Photo-Essay From Operation Joint Endeavor—Part II

By Major Andrew Goetz

Engineers and engineer units must be able to accomplish a wide range of missions, regardless of modified tables of organization and equipment (MTOE). As an engineer observer with Combined Arms Assessment Team (CAAT) II, Center for Army Lessons Learned (CALL) in Bosnia, I found this lesson reinforced most of all. Our current division engineer brigade structure, however, is not designed to accomplish the wide range of general engineering missions asked of it in Bosnia. A large section of this essay addresses my thoughts on the shortfalls of our current structure in the heavy division. I think it's worthwhile to talk about these shortfalls even as we move toward Force XXI. We must identify the capabilities we need. Only then can we design a unit that ensures success in both the high-intensity conflicts for which we must be ready and the Joint Endeavor-type missions that we will surely continue to have.

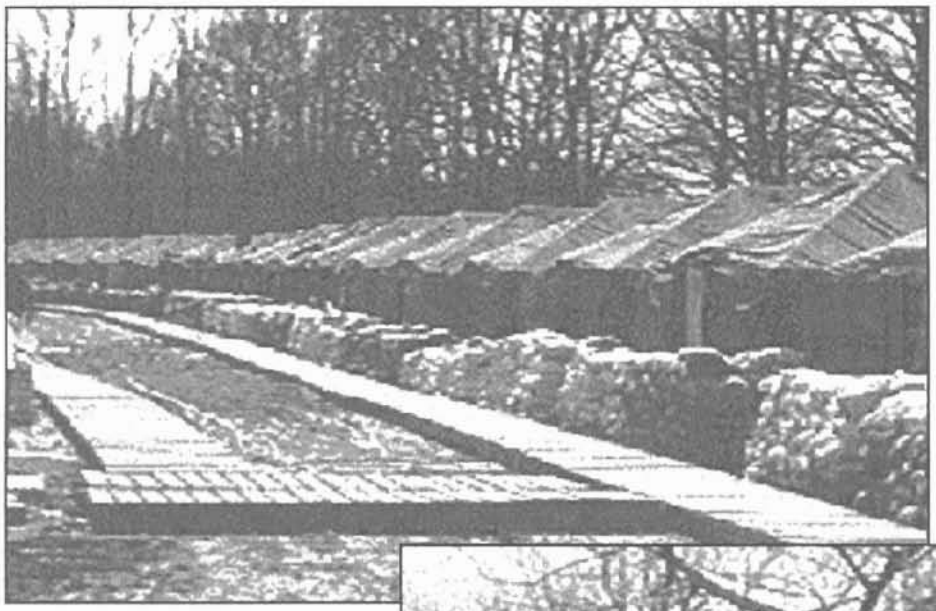
Base Camp Living Conditions

Much of the base camp construction was complete by the time I arrived in March 1996, and most soldiers were living in relative comfort, with hot showers in almost every camp. The following information shows some of the techniques used to house soldiers in Bosnia.

Brown & Root had the contract for base camp maintenance and upgrades, while engineer soldiers continue to work the force protection mission. The two missions are closely linked and require good coordination at all levels.

Task Force Eagle established a "mayor" in each base camp to serve as the camp administrator. The mayor provides transient housing, coordinates with Brown & Root, and resolves base camp issues as they arise.

Few of the camps are built from the Army Facilities Component Systems standard designs for initial or temporary construction. Most are somewhere in between these two standards and include hardback tents, Force Provider modules, container express (CONEX) camps (often called United Nations container camps), and existing facilities adapted for our use.



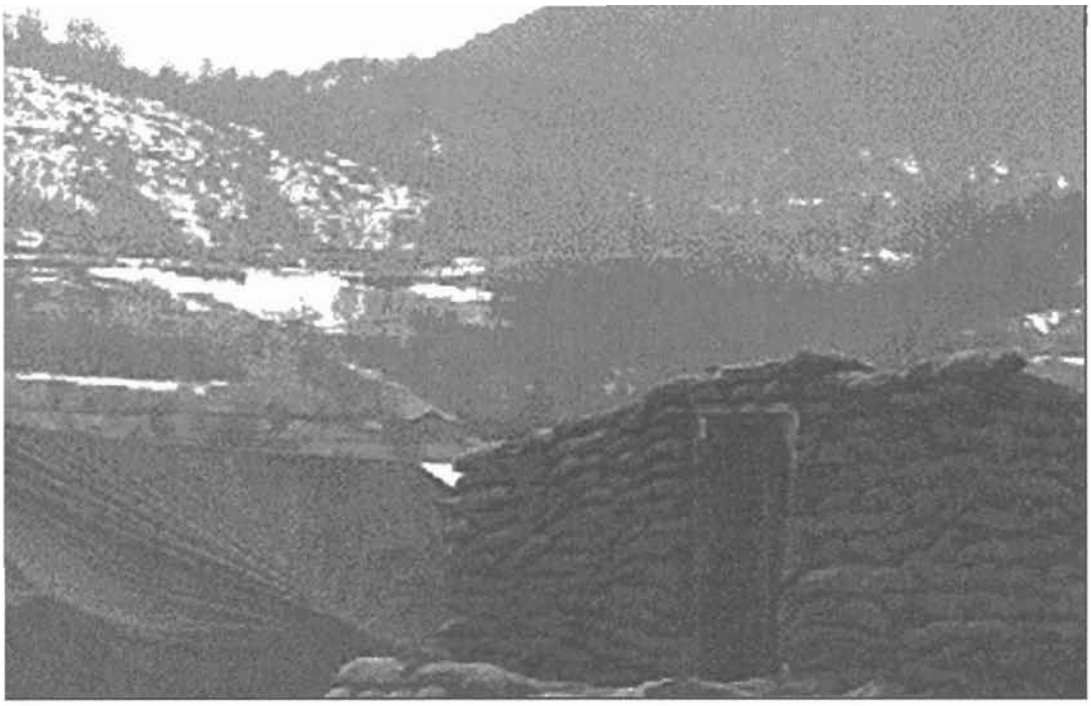
(Photo, left)

Tent City 1 in Tuzla Main, the Task Force Eagle headquarters, is the most traditional type of base camp in Bosnia. The dwellings are hardback, general purpose, medium tents with wood floors, sides, and frames. Boardwalks in most camps keep soldiers out of the mud. Task Force Eagle instituted a self-help program, which provides some materials for soldiers to build shelves, load-bearing equipment racks, and other quality-of-life improvements.

The daily ration cycle is A-MRE-A (hot meal; meal, ready-to-eat; hot meal). Most base camps supplement the lunch MRE with soup, bread, and salad or occasionally serve a hot meal. Mess halls are frequently run by or in conjunction with contractors. At Tuzla Main, the mess hall is run by contractors and is in an old Yugoslavian Army mess hall.

(Photo, right)

This photo shows the difficult conditions under which many of the base camps are built. The tracked vehicle is from the 40th Engineer Battalion. The buildings in the background are typical of those in the zone of separation. They are either destroyed or stripped of useful items, including window and door frames.



(Photo, left)

This bunker is at Lisa Base, headquarters of the 2d Brigade Combat Team. The bunker is a standard design developed by the engineer brigade. It must pass brigade safety and construction standards inspections before it is certified as complete.

(Photo, right)

This is Steel Castle, home of the division engineers and division artillery. The engineer flag flies at the 94th Engineer Battalion (C)(H). Steel Castle is a Force Provider camp. Each Force Provider module can support 550 soldiers and is comfortable, with electricity, heat, and air conditioning.

Steel Castle is built on a dirt airfield that is extremely muddy. Gravel has been laid for all of the roads, between rows of tents, and in parking areas. Drainage for this base camp, as for other base camps and the entire area of responsibility, is a major concern for engineer units.

(Photo, left)

The 2d Brigade Combat Team camp is made from military-owned demountable containers (MILVANs) with windows, doors, air conditioning, and heat. The containers are also equipped with beds, sheets, blankets, and towels—just like a hotel. This was the most comfortable camp I stayed in.

(Photo, right)
This view of a container base camp in the 2d Brigade sector shows elevated CONEXes and boardwalks. Off the boardwalks, the mud is two feet deep in places and probably was deeper early in the spring. A similar CONEX camp design links the containers into barracks.

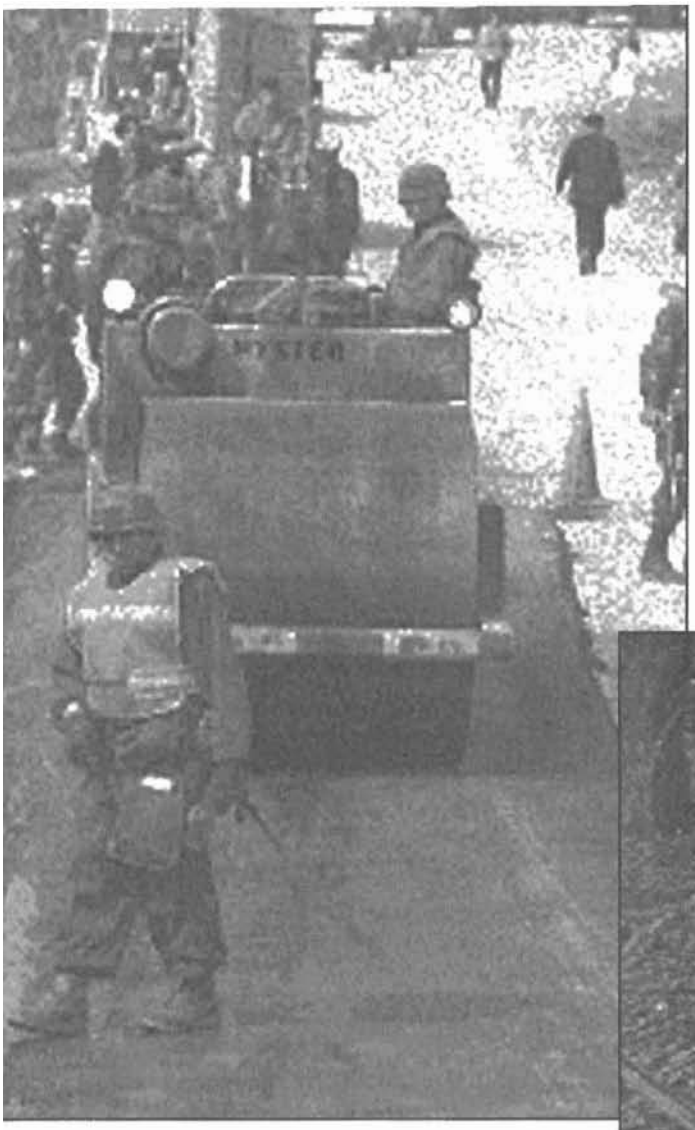
Construction Effort

The primary engineer mission during my stay in Bosnia was construction. Mine-clearing operations in the zone of separation were important, but the construction effort clearly drove the engineer train. In Task Force Eagle, the division engineer brigade was responsible for construction. The 130th Engineer Brigade was on the other side of the Sava River, not in Task Force Eagle's area of responsibility. Division engineers also managed the Class IV construction materials.

To complete their construction mission, the division engineer brigade obtained construction management sections from the 130th, the 94th Engineer Battalion, and the 535th and the 362d Combat Support Equipment (CSE) Companies. Division engineers originally asked for a group headquarters to help manage these corps assets, but that request was not approved.

The construction management section provided planning, management, and quality assurance for the division engineers, and the 94th furnished design work. Both units had the Theater Construction Management System, but problems with the hardware were not resolved during my stay.

(Photo, left)
Constructing parking lots and roads keeps every horizontal asset in country busy. Soil conditions throughout the area of responsibility are terrible, and laying gravel on the muddy subgrade does not solve the problem. Mud percolates through the gravel and causes the structures to fail. The solution is to use geotextile fabrics before laying down the gravel. Since geotextiles are not available through the military system, Task Force Eagle purchased large quantities commercially. We should get these geotextiles a national stock number and maintain them in the supply system.

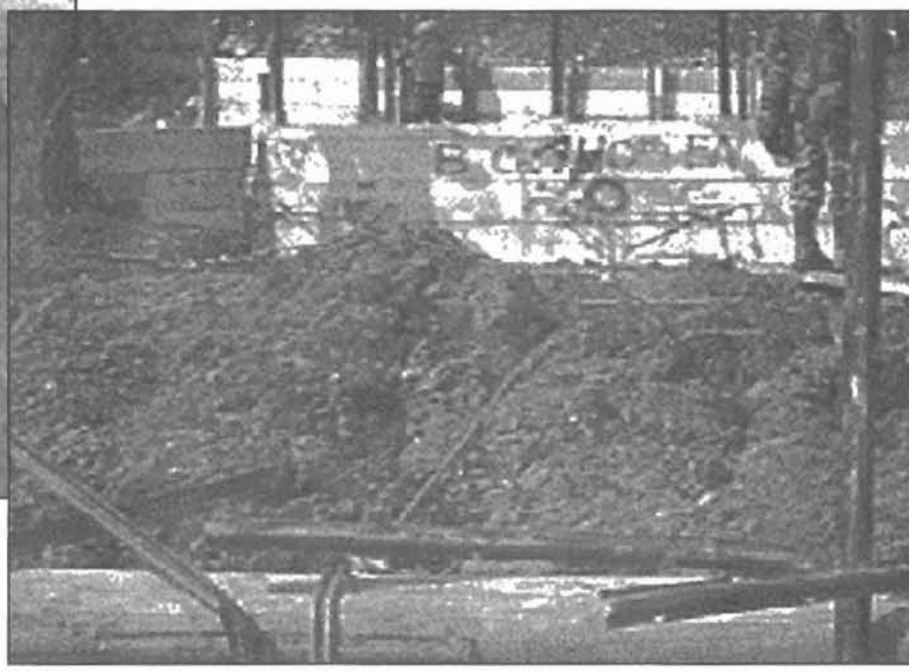


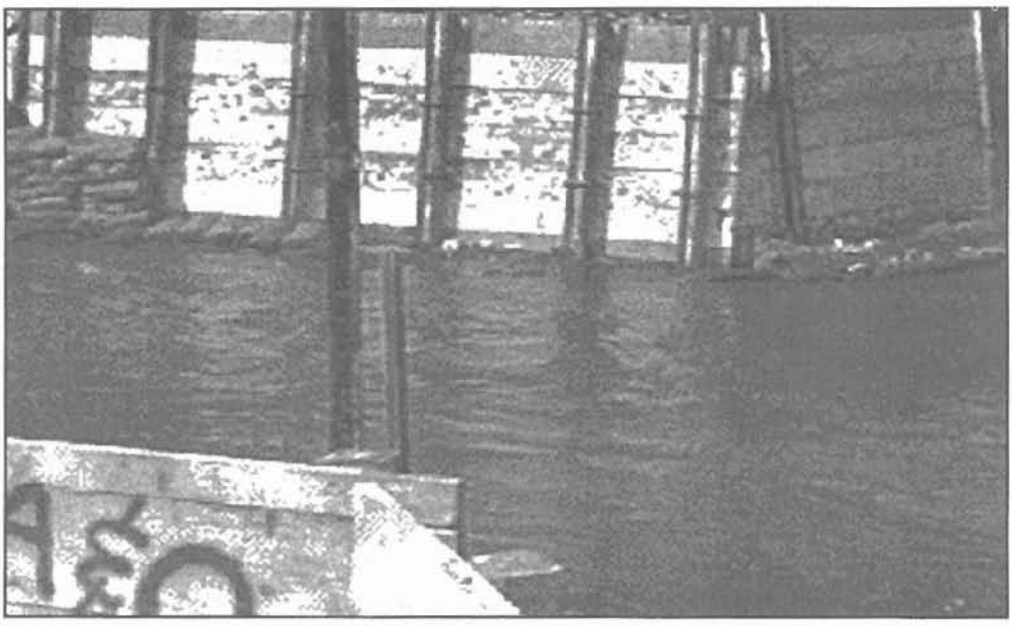
(Photo, left)

Bosnia's extremely weak infrastructure was neglected during the war, and we have weakened it further. Main supply route maintenance is a major concern throughout the country. The 94th did some paving operations, as shown above and in the next photo. Soldiers in Task Force Eagle filled potholes with gravel, cold patch, and hot asphalt. Much of this work was done under contract and was paid for by either NATO or Task Force Eagle, depending on the route and location.

(Photo, below)

The division engineer battalions are deeply involved with construction. In addition to building bunkers, two-man fighting positions and erecting hardback tents, combat engineers completed projects like the bridge abutment shown here. This abutment is for an armored vehicle-launched bridge (AVLB) on the entrance road to a base camp. The 362d Combat Support Equipment Company provided the heavy equipment, and the Assault and Obstacle Platoon, B Company, 40th Engineers, did the rest. This is a fairly significant project for an engineer battalion with the current force structure.





(Photo, left)

This is another view of the AVLB abutment. Sandbags will eventually cover the structure on the river side to protect it from erosion.

Current Engineer Battalion Strengths and Shortfalls

Operation Joint Endeavor highlights both strengths and weaknesses of the current division engineer brigade structure. The benefits having an engineer brigade commander and staff at the division level and battalion commanders and staffs supporting maneuver brigades cannot be overemphasized. The ability of brigades to receive diverse engineer units and to synchronize their efforts in support of the division is a force multiplier that cannot be replaced by an ad hoc or nonorganic headquarters. The habitual relationship between engineer battalion headquarters and maneuver brigades in Bosnia enhanced staff integration of the brigade combat team. It also allowed engineer company commanders and especially platoon leaders to focus on mission execution. The result is accomplishment of the diverse missions described in this article. The basic structure of the divisional engineer brigade is an excellent starting point for the engineer organization of Force XXI.

Despite the soundness of the basic structure, Operation Joint Endeavor highlights several deficiencies in the organization, equipment, and training of battalions configured under the engineer restructure initiative (ERI). My intent here is not to try and turn back the clock in our structure, change the primary focus from warfighting to peacekeeping, or propose a wish list that our resources cannot support. I understand the manpower and fiscal limitations we must work with. I believe, however, that we must identify our current shortfalls in order to design the best engineer structure for Force XXI.

Operation Joint Endeavor is the first true operational test of the ERI concept. It represents our most likely future operations—peace enforcement (with or without forced entry) into a theater with a poor infrastructure and a focus on force protection. From an engineer perspective, Joint Endeavor is not very different from Operation Desert Shield: entry into a theater without pre-existing U.S. facilities, no immediate combat operations, great demands for force protection, and significant construction requirements.

The primary mission of a division engineer brigade is to provide the force with mobility and countermobility support. I believe that, with some minor changes, division engineers can maintain that capability and provide critical survivability and sustainment support as well.

Maintenance

The maintenance organization in the divisional engineer battalion is not robust enough to support dispersed companies during extended operations. The small contact team attached to the companies from the battalion motor pool is usually headed by an E5 soldier. This noncommissioned officer lacks the maintenance management experience and training required to run company maintenance operations. Maintenance support problems are compounded by the low-density, unique equipment in the engineer company. Class IX requisitions and direct-support jobs for dispersed companies cannot be easily supported by one engineer unit-level logistics system (ULLS) computer. If the company goes through the task force for supplies (which is not doctrinally correct for direct support), then the engineer battalion loses sight of the maintenance status of the company. Maintenance for the small emplacement excavator (SEE) and the armored combat earthmover (ACE) was especially challenging during Operation Joint Endeavor. The two key maintenance leaders in the motor pool—the maintenance technician and the motor sergeant—are both wheeled-vehicle maintenance experts. This doesn't make sense because the pacing items are all tracked vehicles.

Shortfalls	Fixes
■ The E5 soldier in the maintenance contact team lacks maintenance management experience.	■ Add enough E6 slots for each company contact team.
■ One ULLS computer cannot support the companies in a direct-support role.	■ Add three ULLS computers and clerks to operate them.
■ The ratio of one 62B mechanic to 45 pieces of equipment is insufficient.	■ Add 62B mechanics.
■ The maintenance technician and motor sergeant are both trained to maintain wheeled rather than tracked vehicles.	■ Change one maintenance technician to an engineer vehicle maintenance technician.

Construction Management

During Operation Joint Endeavor, division engineers were tasked to manage all in-theater construction, which they accomplished with a construction management section obtained from the 130th Engineer Brigade. Task Force Eagle created the "Base Camp Coordinating Agency" to help manage requirements and priorities for base camp construction.

The construction challenges of Operation Joint Endeavor highlighted our need to develop a frame of mind that recognizes that both "combat" and "construction" engineers must be able to manage construction. This concept should be stressed in the Engineer Officer Basic Course and reinforced in the Advanced Course. In addition, the Combat Training Centers should include this concept in their training.

At the conclusion of Operation Joint Endeavor, the Engineer School should take a hard look at the division engineer brigade staff. Based on input from the 1st Engineer Brigade, they should determine if the staff is robust enough to manage the wide range of operations expected of it.

Shortfalls	Fixes
■ No significant construction management capability exists in the division engineer brigades or in the battalions.	■ Stress construction management in both the Engineer Officer Basic and Advanced Courses.
■ The division engineers obtained a construction management section from the 130th Engineer Brigade. ■ The battalions appointed either a captain or a lieutenant as their construction officer.	■ Determine if the division engineer brigade staff needs to be more robust.

Haul Capability

The current engineer battalion structure does not have the haul capacity to self-deploy on a contingency mission to an austere theater or to conduct extended operations. The motor pool cannot break its prescribed load list (PLL) into separate trucks to send to dispersed companies. This capability is a key requirement for low-density equipment for which the task force does not carry PLL. The motor pool has extremely limited Class IV haul capability in a theater where the demand for Class IV material drives much of the engineer mission.

Shortfalls	Fixes
■ Engineers cannot transport all MTOE and tables of distribution and allowances (TDA) materiel. ■ Engineers cannot transport Class IV unit basic load (UBL).	■ Add six dump trucks to the engineer battalion's support platoon.
■ The motor pool cannot haul its PLL and tool room or disperse PLL to the companies.	■ Add two 5-ton cargo trucks to the support platoon for use by the battalion motor pool.

Earth-Moving Assets

Because soil conditions are poor in Bosnia-Herzegovina, earth-moving assets are in great demand. The only asset organic to the division engineers is the ACE. It does many things well, but it cannot move dirt like a D7 Dozer. The division engineers have no equipment to haul gravel and sand. Earth-moving and fill materials were both in demand early in the deployment.

Demands on corps construction units were heavy throughout the first several months. The units could not provide all of the support required by the maneuver brigades. If engineer battalions had earth-moving and fill capabilities, they could provide much more support to the maneuver brigades. As it is, the battalions have little to offer from their organic assets.

Shortfalls	Fixes
■ Division engineers lack construction earth-moving capability. ■ Corps construction units could not fill the immediate earth-moving needs of maneuver units upon forced entry.	■ Replace two ACEs with D7 Dozers and lowboys in each engineer line company. If this is not possible, add at least three D7 Dozers to the battalion support platoon.
■ Division engineers have no dump trucks to move even limited amounts of fill.	■ Add four to six dump trucks to the battalion support platoon.

Carpentry Skills

In Bosnia, 12B engineers built protective bunkers and wood fighting positions, repaired buildings, and erected hardback tents, all requiring carpentry tasks that are rarely practiced in currently structured engineer battalions. Maintaining basic competence in these skills is not difficult, and engineers in Bosnia relearned the skills quickly. The main hindrance was a lack of power tools. While I do not promote bringing back the old pioneer tool trailer, I do promote putting some key power tools in a platoon carpenter's box.

Shortfalls	Fixes
■ Some deploying units did not train on carpentry skills needed in Bosnia.	■ Recognize that carpentry remains a 12B mission, even in currently structured battalions. ■ Use self-help and post projects to maintain a minimum level of carpentry skills in the unit.
■ Carpentry boxes had essentially been banded and stored. ■ Lack of power tools diminished the 12B construction capability.	■ Field a platoon carpenter's box with two skill saws, two power drills, and two electric nail guns.

Class IV Management

As is frequently the case, engineers in Operation Joint Endeavor were given the mission of managing Class IV construction materials. This was a major logistical planning and management challenge as well as a material-handling and transportation challenge. As part of the Class IV management mission, engineer companies assumed responsibility for running the Class IV storage yards. While engineer battalions have one forklift, which is usually old and difficult to maintain, engineer companies have no material-handling equipment. Engineers had to borrow the equipment needed to manage stockpiles of lumber, wire, and geotextiles. Since they were the primary users of Class IV materials, transportation of the materials also fell to them. As currently structured, battalions are light in haul assets just as they are in material-handling equipment.

Shortfalls	Fixes
■ Engineers were responsible for Class IV management.	■ Assume that engineers have the Class IV construction material mission. ■ Fill the division engineer brigade S4 or assistant S4 slot with a multifunctional logistics officer.
■ Units lacked sufficient material-handling equipment.	■ Field one SEE forklift attachment to each engineer company. ■ Replace and/or maintain the battalion forklift.
■ Units lacked sufficient haul capability to move Class IV materials.	■ Increase the haul capacity of the current engineer battalions.

Conclusion

I realize that we don't have the resources to do all the "fixes" in the accompanying charts. However, the capabilities that those fixes represent are ones that we must consider as we move toward Force XXI. As our missions diversify, we must break the recent trend of limiting the division engineer brigade to offensive operations. As our missions become more diverse, our capabilities must keep pace. When the maneuver commander needs engineer work, be it breaching a minefield or building a base camp, he expects his engineers to be able to do it. We must ensure that he can.

Major Goetz is attending the Command and General Staff College at Fort Leavenworth. Previous assignments include construction branch chief, U.S. Army Engineer School, Fort Leonard Wood, Missouri; company commander, 82d Engineer Battalion during Desert Storm; maintenance detachment commander, 3rd Engineer Brigade, 3rd Infantry Division; and military observer to the U.N. mission in the western Sahara.