

PREPARED FOR:

Sweetland Wind Farm, LLC

PREPARED BY:



Stormwater Pollution Prevention Plan (SWPPP) Narrative

Sweetland Wind Farm

Hand County, South Dakota NPDES Permit Identification #:

Prepared For:

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Project Number: Roo26830.00

Date: March 2023



Table of Contents

1.0	Introduction and Purpose	1
2.0	SWPPP Certification Statement	2
3.0	SWPPP Amendments	3
3.1	SWPPP Amendment Log	3
3.2	SWPPP Amendment Certification	4
4.0	Site Information and Description	5
4.1	Site Location and Vicinity Map	5
4.2	Existing Conditions	6
4.3	Soil Names and Types	6
5.0	Project Information	8
5.1	Owner and Operator Information	8
5.2	Project Type and Proposed Conditions	8
5.3	Pre and Post Project Estimates	9
5.4	Construction Activity Description	9
5.5	Project Activity Schedule	15
5.6	Project Phasing	15
5.7	Project Contacts and Chain of Responsibility	16
6.0	Additional Site or Project Considerations	17
6.1	Chemical Treatments	17
6.2	Environmental Review Documents	17
7.0	Receiving Waters	18
7.1	Impaired and/or TMDL Waters	18
8.0	Stormwater Management	19
8.1	Temporary Practices	19
8.2	Permanent Practices	19
9.0	Implementation of Temporary and Permanent Control Measures	
9.1	Soil Management and Compaction Minimization	20
9.2	Natural Buffers and No-Disturbance Areas	20
9.3	Erosion Prevention Practices	20
9.4	Sediment Control Practices	23
9.5	Run-on and Runoff Controls	24
9.6	Tracking Controls	25
9.7	Dewatering and Basin Draining Practices	25
9.8	Sampling Requirements	26
10.0	Pollution Prevention Management	27

10.1	Storage, Handling and Disposal of Construction Materials	27
10.2	Fueling and Maintenance of Equipment and Vehicles; Spill Response	27
10.3	Vehicle and Equipment Washing	
10.4	Concrete Washout and Other Washout	
10.5	Portable Sanitary Facilities	
11.0	Temporary Concrete Batch Plant	30
11.1	Management of Runoff	_
11.2	Material List	30
11.3	Routine Inspections	30
11.4	Training	
11.5	Spill Prevention and Response Procedures	31
11.6	Comprehensive Inspection	31
12.0	Inspection, Maintenance and Corrective Actions	32
12.1	Inspection Schedule	
12.2	Maintenance Schedule	33
13.0	Final Stabilization	34
13.1	Vegetative Cover / Permanent Erosion Control	
13.2	Non-vegetative Cover / Permanent Erosion Control	
14.0	Training Requirements and Documentation	35
15.0	Notice of Termination	36
16.0	Record Retention	3 7
16.1	During construction	37
16.2	Post Construction / Notice of Termination (NOT)	37

Tables

Table 1: Ame	ndment Log 3
Table 2:Proje	ect Location5
Table 3: Soil	K Factors and Erosivity Hazards 6
Table 4: Soil	Particle Size7
Table 5: Proje	ect Area Estimates9
Table 6: Proj	ect Schedule15
Table 7: Proje	ect Contacts16
Table 8: Floc	culation Plan Summary17
Table 9: Rece	iving Waters18
Table 10: Ter	nporary Sediment Basin Calculations, if required19
Table 11: Ero	sion Controls21
Table 12: Sed	liment Controls23
Table 13: Rur	n-on and Runoff Controls24
Table 14: Tra	cking Controls25
Table 15: Rep	oortable Spill Quantities28
Table 16: Ins	pection Schedule32
Table 17: Mai	ntenance Schedule33
•	
Append	ices
Appendix A:	SDR100000 General Permit for Stormwater Discharges Associated with Construction Activities
Appendix B:	Permitting Documentation (NOI, Permit Card, Permit Letters, Blank NOT/MOD)
Appendix C:	Soil Maps
Appendix D:	Pre and Post Drainage Maps, Impaired Water Maps
Appendix E:	Site Plans, Erosion and Sediment Control Plans, Details
Appendix F:	Inspection and Maintenance Forms
Appendix G:	Training Log

1.0 Introduction and Purpose

This SWPPP is prepared in accordance with the National Pollutant Discharge Elimination System (NPDES) regulations as established by the Clean Water Act and guided by the State of South Dakota. The South Dakota Department of Environment and Natural Resource's General Permit for Stormwater Discharges Associated with Construction Activity SDR100000 (Expired: March 31, 2023) provides the framework of requirements for compliance to discharge stormwater from a construction site.

This SWPPP is for implementation by the Owner, as listed in Section 5.1 of this SWPPP, at the Sweetland Wind Farm, with the project location as defined in Section 4.0 of this SWPPP. This report shall be on the site at all times during construction.

The following are outlined in this site specific SWPPP:

- Control measures for stormwater pollution prevention during each phase of construction,
- Control measures for stormwater pollution prevention after construction,
- Sources of stormwater and non-stormwater pollution, and
- Inspection and maintenance procedures.

2.0 SWPPP Certification Statement

"I certify under penalty of law that this document and all Appendices were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Under tung	COO	Mar 24, 2023
	Name & Title	Date

Sweetland Wind SWPPPP_Signature Page

Final Audit Report 2023-03-24

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3.0 SWPPP Amendments

This plan and the Appendices must be amended to include additional requirements, or modified requirements, which take place during construction if one or more of the following occur.

- 1. There is a change in design, construction, operation, maintenance, weather, or seasonal conditions that significantly impacts the discharge of pollutants from the site to surface or groundwater.
- 2. Inspections or investigations by the site owner, Environmental Protection Agency, or South Dakota Department of Environment and Natural Resources officials indicate this plan is not effective in eliminating or significantly minimizing the discharge of pollutants.
- 3. This SWPPP is not achieving the general objectives of minimizing pollutants in stormwater discharges or if this plan is not consistent with the SDR100000 General Permit for Stormwater Discharges Associated with Construction Activities.
- 4. If the South Dakota Department of Environment and Natural Resources notifies the Owner (i.e. permittees) that additional requirements are needed, requirements are not being met for TMDL or other water quality standards, or that the SWPPP did not incorporate the necessary requirements.

3.1 SWPPP Amendment Log

The following table should be completed as necessary during construction to document changes and amendments to this document. Place the Amendment Number next to all application changes, redlines and information in the document to reference back to the changes summarized below. If an additional sheet is necessary, attach the additional sheet to the SWPPP.

Table 1: Amendment Log

Amend #	Date	Reason, location and brief description of modification, or amendment	Requested by:	Prepared by:

3.2 SWPPP Amendment Certification

"I certify under penalty of law that this document and all Appendices were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

An	nendment #:	-
Signature	Title	Date
Printed Name	Contact Number	Company
An	nendment #:	-
Signature	Title	Date
Printed Name	Contact Number	Company
An	nendment #:	-
Signature	Title	Date
Printed Name	Contact Number	Company

4.0 Site Information and Description

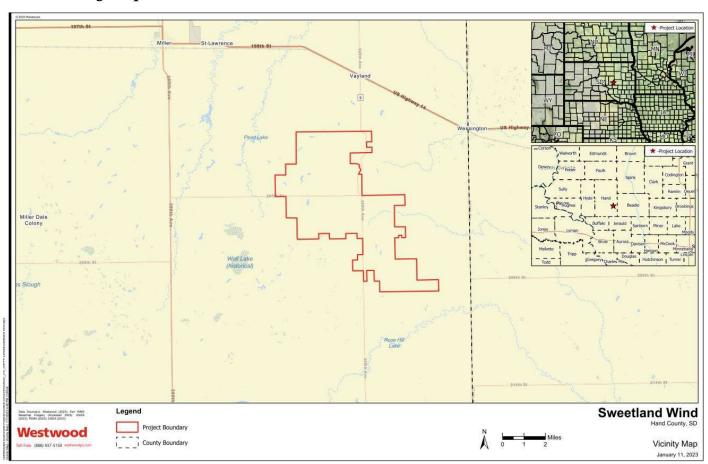
4.1 Site Location and Vicinity Map

This SWPPP is intended for the Sweetland Wind Farm. The project site is located in Hand County, South Dakota. The nearest census-designated place, Miller, is located approximately 10 miles to the northwest. The nearest intersection is State Highway 45 and County Road 205th Street. The site is bordered on the north, west, and east by agricultural fields, the south by 205th Street. Refer to Attachment D of this SWP3 for the full vicinity map.

Table 2:Project Location

Section #	Township	Range				
3, 4, 5, 6, 8, 9, 10, 11	110N	66W				
5, 6, 7, 19, 20, 21, 28, 29, 30, 31, 32, 33	111N	66W				
1, 2, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25, 26	111N	67W				
Latitude and Longitude Points (Decimal) #						
Latitude	Latitude 44.41409					
Longitude	Longitude -98.837337					

Vicinity Map:



4.2 Existing Conditions

The slope and terrain of the site generally consists of agricultural fields gently sloping at less than 2%, with steeper slopes in eastern portions of the site. The site currently has stormwater runoff flowing via overland flow with the bulk draining to the east and west.

The site area is located in a non-arid area. Miller, SD, located approximately 10 miles to the northwest, has an average yearly precipitation amount of 21.13 inches.

Source (accessed 2/7/2023):

https://www.usclimatedata.com/climate/miller/south-dakota/united-states/ussdo221

4.2.1 Non-vegetative Cover

Prior to construction, there is no non-vegetative cover on site.

4.2.2 Vegetative Cover

Prior to construction, the project area is covered by agricultural row crops.

4.2.3 Land Use

Prior to construction the site area was primarily used for agricultural production. A Phase 1 Environmental Assessment (ESA) has been conducted and is summarized in Section 6.2.2.

4.3 Soil Names and Types

The soils present on the project site consist of loams and clay loams. These soils belong to hydrologic soils groups C. Soils belonging to group C have a moderately high runoff potential when wet. Soils information summarized above and, in the table, below are from the USDA Natural Resources Conservation Service Web Soil Survey (Accessed: 08/23/2022). Source: https://websoilsurvey.nrcs.usda.gov/app/. The project Soils Report is located in Appendix C.

4.3.1 Soil Erosivity

Table 3: Soil K Factors and Erosivity Hazards

	Hydrolo		Erosivity Hazard				Reason(s)
Soil Name / Type	gic Soil	l K Factor	Slight	Moderate	Severe	Very Severe	for Erosivity Rating
Glenham-Prosper loams, 1-6% slopes	С	.28/.24	X				Lack of Slope
Glenham-Prosper loams, 0-2% slopes	C	.28/.24	X				Lack of Slope
Glenham-Cavo loams, undulating	С	.32/.24	X				Lack of Slope
Glenham loam, undulating	С	.24	X				Lack of Slope

Glenham loam, rolling	С	24	X		 	Lack of Slope
Tetonka silt loam, o to 1 percent slopes	C/D	.37		X		High Silt Content
Betts-Java Loams, steep	B/C	.24	X			Lack of Slope
Glenham-Cavo loams, nearly level	С	.24	X			Lack of Slope
Glenham-Java loams, rolling	B/C	.24	X			Lack of Slope
Houdek-Prosper loams, 0-2% slopes	C	.28/.24	X			Lack of Slope
Cavo-Glenham loams, nearly level	С	.32/.24	X			Lack of Slope
Java-Glenham loams, hilly	В	.24	X			Lack of Slope

Table 4: Soil Particle Size

Soil Type	% Sand	% Clay	% Silt	% Site Area
Glenham-Prosper loams, 1-6% slopes	38	22	40	45.0
Glenham-Prosper loams, 0-2% slopes	38	22	40	12.2
Glenham-Cavo loams, undulating	39.5	23	37.5	10.4
Glenham loam, undulating	39.5	23	37.5	9.6
Glenham loam, rolling	39.5	23	37.5	3.7
Tetonka silt loam, 0 to 1 percent slopes	13.0	23.0	64.0	2.7
Betts-Java Loams, steep	38.8	22.5	37.7	2.4
Glenham-Cavo loams, nearly level	39.5	23	37.5	2.4
Glenham-Java loams, rolling	39.5	23	37.5	2.3
Houdek-Prosper loams, 0-2% slopes	38	22	40	2.2
Cavo-Glenham loams, nearly level	39.5	23	37.5	2.1
Java-Glenham loams, hilly	39.5	23	37.5	1.3

5.0 Project Information

5.1 Owner and Operator Information

Owner Information	Operator Information
Sweetland Wind Farm, LLC	Blattner Company
Andrew Young, COO	David Blattner, Jr., Vice President
5775 Flatiron Pkwy., Suite 120 Boulder, CO 80301	392 County Rd. 50, Avon, MN 56310
(303)284-7566 andrew@scoutcleanenergy.com	(320)356-7351 dblattner@blattnercompany.com

5.1.1 Owner Responsibilities

The owner responsibilities include:

- Developing a SWPPP prior to submitting the Notice of Intent (NOI);
- Submitting a complete and accurate NOI;
- Complying with all terms and conditions of the General Permit for Stormwater Discharges Associated with Construction Activities;
- Keeping the permit up to date (partial, whole, contractor, builders, etc.);
- Submitting the Notice of Termination (NOT) within thirty days of meeting requirement of final stabilization;
- Identifying who has long term operation and maintenance responsibility of the permanent stormwater controls;
- Developing a chain of responsibility with the operators to ensure NPDES and SWPPP compliance;
- Identifying trained personnel to oversee the SWPPP and conduct inspections;
- Identifying trained personnel to develop a SWPPP; and
- Identifying trained personnel to install and maintain best management practices.

5.2 Project Type and Proposed Conditions

5.2.1 Non-Vegetative Cover

Post-construction, there will be no additional non-vegetative cover on site.

5.2.2 Vegetative Cover

Post-construction, vegetative cover on site will be returned to pre-construction conditions wherever feasible. Areas not returned to pre-construction conditions will be stabilized as outlined in this SWPPP.

5.2.3 Land Use

Post-construction, the site will be used as a wind energy facility. Areas not affected by construction will remain in their pre-existing configurations.

5.3 Pre and Post Project Estimates

Table 5: Project Area Estimates

Project Area	Disturbed Area	Existing Impervious Area	Post Construction Impervious Area
20,800 Acres	909 Acres	5.5 Acres	10.1 Acres

5.4 Construction Activity Description

Construction activity will include installation of up to 71 wind turbines. Construction of the wind turbines requires, but is not limited to, the installation of a substation, an operations and maintenance building, a previously-constructed temporary laydown yard with a temporary concrete batch plant, underground electrical collection, overhead transmission, and 16-foot-wide gravel access roads with temporary thirty-six-foot-wide disturbance due to temporary compacted shoulders (10 feet on each side) for truck transport of materials and crane walking paths. Minor construction activity will be necessary for some existing road and radii. The crane paths are specifically designed to follow access roads to limit disturbance of streams and other sensitive areas such as steep slopes and will be approximately 36 feet wide where located away from access roads. All temporary crane paths should be restored to preconstruction conditions after the use of the paths. The SWPPP shall be amended to show locations and disturbance areas as necessary should locations change during construction.

The laydown area was previously permitted and constructed for component and materials delivery. The original SDDENR Construction Permit authorization will be closed, and the new authorized permit for the Sweetland Wind Project will include the laydown area. Removal and restoration of the laydown area should be completed in one phase with concurrent stabilization occurring by returning the disturbed area to a farmable and tillable condition and returned to operational control of the agricultural landowner.

NOTE: All sensitive areas shall be marked prior to start of earth disturbance activities. If any subsurface and/or surface drainage features are altered during construction, restore to preconstruction conditions and drainage patterns. Coordinate the work with the Landowner.

- 1. Access road construction activity and phasing should include:
 - a. Redistributing topsoil along one or both sides of the road in a linear fashion;
 - b. Temporarily stabilizing ditches (such as erosion control blanket) and applying perimeter sediment controls within the timeframes of the Construction General Permit (CGP);
 - c. Compacting subgrade;

- d. Applying gravel base;
- e. Decompacting soils following turbine erection;
- f. Applying topsoil for non-aggregate areas during final grade;
- g. Applying final gravel cap to road;
- h. Maintaining pre-construction drainage patterns and runoff;
- i. Restoring any subsurface and/or surface drainage features to pre-construction conditions and drainage patterns if altered during construction; and
- j. Returning disturbed areas not part of the final road to pre-construction conditions.
- 2. Turning radius and temporary intersections construction activity and phasing should include:
 - a. Stripping and stockpiling topsoil;
 - b. Applying seed and erosion control blanket, turf reinforcement mat, mulch cover or similar methods for restoration to pre-construction conditions;
 - c. Installing culverts as necessary and according to the plan for the accesses;
 - d. Filling with native material to grade;
 - e. Applying gravel base;
 - f. Removing turning radius (removing gravel and fill soils) following turbine component delivery or turbine erection;
 - g. Removing any extra culvert lengths; and
 - h. Reapplying topsoil and final grade.
- 3. Turbine area construction activity and phasing should include:
 - a. Stripping and segregating topsoil and applying topsoil in a soil berm along with tracking and seeding around the downgrade perimeter of the turbine pad area;
 - b. Installing silt fence at the perimeter as necessary and as shown on the plans;
 - c. Excavating areas required for the foundation and stockpiling the subsoils;
 - d. Dewatering accumulated groundwater or stormwater via pump as necessary and ensuring discharged water does not contribute sedimentation to receiving waters;
 - e. Providing temporary stabilization measures (such as mulch, erosion control blanket, and turf reinforcement mat);
 - f. Temporarily covering the stockpiles with hydromulch or other temporary cover BMP for water and wind erosion protection;
 - g. Constructing concrete washout area or using a common concrete washout during concrete work for mud mat and foundation construction;
 - h. Grading crane pad for turbine erection;

- i. Erecting the turbine;
- j. Backfilling subsoils and topsoil with a rough grade; and
- k. Returning disturbed areas not part of the final road to pre-construction conditions.
- 4. Temporary crane path construction activity and phasing should include:
 - a. Planning crane walks according to unique area conditions where crane walks will occur;
 - b. Installing downgrade perimeter controls, such as fiber logs or silt fence, to protect conveyances as field conditions dictate;
 - c. Walking cranes across waterways/conveyances during dry conditions when possible;
 - d. Providing timber mat crossings for grass waterway crossings, swale crossings, and other gradual conveyance crossings;
 - e. Providing temporary creek/waterway crossing BMPs according to details shown on plans and explained in this SWPPP narrative; and
 - f. Restoring all disturbed areas to pre-construction conditions following crane walk activity by tilling to agricultural condition or applying necessary mulch/erosion control blanket and seeding to areas for restoration to pre-construction condition.
- 5. Electrical underground construction activity and phasing should include:
 - a. Open trenching or plowing collection line across fields, repairing or restoring any drain tile encountered;
 - b. Segregating topsoil from subsoils unless otherwise agreed upon by the landowner;
 - c. Dewatering accumulated groundwater or stormwater via pump (if necessary) and dewatering bag, ensuring discharged water does not contribute sedimentation to receiving waters:
 - d. Using perimeter control, such as logs, silt fence, or rock checks, if open trenching or plowing through a waterway or conveyance; and
 - e. Applying seed with erosion control blanket or mulch to restore grass waterway to preconstruction conditions.
- 6. Laydown yard construction maintenance activity should include:
 - a. Providing stable accesses to area and maintaining culverts according to the plans;
 - b. Maintaining silt fence and other sediment controls as necessary and as detailed in the plans;
 - c. Stripping and stockpiling topsoil around the up-gradient perimeter of the laydown yard for a diversion of water or downgrade perimeter of the vard for runoff control;
 - d. Applying rock base to designed thickness;

- e. Temporarily covering the stockpiles with hydromulch or weed-free straw/hay after seeding with temporary seed mix;
- f. Providing necessary secondary containment, secure storage, and maintenance activities during operation;
- g. Removing rock and decompacting and reapplying topsoil to the area after the laydown yard is no longer needed; and
- h. Returning disturbed areas to pre-construction conditions, which may include applying seed and mulch cover for restoration.
- 7. Batch Plant construction activity and phasing information:
 - a. Providing stable accesses to area and installing culverts according to the plans;
 - b. Installing silt fence and other sediment controls as necessary and as detailed in the plans;
 - c. Stripping and stockpiling topsoil around the up-gradient perimeter of the batch plant for a diversion of water or downgrade perimeter of the plant for runoff control;
 - d. Applying rock base to designed thickness;
 - e. Temporarily covering the stockpiles with hydromulch or weed-free straw/hay after seeding with temporary seed mix;
 - f. Providing necessary secondary containment, secure storage, and maintenance activities during operation;
 - g. Providing a designated and contained concrete washout area as per detail and SWPPP specifications. Properly dispose of washout water or recycle as needed;
 - h. Sampling all discharges from concrete batch plant area;
 - i. Providing dust control and material control as required;
 - j. Removing rock and decompacting and reapplying topsoil to the area after the batch plant is no longer needed; and
 - k. Returning disturbed areas to pre-construction conditions, which may include applying seed and mulch cover for restoration.
- 8. Collector substation construction activity and phasing should include:
 - a. Providing stable accesses to area and installing culverts according to the plans;
 - b. Installing silt fence and other sediment controls as necessary and as detailed in the plans;
 - c. Stripping and stockpiling topsoil around the up-gradient perimeter for a diversion of water or downgrade perimeter of the substation for runoff control;
 - d. Applying rock base to designed thickness;
 - e. Temporarily covering the stockpiles with hydromulch or weed-free straw/hay after seeding with temporary seed mix;

- f. Constructing a concrete washout area prior to starting concrete work;
- g. Constructing electrical components and fencing; and
- h. Returning disturbed areas not part of the final gravel pad to agricultural conditions or applying seed and mulch cover for restoration to pre-construction conditions.
- 9. Electrical Overhead construction activity and phasing information:
 - a. Accessing structure areas from public roads or through the established right-of-way;
 - b. Avoiding vehicle traffic through swales, waterways, and wetlands;
 - c. Selectively removing vegetation only as necessary to complete construction activity;
 - d. Stockpiling spoil piles or other soil/material out of the ditch areas and providing fiber logs for perimeter sediment control;
 - e. Dewatering to restore to existing vegetative conditions or using dewatering bags to control discharge of sediment if the structure foundation area accumulates water;
 - f. Backfilling material around the structure; and
 - g. Returning disturbed areas to pre-construction conditions and operational control of the farmer, which may include applying seed and mulch cover for restoration.
- 10. Operation and maintenance facility construction activity and phasing should include:
 - a. Providing stable accesses to area and installing culverts according to the plans;
 - b. Installing silt fence and other sediment controls as necessary and as detailed in the plans;
 - c. Stripping and stockpiling topsoil around the up-gradient perimeter for a diversion of water or downgrade perimeter of the area for runoff control;
 - d. Temporarily covering the stockpiles with hydromulch or weed-free straw/hay after seeding with temporary seed mix;
 - e. Constructing a concrete washout area prior to starting concrete work;
 - f. Completing concrete work and building construction;
 - g. Applying rock base to designed thickness;
 - h. Applying rock base for parking areas as designed; and
 - i. Providing seed with mulch or erosion control blanket following final grade.
- 11. Met tower and ADLS tower construction activity and phasing:
 - a. Strip and stockpile topsoil along one or both sides of the access road and tower area in a linear berm.
 - b. Apply perimeter sediment controls.

- c. Compact subgrade.
- d. Apply gravel base to tower access.
- e. Following tower erection the soils should be decompacted.
- f. Apply topsoil during final grade.
- g. Apply final gravel cap to tower access.
- h. Maintain pre-construction drainage patterns and runoff.
- i. Return disturbed areas not part of the final road or tower area by applying seed and mulch cover for restoration to pre-construction condition.

5.5 Project Activity Schedule

Table 6: Project Schedule

Activity	Start Date	End Date
Overall Project	04/10/2023	05/31/2024
Access Roads	05/08/2023	08/07/2023
Crane Paths / Turbine Erection	05/08/2023	09/25/2023
Excavations / Foundations	04/10/2023	07/20/2023
O&M Facility	05/08/2023	09/27/2023
Substation	06/02/2023	09/27/2023
Met Tower and ADLS Tower	06/15/2023	08/03/2023
Underground Collection	04/10/2023	09/22/2023
Laydown Yard / Batch Plant	04/10/2023	09/27/2023

5.6 Project Phasing

NOTE to Operator: Mark all sensitive areas prior to start of earth disturbance activities. If any subsurface and/or surface drainage features are altered during construction restore to preconstruction conditions and drainage patterns. Coordinate the work with the Landowner.

Preliminary clearing and grubbing may be required before grading activities commence. Some of the access roads may have a temporary width of fifty feet due to temporary compacted shoulders (ten feet on each side) for crane walking paths. Minor construction activities will be necessary for some existing roads and radii. The crane paths are specifically designed to follow access roads, where necessary, to limit disturbance of streams and other sensitive areas such as steep slopes and will be approximately thirty-six feet wide located away from access roads. All temporary crane paths should be restored to pre-construction conditions after the use of the paths. The SWPPP shall be amended to show locations and disturbance areas as necessary should locations change during construction.

Removal and restoration of the laydown area should be completed in one phase with concurrent stabilization occurring by returning the disturbed area to a farmable and tillable condition and returned to operational control of the agricultural landowner.

5.7 Project Contacts and Chain of Responsibility Table 7: Project Contacts

Company*	Name or Position	Responsibility	Contact Number
Sweetland Wind Farm LLC	Logan Bell	Site Development	970-712-0498
Blattner Company	Cole Stocker	Laydown / Batch Plant	320-241-1079
Blattner Company	Cole Stocker	Project Environmental Contact	320-241-1079
		Routine SWPPP Inspections	
Westwood Professional Services	Aaron Mlynek, CPESC	SWPPP development	952-697-5710
Blattner Company	Cole Stocker	Restoration	320-241-1079
Blattner Company	Cole Stocker	BMP installation	320-241-1079
Blattner Company	Cole Stocker	BMP Maintenance	320-241-1079

6.0 Additional Site or Project Considerations

6.1 Chemical Treatments

At the time of SWPPP completion the use of chemical additives or polymers for purposes of sediment flocculation are not anticipated for this project. Should chemical treatment become necessary based upon inspection results, weather conditions or construction means and methods the table below must be updated to reflect the chemical used. **IMPORTANT: Prior approval from the SDDENR is necessary for any chemical additive for discharging**

Table 8: Flocculation Plan Summary

Flocculation Chemical	Application Location	Primary Soil Types	Settling BMPs Used	Application Method	Receiving Water	Mfr Dosing Rate

6.2 Environmental Review Documents

6.2.1 Cultural Resources Survey

A Class III Intensive Cultural Resource Inventory was conducted for the project (Burns & McDonnell., February 2019). A total of seven new archaeological sites, one previously recorded site, and three Traditional Cultural Property (TCP) sites were identified during the investigations. One of the newly identified archaeological sites, 39HD0120, is recommended as eligible for inclusion in the National Register of Historic Places (NRHP). The six remaining newly recorded archaeological sites (39HD0116, 39HD0117, 39HD0118, 39HD0119, 39HD0121, and 39HD0122) remain unevaluated against the NRHP criteria of significance. All seven newly recorded archaeological sites have been avoided by the Project.

6.2.2 Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment (ESA) was conducted for the project (Blanton & Associates, Inc., December 2019). Information from the site reconnaissance, interviews, regulatory database, and historical sources were used to evaluate the presence of recognized environmental conditions at the Subject Property. Based upon this information, no controlled recognized environmental conditions, historical recognized environmental conditions, or de minimis conditions were identified in connection with the Subject Property.

The ESA identified eight trash/burn pits and one buried structure that were identified as Recognized Environmental Conditions (RECs) due to the presence or likely presence of hazardous materials and/or petroleum products. However, the project will not cause or contribute to potential soil or groundwater impacts at the site, and proposed wind farm infrastructure will be located at sufficient distances so as to not disturb these areas during construction activities.

7.0 Receiving Waters

The table below summarizes the immediate receiving waters from the site. Where necessary the receiving waters has been designated immediate (for the first surface water receiving drainage from the site) and ultimate (for the surface water receiving runoff from site after the immediate receiving waters). The receiving waters listed are located within a mile and receive water from the site discharge location(s).

The site currently has stormwater runoff flowing via overland flow with the bulk of the site draining to the west within the East Pearl Creek watershed. Other existing discharge locations are associated with county road culverts along 20th Street. Refer to Attachment D for drainage maps.

Table 9: Receiving Waters

Name of Receiving Waterbody	Immediate (I) or Ultimate (U)	Type (wetland, lake, stream, ditch)	Impaired? Y/N	MS4? Y/N
Pearl Creek – Cain Creek	U	Stream	N	N
City of Wessington – Cain Creek	U	Stream	N	N
Upper Silver Creek	U	Stream	N	N
Lower Silver Creek	U	Stream	N	N
East Pearl Creek	U	Stream	N	N
Pearl Lake - Pearl Creek	U	Lake	N	N

7.1 Impaired and/or TMDL Waters

There are no impaired waterbodies which receiving stormwater discharge within one mile of the site disturbed area according to the Construction Stormwater Impaired Water Search, South Dakota Department of Environment and Natural Resources website: https://apps.sd.gov/NR92WQMAP (accessed 01/10/2023) and the 2022 South Dakota Integrated Report for Surface Water Quality website: Assessment https://danr.sd.gov/Conservation/WatershedProtection/ReportsPublications/SDDANR 2022 IR approved.pdf.

8.0 Stormwater Management

8.1 Temporary Practices

There are no anticipated temporary stormwater management practices at the time of SWPPP completion due to no contiguous 10-acre drainage areas discharging to a common point.

8.1.1 Calculations

Calculations are not applicable to this project as there are no temporary stormwater management practices requiring calculations. The table below will need to be completed should basins be needed as a SWPPP amendment.

Table 10: Temporary Sediment Basin Calculations, if required.

Basin #	Storm Frequency	Rainfall Amount	Runoff Area	Runoff Volume	Capacity Needed
1	2 yr. / 24 hr.	2.23"	Acres	ac ft.	ac ft.
2	2 yr. / 24 hr.	2.23"	Acres	ac ft.	ac ft.
3	2 yr. / 24 hr.	2.23"	Acres	ac ft.	ac ft.

8.2 Permanent Practices

There are no permanent stormwater practices anticipated for this project activity.

8.2.1 Calculations

Calculations are not applicable to this project as there are no permanent stormwater management practices requiring calculations.

9.0 Implementation of Temporary and Permanent Control Measures

9.1 Soil Management and Compaction Minimization

After clearing and grubbing, the grading contractor will strip and stockpile topsoil material for reapplication on all future permanent pervious surface areas. During development, grading and utility construction the subsoils will be compacted as necessary for construction using typical excavation techniques. During final grade, reapplication of minimum six inches of topsoil will be done by a wide-pad dozer and other equipment to minimize compaction of the topsoil material.

9.2 Natural Buffers and No-Disturbance Areas

9.2.1 Natural Buffers

An undisturbed 50 ft. buffer zone should be preserved and maintained around all jurisdictional waters, where possible. If a 50-ft. buffer cannot be maintained, then redundant sediment controls should be used. Refer to the site erosion and sediment control plans in Attachment E for the location of the buffers. The following activities are prohibited to take place within the buffer area:

- Placement of stockpiles and / or sediment basins;
- Vegetation disturbance;
- Placement of construction material; and
- Storage of gas, oils, other potential pollutant material.

9.2.2 No-disturbance Areas

Refer to the site erosion and sediment control plans in Attachment E for the location of nodisturbance areas.

9.3 Erosion Prevention Practices

The following controls are anticipated to minimize soil loss from the construction site area. The controls should help to minimize soil from being transported from water and wind as well as aide in establishment of temporary and permanent vegetation. Prior to grading and during clearing and grubbing, the areas of vegetation preservation, buffers and other areas of no-disturbance should be flagged, staked or otherwise delineated.

9.3.1 Timing for disturbed areas and slopes

Temporary erosion prevention practices should be initiated immediately after construction activity disturbing soil in an area is temporarily or permanently ceased for a period of 14 days. The application of temporary erosion control management practices should be completed prior to the fourteenth day of temporarily or permanently ceasing construction activity in an area of the project.

9.3.2 Stockpile Management

- Locate the stockpiles and debris outside of any natural buffers established and away from any stormwater conveyances, drain inlets, and areas where stormwater flow is concentrated;
- Protect the stockpile debris from contact with stormwater run-on by using temporary sediment controls, berms, or other best management practices;
- Properly maintain and position stockpiles to minimize dust generation and wind transport of sediment; and
- Minimize stormwater runoff from the piles by properly positioning stockpiles and debris or installing effective sediment controls.
- Operators shall not place stockpiles in surface waters of the state.

Table 11: Erosion Controls

	Co	nsti	uction	ı Pha	ase o	r Activ	ity		
Potential BMPs	Temp Laydown/Batch Plant	Access Roads	Turbine Pads / Erection	UG Collection	Temp Crane Paths	Met and ADLSTower	Collector Substation	O&M Facility	Application Notes
Construction Phasing	Т	Т	Т	Т	Т	Т	Т	Т	Minimize soil disturbance, as feasible, per phase. Stake/flag areas that are to be left undisturbed.
Buffer Strips	Т	Т	Т	Т	Т	Т	Т	T	See Section 9.2 for more information.
Surface Roughening	Т	Т	Т	Т	Т	Т	Т	Т	Use tracked equipment perpendicular to contour on steep slopes for temp/short term erosion control.
Straw / Hay Mulch	Т	Т	Т	Т	Т	Т	Т	Т	Apply at two tons/acre. Disc anchor to soil. Weed Free mulch should be used.
Erosion Control Blanket	Т	Т	Т	Т	Т	Т	Т	Т	Straw or wood fiber, double-sided netting blanket should be installed per manufacturer's recommendations.
Hydromulch	Т	Т	Т	Т	Т	Т	Т	Т	Apply at manufacturers recommended pounds per acre from two directions to prevent shadowing. Could use in lieu of mulch.
Timber Matting					Т				Channel slopes to be modified temporarily during construction to allow for crane crossing. Restore to original conditions

Temporary Seed Mix	Т	Т	Т	Т	Т	Т	Т	Т	Application Rate = See Section 9.3.3	Prepare soil prior to seeding. Broadcast and rake seed into
Permanent Seed Mix	P	P	P	P	P	P	P	P	Application Rate = See Section 9.3.4	soil prior to mulch or blanket.

T= Temporary BMPs which will be removed following construction completion and final stabilization.

9.3.3 Potential Temporary Seed Mix

Seed Name	lbs./acre
Perennial Ryegrass	50
Spring Oats	64

9.3.4 Potential Permanent Seed Mix

South Dakota Department of Transportation Type B Permanent Seed Mixture:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	7
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk, Chief, Nebraska 54	3
Big Bluestem	Bison, Bonilla, Champ, Sunnyview, Rountree, Bonanza	3
Canada Wildrye	Mandan	2
	Total:	18

P= Permanent BMPs which will provide vegetative, non-vegetative stabilization or will not be removed following completion of construction.

9.4 Sediment Control Practices

The following controls are anticipated to minimize sediment discharge, capture sediment in suspension and minimize sedimentation off site.

Table 12: Sediment Controls

	Co	onst	ructio	n Pha	ase or	Activ	vity							
Potential BMPs	Temp Laydown/Batch Plant	Access Roads	Turbine Pads / Erection	UG Collection	Temp Crane Paths	Met and ADLS Tower	Collector Substation	O&M Facility	Application Notes					
Silt fence	Т	Т	Т	Т	T	Т	Т	Т	Machine sliced install with wood posts at six foot spacing. Install perimeter silt fence prior to grading					
Fiber rolls	Т	Т	Т	Т	Т	Т	Т	Т	Install on contour, minimum of nine- inch roll, wood or straw fiber. Trench in approximately 2 inches and secure with two-inch posts every two feet on center.					
Soil berm	Т	Т	Т	Т					Side slopes of 3:1 with at least one foot height. Use temporary erosion control to stabilize berm.					

T= Temporary BMPs which will be removed following construction completion and final stabilization.

P= Permanent BMPs which will provide vegetative, non-vegetative stabilization or will not be removed following completion of construction.

9.5 Run-on and Runoff Controls

The following controls are anticipated to minimize scour, transport water across or down steep slopes or critical areas, divert clean water, and / or provide temporary conveyances to maintain drainage.

Table 13: Run-on and Runoff Controls

		Coı	nstructi	on Ph	ase or	Activi	ty				
Potential BMPs	Temp Laydown/Batch Plant	Access Roads	Turbine Pads / Erection	UG Collection	Temp Crane Paths	Met and ADLS Tower	Collector Substation	O&M Facility	Application Notes		
Riprap Apron / Energy Dissipation	Т	P			Т	Т	P	P	See detail in plans. Install within twenty-four hours of connection to surface waters.		
Culvert Protection	Т		Т				Т	Т	See details in plan set. Install within twenty-four hours of installation of culverts.		
Diversion Berm	Т	P			Т	Т	P	P	See detail, use temp erosion control to stabilize berm. Install prior to disturbing downgradient areas.		

T= Temporary BMPs which will be removed following construction completion and final stabilization.

P= Permanent BMPs which will provide vegetative, non-vegetative stabilization or will not be removed following completion of construction.

9.6 Tracking Controls

The following controls are anticipated to minimize or prevent sediment track-out from construction site exits to paved surfaces or to retrieve material tracked onto paved surfaces to minimize or prevent the material from being washed into surface waters or stormwater inlets.

Table 14: Tracking Controls

		Coı	nstruct	tion P	hase o	r Activit	ty					
Potential BMPs	Temp Laydown/Batch Plant	Access Roads	Turbine Pads / Erection	UG Collection	Temp Crane Paths	Met and ADLS Tower	Collector Substation	O&M Facility	Application Notes			
Rock Pad	Т	P			T	Т	P	P	See detail in plans. Install at all site exits prior to grading. Maintain for duration of project.			
Gravel or Aggregate Road Base	Т	P	P		T	Т	P	P	See detail and notes in plans.			
Street Scraping	T	P			Т	Т	P	P	Scrape large clumps/ amounts of material with soft tracked or wheeled equipment prior to sweeping.			
Street Sweeping	T	P	16.11		T	T	P	P	Sweep paved surfaces within twenty-four hours of discovery.			

T= Temporary BMPs which will be removed following construction completion and final stabilization.

9.7 Dewatering and Basin Draining Practices

Dewatering Accumulated Water (via pulp, trench, temporary ditch or grade cuts):

Dewatering of turbid water (water that is visibly cloudy or brown in color) should be discharged via pump and hose or overland flow to a temporary sediment basin for pretreatment. The use of riprap apron (energy dissipation) should be used for the discharge location. If riprap is not used, an alternative form of energy dissipation should be used to prevent scour and re-suspension of soil at the discharge point of the hose. If discharge to a temporary sediment basin is not feasible, the use of dewatering dumpsters, dewatering bags or other prefabricated product should be used. The use of rock checks, erosion control blanket and sumps or traps may be considered for overland flow. After the use of BMPs, the water could be discharged through a vegetated buffer and energy dissipation. The discharge of water from the site should be visibly clear in appearance.

The discharge of accumulated water should not:

- Contain oil, grease, a sheen, odor, or concrete washout;
- Adversely impact adjacent properties with water or sediment;
- Adversely impact waters of the state;

P= Permanent BMPs which will provide vegetative, non-vegetative stabilization or will not be removed following completion of construction.

- Cause erosion of slopes and channels;
- Cause nuisance conditions; or
- Contribute to inundation of wetlands which negatively impact the wetlands.

NOTE: the permittee may be required to obtain a Temporary Water Right. Contact the SDDENR at 605-773-3351 for more information. It is the operator and permittee responsibility to obtain necessary water rights.

9.8 Sampling Requirements

If the discharge observed contains suspended solids the following must be implemented:

- Installation of additional best management practices and update this SWPPP.
- Sample the dewatering discharge for total suspended solids on a daily basis until there is no longer a discharge of visible solids.
- Samples must be analyzed in accordance with 40 CFR, Part 136 which may require sending the samples to an off-site laboratory for analysis.
- If the sample results exceed 53 mg/L in any sample or measurement you must cease the dewatering discharge to surface waters of the state until the operator can demonstrate additional best management practices are sufficient to eliminate visible pollutants.
- Document sampling and results or any updates in this SWPPP.

10.0 Pollution Prevention Management

10.1 Storage, Handling and Disposal of Construction Materials

10.1.1 Storage and Handling

- All products shall be kept in their original container, with original labels still attached, unless the container is not re-sealable.
- Storage of all diesel fuel, oil, hydraulic fluids, other petroleum products and other chemical and products must be within water-tight containers.
- Hazardous materials shall be returned to the hazardous material storage area at the end
 of each day and be contained within sealed containers and provide secondary
 containment as applicable.
- An effort should be made to store only enough products to do the required job.
- The contractor shall provide tanks or barrels to collect liquid byproducts that pose a pollution hazard.
- The pollutants shall be removed from the site on a weekly basis and disposed of in accordance with federal, state and local regulations.
- All spills shall be cleaned up immediately after discovery, in accordance with the manufacture's recommended methods.
- Hazardous materials shall be properly stored to prevent vandalism or unauthorized access.
- Containment units shall be installed in accordance with federal, state, and local regulations.
- No hazardous material shall be stored within 200 feet of an identified critical area.
- If building materials, chemicals, or general refuse is being used, stored, disposed of, or otherwise managed inappropriately, the contractor shall correct such defects within twenty-four hours of detection or notification.

10.1.2 Disposal (Dumpsters)

- Locate dumpsters away from watercourses, streams, creeks and other surface waters or conveyances.
- Site inspector shall regularly observe for and report excess litter and solid waste and request pickup and retrieval of wastes.
- Wastes, litter, debris shall be deposited into dumpsters in a central location and / or in various satellite locations where work is active.
- Dumpsters should be supplied by and regularly maintained, emptied and removed by a waste management company.

10.2 Fueling and Maintenance of Equipment and Vehicles; Spill Response

• Routine maintenance of vehicles may occur in staging areas only if necessary.

- Avoid maintaining equipment and vehicles on site and perform maintenance off site where feasible.
- If fueling is done by mobile tank and dispenser, provide close supervision for the transfer of fuel, use drip pans, and make spill containment and cleanup materials readily available.
- If fueling is done via temporary tank, store the tank within a bermed, area and away from surface waters.
- Make Spill Kits with absorbent materials available on site for use in cleaning up small spills.
- In the event of a spill or discharge of hazardous material of reportable quantity, contact the South Dakota Notification Center (605-773-3296), the South Dakota After Hours Center (605-773-3231), If the hazardous condition involves the release of an EPA regulated material or an oil as defined by the EPA, the release may also need to be reported to the National Response Center. Federal Reporting is required within 15 minutes of event occurrence or discovery. Contact the National Response Center at (800) 424-8802. The NRC is staffed twenty-four hours a day. For more information reference the following website: https://www.epa.gov/emergency-response/when-are-you-required-report-oil-spill-and-hazardous-substance-release.

Table 15: Reportable Spill Quantities

Material	Where Discharged	Reportable Spill Quantities
Petroleum Material	25 Gallons	Petroleum Material
PCB Oil	1 Pound	PCB Oil
Other Material	Quantity that causes odor, color, sheen, foam, or other obvious indicator of pollutants.	Other Material

10.3 Vehicle and Equipment Washing

If necessary, the contractor shall develop a designated wash area with basin containment to prevent the untreated water from discharging from the site to surface waters. BMPs include, temporary basins, inspecting the vehicles and equipment for leaks prior to washing, and prohibiting washing activity until discovered leaks are repaired and maintenance is completed of the equipment or vehicle. The area shall be identified on the site plan. Contain the water, and pump from the site into a truck for proper disposal at a wastewater facility. No engine degreasing may be done on site.

10.4 Concrete Washout and Other Washout

10.4.1 Mobile Concrete and Mortar Mixers

Implement the following BMPs with the use of mortar or concrete mixers.

- Store bags of concrete and mortar in dry storage.
- Position mixers a minimum of 100 feet from the nearest watercourse or conveyance.

- If mixers must be positioned closer than 100 feet from a conveyance, install a temporary berm to prevent runoff from the mixer from flowing into the conveyance.
- Use Tarpaulins or plastic sheeting as a liner to prevent concrete or mortar from contacting the soil.
- Use buckets to contain washout /rinse water when cleaning the mobile mixer.
- Dump buckets of washout water in a designated concrete washout area.

10.4.2 Concrete Washout

Implement the following BMPs implemented for concrete washout areas.

- Contain washout water from the tools, equipment, and the chutes of concrete trucks, mobile mixers, or other containers with concrete material, and do not allow it to be discharged into waters of the state or drain onto adjacent properties.
- Define the washout area with signage notifying the contactors of the location and use.
- The washout area should be a sufficient size to contain the expected washout material. 10'x10'x3' area should suffice for most activities. Additionally: the washout area shall have a sign demarking the area as a washout.
- Multiple washout areas may be needed. Locations of the washouts should be shown on the construction plans by the contractor.
- When identifying the location of the concrete washout areas, include the date of install, date of last maintenance, and date of removal.
- Use thick poly sheeting to prevent contamination of the soil and prevent infiltration of the washout material.

Once the material is hardened it can be disposed of in a dumpster. If the material is liquid or not hardened, vacuum the material up, haul it off site to properly disposed of or recycle at an approved facility. Some sites will not need the separate washout area if a truck chute washout is available from the concrete supplier.

10.4.3 Truck Chute Washout

Where available, all trucks with self-contained washout and water recycle systems must be used for every truck chute, tool, and equipment rinse and washout. Position the truck in a flat area, away from inlets and surface waters where feasible.

10.5 Portable Sanitary Facilities

- Locate facilities away from watercourses, streams, creeks, and other surface waters or conveyances.
- Place facilities upgradient of perimeter sediment controls, and not on paved or other impervious surfaces.
- Secure facilities to the soil with stakes or tether to other non-movable structure to prevent tipping from wind or other factors.
- Schedule routine and regular cleanout and maintenance of facility from a reliable company.

11.0 Temporary Concrete Batch Plant

The site has a temporary, dedicated concrete batch plant to supply concrete material for use during development. The following information relates to the operation of the temporary concrete batch plant.

11.1 Management of Runoff

See Attachment E for the batch plant map with location, layout and controls. The batch plant should be located on higher ground where feasible with a gravel or aggregate base. Where necessary, the base should have a geotextile liner to minimize potential for infiltration of washout waters or material into the subsoils. Where the batch plant cannot be located on higher ground topsoil or earthen diversions should be constructed to divert any run-on water from adjacent areas around the batch plant operation. As necessary in areas where potential contamination is a low risk, the use of a temporary sediment trap, temporary containment berm from the internal water may be used. Industry standard erosion and sediment control practices should be used to minimize runoff into adjacent surface waters or neighboring property.

11.2 Material List

The operator of the batch plant should have a list of materials which are on site and exposed to the elements. A copy of this list should be inserted into Attachment B.

11.3 Routine Inspections

A qualified person should inspect the batch plant area during the routine site inspections during the batch plant operation. The inspector shall inspect the following:

- Material handling areas,
- Above ground storage tanks,
- Hoppers and silos,
- Dust collection and containment systems, and
- Truck wash down and equipment cleaning areas.

The inspector should document where action items, maintenance, and installation of controls is needed with follow-up documentation on when the action items were addressed, and what was done to correct the items noted. A description of spills and leaks should be included in the reports or as an incident statement with the next inspection report. Insert completed inspections in Attachment G of this binder.

11.4 Training

An employee training program must be developed to educate personnel responsible for implementing any component of the SWPPP at the temporary batch plant. The frequency of the training must be at a minimum one training prior to the initiation of the operation of the concrete batch plant. Documentation of the training shall be inserted into Attachment F of this training / meeting with a list of attendees, topics discussed, duration of the training and signatures of those in attendance.

11.5 Spill Prevention and Response Procedures

Refer to Section 10.2 of this SWPPP.

11.6 Comprehensive Inspection

At least once during the project batch plant activity an alternative person from the routine inspector should provide an additional inspection (which may be used for one of the monthly routine inspections) including the following:

A visual examination of areas draining storm water associated with the batch plant. Observe the following areas for effectiveness:

- Cleaning areas;
- Material handling areas;
- Above ground storage tanks;
- Hoppers and silos;
- Dust collection/containment systems;
- Run-on, runoff, and erosion/sediment controls in place;
- Spill response equipment and management; and
- Material on site and the list of expected materials.

Within two weeks of inspection if deficiencies are observed:

- Revise lists of potential sources and materials;
- Revise BMPs listed on the plan sheets and SWPPP where necessary; and
- Implement revisions and changes to lists, documentation and BMPs.

The inspection report should include:

- Name of person completing the inspection;
- Dates of the evaluation;
- Observations;
- Findings of deficiencies; and
- Corrective Actions recommended.

12.0 Inspection, Maintenance and Corrective Actions

Construction activity and all support activities must be inspected (using the inspection form found in Attachment F or an alternative form) within the parameters of the schedule below. The inspector shall be a person trained and familiar with the requirements of this SWPPP and the SDR100000 Permit. This person is delegated by the owner.

Scope of inspections* should include:

- Date and time of inspections;
- Inspector's name;
- Findings of the inspection;
- Locations of corrective actions needed;
- Corrective actions taken (date/time/ who);
- Date and amount of rainfall**
- Observed discharges Locations;
- Description of discharges with color, odor, floating, settled, solids, foam, or oil sheen;
- Photographs of discharges

Amendments from inspections need to be completed within seven days (see SWPPP section 3.1).

*All inspections should be documented within twenty-four hours after completing the field inspection, and available in paper or electronic form on site.

**Rainfall amounts should be taken from an onsite rain gauge. If a rain gauge is not feasible, the rain fall data should be observed from the following website:

https://www.wunderground.com/weather/us/sd/miller/KSDMILLE12

12.1 Inspection Schedule Table 16: Inspection Schedule

If the site is:	Then an inspection is needed:	Notes and Information
Active	☐ Once every fourteen calendar days and within twenty-four hours of a rainfall ≥ 0.25", OR ☒ Once every seven calendar days	A rain gauge should be used, or rain data should be taken from the link listed above.
Partial final stabilization	Once every month	Allowed in areas where work is completed, and vegetation is established. Other/active areas must follow above.
Subject to Winter/Frozen Conditions	Once every month	Disturbed areas of the site have been temporarily of permanently stabilized. Resuming "active inspection frequency is required no later that March 1st of each year.

12.2 Maintenance Schedule

Table 17: Maintenance Schedule

ВМР	Observed Condition for Maintenance	Maintenance Interval		
All non-functional BMPs	Sediment overtopping, under water, scoured ends, undermined, destroyed, nonfunctional as designed, etc.	Maintenance must be done by the end of the next workday or if the BMP requires replacement: it should be done within seven calendar days or prior to forecast rainfall, whichever is sooner. If sediment escapes the construction site: begin removing the offsite accumulations by the end of the same workday.		
Vegetative Buffer	Silt covered, rill erosion observed or otherwise ineffective	Repair by the end of the next working day.		
Stabilized Areas (temporary or permanently)	Rill erosion, gulley erosion is observed. Mulch washed away or erosion control blanket is undermined.	Repair and stabilize eroded areas and non-functional stabilization BMPs by the end of the same workday.		
Perimeter Sediment Control (silt fence, fiber logs, berms, etc.)	1/2 full of sediment, flattened to 1/2 height, driven over, undermined, scoured, moved for access etc.	Maintenance of the BMP: by the end of the next workday or if replacement is required: complete replacement within seven days of discovery or notice or prior to forecast rainfall, whichever is soonest.		
Inlet protection BMPs, conveyances, surface waters	Sediment deposition, sediment deltas and accumulation of sediment material.	Removal/cleanout of accumulated sediment and deltas to be removed within seven days. Stabilize as needed if soils are exposed during removal/cleanout.		
Site exit locations, rock exit pads, other anti-tracking practices	Accumulated sediment in rock or other anti-tracking BMP, tracking of sediment from the site onto paved surfaces	Top dress rock, maintain rock exit or other anti- tracking controls, scrap paved surfaces, sweep paved surfaces by the end of the same workday.		
Paved surfaces; adjacent streets	Tracked sediment and soil material from the site hauling or access	Sweep within the same workday of discovery; additional and/or more frequent sweeping may be needed to maintain public safety or prevent washing from forecast rains.		

13.0 Final Stabilization

Final stabilization is achieved for the project when permanent erosion control BMPs are applied to the site. The permanent erosion control BMPs may be a combination of vegetative and no vegetative cover types. Additional requirements to achieving final stabilization include:

- All soil disturbing activity is complete;
- Permanent stormwater treatment system (if required) is constructed and accumulated sediment from construction activity has been removed;
- All temporary, synthetic BMPs have been removed from the site;
- In agricultural areas (as applicable), the construction activity area has been restored to the pre-construction agricultural use; and
- The vegetative cover for the site is at a density, with a uniform perennial cover of 70 percent of the expected final growth density.

13.1 Vegetative Cover / Permanent Erosion Control

The planned permanent erosion control vegetative cover BMPs for this site include:

Permanent vegetative establishment will be placed on all areas of the site once construction activities have ceased utilizing the permanent seed mix provided in Section 9.3.4., or as selected by the contractor. Minimization of the presence of invasive species is required. The following seven weeds are declared to be noxious in South Dakota: Canada thistle, hoary cress, leafy spurge, perennial sow thistle, purple loosestrife, Russian knapweed, and salt cedar.

13.2 Non-vegetative Cover / Permanent Erosion Control

The planned permanent erosion control non-vegetative cover BMPs for this site include:

Aggregate rock for county road.

14.0 Training Requirements and Documentation

Prior to commencement of construction activity each person of the stormwater team must be trained and understand the requirements of the Construction General Permit (CGP) specific to their responsibility.

The following topics must be covered in the training and at a minimum training should include:

- Permit requirements and deadlines with installation, maintenance, and removal of BMPs
- Site Stabilization
- Location of stormwater controls;
- Maintenance requirements and maintenance needs for BMPs:
- Procedures and permit requirements for pollution prevention;
- When and how to conduct inspections;
- · Record keeping; and
- Corrective Actions.

Training requirements specific to conducting inspections should include (at a minimum):

- Completed EPA construction inspection certification or license OR
- Hold a current valid construction inspection certification or license from a program that covers the following.
 - Principles and practices of erosion and sediment control and pollution prevention practices at construction sites
 - Proper installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites
 - Performance of inspections, including the proper completion of required reports and documentation.

Documentation of training or certifications is included in **Attachment G**.

15.0 Notice of Termination

The project permit may be terminated in one of the following scenarios.

- All construction activity is complete, temporary synthetic BMPs are removed, accumulated sediment from construction is removed, and final stabilization is completed with vegetative and/or non-vegetative cover. The Notice of Termination form from the South Dakota Department of Environment and Natural Resources should be completed within thirty days of meeting the conditions above. Upon midnight of the post marked date, the permit coverage is terminated unless otherwise notified by the SDDENR.
- Within thirty days of selling or otherwise legally transferring ownership of the site in its
 entirety (including street sweeping and stormwater infrastructure) from the original
 owner to another party taking responsibility of ownership.
- Where the project obtained permit coverage but never started construction activity due to cancellation or other reasons. Documentation should be sent to the SDDENR with the NOT form and is subject to SDDENR approval.

16.0 Record Retention

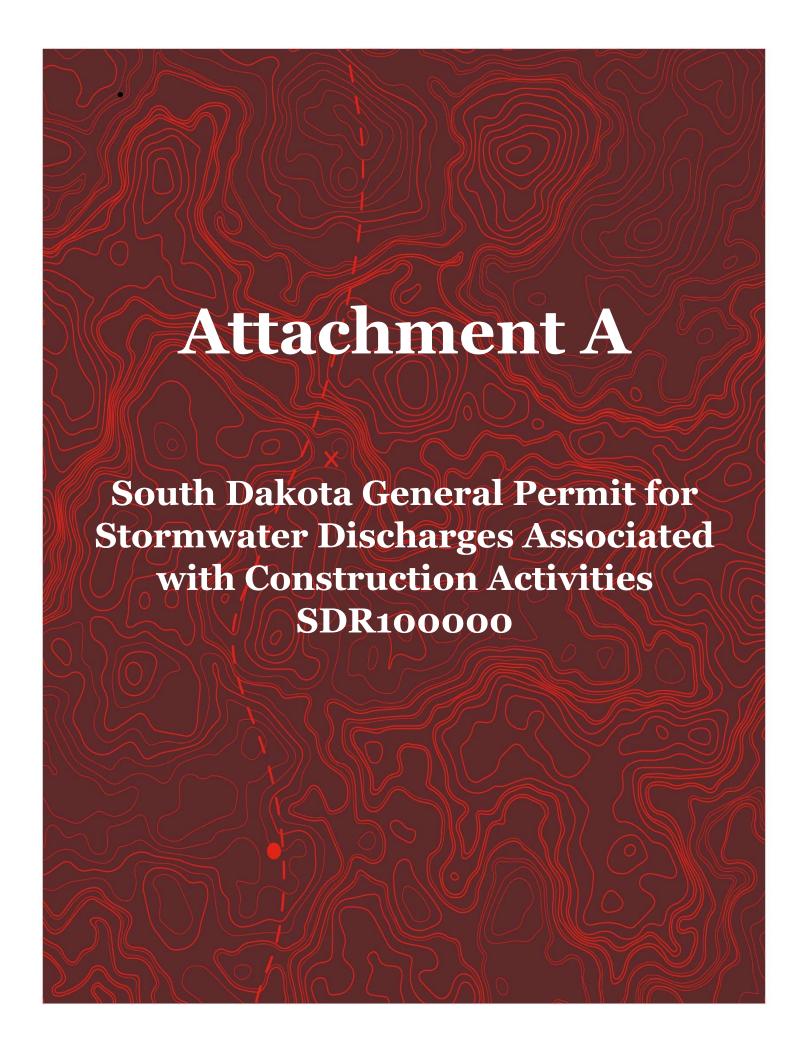
16.1 During construction

This report, amendments and Appendices, inspections, and maintenance records should be kept on site during normal business hours. The records should be kept by the owner or operator listed on the permit application. The records should be in a mailbox, in a vehicle or in an on-site office trailer or model home.

16.2 Post Construction / Notice of Termination (NOT)

The site owner must retain all the following records for a period of at least three years after the submittal of the NOT:

- The final SWPPP with all field notes/amendments;
- Other stormwater related permits in addition to the NPDES permit from SDDENR;
- Inspection and maintenance records;
- All permanent operation and maintenance agreements; and
- All required calculations for design of the temporary and permanent stormwater management systems



Permit Number: SDR100000

SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

General Permit Authorizing Stormwater Discharges Associated with Construction Activities Under the South Dakota Surface Water Discharge System

In compliance with the provisions of the South Dakota Water Pollution Control Act and the Administrative Rules of South Dakota (ARSD), Article 74:52, owners and operators of stormwater discharges from **construction activities**, located in the state of South Dakota are authorized to discharge in accordance with the conditions and requirements set forth herein.

This General Permit shall become effective on April 1, 2018.

General permit coverage for the [PERMITTEE] shall become effective [EFFECTIVE DATE].

This General Permit and the authorization to discharge shall expire at midnight, March 31, 2023.

Signed this 23rd day of March, 2018,

Authorized Permitting Official

Steven M. Pirner

Secretary

Department of Environment and Natural Resources

Note: This page will be replaced with a copy containing the assigned permit number once coverage has been authorized.

TABLE OF CONTENTS

1.0	DEF	INITIONS	1
2.0	COV	VERAGE UNDER THIS GENERAL PERMIT	7
	2.1	Eligibility Requirements	7
	2.2	Discharges Authorized	7
	2.3	Discharges Not Authorized	8
	2.4	Requesting Permit Coverage	9
	2.5	Transferring Permit Coverage	10
	2.6	Terminating Permit Coverage	10
	2.7	Reporting Requirements	11
	2.8	Requiring an Individual Permit or an Alternative General Permit	11
	2.9	Continuation of Coverage for Expired General Permit	12
	2.10	Requirement to Post Notice of Your General Permit Coverage	12
	2.11	Property Rights	12
	2.12	Reopener Provisions	12
	2.13	Severability	13
	2.14	Permit Actions	13
3.0	EFF	LUENT LIMITS	14
	3.1	Proper Operation and Maintenance	14
	3.2	Erosion and Sediment Control Requirements	14
	3.3	Installation Requirements	15
	3.4	Perimeter Controls	15
	3.5	Sediment Basins	15
	3.6	Minimize Sediment Track-Out	15
	3.7	Remove Offsite Accumulation	16
	3.8	Minimize Dust	16
	3.9	Minimize Run-on	16
	3.10	Provide Natural Buffers	16
	3.11	Preserve Topsoil	17
	3.12	Minimize Steep Slope Disturbance	17
	3.13	Protect Storm Drain Inlets	17
	3.14	Erosive Velocity Control	17
	3.15	Minimize Soil Compaction	18
	3.16	Minimize Exposed Soil	18
	3.17	Protect Stockpiles	18
	3.18	Stabilization Requirements	18
	3.19	Maintenance Requirements	20

	3.20	Pollution Prevention Procedures	21
	3.21	Construction Dewatering	23
4.0	INS	PECTION REQUIREMENTS	25
	4.1	Person(s) Responsible for Inspecting the Site	25
	4.2	Frequency of Inspections	25
	4.3	Reduction of Inspection Frequency	25
	4.4	Areas that Need to Be Inspected	25
	4.5	Requirements for Inspections	26
	4.6	Inspection Report	27
5.0	STC	ORMWATER POLLUTION PREVENTION PLAN	29
	5.1	SWPPP Deadlines	29
	5.2	TMDL	29
	5.3	SWPPP Contents	29
	5.4	SWPPP Certification	34
	5.5	Required SWPPP Modifications	34
6.0	SPE	ECIAL CONDITIONS	36
	6.1	Qualified Local Programs	36
7.0	REI	PORTING AND RECORDKEEPING REQUIREMENTS	37
	7.1	Emergency Spill Notification	37
	7.2	Planned Changes	38
	7.3	Records Contents & Retention	38
	7.4	Signatory Requirements	38
	7.5	Duty to Provide Information	39
	7.6	Availability of Information	40
8.0	CO	MPLIANCE REQUIREMENTS	41
	8.1	Duty to Comply	41
	8.2	Duty to Mitigate	41
	8.3	Need to Halt or Reduce Activity Not a Defense	41
	8.4	Upset Conditions	41
	8.5	Removed Substances	42
	8.6	Inspections and Entry	42
	8.7	Oil and Hazardous Substance Liability	42
	8.8	Penalties for Violations of general permit Conditions	42
	8.9	Penalties for Falsification of Reports	43

Appendix A – Notice of Intent (NOI) Form

Appendix B – Notice of Termination (NOT) Form

Appendix C – Contractor Authorization Form

Appendix D – Transfer of Permit Coverage Form

Appendix E – Noitce of Intent for Reauthorization Form

Appendix F – Two-year, Twenty-four Hour Precipitation Event Map

1.0 **DEFINITIONS**

ARSD – Administrative Rules of South Dakota.

Best Management Practices (**BMPs**) – the schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants from the construction site. BMPs also include treatment requirements, operating procedures, and practices to control construction site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Borrow Areas – the areas where materials are dug for use as fill, either onsite or offsite.

Commencement of Construction Activities – the initial disturbance of soils (or 'breaking ground') associated with clearing, grading, or excavating activities or other construction-related activities (e.g., stockpiling of fill material).

Construction Site – the land or water area where construction activities will occur and where control measures will be installed and maintained. The construction site includes construction support activities, which may be located at a different part of the property from where the primary construction activity will take place, or on a different piece of property altogether. The construction site is often a smaller subset of the lot or parcel within which the project is taking place.

Construction Site Washout – as used in this general permit, refers to any wash waters derived from the cleaning of construction trucks and/or equipment including, but not limited to, concrete, mortar, grout, stucco, form release oils, paints, curing compounds, and other construction materials.

Construction Support Activity – a construction-related activity that specifically supports the construction activity and can include activities associated with concrete or asphalt batch plants, equipment staging yards, materials storage areas, excavated material disposal areas, and borrow areas.

Construction Waste – discarded material including, but not limited to, packaging materials, scrap construction materials, masonry products, timber, steel, pipe, electrical cuttings, plastics, and Styrofoam.

Control Measures – as used in this general permit, refer to any best management practice or other method, including narrative effluent limits, used to minimize erosion and sedimentation, and thereby prevent or reduce the discharge of pollutants to surface waters of the state.

Corrective Action – as used in this general permit, refers to any action taken to (1) repair, modify, or replace any control measure used at the site; (2) clean up and dispose of spills, releases, or other deposits found on the site; or (3) remedy a permit violation.

Dewatering – the act of draining or pumping rain water, ground water, or surface waters from building foundations, vaults, trenches, and other areas of the construction site.

Discharge – the addition of any pollutant or combination of pollutants to surface waters of the state from any point source.

Earth-Disturbing Activities – as used in this general permit, means actions taken to alter the existing vegetation and/or underlying soil of a site.

Effective Operating Condition – as used in this general permit, means a control measure is kept in effective operating condition if it has been implemented and maintained in such a manner that it is working as designed to minimize pollutant discharges.

Final Stabilization – on areas not covered by permanent structures, means either (1) vegetation has been established that provides a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the natural background vegetative cover, (2) permanent non-vegetative stabilization methods have been implemented to provide effective cover for exposed portions of the site, or (3) disturbed portions of a construction site on land used for agricultural purposes must be returned to pre-construction agricultural use.

Historic Property – any building, structure, object, district, area, or site that is significant in the history, architecture, archaeology, paleontology, or culture of the state, its communities or the nation as stated in SDCL 1-19A-2.

Infeasible – as used in this general permit, means not technologically possible or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale – a contiguous area where multiple separate and distinct land disturbing activities may be taking place at different times, on different schedules, but under one proposed plan. "One plan" is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating construction activities may occur on a specific plot.

Minimize – to reduce and/or eliminate to the extent achievable using control measures that are technologically available and economically achievable and practicable in light of best industry practices.

Municipal Separate Storm Sewer System – a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) that is owned or operated by the state or a municipality and is designed or used for collecting or conveying stormwater. This definition does not include combined sewers or conveyances that are part of a publicly-owned treatment works, as defined by ARSD 74:52:01:01(36).

Municipality – a city, town, county, district, sanitary district, or other public body created by or under state law with jurisdiction over the disposal of sewage, industrial wastes, or other wastes.

Natural Buffer – as used in this general permit, means an area of undisturbed natural cover surrounding surface waters within which construction activities are restricted. Natural cover

includes the vegetation, exposed rock, or barren ground that exists prior to commencement of construction activities.

Nonpoint Source – a source of pollution that is not defined as a point source.

Non-Stormwater Discharges – discharges that do not originate from runoff events. They can include, but are not limited to, discharges of process water, air conditioner condensate, non-contact cooling water, vehicle wash water, sanitary wastes, construction washout water, paint wash water, irrigation water, or pipe testing water.

Notice of Intent or **NOI** – the form (electronic or paper) provided by the Secretary required for authorization of coverage under this general permit (Appendix A).

Notice of Termination or **NOT** – the form (electronic or paper) provided by the Secretary required for terminating coverage under this general permit (Appendix B).

Operator – as used in this general permit and in the context of stormwater discharges associated with construction activity means any party associated with a construction project that meets either of the following two criteria:

- 1. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
- 2. The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the general permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the general permit).

The operator, along with the owner, is responsible for ensuring compliance with all conditions of this general permit and with development and implementation of the stormwater pollution prevention plan.

Pesticide – any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pests, or any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant.

Note: drugs used to control diseases of humans or animals (such as livestock and pets) are not considered pesticides; such drugs are regulated by the Food and Drug Administration. Fertilizers, nutrients, and other substances used to promote plant survival and health are not considered plant growth regulators and thus are not pesticides. Biological control agents, except for certain microorganisms, are exempted from regulation as pesticides under FIFRA. (Biological control agents include beneficial predators such as birds or ladybugs that eat insect pests, parasitic wasps, fish, etc.)

Point Source – any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, animal feeding operation, or vessel or other floating craft from which pollutants are or may be discharge. Construction sites disturbing one (1) or more acres are point sources. Therefore, any

water flowing off the construction site constitutes a discharge and must be covered by a Surface Water Discharge permit.

Pollutant-Generating Activities – at construction sites, as used in this general permit, means those activities that lead to or could lead to the generation of pollutants, either as a result of earth-disturbance or a related construction support activity. Some of the types of pollutants that are typically found at construction sites are:

- 1. Sediment;
- 2. Nutrients;
- 3. Heavy metals;
- 4. Pesticides and herbicides;
- 5. Oil and grease;
- 6. Bacteria and viruses;
- 7. Trash, debris, and solids;
- 8. Treatment polymers; and
- 9. Any other toxic chemicals.

Prohibited Discharges – as used in this general permit, means discharges that are not allowed under this general permit, see Section 2.3.

Qualified Local Program – a municipal program for stormwater discharges associated with construction sites that has been formally approved by SDDENR to act in lieu of the state program.

Regulated Substance – the compounds designated by the department under South Dakota Codified Law §§ 23A-27-25, 34A-1-39, 34A-6-1.3(17), 34A-11-9, 34A-12-1 to 34A-12-15, inclusive, 45-6B-70, 45-6C-45, 45-6D-60, and 45-9-68, including pesticides and fertilizers regulated by the Department of Agriculture; the hazardous substances designated by the federal Environmental Protection Agency pursuant to section 311 of the Federal Water Pollution Control Act and Clean Water Act (33 United States Code sections 1251 to 1387, inclusive), as amended to January 1, 2011; the toxic pollutants designated by Congress or the Federal Environmental Protection Agency pursuant to section 307 of the Toxic Substances Control Act (15 United States Code sections 2601 to 2671, inclusive), as amended to January 1, 2011; the hazardous substances designated by the Federal Environmental Protection Agency pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (42 United States code sections 9601 to 9675, inclusive), as amended to January 1, 2011; and petroleum, petroleum substances, oil, gasoline, kerosene, fuel oil, oil sludge, oil refuse, oil mixed with other wastes, crude oils, substances, or additives to be utilized in the refining or blending of crude petroleum or petroleum stock, and any other oil or petroleum substance. This term does not include sewage and sewage sludge.

Runoff Event – a precipitation event or snowmelt that results in a measurable amount of surface runoff.

SDDENR – the South Dakota Department of Environment and Natural Resources.

Secretary – the Secretary of the South Dakota Department of Environment and Natural Resources, or an authorized representative.

Section 303(d) List or 303(d) List – a list of South Dakota's water quality-limited surface waters requiring the development of Total Maximum Daily Loads (TMDLs) to comply with Section 303(d) Report is available on the SDDENR website. A link to a map of 303(d) listed waters, waters with approved TMDLs is available on the SDDENR stormwater webpage.

Stormwater – means, for the purpose of this general permit, stormwater runoff, snowmelt runoff, or surface runoff.

Stormwater Associated with Construction Activity – means a discharge of pollutants in stormwater to surface waters of the state from areas where construction site or construction support activities occur.

Stormwater Associated with Industrial Activity – means stormwater runoff, snow melt runoff, or surface runoff and drainage from industrial activities as defined in 40 C.F.R. Section 122.26(b)(14) (July 1, 2016).

Stormwater Pollution Prevention Plan or **SWPPP** – means a site-specific, written document that, among other things: 1) identifies potential sources of stormwater pollution at the construction site; 2) describes control measures to reduce or eliminate pollutants in stormwater discharges from the construction site; and 3) identifies procedures the owner or operator will implement to comply with the terms and conditions of this general permit. See Section 5.0 for details on the requirements for a SWPPP.

Surface Waters of the State – lakes, ponds, streams, rivers, wetlands, and any other body or accumulation of water on the land surface that is considered to be waters of the state, but not waste treatment systems, including treatment ponds, lagoons, leachate collection ponds, or stormwater retention ponds designed to meet the requirements of the federal Clean Water Act.

Surface Water Quality Standards – water quality standards adopted pursuant to South Dakota Codified Law §§ 34A-2-10 and 34A-2-11 or actual existing beneficial uses, whichever is higher, and effluent standards adopted pursuant to SDCL § 34A-2-13 or pursuant to the best professional judgment of the Secretary, whichever is applicable. If waters have more than one designated beneficial use and criteria are established for a parameter that is common to two or more uses, such as pH, the more restrictive criterion for the common parameter applies.

Temporary Stabilization — means a condition where exposed soils or disturbed areas are provided a temporary vegetative and/or non-vegetative protective cover to prevent erosion and sediment loss. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until either final stabilization can be achieved or until further construction activities take place to re-disturb the area.

Total Maximum Daily Load or **TMDL** – means the sum of the individual wasteload allocations for point sources, load allocations for nonpoint sources, and natural background. TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measures.

Upset – an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

U.S. EPA – the United States Environmental Protection Agency.

Waters of the State – all waters within the jurisdiction of this state, including all streams, lakes, ponds, impounding reservoirs, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, situated wholly or partly within or bordering upon the state.

Work Day – means, for the purpose of this general permit, a calendar day on which construction activities will take place.

2.0 COVERAGE UNDER THIS GENERAL PERMIT

2.1 Eligibility Requirements

This general permit shall apply to stormwater discharges from construction sites located within the state of South Dakota. Only those projects that meet all of the following eligibility requirements may be covered under this general permit:

1. You are the owner or operator of the construction project for which discharge will be covered under this general permit. The owner must obtain coverage under this general permit and all operators at the site must comply with the permit conditions.

2. Your project:

- a. Will disturb one (1) or more acres of land; or
- b. Will disturb less than one (1) acre of land but is part of a larger common plan of development or sale that will ultimately disturb one (1) or more acres of land; or
- c. Is less than one (1) acre, but has construction support activities required to be covered and the total area exceeds one (1) or more acres of land; or
- d. Has been designated by the Secretary or the United States Environmental Protection Agency (U.S. EPA) as needing a permit.
- 3. You have complied with all applicable requirements imposed by the applicable county, city, or other local government entities.
- 4. If your project will encroach, damage, or destroy a historic property included in the national register of historic places or the state register of historic places located in South Dakota, you must have approval from the South Dakota State Historic Preservation Office prior to submitting the Notice of Intent (NOI). You must attach an approval letter from the State Historic Preservation Office with the NOI.

2.2 Discharges Authorized

The following discharges shall be authorized under this general permit:

- 1. Stormwater discharges from projects detailed in Section 2.1.2.
- 2. Stormwater discharges from construction support activities provided:
 - a. The support activity is directly related to the construction site required to have permit coverage;
 - b. The support activity does not continue to operate beyond the completion of the construction activity at the project it supports. If the support activity continues past the initial permitted project, you must obtain a separate permit for those activities;

- c. The support activity is included in the SWPPP as required by Section 5.0; and
- d. Control measures are implemented for discharges from the support activity area.
- 3. Stormwater construction discharges combined with discharges from an industrial source, as long as:
 - a. The industrial source is located on the same site as your construction activity; and
 - b. You may not combine stormwater discharges from industrial and construction activities unless each source is covered by its own permit, or are not required to obtain permit coverage.
- 4. Discharges to waters for which there is a total maximum daily load (TMDL) allocation for sediment, suspended solids, and turbidity are covered only if you develop a SWPPP that is consistent with the assumptions, allocations, and requirements in the approved TMDL. If a specific numeric wasteload allocation has been established that would apply to discharges from construction activity, the permittee must incorporate that allocation into the SWPPP and implement necessary steps to meet that allocation.

2.3 Discharges Not Authorized

The following discharges are not authorized by this general permit:

- 1. **Post-Construction Discharges**. This general permit is not designed to address post-construction discharges after you have completed construction activities and achieved final stabilization at the site. Stormwater discharges associated with industrial activities must obtain coverage under a separate stormwater permit.
- 2. **Discharges Mixed with Non-Stormwater**. This general permit does not authorize discharges of non-stormwater.
- 3. **Discharges of Fill Material**. This general permit does not authorize you to discharge fill material into surface waters of the state. You are required to obtain a Section 404 federal Clean Water Act permit from the U.S. Army Corps of Engineers.
- 4. **Discharges Threatening Water Quality**. This general permit does not authorize your discharge from a construction site if the discharge will cause, or have the reasonable potential to cause or contribute to, violations of Surface Water Quality Standards. In such cases, the Secretary may deny you coverage under the general permit or require you to obtain an individual Surface Water Discharge permit.
- 5. **Discharges Threatening Endangered Species**. This general permit does not authorize your discharge from a construction site if the discharge will not ensure the protection of species that are federally-listed as endangered under the federal Endangered Species Act.

6. **Discharges of Regulated Substances**. This general permit does not authorize you to discharge regulated substances, hazardous substances, or oil resulting from onsite spills. You are subject to the federal reporting requirements of 40 CFR Part 110, Part 117, and Part 302 relating to spills or other releases of oils or hazardous substances. You must report spills in excess of the reportable quantities as required in Section 7.1.

2.4 Requesting Permit Coverage

To request coverage under this general permit, you must submit a complete and accurate Notice of Intent (NOI) (Appendix A) to SDDENR at least 15 calendar days prior to the commencement of construction activities at the site. <u>The NOI must be signed by the owner of the property where construction activities will occur.</u>

- 1. You must identify the person(s) responsible for day-to-day operations at the construction site, if different from the owner. A Contractor Authorization Form, included in Appendix C, must be submitted to SDDENR as soon as a contractor is identified if the contractor was not identified on the NOI.
- 2. You are not prohibited from submitting a late NOI. When you submit a late NOI, your authorization to discharge is only for discharges that occur after SDDENR grants coverage. SDDENR reserves the right to take appropriate enforcement action for any unpermitted discharges that may have occurred between the commencement of construction activities and the time authorization for your discharge is granted.
- 3. SDDENR will not process incomplete NOIs.
- 4. You must submit a completed and signed NOI to SDDENR by emailing the NOI to stormwater@state.sd.us, or mailing the NOI to SDDENR at the address in Section 7.3.
- 5. SDDENR will review each complete NOI and make a decision to grant or deny coverage or request additional information. You will receive an authorization letter from SDDENR if permit coverage is granted for your project.
- 6. Upon the effective date of this general permit, the Secretary will terminate the existing general permit.
 - a. If you are authorized under the existing general permit and you have submitted the Notice of Intent for Reauthorization Form (found in Appendix E) prior to permit expiration date, your coverage will automatically continue under the new general permit. Once the new general permit is issued, you will receive an authorization letter from SDDENR notifying you of the continued coverage.

b. Projects covered under the existing general permit must be in compliance with the conditions in the new general permit by **October 1, 2018.** You must still maintain compliance with all requirements in the existing general permit during the grace period. SDDENR may grant additional time on a case by case basis if necessary. To obtain such an extension, you must request it from SDDENR in writing.

2.5 Transferring Permit Coverage

If a new owner purchases a construction site or a portion of the site covered under this general permit, you are responsible for notifying the new owner(s) of the general permit requirements and communicating the importance of achieving final stabilization on the site. You must transfer permit coverage to the new owner. Appendix D includes a form for transferring permit coverage for all or a portion of a project or development to a new owner.

2.6 Terminating Permit Coverage

Until the Secretary terminates your coverage under this general permit, you are required to comply with all conditions and effluent limits in this general permit. To terminate coverage, you are required to submit a complete and accurate Notice of Termination (NOT), found in Appendix B, and signed in accordance with Section 7.4. You must submit the NOT within **30 calendar days** of meeting any one of the following conditions.

- 1. You have completed all earth-disturbing activities at your site and, if applicable, all construction support activities covered by this general permit, and you have met all the following requirements:
 - a. You have met the stabilization requirements listed in Section 3.19 and have reached final stabilization for any areas disturbed during construction and over which you had control during the construction activities;
 - b. You have removed and properly disposed of all temporary construction materials, waste and waste handling devices, and have removed all equipment and vehicles that were used during construction, unless intended for long-term use on the site following termination of your general permit coverage;
 - c. You have removed and properly disposed of all temporary control measures, including silt fence, and of which you installed and maintained during construction, except those that are intended for long-term use following termination of your general permit coverage; and
 - d. You have removed all potential pollutants and pollutant-generating activities associated with construction.
- 2. You have obtained coverage under an individual or alternative general permit that addresses the discharges from the construction site.

2.7 Reporting Requirements

On October 22, 2015, the U.S. EPA published in the federal register a rule that has made electronic reporting of permit and compliance monitoring information mandatory for all National Pollution Discharge Elimination System (NPDES) permits. These are referred to as Surface Water Discharge (SWD) permits in South Dakota. The final rule became effective December 21, 2015.

Phase II of the final rule requires that authorized state NPDES programs begin electronically collecting, managing, and sharing construction stormwater permitting information by December 21, 2020. This includes general permit reports such as Notices of Intent (NOI), Notices of Termination (NOT), and all other remaining NPDES program reports. SDDENR is currently developing programs to meet this requirement and will notify facilities as they become available.

Electronic reporting will be required once SDDENR has fully developed an electronic reporting system. In the interim, all general permit reports must be submitted by email (stormwater@state.sd.us), or to the address listed in Section 7.3.

A hybrid approach will be available for owners/operators that do not expect to submit NOIs for multiple projects. This approach will provide users the ability to electronically submit the data for construction stormwater general permit reports without using the electronic signature verification process. Following electronic submittal of the reports, a hard copy of the Certification of Applicant with an original signature must be mailed to SDDENR.

2.8 Requiring an Individual Permit or an Alternative General Permit

SDDENR may either deny coverage or require you to apply for an individual Surface Water Discharge permit or an alternative general permit. In considering whether we deny coverage or require an alternative permit, the following will be taken into consideration:

- 1. You cannot comply with the conditions of this general permit;
- 2. There has been a change in the availability of demonstrated technologies or practices for the control or abatement of pollutants applicable to construction sites;
- 3. Effluent limitation guidelines are promulgated or revised for point sources covered by this general permit;
- 4. A water quality management plan is approved containing requirements applicable to your construction site;
- 5. Your discharge is a significant contributor of pollution to surface waters of the state or it presents a health hazard; or

6. You are discharging to an impaired water body and the best management practices are not sufficient to implement the assigned wasteload allocations in a Total Maximum Daily Load (TMDL) approved by the U.S. EPA.

2.9 Continuation of Coverage for Expired General Permit

If you wish to continue to be covered by this general permit after its expiration date, you must submit a Notice of Intent for Reauthorization (Appendix E). An expired general permit continues in full force and effect until a new general permit is issued. You will continue to have coverage under the current general permit until a new general permit is issued.

2.10 Requirement to Post Notice of Your General Permit Coverage

You must post a sign or other notice at a safe, publicly accessible location near the project site.

- 1. At a minimum, your notice must include the general permit tracking number (found on the cover page of your general permit and in the authorization letter) and a contact name and phone number for obtaining additional project information.
- 2. The notice must be located so that it is visible from the public road that is nearest to the active part of the construction site and must be readily viewed from a public right-of-way.

2.11 Property Rights

- 1. The Secretary's issuance of this general permit, adoption of design criteria, and approval of plans and specifications, does not convey any property rights of any sort, any exclusive privileges, any authorization to damage, injure or use any private property, any authority to invade personal rights, any authority to violate federal, state or local laws or regulations, or any taking, condemnation or use of eminent domain against any property owned by third parties.
- 2. The State does not warrant that your compliance with this general permit, design criteria, approved plans and specifications, and operation under this general permit, will not cause damage, injury or use of private property, an invasion of personal rights, or violation of federal, state or local laws or regulations. You are solely and severally liable for all damage, injury or use of private property, invasion of personal rights, infringement of federal, state or local laws and regulations, or taking or condemnation of property owned by third parties, that may result from actions taken under this general permit.

2.12 Reopener Provisions

SDDENR may reopen and modify this general permit to include appropriate conditions (following proper administrative procedures) if state or federal statutes or regulations change.

2.13 Severability

If any portion of the general permit is found to be void or is challenged, the remaining permit requirements shall remain valid and enforceable.

2.14 Permit Actions

This general permit may be modified, revoked and reissued, or terminated by the Secretary for cause. Any request for such changes does not stay any permit condition.

3.0 EFFLUENT LIMITS

You are required to comply with the following effluent limits for discharges from your construction site and/or from construction support activities representing the degree of effluent reduction attainable through the best practicable control technology currently available to minimize the pollutants present in the discharges. In order to achieve compliance with the conditions of this permit, you are required to address the following effluent limits by developing a Stormwater Pollution Prevention Plan (SWPPP) as required in Section 5.0. If you determine any of the following limits are infeasible, you must document your rationale in your SWPPP.

Stormwater discharges regulated under this general permit that may discharge to a surface water with an approved TMDL for sediment, total suspended solids, or turbidity must be consistent with the TMDL and any associated wasteload allocation (WLA) for construction or stormwater related discharges. In most cases compliance with this permit will be considered adequate, unless otherwise notified by the Secretary. The Secretary may require an individual permit, as referenced in Section 2.8, should compliance with this general permit be deemed insufficient to meet relevant WLAs.

3.1 Proper Operation and Maintenance

You must properly operate and maintain all sediment and erosion controls, best management practices, treatment systems, and any other control(s) used to achieve compliance with the conditions of this general permit in accordance with manufacturer's specifications, good engineering practices, and design specifications of the SWPPP.

3.2 Erosion and Sediment Control Requirements

- 1. You must design, install, and maintain effective erosion and sediment controls to minimize soil erosion and the discharge of pollutants during earth-disturbing activities. The stormwater controls must be designed to function properly and withstand a 2-year, 24-hour precipitation event. See Appendix F for instructions to determine your construction site's precipitation for a 2-year, 24-hour event.
- 2. You must account for the following factors when designing your erosion and sediment controls:
 - a. The nature of resulting stormwater runoff and run-on at the construction site, including factors such as expected flow from impervious surfaces, slopes, and site drainage features. Controls must be able to control stormwater volume, velocity, and flow rates from a 2-year, 24-hour precipitation event across the construction site.
 - b. Anticipated soil characteristics at the construction site, including soil type and range of particle sizes.

3.3 Installation Requirements

- 1. You must complete installation of down gradient erosion and sediment controls before any land disturbing activity takes place in order to control discharges.
- 2. You must install all other control measures planned for each phase of the project as described in your SWPPP as soon as conditions on the site allow.
- 3. You must install all control measures using good engineering practices and follow the manufacturer's specifications. Any departures from the manufacturer's specifications must reflect good engineering practices and must be explained in your SWPP.

3.4 Perimeter Controls

You must have effective down gradient sediment controls, and controls for any side slope boundaries deemed appropriate for individual site conditions, to minimize pollutant discharges from the construction site.

3.5 Sediment Basins

If you use a sediment basin to control the discharge of sediment from the site, you must meet the requirements listed below.

- 1. Sediment basins must be designed, constructed, and operated in accordance with the requirements found in your local city or county drainage board.
- 2. Outlet structures must withdraw water from the surface of the sediment basin or impoundment to allow for proper sediment removal in the pond.
- 3. Erosion controls and velocity dissipation devices must be used to prevent erosion within the sediment basin as well as at inlets and outlets from the basin.
- 4. Sediment basins must be situated outside of surface waters and any natural buffers established under Section 3.10. The basins must be designed to avoid collecting water from wetlands and other water bodies.

3.6 Minimize Sediment Track-Out

You must minimize the track-out of sediment from the construction site where vehicles leave the site. To comply with this requirement, you must:

- 1. Restrict vehicle use to properly designated access points;
- 2. Use appropriate stabilization techniques at all construction site access point(s) so sediment removal occurs prior to vehicle exit.
- 3. Where sediment has been tracked out from your site onto offsite streets, other paved areas, and/or sidewalks, remove the deposited sediment by the end of the same work

day in which the track-out occurs. You must remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out sediment into storm drain inlet, surface waters of the state, or any stormwater conveyance unless the conveyance is connected to a sediment basin, sediment trap, or similar effective control. You must obtain approval from the owner of the sediment traps before hosing or sweeping sediment into those controls.

3.7 Remove Offsite Accumulation

If sediment escapes the construction site, you must initiate removal of the offsite accumulations to minimize impacts by the end of the same work day. You must revise your SWPPP and implement controls to minimize further offsite accumulation.

3.8 Minimize Dust

You must minimize the generation of dust at the construction site to avoid pollutants from being deposited into surface waters of the state. This can be accomplished through the appropriate application of water or other dust suppression techniques.

3.9 Minimize Run-on

You must minimize run-on to your construction site.

3.10 Provide Natural Buffers

You must comply with the following requirements if disturbed portions of the construction site are within fifty (50) feet of 1) a lake assigned immersion recreation or limited contact recreational beneficial uses in ARSD 74:51:02:02 and listed in ARSD 74:51:02:04; or 2) a river or stream assigned any of the warmwater or coldwater fish life propagation beneficial uses in ARSD 74:51:03:02 and listed in ARSD 74:51:03:04 to 74:51:03:27, inclusive.

- 1. Provide and maintain a 50-foot undisturbed natural buffer.
 - a. When the natural buffer between the disturbed area(s) and surface waters of the state is less than fifty (50) feet, you must provide a combination of undisturbed buffer and supplemental erosion and sediment controls that achieves the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
 - b. When no undisturbed buffer can be provided between the disturbed area(s) and surface waters of the state, you must provide erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
 - c. Document in your SWPPP how any undisturbed natural buffer and the supplemented erosion and sediment controls achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

- 2. Direct surface runoff to vegetated areas and maximize stormwater infiltration to reduce pollutant discharges.
- 3. Delineate and clearly mark all natural buffer areas with flags, tape, or other similar marking device. No construction or other activity should occur in the delineated buffer area.
- 4. **Exception.** You are not required to maintain a 50-foot undisturbed natural buffer or install additional controls if there is no discharge of stormwater to surface waters of the state through the area between your site and the surface waters. This includes situations where you have implemented control measures, such as a berm or other barrier, to prevent such discharges.

3.11 Preserve Topsoil

You must preserve native topsoil on your site, unless infeasible. Preserving topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed.

3.12 Minimize Steep Slope Disturbance

You must minimize the disturbance of slopes that are greater than a three horizontal to one vertical (3:1) slope, unless infeasible.

3.13 Protect Storm Drain Inlets

- 1. You must protect all storm drain inlets that receive stormwater flows from the construction site by using appropriate best management practices during construction to minimize the discharge of pollutants from the site.
- 2. You must maintain the inlet protection until you have permanently stabilized all sources that have the potential to discharge pollutants to the inlet. If local officials require you to remove the inlet controls during the winter, you must install alternative controls to prevent sediment from entering the storm drain inlet.

3.14 Erosive Velocity Control

- 1. You must use erosion controls and velocity dissipation devices where necessary along the length of stormwater conveyance channels and outlets to minimize erosion of the channel, adjacent stream bank, slope, and downstream waters.
- 2. You must provide energy dissipation BMPs prior to connecting pipe or culvert outlets to surface water.
- 3. You must control the stormwater discharges, including both peak flowrates and total stormwater volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.

3.15 Minimize Soil Compaction

In areas of your site where final vegetative stabilization or infiltration will occur, you must either:

- 1. Restrict vehicle and equipment use in these locations to avoid soil compaction; or
- 2. Condition areas of compacted soil prior to seeding or planting to support vegetation growth.
- 3. **Exception.** You are not required to minimize soil compaction where the intended function of a specific area of the site dictates that soil be compacted.

3.16 Minimize Exposed Soil

You must schedule and sequence soil disturbing and stabilizing activities to minimize the amount and duration of soil exposure to erosion and sedimentation by wind, rain, surface runoff, and vehicle tracking. Consider factors such as high precipitation seasons when scheduling soil disturbing activities.

3.17 Protect Stockpiles

For any stockpiles or land clearing debris you must:

- 1. Locate the stockpiles and debris outside of any natural buffers established as required in Section 3.10 and away from any stormwater conveyances, drain inlets, and areas where stormwater flow is concentrated;
- 2. Protect the stockpiles debris from contact with stormwater run-on by using temporary sediment controls, berms, or other BMPs;
- 3. Properly maintain and position stockpiles to minimize dust generation and wind transport of sediment; and
- 4. Minimize stormwater runoff from the piles by properly positioning stockpiles and debris or installing effective sediment controls.
- 5. You are prohibited from placing stockpiles in surface waters of the state.

3.18 Stabilization Requirements

You are required to stabilize exposed portions of your site in accordance with the requirements of this section. You are responsible for implementing winter stabilization methods during frozen ground conditions if the site was not stabilized prior to the ground freezing.

1. **Deadline to Initiate Stabilization.** You must begin soil stabilization measures by the following work day whenever earth-disturbing activities have permanently or temporarily ceased on any portion of the site.

- a. Earth-disturbing activities have permanently ceased when you complete clearing, grading, and excavation within any area of your site that will not include permanent structures.
- b. Earth-disturbing activities have temporarily ceased when you cease clearing, grading, and excavation within any area for a period of at least **14 calendar days**, but will resume such activities in the future.
- 2. **Deadline to Complete Temporary Stabilization**. As soon as practicable, but no later than **14 calendar days** after initiating soil stabilization measures, you are required to have completed:
 - a. All activities necessary to initially seed or plant the area to be stabilized for vegetative stabilization practices.
 - b. The installation or application of all non-vegetative measures.
 - c. As soon as practicable after seeding or planting, select, design, and install non-vegetative erosion controls (e.g., mulch or rolled erosion control products) to prevent erosion on the seeded or planted areas while vegetation establishes.
- 3. **Criteria for Final Stabilization**. To be considered as having reached final stabilization, you must meet the criteria below based on the type of cover you are using.
 - a. **Vegetative Stabilization**. If you are seeding or planting vegetation to stabilize the site, you must meet the following requirements:
 - i. Provide 70 percent or more of the density of coverage that was provided by vegetation prior to commencement of construction activities.
 - ii. Provide perennial vegetative cover.
 - iii. Minimize the presence of invasive species.
 - b. **Non-Vegetative Stabilization**. If you are using non-vegetative controls for final stabilization at your site, the controls must provide effective cover to properly stabilize the exposed portions of your site.
 - c. Return to Pre-construction Agricultural Land Use. For construction projects on land used for agricultural purposes, final stabilization may be accomplished by returning the disturbed land to its pre-construction agricultural use. Areas disturbed that were not previously used for agricultural purposes, such as buffer strips immediately next to surface waters and areas not being returned to preagricultural use must meet the final stabilization criteria listed in (a) and (b) above.

- 4. **Site Specific Stabilization Requirements**. If you are constructing in the specific areas listed below, you must complete the following stabilization requirements as soon as practicable, but no later than the deadlines listed below after initiating soil stabilization measures:
 - a. Stream diversions or drainage ditches that divert water around or drain water from your construction site must be stabilized with appropriate controls prior to connection with any surface water.
 - b. For stockpiles that will be unused for 14 or more days, provide cover or appropriate temporary stabilization consistent with Section 3.18.

3.19 Maintenance Requirements

- 1. **Effective operating condition.** You must ensure that all erosion and sediment controls remain in effective operating condition until final stabilization is complete. At a minimum, you must:
 - a. Remove sediment from sedimentation basins when the design capacity has been reduced by 50% or more.
 - b. Remove sediment from sediment controls before the deposit reaches 50% of the above-ground height of the control.
 - c. Repair vegetative buffers if they become silt-covered, contain rills, or are otherwise rendered ineffective.
 - d. You must repair and stabilize eroded areas by the end of the same work day they are identified. If repair is infeasible, you must implement alternative control measures.
 - e. Clean inlet protection devices when sediment accumulates, or when the filter becomes clogged, or performance is compromised.
 - f. Ensure that all controls remain in effective operating condition and are protected from activities that would reduce their effectiveness.
 - g. All nonfunctional BMPs must be repaired, replaced, maintained or supplemented with functional BMPs. If a nonfunctioning BMP is supplemented, the nonfunctional BMP shall be removed.

- 2. **Deadline for maintenance.** If you find a problem or if your inspections identify that control measures are not operating effectively, you must make the necessary repairs or modifications as follows:
 - a. If you discover a problem that does not require repair or replacement, you must initiate work to fix the problem on the same day. If the problem is identified at a time in the work day when it is too late to complete the corrective actions, you must initiate work to fix the problem on the following work day or before the next anticipated runoff event, whichever comes first.
 - b. If you need to install new erosion or sediment controls or need to complete repairs, you must complete the work before the next anticipated runoff event or by no later than seven (7) calendar days from the time the problem is discovered, whichever comes first.
 - c. You must modify your SWPPP within seven (7) calendar days of completing the work. The SWPPP must address any changes to the controls and must detail the necessary steps to prevent similar damage in the future.

3.20 Pollution Prevention Procedures

You must design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants from the activities listed below. Spills must be reported as required in Section 7.1 of this general permit.

- 1. **Prohibited Discharges.** You are prohibited from discharging the following from your construction site:
 - a. Wastewater from washout and cleanout of concrete, stucco, paint, form release oils, curing compounds, and other construction materials.
 - b. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance.
 - c. Detergents, soaps, or solvents used in vehicle and equipment washing.
 - d. Toxic or hazardous substances from a spill or other release.
 - e. Waste, garbage, floatable debris, construction debris, and sanitary waste.
- 2. **Fueling and Maintenance of Equipment or Vehicles**. If you fuel or maintain equipment or vehicles at your site, you must minimize the discharge of spilled or leaked materials from the area where these activities take place.
- 3. **Washing of Equipment and Vehicles**. You must provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of washing. The washing must be limited to a defined area of the site and must be properly disposed.

- 4. Management of Construction Products, Chemicals, Materials, and Wastes. You must properly store, handle, and dispose of any construction products and materials, chemicals, landscape materials, and wastes in order to minimize the exposure to stormwater. Products or wastes that are either not a source of contamination to stormwater or are designed to be exposed to stormwater are not held to this requirement. Requirements are as follows:
 - a. You must cover or otherwise protect any materials that have the potential to leach pollutants in order to minimize contact with stormwater and prevent the discharge of pollutants.
 - b. Clean up spills by the end of the same work day in which the spill occurred, using dry clean-up methods where possible, and dispose of used materials properly. Do not clean surfaces or spills by hosing the area down. Eliminate the source of the spill to prevent a discharge or continuation of an ongoing discharge.
 - c. For registered pesticides and fertilizers, you must comply with all application and disposal requirements included on the label. Pesticides and fertilizers must be stored under cover or other effective means designed to minimize contact with stormwater. You must document any departures from the manufacturer's specifications for applying fertilizers and pesticides.
 - d. Store all diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals and products in water-tight container.
 - e. Hazardous or toxic wastes that may be present at construction sites include, but are not limited to, paints, solvents, petroleum-based products, wood preservatives, additives, curing compounds, acids, and alkaline materials. For these materials and wastes, you must:
 - i. Separate hazardous or toxic wastes and materials from construction and domestic waste.
 - ii. Store hazardous or toxic wastes and materials in sealed containers and provide secondary containment as applicable. These containers must be constructed of suitable materials to prevent leakage and corrosion. These containers must be labeled in accordance with the applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable federal, state, or local requirements.
 - iii. Dispose of hazardous or toxic wastes in accordance with the manufacturer's recommended method of disposal and in compliance with federal, state, and local requirements.

- f. You must provide effective containment for all liquid and solid wastes generated by washout operations including, but not limited to, concrete, stucco, paint, form release oils, curing compounds, and other construction materials related to the construction activity. For these materials and wastes, you must comply with the following requirements:
 - i. Designate areas to be used for washout and cleanout activities. The containment must be designed so that it does not result in runoff from washout operations or during runoff events;
 - ii. Install signs adjacent to each washout facility directing site personnel to use the proper facilities for concrete disposal and other washout wastes;
 - iii. Direct all wash water into a leak-proof container or leak-proof pit;
 - iv. Do not dump liquid wastes in the storm sewers; and,
 - v. Clean up and properly dispose of any accumulated wastes in designated waste containers.
- g. You must provide proper waste disposal receptacles of sufficient size and number to handle construction wastes including, but not limited to, packaging materials, scrap construction materials, masonry products, timber, pipe, and electrical cuttings, plastics, Styrofoam®, concrete, and other trash or building materials.
 - i. For sanitary waste, you must position portable toilets so they are secure and will not be tipped or knocked over. You must properly remove and dispose of wastes from the portable toilets.

3.21 Construction Dewatering

You are prohibited from discharging from dewatering activities, including discharges from dewatering of trenches and excavation, unless the discharges are managed by the following controls:

- 1. You shall not discharge toxic pollutants in toxic amounts.
- 2. Your discharge shall not impart a visible film or sheen to the surface of the receiving water or adjoining shoreline.
- 3. Your discharge shall not contain visible pollutants. You must visually monitor the discharge for suspended solids. If you observe suspended solids in the discharge, you must implement the following requirements:
 - a. You must install additional best management practices and update your stormwater pollution prevention plan to reduce the visible solids.

- b. You must sample the dewatering discharge for total suspended solids on a daily basis until there is no longer a discharge of visible solids. The samples must be analyzed in accordance with Title 40 of the Code of Federal Regulations, Part 136. If the total suspended solids value exceeds 53 mg/L in any sample or measurement, you must cease the dewatering discharge to surface waters of the state until you can demonstrate the additional best management practices are sufficient to eliminate the visible pollutants. You must also document this in your stormwater pollution prevention plan (SWPPP).
- 4. You must use best management practices to minimize or prevent stream channel scouring or erosion caused by dewatering discharges.
- 5. You cannot add chemicals to the discharge without prior approval from SDDENR.
- 6. You must obtain a Temporary Water Right. Contact SDDENR Water Rights Program at (605) 773-3352 for more information and to obtain a temporary water right.

4.0 INSPECTION REQUIREMENTS

You are required to conduct site inspections to determine the effectiveness of your control measures and your compliance with the conditions of the general permit.

4.1 Person(s) Responsible for Inspecting the Site

The person(s) inspecting your site may be a member of your staff or a third party you hire to conduct the inspections. You are responsible for ensuring the person who conducts the inspection is knowledgeable in the principles and practice of erosion and sediment controls and pollution, possesses the skills to assess conditions at the site that could impact stormwater quality, and is able to assess the effectiveness of any control measures selected and installed to meet the requirements of the general permit.

4.2 Frequency of Inspections

At a minimum, you must conduct a site inspection at the following frequencies:

- 1. Once every 7 calendar days; or
- 2. Once every 14 calendar days **and** within 24 hours of precipitation that exceeds 0.25 inches or snowmelt that generates runoff. You must keep a properly maintained rain gauge on your site.

4.3 Reduction of Inspection Frequency

You may reduce your inspection frequency from the requirements above under the following circumstances. You must document the beginning and ending dates of these periods in your inspection records.

- 1. **Partial final stabilization.** You may reduce the frequency of inspections to once per month on any portion of your site where you have reached final stabilization. If construction activity resumes in this portion at a later date, you must increase the frequency as required in Section 4.2 above.
- 2. **Frozen conditions.** If you are suspending earth-disturbing activities due to frozen conditions and all disturbed areas of the site have been temporarily or permanently stabilized as required in Section 3.19, you shall conduct inspections at least once per month. You must resume weekly inspections by no later than March 1st of each year until your site is permanently stabilized and you have submitted a Notice of Termination (NOT) in accordance with Section 2.6.

4.4 Areas that Need to Be Inspected

During your site inspections you must, at a minimum, inspect the following areas:

1. All areas that have been cleared, graded, or excavated and have not yet reached final stabilization:

- 2. All sediment and erosion control measures and best management practices, including inlet protection;
- 3. Vegetated buffers;
- 4. Stockpiles, chemical and fuel storage, fertilizer and pesticide storage and other material, waste, borrow, and/or equipment storage and maintenance areas;
- 5. All areas where stormwater typically flows within the site, including drainage ways designed to divert, convey, and/or treat stormwater;
- 6. All points of discharge from the site including surface waters, drainage ditches, and conveyance systems; and,
- 7. All dewatering activities at the site.
- 8. **Exception.** You are not required to inspect areas that, at the time of the inspection, are unsafe for your inspection personnel. A detailed description of the situation must be documented in your inspection records explaining the reason the site conditions prevented the inspection.

4.5 Requirements for Inspections

During your site inspections you must, at a minimum:

- 1. Check whether all erosion and sediment controls and best management practices are implemented and functioning to minimize pollutant discharges. Determine if you need to replace, repair, or maintain any controls.
- 2. Check for spills, leaks, or other accumulation of pollutants on the site, or for the presence of conditions that could lead to spills, leaks, or other accumulations of pollutants on site. Determine if you need to install additional controls or take corrective actions to prevent the discharge of these pollutants.
- 3. Determine if site conditions have changed and if current controls are still effective in controlling pollutants from leaving your site. Identify any locations where new or modified control measures are necessary.
- 4. Check for signs of erosion, scour, and sediment deposits that have occurred on or off the construction site:
 - a. Inspect the discharge points and, where applicable, the banks of any surface waters of the state flowing within your property boundaries or immediately adjacent to your property.
 - b. Identify areas where you need to correct erosion and remove sediment.

- c. Determine if you need controls to reduce the velocity of the discharge or prevent further erosion and sedimentation.
- 5. If a discharge is occurring during your inspection, you are required to:
 - a. Identify all points of the property where there is a discharge;
 - b. Observe and document the visual quality of the stormwater discharge and note the characteristics of the discharge, including color, odor, floating, settled, or suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollutants; and
 - c. Document whether your control measures are operating effectively. Describe any controls that are not clearly operating as intended or are in need of maintenance.
- 6. Identify all incidents of noncompliance that you observe.
- 7. Based on the results of your inspection, you must initiate corrective action(s) where needed.

4.6 Inspection Report

You must complete an inspection report in conjunction with each site inspection.

- 1. Each inspection report must be maintained in accordance with the requirements in Section 7.3 and must include the following information;
 - a. Date and time of the inspection.
 - b. Names and titles of the personnel conducting the inspection.
 - c. Date and amount of most recent precipitation event, as well as if runoff was flowing onsite and/or offsite at the time of the inspection.
 - d. A summary of your inspection findings, covering, at a minimum, the observations you made as required in Sections 4.4. and 4.5;
 - e. Specific locations where maintenance, additional best management practices, cleanup, or corrective action is needed;
 - f. The results of the total suspended solids levels in any dewatering discharge, as required by Section 3.21; and
 - g. A summary of any corrective actions taken in response to the inspection findings, including any changes made to the SWPPP.

- 2. If you have determined it is unsafe to inspect a portion of your site, you must describe the reason(s) you found it to be unsafe and specify the locations that were not inspected.
- 3. If an inspection does not identify any incidents of noncompliance, you must include a statement in the report that the site is in compliance with the SWPPP and the general permit.
- 4. You must sign and certify each inspection report in accordance with the signatory requirements found in Section 7.4.

5.0 STORMWATER POLLUTION PREVENTION PLAN

You must develop a stormwater pollution prevention plan, also referred to as a "SWPPP," to be covered under this general permit. Stormwater management documents developed under other regulatory programs may be included or incorporated by reference in the SWPPP, or used in whole as a SWPPP if it meets the requirements of this section.

5.1 SWPPP Deadlines

1. You must develop the SWPPP **prior** to the submittal of the NOI.

Note: If you were covered under the February 1, 2010, general permit and reauthorized under this general permit, you must update your SWPPP to comply with the conditions of this general permit by **October 1, 2018**.

2. You must implement and maintain the SWPPP for any construction activity requiring this general permit until final stabilization is reached.

5.2 TMDL

For projects that discharge stormwater to a water body listed as impaired under section 303(d) of the Federal Clean Water Act due to sediment, suspended solids, or turbidity, you must identify the water body and impairment in the SWPPP. Your SWPPP must describe and conform to any Wasteload Allocation (WLA) for the water body as required in Section 2.2.4

5.3 SWPPP Contents

You must develop your SWPPP to ensure compliance with the effluent limits in Section 3.0. Your SWPPP must include the following information, at a minimum.

- 1. **Personnel**. Your SWPPP must identify those person(s), by name or position, who are knowledgeable and experienced in the application of erosion and sediment control BMPs and who are responsible for the development and implementation of any portion of the SWPPP, for any later modifications to the SWPPP, and for compliance with the requirements of this general permit.
- 2. Staff Training. The SWPPP shall outline how employees and responsible parties shall be trained on the implementation of the SWPPP. Training must be provided at least annually, as new employees or responsible parties are hired, or as necessary to ensure compliance with the SWPPP and this general permit. Employees and responsible parties include individuals who are responsible for conducting inspections or for the design, installation, maintenance, or repair of stormwater controls.
- 3. **Description of Construction Activities**. Your SWPPP must include a narrative description of the nature of your construction activities, including the following:

- a. A description of the overall project and type of construction activities to occur on the site and a description of the final completed project;
- b. The total size of the project and total area expected to be disturbed by construction activities;
- c. The maximum area expected to be disturbed at any one time;
- d. Description of the existing vegetation at the site and an estimate of the percent of vegetative ground cover;
- e. A description of the soil within the disturbed areas;
- f. The name of the surface waters or municipal separate storm sewer system at or near the disturbed area that could potentially receive discharges from the project site:
- g. Any construction support activity areas; and,
- h. The intended sequence and estimated dates of construction activity for the following:
 - i. Implementation of BMPs, including when they will be operational and an explanation of how you will ensure the control measures are installed by the time each phase of earth-disturbing activity begins.
 - ii. Commencement and duration of earth-disturbing activities, including clearing and grubbing, mass grading, site preparation (i.e., excavating, cutting and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization.
 - iii. Cessation, temporary or permanent, of construction activities on the site or in designated portions of the site.
- 4. **Site Map.** You must include a legible site map depicting the following features and boundaries of the project:
 - a. Pre-construction site conditions, including existing vegetative and non-vegetative cover (e.g. forest, pasture, pavement, structures, etc.);
 - b. Locations where earth-disturbing activities will occur, noting any phasing of construction activities;
 - c. Approximate slopes before and after major grading activities. Note areas with a slope greater than three horizontal to one vertical (3:1);
 - d. Topography of the site;

- e. Drainage patterns of stormwater and authorized non-stormwater flows from the site property before and after major grading activities. Mark the flow direction with arrows on the map.
- f. Locations and names, where appropriate, of all surface waters of the state that exist within or in the immediate vicinity of the site and could potentially receive discharges from the project site.
- g. Locations of any surface water crossings, noting areas where work near waterbodies is necessary;
- h. Location of any stormwater conveyances including, but not limited to, sediment ponds, ditches, pipes, swales, stormwater diversions, culverts, and ditch blocks;
- Discharge locations, including locations of any storm drain inlets on or in the immediate vicinity of the site that could potentially receive discharges from the project site;
- j. Locations where stormwater or allowable non-stormwater will be discharged to surface waters of the state on or in the immediate vicinity of the site.
- k. Locations where sediment, soil, or other construction materials will be stockpiled;
- 1. Designated site access points;
- m. Locations of structures and other impervious surfaces upon completion of construction;
- n. Natural buffer boundaries and widths;
- Locations of fueling activity, vehicle and equipment maintenance areas, designated wash water collection areas, lubricant and chemical storage, paint storage, material storage, staging areas, and debris collection areas;
- p. Locations of all activities that could potentially generate pollutants at the site, such as dumpsters, chemical storage, construction site washout, portable toilets, or equipment storage.
- q. Location and types of all sediment and erosions controls, velocity dissipation devices, post-construction controls, and all other BMPs used on the site.
- r. Locations of construction support activities covered by this general permit.
- 5. **Description and Maintenance of Control Measures.** Your SWPPP must include a narrative description of the erosion and sediment control measures that will be implemented during construction at your site to meet the conditions of this general permit. For each control measure you must provide a narrative on the following:

- a. A timeframe for the installation, maintenance, and removal (if necessary) of all selected BMPs for each phase of construction activity;
- b. Your rationale for the selection of all BMPs, including calculations as necessary;
- c. Whether selected BMPs are temporary or permanent;
- d. A description of maintenance specifications and procedures;
- e. A description of structural diversion practices intended to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site;
- f. A description of the removal of any temporary stormwater conveyance; and
- g. A description of the temporary and final stabilization of areas of exposed soil where construction activities have been completed or temporarily ceased. Your SWPPP must describe the specific vegetative and/or non-vegetative practices you will use to comply with the stabilization requirements in Section 3.19, along with the reasons for choosing each practice.
- 6. **Procedures for Inspections.** The SWPPP must describe the procedures you will follow for conducting site inspections and, where necessary, taking corrective actions. The following information must also be included in your SWPPP:
 - a. Personnel responsible for conducting inspections;
 - b. Required frequency of inspections;
 - c. Rationale for reduction of inspection frequency; and,
 - d. Any inspection checklists or other forms that you will use.
- 7. **Post Construction Stormwater Management.** You must identify stormwater management practices that will be installed during the construction process to control pollutants in stormwater discharges occurring after construction operations have been completed. Maintenance for onsite stormwater management features is the responsibility of the permittee until the NOT is submitted or the feature is accepted by the party responsible for long term maintenance. The following information must be included in your SWPPP:
 - a. An explanation of the technical basis used to select the practices to control pollution where flows exceed pre-development levels;
 - b. A description of structural stormwater management practices such as stormwater ponds, open vegetated swales, natural depressions to allow

- infiltration of runoff onsite, and sequential systems that combine several practices or other post construction stormwater management features; and
- c. The location of velocity and energy dissipation devices placed at discharge points and appropriate erosion protection for outfall channels and ditches.

8. Pollution Prevention Procedures

- a. **Spill Prevention and Response Procedures**. Your SWPPP must describe the procedures you will follow to prevent and respond to spills and leaks, including:
 - Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. The SWPPP must identify the name or position of the employee(s) responsible for detection and response of spills and leaks;
 - ii. Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies as required by Section 7.1; and,
 - iii. Ways to prevent reoccurrence of such releases and steps to prevent any such releases from contaminating stormwater runoff. The SWPPP shall be modified and changes implemented as appropriate.
- b. Waste Management Procedures. The SWPPP must describe procedures for how you will handle and dispose of all wastes generated at your site, including, but not limited to, clearing and demolition debris, sediment removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste.

9. Construction Site Pollutants

- a. You must include information in your SWPPP about all activities that could generate pollutants at your site. Examples of pollutant-generating activities include, but are not limited to: paving operations; concrete, paint, and stucco washout; solid waste storage and disposal; storage of fertilizers, pesticides, solvents, fuels, and soils. You must include in your SWPPP a description of the removal of construction equipment and vehicles and any cessation of any pollutant generating activities.
- b. You must include an inventory of the pollutants and chemicals associated with your construction activity and consider where potential spills and leaks could occur.
- c. If SDDENR approves the use of water treatment chemicals, your SWPPP must include:

- i. A listing of all water treatment chemicals planned for use at the site and why these chemicals were selected;
- ii. The proper dosage and method of application for all water treatment chemicals;
- iii. All applicable Safety Data Sheets (SDS) for chemicals planned to be used;
- iv. Schematic drawings of any controls or treatment system used for the application of the water treatment chemicals;
- v. A description of how the chemicals will be stored;
- vi. Copies of the applicable manufacturer's specifications regarding the use of the water treatment chemicals and chemical treatment systems;
- vii. A description of the training that personnel who handle, apply, or store the chemicals have received or will receive prior to the use of water treatment chemicals and chemical treatment systems;
- viii. A description of safe handling, spill prevention, and spill response procedures; and
 - ix. A copy of the approval letter from SDDENR, approving the use of the water treatment chemicals and/or chemical treatment system.
- 10. **Non-Stormwater Discharges.** You must identify in your SWPPP all sources of non-stormwater discharges.
- 11. **Infeasibility Documentation.** If you determine it is infeasible to comply with any of the requirements of this general permit, you must thoroughly document your rationale in your SWPPP.

5.4 SWPPP Certification

You must sign and date your SWPPP as required by Section 7.4.

5.5 Required SWPPP Modifications

- 1. **Conditions Requiring SWPPP Modification**. You must modify your SWPPP, including the site map(s), in response to any of the following conditions:
 - a. When you have a new operator responsible for implementation of any part the SWPPP.
 - b. When you make changes to your construction plans, sediment and erosion control measures, or any best management practices at your site that are no longer accurately reflected in your SWPPP. This includes changes made in response to corrective actions triggered by inspections.

- c. To reflect areas on your site map where operational control has been transferred (including the date of the transfer) or has been covered under a new permit since initiating coverage under this general permit.
- d. If inspections by site staff, local officials, SDDENR, or U.S. EPA determine that SWPPP modifications are necessary for compliance with this general permit.
- e. To reflect any revisions to applicable federal, state, or local requirements that affect the control measures implemented at the site.
- f. If approved by the Secretary, to reflect any changes in chemical water treatment systems or controls, including the use of a different water treatment chemical, different dosage rates, or different areas or methods of application.
- 2. **Deadlines for SWPPP Modification**. You must complete the required revisions to the SWPPP within 7 calendar days following any of the items listed above.
- 3. **Documentation of Modifications to the Plan**. You are required to maintain records showing the dates of all SWPPP modifications. The records must include the name of the person authorizing each change and a brief summary of all changes.
- 4. **Certification Requirements**. All modifications made to your SWPPP must be signed and certified as required in Section 7.4.
- 5. **Required Notice to Other Operators**. If there are multiple operators at the site, you must notify each operator that may be impacted by the change to the SWPPP within 24 hours.

6.0 SPECIAL CONDITIONS

6.1 Qualified Local Programs

- 1. To receive approval as a qualified local program, SDDENR will review the local requirements to ensure they comply with both state and federal requirements. SDDENR may authorize minor variations and alternative standards in lieu of the specific conditions of the general permit based upon the unique comprehensive control measures established in the qualifying local program. SDDENR will review each qualifying local program for recertification during the renewal of its municipal separate storm sewer system permit.
- 2. If a construction site is within the jurisdiction of a qualifying local program, the operator shall submit a Notice of Intent (NOI) to SDDENR to be covered under the general permit and comply with all requirements of the qualifying local program. Compliance with the qualifying local program requirements is deemed to be compliance with this general permit. A violation of qualifying local program requirements is also a violation of this general permit.
- 3. At this time only the City of Sioux Falls is meeting SDDENR's minimum requirements. If additional municipalities are approved as a Qualifying Local Program in the future, a modification to this general permit will be offered for public comment in the municipality's local newspaper.

7.0 REPORTING AND RECORDKEEPING REQUIREMENTS

7.1 Emergency Spill Notification

- 1. You must report a release or spill of a regulated substance (including petroleum and petroleum products) to SDDENR as soon as you become aware of it if any one of the following conditions exists:
 - a. The release or spill threatens or is in a position to threaten waters of the state (surface water or ground water);
 - b. The release or spill causes an immediate danger to human health or safety;
 - c. The release or spill exceeds 25 gallons;
 - d. The release or spill causes a sheen on surface water;
 - e. The release or spill of any substance that exceeds the ground water quality standards of ARSD Chapter 74:54:01;
 - f. The release or spill of any substance that exceeds the surface water quality standards of ARSD Chapter 74:51:01;
 - g. The release or spill of any substance that harms or threatens to harm wildlife or aquatic life;
 - h. The release or spill of crude oil in field activities under SDCL chapter 45-9 is greater than 1 barrel (42 gallons); or
 - i. The release or spill is required to be reported according to Superfund Amendments and Reauthorization Act (SARA) Title III List of Lists, Consolidated List of Chemicals Subject to Reporting Under the Emergency Planning and Community Right to Know Act, US Environmental Protection Agency.
- 2. To report a release or spill, call SDDENR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central Standard Time). To report the release after hours, on weekends or holidays, call South Dakota Emergency Management at 605-773-3231. Reporting the release to SDDENR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, you must also contact local authorities to determine the local reporting requirements for releases. A written report of the unauthorized release of any regulated substance, including quantity discharged and the location of the discharge shall be sent to SDDENR within 14 days of the discharge.

7.2 Planned Changes

You must notify SDDENR as soon as possible of any planned physical alterations or additions to your site. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of pollutant discharged, or could result in noncompliance with permit conditions. This notification also applies to pollutants that are not addressed by the effluent limits in Section 3.0.

7.3 Records Contents & Retention

- 1. You must maintain onsite, or make readily available to SDDENR, the following documents:
 - a. The SWPPP, including all certificates, reports, records, or other information required by this general permit.
 - b. A copy of the Notice of Intent (NOI) submitted to SDDENR, along with any correspondence related to coverage under this general permit.
 - c. A copy of the authorization letter you receive from SDDENR granting coverage under this general permit.
 - d. A copy of this general permit.
- 2. You must retain copies of the SWPPP, your inspection records, all reports required by this general permit, and records of the date you used to complete the NOI and NOT for a period of at least three (3) years from the date you terminate your coverage under the general permit. SDDENR may extend the time period for retaining your records with a written notification to you.
- 3. You must submit all reports and documents required to be submitted to SDDENR by this general permit by email (<u>stormwater@state.sd.us</u>), or to the address below:

SD Department of Environment and Natural Resources Surface Water Quality Program 523 East Capitol Pierre, SD 57501

7.4 Signatory Requirements

1. All applications submitted to SDDENR under this general permit must be signed by either a principal executive officer or ranking elected official.

- 2. All reports required by the general permit and other information requested by SDDENR shall be signed by the person described in Paragraph 1 above or by a duly authorized representative of that person. A person is a duly authorized representative if:
 - a. The authorization is made in writing by a person described in Paragraph 1 above and submitted to SDDENR; and
 - b. The authorized representative must have responsibility for the overall operation of the site, such as the superintendent, or have overall responsibility for environmental matters. A duly authorized representative may be either a named individual or any individual occupying a named position.
- 3. If the authorization under Paragraph 2 above is no longer accurate, you must submit a new authorization to SDDENR.
- 4. You must include the following certification statement with all documents signed under this section:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure qualified personal properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

7.5 **Duty to Provide Information**

- 1. You must provide, within a reasonable period of time, any information SDDENR requests to determine whether cause exists for modifying, revoking and reissuing, or terminating this general permit, or to determine compliance with the general permit.
- 2. You must provide to SDDENR, upon request, copies of the records required to be kept by this general permit.
- 3. You must make your SWPPP available to SDDENR, U.S. EPA, or your local storm sewer operator upon request.
- 4. If you become aware that you failed to submit any relevant facts or submitted incorrect information in your NOI, you must promptly submit such facts or information.
- 5. You must provide SDDENR with an updated point of contact including a mailing address.

7.6 Availability of Information

- 1. Except for data determined to be confidential under ARSD Section 74:52:02:17, all reports you prepare and submit in accordance with the terms of this general permit must be available for public inspection at the offices of SDDENR.
- 2. Your name and address, the NOI and NOT, your SWPPP, and your inspection records will not be considered confidential.

8.0 COMPLIANCE REQUIREMENTS

8.1 Duty to Comply

- 1. You must comply with all conditions of this general permit. Any permit noncompliance is a violation of the South Dakota Water Pollution Control Act and the federal Clean Water Act. A violation is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
- 2. If you violate a condition of the general permit or make any false statement, representation, or certification, you may be subject to enforcement action under South Dakota Codified Law, Chapter 34A-2.
- 3. You are responsible for complying with all local ordinance and requirements. Local governments may have additional or more stringent requirements than those included in this general permit.

8.2 Duty to Mitigate

You must take all reasonable steps to minimize or prevent any discharge of pollutants in violation of this general permit if it has a reasonable likelihood of adversely affecting human health or the environment.

8.3 Need to Halt or Reduce Activity Not a Defense

It is not a defense for you in an enforcement action that it would have been necessary to halt or reduce your construction activity to maintain compliance with the conditions of the general permit.

8.4 Upset Conditions

- 1. An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based permit effluent limits if the requirements of Paragraph 2 of this section are met. You will have an opportunity for a judicial determination on any claim of an upset only if SDDENR or U.S EPA bring an enforcement action for noncompliance with technology-based effluent limits.
- 2. If you wish to establish an affirmative defense of any upset, you must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - a. An upset occurred and you can identify the cause of the upset;
 - b. You were properly operating the pollution controls at your site;

- c. You notified SDDENR within 24 hours of becoming aware of the upset. To report a release or spill, call SDDENR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central Standard Time). To report the release after hours, on weekends or holidays, call South Dakota Emergency Management at 605-773-3231.
- d. You complied with the mitigation measures required under Section 8.2.
- 3. In any enforcement proceeding, you have the burden of proof to establish and document that an upset occurred.

8.5 Removed Substances

Collected solids, sludge, grit, or other pollutants removed in the course of treatment shall be properly disposed of in a manner to prevent any pollutant from entering surface waters of the state or creating a health hazard.

8.6 Inspections and Entry

You must allow SDDENR, U.S. EPA, or the operator of a municipal separate storm sewer system receiving your discharges to:

- 1. Enter your construction site and enter areas where you keep the records required by the general permit;
- 2. Have access to and copy, at reasonable times, any records that you must keep under the conditions of the general permit;
- 3. Inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated under this general permit; and
- 4. At reasonable times, sample or monitor any substances or parameters at any location for the purpose of ensuring permit compliance or as otherwise authorized by the South Dakota Water Pollution Control Act (SDCL 34A-2).

8.7 Oil and Hazardous Substance Liability

Nothing in this general permit shall relieve you from any responsibilities, liabilities, or penalties you may be subject to under Section 311 of the federal Clean Water Act.

8.8 Penalties for Violations of general permit Conditions

1. If you violate a condition of the general permit, you are in violation of the provisions of SDCL 34A-2-36 and subject to penalties under SDCL 34A-2-75. In addition to a jail sentence authorized by SDCL 22-6-2, you can be subject to a criminal fine not to exceed \$10,000 per day per violation. You can also be subject to a civil penalty not to exceed \$10,000 per day per violation, or for damages to the environment of this state.

2. Except as provided above in the Upset Conditions in Section 8.4, nothing in this general permit relieves you of the civil or criminal penalties for noncompliance.

8.9 Penalties for Falsification of Reports

- 1. If you knowingly make any false statement, representation, or certification in any record or other document submitted or required to be maintained under this general permit, you are in violation of the provisions of SDCL 34A-2-77 and subject to penalties under SDCL 34A-2-75.
- 2. If you falsify, tamper with, or knowingly render inaccurate any monitoring device or method required to be maintained under this general permit, you are in violation of the provisions of SDCL 34A-2-77 and is subject to penalties under SDCL 34A-2-75.
- 3. In addition to a jail sentence authorized by SDCL 22-6-2, you can be subject to a criminal fine not to exceed \$10,000 per day per violation. You are also subject to a civil penalty not to exceed \$10,000 per day per violation, or for damages to the environment of this state.

Appendix A

NOTICE OF INTENT (NOI) FORM



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES NOTICE OF INTENT (NOI)

to Obtain Coverage Under the SWD General Permit for Stormwater Discharges Associated with Construction Activities

Submit form to: SD Department of Environment and Natural Resources

Surface Water Quality Program 523 East Capitol Avenue Pierre, South Dakota 57501 stormwater@state.sd.us
Telephone: 1-800-SDSTORM

ALL QUESTIONS MUST BE ANSWERED COMPLETELY FOR THIS FORM TO BE VALID

	Site Owner Contac	Company Name:						
	Primary Contact Person:							
					7. 0.1			
					Zip Code:			
	Type of Ownership:	Private	Federal	State	Other (Municipal, County, etc.)			
	Contractor Inform	ation•			(any type not listed previously)			
			rosion and sedime	ent control practi	ces: Yes No			
	-	_		_	will have day to day responsibility for erosion			
	•				, , ,			
	sediment control practices. If these contractors have not been identified at the time this NOI is submitted, the contracotr							
	certification form may be submitted after they have been identified, but before they being construction work.)							
•	Engineering Firm Contact Information (if applicable):							
	Contact Person:							
	Contact's Email Address:							
•	Construction Proje	ect Information:						
	Project Name:							
	Physical Project Address or Description of Construction Site Location:							
	City:		State:		Zip Code:			
	City:		State:		Zip Code:			
	Phone Number:		County of	of Construction S	Site:			
	Latitude:	Longitud	e:	Source	e (GPS, Google, etc.):			
					Range(s):			

____ Approved by: ___

Date Approved: ___

]	Is this project on Tribal Lands? Yes No
-	Total area disturbed by the project (in acres):
1	Will this project encroach, damage, or destroy one of the historic sites identified at the following wesites:
	http://history.sd.gov/Preservation/nationalregisterofhistoricplaces.aspx Yes No
	http://www.nps.gov/nhl/find/statelists/sd/SD.pdf Yes No
•	Stormwater Pollution Prevent Plan (SWPPP):
]	Has the SWPPP been developed as required? Yes No
((The plan must be developed $\underline{\text{before}}$ the NOI is submitted. DENR will not issue coverage before this has been developed.)
]	Receiving Waters:
	Please list all possible waters that may receive a discharge from this site. If discharging to a Municipal Storm Sewer System indicate which municipality and the ultimate receiving water.
]	Nature of Discharge:
]	Please include a brief description of the construction project:
-	
,	Will construction dewatering be required?
	Construction Dates:
	Construction Dates: Project Start Date (MM/DD/YYYY):
]	
]	Project Start Date (MM/DD/YYYY):
]	Project Start Date (MM/DD/YYYY): Estimated Completion Date (MM/DD/YYYY):
]	Project Start Date (MM/DD/YYYY): Estimated Completion Date (MM/DD/YYYY): Dewatering Activities (Complete this section if you answered yes in VII): Date dewatering will commence (MM/DD/YYYY): Date dewatering will end (MM/DD/YYYY):
]	Project Start Date (MM/DD/YYYY): Estimated Completion Date (MM/DD/YYYY): Dewatering Activities (Complete this section if you answered yes in VII): Date dewatering will commence (MM/DD/YYYY):
]	Project Start Date (MM/DD/YYYY): Estimated Completion Date (MM/DD/YYYY): Dewatering Activities (Complete this section if you answered yes in VII): Date dewatering will commence (MM/DD/YYYY): Date dewatering will end (MM/DD/YYYY):
	Project Start Date (MM/DD/YYYY): Estimated Completion Date (MM/DD/YYYY): Dewatering Activities (Complete this section if you answered yes in VII): Date dewatering will commence (MM/DD/YYYY): Date dewatering will end (MM/DD/YYYY): Total volume of dewatering (gallons): Average flow rate (gallons per minute): Source of water to be discharged: Receiving water:
	Project Start Date (MM/DD/YYYY): Estimated Completion Date (MM/DD/YYYY): Dewatering Activities (Complete this section if you answered yes in VII): Date dewatering will commence (MM/DD/YYYY): Date dewatering will end (MM/DD/YYYY): Total volume of dewatering (gallons): Average flow rate (gallons per minute): Source of water to be discharged:
	Project Start Date (MM/DD/YYYY): Estimated Completion Date (MM/DD/YYYY): Dewatering Activities (Complete this section if you answered yes in VII): Date dewatering will commence (MM/DD/YYYY): Date dewatering will end (MM/DD/YYYY): Total volume of dewatering (gallons): Average flow rate (gallons per minute): Source of water to be discharged: Receiving water: Brief description of water treatment processes to be employed, if any:
	Project Start Date (MM/DD/YYYY):
	Project Start Date (MM/DD/YYYY): Estimated Completion Date (MM/DD/YYYY): Dewatering Activities (Complete this section if you answered yes in VII): Date dewatering will commence (MM/DD/YYYY): Date dewatering will end (MM/DD/YYYY): Total volume of dewatering (gallons): Average flow rate (gallons per minute): Source of water to be discharged: Receiving water: Brief description of water treatment processes to be employed, if any: Will the dewatering discharge contain anything other than uncontaminated groundwater and stormwater: Yes N NOTE: If there will be dewatering activities, please place points of withdrawal and discharge on a topographic map, or other plants are contained to the
	Project Start Date (MM/DD/YYYY):
	Project Start Date (MM/DD/YYYY):
	Project Start Date (MM/DD/YYYY):
	Estimated Completion Date (MM/DD/YYYY):

STATE OF SOUTH DAKOTA

BEFORE THE SECRETARY OF

THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

IN THE MATTER OF THE APPLICATION OF)
) CERTIFICATION OF
STATE OF	
COUNTY OF))
I,, sworn upon oath hereby certify the following inf	the applicant in the above matter after being duly formation in regard to this application:

I have read and understand South Dakota Codified Law Section 1-40-27 which provides:

"The secretary may reject an application for any permit filed pursuant to Titles 34A or 45, including any application by any concentrated swine feeding operation for authorization to operate under a general permit, upon making a specific finding that:

- (1) The applicant is unsuited or unqualified to perform the obligations of a permit holder based upon a finding that the applicant, any officer, director, partner, or resident general manager of the facility for which application has been made:
 - (a) Has intentionally misrepresented a material fact in applying for a permit;
 - (b) Has been convicted of a felony or other crime involving moral turpitude;
 - (c) Has habitually and intentionally violated environmental laws of any state or the United States which have caused significant and material environmental damage;
 - (d) Has had any permit revoked under the environmental laws of any state or the United States; or
 - (e) Has otherwise demonstrated through clear and convincing evidence of previous actions that the applicant lacks the necessary good character and competency to reliably carry out the obligations imposed by law upon the permit holder; or
- (2) The application substantially duplicates an application by the same applicant denied within the past five years which denial has not been reversed by a court of competent jurisdiction. Nothing in this subdivision may be construed to prohibit an applicant from submitting a new application for a permit previously denied, if the new application represents a good faith attempt by the applicant to correct the deficiencies that served as the basis for the denial in the original application.

All applications filed pursuant to Titles 34A and 45 shall include a certification, sworn to under oath and signed by the applicant, that he is not disqualified by reason of this section from obtaining a permit. In the absence of evidence to the contrary, that certification shall constitute a prima facie showing of the suitability and qualification of the applicant. If at any point in the application review, recommendation or hearing process, the secretary finds the applicant has intentionally made any material misrepresentation of fact in regard to this certification,

consideration of the application may be suspended and the application may be rejected as provided for under this section.

Applications rejected pursuant to this section constitute final agency action upon that application and may be appealed to circuit court as provided for under chapter 1-26."

I certify pursuant to 1-40-27, that as an applicant, officer, director, partner, or resident general manager of the activity or facility for which the application has been made that I; a) have not intentionally misrepresented a material fact in applying for a permit; b) have not been convicted of a felony or other crime of moral turpitude; c) have not habitually and intentionally violated environmental laws of any state or the United States which have caused significant and material environmental damage; (d) have not had any permit revoked under the environmental laws of any state or the United States; or e) have not otherwise demonstrated through clear and convincing evidence of previous actions that I lack the necessary good character and competency to reliably carry out the obligations imposed by law upon me. I also certify that this application does not substantially duplicate an application by the same applicant denied within the past five years which denial has not been reversed by a court of competent jurisdiction. Further;

"I declare and affirm under the penalties of perjury that this claim (petition, application, information) has been examined by me, and to the best of my knowledge and belief, is in all things true and correct."

Dated this day of	, 20	
Angliand (mint)		
Applicant (print)		
Applicant (signature)		
Subscribed and sworn before me this	lay of	, 20
Notary Public (signature)		
My commission expires:		

PLEASE ATTACH ANY ADDITIONAL INFORMATION NECESSARY TO DISCLOSE ALL FACTS AND DOCUMENTS PERTAINING TO SDCL 1-40-27 (1) (a) THROUGH (e).

ALL VIOLATIONS MUST BE DISCLOSED, BUT WILL NOT AUTOMATICALLY RESULT IN THE REJECTION OF AN APPLICATION

(SEAL)

Appendix B

NOTICE OF TERMINATION (NOT) FORM



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES NOTICE OF TERMINATION (NOT)

of Coverage Under the SWD General Permit for Stormwater Discharges Associated with Construction Activities

This form is required to be submitted when a discharge permit is no longer required or necessary. Submission of this form shall in no way relieve the permittee of permit obligations required prior to submission of this form. Please submit this form to the following address:

Submit form to: SD Department of Environment and Natural Resources

Surface Water Quality Program 523 East Capitol Avenue Pierre, South Dakota 57501 stormwater@state.sd.us
Telephone: 1-800-SDSTORM

I.	Permit Number:						
II.	Primary Contact Information	:					
	Company Name:						
	Mailing Address:						
	City:	State:	Zip Code:				
	Phone Number:	Email Address:					
III.	Mailing Address for Facility/S	Site Location:					
	Project Name:						
	City:	State:	Zip Code:				
	are authorized by a SWD general permit have been eliminated. I understand that by submitting the Notice of Termination, I am a longer authorized to discharge stormwater associated with construction activity under this general permit, and that discharging pollutants in stormwater associated with construction activity to waters of the state is unlawful under the federal Clean Water Act and the South Dakota Water Pollution Control Act if the discharge is not authorized by a SWD permit. I also understand that the submittal of this Notice of Termination does not release an operator from liability for any violations of this permit or the South Dakota Water Pollution Control Act. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. NOTE: Notice of Termination shall be signed by the authorized chief elective or executive officer of the applicant, or by the applicant, if an individual.						
	Name:	Title:					
	Signature:		Date:				
		FOR DENR USE ONLY					

Appendix C CONTRACTOR AUTHORIZATION FORM



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES CONTRACTOR AUTHORIZATION FORM

for Coverage Under the SWD General Permit for Stormwater Discharges Associated with Construction Activities

This form is required to be submitted when a contractor will act as an operator and have day to day responsibility for erosion and sediment control measures. Submission of this form shall in no way relieve the permittee of permit obligations. Please submit this form to the following address:

Submit form to: SD Department of Environment and Natural Resources

Surface Water Quality Program 523 East Capitol Avenue Pierre, South Dakota 57501 stormwater@state.sd.us Telephone: 1-800-SDSTORM

ALL QUESTIONS MUST BE ANSWERED COMPLETELY FOR THIS FORM TO BE VALID

Project Name:		Permit Number (if available):
Project Site Legal Location:		
Contractor Company Name:		
Responsible Contact Person:		
Contact's Email Address:		
Contractor Mailing Address:		
_		Phone Number:
		nstruction site shall certify the following:
Activities for the project ider South Dakota Codified Laws Sec "The secretary may reject an	ntified above." tion 1-40-27 provides: a application for any permit filed parted swine feeding operation for a	narges Associated with Construction nursuant to Titles 34A or 45, including any nuthorization to operate under a general permit, upon
	officer, director, partner or reside	bligations of a permit holder based upon a finding ont general manager of the facility for which
• •	nisrepresented a material fact in c	applying for a permit;
* *	d of a felony or other crime involv	1
	l intentionally violated environmer icant and material environmental	ntal laws of any state or the United States which damage;
		al laws of any state or the United States; or
	FOR DENR USE	ONLY
Permit Number:	Date Approved:	Approved by:

- (e) Has otherwise demonstrated through clear and convincing evidence of previous actions that the applicant lacks the necessary good character and competency to reliably carry out the obligations imposed by law upon the permit holder; or
- (2) The application substantially duplicates an application by the same applicant denied within the past five years which denial has not been reversed by a court of competent jurisdiction. Nothing in this subdivision may be construed to prohibit an applicant from submitting a new application for a permit previously denied, if the new application represents a good faith attempt by the applicant to correct the deficiencies that served as the basis for the denial in the original application.

All applications filed pursuant to Titles 34A and 45 shall include a certification, sworn to under oath and signed by the applicant, that he is not disqualified by reason of this section from obtaining a permit. In the absence of evidence to the contrary, that certification shall constitute a prima facie showing of the suitability and qualification of the applicant. If at any point in the application review, recommendation or hearing process, the secretary finds the applicant has intentionally made any material misrepresentation of fact in regard to this certification, consideration of the application may be suspended and the application may be rejected as provided for under this section.

Applications rejected pursuant to this section constitute final agency action upon that application and may be appealed to circuit court as provided for under chapter 1-26."

I certify pursuant to SDCL 1-40-27, that as an applicant, officer, partner, or resident general manager of the activity or facility for which the application has been made that I; a) have not intentionally misrepresented a material fact in applying for a permit; b) have not been convicted of a felony or other crime of moral turpitude; c) have not habitually and intentionally violated environmental laws of any state or the United States which have caused significant and material environmental damage; d) have not had any permit revoked under the environmental laws of any state or the United States; or e) have not otherwise demonstrated through clear and convincing evidence of previous actions that I lack the necessary good character and competency to reliably carry out the obligations imposed by law upon me. I also certify that this application does not substantially duplicate an application by the same applicant denied within the past five years which denial has not been reversed by a court of competent jurisdiction. Further;

"I declare and affirm under the penalties of perjury that this claim (petition, application, information) has been examined by me, and to the best of my knowledge and belief, is in all things true and correct."

Dated this	day of	, 20	
Applicant (print)			
Applicant (signate	ture)		
FF (*-18			
Subscribed and s	worn before me this	day of	, 20
Notary Public (si	ignature)		
My commission	expires:		(SEAL)

PLEASE ATTACH A SHEET DISCLOSING ALL FACTS PERTAINING TO SDCL 1-40-27 (1) (a) THROUGH (e). ALL VIOLATIONS MUST BE DISCLOSED, BUT WILL NOT AUTOMATICALLY RESULT IN THE REJECTION OF AN APPLICATION.

Appendix D

TRANSFER OF PERMIT COVERAGE FORM



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES TRANSFER OF PERMIT COVERAGE FORM

for Coverage Under the SWD General Permit for Stormwater Discharges Associated with Construction Activities

This form is required to be submitted when ownership of a construction project or an individual lot in a larger common plan of development has been transferred to a different owner. Please submit this form to the following address:

Submit form to: SD Department of Environment and Natural Resources

Surface Water Quality Program 523 East Capitol Avenue Pierre, South Dakota 57501 stormwater@state.sd.us

Telephone: 1-800-SDSTORM

Project Name:	Permit Number	r:
Site (Lot) Legal Location:		
Site (Lot) Description:		
Previous Owner's Name:		
New Owner's Name:		
New Owner's Mailing Information:		
City:	State:	Zip Code:
Phone Number: Email: _		
Stabilization measures implemented prior to transfer:		
Date transfer of property responsibility and liability becomes effect	tive:	
Plan be updated and revised to reflect all changes. The site (lot) described about is covered under the General Per Construction Activity. Temporary or permanent stabilization by transferred ownership/responsibility as indicated above. The mimportance of site stabilization in an effort to control pollutant	nas been establi ew owners, or o	shed on the site, which has now operators, have been made aware of the
The new owner assumes responsibility for implementing best no form of pollutants to waters of the state. The new owner is aware that disturbing activities at the site have been completed and one of all portions of the site not covered by pavement or per cover over at least 70% of the site; or	nt permit covera the following c	age for the site is required until all soil- onditions have been met:
 equivalent permanent stabilization measure have been geotextiles. 	employed, such	h as the use of riprap, gabions, or
New Owner/Operator Signature:		
Date:	_	
Previous Owner/Operator Signature:		
Date:	_	
FOR DENR US	E ONLY	

Date Approved: _

Approved by: __

Appendix E

NOTICE OF INTENT FOR REAUTHORIZATION FORM



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES NOTICE OF INTENT (NOI) for REAUTHORIZATION

of Coverage Under the SWD General Permit for Stormwater Discharges Associated with Construction Activities

The following facility currently has coverage under the General Permit for Stormwater Discharges Associated with Construction Activities. *This form must be submitted if you wish to continue coverage under the General Permit.* Submission of this form shall in no way relieve the permittee of permit obligations required prior to submission of this form. Please submit this form to the following address:

Submit form to: SD Department of Environment and Natural Resources

Surface Water Quality Program 523 East Capitol Avenue Pierre, South Dakota 57501 stormwater@state.sd.us Telephone: 1-800-SDSTORM

Update information below as needed. Please print or type information.

	Opuate inio	i mation below a	s needed. I leas	e print (n type miormanom.	
I.	Permit Number:					
II.	Owner Information:					
	Company Name:	_				
	Primary Contact Person:	_				
	Mailing Address:					
	City:		State:	Z	ip Code:	
	Phone Number:	· 	Email Address:			
III.	Construction Project Inf	ormation:				
	Project Name:	_				
	On-Site Contact Person:					
	Mailing Address:					
	City:	County:		State:	Zip Code:	
	Phone Number:		Total area disturbe	d by the pr	roject (in acres):	
	Project Start Date:		Estimated Complet	tion Date:		
IV.	Signature of Applicant					
	By signing this form, you are requesting to continue permit coverage under the reissued General Permit. You are certifyin you will comply with the new General Permit and update your Stormwater Pollution Prevention Plan if necessary to meet the reissued General Permit conditions.					
	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including revocation of the permit and the possibility of fine and imprisonment for knowing violations. In addition, I certify that I am aware of the terms and conditions of the General Stormwater permit and I agree to comply with those requirements.					
	NOTE: The NOI for Reauthor by the applicant, if an indi		ned by the authorize	ed chief el	ective or executive offier of the	applicant,
Name (p	orint):			Γitle:		
Signatu	re:		I	Date:		
		FOR I	DENR USE ON	LY		

Date Reauthorized:

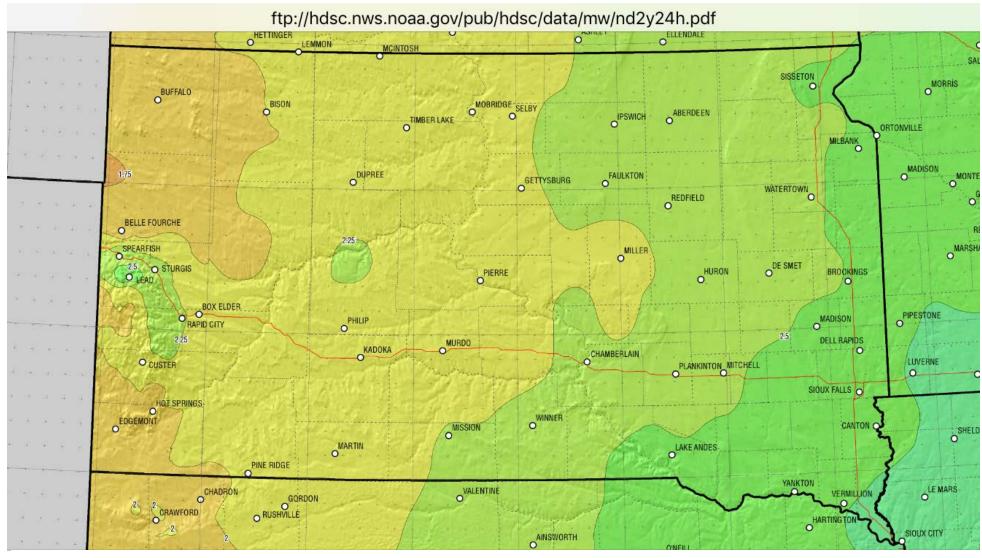
NOI for Reauthorization - General Stormwater Permit

Approved by: ___

Revised January 31, 2018

Appendix F

TWO YEAR, TWENTY-FOUR HOUR PRECIPITATION EVENT MAP



NOAA Atlas 14, Volume 8, Version 2 Midwestern States

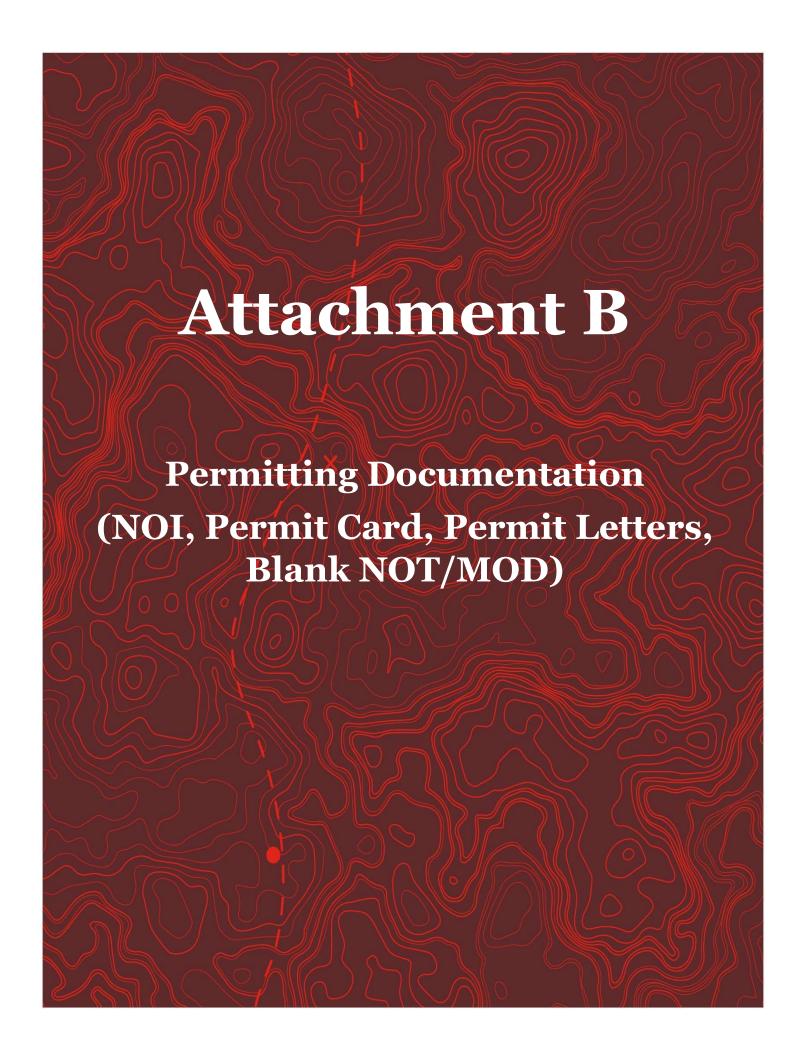
SOUTH DAKOTA

NORR

Prepared by U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE
OFFICE OF HYDROLOGIC DEVELOPMENT
HYDROMETEOROLOGICAL DESIGN STUDIES CENTER
NATIONAL PORTS.

2-year 24-hour precipitation in inches

■ 0.88 - 1.00 ■ 2.01 - 2.25 ■ 3.26 - 3.50 ■ 4.51 - 4.75 ■ 1.01 - 1.25 ■ 2.26 - 2.50 ■ 3.51 - 3.75 ■ 4.76 - 5.00 ■ 1.26 - 1.50 ■ 2.51 - 2.75 ■ 3.76 - 4.00 ■ 5.01 - 5.19 ■ 1.51 - 1.75 ■ 2.76 - 3.00 ■ 4.01 - 4.25 ■ 1.76 - 2.00 ■ 3.01 - 3.25 ■ 4.26 - 4.50





DEPARTMENT of AGRICULTURE and NATURAL RESOURCES

JOE FOSS BUILDING 523 E CAPITOL AVE PIERRE SD 57501-3182 danr.sd.gov

April 4, 2023

Andrew Young Sweetland Wind Farm LLC 775 Flatiron Pkwy Suite 120 Boulder, CO 80301

Dear Andrew Young:

Thank you for submitting your Notice of Intent for the South Dakota General Permit for Stormwater Discharges Associated with Construction Activities. This letter grants you coverage under this general permit for the project listed below in Hand County, SD. This coverage does not relieve you from complying with other state and local requirements or from obtaining other required permits. **All contractors who will be doing dirt work or who will be responsible for implementing sediment and erosion controls must submit a Contractor Authorization form identifying the contractor.** The contractor will then be considered a co-permittee and will also be responsible for complying with the general permit.

You must maintain your site in compliance with the permit conditions. Refer to Section 3.0 for effluent limits and Section 5.0 for Stormwater Pollution Prevention Plan requirements. Your project's Permit Number is **SDR10K896**. Please refer to this number in all future correspondence.

Project Information (Please check to be certain this information is correct):

Cole Stocker – Project Site Contact Person Sweetland Wind Farm (PCN:) Section 12, Township 11N, Range 67W Latitude 44.41409°; Longitude -98.837337°

Effective Date: April 4, 2023

SDDANR is in the process of reissuing the General Permit, which expired on March 31, 2023. The General Permit is administratively continued until an updated General Permit is issued. This letter grants you full coverage under the current administratively continued General Permit.

Thank you for preserving the natural resources of South Dakota. If you have any questions or need any guidance, please contact the stormwater team at 1-800-737-8676 or by email at stormwater@state.sd.us.

Sincerely,

Hatie adais

Katie Adair Stormwater Program Assistant Surface Water Quality Program

cc: Project Contact: Cole Stocker

Engineer: Aaron Mlynek



Contractor Authorization - General Stormwater Permit

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES CONTRACTOR AUTHORIZATION FORM

for Coverage Under the SWD General Permit for Stormwater Discharges Associated with Construction Activities

This form is required to be submitted when a contractor will act as an operator and have day to day responsibility for erosion and sediment control measures. Submission of this form shall in no way relieve the permittee of permit obligations. Please submit this form to the following address:

Submit form to: SD Department of Environment and Natural Resources

Surface Water Quality Program 523 East Capitol Avenue Pierre, South Dakota 57501 stormwater@state.sd.us

Telephone: 1-800-SDSTORM

ALL QUESTIONS MUST BE ANSWERED COMPLETELY FOR THIS FORM TO BE VALID
Project Name:Sweetland Wind Farm Permit Number (if available):
Project Name: Sweetland Wind Farm Permit Number (if available): Project Site Legal Location: 36732 205th St., Saint Lawrence, SD 57373
Contractor Company Name: Blattner Energy, LLC
Responsible Contact Person: Ben Raich
Contact's Email Address:braich@blattnerenergy.com
Contractor Mailing Address: 392 County Road 50
City:
The contractor(s) responsible for the day to day operation of the construction site shall certify the following:
Activities for the project identified above." South Dakota Codified Laws Section 1-40-27 provides: "The secretary may reject an application for any permit filed pursuant to Titles 34A or 45, including any application by any concentrated swine feeding operation for authorization to operate under a general permit, upon making a specific finding that:
 (1) The applicant is unsuited or unqualified to perform the obligations of a permit holder based upon a finding that the applicant, any officer, director, partner or resident general manager of the facility for which application has been made: (a) Has intentionally misrepresented a material fact in applying for a permit;
(b) Has been convicted of a felony or other crime involving moral turpitude;
(c) Has habitually and intentionally violated environmental laws of any state or the United States which have caused significant and material environmental damage;
(d) Has had any permit revoked under the environmental laws of any state or the United States; or
FOR DENR USE ONLY

_ Date Approved: _____ Approved by: ___

Page 1 of 2

Revised December 07, 2017

- (e) Has otherwise demonstrated through clear and convincing evidence of previous actions that the applicant lacks the necessary good character and competency to reliably carry out the obligations imposed by law upon the permit holder; or
- (2) The application substantially duplicates an application by the same applicant denied within the past five years which denial has not been reversed by a court of competent jurisdiction. Nothing in this subdivision may be construed to prohibit an applicant from submitting a new application for a permit previously denied, if the new application represents a good faith attempt by the applicant to correct the deficiencies that served as the basis for the denial in the original application.

All applications filed pursuant to Titles 34A and 45 shall include a certification, sworn to under oath and signed by the applicant, that he is not disqualified by reason of this section from obtaining a permit. In the absence of evidence to the contrary, that certification shall constitute a prima facie showing of the suitability and qualification of the applicant. If at any point in the application review, recommendation or hearing process, the secretary finds the applicant has intentionally made any material misrepresentation of fact in regard to this certification, consideration of the application may be suspended and the application may be rejected as provided for under this section.

Applications rejected pursuant to this section constitute final agency action upon that application and may be appealed to circuit court as provided for under chapter 1-26."

I certify pursuant to SDCL 1-40-27, that as an applicant, officer, partner, or resident general manager of the activity or facility for which the application has been made that I; a) have not intentionally misrepresented a material fact in applying for a permit; b) have not been convicted of a felony or other crime of moral turpitude; c) have not habitually and intentionally violated environmental laws of any state or the United States which have caused significant and material environmental damage; d) have not had any permit revoked under the environmental laws of any state or the United States; or e) have not otherwise demonstrated through clear and convincing evidence of previous actions that I lack the necessary good character and competency to reliably carry out the obligations imposed by law upon me. I also certify that this application does not substantially duplicate an application by the same applicant denied within the past five years which denial has not been reversed by a court of competent jurisdiction. Further;

"I declare and affirm under the penalties of perjury that this claim (petition, application, information) has been examined by me, and to the best of my knowledge and belief, is in all things true and correct."

Dated this
Ben Raich
Applicant (print)
3-176:ch
Applicant (signature)
Subscribed and sworn before me this 30th day of 40, 2023.
Notary Public (signature)
ABBABAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
My commission expires: JESSICA J LOIDOLT JESSICA J LOIDOLT SEALED PUBLIC - MINNESOTA
My Comm. Exp. Jan. 31, 2027

PLEASE ATTACH A SHEET DISCLOSING ALL FACTS PERTAINING TO SDCL 1-40-27 (1) (a) THROUGH (e). ALL VIOLATIONS MUST BE DISCLOSED, BUT WILL NOT AUTOMATICALLY RESULT IN THE REJECTION OF AN APPLICATION.

Permit No.: SDR10K896 Project: Sweetland Wind Farm

SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

General Permit Authorizing Stormwater Discharges Associated with Construction Activities Under the South Dakota Surface Water Discharge System

In compliance with the provisions of the South Dakota Water Pollution Control Act and the Administrative Rules of South Dakota (ARSD), Article 74:52, owners and operators of stormwater discharges from **construction activities**, located in the state of South Dakota are authorized to discharge in accordance with the conditions and requirements set forth herein.

This General Permit shall become effective on April 1, 2018.

General Permit coverage for Sweetland Wind Farm LLC shall become effective April 4, 2023.

This General Permit and the authorization to discharge shall expire at midnight, March 31, 2023.

Signed this 23rd day of March, 2018,

Authorized Permitting Official

Steven M. Pirner

Secretary

Department of Environment and Natural Resources

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES **NOTICE OF INTENT (NOI)**

to Obtain Coverage Under the SWD General Permit for Stormwater Discharges Associated with Construction Activities

Submit form to: SD Department of Environment and Natural Resources

Surface Water Quality Program 523 East Capitol Avenue Pierre, South Dakota 57501 stormwater@state.sd.us Telephone: 1-800-SDSTORM

ALL QUESTIONS MUST BE ANSWERED COMPLETELY FOR THIS FORM TO BE VALID

I. Site Owner Contact In	formation:				
Company Name: Swe	etland Wind Farm, LLC				
Primary Contact Person	n: Andrew Young				
Mailing Address: 775	Flatiron Pkwy., Suite 120				
City: Boulder			State: CO	Zip Code: 0301	
Phone Number: 303-	284-7566	E	mail Address: andrev	w@scoutcleanenergy.c	com
Type of X Ownership:	Private Feder	al	State Other	(Municipal, County, etc	c.)
II. Contractor Information	on:				
Will any contractors be	responsible for erosion and	d sedime	nt control practices:	X Yes No	
sediment control practic	on form must be submitted ces. If these contractors ha after they have been ident	ve not be	en identified at the tim	e this NOI is submitted	ility for erosion and I, the contracotr certification
III. Engineering Firm Co	ntact Information (if appli	cable):			
Contact Person: Aa	aron Mlynek				
Contact's Email Addres	ss: aaron.mlynek@wes	twoodps.	.com		
IV. Construction Project	Information:				
Project Name: Swe	eetland Wind Farm				
Physical Project Addres	ss or Description of Constru	uction Site	e Location:		
miles to the northwest.	ed in Hand County, South The nearest intersection is y agricultural fields, and on	State Hig	hway 45 and County		is located approximately 10 e site is bordered on the
City: Miller		State:	SD	Zip	57362
On-Site Contact Person	n: Cole Stocker			Code:	
Contact's Email Addres	ss: cstocker@blattnerene	rgy.com			
Contact's Mailing Addre	ess: 392 Co Rd 50				
City: Avon		State:	MN	Zip Code:	56310
Phone 320-24 Number:	41-1079	County	of Construction Site:	Hand	
Latitude: 44.41409	Longitu	ıde: <u>-</u> 98.	837337	Source (GPS, Googl	e, etc.): AcrMap
Quarter(s): SW	Section(s): 12		Township(s): 11N	Range(s):	067W

Permit Number:	Date	Approved by:
	— Approved:	
Construction Project Information (Continued):		
Is this project on Tribal Lands? Yes	X No	
Total area disturbed by the project (in acres):	908.00000	
Will this project encroach, damage, or destroy of	one of the historic	c sites identified at the following wesites:
http://history.sd.gov/Preservation/NatReg/N	latReg.aspx	Yes X No
http://www.nps.gov/nhl/find/statelists/sd/SD).pdf	Yes X No
. Stormwater Pollution Prevent Plan (SWPPP)):	
Has the SWPPP been developed as required?		X Yes No
(The plan must be developed before the NOI is	submitted. DEN	NR will not issue coverage before this has been developed.)
I. Receiving Waters:		
Please list all possible waters that may receive which municipality and the ultimate receiving wa		n this site. If discharging to a Municipal Storm Sewer System, indicat
Pearl Creek - Cain Creek, City of Wessington - Pearl Creek,	Cain Creek, Upp	per Silver Crek, Lower Silver Creek, East Pearl Creek, Pearl Lake -
L		
Please include a brief description of the constru	ction project:	
		turbines. Construction of the wind turbines requires but is not limited
		ce building, a previously-constructed temporary laydown yard with a on, overhead transmission, and 16-foot-wide gravel access roads with
temporary thirty-six-foot-wide disturbance due to	o temporary com	npacted shoulders (10 feet on each side) for truck transport of vill be necessary for some existing road and radii. The crane paths are
specifically designed to follow access roads to I	<u>imit disturbance (</u>	of streams and other sensitive areas such as steep slopes and will
preconstruction conditions after the use of the p	aths. The SWPP	roads. All temporary crane paths should be restored to PP shall be amended to show locations and disturbance areas as
necessary should locations change during cons The laydown area was previously permitted and		component and materials delivery. The original SDDENR
Construction Permit will be closed, and the new	authorized perm	nit for the Sweetland Wind Project will include the laydown area. ted in one phase with concurrent stabilization occurring by returning
		ned to operational control of the agricultural landowner.
Will construction dewatering be required?	Yes N	No If yes, please complete section IX also.
III. Construction Dates:		
Project Start Date (MM/DD/YYYY):	4/10/2023 12:00	D:00 AM
Estimated Completion Date (MM/DD/YYYY):	5/31/2024 12:00):00 AM
K. Dewatering Activities (Complete this sectio	n if you answer	red yes in VII):
Date dewatering will commence (MM/DD/YYYY	′): <u>4/10/2023 12</u>	2:00:00 AM
Date dewatering will end (MM/DD/YYYY):	9/25/2023 12	2:00:00 AM
Total volume of dewatering (gallons): 425,000		Average flow rate (gallons per 425,000 minute):
Source of water to be discharged: collected s	stormwater from t	turbine excavations/foundations
Receiving water: Overland flow to East Pear Creek	l Creek, Cain Cre	eek, Upper Silver Creek, Lower Silver Creek, Pearl Lake - Pearl

FOR DENR USE ONLY

Brief description of water treatment processes to be employed, if	any:
<u>Utilization of existing vegetative buffers with scour protection at dipotential of 2000 gallons of collected stormwater at each turbine ledewatering volume.</u>	scharge points, or use of sediment dewatering bags. Assuming a ocation, with three dewatering events at each location for a total
Will the dewatering discharge contain anything other than uncontastormwater:	aminated groundwater and Yes No
NOTE: If there will be dewatering activities, please place points of topographic map is unavailable. This map should extend to one (*each of its discharge facilities, and those wells, springs, and other intake structures listed in public records, or otherwise known to the	surface water bodies, drinking water wells, and surface water
X. Other Information	
List other information you feel should be brought to the attention of Attach additional sheets if necessary.	of the SDDENR regarding coverage under this general permit.
STATE OF SO	UTH DAKOTA
BEFORE THE S	ECRETARY OF
THE DEPARTMENT OF ENVIRONM	IENT AND NATURAL RESOURCES
IN THE MATTER OF THE) APPLICATION OF)	
Sweetland Wind Farm)	CERTIFICATION OF
STATE OF <u>SD</u>	APPLICANT
COUNTY OF <u>Hand</u>	

I, <u>Andrew Young</u>, the applicant in the above matter after being duly sworn upon oath hereby certify the following information in regard to this application: I have read and understand South Dakota Codified Law Section 1-40-27 which provides:

"The secretary may reject an application for any permit filed pursuant to Titles 34A or 45, including any application by any concentrated swine feeding operation for authorization to operate under a general permit, upon making a specific finding that:

- (1) The applicant is unsuited or unqualified to perform the obligations of a permit holder based upon a finding that the applicant, any officer, director, partner, or resident general manager of the facility for which application has been made:
 - (a) Has intentionally misrepresented a material fact in applying for a permit;
 - (b) Has been convicted of a felony or other crime involving moral turpitude;
 - (c) Has habitually and intentionally violated environmental laws of any state or the United States which have caused significant and material environmental damage;
 - (d) Has had any permit revoked under the environmental laws of any state or the United States; or
 - (e) Has otherwise demonstrated through clear and convincing evidence of previous actions that the applicant lacks the necessary good character and competency to reliably carry out the obligations imposed by law upon the permit holder; or
- (2) The application substantially duplicates an application by the same applicant denied within the past five years which denial has not been reversed by a court of competent jurisdiction. Nothing in this subdivision may be construed to prohibit an applicant from submitting a new application for a permit previously denied, if the new application represents a good faith attempt by the applicant to correct the deficiencies that served as the basis for the denial in the original application.

All applications filed pursuant to Titles 34A and 45 shall include a certification, sworn to under oath and signed by the applicant, that he is not disqualified by reason of this section from obtaining a permit. In the absence of evidence to the contrary, that certification shall constitute a prima facie showing of the suitability and qualification of the applicant. If at any point in the application review, recommendation or hearing process, the secretary finds the applicant has intentionally made any material misrepresentation of fact in regard to this certification,

consideration of the application may be suspended and the application may be rejected as provided for under this section.

Applications rejected pursuant to this section constitute final agency action upon that application and may be appealed to circuit court as provided for under chapter 1-26."

I certify pursuant to 1-40-27, that as an applicant, officer, director, partner, or resident general manager of the activity or facility for which the application has been made that I; a) have not intentionally misrepresented a material fact in applying for a permit; b) have not been convicted of a felony or other crime of moral turpitude; c) have not habitually and intentionally violated environmental laws of any state or the United States which have caused significant and material environmental damage; (d) have not had any permit revoked under the environmental laws of any state or the United States; or e) have not otherwise demonstrated through clear and convincing evidence of previous actions that I lack the necessary good character and competency to reliably carry out the obligations imposed by law upon me. I also certify that this application does not substantially duplicate an application by the same applicant denied within the past five years which denial has not been reversed by a court of competent jurisdiction. Further;

"I declare and affirm under the penalties of perjury that this claim (petition, application, information) has been examined by me, and to the best of my knowledge and belief, is in all things true and correct."

Andrew Young
Applicant (print)
3/9/2023 12:00:00 AM
Applicant (signature)
Subscribed and sworn before me this day of
CROMERR
Notary Public (signature)
My commission expires

(SEAL)

PLEASE ATTACH ANY ADDITIONAL INFORMATION NECESSARY TO DISCLOSE ALL FACTS AND DOCUMENTS PERTAINING TO SDCL 1-40-27 (1) (a) THROUGH (e).

ALL VIOLATIONS MUST BE DISCLOSED, BUT WILL NOT AUTOMATICALLY RESULT IN THE REJECTION OF AN APPLICATION



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES NOTICE OF TERMINATION (NOT)

of Coverage Under the SWD General Permit for Stormwater Discharges Associated with Construction Activities

This form is required to be submitted when a discharge permit is no longer required or necessary. Submission of this form shall in no way relieve the permittee of permit obligations required prior to submission of this form. Please submit this form to the following address:

Submit form to: SD Department of Environment and Natural Resources

Surface Water Quality Program 523 East Capitol Avenue Pierre, South Dakota 57501 stormwater@state.sd.us Telephone: 1-800-SDSTORM

Primary Contact Informatio	n:	
Company Name:		
Primary Contact Person:		
Mailing Address:		
City:	State:	Zip Code:
Phone Number:	Email Address:	
Mailing Address for Facility	/Site Location:	
Project Name:		
Primary Contact Person:		
Contact's Email Address:		
Contact's Mailing Address:		
City:	State:	Zip Code:
	. Dermii nave been eiiminaiea. T unaersian	d that by submitting the Notice of Termination.
pollutants in stormwater associat and the South Dakota Water Poll submittal of this Notice of Termin	ormwater associated with construction acted with construction activity to waters of toution Control Act if the discharge is not an action does not release an operator from linker. I am aware that there are significant p	tivity under this general permit, and that discha the state is unlawful under the federal Clean Wa uthorized by a SWD permit. I also understand th ability for any violations of this permit or the S
pollutants in stormwater associate and the South Dakota Water Poll submittal of this Notice of Termin Dakota Water Pollution Control possibility of fine and imprisonment	Ormwater associated with construction acted with construction activity to waters of the discharge is not an action does not release an operator from linker. I am aware that there are significant for knowing violations.	tivity under this general permit, and that dischathe state is unlawful under the federal Clean Wouthorized by a SWD permit. I also understand the ability for any violations of this permit or the Spenalties for submitting false information, inclu
pollutants in stormwater associate and the South Dakota Water Pollution Submittal of this Notice of Termin Dakota Water Pollution Control possibility of fine and imprisonmed NOTE: Notice of Termination shapplicant, if an individual.	formwater associated with construction acted with construction activity to waters of the discharge is not an action does not release an operator from linker. I am aware that there are significant pent for knowing violations. all be signed by the authorized chief elections.	tivity under this general permit, and that dischathe state is unlawful under the federal Clean Wouthorized by a SWD permit. I also understand the ability for any violations of this permit or the Spenalties for submitting false information, inclu
pollutants in stormwater associate and the South Dakota Water Pollution Submittal of this Notice of Termin Dakota Water Pollution Control of possibility of fine and imprisonme NOTE: Notice of Termination shapplicant, if an individual. Name:	ormwater associated with construction acted with construction activity to waters of the discharge is not an action does not release an operator from line Act. I am aware that there are significant pent for knowing violations. all be signed by the authorized chief election. Title:	d that by submitting the Notice of Termination, tivity under this general permit, and that dischasche state is unlawful under the federal Clean Wasthorized by a SWD permit. I also understand the fability for any violations of this permit or the Scienalties for submitting false information, include we or executive officer of the applicant, or by the Date:
pollutants in stormwater associate and the South Dakota Water Pollution Submittal of this Notice of Termin Dakota Water Pollution Control of possibility of fine and imprisonme NOTE: Notice of Termination shapplicant, if an individual. Name:	ormwater associated with construction acted with construction activity to waters of the discharge is not an action does not release an operator from line Act. I am aware that there are significant pent for knowing violations. all be signed by the authorized chief election. Title:	tivity under this general permit, and that dischashe state is unlawful under the federal Clean Wouthorized by a SWD permit. I also understand the fability for any violations of this permit or the Spenalties for submitting false information, incluve or executive officer of the applicant, or by the



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES NOTICE OF TERMINATION (NOT)

of Coverage Under the SWD General Permit for Stormwater Discharges Associated with Construction Activities

This form is required to be submitted when a discharge permit is no longer required or necessary. Submission of this form shall in no way relieve the permittee of permit obligations required prior to submission of this form. Please submit this form to the following address:

Submit form to: SD Department of Environment and Natural Resources

Surface Water Quality Program 523 East Capitol Avenue Pierre, South Dakota 57501 stormwater@state.sd.us Telephone: 1-800-SDSTORM

Primary Contact Informatio	n:	
Company Name:		
Primary Contact Person:		
Mailing Address:		
City:	State:	Zip Code:
Phone Number:	Email Address:	
Mailing Address for Facility	/Site Location:	
Project Name:		
Primary Contact Person:		
Contact's Email Address:		
Contact's Mailing Address:		
City:	State:	Zip Code:
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DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES TRANSFER OF PERMIT COVERAGE FORM

for Coverage Under the SWD General Permit for Stormwater Discharges Associated with Construction Activities

This form is required to be submitted when ownership of a construction project or an individual lot in a larger common plan of development has been transferred to a different owner. Please submit this form to the following address:

Submit form to: SD Department of Environment and Natural Resources

Surface Water Quality Program 523 East Capitol Avenue Pierre, South Dakota 57501 stornwater@state.sd.us

Telephone: 1-800-SDSTORM

Project Name:	Permit Num	ber:
Site (Lot) Legal Location:		
Site (Lot) Description:		
Previous Owner's Name:		
New Owner's Name:		
New Owner's Mailing Information:		
City:	State:	Zip Code:
Phone Number: Ema	il:	
Stabilization measures implemented prior to transfer:		
Date transfer of property responsibility and liability becomes ef	fective:	
The site (lot) described about is covered under the General I Construction Activity. Temporary or permanent stabilization transferred ownership/responsibility as indicated above. The importance of site stabilization in an effort to control pollution.	on has been estal e new owners, o	blished on the site, which has now r operators, have been made aware of the
The new owner assumes responsibility for implementing best of pollutants to waters of the state. The new owner is aware disturbing activities at the site have been completed and one all portions of the site not covered by pavement or proved the cover over at least 70% of the site; or	that permit cove of the following	erage for the site is required until all soil- g conditions have been met:
 equivalent permanent stabilization measure have be geotextiles. 	een employed, si	uch as the use of riprap, gabions, or
New Owner/Operator Signature:		
Date:		
Previous Owner/Operator Signature:		
Date:		
FOR DENR	USE ONLY	

Date Approved: _

Transfer of Ownership - General Stormwater Permit

Approved by: __

Revised January 31, 2018



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES CONTRACTOR AUTHORIZATION FORM

for Coverage Under the SWD General Permit for Stormwater Discharges Associated with Construction Activities

This form is required to be submitted when a contractor will act as an operator and have day to day responsibility for erosion and sediment control measures. Submission of this form shall in no way relieve the permittee of permit obligations. Please submit this form to the following address:

Submit form to: SD Department of Environment and Natural Resources

Surface Water Quality Program 523 East Capitol Avenue Pierre, South Dakota 57501 stormwater@state.sd.us Telephone: 1-800-SDSTORM

ALL QUESTIONS MUST BE ANSWERED COMPLETELY FOR THIS FORM TO BE VALID

Project Name	e:		Permit Number (if available):
Project Site I	Legal Location:		
Contractor Co	ompany Name:		
Responsible (Contact Person:		
Contact's Em	nail Address:		
Contractor M	ailing Address:		
City:	Sta	e: Zip Code:	Phone Number:
The contracto	or(s) responsible for the da	to day operation of the co	nstruction site shall certify the following:
Surface V Activities South Dakota "The sec applicati	Water Discharge General F s for the project identified Codified Laws Section 1- retary may reject an appli	ermit for Stormwater Dischalbove." 40-27 provides: ation for any permit filed p	ly with the terms and conditions of the narges Associated with Construction oursuant to Titles 34A or 45, including any uthorization to operate under a general permit, upon
tha			bligations of a permit holder based upon a finding ent general manager of the facility for which
(a)	Has intentionally misrep	esented a material fact in a	applying for a permit;
` ′	v	elony or other crime involv	
(c)		onally violated environmer ad material environmental	ntal laws of any state or the United States which damage;
(d)	Has had any permit revo	ed under the environmenta	al laws of any state or the United States; or
		FOR DENR USE	ONLY

Approved by: _

Date Approved: _

- (e) Has otherwise demonstrated through clear and convincing evidence of previous actions that the applicant lacks the necessary good character and competency to reliably carry out the obligations imposed by law upon the permit holder; or
- (2) The application substantially duplicates an application by the same applicant denied within the past five years which denial has not been reversed by a court of competent jurisdiction. Nothing in this subdivision may be construed to prohibit an applicant from submitting a new application for a permit previously denied, if the new application represents a good faith attempt by the applicant to correct the deficiencies that served as the basis for the denial in the original application.

All applications filed pursuant to Titles 34A and 45 shall include a certification, sworn to under oath and signed by the applicant, that he is not disqualified by reason of this section from obtaining a permit. In the absence of evidence to the contrary, that certification shall constitute a prima facie showing of the suitability and qualification of the applicant. If at any point in the application review, recommendation or hearing process, the secretary finds the applicant has intentionally made any material misrepresentation of fact in regard to this certification, consideration of the application may be suspended and the application may be rejected as provided for under this section.

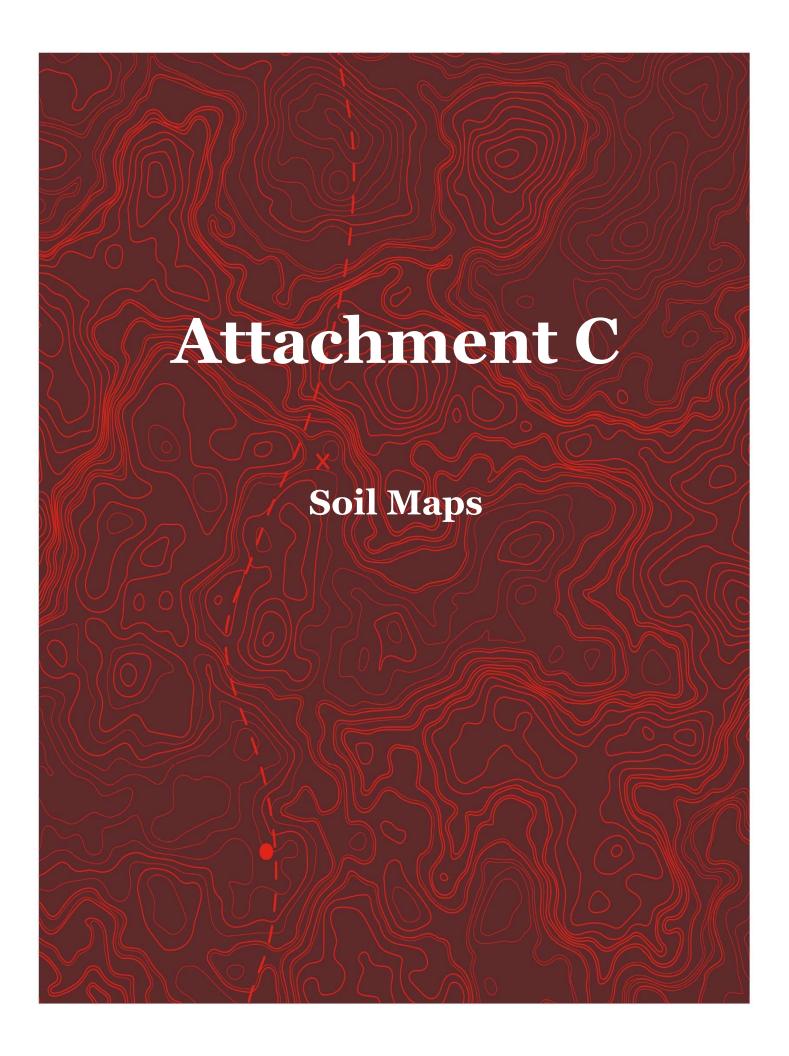
Applications rejected pursuant to this section constitute final agency action upon that application and may be appealed to circuit court as provided for under chapter 1-26."

I certify pursuant to SDCL 1-40-27, that as an applicant, officer, partner, or resident general manager of the activity or facility for which the application has been made that I; a) have not intentionally misrepresented a material fact in applying for a permit; b) have not been convicted of a felony or other crime of moral turpitude; c) have not habitually and intentionally violated environmental laws of any state or the United States which have caused significant and material environmental damage; d) have not had any permit revoked under the environmental laws of any state or the United States; or e) have not otherwise demonstrated through clear and convincing evidence of previous actions that I lack the necessary good character and competency to reliably carry out the obligations imposed by law upon me. I also certify that this application does not substantially duplicate an application by the same applicant denied within the past five years which denial has not been reversed by a court of competent jurisdiction. Further;

"I declare and affirm under the penalties of perjury that this claim (petition, application, information) has been examined by me, and to the best of my knowledge and belief, is in all things true and correct."

Dated this day of	, 20	
Applicant (print)		
Applicant (signature)		
Subscribed and sworn before me this	day of	, 20
Notary Public (signature)		
My commission expires:		(SEAL)

PLEASE ATTACH A SHEET DISCLOSING ALL FACTS PERTAINING TO SDCL 1-40-27 (1) (a) THROUGH (e). ALL VIOLATIONS MUST BE DISCLOSED, BUT WILL NOT AUTOMATICALLY RESULT IN THE REJECTION OF AN APPLICATION.





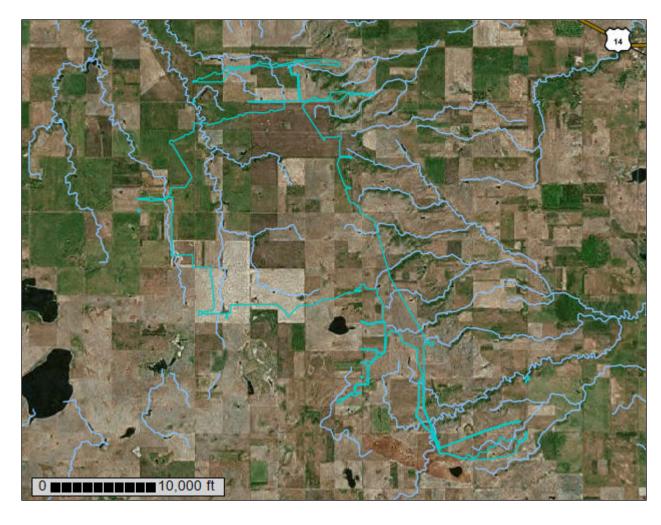
Natural Resources

Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Hand County, **South Dakota**

Sweetland Wind Farm



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2 053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

Preface	2
How Soil Surveys Are Made	
Soil Map	9
Soil Map (Sweetland Wind Farm)	
Legend	
Map Unit Legend (Sweetland Wind Farm)	
Map Unit Descriptions (Sweetland Wind Farm)	
Hand County, South Dakota	
BcA—Prosper-Stickney loams, nearly level	
CaA—Dudley silt loam, nearly level	
CnA—Cavo-Glenham loams, nearly level	
CrA—Stickney-Prosper loams, nearly level	
HdA—Durrstein-Bon complex, nearly level	
HhB—Houdek loam, 2 to 6 percent slopes	
HkA—Houdek-Prosper loams, 0 to 2 percent slopes	
HkB—Houdek-Prosper loams, 1 to 6 percent slopes	
HIA—Houdek-Dudley complex, 0 to 2 percent slopes	
Hv—Hoven silt loam, 0 to 1 percent slopes	
LIA—Bon loam, channeled, 0 to 2 percent slopes, frequently flooded	
LnB—Lane loam, gently sloping	
LpA—Lane-Jerauld silty clay loams, nearly level	
MdA—Dudley-Jerauld silt loams, 0 to 2 percent slopes	
So—Oahe-Delmont loams, 2 to 6 percent slopes	
Tp—Tetonka silt loam, 0 to 1 percent slopes	
W—Water	
WmB—Glenham loam, undulating	
WmC—Glenham loam, rolling	
WnA—Glenham-Prosper loams, 0 to 2 percent slopes	
WnB—Glenham-Propser loams, 1 to 6 percent slopes	
WpA—Glenham-Cavo loams, nearly level	
WyC Clankam lava learns rolling	
WxC—Glenham-Java loams, rolling	
WzC—Glenham-Java loams, rolling	
ZhE—Betts-Ethan loams, 15 to 40 percent slopes	
ZxE—Betts-Java loams, steep	
ZyD—Java-Glenham loams, hilly	
ZyE—Betts-Java loams, steep	
Soil Information for All Uses	
Suitabilities and Limitations for Use	
Land Management	
Erosion Hazard (Off-Road, Off-Trail) (Sweetland Wind Farm)	
Soil Reports	
Soil Erosion	84 84
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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

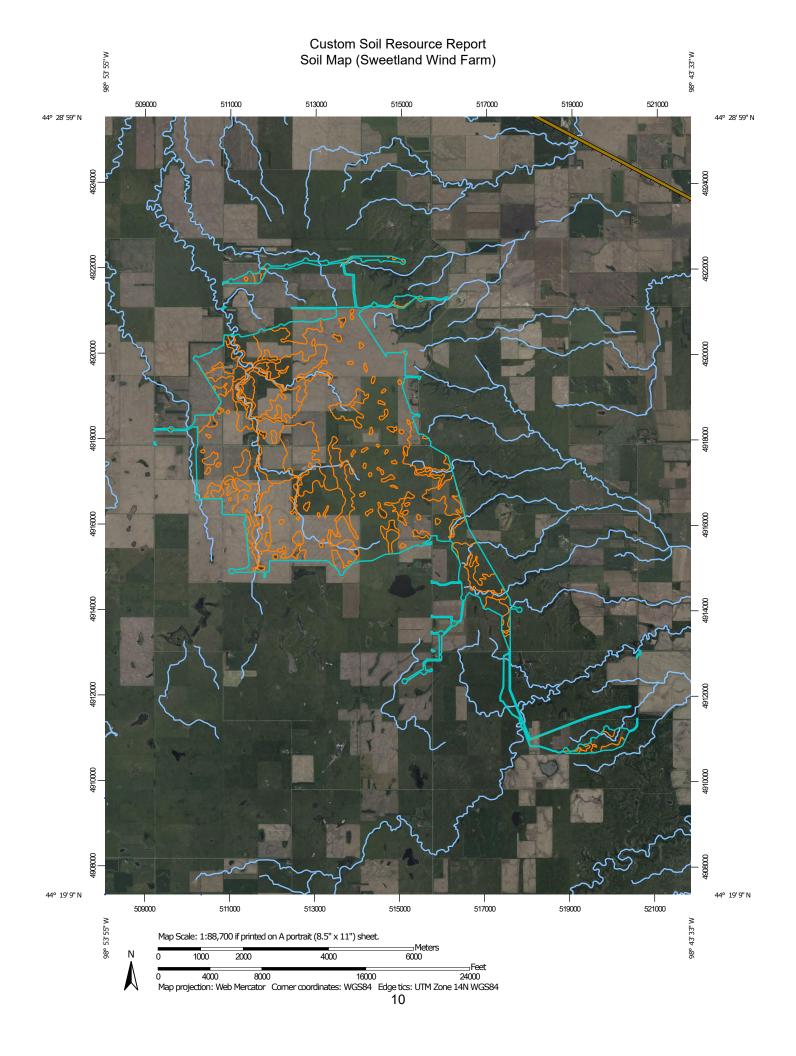
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

 \odot

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole Slide or Slip

Sodic Spot

å

Spoil Area Stony Spot



Very Stony Spot



Wet Spot Other



Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

 \sim

Major Roads Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20.000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hand County, South Dakota Survey Area Data: Version 24, Sep 8, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 1, 2022—Jun 18, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Sweetland Wind Farm)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BcA	Prosper-Stickney loams, nearly level	61.7	0.8%
СаА	Dudley silt loam, nearly level	17.5	0.2%
CnA	Cavo-Glenham loams, nearly level	158.9	2.1%
CrA	Stickney-Prosper loams, nearly level	17.3	0.2%
HdA	Durrstein-Bon complex, nearly level	11.0	0.1%
HhB	Houdek loam, 2 to 6 percent slopes	5.7	0.1%
HkA	Houdek-Prosper loams, 0 to 2 percent slopes	169.2	2.2%
HkB	Houdek-Prosper loams, 1 to 6 percent slopes	5.2	0.1%
HIA	Houdek-Dudley complex, 0 to 2 percent slopes	14.1	0.2%
Hv	Hoven silt loam, 0 to 1 percent slopes	45.3	0.6%
LIA	Bon loam, channeled, 0 to 2 percent slopes, frequently flooded	48.6	0.6%
LnB	Lane loam, gently sloping	0.7	0.0%
LpA	Lane-Jerauld silty clay loams, nearly level	0.0	0.0%
MdA	Dudley-Jerauld silt loams, 0 to 2 percent slopes	1.8	0.0%
So	Oahe-Delmont loams, 2 to 6 percent slopes	5.5	0.1%
Тр	Tetonka silt loam, 0 to 1 percent slopes	206.8	2.7%
W	Water	44.6	0.6%
WmB	Glenham loam, undulating	734.7	9.6%
WmC	Glenham loam, rolling	282.0	3.7%
WnA	Glenham-Prosper loams, 0 to 2 percent slopes	927.4	12.2%
WnB	Glenham-Propser loams, 1 to 6 percent slopes	3,426.5	45.0%
WpA	Glenham-Cavo loams, nearly level	182.6	2.4%
WpB	Glenham-Cavo loams, undulating	791.5	10.4%
WxC	Glenham-Java loams, rolling	1.9	0.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
WzC	Glenham-Java loams, rolling	174.8	2.3%
ZhE	Betts-Ethan loams, 15 to 40 percent slopes	0.3	0.0%
ZxE	Betts-Java loams, steep	1.3	0.0%
ZyD	Java-Glenham loams, hilly	100.8	1.3%
ZyE	Betts-Java loams, steep	179.0	2.4%
Totals for Area of Interest		7,617.0	100.0%

Map Unit Descriptions (Sweetland Wind Farm)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Hand County, South Dakota

BcA—Prosper-Stickney loams, nearly level

Map Unit Setting

National map unit symbol: ctwk Elevation: 1,310 to 1,970 feet

Mean annual precipitation: 18 to 25 inches Mean annual air temperature: 43 to 50 degrees F

Frost-free period: 130 to 155 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Prosper and similar soils: 60 percent Stickney and similar soils: 25 percent Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Prosper

Setting

Landform: Swales

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave Parent material: Loamy till

Typical profile

H1 - 0 to 6 inches: loam
H2 - 6 to 27 inches: clay loam
H3 - 27 to 43 inches: clay loam
H4 - 43 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: About 42 to 60 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 1 percent

Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2c

Hydrologic Soil Group: B

Ecological site: R055CY020SD - Loamy Overflow Forage suitability group: Overflow (G055CY500SD) Other vegetative classification: Overflow (G055CY500SD)

Hydric soil rating: No

Description of Stickney

Setting

Landform: Plains

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave Parent material: Clayey till

Typical profile

H1 - 0 to 16 inches: loam

H2 - 16 to 26 inches: silty clay loam H3 - 26 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 42 to 60 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 20 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

Sodium adsorption ratio, maximum: 3.0

Available water supply, 0 to 60 inches: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: C

Ecological site: R055CY011SD - Clayey

Forage suitability group: Clayey Subsoil (G055CY210SD)
Other vegetative classification: Clayey Subsoil (G055CY210SD)

Hydric soil rating: No

Minor Components

Dudley

Percent of map unit: 5 percent

Landform: Plains

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY013SD - Claypan

Other vegetative classification: Claypan (G055CY800SD)

Hydric soil rating: No

Houdek

Percent of map unit: 5 percent

Landform: Plains

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY010SD - Loamy

Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Tetonka

Percent of map unit: 5 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY004SD - Wet Meadow Other vegetative classification: Wet (G055CY900SD)

Hydric soil rating: Yes

CaA—Dudley silt loam, nearly level

Map Unit Setting

National map unit symbol: ctwm Elevation: 1,310 to 1,970 feet

Mean annual precipitation: 18 to 25 inches
Mean annual air temperature: 43 to 50 degrees F

Frost-free period: 130 to 155 days

Farmland classification: Not prime farmland

Map Unit Composition

Dudley and similar soils: 70 percent Minor components: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dudley

Settina

Landform: Plains

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave Parent material: Clayey till

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 26 inches: silty clay loam
H3 - 26 to 48 inches: clay loam
H4 - 48 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 42 to 60 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)

Sodium adsorption ratio, maximum: 20.0

Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: C

Ecological site: R055CY013SD - Claypan

Forage suitability group: Claypan (G055CY800SD)
Other vegetative classification: Claypan (G055CY800SD)

Hydric soil rating: No

Minor Components

Stickney

Percent of map unit: 14 percent

Landform: Plains

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY011SD - Clayey

Other vegetative classification: Clayey Subsoil (G055CY210SD)

Hydric soil rating: No

Jerauld

Percent of map unit: 11 percent

Landform: Plains

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY015SD - Thin Claypan

Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: No

Hoven

Percent of map unit: 3 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY019SD - Closed Depression Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: Yes

Tetonka

Percent of map unit: 2 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY004SD - Wet Meadow

Other vegetative classification: Wet (G055CY900SD)

Hydric soil rating: Yes

CnA—Cavo-Glenham loams, nearly level

Map Unit Setting

National map unit symbol: ctwt Elevation: 1,310 to 1,970 feet

Mean annual precipitation: 18 to 25 inches
Mean annual air temperature: 43 to 50 degrees F

Frost-free period: 130 to 155 days

Farmland classification: Not prime farmland

Map Unit Composition

Cavo and similar soils: 50 percent Glenham and similar soils: 30 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cavo

Setting

Landform: Plains

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave Parent material: Clayey till

Typical profile

H1 - 0 to 11 inches: loam H2 - 11 to 26 inches: clay loam H3 - 26 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 10 percent

Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

Sodium adsorption ratio, maximum: 20.0

Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: C

Ecological site: R055CY013SD - Claypan

Forage suitability group: Claypan (G055CY800SD)
Other vegetative classification: Claypan (G055CY800SD)

Hydric soil rating: No

Description of Glenham

Setting

Landform: Plains

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy till

Typical profile

H1 - 0 to 5 inches: loam H2 - 5 to 13 inches: clay loam H3 - 13 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2c

Hydrologic Soil Group: C

Ecological site: R055CY010SD - Loamy

Forage suitability group: Loam (G055CY100SD)

Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Minor Components

Prosper

Percent of map unit: 7 percent

Landform: Swales

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY020SD - Loamy Overflow

Other vegetative classification: Overflow (G055CY500SD)

Hydric soil rating: No

Stickney

Percent of map unit: 7 percent

Landform: Plains

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY011SD - Clayey

Other vegetative classification: Clayey Subsoil (G055CY210SD)

Hydric soil rating: No

Tetonka

Percent of map unit: 6 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY004SD - Wet Meadow Other vegetative classification: Wet (G053CY900SD)

Hydric soil rating: Yes

CrA—Stickney-Prosper loams, nearly level

Map Unit Setting

National map unit symbol: ctwv Elevation: 1,310 to 1,970 feet

Mean annual precipitation: 18 to 25 inches
Mean annual air temperature: 43 to 50 degrees F

Frost-free period: 130 to 155 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Stickney and similar soils: 50 percent Prosper and similar soils: 35 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stickney

Setting

Landform: Plains

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave Parent material: Clayey till

Typical profile

H1 - 0 to 16 inches: loam

H2 - 16 to 26 inches: silty clay loam H3 - 26 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 42 to 60 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 20 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

Sodium adsorption ratio, maximum: 3.0

Available water supply, 0 to 60 inches: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: C

Ecological site: R055CY011SD - Clayey

Forage suitability group: Clayey Subsoil (G055CY210SD)
Other vegetative classification: Clayey Subsoil (G055CY210SD)

Hydric soil rating: No

Description of Prosper

Setting

Landform: Swales

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave Parent material: Loamy till

Typical profile

H1 - 0 to 6 inches: loam
H2 - 6 to 27 inches: clay loam
H3 - 27 to 43 inches: clay loam
H4 - 43 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: About 42 to 60 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 1 percent

Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2c

Hydrologic Soil Group: B

Ecological site: R055CY020SD - Loamy Overflow Forage suitability group: Overflow (G055CY500SD)
Other vegetative classification: Overflow (G055CY500SD)

Hydric soil rating: No

Minor Components

Dudley

Percent of map unit: 13 percent

Landform: Plains

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY013SD - Claypan

Other vegetative classification: Claypan (G055CY800SD)

Hydric soil rating: No

Tetonka

Percent of map unit: 2 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY004SD - Wet Meadow Other vegetative classification: Wet (G055CY900SD)

Hydric soil rating: Yes

HdA—Durrstein-Bon complex, nearly level

Map Unit Setting

National map unit symbol: ctxk Elevation: 1,310 to 1,970 feet

Mean annual precipitation: 18 to 25 inches Mean annual air temperature: 43 to 50 degrees F

Frost-free period: 130 to 155 days

Farmland classification: Not prime farmland

Map Unit Composition

Durrstein and similar soils: 50 percent Bon and similar soils: 25 percent Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Durrstein

Setting

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Clayey alluvium

Typical profile

H1 - 0 to 1 inches: silty clay loam H2 - 1 to 16 inches: silty clay H3 - 16 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.06 to 0.20 in/hr) Depth to water table: About 0 to 18 inches Frequency of flooding: OccasionalNone

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Gypsum, maximum content: 10 percent

Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

Sodium adsorption ratio, maximum: 25.0

Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C/D

Ecological site: R055CY007SD - Saline Lowland Forage suitability group: Not suited (G055CY000SD)
Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: Yes

Description of Bon

Setting

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy alluvium

Typical profile

H1 - 0 to 32 inches: silt loam

H2 - 32 to 46 inches: stratified fine sandy loam to loam to silty clay loam

H3 - 46 to 60 inches: stratified loamy fine sand to silty clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches Frequency of flooding: OccasionalNone

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2c

Hydrologic Soil Group: B

Ecological site: R055CY040SD - Loamy Floodplain Forage suitability group: Overflow (G055CY500SD) Other vegetative classification: Overflow (G055CY500SD)

Hydric soil rating: No

Minor Components

Northville

Percent of map unit: 13 percent

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY011SD - Clayey

Other vegetative classification: Clayey Subsoil (G055CY210SD)

Hydric soil rating: No

Lamo

Percent of map unit: 12 percent

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY003SD - Subirrigated

Other vegetative classification: Subirrigated (G055CY700SD)

Hydric soil rating: Yes

HhB—Houdek loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2tlb6 Elevation: 1,150 to 2,130 feet

Mean annual precipitation: 20 to 27 inches Mean annual air temperature: 43 to 52 degrees F

Frost-free period: 130 to 160 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Houdek and similar soils: 85 percent Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Houdek

Setting

Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy till

Typical profile

Ap - 0 to 6 inches: loam

Bt - 6 to 19 inches: clay loam

Bk - 19 to 42 inches: clay loam

C - 42 to 79 inches: clay loam

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Ecological site: R055CY010SD - Loamy

Forage suitability group: Loam (G055CY100SD)

Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Minor Components

Ethan

Percent of map unit: 6 percent Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Convex Across-slope shape: Convex

Ecological site: R055CY012SD - Thin Upland

Other vegetative classification: Limy Upland (G055CY400SD)

Hydric soil rating: No

Prosper

Percent of map unit: 5 percent

Landform: Swales

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY020SD - Loamy Overflow

Other vegetative classification: Overflow (G055CY500SD)

Hydric soil rating: No

Tetonka, undrained

Percent of map unit: 4 percent Landform: Depressions Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY004SD - Wet Meadow Other vegetative classification: Wet (G055CY900SD)

Hydric soil rating: Yes

HkA—Houdek-Prosper loams, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tlbg Elevation: 1,150 to 2,130 feet

Mean annual precipitation: 20 to 27 inches Mean annual air temperature: 43 to 52 degrees F

Frost-free period: 130 to 160 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Houdek and similar soils: 58 percent Prosper and similar soils: 32 percent Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Houdek

Setting

Landform: Plains

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy till

Typical profile

Ap - 0 to 6 inches: loam

Bt - 6 to 19 inches: clay loam

Bk - 19 to 42 inches: clay loam

C - 42 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2c

Hydrologic Soil Group: C

Ecological site: R055CY010SD - Loamy

Forage suitability group: Loam (G055CY100SD)
Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Description of Prosper

Setting

Landform: Swales

Landform position (two-dimensional): Footslope Landform position (three-dimensional): Talf

Down-slope shape: Linear Across-slope shape: Concave Parent material: Loamy till

Typical profile

Ap - 0 to 6 inches: loam A - 6 to 11 inches: loam

Bt - 11 to 28 inches: clay loam Bk - 28 to 40 inches: clay loam C - 40 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2c

Hydrologic Soil Group: C

Ecological site: R055CY020SD - Loamy Overflow Forage suitability group: Overflow (G055CY500SD)
Other vegetative classification: Overflow (G055CY500SD)

Hydric soil rating: No

Minor Components

Stickney

Percent of map unit: 7 percent

Landform: Plains

Landform position (two-dimensional): Footslope Landform position (three-dimensional): Talf

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY011SD - Clayey

Other vegetative classification: Clayey Subsoil (G055CY210SD)

Hydric soil rating: No

Tetonka, undrained

Percent of map unit: 3 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope Landform position (three-dimensional): Dip

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY004SD - Wet Meadow Other vegetative classification: Wet (G055CY900SD)

Hydric soil rating: Yes

HkB—Houdek-Prosper loams, 1 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2tlbk *Elevation:* 1,150 to 2,130 feet

Mean annual precipitation: 20 to 27 inches Mean annual air temperature: 43 to 52 degrees F

Frost-free period: 130 to 160 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Houdek and similar soils: 62 percent Prosper and similar soils: 28 percent Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Houdek

Setting

Landform: Plains

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Loamy till

Typical profile

Ap - 0 to 6 inches: loam

Bt - 6 to 19 inches: clay loam

Bk - 19 to 42 inches: clay loam

C - 42 to 79 inches: clay loam

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Ecological site: R055CY010SD - Loamy

Forage suitability group: Loam (G055CY100SD)
Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Description of Prosper

Setting

Landform: Swales

Landform position (two-dimensional): Footslope Landform position (three-dimensional): Talf

Down-slope shape: Linear Across-slope shape: Concave Parent material: Loamy till

Typical profile

Ap - 0 to 6 inches: loam
A - 6 to 11 inches: loam
Bt - 11 to 28 inches: clay loam
Bk - 28 to 40 inches: clay loam
C - 40 to 79 inches: clay loam

Properties and qualities

Slope: 1 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm) Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2c

Hydrologic Soil Group: C

Ecological site: R055CY020SD - Loamy Overflow Forage suitability group: Overflow (G055CY500SD) Other vegetative classification: Overflow (G055CY500SD)

Hydric soil rating: No

Minor Components

Ethan

Percent of map unit: 4 percent

Landform: Plains

Landform position (two-dimensional): Shoulder Landform position (three-dimensional): Rise

Down-slope shape: Convex Across-slope shape: Convex

Ecological site: R055CY012SD - Thin Upland

Other vegetative classification: Limy Upland (G055CY400SD)

Hydric soil rating: No

Stickney

Percent of map unit: 3 percent

Landform: Plains

Landform position (two-dimensional): Footslope Landform position (three-dimensional): Talf

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY011SD - Clayey

Other vegetative classification: Clayey Subsoil (G055CY210SD)

Hydric soil rating: No

Tetonka, undrained

Percent of map unit: 3 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope Landform position (three-dimensional): Dip

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY004SD - Wet Meadow Other vegetative classification: Wet (G055CY900SD)

Hydric soil rating: Yes

HIA—Houdek-Dudley complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2wbpw Elevation: 1,150 to 2,130 feet

Mean annual precipitation: 20 to 27 inches Mean annual air temperature: 43 to 52 degrees F

Frost-free period: 130 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Houdek and similar soils: 50 percent Dudley and similar soils: 40 percent Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Houdek

Setting

Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear Parent material: Fine-loamy till

Typical profile

Ap - 0 to 6 inches: loam

Bt - 6 to 19 inches: clay loam

Bk - 19 to 42 inches: clay loam

C - 42 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2c

Hydrologic Soil Group: C

Ecological site: R055CY010SD - Loamy

Forage suitability group: Loam (G055CY100SD)
Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Description of Dudley

Setting

Landform: Ground moraines

Landform position (three-dimensional): Talf

Down-slope shape: Linear Across-slope shape: Concave Parent material: Fine-loamy till

Typical profile

Ap - 0 to 6 inches: silt loam
E - 6 to 8 inches: silt loam
Btn1 - 8 to 12 inches: clay loam
Btn2 - 12 to 22 inches: clay loam
Bkyz - 22 to 31 inches: clay loam
Cyz - 31 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: 5 to 11 inches to natric

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)

Sodium adsorption ratio, maximum: 20.0

Available water supply, 0 to 60 inches: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: D

Ecological site: R055CY013SD - Claypan

Forage suitability group: Claypan (G055CY800SD)
Other vegetative classification: Claypan (G055CY800SD)

Hydric soil rating: No

Minor Components

Hoven

Percent of map unit: 3 percent Landform: Depressions Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY019SD - Closed Depression Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: Yes

Jerauld

Percent of map unit: 3 percent Landform: Ground moraines

Landform position (three-dimensional): Talf

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY015SD - Thin Claypan

Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: No

Tetonka, undrained

Percent of map unit: 2 percent Landform: Depressions Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY004SD - Wet Meadow Other vegetative classification: Wet (G055CY900SD)

Hydric soil rating: Yes

Prosper

Percent of map unit: 1 percent

Landform: Swales

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY020SD - Loamy Overflow

Other vegetative classification: Overflow (G055CY500SD)

Hydric soil rating: No

Stickney

Percent of map unit: 1 percent Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY011SD - Clayey

Other vegetative classification: Clayey Subsoil (G055CY210SD)

Hydric soil rating: No

Hv—Hoven silt loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tlcc Elevation: 1,150 to 2,230 feet

Mean annual precipitation: 16 to 27 inches
Mean annual air temperature: 43 to 52 degrees F

Frost-free period: 120 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Hoven and similar soils: 90 percent Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoven

Setting

Landform: Closed depressions Down-slope shape: Concave Across-slope shape: Concave

Parent material: Local alluvium over loamy till

Typical profile

E - 0 to 4 inches: silt loam

Btn1 - 4 to 8 inches: silty clay

Btn2 - 8 to 25 inches: silty clay

Btkn - 25 to 43 inches: silty clay

Bk - 43 to 60 inches: silty clay loam

2C - 60 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: 2 to 6 inches to natric

Drainage class: Poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

low (0.00 to 0.06 in/hr)

Depth to water table: About 0 to 18 inches

Frequency of flooding: None Frequency of ponding: Frequent

Calcium carbonate, maximum content: 15 percent

Maximum salinity: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 25.0

Available water supply, 0 to 60 inches: Very low (about 0.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: R053CY019SD - Closed Depression Forage suitability group: Not suited (G053CY000SD) Other vegetative classification: Not suited (G053CY000SD)

Hydric soil rating: Yes

Minor Components

Tetonka, undrained

Percent of map unit: 10 percent Landform: Closed depressions Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R053CY004SD - Wet Meadow Other vegetative classification: Wet (G053CY900SD)

Hydric soil rating: Yes

LIA—Bon loam, channeled, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2wkpn Elevation: 1,150 to 2,230 feet

Mean annual precipitation: 16 to 27 inches Mean annual air temperature: 43 to 52 degrees F

Frost-free period: 120 to 160 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Bon, channeled, frequently flooded, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bon, Channeled, Frequently Flooded

Setting

Landform: Drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Local alluvium

Typical profile

A - 0 to 9 inches: loam Bw - 9 to 37 inches: loam

C - 37 to 79 inches: stratified loam to loamy fine sand to fine sandy loam to silty

clay loam to clay loam to silt loam to sandy clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.20 to 2.00 in/hr)

Depth to water table: About 30 to 41 inches Frequency of flooding: NoneFrequent

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Gvpsum, maximum content: 5 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6w

Hydrologic Soil Group: C

Ecological site: R055CY040SD - Loamy Floodplain Forage suitability group: Overflow (G055CY500SD)

Other vegetative classification: Overflow (G055CY500SD)

Hydric soil rating: No

Minor Components

Lamo, occasionally flooded

Percent of map unit: 7 percent Landform: Drainageways Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY003SD - Subirrigated

Other vegetative classification: Subirrigated (G055CY700SD)

Hydric soil rating: Yes

Chaska, frequently flooded

Percent of map unit: 5 percent Landform: Drainageways Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY003SD - Subirrigated

Other vegetative classification: Subirrigated (G055CY700SD)

Hydric soil rating: No

Durrstein, frequently flooded

Percent of map unit: 2 percent Landform: Drainageways Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY007SD - Saline Lowland

Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: Yes

Wendte, rarely flooded

Percent of map unit: 1 percent Landform: Drainageways Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY021SD - Clayey Overflow

Other vegetative classification: Overflow (G055CY500SD)

Hydric soil rating: No

LnB—Lane loam, gently sloping

Map Unit Setting

National map unit symbol: ctyf Elevation: 1,300 to 2,300 feet

Mean annual precipitation: 15 to 25 inches Mean annual air temperature: 43 to 48 degrees F

Frost-free period: 130 to 150 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Lane and similar soils: 90 percent Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lane

Setting

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Clayey alluvium

Typical profile

H1 - 0 to 10 inches: loam H2 - 10 to 20 inches: silty clay H3 - 20 to 60 inches: silty clay

Properties and qualities

Slope: 3 to 5 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.06 to 0.57 in/hr)

Depth to water table: About 42 to 60 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Gypsum, maximum content: 3 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: R053CY011SD - Clayey

Forage suitability group: Clayey Subsoil (G053CY210SD)
Other vegetative classification: Clayey Subsoil (G053CY210SD)

Hydric soil rating: No

Minor Components

Houdek

Percent of map unit: 9 percent

Landform: Plains

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R053CY010SD - Loamy

Other vegetative classification: Loam (G053CY100SD)

Hydric soil rating: No

Tetonka

Percent of map unit: 1 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R053CY004SD - Wet Meadow Other vegetative classification: Wet (G053CY900SD)

Hydric soil rating: Yes

LpA—Lane-Jerauld silty clay loams, nearly level

Map Unit Setting

National map unit symbol: ctyh Elevation: 1,310 to 1,970 feet

Mean annual precipitation: 18 to 25 inches
Mean annual air temperature: 43 to 50 degrees F

Frost-free period: 130 to 155 days

Farmland classification: Not prime farmland

Map Unit Composition

Lane and similar soils: 69 percent Jerauld and similar soils: 30 percent Minor components: 1 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lane

Setting

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Clayey alluvium

Typical profile

H1 - 0 to 10 inches: silty clay loam H2 - 10 to 20 inches: silty clay H3 - 20 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.06 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Gypsum, maximum content: 3 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: C

Ecological site: R055CY011SD - Clayey

Forage suitability group: Clayey Subsoil (G055CY210SD)
Other vegetative classification: Clayey Subsoil (G055CY210SD)

Hydric soil rating: No

Description of Jerauld

Setting

Landform: Plains

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave Parent material: Clayey till

Typical profile

H1 - 0 to 1 inches: silty clay loam
H2 - 1 to 9 inches: silty clay
H3 - 9 to 17 inches: clay loam
H4 - 17 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 42 to 60 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

Sodium adsorption ratio, maximum: 25.0

Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C

Ecological site: R055CY015SD - Thin Claypan Forage suitability group: Not suited (G055CY000SD)
Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: No

Minor Components

Durrstein

Percent of map unit: 1 percent

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY007SD - Saline Lowland

Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: Yes

MdA—Dudley-Jerauld silt loams, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2wkph Elevation: 1,150 to 2,130 feet

Mean annual precipitation: 20 to 27 inches Mean annual air temperature: 43 to 52 degrees F

Frost-free period: 130 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Dudley and similar soils: 55 percent Jerauld and similar soils: 35 percent Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dudley

Setting

Landform: Ground moraines

Landform position (three-dimensional): Talf

Down-slope shape: Linear Across-slope shape: Concave Parent material: Fine-loamy till

Typical profile

A - 0 to 6 inches: silt loam
E - 6 to 8 inches: silt loam
Btn1 - 8 to 12 inches: clay loam
Btn2 - 12 to 22 inches: clay loam
Bkyz - 22 to 31 inches: clay loam
Cyz - 31 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: 5 to 11 inches to natric

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)

Sodium adsorption ratio, maximum: 20.0

Available water supply, 0 to 60 inches: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: D

Ecological site: R055CY013SD - Claypan

Forage suitability group: Claypan (G055CY800SD)
Other vegetative classification: Claypan (G055CY800SD)

Hydric soil rating: No

Description of Jerauld

Setting

Landform: Ground moraines

Landform position (three-dimensional): Talf

Down-slope shape: Linear Across-slope shape: Concave Parent material: Fine-loamy till

Typical profile

E - 0 to 3 inches: silt loam

Btn1 - 3 to 6 inches: clay loam

Btn2 - 6 to 12 inches: clay loam

Btnz - 12 to 18 inches: clay loam

Bkyz - 18 to 35 inches: clay loam

Cyz - 35 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: 1 to 5 inches to natric

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)

Sodium adsorption ratio, maximum: 25.0

Available water supply, 0 to 60 inches: Very low (about 0.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: R055CY015SD - Thin Claypan Forage suitability group: Not suited (G055CY000SD)
Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: No

Minor Components

Hoven

Percent of map unit: 3 percent Landform: Depressions Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY019SD - Closed Depression
Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: Yes

Stickney

Percent of map unit: 3 percent Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY011SD - Clayey

Other vegetative classification: Clayey Subsoil (G055CY210SD)

Hydric soil rating: No

Houdek

Percent of map unit: 2 percent Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY010SD - Loamy

Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Beadle

Percent of map unit: 2 percent Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY011SD - Clayey

Other vegetative classification: Clayey Subsoil (G055CY210SD)

Hydric soil rating: No

So—Oahe-Delmont loams, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2wkpk Elevation: 1,410 to 2,230 feet

Mean annual precipitation: 16 to 24 inches
Mean annual air temperature: 43 to 48 degrees F

Frost-free period: 120 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Oahe and similar soils: 55 percent Delmont and similar soils: 35 percent Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oahe

Setting

Landform: Outwash plains

Landform position (three-dimensional): Talf

Down-slope shape: Linear Across-slope shape: Concave

Parent material: Alluvium over sandy and gravelly outwash

Typical profile

A - 0 to 6 inches: loam Bw - 6 to 16 inches: loam Bk - 16 to 25 inches: loam

2C - 25 to 79 inches: very gravelly loamy sand

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.20 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Ecological site: R053CY010SD - Loamy

Forage suitability group: Droughty Loam (G053CY120SD)

Other vegetative classification: Droughty Loam (G053CY120SD)

Hydric soil rating: No

Description of Delmont

Setting

Landform: Outwash plains

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Alluvium over sandy and gravelly outwash

Typical profile

A - 0 to 6 inches: loam Bw - 6 to 16 inches: loam

2Bk - 16 to 34 inches: gravelly loamy sand 2C - 34 to 79 inches: very gravelly loamy sand

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.20 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Ecological site: R053CY014SD - Shallow To Gravel

Forage suitability group: Very Droughty Loam (G053CY130SD)

Other vegetative classification: Very Droughty Loam (G053CY130SD)

Hydric soil rating: No

Minor Components

Ree

Percent of map unit: 6 percent Landform: Outwash plains

Landform position (three-dimensional): Talf

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R053CY010SD - Loamy

Other vegetative classification: Loam (G053CY100SD)

Hydric soil rating: No

Talmo

Percent of map unit: 4 percent Landform: Outwash plains

Landform position (three-dimensional): Rise

Down-slope shape: Convex Across-slope shape: Convex

Ecological site: R053CY016SD - Very Shallow

Other vegetative classification: Very Shallow To Gravel (G053CY003SD)

Hydric soil rating: No

Tp—Tetonka silt loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tlcd Elevation: 1,150 to 2,230 feet

Mean annual precipitation: 16 to 27 inches Mean annual air temperature: 43 to 52 degrees F

Frost-free period: 120 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Tetonka, undrained, and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tetonka, Undrained

Setting

Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave

Parent material: Local alluvium over loamy till

Typical profile

Ap - 0 to 8 inches: silt loam E - 8 to 16 inches: silt loam Bt - 16 to 39 inches: silty clay

Cg1 - 39 to 46 inches: silty clay loam 2Cg2 - 46 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.06 to 0.60 in/hr)

Depth to water table: About 0 to 18 inches

Frequency of flooding: None Frequency of ponding: Frequent

Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: C/D

Ecological site: R055CY004SD - Wet Meadow Forage suitability group: Wet (G055CY900SD)

Other vegetative classification: Wet (G055CY900SD)

Hydric soil rating: Yes

Minor Components

Hoven

Percent of map unit: 3 percent Landform: Depressions Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY019SD - Closed Depression Other vegetative classification: Not suited (G053CY000SD)

Hydric soil rating: Yes

Davison

Percent of map unit: 3 percent Landform: Rims on depressions Down-slope shape: Linear Across-slope shape: Convex

Ecological site: R055CY006SD - Limy Subirrigated

Other vegetative classification: Subirrigated (G055CY700SD)

Hydric soil rating: No

Crossplain

Percent of map unit: 2 percent Landform: Drainageways Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY020SD - Loamy Overflow

Other vegetative classification: Subirrigated (G055CY700SD)

Hydric soil rating: No

Worthing, undrained

Percent of map unit: 2 percent Landform: Depressions Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY001SD - Shallow Marsh

Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: Yes

W-Water

Map Unit Setting

National map unit symbol: 2wx3y Elevation: 970 to 3,940 feet

Mean annual precipitation: 13 to 31 inches
Mean annual air temperature: 39 to 50 degrees F
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydric soil rating: Unranked

WmB—Glenham loam, undulating

Map Unit Setting

National map unit symbol: cv02 Elevation: 1,310 to 1,970 feet

Mean annual precipitation: 18 to 25 inches
Mean annual air temperature: 43 to 50 degrees F

Frost-free period: 130 to 155 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Glenham and similar soils: 99 percent

Minor components: 1 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Glenham

Setting

Landform: Plains

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy till

Typical profile

H1 - 0 to 5 inches: loam H2 - 5 to 13 inches: clay loam H3 - 13 to 60 inches: loam

Properties and qualities

Slope: 3 to 5 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Ecological site: R055CY010SD - Loamy

Forage suitability group: Loam (G055CY100SD)
Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Minor Components

Tetonka

Percent of map unit: 1 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY004SD - Wet Meadow Other vegetative classification: Wet (G053CY900SD)

Hydric soil rating: Yes

WmC—Glenham loam, rolling

Map Unit Setting

National map unit symbol: cv03 Elevation: 1,310 to 1,970 feet

Mean annual precipitation: 18 to 25 inches Mean annual air temperature: 43 to 50 degrees F

Frost-free period: 130 to 155 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Glenham and similar soils: 99 percent

Minor components: 1 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Glenham

Settina

Landform: Plains

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy till

Typical profile

H1 - 0 to 5 inches: loam

H2 - 5 to 13 inches: clay loam H3 - 13 to 60 inches: loam

Properties and qualities

Slope: 6 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: R055CY010SD - Loamy

Forage suitability group: Loam (G055CY100SD)

Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Minor Components

Tetonka

Percent of map unit: 1 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY004SD - Wet Meadow Other vegetative classification: Wet (G053CY900SD)

Hydric soil rating: Yes

WnA—Glenham-Prosper loams, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2wbpp Elevation: 1,150 to 2,230 feet

Mean annual precipitation: 16 to 27 inches Mean annual air temperature: 43 to 52 degrees F

Frost-free period: 120 to 160 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Glenham and similar soils: 55 percent Prosper and similar soils: 35 percent Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Glenham

Setting

Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear Parent material: Fine-loamy till

Typical profile

Ap - 0 to 5 inches: loam

Bt - 5 to 14 inches: clay loam

Bk - 14 to 37 inches: clay loam

C - 37 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2c

Hydrologic Soil Group: C

Ecological site: R053CY010SD - Loamy

Forage suitability group: Loam (G053CY100SD)
Other vegetative classification: Loam (G053CY100SD)

Hydric soil rating: No

Description of Prosper

Setting

Landform: Swales

Down-slope shape: Linear Across-slope shape: Concave Parent material: Loamy till

Typical profile

Ap - 0 to 6 inches: loam
A - 6 to 11 inches: loam
Bt - 11 to 28 inches: clay loam
Bk - 28 to 40 inches: clay loam

C - 40 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2c

Hydrologic Soil Group: C

Ecological site: R053CY020SD - Loamy Overflow Forage suitability group: Overflow (G053CY500SD) Other vegetative classification: Overflow (G053CY500SD)

Hydric soil rating: No

Minor Components

Stickney

Percent of map unit: 4 percent Landform: Ground moraines

Landform position (three-dimensional): Talf

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R053CY011SD - Clayey

Other vegetative classification: Clayey Subsoil (G053CY210SD)

Hydric soil rating: No

Plankinton, undrained

Percent of map unit: 3 percent Landform: Depressions Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R053CY019SD - Closed Depression Other vegetative classification: Wet (G053CY900SD)

Hydric soil rating: Yes

Hoven

Percent of map unit: 3 percent Landform: Depressions Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R053CY019SD - Closed Depression
Other vegetative classification: Not suited (G053CY000SD)

Hydric soil rating: Yes

WnB—Glenham-Propser loams, 1 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2wbpq Elevation: 1,150 to 2,230 feet

Mean annual precipitation: 16 to 27 inches Mean annual air temperature: 43 to 52 degrees F

Frost-free period: 120 to 160 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Glenham and similar soils: 65 percent Prosper and similar soils: 25 percent Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Glenham

Setting

Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear Parent material: Fine-loamy till

Typical profile

Ap - 0 to 5 inches: loam

Bt - 5 to 14 inches: clay loam

Bk - 14 to 37 inches: clay loam

C - 37 to 79 inches: clay loam

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Ecological site: R053CY010SD - Loamy

Forage suitability group: Loam (G053CY100SD)
Other vegetative classification: Loam (G053CY100SD)

Hydric soil rating: No

Description of Prosper

Setting

Landform: Swales

Down-slope shape: Linear Across-slope shape: Concave Parent material: Loamy till

Typical profile

Ap - 0 to 6 inches: loam
A - 6 to 11 inches: loam
Bt - 11 to 28 inches: clay loam
Bk - 28 to 40 inches: clay loam
C - 40 to 79 inches: clay loam

Properties and qualities

Slope: 1 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2c

Hydrologic Soil Group: C

Ecological site: R053CY020SD - Loamy Overflow Forage suitability group: Overflow (G053CY500SD) Other vegetative classification: Overflow (G053CY500SD)

Hydric soil rating: No

Minor Components

Stickney

Percent of map unit: 4 percent Landform: Ground moraines

Landform position (three-dimensional): Talf

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R053CY011SD - Clayey

Other vegetative classification: Clayey Subsoil (G055CY210SD)

Hydric soil rating: No

Hoven

Percent of map unit: 3 percent Landform: Depressions Down-slope shape: Concave

Across-slope shape: Concave

Ecological site: R053CY019SD - Closed Depression
Other vegetative classification: Not suited (G053CY000SD)

Hydric soil rating: Yes

Plankinton, undrained

Percent of map unit: 3 percent Landform: Depressions Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R053CY019SD - Closed Depression Other vegetative classification: Wet (G053CY900SD)

Hydric soil rating: Yes

WpA—Glenham-Cavo loams, nearly level

Map Unit Setting

National map unit symbol: cv06 Elevation: 1,310 to 1,970 feet

Mean annual precipitation: 18 to 25 inches
Mean annual air temperature: 43 to 50 degrees F

Frost-free period: 130 to 155 days

Farmland classification: Not prime farmland

Map Unit Composition

Glenham and similar soils: 50 percent Cavo and similar soils: 30 percent Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Glenham

Setting

Landform: Plains

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy till

Typical profile

H1 - 0 to 5 inches: loam H2 - 5 to 13 inches: clay loam H3 - 13 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2c

Hydrologic Soil Group: C

Ecological site: R055CY010SD - Loamy

Forage suitability group: Loam (G055CY100SD)
Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Description of Cavo

Setting

Landform: Plains

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave Parent material: Clayey till

Typical profile

H1 - 0 to 11 inches: loam H2 - 11 to 26 inches: clay loam H3 - 26 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 10 percent

Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

Sodium adsorption ratio, maximum: 20.0

Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: C

Ecological site: R055CY013SD - Claypan

Forage suitability group: Claypan (G055CY800SD)
Other vegetative classification: Claypan (G055CY800SD)

Hydric soil rating: No

Minor Components

Hoven

Percent of map unit: 5 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY019SD - Closed Depression Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: Yes

Jerauld

Percent of map unit: 5 percent

Landform: Plains

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY015SD - Thin Claypan

Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: No

Prosper

Percent of map unit: 5 percent

Landform: Swales

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY020SD - Loamy Overflow

Other vegetative classification: Overflow (G055CY500SD)

Hydric soil rating: No

Tetonka

Percent of map unit: 5 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY004SD - Wet Meadow Other vegetative classification: Wet (G055CY900SD)

Hydric soil rating: Yes

WpB—Glenham-Cavo loams, undulating

Map Unit Setting

National map unit symbol: cv07 Elevation: 1,310 to 1,970 feet

Mean annual precipitation: 18 to 25 inches
Mean annual air temperature: 43 to 50 degrees F

Frost-free period: 130 to 155 days

Farmland classification: Not prime farmland

Map Unit Composition

Glenham and similar soils: 50 percent Cavo and similar soils: 30 percent Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Glenham

Setting

Landform: Plains

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy till

Typical profile

H1 - 0 to 5 inches: loam H2 - 5 to 13 inches: clay loam H3 - 13 to 60 inches: loam

Properties and qualities

Slope: 3 to 5 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Ecological site: R055CY010SD - Loamy

Forage suitability group: Loam (G055CY100SD)
Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Description of Cavo

Setting

Landform: Plains

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave Parent material: Clayey till

Typical profile

H1 - 0 to 11 inches: loam H2 - 11 to 26 inches: clay loam H3 - 26 to 60 inches: clay loam

Properties and qualities

Slope: 3 to 5 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.06 to 0.20 in/hr) Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 10 percent

Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)

Sodium adsorption ratio, maximum: 20.0

Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: C

Ecological site: R055CY013SD - Claypan

Forage suitability group: Claypan (G055CY800SD)
Other vegetative classification: Claypan (G055CY800SD)

Hydric soil rating: No

Minor Components

Hoven

Percent of map unit: 5 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY019SD - Closed Depression Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: Yes

Jerauld

Percent of map unit: 5 percent

Landform: Plains

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R055CY015SD - Thin Claypan

Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: No

Prosper

Percent of map unit: 5 percent

Landform: Swales

Landform position (two-dimensional): Footslope

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: R055CY020SD - Loamy Overflow Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Tetonka

Percent of map unit: 5 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R055CY004SD - Wet Meadow Other vegetative classification: Wet (G055CY900SD)

Hydric soil rating: Yes

WxC—Glenham-Java loams, rolling

Map Unit Setting

National map unit symbol: cv0g Elevation: 1,300 to 2,300 feet

Mean annual precipitation: 15 to 25 inches Mean annual air temperature: 43 to 48 degrees F

Frost-free period: 130 to 150 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Glenham and similar soils: 60 percent Java and similar soils: 30 percent Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Glenham

Setting

Landform: Plains

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy till

Typical profile

H1 - 0 to 5 inches: loam H2 - 5 to 13 inches: clay loam H3 - 13 to 60 inches: loam

Properties and qualities

Slope: 6 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: R053CY010SD - Loamy

Forage suitability group: Loam (G053CY100SD)
Other vegetative classification: Loam (G053CY100SD)

Hydric soil rating: No

Description of Java

Setting

Landform: Plains

Landform position (two-dimensional): Shoulder

Down-slope shape: Convex Across-slope shape: Convex Parent material: Loamy till

Typical profile

H1 - 0 to 3 inches: loam H2 - 3 to 6 inches: loam H3 - 6 to 40 inches: loam H4 - 40 to 60 inches: loam

Properties and qualities

Slope: 6 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Ecological site: R053CY012SD - Thin Upland

Forage suitability group: Limy Upland (G053CY400SD)
Other vegetative classification: Limy Upland (G053CY400SD)

Hydric soil rating: No

Minor Components

Delmont

Percent of map unit: 9 percent Landform: Outwash plains

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R053CY014SD - Shallow To Gravel

Other vegetative classification: Very Droughty Loam (G053CY130SD)

Hydric soil rating: No

Tetonka

Percent of map unit: 1 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R053CY004SD - Wet Meadow Other vegetative classification: Wet (G053CY900SD)

Hydric soil rating: Yes

WzC—Glenham-Java loams, rolling

Map Unit Setting

National map unit symbol: cv0h Elevation: 1,300 to 2,300 feet

Mean annual precipitation: 15 to 25 inches
Mean annual air temperature: 43 to 48 degrees F

Frost-free period: 130 to 150 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Glenham and similar soils: 60 percent Java and similar soils: 35 percent Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Glenham

Setting

Landform: Plains

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy till

Typical profile

H1 - 0 to 5 inches: loam H2 - 5 to 13 inches: clay loam H3 - 13 to 60 inches: loam

Properties and qualities

Slope: 6 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: R053CY010SD - Loamy

Forage suitability group: Loam (G053CY100SD)
Other vegetative classification: Loam (G053CY100SD)

Hydric soil rating: No

Description of Java

Setting

Landform: Plains

Landform position (two-dimensional): Shoulder

Down-slope shape: Convex Across-slope shape: Convex Parent material: Loamy till

Typical profile

H1 - 0 to 3 inches: loam H2 - 3 to 6 inches: loam H3 - 6 to 40 inches: loam H4 - 40 to 60 inches: loam

Properties and qualities

Slope: 6 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Ecological site: R053CY012SD - Thin Upland

Forage suitability group: Limy Upland (G053CY400SD)

Other vegetative classification: Limy Upland (G053CY400SD)

Hydric soil rating: No

Minor Components

Delmont

Percent of map unit: 4 percent Landform: Outwash plains

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R053CY014SD - Shallow To Gravel

Other vegetative classification: Very Droughty Loam (G053CY130SD)

Hydric soil rating: No

Tetonka

Percent of map unit: 1 percent

Landform: Potholes

Landform position (two-dimensional): Toeslope

Down-slope shape: Concave Across-slope shape: Concave

Ecological site: R053CY004SD - Wet Meadow Other vegetative classification: Wet (G053CY900SD)

Hydric soil rating: Yes

ZhE—Betts-Ethan loams, 15 to 40 percent slopes

Map Unit Setting

National map unit symbol: 2wkq9 Elevation: 1,120 to 2,230 feet

Mean annual precipitation: 16 to 28 inches Mean annual air temperature: 43 to 52 degrees F

Frost-free period: 120 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Betts and similar soils: 55 percent Ethan and similar soils: 35 percent Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Betts

Setting

Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Convex Across-slope shape: Convex Parent material: Fine-loamy till

Typical profile

A - 0 to 3 inches: loam
Bk - 3 to 31 inches: clay loam
C - 31 to 79 inches: clay loam

Properties and qualities

Slope: 15 to 40 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.20 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C

Ecological site: R055CY012SD - Thin Upland Forage suitability group: Not suited (G055CY000SD)
Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: No

Description of Ethan

Setting

Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Convex Across-slope shape: Convex Parent material: Fine-loamy till

Typical profile

Ap - 0 to 7 inches: loam
Bk - 7 to 33 inches: clay loam
C - 33 to 79 inches: clay loam

Properties and qualities

Slope: 15 to 40 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.20 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C

Ecological site: R055CY012SD - Thin Upland

Forage suitability group: Limy Upland (G055CY400SD)

Other vegetative classification: Limy Upland (G055CY400SD)

Hydric soil rating: No

Minor Components

Clarno

Percent of map unit: 4 percent Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R055CY010SD - Loamy

Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Talmo

Percent of map unit: 2 percent Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Convex Across-slope shape: Convex

Ecological site: R055CY016SD - Very Shallow

Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: No

Davis

Percent of map unit: 2 percent Landform: Ground moraines

Landform position (three-dimensional): Base slope, talf

Down-slope shape: Concave Across-slope shape: Linear

Ecological site: R055CY020SD - Loamy Overflow Other vegetative classification: Loam (G055CY100SD)

Hydric soil rating: No

Betts, very stony

Percent of map unit: 1 percent Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Convex Across-slope shape: Convex

Ecological site: R055CY012SD - Thin Upland

Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: No

Ethan, very stony

Percent of map unit: 1 percent Landform: Ground moraines

Landform position (three-dimensional): Rise

Down-slope shape: Convex Across-slope shape: Convex

Ecological site: R055CY012SD - Thin Upland

Other vegetative classification: Not suited (G055CY000SD)

Hydric soil rating: No

ZxE—Betts-Java loams, steep

Map Unit Setting

National map unit symbol: cv0v Elevation: 1,300 to 2,300 feet

Mean annual precipitation: 15 to 25 inches Mean annual air temperature: 43 to 48 degrees F

Frost-free period: 130 to 150 days

Farmland classification: Not prime farmland

Map Unit Composition

Betts and similar soils: 50 percent Java and similar soils: 30 percent Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Betts

Setting

Landform: Moraines

Landform position (two-dimensional): Shoulder

Down-slope shape: Convex Across-slope shape: Convex Parent material: Loamy till

Typical profile

H1 - 0 to 4 inches: loam H2 - 4 to 30 inches: clay loam H3 - 30 to 60 inches: clay loam

Properties and qualities

Slope: 15 to 34 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 11.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C

Ecological site: R053CY012SD - Thin Upland
Forage suitability group: Not suited (G053CY000SD)
Other vegetative classification: Not suited (G053CY000SD)

Hydric soil rating: No

Description of Java

Setting

Landform: Moraines

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy till

Typical profile

H1 - 0 to 3 inches: loam H2 - 3 to 6 inches: loam H3 - 6 to 40 inches: loam H4 - 40 to 60 inches: loam

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: B

Ecological site: R053CY012SD - Thin Upland

Forage suitability group: Limy Upland (G053CY400SD)
Other vegetative classification: Limy Upland (G053CY400SD)

Hydric soil rating: No

Minor Components

Prosper

Percent of map unit: 7 percent

Landform: Swales

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R053CY020SD - Loamy Overflow Other vegetative classification: Loam (G053CY100SD)

Hydric soil rating: No

Talmo

Percent of map unit: 7 percent

Landform: Outwash terraces on moraines Landform position (two-dimensional): Shoulder

Down-slope shape: Convex Across-slope shape: Convex

Ecological site: R053CY016SD - Very Shallow

Other vegetative classification: Not suited (G053CY000SD)

Hydric soil rating: No

Betts

Percent of map unit: 6 percent

Landform: Moraines

Landform position (two-dimensional): Shoulder

Down-slope shape: Convex Across-slope shape: Convex

Ecological site: R053CY012SD - Thin Upland

Other vegetative classification: Not suited (G053CY000SD)

Hydric soil rating: No

ZyD—Java-Glenham loams, hilly

Map Unit Setting

National map unit symbol: cv0w Elevation: 1,300 to 2,300 feet

Mean annual precipitation: 15 to 25 inches
Mean annual air temperature: 43 to 48 degrees F

Frost-free period: 130 to 150 days

Farmland classification: Not prime farmland

Map Unit Composition

Java and similar soils: 50 percent Glenham and similar soils: 30 percent Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Java

Setting

Landform: Moraines

Landform position (two-dimensional): Shoulder

Down-slope shape: Convex Across-slope shape: Convex Parent material: Loamy till

Typical profile

H1 - 0 to 3 inches: loam H2 - 3 to 6 inches: loam H3 - 6 to 40 inches: loam H4 - 40 to 60 inches: loam

Properties and qualities

Slope: 9 to 14 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: B

Ecological site: R053CY012SD - Thin Upland

Forage suitability group: Limy Upland (G053CY400SD)
Other vegetative classification: Limy Upland (G053CY400SD)

Hydric soil rating: No

Description of Glenham

Setting

Landform: Moraines

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy till

Typical profile

H1 - 0 to 5 inches: loam H2 - 5 to 13 inches: clay loam H3 - 13 to 60 inches: loam

Properties and qualities

Slope: 9 to 14 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: R053CY010SD - Loamy

Forage suitability group: Loam (G053CY100SD)
Other vegetative classification: Loam (G053CY100SD)

Hydric soil rating: No

Minor Components

Betts

Percent of map unit: 10 percent

Landform: Moraines

Landform position (two-dimensional): Shoulder

Down-slope shape: Convex Across-slope shape: Convex

Ecological site: R053CY012SD - Thin Upland

Other vegetative classification: Limy Upland (G053CY400SD)

Hydric soil rating: No

Prosper

Percent of map unit: 10 percent

Landform: Swales

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R053CY020SD - Loamy Overflow Other vegetative classification: Loam (G053CY100SD)

Hydric soil rating: No

ZyE—Betts-Java loams, steep

Map Unit Setting

National map unit symbol: cv0x Elevation: 1,300 to 2,300 feet

Mean annual precipitation: 15 to 25 inches
Mean annual air temperature: 43 to 48 degrees F

Frost-free period: 130 to 150 days

Farmland classification: Not prime farmland

Map Unit Composition

Betts and similar soils: 50 percent Java and similar soils: 30 percent Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Betts

Setting

Landform: Moraines

Landform position (two-dimensional): Shoulder

Down-slope shape: Convex Across-slope shape: Convex Parent material: Loamy till

Typical profile

H1 - 0 to 4 inches: loam H2 - 4 to 30 inches: clay loam H3 - 30 to 60 inches: loam

Properties and qualities

Slope: 15 to 34 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 11.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C

Ecological site: R053CY012SD - Thin Upland
Forage suitability group: Not suited (G053CY000SD)
Other vegetative classification: Not suited (G053CY000SD)

Hydric soil rating: No

Description of Java

Setting

Landform: Moraines

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy till

Typical profile

H1 - 0 to 3 inches: loam H2 - 3 to 6 inches: loam H3 - 6 to 40 inches: loam H4 - 40 to 60 inches: loam

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 5 percent

Maximum salinity: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: B

Ecological site: R053CY012SD - Thin Upland

Forage suitability group: Limy Upland (G053CY400SD)
Other vegetative classification: Limy Upland (G053CY400SD)

Hydric soil rating: No

Minor Components

Glenham

Percent of map unit: 10 percent

Landform: Moraines

Landform position (two-dimensional): Backslope

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R053CY010SD - Loamy

Other vegetative classification: Loam (G053CY100SD)

Hydric soil rating: No

Prosper

Percent of map unit: 10 percent

Landform: Swales

Landform position (two-dimensional): Footslope

Down-slope shape: Linear Across-slope shape: Concave

Ecological site: R053CY020SD - Loamy Overflow Other vegetative classification: Loam (G053CY100SD)

Hydric soil rating: No

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Management

Land management interpretations are tools designed to guide the user in evaluating existing conditions in planning and predicting the soil response to various land management practices, for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture, and rangeland. Example interpretations include suitability for a variety of irrigation practices, log landings, haul roads and major skid trails, equipment operability, site preparation, suitability for hand and mechanical planting, potential erosion hazard associated with various practices, and ratings for fencing and waterline installation.

Erosion Hazard (Off-Road, Off-Trail) (Sweetland Wind Farm)

As of 9/30/2022, this rating is not working as intended. All components appear as not rated. This rating will be fixed on 10/01/2023.

The ratings in this interpretation indicate the hazard of soil loss from off-road and off-trail areas after disturbance activities that expose the soil surface. The ratings are based on slope, soil erosion factor K, and an index of rainfall erosivity (R). The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance.

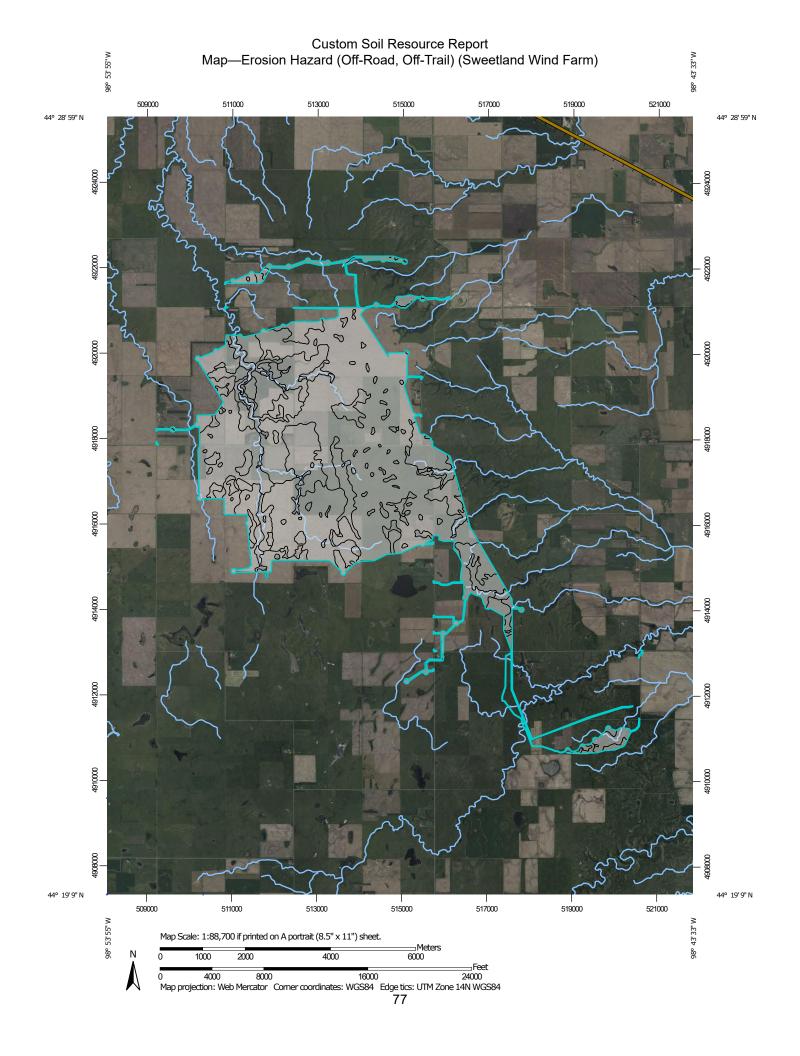
The ratings are both verbal and numerical. The hazard is described as "slight," "moderate," "severe," or "very severe." A rating of "slight" indicates that erosion is unlikely under ordinary climatic conditions; "moderate" indicates that some erosion is likely and that erosion-control measures may be needed; "severe" indicates that

erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and "very severe" indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.



MAP LEGEND MAP INFORMATION Area of Interest (AOI) **US Routes** The soil surveys that comprise your AOI were mapped at 1:20.000. Area of Interest (AOI) Major Roads Soils Please rely on the bar scale on each map sheet for map Local Roads \sim Soil Rating Polygons measurements. Background Very severe Aerial Photography Source of Map: Natural Resources Conservation Service Severe Web Soil Survey URL: Moderate Coordinate System: Web Mercator (EPSG:3857) Slight Maps from the Web Soil Survey are based on the Web Mercator Not rated or not available projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Soil Rating Lines Albers equal-area conic projection, should be used if more Very severe accurate calculations of distance or area are required. Severe This product is generated from the USDA-NRCS certified data as Moderate of the version date(s) listed below. Soil Survey Area: Hand County, South Dakota Not rated or not available Survey Area Data: Version 24, Sep 8, 2022 Soil Rating Points Soil map units are labeled (as space allows) for map scales Very severe 1:50,000 or larger. Severe Date(s) aerial images were photographed: Jun 1, 2022—Jun 18, Moderate 2022 Slight The orthophoto or other base map on which the soil lines were Not rated or not available compiled and digitized probably differs from the background Water Features imagery displayed on these maps. As a result, some minor Streams and Canals shifting of map unit boundaries may be evident. **Transportation** Rails Interstate Highways

Tables—Erosion Hazard (Off-Road, Off-Trail) (Sweetland Wind Farm)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BcA	Prosper-Stickney	Not rated	Prosper (60%)		61.7	0.8%
	loams, nearly level		Stickney (25%)			
			Tetonka (5%)			
			Dudley (5%)			
			Houdek (5%)			
CaA	Dudley silt loam,	Not rated	Dudley (70%)		17.5	0.2%
	nearly level		Stickney (14%)			
			Jerauld (11%)			
			Hoven (3%)			
			Tetonka (2%)			
CnA	Cavo-Glenham	Not rated	Cavo (50%)		158.9	2.1%
	loams, nearly level		Glenham (30%)			
			Prosper (7%)			
			Stickney (7%)			
			Tetonka (6%)			
CrA	Stickney-Prosper	Not rated	Stickney (50%)		17.3	0.2%
	loams, nearly level		Prosper (35%)			
			Dudley (13%)			
			Tetonka (2%)			
HdA	Durrstein-Bon	Not rated	Durrstein (50%)		11.0	0.1%
	complex, nearly level		Bon (25%)			
	,		Northville (13%)			
			Lamo (12%)			
HhB	Houdek loam, 2	Not rated	Houdek (85%)		5.7	0.1%
	to 6 percent slopes		Ethan (6%)			
			Prosper (5%)			
			Tetonka, undrained (4%)			
HkA	Houdek-Prosper	Not rated	Houdek (58%)		169.2	2.2%
	loams, 0 to 2 percent slopes		Prosper (32%)			
F3.33 010p0			Stickney (7%)			
			Tetonka, undrained (3%)	_		
HkB	Houdek-Prosper	Not rated	Houdek (62%)		5.2	0.1%
	loams, 1 to 6 percent slopes		Prosper (28%)			

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Ethan (4%)			
			Tetonka, undrained (3%)			
			Stickney (3%)			
HIA	Houdek-Dudley	Not rated	Houdek (50%)		14.1	0.2%
	complex, 0 to 2 percent slopes		Dudley (40%)			
			Hoven (3%)			
			Jerauld (3%)			
			Tetonka, undrained (2%)			
			Prosper (1%)			
			Stickney (1%)			
Hv	Hoven silt loam,	Not rated	Hoven (90%)		45.3	0.6%
	0 to 1 percent slopes		Tetonka, undrained (10%)			
LIA	Bon loam, channeled, 0 to 2 percent	Not rated	Bon, channeled, frequently flooded (85%)		48.6	0.6%
	slopes, frequently flooded	frequently	Lamo, occasionally flooded (7%)			
			Chaska, frequently flooded (5%)			
			Durrstein, frequently flooded (2%)			
			Wendte, rarely flooded (1%)			
LnB	Lane loam,	Not rated	Lane (90%)		0.7	0.0%
	gently sloping		Houdek (9%)			
			Tetonka (1%)			
LpA	Lane-Jerauld silty clay loams,	Not rated	Lane (69%)		0.0	0.0%
	nearly level		Jerauld (30%)			
			Durrstein (1%)			
MdA	Dudley-Jerauld silt loams, 0 to	Not rated	Dudley (55%)		1.8	0.0%
	2 percent		Jerauld (35%)			
	slopes		Stickney (3%)			
			Hoven (3%)			
			Beadle (2%)			
			Houdek (2%)			

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI				
So	Oahe-Delmont	Not rated	Oahe (55%)		5.5	0.1%				
	loams, 2 to 6 percent slopes		Delmont (35%)							
	F342544		Ree (6%)							
			Talmo (4%)							
Тр	Tetonka silt loam, 0 to 1 percent slopes	Not rated	Tetonka, undrained (90%)		206.8	2.7%				
			Davison (3%)							
			Hoven (3%)							
			Crossplain (2%)							
			Worthing, undrained (2%)							
W	Water	Not rated	Water (100%)		44.6	0.6%				
WmB	Glenham loam,	Not rated	Glenham (99%)		734.7	9.6%				
	undulating		Tetonka (1%)							
WmC	Glenham loam,	Not rated	Glenham (99%)		282.0	282.0	3.7%			
	rolling		Tetonka (1%)							
WnA		Not rated	Glenham (55%)		927.4	12.2%				
	Prosper loams, 0 to 2 percent		Prosper (35%)							
	slopes		Stickney (4%)							
			Hoven (3%)							
			Plankinton, undrained (3%)							
WnB	Glenham-	Not rated	Glenham (65%)		3,426.5	45.0%				
	Propser loams, 1 to 6 percent		Prosper (25%)							
	slopes		Stickney (4%)							
			Hoven (3%)							
			Plankinton, undrained (3%)							
WpA	Glenham-Cavo	Not rated	Glenham (50%)		182.6	2.4%				
	loams, nearly level		Cavo (30%)							
			Tetonka (5%)							
			Jerauld (5%)							
			Hoven (5%)							
			Prosper (5%)							
WpB	Glenham-Cavo	Not rated	Glenham (50%)		791.5	10.4%				
	loams, undulating						Cavo (30%)			
			Prosper (5%)							
			Jerauld (5%)							
			Hoven (5%)							

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Tetonka (5%)			
WxC	Glenham-Java	Not rated	Glenham (60%)		1.9	0.0%
	loams, rolling		Java (30%)			
			Delmont (9%)			
			Tetonka (1%)			
WzC	Glenham-Java	Not rated	Glenham (60%)		174.8	2.3%
	loams, rolling		Java (35%)			
			Delmont (4%)			
			Tetonka (1%)			
ZhE	Betts-Ethan	Not rated	Betts (55%)		0.3	0.0%
	loams, 15 to 40 percent slopes		Ethan (35%)			
			Clarno (4%)			
			Talmo (2%)			
			Davis (2%)			
			Betts, very stony (1%)			
			Ethan, very stony (1%)			
ZxE	Betts-Java	Not rated	Betts (50%)		1.3	0.0%
	loams, steep		Java (30%)			
			Prosper (7%)			
			Talmo (7%)			
			Betts (6%)			
ZyD	Java-Glenham	Not rated	Java (50%)		100.8	1.3%
	loams, hilly		Glenham (30%)			
			Betts (10%)			
			Prosper (10%)			
ZyE	Betts-Java	Not rated	Betts (50%)		179.0	2.4%
	loams, steep		Java (30%)			
			Prosper (10%)			
			Glenham (10%)			
Totals for Area	of Interest		<u>.</u>		7,617.0	100.0%

Rating	Acres in AOI	Percent of AOI
Null or Not Rated	7,616.9	100.0%
Totals for Area of Interest	7,617.0	100.0%

Rating Options—Erosion Hazard (Off-Road, Off-Trail) (Sweetland Wind Farm)

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Erosion

This folder contains a collection of tabular reports that present soil erosion factors and groupings. The reports (tables) include all selected map units and components for each map unit. Soil erosion factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

RUSLE2 Related Attributes (Sweetland Wind Farm)

This report summarizes those soil attributes used by the Revised Universal Soil Loss Equation Version 2 (RUSLE2) for the map units in the selected area. The report includes the map unit symbol, the component name, and the percent of the component in the map unit. Soil property data for each map unit component include the hydrologic soil group, erosion factor Kf for the surface horizon, erosion factor T, and the representative percentage of sand, silt, and clay in the mineral surface horizon. Missing surface data may indicate the presence of an organic layer.

Report—RUSLE2 Related Attributes (Sweetland Wind Farm)

Soil properties and interpretations for erosion runoff calculations. The surface mineral horizon properties are displayed or the first mineral horizon below an organic surface horizon. Organic horizons are not displayed.

RUSLE2 Related Attributes–Hand County, South Dakota										
Map symbol and soil name	Pct. of	Slope	Hydrologic group	Kf	T factor	Representative value		value		
	map unit	length (ft)				% Sand	% Silt	% Clay		
BcA—Prosper-Stickney loams, nearly level										
Prosper	60	_	В	.20	5	41.1	36.9	22.0		
Stickney	25	_	С	.28	5	39.2	37.3	23.5		
CaA—Dudley silt loam, nearly level										
Dudley	70	_	С	.37	2	26.1	52.4	21.5		

	RUSLE2 Related Attributes-Hand County, South Dakota									
Map symbol and soil name	Pct. of Slope	Hydrologic group	Kf	T factor	Representative value					
	map unit	length (ft)				% Sand	% Silt	% Clay		
CnA—Cavo-Glenham loams, nearly level										
Cavo	50	_	С	.32	2	39.5	37.5	23.0		
Glenham	30	_	С	.24	5	39.5	37.5	23.0		
CrA—Stickney-Prosper loams, nearly level										
Stickney	50	_	С	.28	5	39.2	37.3	23.5		
Prosper	35	_	В	.20	5	41.1	36.9	22.0		
HdA—Durrstein-Bon complex, nearly level										
Durrstein	50	_	C/D	.43	2	20.0	49.0	31.0		
Bon	25	_	В	.28	5	24.8	52.7	22.5		
HhB—Houdek loam, 2 to 6 percent slopes										
Houdek	85	180	С	.28	5	38.0	40.0	22.0		
HkA—Houdek-Prosper loams, 0 to 2 percent slopes										
Houdek	58	197	С	.28	5	38.0	40.0	22.0		
Prosper	32	197	С	.24	5	38.0	40.0	22.0		
HkB—Houdek-Prosper loams, 1 to 6 percent slopes										
Houdek	62	180	С	.28	5	38.0	40.0	22.0		
Prosper	28	180	С	.24	5	38.0	40.0	22.0		
HIA—Houdek-Dudley complex, 0 to 2 percent slopes										
Houdek	50	200	С	.28	5	38.0	40.0	22.0		
Dudley	40	_	D	.37	2	13.0	63.0	24.0		
Hv—Hoven silt loam, 0 to 1 percent slopes										
Hoven	90	200	D	.43	2	13.0	63.0	24.0		
LIA—Bon loam, channeled, 0 to 2 percent slopes, frequently flooded										
Bon, channeled, frequently flooded	85	200	С	.20	5	38.0	40.0	22.0		
LnB—Lane loam, gently sloping										
Lane	90	_	С	.24	5	39.5	37.5	23.0		
LpA—Lane-Jerauld silty clay loams, nearly level										
Lane	69	_	С	.24	5	18.7	47.8	33.5		
Jerauld	30	_	С	.37	2	18.7	47.8	33.5		

RUSLE2 Related Attributes–Hand County, South Dakota									
Map symbol and soil name	Pct. of	Slope	Hydrologic group K	Kf	T factor	Repre	esentative	value	
	map unit	length (ft)				% Sand	% Silt	% Clay	
MdA—Dudley-Jerauld silt loams, 0 to 2 percent slopes									
Dudley	55	200	D	.37	2	13.0	63.0	24.0	
Jerauld	35	_	D	.43	2	13.0	63.0	24.0	
So—Oahe-Delmont loams, 2 to 6 percent slopes									
Oahe	55	180	В	.20	3	39.0	39.0	22.0	
Delmont	35	_	В	.20	2	39.0	39.0	22.0	
Tp—Tetonka silt loam, 0 to 1 percent slopes									
Tetonka, undrained	90	200	C/D	.37	5	13.0	64.0	23.0	
WmB—Glenham loam, undulating									
Glenham	99	_	С	.24	5	39.5	37.5	23.0	
WmC—Glenham loam, rolling									
Glenham	99	_	С	.24	5	39.5	37.5	23.0	
WnA—Glenham-Prosper loams, 0 to 2 percent slopes									
Glenham	55	200	С	.28	5	38.0	40.0	22.0	
Prosper	35	200	С	.24	5	38.0	40.0	22.0	
WnB—Glenham-Propser loams, 1 to 6 percent slopes									
Glenham	65	180	С	.28	5	38.0	40.0	22.0	
Prosper	25	180	С	.24	5	38.0	40.0	22.0	
WpA—Glenham-Cavo loams, nearly level									
Glenham	50	_	С	.24	5	39.5	37.5	23.0	
Cavo	30	_	С	.32	2	39.5	37.5	23.0	
WpB—Glenham-Cavo loams, undulating									
Glenham	50	_	С	.24	5	39.5	37.5	23.0	
Cavo	30	_	С	.32	2	39.5	37.5	23.0	
WxC—Glenham-Java loams, rolling									
Glenham	60	_	С	.24	5	39.5	37.5	23.0	
Java	30	_	В	.24	5	38.8	36.7	24.5	
WzC—Glenham-Java loams, rolling									
Glenham	60	_	С	.24	5	39.5	37.5	23.0	
Java	35	_	В	.24	5	38.8	36.7	24.5	

RUSLE2 Related Attributes-Hand County, South Dakota									
Map symbol and soil name	Pct. of	Slope	Hydrologic group	Kf	T factor	ctor Represen		ntative value	
	map unit	length (ft)				% Sand	% Silt	% Clay	
ZhE—Betts-Ethan loams, 15 to 40 percent slopes									
Betts	55	49	С	.28	5	38.0	40.0	22.0	
Ethan	35	_	С	.28	5	38.0	40.0	22.0	
ZxE—Betts-Java loams, steep									
Betts	50	_	С	.24	5	39.8	37.7	22.5	
Java	30	_	В	.24	5	38.8	36.7	24.5	
ZyD—Java-Glenham loams, hilly									
Java	50	_	В	.24	5	38.8	36.7	24.5	
Glenham	30	_	С	.24	5	39.5	37.5	23.0	
ZyE—Betts-Java loams, steep									
Betts	50	_	С	.24	5	39.8	37.7	22.5	
Java	30	_	В	.24	5	38.8	36.7	24.5	

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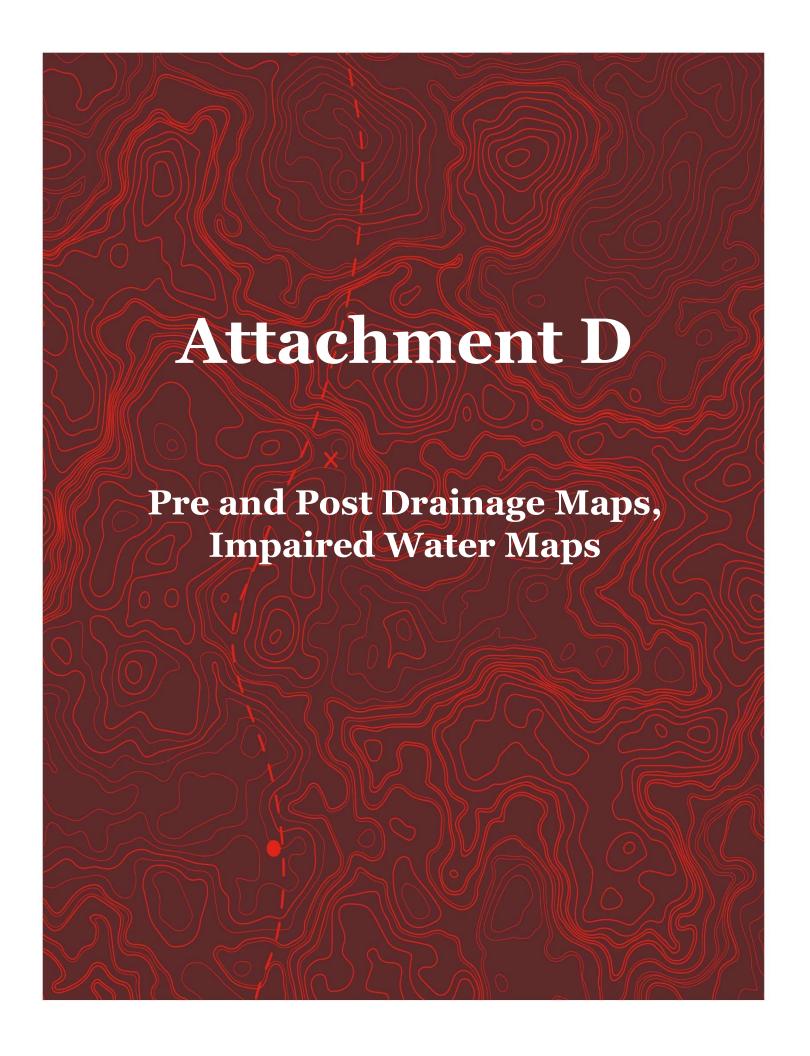
United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2 053374

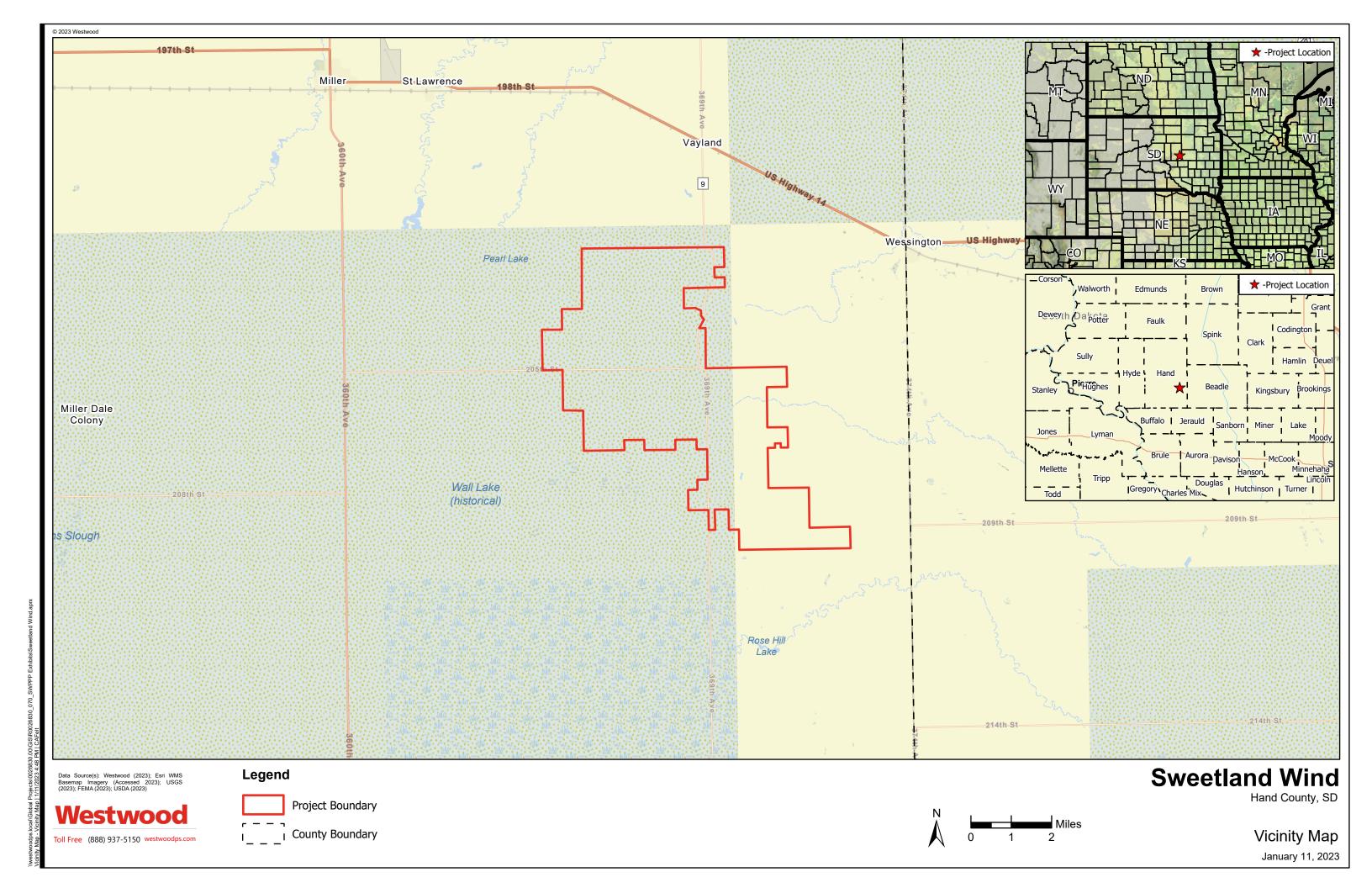
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United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

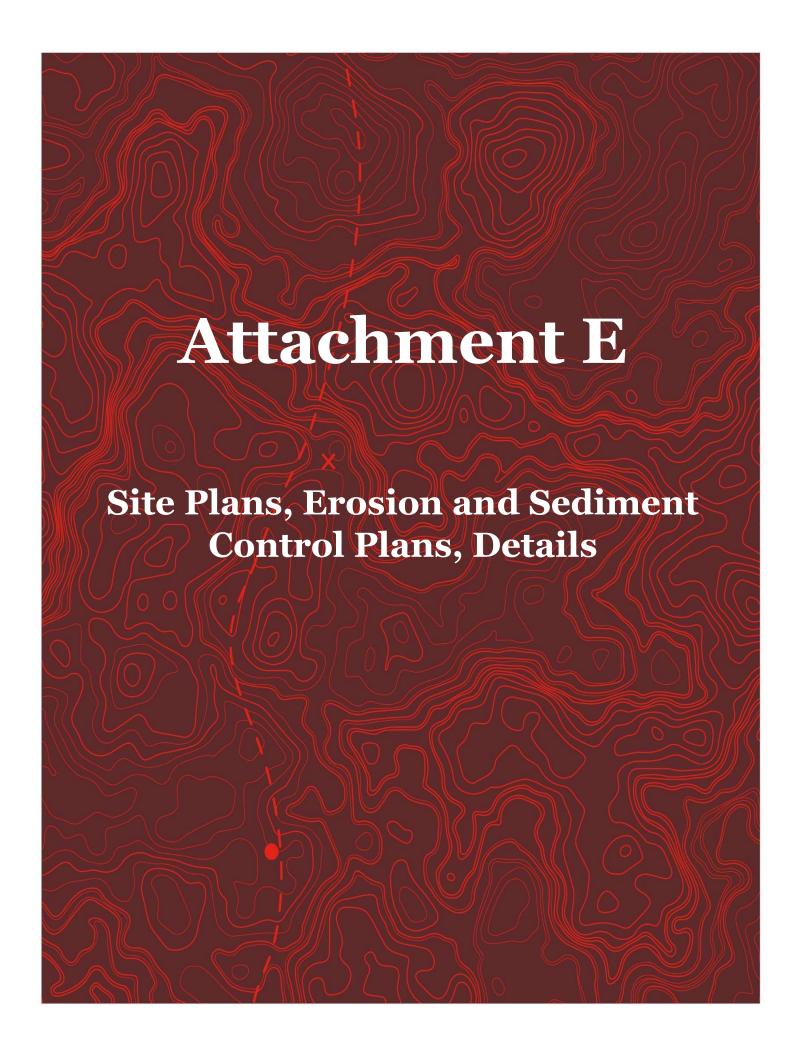
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Alternate Crane Path

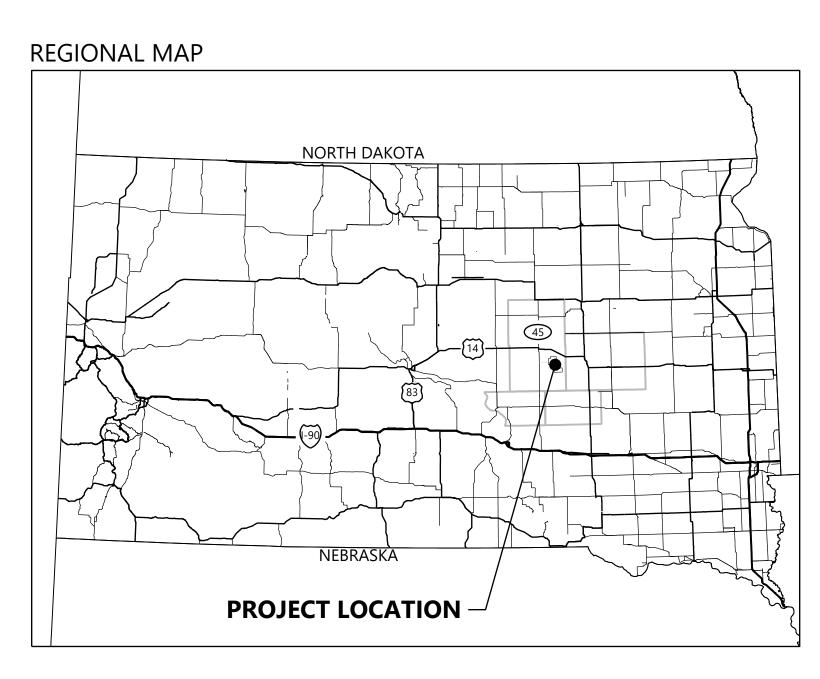




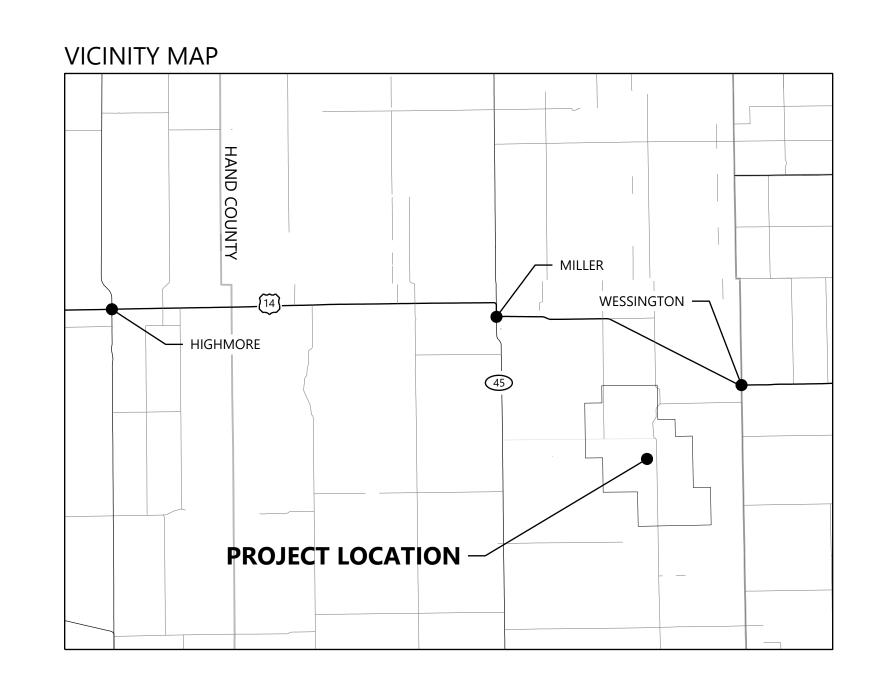
Sweetland Wind Project

Hand County, South Dakota

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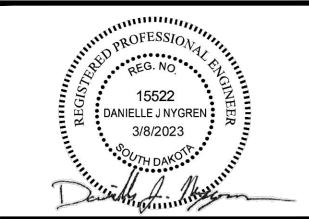


	DATA SET INFORMATION		
Coordinate System	HARN/SD.SD-NF		
BASE FILE	FILE NAME / NOTES	PROVIDER	DATE
AERIAL IMAGE	0015724.00 AERIAL.dwg	Westwood	4/10/2019
LAND CONTROL	Sweetland Wind Project_30pctResubmittal_20220419.kmz	Blattner	9/28/2022
ALTA SURVEY	221013-Sweetland-Survey CAD File.dwg	Westwood	10/13/2022
TOPOGRAPHY	0015724.00 Sweetland Wind Farm 2ft Contours.180723.dxf	Blattner	9/28/2022
TURBINE ARRAY	Exhibit_G01_Site Turbine Coordinates Final.xlsx	Blattner	11/8/2022
UNDERGROUND COLLECTION	Sweetland KMZ 02152023-1.kmz	Blattner	2/27/2023
GEN-TIE	20220819 Sweetland Wind Project - Updated Gentie and Cultural (8).kmz	Blattner	11/10/2022
STREAMS/WETLANDS	Sweetland Wind Project_30pctResubmittal_20220419.kmz	Blattner	9/28/2022
CULTURAL RESOURCES	20220819 Sweetland Wind Project - Updated Gentie and Cultural (8).kmz	Blattner	11/10/2022
BIOLOGICAL	*	*	*
FEMA INFO	*	*	*
TURBINE DELIVERY MANUAL	*	*	*
GEOTECHNICAL REPORT	Exhibit K_02_SweetlandWind_GeotechnicalReport-REV1_09.15.2022.pdf	Blattner	9/28/2022



CONTACT INFORMATION						
PROJECT ROLE	CONTACT NAME	COMPANY	PHONE			
PROJECT MANAGER	RYAN CLAEYS	BLATTNER	320-290-1859			
SR. MANAGER, ENGINEERING	MATT SAUNDERS	BLATTNER	320-247-097			
PROJECT MANAGER	LOGAN BELL	SCOUT	970-712-0498			
PROJECT MANAGER	STEVE BATTAGLIA	WESTWOOD	952-937-5150			





PREPARED FOR:





REVISIONS:

DATE COMMENT BY CHK APR

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Sweetland Wind Project

Hand County, South Dakota

Cover

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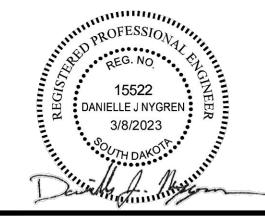
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	Sheet List Table
SHEET NUMBER	SHEET TITLE
C001	Cover
C002	Sheet Index and Drainage Crossing Schedule
C003	Turbine Index and Utility Crossings
C004	Fence Crossing Matrix
C200	Overall Site Plan
C201	Delivery Flow Plan
C202	Access Road Summary
C300	Site Plan Sheet Layout Guide
C301	Site Plan T01, T02, T03, T04
C302	Site Plan T05, T06, T07
C302	Site Plan T08, T09, T10, T20, T21, T22
C304	Site Plan
C304	
	Site Plan T11, T12
C306	Site Plan T13, T14, T15
C307	Site Plan T16, T17, T18, T19, T33
C308	Site Plan T34, T35, T36
C309	Site Plan T23, T24, T25
C310	Site Plan T27, T28, T29
C311	Site Plan T30, T31, T32
C312	Site Plan T47, T48
C313	Site Plan T37, T38
C314	Site Plan T39, T40, T41, T42, T82
C315	Site Plan T44, T45
C316	Site Plan T-49 T-50
C317	Site Plan T51
C318	Site Plan
C319	Site Plan T81, T56, T57, T58, T59
C320	Site Plan T60, T61, T62
C321	Site Plan T64
C322	Site Plan T65
C323	Site Plan T84, T85, T69, T70
C324	Site Plan T72
C325	Site Plan T86 T87
C326	Site Plan
C327	Site Plans
C328	Site Plan
C329	Site Plan T77
C330	Site Plan T78, T79, T80, T89
C500	O&M Facility Plan
C501	Laydown Yard Plan
C502	Substation Plan
C700	Details
C700	Details
C701	Details
C702	Details
C703	Details
C705	Details
C706	Details
C707	Details
C708	General Construction Notes
C709	Cement Stabilization Notes

	Access Road Drainage Crossing Schedule							
Crossing Number	Watershed Area (ac)	25-year Peak Flow (cfs)	25-year Culvert Diameter (in)	25-Year LWC	25-Year LWC Length (ft)	Sheet Number		
DC-01	11.7	15.98	1-30"; 2-24"; 3-18"	STANDARD DUTY	60	C303		
DC-02	5.6	7.64	1-18"	STANDARD DUTY	50	C303		
DC-03	1.7	3.55	1-18"	STANDARD DUTY	50	C302		
DC-04	160.8	110.06	1-60"; 2-42"; 3-36"	STANDARD DUTY	160	C302		
DC-05	43.9	55.33	1-42"; 2-36"; 3-30"	STANDARD DUTY	60	C302		
DC-06	40.8	36.02	1-36"; 2-30"; 3-24"	STANDARD DUTY	60	C301, C302		
DC-07	305.4	173.74	1-72"; 2-54"; 3-42"	STANDARD DUTY	140	C301		
DC-08	3.1	12.68	1-24"; 2-18"	STANDARD DUTY	50	C307, C306		
DC-09	28.8	42.5	1-42"; 2-30"; 3-24"	STANDARD DUTY	70	C306		
DC-10	107.7	123.93	1-60"; 2-48"; 3-36"	STANDARD DUTY	110	C306		
DC-11	59.0	91.42	1-54"; 2-42"; 3-36"	STANDARD DUTY	120	C306		
DC-12	20.5	41.22	1-36"; 2-30"; 3-24"	STANDARD DUTY	60	C308		
DC-13	85.6	92.58	1-54"; 2-42"; 3-36"	STANDARD DUTY	160	C310		
DC-14	11.1	14.65	1-24"; 2-18"	STANDARD DUTY	60	C311, C315		
DC-15	14.5	14.44	1-24"; 2-18"	STANDARD DUTY	100	C315		
DC-16	36.1	56.69	1-42"; 2-36"; 3-30"	STANDARD DUTY	50	C313		
DC-17	1023.2	248.33	1-78"; 2-60"; 3-54"	STANDARD DUTY	50	C313		
DC-18	26.5	47.88	1-42"; 2-30"; 4-24"	STANDARD DUTY	250	C302, C307		
DC-19	67.0	52.15	1-42"; 2-30"; 4-24"	STANDARD DUTY	110	C324		
DC-20	37.6	51.35	1-42"; 2-30"; 4-24"	STANDARD DUTY	50	C323		
DC-21	217.1	100.67	1-54"; 2-42"; 3-36"	STANDARD DUTY	180	C330		
DC-22	6.1	10.72	1-24"; 2-18"	STANDARD DUTY	50	C330		
DC-24	18.7	21.68	1-30"; 2-24"; 3-18"	STANDARD DUTY	100	C330		
DC-25	7.6	13.04	1-24"; 2-18"	STANDARD DUTY	60	C330		
DC-26	13.1	12.49	1-24"; 2-18"	STANDARD DUTY	90	C330		
DC-27	139.8	118.91	1-60"; 2-42"; 3-36"	HEAVY DUTY	105	C302, C307		
DC-28	137.0	118.76	1-60"; 2-42"; 3-36"	STANDARD DUTY	100	C302, C307		
DC-29	122.7	114.27	1-60"; 2-42"; 3-36"	STANDARD DUTY	200	C302, C307		
DC-30	55.5	79.62	1-48"; 2-36"; 3-30"	STANDARD DUTY	50	C302, C307		
DC-31	70.3	117.53	1-60"; 2-42"; 3-36"	STANDARD DUTY	200	C310, C311		
DC-32	85.2	78.98	1-48"; 2-36"; 3-30"	STANDARD DUTY	150	C309		
DC-33	30.8	29.75	1-36"; 2-24"; 4-18"	STANDARD DUTY	50	C322, C323		
DC-34	3976.5	516.96	1-108"; 2-84"; 3-72"	STANDARD DUTY	50	C319		
DC-35	33.3	58.32	1-42"; 2-36"; 3-30"	STANDARD DUTY	100	C320		
DC-36	8.0	25.31	1-30"; 2-24"; 4-18"	STANDARD DUTY	150	C319, C320		

Crossing	Watershed	2-year Peak	2-Year Culvert	Shee
Number	Area (ac)	Flow (cfs)	Diameter (in)	Numb
CP-01	8124.5	292.42	1-84"; 2-66"; 3-54"	C30
CP-03	1677.2	110.72	1-60"; 2-42"; 3-36"	C309
CP-04	6702.4	271.85	1-84"; 2-60"; 3-54"	C310
CP-05	305.0	69.63	1-48"; 2-36"; 3-30"	C31:
CP-06	16.8	7.53	1-18"	C31
CP-08	7.4	7.25	1-18"	C31
CP-09	9.3	11.52	1-24"; 2-18"	C31
CP-10	7.1	8.44	1-24"; 2-18"	C31
CP-12	5976.1	245.27	1-78"; 2-60"; 3-48"	C314
CP-13	22.0	20.80	1-30"; 2-24"; 3-18"	C30
CP-14	32.3	24.94	1-30"; 2-24"; 4-18"	C30
CP-18	149.8	115.52	1-60"; 2-42"; 3-36"	C30
CP-20	112.1	93.25	1-54"; 2-42"; 3-36"	C30
CP-21	762.6	61.78	1-48"; 2-36"; 3-30"	C314
CP-22	51.3	28.40	1-36"; 2-24"; 4-18"	C314
CP-23	5001.4	183.64	1-72"; 2-54"; 3-48"	C314, C
CP-24	50.0	6.42	1-18"	C32
CP-25	43.1	5.59	1-18"	C32
CP-26	114.8	18.04	1-30"; 2-24"; 3-18"	C316, C
CP-27	64.0	9.42	1-24"; 2-18"	C316, C









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Sweetland Wind Project

Hand County, South Dakota

Sheet Index and Drainage Crossing Schedule

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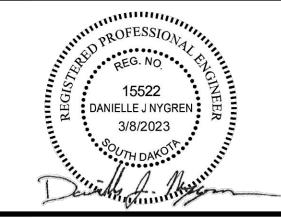
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1		Turbine Index		Evicting Crawel
Turbine Number	Turbine Type	Easting	Northing	Existing Ground Elevation
T-01	2.8-127	2265782.95	226331.38	1709.83
T-02	2.8-127	2267223.66	226915.03	1719.72
T-03	2.8-127	2268584.46	227520.68	1725.45
T-04	2.8-127	2270064.99	227518.67	1739.21
T-05	2.8-127	2271546.82	228002.50	1746.85
T-06	2.8-127	2273091.49	227855.58	1756.06
T-07	2.8-127	2274620.30	227965.55	1758.32
T-08	2.8-127	2275991.90	228153.55	1763.84
T-09	2.8-127	2277362.04	228170.95	1756.14 1706.03
T-10 T-11	2.8-127 2.8-127	2279020.47 2263170.23	228026.18 220345.23	1706.03
T-11	2.8-127	2264565.57	220343.23	1721.59
T-13	2.8-127	2266374.76	222068.02	1721.32
T-14	2.8-127	2268197.77	222500.69	1745.81
T-15	2.8-127	2269718.68	222896.05	1770.45
T-16	2.8-127	2271359.62	223140.42	1807.34
T-17	2.8-127	2272737.07	223381.95	1811.17
T-18	2.8-127	2274114.47	223680.64	1821.12
T-19	2.8-127	2275522.73	223982.91	1823.37
T-20	2.8-127	2276881.61	224691.07	1814.10
T-21	2.8-127	2278576.80	225169.04	1779.41
T-22	2.8-127	2280429.30	225204.72	1729.60
T-23	2.8-127	2261301.75	214868.68	1741.12
T-24	2.8-127	2263198.81	215256.12	1735.88
T-25	2.8-127	2264559.86	215863.98	1743.36
T-27	2.8-127	2267184.87	217256.49	1743.51
T-28	2.8-127	2268493.69	217550.67	1756.58
T-29	2.8-127	2269885.16	217834.41	1771.19
T-30	2.8-127	2271330.63	218368.98	1796.89
T-31	2.8-127	2272595.47	218557.60	1817.01
T-32	2.8-127	2274165.74	218688.11	1834.05
T-33	2.8-127	2275451.33	219381.26	1841.32
T-34	2.8-127	2276724.56	219915.70	1841.33
T-35	2.8-127	2277997.69	220450.22	1841.11
T-36	2.8-127	2279270.75	220984.46	1829.29
T-37	2.8-127	2263466.87	209623.13	1761.40
T-38	2.8-127	2264555.45	210745.24	1760.73
T-39	2.8-127	2265979.08	211770.79	1768.63
T-40	2.8-127	2267293.08	212129.51	1782.19
T-41	2.8-127	2268691.52	212337.07	1774.61
T-42	2.8-127	2270068.03	212560.11	1791.06
T-44	2.8-127	2273887.44	212627.81	1831.65
T-45	2.8-127	2275279.48	212611.62	1861.84
T-47	2.8-127	2279080.87	215230.97	1847.37
T-48	2.8-127	2279837.28	216240.87	1845.52
T-49	2.8-127	2279612.97	210842.84	1877.48
T-50	2.8-127	2280595.91	211524.36	1856.17
T-51	2.8-127	2282204.02	212293.83	1817.74
T-56	2.8-127	2266157.12	204037.51	1787.23
T-57	2.8-127	2267556.97	204311.73	1787.49
T-58	2.8-127	2268943.19	204955.20	1788.31
T-59	2.8-127	2270328.49	205351.07	1802.01
T-60	2.8-127	2271919.28	205498.29	1806.88
T-61	2.8-127	2274622.58	204026.91	1822.13
T-62	2.8-127	2275757.57	205021.71	1833.55
T-64	2.8-127	2280709.70	206350.41	1860.91
T-65	2.8-127	2282165.60	207041.82	1843.64
T-69	2.8-127	2284076.23	202249.47	1856.77
T-70	2.8-127	2285813.32	201574.67	1808.60
T-72	2.8-127	2288422.22	201381.33	1768.83
T-77	2.8-127	2292184.11	190632.86	1775.44
T-78	2.8-127	2293307.78 2294288.50	190924.25 191448.32	1712.76
T-79	2.8-127			1728.14
T-80	2.8-127	2295279.12	192349.23	1680.38
T-81	2.8-127	2267233.42	207733.79	1788.20
T-82	2.8-127	2270039.29	209155.40	1797.59
T-84	2.8-127	2282401.37	199473.86	1831.44
T-85	2.8-127	2283391.92	200266.77	1833.06
T-86	2.8-127	2279634.79	195752.79	1804.56
T-87 T-89	2.8-127 2.8-127	2281111.05 2296799.82	196478.62 192167.74	1806.73 1639.72
1-89 PMM-3	- 2.0-12/	2296799.82	203671.33	1639.72
ADLS		2277378.70	213993.74	1867.37

Crossing ID	Site Improvement	Sweetland Utility Cr Utility Type	Northing	Easting	Latitude	Longitude
_	<u> </u>	Mid Dakota Water Line			44.44814796	-98.8637468
1	Access Road		226228.62	2265226.45		
2	Access Road	Mid Dakota Water Line	225339.87	2282502.82	44.44502591	-98.7976504
4	Temporary Turn	Mid Dakota Water Line	225280.95	2282504.64	44.44486422	-98.79764680
5	Collection Line	Mid Dakota Water Line	221337.67	2265277.47	44.43473156	-98.8638144
6	Crane Path	Mid Dakota Water Line	221336.09	2265277.49	44.43472721	-98.8638144
7	Crane Path	Mid Dakota Water Line	217037.34	2265327.89	44.42293507	-98.8638524
8	Collection Line	Mid Dakota Water Line	216583.39	2265333.42	44.42168982	-98.8638556
9	Access Road	Mid Dakota Water Line	216268.74	2280382.97	44.42023278	-98.8062786
10	Access Road	Mid Dakota Water Line	214878.98	2260071.10	44.41721590	-98.8840848
11	Collection Line	Mid Dakota Water Line	214758.17	2280495.61	44.41608523	-98.8059328
12	Collection Line	Fiber Optic	214759.27	2280615.27	44.41608339	-98.8054748
13	Collection Line	Mid Dakota Water Line	214738.17	2280497.02	44.41603030	-98.8059285
14	Collection Line	Fiber Optic	214739.26	2280615.67	44.41602850	-98.8054744
15	Collection Line	Mid Dakota Water Line	214718.19	2280498.42	44.41597546	-98.8059243
16	Collection Line	Fiber Optic	214719.27	2280615.64	44.41597366	-98.8054757
17	Collection Line	Mid Dakota Water Line	214698.23	2280499.83	44.41592066	-98.8059200
18	Collection Line	Fiber Optic	214699.29	2280616.20	44.41591884	-98.8054747
19	Collection Line	Mid Dakota Water Line	214678.20	2280501.24	44.41586567	-98.8059158
20	Collection Line	Fiber Optic	214679.28	2280617.28	44.41586392	-98.8054716
21	Collection Line	Mid Dakota Water Line	214658.23	2280502.65	44.41581084	-98.8059115
22	Collection Line	Fiber Optic	214659.30	2280618.78	44.41580905	-98.8054670
23	Collection Line	Mid Dakota Water Line	214638.13	2280504.06	44.41575565	-98.8059072
24	Collection Line	Fiber Optic	214639.29	2280620.71	44.41575411	-98.8054608
25	Collection Line	Mid Dakota Water Line	214618.05	2280525.71	44.41570053	-98.8059029
26	Collection Line	Fiber Optic	214618.03	2280623.33	44.41569902	-98.8054519
27	Temporary Turn	Mid Dakota Water Line	214619.24	2280523.33	44.41555229	-98.8058914
28	Temporary Turn	Fiber Optic	214304.00	2280309.28	44.41333229	-98.8049586
	Crane Path	·	214271.95			-98.8712238
29		Mid Dakota Water Line		2263446.99	44.41412191	
30	Temporary Turn	Mid Dakota Water Line	213820.67	2265347.67	44.41411192	-98.8639495
31	Temporary Turn	Fiber Optic	214025.29	2281002.43	44.41405463	-98.8040348
32	Access Road	Mid Dakota Water Line	213699.38	2267265.78	44.41370519	-98.8566163
33	Collection Line	Mid Dakota Water Line	213833.03	2280564.71	44.41354506	-98.8057206
34	Collection Line	Fiber Optic	212302.82	2281506.12	44.40931003	-98.8022050
35	Access Road	Fiber Optic	212283.47	2281506.36	44.40925696	-98.8022052
36	Access Road	Mid Dakota Water Line	211406.74	2281017.82	44.40687220	-98.8041240
37	Crane Path	Fiber Optic	211312.98	2281520.66	44.40659463	-98.8022054
38	Transmission Line	Fiber Optic	207533.75	2284404.28	44.39611190	-98.7913886
39	Transmission Line	Mid Dakota Water Line	207357.50	2284510.92	44.39562412	-98.7909907
40	Access Road	Mid Dakota Water Line	207030.99	2281623.59	44.39484635	-98.8020541
41	Access Road	Fiber Optic	207030.26	2281588.12	44.39484580	-98.8021898
42	Collection Line	Fiber Optic	207021.93	2281588.25	44.39482296	-98.8021898
43	Collection Line	Mid Dakota Water Line	207021.57	2281624.00	44.39482051	-98.8020530
44	Collection Line	Fiber Optic	206015.21	2283239.48	44.39199464	-98.7959307
45	Collection Line	Fiber Optic	206014.72	2283219.48	44.39199412	-98.7960072
46	Crane Path	Fiber Optic	206014.13	2283195.50	44.39199348	-98.7960990
47	Collection Line	Mid Dakota Water Line	206002.45	2283239.96	44.39195963	-98.7959296
48	Collection Line	Mid Dakota Water Line	206001.83	2283219.97	44.39195874	-98.7960061
49	Crane Path	Mid Dakota Water Line	206001.08	2283195.99	44.39195768	-98.7960979
50	Access Road	Fiber Optic	203375.18	2281651.01	44.38481855	-98.8021561
51	Access Road	Mid Dakota Water Line	203373.17	2281790.54	44.38481835	-98.8016224
52	Access Road	Mid Dakota Water Line	200733.44	2282265.20	44.37754818	-98.7999569
53	Access Road	Fiber Optic	200733.44	2281696.93	44.37754081	-98.8021307
54	Access Road Access Road	Mid Dakota Water Line	199472.53	2281090.93	44.37734081	-98.7998907
		Fiber Optic				
55	Access Road	<u> </u>	199463.17	2281716.71	44.37408653	-98.8021263
56	Collection Line	Mid Dakota Water Line	199284.20	2282306.59	44.37357169	-98.7998808
57	Temporary Turn	Fiber Optic	198153.26	2281736.03	44.37049308	-98.8021266
58	Collection Line	Fiber Optic	198144.36	2281735.88	44.37046868	-98.8021276
59	Temporary Turn	Fiber Optic	198370.71	2297777.25	44.37042170	-98.7407786
60	Temporary Turn	Fiber Optic	198330.63	2297804.90	44.37031059	-98.7406752
61	Collection Line	Mid Dakota Water Line	198131.29	2287271.65	44.37020617	-98.7809617
62	Transmission Line	Mid Dakota Water Line	198135.09	2287721.53	44.37019798	-98.7792414
63	Temporary Turn	Fiber Optic	198104.49	2297715.19	44.36969420	-98.7410317
64	Transmission Line	Mid Dakota Water Line	192991.04	2288721.99	44.35604817	-98.7757135
65	Collection Line	Mid Dakota Water Line	192983.17	2288539.79	44.35603414	-98.7764104
66	Access Road	Fiber Optic	193116.74	2297638.17	44.35601789	-98.7416227
67	Transmission Line	Fiber Optic	193013.39	2293409.85	44.35591359	-98.7577921
68	Collection Line	Electricity	191088.25	2289330.01	44.35080423	-98.7734995
69	Temporary Turn	Mid Dakota Water Line	226185.31	2265227.43	44.44802912	-98.8637454
70	Temporary Turn	Mid Dakota Water Line	214814.49	2260072.24	44.41703896	-98.8840839
71	Temporary Turn	Mid Dakota Water Line	213677.26	2267370.47	44.41364048	-98.8562169
	- 15-21-01-1 1-01-11	a Danota vvater Line			1230 10-10	20.0002100
72	Temporary Turn	Mid Dakota Water Line	216245.97	2280384.71	44.42017025	-98.8062732



Westwood Professional Services, Inc.







DATE COMMENT BY CHK APR 0 03/08/2023 IFC Civil Development Plans

Sweetland Wind ProjectHand County, South Dakota

Turbine Index and **Utility Crossings**

ISSUED FOR CONSTRUCTION

03/08/2023

	SITE IMPROVEMENT		PARCEL_ID	LATITUDE	LONGITUDE	NORTHING	EASTING
FN-001	Access Road	LIVING JAMES & LIVING RUTHANN MAJOR TRUST	4435	44.45285	-98.82759	228072.87700	2274644.88412
FN-002 FN-003	Collection Line Collection Line	LIVING JAMES & LIVING RUTHANN MAJOR TRUST JTWROS DALE A & JTWROS LEANNA RESEL	4435 4440	44.45236 44.45183	-98.82759 -98.84372	227896.51384 227640.58227	2274647.05800 2270438.46011
FN-003	Access Road	JTWROS DALE A & JTWROS LEANNA RESEL	4440	44.45158	-98.84372	227549.65233	2270439.64876
FN-005	Crane Path	LIVING JAMES & LIVING RUTHANN MAJOR TRUST	4435	44.44999	-98.82779	227030.59530	2274608.22999
FN-006	Collection Line	LIVING JAMES & LIVING RUTHANN MAJOR TRUST	4435	44.44999	-98.82769	227030.93060	2274635.16432
FN-007	Collection Line	LIVING JAMES & LIVING RUTHANN MAJOR TRUST	4435	44.44999	-98.82762	227031.14713	2274652.56717
FN-008	Collection Line	JTWROS DALE A & JTWROS LEANNA RESEL	4443	44.44995	-98.85371	226919.39342	2267841.27535
FN-009	Collection Line	JTWROS DALE A & JTWROS LEANNA RESEL	4439	44.44989	-98.82547	227002.09470	2275213.74584
FN-010	Collection Line	JTWROS DALE A & JTWROS LEANNA RESEL	4439	44.44985	-98.82547	226987.56356	2275214.20319
FN-011	Crane Path	JTWROS DALE A & JTWROS LEANNA RESEL LIVING JAMES & LIVING RUTHANN MAJOR TRUST	4439	44.44978 44.44485	-98.82547 -98.80614	226963.44484 225240.64054	2275214.96204
FN-012 FN-013	Collection Line Access Road	LIVING JAMES & LIVING RUTHANN MAJOR TRUST	3152 3151	44.44465	-98.82266	224412.78492	2275984.90440
FN-014	Collection Line	LIVING JAMES & LIVING RUTHANN MAJOR TRUST	3151	44.44275	-98.82258	224413.03393	2276006.13172
FN-015	Crane Path	LIVING JAMES & LIVING RUTHANN MAJOR TRUST	3151	44.44275	-98.82245	224413.43354	2276040.22024
FN-016	Access Road	JTWROS DALE A & JTWROS LEANNA RESEL	4439	44.44275	-98.82373	224408.06478	2275705.51979
FN-017	Collection Line	JTWROS DALE A & JTWROS LEANNA RESEL	4439	44.44275	-98.82441	224403.07890	2275529.54409
FN-018	Collection Line	JTWROS DALE A & JTWROS LEANNA RESEL	4439	44.44274	-98.82455	224402.05889	2275493.54220
FN-019	Access Road	ESTATES DAVID & ELEANOR LANZ LIFE ESTATES	4478	44.43974	-98.84380	223235.28235	2270480.91574
FN-020	Access Road	NMD PROPERTIES LLC	4483	44.43974	-98.84356	223235.90899	2270542.86050
FN-021	Collection Line	NMD PROPERTIES LLC ESTATES DAVID & ELEANOR LANZ LIFE ESTATES	4483	44.43915	-98.84356	223019.16795	2270545.63214
FN-022 FN-023	Collection Line Collection Line	ESTATES DAVID & ELEANOR LANZ LIFE ESTATES ESTATES DAVID & ELEANOR LANZ LIFE ESTATES	4478 4478	44.43912 44.43805	-98.84380 -98.85126	223009.82644	2270482.90360 2268541.88943
FN-024	Collection Line	ESTATES DAVID & ELEANOR LANZ LIFE ESTATES ESTATES DAVID & ELEANOR LANZ LIFE ESTATES	4478	44.43750	-98.85303	222384.72303	2268082.65610
FN-025	Access Road	ESTATES DAVID & ELEANOR LANZ LIFE ESTATES	4478	44.43750	-98.85258	222386.38805	2268200.15324
FN-026	Collection Line	ESTATES DAVID & ELEANOR LANZ LIFE ESTATES	4479	44.43569	-98.86370	221684.87174	2265303.34374
FN-027	Crane Path	ESTATES DAVID & ELEANOR LANZ LIFE ESTATES	4479	44.43569	-98.86357	221685.29365	2265338.83449
FN-028	Collection Line	LIVING JEFFREY & LIVING SUZANNE HAMILTON TRUST	3213	44.42812	-98.81774	219098.52323	2277348.07753
FN-029	Collection Line	JTWROS JOHN A & KIMBERLY A FANNING JTWROS	4490	44.42492	-98.84662	217821.57533	2269822.40196
FN-030	Access Road	JTWROS JOHN A & KIMBERLY A FANNING JTWROS	4490	44.42480	-98.84638	217779.96649	2269884.69679
FN-031	Collection Line	LIVING JEFFREY & LIVING SUZANNE HAMILTON TRUST	3213	44.42394	-98.82337	217552.23499	2275900.58469
FN-032 FN-033	Collection Line	JTWROS JOHN A & KIMBERLY A FANNING JTWROS LIVING JEFFREY & LIVING SUZANNE HAMILTON TRUST	4490 3213	44.42391	-98.85385 -98.82337	217425.86385 217534.00537	2267938.58290 2275900.90851
FN-033	Collection Line Access Road	JTWROS JOHN A & KIMBERLY A FANNING JTWROS	4490	44.42349	-98.85385	217334.00337	2267940.56616
FN-035	Collection Line	LIVING JEFFREY & LIVING SUZANNE HAMILTON TRUST	3213	44.42282	-98.81250	217183.37943	2278745.39068
FN-036	Collection Line	JTWROS JOHN A & KIMBERLY A FANNING JTWROS	4491	44.42233	-98.86072	216826.08093	2266151.52381
FN-037	Crane Path	JTWROS JOHN A & KIMBERLY A FANNING JTWROS	4491	44.42226	-98.86072	216799.31983	2266150.97591
FN-038	Collection Line	RESEL CHAD & TIC JASON RESEL	3217	44.41837	-98.81250	215562.19894	2278770.54056
FN-039	Collection Line	RESEL CHAD & TIC JASON RESEL	3217	44.41833	-98.81250	215547.31807	2278770.68459
FN-040	Collection Line	RESEL CHAD & TIC JASON RESEL	3217	44.41825	-98.81250	215517.48775	2278770.97363
FN-041	Crane Path	RESEL CHAD & TIC JASON RESEL	3217	44.41818	-98.81250	215493.04258	2278771.30861
FN-042 FN-043	Collection Line Crane Path	BEANER MATTHEW A & BEANER HEATHER N BEANER MATTHEW A & BEANER HEATHER N	4497 4497	44.41783 44.41783	-98.87293 -98.87288	215140.41337 215139.79788	2262983.69943
FN-043	Collection Line	LIVING JEFFREY & LIVING SUZANNE HAMILTON TRUST	3215	44.41761	-98.82337	215139.79788	2275933.60496
FN-045	Collection Line	CHRISTIANSEN DALE G	4489	44.41761	-98.82365	215243.40135	2275861.33083
FN-046	Crane Path	LIVING JEFFREY & LIVING SUZANNE HAMILTON TRUST	3215	44.41754	-98.82337	215220.40402	2275934.15122
FN-047	Crane Path	CHRISTIANSEN DALE G	4489	44.41752	-98.82365	215209.93291	2275861.87282
FN-048	Access Road	JTWROS JEREMY C & MARCI M STEVENS JTWROS	4496	44.41722	-98.88384	214879.17701	2260137.87868
FN-049	Access Road	JTWROS JEREMY C & MARCI M STEVENS JTWROS	4496	44.41720	-98.88155	214880.90339	2260735.82598
FN-050	Access Road	JTWROS JEREMY C & MARCI M STEVENS JTWROS	4496	44.41720	-98.88113	214881.21671	2260844.30542
FN-051	Collection Line	JTWROS JEREMY C & MARCI M STEVENS JTWROS	4496	44.41715	-98.87484	214885.07923	2262489.12595
FN-052 FN-053	Crane Path Crane Path	JTWROS JEREMY C & MARCI M STEVENS JTWROS BEANER MATTHEW A & BEANER HEATHER N	4496 4497	44.41708 44.41407	-98.87484 -98.87123	214861.13768 213775.55586	2262489.20239
FN-053	Temporary Turn	LIVING JEFFREY & LIVING SUZANNE HAMILTON TRUST	3214	44.41397	-98.81250	213773.53580	2278793.00837
FN-055	Access Road	SWEETLAND WIND FARM LLC	9616	44.41393	-98.80289	213981.02002	2281303.78222
FN-056	Access Road	CHRISTIANSEN BENJAMIN J	3216	44.41392	-98.81791	213921.18615	2277380.17687
FN-057	Access Road	SWEETLAND WIND FARM LLC	9616	44.41392	-98.80346	213976.18112	2281155.84452
FN-058	Crane Path	CHRISTIANSEN DALE G	4489	44.41390	-98.82452	213885.55630	2275653.51563
FN-059	Collection Line	CHRISTIANSEN DALE G	4489	44.41389	-98.82462	213884.96247	2275627.66266
FN-060	Temporary Turn	LIVING MATTHEW & LIVING HEATHER BEANER TRUST	4527	44.41372	-98.85614	213704.16952	2267390.90945
FN-061	Collection Line	LIVING ROY MEHLING TRUST	3218	44.41368	-98.80613	213876.51990	2280459.34690
FN-062	Collection Line	LIVING ROY MEHLING TRUST	3218	44.41368	-98.80620 -98.80628	213876.22758	2280439.94470
FN-063 FN-064	Collection Line Crane Path	LIVING ROY MEHLING TRUST LIVING ROY MEHLING TRUST	3218 3218	44.41368 44.41368	-98.80628 -98.81239	213875.93591 213851.66923	2280420.58779
FN-064 FN-065	Access Road	CHRISTIANSEN DALE G	4530	44.41362	-98.83134	213758.30852	2273872.26722
FN-066	Access Road	CHRISTIANSEN DALE G	4530	44.41361	-98.82687	213733.50032	2275040.10183
FN-067	Crane Path	CHRISTIANSEN DALE G	4530	44.41361	-98.82451	213781.21727	2275656.57501
FN-068	Collection Line	CHRISTIANSEN DALE G	4530	44.41361	-98.82461	213780.77665	2275630.63050
FN-069	Crane Path	CHRISTIANSEN DALE G	4530	44.41059	-98.83357	212646.77006	2273304.86285
FN-070	Collection Line	CHRISTIANSEN DALE G	4530	44.41051	-98.83357	212617.45516	2273305.43404
FN-071	Crane Path	BEANER MATTHEW A & BEANER HEATHER N	4526	44.41003	-98.85240	212370.87724	2268387.75391
FN-072	Collection Line	BEANER MATTHEW A & BEANER HEATHER N	4526	44.40988	-98.85240	212318.52597	2268388.52589
	Collection Line	THOMAS JERRIT & STEPHANIE LYNN MEHLING JTWROS	3223	44.40932	-98.80220	212302.86852	2281509.36547
FN-073			2212	44.40022	00.00270	212200 26022	2281378.62951
FN-073 FN-074	Collection Line	LIVING ROY MEHLING TRUST	3218	44.40932	-98.80270	212300.36032	22013/0.02931
	Collection Line Access Road	THOMAS JERRIT & STEPHANIE LYNN MEHLING	3218	44.40932	-98.80270	212300.36032	2281578.62951
FN-074							

CROSSING ID	SITE IMPROVEMENT	OWNER	PARCEL_ID	LATITUDE	LONGITUDE	NORTHING	EASTING
FN-078	Crane Path	LIVING MATTHEW & LIVING HEATHER BEANER TRUST	4527	44.40740	-98.86390	211369.33594	2265397.51580
FN-079	Collection Line	LIVING MATTHEW & LIVING HEATHER BEANER TRUST	4527	44.40735	-98.86390	211352.04168	2265397.81304
FN-080	Temporary Turn	LIVING ROY MEHLING TRUST	3218	44.40679	-98.80259	211378.19714	2281421.61203
FN-081	Crane Path	THOMAS JERRIT & STEPHANIE LYNN MEHLING JTWROS	3223	44.40660	-98.80220	211313.05390	2281523.76570
FN-082	Collection Line	LIVING ROY MEHLING TRUST	3225	44.40658	-98.80198	211306.63462	2281581.61893
FN-083	Crane Path	LIVING ROY MEHLING TRUST	3225	44.40658	-98.80200	211306.54997	2281576.72458
FN-084	Collection Line	LIVING ROY MEHLING TRUST	3221	44.40655	-98.80926	211264.65045	2279678.30909
FN-085	Access Road	LIVING ROY MEHLING TRUST	3221	44.40655	-98.80933	211264.23182	2279660.19495
FN-086	Crane Path	LIVING ROY MEHLING TRUST	3221	44.40654	-98.80935	211264.10550	2279654.72974
FN-087	Collection Line	LIVING ROY MEHLING TRUST	3221	44.40654	-98.80973	211261.81811	2279555.77817
FN-088	Crane Path	NMD PROPERTIES LLC	4529	44.40654	-98.84593	211122.97127	2270097.38501
FN-089 FN-090	Crane Path Collection Line	LIVING ROY MEHLING TRUST LIVING ROY MEHLING TRUST	3221 3221	44.40447 44.40440	-98.80748 -98.80748	210516.18443 210490.65265	2280156.77270 2280157.21856
FN-090 FN-091	Collection Line	LIVING ROY MEHLING TRUST	3221	44.40436	-98.80748 -98.80748	210490.65265	2280157.21836
FN-092	Crane Path	LIVING ROY MEHLING TRUST	3221	44.40338	-98.80679	210119.83581	2280340.71754
FN-093	Collection Line	LIVING ROY MEHLING TRUST	3221	44.40338	-98.80690	210119.41783	2280314.45841
FN-094	Collection Line	LIVING ROY MEHLING TRUST	3221	44.40338	-98.80695	210119.17899	2280299.46041
FN-095	Collection Line	LIVING ROY MEHLING TRUST	3225	44.39938	-98.80014	208689.06275	2282100.64906
FN-096	Crane Path	LIVING ROY MEHLING TRUST	3225	44.39938	-98.80025	208688.53224	2282073.30856
FN-097	Crane Path	LIVING ROY MEHLING TRUST	3221	44.39934	-98.80698	208645.93489	2280313.26878
FN-098	Collection Line	LIVING ROY MEHLING TRUST	3221	44.39934	-98.80708	208644.96179	2280287.37710
FN-099	Collection Line	LIVING ROY MEHLING TRUST	3221	44.39932	-98.80777	208638.21312	2280107.80889
FN-100	Crane Path	HAIGH KAREN J & HAIGH CLINTON	3271	44.39921	-98.80698	208599.45073	2280315.03911
FN-101	Collection Line	HAIGH KAREN J & HAIGH CLINTON	3271	44.39921	-98.80708 -98.80782	208598.70171	2280289.13661 2280096.13076
FN-102 FN-103	Collection Line Access Road	HAIGH KAREN J & HAIGH CLINTON HENRY CRAIG & CHERYL D VAN ASPEREN JTWROS	3271 3268	44.39920 44.39485	-98.80782 -98.80220	208594.26832 207030.27375	2281588.67699
FN-104	Collection Line	HENRY CRAIG & CHERYL D VAN ASPEREN JTWROS	3268	44.39483	-98.80220	207021.92928	2281588.81216
FN-105	Crane Path	HAIGH KAREN J & HAIGH CLINTON	3271	44.39391	-98.80681	206667.50938	2280388.61541
FN-106	Collection Line	HAIGH KAREN J & HAIGH CLINTON	3271	44.39391	-98.80691	206667.11831	2280362.60595
FN-107	Collection Line	HAIGH KAREN J & HAIGH CLINTON	3271	44.39391	-98.81033	206652.80403	2279467.93845
FN-108	Crane Path	HAIGH KAREN J & HAIGH CLINTON	3271	44.39390	-98.80311	206679.08908	2281353.96617
FN-109	Collection Line	HAIGH KAREN J & HAIGH CLINTON	3271	44.39390	-98.80303	206678.98180	2281375.10819
FN-110	Access Road	HAIGH KAREN J & HAIGH CLINTON	3271	44.39303	-98.80257	206363.23965	2281501.61450
FN-111	Collection Line	HENRY CRAIG & CHERYL D VAN ASPEREN JTWROS	3268	44.39220	-98.79594	206086.15228	2283236.80066
FN-112	Collection Line	HENRY CRAIG & CHERYL D VAN ASPEREN JTWROS	3268	44.39220	-98.79602	206085.70477	2283216.80332
FN-113	Crane Path	HENRY CRAIG & CHERYL D VAN ASPEREN JTWROS	3268	44.39220	-98.79611	206085.16803	2283192.81715
FN-114 FN-115	Collection Line Collection Line	DEBRA G ALEXANDER REV LIV TRUST DEBRA G ALEXANDER REV LIV TRUST	3269 3269	44.39200 44.39200	-98.79594 -98.79601	206014.04678 206013.45000	2283239.52080 2283219.52937
FN-115 FN-116	Crane Path	DEBRA G ALEXANDER REV LIV TRUST	3269	44.39200	-98.79611	206013.43000	2283219.52957
FN-117	Collection Line	DEBRA G ALEXANDER REV LIV TRUST	3269	44.39154	-98.79552	205846.20033	2283350.30339
FN-118	Collection Line	DEBRA G ALEXANDER REV LIV TRUST	3269	44.39148	-98.79552	205824.42511	2283351.35784
FN-119	Crane Path	DEBRA G ALEXANDER REV LIV TRUST	3269	44.39138	-98.79552	205789.70274	2283353.27877
FN-120	Collection Line	HAIGH KAREN J & HAIGH CLINTON	3273	44.38982	-98.82344	205115.11387	2276061.54959
FN-121	Collection Line	HAIGH KAREN J & HAIGH CLINTON	3273	44.38967	-98.81255	205100.18706	2278908.77749
FN-122	Temporary Turn	DEBRA G ALEXANDER REV LIV TRUST	9675	44.38494	-98.80209	203416.28426	2281670.10235
FN-123	Crane Path	MYRTLE A VANASPEREN LIFE ESTATE	3282	44.38140	-98.79294	202160.50888	2284080.10475
FN-124	Collection Line	MYRTLE A VANASPEREN LIFE ESTATE	3282	44.38140	-98.79299	202159.76610	2284067.73568
FN-125	Access Road	GERALD T MEHLING REVOCABLE TRUST	3286	44.37995	-98.78209	201674.37042	2286926.41697
FN-126 FN-127	Collection Line Collection Line	GERALD T MEHLING REVOCABLE TRUST GERALD T MEHLING REVOCABLE TRUST	3286 3286	44.37981 44.37807	-98.78209 -98.78208	201623.16022 200991.10440	2286927.13941 2286937.81983
FN-127 FN-128	Temporary Turn	MYRTLE A VANASPEREN LIFE ESTATE	3282	44.37769	-98.80213	200991.10440	2281699.09999
FN-129	Crane Path	JTWROS GILBERT G & JTWROS STEPHANIE RODGERS	3283	44.37762	-98.79347	200779.86663	2283963.54560
FN-130	Collection Line	JTWROS GILBERT G & JTWROS STEPHANIE RODGERS	3283	44.37761	-98.79357	200779.41650	2283937.42459
FN-131	Temporary Turn	JTWROS GILBERT G & JTWROS STEPHANIE RODGERS	3283	44.37759	-98.80175	200740.12721	2281798.40196
FN-132	Collection Line	JTWROS GILBERT G & JTWROS STEPHANIE RODGERS	3288	44.37402	-98.78091	199519.06272	2287264.95140
FN-133	Collection Line	JTWROS GILBERT G & JTWROS STEPHANIE RODGERS	3288	44.37055	-98.78096	198255.11413	2287271.05440
FN-134	Collection Line	JTWROS GILBERT G & JTWROS STEPHANIE RODGERS	3283	44.37052	-98.80210	198159.09628	2281744.40601
FN-135	Temporary Turn	JTWROS GILBERT G & JTWROS STEPHANIE RODGERS	3283	44.37044	-98.80210	198131.76333	2281744.87484
FN-136	Collection Line	JAY C & JUNE M ANDERBERG JTWROS	5395	44.37027	-98.78097	198152.92142	2287271.54784
FN-137	Collection Line	JTWROS GILBERT G & JTWROS STEPHANIE RODGERS	5406	44.37002	-98.80260	197977.16390	2281617.43448
FN-138	Collection Line	JAY C & JUNE M ANDERBERG JTWROS	5395 5406	44.36821	-98.78103	197400.43671	2287266.35953
FN-139 FN-140	Access Road Collection Line	JTWROS GILBERT G & JTWROS STEPHANIE RODGERS HORSLEY WAYNE B & HORSLEY JOAN J	5406 5396	44.36621 44.36306	-98.80260 -98.78110	196586.24641 195521.39257	2281637.5676 ² 2287276.14658
FN-140 FN-141	Collection Line	HORSLEY WAYNE B & HORSLEY JOAN J	5396	44.36109	-98.78110 -98.78191	194802.54525	2287276.14638
FN-142	Collection Line	JAY C & JUNE M ANDERBERG JTWROS	5400	44.35989	-98.78203	194362.81647	2287070.81203
FN-143	Collection Line	HORSLEY WAYNE B & HORSLEY JOAN J	5396	44.35982	-98.78191	194338.87295	2287083.85268
FN-144	Collection Line	HORSLEY WAYNE B & HORSLEY JOAN J	5396	44.35596	-98.77639	192951.46464	2288548.78183
	Collection Line	HORSLEY WAYNE B & HORSLEY JOAN J	5419	44.35578	-98.77632	192888.64619	2288566.59184
FN-145	Access Road	HORSLEY WAYNE B & HORSLEY JOAN J	5424	44.35086	-98.75680	191171.96295	2293699.91392
FN-145 FN-146		HORSLEY WAYNE B & HORSLEY JOAN J	5424	44.35040	-98.75680	191004.44064	2293701.34666
	Collection Line	HORSELT WATNE D & HORSELT JOAN J			i —		
FN-146 FN-147 FN-148	Collection Line Collection Line	HORSLEY WAYNE B & HORSLEY JOAN J	5418	44.35024	-98.77059	190891.84999	
FN-146 FN-147 FN-148 FN-149	Collection Line Collection Line	HORSLEY WAYNE B & HORSLEY JOAN J HORSLEY WAYNE B & HORSLEY JOAN J	5418	44.34928	-98.76193	190574.33127	2290096.81056 2292366.41068
FN-146 FN-147 FN-148 FN-149 FN-150	Collection Line Collection Line Collection Line	HORSLEY WAYNE B & HORSLEY JOAN J HORSLEY WAYNE B & HORSLEY JOAN J HORSLEY WAYNE B & HORSLEY JOAN J	5418 5424	44.34928 44.34923	-98.76193 -98.76172	190574.33127 190557.03767	2292366.41068 2292422.70158
FN-146 FN-147 FN-148 FN-149	Collection Line Collection Line	HORSLEY WAYNE B & HORSLEY JOAN J HORSLEY WAYNE B & HORSLEY JOAN J	5418	44.34928	-98.76193	190574.33127	



Phone (952) 937-5150 12701 Whitewater Drive, Suite #300 Fax (952) 937-5822 Minnetonka, MN 55343 Toll Free (888) 937-5150 westwoodps.com Westwood Professional Services, Inc.







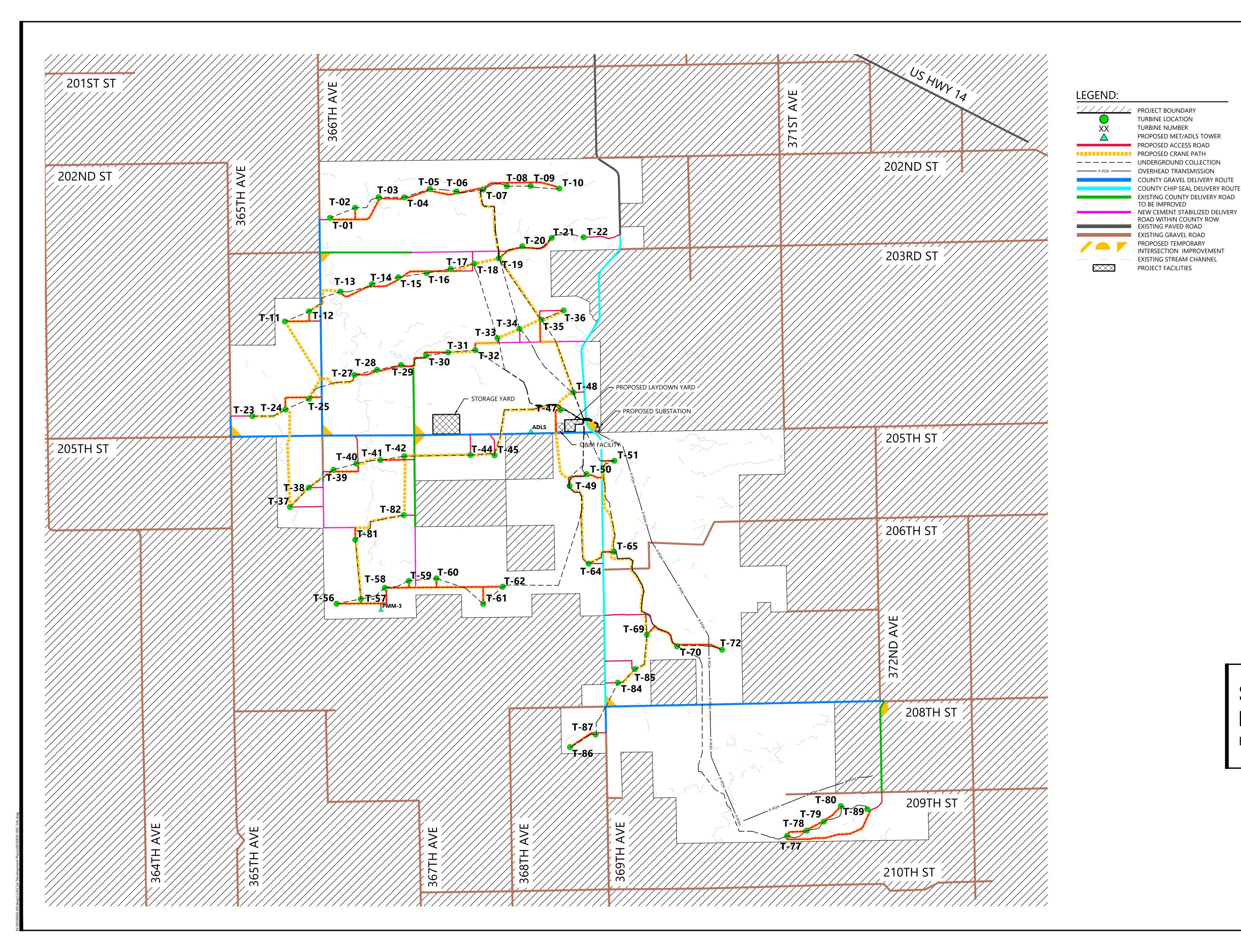
DATE COMMENT BY CHK APR 0 03/08/2023 IFC Civil Development Plans

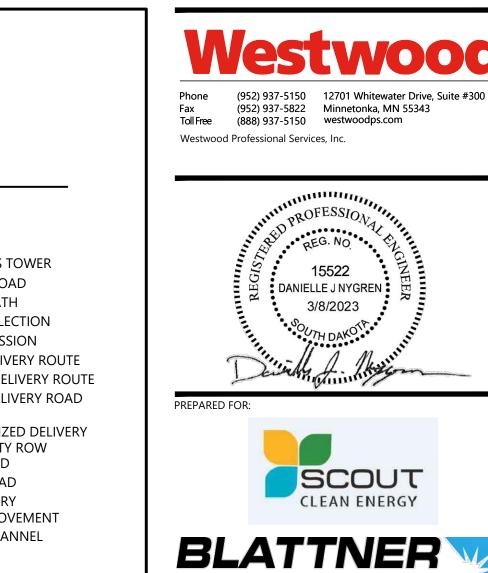
Sweetland Wind ProjectHand County, South Dakota

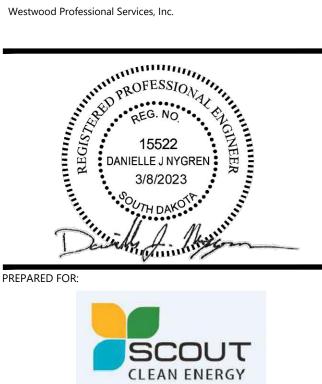
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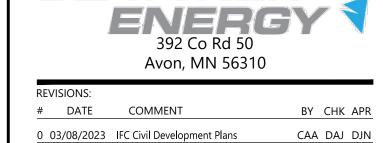
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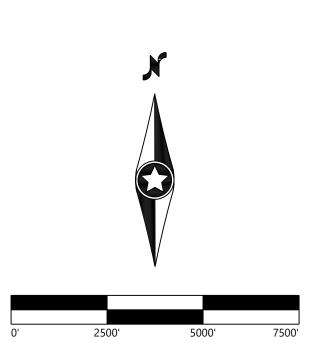
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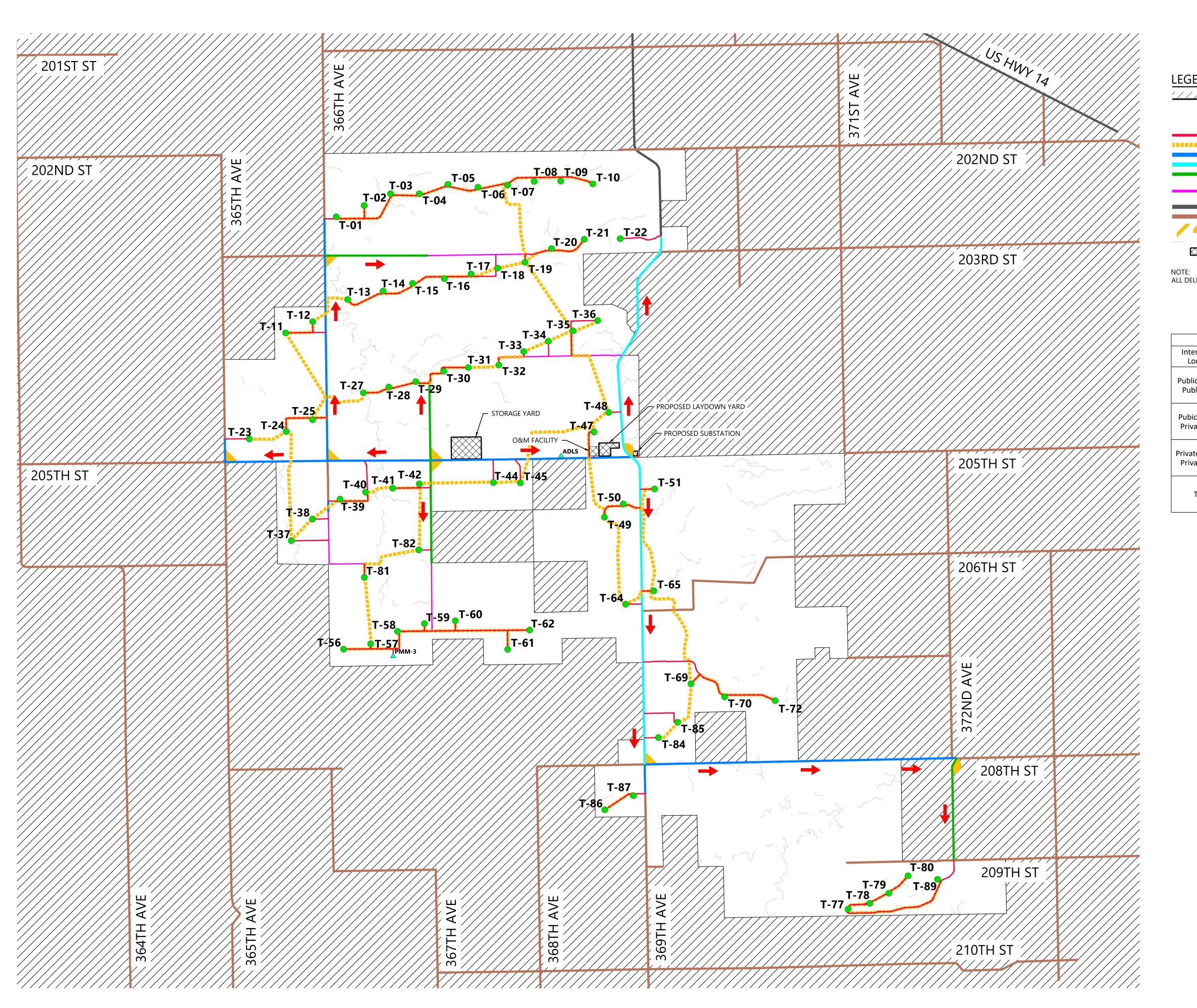
Sweetland Wind Project

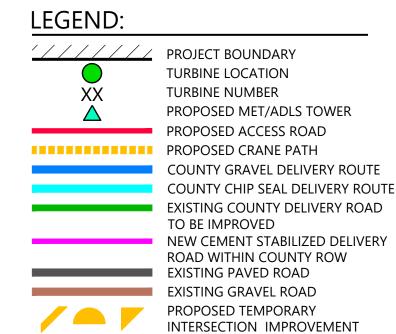
Hand County, South Dakota

Overall Site Plan

ISSUED FOR CONSTRUCTION

03/08/2023





NOTE: ALL DELIVERIES ORIGINATE FROM STORAGE YARD.

EXISTING STREAM CHANNEL

PROJECT FACILITIES

Intersection	on Improvement Sumn	nary
Intersection Location	Intersection Type	Quantity
	Wedge	7
Public Road to Public Road	Cut-Through	1
r ablic Road	Jug-Handle	2
	Wedge	30
Pubic Road to Private Road	Cut-Through	4
Filvate Noau	Jug-Handle	0
	Wedge	18
Private Road to Private Road	Cut-Through	0
FIIVALE NOAU	Jug-Handle	0
	Wedge	55
Total	Cut-Through	5
	Jug-Handle	2



PROFESSION REG. NO.

15522

DANIELLE J NYGREN

3/8/2023

SOUTH DAKOTE

TO FOR

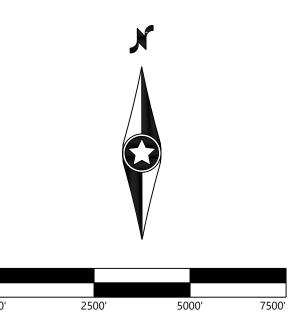
REPARED FOR:





AVOII, IVIIN

DATE COMMENT BY CHK APR
0 03/08/2023 IFC Civil Development Plans CAA DAJ DJN



Sweetland Wind Project

Hand County, South Dakota

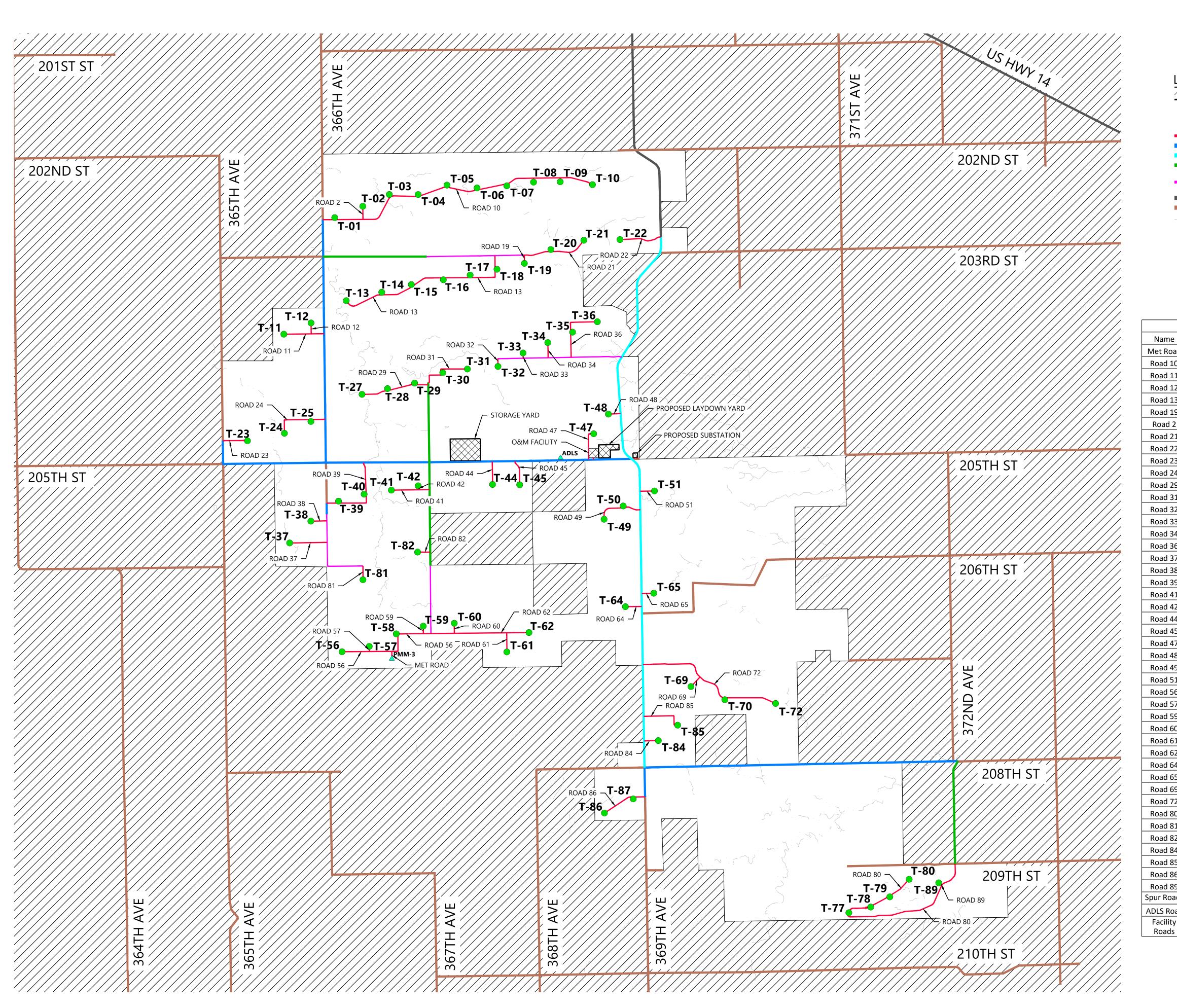
Delivery Flow Plan

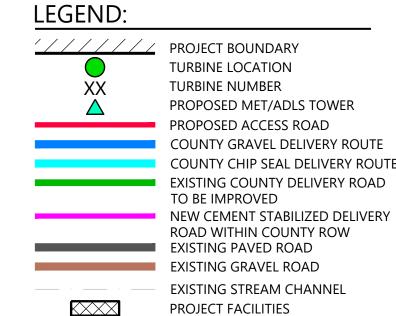
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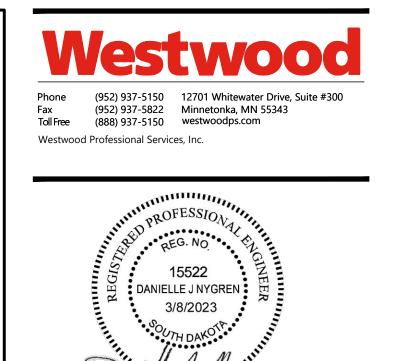
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Met Road 0+00.00 3+85.96 385.95.7 Road 10 0+00.00 147+84.00 14783.99 Road 11 0+00.00 20+61.16 2061.15 Road 12 0+00.00 5+61.50 561.504 Road 13 0+00.00 92+19.28 9219.28 Road 19 0+00.00 4+17.21 417.212 Road 2 0+00.00 33+49.16 3349.16 Road 21 0+00.00 21+52.67 2152.66 Road 23 0+00.00 12+60.80 1260.80 Road 24 0+00.00 27+76.78 2776.78 Road 31 0+00.00 34+58.08 3458.08 Road 31 0+00.00 34+58.08 3458.08 Road 32 0+00.00 3+99.28 399.276 Road 34 0+00.00 7+79.19 779.186 Road 35 0+00.00 7+79.19 779.186 Road 36 0+00.00 31+68.89 3168.89 Road 37 0+00.00 31+68.89 3168.89 <tr< th=""><th></th><th>71000331101</th><th>ad Summary</th><th></th></tr<>		71000331101	ad Summary	
Road 10 0+00.00 147+84.00 14783.99 Road 11 0+00.00 20+61.16 2061.15 Road 12 0+00.00 5+61.50 561.504 Road 13 0+00.00 92+19.28 9219.28 Road 19 0+00.00 4+17.21 417.212 Road 21 0+00.00 6+74.67 674.666 Road 21 0+00.00 33+49.16 3349.16 Road 22 0+00.00 12+60.80 1260.80 Road 23 0+00.00 27+76.78 2776.78 Road 24 0+00.00 34+58.08 3458.08 Road 31 0+00.00 26+57.95 2657.95 Road 31 0+00.00 3+99.28 399.276 Road 33 0+00.00 31+68.89 3168.89 Road 34 0+00.00 7+79.19 779.186 Road 37 0+00.00 31+68.89 3168.89 Road 38 0+00.00 41+10.65 4110.65 Road 41 0+00.00 41+10.65 4110.65 <tr< th=""><th>Name</th><th>Begin Sta.</th><th>End Sta.</th><th>Length (FT)</th></tr<>	Name	Begin Sta.	End Sta.	Length (FT)
Road 11 0+00.00 20+61.16 2061.15 Road 12 0+00.00 5+61.50 561.504 Road 13 0+00.00 92+19.28 9219.28 Road 19 0+00.00 4+17.21 417.212 Road 20 0+00.00 6+74.67 674.666 Road 21 0+00.00 33+49.16 3349.16 Road 22 0+00.00 21+52.67 2152.66 Road 23 0+00.00 27+76.78 2776.78 Road 24 0+00.00 34+58.08 3458.08 Road 31 0+00.00 26+57.95 2657.95 Road 32 0+00.00 3+99.28 399.276 Road 33 0+00.00 3+99.28 399.276 Road 34 0+00.00 31+68.89 3168.89 Road 37 0+00.00 31+68.89 3168.89 Road 37 0+00.00 3+168.89 3168.89 Road 41 0+00.00 41+10.65 4110.65 Road 41 0+00.00 19+55.53 1955.526	Met Road	0+00.00	3+85.96	385.957
Road 12 0+00.00 5+61.50 561.504 Road 13 0+00.00 92+19.28 9219.28 Road 19 0+00.00 4+17.21 417.212 Road 2 0+00.00 6+74.67 674.666 Road 21 0+00.00 33+49.16 3349.16 Road 22 0+00.00 21+52.67 2152.661 Road 23 0+00.00 12+60.80 1260.803 Road 24 0+00.00 27+76.78 2776.78 Road 29 0+00.00 34+58.08 3458.08 Road 31 0+00.00 3+99.28 399.276 Road 32 0+00.00 3+99.28 399.276 Road 33 0+00.00 7+79.19 779.186 Road 34 0+00.00 7+79.19 779.186 Road 37 0+00.00 31+68.89 3168.89 Road 37 0+00.00 34+10.65 4110.65 Road 41 0+00.00 41+10.65 4110.65 Road 40 0+00.00 12+77.33 1277.33	Road 10	0+00.00	147+84.00	14783.998
Road 13 0+00.00 92+19.28 9219.28 Road 19 0+00.00 4+17.21 417.212 Road 2 0+00.00 6+74.67 674.666 Road 21 0+00.00 33+49.16 3349.16 Road 22 0+00.00 21+52.67 2152.66 Road 23 0+00.00 12+60.80 1260.80 Road 24 0+00.00 27+76.78 2776.78 Road 29 0+00.00 34+58.08 3458.08 Road 31 0+00.00 3+99.28 399.276 Road 32 0+00.00 3+99.28 399.276 Road 33 0+00.00 7+79.19 779.186 Road 34 0+00.00 7+79.19 779.186 Road 36 0+00.00 31+68.89 3168.89 Road 37 0+00.00 31+68.89 3168.89 Road 38 0+00.00 41+10.65 4110.65 Road 40 0+00.00 41+10.65 4110.65 Road 41 0+00.00 12+67.33 1277.33	Road 11	0+00.00	20+61.16	2061.156
Road 19 0+00.00 4+17.21 417.212 Road 2 0+00.00 6+74.67 674.666 Road 21 0+00.00 33+49.16 3349.16 Road 22 0+00.00 21+52.67 2152.661 Road 23 0+00.00 12+60.80 1260.803 Road 24 0+00.00 27+76.78 2776.78 Road 29 0+00.00 34+58.08 3458.084 Road 31 0+00.00 26+57.95 2657.95 Road 32 0+00.00 3+99.28 399.276 Road 33 0+00.00 2+69.17 269.173 Road 34 0+00.00 7+79.19 779.186 Road 36 0+00.00 31+68.89 3168.89 Road 37 0+00.00 31+68.89 3168.89 Road 38 0+00.00 41+10.65 4110.65 Road 41 0+00.00 41+10.65 4110.65 Road 42 0+00.00 19+55.53 1955.52 Road 45 0+00.00 12+77.33 1277.33 <tr< td=""><td>Road 12</td><td>0+00.00</td><td>5+61.50</td><td>561.504</td></tr<>	Road 12	0+00.00	5+61.50	561.504
Road 2 0+00.00 6+74.67 674.666 Road 21 0+00.00 33+49.16 3349.16 Road 22 0+00.00 21+52.67 2152.66 Road 23 0+00.00 12+60.80 1260.80 Road 24 0+00.00 27+76.78 2776.78 Road 29 0+00.00 34+58.08 3458.08 Road 31 0+00.00 26+57.95 2657.95 Road 32 0+00.00 3+99.28 399.276 Road 33 0+00.00 2+69.17 269.173 Road 34 0+00.00 7+79.19 779.186 Road 36 0+00.00 31+68.89 3168.89 Road 37 0+00.00 19+27.31 1927.31 Road 38 0+00.00 41+10.65 4110.65 Road 41 0+00.00 19+55.53 1955.526 Road 42 0+00.00 12+69.37 1169.36 Road 44 0+00.00 12+77.33 1277.33 Road 45 0+00.00 15+69.92 1569.92	Road 13	0+00.00	92+19.28	9219.28
Road 21 0+00.00 33+49.16 3349.16 Road 22 0+00.00 21+52.67 2152.66 Road 23 0+00.00 12+60.80 1260.80 Road 24 0+00.00 27+76.78 2776.78 Road 29 0+00.00 34+58.08 3458.08 Road 31 0+00.00 26+57.95 2657.95 Road 32 0+00.00 3+99.28 399.276 Road 33 0+00.00 2+69.17 269.173 Road 34 0+00.00 7+79.19 779.186 Road 36 0+00.00 31+68.89 3168.89 Road 37 0+00.00 19+27.31 1927.31 Road 38 0+00.00 41+10.65 4110.65 Road 41 0+00.00 19+55.53 1955.526 Road 42 0+00.00 12+77.33 1277.33 Road 44 0+00.00 12+77.33 1277.33 Road 45 0+00.00 15+69.92 1569.92 Road 49 0+00.00 2+31.054 2310.53 <t< td=""><td>Road 19</td><td>0+00.00</td><td>4+17.21</td><td>417.212</td></t<>	Road 19	0+00.00	4+17.21	417.212
Road 22 0+00.00 21+52.67 2152.66 Road 23 0+00.00 12+60.80 1260.80 Road 24 0+00.00 27+76.78 2776.78 Road 29 0+00.00 34+58.08 3458.08 Road 31 0+00.00 26+57.95 2657.95 Road 32 0+00.00 3+99.28 399.276 Road 33 0+00.00 2+69.17 269.173 Road 34 0+00.00 7+79.19 779.186 Road 36 0+00.00 31+68.89 3168.89 Road 37 0+00.00 19+27.31 1927.31 Road 38 0+00.00 41+10.65 4110.65 Road 41 0+00.00 19+55.53 1955.52 Road 42 0+00.00 12+77.33 1277.33 Road 45 0+00.00 12+77.33 1277.33 Road 47 0+00.00 15+69.92 1569.92 Road 48 0+00.00 54+42.82 5442.82 Road 51 0+00.00 7+32.42 732.41	Road 2	0+00.00	6+74.67	674.666
Road 23 0+00.00 12+60.80 1260.80 Road 24 0+00.00 27+76.78 2776.78 Road 29 0+00.00 34+58.08 3458.084 Road 31 0+00.00 26+57.95 2657.95 Road 32 0+00.00 3+99.28 399.276 Road 33 0+00.00 2+69.17 269.173 Road 34 0+00.00 7+79.19 779.186 Road 36 0+00.00 31+68.89 3168.89 Road 37 0+00.00 19+27.31 1927.313 Road 38 0+00.00 41+10.65 4110.65 Road 41 0+00.00 19+55.53 1955.52 Road 42 0+00.00 12+69.37 1169.36 Road 44 0+00.00 12+77.33 1277.33 Road 45 0+00.00 15+69.92 1569.92 Road 47 0+00.00 23+10.54 2310.53 Road 51 0+00.00 7+32.42 732.417 Road 57 0+00.00 54+42.82 5442.82 <t< td=""><td>Road 21</td><td>0+00.00</td><td>33+49.16</td><td>3349.161</td></t<>	Road 21	0+00.00	33+49.16	3349.161
Road 24 0+00.00 27+76.78 2776.78 Road 29 0+00.00 34+58.08 3458.08 Road 31 0+00.00 26+57.95 2657.95 Road 32 0+00.00 3+99.28 399.276 Road 33 0+00.00 2+69.17 269.173 Road 34 0+00.00 7+79.19 779.186 Road 36 0+00.00 31+68.89 3168.89 Road 37 0+00.00 19+27.31 1927.31 Road 38 0+00.00 41+10.65 4110.65 Road 41 0+00.00 19+55.53 1955.526 Road 42 0+00.00 2+04.38 204.385 Road 42 0+00.00 12+77.33 1277.33 Road 45 0+00.00 12+77.33 1277.33 Road 47 0+00.00 15+69.92 1569.92 Road 48 0+00.00 23+10.54 2310.53 Road 51 0+00.00 7+32.42 732.417 Road 57 0+00.00 7+32.42 732.417	Road 22	0+00.00	21+52.67	2152.665
Road 29 0+00.00 34+58.08 3458.08 Road 31 0+00.00 26+57.95 2657.95 Road 32 0+00.00 3+99.28 399.276 Road 33 0+00.00 2+69.17 269.173 Road 34 0+00.00 7+79.19 779.186 Road 36 0+00.00 31+68.89 3168.893 Road 37 0+00.00 19+27.31 1927.313 Road 38 0+00.00 8+16.21 816.211 Road 39 0+00.00 41+10.65 4110.65 Road 41 0+00.00 19+55.53 1955.526 Road 42 0+00.00 2+04.38 204.385 Road 44 0+00.00 12+77.33 1277.33 Road 45 0+00.00 15+69.92 1569.92 Road 47 0+00.00 6+17.12 617.123 Road 49 0+00.00 7+32.42 732.417 Road 56 0+00.00 7+32.42 732.417 Road 57 0+00.00 7+42.82 5442.82	Road 23	0+00.00	12+60.80	1260.803
Road 31 0+00.00 26+57.95 2657.95 Road 32 0+00.00 3+99.28 399.276 Road 33 0+00.00 2+69.17 269.173 Road 34 0+00.00 7+79.19 779.186 Road 36 0+00.00 31+68.89 3168.89 Road 37 0+00.00 19+27.31 1927.312 Road 38 0+00.00 8+16.21 816.211 Road 39 0+00.00 41+10.65 4110.65 Road 41 0+00.00 19+55.53 1955.526 Road 42 0+00.00 2+04.38 204.385 Road 42 0+00.00 12+77.33 1277.33 Road 45 0+00.00 12+77.33 1277.33 Road 47 0+00.00 15+69.92 1569.92 Road 49 0+00.00 23+10.54 2310.53 Road 51 0+00.00 7+32.42 732.417 Road 56 0+00.00 54+42.82 5442.82 Road 57 0+00.00 5+14.01 514.014	Road 24	0+00.00	27+76.78	2776.78
Road 32 0+00.00 3+99.28 399.276 Road 33 0+00.00 2+69.17 269.173 Road 34 0+00.00 7+79.19 779.186 Road 36 0+00.00 31+68.89 3168.89 Road 37 0+00.00 19+27.31 1927.31 Road 38 0+00.00 8+16.21 816.211 Road 39 0+00.00 41+10.65 4110.65 Road 41 0+00.00 19+55.53 1955.526 Road 42 0+00.00 2+04.38 204.385 Road 44 0+00.00 12+77.33 1277.33 Road 45 0+00.00 15+69.92 1569.925 Road 47 0+00.00 15+69.92 1569.925 Road 49 0+00.00 2+110.54 2310.53 Road 51 0+00.00 7+32.42 732.417 Road 56 0+00.00 54+42.82 5442.82 Road 57 0+00.00 3+82.07 382.071 Road 60 0+00.00 5+14.01 514.014	Road 29	0+00.00	34+58.08	3458.084
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Road 65 0+00.00 6+13.63 613.632 Road 69 0+00.00 6+78.26 678.256 Road 72 0+00.00 77+81.17 7781.165 Road 80 0+00.00 108+92.83 10892.83 Road 81 0+00.00 7+05.43 705.435 Road 82 0+00.00 6+38.48 638.482 Road 84 0+00.00 7+21.02 721.022 Road 85 0+00.00 21+80.90 2180.9 Road 89 0+00.00 1+99.07 199.066 Spur Roads - 2927.53 ADLS Road - 116.20				
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Road 72 0+00.00 77+81.17 7781.165 Road 80 0+00.00 108+92.83 10892.83 Road 81 0+00.00 7+05.43 705.435 Road 82 0+00.00 6+38.48 638.482 Road 84 0+00.00 7+21.02 721.022 Road 85 0+00.00 21+80.90 2180.9 Road 86 0+00.00 23+15.74 2315.73 Road 89 0+00.00 1+99.07 199.066 Spur Roads - 2927.53 ADLS Road - 116.20				
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Road 84 0+00.00 7+21.02 721.022 Road 85 0+00.00 21+80.90 2180.9 Road 86 0+00.00 23+15.74 2315.73 Road 89 0+00.00 1+99.07 199.066 Spur Roads - 2927.53 ADLS Road - 116.20				
Road 85 0+00.00 21+80.90 2180.9 Road 86 0+00.00 23+15.74 2315.73 Road 89 0+00.00 1+99.07 199.066 Spur Roads - - 2927.53 ADLS Road - - 116.20		0+00.00	6+38.48	638.482
Road 86 0+00.00 23+15.74 2315.73 Road 89 0+00.00 1+99.07 199.066 Spur Roads - - 2927.53 ADLS Road - - 116.20 Facility - - -	Road 84	0+00.00		721.022
Road 89 0+00.00 1+99.07 199.066 Spur Roads - - 2927.53 ADLS Road - - 116.20	Road 85	0+00.00	21+80.90	2180.9
Spur Roads - 2927.53 ADLS Road - - 116.20	Road 86	0+00.00	23+15.74	2315.737
ADLS Road 116.20	Road 89	0+00.00	1+99.07	199.066
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Roads 191.64	Facility	-	-	191.64



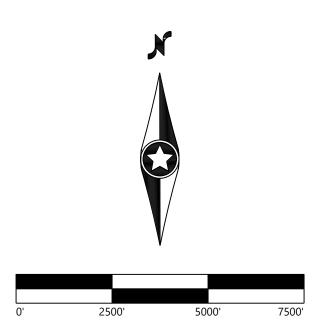
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REVISIONS:
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Sweetland Wind Project

Hand County, South Dakota

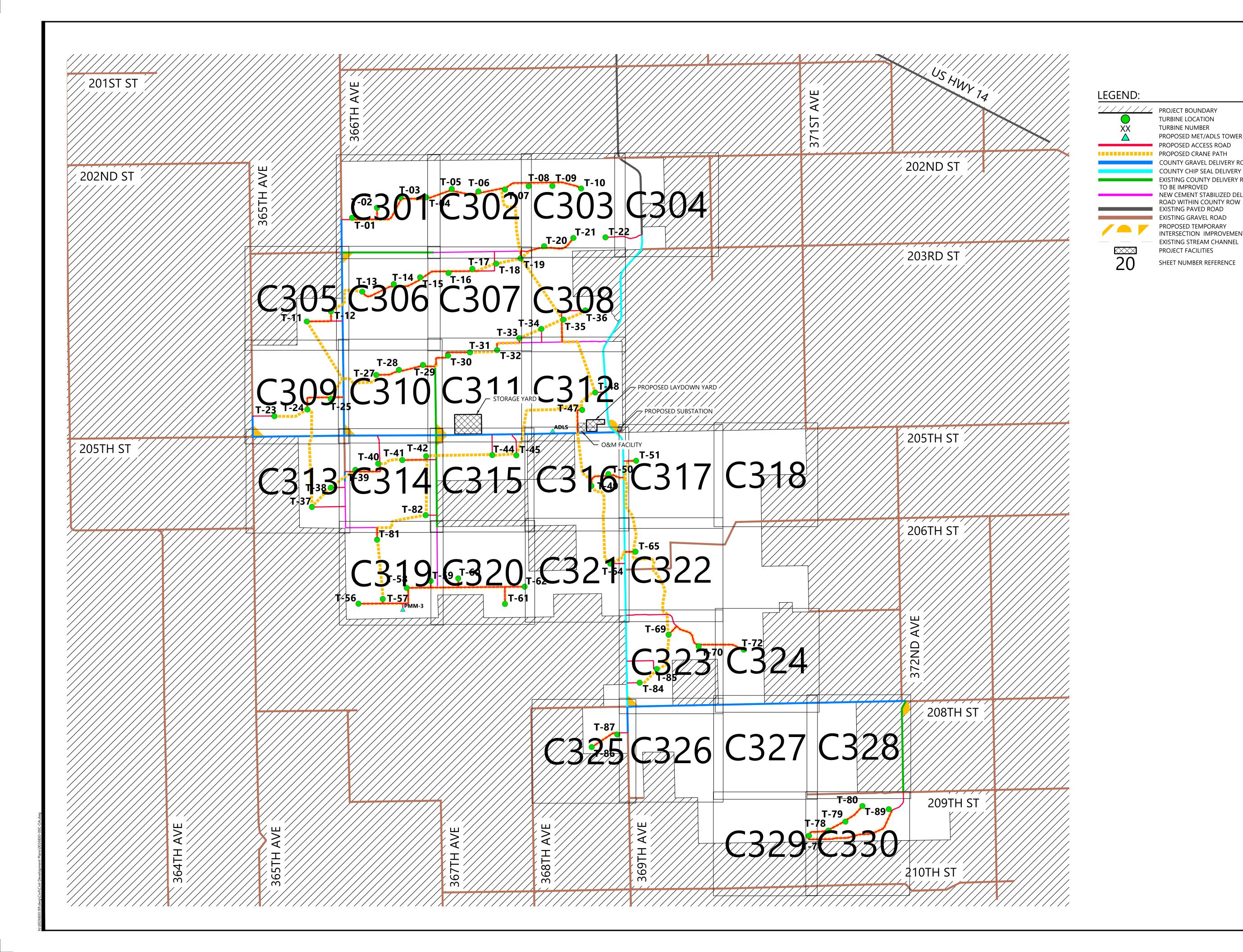
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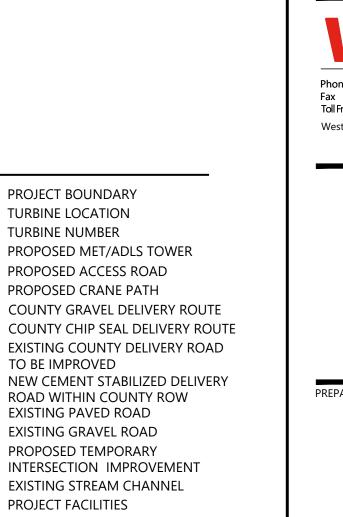
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DATE: 03/08/2023

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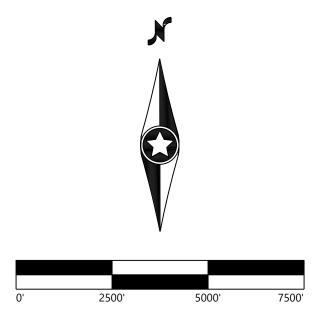








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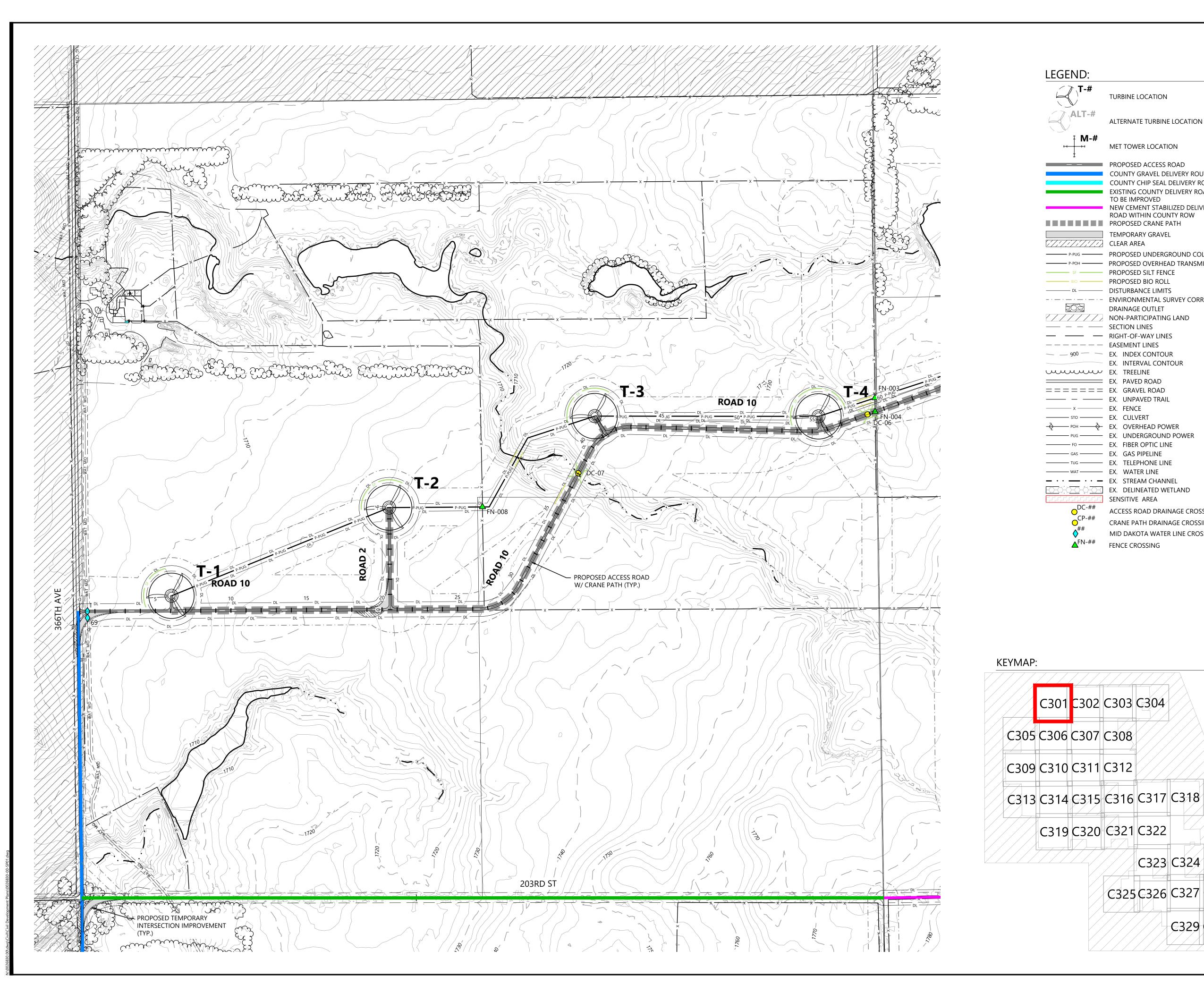
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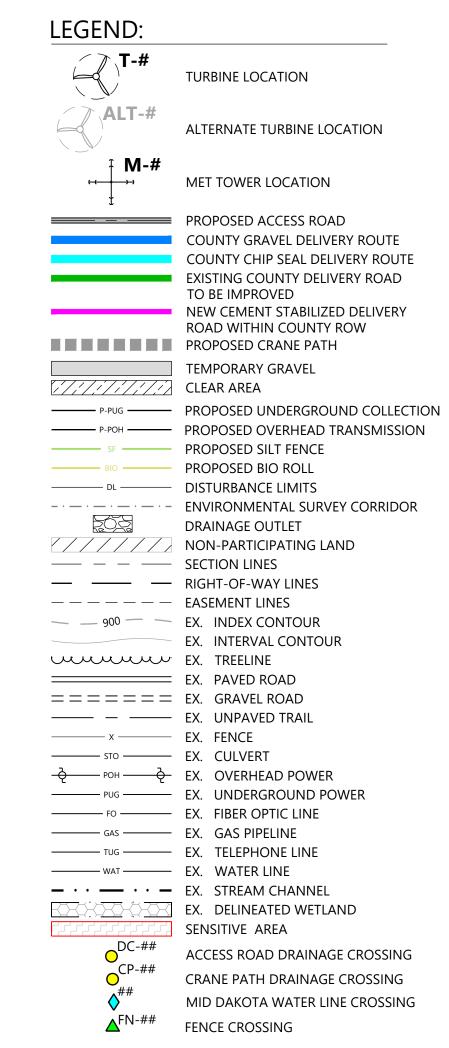
Hand County, South Dakota

Site Plan Sheet Layout Guide

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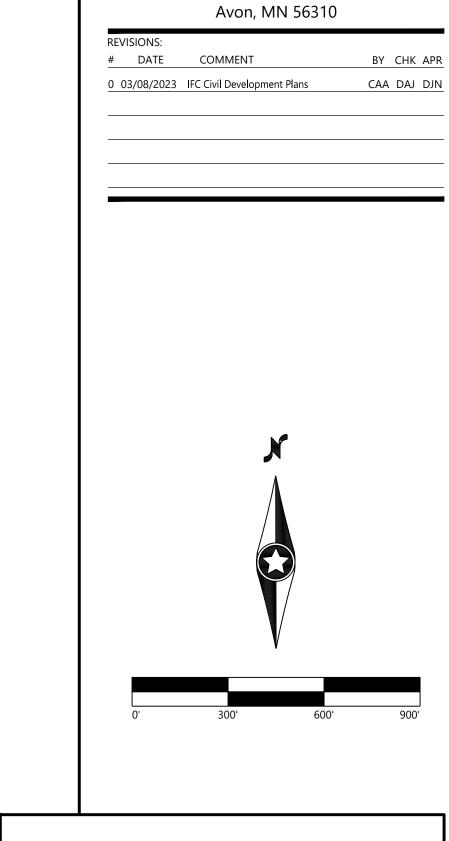
C301 C302 C303 C304

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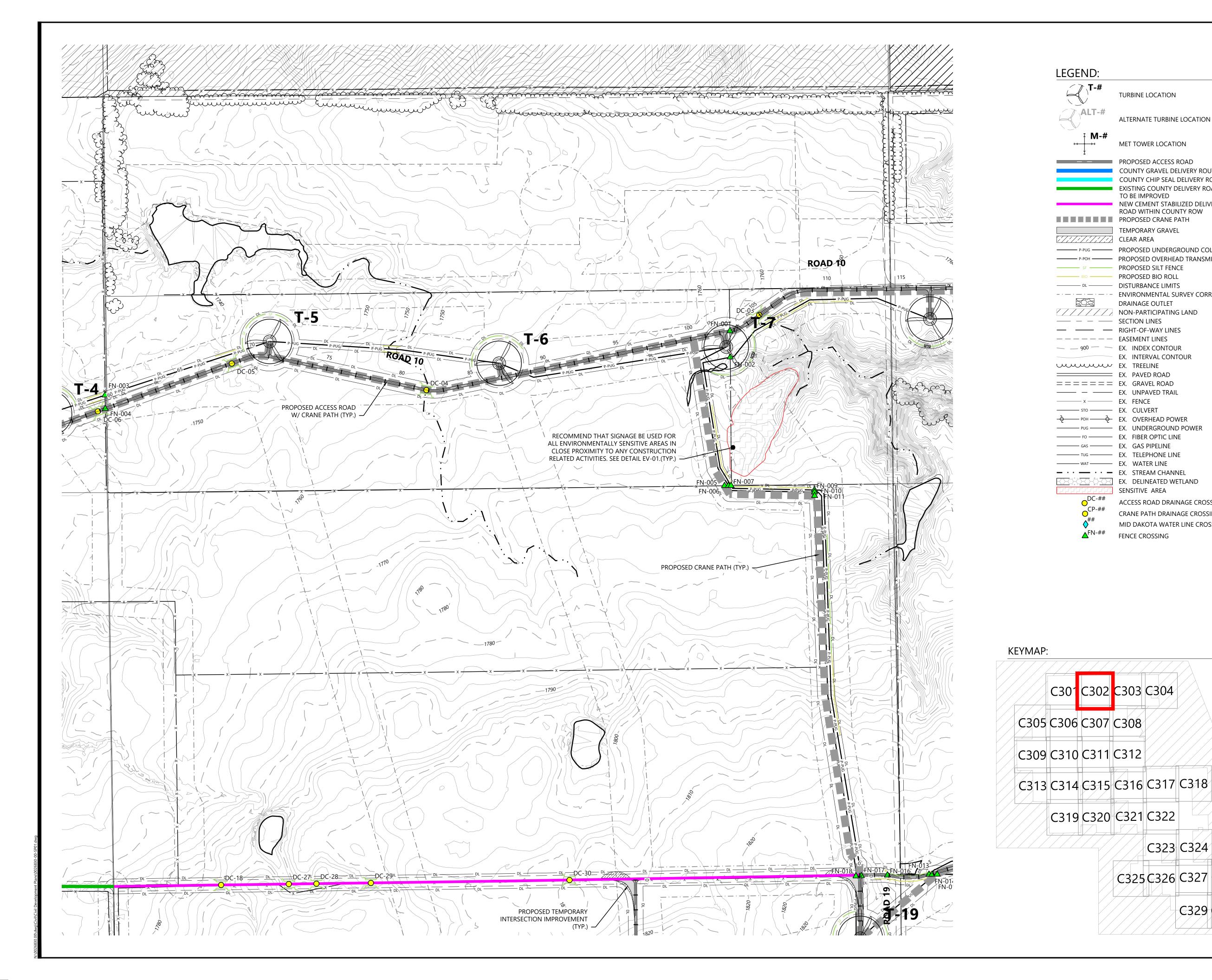
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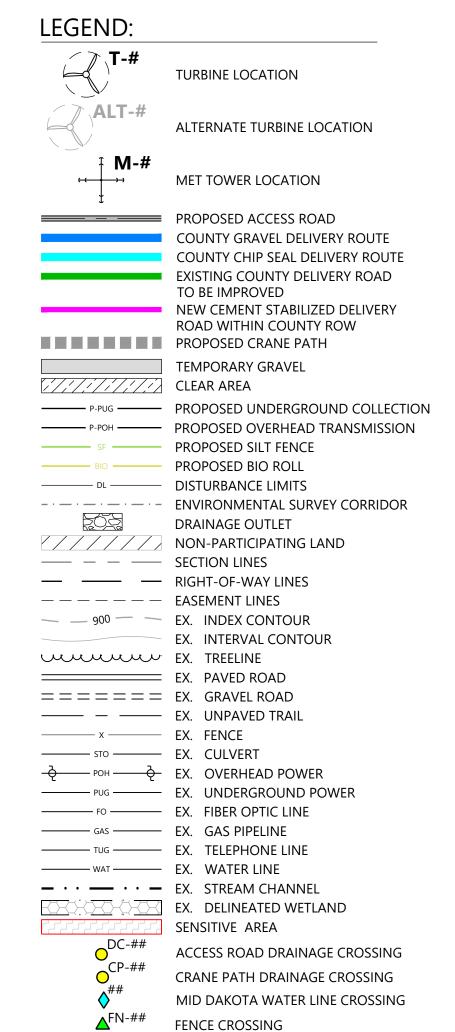
Hand County, South Dakota

Site Plan T01, T02, T03, T04

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Avon, MN 56310

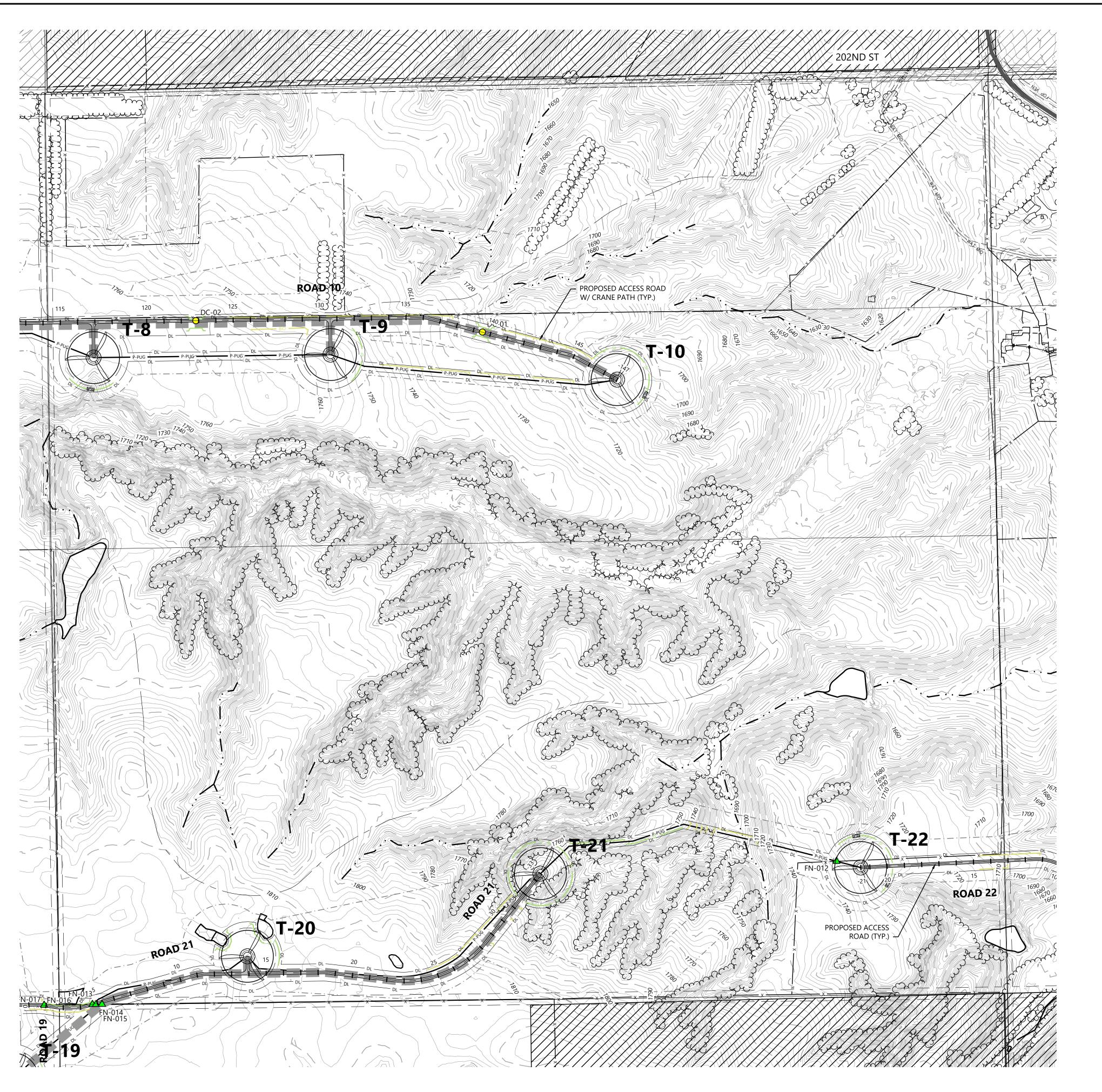
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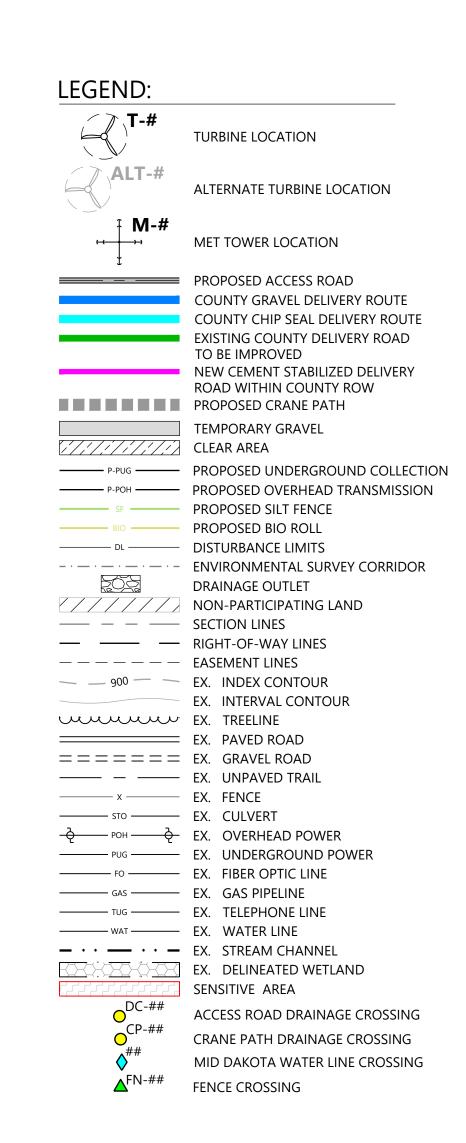
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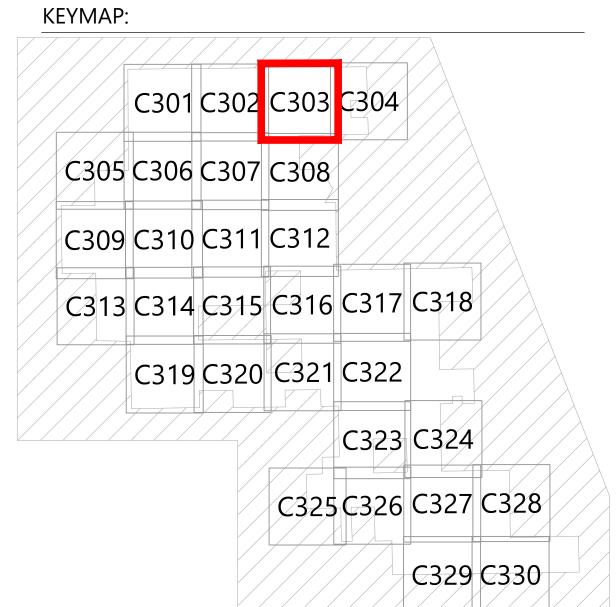
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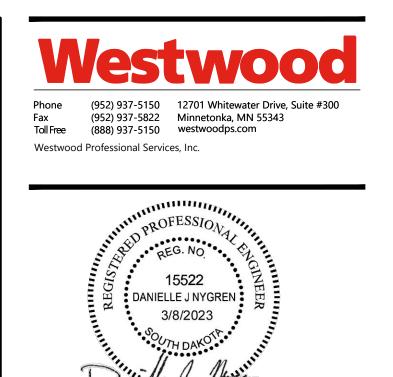
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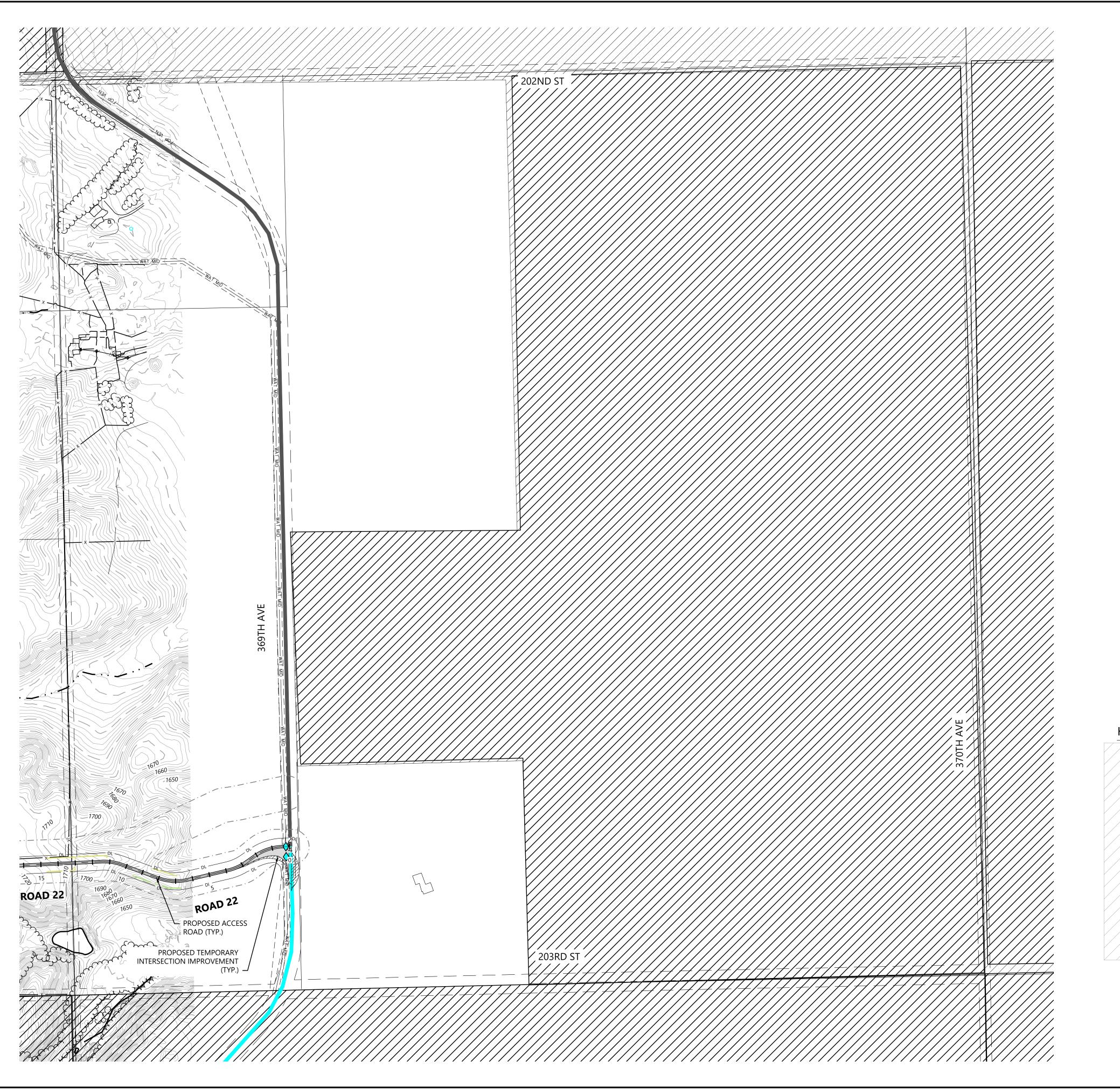
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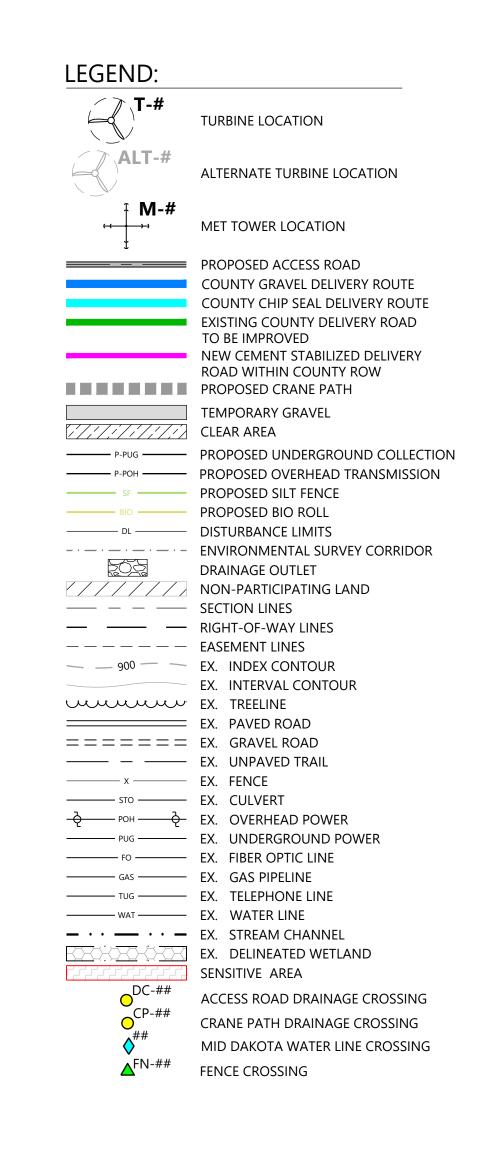
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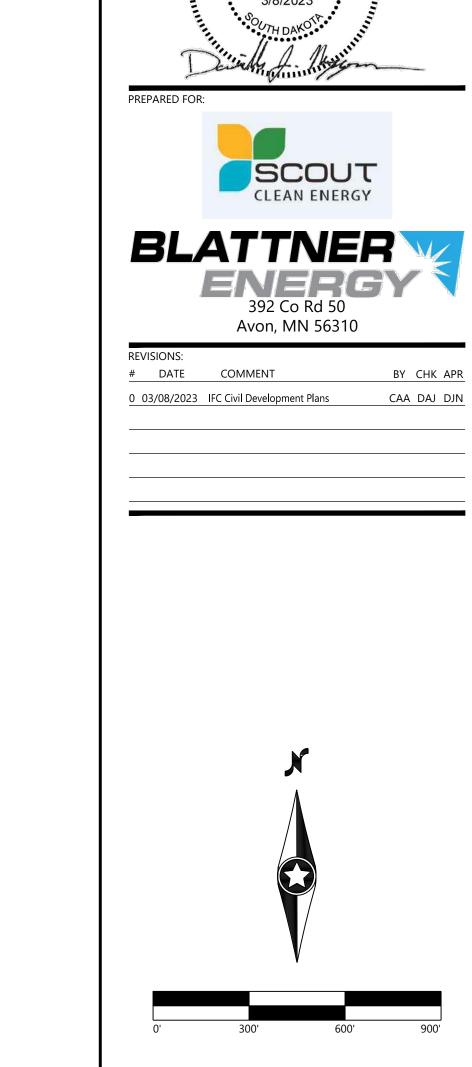
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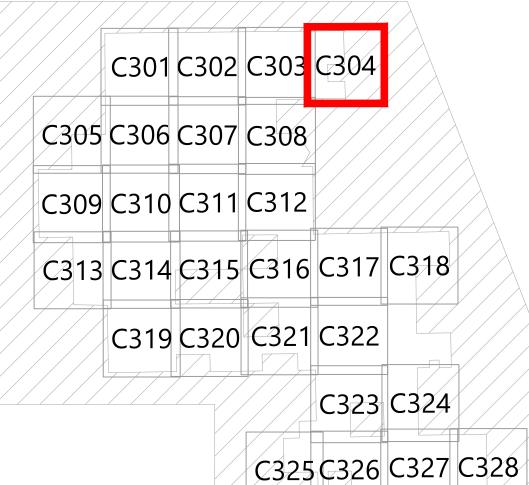


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KEYMAP:



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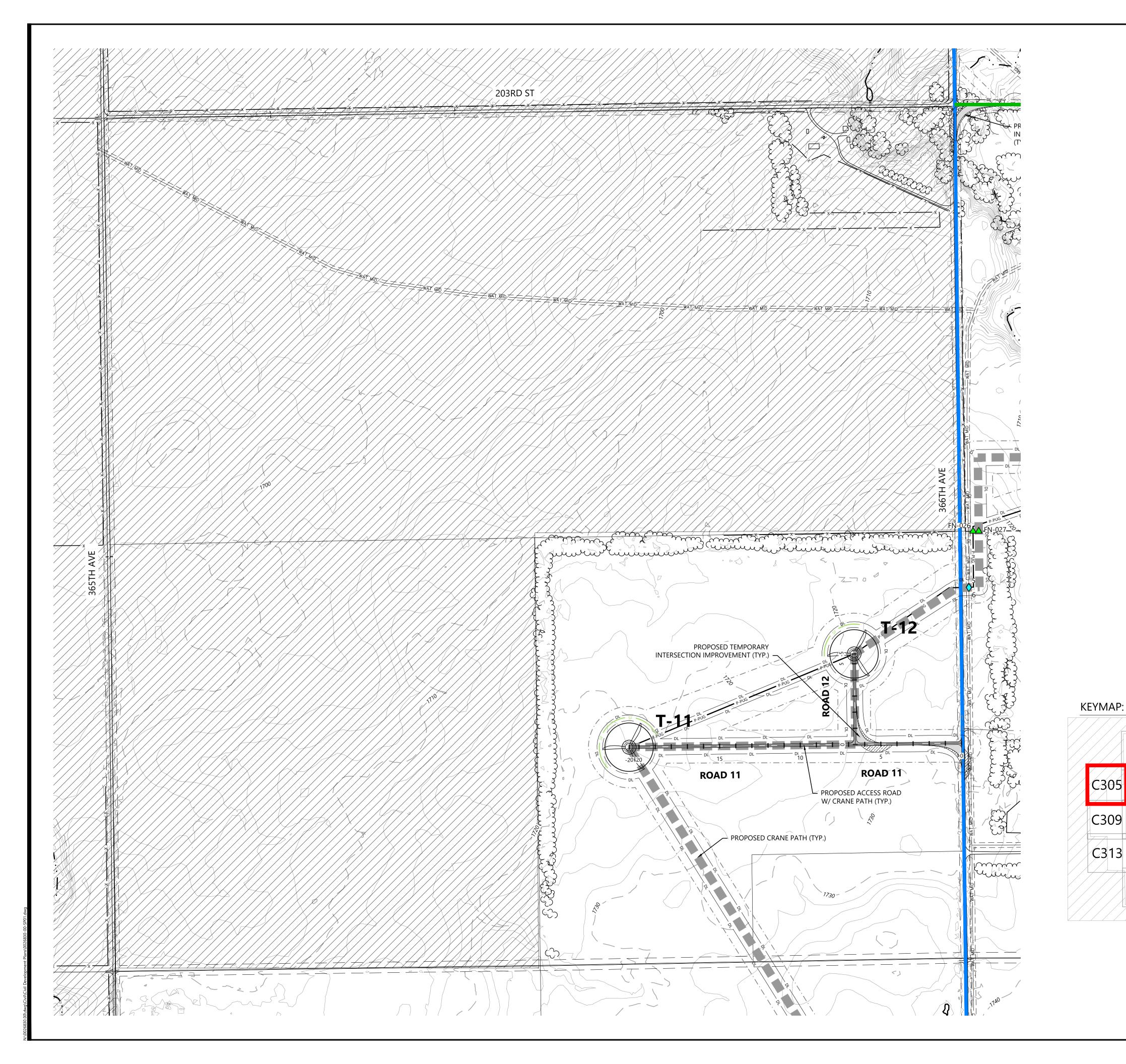
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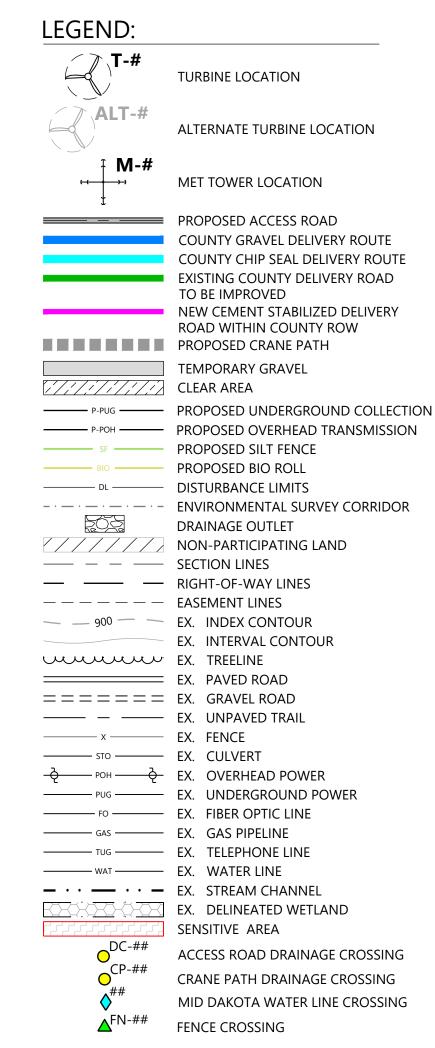
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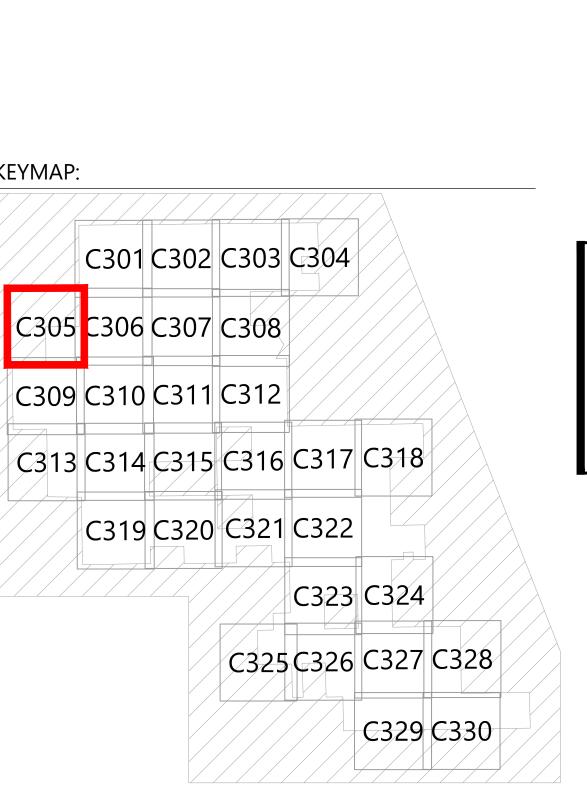
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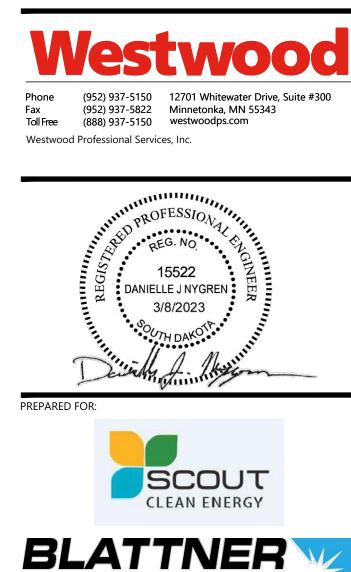
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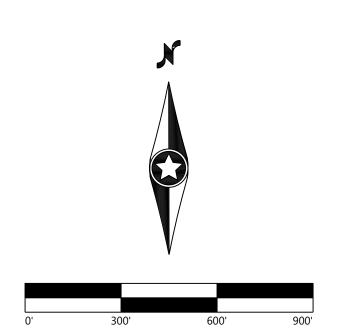


Avon, MN 56310

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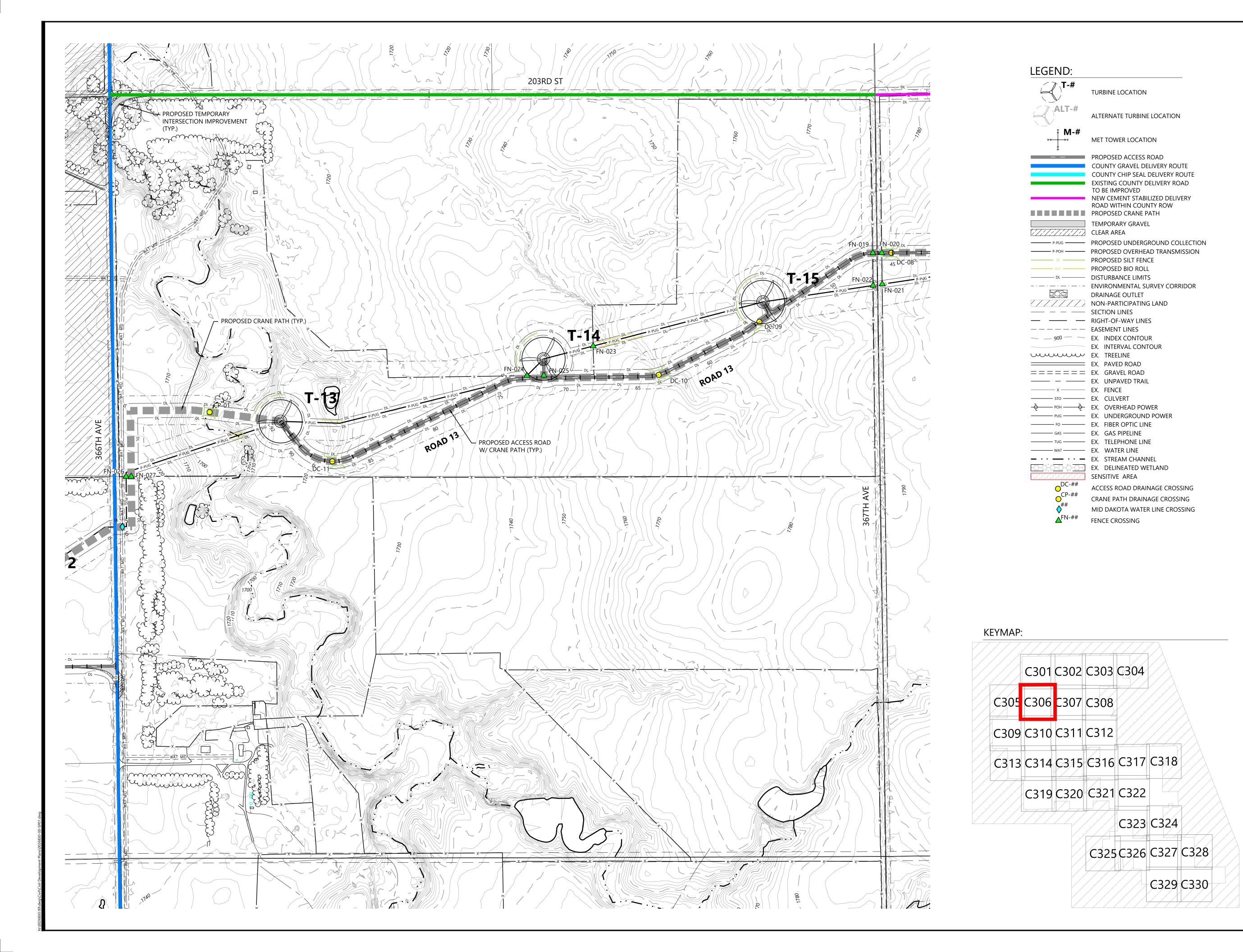
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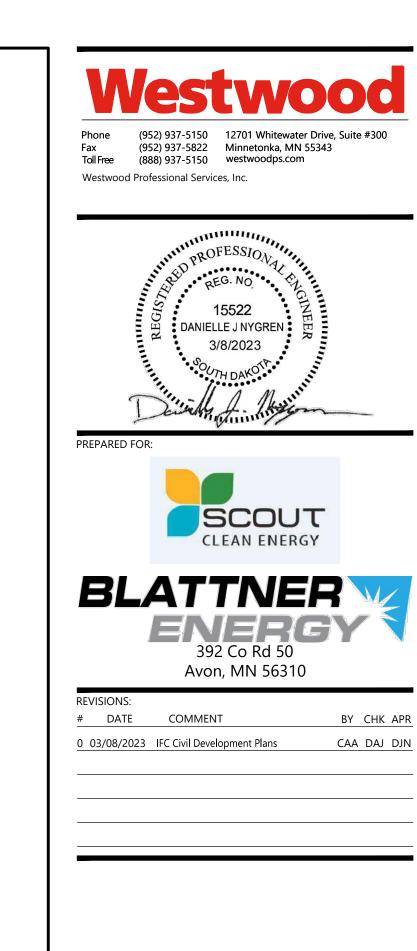
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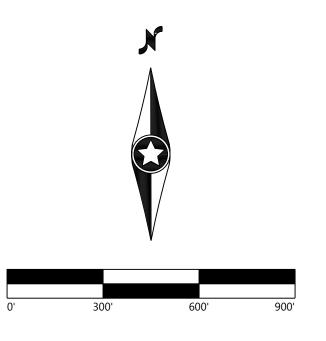
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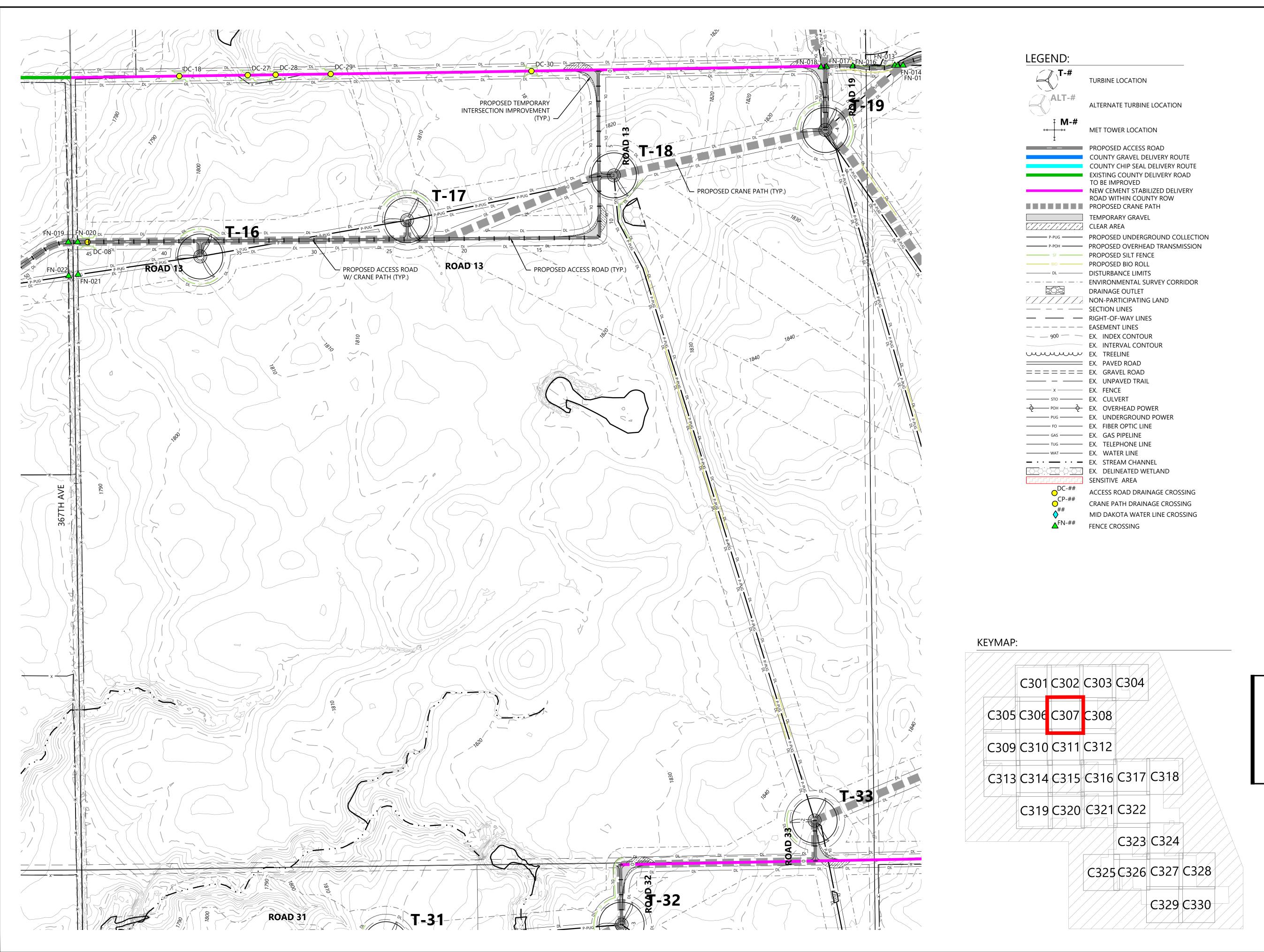
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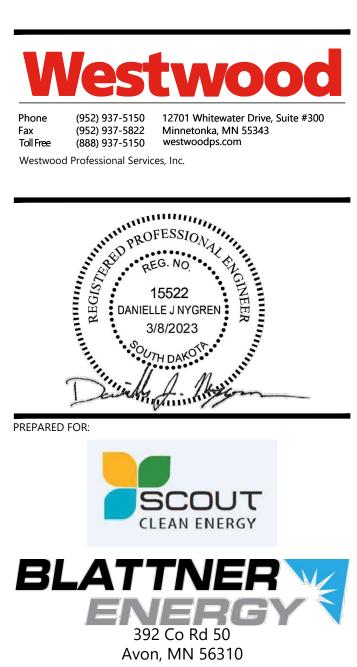
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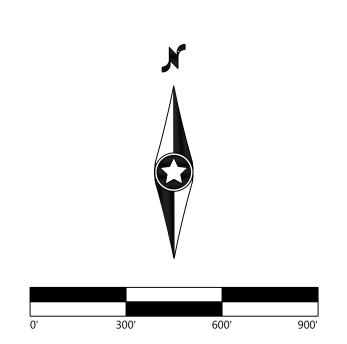


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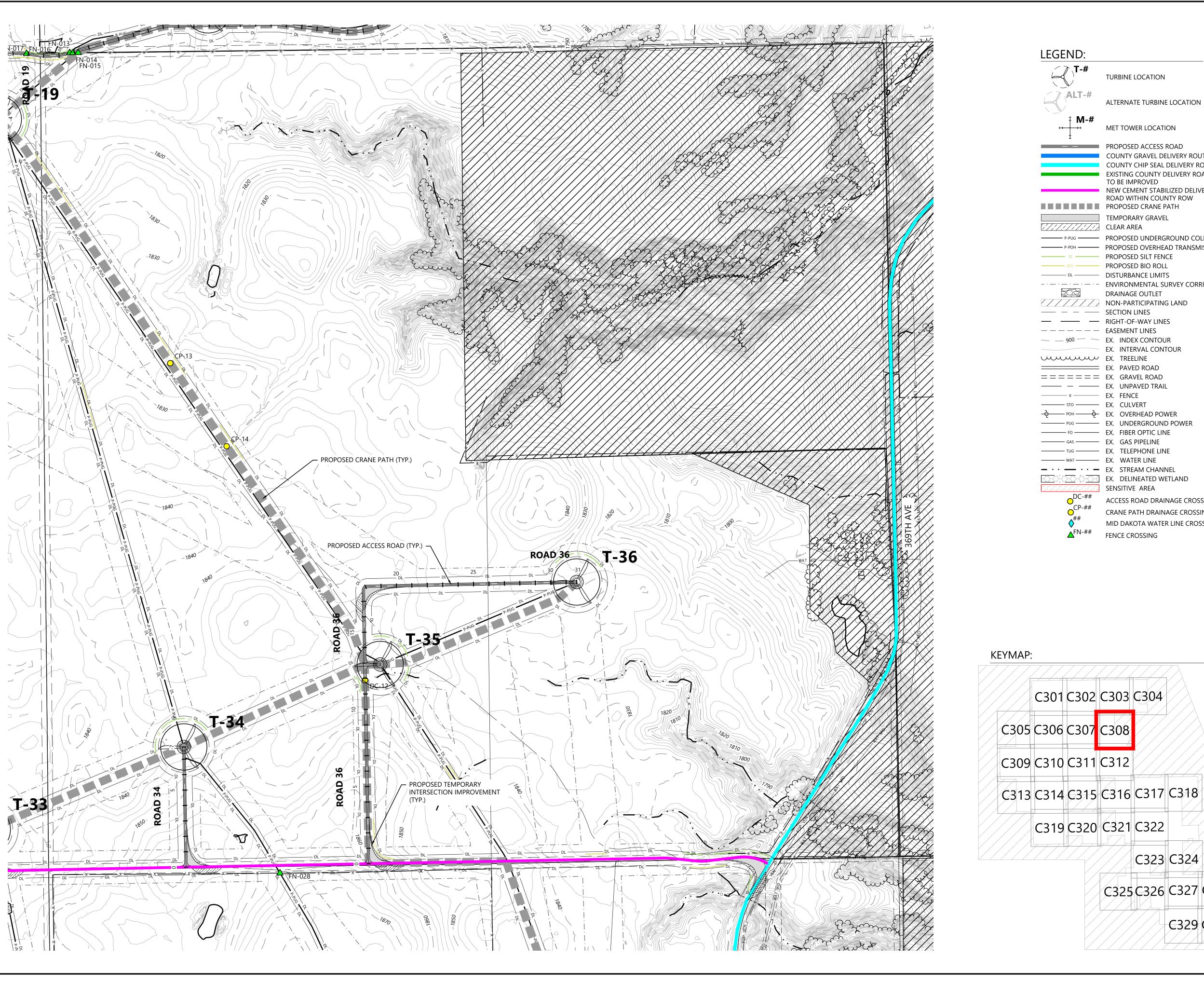
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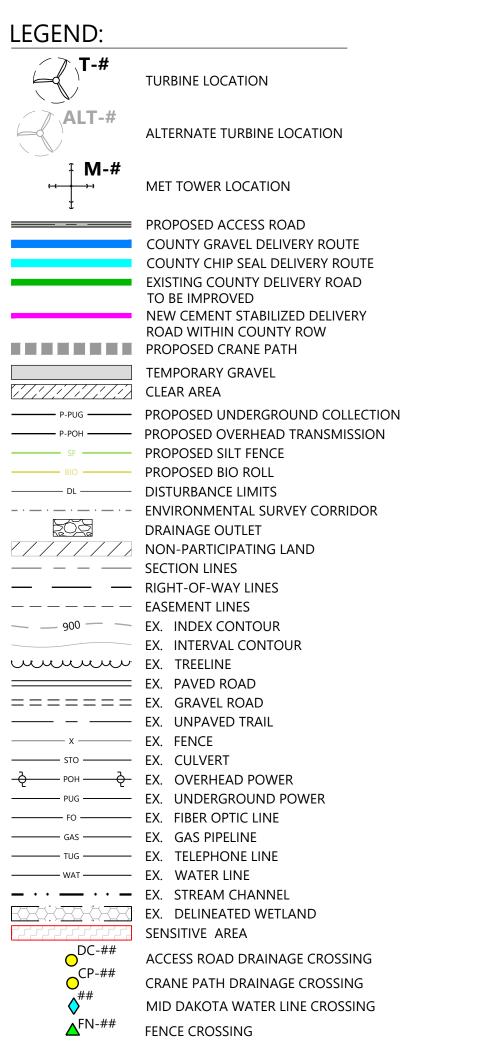
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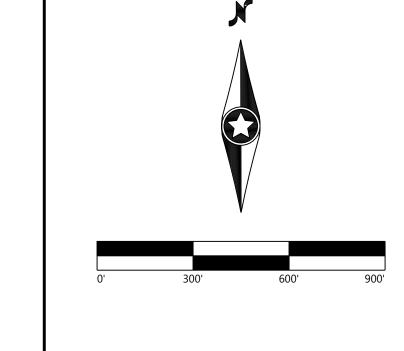




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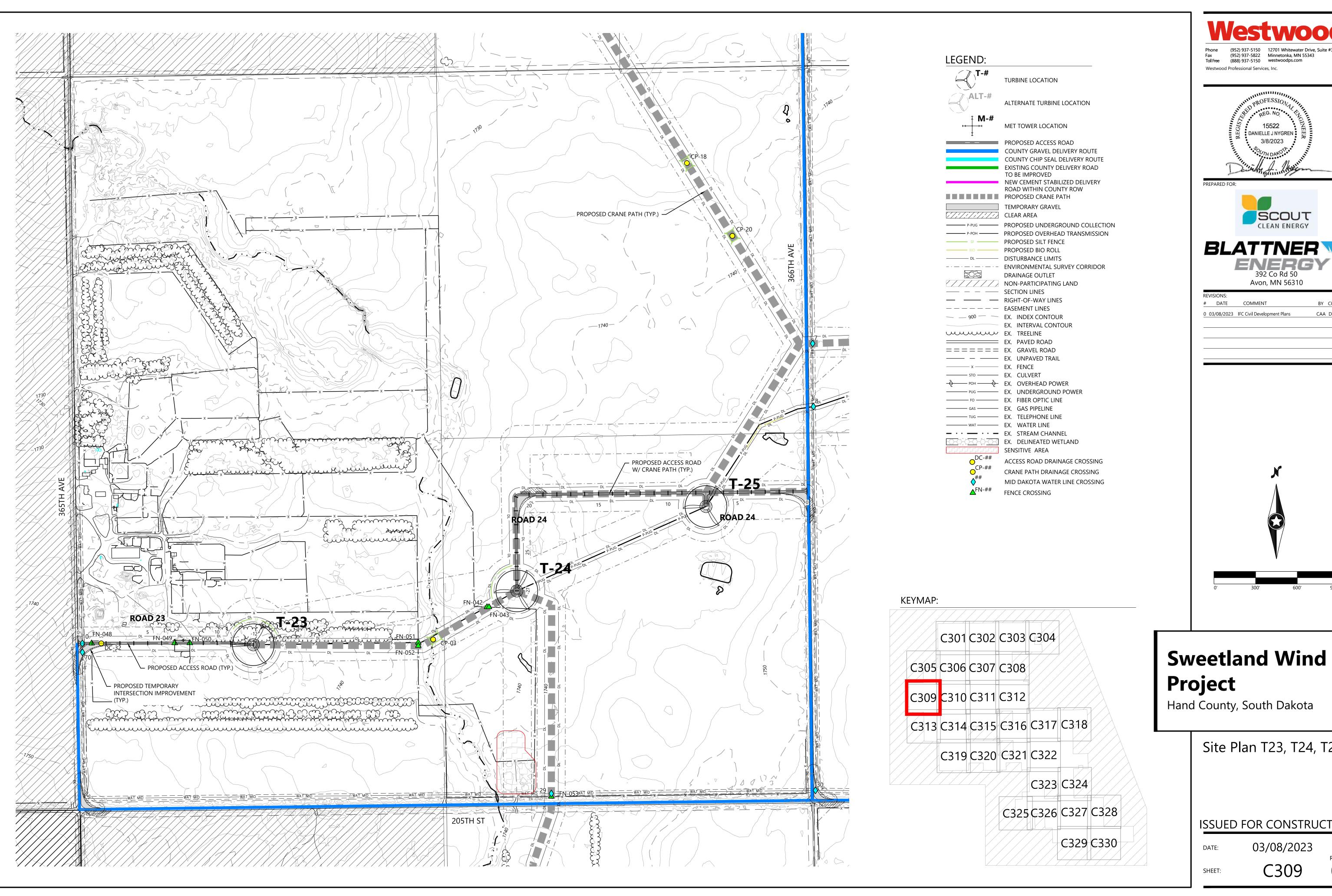
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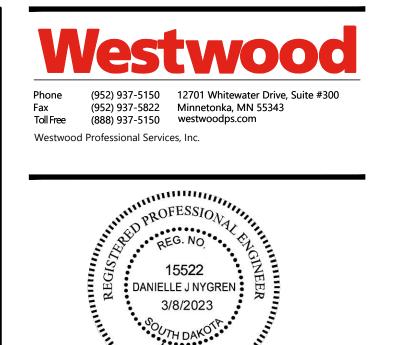
Hand County, South Dakota

Site Plan T34, T35, T36

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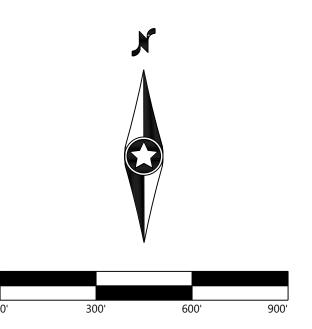






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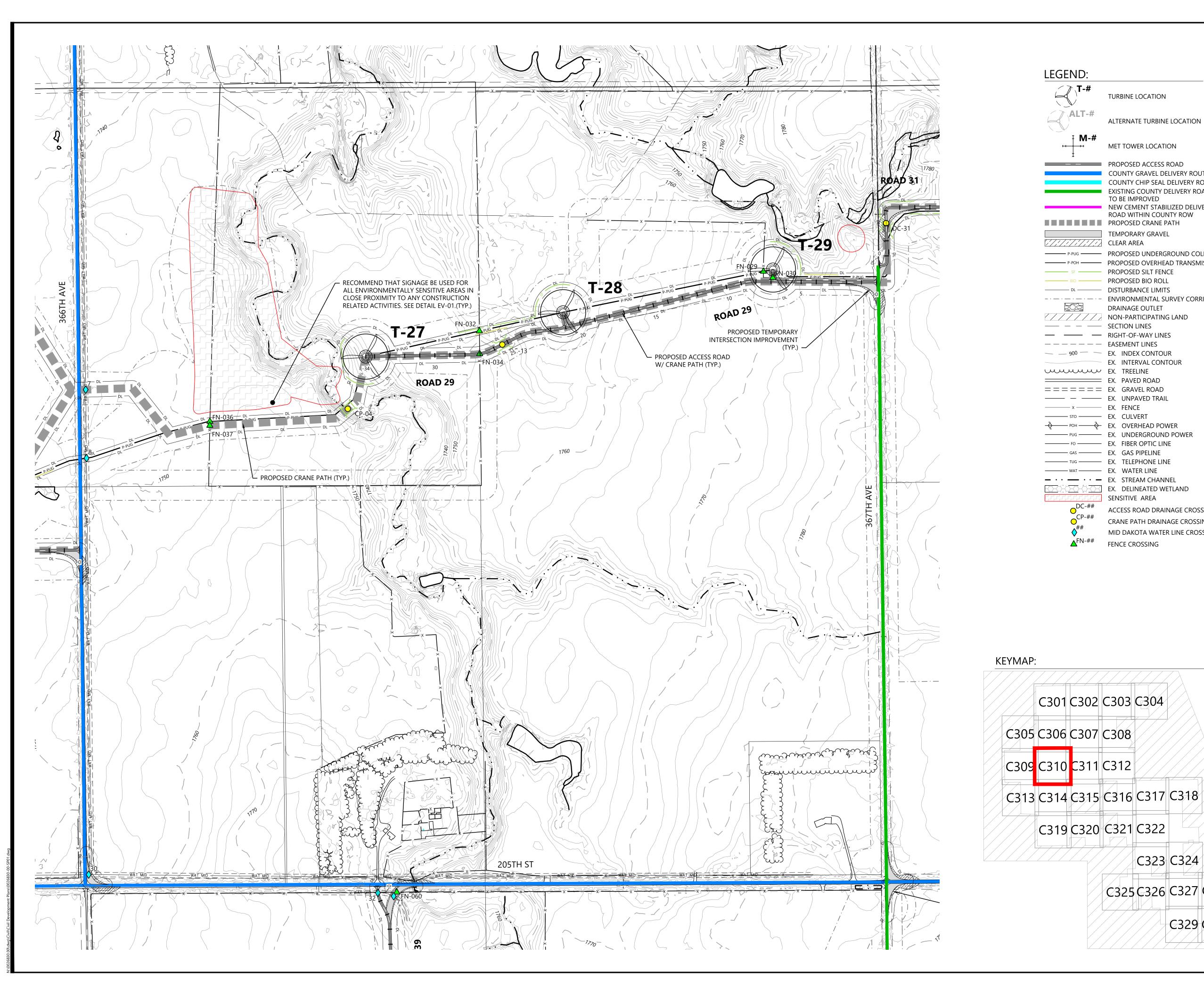
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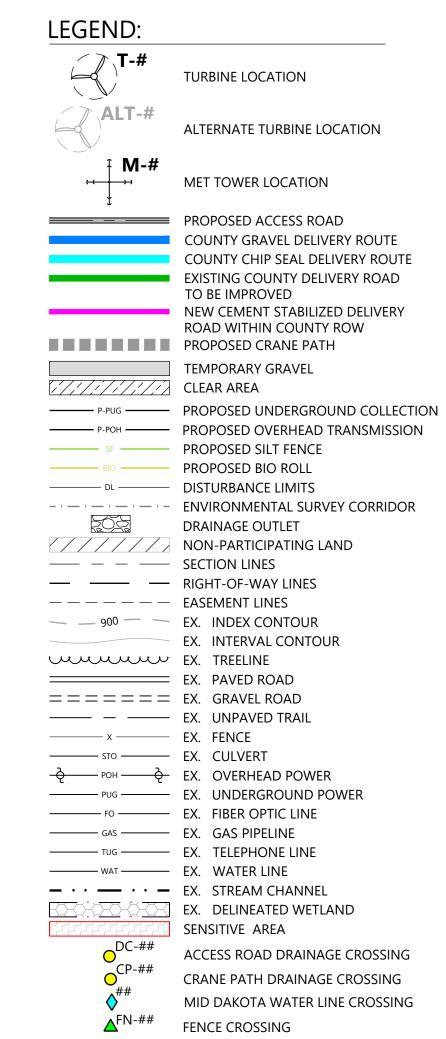


Site Plan T23, T24, T25

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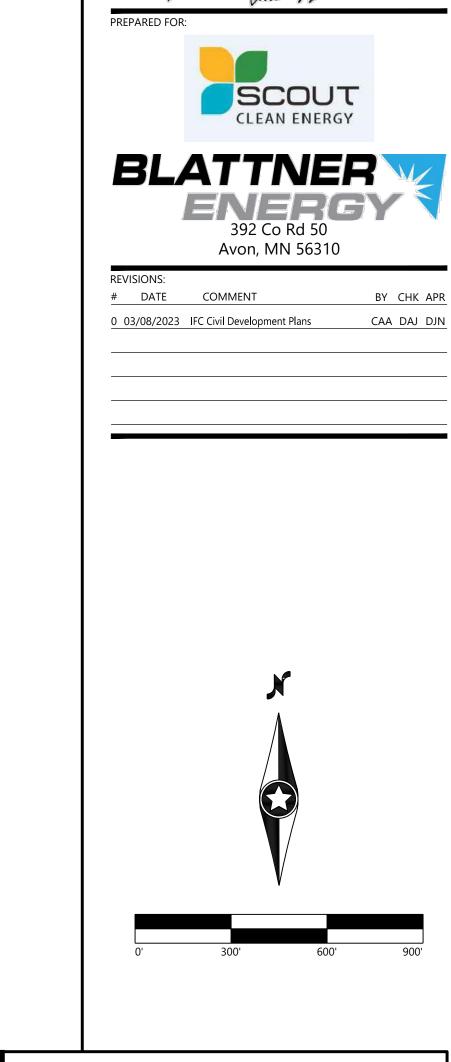
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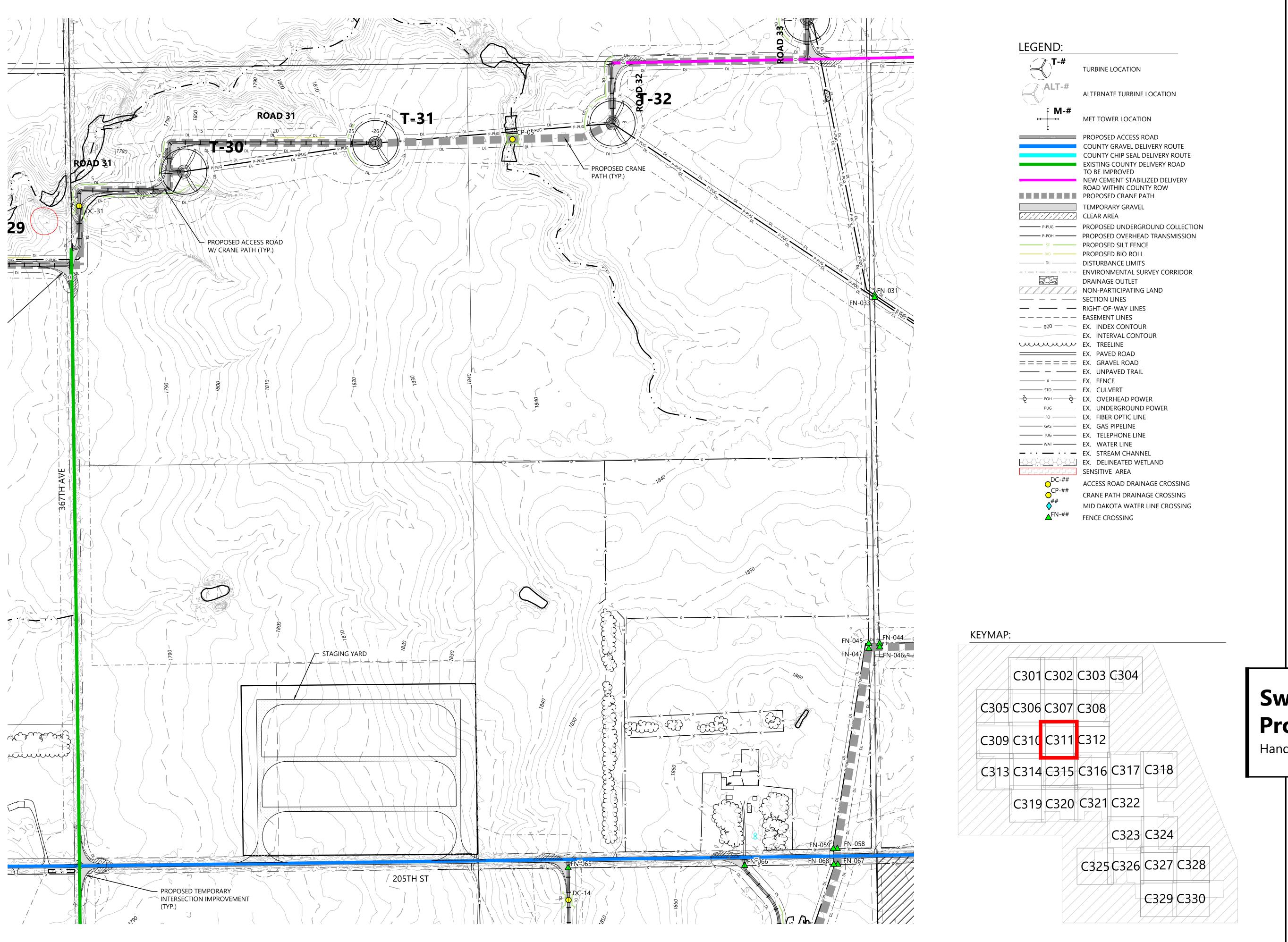
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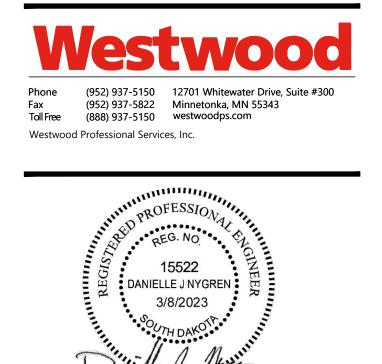
Hand County, South Dakota

Site Plan T27, T28, T29

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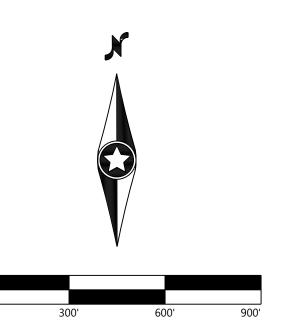








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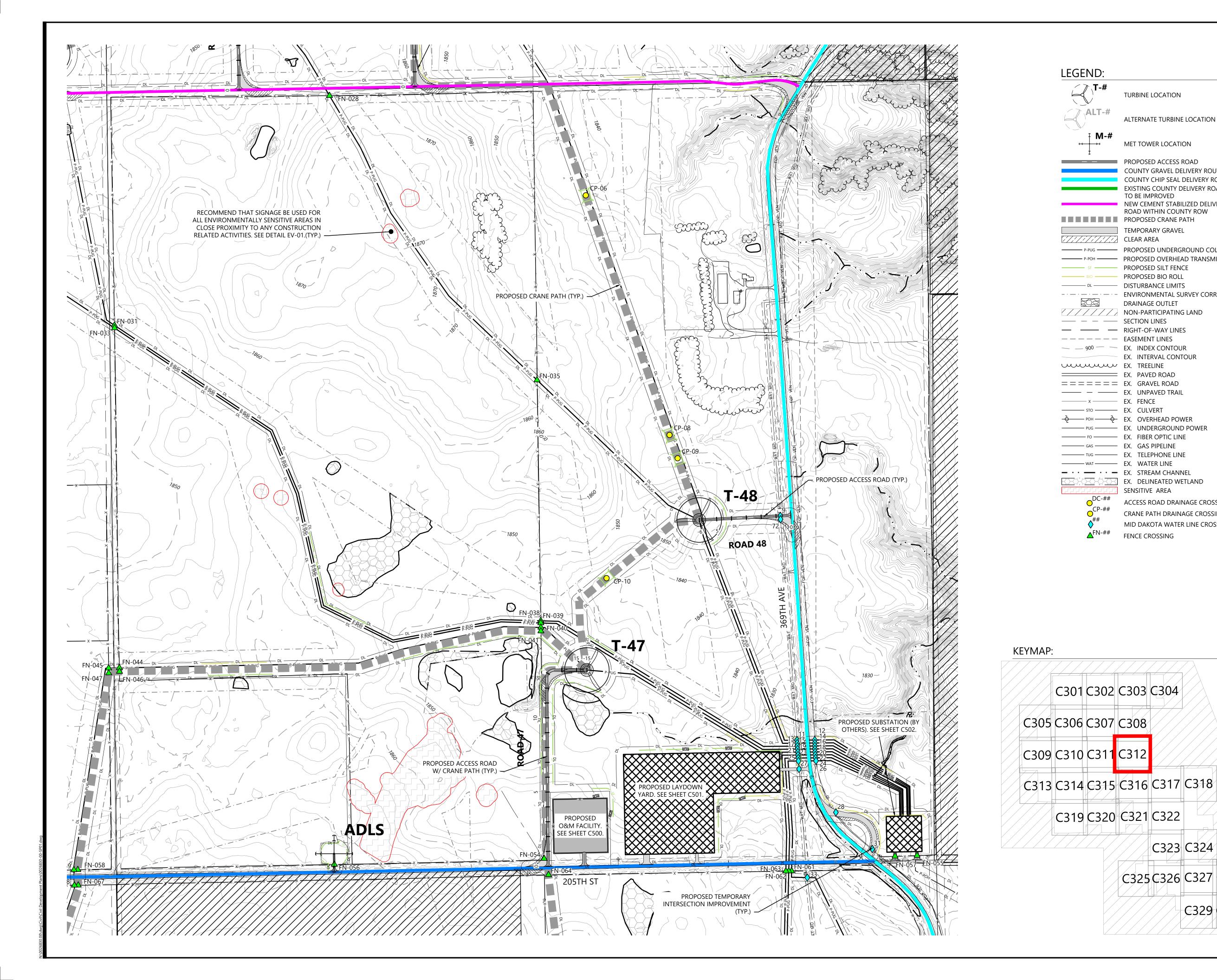
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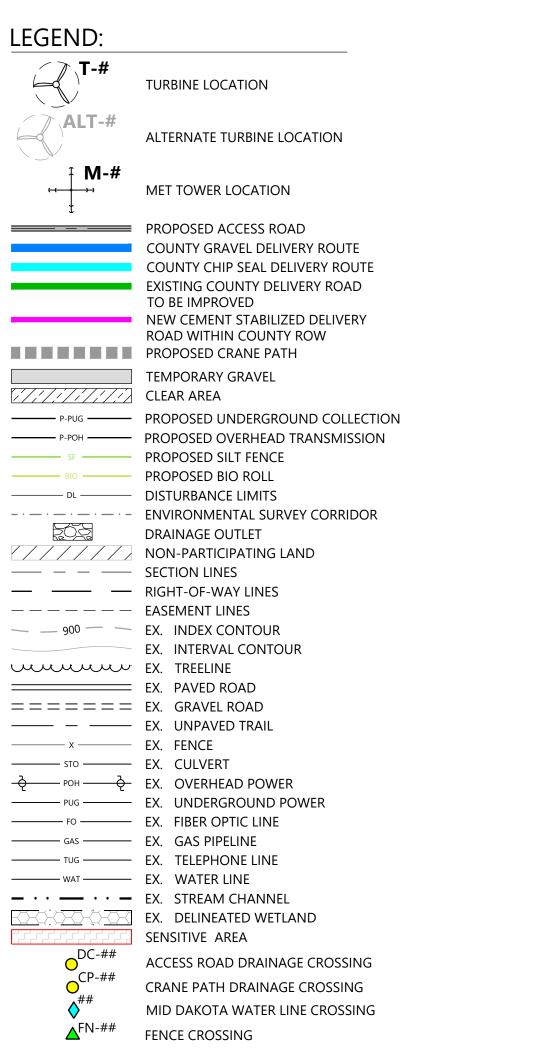
Hand County, South Dakota

Site Plan T30, T31, T32

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Site Plan T47, T48

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Avon, MN 56310

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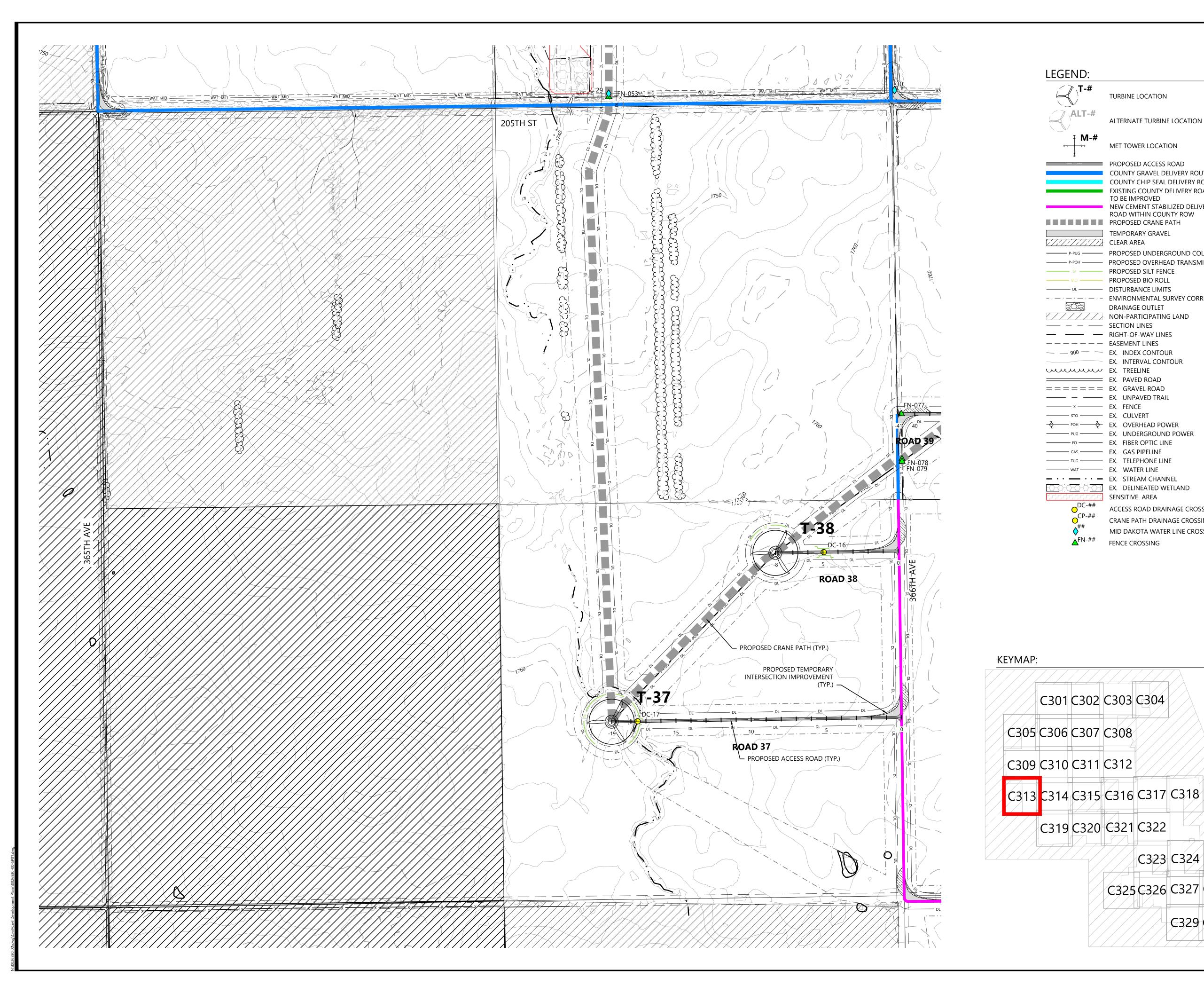
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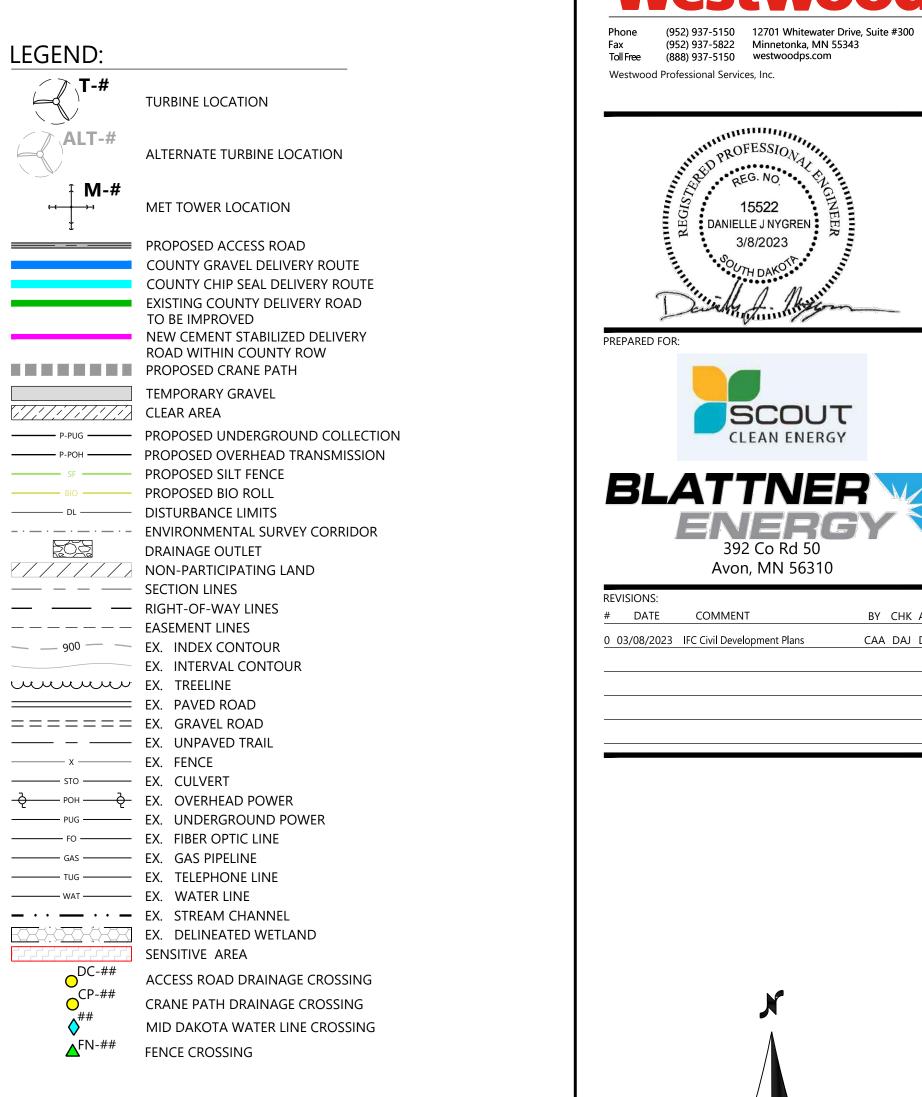
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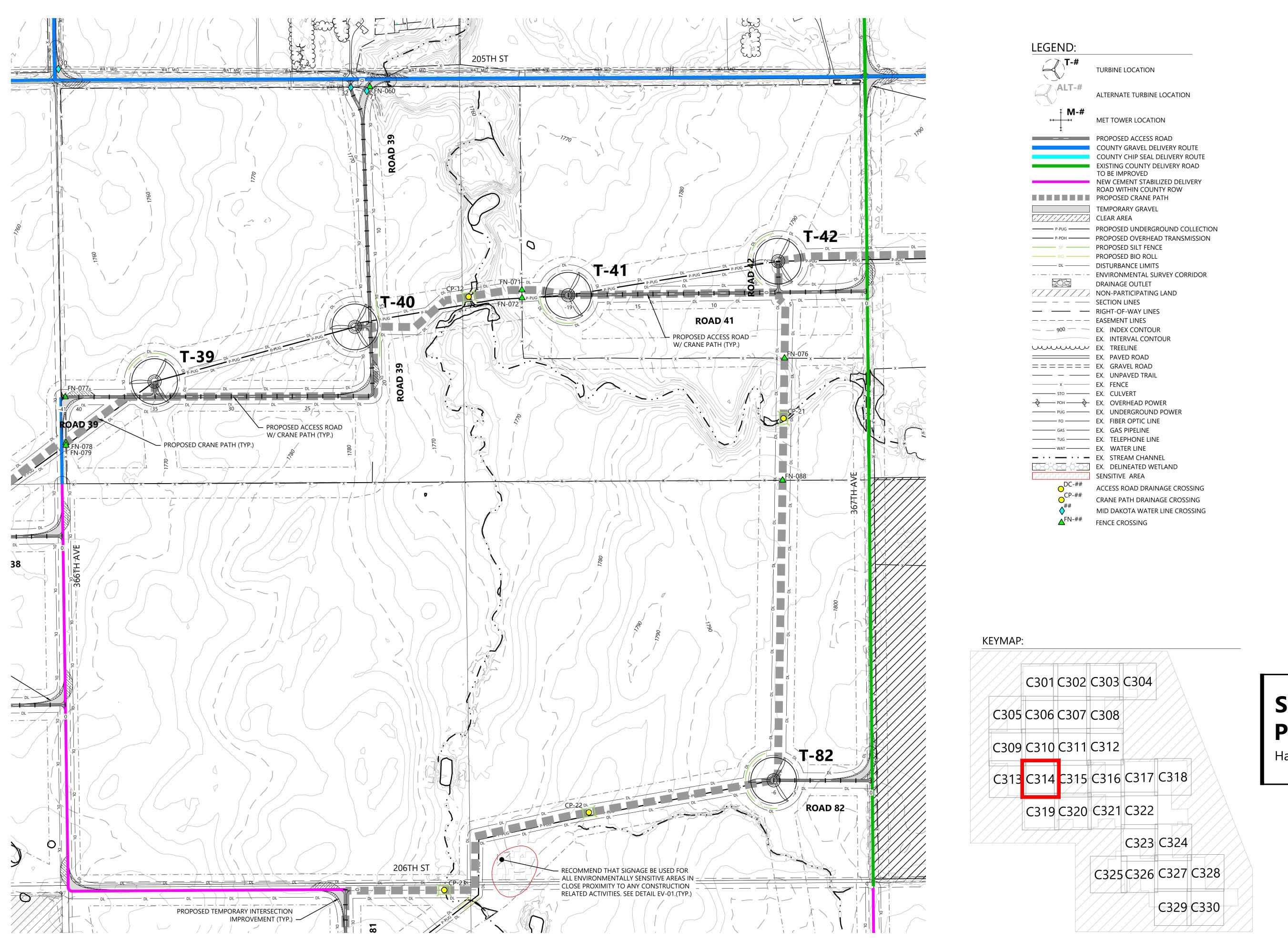
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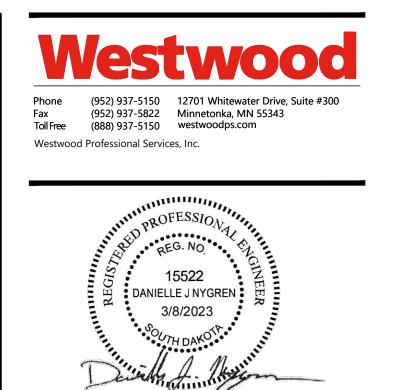
Hand County, South Dakota

Site Plan T37, T38

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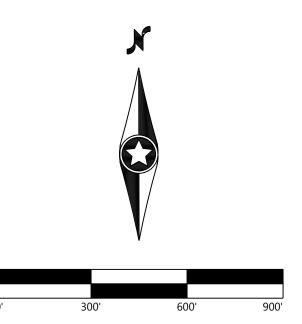
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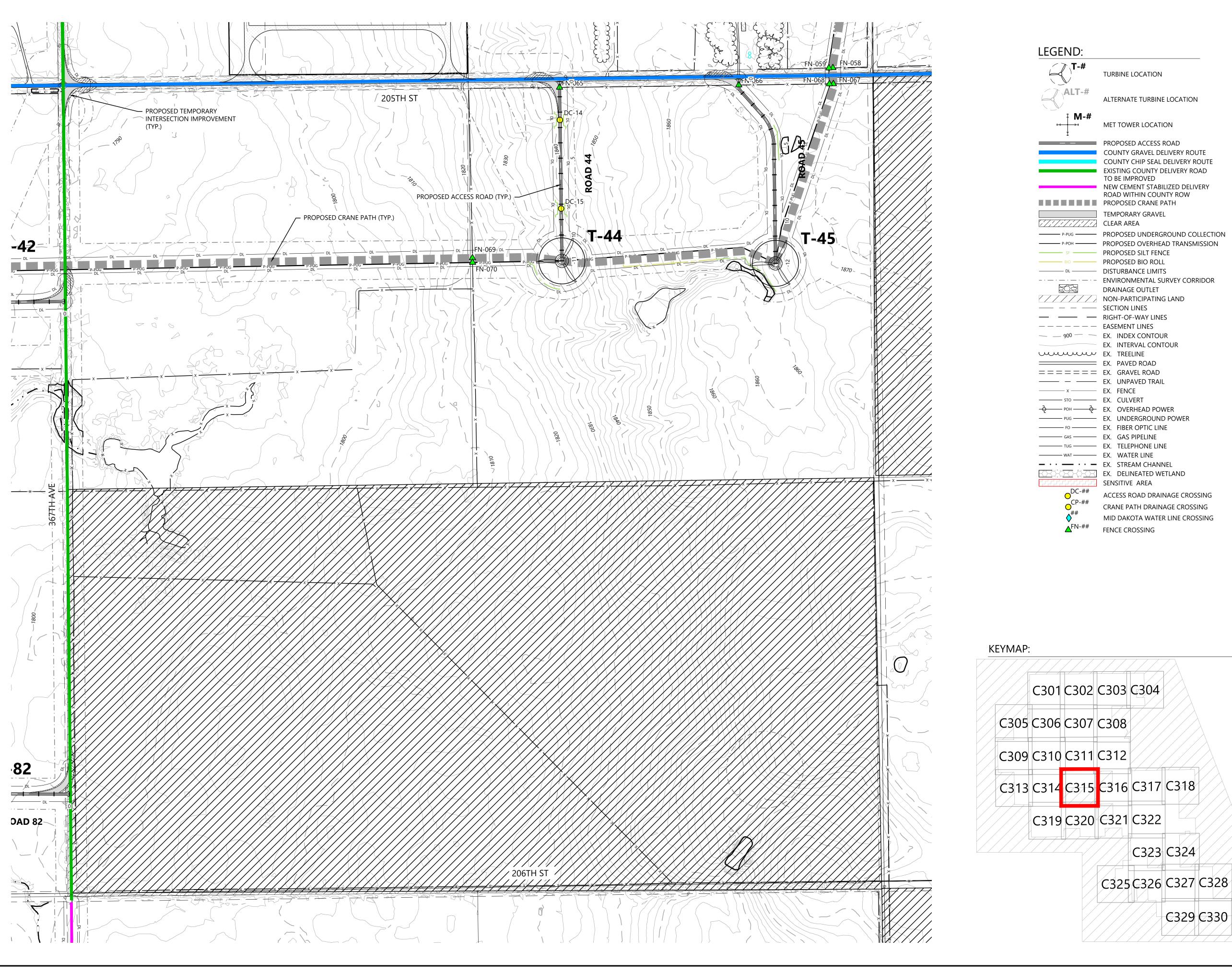
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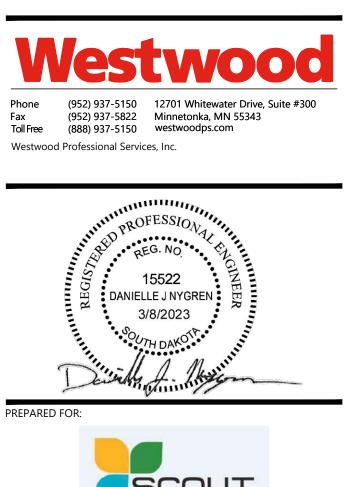
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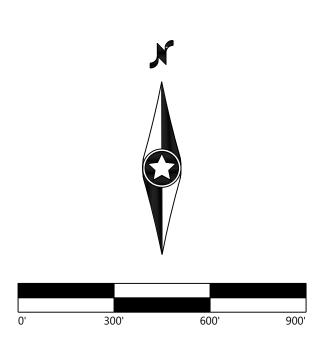


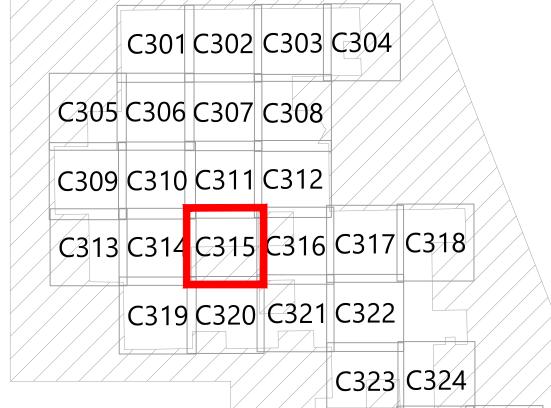




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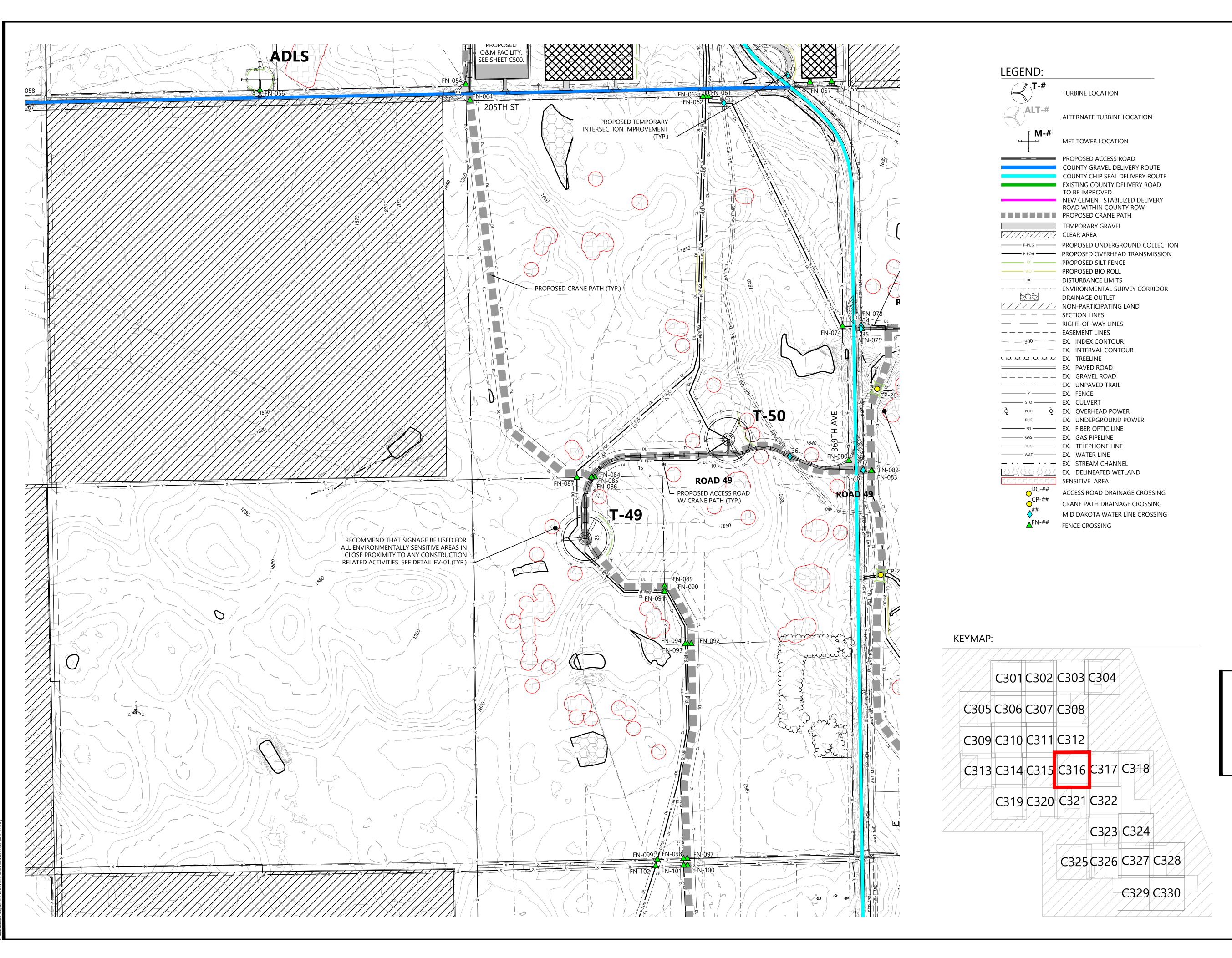
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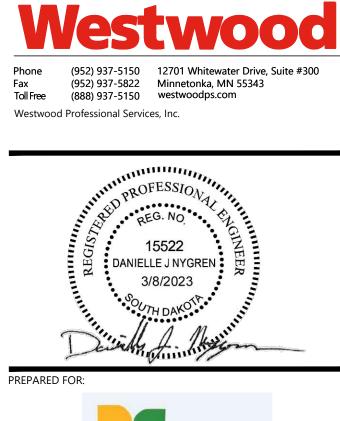
Hand County, South Dakota

Project

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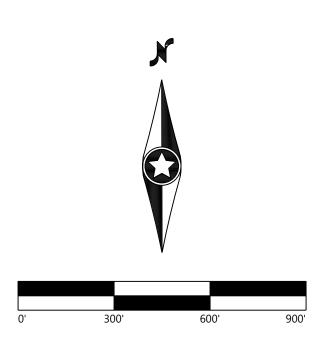








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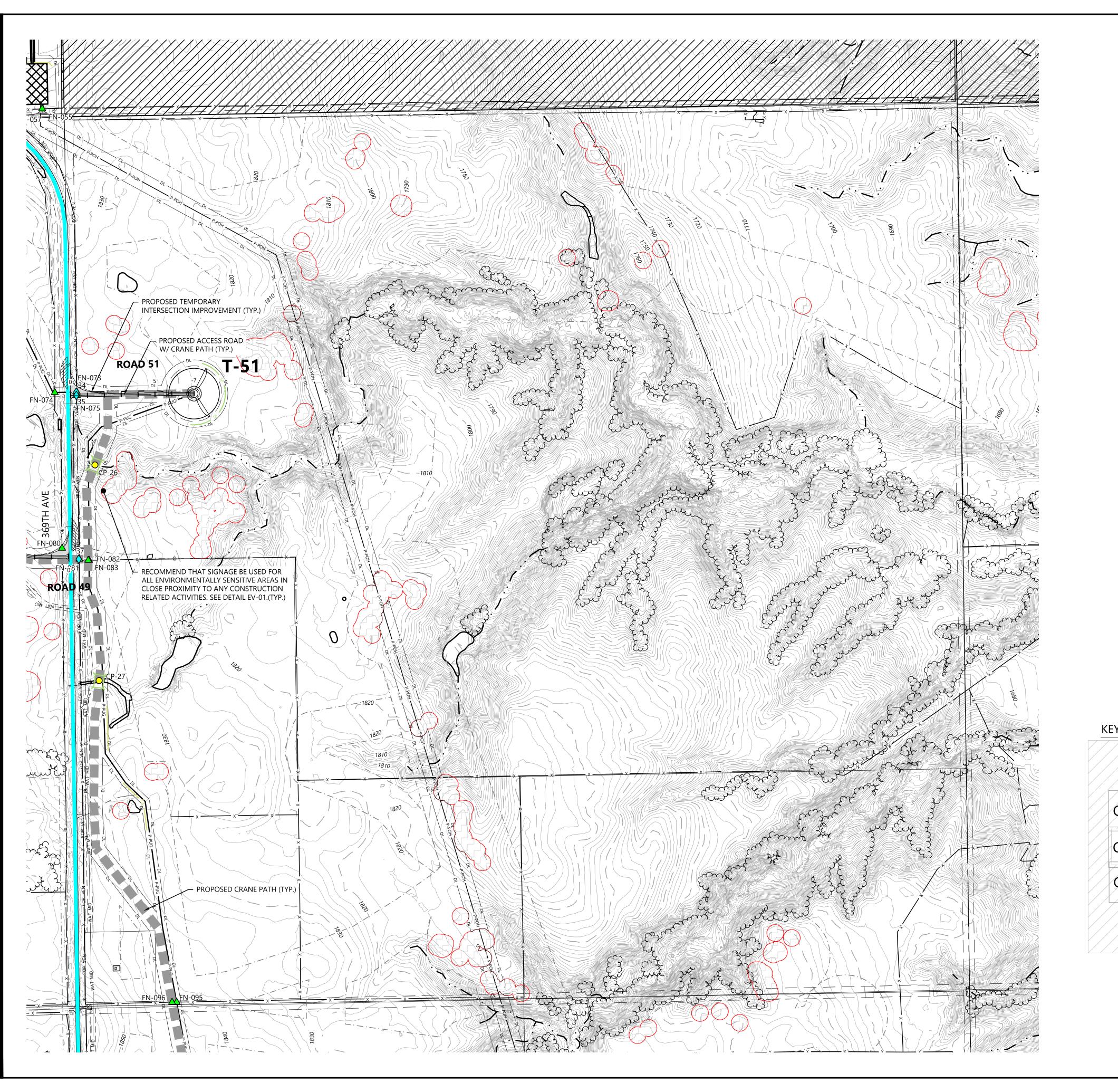
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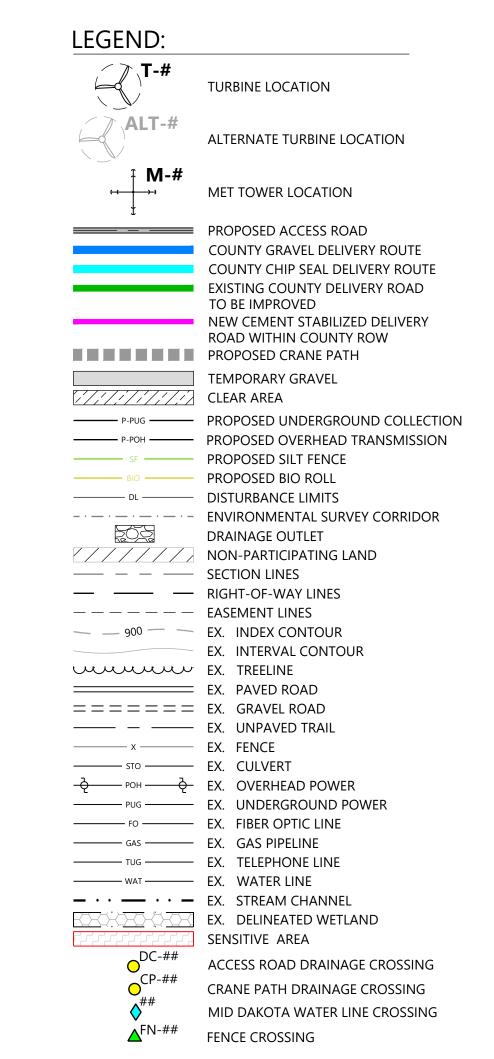
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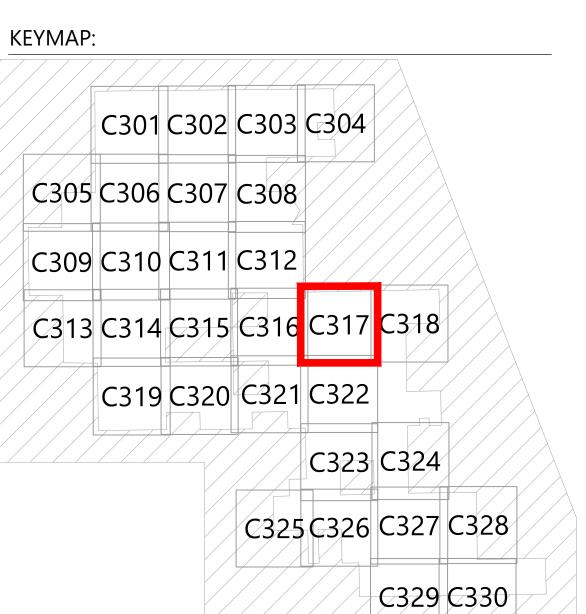
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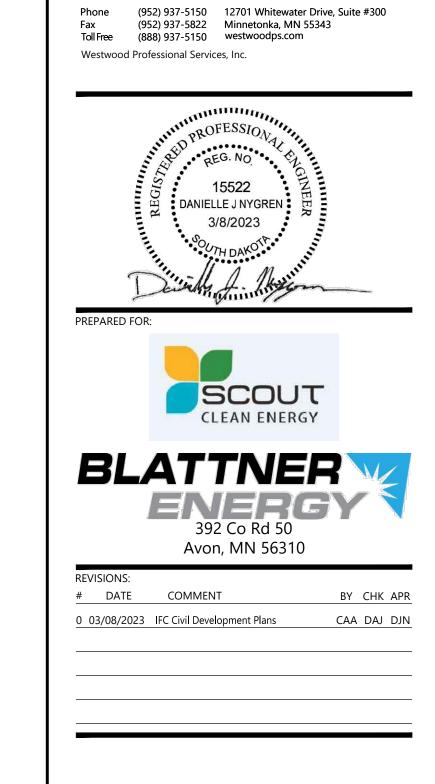
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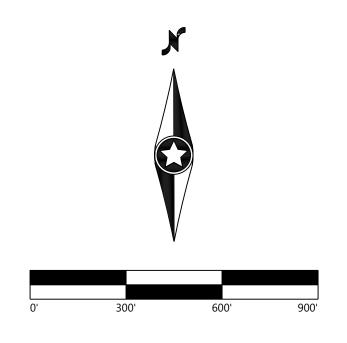
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Sweetland Wind Project

Hand County, South Dakota

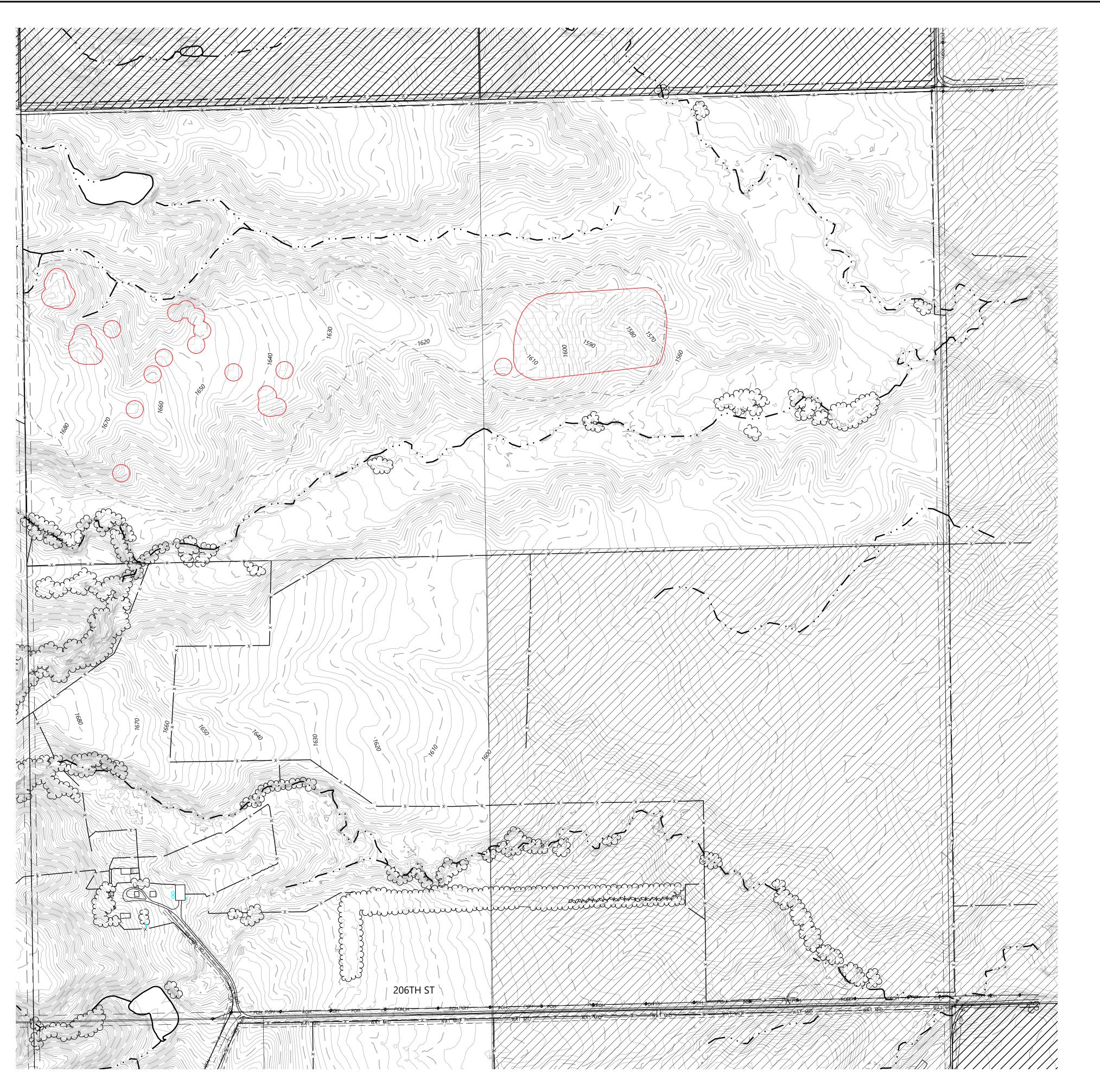
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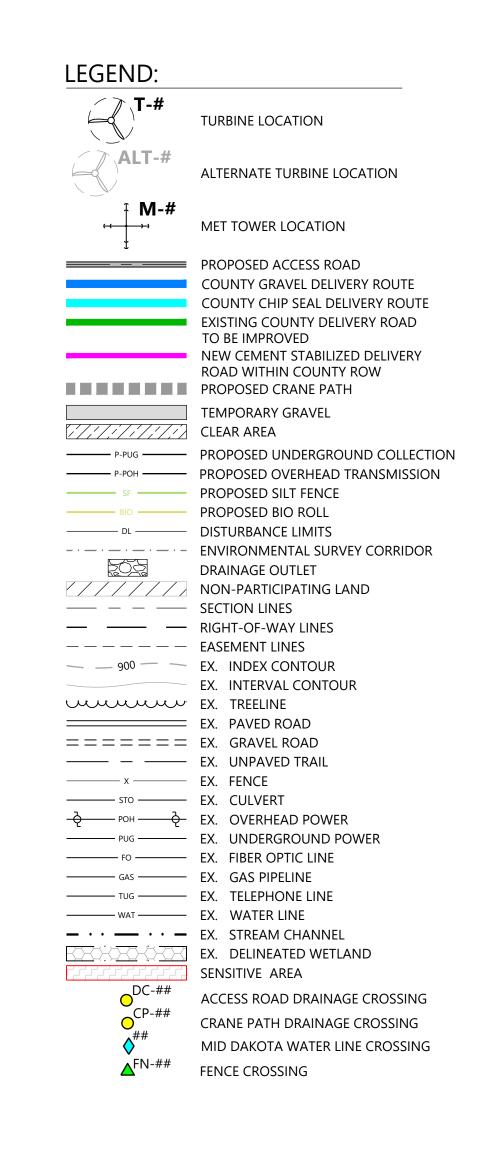
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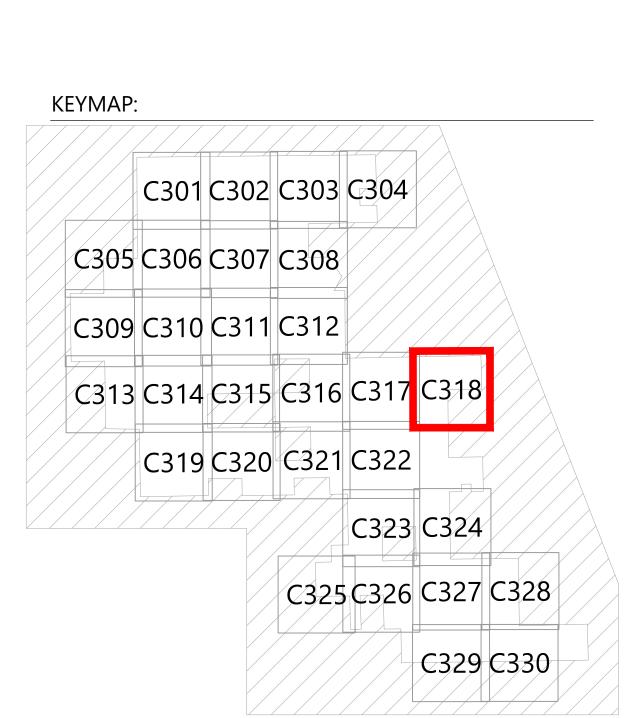
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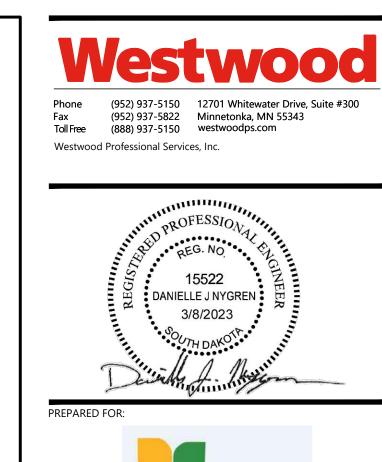
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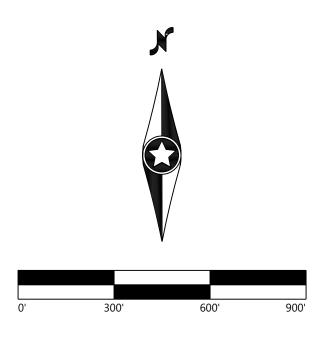






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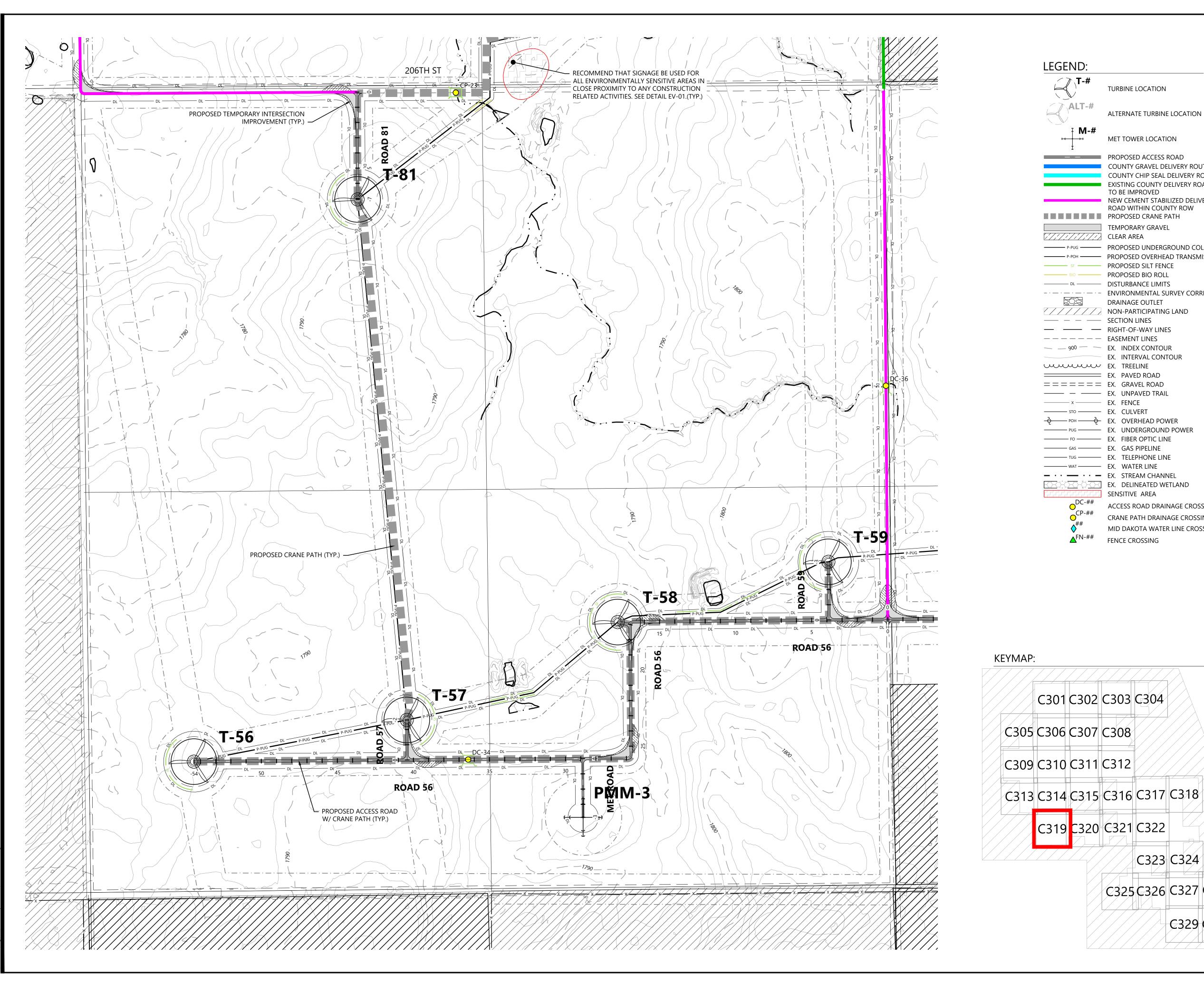
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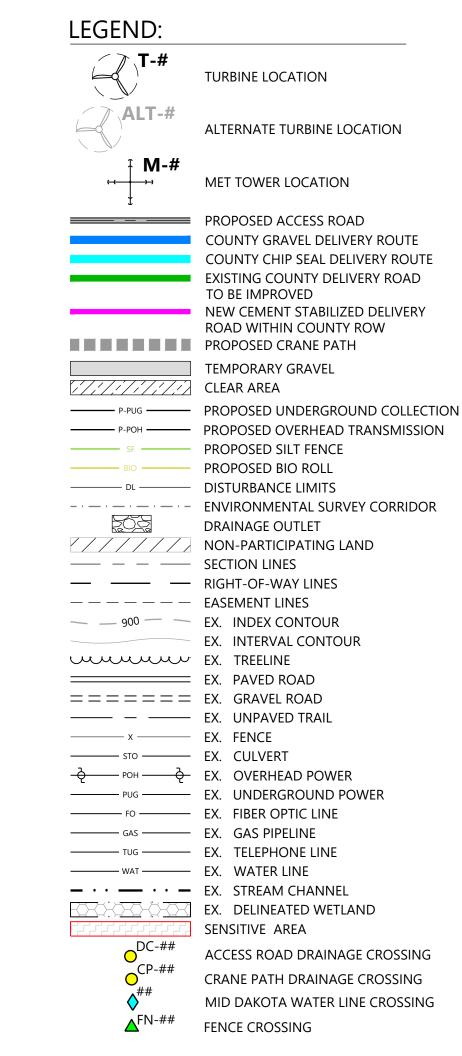
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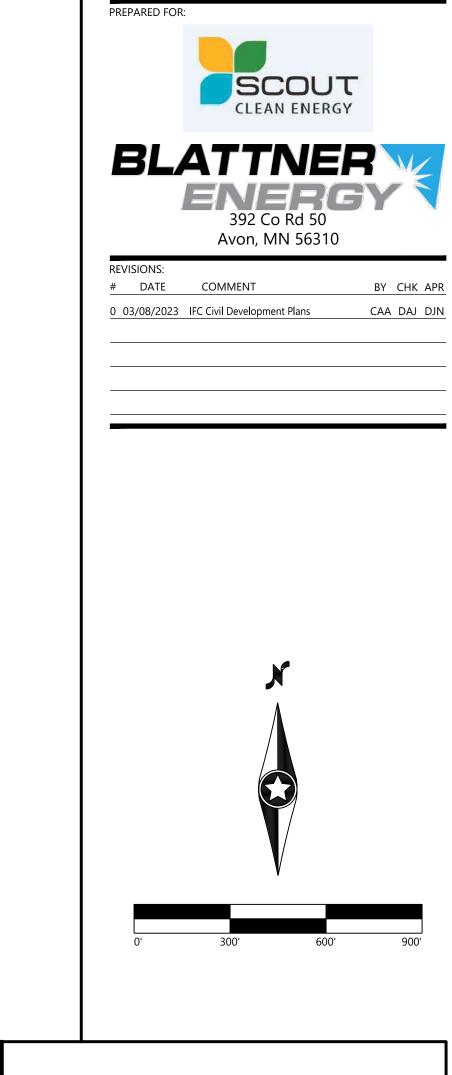


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C325 C326 C327 C328

C329 C330



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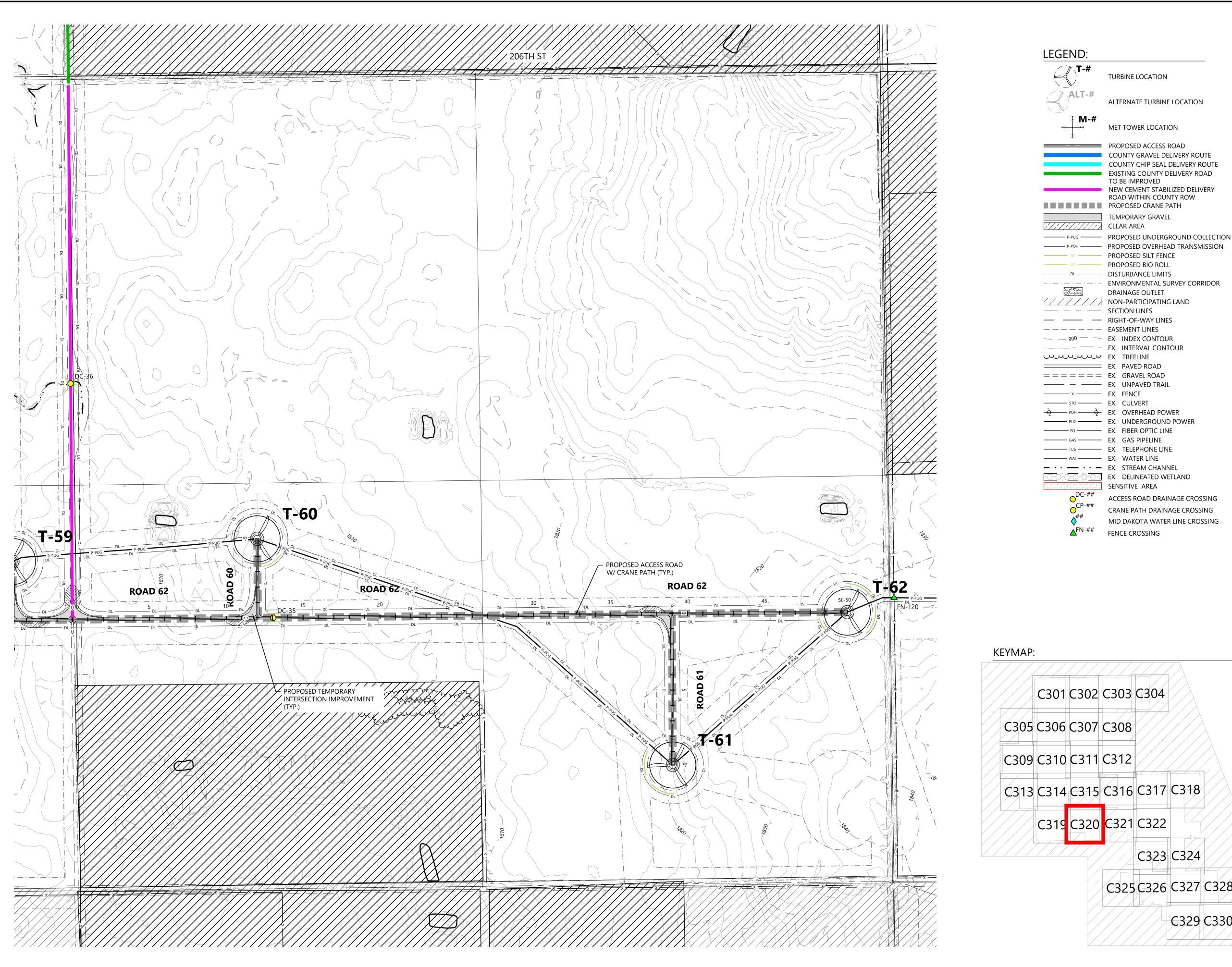
Sweetland Wind Project

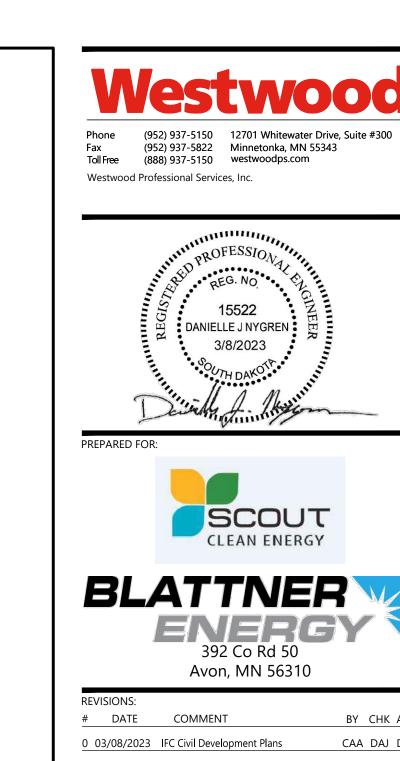
Hand County, South Dakota

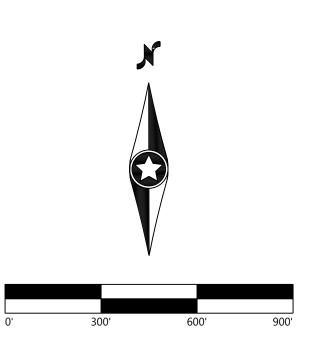
Site Plan T81, T56, T57, T58, T59

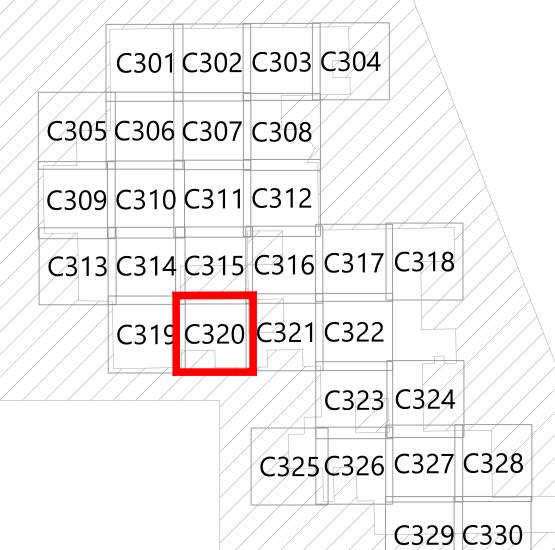
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TURBINE LOCATION

MET TOWER LOCATION

TO BE IMPROVED

TEMPORARY GRAVEL

DRAINAGE OUTLET

EX. INTERVAL CONTOUR

SENSITIVE AREA

FENCE CROSSING

ACCESS ROAD DRAINAGE CROSSING CRANE PATH DRAINAGE CROSSING MID DAKOTA WATER LINE CROSSING

ALTERNATE TURBINE LOCATION

COUNTY GRAVEL DELIVERY ROUTE COUNTY CHIP SEAL DELIVERY ROUTE EXISTING COUNTY DELIVERY ROAD

NEW CEMENT STABILIZED DELIVERY ROAD WITHIN COUNTY ROW

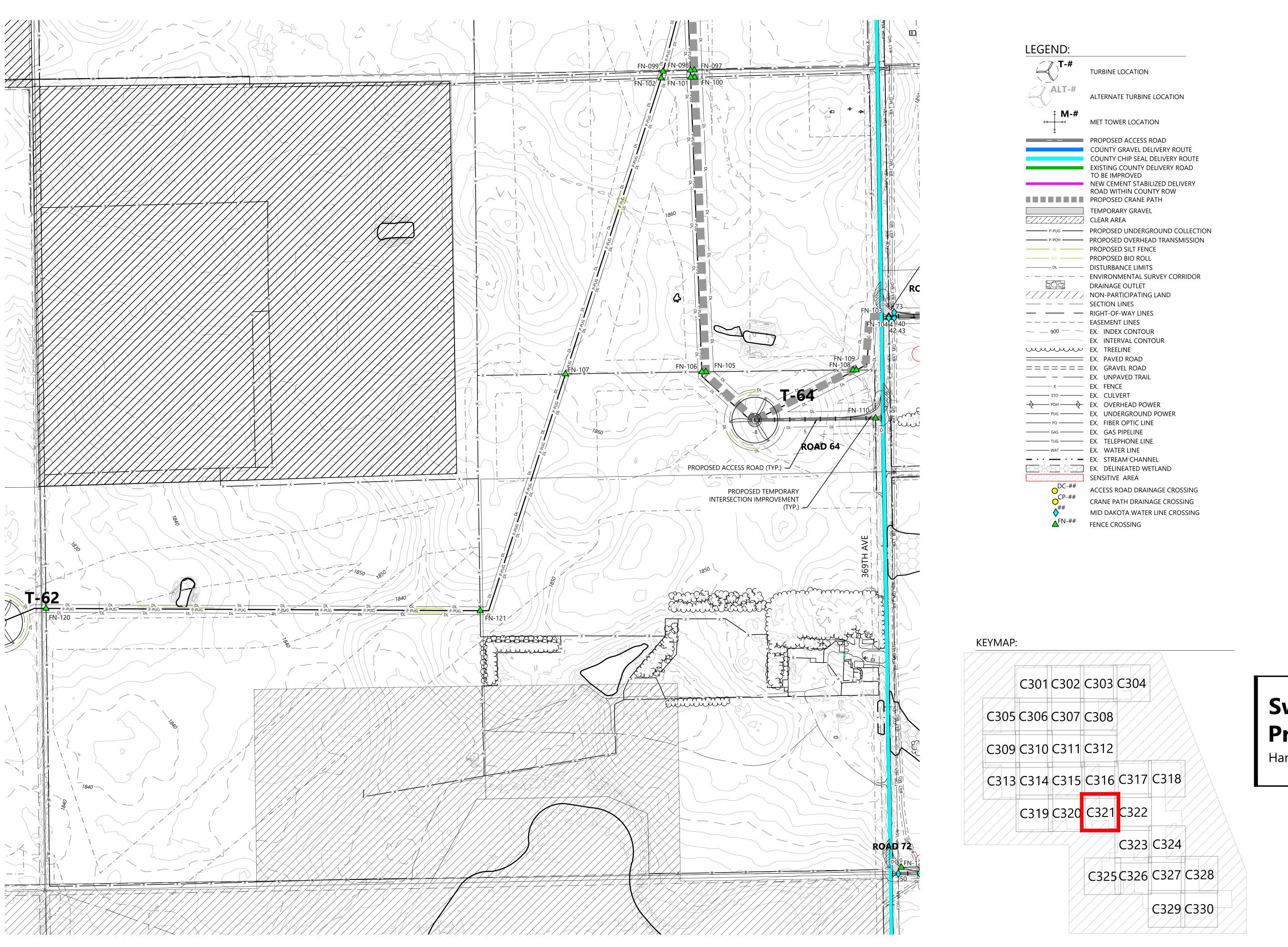
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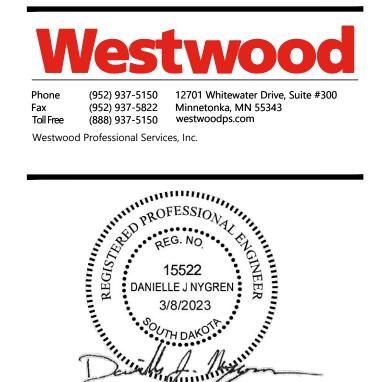
Hand County, South Dakota

Site Plan T60, T61, T62

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REPARED FOR:





ISIONS: DATE CON

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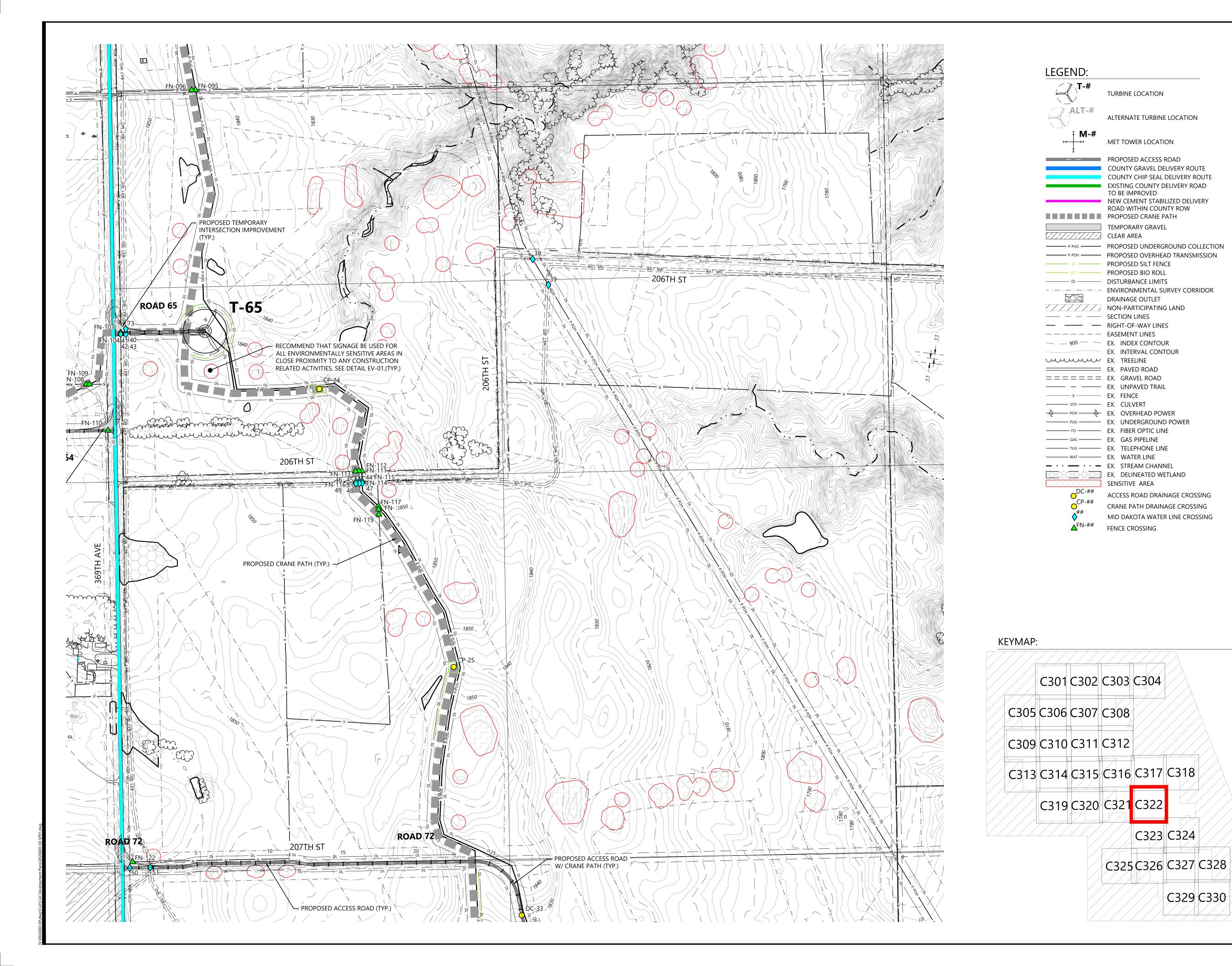
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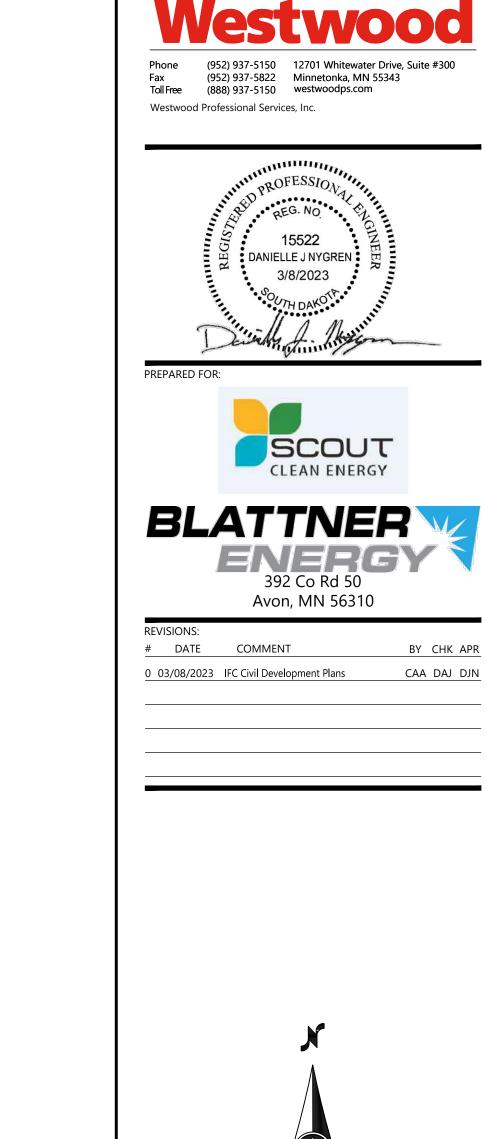
Hand County, South Dakota

Site Plan T64

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OATE: 03/08/2023





Sweetland Wind Project

Hand County, South Dakota

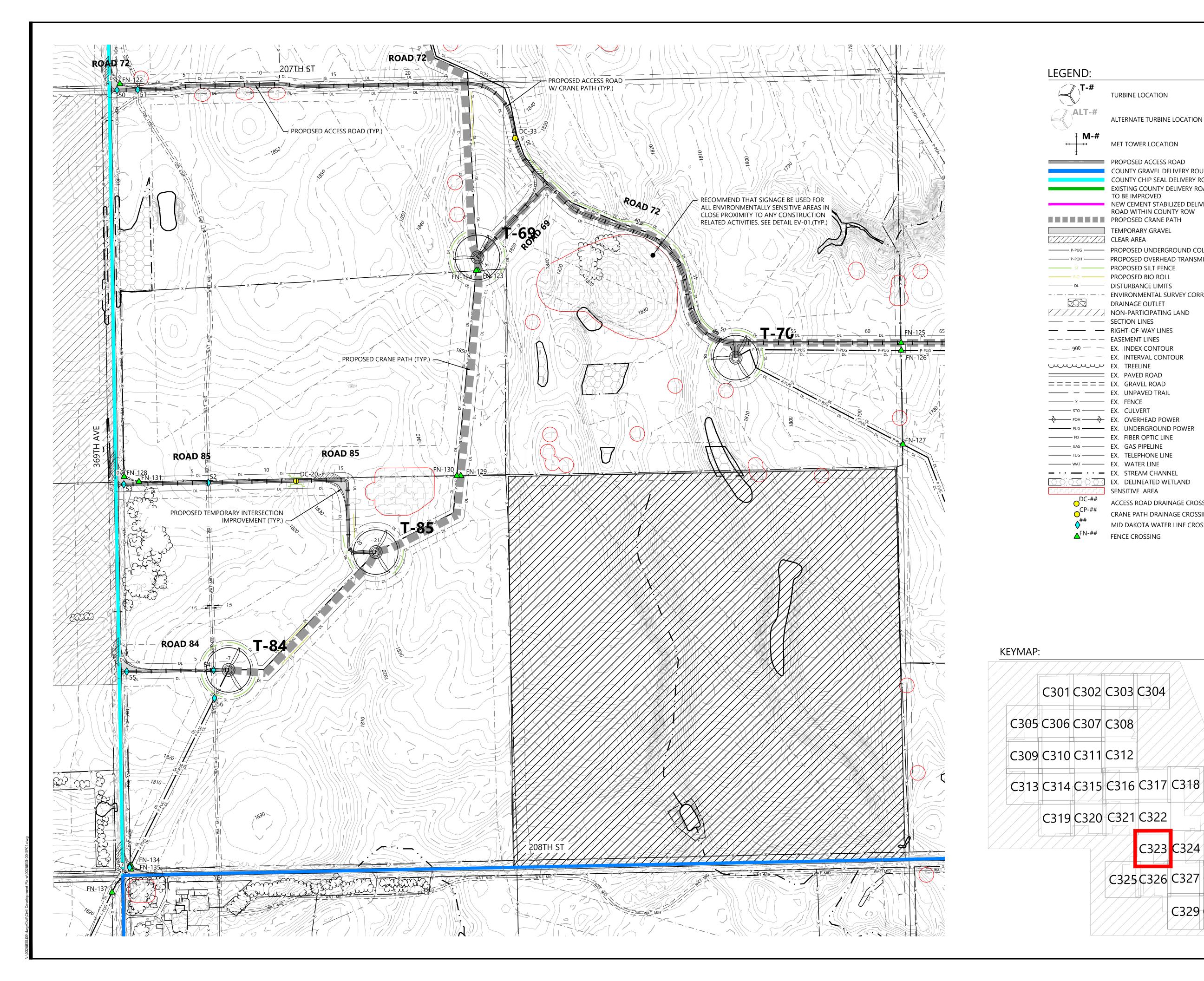
Site Plan T65

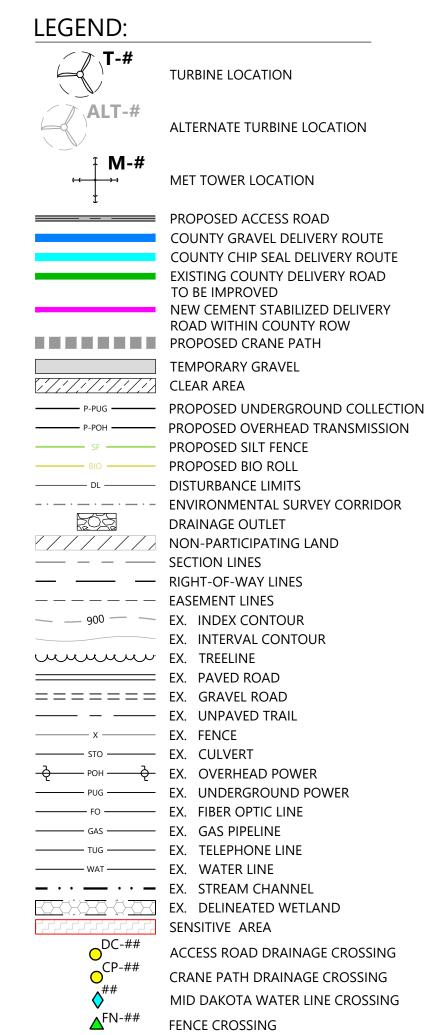
ISSUED FOR CONSTRUCTION

DATE: 03/08/2023

C322

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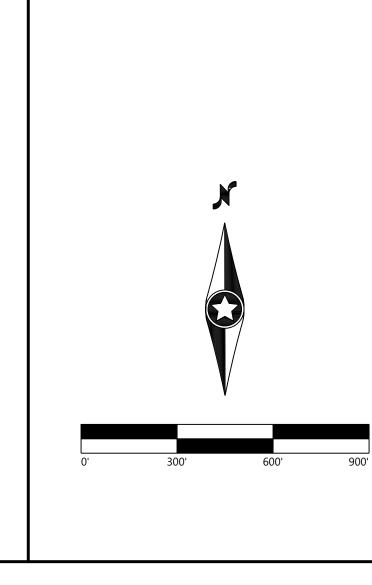


C319 C320 C321 C322

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C325 C326 C327 C328

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DANIELLE J NYGREN

SCOUT CLEAN ENERGY

Avon, MN 56310

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BLATTNER

DATE COMMENT

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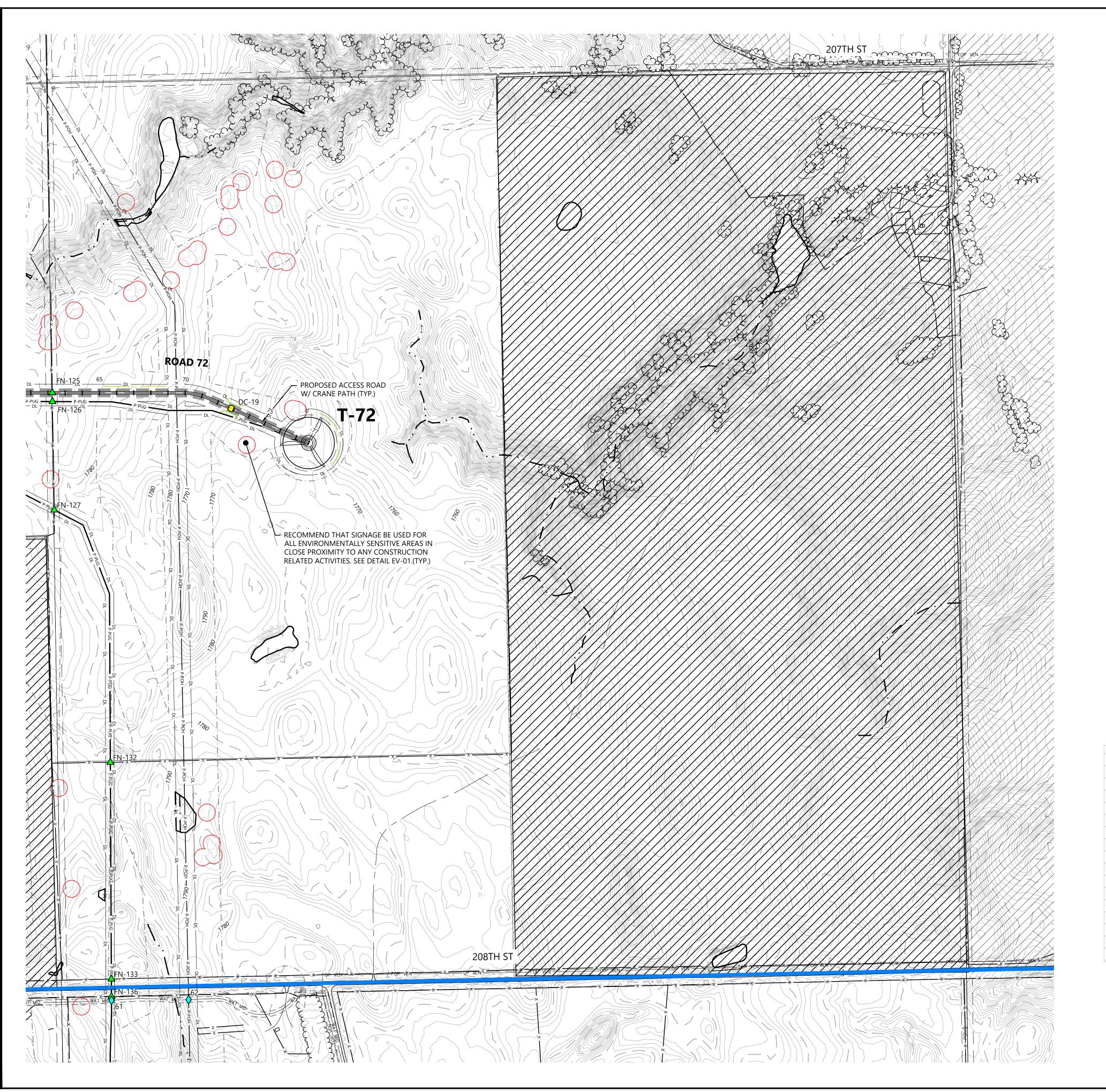
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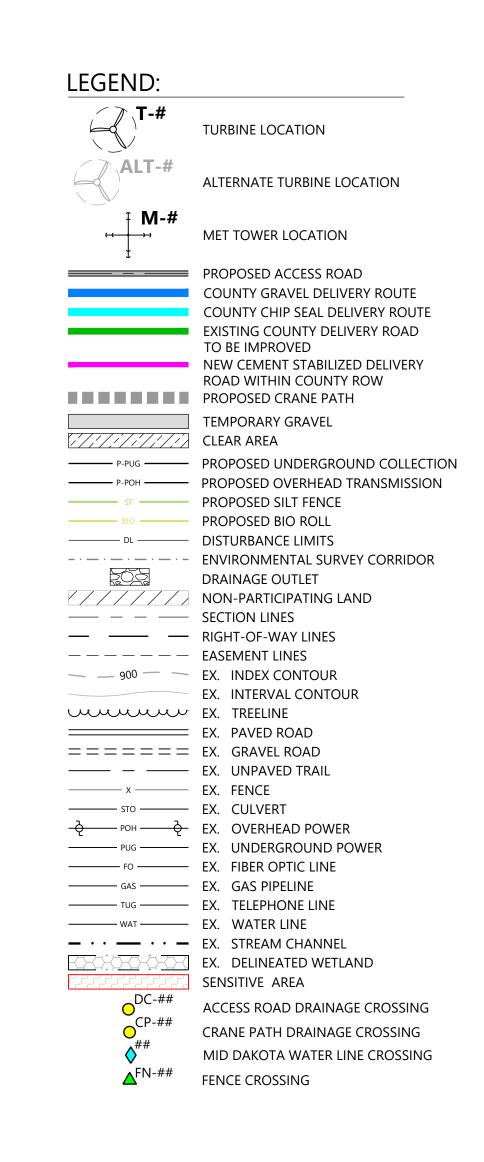
Hand County, South Dakota

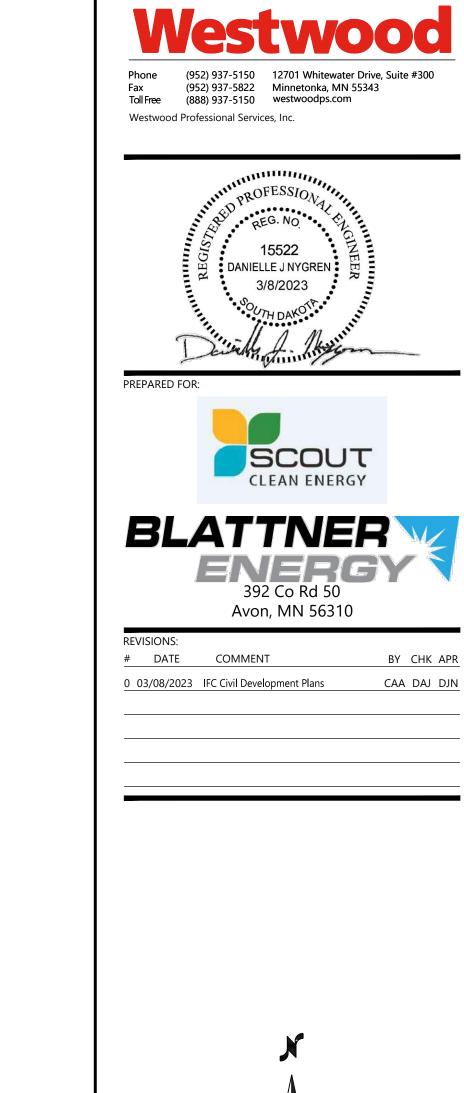
Site Plan T84, T85, T69, T70

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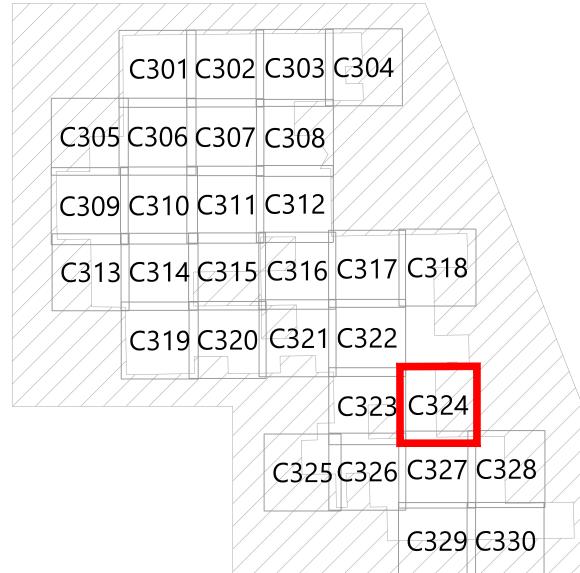
03/08/2023







KEYMAP:



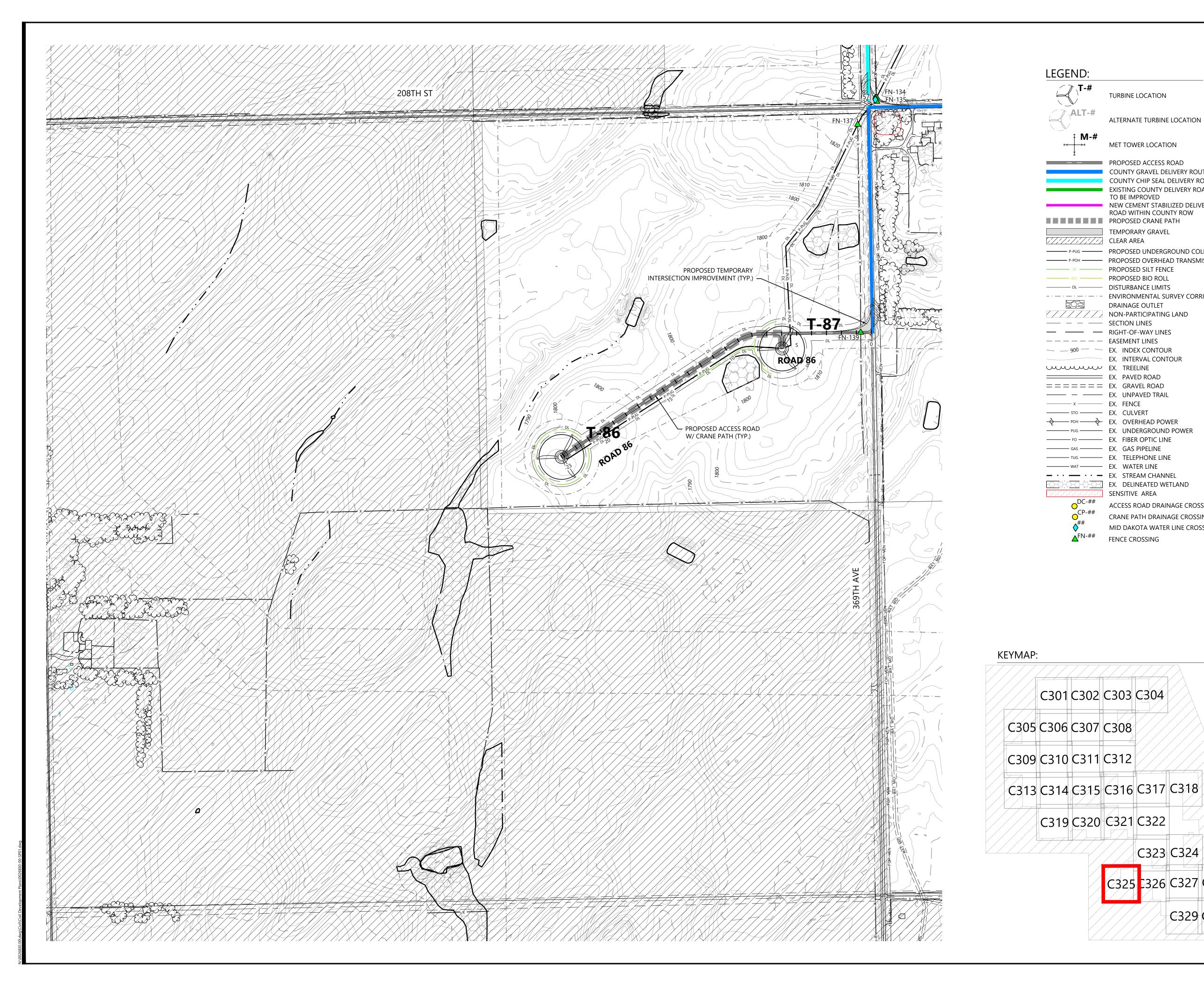
Sweetland Wind Project

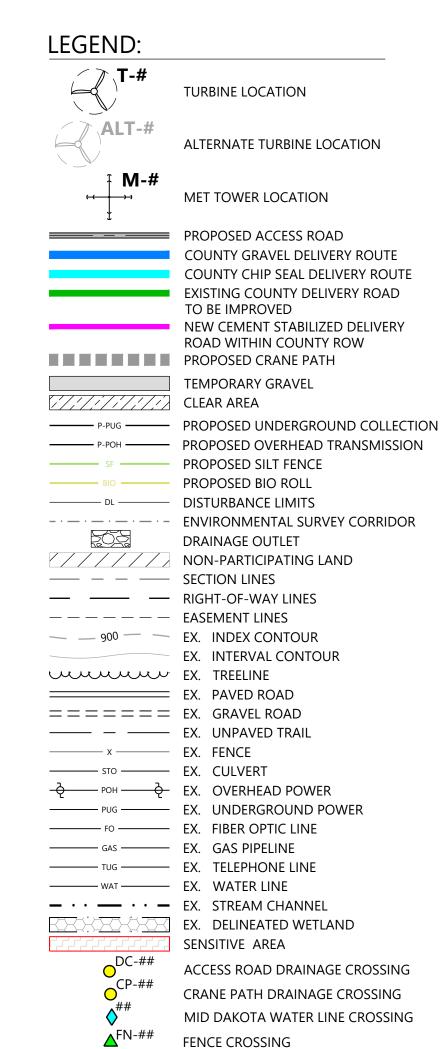
Hand County, South Dakota

Site Plan T72

ISSUED FOR CONSTRUCTION

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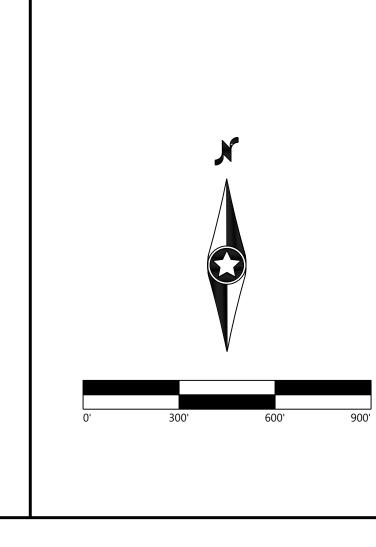


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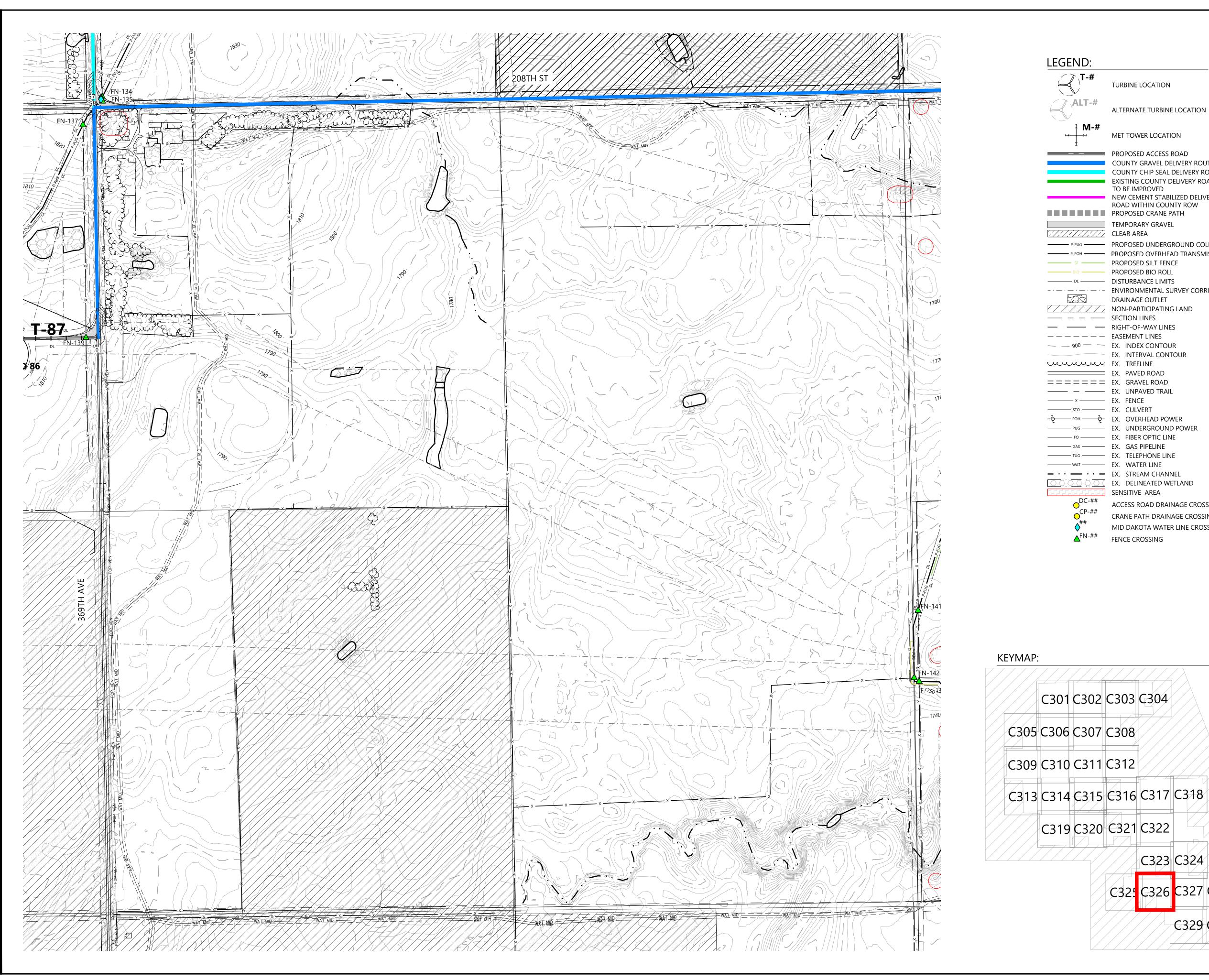
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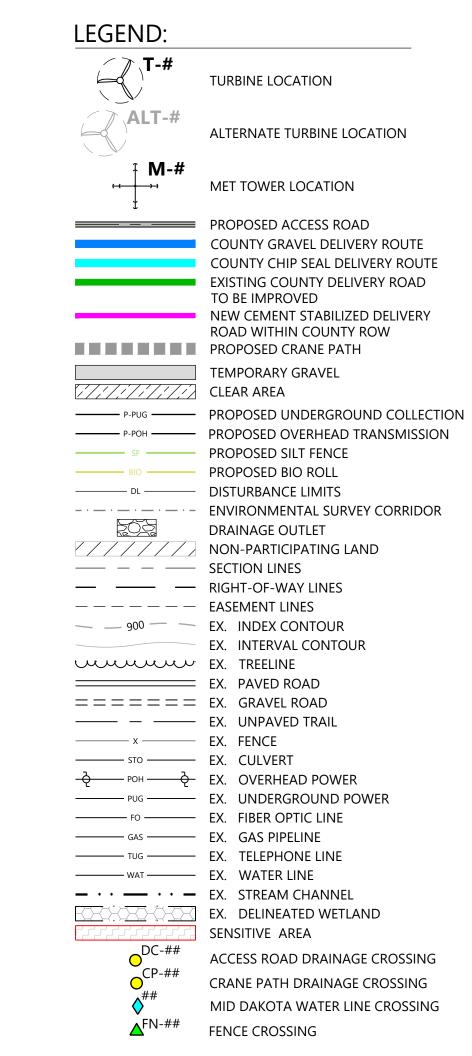
Hand County, South Dakota

Site Plan T86 T87

ISSUED FOR CONSTRUCTION

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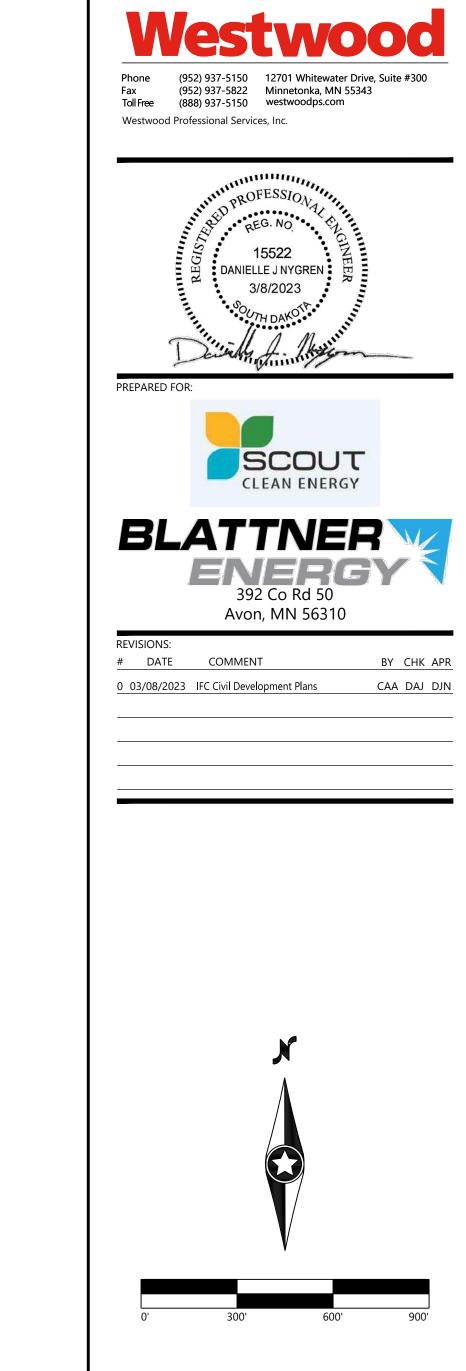


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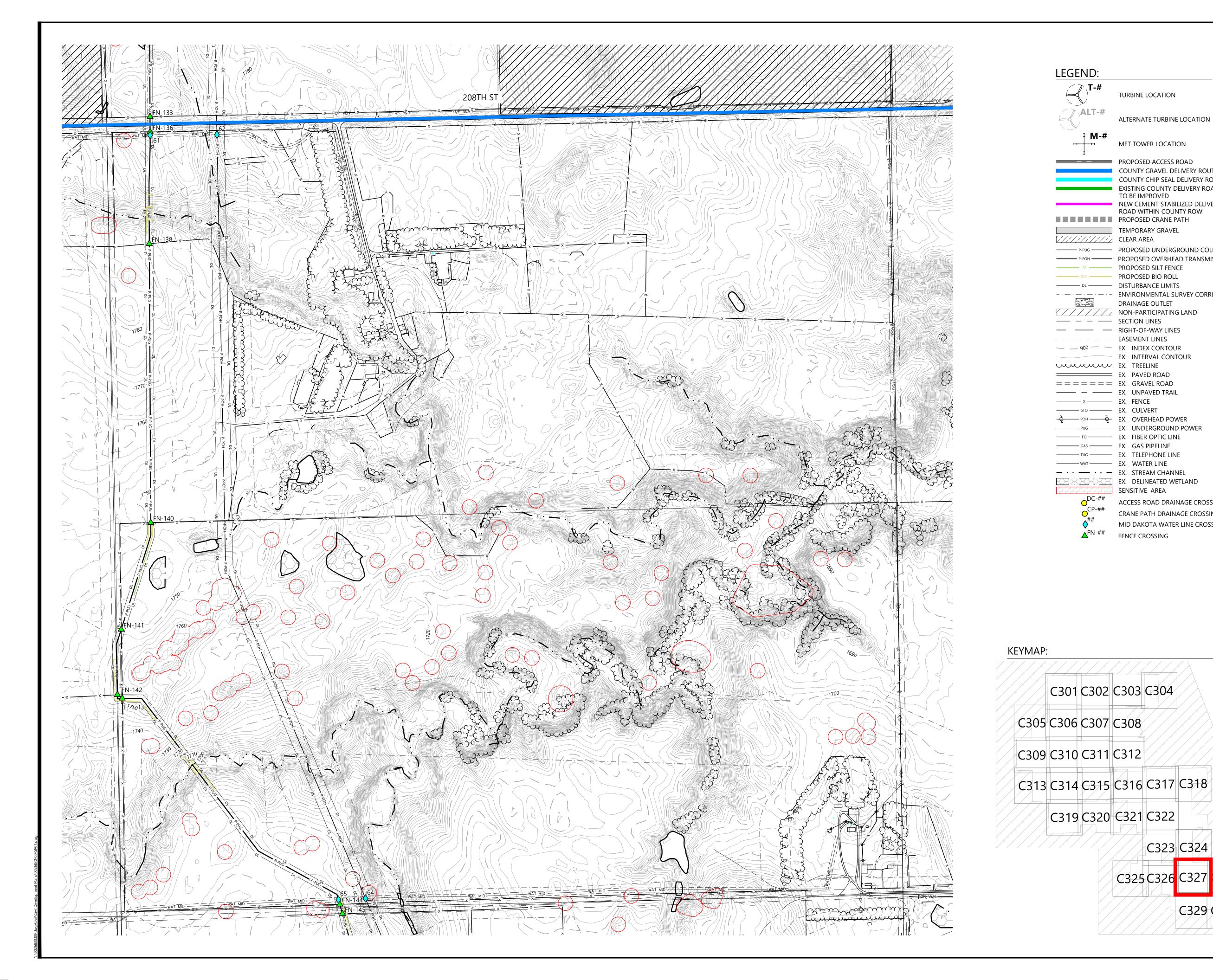
Sweetland Wind Project

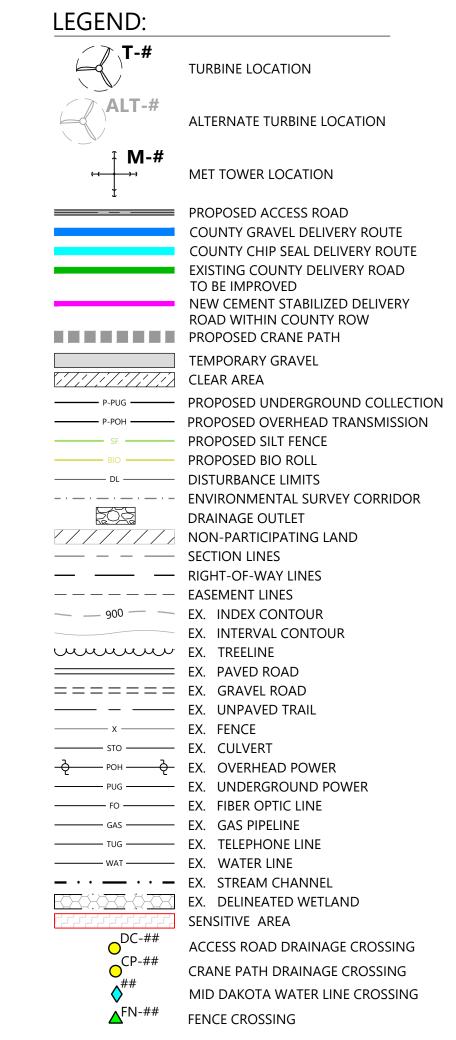
Hand County, South Dakota

Site Plan

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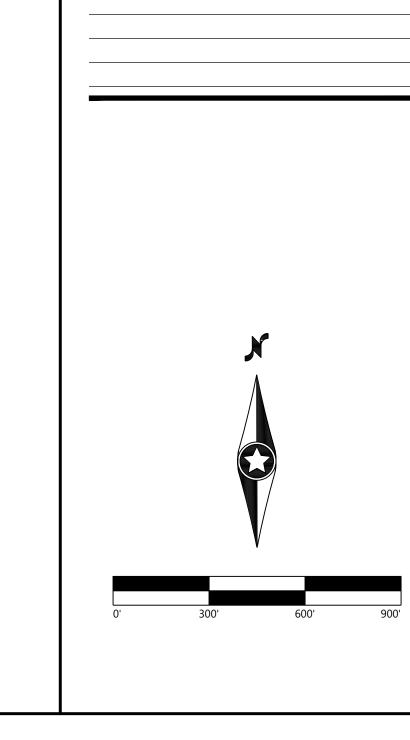


C319 C320 C321 C322

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Avon, MN 56310

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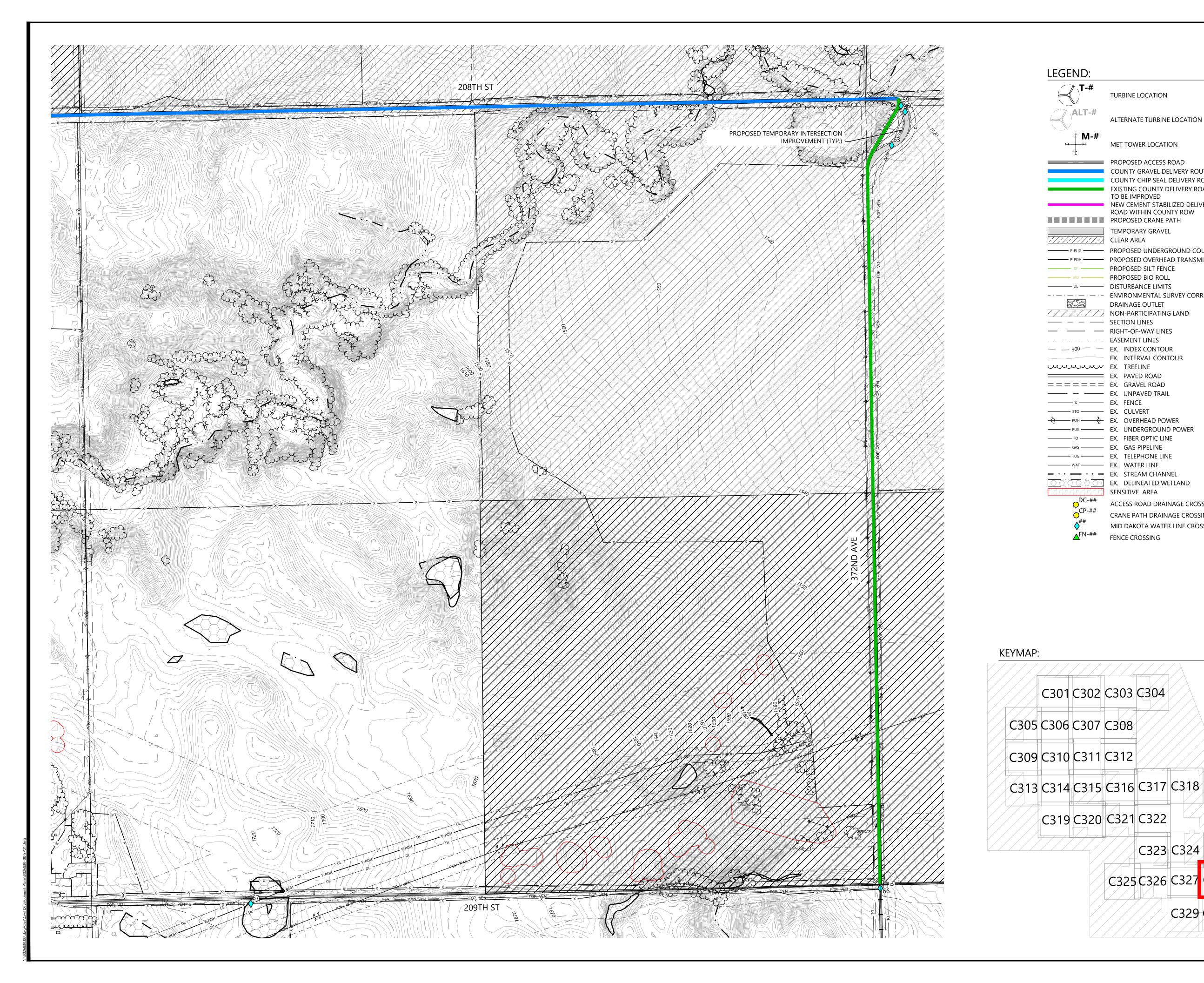
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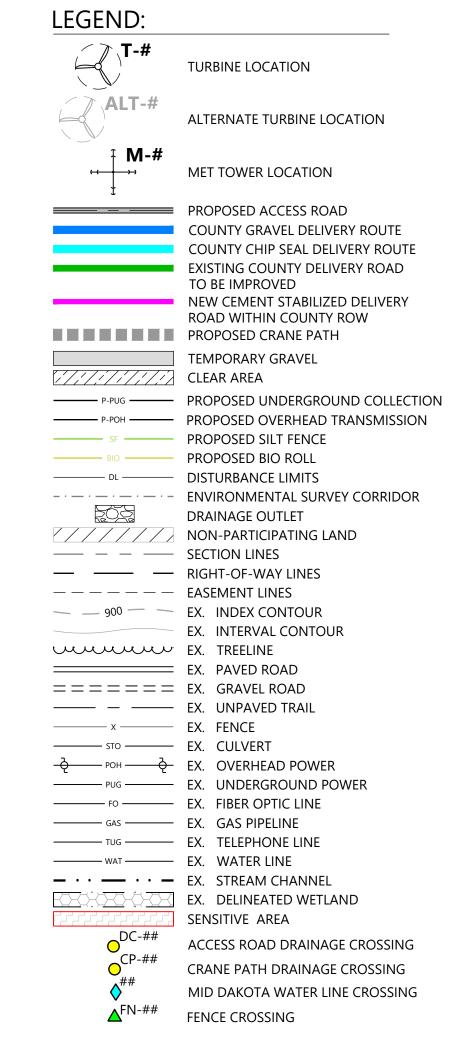
Hand County, South Dakota

Site Plans

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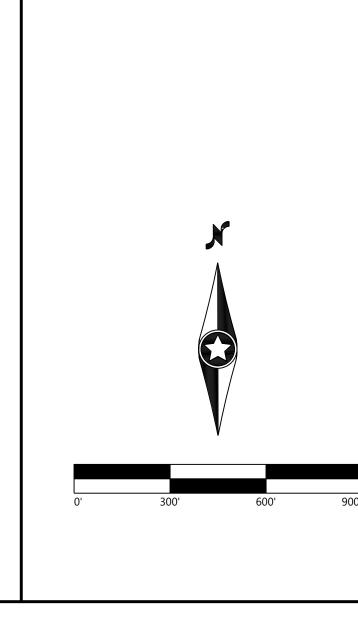


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Avon, MN 56310

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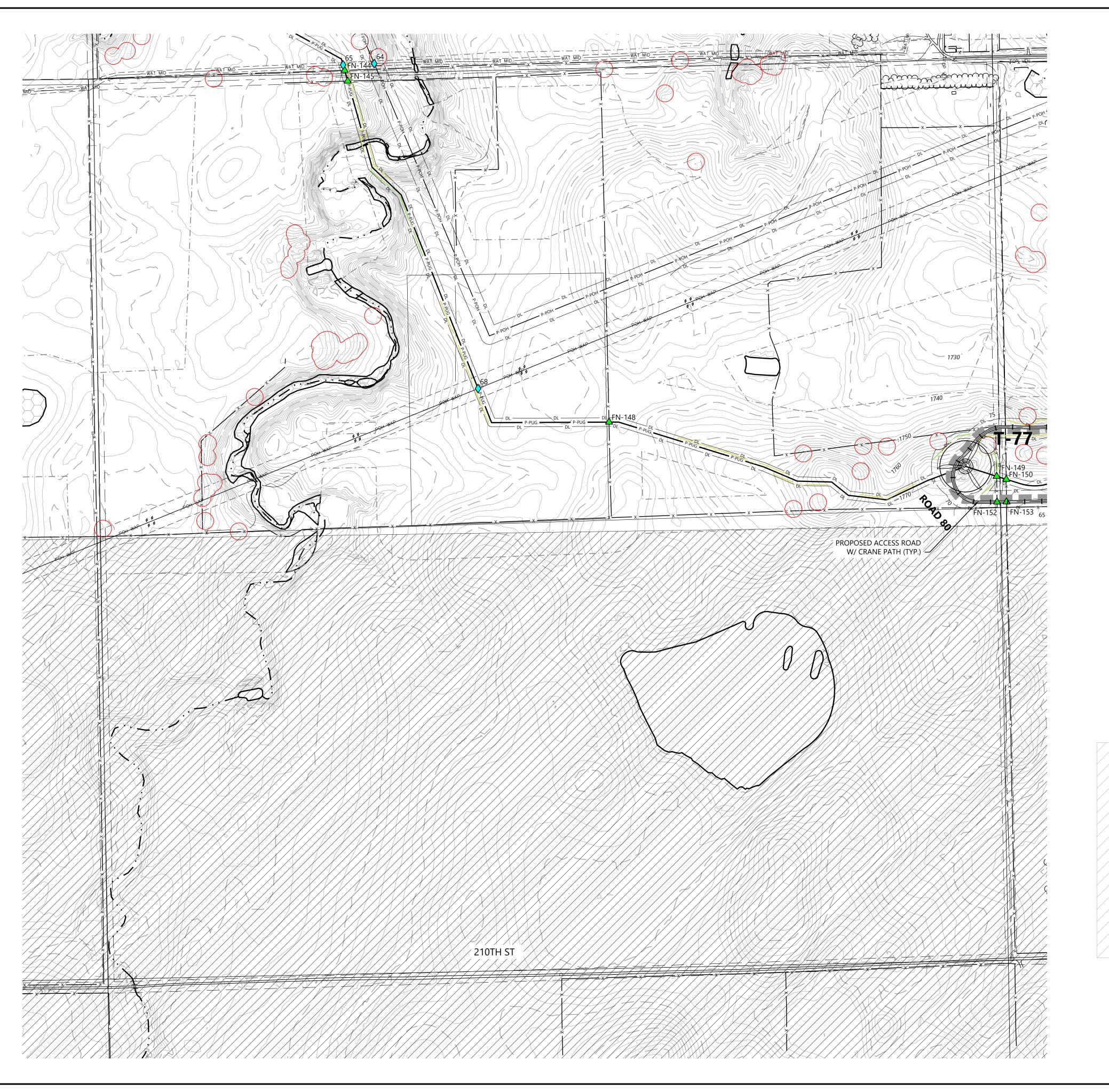
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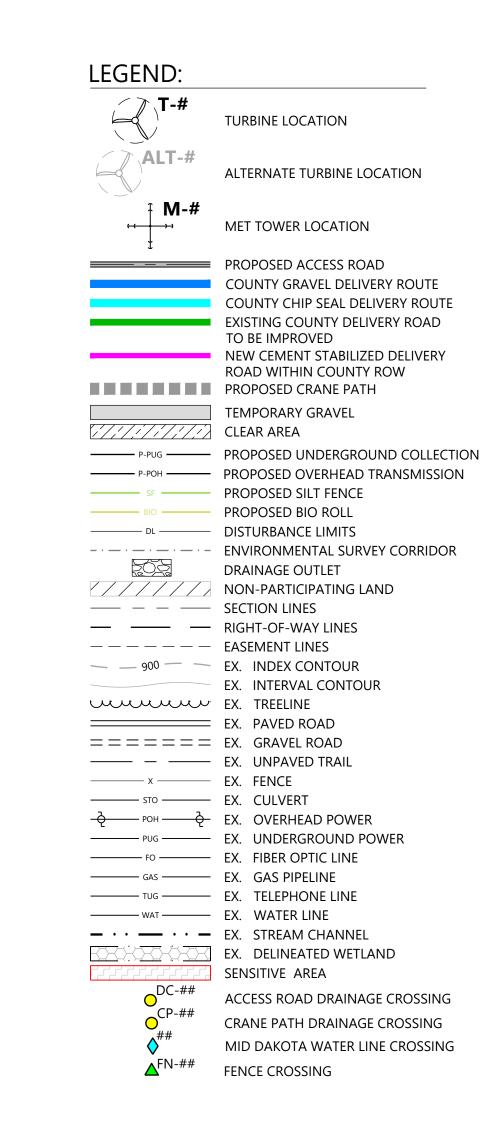
Hand County, South Dakota

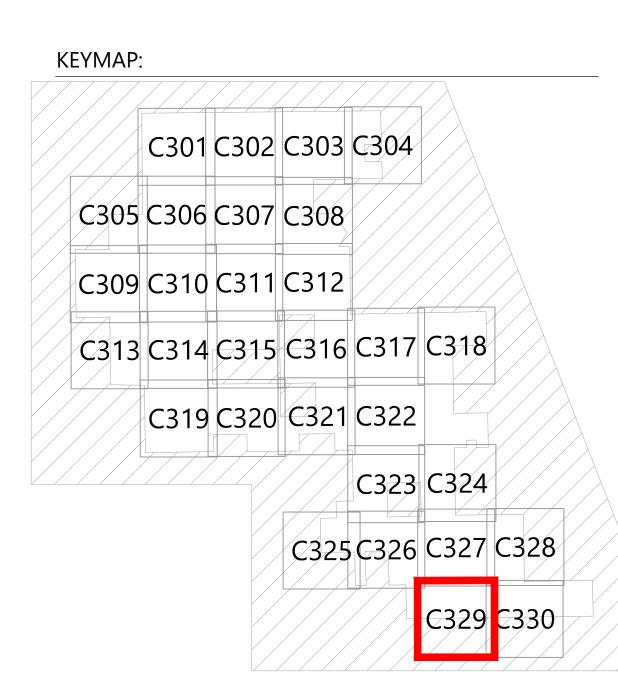
Site Plan

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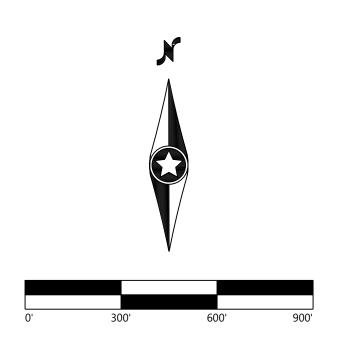
Avon, MN 56310

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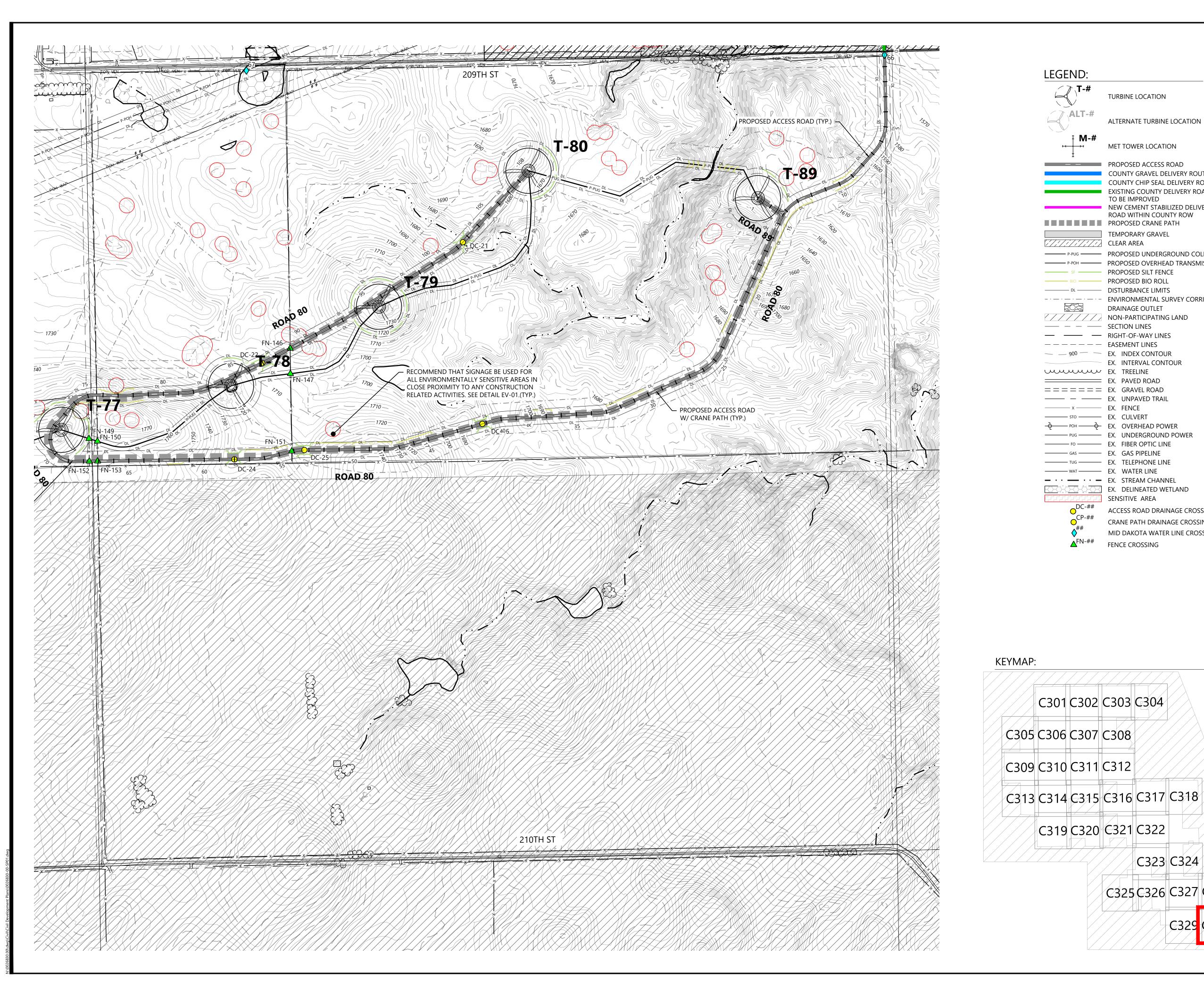
Sweetland Wind Project

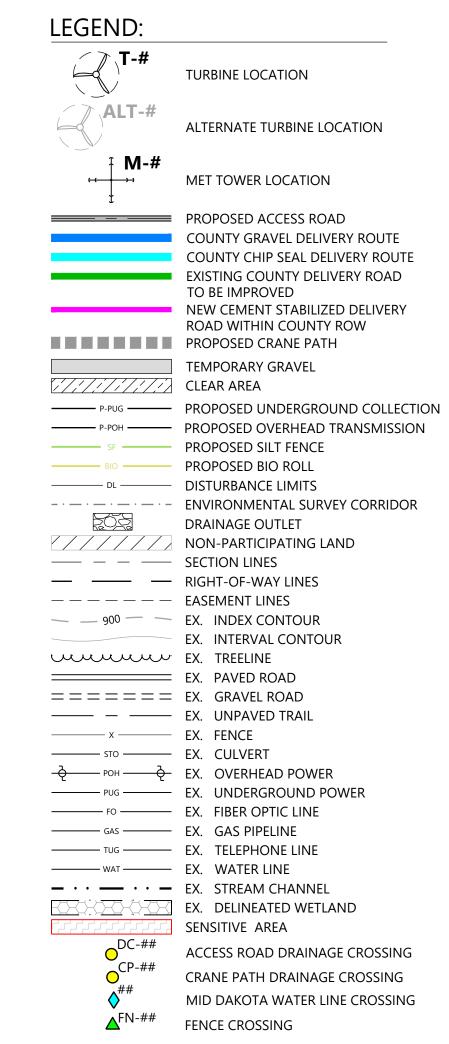
Hand County, South Dakota

Site Plan T77

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C319 C320 C321 C322

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DANIELLE J NYGREN SCOUT **CLEAN ENERGY** BLATTNER Avon, MN 56310 # DATE COMMENT BY CHK APR 0 03/08/2023 IFC Civil Development Plans CAA DAJ DJN

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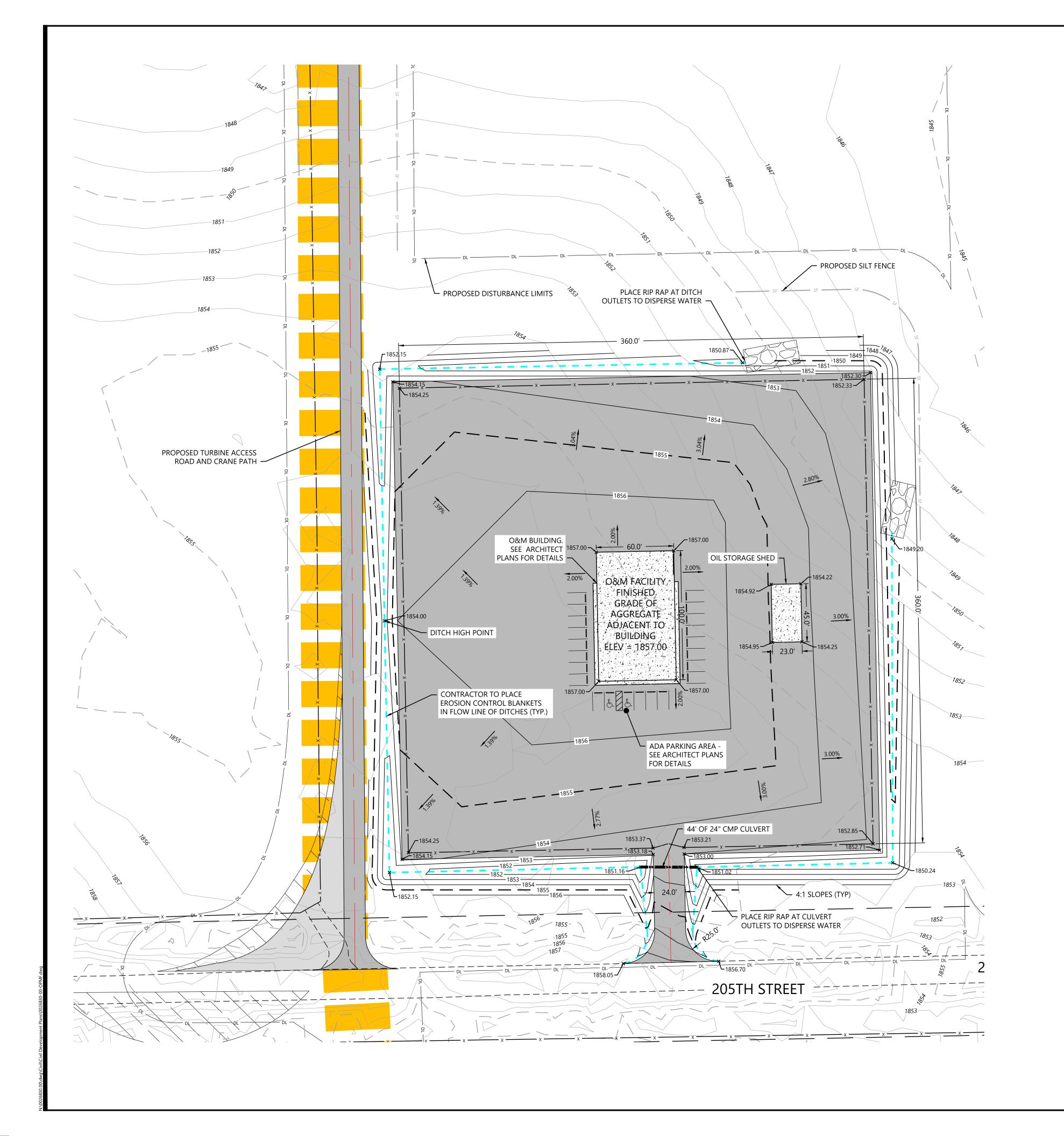
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Sweetland Wind

Site Plan T78, T79, T80,

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03/08/2023



LEGEND:

PROPOSED ACCESS ROAD PROPOSED CRANE PATH PROPOSED CULVERT DRAINAGE OUTLET DISTURBANCE LIMITS 6" AGGREGATE SURFACE PARCEL LINES — SF — PROPOSED SILT FENCE CONCRETE AREA P-PUG — PROPOSED UNDERGROUND COLLECTION — 900 — PROPOSED INDEX CONTOUR ——901 — PROPOSED INTERVAL CONTOUR — 900 — EX. INDEX CONTOUR 901 EX. INTERVAL CONTOUR PROPOSED DITCH PROPOSED FINISHED GRADE ELEVATION = = = = = = EX. GRAVEL ROAD ——— × ——— EX. FENCE ——— POH — EX. OVERHEAD POWER — RIGHT-OF-WAY LINES ————— EASEMENT LINES

GENERAL NOTES

- 1. ALL CONSTRUCTION SHALL CONFORM TO LOCAL, STATE AND FEDERAL RULES INCLUDING THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM (TPDES) PERMIT REQUIREMENTS. REFER TO THE STORM WATER POLLUTION PREVENTION PLAN PREPARED FOR SWEETLAND WIND PROJECT FOR DETAILS.
- 2. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. THE CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES OCCURRING DURING THE CONSTRUCTION PHASES OF THIS PROJECT.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING TRAFFIC CONTROL DEVICES SUCH AS BARRICADES, WARNING SIGNS, DIRECTIONAL SIGNS, AND FLAGGERS TO CONTROL THE MOVEMENT OF TRAFFIC WHERE NECESSARY. PLACEMENT OF THESE DEVICES SHALL BE APPROVED BY THE COUNTY AND ENGINEER PRIOR TO PLACEMENT.
- 4. ALL SLOPES SHALL BE GRADED TO 4:1 OR FLATTER, UNLESS OTHERWISE INDICATED ON THE PLAN. ALL SLOPES 3:1 OR GREATER SHALL BE SEEDED AND STABILIZED WITH FIBER BLANKET.
- 5. SPOT ELEVATIONS AND PROPOSED CONTOURS INDICATE FINISHED GRADE SURFACE. FINISH GRADE ELEVATIONS ARE TO TOP OF AGGREGATE.
- 6. AFTER THE SITE GRADING IS COMPLETED, IF EXCESS SOIL MATERIAL EXISTS, THE CONTRACTOR SHALL DISPOSE OF ALL EXCESS SOIL MATERIAL IN A MANNER ACCEPTABLE TO THE OWNER AND THE REGULATING AGENCIES INVOLVED.
- 7. PROVIDE EROSION CONTROL SILT FENCE AT THE PERIMETER OF ALL TEMPORARY STOCKPILES. LOCATIONS TO BE DETERMINED BY SEQUENCE OF GRADING OPERATIONS.
- 8. ALL DIMENSIONS AND ORIENTATIONS TO BE CONFIRMED BY OWNER.
- 9. SUBGRADE SHALL BE COMPACTED TO A MINIMUM 95% OF MAXIMUM STANDARD PROCTOR DRY DENSITY.
- 10. EARTHWORK QUANTITIES ARE IN-PLACE ESTIMATES, NO SHRINK OR SWELL IS ASSUMED.
- 11. FOUNDATIONS, BUILDING SLAB, AND CONCRETE APRONS TO BE DESIGNED BY OTHERS.

OPERATION & MAINTENANCE SITE

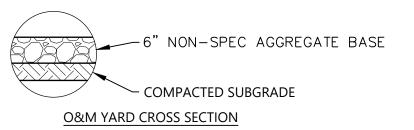
O&M PAD & DRIVEWAY AGGREGATE AREA = 132,145 SF± GREEN SPACE (DITCHES & TIE-IN SLOPES) = 37,850 SF± O&M CONCRETE/ASPHALT AREA = 7,035 SF± TOTAL GRADED AREA = 177,030 SF±

EARTHWORK

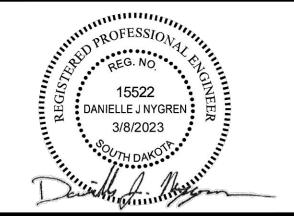
8" TOPSOIL STRIPPING = 4,370 CY

RAW CUT (+) = 5,575 CY RAW FILL (-) = 4,750 CY RAW NET = 825 CY

6" AGGREGATE IMPORT = 2,450 CY







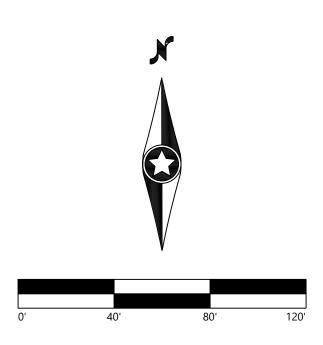




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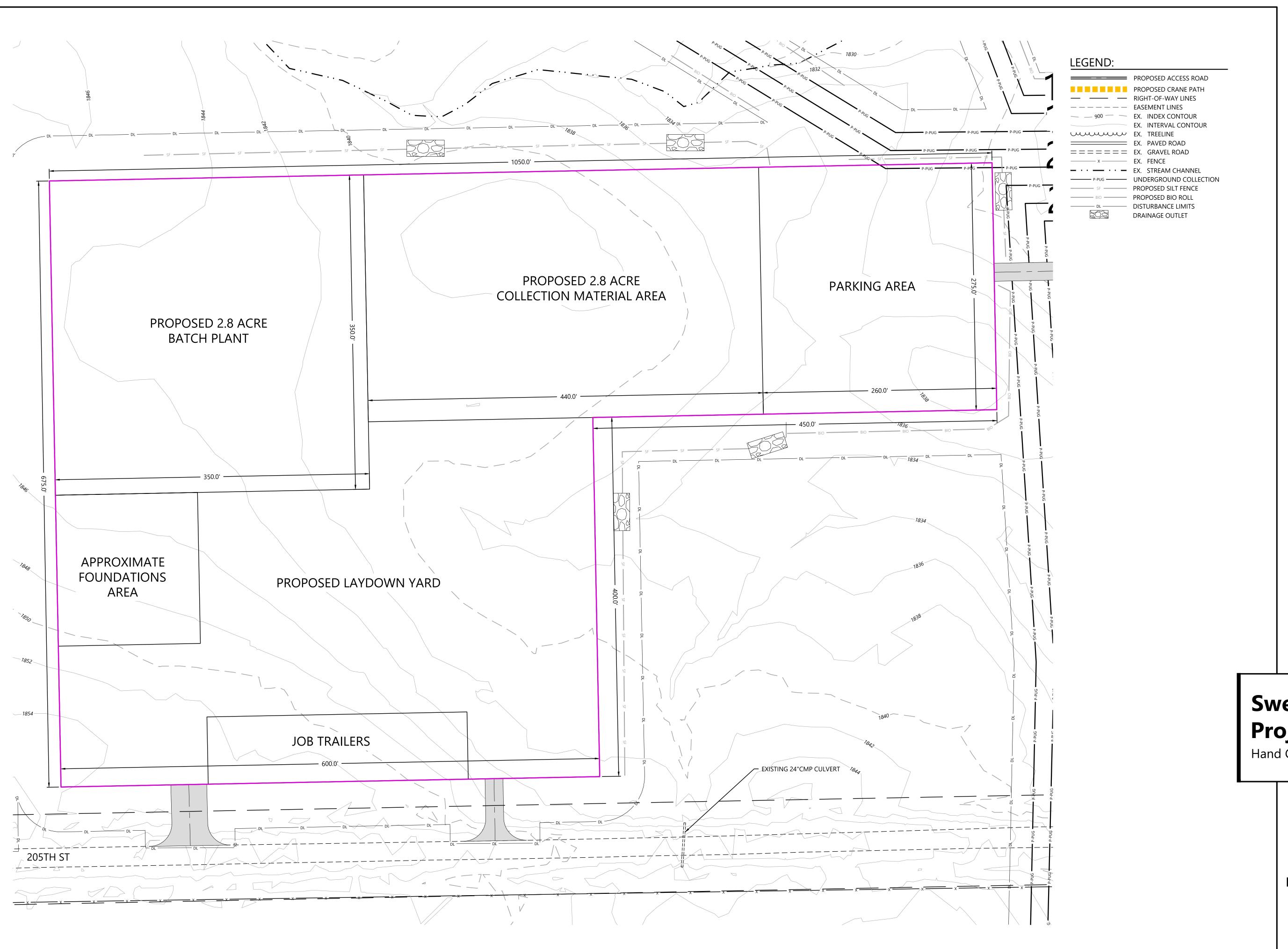
Hand County, South Dakota

O&M Facility Plan

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03/08/2023

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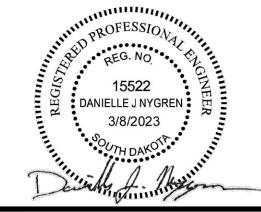


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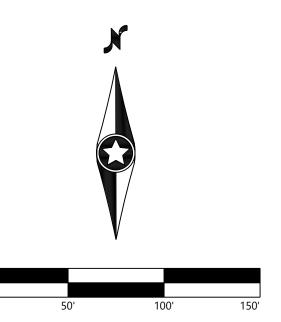
PREPARED FOR:





REVISIONS:
DATE COMMENT BY CHK APR

0 03/08/2023 IFC Civil Development Plans CAA DAJ DJN



Sweetland Wind Project

Hand County, South Dakota

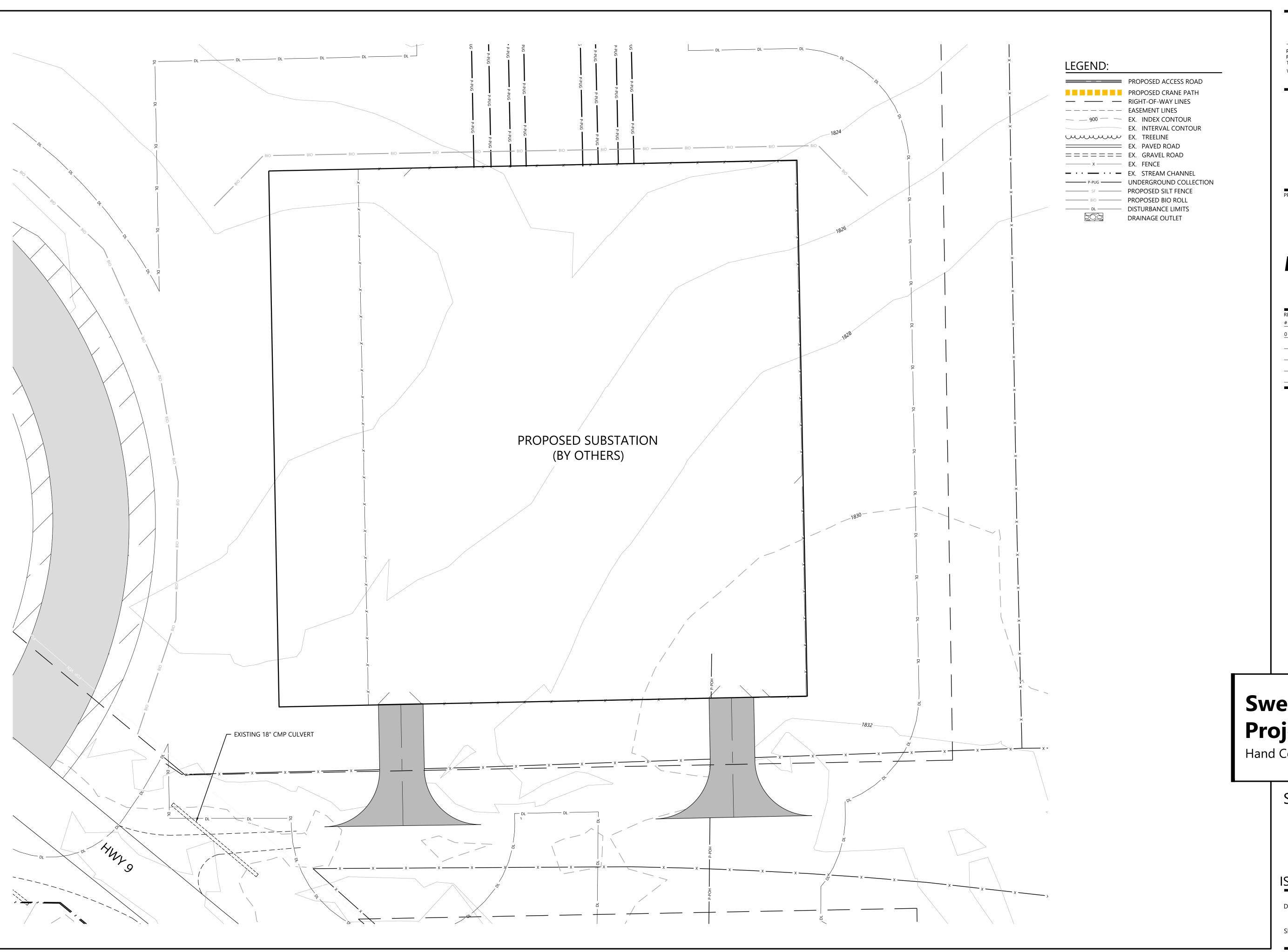
Laydown Yard Plan

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DATE: 03/08/2023

T: C501

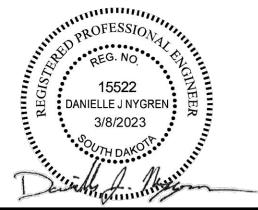
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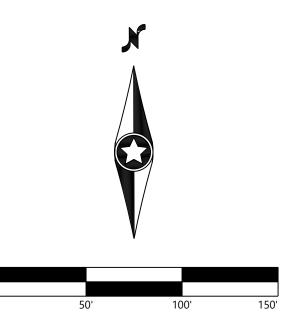
PREPARED FOR





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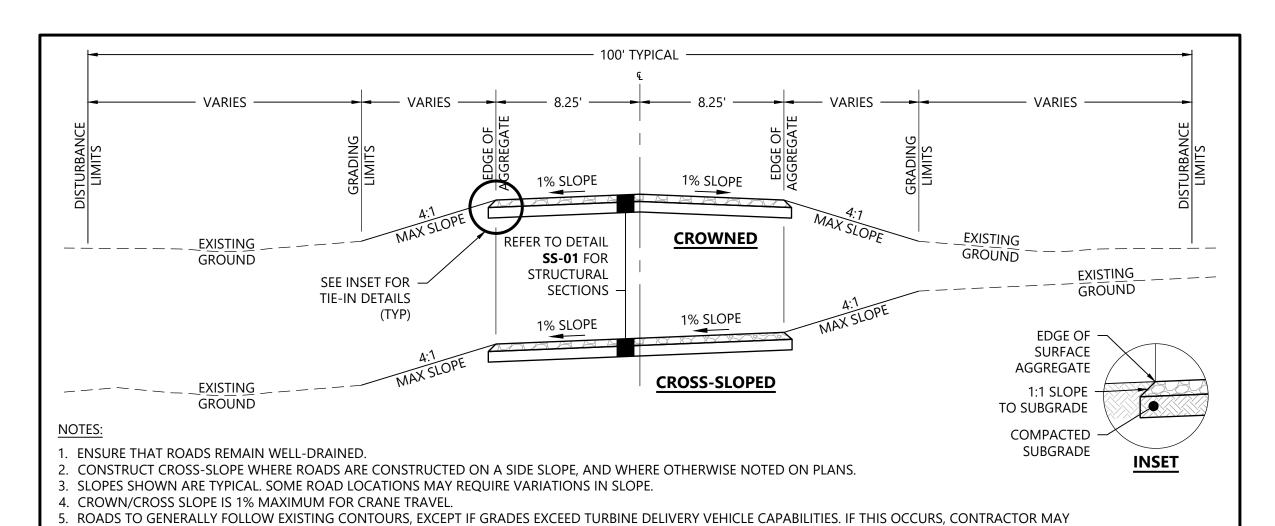
Hand County, South Dakota

Substation Plan

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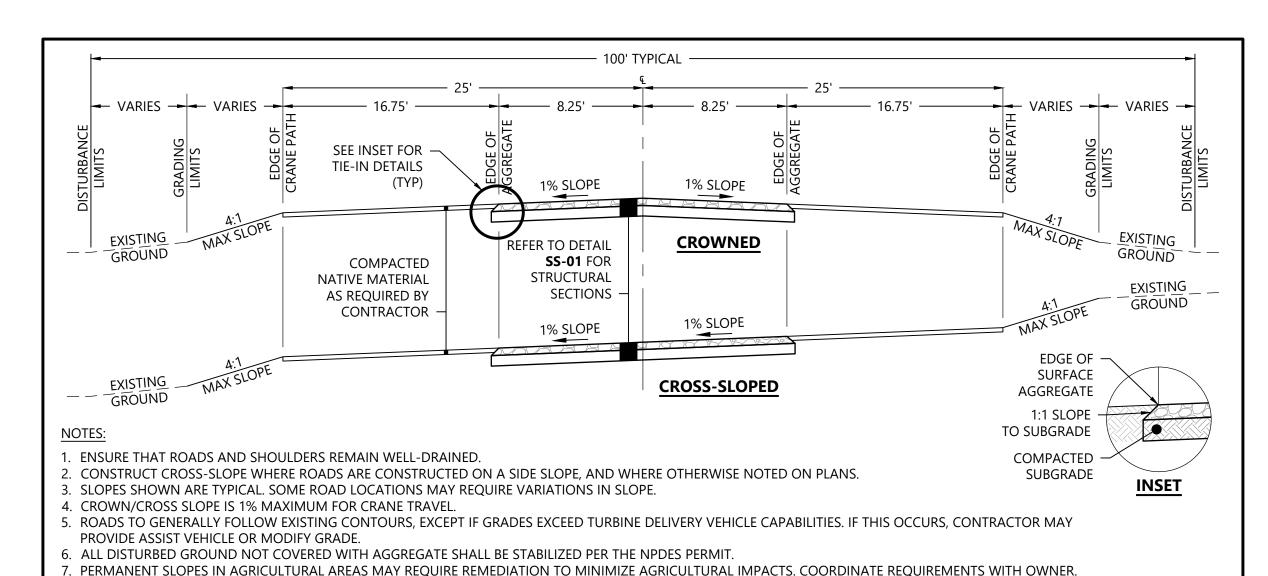
C502



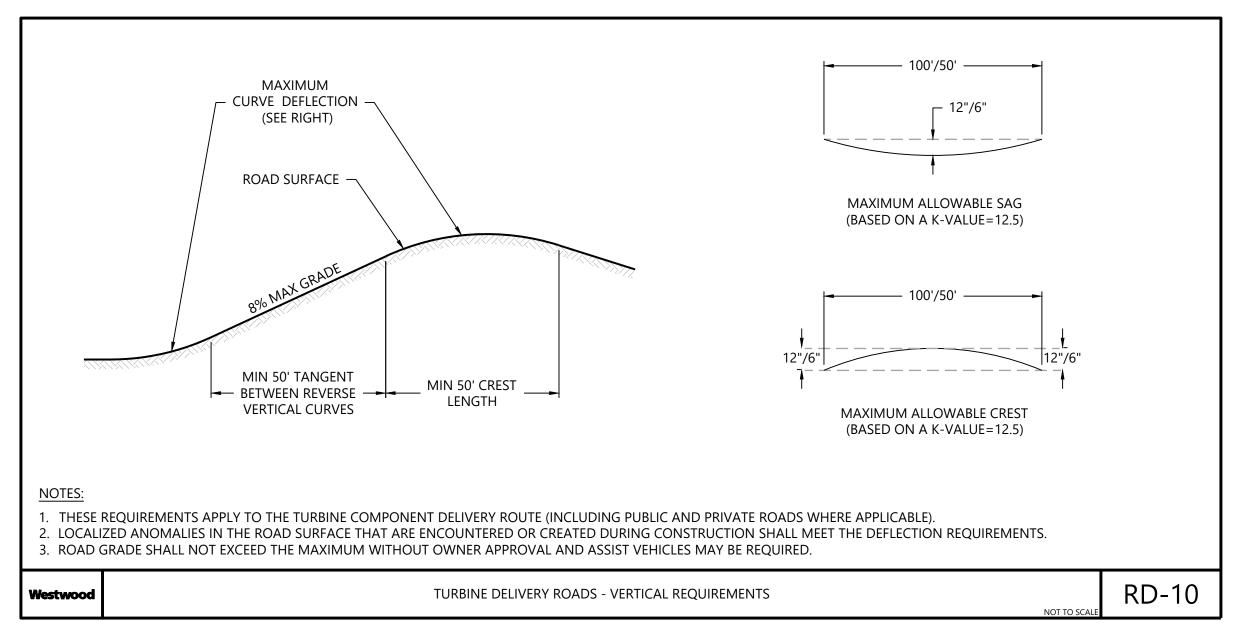
7. PERMANENT SLOPES IN AGRICULTURAL AREAS MAY REQUIRE REMEDIATION TO MINIMIZE AGRICULTURAL IMPACTS. COORDINATE REQUIREMENTS WITH OWNER. **RD-01** TYPICAL ACCESS ROAD

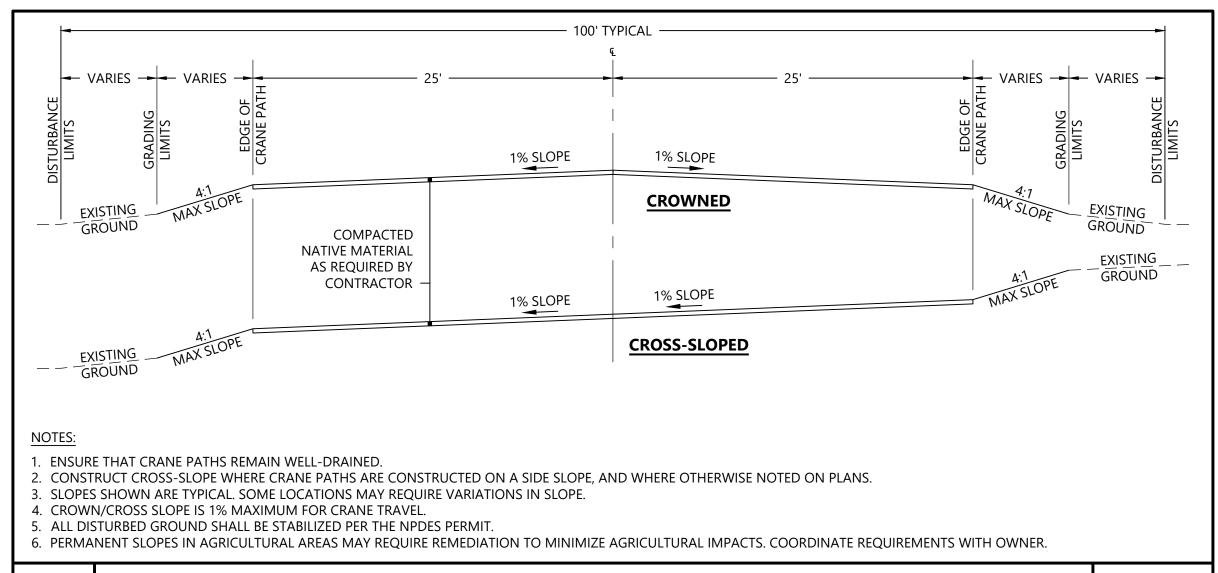
PROVIDE ASSIST VEHICLE OR MODIFY GRADE.

5. ALL DISTURBED GROUND NOT COVERED WITH AGGREGATE SHALL BE STABILIZED PER THE NPDES PERMIT.

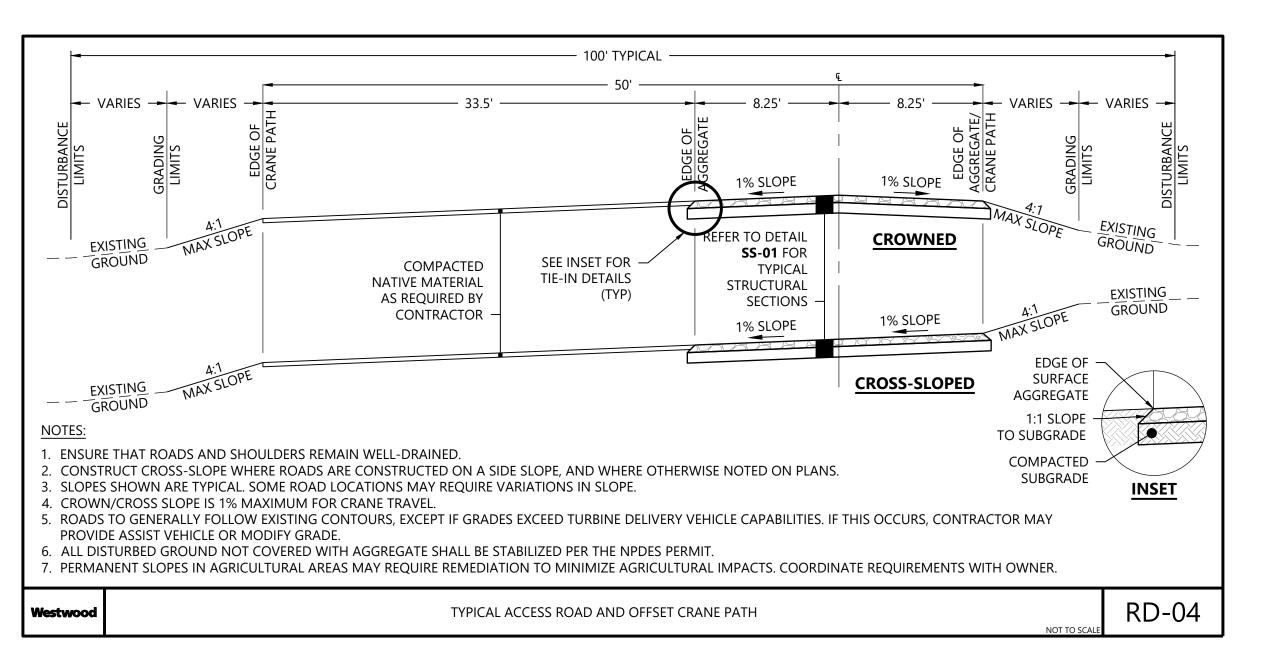


TYPICAL ACCESS ROAD AND CRANE PATH

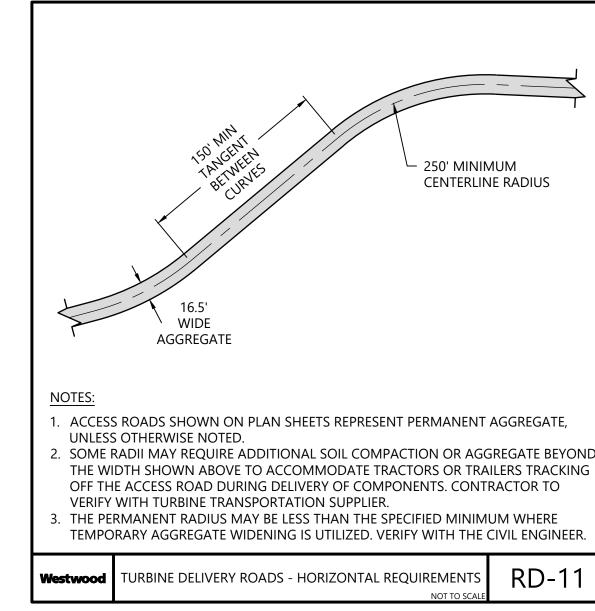




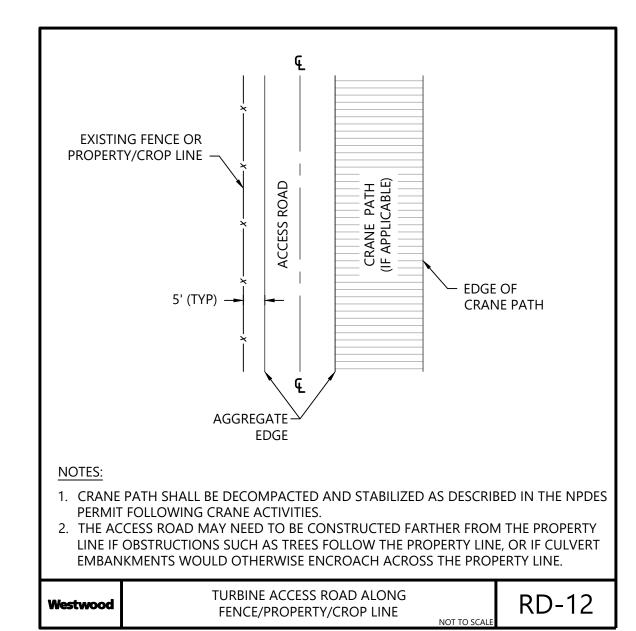
TYPICAL CRANE PATH



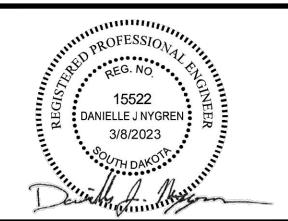
RD-11



RD-03







RD-02





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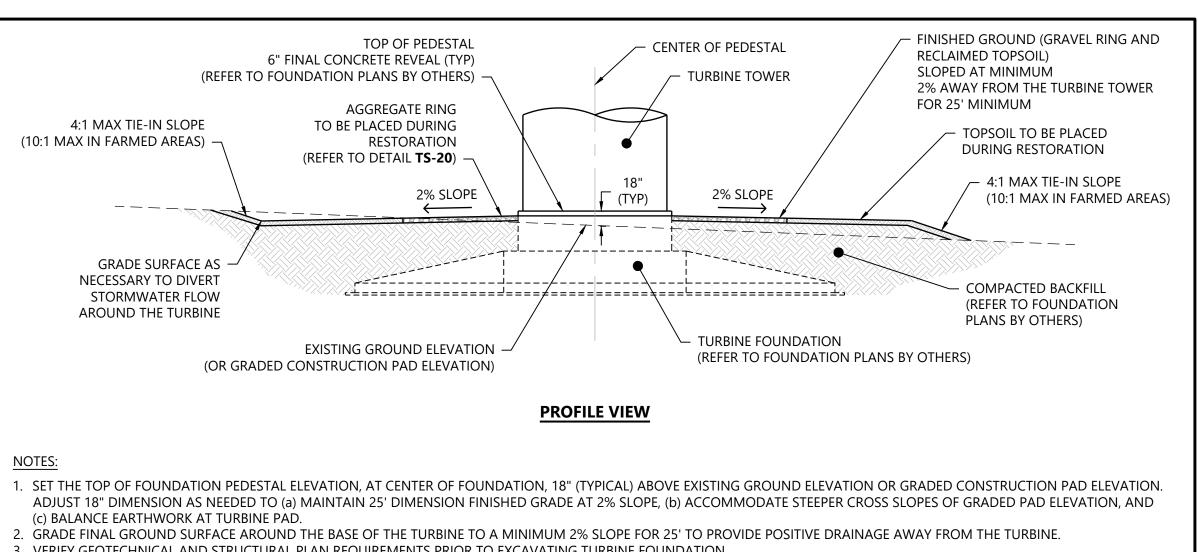
Hand County, South Dakota

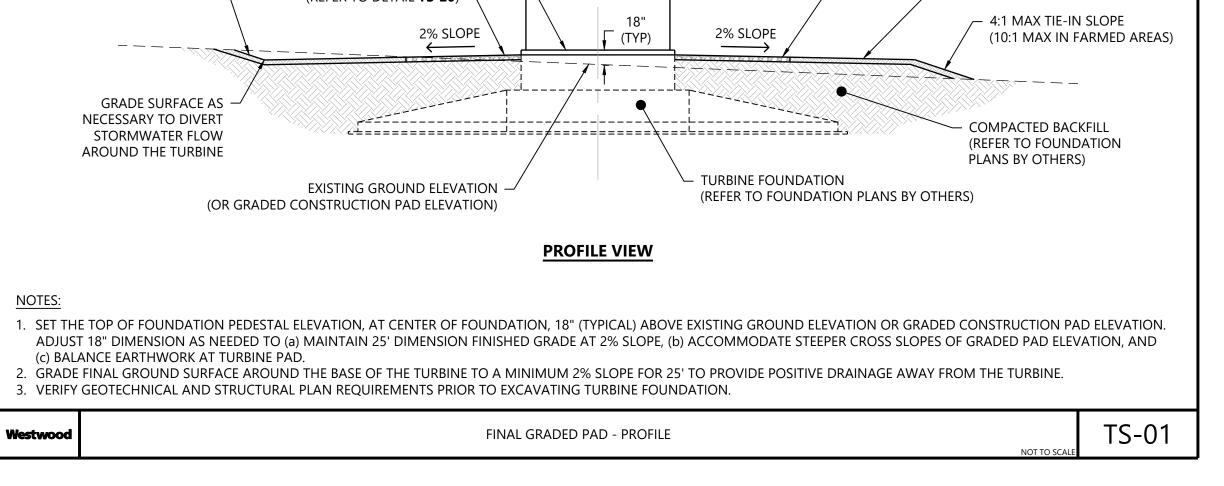
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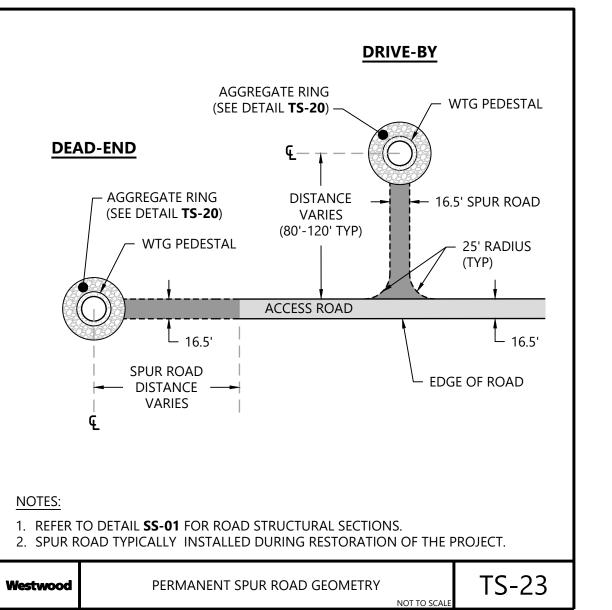
ISSUED FOR CONSTRUCTION

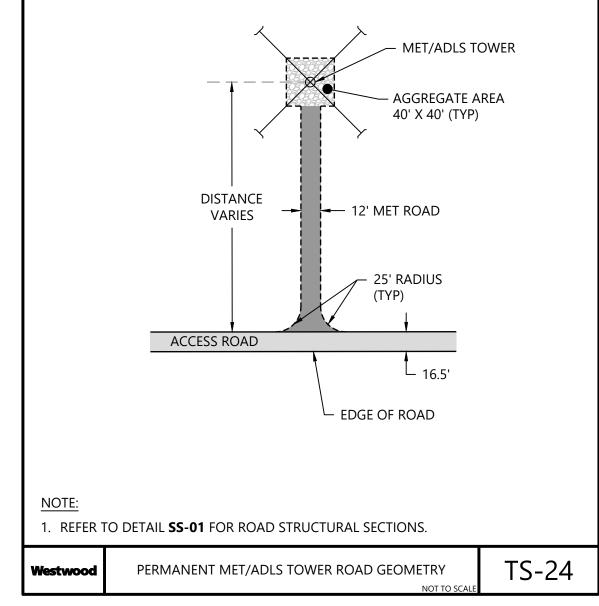
03/08/2023 DATE:

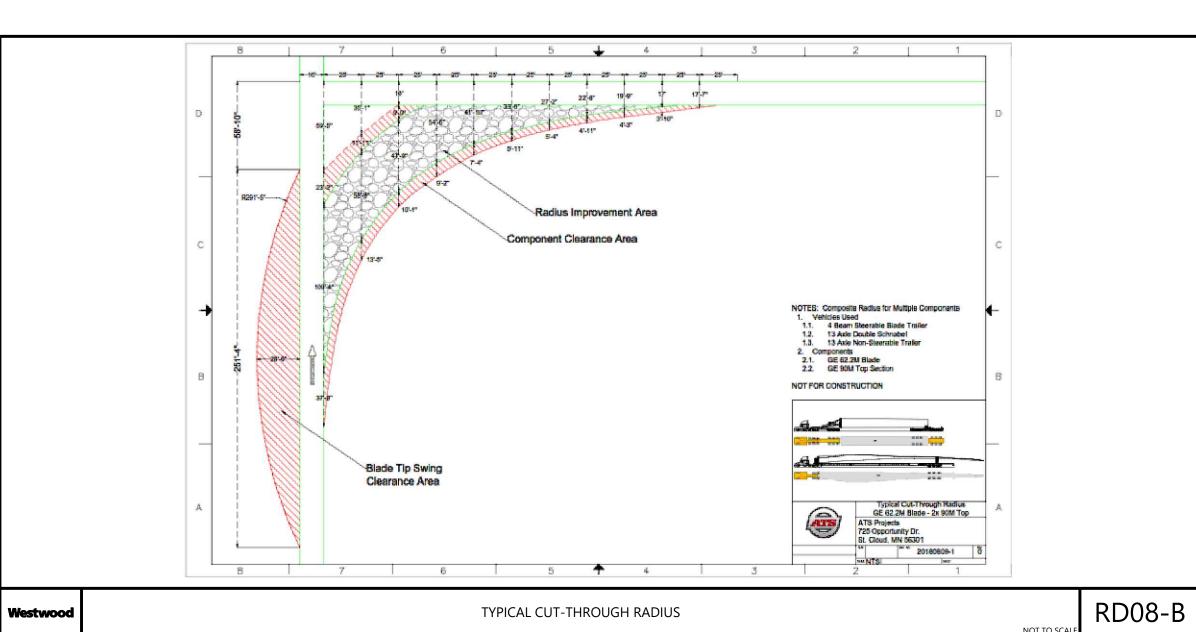
C700 SHEET

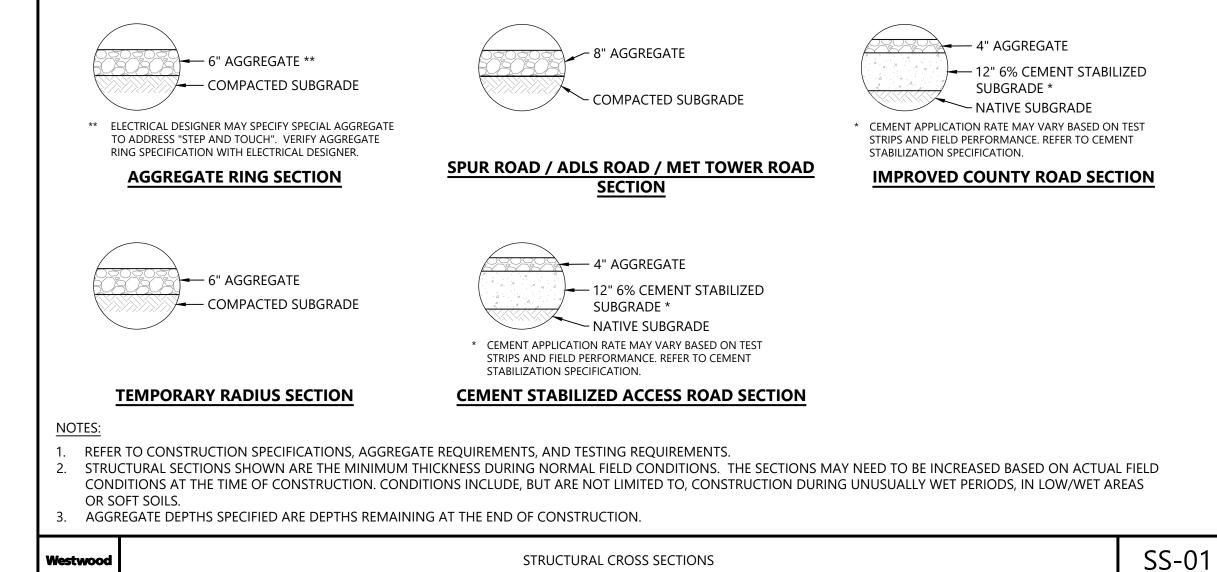


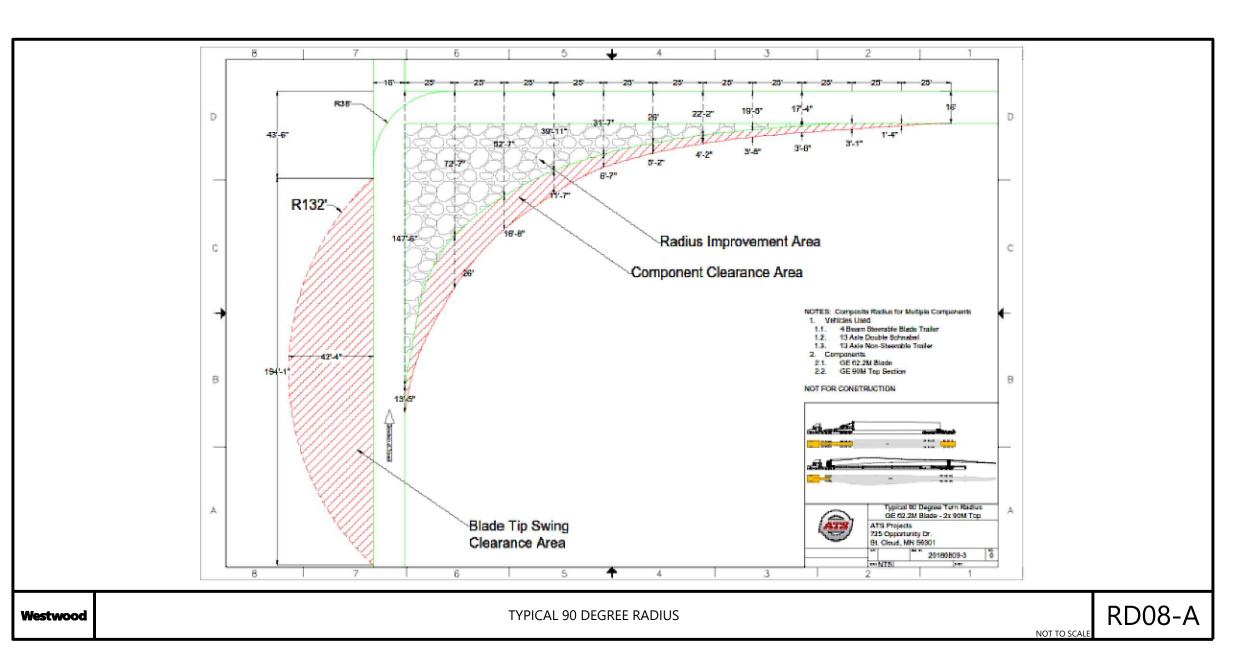


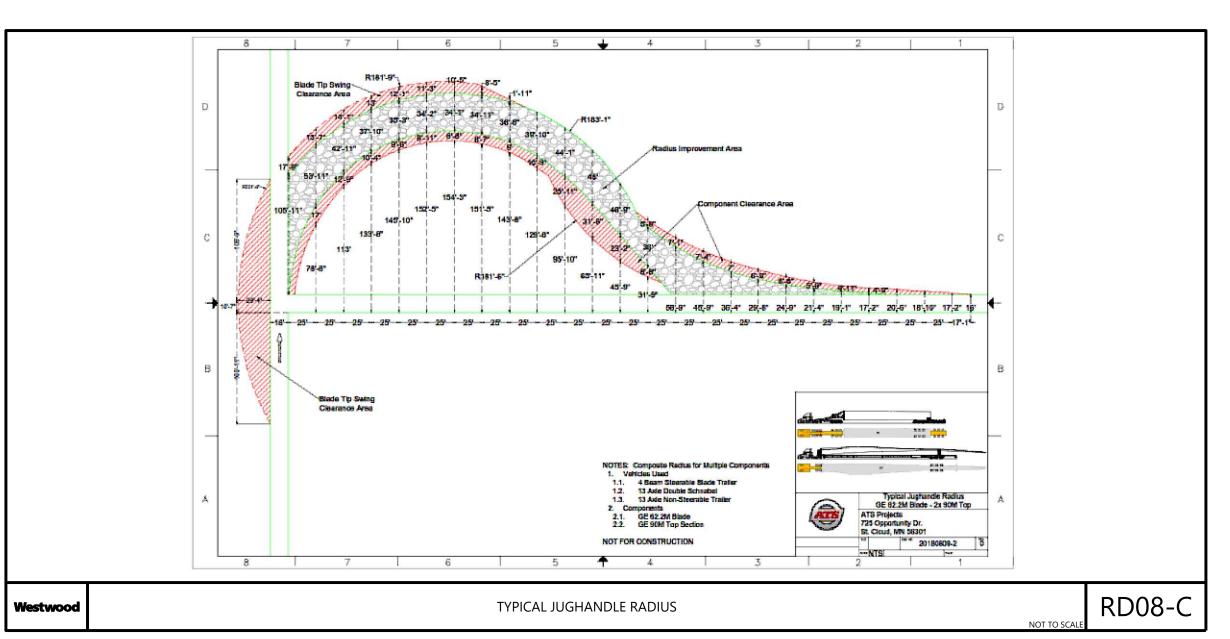




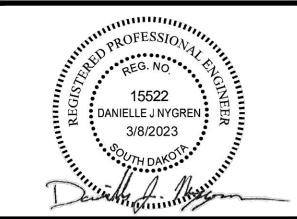
















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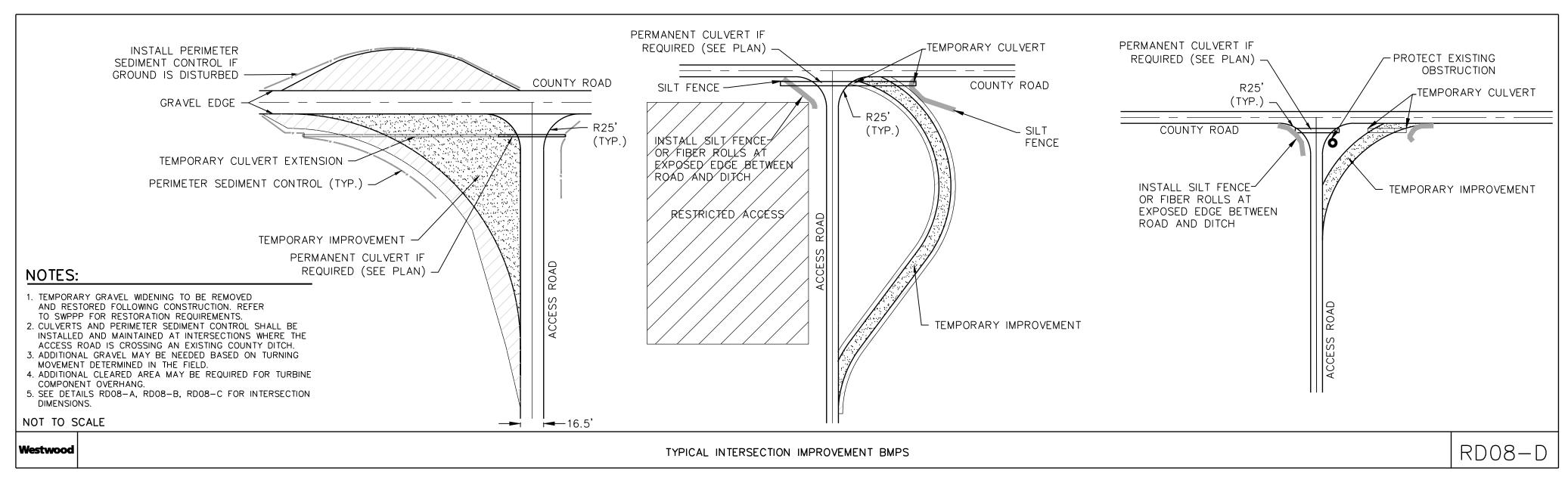
Hand County, South Dakota

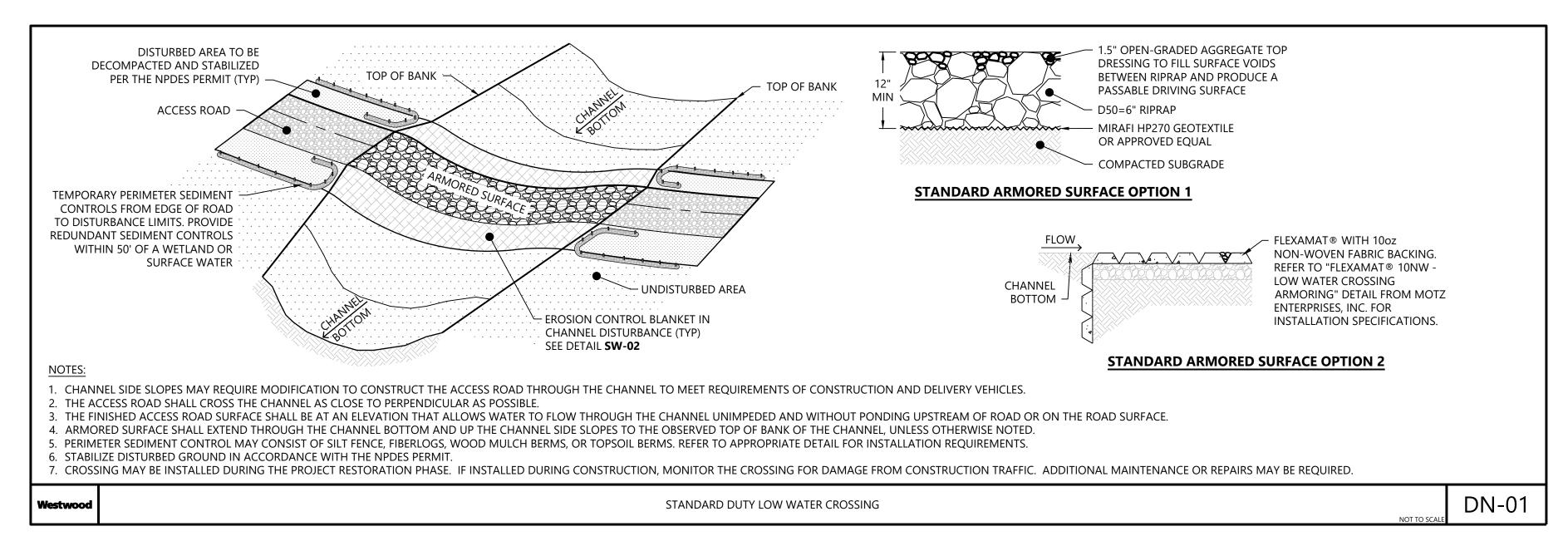
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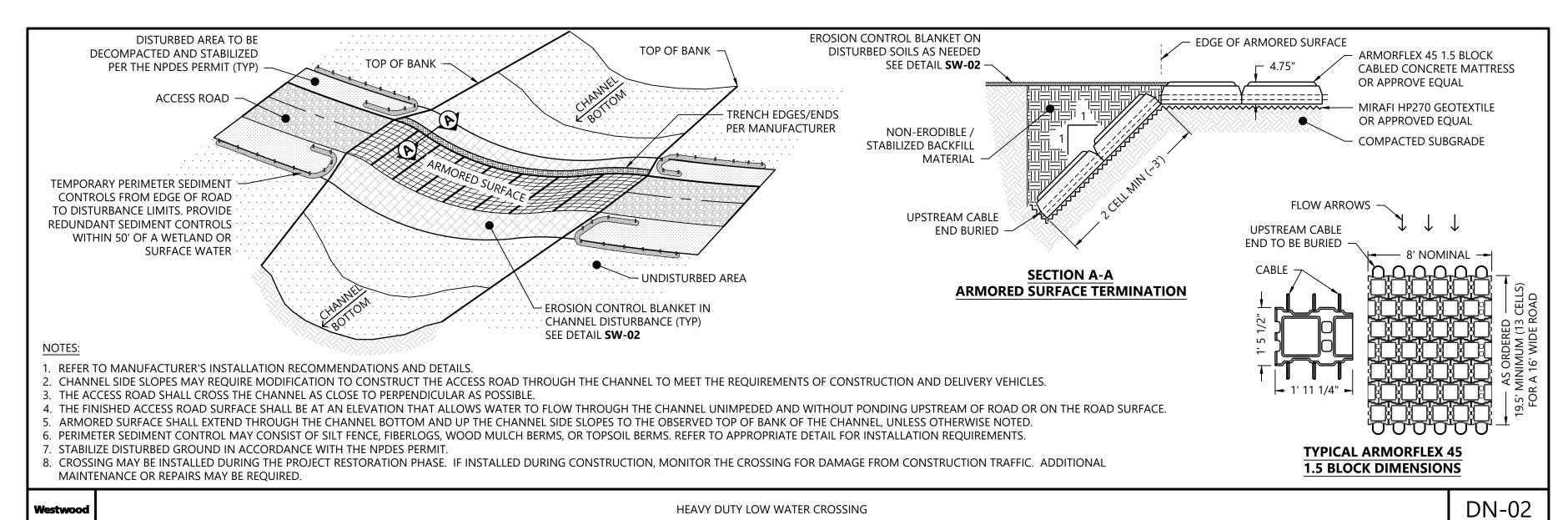
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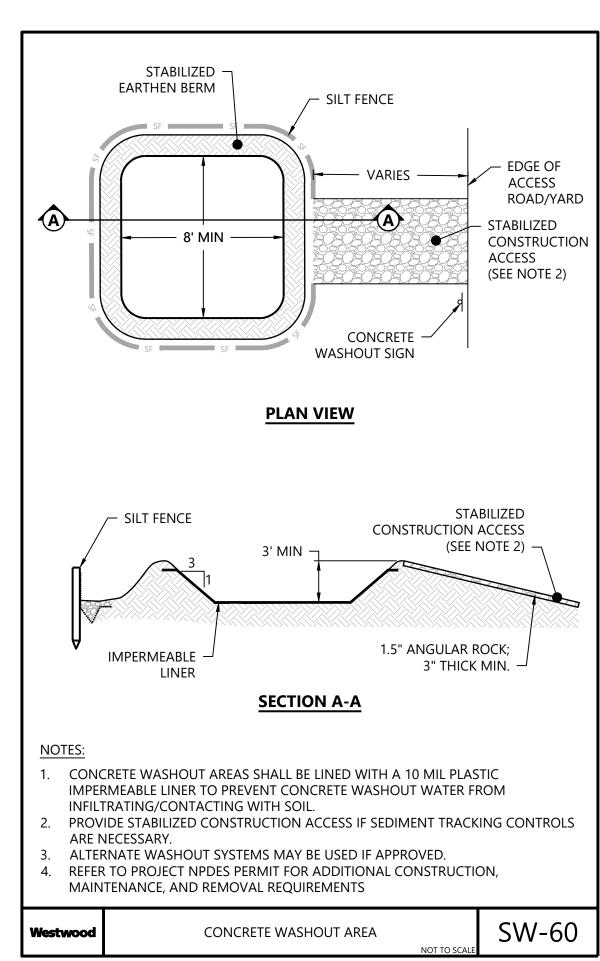
03/08/2023 DATE:

C701 SHEET:



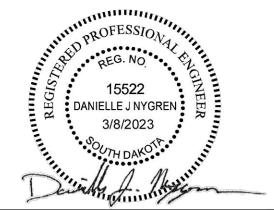






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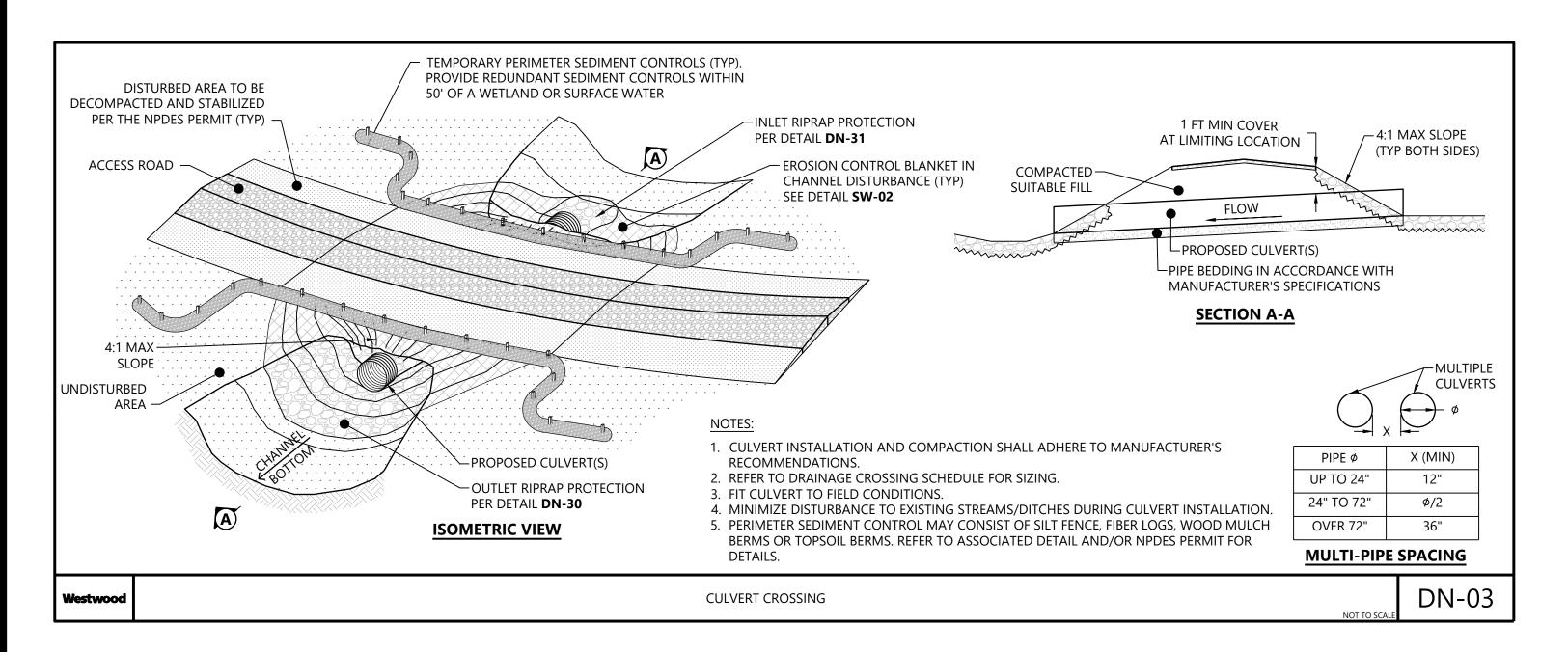
Hand County, South Dakota

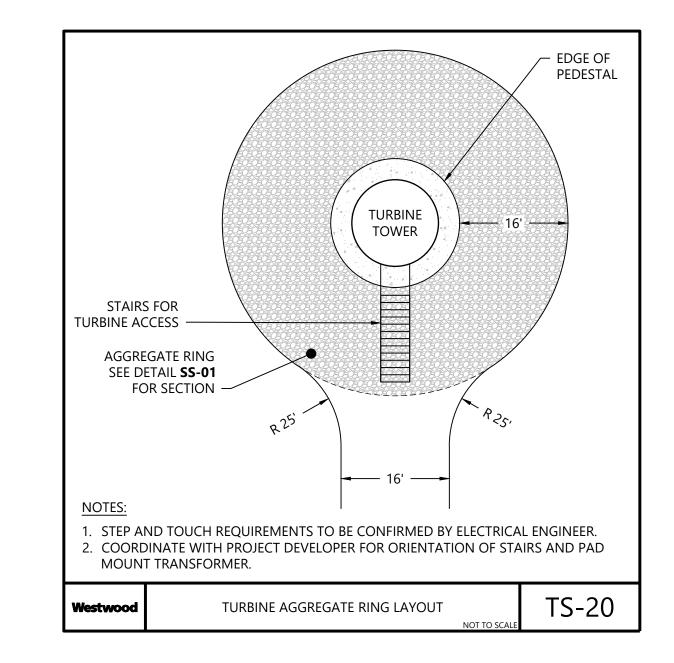
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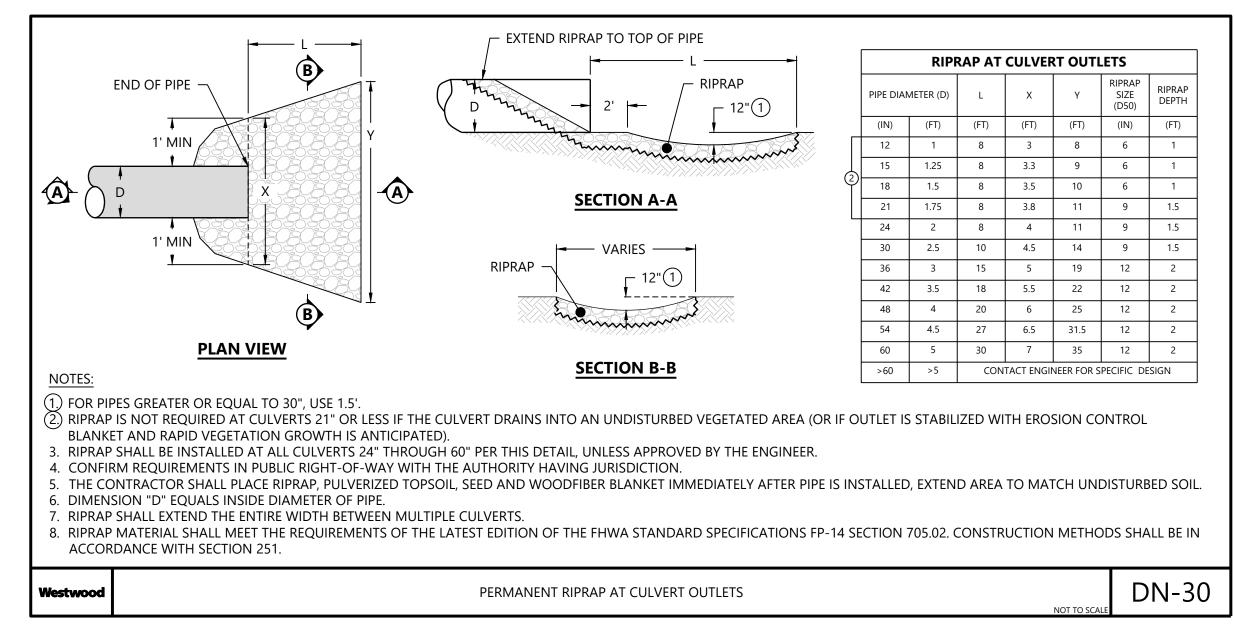
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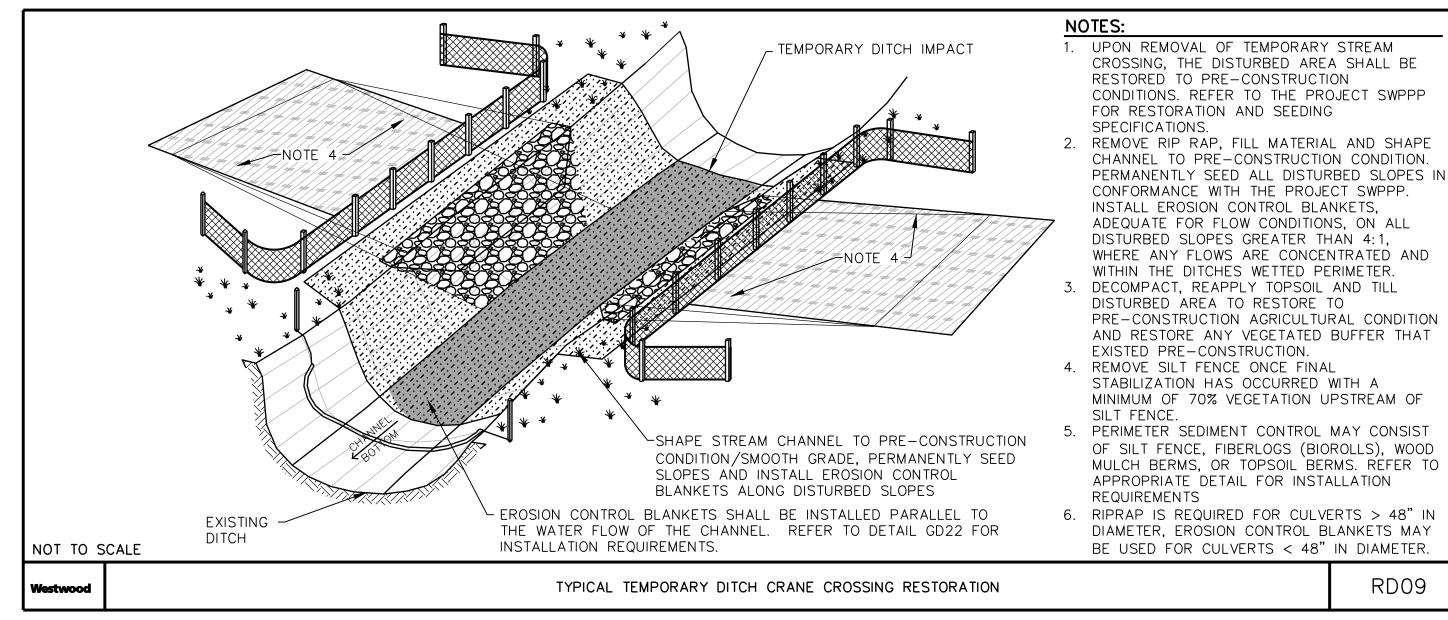
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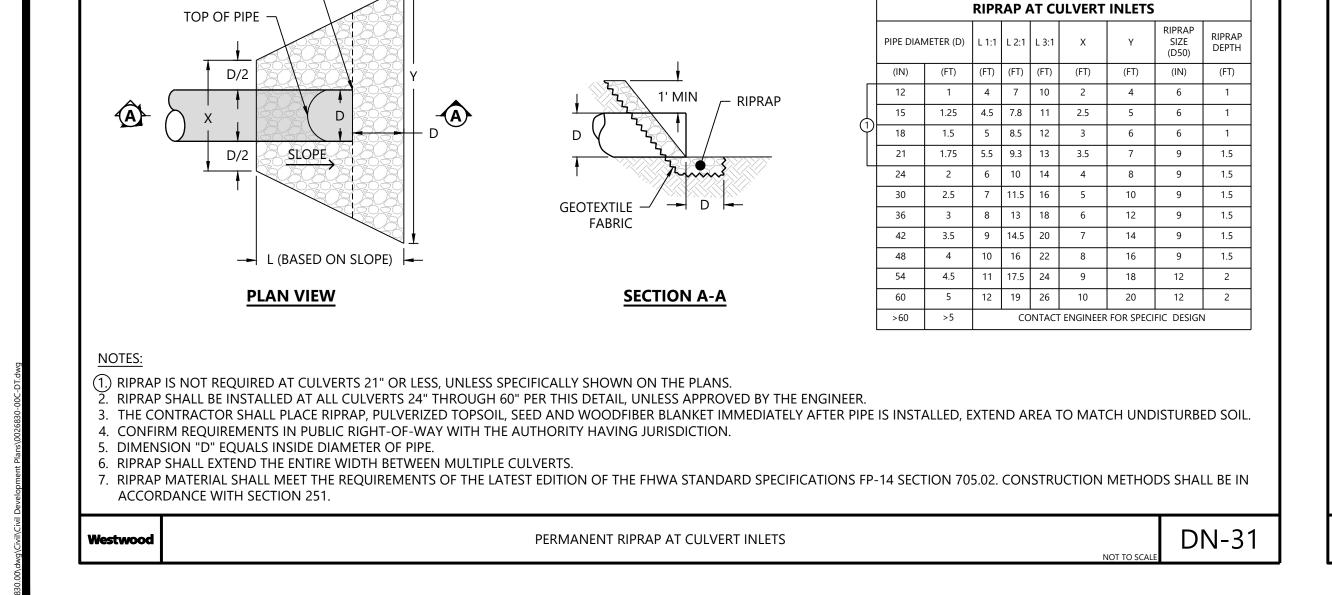
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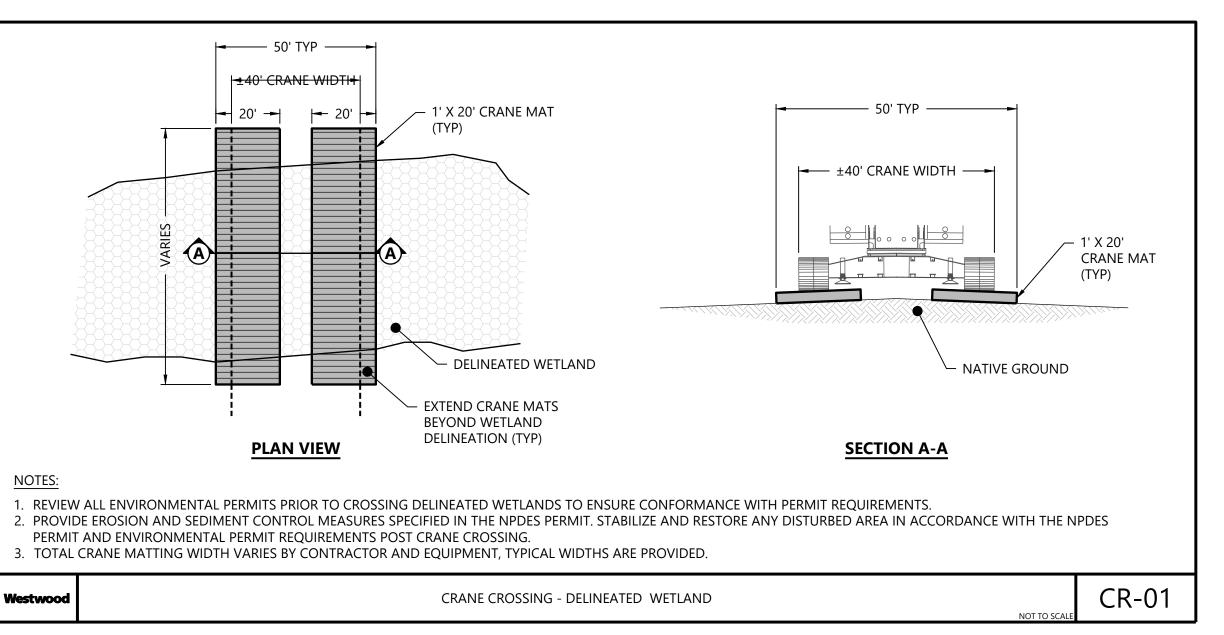








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Sweetland Wind Project

Hand County, South Dakota

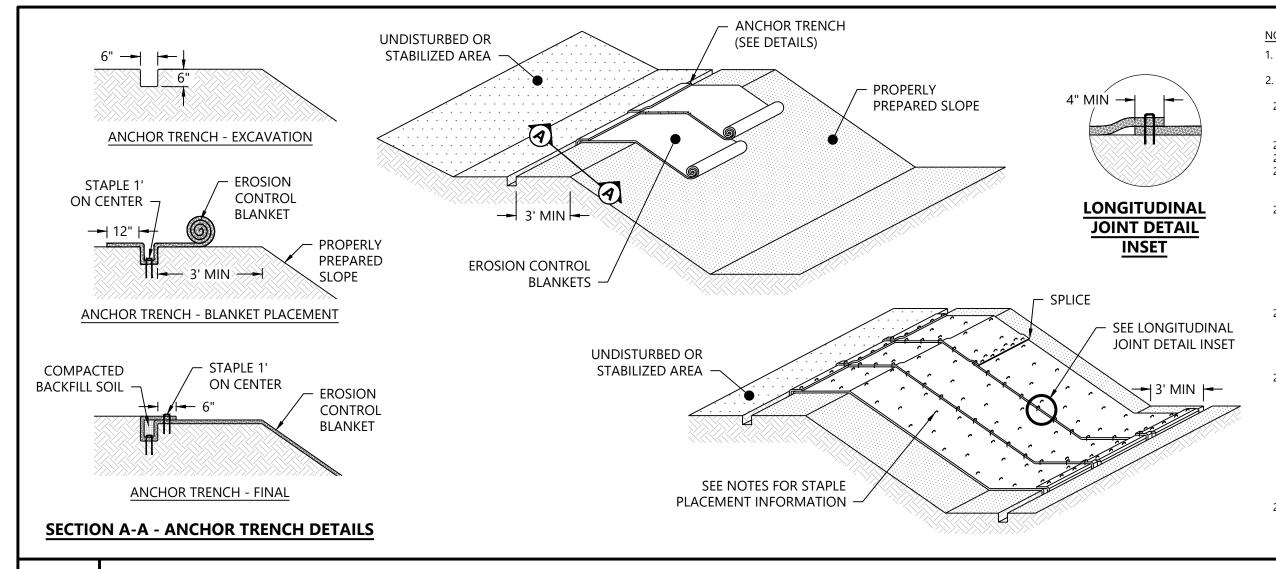
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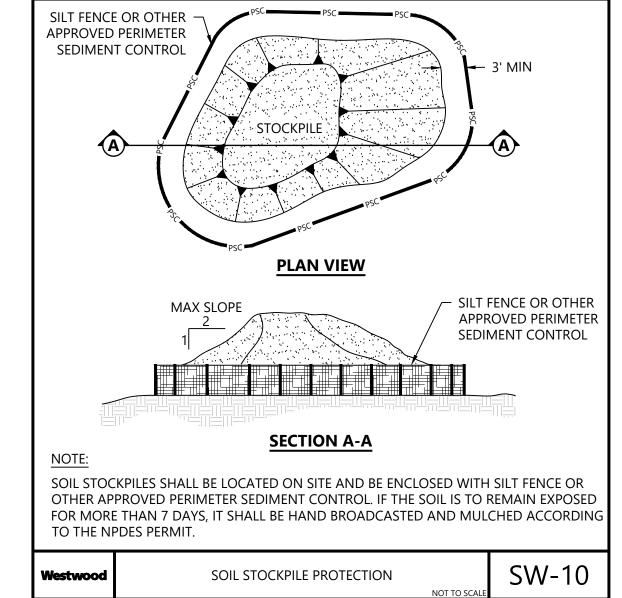
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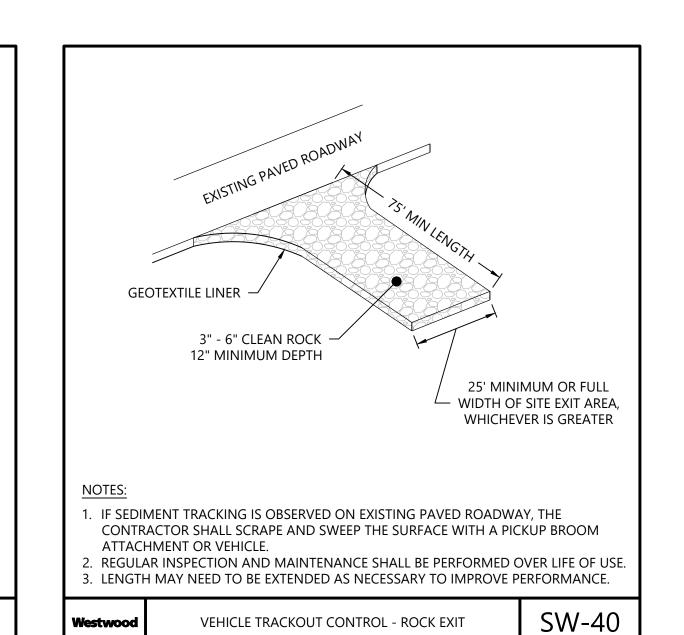
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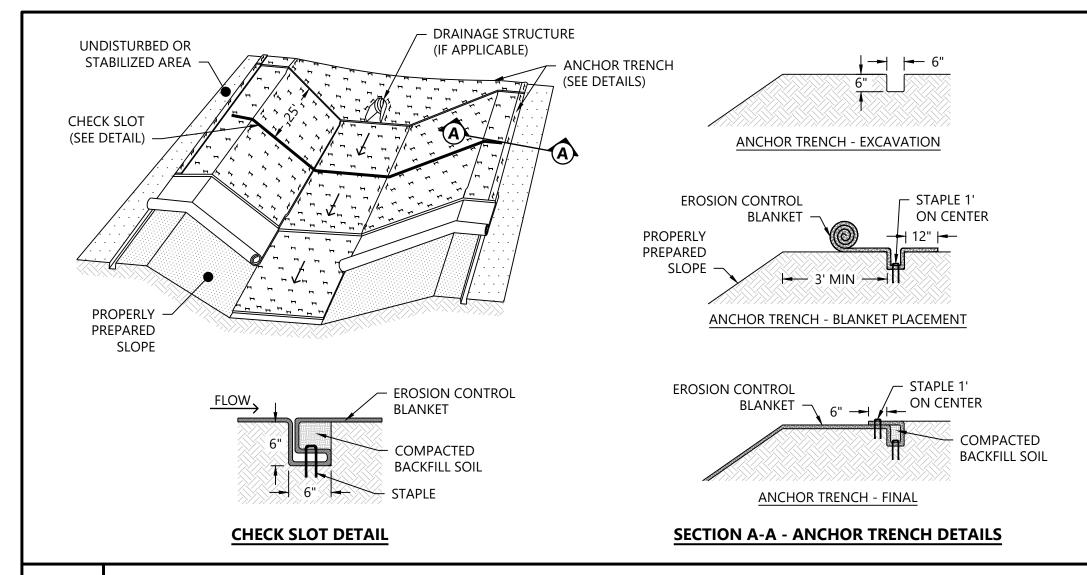


NOTES:

- 1. EROSION CONTROL BLANKETS ARE INTENDED TO BE USED AS AN IMMEDIATE MULCH COVER FOR DISTURBED SLOPES THAT HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED.
- 2. EROSION CONTROL BLANKETS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS SPECIFICATIONS. WHEN NOT AVAILABLE. INSTALL ACCORDING TO THIS DETAIL AND THE FOLLOWING NOTES: 2.1. STEP ONE: SITE PREPARATION. TO PREVENT TENTING THE SITE SHOULD BE FINE GRADED TO A SMOOTH PROFILE AND RELATIVELY FREE FROM ALL WEEDS, CLODS, STONES, ROOTS, STICKS, RIVULETS, GULLIES,
- CRUSTING, AND CAKING. FILL ANY VOIDS AND MAKE SURE THE SLOPE IS COMPACTED PROPERLY. 2.2. STEP TWO: ADEQUATE TOPSOIL SHALL BE REAPPLIED AFTER GRADING PRIOR TO SEEDING. 2.3. STEP THREE: SEEDING. SEEDING WITHOUT MULCH SHOULD BE APPLIED TO THE AREA TO BE VEGETATED. STEP FOUR: PREPARE THE ANCHOR TRENCH. AT THE TOP OF THE SLOPE EXCAVATE AN ANCHOR TRENCH 6" X 6". THE EROSION CONTROL BLANKET WILL BE ANCHORED INTO THE TRENCH BY STAPLES.
- ALLOW A MINIMUM OF 3' FROM THE CREST OF THE SLOPE TO THE ANCHOR TRENCH. 2.5. STEP FIVE: SECURE THE EROSION CONTROL BLANKET IN THE ANCHOR TRENCH. BEGIN EROSION CONTROL BLANKET PLACEMENT 30" ABOVE THE ANCHOR TRENCH. PLACE THE EROSION CONTROL BLANKET INTO THE ANCHOR TRENCH. ANCHOR THE EROSION CONTROL BLANKET WITH STAPLES 1' ON CENTER IN THE ANCHOR TRENCH WHEN NO OTHER GUIDANCE IS AVAILABLE. BE SURE THE DRIVE STAPLES OR STAKES FLUSH WITH THE SOIL SURFACE. BACKFILL THE ANCHOR TRENCH AND COMPACT THE SOIL. PLACE SEED OVER THE COMPACTED SOIL. COVER THE COMPACTED SOIL WITH THE REMAINING 12" OF THE TERMINAL END OF THE EROSION CONTROL BLANKET. STAPLE OR STAKE TERMINAL END DOWN SLOPE OF THE ANCHOR TRENCH ON 1' CENTERS.
- 2.6. STEP SIX: EROSION CONTROL BLANKET DEPLOYMENT. STARTING AT THE CREST OF THE SLOPE, ROLL THE EROSION CONTROL BLANKET DOWN THE SLOPE IN A CONTROLLED MANNER TO PREVENT EXCESSIVE STRETCHING. APPROXIMATELY EVERY 20'-25' PULL THE EROSION CONTROL BLANKET TO TAKE OUT ANY EXCESS SLACK. THE GOAL IS TO HAVE THE EROSION CONTROL BLANKET CONTOUR AND INITIATE CONTACT WITH THE SOIL
- STEP SEVEN: STAPLE OR STAKE THE EROSION CONTROL BLANKET. SECURE THE OVERLAP OR THE EDGES WITH STAPLES. THE TYPICAL INSTALLATION WILL REQUIRE ONE STAPLE PLACED AT 3' INTERVALS ALONG THE VERTICAL LENGTH OF THE EROSION CONTROL BLANKET. STAPLES SHOULD BE STAGGERED EVERY 18" TO 24" HORIZONTALLY ACROSS THE EROSION CONTROL BLANKET. IF THE EROSION CONTROL BLANKET NEEDS TO BE SPLICED IN THE MIDDLE OF A SLOPE BE SURE THE EROSION CONTROL BLANKET IS "SHINGLED" WITH UP-SLOPE EROSION CONTROL BLANKET OVERLAPPING THE DOWN-SLOPE EROSION CONTROL BLANKET. THERE SHOULD BE A MINIMUM OF 4" OF OVERLAP IN A SPLICE. USE A STAPLE CHECK SLOT TO SECURE THE OVERLAP. A STAPLE CHECK SLOT IS MADE BY PLACING A ROW OF STAPLES 4" ON CENTER AND THEN PLACING A SECOND ROW OF STAPLES 4" ON CENTER, STAGGERED FROM THE FIRST ROW
- 2.8. STEP EIGHT: SECURING THE EROSION CONTROL BLANKET AT THE TOE OF THE SLOPE. ROLL THE EROSION CONTROL BLANKET 36" PAST THE TOE OF THE SLOPE. STAPLE OR STAKE TERMINAL END OF THE EROSION CONTROL BLANKET ON 1' CENTERS.







EROSION CONTROL BLANKET INSTALLATION FOR SLOPE

- 1. EROSION CONTROL BLANKETS ARE USED TO TEMPORARILY AND PERMANENTLY STABILIZE DITCHES AND SWALES. 2. EROSION CONTROL BLANKETS SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS. WHEN NOT AVAILABLE INSTALL
- ACCORDING TO THIS DETAIL AND THE FOLLOWING NOTES: 2.1. STEP ONE: SITE PREPARATION. TO PREVENT TENTING THE CHANNEL SHOULD BE FINE GRADED TO A SMOOTH PROFILE AND RELATIVELY

FREE FROM ALL WEEDS, CLODS, STONES, ROOTS, STICKS, RIVULETS, GULLIES, CRUSTING, AND CAKING. FILL ANY VOIDS AND MAKE SURE THE CHANNEL IS COMPACTED PROPERLY.

2.2. STEP TWO: ADEQUATE TOPSOIL SHALL BE REAPPLIED AFTER GRADING PRIOR TO SEEDING 2.3. STEP THREE: SEEDING. SEEDING WITHOUT MULCH SHOULD BE APPLIED TO THE AREA TO BE VEGETATED.

- 2.4. STEP FOUR: ANCHORING THE EROSION CONTROL BLANKET. EROSION CONTROL BLANKETS SHALL BE ANCHORED AT THE BEGINNING OF THE CHANNEL. A 6" X 6" DEEP TRENCH SHOULD BE EXCAVATED PERPENDICULAR TO THE DIRECTION OF WATER FLOW ACROSS THE ENTIRE WIDTH OF THE CHANNEL. THE EROSION CONTROL BLANKET SHOULD BE LAID IN THE CHECK SLOT WITH 30" OF THE EROSION CONTROL BLANKET EXTENDING UPSTREAM OF THE ANCHORING TRENCH. STAKE OR STAPLE THE EROSION CONTROL BLANKET IN THE CHECK SLOT ON 12" CENTERS WHEN NO OTHER GUIDANCE IS AVAILABLE. BACKFILL THE ANCHOR TRENCH AND COMPACT THE SOIL. PLACE SEED OVER THE COMPACTED SOIL. COVER THE COMPACTED SOIL WITH THE REMAINING 12 INCHES OF THE TERMINAL END OF THE
- EROSION CONTROL BLANKET. STAPLE OR STAKE TERMINAL END DOWN SLOPE OF THE ANCHOR TRENCH ON 12" CENTERS 2.5. STEP FIVE: EROSION CONTROL BLANKET DEPLOYMENT IN THE CHANNEL BOTTOM. THE EROSION CONTROL BLANKETS SHOULD BE UNROLLED IN THE DIRECTION OF WATER FLOW. FIRST THE EROSION CONTROL BLANKET IS DEPLOYED IN THE CHANNEL BOTTOM. IT IS ALSO NECESSARY TO PREVENT A SEAM FROM GOING DOWN THE CENTER OF THE CHANNEL BOTTOM OR IN AREAS OF CONCENTRATED WATER FLOW. WHEN INSTALLING TWO EROSION CONTROL BLANKETS SIDE BY SIDE IN A WATERWAY THE CENTER OF THE EROSION CONTROL BLANKET SHOULD BE CENTERED IN THE AREA OF CONCENTRATED WATER FLOW. INSTALL ADJOINING EROSION CONTROL BLANKETS AWAY FROM THE CENTER OF THE CHANNEL BOTTOM, ADJOINING FROSION CONTROL BLANKETS SHOULD BE OVERLAPPED 4" TO 6". CONTINUE TO INSTALL A COMMON ROW OF STAPLES AT 2' CENTERS ALONG THE LENGTH OF THE OVERLAP.
- 2.6. STEP SIX: CHECK SLOTS. CHECK SLOTS SHOULD BE PLACED PERPENDICULAR TO THE FLOW DIRECTION ACROSS THE ENTIRE WIDTH OF THE CHANNEL AT 25' INTERVALS AND AT THE TERMINAL END OF THE CHANNEL. THE CHECK SLOTS SHOULD BE PLACED IN A 6" X 6" TRENCH AS SHOWN. SECURE THE EROSION CONTROL BLANKET IN THE UPSTREAM SIDE OF THE CHECK SLOT WITH STAPLES OR STAKES ON 12" CENTERS. FLIP THE EROSION CONTROL BLANKET ROLL ON THE UPSTREAM EDGE. BACK FILL THE CHECK SLOT AS SHOWN AND COMPACT THE SOIL. CONTINUE ROLLING THE EROSION CONTROL BLANKET DOWNSTREAM OVER THE COMPLETED CHECK SLOT. STEP SEVEN: EROSION CONTROL BLANKET DEPLOYMENT ON THE SIDE SLOPES. CONTINUE TO ROLL THE EROSION CONTROL BLANKET
- ALONG THE CHANNEL BOTTOM AND SIDE SLOPES IN THE DIRECTION OF THE WATER FLOW. AS THE EROSION CONTROL BLANKET IS INSTALLED FROM THE CHANNEL BOTTOM UP THE SLOPE, A SHINGLE TYPE INSTALLATION IS NECESSARY WITH THE UP-SLOPE EROSION CONTROL BLANKET OVERLAPPING THE LOWER EROSION CONTROL BLANKET APPROXIMATELY 4". ANCHOR THE EROSION CONTROL EROSION CONTROL BLANKET NEEDS TO BE SPLICED, BE SURE THE EROSION CONTROL BLANKET IS "SHINGLED" WITH THE UPSTREAM EROSION CONTROL BLANKET OVERLAPPING THE DOWNSTREAM EROSION CONTROL BLANKET. THERE SHOULD BE A MINIMUM OF 4" OF OVERLAP IN A SPLICE. USE A STABLE CHECK SLOT TO SECURE THE OVERLAP, ANCHOR THE EROSION CONTROL BLANKET PLACED AT THE TOP OF THE CHANNEL SLOPE IN THE SAME MANNER AS SHOWN.

2.8. STEP EIGHT: TERMINAL END. SECURE THE EROSION CONTROL BLANKET AT THE TERMINAL END OF THE CHANNEL WITH A SLOT SIMILAR TO THE ONE MADE AT THE BEGINNING OF THE CHANNEL.

EROSION CONTROL BLANKET INSTALLATION FOR CHANNEL

SW-02

- FIBER ROLLS SHALL BE PREFABRICATED AND MADE FROM WEED FREE RICE STRAW, FLAX, OR A SIMILAR AGRICULTURAL MATERIAL BOUND INTO A TIGHT TUBULAR ROLL BY NETTING
- $2.\,$ Stake fiber rolls into the trench. Drive stakes at the end of EACH FIBER ROLL AND SPACED 4 FEET MAXIMUM ON CENTER. USE WOOD STAKES WITH NOMINAL CLASSIFICATION OF 0.75 IN BY 0.75 IN. AND A MINIMUM LENGTH OF 24 IN.
- 3. PREPARE THE SLOPE BEFORE BEGINNING THE INSTALLATION.
- 4. DIG SMALL TRENCHES ACROSS THE SLOPE ON THE CONTOUR. THE TRENCH DEPTH SHOULD BE 1/4 TO 1/3 OF THE THICKNESS OF THE ROLL, AND THE WIDTH SHOULD EQUAL THE ROLL DIAMETER, IN ORDER TO PROVIDE AREA TO BACKFILL THE TRENCH.
- . ROLLS SHALL BE INSTALLED PERPENDICULAR TO WATER MOVEMENT, AND PARALLEL TO THE SLOPE CONTOUR.
- 6. START BUILDING TRENCHES AND INSTALLING ROLLS FROM THE BOTTOM OF THE SLOPE AND WORK UP.
- 7. TURN THE ENDS OF THE FIBER ROLLS UP SLOPE TO PREVENT RUNOFF FROM GOING AROUND THE ROLL.
- 8. IF MORE THAN ONE FIBER ROLL IS PLACED IN A ROW, THE ROLLS SHOULD BE OVERLAPPED, NOT ABUTTED
- 9. FIBER ROLLS ENCASED WITH PLASTIC NETTING ARE USED FOR A TEMPORARY APPLICATION ONLY AND SHOULD BE REMOVED FOLLOWING STABILIZATION. FIBER ROLLS USED IN A PERMANENT APPLICATION SHALL BE ENCASED WITH A BIODEGRADABLE MATERIAL AND MAY BE LEFT IN.
- 10. TEMPORARY INSTALLATIONS SHOULD ONLY BE REMOVED WHEN UP GRADIENT AREAS ARE STABILIZED PER GENERAL PERMIT REQUIREMENTS, AND/OR POLLUTANT SOURCES NO LONGER PRESENT A HAZARD. BUT, THEY SHOULD ALSO BE REMOVED BEFORE VEGETATION BECOMES TOO MATURE SO THAT THE REMOVAL PROCESS DOES NOT DISTURB MORE SOIL AND VEGETATION THAN IS NECESSARY
- STAKES TO BE PERPENDICULAR TO SURFACE ACCESS ROAD 0.75" 24" MÍN // / 0.75" SLOPE | MAX. SPACING (H:V) (FT.) < 4:1 4:1 - 2:1 **EXISTING GROUND** > 2:1 * A CLOSER SPACING IS MORE EFFECTIVE
- 11. FIBER ROLLS MUST BE INSPECTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS FOR THE ASSOCIATED PROJECT TYPE AND RISK LEVEL. IT IS RECOMMENDED THAT A MINIMUM, THE BMPS BE INSPECTED WEEKLY, PRIOR TO FORECASTED RAIN EVENTS, DAILY DURING EXTENDED RAIN EVENTS, AND AFTER THE CONCLUSION OF RAIN EVENTS. . REPAIR OR REPLACE SPLIT, TORN, UNRAVELING, OR SLUMPING FIBER ROLLS.
- 13. IF THE FIBER ROLL IS USED AS A SEDIMENT CAPTURE DEVICE, OR AS AN EROSION CONTROL DEVICE TO MAINTAIN SHEET FLOWS, SEDIMENT THAT ACCUMULATES IN THE BMP SHOULD BE PERIODICALLY REMOVED IN ORDER TO MAINTAIN BMP EFFECTIVENESS. SEDIMENT SHOULD BE REMOVED WHEN SEDIMENT ACCUMULATION REACHES ONE-THIRD THE DESIGNATED SEDIMENT STORAGE DEPTH. 14. IF FIBER ROLLS ARE USED FOR EROSION CONTROL, SEDIMENT REMOVAL SHOULD NOT BE REQUIRED AS LONG AS THE SYSTEM CONTINUES TO CONTROL THE GRADE. SEDIMENT CONTROL BMPS WILL LIKELY BE
 - REQUIRE IN CONJUNCTION WITH THIS TYPE OF APPLICATION. 15. REPAIR ANY RILLS OR GULLIES PROMPTLY.

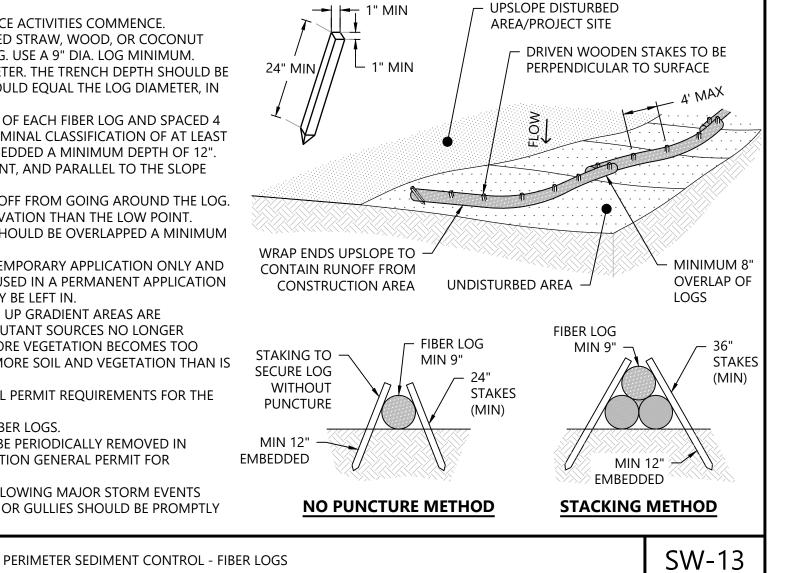
SW-05 FIBER ROLLS - SLOPE APPLICATION

- 1. FIBER LOGS SHALL BE INSTALLED PRIOR TO UPSLOPE DISTURBANCE ACTIVITIES COMMENCE. 2. FIBER LOGS SHALL BE PREFABRICATED AND MADE FROM CERTIFIED STRAW, WOOD, OR COCONUT
- FIBER MATERIAL BOUND INTO A TIGHT TUBULAR LOG BY NETTING. USE A 9" DIA. LOG MINIMUM. 3. TRENCHES SHALL BE CREATED ALONG THE SLOPE OF THE PERIMETER. THE TRENCH DEPTH SHOULD BE 1/4 TO 1/3 OF THE THICKNESS OF THE LOG, AND THE WIDTH SHOULD EQUAL THE LOG DIAMETER, IN
- ORDER TO PROVIDE AREA TO BACKFILL THE TRENCH. I. STAKE FIBER LOGS INTO THE TRENCH. DRIVE STAKES AT THE END OF EACH FIBER LOG AND SPACED 4 FEET MAXIMUM ON CENTER. USE HARD WOOD STAKES WITH NOMINAL CLASSIFICATION OF AT LEAST
- 1" BY 1" AND A MINIMUM LENGTH OF 24". STAKES SHALL BE EMBEDDED A MINIMUM DEPTH OF 12". 5. LOGS SHALL BE INSTALLED PERPENDICULAR TO WATER MOVEMENT, AND PARALLEL TO THE SLOPE
- 6. TURN THE ENDS OF THE FIBER LOGS UP SLOPE TO PREVENT RUNOFF FROM GOING AROUND THE LOG. THE UPSLOPE POINT SHOULD BE A MINIMUM 12" HIGHER IN ELEVATION THAN THE LOW POINT. '. IF MORE THAN ONE FIBER LOG IS PLACED IN A ROW, THE LOGS SHOULD BE OVERLAPPED A MINIMUM
- OF 8 INCHES, NOT ABUTTED. 8. FIBER LOGS ENCASED WITH PLASTIC NETTING ARE USED FOR A TEMPORARY APPLICATION ONLY AND SHOULD BE REMOVED FOLLOWING STABILIZATION. FIBER LOGS USED IN A PERMANENT APPLICATION
- SHALL BE ENCASED WITH A BIODEGRADABLE MATERIAL AND MAY BE LEFT IN. . TEMPORARY INSTALLATIONS SHOULD ONLY BE REMOVED WHEN UP GRADIENT AREAS ARE STABILIZED PER GENERAL PERMIT REQUIREMENTS, AND/OR POLLUTANT SOURCES NO LONGER PRESENT A HAZARD. BUT, THEY SHOULD ALSO BE REMOVED BEFORE VEGETATION BECOMES TOO
- MATURE SO THAT THE REMOVAL PROCESS DOES NOT DISTURB MORE SOIL AND VEGETATION THAN IS **NECESSARY** 10. FIBER LOGS MUST BE INSPECTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS FOR THE
- ASSOCIATED PROJECT TYPE AND RISK LEVEL 11. REPAIR OR REPLACE SPLIT, TORN, UNRAVELING, OR SLUMPING FIBER LOGS. 12. SEDIMENT THAT ACCUMULATES UPSLOPE OF THE BMP SHOULD BE PERIODICALLY REMOVED IN

ORDER TO MAINTAIN BMP EFFECTIVENESS. REFER TO CONSTRUCTION GENERAL PERMIT FOR

SEDIMENT ACCUMULATION MAINTENANCE INTERVALS 13. RILL, UNDERMINING, AND/OR GULLIES MAY BEGIN TO FORM FOLLOWING MAJOR STORM EVENTS

WHERE RUNOFF HAS OVERTOPPED THE FIBER LOGS. THESE RILLS OR GULLIES SHOULD BE PROMPTLY REPAIRED.



Project

Sweetland Wind

(952) 937-5822 Minnetonka, MN 55343

DANIELLE J NYGREN

3/8/2023

Avon, MN 56310

BY CHK APR

COMMENT

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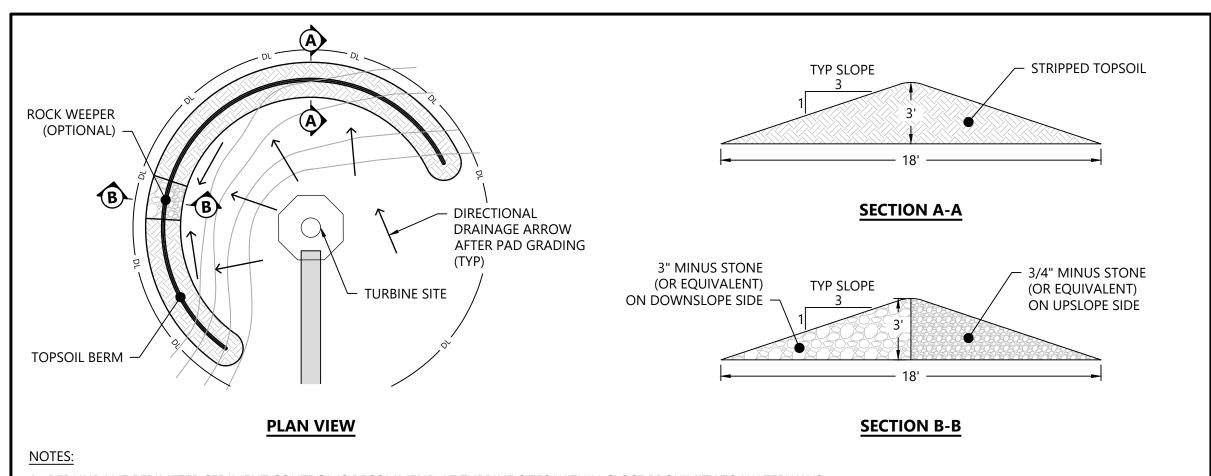
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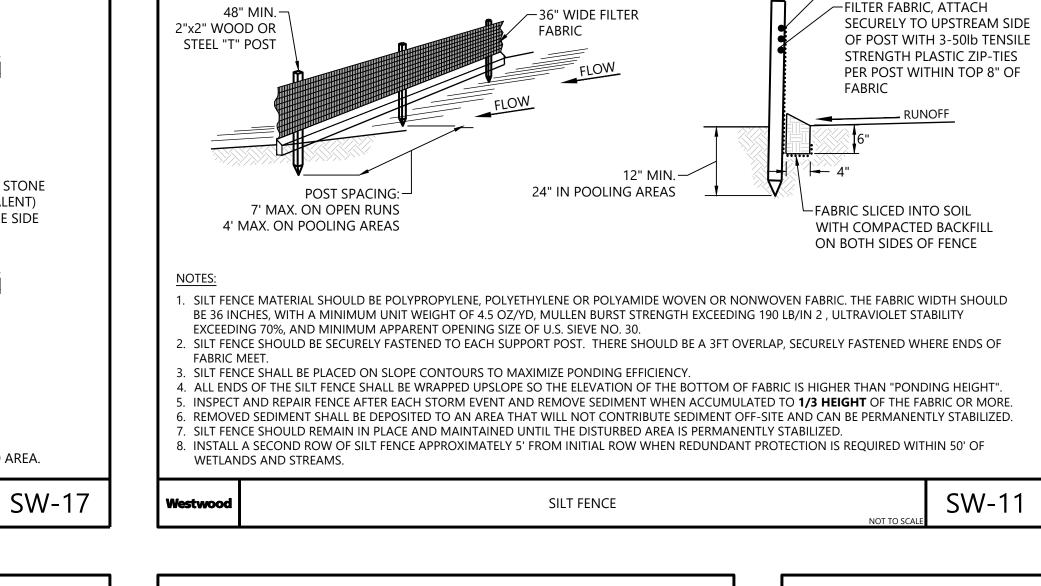
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- REDUNDANT PERIMETER SEDIMENT CONTROL IS RECOMMEND AT TURBINE SITES WITHIN CLOSE PROXIMITY TO WATERWAYS.
- 2. BERMS SHOULD BE PLACED AROUND DOWN GRADIENT PERIMETER OF PAD AREA TO PROVIDE PERIMETER SEDIMENT CONTROL.
- 3. TERMINAL ENDS OF BERM SHOULD BE HIGHER IN ELEVATION THAN THE TOP OF BERM.
- 4. TEMPORARY STABILIZATION OF TOPSOIL BERM COULD CONSIST OF HYDROMULCH OR STRAW MULCH (WEED FREE) AS NECESSARY.
- 5. MULTIPLE ROCK WEEPERS MAY BE NEEDED, CONTRACTOR TO FIELD FIT AS NECESSARY, ROCK WEEPERS ARE OPTIONAL TO MINIMIZE WATER ACCUMULATION WITHIN PAD AREA.

TOPSOIL BERM AND ROCK WEEPER

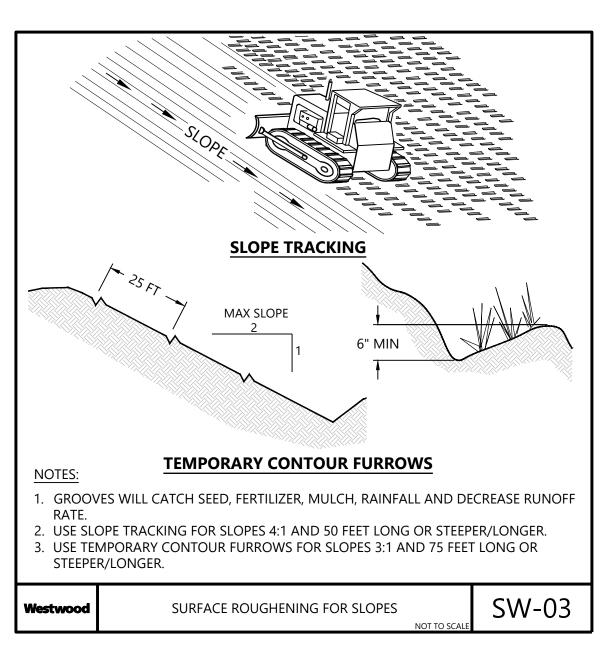


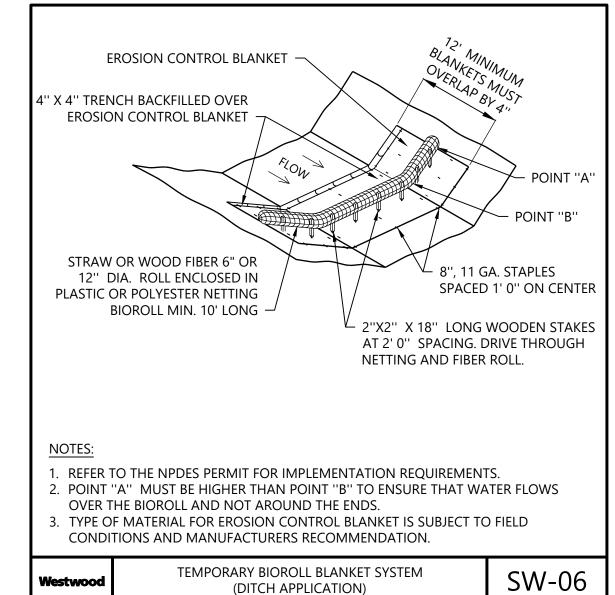
48" MIN. POST INSTALLED ON-

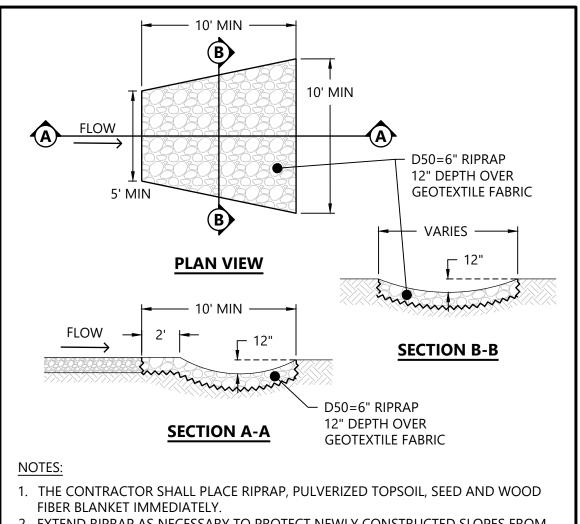
SLIGHT ANGLE TOWARD

RUNOFF SOURCE

-PONDING HEIGHT (2' MAX.)

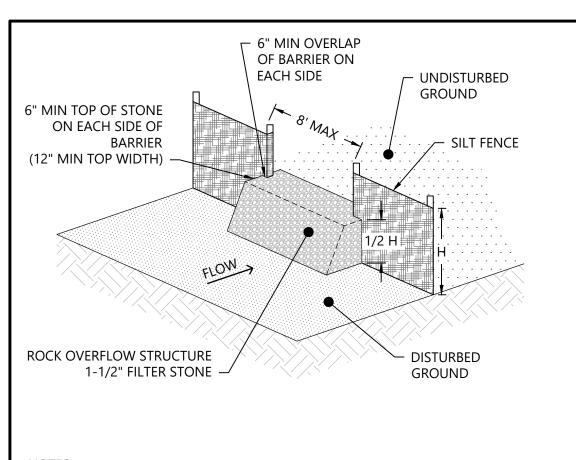






2. EXTEND RIPRAP AS NECESSARY TO PROTECT NEWLY CONSTRUCTED SLOPES FROM

EROSIO	IN.	
Vestwood	STABILIZED OUTLET FOR ACCESS ROAD DIVERSIONS	SW-30



. LOCATIONS OF ROCK OVERFLOW STRUCTURES INDICATED ON PLANS AND AS

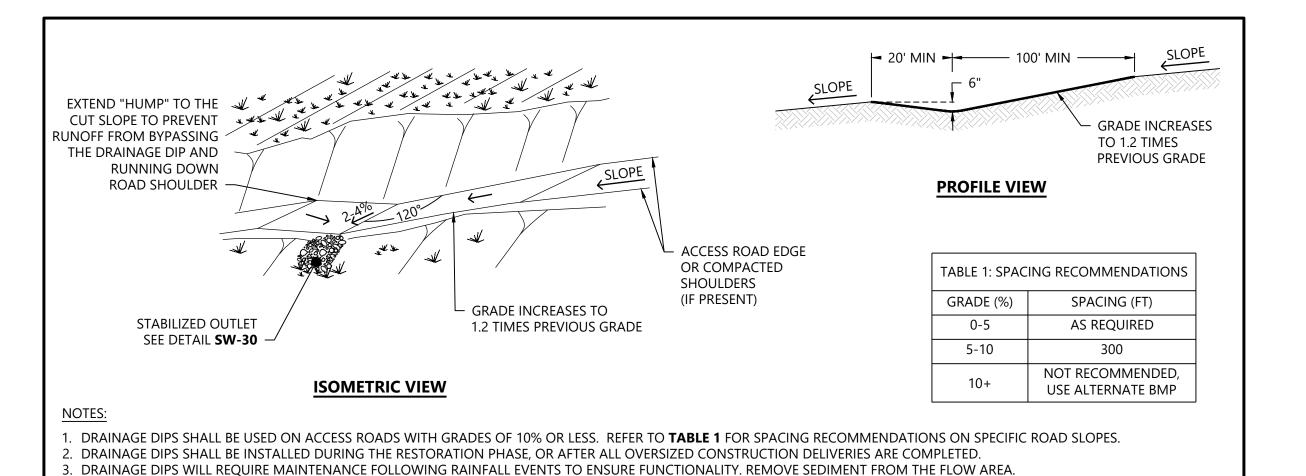
DETERMINED BY CONTRACTOR BASED ON FIELD CONDITIONS TO MAINTAIN

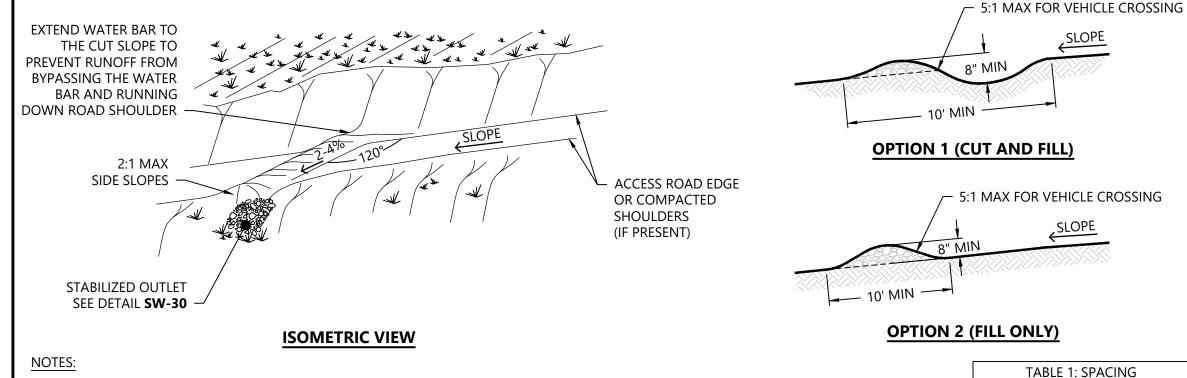
ROCK OVERFLOW STRUCTURE FOR SILT FENCE

A SPACING OF 300 FEET WHERE NO LOW POINT IS APPARENT.

2. ROCK OVERFLOW STRUCTURES ARE RECOMMENDED AT ALL LOW POINTS AND AT

SW-19





ACCESS ROAD DIVERSION - WATER BAR

- . WATER BARS SHALL BE USED ON ACCESS ROADS. REFER TO **TABLE 1** FOR SPACING RECOMMENDATIONS ON SPECIFIC ROAD SLOPES.
- 2. WATER BARS SHALL BE INSTALLED DURING THE RESTORATION PHASE, OR AFTER ALL OVERSIZED CONSTRUCTION DELIVERIES ARE COMPLETED. 3. WATER BARS WILL REQUIRE MAINTENANCE FOLLOWING RAINFALL EVENTS TO ENSURE FUNCTIONALITY. REMOVE SEDIMENT FROM THE FLOW
- 4. WATER BARS SHALL BE BUILT AT AN ANGLE OF +/-30° DOWNSLOPE (120° FROM CENTERLINE) AND HAVE A GRADE OF 2-4%.
- 5. $\,$ The Height from flow line to the top of the settled water bar shall be 8 inches minimum. 6. DIVERSIONS SHALL HAVE STABILIZED OUTLETS, EITHER NATURAL OR MANMADE.
- 7. FLOW PATH SHALL BE STABILIZED WITH CRUSHED ROCK OR AGGREGATE.
- 8. LOCATIONS OF ACCESS ROAD WATER BARS ARE SUBJECT TO CHANGE BASED ON EROSION LOCATIONS IN THE FIELD.

RECOMMENDATIONS GRADE (%) SPACING (FT) AS REQUIRED 0-5 5-10 300 10-15 150 15+ 100

> SW-20 Westwood

6. DIVERSIONS SHALL HAVE STABILIZED OUTLETS, EITHER NATURAL OR MANMADE.

7. FLOW PATH SHALL BE STABILIZED WITH CRUSHED ROCK OR AGGREGATE.

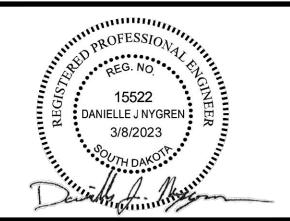
SW-21 ACCESS ROAD DIVERSION - DRAINAGE DIP

4. DRAINAGE DIPS SHALL BE BUILT AT AN ANGLE OF +/-30° DOWNSLOPE (120° FROM THE CENTERLINE) AND HAVE A GRADE OF 2-4%.

5. FOR DRAINAGE DIPS, THE HEIGHT FROM FLOW LINE TO THE TOP OF THE SETTLED RIDGE SHALL BE 6 INCHES MINIMUM.

8. LOCATIONS OF ACCESS ROAD DRAINAGE DIPS ARE SUBJECT TO CHANGE BASED ON EROSION LOCATIONS IN THE FIELD.









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Sweetland Wind Project

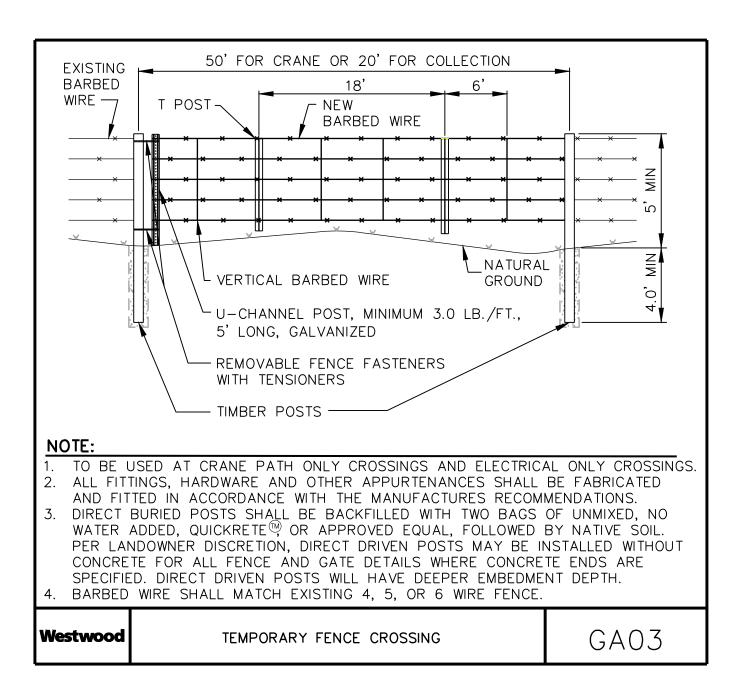
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C705 SHEET



4. BARBED WIRE SHALL MATCH EXISTING 4, 5, OR 6 WIRE FENCE

DIRECT DRIVEN POSTS WILL HAVE DEEPER EMBEDMENT DEPTH.

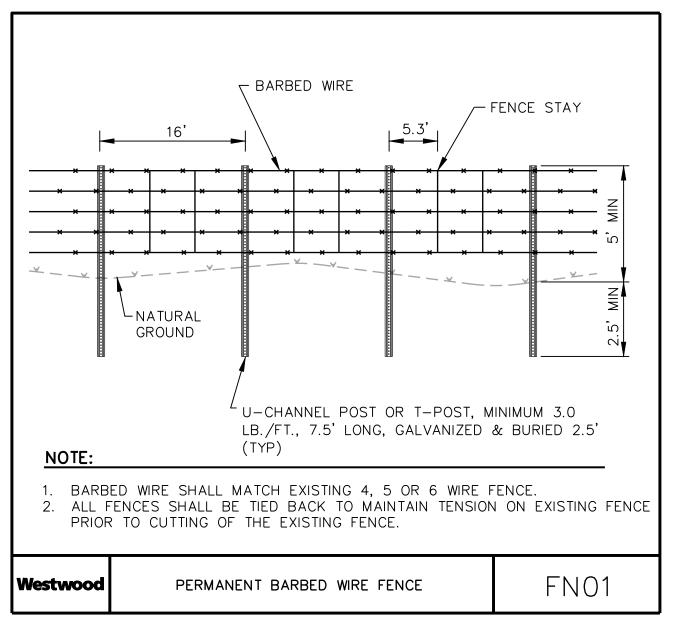
BARBED WIRE SHALL MATCH EXISTING 4, 5, OR 6 WIRE FENCE

INSTALLED DURING PROJECT RESTORATION.

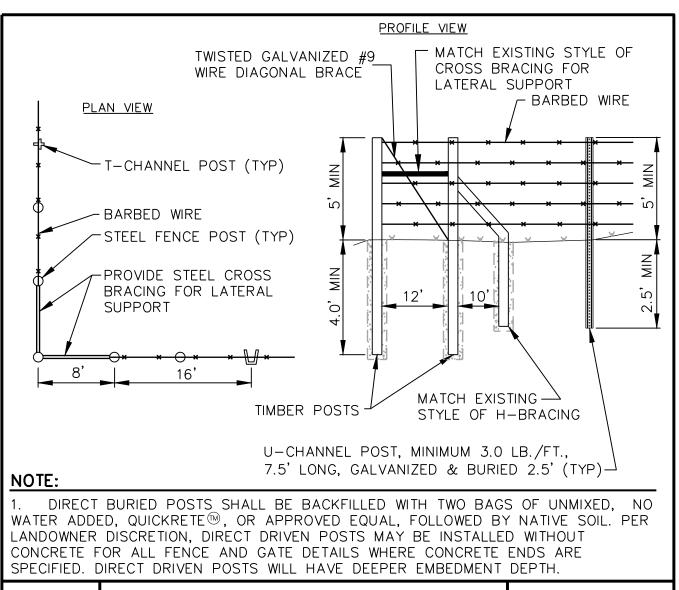
GATE TO BE INSTALLED AFTER CRANE TRAVEL AND DELIVERY COMPLETIONS.

Westwood

Westwood

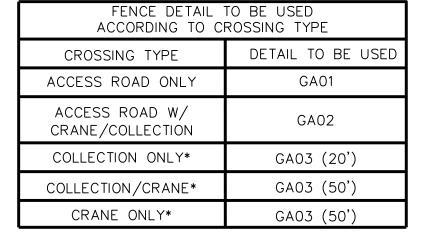


- 16' or 20' HEAVY DUTY TUBE

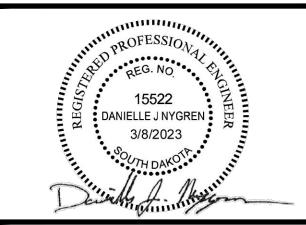


PERMANENT FENCE CORNER POST

4. BARBED WIRE SHALL MATCH EXISTING 4, 5, OR 6 WIRE FENCE.



'ALTERNATIVELY, FENCES MAY BE CUT AND REPAIRED AFTER CROSSING IF APPROVED BY OWNER AND LANDOWNER.



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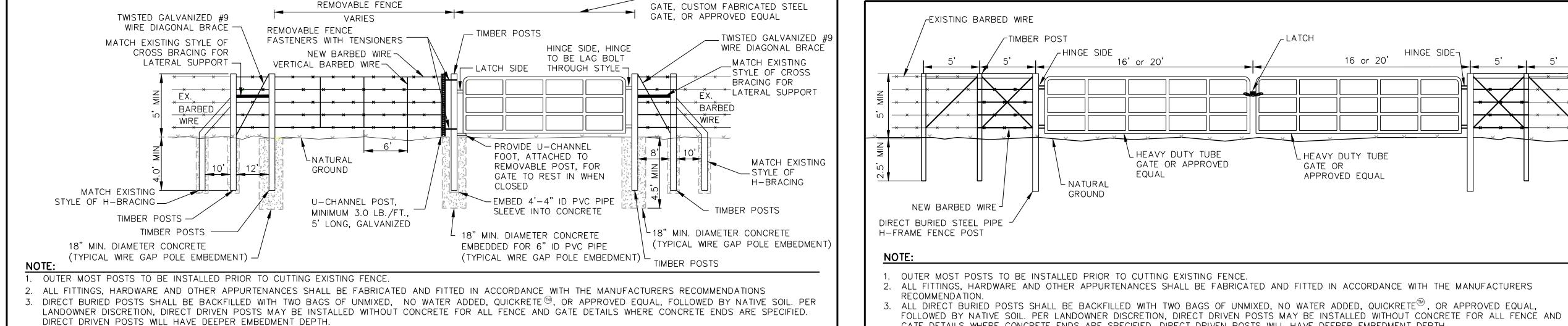
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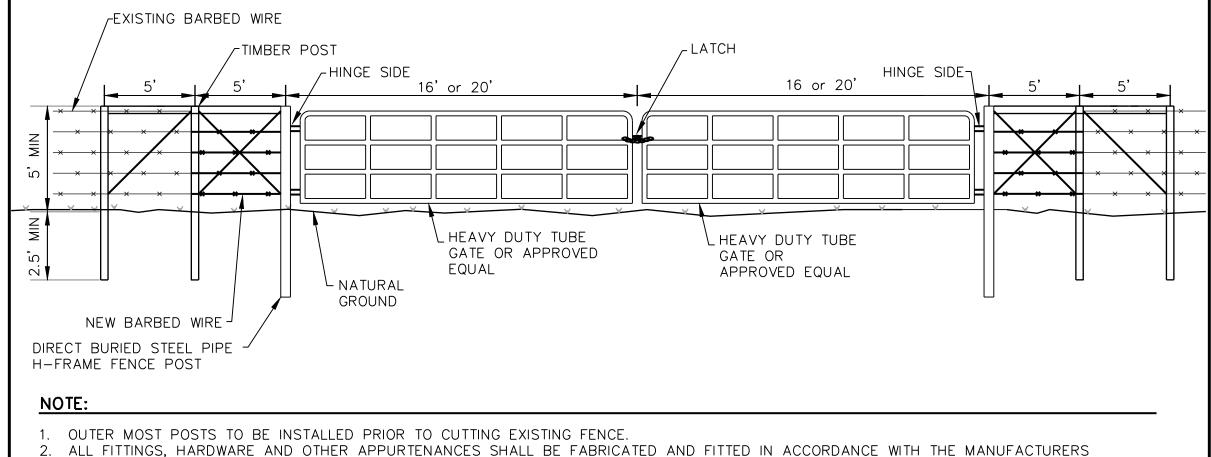
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GATE DETAILS WHERE CONCRETE ENDS ARE SPECIFIED. DIRECT DRIVEN POSTS WILL HAVE DEEPER EMBEDMENT DEPTH.

FN02

TWISTED GALVANIZED #9 TWISTED GALVANIZED #9 MATCH EXISTING STYLE - MATCH EXISTING STYL WIRE DIAGONAL BRACE WIRE DIAGONAL BRACE -OF CROSS BRACING OF CROSS BRACING FOR LATERAL SUPPORT ---LATCH SIDE HINGE SIDE, HINGE TO BE LAG \FOR LATERAL SUPPORT BOLT THROUGH STYLE -EX. — BARBED WIRE -16' OR 20' (SEE TABLE 3) HEAVY DUTY TUBE GATE, CUSTOM FABRICATED STEEL GATE, OR APPROVED EQUAL. PROVIDE U-CHANNEL FOOT, ATTACHED TO REMOVABLE POST, FOR GATE TO REST IN WHEN CLOSED. TIMBER POSTS -MATCH EXISTING -STYLE OF ·18" MIN. DIAMETER CONCRETE H-BRACING (TYPICAL WIRE GAP POLE EMBEDMENT) -MATCH EXISTING STYLE OF H-BRACING -ALL FITTINGS, HARDWARE AND OTHER APPURTENANCES SHALL BE FABRICATED AND FITTED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. DIRECT BURIED POSTS SHALL BE BACKFILLED WITH TWO BAGS OF UNMIXED, NO WATER ADDED, QUICKRETE®, OF

GATE TYPE A - SINGLE GATE

GATE TYPE B - DOUBLE GATE

WIRE APPROVED EQUAL, FOLLOWED BY NATIVE SOIL. PER LANDOWNER DISCRETION, DIRECT DRIVEN POSTS MAY BE INSTALLED WITHOUT CONCRETE FOR ALL FENCE AND GATE DETAILS WHERE CONCRETE ENDS ARE SPECIFIED. IF TYPE A GATE IS TO BE INSTALLED ON AN ACCESS ROAD WHERE CRANES WILL TRAVEL, GATE IS TO BE

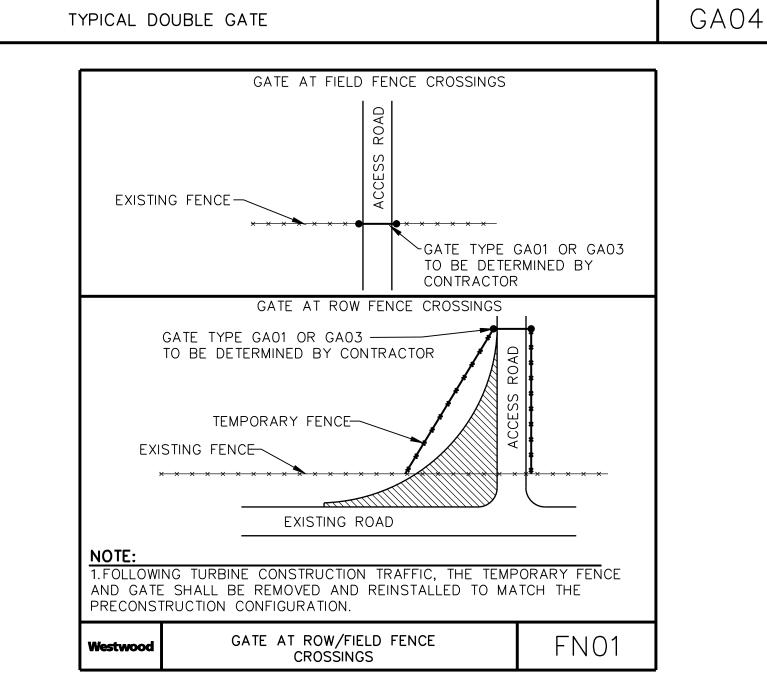
GA01

-HINGE SIDE, HINGE TO BE -LATCH SIDE LAG BOLT THROUGH STYLE -PROVIDE U-CHANNEL FOOT, V V -MATCH EXISTING STYLE OF CROS ATTACHED TO REMOVABLE BRACING FOR LATERAL SUPPORT POST, FOR GATE TO REST IN WHEN CLOSED —×— : EXISTING — CONCRETE FOUNDATION BARBED GUARD VARIES (16' TYP.)) $\rightarrow \langle$ └ H-20 CATTLE GUARD, CUSTOM FABRICATED CATTLE GUARD, OR APPROVED EQUAL (MATCH FLUSH WITH GROUND) MATCH EXISTING — STYLE OF TIMBER POSTS -H-BRACING 18" MIN. DIAMETER CONCRETE MATCH OR APPROVED EQUIVALENT EXISTING STYLE (TYPICAL WIRE GAP POLE EMBEDMENT) OF H-BRACING ___TIMBER POSTS _ ALL FITTINGS, HARDWARE AND OTHER APPURTENANCES SHALL BE FABRICATED AND FITTED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. DIRECT BURIED POSTS SHALL BE BACKFILLED WITH TWO BAGS OF UNMIXED, NO WATER ADDED. QUICKRETEM, OR APPROVED EQUAL, FOLLOWED BY NATIVE SOIL. PER LANDOWNER DISCRETION, DIRECT DRIVEN POSTS MAY BE INSTALLED WITHOUT CONCRETE FOR ALL FENCE AND GATE DETAILS WHERE CONCRETE ENDS ARE SPECIFIED. DIRECT DRIVEN POSTS WILL HAVE DEEPER EMBEDMENT DEPTH. BARBED WIRE SHALL MATCH EXISTING 4, 5, OR 6 WIRE FENCE. REPLACEMENT OF EXISTING CATTLE GUARDS WILL MATCH EXISTING SPECS OR LANDOWNER REQUIREMENT. **GA05** Westwood CATTLE GUARD W/ OPTIONAL GATE ACROSS

Nestwood

GA02

Westwood



Sweetland Wind Project

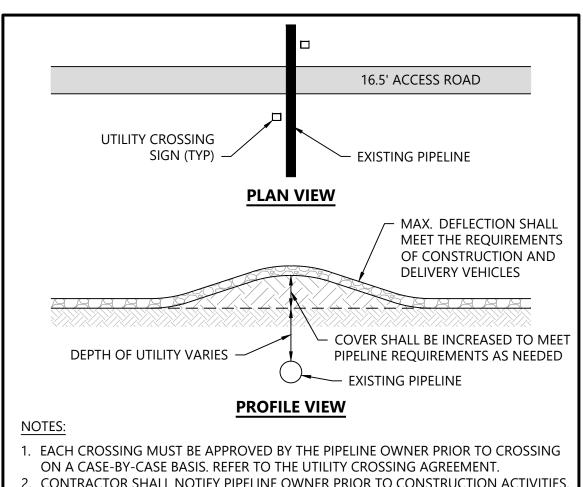
Hand County, South Dakota

Details

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03/08/2023 DATE:

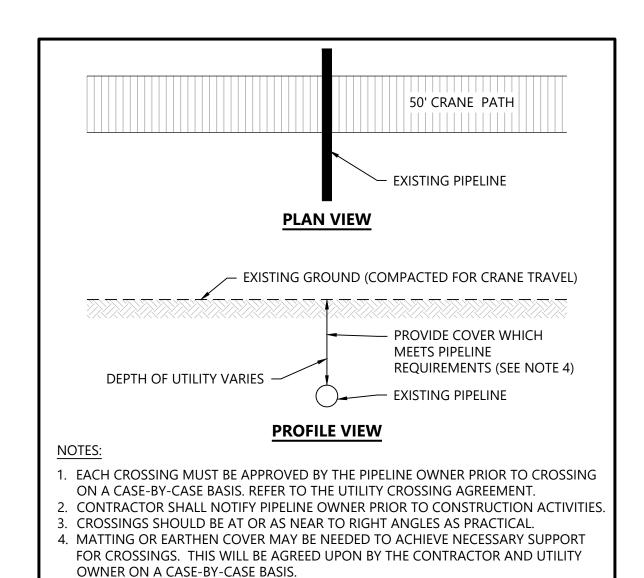
C706 SHEET



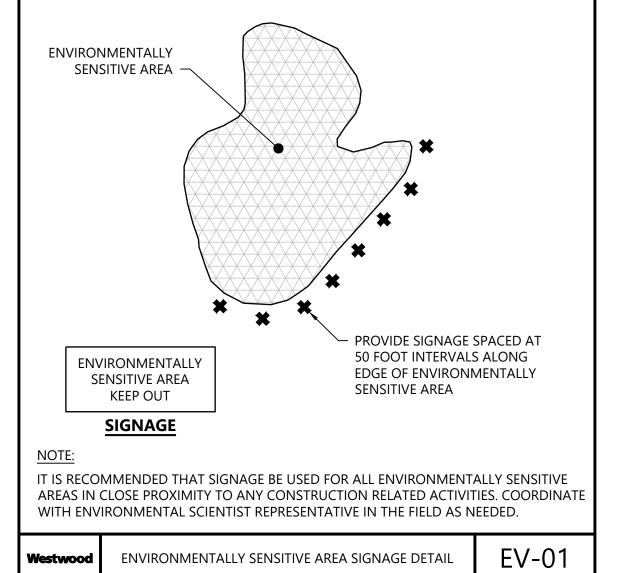
CONTRACTOR SHALL NOTIFY PIPELINE OWNER PRIOR TO CONSTRUCTION ACTIVITIES. 3. CROSSINGS SHOULD BE AT OR AS NEAR TO RIGHT ANGLES AS PRACTICAL.

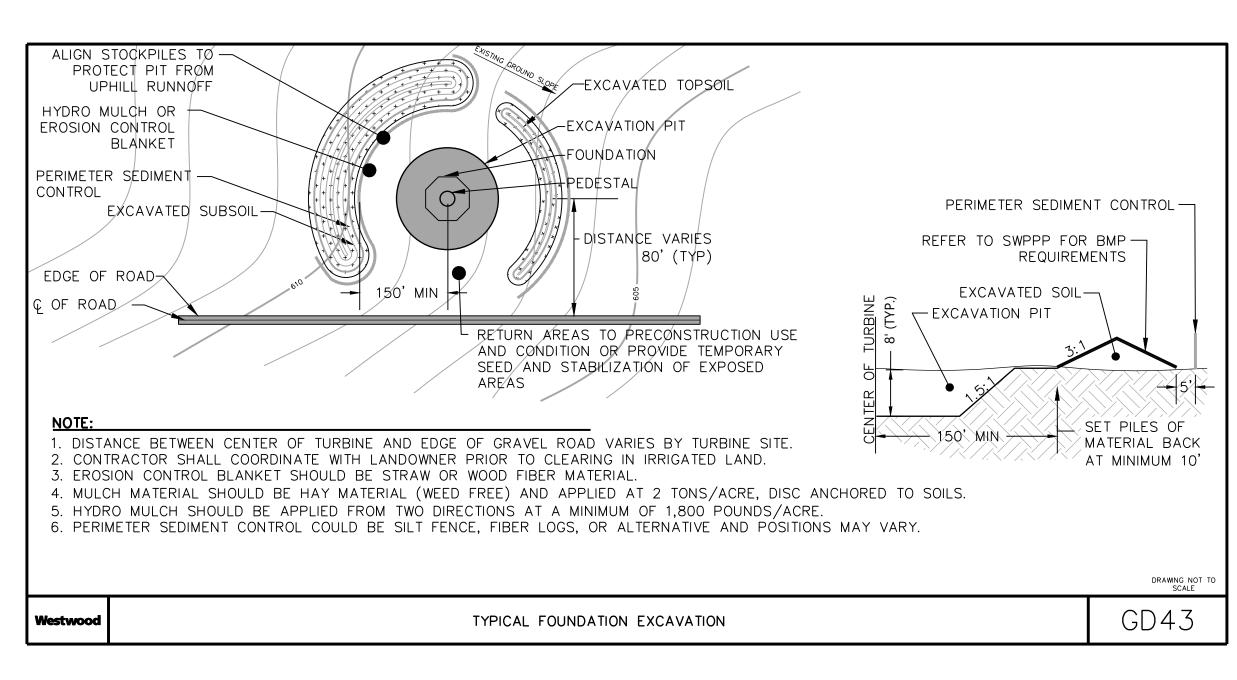
4. EARTH COVER PROTECTION FOR EXISTING UTILITIES SHALL BE USED WHERE THE COVER OVER THE EXISTING UTILITY IS LESS THAN REQUIRED IN THE UTILITY CROSSING AGREEMENT.

EARTHEN PROTECTION OVER PIPELINE CROSSING - ROAD



EARTHEN PROTECTION OVER PIPELINE CROSSING - CRANE







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15522

DANIELLE J NYGREN

3/8/2023

CLEAN ENERGY

392 Co Rd 50 Avon, MN 56310

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CAA DAJ DJN

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COMMENT

0 03/08/2023 IFC Civil Development Plans

REVISIONS: # DATE

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Westwood Professional Services, Inc.

Hand County, South Dakota

Details

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03/08/2023

C707 SHEET:

ROAD DESIGN PARAMETERS

1. THE ROAD HAS BEEN DESIGNED TO ACCOMMODATE LOADS DURING CONSTRUCTION AND LIGHT DUTY TRUCKS FOR LOW VOLUME USE IN NORMAL

OPERATING CONDITIONS. THE ROAD DESIGN SPECIFIED IS NOT INTENDED FOR ALL WEATHER USE FOR HEAVY DUTY, HIGH VOLUME CONSTRUCTION LOADS. 2. ROAD MAINTENANCE CAN BE EXPECTED DURING CONSTRUCTION AND OVER THE LIFE OF THE PERMANENT FACILITY.

. GENERAL

EARTHWORK

- a. THIS SECTION DESCRIBES WORK RELATED TO EARTHWORK AND MAY INCLUDE CLEARING AND GRUBBING, EXCAVATIONS, SUBGRADE, AGGREGATE PLACEMENT, GENERAL FILL, STABILIZATION, ANY ASSOCIATED INSPECTIONS AND TESTING OF EARTHWORK, AND ALL OTHER WORK NECESSARY TO
- COMPLETE EARTHWORK FOR THE PROJECT. b. THIS SECTION DOES NOT ADDRESS EARTHWORK ASSOCIATED WITH FOUNDATIONS, REFER TO STRUCTURAL DRAWINGS FOR FOUNDATION RELATED

2. SUBMITTALS

- a. THE FOLLOWING MATERIAL SUBMITTALS ARE REQUIRED FOR REVIEW BY THE CIVIL ENGINEER OF RECORD (EOR) PER SPECIFIC PRODUCT AND PRE-PLACEMENT
- a.1. ON-SITE BORROW SOURCE
- a.2. IMPORTED FILL MATERIAL
- a.3. AGGREGATE a.4. RIPRAP
- a.5. GEOSYNTHETIC FABRIC
- a.6. CULVERTS
- a.7. LOW WATER CROSSINGS
- b. EROSION AND SEDIMENT CONTROL (BMP) PRODUCT SUBMITTALS ARE NOT REQUIRED. REFER TO THE NPDES PERMIT FOR INFORMATION.
- c. REFER TO TABLE 1 FOR REQUIRED TESTS FOR EACH SUBMITTAL

3. MATERIALS

- a. GENERAL FILL
- a.1. GENERAL FILL MATERIAL SHALL CONSIST OF ON-SITE SAND, SILTY SAND, CLAYEY SAND, SANDY LEAN CLAY, OR LEAN CLAY WITH A LIQUID LIMIT 30 OR LESS AND A PLASTICITY INDEX LESS THAN 15.
- a.2. CONTROLLED STRUCTURAL FILL SHALL BE PROCESSED ON-SITE OR IMPORTED FILL AND SHALL MEET THE FOLLOWING REQUIREMENTS:
- a.2.1. LIQUID LIMIT OF 30 OR LESS
- a.2.2. PLASTIC INDEX OF LESS THAN 15
- a.2.3. FREE OF ORGANIC MATTER
- a.2.4. MAXIMUM PARTICLE SIZE NO GREATER THAN 4 INCHES
- a.3. SAND BEDDING OR SAND FILL SHALL MEET THE FOLLOWING REQUIREMENTS:
- a.3.1. FREE FROM CLAY OR ORGANIC MATERIAL
- SUITABLE FOR THE PURPOSE INTENDED
- UNIFORMLY GRADED
- 90% TO 100% WILL PASS A ½" SIEVE a.3.5. NOT MORE THAN 5% WILL PASS THE NO. 200 SIEVE

b. AGGREGATE MATERIAL

- b.1. AGGREGATE MATERIAL SHALL CONSIST OF SOUTH DAKOTA DOT AGGREGATE BASE. SEE TABLE 2 FOR GRADATION.
- b.2. AGGREGATE MATERIAL FOR PARKING AREAS SHALL BE NON-SPEC
- b.3. FOR USE WITHIN SUBSTATIONS, SWITCHYARDS, AND OTHER AREAS WHERE STEP-AND-TOUCH POTENTIAL HAZARDS EXIST TO PERSONNEL
- b.3.1. SUBMIT IMPORTED MATERIAL SPECIFICATION TO ENGINEER FOR APPROVAL. MATERIAL SHALL CONSIST OF UNIFORMLY GRADED CRUSHED STONE, CRUSHED OR SCREENED GRAVEL, THAT IS HARD, DURABLE, AND FREE FROM ORGANIC MATTER, CLAY BALLS, OR OTHER DELETERIOUS SUBSTANCES, WITH A MINIMUM OF 75% BY WEIGHT HAVING TWO OR MORE

b.4. FOR ROAD SURFACING:

- b.4.1. AGGREGATE SHALL BE COMPOSED OF CRUSHED ROCK. ROAD SURFACING AGGREGATE SHALL BE FREE FROM ORGANIC MATTER AND ALL OTHER DELETERIOUS MATERIALS, INCLUDING SILT AND CLAY BALLS. SUBMIT MATERIAL SPECIFICATION TO ENGINEER FOR APPROVAL. AGGREGATE SHALL HAVE A LIQUID LIMIT OF 30 MAX, PLASTICITY INDEX OF 15 MAX.
- COUNTY ROADS AND COUNTY ROAD TO COUNTY ROAD TEMPORARY INTERSECTION IMPROVEMENTS SHALL CONSIST OF SOUTH DAKOTA DOT AGGREGATE BASE. SEE TABLE 2 FOR GRADATION.
- b.4.1.2. ACCESS ROADS AND ACCESS ROAD TEMPORARY INTERSECTION IMPROVEMENTS SHALL CONSIST OF 1.5" AGGREGATE.

c. GEOTEXTILE c.1. ROAD APPLICATIONS

- GEOTEXTILE SHALL CONSIST OF MIRAFI HP 270 GEOTEXTILE FABRIC OR CIVIL ENGINEER APPROVED EQUAL
- c.1.2. GEOTEXTILE SHALL BE USED AS SHOWN ON THE DRAWINGS.

c.2. DRAINAGE APPLICATIONS

- GEOTEXTILE SHALL CONSIST OF MIRAFI 140N GEOTEXTILE FABRIC OR CIVIL ENGINEER APPROVED EQUAL.
- GEOTEXTILE SHALL BE USED FOR RIPRAP AREAS AND AS SHOWN ON THE DRAWINGS.

FRACTURED FACES, AND CONFORMS TO THE FOLLOWING GRADATION:

d. RIPRAP

d.1. RIRRAP SHALL CONSIST OF ROCK THAT MEETS D50 REQUIREMENTS SPECIFIED IN THE PLANS. D50 SHALL BE MEASURED BY TAKING A REPRESENTATIVE SAMPLE OF THE RIPRAP MATERIAL AND MEASURING 100 STONES IN THE 3 GENERAL DIMENSIONS OF LENGTH, WIDTH, AND THICKNESS. THE AVERAGE INTERMEDIATE DIMENSION SHALL BE EQUAL TO THE D50 VALUE OR GREATER. INTERMEDIATE DIMENSION IS DEFINED AS THE LONGEST. STRAIGHT-LINE DISTANCE ACROSS THE ROCK THAT IS PERPENDICULAR TO THE LONGEST AXIS ON THE FACE OF THE ROCK WITH THE LARGEST PROJECTION PLANE. FOR THE IDEALIZED ROCK PARTICLE SHOWN IN FIGURE 1, THIS WOULD BE DIMENSION 'B'. REFERENCE FLH DESIGNATION T 521-13 "DETERMINING RIPRAP GRADATION BY WOLMAN COUNT" FOR FURTHER INFORMATION.

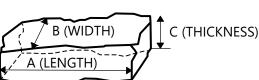


FIGURE 1 - ROCK PARTICLE DIMENSIONS

- d.2. RIPRAP SHALL BE USED FOR CULVERT ENDS, STILLING BASINS, DRAINAGE SWALES, PROTECTED ROAD CROSSINGS, AND AS SHOWN ON THE DRAWINGS. e. CULVERTS
- e.1. CULVERTS SHALL HAVE NO END TREATMENTS UNLESS OTHERWISE NOTED OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION
- e.2. CULVERTS 48" AND SMALLER SHALL BE MINIMUM 16-GAGE CORRUGATED METAL PIPE.
- e.3. CULVERTS 54" AND LARGER SHALL BE MINIMUM 12-GAGE CORRUGATED METAL PIPE.
- e.4. CONFIRM CULVERT MATERIAL WITH MANUFACTURER RECOMMENDATIONS BASED ON GAGE, COVER, SIZE, AND ANTICIPATED LOADINGS.

4. CONSTRUCTION

- a. CLEARING AND GRUBBING
- a.1. THE CONTRACTOR SHALL BE REQUIRED 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 OWNER'S REPRESENTATIVE FOR REMOVAL, AND SHALL EXERCISE EXTREME CARE AROUND EXISTING TREES TO BE SAVED. TREE CLEARING IS NOT ALLOWED BETWEEN JUNE 1 AND JULY 31.

b. EXCAVATIONS

- b.1. TOPSOIL SHALL BE STRIPPED FROM ALL ROADWAY AREAS (AT A MINIMUM DEPTH OF ±6 INCHES) (THROUGH THE ROOT ZONE). TOPSOIL SHALL NOT BE STRIPPED OUTSIDE OF THE DESIGNATED DISTURBANCE AREAS. b.2. ANY TOPSOIL THAT HAS BEEN STRIPPED SHALL BE RE-SPREAD OR STOCKPILED WITHIN GRADING AREAS AND/OR USED AS FILL OUTSIDE OF THE DISTURBANCE AREAS, AS DIRECTED BY THE CIVIL ENGINEER. ALL TOPSOIL SHALL BE REDISTRIBUTED TO THE LAND OWNER'S PROPERTY OF WHERE IT ORIGINATED FROM. SEEDING AND MULCHING TO BE UNDER THE DIRECTION OF THE PROPERTY OWNER.
- c. SUBGRADE c.1. SUBGRADE SOIL BELOW FILL SHALL BE COMPACTED AND PROOF-ROLLED IN ACCORDANCE WITH TABLE 1.
- c.2. FOR CEMENT STABILIZED SUBGRADES, REFER TO ACCESS ROAD CEMENT STABILIZATION SECTION ON SHEET C709.
- c.3. WHERE APPLICABLE, GEOTEXTILE FABRIC SHALL BE PLACED AFTER SUBGRADE TESTING REQUIREMENTS AS SPECIFIED IN TABLE 1. GEOTEXTILE FABRIC SHALL BE INSTALLED PER MANUFACTURE RECOMMENDATION. d. GENERAL FILL
- d.1. FILL MAY BE PLACED ABOVE GRADE AFTER TOPSOIL STRIPPING, IN LOOSE LIFTS NOT EXCEEDING 8 INCHES FOR CONTROLLED FILL AND 6 INCHES FOR ROAD FILL. FILL SHALL BE COMPACTED IN ACCORDANCE WITH TABLE 1 d.2. SIDE SLOPES GREATER THAN 4:1 WILL NOT BE PERMITTED, UNLESS OTHERWISE NOTED ON THE PLAN.
- e. AGGREGATE PLACEMENT
- e.1. SUBSEQUENT TO THE SUBGRADE PREPARATION, THE AGGREGATE BASE SHALL BE PLACED, COMPACTED, AND TESTED TO THE SPECIFICATIONS IDENTIFIED IN TABLE 1.
- f. SEEDING, MULCHING, AND STABILIZATION
- f.1. PRIOR TO FINAL STABILIZATION, TOPSOIL SHALL BE DISTRIBUTED OVER THE EXPOSED DISTURBED AREAS, EXCLUDING THE AGGREGATE DRIVING SURFACE.
- f.2. FOLLOWING ROUGH GRADING OPERATIONS, TOPSOIL CAN BE USED TO BRING THE GROUND ELEVATIONS UP TO THE DESIGNED FINISHED GRADE ELEVATIONS IN NON-STRUCTURAL AREAS.
- f.3. ALL DISTURBED AREAS SHALL HAVE TEMPORARY AND PERMANENT STABILIZATION MEASURES ESTABLISHED IN ACCORDANCE WITH THE NPDES PERMIT.

TABLE 1: MATERIAL TESTING SCHEDULE

	Location	Required Test	ASTM Standard	Frequency	Specified Criteria
	ent Temporary Roads	Standard Proctor	ASTM D-698	1 per soil type as determined by independent testing agency	N/A
		Nuclear Density	ASTM D-6938	Roads: 1 test per 2,500 LF (minimum 1 per road) Areas: 1 test per 5,000 SF (minimum 1 per area)	95% of Standard Proctor Maximum Dry Density +/- 2% of Optimum Moisture Content
Subgrade		Proof Roll	N/A	Entire Length / Area	No rutting greater than 1.5" and no "pumping" of the soil beneath/behind the loade truck. See testing requirements for additional information.
(Non-cement Stabilized)		Proof Roll	N/A	Entire Length / Area	No rutting greater than 1.5" and no "pumping" of the soil beneath/behind the load truck. See testing requirements for additional information.
	Crane Walks Crane Pads	EXCLUDED ¹	N/A	EXCLUDED ¹	EXCLUDED ¹
	Source	Standard Proctor	ASTM D-698		N/A
	(On -Site Borrow) (Imported Fill) (Common Excavation) Embankments Turbine Pads (Staging Areas) Intersection Improvements Access Roads Spur Roads Met Tower Roads Public Road Improvements O&M Area Laydown/Batch Plant	Moisture Content	ASTM D-2216	1 per soil type/source as determined by independent testing agency	IVA
		Atterberg Limits	ASTM D-4318		LL <u><</u> 30 and PI < 15
General Fill (for Mass Grading)		Nuclear Density	ASTM D-6938	1 test per 5,000 SF per lift 1 test per 30,000 SF per lift (Turbine Pads only)	95% of Standard Proctor Maximum Dry Density +/- 2% of Optimum Moisture Content
		Proof Roll	N/A	Entire Length / Area (Final Surface)	No rutting greater than 1.5" and no "pumping" of the soil beneath/behind the load truck. See earthwork specifications for additional information.
	Quarry Testing (Pre-Placement)	Grain Size Analysis	ASTM C-136	Per source from quarry. Sample from site every 5,000CY.	See Table 2
		Standard Proctor	ASTM D-698		N/A
		Moisture Content	ASTM D-2216		IN/A
		Atterberg Limits	ASTM D-4318		See Table 2
		Los Angeles Abrasion	ASTM C-131		See Table 2
Aggregate Material	te Material Access Roads Spur Roads Met Tower Roads Public Road Improvements O&M Area Aggregate Rings Intersection Improvements Laydown/Batch Plant	N/A	Entire Length / Area	No rutting greater than 1.5" and no "pumping" of the soil beneath/behind the load truck. See earthwork specifications for additional information.	

¹ Structural design, recommendations, and testing for crane walks and crane pads is excluded from the engineering design contained within these plans. Refer to the geotechnical report, project specific crane walk/pad structural design (if available), geotechnical engineer, and/or contractor for specific information.

- 5. INSPECTIONS AND TESTING
- a. TESTING SHALL BE PERFORMED BY A DESIGNATED INDEPENDENT TESTING AGENCY
- b. TESTING AND INSPECTION RECORDS SHALL BE MAINTAINED BY THE CONTRACTOR AND MADE ACCESSIBLE TO THE CIVIL **EOR AT THEIR REQUEST**
- b.1. THE CIVIL ENGINEER MAY REVIEW THE TESTING AND INSPECTION RECORDS TO CHECK CONFORMANCE WITH THE DRAWINGS AND SPECIFICATIONS. THE CIVIL ENGINEER'S REVIEW DOES NOT RELIEVE THE CONSTRUCTION CONTRACTOR FROM THE RESPONSIBILITY FOR CORRECTING DEFECTIVE WORK.
- c. REFER TO TABLE 1 FOR PROJECT TESTING SPECIFICATIONS
- d. PROOF ROLLING: PROOF ROLLING SHALL BE PERFORMED IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER OR QUALIFIED GEOTECHNICAL REPRESENTATIVE
- d.1. UNSTABILIZED SUBGRADE AND AGGREGATE BASE SHALL BE PROOF ROLLED USING A FULLY LOADED TANDEM AXLE DUMP TRUCK WITH A MINIMUM GROSS WEIGHT OF 25 TONS OR A FULLY LOADED WATER TRUCK WITH AN EQUIVALENT AXLE LOADING

TABLE 2: SOUTH DAKOTA DOT ACCDECATE BACE CDEC

AGGREGATI	E RASE SPEC		
SIEVE SIZE	PERCENT PASSING		
1"	100		
3/4"	80-100		
1/2"	68-91		
#4	46-70		
#8	34-58		
#40	13-35		
#200	3.0-12.0		
LIQUID LIMIT (MAX) = 25 PLASTICITY INDEX = 0-6			

LA ABRASION (% MAX) = 40%

GENERAL NOTES

SWPP PLAN.

- CONSTRUCTION PLANS ARE BASED OFF THE COORDINATE SYSTEM HARN/SD.SD-NF.
- 2. SITE DRAINAGE INFRASTRUCTURE INCLUDING SWALES, ACCESS ROAD SWALE CROSSINGS, AND OUTLET FEATURES ARE SIZED FOR A 25 YEAR 24HR RAIN EVENT, 4.06 INCHES PER NOAA ATLAS 14, VOLUME 8, VERSION 2.
- THE ALTA SURVEY AND EXISTING PLANIMETRIC DATA IS FROM WESTWOOD PROFESSIONAL SERVICES, DATED 10/13/2022.
- 4. THE GROUND SURFACE CONTOURS (AT TWO-FOOT VERTICAL INTERVALS) AND ELEVATIONS ARE BASED ON DATA PROVIDED BY BLATTNER.
- 5. THE CONTRACTOR SHALL NOTIFY THE CIVIL ENGINEER WHEN THEY FIND THAT GROUND ELEVATIONS DETERMINED DURING FIELD STAKING VARY FROM THE GROUND ELEVATIONS SHOWN ON THE DRAWINGS FOR POTENTIAL DESIGN MODIFICATIONS.
- 6. WHERE SECTION OR SUBSECTION MONUMENTS ARE ENCOUNTERED, THE OWNER SHALL BE NOTIFIED AND ARE NOT TO BE REMOVED WITHOUT PERMISSION FROM THE OWNER. 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.
- 7. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING DRAINAGE THROUGHOUT THE CONSTRUCTION OF THIS PROJECT. CONSTRUCTION ACTIVITIES SHALL NOT BLOCK THE NATURAL DRAINAGE SWALES CAUSING RAINWATER TO POND. IF CULVERTS ARE NEEDED, THE CIVIL ENGINEER MUST BE CONTACTED FOR APPROPRIATE SIZING OF STRUCTURE. WHEN INSTALLING DRAINAGE CROSSINGS, THE CONTRACTOR SHALL USE JUDGMENT IN SETTING THE FLOW LINE ELEVATIONS TO PROVIDE POSITIVE DRAINAGE. WHEN POSSIBLE, ALL CULVERTS SHOULD BE PLACED AT A MINIMUM 0.5% GRADE.
- 8. 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 UNLESS INDICATED FOR REMOVAL
- 9. THE CONTRACTOR SHALL NOTIFY SOUTH DAKOTA 811 AT LEAST 48 HOURS BEFORE EXCAVATION ACTIVITIES COMMENCE.
- 10. ALL CONSTRUCTION PERFORMED SHALL CONFORM WITH THE CURRENT STANDARDS AND SPECIFICATION OF HAND COUNTY. WHERE DISCREPANCIES EXIST BETWEEN THE PROJECT SPECIFICATIONS AND THE COUNTY SPECIFICATIONS OR STANDARD, THE CONTRACTOR SHALL ABIDE BY THE GREATER OR MORE RESTRICTIVE REQUIREMENTS.
- 11. ELECTRONIC FILES ARE AVAILABLE FOR CONSTRUCTION OPERATIONS.
- 12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING TRAFFIC CONTROL DEVICES SUCH AS BARRICADES, WARNING SIGNS, DIRECTIONAL SIGNS, FLAGGERS TO CONTROL THE MOVEMENT OF TRAFFIC WHERE NECESSARY. PLACEMENT OF THESE DEVICES SHALL BE APPROVED BY THE COUNTY/MUNICIPALITY AND CIVIL ENGINEER PRIOR TO PLACEMENT. TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST VERSION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)
- 13. TEMPORARY FEATURES SHALL, UPON COMPLETION OF ALL PROJECT CONSTRUCTION OR UPON NOTIFICATION OF THE CIVIL ENGINEER, BE REMOVED AND THE AREA RESTORED TO APPROXIMATELY ORIGINAL LINES AND GRADES WITH TOPSOIL REPLACED, EXCEPT WHERE REQUESTED BY THE TOWNSHIP OR COUNTY TO PERMANENTLY REMAIN.
- 14. ELECTRICAL INFORMATION SHOWN ON THE PLANS IS FOR REFERENCE ONLY. REFER TO ELECTRICAL PLANS FOR SPECIFIC LOCATIONS AND CONSTRUCTION DETAILS. 15. GEOTECHNICAL REPORTS WITH RECOMMENDATIONS WERE PROVIDED ON 9/15/2022.
- 16. WETLAND INFORMATION HAS BEEN PROVIDED BY THE OWNER ON 4/19/2022. ALL WETLAND DELINEATIONS AND PERMITTING SHALL BE THE RESPONSIBILITY OF OTHERS. THE OWNER AND CONTRACTOR SHALL VERIFY THAT ALL WETLAND PERMITS HAVE BEEN SUBMITTED AND APPROVED PRIOR TO CONSTRUCTION COMMENCING.
- 17. CULTURAL RESOURCE INFORMATION HAS BEEN PROVIDED BY THE OWNER on 8/19/2022. THE CONTRACTOR SHALL BE FAMILIAR WITH THE INFORMATION/REPORT AND REVIEW ALL RECOMMENDATIONS.
- 18. AN ENVIRONMENTAL ASSESSMENT HAS BEEN PROVIDED. THE CONTRACTOR SHALL BE FAMILIAR WITH THE INFORMATION/REPORT AND REVIEW ALL RECOMMENDATIONS. 19. WILDLIFE REPORT(S) HAVE BEEN PROVIDED, THE CONTRACTOR SHALL BE FAMILIAR WITH THE INFORMATION/REPORT(S) AND REVIEW ALL RECOMMENDATIONS.
- 20. TURBINE SETBACKS ARE NOT IDENTIFIED ON THE CONSTRUCTION PLANS. IT SHALL BE THE RESPONSIBILITY OF THE OWNER AND CONTRACTOR TO ENSURE ALL TURBINE SETBACKS
- MEET PROJECT REQUIREMENTS.

EROSION AND SEDIMENT CONTROL / STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

- THE CONTRACTOR SHALL PROVIDE EROSION CONTROL MEASURES AS PLANNED AND SPECIFIED FOLLOWING BEST MANAGEMENT PRACTICES AS OUTLINED BY THE SOUTH DAKOTA DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES AND BEING IN CONFORMANCE WITH THE SOUTH DAKOTA POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL STORMWATER PERMIT. SEE THE PROJECT SITE PLANS AND ASSOCIATED STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR EROSION CONTROL AND RESTORATION LOCATIONS AND SPECIFICATIONS. UNLESS OTHERWISE NOTED OR MODIFIED IN THE SWPPP/HEREIN, ALL SECTIONS OF THE GENERAL CONDITIONS SHALL APPLY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SWPPP'S AVAILABILITY. ALL TOP-SOIL BERMS, FIBER ROLLS, AND OTHER EROSION CONTROL FEATURES SHALL BE IN-PLACE PRIOR TO ANY EXCAVATION/CONSTRUCTION AND SHALL BE MAINTAINED UNTIL
- VIABLE TURF OR GROUND COVER HAS BEEN ESTABLISHED. ALL DRAINAGE SWALES DISTURBED DURING CONSTRUCTION ACTIVITIES AND NOT COVERED BY ROAD SURFACING MATERIALS, SHALL BE STABILIZED IN ACCORDANCE WITH THE

Avon, MN 56310 **REVISIONS:** # DATE COMMENT BY CHK APR 0 03/08/2023 IFC Civil Development Plans

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15522

DANIELLE J NYGREN

3/8/2023

Westwood Professional Services, Inc.

Sweetland Wind Project

Hand County, South Dakota

General Construction Notes

ISSUED FOR CONSTRUCTION

03/08/2023

SHEET

ACCESS ROAD CEMENT STABILIZATION

1. GENERAL

- a. THIS SECTION DESCRIBES WORK RELATED TO ACCESS ROAD SUBGRADE SOIL STABILIZED WITH PORTLAND CEMENT. THIS SECTION DOES NOT INCLUDE CEMENT STABILIZATION FOR OTHER PROJECT INFRASTRUCTURE, SUCH AS CRANE WALKS, CRANE PADS, LAYDOWN YARDS, OR SUBGRADE BELOW FOUNDATIONS, UNLESS SPECIFICALLY STATED IN THESE PLANS.
- b. IT IS EXPECTED THAT AGGREGATE-SURFACED ACCESS ROADS WILL REQUIRE ONGOING MAINTENANCE DURING CONSTRUCTION AND OVER THE LIFE OF THE PERMANENT FACILITY TO KEEP THEM IN A SERVICEABLE CONDITION, REGARDLESS OF THE AGGREGATE THICKNESS AND SUBGRADE PREPARATION. IT IS NOT PRACTICAL TO DESIGN AN AGGREGATE SECTION OF ADEQUATE THICKNESS THAT PREVENTS ONGOING MAINTENANCE. RUTS, DEPRESSIONS, AND SOFT SUBGRADE SHOULD BE REPAIRED AS NEEDED TO FACILITATE TRAFFIC. THROUGHOUT THE OPERATIONAL LIFE OF THE PROJECT, ADDITIONAL AGGREGATE MAY BE PLACED IN RUTS AND DEPRESSIONS, OR THE ENTIRE AGGREGATE SECTION AND SOFT SUBGRADE MAY BE REMOVED AND REPLACED WITH A NEW AGGREGATE SECTION.

2. SUBMITTALS

- a. SUBMIT A QUALITY CONTROL PLAN TO ENGINEER FOR REVIEW ONLY, PRIOR TO CONSTRUCTION ACTIVITIES. THE PLAN SHOULD INCLUDE THE FOLLOWING ITEMS, AT A MINIMUM:
- a.1. QUALIFICATIONS FOR EXPERIENCED PERSONNEL OVERSEEING STABILIZATION
- a.2. REPRESENTATIVE MOISTURE-DENSITY RELATIONSHIP (PROCTOR) TESTS a.3. STABILIZATION DEPTH AND WIDTH
- a.4. CEMENT AND MOISTURE APPLICATION RATE MONITORING
- a.5. TEMPERATURE MONITORING
- a.6. MOISTURE/COMPACTION TESTS a.7. DYNAMIC CONE PENETROMETER (DCP) TEST EQUIPMENT AND PROCEDURE
- a.8. PROOF-ROLL VEHICLE TYPE AND WEIGHT
- a.9. SURFACE MOISTURE CONTROL FOR CURING
- a.10. CORRECTIVE ACTION PLAN IF SPECIFICATION IS NOT MET
- b. SUBMIT A TEST STRIP CONSTRUCTION PLAN, INCLUDING THE FOLLOWING ITEMS, AT A MINIMUM
- b.1. TEST STRIP LOCATIONS AND LENGTHS
- b.2. CEMENT APPLICATION RATES b.3. QUALITY CONTROL PLAN

3. MATERIALS

- a. CEMENT: ANY TYPE OF PORTLAND CEMENT THAT COMPLIES WITH ASTM C595.
- b. Water: Relatively clean and free from Harmful amounts of Alkalies, Acids, or Organic Matter.
- c. AGGREGATE: REFER TO CONSTRUCTION NOTES ON SHEET C708.
- d. GEOTEXTILE: REFER TO CONSTRUCTION NOTES ON SHEET C708.

4. CONSTRUCTION

a. PREPARATION

- a.1. STRIP TOPSOIL TO A MINIMUM DEPTH OF 4 INCHES. STRIPPING DEPTH MAY NEED TO EXTEND DEEPER TO REMOVE ROOTS/ORGANICS AND ACHIEVE THE REQUIRED CEMENT STABILIZED SUBGRADE STRENGTH. ROOTS SMALLER THAN 1/2 INCH DIAMETER ARE ACCEPTABLE.
- a.2. SHAPE SUBGRADE TO THE PROPER WIDTH AND GRADE.
- a.3. THE CONSTRUCTION MATERIALS TESTING COMPANY SHALL EVALUATE SUBGRADE MATERIAL TO DETERMINE IF A REPRESENTATIVE MOISTURE-DENSITY RELATIONSHIP (PROCTOR) TEST EXISTS, AND IF NOT A NEW PROCTOR TEST SHALL BE PERFORMED.
- a.4. DETERMINE THE IN-SITU MOISTURE CONTENT OF THE SUBGRADE SHORTLY BEFORE SPREADING CEMENT USING A NUCLEAR DENSITY GAUGE OR OTHER SUITABLE DEVICE. PERFORM ADDITIONAL MOISTURE CONTENT CHECKS IF WEATHER CONDITIONS OR SOIL CONDITIONS CHANGE. SEE BEST PRACTICES FOR SUBGRADE MOISTURE RECOMMENDATIONS.
- a.5. DO NOT STABILIZE SUBGRADE THAT IS FROZEN. REFER TO BEST PRACTICES FOR ADDITIONAL TEMPERATURE RECOMMENDATIONS.

b. SPREADING CEMENT

- b.1. APPLY CEMENT AT A RATE THAT ENSURES THE WEIGHT SPREAD IS WITHIN 10% OF THE DESIRED AMOUNT. FURNISH A SQUARE-YARD CLOTH, SCALES, WEIGHT TICKETS, AND/OR PERSONNEL TO CHECK THE SPREAD RATE OF CEMENT PLACED.
- b.2. UNIFORMLY SPREAD CEMENT TO THE FULL WIDTH OF THE AREA TO BE COVERED.
- b.3. CEMENT APPLICATION RATE MAY NEED TO BE ADJUSTED THROUGHOUT CONSTRUCTION TO ACHIEVE DESIRED RESULTS BASED ON FIELD CONDITIONS. c. MIXING
- c.1. BEGIN MIXING AS SOON AS PRACTICAL AFTER THE CEMENT IS SPREAD, AND CONTINUE UNTIL A HOMOGENEOUS AND UNIFORM MIXTURE IS PRODUCED TO THE DEPTH AND WIDTH SPECIFIED IN THE DESIGN DOCUMENTS.
- c.2. MIX AT A SPEED THAT ENSURES A UNIFORM MIXTURE OF SOIL, CEMENT, AND WATER.
- c.3. PULVERIZE SUBGRADE DURING MIXING PROCESS TO AVOID LARGE CLODS OF SOIL. REFER TO BEST PRACTICES FOR RECOMMENDATIONS.
- c.4. APPLY WATER THROUGH A METERING DEVICE SUCH AS THE RECLAIMER TO UNIFORMLY DISTRIBUTE THE PROPER AMOUNT OF WATER. SEE BEST PRACTICES FOR SUBGRADE MOISTURE RECOMMENDATIONS.
- c.5. IF STABILIZATION HALTS AND NEEDS TO BE RESUMED AT A LATER TIME, CONSTRUCTION JOINTS SHALL BE FORMED BY CUTTING BACK INTO THE COMPLETED WORK A MINIMUM OF 2 FEET.

d. COMPACTION AND FINISHING

- d.1. BEGIN COMPACTION IMMEDIATELY AFTER SOIL, CEMENT, AND WATER HAVE BEEN MIXED, TYPICALLY WITHIN 45 MINUTES OF MIXING. COMPLETE COMPACTION WITHIN 2 HOURS.
- d.2. COMPACT THE STABILIZED SUBGRADE TO THE SPECIFICATIONS PRESENTED IN **TABLE CS2** AND UNTIL NO EVIDENCE OF FURTHER COMPACTION IS
- d.3. COMPACTION SHALL BE PERFORMED WITH MULTIPLE PASSES OF A SHEEP FOOT OR TAMPING ROLLER (FOR FINE-GRAINED SOIL), AND FINISHED BY A SMOOTH DRUM ROLLER TO SET THE FINAL ROAD PROFILE.
- d.4. PLACE AGGREGATE ON STABILIZED SUBGRADE AFTER PASSING THE PROOF-ROLL AND DCP TESTING SPECIFICATIONS IN THE INSPECTION AND TEST NOTES ON THIS SHEET. REFER TO ACCESS ROAD CROSS SECTION DETAILS IN THE CONSTRUCTION DETAILS FOR AGGREGATE THICKNESS AND WIDTH. AGGREGATE THICKNESS APPLIES TO THE BEGINNING OF CONSTRUCTION. ADDITIONAL AGGREGATE MAY BE REQUIRED AT THE END OF CONSTRUCTION DUE TO AGGREGATE LOSS FROM ROAD USE, IF REQUIRED BY OWNER SPECIFICATIONS.

5. INSPECTION AND TESTING

- a. REFER TO **TABLE CS1** AND **TABLE CS2** FOR TESTING SPECIFICATIONS.
- b. ONCE THE MINIMUM REQUIRED CBR IS ACHIEVED AT OR BEFORE THE CORRESPONDING TIME PERIOD SHOWN IN **TABLE CS1**, BUT NO SOONER THAN 24 HOURS AFTER COMPACTION, THE CONTRACTOR MAY PROCEED WITH PROOF-ROLL TESTING. FUTURE DCP TESTING ON THAT SEGMENT OF SUBGRADE IS NOT REQUIRED.
- c. IF DCP TESTING SPECIFICATIONS ARE NOT MET WITHIN 7 DAYS, ADDITIONAL TESTS MAY BE PERFORMED AT A LATER DATE (E.G., 14 DAYS), THE SECTION MAY BE RE-STABILIZED WITH ADDITIONAL CEMENT, OR ADDITIONAL AGGREGATE SURFACE AND/OR THE ADDITION OF GEOTEXTILE MAY BE REQUIRED. REFER TO TABLE CS3 FOR ALTERNATE ACCESS ROAD SECTIONS, OR CONTACT ENGINEER FOR ADDITIONAL RECOMMENDATIONS. COMPLETE SUBGRADE FAILURE OR EXCESSIVE RUTTING MAY OCCUR IF NO REMEDIAL ACTION IS TAKEN.
- d. PROOF-ROLLING SHALL BE PERFORMED PRIOR TO PLACING AGGREGATE AND IN THE PRESENCE OF A QUALIFIED GEOTECHNICAL REPRESENTATIVE. REFER TO TABLE CS2 AND CONSTRUCTION NOTES ON SHEET C708 FOR PROOF-ROLL TESTING AND EQUIPMENT SPECIFICATIONS.
- e. PROOF-ROLLING SHALL BE PERFORMED WITH A MINIMUM OF TWO PASSES BUT NOT WITHIN 12 INCHES OF THE EDGE OF THE STABILIZED SECTION.
- f. If proof-rolls fail, test the failed area with DCP and use an alternate road section according to **Table CS3**, or contact engineer for
- g. REFER TO THE CONSTRUCTION NOTES ON SHEET C708 FOR AGGREGATE PLACEMENT, INSPECTION, AND TESTING SPECIFICATIONS.

BEST PRACTICES FOR CEMENT STABILIZATION

THE FOLLOWING RECOMMENDATIONS SHOULD BE CONSIDERED FOR BEST RESULTS:

- 1. IT IS NOT RECOMMENDED TO MIX SOIL AND CEMENT IF AIR TEMPERATURES ARE PROJECTED TO BE BELOW 40 DEGREES FOR THE NEXT 3 DAYS OR BELOW 32 DEGREES FOR THE NEXT 7 DAYS. CONSULT ENGINEER PRIOR TO MIXING IF COLD TEMPERATURES ARE EXPECTED.
- 2. PROVIDE SUFFICIENT EQUIPMENT IN GOOD WORKING CONDITION TO ALLOW FOR CONTINUOUS AND UNIFORM BLENDING AND COMPACTION OF THE SUBGRADE. DISKING IS NOT AN ADEQUATE BLENDING METHOD. OPERATE EQUIPMENT SO THAT IT DOES NOT DISPLACE CEMENT SPREAD ON SUBGRADE SURFACE.
- 3. SUBGRADE SOIL SHOULD BE MOISTURE CONDITIONED TO NEAR OPTIMUM MOISTURE CONTENT PRIOR TO SPREADING CEMENT. REFER TO TABLE CS4 FOR MOISTURE CONTENT ADJUSTMENT RECOMMENDATIONS. CONTACT ENGINEER IF MOISTURE CONDITIONING TO NEAR OPTIMUM IS NOT FEASIBLE
- 4. PULVERIZE SUBGRADE DURING MIXING PROCESS UNTIL 100 PERCENT OF THE MATERIAL PASSES THROUGH A 1.5 INCH SIEVE AND AT LEAST 80 PERCENT OF THE MATERIAL, EXCLUDING GRAVEL, PASSES THROUGH THE NO. 4 (4.75 MM) SIEVE.
- 5. THE SURFACE OF THE STABILIZED SUBGRADE SHOULD BE MAINTAINED FOR THE FIRST WEEK FOLLOWING STABILIZATION TO PREVENT MOISTURE LOSS AFTER SHAPING AND COMPACTING TO ENSURE THAT CEMENT CAN FULLY HYDRATE. INADEQUATE MOISTURE AVAILABILITY WILL LOWER THE LONG TERM STRENGTH.
- 6. STABILIZE SUBGRADE 1 TO 2 FEET WIDER THAN THE PROPOSED AGGREGATE SURFACE ROAD WIDTH TO PROVIDE ADEQUATE STRENGTH FOR THE FULL ROAD WIDTH.

TABLE CS1 - CEMENT STABILIZED SUBGRADE CRITERIA					
DAYS ELAPSED BETWEEN COMPACTION AND DCP TEST ⁽¹⁾	MINIMUM CBR	MINIMUM DCP (BLOWS/4")	MINIMUM UNCONFINED COMPRESSIVE STRENGTH (2) (PSI)	ALLOWABLE BEARING CAPACITY ⁽³⁾ (PSF)	
3	20	9	90	5,500	
7	30	13	135	7,900	
14 40		17	180	10,200	
28	50	21	225	12,500	

1) DCP TESTS MAY BE PERFORMED SOONER BUT MUST MEET THE MINIMUM CBR/DCP TEST CRITERIA FOR THE NEXT TIME INCREMENT.

(2) UNCONFINED COMPRESSIVE STRENGTH BASED ON CORRELATIONS TO CBR, FOR REFERENCE ONLY UNLESS STATED OTHERWISE IN THESE SPECIFICATIONS. (3) ALLOWABLE BEARING CAPACITY BELOW A TIRE AT THE SURFACE OF 4" OF GRAVEL LAYER, INCLUDES A SAFETY FACTOR OF 1.5 AND ASSUMES AN UNSTABILIZED SUBGRADE CBR OF 1.5.

TABLE CS2 - CEMENT STABILIZED SUBGRADE TESTING SCHEDULE						
LOCATION	TEST	ASTM STANDARD	FREQUENCY	SPECIFIED CRITERIA		
CEMENT STABILIZED SUBGRADE (BEFORE CEMENT STABILIZATION)	STANDARD PROCTOR	D698	AS NEEDED	REPRESENTATIVE PROCTORS FOR ALL SUBGRADE MATERIAL ON SITE		
	COMPACTION TEST W/ NUCLEAR DENSITY GAUGE	D6938	AS NEEDED (MIN. 1 PER ROAD PER DAY)	NEAR OPTIMUM MOISTURE CONTENT (SEE BEST PRACTICES) NO DENSITY CRITERIA		
	DYNAMIC CONE PENETRATION (DCP)	D6951 (17.6 LB HAMMER)	1 PER 1,000 LF IN EACH PASS OF THE RECLAIMER (MIN. 5 PER ROAD)	SEE TABLES CS1 AND CS3		
CEMENT STABILIZED SUBGRADE (AFTER CEMENT STABILIZATION)	PROOF-ROLL	N/A	ENTIRE LENGTH	NO RUTTING GREATER THAN 3/4" AND NO PUMPING. SEE CONSTRUCTION NOTES FOR PROOF-ROLL EQUIPMENT.		
AGGREGATE MATERIAL	REFER TO CONSTRUCTION NOTES ON SHEET C708					

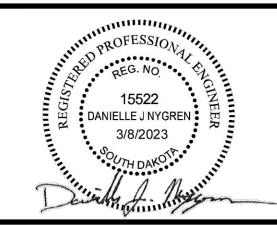
TABLE CS3 - ALTERNATE ACCESS ROAD SECTIONS FOR LOCALIZED **FAILED AREAS** FINAL **AGGREGATE** 7 DAY DCP THICKNESS (BLOWS/4") (IN) 13 30 4 9 - 13 20 - 30 5 7 - 9 15 - 20 6 5 - 7 10 - 15 8 CONTACT ENGINEER < 5

TABLE CS4 - MOISTURE CONTENT ADJUSTMENTS				
MOISTURE CONTENT RELATIVE TO OPTIMUM	RECOMMENDED ADJUSTMENT			
DRY	ADD WATER DURING MIXING TO INCREASE MOISTURE TO SLIGHTLY ABOVE OPTIMUM			
NEAR (WITHIN ±2%)	NO OR SLIGHT MOISTURE ADJUSTMENTS NEEDED, PENDING PASSING DCP TEST RESULTS			
WET	DRY SOIL TO NEAR OPTIMUM PRIOR TO MIXING CEMENT BY SCARIFYING OR PRE-MIXING WITH LIME, AND/OR INCREASE CEMENT CONTENT DURING MIXING			



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REVISIONS: # DATE

COMMENT BY CHK APR 0 03/08/2023 IFC Civil Development Plans CAA DAJ DJN

Sweetland Wind Project

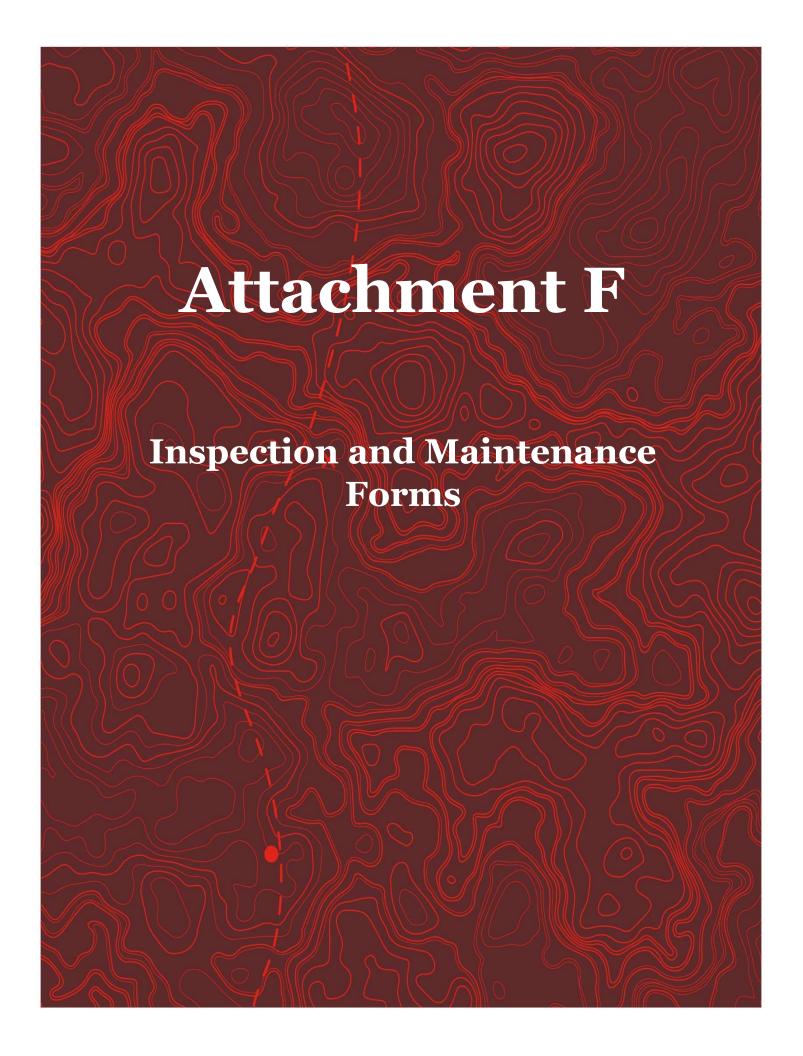
Hand County, South Dakota

Cement Stabilization Notes

ISSUED FOR CONSTRUCTION

03/08/2023 DATE:

SHEET



STORMWATER CONSTRUCTION SITE INSPECTION REPORT

General Information				
Project Name:				
Location:				
Date of Inspection:	Start/End Time:			
Inspector's Name:				
Inspector's Title:				
Inspector's Contact Information:				
Describe present phase of construction:				
Type of Inspection: □ Regular □ Pre-storm event □ During storm event □ Post-storm event				
Weather I	NFORMATION			
Has there been a storm event since the last inspection? □Yes □No If yes, provide: Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):				
Weather at time of this inspection? □ Clear □ Cloudy □ Rain □ Sleet □ Fog □ Snowing □ High Winds □ Other: Temperature:				
Have any discharges occurred since the last inspection? □Yes □No If yes, describe:				
Are there any discharges at the time of inspection? □Yes □No If yes, describe:				
CERTIFICATION STATEMENT				
"I certify under penalty of law that this document and al	attachments were prepared under my direction or			

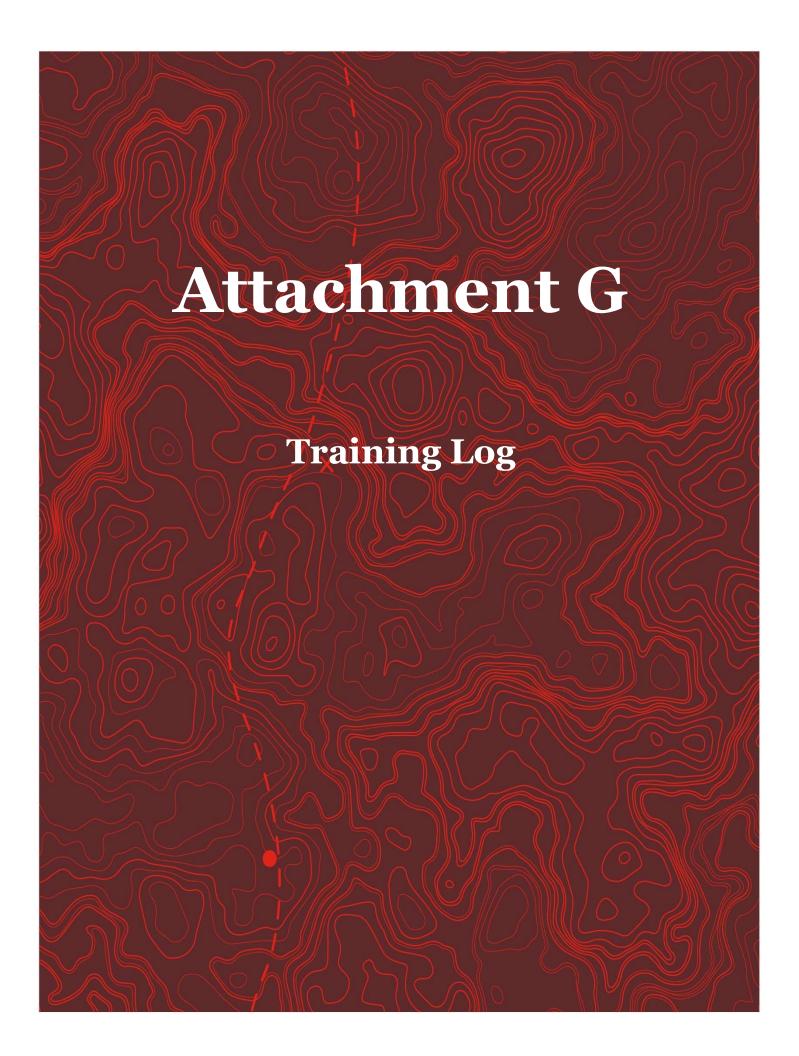
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Inspector Printed Name and Title Date

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

BMP/activity	Implemented?	Maintenance	Corrective Action Needed
		Required?	and Notes
1. All inactive slopes and disturbed areas have been stabilized.	□Yes □No	□Yes □No	
2. Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	□Yes □No	□Yes □No	
3. Are all sanitary waste recepticles placed in secondary containment and free of leaks?	□Yes □No	□Yes □No	
4. Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	□Yes □No	□Yes □No	
5. Are discharge points and receiving waters free of any sediment deposits?	□Yes □No	□Yes □No	
6. Are storm drain inlets properly protected?	□Yes □No	□Yes □No	
7. Is the construction exit preventing sediment from being tracked into the street?	□Yes □No	□Yes □No	
8. Is trash/litter from work areas collected and placed in covered dumpsters?	□Yes □No	□Yes □No	
9. Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	□Yes □No	□Yes □No	
10. Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	□Yes □No	□Yes □No	
11. Are materials that are potential stormwater contaminants stored inside or under cover?	□Yes □No	□Yes □No	
12. Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	□Yes □No	□Yes □No	
13. (Other)	□Yes □No	□Yes □No	



Stormwater Pollution Prevention Training Log

Proj	ect Name:							
Project Location:								
Inst	ructor's Name(s):							
Inst	ructor's Title(s):							
Cou	urse Location:							
Dat	e of Course:							
Cou	urse Length(hours):							
Stor	mwater Training Topic: (chec	ck as	appropriate)					
	Sediment and Erosion Controls		Emergency Pro	ocedures				
	Stabilization Controls		Inspections/C	orrective Actions				
	Pollution Prevention Measures		Stormwater Ru	noff Sampling				
Spe	cific Training Objective(s):							
Atte	endee Roster: (attach additic	nal p	pages as necess	sary)				
No.	Name of Atte	ende	е	Company				
2								
3								
4								
5		-						
6								
7								
9								
10								
10								