

SUBTERRANEAN OPERATIONS

Knowledge of the nature and location of underground facilities is of great value to both the urban attacker and defender. To exploit the advantages of underground facilities, a thorough reconnaissance is required. This appendix describes the techniques used to deny the enemy use of these features, the tactical value of subterranean passage techniques, and the psychological aspects of extended operations in subterranean passages.

D-1. TACTICAL VALUE

In larger cities, subterranean features include sunken garages, underground passages, subway lines, utility tunnels (Figure D-1), sewers, and storm drains. Most of these features allow the movement of many troops. Even in smaller European towns, sewers and storm drains permit soldiers to move beneath the fighting and surface behind the enemy.

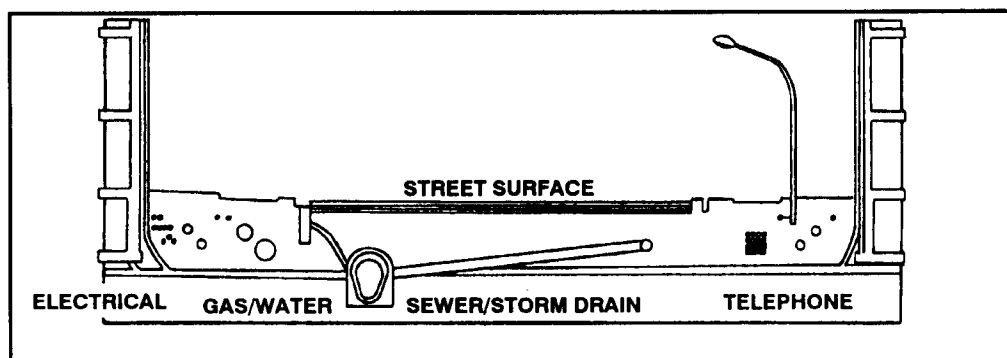


Figure D-1. Tunnels.

a. Subterranean passages provide the attacker with covered and concealed routes into and through built-up areas. This enables the enemy to launch his attack along roads that lead into the city while infiltrating a smaller force in the defenders rear. The objective of this attack is to quickly insert a unit into the defenders rear, thereby, disrupting his defense and obstructing the avenues of withdrawal for his forward defense.

b. Depending upon the strength and depth of the defense, the attack along the subterranean avenue of approach could easily become the main attack. Even if the subterranean effort is not immediately successful, it forces the defender to fight on two levels and to extend his resources to more than just street-level fighting.

c. The existence of subterranean passages forces the defender to defend the built-up area above and below ground. Passages are more of a disadvantage to the defender than the attacker. However, subterranean passages also offer some advantages. When thoroughly reconnoitered and controlled by the defender, subterranean passages provide excellent covered and concealed routes to move reinforcements or to launch counterattacks. They also provide ready-made lines of communication for the movement of supplies and evacuation of casualties, and provide places to cache supplies for

forward companies. Subterranean passages also offer the defender a ready-made conduit for communications wire, which protects it from tracked vehicles and indirect fires,

D-2. DENIAL TO THE ENEMY

Subterranean passages are useful to the defender only to the extent that the attacker can be denied their use. The defender has an advantage in that, given the confining, dark environment of these passages, a small group of determined soldiers in a prepared position can defeat a numerically superior force.

a. Tunnels afford the attacker little cover and concealment except for the darkness and any man-made barriers. The passageways provide tight fields of fire and amplify the effect of grenades. Obstacles at intersections in the tunnels set up excellent ambush sites and turn the subterranean passages into a deadly maze. These obstacles can be quickly created using chunks of rubble, furniture, and parts of abandoned vehicles interspersed with M18A1 Claymore mines.

b. A thorough reconnaissance of the subterranean or sewer system must be made first. To be effective, obstacles must be located at critical intersections in the passage network so that they trap attackers in a kill zone but allow defenders freedom of movement (Figure D-2).

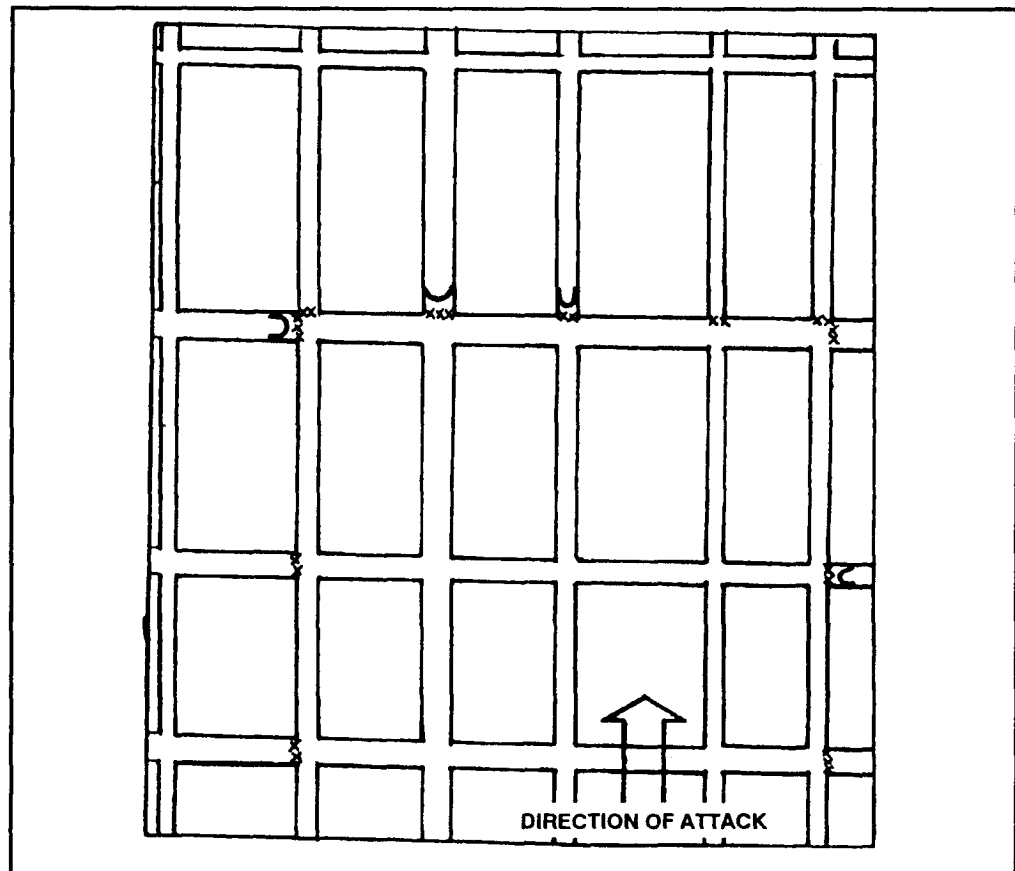


Figure D-2. Defense of a sewer system.

D-3. SUBTERRANEAN RECONNAISSANCE TECHNIQUES

The local reconnaissance mission (platoon or company area of responsibility) should be given to a squad-size element (six or seven personnel). Enough soldiers are in a squad to gather the required data without getting in each other's way in the confines of the tunnel. Only in extremely large subterranean features should the size of a patrol be increased.

a. The patrol unit leader should organize his patrol with two riflemen—one tasked with security to the front (the point man) and one tasked with security to the rear (Figure D-3). The patrol leader moves directly behind the point man, and navigates and records data collected by the patrol. The grenadier should follow the patrol unit leader, and the demolitions man should follow the grenadier. Two riflemen should be left as a security post at the point of entry. They are responsible for detecting enemy who come upon the patrol unit's rear and for serving as the communications link between the patrol unit leader and his higher headquarters.

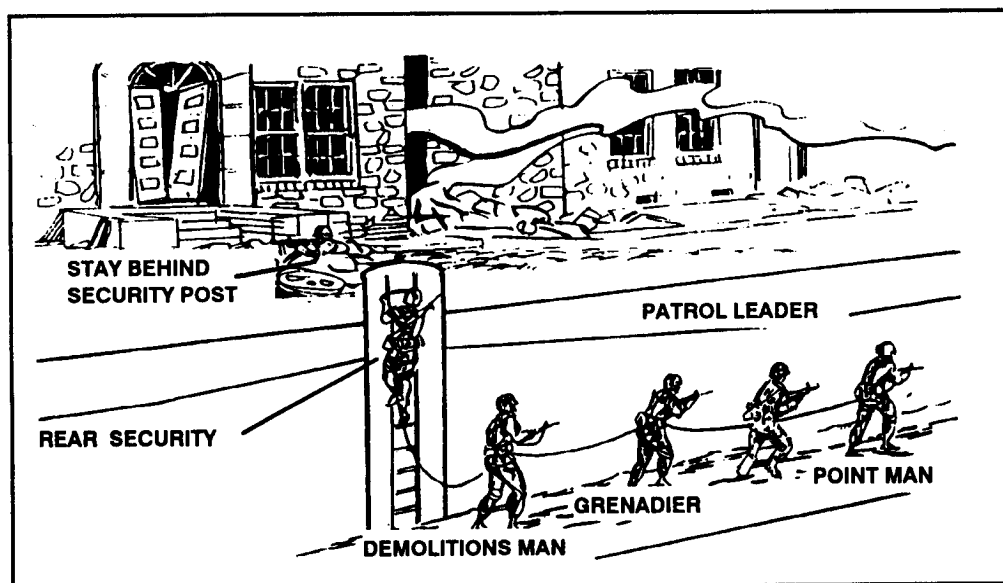


Figure D-3. Organization of the patrol unit.

b. The patrol unit leader should carry a map, compass, street plan, and notebook in which he has written the information he must gather for the platoon leader. The grenadier should carry the tools needed to open manhole covers. If the patrol is to move more than 200 to 300 meters or if the platoon leader directs, the grenadier should also carry a sound-powered telephone (TA-1) and wire dispenser (XM-306A) for communications. (Radios are unreliable in this environment). The point man should be equipped with night vision goggles to maintain surveillance within the sewer.

c. All soldiers entering the sewer should carry a sketch of the sewer system to include magnetic north, azimuths, distances, and manholes. They should also carry protective masks, flashlights, gloves, and chalk for marking features along the route. The patrol should also be equipped with a 120-foot safety rope to which each man is tied. To improve their footing in slippery sewers and storm drains, the members of the patrol unit should wrap chicken wire or screen wire around their boots.

d. A constant concern to troops conducting subterranean patrol is chemical defense. Enemy chemical agents used in tunnels are encountered in dense concentrations, with no chance of dispersement. The M8 automatic chemical agent alarm system, carried by the point man, provides instant warning of the presence of chemical agents. M8 detector paper can also be used to detect chemical agents. At the first indication that harmful gases are present, the patrol should mask.

e. In addition to enemy chemical agents, noxious gases from decomposing sewage can also pose a threat. These gases are not detected by the M8 chemical agent alarm system, nor are they completely filtered by the protective mask. Physical signs that indicate their presence in harmful quantities are nausea and dizziness. The patrol leader should be constantly alert to these signs and know the shortest route to the surface for fresh air.

f. Once the patrol is organized and equipped, it moves to the entrance of the tunnel, which is usually a manhole. With the manhole cover removed, the patrol waits 15 minutes before entry to allow any gases to dissipate. Then the point man descends into the tunnel to determine whether the air is safe to breathe and if movement is restricted. The point man should remain in the tunnel for 10 minutes before the rest of the patrol follows. If he becomes ill or is exposed to danger, he can be pulled out by the safety rope.

g. When the patrol is moving through the tunnel, the point man moves about 10 meters in front of the patrol leader. Other patrol members maintain 5-meter intervals. If the water in the tunnel is flowing faster than 2.5 meters per second or if the sewer contains slippery obstacles, those intervals should be increased to prevent all patrol members from falling if one man slips. All patrol members should stay tied into the safety rope so that they can easily be retrieved from danger. The rear security man marks the route with chalk so other troops can find the patrol.

h. The patrol leader should note the azimuth and pace count of each turn he takes in the tunnel. When he encounters a manhole to the surface, the point man should open it and determine the location, which the patrol leader then records. The use of recognition signals (Figure D-4) prevents friendly troops from accidentally shooting the point man as he appears at a manhole.

i. Once the patrol has returned and submitted its report, the platoon leader must decide how to use the tunnel. In the offense, the tunnel could provide a covered route to move behind the the enemy's defenses. In the defense, the tunnel could provide a covered passage between positions. In either case, the patrol unit members should act as guides along the route.

j. If the tunnel is to be blocked, the platoon should emplace concertina wire, early warning devices, and antipersonnel mines. A two-man position established at the entrance of the sewer (Figure D-5) provides security against enemy trying to approach the platoon's defense and should be abandoned when the water rises. It should be equipped with command-detonated illumination. While listening for the enemy, soldiers manning this position should not wear earplugs (they should be put in ears just before firing). The confined space amplifies the sounds of weapons firing to a dangerous level. The overpressure from grenades, mines, and booby traps exploding in a sewer or tunnel can have adverse effects on friendly troops such as ruptured eardrums and wounds from flying debris. Also, gases found in sewers can be ignited by the blast effects of these munitions. For these

reasons, small-arms weapons should be employed in tunnels and sewers. Friendly personnel should be outside of tunnels or out of range of the effects when mines or demolitions are detonated. Soldiers should mask at the first sign of a chemical threat.



Figure D-4. Recognition signals.

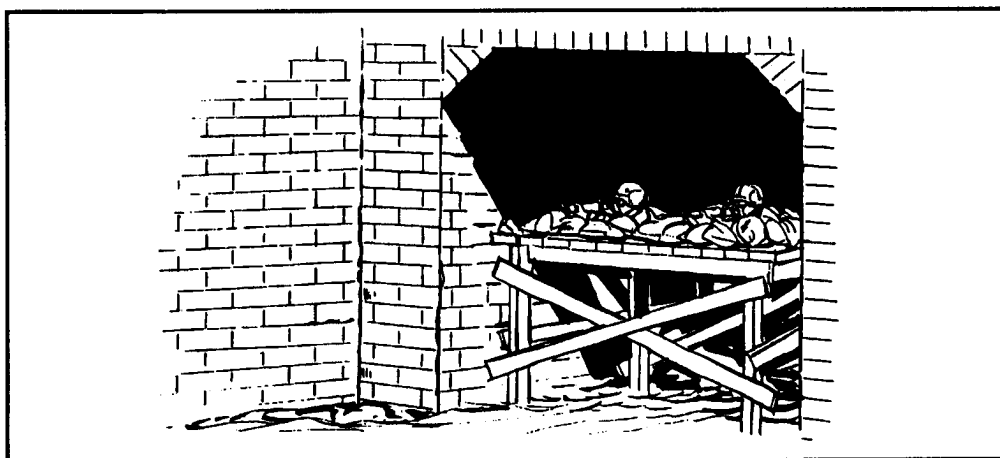


Figure D-5. Two-man position established at the entrance to a sewer.

D-4. PSYCHOLOGICAL CONSIDERATIONS

Combat operations in subterranean passages are much like night combat operations. The psychological factors that affect soldiers during night operations reduce confidence, cause fear, and increase a feeling of isolation. This feeling of isolation is further magnified by the tight confines of the tunnels. The layout of tunnels could require greater dispersion between positions than is usual for operations in wooded terrain.

a. Leaders must enforce measures to dispel the feelings of fear and isolation experienced by soldiers in tunnels. These measures include leadership training, physical and mental fitness, sleep discipline, and stress management.

b. Leaders maintain communication with soldiers manning positions in the tunnels either by personal visits or by field telephone. Communications inform leaders of the tactical situation as well as the mental state of their soldiers. Training during combat operations is limited; however, soldiers manning positions below ground should be given as much information as possible on the organization of the tunnels and the importance of the mission. They should be briefed on contingency plans and alternate positions should their primary positions become untenable.

c. Physical and mental fitness can be maintained by periodically rotating soldiers out of tunnels so they can stand and walk in fresh air and sunlight. Stress management is also a factor of operations in tunnels. Historically, combat in built-up areas has been one of the most stressful forms of combat. Continuous darkness and restricted maneuver space cause more stress to soldiers than street fighting.