

Fort Knox Medical | Fort Knox, Kentucky



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The Ireland Army Community Hospital at Fort Knox, KY is named after the U.S. Army Surgeon General from 1918 – 1931, Major General Merritte W. Ireland. It was built in the mid-1950s. and serves military personnel in the states of Kentucky, Illinois, Indiana, Michigan, Ohio, and Wisconsin.

In order to meet the medical demands of Fort Knox and the Army, a replacement clinic needed to be built. The new Fort Knox Medical Clinic will offer services such as physical therapy, primary and specialty care clinics, mental health outpatient care and more. It was constructed under a design-build contract with Mortenson for the U.S. Army Corps of Engineers Medical Division and completed in 2019.

A significant problem related to the lighting arose during the design phase and needed to be overcome to meet the new design requirements and to obtain approval from USACE.

To fix the problem, AEG redesigned the project to meet the new stricter requirements, down to the LED chip level, which included color consistency, color shift, fidelity index, gamut index, huge-bin one fidelity, hue-bin one chroma shift, violet fraction, life, correlated color temperature, flicker, and warranty. Most of the lighting industry was not aware of these requirements. So AEG strategically worked with multiple manufacturers to inform them and guide them to test and update their product data sheets to meet the requirements.

With this updated information, AEG created the necessary submittals, to include the additional information providing the color quality of the chips, and the project was able to obtain the approvals to move forward.

From Mortenson's Jason Boothe – MEP Project Manager:

"In my 20 years of being in the industry, AEG's submittal and attention to detail on getting this done was the best that I've ever seen."

We are honored to be a part of this great project.

Additional Information on the updated design guides:

Because the contract was with the U.S. Army Corps of Engineers (USACE) for a Medical Facility, the design and construction were required to adhere to the Unified Facilities Criteria (UFC) and UFC 4-510-01 DESIGN: Military Medical Facilities. In November of 2017 the UFC Design: Military Medical Facilities underwent an update with “Change 2” UFC version. One of these changes impacted the evaluation metrics for the color quality of LED lighting. This required additional documentation in the submittals under the ‘Luminaire Design Review Check List’.

The additional documentation requirement was done to satisfy TM-30, IES Method for Evaluating Light Source Color Rendition. TM-30, a standard from the Illuminating Engineering Society of North America (IESNA) that helps identify the color quality of the LED lighting. Essentially, the contract requirements for the color quality metrics changed from the Color Rendering Index (CRI), an index from (0) zero to (99) ninety-nine based upon how light looks compared to the sun based upon **(6) six colors** to the new TM-30 which now requires multiple color quality data points spread over **(99) ninety-nine colors**. This is a huge change to the industry and how color quality is measured.

In addition, the technical submittal for the fixture documentation needed to include details of the LED chips in the fixture to get USACE submittal approval. This information is not provided by fixture manufacturers as an industry standard, so AEG had to teach the manufacturer about the new submittal requirements. AEG had to coordinate with fixture manufacturers on both the technical documentation and the ordering procedures to match up with factory OEM component for Procurement and Production. Mortenson and AEG worked together to meet the requirements and deliver a successful project to USACE.