

# ADVANCING FIREHOUSE DESIGN FOR MENTAL HEALTH



VR with Fire Chief



West Chester Fire Station 73, West Chester, OH

## BY TIM WILEY & AMBER GENTRY, emersion DESIGN

In times of disaster, the first responder on the scene is often the firefighter. Every day, firefighters are faced with fatal injuries, hostile situations, life-threatening fires, and deadly accidents. These daily encounters are stressful, traumatic events that make firefighters increasingly vulnerable to a host of behavioral conditions, including PTSD, anxiety, and depression. According to the University of Phoenix, 85% of all first responders surveyed have experienced symptoms related to mental health issues<sup>3</sup>. Another study completed in 2018 by the Substance Abuse and Mental Health Services Administration suggests firefighters are at greater risk of dying by suicide than in the line of duty<sup>2</sup>. Nevertheless, the mental health of firefighters is often put on the back burner.

*"According to the University of Phoenix, 85% of all first responders surveyed have experienced symptoms related to mental health issues"*

Most departments have access to some form of behavioral health services. Despite this, these resources are seldomly used. Why? The Ruderman Family Study<sup>3</sup> refers to bravado on the job, embarrassment about needing help, stigmas regarding mental health in general, and feelings of isolation as reasons firefighters choose silence when it comes to their symptoms. It is perceptibly easier to "bury feelings" than face potential ridicule, judgment, or derision from peers. As design professionals focused on health and wellness, we have curated some suggestions to inspire fire departments to use thoughtful design to create highly-functional stations, conducive to the holistic well-being of our first responders.

Incorporating simple strategies like biophilic elements, stress relief areas, and social zones, our firefighters will have an environment to decompress and relax, improving their mental health, and creating a safe space to ask for help if necessary.

## Utilize Daylighting and Nature

Daylighting plays a major role in determining our circadian rhythm, the natural internal process regulating the sleep/wake cycle. Disruption in the rhythm can lead to lack of sleep, which can impact cognitive function of our cerebrums and physical function of our bodies. A firefighters' irregular sleep schedule, coupled with anxiety, may make it nearly impossible to get the much needed rest between emergencies. To help minimize this undue mental strain, fire stations often require absolute darkness in dorm rooms. An alternative solution is integration of wavelength specific lighting, which replicates natural light hues, promoting melatonin production and deeper sleep. More productive resting periods can lead to better cognition and less fatigue.

Natural lighting is also critical to daily function. Known to increase alertness, productivity, reaction times and coordination, controlled daylight enhances the function and performance of the inhabitants. Vision glazing, clerestory windows, skylights, and glass walls should be considered for fire station designs.

Utilizing "direct nature and indirect nature", a concept of biophilic design, also adds tranquility and respite to a chaotic work environment. Living walls, natural elements, indoor/outdoor spaces, and water features can alleviate symptoms of depression and foster well-being. Subtle shifts in colors, materials, and light to reflect earth tones of the surrounding area can have a positive impact on mental health as well.



*With combined fitness rooms and meditation areas, firefighters can exercise both their bodies and their minds.*

### **Include Stress-Relieving Zones**

Stress is known to wreak havoc on the body. Interruptions to the cardiovascular, immune, digestive, and other systems can create serious health issues such as heart disease, high blood pressure, depression, and anxiety. First responders routinely deal with high levels of stress and trauma, so they must have places to unwind and relax. Most fire stations include fitness rooms, however, very few include additional spaces for meditation or reflection. "Science has shown that methods such as breathing techniques, meditation, yoga... when regularly practiced, can help people restore a sense of normalcy to their neurological systems," says Deputy Chief Mike Ming of Cal Fire<sup>4</sup>. Incorporation of designated space for meditation and relaxation not only allows for decompression after an arduous day, but reduces the stigma around seeking assistance for mental health. If budget constraints won't allow for designated meditation space, bunk rooms, media rooms, or saunas can serve dual functions.

### **Incorporate Social Zones**

Camaraderie is the keystone of a functioning fire department. A strong, supportive environment is beneficial to alleviate symptoms of depression, boost immune systems, and foster empathy. Designs geared towards group activities promote healthy peer to peer relationships, which leads to trust, and creates safe spaces to ask for help<sup>5</sup>. Limiting functions of private spaces to encourage use of common areas, such as kitchens, community rooms, dayrooms, and media rooms, can increase communication and reduce isolation. Designing minimalist bunk rooms with a decreased footprint is also an effective tool for discouraging unnecessary seclusion. The bunk rooms become specific zones for rest and recovery, which in turn creates more opportunities for fellowship in the social zones.



*This social zone features natural daylighting.*

While the physical demands and stresses of firefighters are well known, it is the lesser known and often ignored mental stresses that warrant more focus. A firefighters' cognitive stability and psychological well-being deserve top priority in the design of today's fire stations. As design professionals, we have an obligation to protect the mental health of those who protect us. By incorporating daylighting, nature, stress-relieving zones, and social zones into fire stations, we can secure increased health and mental well-being for future firefighters.



#### About the Author:

Tim is a Project Manager and Project Architect for the civic market at emerision DESIGN. His education and experience working in multiple markets have provided him with a broad knowledge of architectural practices and trends. He has experience in assessing existing conditions, site planning, preliminary design, design development and construction documentation. Tim leads and listens, engages the community, reduces risk, and provides unique avenues for new facilities.



#### About the Author:

Amber has over 15 years of professional experience in interior design. She has completed projects across several project types, notably education, government, civic, corporate, and hospitality. With experience in both project management and design, she understands the importance of staying on budget to deliver high-quality work that exceeds the clients' expectations.

#### REFERENCES:

1. Majority of First Responders Face Mental Health Challenges in the Workplace [https://www.phoenix.edu/about\\_us/media-center/news/uopx-releases-first-responder-mental-health-survey-results.html](https://www.phoenix.edu/about_us/media-center/news/uopx-releases-first-responder-mental-health-survey-results.html)
2. Disaster Technical Assistance Center Supplemental Research Bulletin <https://www.samhsa.gov/sites/default/files/dtac/supplementalresearchbulletin-firstresponders-may2018.pdf>
3. The Ruderman White Paper on Mental Health and Suicide of First Responders [http://dir.nv.gov/uploadedFiles/dirnv.gov/content/WCS/TrainingDocs/First%20Responder%20White%20Paper\\_Final%20\(2\).pdf](http://dir.nv.gov/uploadedFiles/dirnv.gov/content/WCS/TrainingDocs/First%20Responder%20White%20Paper_Final%20(2).pdf)
4. For Calif. Firefighters, 'mindfulness' can ease the deadly stress of their jobs <https://www.firerescue1.com/health/articles/for-calif-firefighters-mindfulness-can-ease-the-deadly-stress-of-their-jobs-kUxcQf2W2GNv8RWR/>
5. Firefighters can ease one another's job stress, but loving spouses may increase it <https://www.sciencedaily.com/releases/2019/11/191113153017.htm>