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The Joint Operations Center Plan for Fort Polk, Louisiana, was designed in accordance with the Unified Facilities Criteria 2-100-01 Master Planning and the associated Fort Polk Master Plan. The Concept Plan was developed by the U.S. Army Corps of Engineers Fort Worth Regional Planning Support Center and The Urban Collective. (Courtesy photo)

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Enhancing mission resilience by using green infrastructure

by Mark Gillem and Jerry Zekert

Resiliency in planning is not a new subject As we learned in our Master Planning Principles Course 75 class, Dec. 6 to 10 in Philadelphia, William Penn prepared a plan for the city of Philadelphia in 1863 that focused in part on resiliency. He applied lessons he learned, for example, from living in London that taught him the value of urban parks in supporting healthy communities and suppressing urban fires.

A major feature of Penn's plan is the green infrastructure that permeates all aspects of the historic fabric. For example, the city center's four major squares serve as public parks in addition to providing stormwater and air quality benefits. Planting strips between street curbs and sidewalks in many neighborhoods help reduce runoff. Planted medians in major streets not only protect drivers but also absorb stormwater.

Military planners can learn from Penn's model by recognizing the value of green infrastructure to mission resilience. When designed effectively, an installation's open space network can help absorb impacts from acute threats that can jeopardize mission effectiveness. The most obvious approach is to incorporate low-impact development strategies into the master plan.

According to the Low Impact Development Center, the basic approach is to "...manage rainfall at the source using uniformly distributed decentralized microscale controls. LID's goal is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source. Instead of conveying and managing/ treating stormwater in large, costly endof-pipe facilities located at the bottom of drainage areas, LID addresses stormwater through small, cost-effective landscape features located at the lot level."

Surprisingly, many of the same features that improve livability also improve an installation's ability to manage stormwater and reduce the possibility of flooding. For example, planting strips and medians



The long-term plan for the Clear Creek Darnall district, Fort Hood, Texas, provides a clear vision for a new Town Center that uses simple techniques like parks, planting strips along streets and in parking areas, street trees, and bioswales to mitigate stormwater runoff. (Courtesy of The Urban Collaborative)

work as well today as they did in the 17th century. We can now add bioswales, engineered wetlands, and other more robust solutions to the equation. In addition, parks and quads located in the hearts of military neighborhoods can be designed to collect stormwater and serve retention and detention purposes. Greenbelts through and around installations not only provide places for close-in training and military laydown areas, but they can provide fire buffers and absorb stormwater.

At Fort Hunter Liggett, California, planners integrated many of these techniques into the master plan and found that effective planning could absorb up to 32 million gallons of stormwater annually – which more than met the design storm requirements. Similarly, at Fort Hood, Texas, the green infrastructure plan incorporates multiple strategies across the installation to absorb stormwater and reduce the possibility

of flooding.

William Penn knew how to use green infrastructure to support readiness for his missions. Today, Unified Facilities Criteria 2-100-01, Installation Master Planning, requires master plans to include green infrastructure network plans within the overall installation development plan. So, as planners regularly update their plans, they have many opportunities to enhance mission readiness through effective and affordable green infrastructure.

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