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Master Planning,
Housing, and
Barracks

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The top two images show the proposed mixed-use mission support facility at U.S. Army Garrison Miami, Florida, that combines logistics and administrative uses into one connected building supporting footprint reduction, resiliency, energy efficiency, low impact development, and mission effectiveness goals. The proposed barracks (bottom image) follow the apartment model first developed at Fort Leonard Wood with one building sized for no more than 10 residents. This makes the building exempt from anti-terrorism/force protection requirements and much more efficient in terms of total cost and area required. See article on [Page 15](#) (Images courtesy of The Urban Collaborative, LLC).





Robust planning supports evolving installation priorities

by Rumanda Young and Mark Gillem

New leadership, new threats, and even new budgets frequently result in new initiatives for Department of Defense planners. Once hot topics like sustainability and consolidation give way to new concepts like resiliency, footprint reduction, and infrastructure resets. These are not whims but legitimate priorities driven by larger strategic interests. Planners (and their plans) need to be flexible enough to respond to this evolving guidance while always meeting mission requirements. Fortunately, with a robust planning framework in place, planners can drill down to the details required by higher authorities with ease regardless of the topic of the day.

Robust planning can position installations to successfully address the latest direction. It is important to note that the concepts below are best addressed at the district scale using appropriate Area Development Plans as the foundation and then follow-on plans as applicable, which may include Sustainability Component Plans, Area Development Execution Plans, Network Plans, or Customer Concept Documents.

Energy and Water Security

This is a maturing concept that plans should address at the building scale and at the district scale. Research shows that more compact development patterns significantly reduce energy consumption – in some cases by a factor of 2.5. These reductions are a key step toward energy security. Also, we know that deep energy retrofits can drop energy consumption in an existing building level by up to 70 percent. Simpler retrofits also can achieve impressive results. Even a focus on continuous retro-commissioning of systems can reduce energy consumption by 15 percent. Any building enhancements should be considered within the context of an overall plan using appropriate modeling techniques to forecast cost effective targets for new construction and renovation projects.

By following the DOD's process of creating Installation Energy Plans, which currently focus on energy and water, planners forecasted a 59 percent energy reduction in the capacity phase using a variety of contextually appropriate strategies at U.S. Army Garrison Hawaii, a

100 percent reduction at Fort Hunter Liggett, California, and a 54 percent reduction at Fort Hood, Texas. Using a similar process for water resulted in equally impressive forecasts.

Low Impact Development

This also is a fairly mature concept. As installations seek ways to address greater stormwater runoff volumes due to more frequent storm events, mitigating stormwater on site is more relevant. Integrated bioswales, low-maintenance green roofs, rainwater harvesting, permeable paving, and recreation spaces designed to accommodate and store runoff at peak flows are all viable strategies that should be considered in the planning process. Using these strategies at U.S. Army Garrison Hawaii resulted in a 4 percent reduction in stormwater and a 36 percent reduction at Fort Hood.

Footprint Reduction

It is often easier to grow than shrink. Losing weight is hard and losing square footage on an installation is even harder since most buildings have been claimed by someone. But effective planning can find targeted areas for appropriate reduction through efficiencies, consolidations, and demolitions. For example, as part of the area developing planning process, Installation Management Command planners conduct appropriate facility assessments to identify opportunities for consolidation and footprint reduction. These opportunities can be integrated into the phasing plans and follow-on Area Development Execution Plans. Consolidation opportunities are generally greatest in warehousing and administrative spaces.

For example, at Marine Corps Air Station Iwakuni, Japan, planners found that through more efficient vertical storage systems, existing ambient storage warehouse space could meet future additional requirements without building new. Similarly, by moving to more collaborative office environments that balance open linear systems with limited private offices and ample quiet zones for small team or individualized work, planners at Hurlburt Field, Florida, found that administrative space in selected facilities could be reduced by 20 percent. These types of findings were identified through the development of Customer Concept Documents

that followed Area Development Plans.

Infrastructure Resets

Like footprint reduction, infrastructure reset is a concept that focuses on reducing infrastructure to the most efficient level. For planners, this melds footprint reduction at the building level with infrastructure reduction at the network level. Opportunities to right-size and reset transportation infrastructure are abundant when we rethink parking requirements, road widths, and fire access lane requirements. For example, many installations have roads that are simply too wide for the traffic volumes. Using road diet concepts, paving can be reduced without significantly impacting throughput. At Marine Corps Air Station Iwakuni, the plans call for eliminating unneeded lanes on many streets and replacing that paving with green bioswales to reduce stormwater runoff and the heat island effect (which generates a demand for more air conditioning). Similarly, poor planning at many installations has led to a redundant road network around many new buildings due to the fact that actual roads are set at an appropriate standoff distance but that makes them too far for fire access lanes so a secondary fire access road network is placed around the building. If those access lanes double up with the sidewalks system (as is common on most college campuses) at least one ring of paving can be eliminated.

Resiliency

Resiliency in planning is not a new subject. Another article in this edition of the *Public Works Digest* addresses the concept in more detail. Simply put, robust planning is resilient planning. And resiliency leads to improved mission readiness. Good planning considers the acute threats to mission execution and mitigates those threats through tested strategies. One simple example, again at Iwakuni, is that new replacement housing will be designed to meet more stringent earthquake codes and elevated by at least three risers (18") from the street level. This height was set based on projected storm surges and will ensure homes are not flooded or unusable in the event of a flood. Another example at Iwakuni is the potential use of

(See *Robust Planning*, on page 10)



Area Development Planning takes root at USAG Stuttgart

by Dianne Wilson, Kevin Cooper, Shenita McConis and Doug Shaw

In 2017, U.S. Army Garrison Stuttgart Kaserne, with consultants HDR Engineering, Inc, completed Area Development Plans, or ADP's, for four of its six geographically distinct Garrison districts in Germany: Patch Barracks, Kelley Barracks, Panzer Kaserne, and Stuttgart Army Air Airfield. The Real Property Vision Plan, first component of the Real Property Master Plan, completed in 2016, identifies each distinct district in the Framework Plan, its primary focus, its supporting elements, and its appropriate services.

To accommodate an aggressive schedule, all four ADP charrettes were accomplished in the first half of the year, and the report submittals were expected to be finalized before the end of this year. ADP's comprise the third component of the RPMP, the Long Range Component, of the four mandatory components of the Real Property Master Plan process as described in the Army Regulation 420-1, Chapter 10. This comprehensive approach has proven beneficial as a decision made on one installation has impacts on others. For example, following the outlined primary focus, the Directorate of Public Works currently located on Kelley Barracks is programmed to move to Panzer Kaserne, the Community Support Hub, which



Rendering of the Pedestrian J-Mall, which will replace Oak Strasse on Kelley Barracks, part of U.S. Army Garrison Stuttgart, Germany, creating pedestrian activity and promoting connectivity. (U.S. Army graphic)

will afford AFRICOM much needed space to expand.

ADP's facilitate the effective and efficient use of real property resources and land, and provide important planning information for future projects. Master planning at military installations takes place amid continuous changes in existing and forecast conditions. In the case of U.S. Army Garrison Stuttgart, the changes include evolving mission requirements, technological advancements, and changing manpower support mission demands. The small, landlocked physical footprint amplify the impact of these changing demands.

For example, Kelley Barracks has less than six hectares of land identified as developable and no land that can be developed without demolition of existing facilities or taking community open space. A compounding challenge is that two of the districts, Kelley and Patch, support multiple Combatant Commands with expanding manning requirements that translate into the need for more facility space and services.

The planning team used a four-day charrette format for developing the U.S. Army Garrison

(See USAG Stuttgart, on page 12)

(Robust Planning, continued from page 9)

planned linear parks for beddown areas in the event of a temporary need for mission success.

Hardening

During the Cold War, hardening was generally limited to critical infrastructure on the assumed front lines. Revetments on airfields were the norm. Unified Facilities Criteria 3-340-01 is now the guide for hardening of key structures needed to withstand conventional weapons effects. Planners should identify not only aboveground structures and aircraft shelters that could benefit from hardening but also key infrastructure nodes where hardening may apply (i.e., power substations, water supply points, wastewater treatment centers, communication hubs and nodes, etc.). There is considerable overlap between hardening and designing for antiterrorism/force protection so

planners need to work closely with the applicable subject matter experts to ensure their installation can survive an attack and execute its mission in the most challenging circumstances.

Contingency/Disaster Recovery

When faced with natural or man-made disasters installations need to be able to react and respond quickly to restore critical operations that may have been either completely or partially interrupted. A contingency plan or disaster recovery plan is a detailed and structured approach that will allow an installation to continue operations or quickly resume mission-critical functions. This type of planning establishes priorities and recovery time objectives for the installation. One example of such planning is the Contingency Plan for Marine Corps Forces Reserve Headquarters, located in the hurricane prone area of New Orleans. The plan includes fall back/relocation steps as well as identifying key personnel needed to continue

operations at a scaled back level.

This is an incomplete listing of issues that plans need to address. The good news is that if planners follow the process and prepare the planning products outlined in Unified Facilities Criteria 2-100-01 (Installation Master Planning), they will position their installations for mission success regardless of the topic of the day emanating from higher headquarters.

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