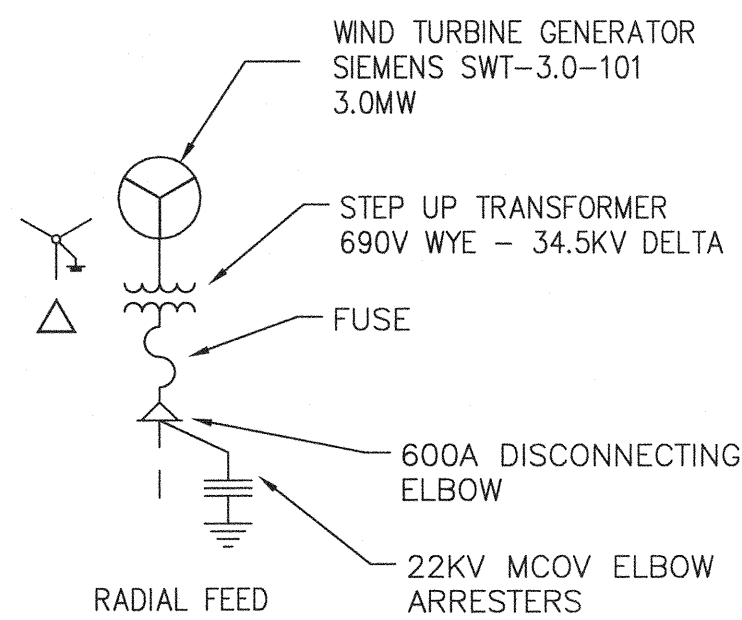


TYPICAL TURBINE /
TRANSFORMER ARRANGEMENT



LEGEND

- SIEMENS 3.0 WTG (WIND TURBINE GENERATOR)
- 22KV MCOV ELBOW ARRESTERS
- FAULT INDICATORS LOCATED ON ELBOW
- FUSE
- 600A DISCONNECTING ELBOW
- 38KV SECTIONAL PADMOUNT SWITCH
- GROUNDING TRANSFORMER

CABLE SIZES

- (1) UG 1000 STR AL, 35KV 100% EPR 1/3 CU CN
- (2) UG 750 STR AL, 35KV 100% EPR 1/3 CU CN
- (3) UG 350 STR AL, 35KV 100% EPR 1/3 CU CN
- (4) UG 4/0 STR AL, 35KV 100% EPR FULL CU CN
- (5) UG 1/0 STR AL, 35KV 100% EPR FULL CU CN

NOTES

- CONDUCTOR LENGTHS ARE ACTUAL TRENCH LENGTH. END OF PVC PIPE AT START OF RUN TO END OF PVC PIPE AT END OF RUN.
- CONDUCTOR SIZING BASED ON:
 - THERMAL STUDY AT AVERAGE AND WORST CASE RHO (APPROXIMATELY 180°C-CM/W)
 - EXPECTED FAULT CURRENT OF 15 KA
 - OVERALL COLLECTOR SYSTEM LOSSES OF 1.7% FULL OUTPUT (ASSUMING 0.6% FROM PMT)
- CABLE SPLICE LOCATIONS NOT SHOWN.
- COLLECTOR SYSTEM TRENCH WILL ALSO CONTAIN FIBER OPTIC CABLE.
- NOT USED.
- NOT USED.
- PERMANENT METEOROLOGICAL TOWERS NOT SHOWN. POWER FOR MET TOWERS SUPPLIED FROM LOCAL DISTRIBUTION.



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ND License No. 954PE



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Scale	N.T.S
Date	07/08/11
Drawn	RJG
Checked	CSF
Designed	RJG
Approved	JLM



A WIND ENERGY INITIATIVE OF MINNESOTA POWER IN NORTH DAKOTA

BISON 3 WIND PROJECT
MORTON & OLIVER COUNTIES, NORTH DAKOTA

COLLECTOR SYSTEM
SINGLE LINE

BARR PROJECT No.

34/33-1006

CLIENT PROJECT No.

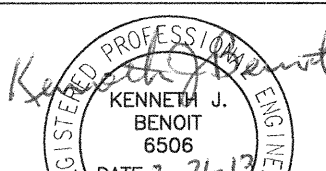
DWG. No.

E-SL-30

REV. No.

1

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	NJG			12/11/12	CONSTRUCTION REVISIONS
0	BNK	CSF	JLM	10/4/11	ISSUED FOR CONSTRUCTION
F	BNK	CSF	CSF	9/20/11	90% DELIVERABLE
E	RJG	CEG	CSF	8/23/11	REVISIONS TO BUSHING DETAILS
D	RJG	CEG	CSF	8/16/11	85% DELIVERABLE
C	RJG	CEG	CSF	7/26/11	WTG DETAIL & CABLE SIZE REV PER CLIENT



CLIENT	8/16/118/23/119/20/1110/4/11
BID	
CONSTRUCTION PERMITTING	
RELEASED TO/FOR	D E F O 1 2 3
DATE RELEASED	