A REPORT FOR
HOFFMAN FALLS WIND LLC

Hoffman Falls Wind

EMF Study Report

JANUARY 26, 2024

PREPARED FOR:

Hoffman Falls Wind LLC

PREPARED BY:

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Westwood

ELECTRIC AND MAGNETIC FIELD (EMF) STUDY

Hoffman Falls Wind

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1. Introduction

The Hoffman Falls Wind Substation interconnection is located in Madison County, New York (the Project). Hoffman Falls Wind Substation is a proposed 115kV greenfield substation with an in-and-out interconnection off of an existing transmission line, as well as a 2 span connection to a new nearby collector substation.

An evaluation was performed of the electric and magnetic fields (EMFs) associated with the proposed 115kV in and out substation interconnection, as well as the 2 span connection to the nearby collector substation. The purpose of this study was to perform computer modeling of the lines associated with the Project and prepare a technical report of the calculation results, which are presented herein. Each line cross section was analyzed and results are provided below for each segment.

As demonstrated in the calculations to follow, the maximum magnetic field produced by the four new transmission spans at the edge of the right-of-way is predicted to be 20.289 mG, which is below the New York state limit of 200 mG. The maximum electric field produced by the four new transmission spans anywhere within the right-of-way is predicted to be 0.579 kV/m, which is below the New York state limit of 11.8 kV/m. The maximum electric field produced by the four new transmission spans at the edge of the right-of-way is predicted to be 0.127 kV/m, below the New York state limit of 1.6 kV/m. There are no federal or New York state standards limiting occupational or residential exposure to 60-Hz EMF in the United States. There are no habitable buildings encroaching on any section of ROW or any transmission span for the four spans analyzed.

No transmission or substation design was included in the scope of this report, and information on heights, pole framings, and span lengths/tensions are based on reasonable assumptions for this voltage class. Assumptions and limitations for this analysis are listed in section 5 of this report.

2. General Description of Electric and Magnetic Fields

A. Background Information

The generation, delivery, and use of electricity produces both electric and magnetic fields. Electric and magnetic fields are created by electrical voltage and electrical current respectively. Electrical facilities, such as the Hoffman Falls Wind Substation Interconnection, produce electric and magnetic fields during operation. The exposure to electric and magnetic fields is complex and comes from multiple sources in the home and workplace in addition to power lines.

B. Units of Measure

Electric field values are reported using units of Volts per meter (V/m). Often the electric field is reported using thousands of Volts per meter (or kV/m).

Magnetic field values are reported using units of gauss (G). However, it is usually more convenient to report magnetic field using milliGauss (mG) which is equal to one-thousandth of a gauss (i.e., 1 mG = 0.001 G). Some technical reports also use the unit Tesla (T) or microTesla (µT; 1 µT = 0.000001 T) for magnetic fields. The conversion between these two units is 1 mG = 0.1 µT and 1 µT = 10mG.

C. Electric Fields

The potential or voltage (electrical pressure) on an object causes an electric field. Any object with an electric charge on it has a voltage (potential) at its surface caused by the accumulation of more electrons as compared with another object or surface. The voltage effect is not limited to the surface of the object but exists in the surrounding space in diminishing intensity. Electric fields can exert a force on the other electric charges at a distance. The change in voltage over distance is known as the electric field. The electric field becomes stronger near a charged object and decreases with distance away from the object. Electric fields are found in everyday life with typical values of electric field measured 1-foot away from common appliances shown in Table 1:

Appliance	Electric Field (kV/m)
Electric Blanket	0.25*
Broiler	0.13
Refrigerator	0.06
Iron	0.06
Hand Mixer	0.05
Coffee Pot	0.03

* Note: 1 to 10 kV/m next to blanket wires
Source: Carstensen 1985; Enertech Consultants 1985

Table 1 – Typical Electric Field Values for Appliances at 12 inches

In the United States, electric power transmission lines create 60 Hz electric fields. These fields result from the voltage of the transmission line phase conductors with respect to the ground.

Electric field strengths from a transmission line decrease with distance away from the outermost conductor, typically at a rate of approximately one divided by the distance squared ($1/d^2$). For example, in an undisturbed field, if the electric strength is 10 kV/m at a distance of 1 meter away, it will be approximately 2.5 kV/m at 2 meters away, and 0.625 kV/m at 4 meters away. Electric field strengths for a transmission line remain relatively constant over time because the voltage of the line is kept within bounds of about ± 5 percent of its rated voltage.

Transmission line electric fields are affected by the presence of grounded and conductive objects as demonstrated by Figure 1. Trees and buildings, for example can significantly reduce ground level electric fields by shielding the area nearby.

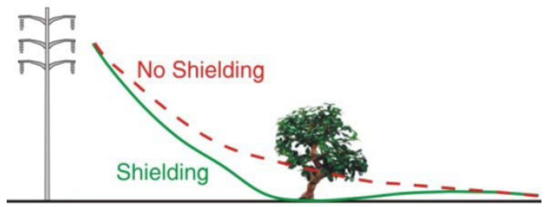


Figure 1 – Electric Field Measurements Demonstrate Shielding Due to the Presence of a Tree

D. Magnetic Fields

An electric current flowing in a conductor (electric equipment, household appliance, power circuits, etc.) creates a magnetic field. The most commonly used magnetic field intensity unit of measure is the milligauss (mG).

Since the magnetic field is caused by the flow of an electric current, a device must be operated to create a magnetic field. Magnetic field strengths of many common household appliances were measured and typical magnetic field values for some appliances have been measured as low as 0.3 mG to as high as 20,000 mG. This is shown in **Table 2**:

Appliance	Magnetic Field at 12 inches Away (mG)	Maximum Magnetic Field (mG)
Electric Range	3 to 30	100 to 1,200
Electric Oven	2 to 25	10 to 50
Garbage Disposal	10 to 20	850 to 1,250
Refrigerator	0.3 to 3	4 to 15
Clothes Washer	2 to 30	10 to 400
Clothes Dryer	1 to 3	3 to 80
Coffee Maker	0.8 to 1	15 to 250
Toaster	0.6 to 8	70 to 150
Crock Pot	0.8 to 1	15 to 80
Iron	1 to 3	90 to 300
Can Opener	35 to 250	10,000 to 20,000
Blender, Popper, Processor	6 to 20	250 to 1,050
Vacuum Cleaner	20 to 200	2,000 to 8,000
Portable Heater	1 to 40	100 to 1,100
Fans/Blowers	0.4 to 40	20 to 300
Hair Dryer	1 to 70	60 to 20,000
Electric Shaver	1 to 100	150 to 15,000
Fluorescent Light Fixture	2 to 40	140 to 2,000
Fluorescent Desk Lamp	6 to 20	400 to 3,500
Circular Saws	10 to 250	2,000 to 10,000
Electric Drill	25 to 35	4,000 to 8,000

Source: IITRI 1984; Silva 1989

TABLE 2 – MAGNETIC FIELDS FROM HOUSEHOLD APPLIANCES

Electric power transmission lines also create magnetic fields. These fields are typically generated by the current (amperes) flowing through the phase conductors. The magnetic field is a vector quantity having magnitude and direction.

Similar to the electric field, magnetic field strengths decrease with the inverse square of the distance away from the power line. Unlike electric fields that vary little over time, magnetic fields are not constant because the current on any power line changes in response to increasing and decreasing electrical load. Magnetic fields are not easily shielded.

E. EMF Standard Design Limits

There are no federal standards limiting occupational or residential exposure to 60-Hz EMF in the United States. However, New York has exposure limits for electric and magnetic fields measured based on IEEE (Institute of Electrical and Electronics Engineers) standard C95.3-2021, 1 meter from the ground. For electric fields the limit anywhere within the right-of-way of the transmission line is 11.8 kV/m and the limit at the edge of the right-of-way is 1.6 kV/m. For the magnetic field the only limit is at the edge of the right-of-way and it is 200 mG.

3. Project Overview

The Hoffman Falls Wind Substation Connection is broken up into four unique right-of-way sections, as defined below:

Calculation #	Cross-Section #	Description
1	1	One Horizontally-Oriented 115 kV Circuit to Horizontal Substation Dead-End with 795 26/7 Drake ACSR Conductor.
2	2	One Horizontally-Oriented 115 kV Circuit to Horizontal Substation Dead-End with 795 26/7 Drake ACSR Conductor..
3	3	One Vertically-Oriented 115 kV Circuit to Horizontal Substation Dead-End with 795 26/7 Drake ACSR Conductor.
4	4	One Vertically-Oriented 115 kV Circuit to Horizontal Substation Dead-End with 795 26/7 Drake ACSR Conductor.
5	1&2	Two Horizontally-Oriented 115 kV Circuit to Horizontal Substation Dead-End with 795 26/7 Drake ACSR Conductor.

Table 3 – EMF Study Cross-reference

Calculation #	Cross-Section #	Structure Range
1	1	Between Transmission Str. 1 and Hoffman DE-1
2	2	Between Transmission Str. 2 and Hoffman DE-2
3	3	Between Transmission Str. 3 and Hoffman DE-3
4	4	Between Transmission Str. 3 and Collector DE-1
5	1&2	Between Transmission Str. 1 and Hoffman DE-1, and Between Transmission Str. 2 and Hoffman DE-2

Table 4 – EMF Study Cross-Section Structure Range

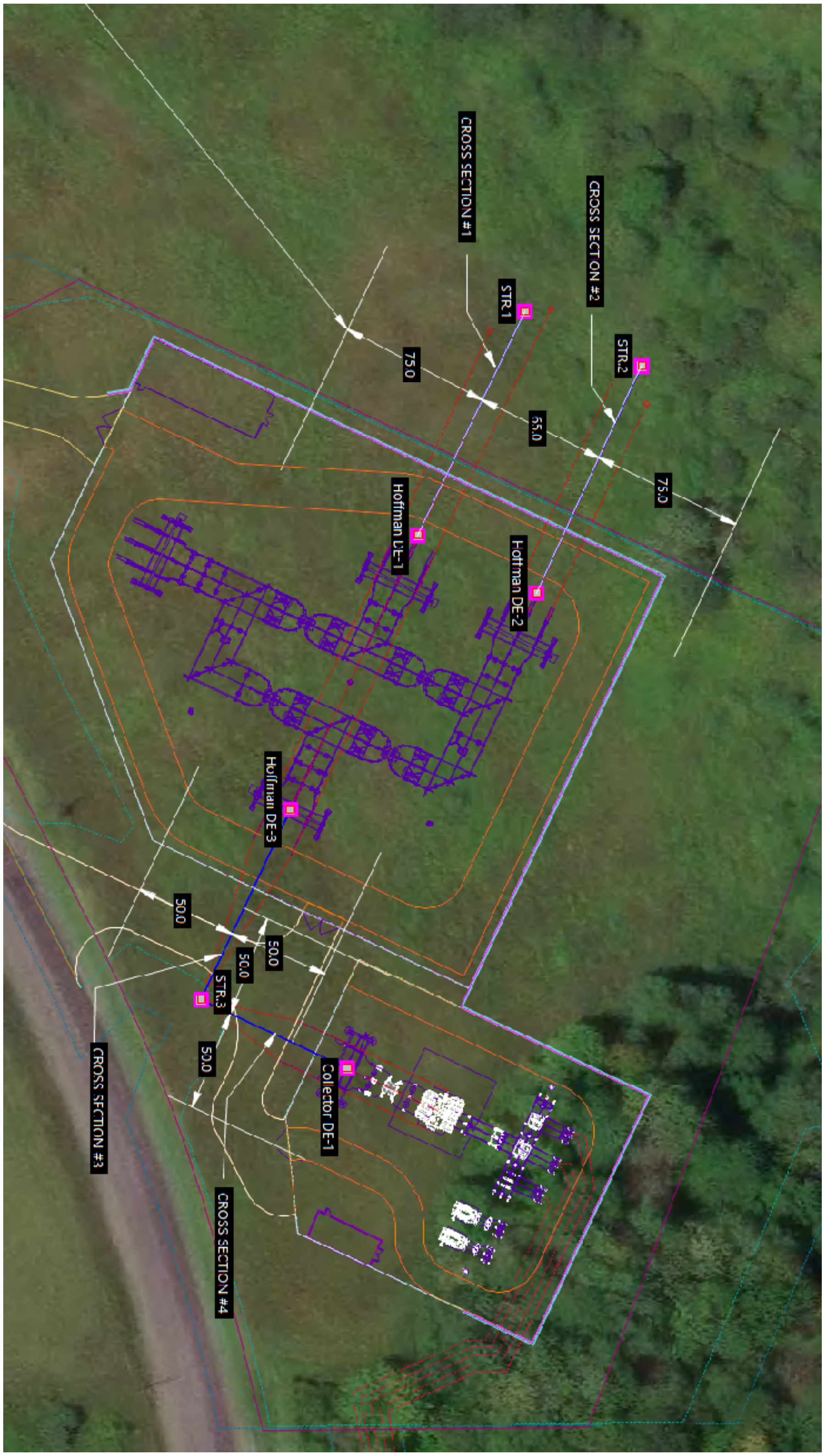


Figure 2 – Aerial Imagery Showing plan View of all cross sections and proposed substation *All Dimensions shown are in feet

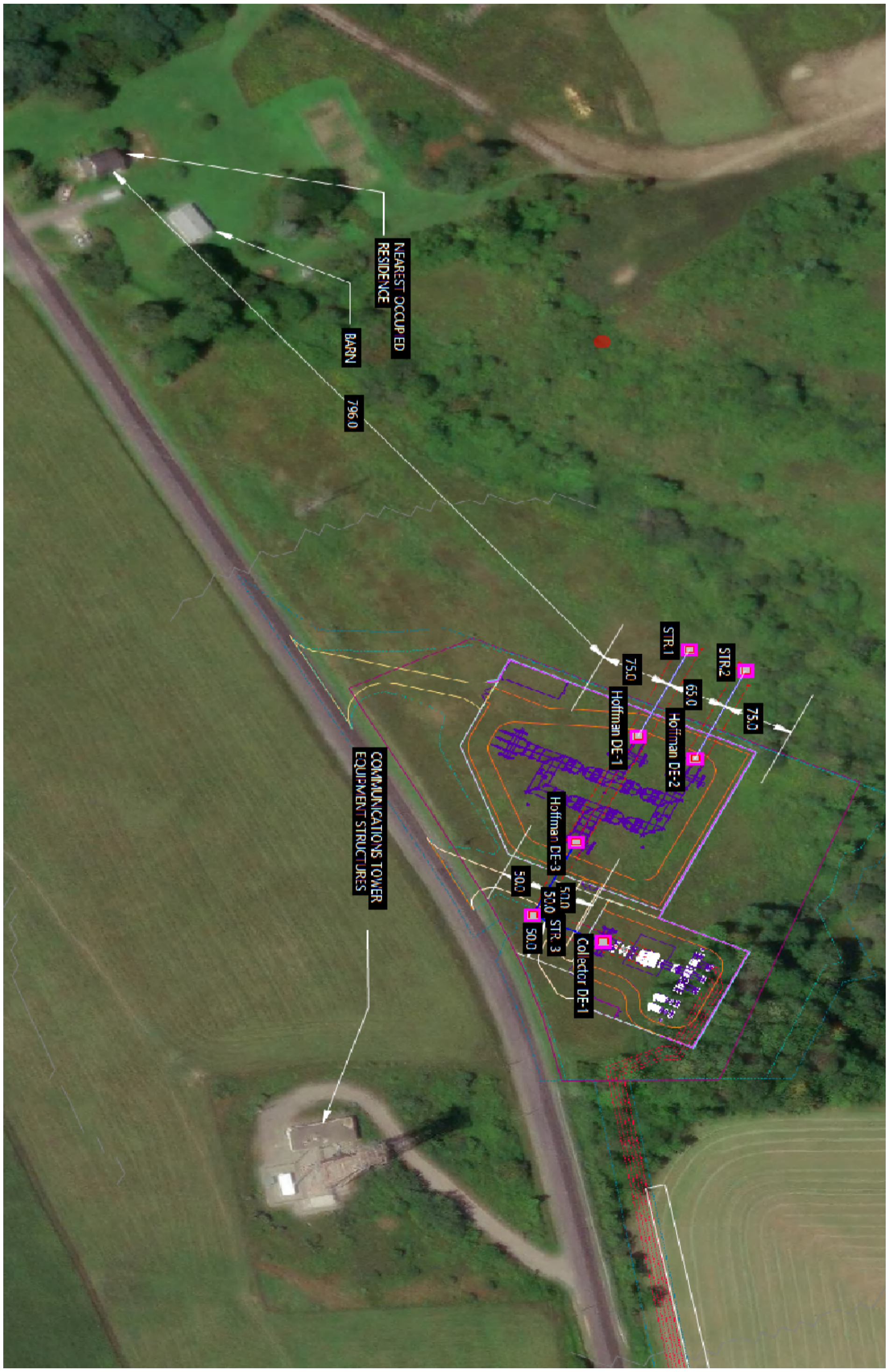


Figure 3 – Aerial Imagery Showing plan View of Nearest occupied residence *All Dimensions shown are in feet

4. Calculations

A. Specific Parameters and Circuit Information for Calculations

Corridor Width for Calculation	Corridor width based on a future ROW proposed width of 150ft (100ft for calculation #3&4)
Frequency	60 Hz
Loading	Amperage used was based on the max hypothetical amperage the conductor will be operated up to at 212°F at the line location.
Wire Location	Based on PLS model (varies)
Measurement Location	3.28 ft. (1m) above ground
Software Used	PLS-CADD v18.01x64
Phasing	For the purpose of the EMF study, phases A, B, and C will have phase angles of 0 degrees, -120 degrees, and 120 degrees, respectively. Balanced three phase loads were assumed. See Figure 4 to Figure 13 for phasing for each section.

Table 5 – EMF Study Modeling Parameters

Calculation #	Number of circuits in ROW Segment	Voltage	Status	Conductors Modeled	Winter Normal Current (Amps)
1	1	115 kV	New	795 26/7 Drake ACSR	927A
2	1	115 kV	New	795 26/7 Drake ACSR	927A
3	1	115 kV	New	795 26/7 Drake ACSR	927A
4	1	115 kV	New	795 26/7 Drake ACSR	927A
5	2	115 kV	New	795 26/7 Drake ACSR	927A

Table 6 – EMF Study Modeling Parameters

B. General Parameters

The modeling and calculations of electric and magnetic fields were performed using the 3D EMF calculator within PLS-CADD, based on Electric Power Research Institute (EPRI) and IEEE methods.

The calculations were performed on a 60 Hz frequency, with the conductors loaded with a max operating current. The calculations were made, based on IEEE standard C95.3-2021, at 1 meter (3.28ft) above ground in 5ft increments across the right-of-way at the point of Max electric/magnetic field along centerline.

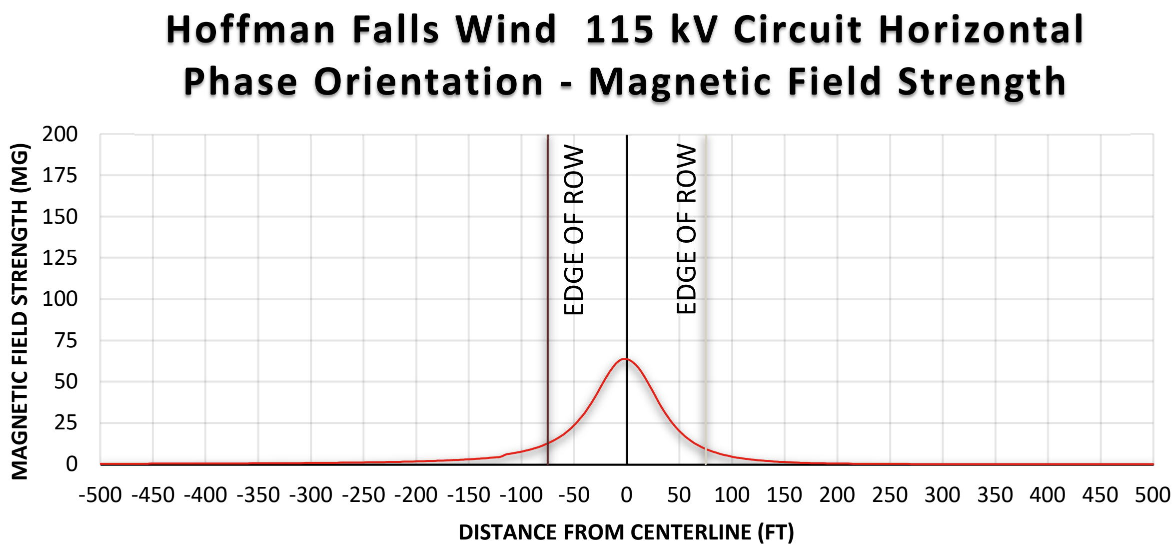
5. Assumptions & Limitations

Loading for this EMF report was based on max loading for an assumed cable size and was applied to all sections for the max amperage the cable can operate at. Assumed conductor was 795 ACSR “Drake”, as the cable size was not provided by the owner. A different cable size or loading on the line would result in an increase or decrease in EMF contributions from the line. This EMF report is based off of the EMF effects from each span on it’s own ROW, and does not factor in the contributions from any other existing transmission, distribution or any other electrical equipment (existing or new), which will likely increase the EMF effects within the ROW. This was not included as no information on existing transmission or distribution lines was provided for this report by the owner of the project. It is likely that the existing transmission line that the new Structures 1 & 2 would tap off of contribute to the EMF, likely causing an increase of unknown magnitude. Furthermore, the electrical equipment in the substation that will be installed in the future was not included in this analysis and would likely result in an increase in the effects of EMF on the ROW.

No transmission or substation design was included in the scope of this report, and information on heights, pole framings, and span lengths/tensions are based on reasonable assumptions for this voltage class, or information from the provided in Appendix 5-C to Exhibit 5. The dimensions from Appendix 5-C to Exhibit 5 that were used can be seen in Figure 4-13. As Westwood made assumptions and used drawings provided by the owner that are pending final design, true engineering may impact the EMF positively or negatively, of which the magnitude is unknown.

6. Results

CALC #1 HOFFMAN FALLS WIND 115 KV CIRCUIT HORIZONTAL PHASE ORIENTATION – MAGNETIC FIELD



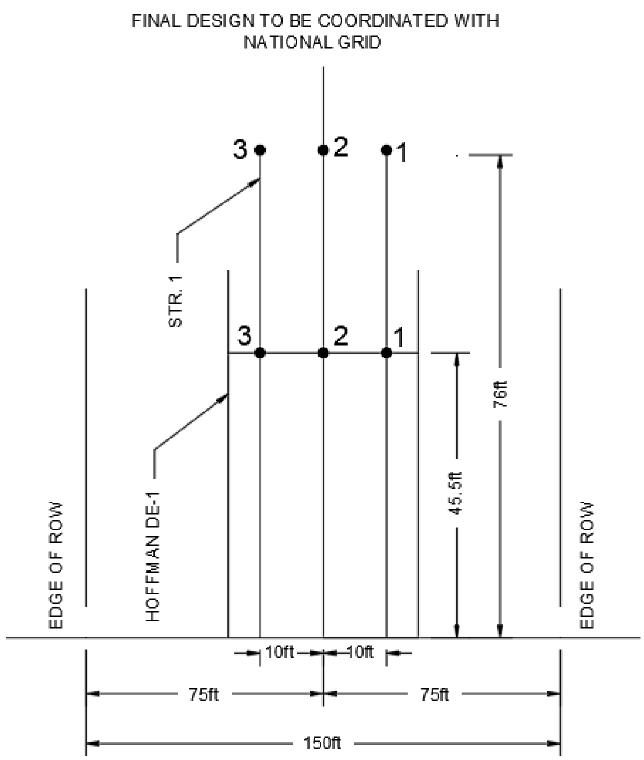
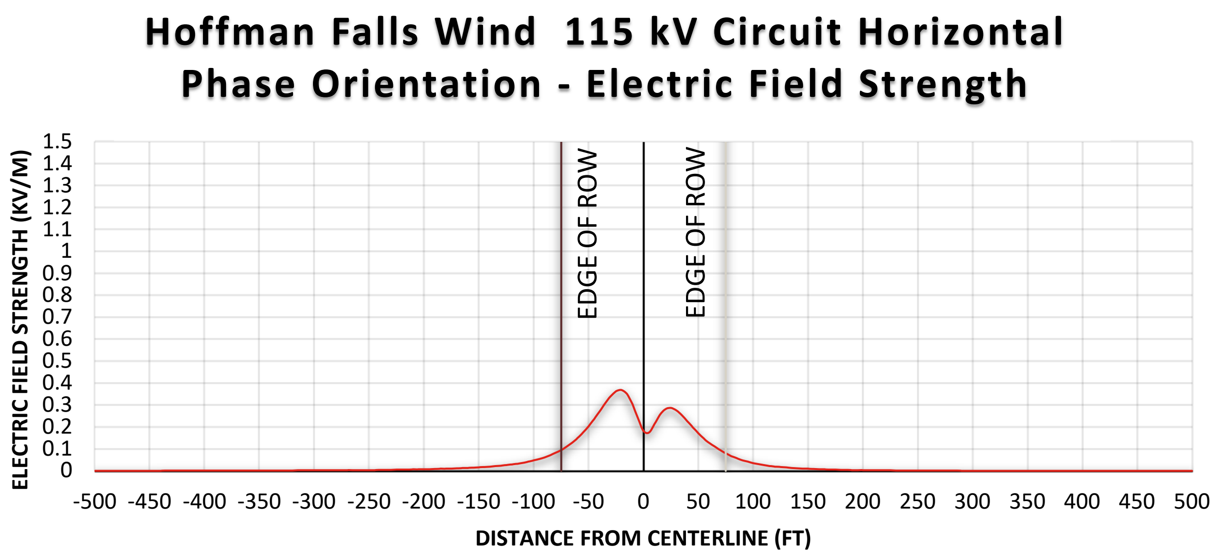


FIGURE 4 – HOFFMAN FALLS WIND PROJECT PHASE ORIENTATION MAGNETIC FIELD STRENGTH FOR 115KV CIRCUIT BETWEEN TRANSMISSION STR. 1 AND HOFFMAN DE-1

CALC #1 Hoffman Falls Wind 115 kV Circuit Vertical Phase Orientation – Electric Field



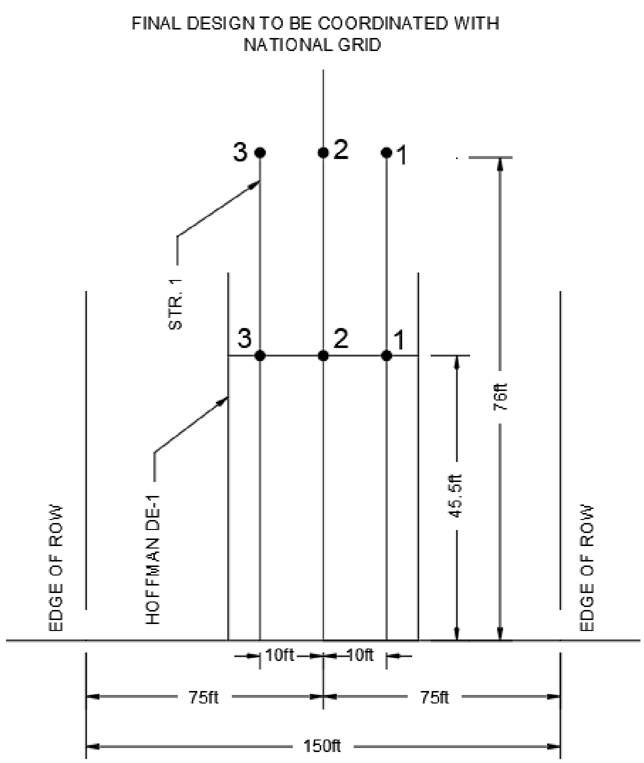
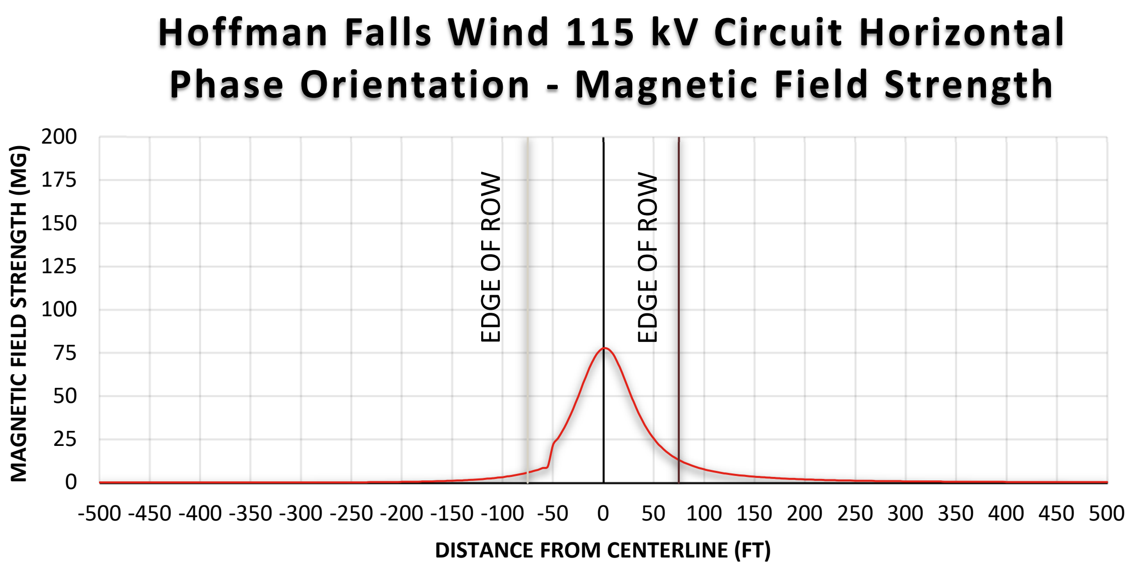


Figure 5 – Hoffman Falls Wind Project Phase Orientation Electric Field Strength for 115kV Circuit Between Transmission Str. 1 and Hoffman DE-1

CALC #2 HOFFMAN FALLS WIND 115 KV CIRCUIT VERTICAL PHASE ORIENTATION – MAGNETIC FIELD



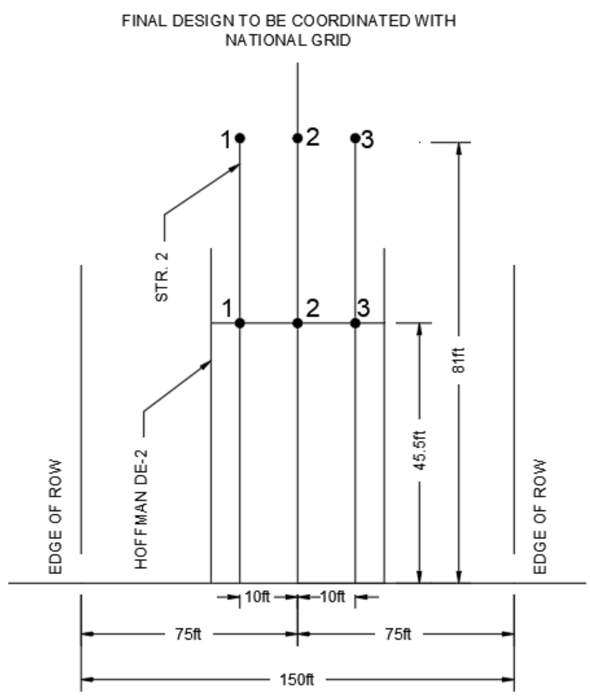
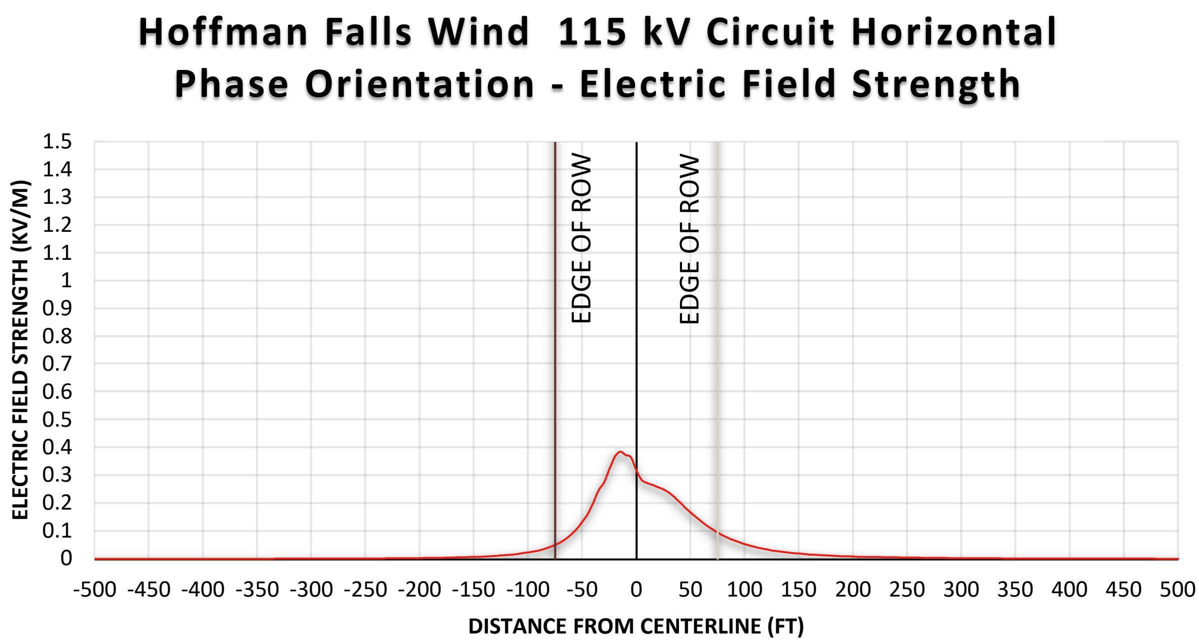


FIGURE 6 – HOFFMAN FALLS WIND PROJECT PHASE ORIENTATION MAGNETIC FIELD STRENGTH FOR 115KV CIRCUIT BETWEEN TRANSMISSION STR. 2 AND HOFFMAN DE-2

CALC #2 HOFFMAN FALLS WIND 115 KV CIRCUIT VERTICAL PHASE ORIENTATION – ELECTRIC FIELD



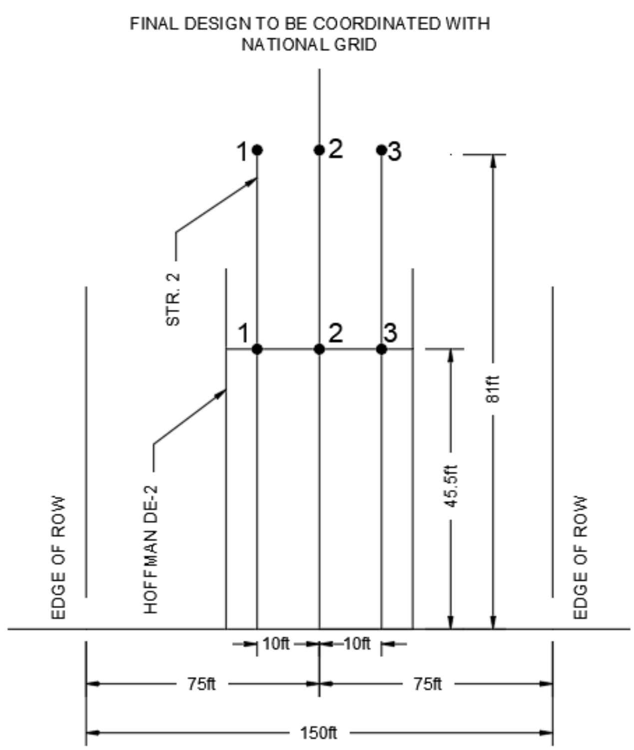
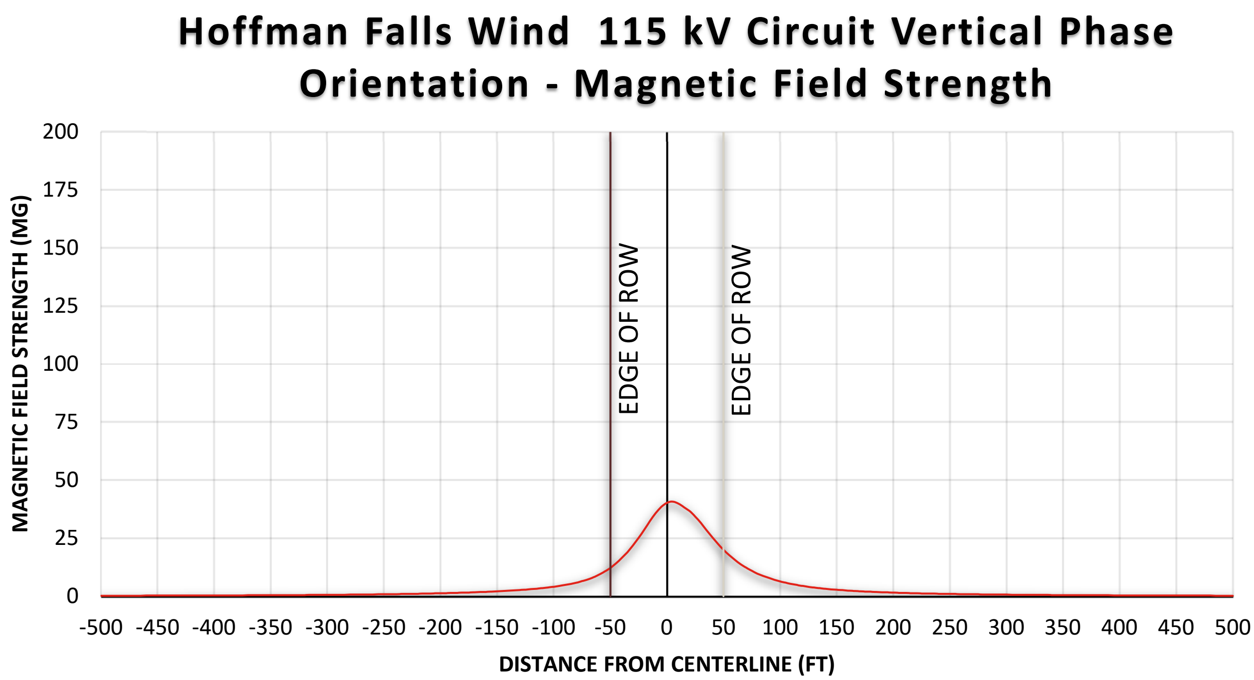


FIGURE 7 – HOFFMAN FALLS WIND PROJECT PHASE ORIENTATION ELECTRIC FIELD STRENGTH FOR 115KV CIRCUIT BETWEEN TRANSMISSION STR. 2 AND HOFFMAN DE-2

CALC #3 HOFFMAN FALLS WIND 115 KV CIRCUIT VERTICAL PHASE ORIENTATION – MAGNETIC FIELD



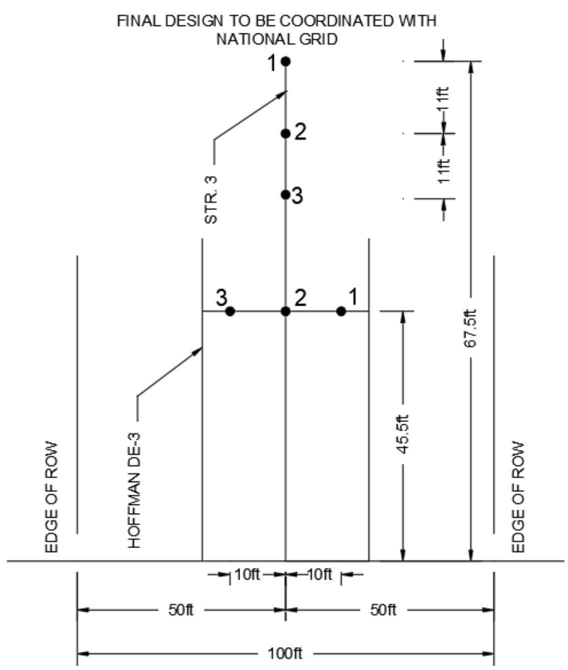
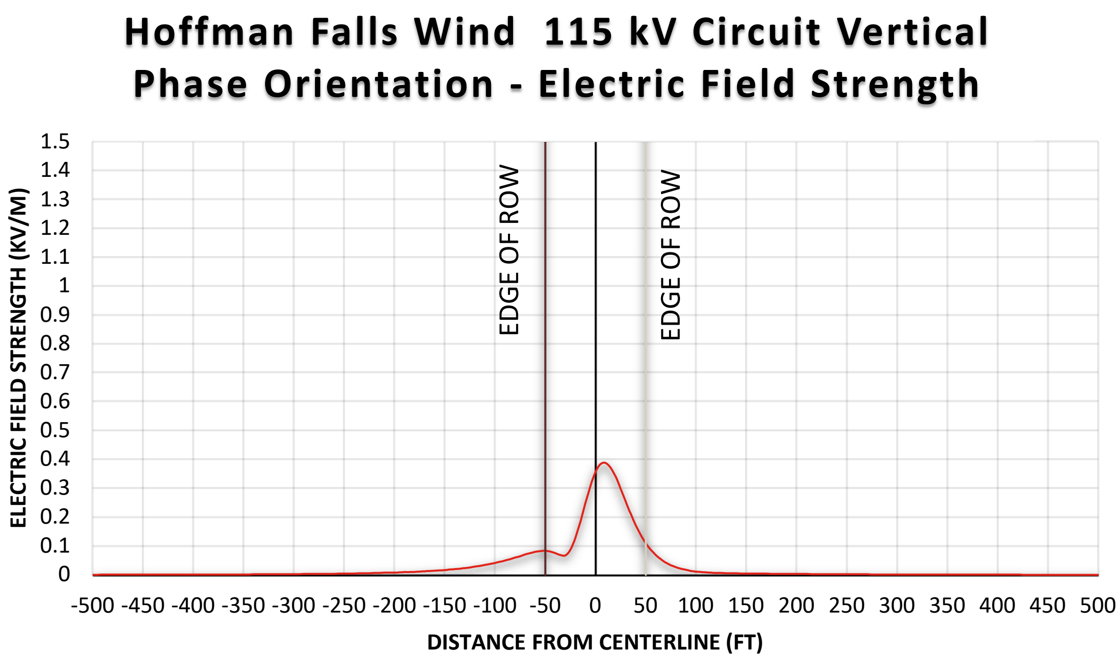


FIGURE 8 – HOFFMAN FALLS WIND PROJECT PHASE ORIENTATION MAGNETIC FIELD STRENGTH FOR 115KV CIRCUIT BETWEEN TRANSMISSION STR. 3 AND HOFFMAN DE-3

CALC #3 HOFFMAN FALLS WIND 115 KV CIRCUIT VERTICAL PHASE ORIENTATION – ELECTRIC FIELD



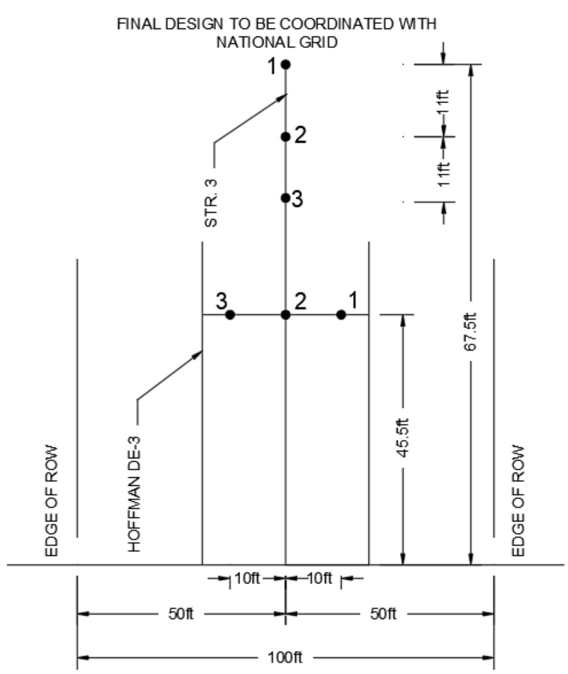
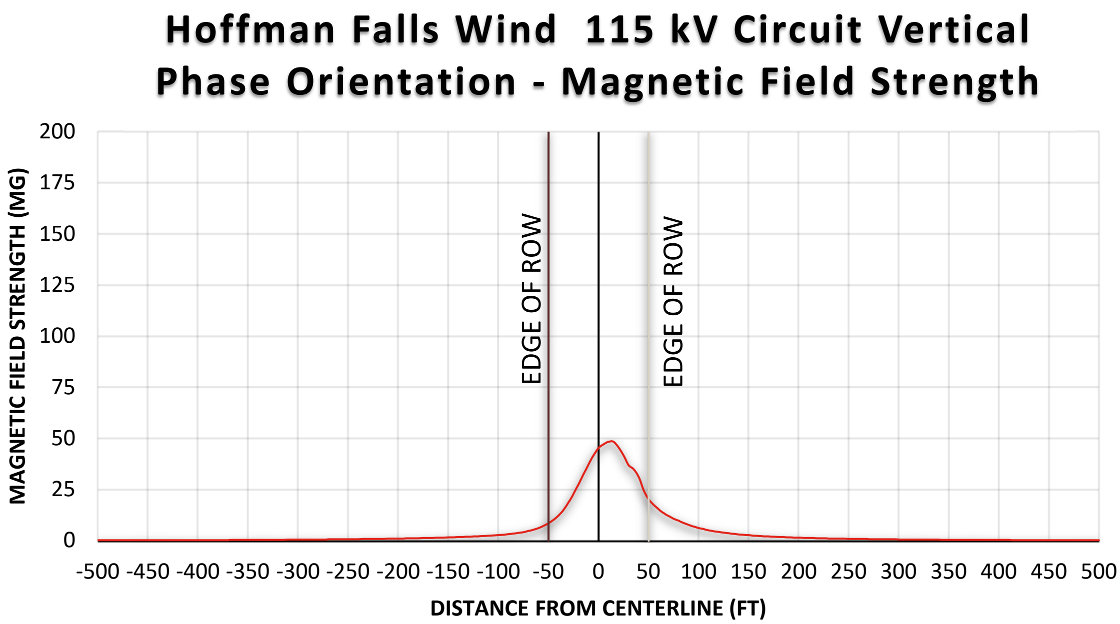


FIGURE 9 – HOFFMAN FALLS WIND PROJECT PHASE ORIENTATION ELECTRIC FIELD STRENGTH FOR 115KV CIRCUIT BETWEEN TRANSMISSION STR. 3 AND HOFFMAN DE-3

CALC #4 HOFFMAN FALLS WIND 115 KV CIRCUIT VERTICAL PHASE ORIENTATION – MAGNETIC FIELD



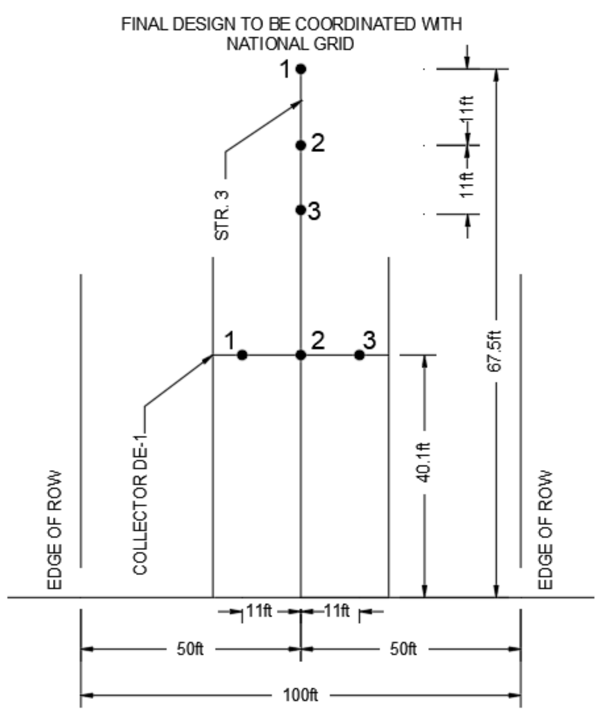
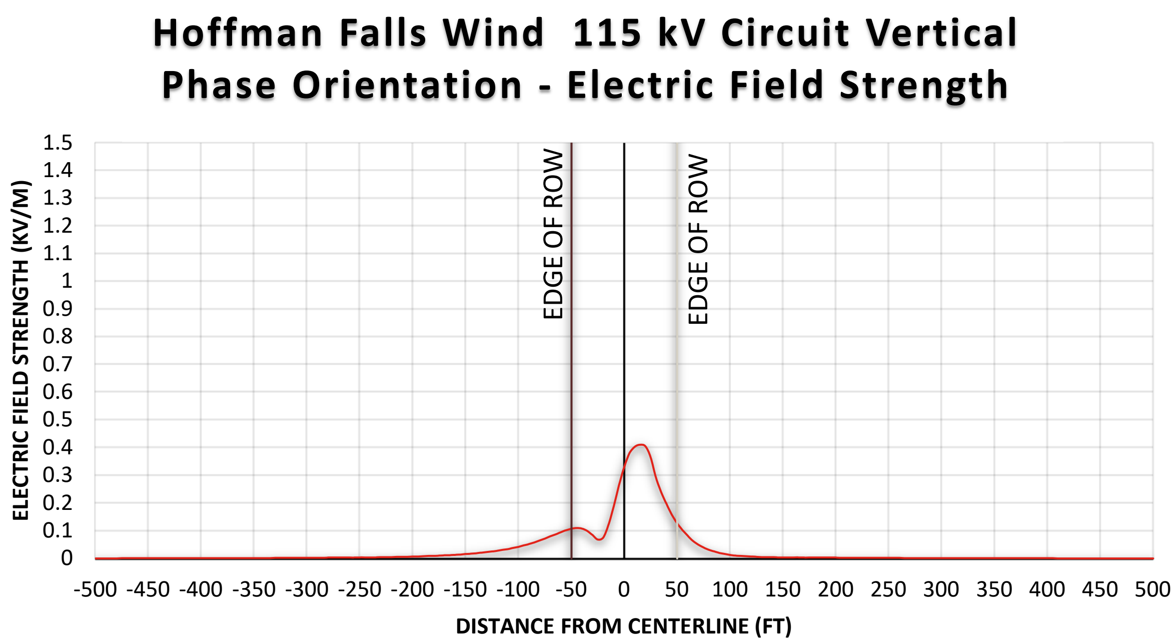


FIGURE 10 – HOFFMAN FALLS WIND PROJECT PHASE ORIENTATION MAGNETIC FIELD STRENGTH FOR 115KV CIRCUIT BETWEEN TRANSMISSION STR. 3 AND COLLECTOR DE-1

CALC #4 Hoffman Falls Wind 115 kV Circuit Vertical Phase Orientation – Electric Field



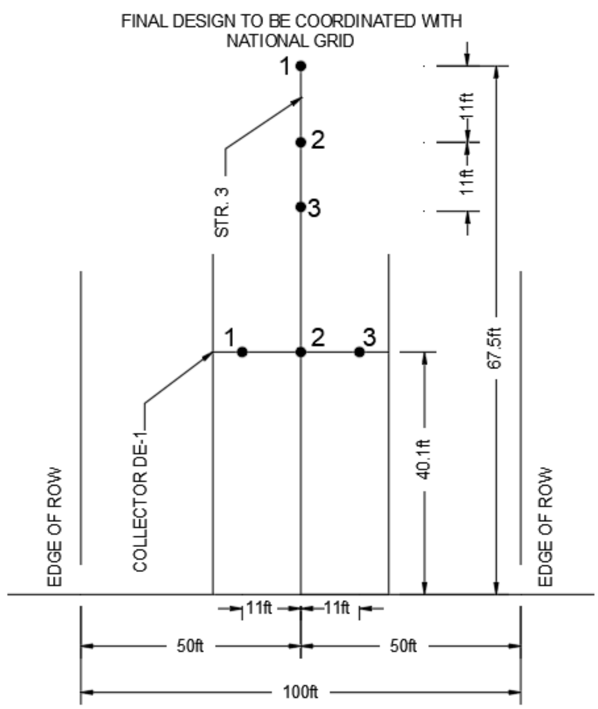
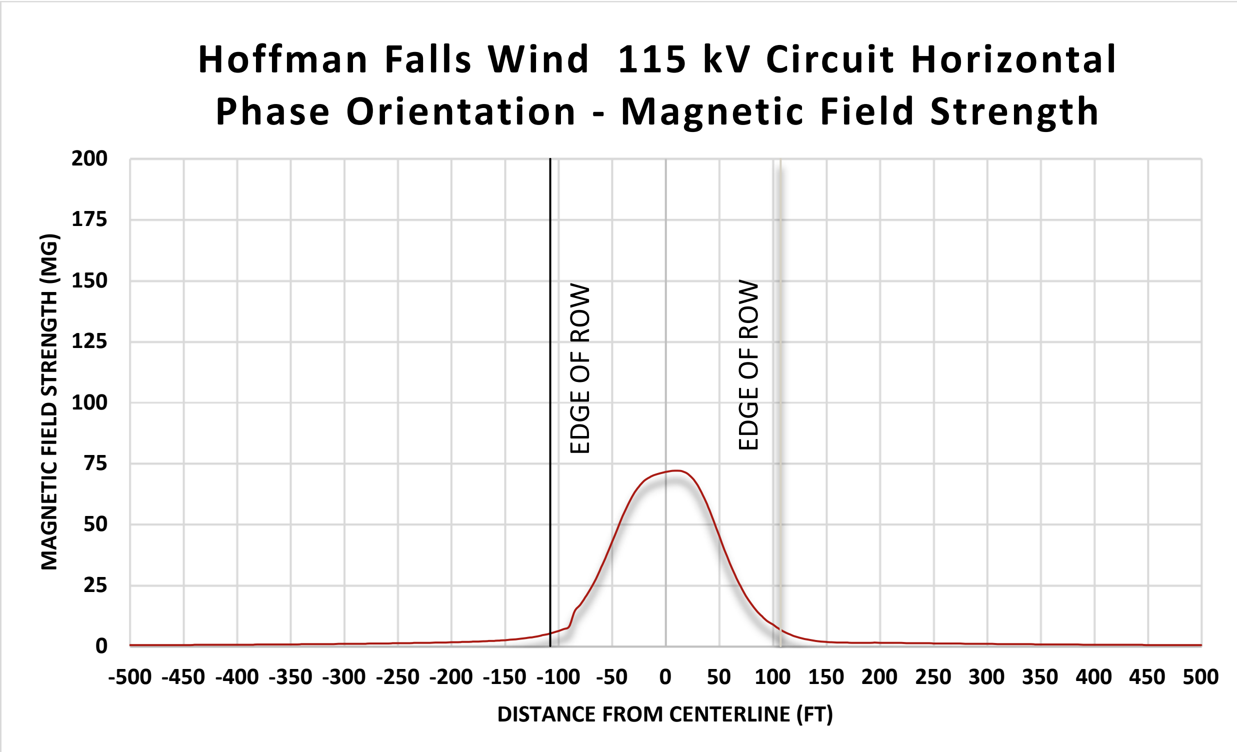


Figure 11 – Hoffman Falls Wind Project Phase Orientation Electric Field Strength for 115kV Circuit Between Transmission Str. 3 and Collector de-1

CALC #5 Hoffman Falls Wind 115 kV Circuit Horizontal Phase Orientation – Magnetic Field



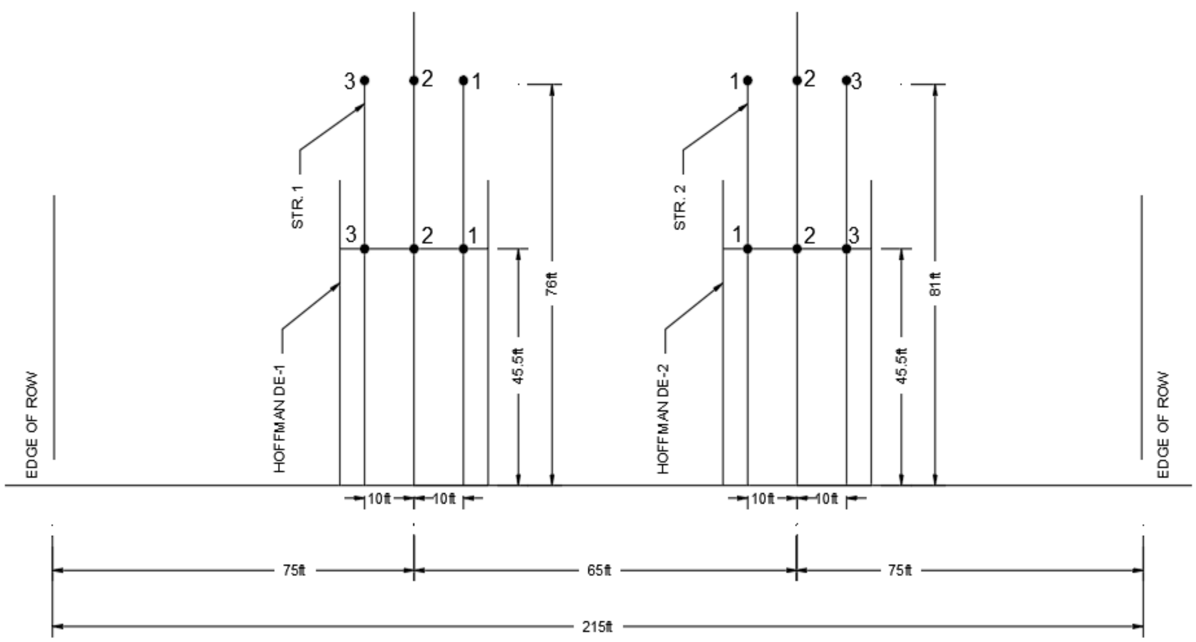


Figure 12 – Hoffman Falls Wind Project Phase Orientation magnetic Field Strength for Calculation #5

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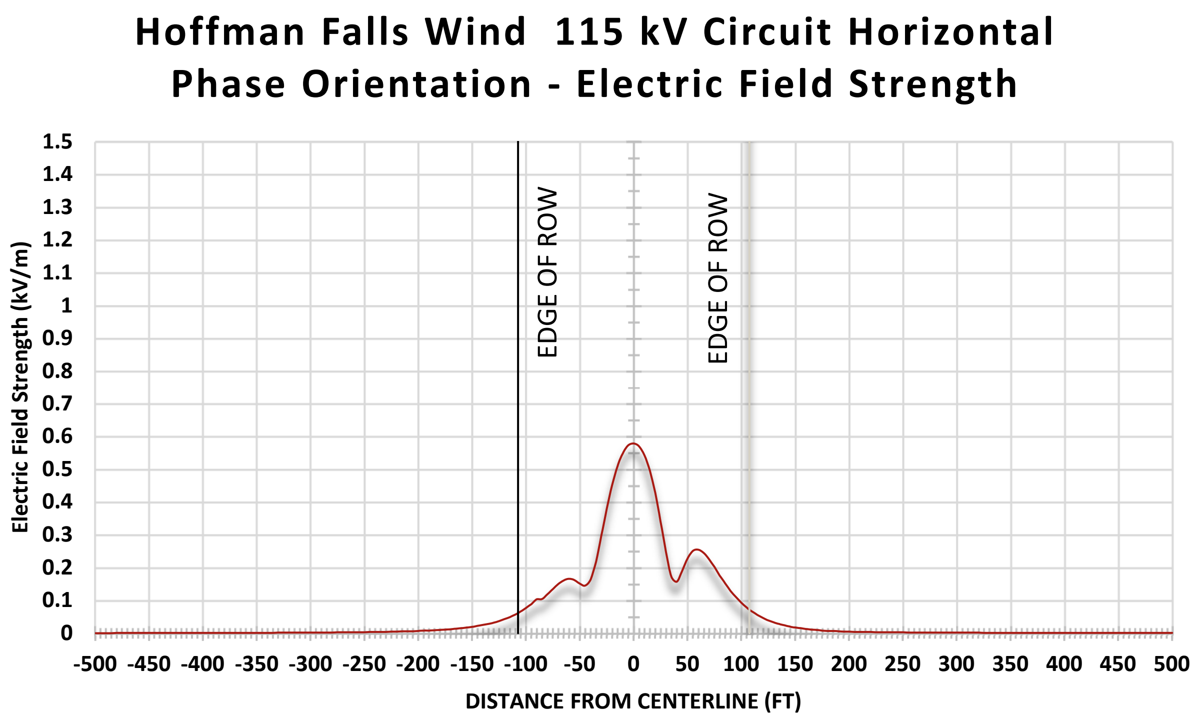
CALC #5 Hoffman Falls Wind 115 kV Circuit Horizontal Phase Orientation – Electric Field



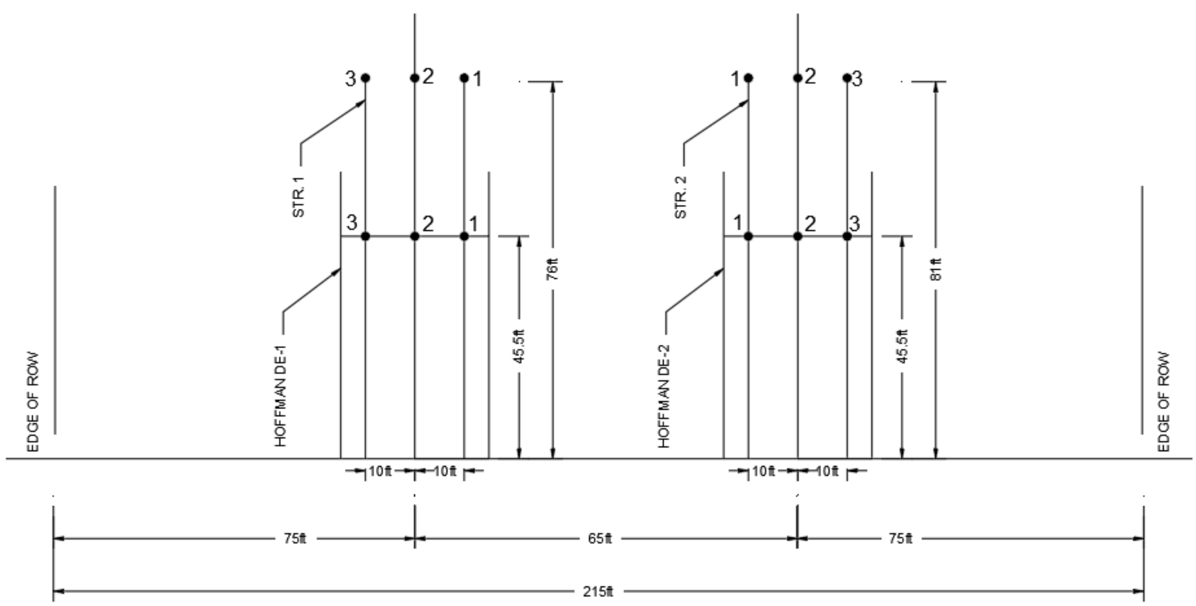


Figure 13 – Hoffman Falls Wind Project Phase Orientation electric Field Strength for Calculation #5

Appendix A – EMF Data

Calculated field strengths are shown in **Table 7 and Table 8** below at various distances from centerline of the proposed line.

	Magnetic Field Strength (mG)				
Distance From Centerline (ft)	Calc #1	Calc #2	Calc #3	Calc #4	Calc #5
-500	0.238	0.065	0.229	0.192	0.407
-495	0.243	0.065	0.234	0.196	0.414
-490	0.249	0.065	0.238	0.199	0.422
-485	0.254	0.066	0.243	0.203	0.429
-480	0.26	0.066	0.248	0.207	0.437
-475	0.266	0.067	0.253	0.21	0.445
-470	0.272	0.067	0.258	0.214	0.454
-465	0.279	0.068	0.264	0.219	0.462
-460	0.286	0.068	0.269	0.223	0.471
-455	0.293	0.068	0.275	0.227	0.48
-450	0.3	0.069	0.281	0.232	0.489
-445	0.307	0.069	0.287	0.236	0.498
-440	0.315	0.069	0.293	0.241	0.508
-435	0.323	0.07	0.3	0.246	0.518
-430	0.331	0.07	0.307	0.251	0.528
-425	0.34	0.07	0.314	0.256	0.539
-420	0.349	0.07	0.321	0.262	0.55
-415	0.358	0.071	0.328	0.268	0.561
-410	0.368	0.071	0.336	0.273	0.572
-405	0.378	0.071	0.344	0.28	0.584
-400	0.388	0.071	0.352	0.286	0.596
-395	0.399	0.071	0.361	0.292	0.609
-390	0.411	0.071	0.37	0.299	0.621
-385	0.422	0.071	0.379	0.306	0.635
-380	0.434	0.071	0.389	0.313	0.648
-375	0.447	0.071	0.399	0.321	0.662
-370	0.46	0.071	0.409	0.328	0.677
-365	0.474	0.071	0.42	0.336	0.691
-360	0.489	0.071	0.431	0.345	0.707
-355	0.504	0.072	0.442	0.353	0.722
-350	0.52	0.072	0.454	0.362	0.739
-345	0.536	0.072	0.467	0.372	0.755
-340	0.553	0.072	0.48	0.381	0.772
-335	0.571	0.072	0.494	0.392	0.79
-330	0.59	0.073	0.509	0.404	0.808
-325	0.61	0.074	0.524	0.416	0.827
-320	0.631	0.075	0.539	0.428	0.847

-315	0.652	0.076	0.556	0.441	0.867
-310	0.675	0.077	0.573	0.506	0.887
-305	0.699	0.079	0.591	0.521	0.909
-300	0.725	0.082	0.61	0.536	0.931
-295	0.751	0.085	0.63	0.552	0.953
-290	0.779	0.089	0.651	0.569	0.977
-285	0.808	0.094	0.673	0.586	1.001
-280	0.839	0.099	0.696	0.604	1.026
-275	0.872	0.105	0.72	0.623	1.052
-270	0.906	0.113	0.746	0.643	1.079
-265	0.943	0.121	0.773	0.664	1.106
-260	0.981	0.131	0.801	0.685	1.135
-255	1.022	0.142	0.831	0.708	1.164
-250	1.065	0.155	0.863	0.732	1.195
-245	1.11	0.169	0.896	0.758	1.227
-240	1.159	0.185	0.931	0.784	1.26
-235	1.21	0.203	0.968	0.813	1.294
-230	1.265	0.222	1.007	0.842	1.33
-225	1.323	0.244	1.049	0.873	1.368
-220	1.385	0.269	1.093	0.906	1.408
-215	1.451	0.296	1.139	0.941	1.449
-210	1.522	0.325	1.189	0.977	1.493
-205	1.597	0.358	1.241	1.016	1.54
-200	1.678	0.395	1.297	1.056	1.589
-195	1.766	0.435	1.357	1.099	1.643
-190	1.86	0.48	1.421	1.145	1.7
-185	1.961	0.529	1.49	1.193	1.763
-180	2.07	0.584	1.563	1.244	1.833
-175	2.189	0.645	1.642	1.299	1.909
-170	2.316	0.713	1.726	1.356	1.995
-165	2.455	0.788	1.818	1.417	2.092
-160	2.605	0.871	1.916	1.482	2.202
-155	2.77	0.964	2.022	1.552	2.328
-150	2.949	1.068	2.137	1.626	2.473
-145	3.144	1.183	2.262	1.705	2.641
-140	3.358	1.311	2.396	1.788	2.837
-135	3.591	1.457	2.541	1.875	3.066
-130	3.848	1.621	2.701	1.969	3.335
-125	4.122	1.806	2.875	2.07	3.651
-120	4.409	2.014	3.072	2.179	4.023
-115	5.826	2.249	3.29	2.298	4.459

-110	6.343	2.516	3.535	2.432	4.97
-105	6.926	2.819	3.812	2.588	5.566
-100	7.586	3.163	4.122	2.765	6.261
-95	8.338	3.554	4.471	2.966	7.067
-90	9.198	4.005	4.872	3.2	7.999
-85	10.187	4.518	5.331	3.476	14.166
-80	11.33	5.103	5.862	3.802	16.868
-75	12.657	5.773	6.484	4.222	19.97
-70	14.206	6.54	7.229	4.747	23.565
-65	16.023	7.415	8.155	5.393	27.675
-60	18.159	8.385	9.282	6.187	32.286
-55	20.677	9.361	10.636	7.21	37.332
-50	23.641	21.628	12.247	8.524	42.674
-45	27.115	25.628	14.173	10.201	48.105
-40	31.142	30.409	16.438	12.313	53.358
-35	35.755	36.047	18.982	15.136	58.148
-30	40.977	42.541	21.9	18.639	62.228
-25	46.554	49.748	25.144	22.879	65.442
-20	52.135	57.314	28.728	27.57	67.766
-15	57.211	64.647	32.361	32.474	69.313
-10	61.199	70.984	35.731	37.371	70.295
-5	63.581	75.552	38.477	41.802	70.948
0	63.691	77.736	40.26	45.252	71.45
5	62.174	77.199	40.798	47.16	71.855
10	59.239	73.969	39.918	48.425	72.063
15	54.851	68.493	38.423	48.364	71.844
20	49.496	61.564	36.682	45.632	70.906
25	43.71	54.079	34.311	41.787	68.989
30	37.967	46.82	31.571	36.963	65.993
35	32.605	40.295	28.505	34.931	61.87
40	27.81	34.549	25.411	31.41	56.956
45	23.642	29.633	22.604	24.865	51.313
50	20.086	25.496	20.032	20.289	45.404
55	17.085	22.042	17.723	17.653	39.572
60	14.564	19.162	15.681	15.403	34.057
65	12.453	16.736	13.89	13.491	29.038
70	10.703	14.729	12.321	12.064	24.578
75	9.228	13.053	10.955	10.792	20.7
80	7.994	11.63	9.772	9.735	17.381
85	6.948	10.413	8.746	8.68	14.557
90	6.018	9.368	7.856	7.76	12.216

95	5.229	8.464	7.081	6.952	10.327
100	4.557	7.677	6.404	6.251	8.925
105	3.983	6.99	5.815	5.649	7.367
110	3.49	6.386	5.297	5.127	6.084
115	3.064	5.853	4.821	4.673	5.032
120	2.697	5.38	4.407	4.275	4.174
125	2.378	4.959	4.044	3.926	3.481
130	2.1	4.583	3.728	3.617	2.927
135	1.858	4.246	3.462	3.344	2.492
140	1.646	3.944	3.209	3.1	2.158
145	1.46	3.672	2.989	2.882	1.909
150	1.297	3.427	2.791	2.686	1.729
155	1.153	3.198	2.625	2.509	1.603
160	0.976	2.989	2.454	2.349	1.518
165	0.858	2.8	2.319	2.204	1.463
170	0.764	2.626	2.182	2.072	1.426
175	0.682	2.467	2.057	1.951	1.402
180	0.61	2.322	1.943	1.841	1.385
185	0.546	2.188	1.838	1.739	1.372
190	0.488	2.065	1.74	1.646	1.36
195	0.437	1.951	1.649	1.559	1.432
200	0.391	1.846	1.565	1.48	1.404
205	0.35	1.748	1.489	1.406	1.378
210	0.313	1.658	1.419	1.337	1.353
215	0.28	1.574	1.354	1.274	1.328
220	0.251	1.496	1.287	1.215	1.303
225	0.225	1.398	1.232	1.159	1.278
230	0.202	1.331	1.179	1.108	1.254
235	0.182	1.268	1.129	1.06	1.229
240	0.164	1.211	1.082	1.014	1.205
245	0.148	1.157	1.038	0.972	1.18
250	0.135	1.107	0.997	0.932	1.156
255	0.123	1.06	0.958	0.895	1.132
260	0.114	1.016	0.922	0.859	1.108
265	0.106	0.974	0.887	0.826	1.085
270	0.099	0.934	0.855	0.794	1.062
275	0.094	0.897	0.824	0.765	1.039
280	0.091	0.862	0.795	0.736	1.017
285	0.088	0.828	0.767	0.71	0.994
290	0.086	0.797	0.741	0.684	0.973
295	0.085	0.767	0.716	0.66	0.952

300	0.084	0.739	0.692	0.637	0.931
305	0.084	0.712	0.67	0.616	0.91
310	0.084	0.686	0.648	0.595	0.89
315	0.084	0.662	0.628	0.575	0.871
320	0.084	0.639	0.608	0.557	0.852
325	0.085	0.617	0.59	0.539	0.833
330	0.085	0.596	0.572	0.522	0.815
335	0.086	0.576	0.555	0.506	0.798
340	0.086	0.557	0.539	0.49	0.781
345	0.087	0.539	0.523	0.475	0.764
350	0.087	0.522	0.508	0.461	0.747
355	0.087	0.505	0.494	0.448	0.732
360	0.088	0.49	0.48	0.435	0.716
365	0.088	0.475	0.467	0.422	0.701
370	0.088	0.46	0.455	0.41	0.686
375	0.088	0.446	0.443	0.399	0.672
380	0.088	0.433	0.431	0.388	0.658
385	0.088	0.421	0.42	0.377	0.644
390	0.088	0.409	0.409	0.367	0.631
395	0.088	0.397	0.399	0.358	0.618
400	0.088	0.386	0.389	0.348	0.606
405	0.088	0.375	0.379	0.339	0.594
410	0.087	0.365	0.37	0.331	0.582
415	0.087	0.355	0.361	0.322	0.57
420	0.087	0.345	0.353	0.314	0.559
425	0.086	0.336	0.344	0.307	0.548
430	0.086	0.327	0.336	0.299	0.538
435	0.086	0.319	0.329	0.292	0.527
440	0.085	0.311	0.321	0.285	0.517
445	0.085	0.303	0.314	0.278	0.507
450	0.084	0.295	0.307	0.272	0.498
455	0.083	0.288	0.3	0.266	0.488
460	0.083	0.281	0.294	0.26	0.479
465	0.082	0.274	0.287	0.254	0.47
470	0.082	0.268	0.281	0.272	0.462
475	0.081	0.261	0.275	0.266	0.453
480	0.081	0.255	0.27	0.261	0.445
485	0.08	0.249	0.264	0.255	0.437
490	0.079	0.244	0.259	0.25	0.429
495	0.079	0.238	0.253	0.245	0.422
500	0.078	0.233	0.248	0.24	0.414

Maximum Field Strength	63.691	77.736	40.798	48.425	72.063
Maximum Field Strength at edge of ROW	12.657	13.053	10.955	20.289	6.657

Table 7 - Calculated Magnetic Field Strength Results

	Electric Field Strength (kV/m)				
Distance From Centerline (ft)	Calc #1	Calc #2	Calc #3	Calc #4	Calc #5
-500	0	0	0	0	0
-495	0	0	0	0	0
-490	0	0	0.001	0	0
-485	0	0	0.001	0	0
-480	0	0	0.001	0	0.001
-475	0	0	0.001	0.001	0.001
-470	0	0	0.001	0.001	0.001
-465	0	0	0.001	0.001	0.001
-460	0	0	0.001	0.001	0.001
-455	0	0	0.001	0.001	0.001
-450	0	0	0.001	0.001	0.001
-445	0	0	0.001	0.001	0.001
-440	0	0	0.001	0.001	0.001
-435	0.001	0	0.001	0.001	0.001
-430	0.001	0	0.001	0.001	0.001
-425	0.001	0	0.001	0.001	0.001
-420	0.001	0	0.001	0.001	0.001
-415	0.001	0	0.001	0.001	0.001
-410	0.001	0	0.001	0.001	0.001
-405	0.001	0	0.001	0.001	0.001
-400	0.001	0	0.001	0.001	0.001
-395	0.001	0	0.001	0.001	0.001
-390	0.001	0	0.001	0.001	0.001
-385	0.001	0	0.001	0.001	0.001
-380	0.001	0	0.001	0.001	0.001
-375	0.001	0	0.001	0.001	0.001
-370	0.001	0	0.001	0.001	0.001
-365	0.001	0	0.001	0.001	0.001
-360	0.001	0	0.001	0.001	0.001
-355	0.001	0	0.001	0.001	0.001
-350	0.001	0	0.001	0.001	0.001
-345	0.001	0	0.001	0.001	0.001
-340	0.001	0	0.002	0.001	0.001

-335	0.001	0	0.002	0.001	0.001
-330	0.001	0.001	0.002	0.002	0.002
-325	0.001	0.001	0.002	0.002	0.002
-320	0.001	0.001	0.002	0.002	0.002
-315	0.002	0.001	0.002	0.002	0.002
-310	0.002	0.001	0.002	0.002	0.002
-305	0.002	0.001	0.002	0.002	0.002
-300	0.002	0.001	0.002	0.002	0.002
-295	0.002	0.001	0.002	0.002	0.002
-290	0.002	0.001	0.003	0.002	0.002
-285	0.002	0.001	0.003	0.002	0.002
-280	0.002	0.001	0.003	0.003	0.002
-275	0.002	0.001	0.003	0.003	0.003
-270	0.003	0.001	0.003	0.003	0.003
-265	0.003	0.001	0.003	0.003	0.003
-260	0.003	0.001	0.003	0.003	0.003
-255	0.003	0.001	0.004	0.003	0.003
-250	0.003	0.001	0.004	0.004	0.003
-245	0.003	0.001	0.004	0.004	0.004
-240	0.004	0.001	0.004	0.004	0.004
-235	0.004	0.001	0.005	0.004	0.004
-230	0.004	0.002	0.005	0.005	0.004
-225	0.005	0.002	0.005	0.005	0.005
-220	0.005	0.002	0.006	0.005	0.005
-215	0.005	0.002	0.006	0.006	0.006
-210	0.006	0.002	0.007	0.006	0.006
-205	0.006	0.002	0.007	0.006	0.006
-200	0.007	0.002	0.007	0.007	0.007
-195	0.007	0.003	0.008	0.007	0.008
-190	0.008	0.003	0.009	0.008	0.008
-185	0.009	0.003	0.009	0.009	0.009
-180	0.009	0.003	0.01	0.009	0.01
-175	0.01	0.004	0.011	0.01	0.011
-170	0.011	0.004	0.012	0.011	0.012
-165	0.012	0.005	0.013	0.012	0.014
-160	0.013	0.005	0.014	0.013	0.015
-155	0.014	0.006	0.015	0.014	0.017
-150	0.016	0.007	0.016	0.016	0.019
-145	0.017	0.007	0.018	0.017	0.022
-140	0.019	0.008	0.019	0.019	0.025
-135	0.021	0.009	0.021	0.021	0.028

-130	0.023	0.01	0.023	0.023	0.032
-125	0.026	0.012	0.025	0.025	0.037
-120	0.029	0.013	0.028	0.028	0.043
-115	0.032	0.015	0.031	0.031	0.049
-110	0.036	0.017	0.034	0.034	0.057
-105	0.041	0.02	0.037	0.038	0.066
-100	0.047	0.023	0.041	0.042	0.077
-95	0.054	0.026	0.045	0.047	0.089
-90	0.061	0.03	0.049	0.052	0.103
-85	0.071	0.035	0.054	0.058	0.104
-80	0.082	0.042	0.059	0.065	0.119
-75	0.094	0.05	0.064	0.072	0.135
-70	0.11	0.059	0.07	0.08	0.15
-65	0.128	0.072	0.075	0.087	0.161
-60	0.149	0.088	0.079	0.095	0.166
-55	0.174	0.108	0.082	0.102	0.162
-50	0.203	0.133	0.083	0.107	0.151
-45	0.236	0.161	0.08	0.11	0.145
-40	0.271	0.201	0.075	0.108	0.164
-35	0.307	0.246	0.068	0.099	0.219
-30	0.339	0.274	0.067	0.084	0.297
-25	0.362	0.321	0.086	0.068	0.379
-20	0.368	0.366	0.128	0.075	0.452
-15	0.349	0.385	0.185	0.12	0.51
-10	0.302	0.373	0.248	0.188	0.55
-5	0.238	0.364	0.308	0.263	0.573
0	0.181	0.317	0.356	0.331	0.579
5	0.174	0.283	0.383	0.38	0.57
10	0.212	0.272	0.387	0.403	0.543
15	0.255	0.265	0.371	0.41	0.496
20	0.281	0.257	0.34	0.405	0.428
25	0.286	0.249	0.299	0.365	0.342
30	0.275	0.238	0.254	0.291	0.249
35	0.253	0.221	0.211	0.239	0.173
40	0.226	0.203	0.172	0.196	0.157
45	0.198	0.184	0.138	0.158	0.19
50	0.171	0.166	0.109	0.127	0.228
55	0.146	0.15	0.087	0.103	0.251
60	0.126	0.134	0.068	0.082	0.255
65	0.11	0.119	0.054	0.063	0.245
70	0.094	0.106	0.042	0.05	0.226

75	0.079	0.094	0.033	0.039	0.202
80	0.067	0.083	0.026	0.031	0.176
85	0.057	0.074	0.021	0.025	0.152
90	0.048	0.066	0.017	0.02	0.129
95	0.041	0.059	0.013	0.016	0.11
100	0.035	0.052	0.011	0.013	0.093
105	0.03	0.047	0.009	0.01	0.078
110	0.026	0.042	0.008	0.009	0.066
115	0.022	0.037	0.007	0.008	0.056
120	0.019	0.034	0.006	0.007	0.047
125	0.017	0.03	0.006	0.006	0.039
130	0.015	0.027	0.005	0.005	0.033
135	0.013	0.025	0.005	0.005	0.028
140	0.011	0.022	0.005	0.005	0.024
145	0.01	0.02	0.004	0.004	0.02
150	0.009	0.019	0.004	0.004	0.017
155	0.008	0.017	0.004	0.004	0.015
160	0.007	0.015	0.004	0.004	0.013
165	0.006	0.014	0.004	0.004	0.011
170	0.005	0.013	0.004	0.003	0.01
175	0.005	0.012	0.003	0.003	0.008
180	0.004	0.011	0.003	0.003	0.007
185	0.004	0.01	0.003	0.003	0.007
190	0.003	0.009	0.003	0.003	0.006
195	0.003	0.009	0.003	0.003	0.005
200	0.003	0.008	0.003	0.003	0.005
205	0.002	0.007	0.003	0.002	0.004
210	0.002	0.007	0.003	0.002	0.004
215	0.002	0.006	0.002	0.002	0.004
220	0.002	0.006	0.002	0.002	0.004
225	0.002	0.006	0.002	0.002	0.003
230	0.001	0.005	0.002	0.002	0.003
235	0.001	0.005	0.002	0.002	0.003
240	0.001	0.005	0.002	0.002	0.003
245	0.001	0.004	0.002	0.002	0.003
250	0.001	0.004	0.002	0.002	0.003
255	0.001	0.004	0.002	0.002	0.002
260	0.001	0.004	0.002	0.002	0.002
265	0.001	0.003	0.002	0.001	0.002
270	0.001	0.003	0.002	0.001	0.002
275	0.001	0.003	0.001	0.001	0.002

280	0.001	0.003	0.001	0.001	0.002
285	0.001	0.003	0.001	0.001	0.002
290	0	0.002	0.001	0.001	0.002
295	0	0.002	0.001	0.001	0.002
300	0	0.002	0.001	0.001	0.002
305	0	0.002	0.001	0.001	0.002
310	0	0.002	0.001	0.001	0.002
315	0	0.002	0.001	0.001	0.002
320	0	0.002	0.001	0.001	0.002
325	0	0.002	0.001	0.001	0.001
330	0	0.002	0.001	0.001	0.001
335	0	0.002	0.001	0.001	0.001
340	0	0.001	0.001	0.001	0.001
345	0	0.001	0.001	0.001	0.001
350	0	0.001	0.001	0.001	0.001
355	0	0.001	0.001	0.001	0.001
360	0	0.001	0.001	0.001	0.001
365	0	0.001	0.001	0.001	0.001
370	0	0.001	0.001	0.001	0.001
375	0	0.001	0.001	0.001	0.001
380	0	0.001	0.001	0.001	0.001
385	0	0.001	0.001	0.001	0.001
390	0	0.001	0.001	0.001	0.001
395	0	0.001	0.001	0.001	0.001
400	0	0.001	0.001	0.001	0.001
405	0	0.001	0.001	0.001	0.001
410	0	0.001	0.001	0	0.001
415	0	0.001	0.001	0	0.001
420	0	0.001	0.001	0	0.001
425	0	0.001	0	0	0.001
430	0	0.001	0	0	0.001
435	0	0.001	0	0	0.001
440	0	0.001	0	0	0.001
445	0	0.001	0	0	0.001
450	0	0.001	0	0	0.001
455	0	0.001	0	0	0.001
460	0	0.001	0	0	0.001
465	0	0.001	0	0	0.001
470	0	0.001	0	0	0.001
475	0	0.001	0	0	0.001
480	0	0	0	0	0.001

485	0	0	0	0	0.001
490	0	0	0	0	0.001
495	0	0	0	0	0.001
500	0	0	0	0	0.001
Maximum Field Strength	0.368	0.385	0.387	0.41	0.579
Maximum Field Strength at edge of ROW	0.094	0.094	0.064	0.127	0.072

TABLE 8 - CALCULATED ELECTRIC FIELD STRENGTH RESULTS