Davidson Academy Governing Board Meeting – May 29, 2026

Supplemental Materials

Correspondence Received May 28, 2026

From: Alfredo Cid <al.ciro@hotmail.com>
Sent: Thursday, May 28, 2026 10:57 AM
To: Aimee Fredericks <afredericks@davidsonacademy.unr.edu>
Subject: Technical Memorandum: Addendum to Technical Proposal (Evans Ave. Facility)

Dear Mrs. Fredericks,
I hope this email finds you well.
Regarding the comprehensive technical proposal submitted a few days ago for the new Evans Ave. building, I would like to formally request the inclusion of a brief technical memorandum into the main project file.
This addendum provides a necessary calibration regarding operational physical scales.
Could you please ensure that this brief note is attached to the main file for the Board's consideration?
Thank you in advance for your assistance.
Sincerely,
Alfredo Cid
Advocate for Gifted Education

Technical Memorandum: Spatial Scaling and Geomagnetic Homogeneity

1. Operational Scales

This memorandum calibrates the operational models presented in the document recently submitted to the Governing Board (Technical Proposal: Cognitive Performance Optimization and Structural Safety). It establishes a clear line of distinction between the theoretical laboratory parameters contained in that document and the macro-scale physical realities of a building environment.

At a real-world classroom scale, the biophysical models suggesting that magnetic torque can force the mechanical opening of potassium channels (K^+) in glial membranes are strictly confined to the experimental scope of controlled laboratory environments (where massive artificial fields are applied at sub-centimeter distances). However, at distances greater than or equal to 1.5 m from a passive floor slab, the direct mechanical forces acting upon the magnetite crystals anchored within the glial membranes are infinitesimal compared to cellular thermal noise.

Therefore, the biophysical mechanisms explaining background neurological noise and alpha-wave reduction shift from cellular mechanics toward a macroscopic phenomenon: the ambient magnetic field inhomogeneity induced by conventional structural steel.

2. Contextualization of the Caltech Experiment Results

The Caltech experiment evaluated neurophysiological responses by manipulating a homogeneous and uniform magnetic vector. Subjects were exposed to directional

rotations of a uniform magnetic field that simulated the natural geomagnetic baseline. That experiment recorded that such vector rotations induced a 15% to 25% reduction in alpha-wave amplitude within the responsive cohort (as well as significant responses, though below 15%, in other participants). It conclusively demonstrated the extreme sensitivity of the human magnetoreceptive pathway, proving that the human brain subconsciously registers and responds to subtle directional shifts in a clean magnetic vector.

3. Inference for Architectural Design

In a natural environment, the Earth's geomagnetic field is uniform and homogeneous. At the scale of the human brain, its lines of force are spatially constant in both intensity and direction. This means that the billions of magnetite crystals distributed throughout the brain experience the exact same vector in unison. For the central nervous system, this provides a uniform, predictable, and gradient-free biophysical signal.

The human brain utilizes this stable matrix as an invisible, permanent coordinate system—a baseline map to anchor subconscious cognitive processing and focus—as subsequently demonstrated by the neurobiological trials of Dr. Chae and his team.

- **Geomagnetic Field Distortion Produced by Conventional Steel:** Inside a building constructed with conventional ferromagnetic steel, this environmental uniformity is shattered. The massive accumulation of steel in slabs and columns acts as a passive distorting lens, forcing the lines of force to deform, deflect, and concentrate irregularly every few millimeters throughout the indoor space.

- **Signal Blur:** This spatially fragmented geomagnetic field causes different areas of an occupant's cerebral cortex to simultaneously register conflicting magnetic vectors. The brain is thus forced to process a "blurred" or incoherent environmental signal. This generates continuous neurological background noise, leading to a subsequent reduction of alpha waves in cerebral bioelectrical activity.

The brain must constantly process and filter this background anomaly, which represents a persistent expenditure of metabolic energy (allostatic load). Furthermore, this continuous parasitic processing directly competes for executive cognitive resources, accelerating mental fatigue and cognitive depletion. This phenomenon is significantly more acute in highly gifted students, whose nervous systems routinely exhibit heightened sensory connectivity and low latent inhibition.

4. Additional Contributing Factor: Dynamic Sensory Integration Conflict (Spatial Mismatch)

To this static background noise, a dynamic sensory conflict factor is added, operating continuously based on the student's movements.

This phenomenon does not require the subject to walk around the room; it is persistently triggered by the habitual head micromovements a student makes while sitting at their desk (such as tilting the head to write, nodding, or turning toward the whiteboard).

In a natural environment, the geomagnetic vector is uniform. If a person moves or turns their head, the brain's magnetoreceptive pathway and the vestibular system (inner ear) register a perfectly coordinated and predictable rotation.

Conversely, within the distorted matrix of a steel-structured building, the direction of the geomagnetic vector fluctuates drastically on a centimeter-by-centimeter scale. When head movements occur, the magnetite micro-crystals attempt to realign with these highly localized anomalies. The brain constantly cross-references this data with visual and vestibular inputs.

If the eyes and the inner ear report a steady planar movement or relative rest, but the magnetic sense perceives chaotic, rapid vector variations, a constant data discrepancy arises, generating a subconscious sensory integration conflict. Registering and filtering this spatial mismatch demands an additional neurocognitive processing effort, acting as a secondary aggravating factor of general cognitive fatigue.