

The Army XXI Division:

Engineer Relevancy in the Age of Information Technology

By Major General Robert B. Flowers, Mr. Vern Lowrey, and Colonel Bruce Porter

Engineers continue to prove their professional excellence and relevance in ongoing missions and training throughout the world. Today, Army engineers are deployed in more than 70 countries to support operations ranging from building roads to clearing landmines to producing terrain visualization products. In the coming months and years, Army engineers have yet another challenge to meet—the Army XXI division (see Figure 1).

Since 1993, the Training and Doctrine Command (TRADOC) has been in the process of restructuring for tomorrow's Army. Through numerous seminars, analyses, and Advanced Warfighting Experiments, we designed a new heavy division. In June 1998, Army Chief of Staff General Reimer approved the Army XXI division design, which will be fielded initially by the 4th Infantry Division at Fort Hood, Texas. The division will reorganize starting in October 1998 and will be

evaluated during a series of experiments and exercises that culminate in a Division Capstone Exercise (DCX) to validate the design sometime during the summer of 2001.

The U.S. Army Engineer School will thoroughly evaluate the 4th Infantry Division engineer structure from now through the DCX. The school will properly collect and analyze data that may lead to appropriate recommendations to the Army Chief of Staff concerning the Army XXI engineer structure. **The school does not support efforts to convert other heavy divisions to the Army XXI structure until the design has been thoroughly evaluated by the Army and appropriate enablers are available.**

TRADOC Commander General Hartzog wrote in the July-August 1998 issue of *Army RD&A* that this design is "...unique because of its smaller size (about 15,000 soldiers), its smaller and more compact combat elements (45 combat platforms in

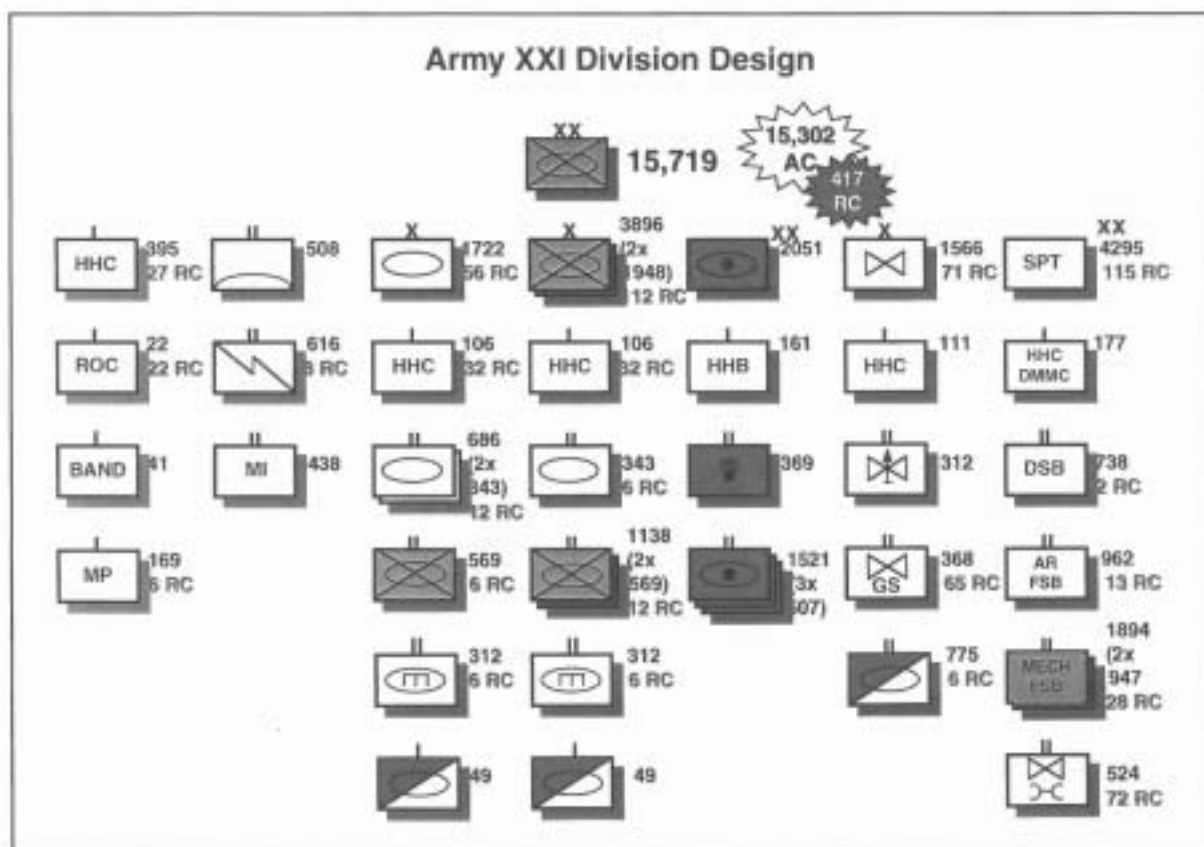


Figure 1

"Let me emphasize to everyone that the loss of the division engineer brigade headquarters in the Army XXI division design is not a 'done deal!' The Engineer School will continue to gather evidence through ongoing experimentation. We critically need help NOW from engineer commanders in the field to help retain the engineer brigade structure in the Army XXI and other heavy divisions in the future. We ask that you work your recommendations through your major Army command headquarters (i.e., FORSCOM, USAREUR, or the National Guard Bureau) to the Army Chief of Staff. We also ask that you keep key Engineer School personnel informed of your actions. We must work together to achieve our common goal."

Major General Robert B. Flowers

maneuver battalions), and its reliance upon digital technology and computers. Its size makes it more rapidly deployable. Its ability to share information horizontally and vertically across the battlefield makes it capable of sustaining a rapid tempo of planning, preparing, and executing operations as well as sustaining and recovering from operations. Its modular organization contributes to its versatility for specific missions. The division is agile and lethal and increases warfighter survivability, and it has the organizational capability for what is called "mental agility."

Army XXI Division Engineer Structure

The Army XXI division has three major changes in engineer structure compared to the current Army of Excellence division:

- An engineer staff element is part of the division headquarters and headquarters company (HHC)—versus the current separate division engineer brigade headquarters. (The Engineer School's goal remains to reinstate a divi-

sion engineer brigade headquarters as part of the Army XXI division validation process. We will accomplish this through the DCX.)

- An engineer battalion is assigned to each brigade combat team (BCT) in the division—rather than being assigned to the division engineer brigade headquarters as it is today.
- All combat service support (CSS) (less medical) for the engineer battalion is provided by the base support company (BSC) of the BCT forward support battalion—versus the current engineer battalion with its own CSS.

Doctrinal and Organizational Impacts

Army XXI division engineers will be required to change the way they operate doctrinally based on organizational changes in the Army XXI division design (Figure 2). The major organizational changes affecting doctrine include the division engineer staff element, the division engineer battalion, echelon above division (EAD) engineer support, and CSS operations. Implications of these changes follow.

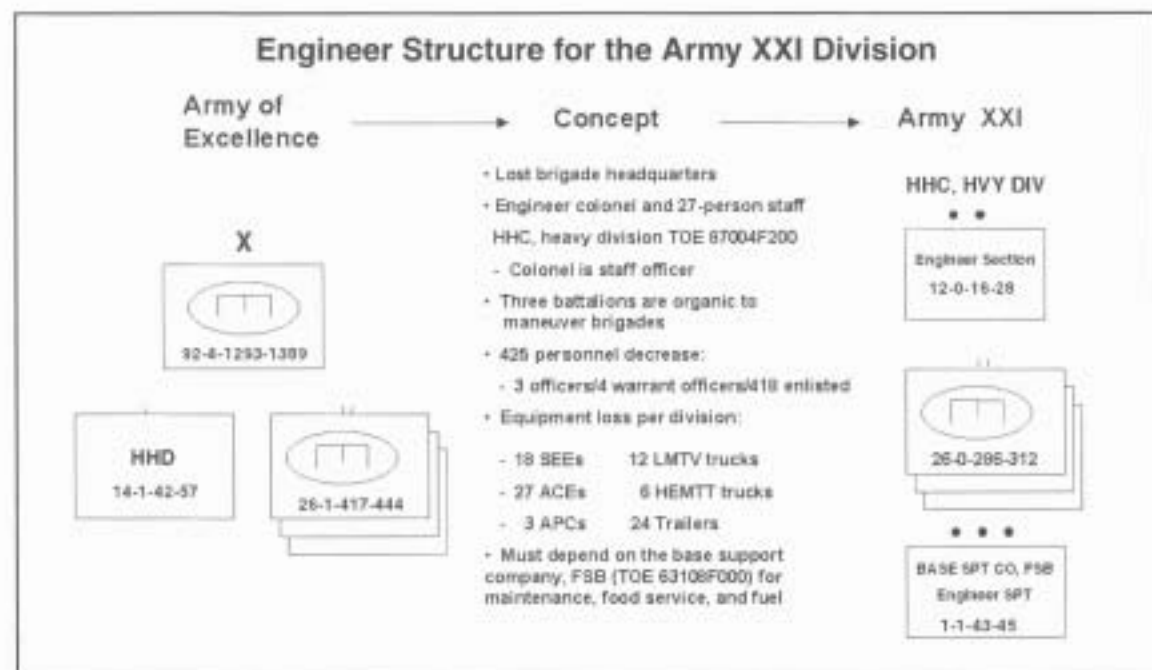


Figure 2

Division Engineer Staff

The Army XXI division engineer staff element is under the control of the division engineer officer, who remains a colonel. The engineer staff is embedded in division command posts, currently the tactical and main command posts. The engineer staff provides digital engineer input to division orders and writes the engineer annex. The staff determines additional engineer capabilities needed from EAD based on division requirements. The engineer staff maintains situational understanding of the organic division and augmenting EAD engineer operations through division digital reporting procedures. All engineer staff recommendations flow through the division G3 for action or decision by the division commander. The engineer staff normally works to integrate an engineer command and control headquarters—such as an engineer group (combat), which is task organized from EAD to support the division.

Heavy Division Engineer Battalion

Army XXI division engineer battalions are now under the BCT commander (Figure 3). They support the commander's intent by providing responsive mounted obstacle breaching and emplacement, such as Volcano-scatterable minefields. The Army XXI division engineer battalion is fully mounted and uses Grizzly breachers, Wolverine heavy assault bridging, and M9 armored combat earthmovers (ACEs) in support of brigade offensive operations. The Army XXI engineer battalion no longer has small emplacement excavators (SEEs). It has one less squad per engineer platoon, no tactical command post capability, and fewer ACEs. The engineer battalion can receive additional engineers from EAD for increased obstacle reduction and creation capability, deliberate defensive operations, operations in restricted terrain, lines-of-communication (LOC) construction, and maintenance and repair in the brigade battlespace.

The Engineer School and 4th Infantry Division Engineer Brigade are evaluating the TRADOC-approved concept of using an M2 Bradley fighting vehicle as an engineer squad vehicle to possibly replace the M113A3 armored personnel carrier (APC) in Army XXI division engineer battalions. (See article on page 7.)

The engineer battalion commander is dual-hatted as the brigade engineer and the engineer battalion commander. The engineer battalion provides an assistant brigade engineer staff element that operates in the brigade command post. The ABE provides digital engineer input to brigade orders and writes the engineer annex. He determines additional engineer capabilities needed based on brigade requirements and passes them to the division engineer. The assistant brigade engineer maintains situational understanding of organic and augmenting EAD engineer operations through brigade digital reporting procedures. The engineer battalion staff writes

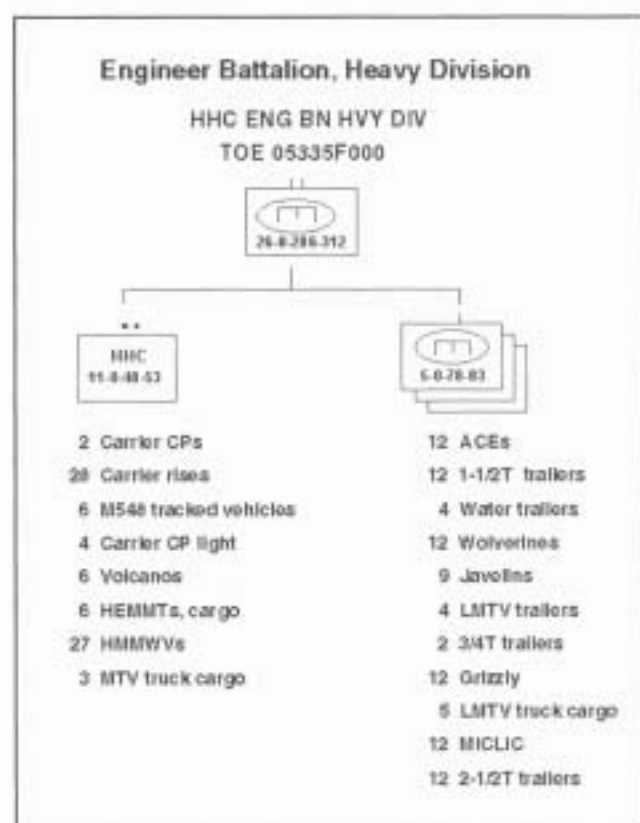


Figure 3

digital engineer orders to companies in support of task-force operations.

EAD Engineer Support

Army XXI division engineers are structured to provide only minimal obstacle-creation and obstacle-reduction capabilities. Any additional engineer support needed by the Army XXI division, such as bridging and heavy construction equipment, must come from EAD engineer forces. The Engineer School is working with TRADOC as part of the Corps XXI redesign process to determine EAD engineer doctrine and organizations required to support the Army XXI division and other maneuver forces. The EAD engineer support will come mainly from the Reserve Components of the U.S. Army Reserve and Army National Guard.

EAD engineer support normally will require an engineer headquarters element (such as an engineer group) to command and control EAD engineers operating in the Army XXI division's battlespace. Some EAD engineer units may not be digitized and thus will be unable to "plug" into the Army XXI division information networks. Extensive liaison capability may be required to effectively integrate EAD engineers with the Army XXI division.

EAD engineer support to the Army XXI division is primarily in the areas of terrain visualization, supplemental obstacle-reduction capability, mobility support through

restrictive terrain, emplacement of deliberate defenses, and force protection. Additionally, EAD engineers will construct, repair, and maintain combat trails, LOC facilities, routes, bases, and forward aviation support sites.

Terrain Visualization. It is the Engineer School's intent to provide digital terrain analysis and data-management capability to each BCT, the aviation brigade, and each division command post. This capability will be in the form of terrain analysis teams that use the Digital Topographic Support System. The Engineer School is working this initiative as the "Concept for the Redesign of Topographic Analysis Teams (Heavy)" through the Corps XXI redesign process with TRADOC and the Department of the Army. An article describing this concept will be published in a future issue of *Engineer*.

Obstacle Reduction. The Army XXI division engineer structure provides minimal mounted capability to reduce obstacles in support of task force attack operations. Reduction of other obstacle systems in the division area falls to supporting EAD engineer units. These units create additional lanes through obstacle systems to clear logistics base sites for occupation and open LOCs. Fixed- and float-bridging support continues to be provided by multirole bridge companies from EAD.

Restrictive Terrain Operations. The Army XXI division requires extensive EAD augmentation for operations in restrictive terrain, such as urban areas. For engineers, this includes the requirement for dismounted sappers to assist with reconnaissance and obstacle clearance in buildings. EAD engineer equipment will reduce and clear rubble along urban routes.

Deliberate Defense Operations. The Army XXI division engineer structure maintains minimal digging and dismounted sapper capabilities. These engineers have only Volcano mine systems to support limited hasty defense operations. This means that EAD engineers must provide the heavy engineer equipment (bulldozers and other earthmoving equipment such as SEEs and scrapers) needed to support a division deliberate defense. Major EAD engineer tasks in support of deliberate defense operations include the emplacement of vehicle fighting positions, dismounted infantry fighting positions, and conventional obstacles.

Force Protection. EAD engineers will provide the majority of engineer force-protection support to Army XXI division operations, including the construction of logistics-based security systems; tactical clearing of landmines and unexploded ordnance; construction of chemical decontamination sites; environmental hazard remediation; and camouflage, concealment, and deception support. The Army

XXI division will conduct nonlinear and distributed operations over large areas with bypassed and other enemy forces operating at will throughout the division's battlespace. Supporting EAD engineers must secure themselves against these threats up to level II because Army XXI division security forces (military police and maneuver) will not be readily available to support the EAD engineer effort.

Construction, Repair, and Maintenance. The Army XXI division will operate over areas up to 200 kilometers wide and deep. This will require exclusive EAD engineer support to construct, repair, and maintain extended division LOC facilities, bases, routes, ports, and airfields. These missions will have a significant security risk to our soldiers and equipment because of bypassed enemy forces, irregular operations, and the lack of division maneuver and military police forces throughout most of the battlespace. EAD engineers must be able to secure themselves against higher-level threats than currently is possible and maintain continuous communications with division command posts.

Combat Service Support

The Army XXI division has consolidated CSS for armor, infantry, and engineer battalions. This support is based on situational understanding of the CSS status of each unit. For example, as an engineer company runs low on fuel, that information will be transmitted digitally to the supporting CSS unit for its response. CSS units use distributed operations and velocity management tools to provide responsive support for supply, maintenance, transportation, food service, fuel, and medical support. Army XXI division engineer line companies will receive CSS (less medical) primarily from the engineer support platoon of the BSC of the brigade forward support battalion. The engineer battalion HHC will be supported by elements of the BSC. EAD engineers operating in the Army XXI division area will continue to receive support from an appropriate EAD CSS unit, such as a corps support battalion.

General Supply, Food Service, Fuel, Water, Repair Parts, and Ammunition. When engineer operations are centrally located in the BCT area, the engineer support platoon will coordinate with the supply and transportation platoon of the BSC and send normal logistics packages out of the brigade forward support area. Most supplies will be pushed to the brigade support area or forward support area by EAD units. Then the supply and transportation platoon will move them to the engineer company.

Maintenance. All required engineer maintenance support resides in the BSC. It has a maintenance section in the engineer support platoon that includes an engineer maintenance technician, senior mechanic, and three engineer combat repair teams. Each team has improved mobility with a trucked vehicle

and two wheeled vehicles and is designed to provide on-site support to a single engineer line company. Scheduled maintenance such as periodic services and maintenance problems that are beyond the capability of the combat repair teams to resolve will be provided by other elements of the BSC. The engineer support platoon may be augmented by other maintenance elements of the BSC to form a unit maintenance collection point that services all engineer vehicles from the line companies. Alternatively, engineer combat repair teams may combine with task force forward support companies to provide maintenance support. The engineer battalion HHC will be supported directly from the BSC maintenance platoon.

Medical Support. A combat medical section with 10 medics is organic to each Army XXI division engineer battalion. This organization allows for a combat medical section of three medics to be task organized with each engineer line company; doctrinal employment is one combat medic per engineer platoon. Four of the 10 medics in the engineer battalion remain on active duty, and the other six will be in the Reserve Components. Medical evacuation support will be coordinated through the task force medical platoon or forward support battalion medical company.

Training and Leader Development Impacts

Arrmy XXI division engineers must continue to train with the combined-arms team and focus training on mobility tasks. The Army's increasing reliance on systems such as air Volcano, artillery-delivered scatterable minefields, and Raptor intelligent combat outposts require that engineers be well-versed in aviation, artillery, and intelligence functions. Increased training will be required for terrain visualization and digital engineer planning and execution using digital command and control systems. Training with Army XXI division combat service support agencies will be required to properly sustain and maintain the engineer force. The noncommand operational relationship between the division engineer staff and engineer battalions under the control of the BCTs must be fostered and developed during training. EAD engineers must be included with Army XXI division engineer training at every opportunity, such as division warfighters, combat training center rotations, and during the DCX. Many challenges will arise as we integrate Reserve Component medics and EAD engineers with Army XXI division engineer training. The Engineer School is developing new strategies to assist Army XXI engineers, including Classroom XXI distance-learning capabilities, new training simulators, and digital doctrine and training products.

Materiel Impacts

Arrmy XXI engineers will have the same enabling digital command and control technologies as those available to the rest of the division. These include appropriate Army Battle Command System components such as the Maneuver Control System, All-Source Analysis System, and Force XXI Battle Command Brigade and Below Systems. The Digital Topographic Support System will enable the Army XXI division to properly portray terrain in these digital command and control systems. EAD engineers supporting Army XXI will require similar digital command and control components to obtain and maintain situational understanding with the Army XXI division.

Soldier Impacts

Arrmy XXI division engineer soldiers must continue to master basic warfighting skills, which are prerequisites for gaining digital proficiency. They will require increased skills in the operation and maintenance of digital command and control equipment. Engineer soldiers will be required to maintain assigned equipment without ready access to mechanics and spare parts. They will be required to operate in isolated locations and without responsive security support. Engineer School personnel will address these challenging realities as they participate in the ongoing Corps XXI redesign process.

Conclusion

The Army Engineer School continues to stay in the forefront of all actions associated with the standup, training, and validation of the Army XXI division design. Insights gleaned from our efforts will be used to ensure that engineers remain relevant with future light-force and strike-force redesign efforts. If you have questions, call Vern Lowrey at DSN 676-4082 or commercial (573) 563-4082 or Pete Malley at DSN 676-7282 or commercial (573) 563-7282. 

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