CHAPTER 2
Maneuver

Engineer support to maneuver units requires detailed planning. Engineers may be part of the maneuver unit's formations and, if so, will provide the combat multiplier of engineer effort. *FM 90-13-1* is the primary doctrinal manual for breach planning. *FMs 20-32 and 90-7* are the primary doctrinal manuals for obstacle planning and construction. These references provide the technical information required to plan engineer support for offensive and defensive maneuvers.

The platoon leader should have an understanding of the tactical decision-making process, troop-leading procedures (TLP), and orders preparation. *Figure 2-1, page 2-2,* shows the relationship between TLP, the estimate process, and the intelligence preparation of the battlefield (IPB) process.

In addition, the platoon leader must advise the maneuver commander on the military aspects of the terrain since he is the terrain expert. Normally, the platoon leader only has a map to prepare his terrain analysis. However, he should request terrain-analysis products from his parent engineer company. In both light and armored units, the engineer company has access to terrain-analysis and terrain-visualization products or the ability to develop them. These products greatly aid platoon-level planning.

OFFENSE

The platoon leader is the key engineer expert to his supported unit. He must make several key decisions during the offense. He recommends where critical breach assets are located and which ones are best based on the situation. For example, the supporting engineer platoon leader, in an armored unit, would recommend where and how the M1 tank's plow would be used; or a light platoon leader could recommend to the TF commander a covert breach based on his terrain analysis. In both cases, the engineer platoon leader assists the maneuver commander with his planning. For more information on breaching, see *FM 90-13-1*. The following considerations are specific to the offense:

- Using a highly mobile engineer force, well forward and integrated into maneuver formations, to maintain the momentum of the attack.

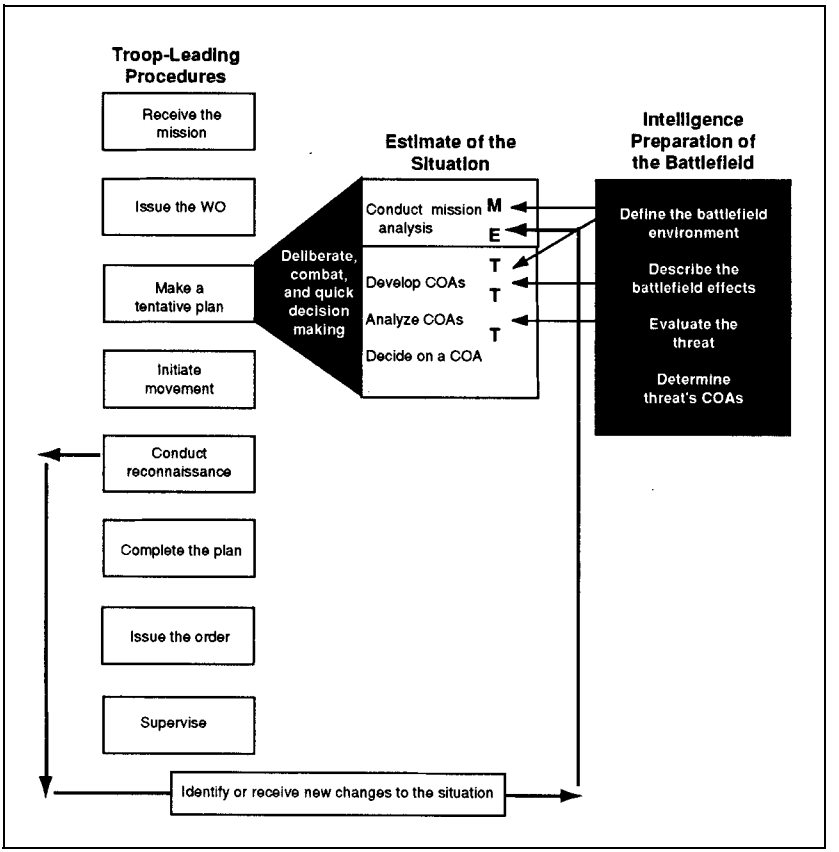

Figure 2-1. Relationship between TLP, the estimate process, and the IPB process

- Arranging for lane turnover between the forward breaching force and follow-on engineers for lane improvement and obstacle clearance.
- Ensuring that marking material and the standing operating procedure (SOP) for lane marking are coordinated between passing units.
- Ensuring that critical engineer equipment, such as armored vehicle-launched bridges (AVLBs), follow-on tactical bridging, lift capability for

line-charge reloading, and lane-marking materials to replenish marking systems, is available.

- Planning situational-obstacle capability for flank security. Scatterable mine (SCATMINE) systems work well in this application.
- Planning tactical-obstacle capability for protection against counterattacks (CATKs). Artillery- and aircraft-delivered family of scatterable mines (FASCAM) are planned for quick emplacement. Ground FASCAM systems are planned for prolonged defenses.
- Ensuring that Class IV/Class V barrier materials are available for a transition to the defense.
- Removing curbs from the AVLB if M1 tanks with rollers are to cross. The roller's dog bone should be raised.

DEFENSE

As with the offense, the platoon leader recommends to the maneuver commander where engineer assets are best used. It is critical that the platoon leader be an integral part of obstacle planning and integration. For more information on obstacle integration, see *FM 90-7*. The platoon leader should also coordinate and develop the obstacle-protection plan. It is critical that the obstacles are protected against enemy breaching attempts, especially covert attempts. The platoon leader should coordinate the inspection of the obstacles that his platoon built before the expected enemy attack. This will ensure that the enemy has not covertly breached and, if so, allows for the obstacles to be repaired before the enemy's main attack. The following considerations are specific to the defense:

- Understanding the commander's intent for obstacles.
- Ensuring that adequate transportation assets are available to haul Class IV/Class V supplies forward (see *Table 2-1, page 2-4).*
- Identifying critical engineer tasks early. Terrain preparation requires time for completion. Engineers must not remain idle while planning is in progress. If possible, mortars, air-defense artillery (ADA), fire-support-team (FIST) vehicles, CSS assets, and the tactical operations center (TOC) should be dug in while direct-fire systems are being positioned. Typically, these systems can be fortified between issuing the WO and completing the direct-fire systems' positioning.
- Practicing operations security (OPSEC) measures to prevent premature disclosure of the defense.

Table 2-1. Class IV/Class V haul capacities

Vehicle	Concertina Wire	M15 AT Mine	M19 AT Mine	M21 AT Mine	M16 AP Mine	M14 AP Mine	MOPMS Mine	Flipper Mine	Volcano Mine	MICLIC Reload
HMMWV, M998 2,500 lb 215 cu ft	2	51	34	27	55	56	15	11	1	*1
$2^{1}/_{2}$-ton truck 5,000 lb 443 cu ft	4	102	69	55	111	113	30	23	2	1
5-ton truck 10,000 lb 488 cu ft	7	204	138	109	222	227	61	46	5	3
5-ton dump truck 10,000 lb ***135/291 cu ft	2/4	112/204	64/138	32/70	168/222	71/153	23/51	39/46	3/5	2/3
20-ton dump truck 40,000 lb 754 cu ft	11	628	443	179	888	443	132	184	20	11
HEMTT truck 20,000 lb 540 cu ft	8	408	277	128	444	317	94	92	10	7
12-ton S&P 24,000 lb 875 cu ft	13	489	333	208	533	514	148	110	12	9
40-ton lowboy 80,000 lb 1,760 cu ft	27	1,466	1,035	419	1,777	1,035	308	368	43	27
M548 12,000 lb 529 cu ft	8	244	166	125	266	272	74	55	6	4
# Mines/wt/lb / Cube cu ft	40/1,180 / 64	1/49 / 1.2	2/72 / 1.6	4/91 / 4.1	4/45 / .8	90/44 / 1.9	21/162 / 5.7	40/217 / 3.4	240/1,850 / 37.6	** 2,656 / 64.8

for concertina = bundles; 1 bundle = 40 rolls *Overloads vehicle **Line charge + rocket ***Without/with sideboards

- Ensuring that the engineer organization for combat allows for rapid transition to the offense. The reserve must always have a designated force of engineers. Obstacle placement must not interfere with spoiling and CATKs.
- Ensuring that engineer units are not held in reserve but remain committed and work on the commander's priority tasks.

PLATOON LEADER'S PLANNING

The platoon leader can use *Tables 2-2 and 2-3, pages 2-6 and 2-7,* as a guideline when planning and conducting offensive and defensive operations.

REHEARSAL PRINCIPLES

Regardless of the event or task to be rehearsed or the type of rehearsal used, certain principles are universal for conducting effective rehearsals. They are—

- Supporting the scheme of maneuver and the commander's intent.
- Providing clear tasks/conditions/standards (T/C/S).
- Conducting multiechelon CA rehearsals.
- Determining key participants.
- Enforcing standards/training to standard.
- Using the after-action-review (AAR) process to provide feedback to all participants.
- Complementing the preparation phase.
- Instilling confidence in the plan and in the leaders.

During the command estimate process, use the rehearsal principles. These principles produce the—

- Participant levels.
- Rehearsal technique.
- Initiation of precombat checks (PCCs), precombat inspections (PCIs), and mission-specific drills.

Proper application of the rehearsal principles enables the unit to progress through a "crawl/walk/run" process that ends with mission success (see *Figure 2-2, page 2-8*).

Table 2-2. TF-engineer offense briefing

Briefing Topic	Main Points to Brief
Engineer task organization	• How the platoon will be task-organized • Special equipment that will be task-organized to subordinate units • Times and locations for linkup
Enemy situation	• Obstacle template • Enemy's obstacle intent • Enemy's expected level of defensive preparation • Confirmed intelligence on enemy obstacles and positions (include an analysis of this intelligence) • Enemy employment of FASCAM • Impact of enemy obstacles on friendly maneuver
OBSTINTEL collection effort	• Engineer R&S plan • NAIs critical to OBSTINTEL • How the OBSTINTEL effort supports the scheme of maneuver • Scout, engineer, and maneuver OBSTINTEL responsibilities and relationships
Scheme of engineer operations	• How the platoon will support the scheme of maneuver from the objective to the LD, to include consolidation • Engineer contingency plans and pertinent decision points
TF and company/team actions at obstacles	• In-stride breaching, to include— – Areas where the unit can expect to in-stride breach – Special equipment required – Special instructions • Deliberate breaching, to include— – Transitioning from attack formations to breaching formations – How the fundamentals of breaching will be synchronized – Key events and control measures synchronizing the breach – Composition of and instructions for the support, breach, and assault forces – Scheme of fires supporting the breach – Obscuration plan – Coordinating instructions, command and signals for the breach • Assault breaching, to include— – Allocation of engineers – Special coordinating instructions
Countermobility support to offensive maneuver	• Planned locations for situational obstacles • Triggers for situational-obstacle employment
Coordinating instructions	• Lane marking, breach traffic control, order of march through the lane, specific breaching signals, and breach C^2
Service support	• What support the platoon is receiving from the supported company/team and the parent company, if different from the SOP • Medical evacuation, supplies, and vehicle recovery • Current equipment status if critical to the mission
Unresolved issues	• Issues that the plan does not adequately address

Table 2-3. TF-engineer defense briefing

Briefing Topic	Main Points to Brief
Engineer task organization	• How the platoon will be task-organized • Special equipment that will be task-organized to subordinate units • Times and locations for linkup
Enemy	• Enemy maneuver formations through the sector, to include— – Most probable enemy COA – Place and time the enemy will change formation – Enemy breaching assets and capabilities (include high-priority targets)
Countermobility support	• Scheme of obstacles, to include— – Obstacle zones and restrictions – Obstacle belts and groups and their effects – Desired effect of obstacle groups on enemy maneuver – How the scheme of obstacles support the direct- and indirect-fire plans – Triggers and decision points for situational and reserve obstacles – Location of Class IV/ClassV supply points • Obstacle status reporting, to include— – Completion of obstacles – Barrier-material status • Obstacle-protection and turnover plans
Mobility support	• Where the lanes need to be to support MSRs, company/team supply routes, and reconnaissance passages • Responsibility for lane siting and closure • Lane marking and contact points • Obstacle restrictions that support the TF's mobility • Engineer-support plan for mobility
Survivability support	• Protective-obstacle plan, to include— – Material that the unit allocates – Any engineer assistance required – Protective-obstacle reporting responsibilities • Construction plan for fighting positions, to include— – Any engineer assistance required to construct individual positions – Allocation of engineer equipment and time and the priority for constructing vehicle positions – Linkup points and times with the company/team • Equipment control plan to ensure that maneuver companies know— – How many positions will be constructed by type – When, where, and how much equipment they will receive – How long they will retain the equipment
Engineer time line	• Engineer time line, to include— – Estimated completion time – Enemy trigger to stop work – Withdrawal route or passage – Engineer consolidation plan – Class VI/V supply-point recover or destruction
Coordinating instructions	• Obstacle-siting responsibilities • Reporting times • Class IV/Class V supply-point location, security plan, and responsibility

Table 2-3. TF-engineer defense briefing (continued)

Briefing Topic	Main Points to Brief
Service support	• Critical equipment and material shortages affecting defensive preparations • Medical evacuation plan for engineers • Barrier-material configurations to support obstacle-group construction
Unresolved issues	• Issues that the plan does not adequately address

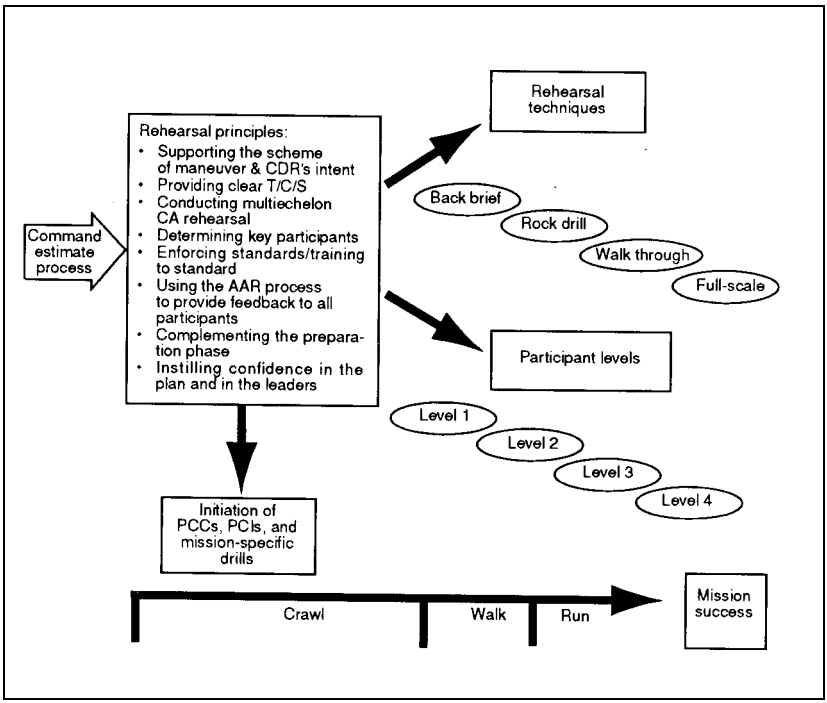

Figure 2-2. Rehearsal planning

PARTICIPANT LEVELS

The participant level details exactly who in the unit is required to attend the rehearsal. A CA-team rehearsal may have four distinct levels. The platoon leader may participate with or without his subordinates in the CA rehearsal. The three levels that apply to a platoon rehearsal follow:

- Level 1 - Squad leaders and platoon HQ.
- Level 2 - Squad leader, team leader, special teams, and vehicle commanders.
- Level 3 - Entire unit.

REHEARSAL TECHNIQUES

Rehearsal techniques fall into four different categories that follow the "crawl/walk/run" training concept. These categories are—

- Back brief.
- Rock drill.
- Walk through.
- Full-scale.

Each type of rehearsal reflects an increase in mission realism and a corresponding increase in rehearsal payoff. Each technique also increases the realism of the enemy, terrain, subunit actions, and time/distance relationships.

Back Brief

The back-brief rehearsal is an event that occurs after an operation order (OPORD) brief. Subordinate leaders repeat to the commander what he expects them to do and why. They identify all specified and implied tasks, determine their mission-essential tasks, and give their restated mission. During the back brief, they address the—

- Commander's intent.
- Concept of the operation.
- Scheme of maneuver.
- Timing to complete tasks.

During a typical back brief, each leader uses a map or a sand table and explains his mission. The back brief is the quickest of all the rehearsal techniques. It is a leader's tool and is typically the first rehearsal for the unit.

Rock Drill

A rock-drill rehearsal is the acting out of friendly and enemy actions based on the scheme of maneuver and the situation and event templates. Participants rehearse their actions by moving something that represents themselves or their unit, such

as rocks or sticks. While acting out the plan, participants talk through their missions, critical tasks, actions, and decisions. Since all participants are simultaneously acting out their part of the scheme of maneuver, leaders can identify problems and disconnects in synchronization more clearly in a rock drill.

Walk Through

A walk-through rehearsal is the acting out of the scheme of maneuver using mounted or dismounted movement based on the assets employed during the attack. Participants should also communicate with the same type of equipment they will use during the action. Participants rehearse by—

- Maneuvering their vehicles (mounted movement) or themselves (dismounted movement).
- Reporting critical actions.
- Making required decisions.

Since the participants are in a more realistic environment, they rehearse the finer aspects of synchronization, C^2, and subunit actions. Aggressive portrayals of enemy actions and reactions are critical in walk-through rehearsals. This threat portrayal is the backbone of increasing the rehearsal realism. This rehearsal technique is more difficult to orchestrate than the back brief or rock drill; however, it is the optimum balance between resource constraints and realism. Successfully mastering a walk-through rehearsal should be the minimum goal for all units.

Full-Scale

During a full-scale rehearsal, participants use real-time mounted and dismounted movement over the actual or similar terrain. Typically, it is conducted at Level 3; however, a mix of participant levels is possible. At least one subunit must participate at Level 3 for a full-scale rehearsal. This type of rehearsal is obviously the most resource intensive, but it provides the most realistic training environment for the unit. It is often used to rehearse the operation plan (OPLAN) or OPORD when time is not an immediate constraint. One must plan extensively to execute full-scale rehearsals correctly and in a manner that does not waste the soldiers' time.

INITIATION OF PCCs, PCIs, AND MISSION-SPECIFIC DRILLS

The subordinate leader conducts PCCs to determine his unit's readiness to execute its assigned tactical mission. These inspections are informal. They are the leader's inspection of mission-critical tasks or areas of special interest to the commander. PCCs should cover—

- Vehicles.
- Weapons systems.

- Soldier's equipment, to include his weapon.
- Mission-critical equipment, such as explosives, detonators, and blasting machines.

The unit commander or leader conducts PCIs to determine the unit's readiness to execute its assigned tactical mission. These inspections may be formal or informal. Formal PCIs are the commander's meticulous and time-consuming inspections of all areas within the unit. They are seldom conducted during combat operations or assembly-area occupation. Informal PCIs are the commander's inspections of particular areas or activities of special interest or concern to him. He may designate the executive officer (XO) or first sergeant (1SG) to perform the PCI. PCIs should cover—

- Vehicles
- Major weapons systems.
- Soldiers.
- Communications equipment.

Mission-specific drills are rehearsals of special combat drills that subordinate units conduct. Special drills may include—

- Breach drills.
- Marking drills.
- Situational obstacles.
- Reserve demolitions.