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## Garrison Command Skills for Success

By Colonel Charles D. Allen

## Transforming Installation Services Management Through Common Levels of Support

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## Sprawl: An Unsustainable Model for Military Planning

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# Sprawl: An Unsustainable Model for Military Planning

By Mark L Gillem with Jerry Zekert

The planner shot his best photos of Kadena Air Force Base, Japan, hanging outside of a Blackhawk helicopter 2,500 feet in the air. A few minutes before, they had reached the right spot above the base. He had opened the side door, pulled a spring-loaded lever, and his seat had lunged out of the hovering craft and locked with a jerk. The exterior seat held firmly in place as the helicopter banked 90 degrees, and the planner, face down above the striking landscape around Kadena (Figure 1), clicked off shots.

The 11,018-acre base, with its sprawling subdivisions, strip malls and streets wide and straight enough to land fighter jets, abutted the compact urban fabric of Okinawa-chi, Kadena-cho, and Chatan-cho. The golf course stood ready to defend the base along one edge. The main shopping center's parking lot was bigger than the dense town center of Okinawa-chi. What was the United States doing building in a place so short of land that airports must be constructed on artificial islands?

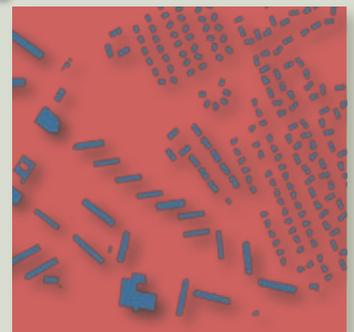
## The Costs of Sprawl

This inefficient land use pattern is not unique to American bases overseas. Low density, auto-oriented development known as sprawl is the norm at U.S. military installations everywhere and it comes with a high price tag.<sup>1</sup> In this era of sustainability, building sprawling compounds is a practice that military planners should reconsider. From a mission standpoint, this pattern of development consumes valuable range and training land at an alarming rate and jeopardizes our ability to accommodate future



**Figure 1.** Ground drawing of Misawa Air Base, Japan, shows the base at upper left and local development at lower right.

**Figure 2.** A figure-ground image of Misawa Air Base, Japan, shows how widely spaced buildings are on U.S. installations. This is typical of U.S. installations across the world.



missions. From an environmental standpoint, this pattern demands an auto-dependent lifestyle, which consumes natural resources and generates substantial pollution. From an economic standpoint, this pattern extends infrastructure runs (i.e. roads, utilities, parking lots), which adds to an installation's operating costs. From a quality-of-life standpoint, this pattern isolates families and forces all of us on to congested roads and into time-consuming commutes.<sup>2</sup>

In this era of preemptive war, one might think that land use is a minor issue. But this reading would be inaccurate. Despite widespread media attention focusing on the tragic stories of rapes, deadly accidents and environmental damage, surveys of local residents near some of America's military installations reveal not so much an all-consuming desire for their demise but concern, above all, with the excessive use of land by American forces. For example, a survey of 1,200 South Koreans living near U.S. military bases demonstrates this point quite clearly. The survey, conducted by the Kyonggi Research Institute in the fall of 2001, revealed some startling attitudes.<sup>3</sup> Not surprisingly, 30 percent of the residents interviewed said that either they or their family members have suffered due to the presence of American military bases near their homes. They complained of traffic problems, theft, noise pollution and violence, including rape. When asked to describe what they considered pressing concerns regarding U.S. troops, 56 percent pointed to environmental pollution and 62 percent noted crimes and undisciplined activity. Most significantly, 68 percent cited the U.S. military's excessive use of Korean land as the burning issue.

In a similar survey of 143 planners and architects working for the

U.S. military, the result was quite different. Like the South Korean survey, more than one answer was acceptable. The 143 that responded had a very different view: 64 percent thought noise from military operations was the most pressing concern, 44 percent thought it was crime, and only 43 percent thought it was land use. The results are nearly a mirror image of misunderstanding. Americans, used to living with ample land, appear blinded to the importance residents of other nations place on land. By assuming noise is the key issue, they can be relieved of worrying about land use.<sup>4</sup>

These land use patterns have led to protests at installations worldwide. For instance, in a unique form of protest, the Korea Confederation of Trade Unions coordinated the efforts of 600 citizens under a "buy one pyong movement" to acquire land just outside Osan Air Base as a symbolic foothold against its growth.<sup>5</sup> One pyong is about 35.5 square feet. This measure is a telling example of the value of land. American planners typically measure land in terms of acres. One acre is 43,560 square feet. While land has been plentiful in America, the units of measure in South Korea reveal that land is a precious resource. After all, banks do not measure gold by the ton but by the ounce.

Italians have a similar concern for the value of land and do not appreciate the American appetite for their land. In the 1990s, thousands of Italians protested an expansion at Aviano Air Base in northern Italy. And in Vicenza in 2007, over 80,000 Italians protested against a planned expansion of an Army installation in the area. The issue was not so much that the United States was there and planning to add more missions. After all, the United States has been in Italy since World War II and has expanded its presence considerably over the years.

Rather, the local concern was with the taking of more land for ever-more sprawling compounds. These events have turned some supporters of the military mission in Italy into opponents. This is hardly a strategy for mission sustainability.

This pattern is increasingly evident in the continental United States as well. In Colorado, for example, farmers who have historically supported the U.S. military have joined together to oppose expansion of Fort Carson's range area at Pinon Canyon. When allies become opponents over land use issues it may be time to rethink our approach.

### **A Checklist for Sprawl**

Despite these growing concerns, this costly development pattern is the norm on military installations built after World War II. For American Soldiers, their spatial world is a recognizable suburb, which is hardly surprising given the proliferation of low density, auto-oriented suburbs built across the United States. "In the United States today," says geographer Richard Harris, "no place seems more familiar than the suburb."<sup>6</sup> It may be so recognizable because it is so ubiquitous. More than half of Americans live in suburbs.<sup>7</sup> J. B. Jackson calls this a national style of spatial organization and claims the proliferation of familiar landscapes is an American tradition. "There are landscapes in America separated by hundreds of miles that resemble one another to a bewildering degree."<sup>8</sup> Whether separated by 100 miles or 5,000 miles, Americans have a clear tendency to change the landscape into familiar forms despite differences in ecology, geology, and climate. In the United States and overseas, planners at military bases have wholeheartedly adopted the suburban ethos using a suburban script.

In many ways, a script for a performance is like a checklist for a flight.

Both define what to do, what to say, and where to go. The military regularly operates on a checklist mentality. Fighter pilots attach checklists to their flight suits. Military engineers carry laminated checklists in their pockets. Inspection teams walk around with their clipboards and checklists making sure every installation conforms to military standards. Planners keep a checklist ready as they create Base Master Plans. Checklists ensure certainty through overarching control. In keeping with this checklist mentality, listed below are seven key attributes of a suburban script that policy makers and planners use to build America's outposts.

**Auto Focused:** Americans living in suburbs primarily get around in their cars. They take only 5 percent of their trips on foot; Europeans and Japanese take up to 50 percent of their trips on foot.<sup>9</sup> Parking lots rather than sidewalks are the priority for planners. And, when possible, drive-thrus are the preferred architectural typology. To get around on America's sprawling outposts, most Soldiers and their Families must drive. Since automobile ownership costs roughly \$3,500 per car per year, this pattern is expensive. And for the military families that can least afford a multiple car lifestyle, land use patterns force them into a second or third car and in some cases this makes the difference between getting by on their own financially or relying on food stamps. Moreover, this auto-oriented pattern of living leads to environmental damage. In American suburbs, the average family drives over 30,000 miles per year and spews over 33,000 pounds of carbon dioxide into the air.

**Abundantly Paved:** "Suburbia," says architect Douglas Kelbaugh, "may be paved with good intentions, but

mainly it is paved."<sup>10</sup> In one 86-acre area of land at Kadena Air Base, 40 percent of the land (34 acres) area is paved. Howard Nicchols, the supervisor of the Osan Air Base, South Korea environmental office, said with a grin, "We have one planning rule here, 'thou shalt not build anything without a parking lot.'"<sup>11</sup> Of course, people need a place to park but this comes with a spatial cost. Every parking space requires at least 350 square feet of paved area so the land required for this quickly adds up to a substantial number. On Fort Lewis, Wash., for example, there are roughly 70,000 parking spaces for a daily population of fewer than 40,000. This adds up to over 24 million square feet of parking lots. On older installations designed to support multiple modes of travel (walking, biking, and driving), the land consumed by parking lots is dramatically reduced.

**Widely Spaced:** The helicopter photo of Kadena Air Base (Figure 1) and a figure-ground image of Misawa Air Base, Japan, (Figure 2) where buildings are black and all else is white both show how widely spaced buildings are on U.S. installations. These bases are typical of U.S. installations across the world. This applies to commercial as well as residential buildings. Undefined open space and parking lots separate many commercial buildings. Ample yards and wide roads separate most single-family homes. Typical residential densities range from six to eight units per acre.<sup>12</sup> Across the street from Okinawa Air Base, however, local developers have built a charming single-family neighborhood at 19 units per acre. In single-family residential areas on U.S. bases, homes also need to be setback from the curb enough to accommodate two cars in the driveway. Rear yards on many installations are anywhere from 50 to 150 feet deep. This pattern con-

sumes land at an alarming rate and does little to improve the livability of a neighborhood. In fact, some of the most cherished neighborhoods on many military installations are those built before 1930, when sprawl became commonplace. The historic district at Fort Lewis and the old brick quarters at Wright Patterson Air Force Base, Ohio, were built in an era when military planners appreciated the value of land and the inconvenience of sprawl. These are neighborhoods where one can easily and safely walk to fitness centers, workplaces, shopping areas, and clubs.

**Extensively Lawned:** Something must fill the increasing gap between buildings and, if it is not paving, it is usually grass. "We have too much grass here," complained Austin Mears, a housing manager at Misawa Air Base. "We have 9.6 acres of grass in the dorm area that takes my crew three days to mow."<sup>13</sup> This translates into 440 square feet of lawn per occupant, but it is largely unusable, devoid of benches, sidewalks, and easy access points from buildings. "Our lawns exist to unite us," argues historian Michael Pollan, "and so across a continent of almost unimaginable geographic variety... we have rolled out a single emerald carpet of lawn."<sup>14</sup> The lawns serve less to unite people than to unite a disparate array of buildings. This pattern comes with an obvious cost in terms of maintenance.

**Increasingly Franchised:** In suburbs, chain stores proliferate. They provide the certainty that some Americans crave. A Whopper is the same in Italy as it is in Illinois. And the building where it is made is the same as well. You can count on copyrighted consistency.<sup>15</sup> On military installations, the retail experience is also a franchised experience. Burger King, Baskin Robbins, Chili's, and Taco Bell



have the franchises to sell food fast. What they do not offer is sold by one of the largest franchises in the world: the Army and Air Force Exchange Service (AAFES). AAFES owns the gas stations, car washes and shopping malls at every base. They have their model and their market. They also run one of the oddest ironies – “Main Street USA,” which is essentially a food court inside a strip mall. There is never a real street. Even Walt Disney wanted a street at Disneyland. Rather, these places are food courts with Popeye’s Chicken and Biscuits, Robin Hood sandwich shops, and perhaps a Chinese take-out. With their massive parking lots and single-story buildings, AAFES is a prime contributor to sprawl on U.S. installations. Now, with their new emerging model of “lifestyle centers” that combine exchanges, commissaries, theaters and gyms into one area, they are requesting even more land – in some cases up to 50 acres.

**Clearly Segregated:** Suburbs are not simply residential enclaves. They include segregated space for all the functions of life: sleeping, working, shopping, and recreating to name just four.<sup>16</sup> They must have color-coded land use plans that segregate compatible land uses like offices and retail shops. Military installations, for example, must usually show the following zones on land use maps: mission (airfields, training areas, etc.), industrial, administrative, Family housing, unaccompanied housing, temporary housing, commercial, medical, recreation and green space. What results is a segregated landscape that can only be accessed by automobile. Walking from one zone to another is often a hazard since sidewalks are an afterthought on many installations.

**Haphazardly Ordered:** At one military installation, the commander said, “This base looks haphazard and

needs to be reorganized from a human factors standpoint.”<sup>17</sup> As a pilot, he was aware that designers base the layout of F-16 cockpits on the physical needs of pilots. Designers measure, weigh, survey and test pilots to determine optimal cockpit configurations. This ushered in the new field of ergonomic design.<sup>18</sup> However, designers do not plan the built environment that way – the needs of cars and franchises take precedence over people. Looking at installation maps, it appears the process employed is more like “train-wreck” planning (see Figure 3). Think of the scattering of train cars after a derailing and you get the picture. Eric Schlosser, author of “Fast Food Nation: The Dark Side of the All-American Meal,” argues that the haphazard placement of buildings is distinctively American.<sup>19</sup> Nevertheless, there is an underlying order. Every building and road is “planned” in the sense that someone thinks about the siting. Is the site in the right land use zone? Does it have room for parking and setbacks? If the answer is yes to these two questions, then construction begins. Since there is no desire to frame the public realm with buildings to enhance pedestrian comfort and safety, planners often site buildings at arbitrary angles to the streets. The result is a focus on buildings as objects, which, according to architect Dan Solomon, is at the root of modern architecture that favors “... the making of things as opposed to places and ... disengagement of those things from what is around them.”<sup>20</sup> Military planners refer to this as “vacant lot” planning.<sup>21</sup>

Following this checklist, military planners can create sprawl regardless of the spatial, environmental or economic costs. From a sustainability point of view the costs are indeed high. While the environmental impacts of auto use are obvious, less obvious are the spatial costs of sprawl. In more

than 100 interviews with military planners across the globe, lack of land was the most common complaint – 90 percent said land availability was an important concern. Many of them would list all of the “constraints” on their maps and describe how they had no more land for new missions. Never did they acknowledge that these “constraints” were self-imposed. Across the military, designers think there is not enough developable land. The reality on the ground, however, unarguably shows that the space exists. What then constrains the use of the ample land the military controls? A planning mentality that perpetuates sprawl is a prime culprit.

### Writing Sprawl

Unfortunately, America’s inefficient land use approach is enshrined in many military planning documents. On Army installations it can be found in many Real Property Master Plans. On Air Force bases it is evident in many General Plans. On Marine installations it is clear in their Master Plans. Many of these legacy documents do a good job of describing current conditions and listing needed future projects but they rarely offer a vision for an installation that can be translated into a real plan. This may be one reason why many of these plans are largely ineffective. “Though our base’s General Plans have been updated (regularly) since 1995, the current revision was halted at 35 percent due to funding withdrawal,”<sup>22</sup> said one planner at a military base. She added, “This and prior versions sit on a shelf in a cabinet and are not referenced for near-future planning. At no time in (the base’s) history has an installation commander succeeded — assuming there were attempts — in bringing order to the arrangement through a vision that was translated into a General Plan.”

The planner then commented about a “building box” mentality. Planners would place a square that represented a future building on an open site on the map and that would lock in the site and, more often than not, the design. This reduced planning to a technical exercise of finding an open site with the least constraints. But in many cases, even these boxes are missing and these plans are usually no more than a report card identifying the condition of the base with maps of current infrastructure, a list of future projects, and a color-coded land use map showing functional zones. Some installations may even place a number on a future land use map representing a location for a particular project. Very few actually have maps that show details of future development such as possible roads, parking or building outlines.

### **Antiterrorism and Force Protection: Mandating Sprawl**

Today planning effectiveness is largely measured by one overarching criterion – antiterrorism and force protection stand-off. In other words, do buildings follow the required setbacks from roads and parking lots? The goal is to keep cars away from buildings. But this goal may be superseded by the changing nature of terror.

On Oct. 14, 2004, two men hand-carried small bombs in their backpacks into the Iraqi Green Zone, a heavily protected compound where the American leadership lives and works. After having tea in the popular Green Zone Café, one man left but the other stayed behind. A few minutes later, a bomb exploded in a nearby open-air street market and then the man at the café detonated his bomb. Seven people died, including the suicide bombers.<sup>23</sup> The U.S. military controls security for the Green Zone and boosted air surveillance over Baghdad, increased armed patrols in and around the Green

Zone, and strengthened checkpoint security. The zone, however, is not strictly a government or military compound; hundreds of Americans and approximately 10,000 Iraqis live in the four-square-mile area.

Unfortunately, military planners are not facing this new threat. They are responding to car bombs not backpack bombs. They hope to create a new type of cordon sanitaire. Military police have created far-reaching planning regulations that impact every new project built on every U.S. military installation. Planners have ceded their domain to police. In 2002, the Department of Defense published its “Minimum Antiterrorism Standards for Buildings.” The space required to implement the policy is immense. Buildings with occupancies of 50 or more people must be 25 meters away from any road, parking lot, or dumpster. Inhabited buildings have occupancies between 11 and 49 and they need to be 10 meters away from any road, parking lot or dumpster. All buildings need to have a minimum separation of 10 meters and must have an unobstructed space (i.e. no landscaping other than grass) of 10 meters as well.

While planners have turned planning over to the police, the police have largely given up on the defended perimeter, which at most bases is flimsy chain link fencing topped by a few strands of barbed wire. Without the protection of a wall or effective gate, the defensive perimeter moves into the base, around every building. When fully implemented, the only conclusion will be increasingly sprawled-out compounds with longer perimeters that will only be more difficult to defend. Or worse, these policies drive designers to build fewer larger buildings thereby concentrating personnel, which makes these buildings much more attractive targets. Enforcing 25-meter

setbacks that require designers to site one twelve-story building rather than four, three-story buildings puts the entire occupancy of the building at risk if a backpack bomber walks through the doors. As one planner struggling with the requirements recounted, “The rules are making me put all my eggs in one basket. But as soon as you say something the response is 9/11 and the subject is closed. The setbacks just spread everything out – they’re killing us.” By killing he meant he could not find sites for new buildings that had 25-meter setbacks from roads or parking.<sup>24</sup>

Another planner had this to say: My largest concern is in regard to antiterrorism, force protection setback requirements. It is undisputed that the first and most important aspect of base security is perimeter security. Therefore, gates should be improved, fences and perimeter surveillance improved, etc. Instead, our set-back requirements are driving less dense bases that require more vehicle traffic and consume land indiscriminately.<sup>25</sup>

These planners are struggling to make the rules work but recognize their flaws. As bases get less dense, they will need to expand. These policies contradict current thinking as articulated by advocates of crime prevention through environmental design and may jeopardize the ability of bases to accommodate new or relocated missions, which is an essential element in the strategy currently underway that aims to reduce bases overseas by consolidating missions on select bases.<sup>26</sup> But with all the required setbacks, planners argue there is little room for these missions on existing bases.

The 25-meter standoff distance is largely a reaction to the Khobar Towers bombing in 1996 in Dhahran, Saudi Arabia. Of course, 25 meters is meaningless against an airplane or missile attack so these



modes can be left aside. In terrorist attacks in Beirut (1983) and New York City (1993), trucks drove past lightly guarded or unguarded gates. In Oklahoma City (1995), Dhahran (1996), and Africa (1998), the trucks and cars were on uncontrolled public streets. The lesson from these events should not be that a car will freely drive onto a base, park next to an office building, and detonate a trunkload of explosives. Rather, the lesson should be that the military should protect the gate and the perimeter as a first step. To patrol and monitor this sprawling landscape, the United States will need even more police because there will be few "eyes on the street" other than the eyes of the police. As Nan Ellin argues, "form follows fear."<sup>27</sup>

### Setbacks or Sustainability?

These force protection rules require extensive setbacks, which results in extremely low densities. This is at odds with the U.S. military's requirement that all construction be "sustainable," as measured by mandatory compliance with the United States Green Building Council's LEED (Leadership in Energy and Environmental Design) criteria. The LEED criteria call for "sustainable sites" with a preference for densities of 60,000 square feet per acre, which translates into an overall Floor Area Ratio (FAR) of 1.38.<sup>28</sup> Not including the area devoted to airfields or ranges, most military installations have FARs of less than 0.1. For example, Osan Air Base has 3,960 square feet of building per acre (FAR 0.09) and Kadena Air Base has just 1,689 square feet of building per acre (FAR .04).<sup>29</sup> But the LEED standard does not translate into high-rise buildings and limited open spaces. With their three- and four-story buildings arranged efficiently around walkable "downtown" cores, town squares, and parade grounds, historic portions

of many military installations, such as Fort Belvoir, Va., Fort Lewis, and Wright-Patterson Air Force Base meet this standard. In visual preference surveys of more than 1,000 military personnel over the past 10 years, these older areas are consistently the most valued. Of course respondents love the older architectural styles, with their brick facades and human-scale windows. But they also prefer the sense of enclosure and efficiency provided by the more compact development patterns.

Despite this preference for more compact development, U.S. planners continue to segregate buildings on military installations from each other in short-sighted policies aimed at avoiding automobiles and the bombs they may carry. This approach overpowers local concerns, user needs, ecological values, and even economic logic. Moreover, it actually reduces security since it reduces the ability for natural surveillance as a result of the spread-out nature of development. Another key problem with this approach is that the U.S. military does not consider limited land availability an impediment to its anti-terrorism planning philosophy. The post-Sept. 11 planning rules that require inordinate setbacks or stand-off distances reveal a continued desire to develop at extremely low densities. At installations across the globe, the default position is to sprawl. This comes at the expense of someone else's land. This may mean that installations expand into range and training lands, which will compromise future missions. It may mean that installations expand into adjacent privately owned land, which can turn allies into opponents. When asked what the United States could do first to improve the situation in South Korea, more than 45 percent wanted the United States to use less land. Next, at 19 percent, was better education and improved regulations for the Soldiers.<sup>30</sup>

### A Way Forward?

Sprawling compounds need not be the norm. Nor do we need to build at densities that are inappropriate for American culture. High-rises are not the answer. Rather, a new model is emerging that recognizes the economic, environmental and political value of compact development. At Fort Belvoir, for example, planners have created a walkable neighborhood with mixed-use buildings aligned along a new "Main Street." Apartments over shops are in high demand. Small-lot single family homes have porches rather than garages in front (the garages are placed next to alleys in the back). Residents can easily walk to work, the fitness center, the library and the chapel. At Fort Lewis, planners are designing a new town center based on planning patterns used in small towns. It will have a town square surrounded by mixed use buildings with retail shops on the ground floor and townhomes on the upper floors. These installations are succeeding because they have focused planning efforts on formulating a sound vision for development, implemented by comprehensive Area Development Plans based on effective planning principles.

They have embraced the planning process and are using it to guide development. But these are the rare exceptions. The norm continues to be low-density, auto-oriented development that consumes vast tracts of land. The end result may be a military confronted with dwindling supplies of land, unnecessary infrastructure expenses, and costly environmental problems associated with sprawl. This is hardly a recipe for success.

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- Jamal Stevenson, Personal Interview, 21. May 2004.
- This quote is from a planner who participated in my 2004 survey of planners and architects working for the U.S. military.
- The Crime Prevention Through Environmental Design (CPTED) movement believes that proper physical design can lead to a reduction in crime. Adherents to the philosophy have their own international organization, hold regular conferences, publish a journal, and monitor a registration program for professionals. They also lobby municipalities to adopt CPTED ordinances that require designs that maximize the ability for natural surveillance, provide natural access control, and allow for territorial reinforcement. See <http://www.cpted.net/home.html>
- Nan Ellin, *Postmodern Urbanism* (Cambridge, Mass: Blackwell, 1996). p. 145. Ellin argues that in the postmodern world, form follows function, finance, and fear. She links the growing trend towards privatization of public space to the increasing fear of uncontrolled urban life.
- United States Green Building Council, "LEED Rating System Version 2.0," (2001). The U.S. Green Building Council developed the LEED criteria to quantify "sustainability" as it pertains to construction design and practices. Compliance is measured in six primary categories and points are given if a particular project complies with specified criteria. Since the LEED criteria give only one point out of a total 69 points for channeling construction to areas developed at 60,000 square feet per acre, the U.S. military can easily make up that one point using other means. For example, they can hire a LEED certified professional to write up a compliance plan (one point) or use paint that minimizes emissions of volatile organic compounds (one point).
- Author's calculations using data from United States Department of Defense and Environment), "Base Structure Report."
- Kim, "U.S. Military Causes Problems to Residents: Survey."

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