ENGINEER THEATER SUPPORT OPERATIONS

By Jeb Stewart

The Army's Role in Containment

From 1946 until 1991, the strategic security policy of the United States was "containment"—containment of the Soviet Union, its surrogates, and the spread of world communism. Since 1950, about half the U.S. Army has been positioned in Europe to thwart Soviet designs on western Europe. For decades, many USAREUR units were stationed almost where they were when the fighting stopped in 1945. And, until quite recently, operational-level thinking and many Army support structures reflected the World War II experience.

In 1991, containment was finally victorious. Facing intolerable pressures, the Soviet economic system collapsed and with it the Soviet military empire. The war of the giants had been averted, but frustratingly, the quarrels of the pygmies have intensified. Now our Army is coming home, downsizing, and learning how to protect vital national interests abroad by developing more deployable forces that can meet the realistic goal of dealing with two almost simultaneous, major regional crises. Our now-obsolete doctrine was developed with a global threat in mind; its basic premise was the defense of western Europe. Doctrine is now being rewritten as fast as possible to reflect and support our new security needs. Among the doctrinal challenges facing the Engineer School is the preservation of a central core of doctrinal substance as we rewrite our doctrine or participate in other proponents' doctrinal development process. Many talented writing teams are hard at work on this immense task. Unfortunately, the possibilities of inadvertent conflicts in doctrine or substantive errors are quite high.

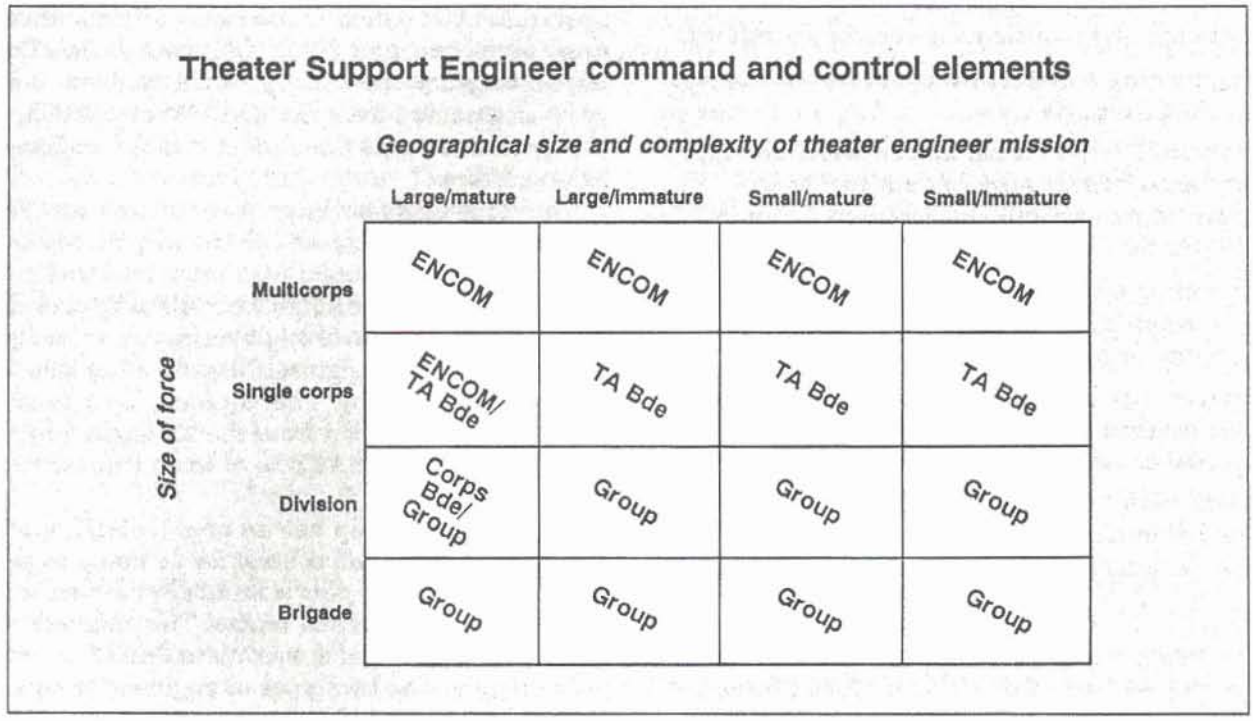
Core Guidance

To articulate the core guidance and to serve as the intellectual precursor for subsequent doctrinal publications, the Engineer School has developed a white paper that describes engineer theater support operations. This paper describes in specific terms how theater U.S. Army engineer field organizations will respond to various contingency requirements with a mix of military and contractor capabilities and how the U.S. Army Corps of Engineers (USACE) will be integrated into this effort. This article is an abridgement of the white paper. It describes what must be done to fill the doctrine and force design "gap" and discusses engineer organizations that are designed or can be adapted for theater support operations and the inclusive missions they may have to perform.

The White Paper

The current national military strategy envisions a response to regional crises with a mix of rapidly deliverable and initially self-sufficient forces. The unified commander (CinC) may assign a single service to respond or, more likely, may select from a broad spectrum of capabilities from all services and tailor a joint task force. The U.S. Army contribution to either option may be a brigade, a division, a corps, two or more corps or a task force organization of any size. This force must have the capability to operate for a notional 90-day period without the theater support structure described in current doctrine.

Some critical engineer missions are currently staffed for planning only at theater level. The absence of early-on theater engineer support could jeopardize missions to a degree that is not clearly understood outside the engineer community. If a corps is deployed, under current doctrine the troop list typically includes a corps engineer brigade headquarters and several engineer group headquarters along with engineer troop units. If a division or a brigade is deployed, only those organic engineer elements (engineer brigade for heavy



divisions, engineer battalion for light divisions and a battalion slice for a heavy maneuver brigade) are normally included in the troop list.

All these elements are focused on combat engineering in combined arms operations and have a limited capability for "theater support" engineering. In most conceivable scenarios, the combat engineers will be unable to cope with requirements for construction engineering and related services. Theater support engineering will almost certainly be conducted jointly with other U.S. service components and probably combined with our allies. Engineer topographic support (other than divisional terrain teams) is provided by engineer topographic units found in theater and corps support structures.

Reliance on Reserve Components

An important assumption is access to critical engineer theater support skills that reside either predominately or exclusively within the Reserve Components. The resolution of certain mobilization issues, the discussion of which is outside the scope of the white paper, is of vital importance to the engineer force.

Focus of Engineer Operations

At theater level, the engineer and the logistician share numerous interests; they are equally concerned about such matters as logistics base construction and the maintenance of supply routes. Their concerns are often considered so closely related as to tempt planners to combine their command and control structures. However, such a policy works to the pronounced detriment of the theater commander's ability to execute his campaign plan, which requires a flexible engineer task organization to achieve operational objectives.

In addition to supporting forward commanders, engineer forces are responsible for constructing, maintaining and rehabilitating the theater support base. The theater army (TA) commander tailors the engineer structure to theater requirements. Establishing a theater base depends heavily on the extent and nature of the civil and military infrastructure existing in the theater before hostilities begin. All engineer units (combat, construction and topographic) are focused on actions at the operational "tip of the spear."

While they fully support logistical requirements, engineers must not be rolled into the theater logistics support structure. Theater engineers are often employed in reinforcing combat engineers organic to the corps, divisions, separate maneuver brigades and cavalry regiments. The senior engineer commander ensures that all engineer battlefield functions are fully planned, integrated, synchronized and executed to support the maneuver commander's intent and scheme of maneuver. Engineers must be full participants in current and future operational planning and have their own command and control headquarters to ensure the timely and proper execution of the intent and scheme of maneuver.

The senior engineer commander in a theater of operations may be responsible for any or all of the following missions:

- Planning and coordinating combat operations.
- Engineering assessments of theater infrastructure requirements.
- Planning, coordinating, and supervising military and contract engineer support to the Army, other services and coalition forces in the theater.
- Allocating engineer resources (units, contractors, materials, and equipment) to meet mission requirements.
- Prioritizing the use of available theater engineer assets to include tradeoffs between combat and construction requirements.
- Coordinating topographic and military geographic intelligence support to the force.
- Providing real estate support to the Army, other services, and allies throughout the theater.
- Providing technical assistance to real property maintenance activities (RPMA) throughout the theater.
- Planning construction material requirements and prioritizing their use.

Engineer command and control headquarters with theater support capabilities include:

- Engineer Command (ENCOM).
- Engineer Brigade (Theater Army).
- Engineer Brigade (Corps).
- Engineer Group.

The central organizational framework for theater support operations is the theater army, of which an ENCOM is a major subordinate element. There are two ENCOMs in the current force structure; both are U.S. Army Reserve units. Each ENCOM is focused to support one of two major regional contingencies occurring simultaneously. An ENCOM normally consists of one or more engineer brigades (theater army), at least one topographic battalion, and several other specialized engineer units. The ENCOM structure was designed to support a multicorps theater and represents prudent force planning for a major regional contingency. During lesser regional contingencies, the ENCOMs are a source of highly trained professional engineers and support personnel who can deploy incrementally as necessary to augment other engineer staffs.

The TA engineer brigade consists only of a headquarters and headquarters company (HHC), with all other subordinate elements assigned based on METT-T considerations. The TA engineer brigade may have a number of engineer group headquarters, engineer battalions, companies, detachments, and teams. The TA engineer brigade area of operation (AO) normally coincides with the theater army area command (TAACOM) boundaries. During contingency operations, the TA engineer brigade, augmented from the ENCOM or USACE, can deploy and serve as the theater's senior engineer headquarters.

The corps engineer brigade commands and controls the combat engineers in the corps troop list and other engineer units task-organized under the control of the corps commander. Although not designed for theater-level engineering, as an early deployer the corps engineer brigade often gets the responsibility anyway. The corps engineer brigade requires augmentation from the TA engineer brigade, ENCOM or USACE to execute theater support missions.

The engineer group has an organic HHC and can provide command and control for as many as seven engineer battalions, plus a number of separate companies, detachments and teams. The engineer group is the principal subordinate unit of an engineer brigade. The two types of engineer groups are the combat group and the construction group. The primary difference is the size of the construction management section (five soldiers in the combat group, 17 in the construction group). The engineer group functions as the principal manager of engineer combat forces or as the construction manager for a given area or specific tasks and has planning and design capabilities. For maneuver brigade or division-level force contingencies, the group may be utilized as the command and control headquarters for engineer theater support.

Engineer Theater Missions

Planning and coordinating combat operations.
Theater engineer units conduct combat operations by providing mobility, countermobility, survivability and topographic services to maneuver units. Missions include replacing assault bridging with support or lines of communication bridging, clearing minefields and removing other obstacles, maintaining main supply routes and constructing heliports and airfields. Topographic support includes mobility "go/no go" overlays and geodetic survey products.

Engineer assessment of theater requirements.
Combatant commands maintain libraries of information on countries within their AO which the CinC has identified as potential contingency areas.

Engineer assessments describe the countries' infrastructure, including ports, airfields, soils and topography, construction materials availability and civilian construction industry. This information is useful but does not have the level of detail or accuracy required for thorough construction management planning. The first arriving engineer

command and control element will determine macro requirements and report their initial observations. This first-arriving engineer command and control element will likely be a combat engineer element and will lack the staffing or expertise to do construction management planning. The first-arriving engineer element may be able to conduct an initial assessment but will be unable to plan or execute missions to correct theater-wide engineering deficiencies. This element will likely require augmentation to plan theater-level engineering regardless of the size of the theater of operations.

Planning, coordinating, and supervising general troop and contract construction or rehabilitation support to the Army and other services and allies within the COMMZ and construction support in the corps areas. The engineer supports the theater of operations through construction of new facilities or repair or modification of existing facilities. Wartime facility requirements will be satisfied, in order of priority, by—

- Maximum use of existing facilities (US- or host-nation controlled).
- Modification of existing facilities rather than new construction.
- Expedient and initial standard construction and site preparation necessary for emplacement and operation of unit equipment and bed-down of troops.
- "Temporary" standard construction.

The CinC establishes broad construction policies and standards and designates a staff engineer, who may be from any service. To assist this engineer, the CinC may establish a regional contingency engineering management (RCEM) cell. This cell provides policy interpretation, oversight and project prioritization recommendations. The RCEM cell does not have command and control responsibility. Command of Army engineer theater-support forces rests with the senior engineer commander, normally the ENCOM commander, who may wear a second hat as the regional contingency engineering manager. The mission of the regional contingency engineering manager may include the following:

- Set construction priorities and policies based on CinC's guidance.
- Allocate force construction capability.
- Balance engineer support to operational and logistical requirements.
- Manage construction materials.
- Plan for future construction.
- Program construction funding requirements.

Allocating engineer resources (units, contractors, materials, and equipment) to missions. The senior engineer headquarters will allocate scarce resources and adjudicate among claimants. The requirement may fluctuate significantly between mature and immature theaters. For example, during Desert Shield, 26 of the 29 engineer battalions in the theater were assigned to the two corps engineer brigades because much of the rear infrastructure was already in place.

Missions can be executed by troop units, host nation, or contracting. Engineer services include but are not limited to hazardous waste and waste water disposal, trash removal, maintenance services, construction equipment/operator services, and firefighting. Contingency force operations may have an austere combat service support base and will require contract-provided services and supplies. The use of large, multifunctional civilian contractors, LOGCAP (Logistics Civil Augmentation Program) to perform various theater-support engineering jobs is usually desirable and may be feasible in many overseas areas. The Corps Support Command (COSCOM) or Division Support Command (DISCOM) will operate a contracting element to provide contracting support. When a full corps or a complete division is not deployed, the COSCOM or DISCOM may provide a contracting task force tailored for the specific contingency operation. The RCEM cell will determine the need for and availability of engineer services contracting.

Prioritizing the use of engineer assets. The senior engineer will be tasked to refine the notional time-phased force deployment list (TPFDL) to more closely match existing requirements with capabilities. Focusing on the campaign plan, the senior engineer commander must make tradeoffs between combat and construction engineering. Sometimes, despite the versatility of the engineer force, this process results in apparent "square pegs" as units temporarily perform missions for which they are not trained or equipped in anticipation of future requirements for work in which they are. This concept outlines the use of selected ENCOM elements and their entry into the deployment stream through the process of force modularity.

The ENCOM will provide a construction management cell to the senior deploying engineer element. This Army reserve cell will train in peacetime for ENCOM or contingency force engineer missions. The cell will be quickly called to active duty for deployment during contingency operations.

Early deployment is critical because the cell will be involved in force reception and bed-down. The cell will become the senior engineer commander's construction management staff. It will be equipped with and trained in the use of an automated

construction management system (for example, the developmental Theater Construction Management System or a similar system). If and when the theater matures and the ENCOM deploys, the ENCOM and brigade commanders will coordinate a hand-off of construction management responsibilities.

Coordinating topographic and military geographic intelligence support to the force. Commanders planning or executing contingency operations will require accurate, timely, and tailored topographic engineering products in order to visualize, operate on and exploit their battle space. Topographic engineers will provide critical mapping, charting and geodesy (MC&G) support and products during contingency operations. Contingency operations may occur anywhere on earth, and surprisingly little of the earth's surface has been accurately mapped. Contingency operations frequently occur, as if with malicious intent, in sparsely mapped areas. Topographic engineering support will provide operational and tactically oriented terrain analyses, nonstandard and substitute maps, and survey data to combat, combat support, and combat service support forces in all phases of operations throughout the contingency area. The Defense Mapping Agency (DMA) will be responsible for producing all standard MC&G products and data bases.

Throughout the operation, topographic engineer planning and control elements will process and refine topographic information passed between deployed forces and DMA. Some terrain features may change rapidly once operations begin; others may be unaltered by operations. Knowledge of the terrain will rapidly increase as a result either of focused study or on-the-ground reconnaissance. Topographic engineers will maintain qualitative information concerning coverage, resolution, standards, source, currency, accuracy, uncertainty, and limitations of all topographic data. They quickly replace older, superseded data to ensure that users are provided the most current data available. This support includes passing provisional or locally acquired data back to DMA for possible exploitation as DMA updates and maintains its standard data bases and products.

The commander of the topographic engineer battalion identified within the OPLAN/CONPLAN/-OPORD to provide topographic engineer support will command all topographic units involved in the operation. The topographic engineer battalion provides general support to unified and specified commands and to subordinate topographic units for requirements beyond their capabilities, and provides topographic support to all theater Army units. The senior engineer commander will serve as the theater topographic engineer and, as such, will recommend the size, composition, support relationships, and location of the topographic engineer force.

Topographic support may require augmentation by an ad hoc rapid-response terrain team to ensure the proper level of support. The ARFOR command MC&G officer will request and coordinate the formation of a team based on the urgency and quantity of the support required. The team will be developed from reserve units, topographic units not deployed, and technical experts from Army laboratories and MC&G production agencies. Its mission will be to help deployed forces develop a detailed topographic data base quickly to allow development of required MC&G products. Deployed topographic units will continue to seek host-nation and all-source intelligence data to provide required MC&G products and enhance the force capability.

Providing real estate support to the Army, other services, and allies throughout the theater. The US Army Corps of Engineers (USACE) is the Army's real estate agent for acquisition and disposal of real property and is capable of providing real estate services for all services. During combat or contingency operations, the Chief of Engineers discharges his real estate functions through the theater commander. The work is actually done by the ENCOM, but if an ENCOM is not deployed, it may be done by the senior engineer headquarters with augmentation support. The ENCOM's contingency/wartime CAPSTONE organization includes Army engineer real estate (AERE) teams. These teams may provide general support to TAACOM in order to conduct real estate operations within a designated area. To support Operation Desert Shield, we needed an immediate in-country real estate contracting capability before the ENCOM was activated and deployed. This concept codifies many of the successful doctrinal improvisations from Operation Desert Shield and Operation Restore Hope that can be applied in future force projection operations.

USACE will provide a contingency real estate support team (CREST) for deployment as part of the contingency force. The CREST personnel will be predesignated volunteers who possess the requisite knowledge, skills, and abilities to successfully accomplish all tasks. They will maintain passports, immunization certificates, and other documents necessary for quick deployment and will have the required training to operate in a combat theater environment. The USACE CREST will participate in the annual training of the ENCOM personnel and their AERE teams so that improved training and close working relationships are achieved prior to operational deployment. The USACE CREST and ENCOM AERE personnel will review OPLANs for real estate impacts and provide recommendations to the planning headquarters. Among the areas reviewed

will be level of infrastructure development and facilities leasing ceilings for potential operational areas.

When the contingency force deploys, the USACE CREST deploys and serves as the real estate cell. The CREST is attached to the senior Army engineer headquarters in theater. If the campaign develops a theater-level structure, this cell will become a staff element to the theater engineer. Among the duties of this staff element are:

- Provide technical real estate guidance and advice to the contingency force and/or theater commander, staff and all echelons of the contingency force and theater command.
- Recommend real estate policies and operational procedures to the contingency force and theater logistics officer.
- Acquire, manage, dispose, administer payment of rents and damages, handle claims and prepare records and reports for real estate used within the contingency force area or theater of operations.
- Exercise staff supervision over real estate operations of subordinate Army commands and provide real estate support to other U.S. services.
- Ensure compliance with international agreements and the laws of land warfare.
- Direct processes for seizure, requisition, or lease of real property in liberated or occupied countries.

If and when the theater matures and a Reserve Component ENCOM deploys, the USACE CREST will become OPCON to the ENCOM. The AERE teams, when employed, will conduct real estate operations in conjunction with the USACE CREST according to the theater real estate policy. The AERE teams' duties are:

- Acquire, manage and dispose of real estate.
- Investigate, process and settle real estate claims.
- Conduct utilization inspections.
- Conduct real estate operations forward of the COMMZ.

As combat subsides and forces begin returning to CONUS, real estate functions will be conducted by the USACE CREST as the ENCOM AERE team is redeployed.

Providing technical assistance to Real Property Maintenance Activities (RPMA) throughout the COMMZ. Principal RPMA functions in a theater of operations include the repair and maintenance of facilities and utilities, fire prevention and protection, and refuse collection and disposal. RPMA is the responsibility of the TAACOM or area support group, who look to a senior engineer (normally a TA brigade or a group) for technical assistance and support that are beyond the capability of their attached engineer element. RPMA work typically involves host-nation support and local contractors; however, active military operations may limit the feasibility of this option.

Managing selected construction material stocks. Engineers look to a corps or division materiel management center for most of their Class IV construction materials. Adequate Class IV supplies and timely delivery of the materials to the work sites are key to mission accomplishment. Materials typically include nails, ready-mix concrete, concrete building blocks, lumber, plywood, wire, pipe, fittings and hundreds of other "hardware" items. During initial contingency force operations, we may buy most of our Class IV requirements on the local market. We can expect little mission sealift or airlift space to be allocated for construction materials, especially in the early phases of an operation. Complete reliance on locally procured materials will be challenging. Some items may be scarce, and some manufactured items will differ significantly from U.S. building codes specification items. Dimensional materials may be cut metrically or rough-hewn.

Engineer participation in construction material purchasing is key to adapting and substituting local materials. Engineers must identify requirements with considerable specificity (including acceptable substitutes) and work with the logistics support unit to develop a delivery plan that gets the required materials to the right place and in time to keep engineers working. The COSCOM, DISCOM, or the area support group will direct a survey of the local construction material market, identify potential sources of Class IV materiel, and open blanket purchase agreements with local vendors. Engineer unit S4 officers will be appointed ordering officers to execute purchases against these agreements and will maintain a stockage of high demand items. Scarce items will be managed by the senior engineer commander. Subordinate engineer commanders will report on-hand quantities of all construction materials (Daily Logistics Report). Stockpiled materials are subject to cross-leveling. Consideration should be given to pre-positioning selected Class IV materials and/or identifying "basic load" of these materials to accompany early deploying engineer units.

The Future

Doctrine determines how engineers think about waging war and drives weapons and systems design. Doctrine incorporates the equipment

and weapons of war and the cultural strengths, weaknesses and values of an army and its society into coherent concepts of how to conduct a battle. Doctrine helps soldiers and their leaders act in the absence of detailed instructions that would require continual restatement for different situations. Sound doctrine, intelligently applied to the circumstances, can have a profound, even war-winning effect on an army's performance. Doctrine formulation is a continuous process, reflecting the changing calculus of geopolitical and "break-through" scientific events. Obsolete doctrine, especially when rigidly applied, can have a disastrous effect.

By articulating our core values and vision in white paper form, the Engineer School is providing both an azimuth for coherent doctrine development and a starting point for debate within the engineer community. We need the experiences and thoughts of our engineer senior leadership. Because the impact of engineer work upon theater support operations is not fully understood outside the engineer community, many of our unique concerns may be overlooked unless we speak up as the Army wrestles with all the implications of force projection from CONUS. We urgently need your help if we are to make our positions heard.

Comments are appreciated and the mode is unimportant. Write: Commandant, USAES, Attn: ATSE-CDB-S (Stewart), Fort Leonard Wood, MO 65473-5000; call (314) 563-4083; or send via PROFS: WOO1 (STEWARTJ). Your input can help us formulate dynamic doctrine to carry the engineer force into the 21st century and beyond.

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The ENGINEER Writer's Guide

We think engineers take a special pride in their profession, and ENGINEER is always looking for articles from readers who want to share their expertise, experience and ideas.

If you're a potential contributing writer, here are a few "writer's guide" tips that should help steer you in the right direction:

Articles can cover engineer training, operations or doctrine, engineer equipment, history, or other areas of general interest to an engineer readership.

We're especially interested in articles that have a "how-to-do-it-better" theme. For instance, we're not looking for articles telling readers how you conducted a routine field exercise. But if you think you have a "new-and-improved" way of conducting a tactical operation, training exercise, or other operational procedure that may prove helpful to other engineers—that's what we need.

Articles should generally come from contributors with firsthand experience with the subject being presented. Avoid theatrical writing styles like: "It was a dark and stormy night...," or "...the soldier blazed through the jungle on his lumbering D7, providing a trail of freedom for the other vehicles...."

Articles should be concise, straightforward, and in the active voice.

Length should range between 2,000 and 4,000 words, and the text should be typewritten and double-spaced. Generally, each such page will contain from 200 to 250 words.

Articles containing attributable information or quotations not references within the story should carry appropriate footnotes.

Manuscripts must be original, unpublished, and not under consideration by another publication. Normally, you can expect a reply to your submission within two weeks after we receive it.

All submissions are subject to editing.

Contributors are encouraged to include black-and-white photos, artwork, and/or line diagrams to help illustrate your article.

Include your full name, rank, current unit and job title. Also include a list of your past assignments, experience and education, your mailing address, and commercial daytime phone number. Send your articles to: Editor, *ENGINEER* Professional Bulletin, ATTN: ATSE-T-PD-EB, Fort Leonard Wood, MO 65473-6650.

If you have any questions about an article you're working on—or considering writing—give our editor, Catherine Eubanks, a call at Autovon 676-4104, or commercial (314) 563-4104.

We look forward to hearing from you. P.S. *ENGINEER* welcomes response from our readers. Letters regarding information in our magazine are published in our "Letters to the Editor" department. Let your thoughts be heard.