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January 2, 2008

RE: New Middle School
Orange County, Virginia

Ms. Ann M. Bledsoe
Orange County Public Schools
200 Dailey Drive
Orange, Virginia 22960

Dear Ms. Bledsoe:

At the request of Orange County Public Schools, an electromagnetic field survey was performed on December 20, 2008 on the proposed Orange County Middle School site.

There are utility company high-tower, high-voltage power lines running North-South at the rear of the site (farthest from Flat Run Road). These power lines will remain in place. There is also a utility company medium-voltage power line running parallel near Flat Run Road through the location proposed for the school building. This power line will be relocated east, away from the school site, closer to Flat Run Road.

EMF Background Information:

Electromagnetic fields (EMF) are waves of energy generated from all electrical currents. Power lines, electrical wiring, computers, televisions, hair dryers, household appliances and everything else that uses electricity are sources of EMF. Electromagnetic fields radiate out from electrical devices and wiring. The strength of the field decreases rapidly with distance. EMF is commonly measured in units of gauss (G) by an instrument known as a gaussmeter. A milligauss (mG) is 1000 times smaller than a gauss.

While there are several studies that suggest a correlation between the effects of EMF and health related issues, the studies also point out that there is no conclusive evidence to prove such a claim. Several studies indicate that depending on the type of line and its current, magnetic fields 200 to 300 feet away from power lines become less than those encountered in the typical residence (3-4mG). Most power lines in neighborhoods are low voltage and not an important source of EMF exposure. However, high voltage lines can cause EMF to be elevated directly beneath and nearby the lines. Average EMF levels directly beneath high voltage power lines can vary from 30 to 90mG, depending on the voltage, height and placement of the lines. Approximately 300 feet away, EMF levels from high voltage power lines are similar to background levels found outside or inside the home.

In a study that measured EMF in almost 1000 homes in the United States, 95% had an average EMF level below 3mG. Keep in mind that these are average EMF levels within a home. EMF levels can be higher when you are near a household appliance (or anything else that uses electricity). EMF levels rapidly become weaker as you move away from the source.

To provide a basis for comparison of EMF levels that may be encountered at your site, please refer to the following chart for typical household appliances expressed in milligauss mG. All figures listed are for appliances on medium setting and are compiled from "EMF In Your Environment, EPA 1992."

Distance from Source	6"	1'	2'
Bathroom			
Hair Dryer	300	1	-
Electric Shaver	100	20	-
Kitchen Sources			
Blender	70	10	-
Dishwasher	20	10	4
Garbage Disposal	80	10	2
Microwave	200	10	4
Electric Range	30	8	2
Refrigerator	2	2	1
Living/Family Room			
Window A/C	20	8	4
Color TV	20	8	4
PC with Color Monitor	14	5	2
Laundry/Utility Room			
Clothes Dryer	3	2	-
Washing Machine	20	7	1
Iron	8	1	-
Vacuum Cleaner	300	60	10
Bedroom Sources			
Digital Clock	8	2	1
Baby Monitor	6	1	-

Field Measurements:

Electromagnetic field measurements were taken at the proposed Orange County Middle School site. Weather was sunny in mid-40's F. A TES model 1393 triaxial magnetic field meter was used for all measurements. Readings are in milliGauss (mG). Two sets of EMF readings were taken at 100' increments at ground level: (1) from the center line of the high-voltage transmission lines east to the proposed building structure location. (2) Near power lines to the proposed main parking lot. The closest corner of the proposed building is about 400' from the high-voltage lines.

Distance in Feet from Lines	(1) Power Lines to Building mG Range	(2) Power Lines to Parking mG Range
0	121.7 – 122.7	-
100'	23.7 – 24.1	-
200'	8.25 – 8.35	8.78 – 8.90
300'	4.43 – 4.55	4.42 – 4.55
400'	2.85 – 2.95	2.20 – 2.37
500'	2.03 – 2.20	1.69 – 1.89
600'	1.58 – 1.79	1.47 – 1.70
700'***	2.05 – 2.17	-
740'***	11.2 – 11.6	-
800'*	1.82 – 2.10	-

As you can see, at 400 feet from the high-voltage lines (where the building will be) the average measurements fall below the 3 mG average level encountered in a typical household.


** Note that the readings increase on the 700 – 800' range of set (1). The 740' reading was taken at the base of utility medium-voltage pole 405-44-312-174. This pole, the surrounding poles, and the associated power lines will be relocated approximately 400' away to avoid conflict with the building and construction. After that relocation, the reading at the 750' range could then be expected to continue the downward trend below 2 mG.

Conclusion:

Moseley Architects plans have located the proposed New Middle School on the site as far away from the high voltage power lines as reasonably possible at a distance of approximately 400 to 750 feet. At this distance, the metered readings indicate the site has lower background EMF levels than what would normally be experienced in the average home.

Please call if you have any questions.

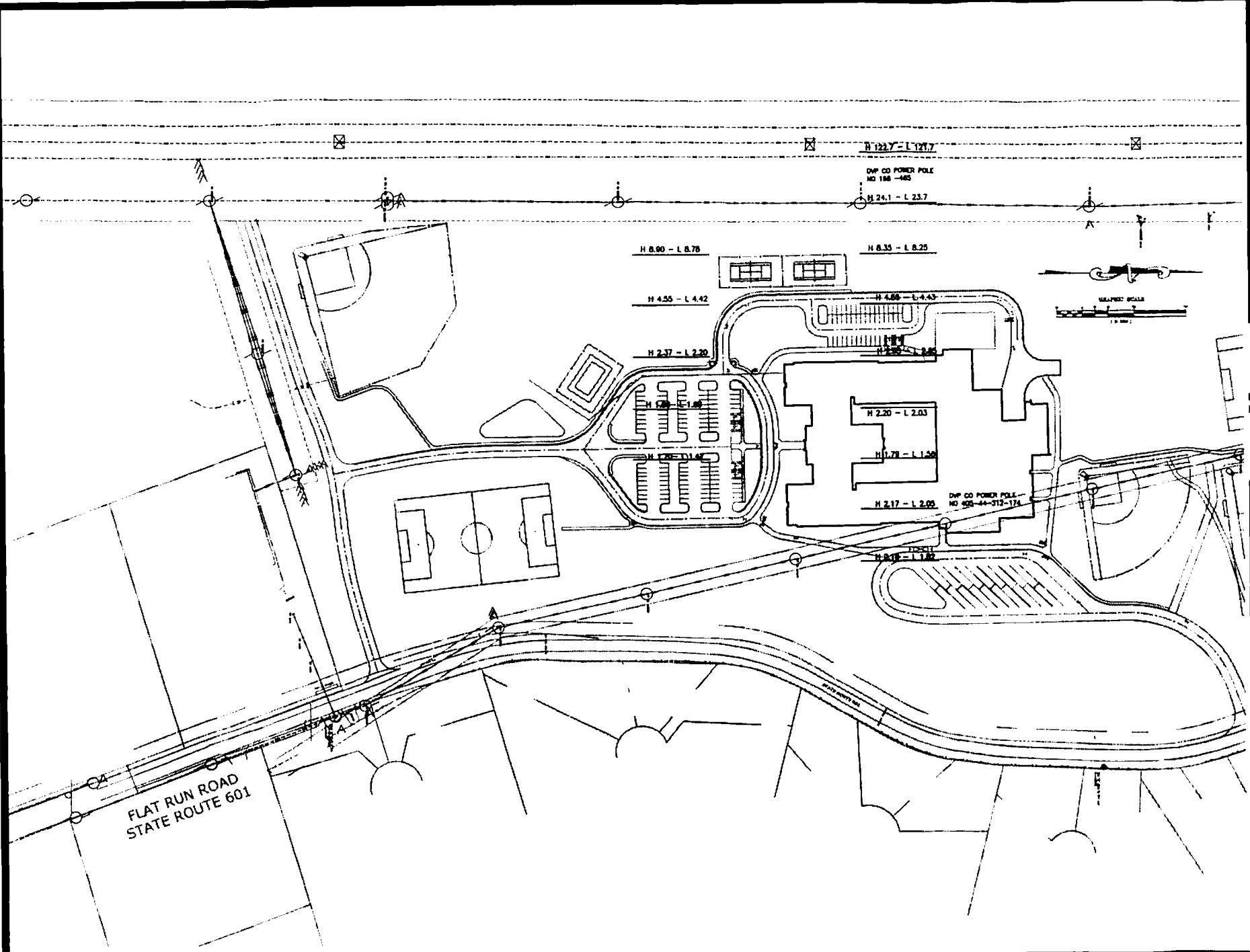
Sincerely,



David K. Lockwood, PE
Director of Electrical Engineering

Attachment: Electromagnetic survey site plan EMF-1

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NEW ORANGE COUNTY
MIDDLE SCHOOL SDE # 68-4A
ORANGE COUNTY PUBLIC SCHOOLS
ORANGE COUNTY, VIRGINIA

DATE	DESCRIPTION

REVISIONS:
FIELD SURVEY

EMF-1