CHAPTER 9
EMPLOYMENT OF ATTACK AND ASSAULT/CARGO HELICOPTERS

Ground maneuver commanders must understand that aviation forces can provide a significant advantage during UO. In addition, ground maneuver planners must understand that the unique capabilities of Army aviation also require unique planning and coordination. Army aviation forces must be fully integrated in the military decision-making process (MDMP) to ensure effective combined arms employment. Effective combined arms employment also requires that aviation and ground maneuver forces synchronize their operations by operating from a common perspective. This chapter highlights some possible procedures that will aid in creating a common air-ground perspective.

9-1. SUPPORT FOR GROUND MANEUVER UNITS

Ground units may receive support from a variety of attack helicopters including (but not limited to) the AH-64, AH-1, and OH-58D. Attack helicopters can provide area fire to suppress targets, and precision fire to destroy specific targets or breach structures. Attack helicopters can also assist with ISR and communications using their advanced suite of sensors and radios. Other supporting (lift) helicopters, such as the UH-60 and CH-47, may also have weapon systems (7.62-mm machine gun, caliber .50 machine gun, 7.62-mm minigun) that aid in the suppression of enemy forces when operating in urban terrain. However, their primary role is to transport personnel, equipment, and supplies to those critical urban areas. Lift helicopters can provide a distinct advantage by placing personnel and weapon systems at critical locations at critical times to surprise and overwhelm the enemy. Lift helicopters can also transport needed supplies to urban areas that may be inaccessible to ground transportation

9-2. ROLE DURING URBAN OPERATIONS

Army aviation's primary role during UO is to support the ground maneuver force's operations. Army aviation is normally most effective conducting shaping operations. Aviation forces operating on the urban periphery effectively enhance isolation, reconnaissance, resupply, troop movement, evacuation, and support by fire for ground forces. Army aviation also enhances the combined arms team's ability to quickly and efficiently transition to new missions. Aviation forces normally avoid over-flight of built up terrain due to the high risk of being engaged by enemy forces in close proximity. When aviation forces cannot avoid the built up areas, special measures and thorough risk analysis may minimize the associated dangers. The following missions are commonly performed during UO.

a. **Assess**. Identify the portions of the urban area essential to mission success. Aviation forces provide reconnaissance capability, security to ground forces, movement of troops and supplies, and augmentation of communication and surveillance capabilities (Table 9-1, page 9-2).

b. **Shape**. Isolate those areas essential to mission success or avoid isolation while in the defense. In the offense, aviation forces attack to isolate the objective, move troops

and supplies, enhance C2, conduct reconnaissance, and augment ground forces. In the defense, aviation forces act as a maneuver element to set the conditions for the main battle and prevent isolation (Table 9-1).

c. **Dominate**. Precisely mass the effects of combat power to rapidly dominate the area. Army aviation supports the ground maneuver commander's intent and scheme of maneuver by providing maneuver and support assets. Aviation supports the combined arms effort by providing support by fire, movement of troops and supplies, enhanced C2, air assaults, reconnaissance, and continued isolation of the objective (Table 9-2).

d. **Transition**. Transition the urban area to the control of another agency and prepare for follow-on operations. Aviation forces conduct combat, combat support and combat service support missions that facilitate the combined arms transition to follow-on operations (Table 9-3). Stability and support missions are shown in Table 9-4, page 9-4.

ASSESS AND SHAPE (Reconnaissance, Movement, Isolation of Objective)
Lift (Utility/Cargo) Helicopter Units
• Conduct air assaults to the flanks and rear of urban areas to deny LOCs from enemy. • Provide CASEVAC. • Perform CSAR. • Perform DART. • Conduct air movement of troops and supplies. • Air move/assault ground R&S elements. • Emplace logistical resupply points and FARPs. • Conduct C2 operations. • Conduct EW operations. • Provide NEO support. • Conduct countermobility operations/emplace Volcano mines.
Attack/Cavalry Helicopter Units
• Perform reconnaissance of urban peripheral area to establish enemy strength and disposition. • Conduct route and area reconnaissance for ground maneuver forces. • Establish initial security of urban flanks and rear until relieved by ground forces. • Augment ground forces for isolation of urban area. • Employ indirect fires and CAS, AF CAS, urban CAS, and JAAT to enforce isolation. • Perform air assault security. • Provide suppressive fires in support of ground maneuver and security elements. • Employ direct fires to destroy enemy elements attempting to escape, resupply, or reinforce the urban area. • Destroy key targets with direct fires.

Table 9-1. Assessing and shaping missions.

DOMINATE
(Isolate, Secure Foothold, Clear Objective)

Lift (Utility/Cargo) Helicopter Units

(In addition to the missions listed under assess and shape*, utility and cargo helicopters may conduct these missions.)*
- Perform air assault in proximity to urban area to insert infantry elements.
- Support CA/PSYOPS operations.

Attack/Cavalry Helicopter Units

(In addition to the missions listed under assess and shape*, attack and cavalry helicopters may conduct these missions.)*
- Provide security to flanks of advancing ground forces.
- Provide suppressive fires in support of attacking ground forces.
- Engage high priority targets influencing point of penetration with precision direct fires.

Table 9-2. Dominating missions.

TRANSITION
(Consolidate, Reorganize, Prepare for Future Operations)

Lift (Utility/Cargo) Helicopter Units

- Provide CASEVAC.
- Perform CSAR.
- Perform DART missions.
- Conduct air movement of troops and supplies.
- Emplace logistical resupply points and FARPs.
- Conduct C2 operations.
- Augment TCF.

Attack/Cavalry Helicopter Units.

- Provide screen or area security.
- Conduct route and area reconnaissance for ground maneuver forces.
- Serve as TCF or reserve.
- Conduct deep operations to set conditions for follow-on missions.

Table 9-3. Transition missions.

Lift (Utility/Cargo) Helicopter Units	Attack/Cavalry Helicopter Units
• Perform show of force. • Conduct air assaults with QRF. • Provide medical evacuation. • Conduct DART. • Conduct SAR/CSAR. • Transport troops and equipment. • Emplace FARPs. • Perform C2. • Conduct aerial search. • Conduct movement of dignitaries and or civilians. • Conduct offensive operations. • Conduct defensive operations. • Conduct aerial rescue and evacuation.	• Perform reconnaissance. • Conduct aerial surveillance. • Conduct security operations. • Provide air assault security. • Provide over-watch for ground forces. • Conduct offensive operations. • Conduct defensive operations.

Table 9-4. Stability and support missions.

9-3. COMMAND AND CONTROL

Army aviation forces may be employed organic to a division or higher level of command to conduct maneuver or provide support (CS/CSS). Aviation forces may also be attached or under operational control (OPCON) of another command. Army aviation units normally will not be OPCON to echelons below battalion level; however, attack helicopters may conduct direct air-to-ground coordination with companies and platoons during combat operations.

9-4. MANEUVER GRAPHIC AIDS

The greatest strength of aviation is the ability to maneuver in the third dimension. In an urban environment, this strength can be a detriment due to associated challenges. One associated challenge is that aircrews have different visual cues and perspectives than do ground forces. Common graphics and sketches can help alleviate these differences.

a. A network route structure of air control points (ACP) and routes (preferably surveyed) may be used to facilitate route planning, navigation, and command, control, and communications (C3).

b. Sketches help correlate air and ground control measures with predominate urban features. The area sketch offers the ground commander and the aircrew a means of identifying friendly and enemy locations for planning and coordination. It is best used for smaller towns and villages but can be applied to a certain engagement area or specific area of operations in a larger city. The area sketch captures the natural terrain features, man-made features, and key terrain in an area and designates a letter or numeral code to each. Buildings are coded and each corner of the building is coded. This gives the aircrews an accurate way to identify specific buildings as requested by the ground unit commander or to identify friendly locations.

c. Inclusion of maneuver graphic, fire support control measures (FSCM), and airspace control measures (ACM) further allow aircrews and maneuver elements to better

visualize the urban portion of the battlespace. It is the responsibility of both the aviation unit and the ground maneuver unit to ensure they use the same area sketch for accurate coordination (Figure 9-1).

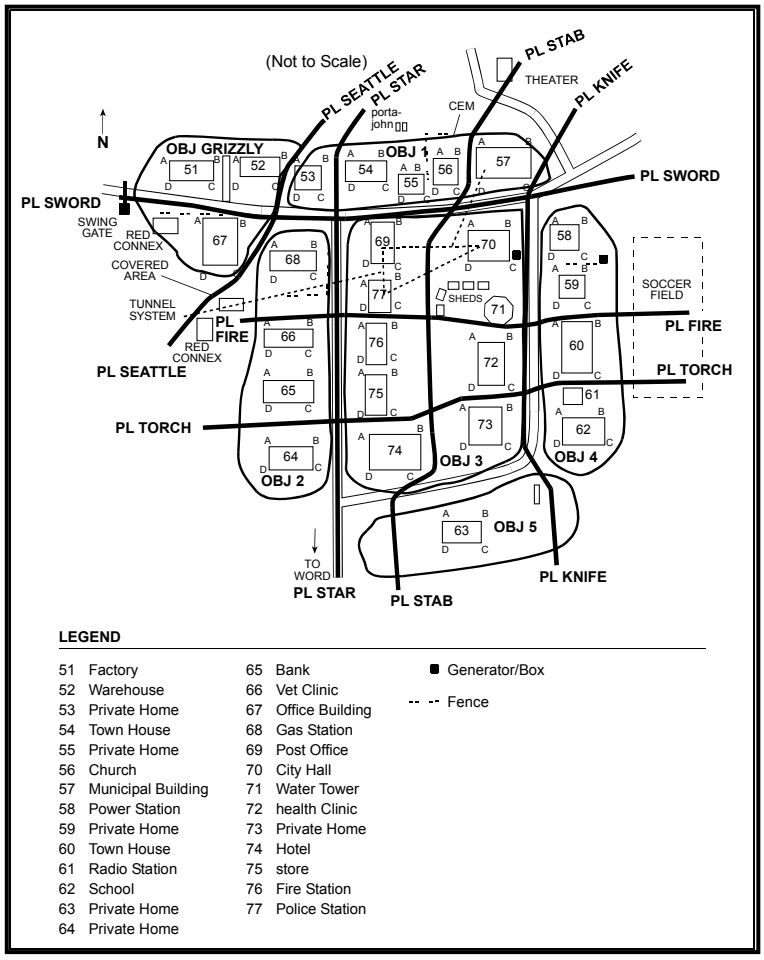


Figure 9-1. Simplified area sketch.

9-5. IDENTIFYING FRIENDLY POSITIONS, MARKING LOCATIONS, AND ACQUIRING TARGETS

In the urban environment, friendly and enemy forces, along with noncombatants, may operate in close vicinity to one another. Furthermore, structures and debris can cause problems with the identification of precise locations. Reliable communication is essential to ensure aircrews know the locations of all participants in UO. To further enhance air-ground coordination, methods must be established to allow aircrews to visually identify key locations.

a. **Marking Methods.** Table 9-5, on pages 9-6 and 9-7, describes different marking methods.

METHOD	DAY/ NIGHT	ASSETS	FRIENDLY MARKS	TARGET MARKS	REMARKS
SMOKE	D	ALL	GOOD	GOOD	Easily identifiable, may compromise friendly position, obscure target, or warn of fire support employment. Placement may be difficult due to structures.
SMOKE (IR)	D/N	ALL/ NVD AT NIGHT	GOOD	GOOD	Easily identifiable, may compromise friendly position, obscure target, or warn of fire support employment. Placement may be difficult due to structures. Night marking is greatly enhanced by the use of IR reflective smoke
ILLUM, GROUND BURST	D/N	ALL	N/A	GOOD	Easily identified, may wash out NVDs.
SIGNAL MIRROR	D	ALL	GOOD	N/A	Avoids compromise of friendly location. Dependent on weather and available light and may be lost in reflections from other reflective surfaces (windshields, windows, water, etc.)
SPOT LIGHT	N	ALL	GOOD	MARGINAL	Highly visible to all. Compromises friendly position and warns of fire support employment. Effectiveness is dependent upon degree of urban lighting.
IR SPOT LIGHT	N	ALL NVD	GOOD	MARGINAL	Visible to all with NVGs. Less likely to compromise than overt light. Effectiveness dependent upon degree of urban lighting.
IR LASER POINTER (below .4 watts)	N	ALL NVG	GOOD	MARGINAL	Effectiveness dependent upon degree of urban lighting.
IR LASER POINTER (above .4 watts)	N	ALL NVD	GOOD	GOOD	Less affected by ambient light and weather conditions. Highly effective under all but the most highly lit or worst weather conditions. IZLID-2 is the current example.
VISUAL LASER	N	ALL	GOOD	MARGINAL	Highly visible to all. Risk of compromise is high Effectiveness dependant upon degree of urban lighting.
LASER DESIGNATOR	D/N	PGM OR LST EQUIPPED	N/A	GOOD	Highly effective with PGM. Very restrictive laser acquisition cone and requires line of sight to target. May require pre-coordination of laser codes
TRACERS	D/N	ALL	N/A	MARGINAL	May compromise position. May be difficult to distinguish mark from other gunfire. During daytime use, may be more effective to kick up dust surrounding target.

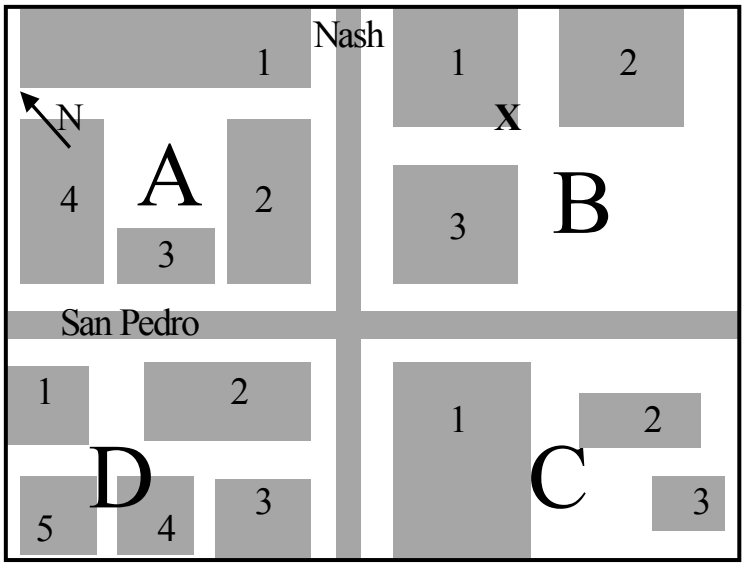
Table 9-5. Marking methods.

METHOD	DAY/ NIGHT	ASSETS	FRIENDLY MARKS	TARGET MARKS	REMARKS
ELECTRONIC BEACON	D/N	SEE REMARKS	EXCELLENT	GOOD	Ideal friendly marking device for AC-130 and some USAF fixed wing (not compatible with Navy or Marine aircraft). Least impeded by urban terrain. Can be used as a TRP for target identification. Coordination with aircrews essential to ensure equipment and training compatibility.
STROBE (OVERT)	N	ALL	MARGINAL	N/A	Visible by all. Effectiveness dependent upon degree of urban lighting.
STROBE (IR)	N	ALL NVD	GOOD	N/A	Visible to all NVDs. Effectiveness dependent upon degree of urban lighting. Coded strobes aid in acquisition
FLARE (OVERT)	D/N	ALL	GOOD	N/A	Visible by all. Easily identified by aircrew.
FLARE (IR)	N	ALL NVD	GOOD	N/A	Visible to all NVDs. Easily identified by aircrew.
GLINT/IR PANEL	N	ALL NVD	GOOD	N/A	Not readily detectable by enemy. Very effective except in highly lit areas.
COMBAT IDENTIFICATION PANEL	D/N	ALL FLIR	GOOD	N/A	Provides temperature contrast on vehicles or building. May be obscured by urban terrain.
VS-17 PANEL	D	ALL	MARGINAL	N/A	Only visible during daylight. Easily obscured by structures.
CHEMICAL HEAT SOURCES	D/N	ALL FLIR	POOR	N/A	Easily masked by urban structures and lost in thermal clutter. Difficult to acquire, can be effective when used to contrast cold background or when a/c knows general location.
SPINNING CHEM-LIGHT (OVERT)	N	ALL	MARGINAL	N/A	Provides unique signature. May be obscured by structures. Provides a distinct signature easily recognized. Effectiveness dependent upon degree of urban lighting.
SPINNING CHEM-LIGHT (IR)	N	ALL NVD	MARGINAL	N/A	Provides unique signature. May be obscured by structures. Effectiveness dependent upon degree of urban lighting.

Table 9-5. Marking methods (continued).

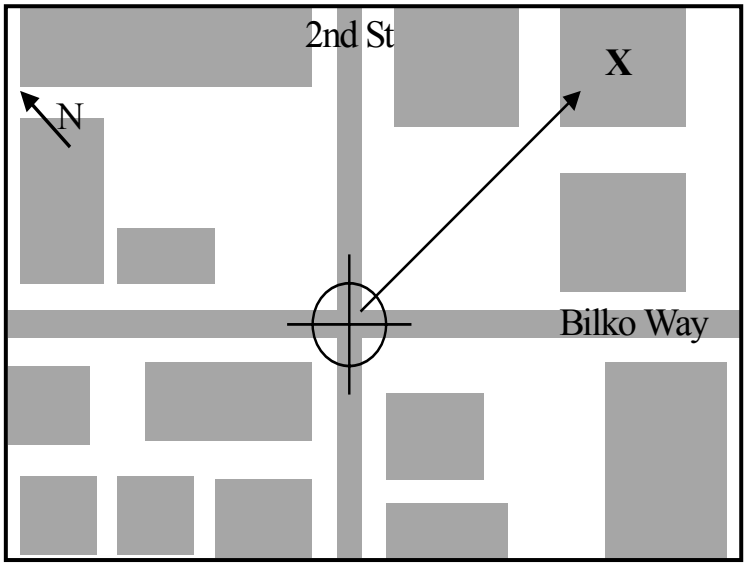
b. **Targeting Grids and Reference Techniques** (Figures 9-2 through 9-5 on pages 9-8 and 9-9)**.** Ground maneuver elements generally use a terrain-based reference system during urban operations. MGRS coordinates have little meaning at street level. To facilitate combined arms operations, aviation and ground maneuver forces must use common control methods. Possible techniques include urban grid, checkpoint targeting, objective area reference grid, and TRPs. These techniques are based on the street and structure pattern present, without regard to the MGRS grid pattern. Using common techniques allows aircrews to transition to the system in use by the ground element upon arrival in the objective area. For example, references to the objective or target may

include local landmarks such as, “The third floor of the Hotel Caviar, south-east corner.” This transition should be facilitated by using a “big to small” acquisition technique.



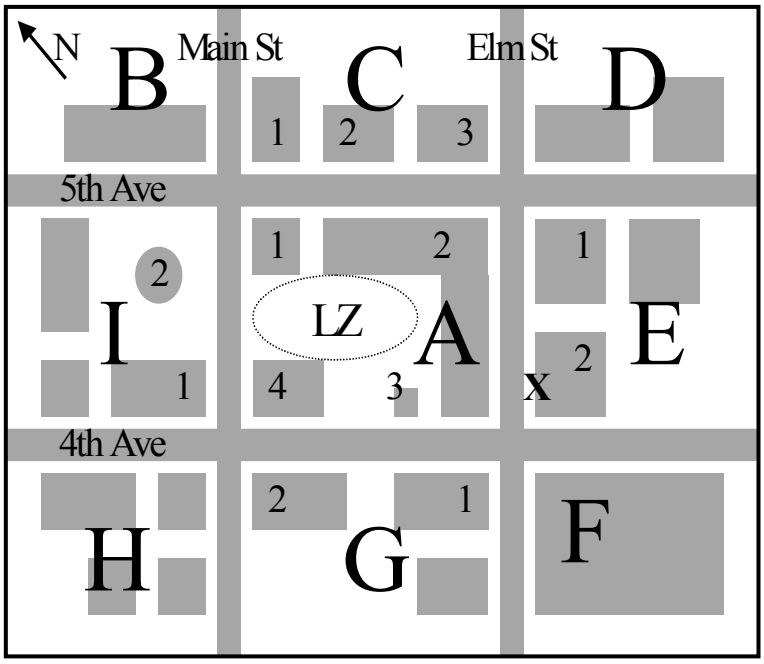
Bravo-1, south corner. Sniper top floor window.”

Figure 9-2. Urban grid technique.



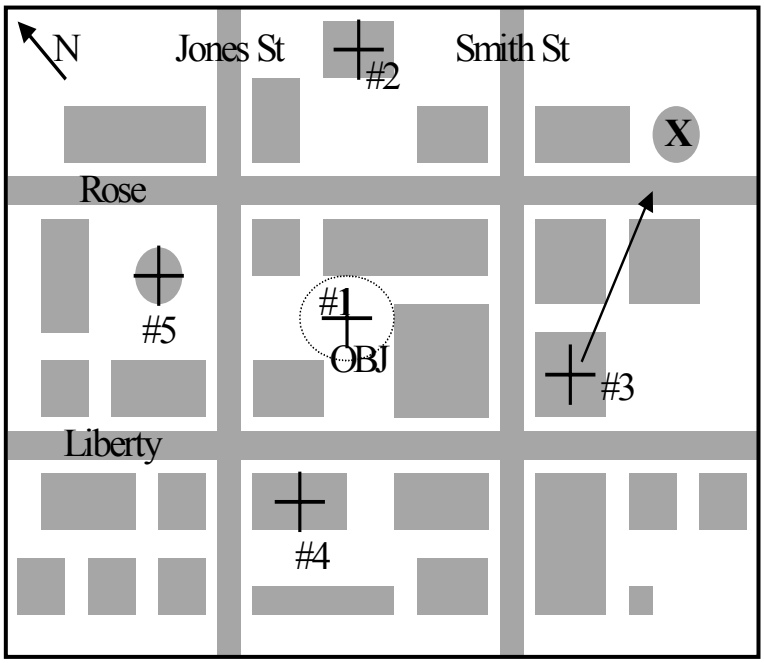
“Checkpoint, Charlie. 105 degrees magnetic, 250 meters. ZPU on the roof.”

Figure 9-3. Checkpoint technique.



"Echo-2, main entry on Elm."

Figure 9-4. Objective area reference grid technique.



"TRP #3, 087 degrees magnetic, 325 meters, the water tower."

Figure 9-5. TRP technique.

c. **Additional Cues.** Aviation forces also use these additional cues.

(1) ***Roof Characteristics*.** Flat roofs, pitched roofs, domed roofs, and roofs with towers or air conditioning units on top will aid in visual and thermal acquisition.

Additional structural features revealed in imagery will aid in confirmation. This method of terrain association may prove invaluable for identification and recognition since structures are often too close to rely on mere grid coordinates.

(2) ***Visual Markings.*** The visual signaling or marking of positions makes determining the location of friendly forces easier. During building clearing operations, the progress of friendly units (both horizontally and vertically) may be marked with spray paint or bed sheets hung out of windows. Often, the simplest methods are the best. Traditional signaling devices, such as flares, strobes, and signaling mirrors, may be effective as well. Target marking or an orientation on enemy positions may also be accomplished using signaling procedures. The use of GLINT tape, combat ID panels, and IR beacons assist in the identification of friendly ground forces on urban terrain. Standardized usage of ground lighting, thermal contrast, and interposition of structures influence the effectiveness of these devices.

(3) ***Shadows***. During both high and low ambient light conditions, expect to see significant urban shadowing from buildings when lights from the urban area are present. Shadows will hide personnel and or vehicular targets, like the shadows that hide small hills against the background of larger mountains. Shadows will hide targets that are not thermally significant, but thermal targets should still be seen. A combination of sensors must be used to acquire and identify the target; therefore, a sensor hand-off plan must be thoroughly briefed.

(4) ***GPS***. The use of aircraft with integrated GPS reduces the amount of time spent finding the target area. If ground forces can provide accurate coordinates, inputting a target grid into the GPS or inertial navigation system (INS) provides fire control cues (range, heading, time) to the target, which aids in quicker target acquisition and helps distinguish friendly forces from enemy forces.

9-6. ATTACK HELICOPTER TARGET ENGAGEMENT

Attack helicopters will conduct a variety of TTP to engage targets in the urban area. Techniques range from support by fire/attack by fire at maximum standoff ranges to running/diving fire and close combat attack at minimum engagement ranges. Coordination is imperative to ensure positive identification of the target as well as friendly locations.

a. **Urban Canyons.** Urban terrain introduces a unique challenge to aircrews and ground personnel alike with the notion of the urban canyon. Simply stated, an urban canyon exists when a target or target set is shielded by vertical structures. Unlike most natural terrain, the vertical characteristics of urban terrain can greatly affect delivery options.

(1) Urban terrain typically creates corridors of visibility running between structures. Street-level targets are only visible along the street axis or from high angles. The interposition of structures around a target interrupts line of sight (LOS) from many directions. The presence of buildings and other structures in urban terrain creates corridors of visibility along streets, rivers, and railways. LOS must be maintained for enough time to acquire the target, achieve a weapons delivery solution, and fly to those parameters.

(2) This timeline is reduced during the employment of the AH-64D. Its precise navigation system enables the aircraft to slave its sensors and weapons to a stored target,

thereby significantly reducing target acquisition times. In some cases, the AH-64D may employ the gun or FFARs in an "area supression" mode and never have to expose the aircraft to the target area.

(3) Visibility limitations on marking devices in the urban environment are geometric in nature. The use of any pointer or laser requires LOS. In addition, the aircraft must have LOS with the target to see the mark. Urban terrain severely limits LOS opportunities. Due to the close proximity of structures to one another, there may be very narrow fields of view and limited axes of approach.

NOTE: Ground forces should make every attempt to pass along accurate 8-digit grid coordinates. The AH-64D can easily and accurately engage targets using this method.

b. **Reflective Surfaces.** The high number of reflective surfaces in an urban area presents an additional challenge. Laser energy can be reflected and present multiple false returns. For these reasons, fire support can be expected to be more time consuming and be much more dependent on good communications. Combinations of marking devices and clear talk-on procedures will be essential to safe and effective fire support. Ground forces should consider using buddy team or remote laser marking tactics for laser guided munitions when urban effects preclude the attacking aircraft from maintaining LOS with the target until ordnance impact. However, when designating a target with a ground based laser along a narrow street bounded by tall buildings, LOS geometry may allow the weapon to receive reflected laser energy. Aircrews must also consider the potential miss distances for "precision" munitions when their guidance source is interrupted or removed.

c. **Weapons Mix.** Armed helicopters can carry a mix of weapons. Commanders must choose the weapons to use on a specific mission based on the effects on the target, employment techniques, and the target's proximity to ground forces. Planners must consider proportionality, collateral damage, and noncombatant casualties. Planners and aircrew must consider the following when choosing weapons.

(1) Hard, smooth, flat surfaces with 90-degree angles are characteristic of man-made targets. Due to aviation delivery parameters, munitions will normally strike a target at an angle less than 90 degrees. This may reduce the effect of munitions and increase the chance of ricochets. The tendency of rounds to strike glancing blows against hard surfaces means that up to 25 percent of impact-fused rounds may not detonate when fired onto rubbled areas.

(2) Identification and engagement times are short.

(3) Depression and elevation limits create dead space. Target engagement from oblique angles, both horizontal and vertical, must be considered.

(4) Smoke, dust, and shadows mask targets. Additionally, rubble and man-made structures can mask fires. Targets, even those at close range, tend to be indistinct.

(5) Urban fighting often involves units attacking on converging routes. The risks from friendly fires, ricochets, and fratricide must be considered during the planning of operations.

(6) The effect of the weapon and the position of friendly and enemy personnel with relation to structures must be considered. Chose weapons for employment based on their effects against the building's material composition rather than against enemy personnel.

(7) Munitions can produce secondary effects, such as fires.

9-7. AIR GROUND INTEGRATION IN THE HASTY ATTACK/CLOSE FIGHT

Attack helicopter employment in urban operations will typically involve the close fight and often, the hasty attack. The hasty attack in the close fight, historically, lacks proper coordination between air and ground elements to ensure mission success. The key to success for enhancing air-ground coordination, and the subsequent execution of the tasks involved, begins with standardizing techniques and procedures. The end-state is a detailed SOP between air and ground maneuver units that addresses the attack in a close combat situation.

Effective integration of air and ground assets begins with the ground maneuver brigade. When the aviation brigade or task force receives a mission to provide assistance to a ground unit engaged in close combat and planning time is minimal, the initial information provided by the brigade in contact should be sufficient to get the aviation attack team out of the aviation tactical assembly area to a holding area to conduct direct coordination with the engaged maneuver unit. The attack teams utilized in this procedure are under aviation brigade control. This procedure contains five major steps:

- Maneuver brigade planning requirements.
- Battalion close fight SITREP.
- Attack team check-in.
- Coordination for aviation close fires (ACF).
- Battle damage assessment/reattack.

a. **STEP 1, Maneuver Brigade Planning Requirements.** The maneuver brigade, through their aviation liaison officer, provides the aviation brigade headquarters the necessary information to meet planning requirements (Figure 9-6). The initial planning and information to be passed to the aviation brigade headquarters includes the location of the holding area, the air axis, and the route or corridor for entry and exit through the brigade and battalion sector.

(1) The holding area should be in the sector of the ground maneuver battalion involved in close combat. The holding area may be a concealed position or an aerial holding area that allows for final coordination between the attack team leader and the ground unit leader. It must be located within frequency modulated (FM) radio range of all units involved. Alternate holding areas, along with ingress and egress routes, must be designated if occupation is expected to last longer than 15 minutes.

(2) The brigade also provides the call signs and frequencies of single-channel ground and air radio system (SINCGARS), Hopsets, and communications security (COMSEC) information regarding the battalion in contact. If the unit is SINCGARS-equipped, the attack team must also have the common “time,” which may be taken from global positioning systems (GPSs).

(3) In addition, the brigade provides a current situation update for their AO and specifically for the supported battalions AO. This will include a recommended engagement area, which will allow for initial planning for battle positions (BPs) or attack by fire/support by fire positions (ABF/SBF) and possibly prevent unintentional overflight of enemy positions.

MINIMUM BRIGADE PLANNING REQUIREMENTS

1. **Current situation** should include friendly forces location and situation, enemy situation highlighting known ADA threat in the AO, and tentative engagement area coordinates.
2. **Brigade/Battalion level graphics update** this can be via MCS-P, or via radio communications, updating critical items such as LOA, fire control measures, base maneuver graphics so as to better integrate into the friendly scheme of maneuver.
3. **Fire support** coordination information; i.e. location of DS artillery, and organic mortars, call signs and frequencies
4. **Ingress/egress routes** into their AO, this includes PP into sector or zone and air routes to the holding area.
5. **Holding Area** for face-to-face coordination between the attack team and the battalion in contact. A holding area equates to an assault position. It must be adequate in size to accommodate the number of aircraft assigned the mission, be out of range of enemy direct fire systems, should be out of enemy mortar range.
6. **Call signs/frequencies** of the battalion in contact down to the company in contact. Air ground coordination must be done on command frequencies to provide situational awareness for all elements involved.
7. **SINCGARS** time hack.

Figure 9-6. Maneuver brigade planning requirements.

b. **STEP 2, Battalion Close Fight SITREP.** En route to the holding area, the attack team leader contacts the ground maneuver battalion on its FM command net to receive a close fight situation report (SITREP) (Figure 9-7). This SITREP verifies the location of the holding area and a means to conduct additional coordination. The attack team leader receives an update from the ground maneuver battalion on the enemy and friendly situations. The battalion also verifies frequencies and callsigns of the unit in contact. By this time, the ground maneuver battalion has contacted the ground maneuver unit leader in contact to inform him that attack aviation is en route to conduct a hasty attack. Figure 9-8 on page 9-14 shows an example of radio traffic and what may occur.

BATTALION CLOSE FIGHT SITREP

1. **Enemy situation** focusing on ADA in the AO, type of enemy vehicles/equipment position (center mass) and direction of movement if dispersed provide front line trace.
2. **Friendly situation** location of company in contact, mission assigned to them, method of marking their position.
3. **Call sign/frequency verification**
4. **Holding area verification** if intended to be used for face-to-face coordination, a sign counter sign must be agreed upon; i.e. using a light/heat source to provide a recognizable signature, answered by either aircraft IR lights or visible light flashes to signify which aircraft to approach.

Figure 9-7. Battalion close fight SITREP.

Attack Team	Ground Maneuver Battalion
"Bulldog 06 this is Blackjack 26, over."	"Blackjack 26 this is Bulldog 06, L/C, over."
"Bulldog 06, Blackjack 26 enroute to HA at grid VQ 98454287, request SITREP, over."	"Blackjack 26 this is Bulldog 06, enemy situation follows, Hardrock 06 is taking direct fire from a platoon size armor element at grid VQ 96204362, (or reference grid, Echo-2, main entry on Elm) Hardrock 06 elements are established on phase line Nevada center mass VQ 96000050, holding area VQ 94004000 expect radio coordination only, contact Hardrock 06 on FH 478, over."

Figure 9-8. Example radio conversation.

(1) Upon receiving the required information from the ground maneuver battalion, the attack team leader changes frequency to the ground company's FM command net to conduct final coordination before progressing on attack routes to BPs or ABF/SBF positions. Coordination begins with the ground maneuver company commander and ends with the leader of the lowest-level unit in contact.

(2) Regardless of which key leader the attack team leader conducts coordination with, the ground command net is the most suitable net on which both air and ground elements can conduct the operation. It allows all key leaders on the ground, including the fire support team (FIST) chief and the attack team leader and his attack crews, to communicate on one common net throughout the operation. Operating on the command net also allows the attack team to request responsive mortar fire for either suppression or immediate suppression of the enemy. The AH-64 Apache and the AH-1 Cobra are limited to only one FM radio due to aircraft configuration. However, the OH-58 is dual-FM capable, which gives the attack team leader the capability to maintain communications with the ground maneuver company, as well as its higher headquarters, or a fire support element (Figure 9-9).

Attack Team	Ground Maneuver Battalion
"Hardrock 06 this is Blackjack 26 on FH 478, over."	"Blackjack 26 this is Hardrock 06, L/C over."

Figure 9-9. Attack team/maneuver company communications check.

c. **STEP 3, Attack Team Check-In.** Upon making initial radio contact with the ground maneuver unit in contact, the attack team leader executes a succinct check-in (Figures 9-10 and 9-11).

(1) This check-in includes the attack team's present location, which is normally the ground or aerial holding area; the composition of the attack team; the armament load and weapons configuration; total station time; and the night-vision device capability of the attack team. In the event a ground holding area is not used because of METT-TC considerations, the attack team will select and occupy an aerial holding area within FM communications range until all required coordination is complete.

(2) The attack team leader and ground unit's key leaders must consider the effects on friendly forces of the various weapons carried by the attack aircraft prior to target selection and engagement (see figure TBD, SDZ for 30 mm, 2.75, and Hellfire). Weapon systems and munition selection for a given engagement is METT-TC dependent. Point target weapon systems, such as Hellfire or TOW, are the preferred system for armor or hardened targets when engaging targets in the close fight. The gun systems and the 2.75-inch rockets are the preferred system/munition for engaging troops in the open and for soft targets such as trucks and trenchworks. These area fire weapon systems pose a danger to friendly soldiers who may be in the lethality zone of the rounds or rockets. In this case, the leader on the ground must be very precise in describing the target he wants the aircraft to engage.

ATTACK TEAM CHECK-IN

1. Aircraft present location
2. Team composition
3. Munitions available
4. Station time
5. Night vision device capable and type

Figure 9-10. Attack team check in.

Attack Team	Ground Maneuver Battalion
"Hardrock 06, Blackjack 26 is currently holding at grid VQ 98454287, 2 Kiowa Warriors with 450 rounds of .50 cal, 2 Hellfires each, half hour station time, all aircraft are NVG and FLIR capable, over."	
"Blackjack 26, roger."	
	"Blackjack 26, Hardrock 06, stand by, over."

Figure 9-11. Example attack team check in radio conversation.

d. **STEP 4, Coordination for Aviation Close Fires (ACF).** Time is the primary constraining factor for coordinating ACF in the hasty attack. When possible, ACF should be coordinated face to face using the ACF coordination checklist (Figure 9-12, page 9-16),

but if time is not available to accomplish face-to-face coordination, then radio only communications will be the means for coordination using the request for immediate ACF (Figure 9-13). Additionally, during an ACF attack, when face-to-face coordination has been conducted, targets of opportunity may require engagement through a target handoff between the ground and aviation elements using the request for immediate ACF. Although face-to-face coordination is preferred, METT-TC will dictate how the coordination between the commander in contact and the attack team leader is accomplished. A major benefit of face-to-face coordination is the ability to talk to the ground commander with a map available and integrate into the ground scheme of maneuver. This also provides an opportunity for the attack team to update their maps with the maneuver battalion's latest graphics.

AVIATION CLOSE FIRES (ACF)
COORDINATION CHECKLIST

1. **Enemy situation specific target ID.**
2. **Friendly situation location and method of marking friendly positions.**
3. **Ground maneuver mission/scheme of maneuver.**
4. **Attack aircraft scheme of maneuver.**
5. **Planned engagement area and BP/SBF.**
6. **Method of target marking.**
7. **Fire coordination and restrictions.**
8. **Map graphics update.**
9. **Request for immediate ACF should be used for targets of opportunity or for ground to air target handoff.**

Figure 9-12. ACF coordination checklist.

NOTE: To employ immediate ACF, at a minimum, essential elements from the coordination checklist, **in bold letters**, should be briefed by way of radio as a SITREP by the ground commander.

Attack Team	Ground Maneuver Battalion
	"Blackjack 26, Hardrock 06, stand by for update, friendly platoon in contact located at VQ 96000050, marked by IR strobes, enemy platoon size armor element is 800 meters due north, there has been sporadic heavy machine gun fire and main tank gun fire into our position, fire appears to be coming from road intersection vic VQ 96204362, negative knowledge on disposition of enemy ADA, I'll be handing you down to Hardrock 16 for the ACF request, over."
"Hardrock 06, Blackjack 26, good copy, standing by at HA for ACF request, over."	
	"Roger Blackjack 26, Hardrock 16 request follows, friendly location VQ96000050, 360 degrees to target, 800 meters, 2 T-80s at the road intersection, target location VQ96000850, PAQ-4 spot on, no friendlies north of the 00 grid line, low wires directly over our position, over."
"Hardrock 16, Blackjack elements will attack from the southeast, turn on IR strobes at this time, we will establish a BP to the west of your position 100 meters, over."	
	"Blackjack 26, Hardrock 16, strobes on at this time, over."
"Roger Hardrock, Blackjack has your position, enroute for attack 30 seconds, over."	
	"Hardrock 16, roger."
"Hardrock 16, Blackjack 26, engagement complete, 2 T-80s destroyed, over."	
	"Blackjack 26, Hardrock 16, roger 2 T-80s destroyed, end of mission, out."

Figure 9-13. Example request for immediate ACF.

(1) After receipt of a request for immediate ACF, the attack team leader informs the ground unit leader of the battle position (BP), support-by-fire position (SBF), or the series of positions his team will occupy that provide the best observation and fields of fire into the engagement or target area.

(a) The BP or SBF is a position from which the attack aircraft will engage the enemy with direct fire. It includes a number of individual aircraft firing positions and may be preplanned or established as the situation dictates. Size will vary depending on the

number of aircraft using the position, the size of the engagement area, and the type of terrain.

(b) The BP or SBF is normally offset from the flank of the friendly ground position, but close to the position of the requesting unit to facilitate efficient target handoffs. This also ensures that rotor wash, ammunition casing expenditure and the general signature of the aircraft does not interfere with operations on the ground. The offset position also allows the aircraft to engage the enemy on its flanks rather than its front, and lessens the risk of fratricide along the helicopter gun target line.

(2) The attack team leader then provides the ground maneuver unit leader with his concept for the team's attack on the objective. This may be as simple as relaying the direction the aircraft will be coming from or attack route, time required to move forward from their current position, and the location of the BP. Only on completion of coordination with the lowest unit in contact does the flight depart the holding area for the battle position. As the attack team moves out of the holding area, it uses NOE flight along attack routes to mask itself from ground enemy observation and enemy direct fire systems. The attack team leader maintains FM communications with the ground unit leader while he maintains internal communications on either his very high frequency (VHF) or ultra high frequency (UHF) net.

NOTE: Grid locations may be difficult for the ground maneuver, depending on the intensity of the ongoing engagement, and actual FM communications between the ground and air may not work this well.

e. **STEP 5, Battle Damage Assessment and Reattack.** After completing the requested ACF, the attack team leader provides a battle damage assessment (BDA) to the ground maneuver commander. Based on his intent, the ground maneuver commander will determine if a reattack is required to achieve his desired endstate. Requests for ACF can be continued until all munitions or fuel is expended. Upon request for a reattack, the attack team leader must consider the effects on duration and strength of coverage he can provide the ground maneuver commander. The attack team may be required to devise a rearming and refueling plan, maintaining some of his aircraft on station with the unit in contact, while the remainder returns to the forward arming and refueling point (FARP). In addition to coordinating with the ground maneuver unit in contact, the attack team leader is required to coordinate this effort with his higher headquarters.

9-8. EMPLOYMENT OF ASSAULT/CARGO HELICOPTERS

Assault and cargo helicopters play a crucial role in UO. Rapid mobility of ground forces and equipment is essential in all urban combat operations. In battle in an urban area, troop movement may become a major requirement. Units engaged in house to house fighting normally suffer more casualties than units fighting in open terrain. The casualties must be evacuated and replaced quickly with new troops. At the same time, roads are likely to be crowded with resupply and evacuation vehicles, and may also be blocked with craters or rubble. Helicopters provide a responsive means to move troops by flying nap of the earth (NOE) flight techniques down selected streets already secured and cleared of obstacles. Aircraft deliver the troops at the last covered position short of the fighting and then return without exposure to enemy direct fire. Similar flight techniques

can be used for air movement of supplies and medical evacuation missions. High risk-high payoff missions, like the air assault, may similarly be conducted. Air assaults into enemy-held urban territory are extremely difficult. One technique is to fly NOE down a broad street or commercial ribbon while attack helicopters and door gunners from lift helicopters suppress buildings on either side of the street. Scheduled artillery preparations can be incorporated into the air assault plan through the H-hour sequence. Feints and demonstrations in the form of false insertions can confuse the enemy as to the real assault landings.

a. **Small-Scale Assaults.** Small units may have to be landed onto the rooftop of a key building. Success depends on minimum exposure and the suppression of all enemy positions that could fire on the helicopter. Inspections should be made of rooftops to ensure that no obstacles exist, such as electrical wires, telephone poles, antennas, or mines and wire emplaced by the enemy, that could damage helicopters or troops. In many modern cities, office buildings often have helipads on their roofs for landing helicopters. Other buildings, such as parking garages, are usually strong enough to support the weight of a helicopter. Insertion/extraction techniques to rooftops include:

- Remaining light on the landing gear after touchdown.
- Hovering with a single skid or landing gear touching the structure.
- Rappelling.
- Jumping from the aircraft.
- Using the fast rope.
- Using the special purpose insertion/extraction system (SPIES).
- Hoisting.

b. **Large-Scale Assaults.** For large-scale air assaults, rooftop landings are not practical. Therefore, open spaces (parks, parking lots, sports arenas) within the urban area must be used. Several spaces large enough for helicopter operations normally can be found within 2 kilometers of a city's center. Most major cities have urban parks near the central business district. Other potential LZs include athletic stadiums and parking lots. These areas are often suitable LZs, if secure.

(1) ***Technical Considerations for LZ/PZ Selection.*** The technical considerations for urban LZ/PZ selection are similar to those in natural terrain. The employment of Pathfinders or ground security elements is invaluable in the preparation of the LZ. Air traffic services (ATS) units can provide tactical air control team (TACT) support for LZs/PZs and they can also provide critical information such as LZ condition, enemy situation, and landing data. Communications should be established with ground elements at the LZ as early as possible during ingress.

(2) ***Tactical Considerations for LZ/PZ Selection.*** The tactical considerations for LZ/PZ selection, mission, location, and security are exaggerated in urbanized terrain. Missions may dictate the number and type of aircraft required and, therefore, the size of LZ selected. The opposite may also be true—the physical limitations of available LZs dictate the number of aircraft used. If there are more aircraft than a single LZ can accommodate, multiple LZs near the objective should be selected. Control measures must be adequate to safely deconflict the movement of all elements. Formations of helicopters should not be larger than the ability to simultaneously land on the LZ. All secondary or alternate LZs should be the same size (or larger) to prevent unnecessary stack-ups of exposed aircraft waiting to land. LZs should be located as close to the objective as

possible to enable swift accomplishment of the ground mission. Generally, the more difficult the LZ and approach/departure paths are to observe from the ground or surrounding structures, the more easily the area can be secured.

9-9. AVIATION URBAN OPERATIONS RISK ASSESSMENT

Risk assessment, as a step in the military decision-making process (MDMP), must identify and assess unique hazards associated with aviation UO. The following list is not all-inclusive, but it provides a good starting point in identifying possible UO hazards.

a. **Fires.**

(1) ***Weapon Utilization.*** Minimum arming range and minimum slant ranges within urban areas limit the usage of some weapons.

(2) ***Coordination***. Heavy concentration of precision weapon systems along a narrow front may cause coordination problems.

(3) ***Laser Designation.*** Multiple flat, polished surfaces in an urban area may degrade laser use, thereby rendering some weapon systems useless.

(4) ***Limited Close Air Support.*** Heavily developed urban centers will limit the close air support. This is due to vulnerabilities at higher altitudes, thus placing a greater dependence on rotary-wing aircraft support.

(5) ***Need for Direct and Indirect Suppressive Ground Fires.*** Direct and indirect suppressive ground fire should augment the escort suppressive fires as helicopters approach intended landing zones.

(6) ***ROE.*** Operations could be in areas with a high concentration of civilians or cause significant collateral damage of property.

(7) ***Weapons Effects.*** Certain weapons may produce less or more damage on structures. Specific knowledge of weapons effects is critical to target destruction, the reduction of unnecessary collateral damage, and overall mission accomplishment. In addition, collateral damage may introduce the risk of exposure to toxic industrial materials (TIM).

b. **Threat.**

(1) ***Small Arms***. There is a high risk to aircraft from close-range, small arms fires that is complicated by the close proximity friendly forces and non-combatants.

(2) ***Exposure to Direct Fire***. Small-arms fire may increase risk, as the urban area forces concentration of units and provides excellent cover and concealment.

(3) ***Individual Soldiers***. The individual soldiers may be the greatest threat to rotary-wing aircraft in an urban environment.

(4) ***Detection of ADA***. Portable surface to air missile systems will be difficult to detect in and among the buildings.

(5) ***Predictable Landing Zones.*** As landing zones may be scarce and therefore predictable, air assault operations in mass may be vulnerable to enemy fires.

c. **Navigation.**

(1) Most maps do not show the vertical development of the urban terrain.

(2) Accurate navigation in the urban environment requires familiarization with current military city maps which pilots have limited experience.

(3) The planning of missions will depend heavily on the upgraded photo-imagery products to make accurate assessments of key features.

(4) Newly developed areas and buildings may not appear on a navigational map.

(5) The numerous buildings and streets and few map references complicate navigation over built-up areas. Flight routes over urban terrain may increase employment time and fuel consumption.

d. **Weather.**

(1) Continuous smoke and fire within the buildings cause obscuration.

(2) Urban areas directly affect weather, especially wind patterns.

(3) Night-vision systems are degraded due to city lights and thermal inversion.

e. **Terrain.** Obstacles may be more numerous and dangerous than in any other environment. These obstacles will include, but are not limited to, the following:

(1) Buildings limit maneuverability and engagement ranges.

(2) Urbanized terrain masks intelligence and electronic warfare acquisition capabilities.

(3) Landing and pickup zones may be severely limited; operations from rooftops may be required.

(4) Vertical development blocking line-of-sight radio communication will severely affect air-to-ground and low-level air-to-air communication.