Constructing a MOUT Training Village

By Major Michael C. Wehr

How does an active engineer construction battalion execute great training, improve its installation, and contribute to the training objectives of a maneuver division...all in a span of five months? One way is to be prepared to seize every opportunity. The 92d Engineer Combat Battalion (Heavy) (ECB[H]) at Fort Stewart, Georgia, (known as the Black Diamond Battalion) is just that. During one five-month window of opportunity, the unit became part of the solution for a 3d Infantry Division (3ID) stabilization-force (SFOR) training challenge and executed its construction mission with tenacity. The result was Ern Karo Village, a training village for military operations in urban terrain (MOUT). The process could only have taken place with a solid foundation of readiness. The battalion was guided by the motto "Maintenance Is the Foundation for Everything We Build."

How well did this foundation of readiness work? The requirement occurred after the 92d ECB (H) returned in late November 1999 from a deployment to Egypt for Exercise Bright Star 2000. By mid-December, the entire battalion had signed up for another major construction mission with a very short suspense. This was possible only because our constant focus on readiness, even through a deployment, ensured the flexibility to launch into any mission that became available.

Seize the Opportunity

Early in December of 1999, the 3ID was deciding how to establish training lanes for the SFOR deploying to Bosnia (SFOR 8-9). One idea was to build a MOUT village. The problem was how to keep the cost low and still get a world-class training facility that could be used for many years. The 92d ECB (H) became part of the solution. Since we had a proven track record with a high degree of success in both Bright Star and a company deployment to Haiti, we knew we could be ready.

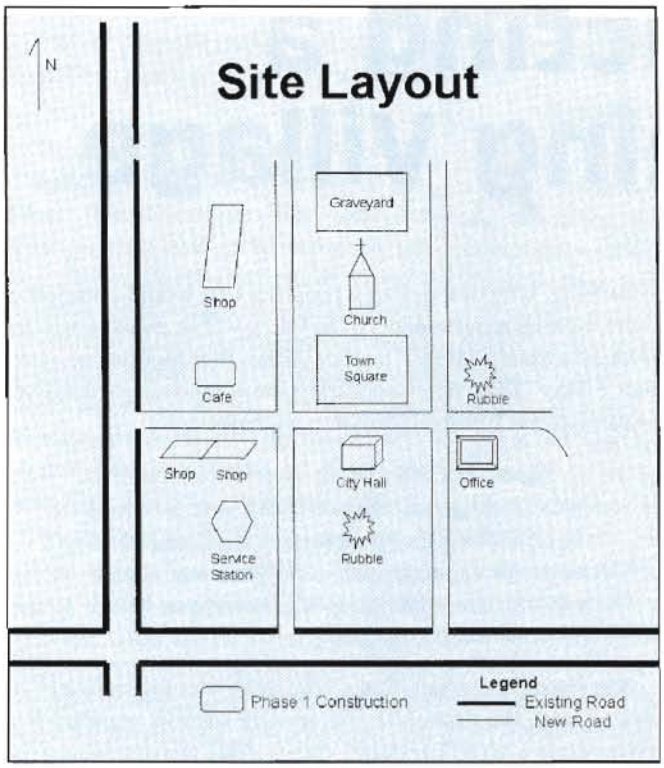
During the remaining weeks of December, while the battalion was recovering, we put together a proposal that would contribute to the training requirements of SFOR 8-9. The mission was to produce a usable MOUT facility within four months, no later than 1 May 2000. After analyzing the mission, the battalion established the following mission statement:

> *The 92d ECB (-) builds an 8- to 10-structure MOUT village starting 03JAN00 and finishing NLT 01MAY00 in the vicinity of MR223425 that meets the requirements of SFOR 8 and can be integrated into future MOUT training on FSGA (Fort Stewart, Georgia).*

The intent of the battalion commander was to provide Fort Stewart with the first-class engineering support required for constructing a MOUT training village. This mission would be accomplished by executing it at a rapid but sustainable operational tempo. Companies would have the flexibility to plan and execute their projects within an agreed-upon schedule, while sustaining maintenance and personnel readiness. Upon completion of the mission, the MOUT village would meet the training requirements of SFOR 8-9. The mission would be successful if the 92d ECB (H)—



A soldier from the 92d ECB(H) receives on-site guidance from a DPW engineer.



- Satisfied the units and agencies it supported.
- Improved construction skills of its soldiers without compromising safety.
- Sustained its equipment at combat-ready (10/20) standards.
- Maintained individual soldier deployablity and family readiness.

Designing the Buildings

To jump-start the planning process, we developed our own proposal and then sought endorsement from the 3ID. We used a village layout from previous SFOR training at Fort Carson, Colorado, to develop a concept sketch. For the buildings, we used a basic, single-room-schoolhouse design that we had just produced in Haiti. The structure was of concrete-masonry-unit (CMU) block, which provided a known reference point for company planning and material estimates. We knew that each of our four vertical platoons could build at least two schoolhouse-type structures in the required timeframe. Our concept sketch included nine structures that varied in construction effort (see figure above). The plan included two rubble buildings, two shop buildings, an office building, a service station, a cafe, a city hall, and a church. Because of the proven village design from Fort Carson, the 3ID immediately supported the general concept of the layout and the CMU-type structures.

Briefing the Commander

A mission of this magnitude and time constraint had an impact on previously planned activities and how normal garrison activities were conducted. This was best demonstrated by the fact that we gave our quarterly training briefing (minus the MOUT construction) to the commanding general on the morning of 7 December, followed by our proposal to execute the MOUT construction that very afternoon. We had to use a completely new calendar. We included a detailed breakdown of changes that would result and our ability to execute other missions. Our goal was to immediately establish an agreement on the support and current tasking relief we would need to accomplish the MOUT mission.

Defining the End State

The most important part of the agreement was the definition of the end state and what constituted success. The division approved the battalion commander's intent. The overall agreement reached was that two-thirds of the battalion would be considered in a deployed status, especially important due to the one-hour travel time from garrison to the construction location.

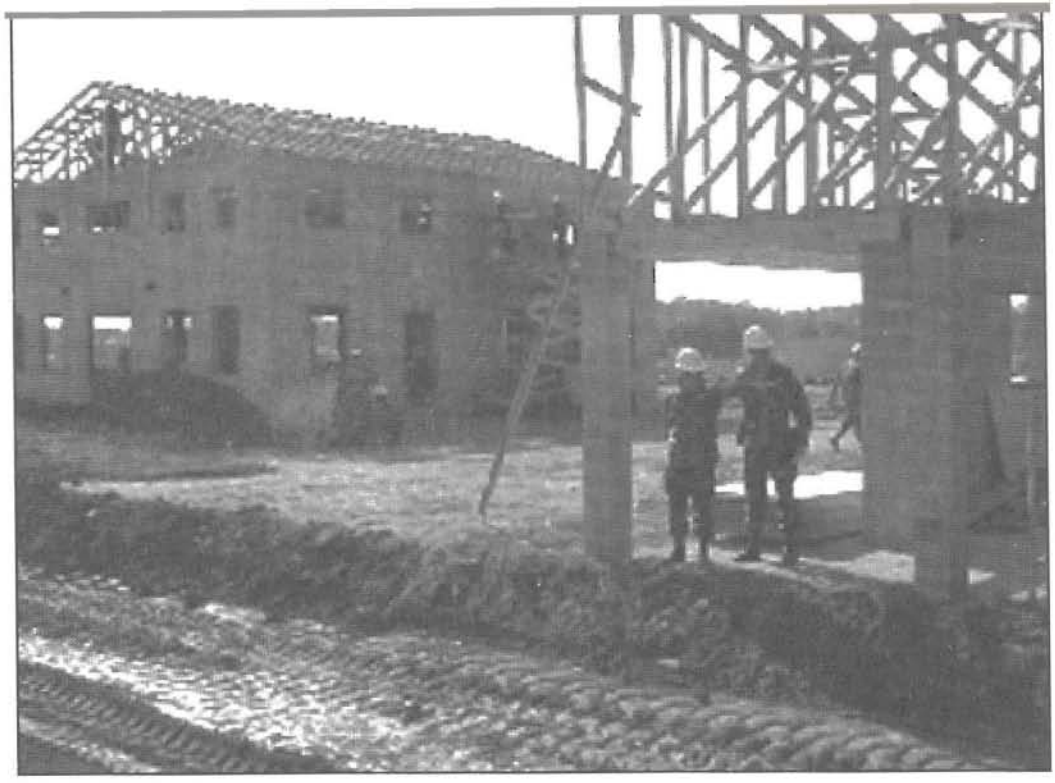
Setting Up for Success

Besides this deployed status, the 3ID and various garrison agencies were instrumental in setting us up for success on our "deployed mission." What was originally listed as assumptions in our briefings rapidly became fact. Representatives from the garrison command and range control and the G3 quickly agreed on a site for construction. The G3 agreed to manage the training activity in the area and arrange to share facilities to ensure uninterrupted construction. The Directorate of Public Works (DPW) took the lead on critical design requirements, materials procurement, special-equipment rental, and environmental and building permits. Using the basic building design of the schoolhouse, we produced a rough estimate for materials, the procurement of which DPW immediately put into motion. The majority of the materials would not change in type but would adjust slightly in quantity. All of this support allowed us to start work on 3 January, less than a month after approval of the initial briefing to the 3ID commander.

One of the most dramatic selling points to our proposed mission was the cost savings realized if we constructed the MOUT village rather than hire a civilian contractor. The project had to produce a usable facility under $500k to meet statutory requirements. The majority of the estimated cost was for materials ($386k). Rental equipment and operational tempo constituted $26k and $88k of the estimate, respectively. The estimated savings for the installation in labor and design costs was estimated at more than $700k. The true value of the 92d ECB (H) construction effort was our ability to react quickly.

Execute the Mission

The training opportunity sounded too good to be true. The 92d ECB (H) had written its own mission statement, received funding, and had tremendous support from higher headquarters and the installation, namely the DPW. However, as with any mission—especially those that are accelerated in the planning phase—there are challenges in



A view of city hall in the background at the village

execution. But the teamwork required and achieved throughout the ranks of the battalion and with various agencies on the installation made the MOUT village a reality. The 92d ECB (H) maximized the training opportunity and remained flexible to changes.

Split-Base Operations

The battalion staff was faced with the challenge of a split-base operation. Rather than deploy the battalion tactical operations center (TOC), the battalion staff continued with garrison operations, in addition to supporting the project site. The administrative, logistical, and operational support each had a different center of gravity.

Administrative Support. This support, which included logistical maintenance support, was based in the garrison. The S1 shop and motor pool provided support to the companies primarily on days when there was no construction. The usual schedule was four construction days and one administrative day each week. Initially, this depended heavily on the weather and the delivery schedules of materials. For the first few weeks of horizontal earthwork and foundation construction, the platoons worked as quickly as possible. This minimized weather impacts by getting the project "out of the ground," or having completed slabs for each building. Coordination with the DPW for ground insecticide preparation, inspections, and delivery of premixed concrete was the major benchmark for identifying which days would be used for garrison administrative support. However, once block work began, administrative-support days were more predictable.

Logistical Support. The center of gravity for logistical-materials supply was on-site, primarily because a materials yard had been established. The battalion also established other life support on-site, to include a mobile kitchen trailer, sleep tents, an ambulance with a medic, and an equipment park. Although this infrastructure had to be guarded at night, the stockpile of supplies prevented construction delays due to nonavailability of materials or equipment. It also streamlined the delivery of materials with the easier and quicker method of bulk "throughput" of resources to the location. An officer assigned to run the materials yard developed a tracking system to validate requests and initial estimates of materials. Even more importantly, the tracker provided a record of the materials required to build each structure. The initial estimates took on an accurate resolution for future construction-materials estimates. The most efficient method of gaining this information was on-site materials support.

Operational Support. Operationally, the S3 section had the same challenge of split-base support. However, the center of gravity was information, not the location. The primary ingredients for success at the construction site included a full-time inspector and a small version of the battalion TOC. This provided information needed for a systematic approach to internal and external reporting. There was no substitute for having a full-time battalion-level inspector (a sergeant first class) on-site. He provided the main link between the DPW and the leaders of the platoons that were building the structures. This coordination with the DPW inspector and procurement representatives was invaluable because of the incomplete design details, an inherent part of fast-track construction. As the platoons needed clarification, the battalion inspector worked through the specifications with the DPW. This worked so well that all design changes were accomplished on-site.

At this point, it is important to note that the support provided by the DPW on-site was key to project completion. The more efficient construction techniques that were relayed to the soldiers and the ability to design while constructing kept the

project on schedule. The small battalion TOC included a computer that each platoon used for updating its construction schedule as it encountered changes and made progress.

Methodology

The methodology of managing this project at the battalion level hinged on accurate and updated construction schedules. The intent was to maximize the training value of this project since we had established our own mission statement. While most construction projects result in well-trained craftsmen, leaders often only react and execute instead of exercising true planning and managing. To maximize the opportunity, the S3 construction officer used a software program called Microsoft® Project. The goal was to track a project with the same database that would be used to report on its status, and this software made the goal a reality.

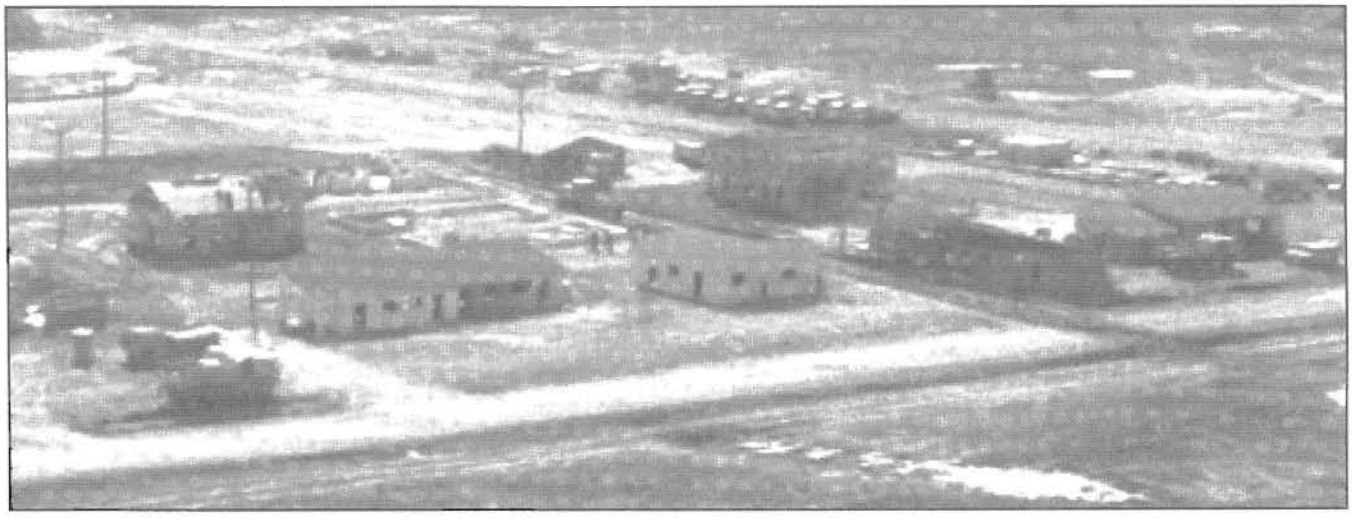
From the start, platoons developed their own construction logic networks (critical path methods [CPMs]). The initial battalion construction meeting involved a review of the best (most detailed) platoon CPM, followed by the distribution of all the platoons' CPMs to each platoon leader. The intent was to learn from each other and increase the overall project-management quality. Within two weeks, the construction officer consolidated the project files into a master battalion file. Immediately, the battalion S3 could identify and work through any resource or timing conflict. Weekly reports involved a construction meeting, platoon-leader status updates, company commander briefs to the S3, and a status update to the battalion commander.

The resolution on project status offered by Microsoft® Project enabled the battalion to immediately assess the impact of any changes in the construction schedule. Armed with this knowledge, both internal and external schedule challenges could be met with a real-time answer. This ensured that all decisions were based on quantitative impacts. Internally, the software program allowed the companies and platoons to determine the amount of overtime required to make up for delays. Also, if an unforeseen requirement (such as mandatory training) pulled soldiers off the construction site, the actual impact could be assessed. This information was used to help decide when to execute the newly identified training.

Even during the construction phase, we never lost sight of maintenance being our foundation. Platoon leaders also discovered the capability to track equipment services using Microsoft® Project. They could identify the soldiers and equipment (as resources) that would be unavailable for construction and immediately know the effect on project duration. Externally, the biggest challenges were in the form of taskings from higher headquarters and potential work stoppages due to concurrent training exercises in the same area. The battalion was able to quantify the impact of a tasking or work stoppage in terms of the resulting additional construction days. This knowledge always convinced higher headquarters that forcing the tasking or work stoppage was not worth the delay in the project completion date.

Information was the center of gravity for the operation, and the computer, digital camera, and cell phone made information work for the battalion. The computer was the primary tracking tool for construction status and material accountability and provided the leverage needed to work through the challenge of split-base operations. The digital camera provided an invaluable means for conveying the ground truth via e-mail and various presentations. While not just a way to document progress, photos were used to aid in making decisions and to generate or maintain interest in our remote project site. Besides the on-site visits that these photos prompted, there was no better way to convey the results of employing the 92d ECB (H) for construction projects. Without the cell phone, coordination would have been too slow to keep up with the demanding schedule of this project.

With all this overhead staff coordination, the companies and platoons executing the mission must be singled out as the



Ern Karo Village, shown on 11 April 2000, was constructed in three months by the 92d ECB at Fort Stewart, Georgia.

primary reason for mission accomplishment. With a freedom to execute and manage their own schedules, they finished the project in time for the 1 May ribbon-cutting ceremony.

Challenges

Incomplete plans can be a challenge to fast-track construction, and this project was no exception. Companies initiated planning with only concept sketches of buildings. Each building evolved throughout the construction period as time allowed. The intent was to move from the basic square structures of the Haiti schoolhouse to more detailed structures that would resemble a village, maximize the available funds, and still meet the deadline.



The ribbon-cutting ceremony after completion of the village

The most extensive design modifications involved the church and city hall. For example, the floor supports, interior layout, stairs, building heights, vault trusses, openings, porches, and cupolas were all modified. Some building elevations, wall offsets, and shop measurements were changed on-site. Other changes that had to be scheduled included staggering buildings to produce hidden corners, adding awnings and patios on cafes and shops, defining building areas with sidewalks, and installing other visual improvements such as lights and signs. The platoons had time to incorporate these changes because of an aggressive schedule throughout the project. An example of this included an initial one- to two-week deployment on-site.

Another significant challenge that the companies overcame was split-base operations. While the focus was forward at the construction site, garrison requirements did not stop. Company leadership had to contend with garrison operations and project supervision. One lesson learned involved the significant challenge of a company executive officer in handling the mission of the company construction officer and primary company maintenance officer. Meeting times shifted to take into account the travel requirements from the site to the garrison. Despite the challenges of initially incomplete drawings, design changes, and competing garrison/project responsibilities, the companies and platoons made it all happen and produced a village well beyond the 3ID's expectations.

Mission Accomplishment

A construction battalion can control its own destiny if it can demonstrate to higher headquarters that it can meet new challenges and still sustain its readiness. Because of the overwhelming success of the MOUT training-village project, the post leadership's trust in the 92d ECB (H) is tremendous. Consequently, the battalion has been offered several major construction projects to improve Fort Stewart's infrastructure, which will provide even more opportunities to enhance our construction skills. The process can work for other engineer construction battalions as well.

Major Wehr is the XO of the 11th Engineer Battalion (Mech), 3d Infantry Division, Fort Stewart, Georgia. He previously served as S3 of the 92d Engineer Combat Battalion (Heavy) and Engineer Brigade S4, Fort Stewart, following Command and General Staff College. MAJ Wehr holds a master's degree in structural engineering from the University of Texas, Austin, and is a licensed professional engineer in Virginia.

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