



ENVIRONMENTAL CONSULTANTS

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TECHNICAL MEMORANDUM

To: Paige Olson
Review and Compliance Manager
South Dakota State Historic Preservation Office
900 Governors Drive
Pierre, South Dakota 57501

From: Aidan McCarty, Archaeologist/Project Manager

Date: March 25, 2020

Re: **Tatanka Ridge Wind, Updated Laydown Yard Location**

On September 11, 2019, Avangrid Renewables, LLC, provided to the South Dakota State Historic Preservation Office (SHPO) a copy of the report titled: *Level III Intensive Archaeological Survey for the Tatanka Ridge Wind Project, Deuel County South Dakota*. The report was submitted to provide the SHPO with the opportunity to comment on the Tatanka Ridge Wind Project (project), and the cultural resource investigations conducted in support of the project pursuant to South Dakota Codified Law 1-19A-11.1. In a letter dated September 19, 2019, the SHPO concurred with the recommendations provided in the report, and determined that the project would not encroach upon, or damage or destroy any property listed in the State or National Registers of Historic Places. Subsequent to the submittal of the above-referenced report and the SHPO response, the proposed project design has been updated. Due to a necessitated change, the footprint of the temporary laydown yard has been expanded from the initially proposed, approximately 10.00 acres to 20.43 acres. As a result of this update, a portion of the updated laydown yard footprint extends outside of the previous cultural resource inventory (inventory) conducted in support of the project (see attached overview map). In total, 10.92 acres of the current proposed laydown yard are located within the previously inventoried area.

The laydown yard is located in the NENE Section 10, Township 113 North, Range 49 West, immediately southwest of the intersection of Highway 15 and 191st Street in Deuel County, South Dakota (see attached overview map). The landform slopes from the northeast to the southwest. An occupied residence is approximately 1,200 feet to the south, and an existing Western Area Power Administration (WAPA) overhead electrical transmission line corridor trends northwest–southeast, intersecting the southwestern corner of the laydown yard. The area has been impacted by the construction and maintenance of the adjacent state and county roads; agricultural activities including plowing and the installation of drainage tiles; and erosion.

The proposed construction activities at the laydown yard will include the mechanical stripping of the top 12 inches of topsoil, which will be stockpiled for use in restoration of the area (see attached plan set). Due to the slope, soil will be cut primarily from the eastern side of the laydown yard area, which is the portion within previous inventory, and used to fill the western portion. The amount of cut is balanced with the





amount of fill within the site of the construction laydown yard. The site will be graded, geotextile fabric will be put down, and that will then be surfaced with 6 inches of gravel. Upon completion of the construction activities, the gravel and geotextile will be removed from the construction laydown yard. The site will be restored by grading, placing topsoil, and decompaction.

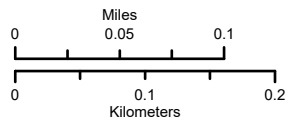
Approximately 10.92 acres of the proposed 20.43-acre laydown yard are located within previous inventory. Additional inventory has been conducted in the immediate area to provide coverage for turbine locations, access roads, and crane walks associated with the project, as well as the nearby WAPA transmission line corridor. No cultural resources have been identified in the vicinity. The lack of identified resources in the vicinity given the amount of previous inventory, and the existing impacts to the area would indicate a low potential for intact cultural resources in the laydown yard area. The proposed project impacts to the western portion of the laydown yard, the portion not covered by previous inventory, will be limited to the removal of 12 inches of topsoil, the deposition of fill, and gravel surfacing. Based on the nature of the proposed work, the negative results of the previous inventory, and the existing impacts to the area, it is unlikely that the proposed project changes will result in the damage to any property eligible for listing in the State or National Registers of Historic Places.



Service Layer Credits: World Boundaries and Places: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
USA NAIP Imagery: Natural Color: Esri, USDA Farm Service Agency

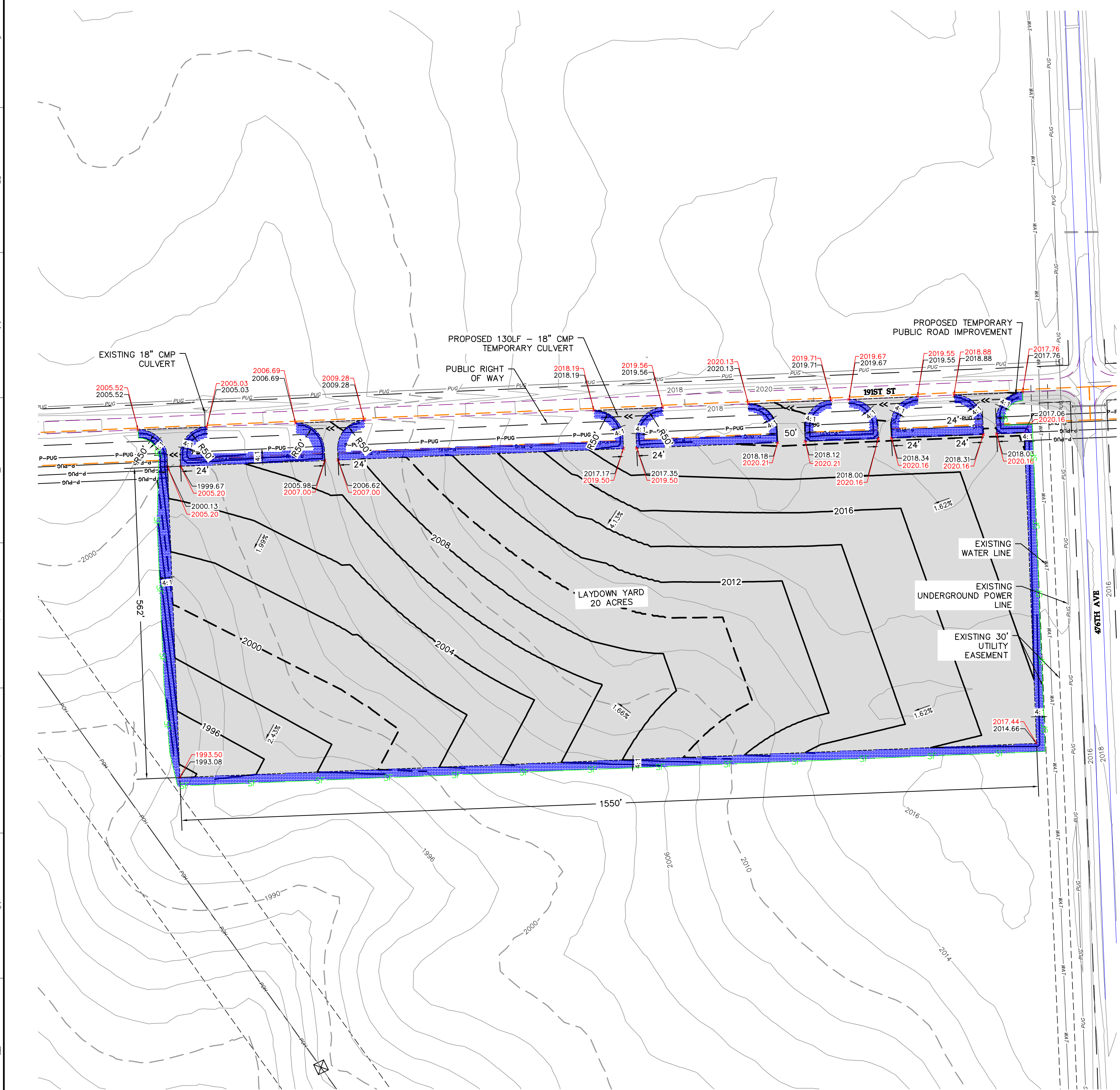
Tatanka Wind Laydown Yard

-  Laydown Yard
-  Existing Road
-  Previously Inventoried Area
-  Section Boundary



SWCA
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Base Map: Aerial Imagery
Source: Esri ArcGIS service
Township/Range: T113N, R49W
Deuel County, South Dakota
Projection: NAD 1983 UTM Zone 14N



LEGEND:

- 1901 EXISTING 1' CONTOURS
- 1900 EXISTING 5' CONTOURS
- EXISTING BITUMINOUS EDGE
- EXISTING GRAVEL EDGE
- EXISTING RIGHT OF WAY
- EXISTING PARCEL LINE
- EXISTING FENCE
- WAT EXISTING WATER LINE
- PUG EXISTING UNDERGROUND POWER LINE
- EXISTING UTILITY EASEMENT
- EXISTING LANDOWNER EASEMENT
- GRADED PAD AREA
- PROPOSED EROSION CONTROL BLANKET
- 1961 PROPOSED 1' CONTOURS
- 1960 PROPOSED 5' CONTOURS
- 1900 PROPOSED FINISH GRADE ELEVATION
- 1900 EXISTING GROUND ELEVATION
- PROPOSED DRAINAGE SWALE
- P-PH PROPOSED OVERHEAD COLLECTION
- P-PUG PROPOSED UNDERGROUND COLLECTION
- PROPOSED FENCE
- SF PROPOSED SILT FENCE

LAYDOWN SITE

AGGREGATE AREA FOOTPRINT = 937,525 SF

EARTHWORK

TOPSOIL STRIP (12")

PAD & DRIVEWAY AREA = 33,055 CY
 REMAINING GRADED AREA = 1,670 CY

COMPACTED SUBGRADE

RAW CUT - 30,740 CY
 RAW FILL - 30,740 CY
 RAW NET - 0 CY

FINISHED GRADE

6" AGGREGATE BASE = 17,360 CY

NOTES:

1. APPROXIMATE EARTHWORK BALANCE IS AFTER THE TOPSOIL HAS BEEN STRIPPED.
2. GRADING ELEVATIONS ARE MEASURED TO FINISH GRADE LEVEL. SUBGRADE ELEVATIONS ARE 6" LOWER THAN FINISHED GRADE.
3. QUANTITIES ARE IN-PLACE ESTIMATES NO SHRINK OR SWELL IS ASSUMED.
4. REFER TO PROJECT SWPPP NARRATIVE BY WESTWOOD FOR ADDITIONAL BMP'S.

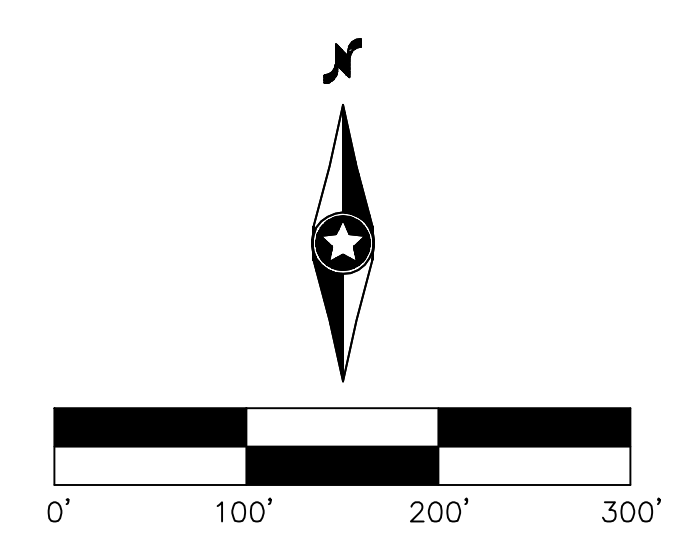
Designed: TDD
 Checked: DJN
 Drawn: TDD

Revisions #	DATE	DESCRIPTION
A	10/21/19	30% DESIGN
B	02/05/20	60% DESIGN
C	03/17/20	90% DESIGN

Prepared for:



4850 32nd Avenue S
 Fargo, ND 58104

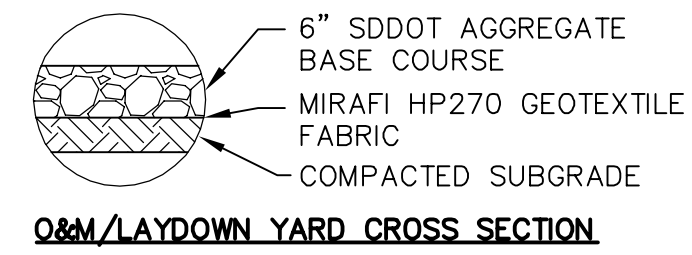


**Tatanka Ridge
 Wind Farm**
 Deuel County, SD

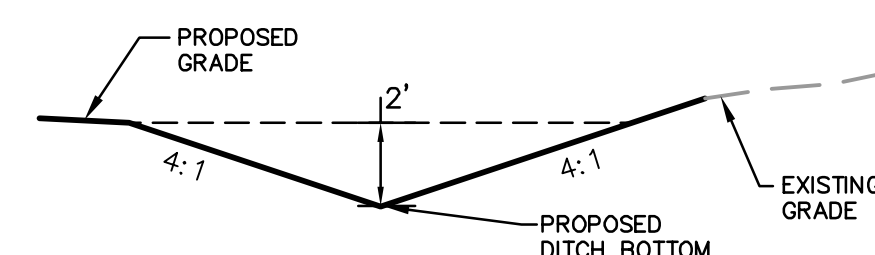
Laydown Grading Plan

90% Plan Set
 Not For Construction

Date: 03/17/2020
 Sheet: TRW-C-511-032-00



O&M/LAYDOWN YARD CROSS SECTION



TYPICAL DRAINAGE DITCH CROSS SECTION

Westwood	TYPICAL STRUCTURAL CROSS SECTION	LAST REVISED: 12/20/18
		TS05

Westwood	TYPICAL DRAINAGE DITCH CROSS SECTION	LAST REVISED: 02/04/20
		ER06

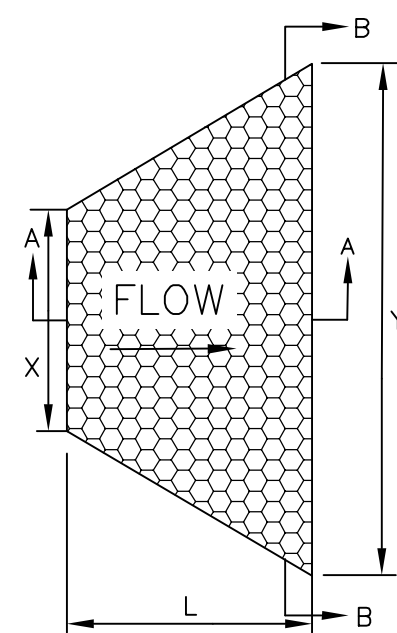
GENERAL NOTES

- ALL CONSTRUCTION SHALL CONFORM TO LOCAL, STATE AND FEDERAL RULES INCLUDING THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL STORMWATER PERMIT REQUIREMENTS. REFER TO THE STORM WATER POLLUTION PREVENTION PLAN PREPARED FOR THE TATANKA RIDGE WIND PROJECT FOR DETAILS.
- REFER TO ARCHITECTURAL PLANS AND SITE PLAN BY OTHERS FOR DETAILED DIMENSIONS FOR BUILDING FOOTPRINT AND EXACT LOCATIONS/DIMENSIONS OF FEATURES (I.E. FENCE, GATES, UTILITIES, SEPTIC, VESTIBLE, SLOPED PAVING, RAMPS, TRUCK DOCKS, UTILITY ENTRANCES AND DOWNSPOUT LOCATIONS).
- 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.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING TRAFFIC CONTROL DEVICES SUCH AS BARRICADES, WARNING SIGNS, DIRECTIONAL SIGNS, FLAGGERS AND LIGHTS TO CONTROL THE MOVEMENT OF TRAFFIC WHERE NECESSARY. PLACEMENT OF THESE DEVICES SHALL BE APPROVED BY THE COUNTY AND ENGINEER PRIOR TO PLACEMENT. TRAFFIC CONTROL DEVICES SHALL CONFORM TO APPROPRIATE SOUTH DAKOTA HIGHWAY DEPARTMENT STANDARDS.
- ALL SLOPES SHALL BE GRADED TO 3:1 OR FLATTER, UNLESS OTHERWISE INDICATED ON THE PLAN. ALL SLOPES 4:1 OR GREATER SHALL BE SEEDED AND STABILIZED WITH FIBER BLANKET.
- SPOT ELEVATIONS AND PROPOSED CONTOURS INDICATE FINISH GRADE SURFACE. SUB-GRADE ELEVATIONS ARE 6" LOWER THAN THE SPOT ELEVATIONS SHOWN.
- 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.
- PROVIDE EROSION CONTROL SILT FENCE AT THE PERIMETER OF ALL TEMPORARY STOCKPILES. LOCATIONS TO BE DETERMINED BY SEQUENCE OF GRADING OPERATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING EXISTING DRAINAGE PATTERNS.
- THE CONTRACTOR SHALL NOTIFY SOUTH DAKOTA 811 AT LEAST 48 HOURS BEFORE EXCAVATION ACTIVITIES COMMENCE.

O&M AND LAYDOWN YARD EXECUTION

- TOPSOIL:
 - TOPSOIL, INCLUDING ROOTS LARGER THAN 2" AND ROOT MASSES SHALL BE STRIPPED FROM THE ENTIRE O&M PAD. A TOPSOIL STRIP OF 13" WAS ASSUMED, FOR THE O&M AND 12" FOR THE LAYDOWN.
 - TOPSOIL TO BE STOCKPILED IN A DESIGNATED AREA AND SPREAD WITHIN PARCEL AFTER GRADING AND COMPACTED WITHOUT ADVERSELY AFFECTING THE DRAINAGE PATTERN.
- FILL MATERIAL:
 - SOILS USED AS FILL MATERIAL SHALL BE TESTED FOR MOISTURE CONTENT, ATTERBERG LIMITS, AND PROCTOR TESTS IN ACCORDANCE WITH THE GEOTECHNICAL REPORT RECOMMENDATIONS.
 - ALL FILL MATERIAL SHALL BE FREE OF ORGANIC MATERIALS INCLUDING ROOTS AND VEGETATIVE MATERIAL.
 - FILL MATERIAL SHALL BE PLACED IN LIFTS NOT TO EXCEED 12".
- SUBGRADE TESTING:
 - PROVIDE 3 MOISTURE DENSITY COMPACTION TESTS PER LIFT. COMPACTED SUBGRADE MUST BE COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR MAXIMUM DRY DENSITY.
 - THE FINAL SUBGRADE SHALL BE PROOF-ROLLED PRIOR TO THE PLACEMENT OF THE AGGREGATE BASE TO IDENTIFY AREAS OF UNSTABLE SUBGRADE.
- GEOTEXTILE FABRIC:
 - INSTALL PER MANUFACTURER RECOMMENDATIONS.
- AGGREGATE BASE TESTING:
 - AGGREGATE BASE SHALL BE PROOF-ROLLED OVER THE ENTIRE O&M PAD AND LAYDOWN YARD.
 - PROVIDE 1 SIEVE ANALYSIS.

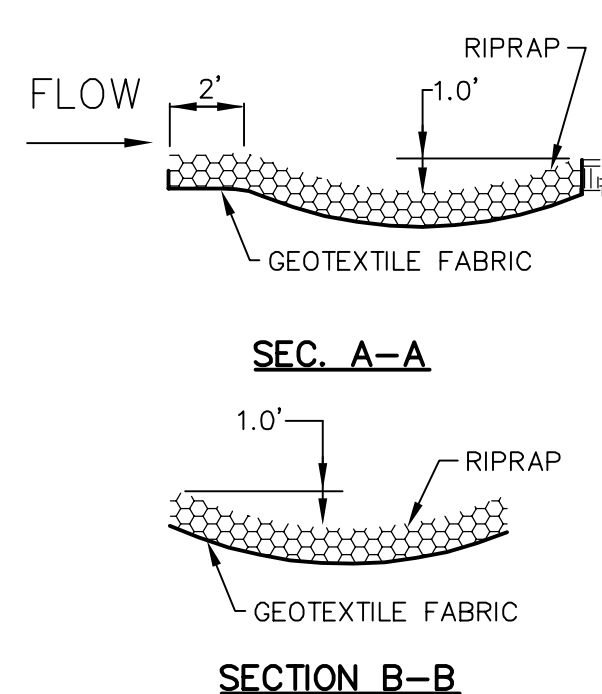
PLAN



**TABLE OF QUANTITIES
RIPRAP AT OUTLETS**

L (Ft.)	X (Ft.)	Y (Ft.)	D ₅₀ (in)	Rock Depth (Ft.)	Riprap Quantity (Cu. Yd.)
8	3.5	10	6	1.5	3.0

PROFILE



NOTE:

- THE CONTRACTOR SHALL PLACE RIP RAP, PULVERIZED TOPSOIL, SEED AND WOODFIBER BLANKET IMMEDIATELY AFTER DITCH IS STABILIZED, EXTEND AREA TO MATCH UNDISTURBED SOIL.
- CHECK DAMS WERE DEEMED UNNECESSARY DUE TO THE LOW VELOCITIES IN THE PROPOSED DITCH SECTIONS.
- THE RIP RAP SIZING AT THE OUTLETS WERE SIZED BASED ON THE FLOW RATES AND VELOCITIES.

Westwood	PERMANENT RIP RAP OUTLETS FOR O&M DRAINAGE SWALES	LAST REVISED: 02/04/20
		ER07

Prepared for:



4850 32nd Avenue S
 Fargo, ND 58104



**Tatanka Ridge
 Wind Farm**

Deuel County, SD

O&M and Laydown
 Grading Details

90% Plan Set
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Date: 03/17/2020

Sheet: TRW-C-511-033-00