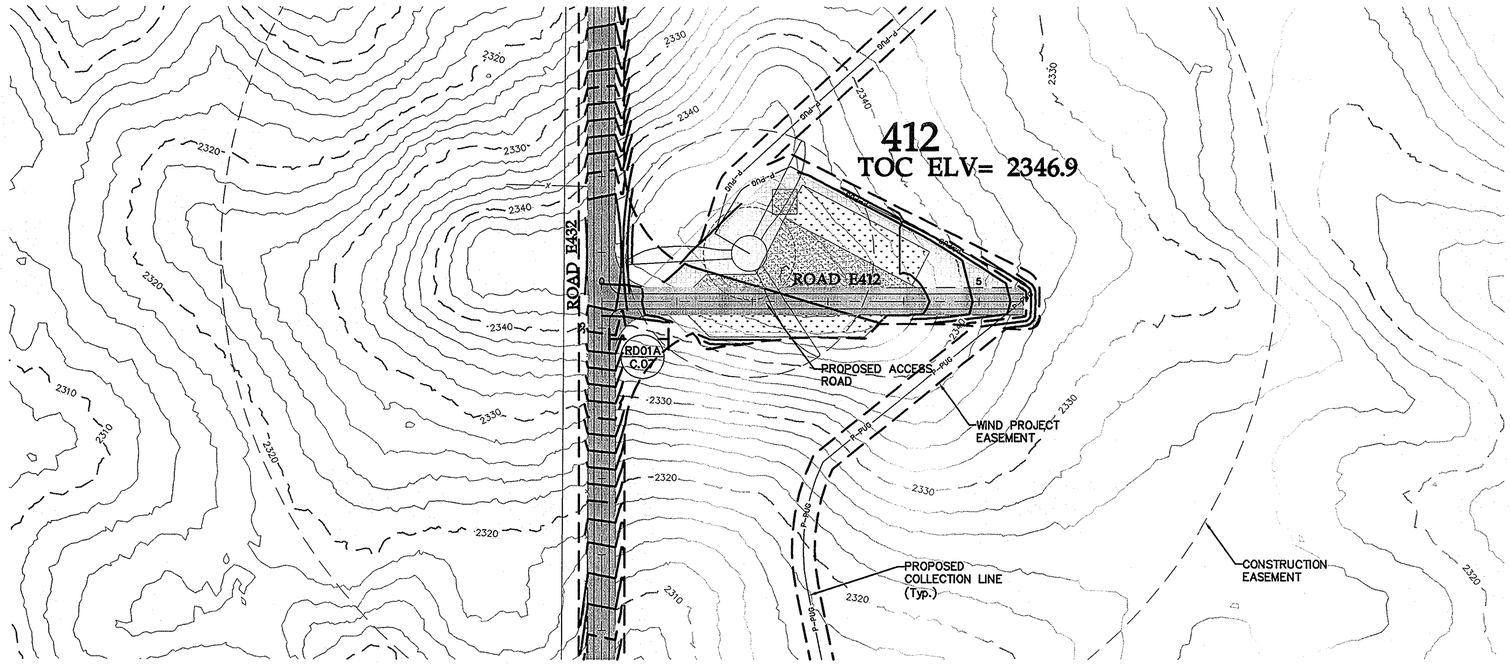
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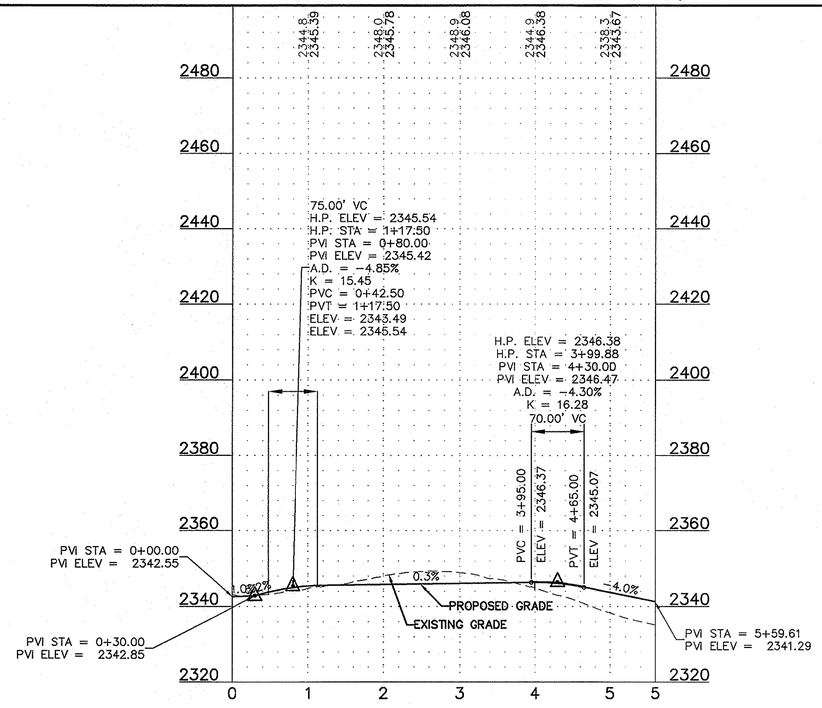
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Road E412 Sta. 0+00 to 5+59





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REGISTERED PROFESSIONAL ENGINEER
WILLIAM R. HUSTON
PE-8310
DATE 8/8/13
NORTH DAKOTA

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

Revisions:

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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 E412 Sta. 0+00 to 5+59

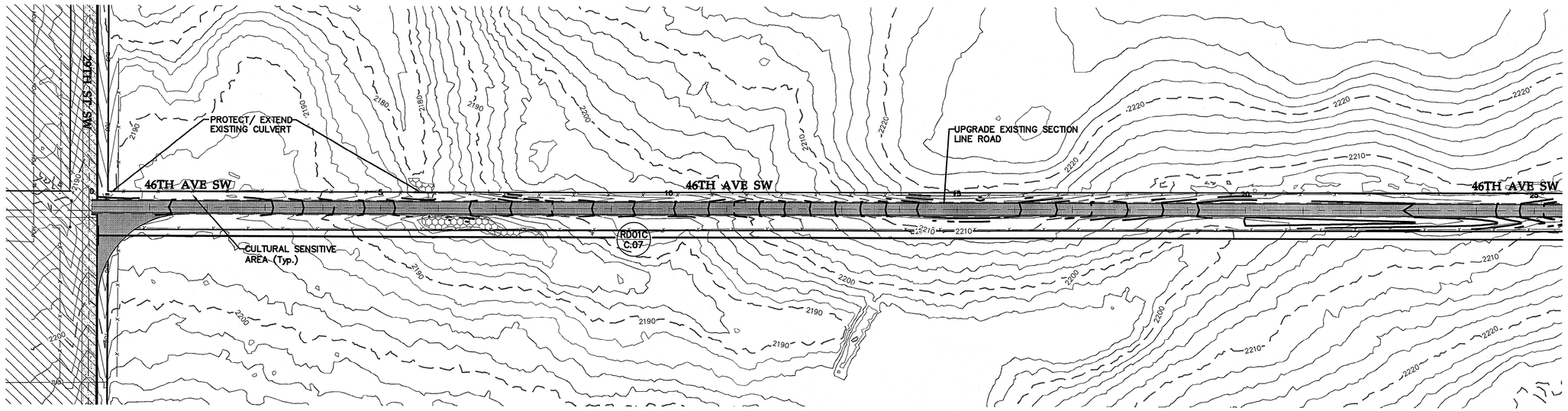
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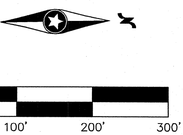
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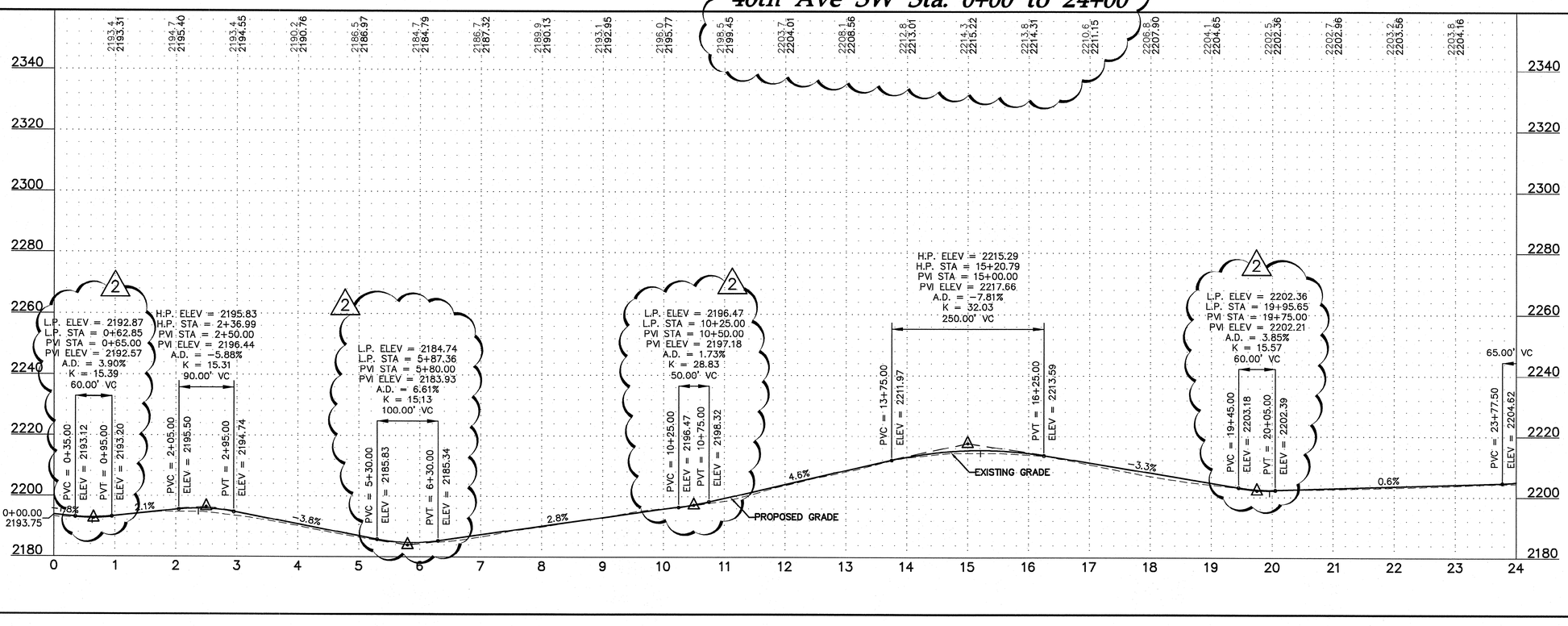
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PE-8310
DATE 10/9/13
NORTH DAKOTA

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2	10/09/13	Owner Comments/Field Changes

Prepared for:

minnesota power
AN ALLETE COMPANY

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Bison 4 Wind Project

Oliver County, North Dakota

46th Ave SW Sta. 0+00 to 24+00

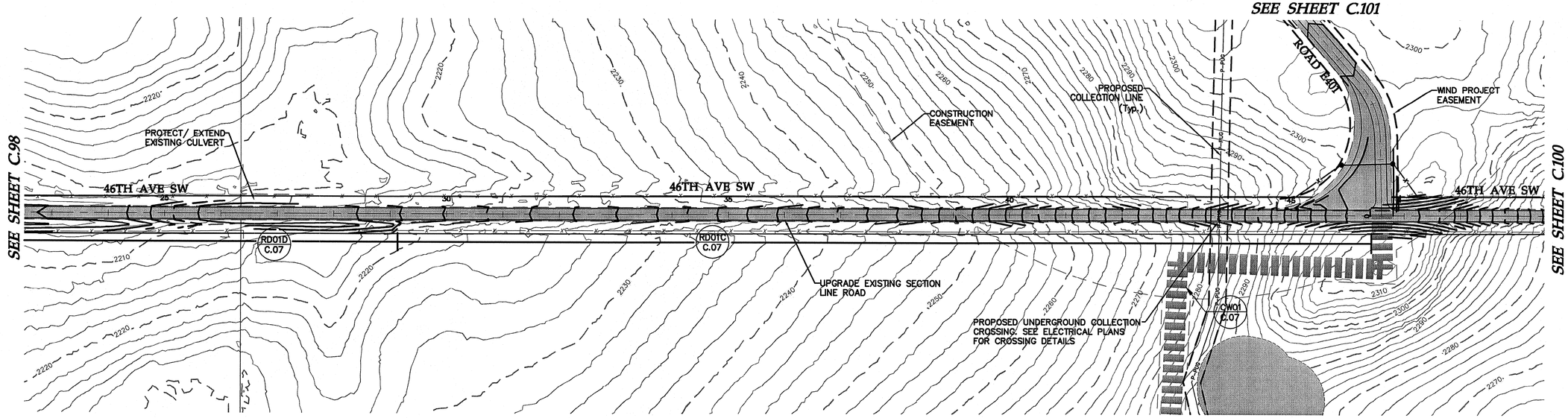
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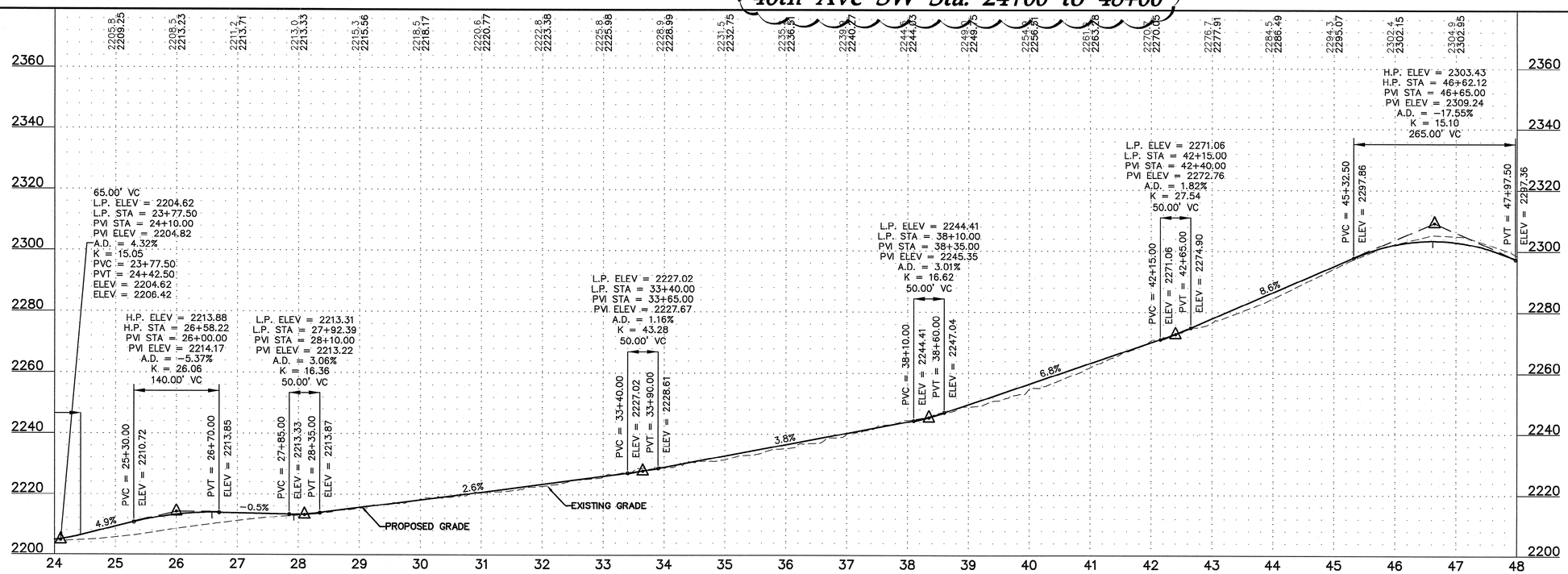
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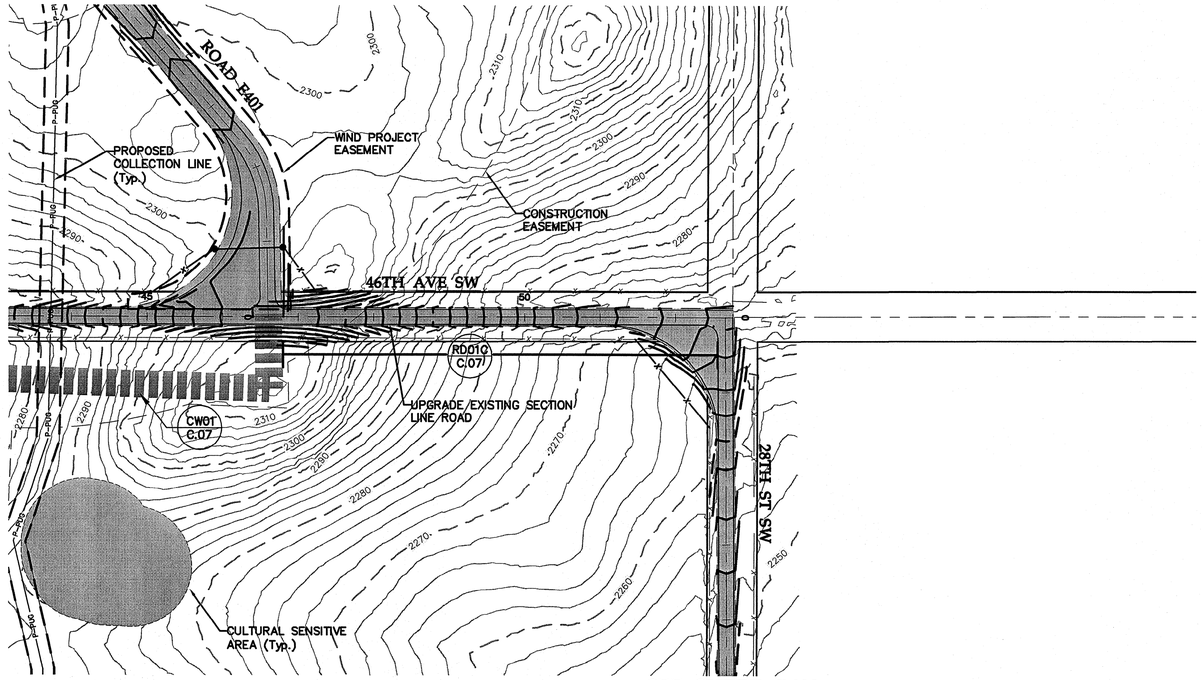
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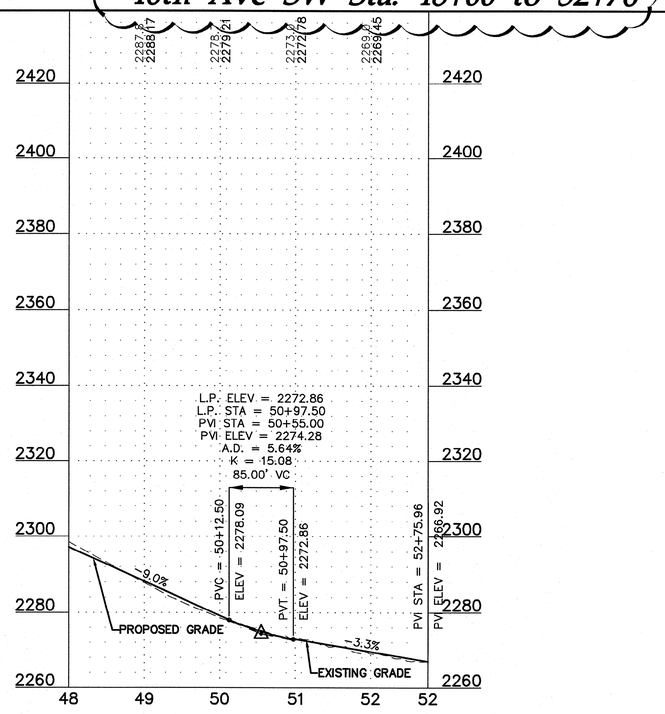
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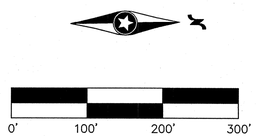
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2 46th Ave SW Sta. 48+00 to 52+76







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Bison 4 Wind Project

Oliver County, North Dakota

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

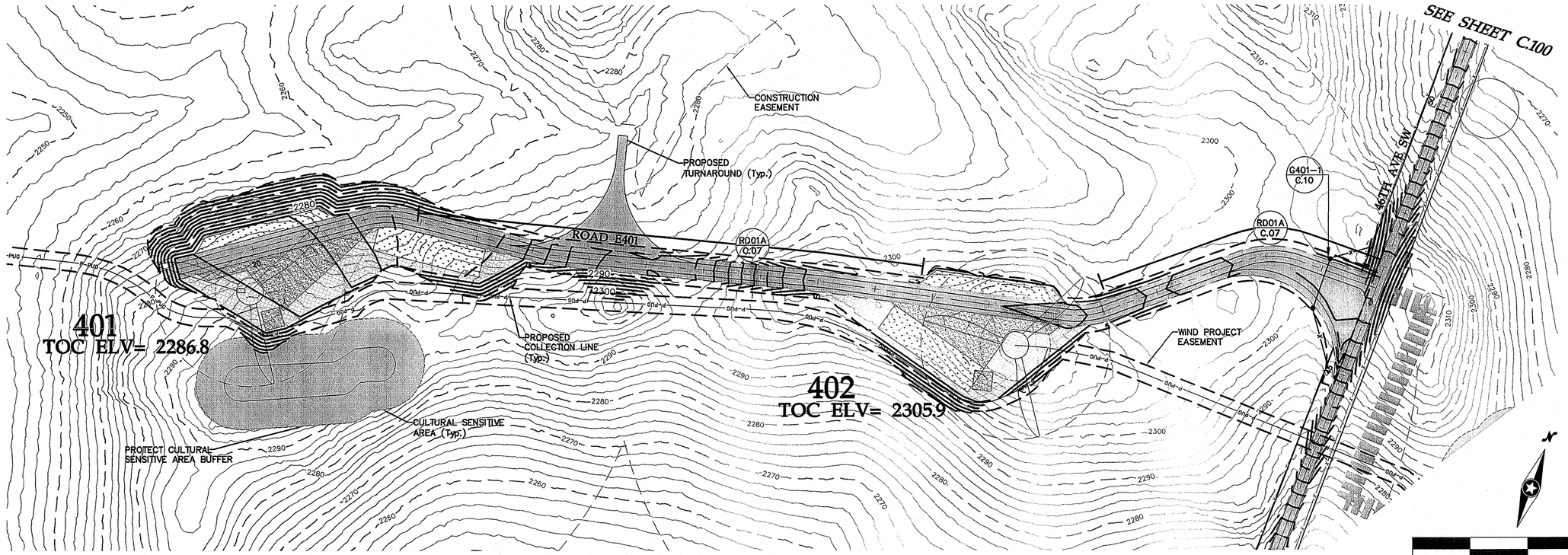
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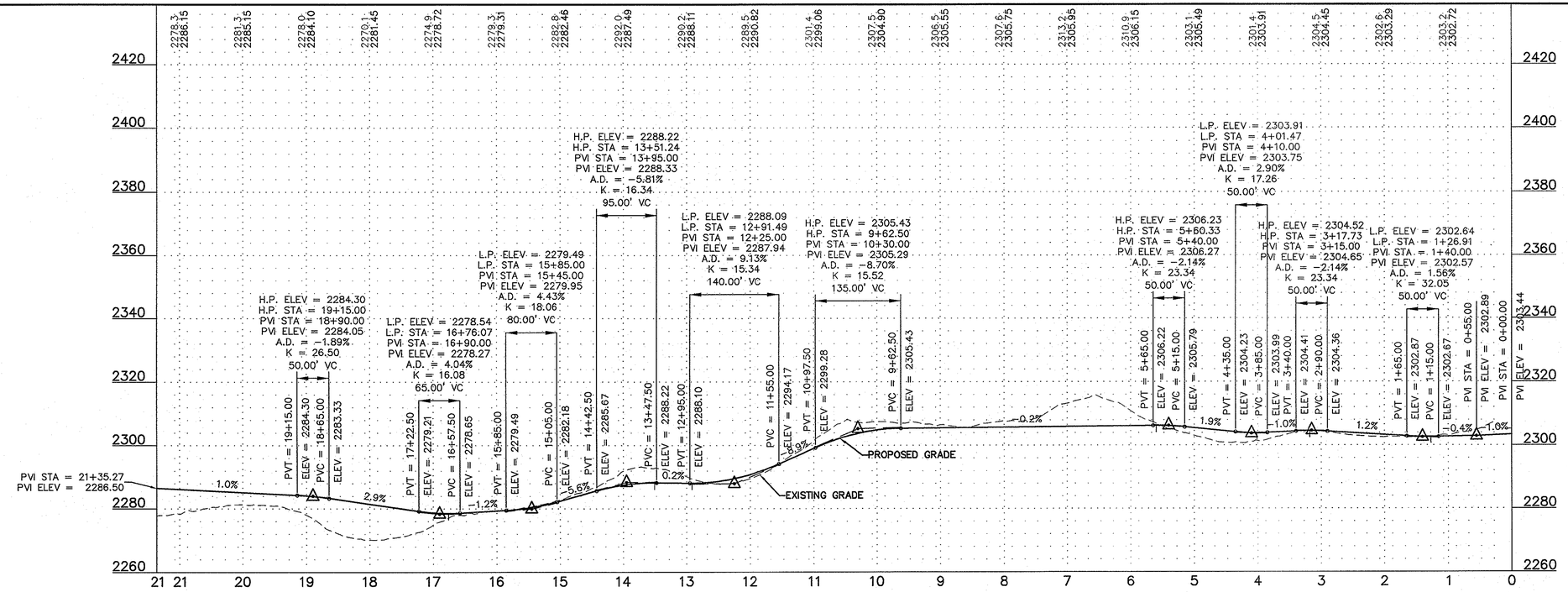
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 8/8/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
-	-	-

Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

LEGEND:

- TURBINE LOCATION
- T-XX — TURBINE NUMBER
- PROPOSED ACCESS ROADS
- 3000 — PROPOSED 10' CONTOURS
- PROPOSED 2' CONTOURS
- P-POH — PROPOSED OVERHEAD POWER
- PROPOSED OVERHEAD RIGHT OF WAY
- P-PUG — PROPOSED UNDERGROUND ELECTRICAL COLLECTION
- PROPOSED CRANE PATH
- PROPOSED CULVERT
- C432-1 — CULVERT ID
- PROPOSED FENCE
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- EXISTING WETLAND
- EXISTING WATER BODY

20' 0 10' 20'

Bison 4 Wind Project

Oliver County, North Dakota

Road E401 Sta. 0+00 to 21+35

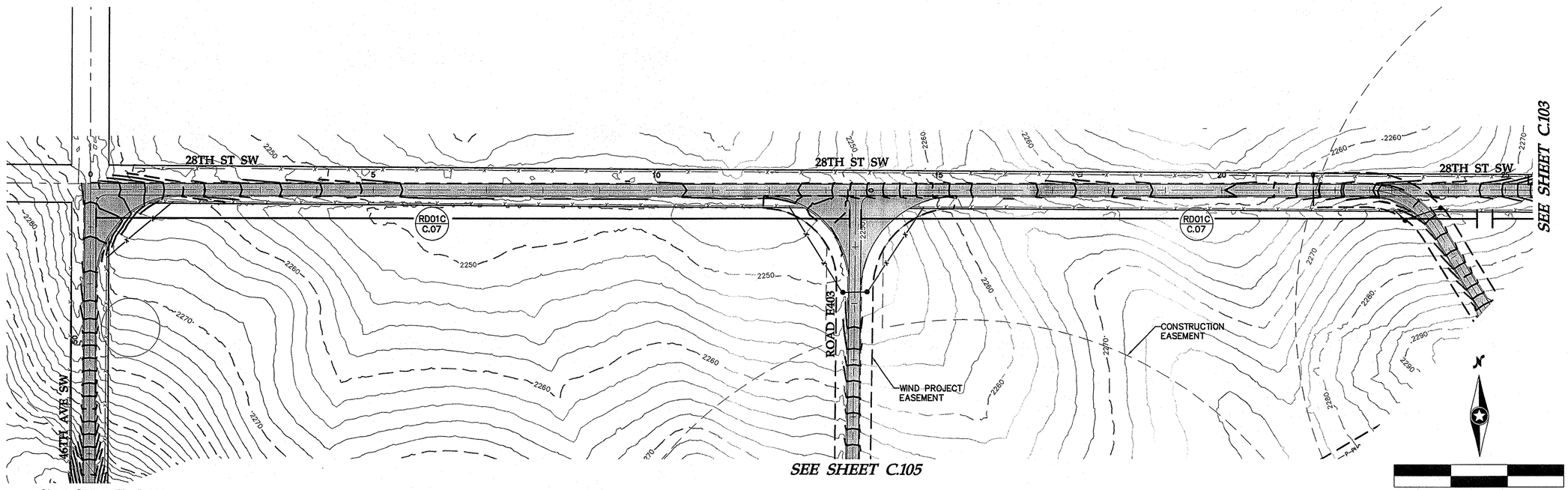
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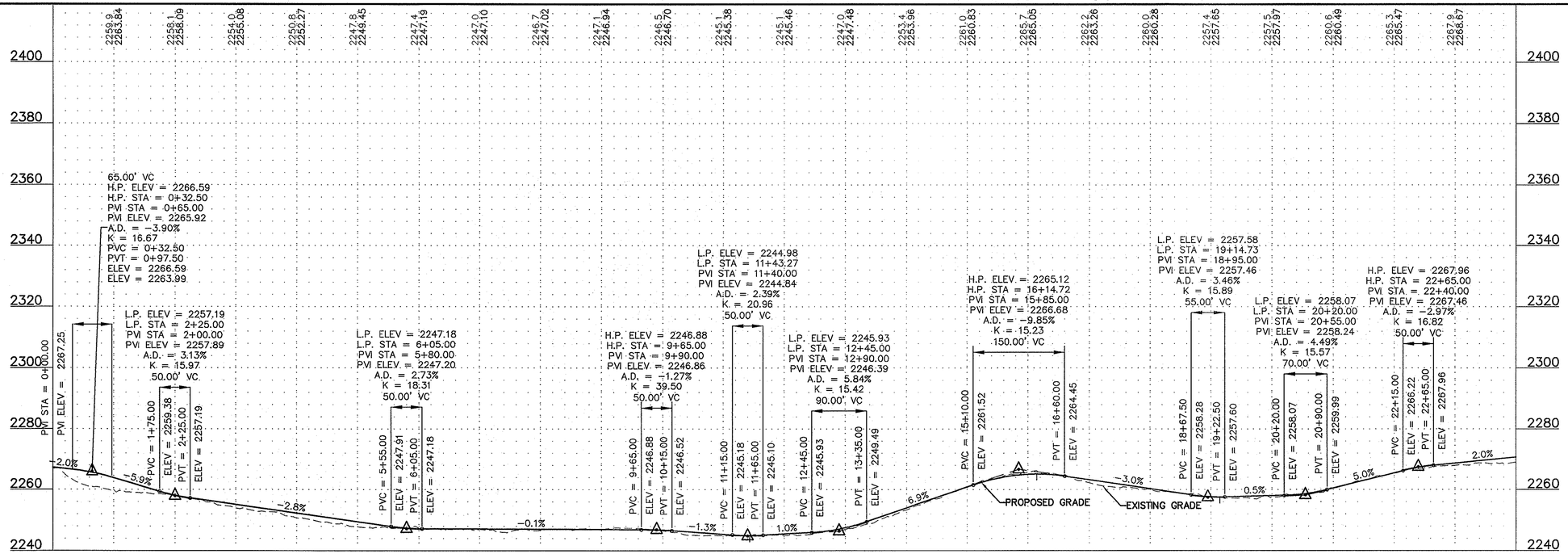
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Bison 4 Wind Project

Oliver County, North Dakota

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

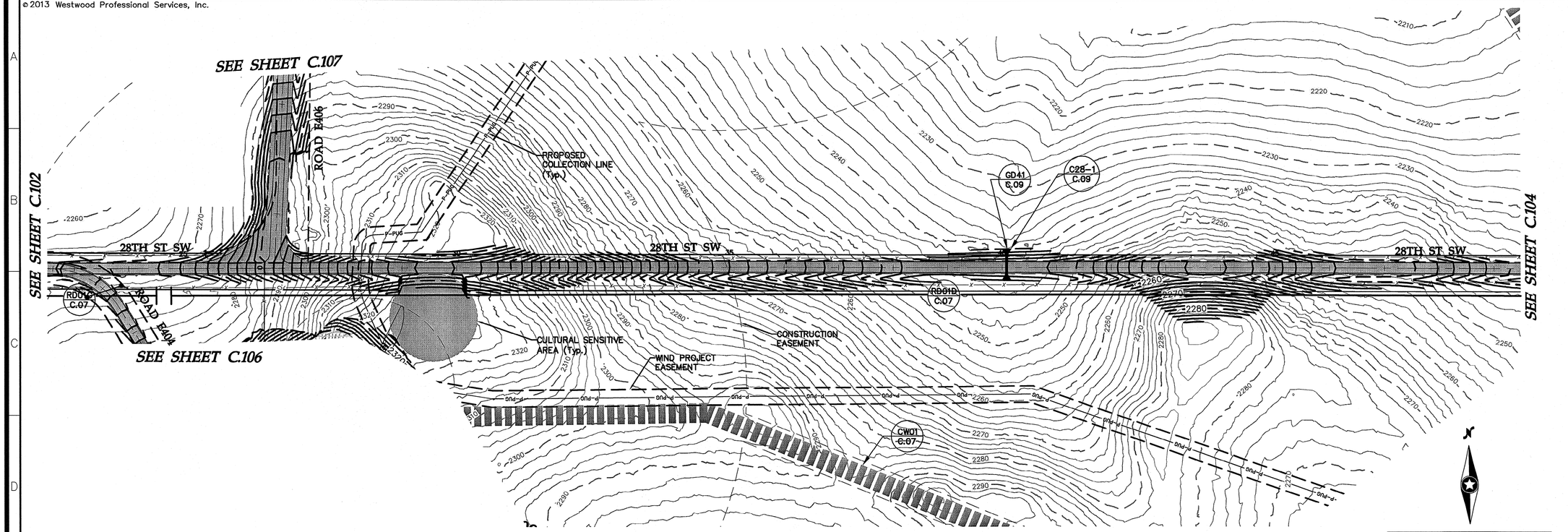
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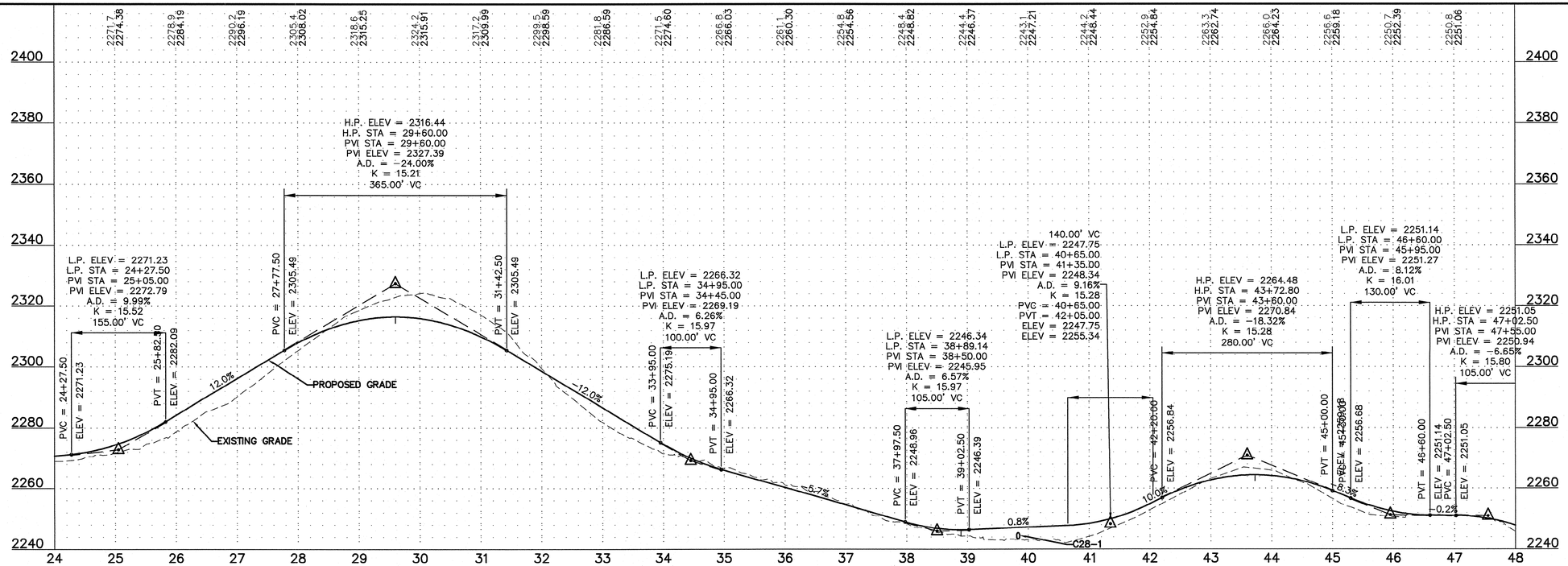
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2	10/09/13	Owner Comments/Field Changes

Prepared for:
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30 West Superior Street
Duluth, Minnesota 55802

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Bison 4 Wind Project

Oliver County, North Dakota

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

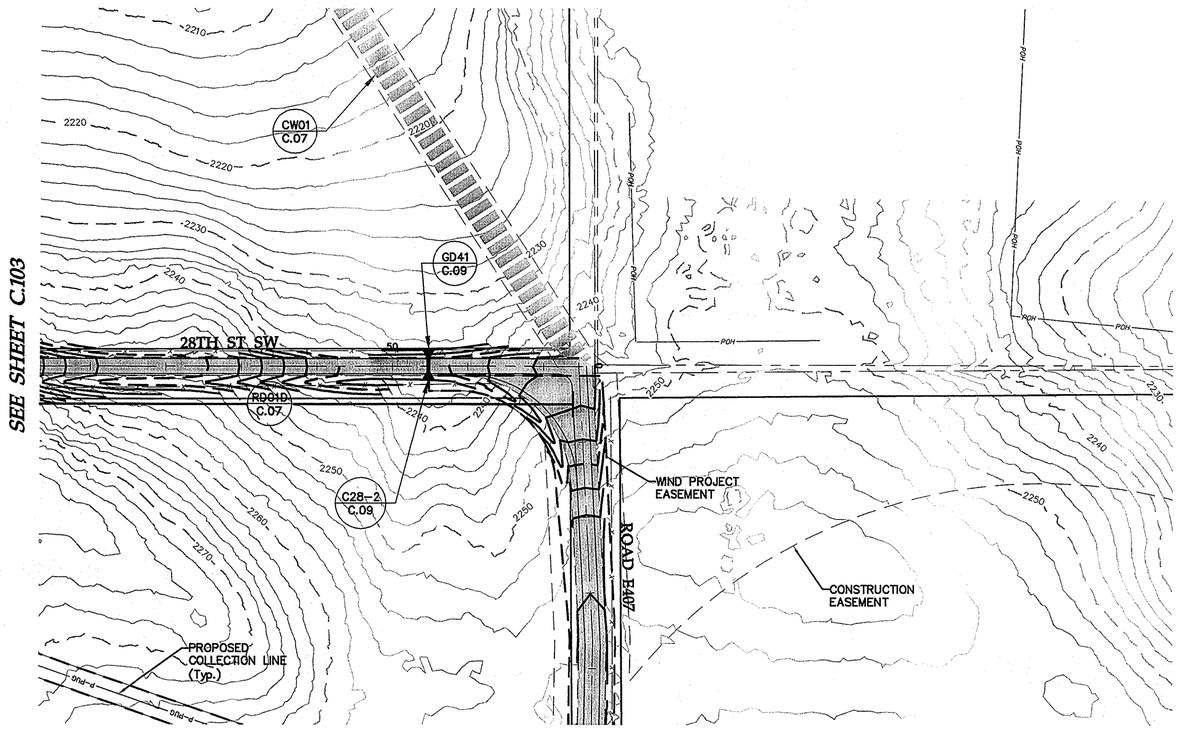
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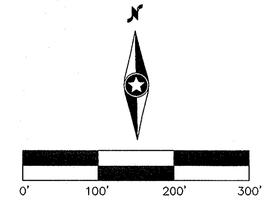
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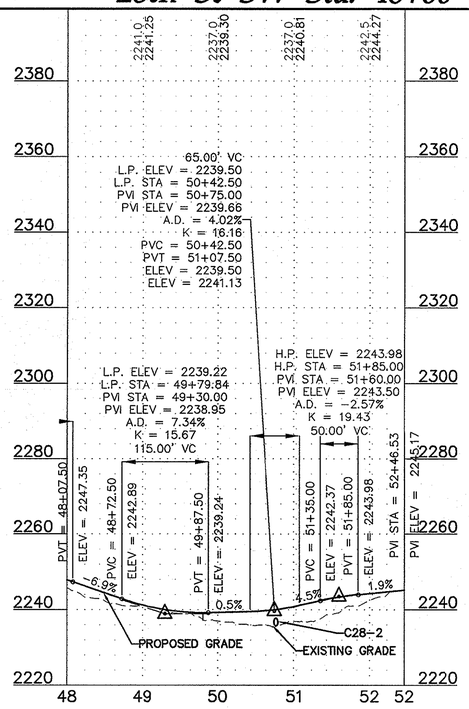
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 8/9/13
NORTH DAKOTA

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

Revisions:

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Prepared for:

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, Minnesota 55802

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- EXISTING WATER BODY

Bison 4 Wind Project

Oliver County, North Dakota

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

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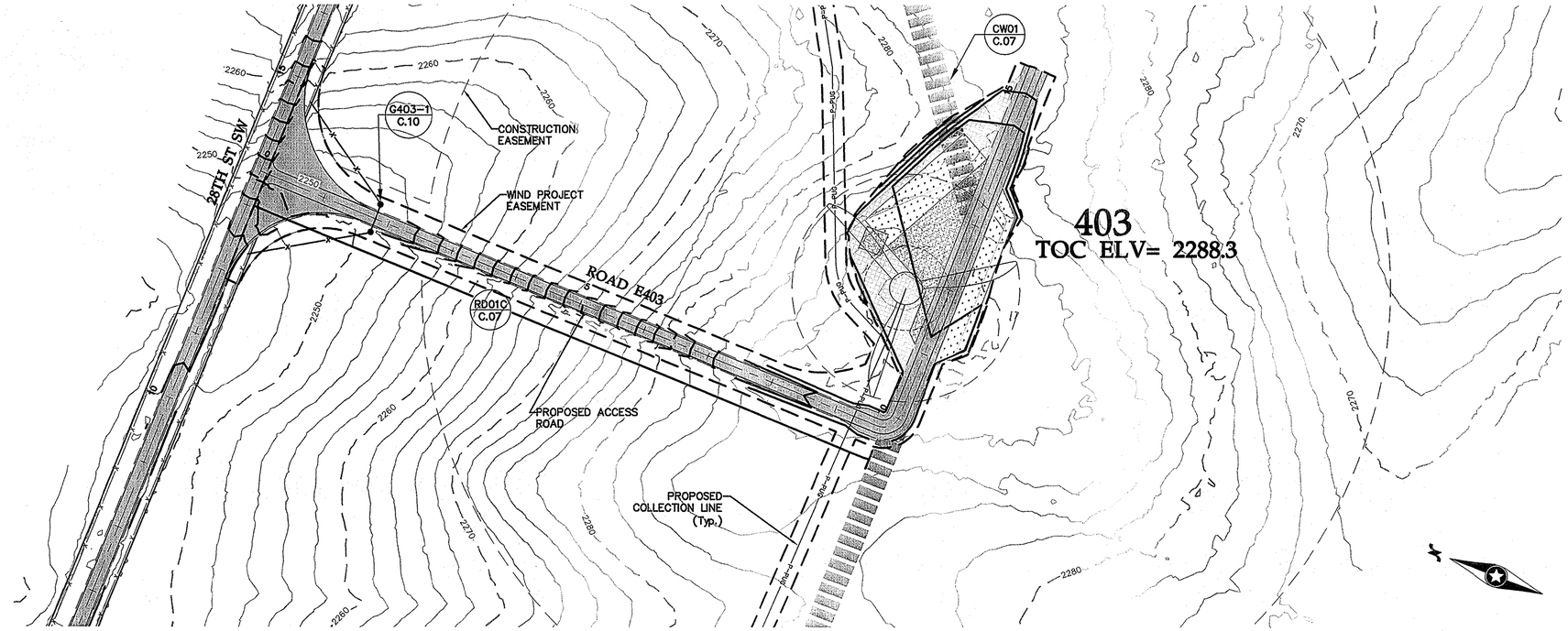
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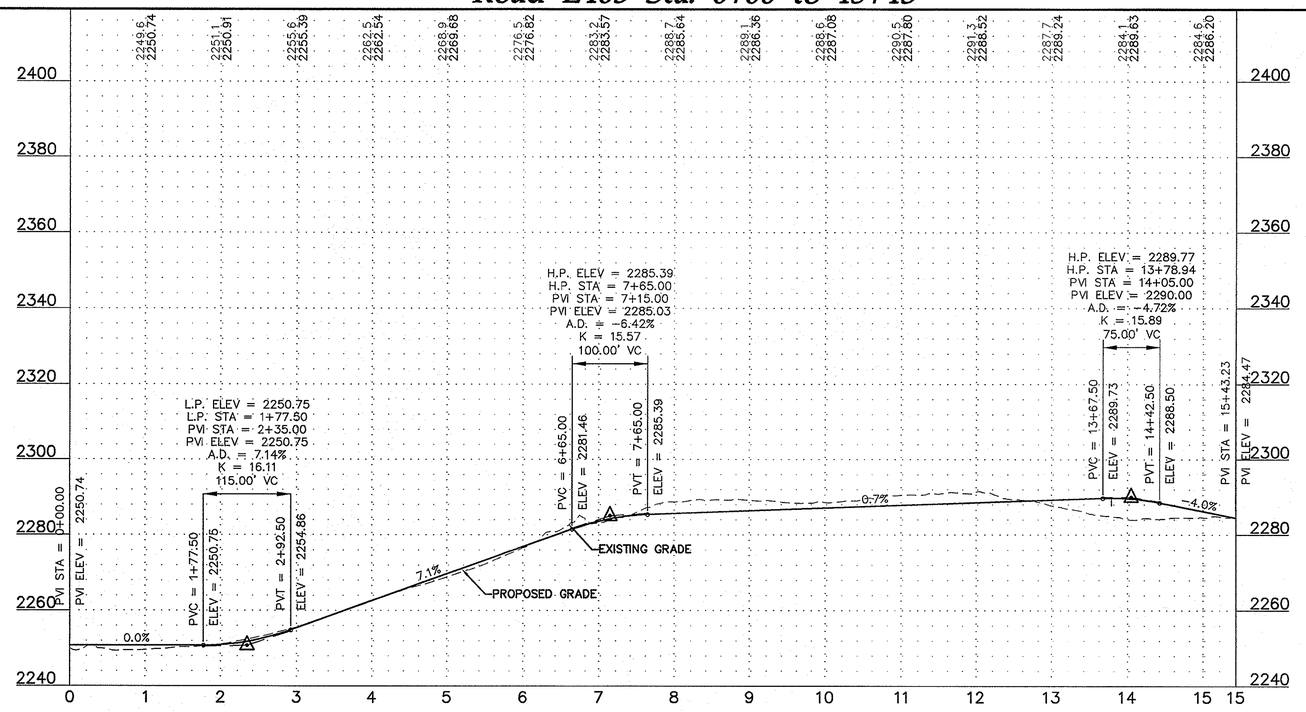
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PE-8310
DATE 8/9/13
NORTH DAKOTA

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minnesota power
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30 West Superior Street
Duluth, Minnesota 55802

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20' 0 10' 20'

Bison 4 Wind Project

Oliver County, North Dakota

Road E403 Sta. 0+00 to 15+43

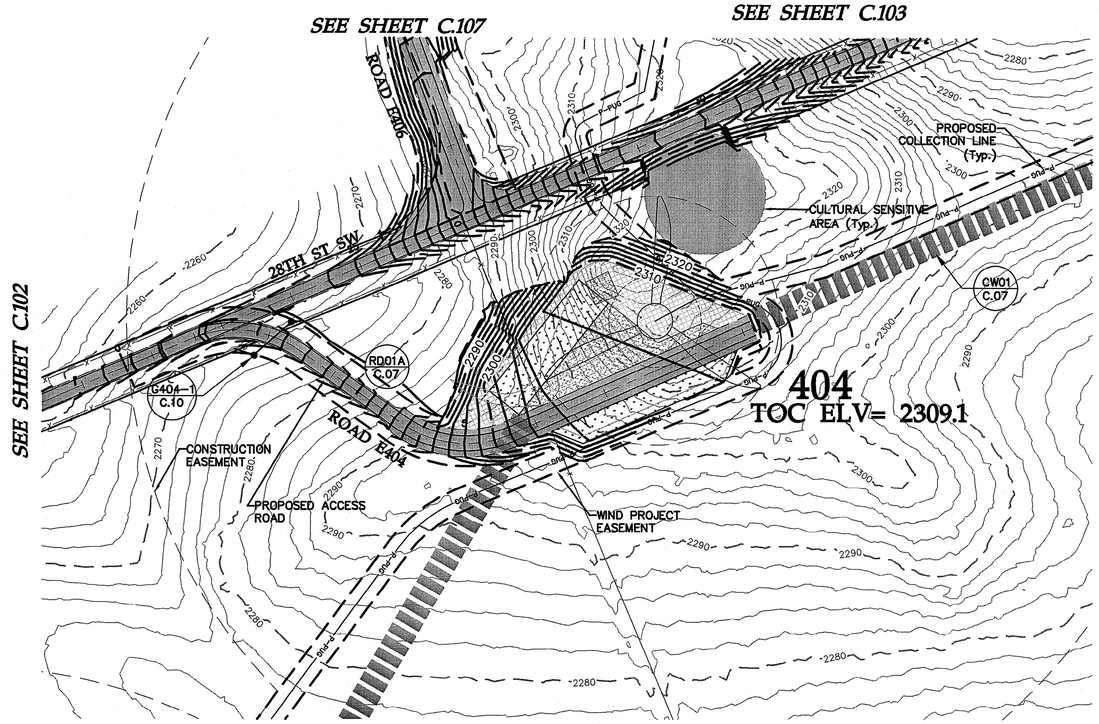
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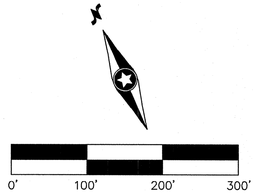
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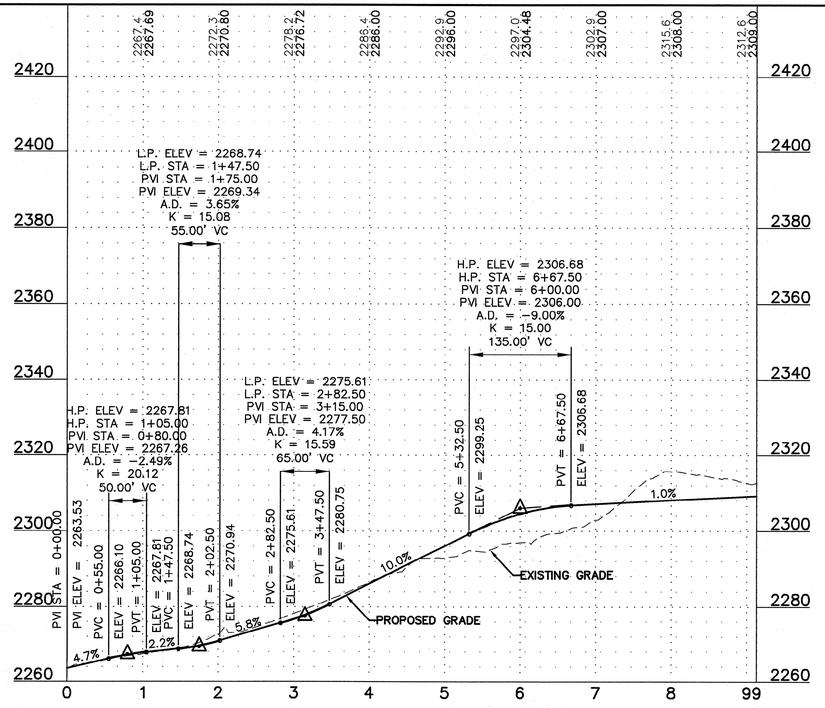
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Road E404 Sta. 0+00 to 9+13





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REGISTERED PROFESSIONAL ENGINEER
WILLIAM P. HUSTON
PE-8310
DATE 10/9/13
NORTH DAKOTA

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

Revisions:

#	DATE	DESCRIPTION
1	09/04/13	Owner Comments
2	10/09/13	Owner Comments/Field Changes

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 E404 Sta. 0+00 to 9+13

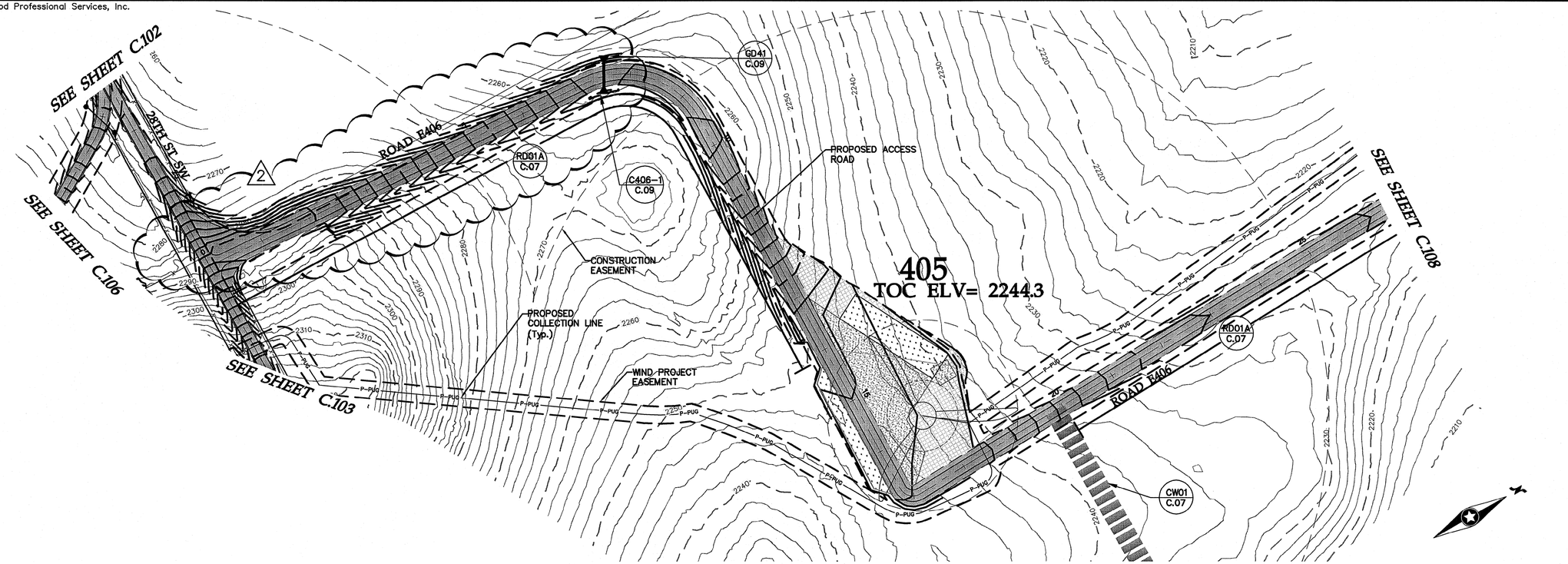
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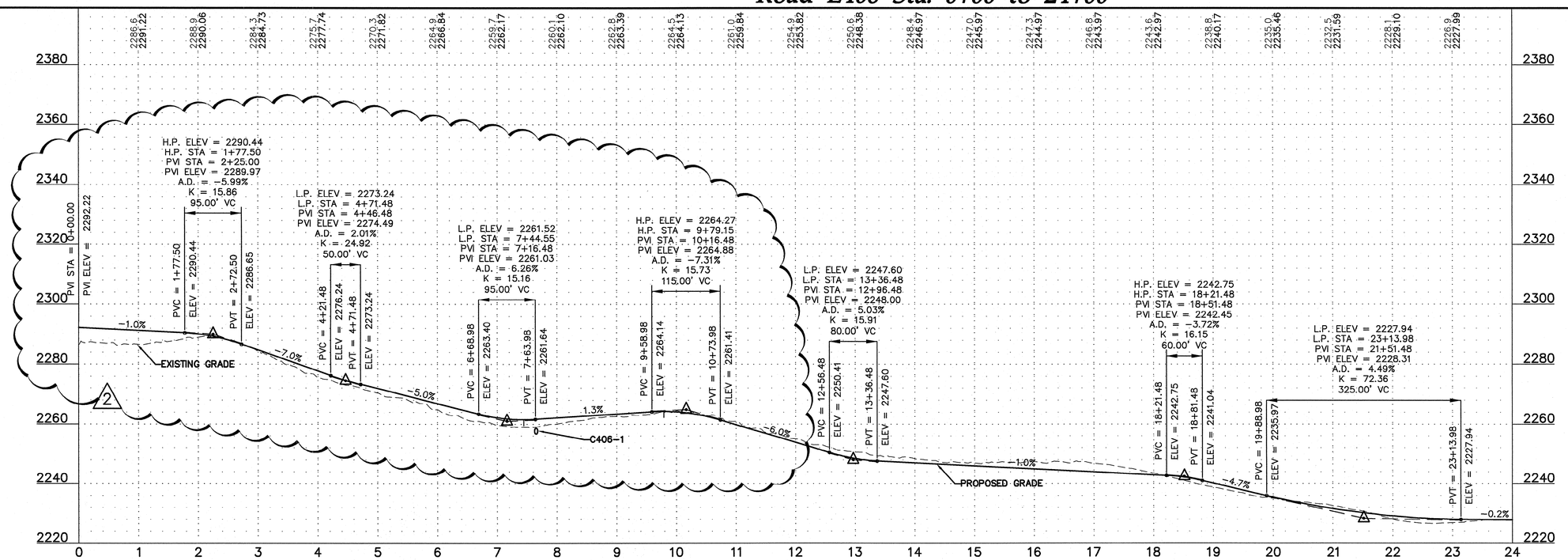
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Bison 4 Wind Project

Oliver County, North Dakota

Road E406 Sta. 0+00 to 24+00

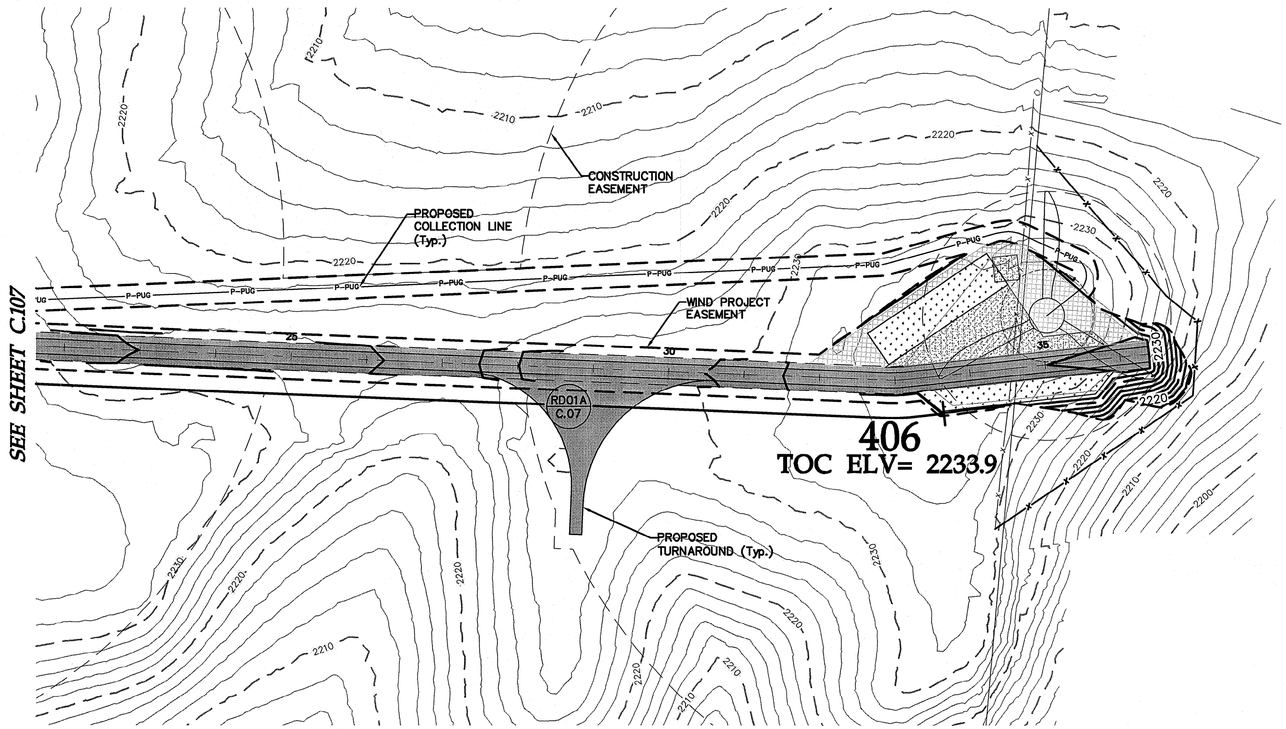
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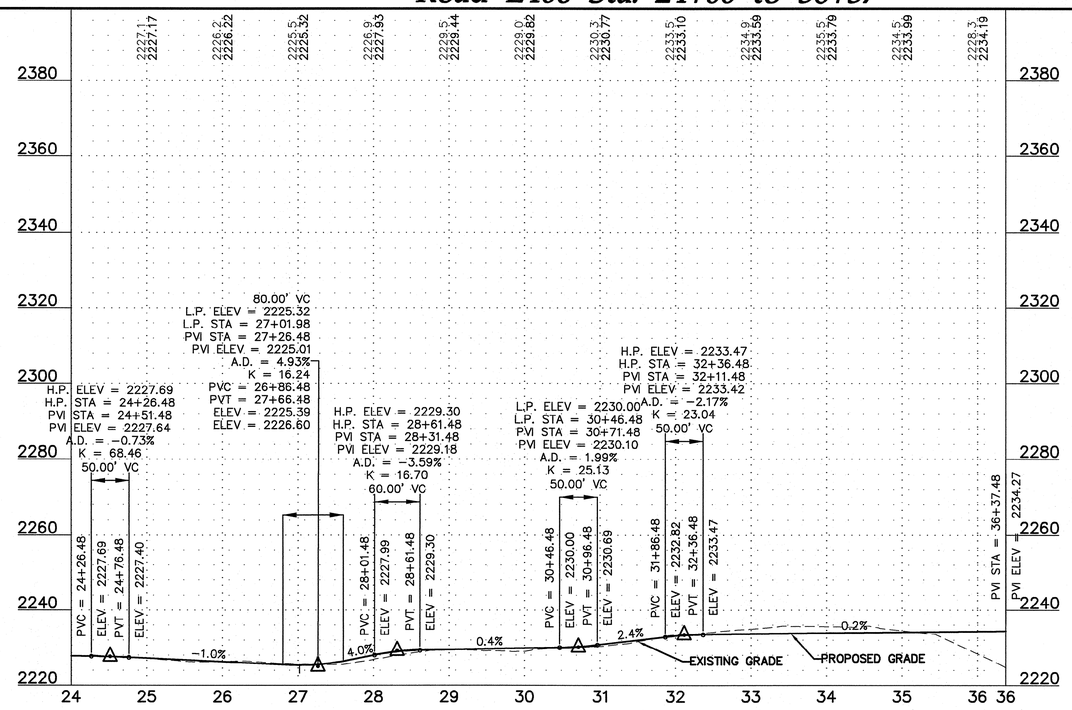
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0' 100' 200' 300'

Road E406 Sta. 24+00 to 36+37



20' 0 10' 20'

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Bison 4 Wind Project

Oliver County, North Dakota

Road E406 Sta. 24+00 to 36+37

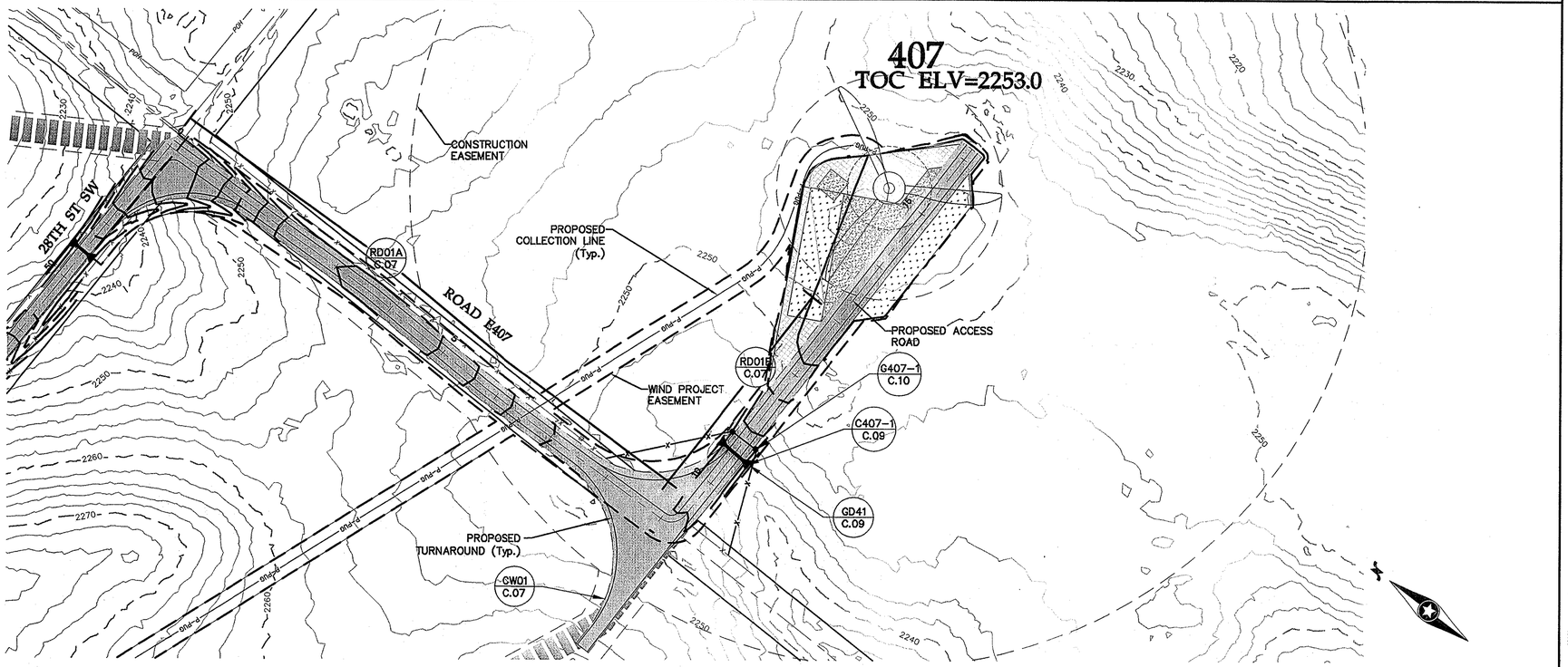
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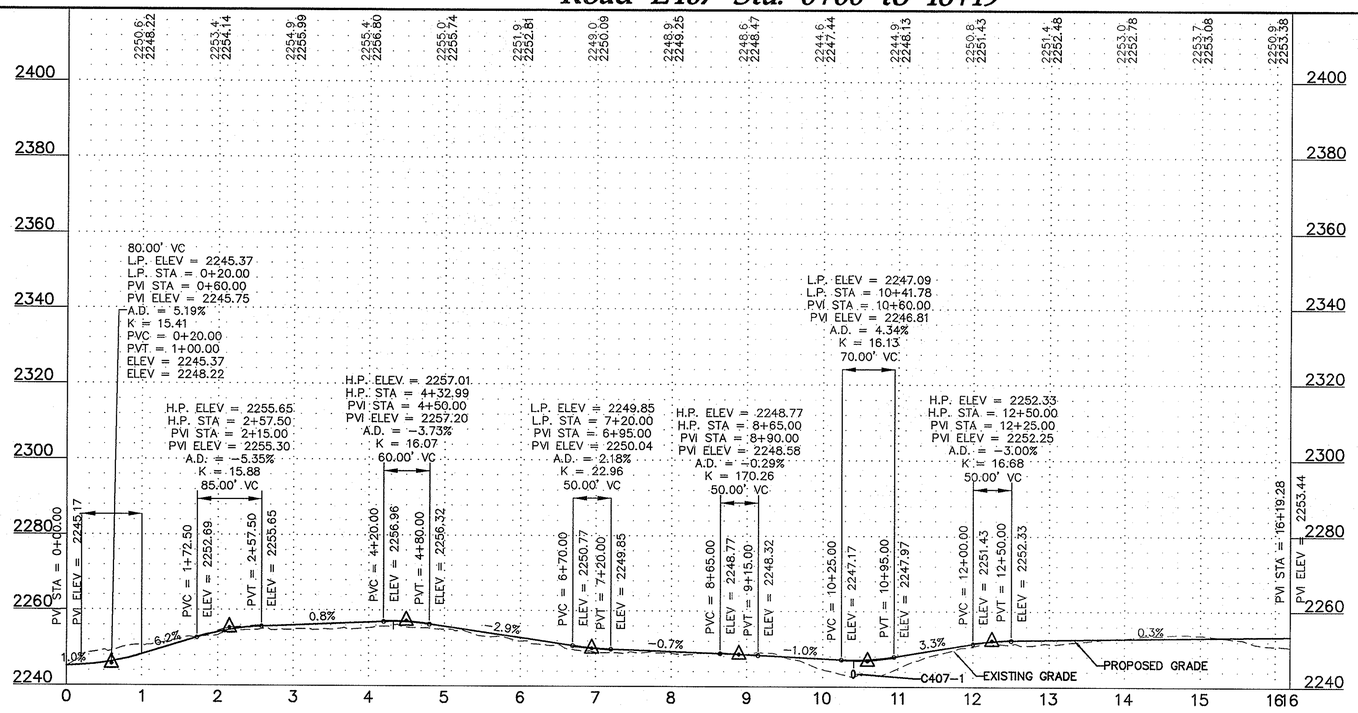
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20' 0 10' 20'

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