

October 14, 2025

Mr. Russell G. Whitaker, III
Rosanova & Whitaker, Ltd.
445 Jackson Ave., Suite 200
Naperville, IL 60540

RE: Karis -Chiller Selection for Noise Study

Dear Mr. Whitaker:

Carlson Design Group is the Engineer of Record for Mechanical Engineering Services associated with the Karis Critical Data Center located at 1690 West Lucent Lane, Naperville, IL 60563. This letter serves to detail the design basis for the selection and performance criteria for the air-cooled chillers chosen to support the cooling requirements for the 36MW critical load, including related electrical and building systems. It further explains how this data informed the subsequent noise study performed by the designated sound consultant.

The data center is proposed to be built on the site of the former Lucent Technologies Office Building. It will use twenty-four (24) Trane ACR-450 air-cooled screw chillers with N+1 redundancy, each producing 555 tons (1,951kW) of chilled water at a 99.5°F ambient temperature, 60°F leaving temperature, and a 14°F Delta-T, operating at approximately 0.93kW/Ton. The chillers feature Trane's Invisisound technology for noise reduction and will run continuously to maximize energy efficiency and minimize sound transmission.

A 10-year high temperature was utilized for the selection of the air-cooled chiller and represents the maximum chiller load. The anticipated chiller load calculations were based on the average ASHRAE 2021 July design temperature for the site, at 72.8°F to cool the critical load of 36MW, along with an estimated additional electrical load of 3% of the critical load. Excluding minimal building loads at this ambient temperature, the twenty-four (24) air-cooled chillers collectively cool a total of 37.08MW. With all units in operation, each chiller is required to produce 1,505kW (428 Tons) of chilled water to satisfy the demand.

The ambient temperature, combined with the relatively high leaving water temperature from the chillers, significantly lowers the compressor workload for the air-cooled chillers. Under the average site ambient conditions indicated above, daytime chiller load is expected to be 0.57kW/Ton, decreasing further to 0.47kW/Ton during nighttime operation. This represents a reduction from full-load design operation to anticipated

average operating conditions of 60% (0.57kW/Ton / 0.94kW/Ton) of maximum chiller capacity during daytime and 50% (0.47kW/Ton / 0.94kW/Ton) during nighttime periods. These values, 60% daytime and 50% nighttime, informed the basis of Jacob & Hefner's noise study regarding noise contribution from the roof mounted chillers.

Sincerely,

CARLSON Design Group of Ohio LLC

A handwritten signature in black ink, appearing to be 'CH' or similar, written over a light blue horizontal line.

Christian Hurd, PE
Principal

