Construction Unit Training Challenges:

A Proposal for Construction Engineer Qualification Tables

By Captain Jacob R. Kondo

The deployment rhythm for a typical engineer construction unit has had a negative effect on the quality and length of training in these units. The emphasis on quality commercial construction has declined in these units while the type of "hurry-up-and-build-it" projects typically found in combat zones has increased. The construction tasks in the Soldier Training Publications (STPs) are not being taught and evaluated to the standard of commercial construction, leaving Soldiers inexperienced except for the brief overview they receive in advanced individual training (AIT). Even AIT does not teach all of the tasks in the STPs. Some of these construction tasks require the Soldier to learn at the unit. Construction units in today's Army need a solid set of guidelines—similar to the standardized method used by most combat engineer units—to train and evaluate their subordinate units.

Proposed New Tables

The concept of combat engineer qualification tables can be used in conjunction with the construction tasks established in the individual military occupational specialty (MOS) STPs to form new construction engineer qualification tables. The construction tables would have a biannual schedule that provides construction MOS Soldiers a refresher on AIT-taught tasks and teaches actual unit-specified tasks that are in the STP. This schedule would also ensure that companies have a mandated time to train their Soldiers on construction STPs. This proposed schedule and the construction tables are a method the construction battalions can integrate into their training calendars, giving a solid set of guidelines to assess the companies.

Table I. Construction tasks can be divided into three different engineer tables and should be taught using the *crawl-walk-run* method. Table I, in the *crawl* phase, begins with individual companies teaching Soldiers straight from the field manuals (FMs) and STPs in a classroom-type environment, where most of the learning is done by reading the FMs and applying the lessons in a practical exercise. Outside agencies can help during this phase as well. The 92d Engineer Battalion invited representatives from several organizations to Fort Stewart, Georgia, to teach its Soldiers. These organizations included AutoCAD®, EMC Engineering Services Incorporated, the United States Army Corps of Engineers (USACE), the Directorate of Public Works (DPW), Hilti Corporation, and Stihl® Incorporated. All of them can have a part in the one-month block of instruction for Table I, but units must plan thoroughly to integrate these resources into training.

This means that the MOSs of greatest benefit to Soldiers need to be assigned to the class. For example, the 92d sent its company executive officers and drafters to the AutoCAD class, construction supervisors to the EMC and USACE internships, and skill level one and two Soldiers to the construction tools and equipment licensing classes presented by Hilti Corporation and Stihl Incorporated. All of this outside training should be within the one-month time frame and synchronized with each company's classroom training. Once the companies have completed their internal evaluation of Table I, they can request an evaluation from the battalion. The evaluation will consist of a written test based on the guidelines established in the STPs. Once all Soldiers pass the written test, the unit can proceed to the *walk* phase, or Table II.

Table II. Table II consists of small "battalion-owned" projects that the companies must complete and inspect before moving on to the next table. Battalion-owned means that the projects are constructed for the battalion and no other outside unit or agency. This approach ensures that the Soldiers remain in a focused learning environment. The companies begin with the design phase of the project when the company construction officer and the platoon leader develop a design and a bill of materials (BOM) based on the scope of work derived from the subject areas of the STP. For example, if a vertical company has reached the *walk* phase, then its individual project must include a scope of work that encompasses all subject areas for electricians, plumbers, carpenters, and masons. The project should be very basic and not become a permanent structure. Examples of projects allowed for this phase would be wood footing-supported maintenance sheds constructed by a vertical company and equipment operator training for a horizontal company.

Once the company has designs and an initial BOM, the project packet should be submitted to the battalion, which will evaluate and critique the packet and allow the company to move on to the construction portion of this phase. When the project packet is approved, the company will order, track, inventory, and store its BOM. When construction begins, the company will inspect and evaluate individual Soldiers through quality control (QC) personnel, using the same evaluation criteria as the STPs. The battalion will use the completed evaluation to track the project and coordinate with DPW to inspect it with QC personnel. The 92d Engineer Battalion has employed these QC steps successfully and found that DPW has been very willing to provide additional training to our Soldiers. As the QC personnel evaluate Soldiers and their individual tasks, the battalion will evaluate the company QC personnel and how they inspect the job sites. The battalion will also use the evaluation criteria found in the STPs for the construction engineering supervisor (MOS 21H) and construction equipment supervisor (MOS 21N). As quality assurance inspectors, the battalion also inspects the company projects. This allows the battalion to oversee evaluations by the QC personnel and also evaluate the overall company command and control of the project. After the construction portion of this phase is complete, the project will undergo prefinal and final inspections and typical close-out procedures by the companies while the battalion is evaluating.

Military surveyors receive a class on soil analysis during Table I training.

Soldiers from the 92d Engineer Battalion lay the first course of a concrete masonry unit wall.

Table III. Table III, the *run* phase, is the culminating training event in which companies will design and construct their own capstone project. The project will be larger than the Table II project and will have an outside agency as the customer. Since there is an actual customer, all initial designs and project packets will be synchronized with the battalion and the company. Once the project packet is complete, it will be sent to the customer for approval. Due to the typical six-month waiting time that DPW and the Directorate of Contracting require for all projects, the project packet must be submitted during the first phase. This will require the battalion-level construction officer to do all initial planning and coordination with the customer at the start. Once the company reaches the third table, then in-progress reviews between battalion and company will begin and the company will plan the actual project packet.

Timeline

The timeline for this type of training is spread throughout the year. The training will be biannual, with the first qualification tables starting in Month One and ending in Month Six. Table I will take place at the beginning of the course and will typically take a month to complete. This leaves five months to complete the small and capstone projects during Tables II and III. Performance of Table II will determine if Table III can actually be accomplished. If the company's Soldiers are ahead of schedule during Table II and appear to be retaining their STP skills, then the battalion may allow the company to continue on to Table III once Table II is complete. On the other hand, if the Soldiers are falling behind and not retaining their STP skills, Table III can be cancelled and Table II extended to the end of the six-month period. Once that period is up, the

A Soldier uses a D7 bulldozer to push-load a scraper.

Carpenters train on their skill level one tasks.

company can start over and begin the second iteration of Tables I through III. This will allow for all the Soldier and leader transitions during that six-month period.

Potential Challenges

The most significant uncertainty for this proposal is how well it will match up with units' training calendars. Each unit must compare and synchronize its long-range training calendar and balance out its construction tasks with common Soldier tasks. Another challenge may arise if the customer approval process for the capstone project starts in Month One, which will leave little flexibility in the timeline in case a company does not pass the battalion evaluations for each table. In that case, a company could delay its capstone project (Table III) and use that time slot to continue working on Table II. The only coordination needed for this postponement would be to inform the outside agency sponsoring the capstone project.

Another consideration is the budget, time schedule, and agenda of the DPW or other outside agency. DPW's budget and time schedule may conflict with the battalion's training calendar. Past projects have shown that the time between the planning and construction phases varies widely due to the unpredictable processes that all BOM and project approval requests must undergo. Since there is no definite timeline for these processes, it will be difficult for the battalion to define the training timeline for the projects and to synchronize DPW's calendar with its own. To prevent lost training time, all BOM and project approval requests will be approved three months before any construction begins (Table III). These approvals from DPW will be one of the decision points that will determine if the companies will reach Table III. This will eliminate any undefined variations in the timeline between the planning process and the construction phase. Having the project approved and the BOM awarded before the construction phase will allow the companies to create a more accurate critical path method and synchronize that timeline between DPW and the battalion.

Conclusion

The little training time most construction units have between deployments is valuable and should be used to its fullest potential. Simply assigning construction projects to subordinate units does not teach Soldiers the fundamentals of construction. That is why there should be a redundant teaching system that starts with the fundamentals of construction. Soldiers start with the basics and learn straight from the STPs and FMs. Once Soldiers pass the first table, they will use what they have learned and apply it first to a small-scale project and eventually to their capstone project. This article proposes to overlap lessons that teach Soldiers their individual construction tasks because redundancy is the best way to reinforce training. The overlap also helps train new Soldiers and newly promoted noncommissioned officers (NCOs). Soldiers and NCOs who might have missed a previous table will be accounted for during the next six-month training cycle. This proposal is one way the Engineer Regiment can ensure that construction units are properly trained on basic skill sets and can execute projects in a variety of circumstances.

Captain Kondo is the 92d Engineer Battalion construction officer. He attended the United States Military Academy at West Point, New York, and holds a bachelor's in civil engineering.

The author would like to thank Lieutenant Colonel Diana M. Holland and Major James Schultze for their help and support in writing this article.