Glossary

A total area

abatis Fallen-tree obstacles made by cutting trees that remain attached to their stumps.

ABCA American, British, Canadian, and Australian

AFV armored fighting vehicle

amatol A mixture of ammonium nitrate and trinitrotoluene (TNT); a substitute for TNT in bursting charges.

ammonium nitrate The least sensitive of the military explosives; it requires a booster charge to successfully initiate detonation; a component inmost cratering and ditching charges.

ammonium-nitrate satchel charge A mixture of ammonium-nitrate fertilizer and melted wax; the mixing ratio is 4 pounds of fertilizer to 1 pound of wax.

angled attack A method of attack used in bridge demolitions.

AT antitank

Attn attention

AP antipersonnel

approx approximately

ARNG Army National Guard

ASP ammunition supply point

AVLB armored vehicle launch bridge

beam collapse mechanism A method of allowing abridge to collapse under its own weight.

black powder The oldest-known explosive and propellant; a composite of potassium or sodium nitrate, charcoal, and sulfur.

blasting cap Used to detonate high explosives; there are two types: electric and nonelectric.

blasting machine Provides the electric impulse needed to initiate electric blasting-cap operations there are two models: M32 10-cap blasting machine and M34 50-cap blasting machine.

block demolition charge Prepackaged, high-explosive charges for general demolition operations, such as cutting, breaching, and cratering; composed of high-explosive TNT, tetrytol, Composition-C series, and ammonium nitrate.

block-hole method Away of removing boulders; a hole is drilled in the top of the boulder deep and wide enough to hold the required amount of explosive.

bottom attack Forms a hinge at the top of the span; as the span falls, the cut ends at the bottom move outward.

branch line A length of detonating cord.

breaching charges Used to destroy concrete-slab bridges, bridge beams, bridge piers, bridge abutments, and permanent field fortifications; the size, shape, placement, and tamping or confinement of breaching charges are critical to success.

breaching radius (R) For external charges, it is equal to the thickness of the target being breached; for internal charges placed in the center of the target's mass, R is one half the thickness of the target; for internal charges placed at less than half the mass thickness, R is the longer of the distances from the center of the charge to the outside surfaces of the target.

C *See* **tamping** factor **(C).**

C4 *See* **Composition C4 (C4).**

categorization To put into any of several fundamental and distinct classes to which entities or concepts belong; a division within a system of classification.

chg charge

class classification

classification (class) The systematic arrangement in groups based on the load-carrying capacity of bridges.

cm centimeter(s)

command post Located where the demolition guard can best control the defense of the demolition target from the friendly side.

common series circuit Used to connect two or more electric blasting caps to a single blasting machine.

Composition A3 A composite explosive containing 91 percent cyclonite (RDX) and 9 percent wax.

Composition B A composite explosive containing approximately 60 percent RDX, 39 percent TNT, and 1 percent wax.

Composition B4 A composite explosive containing 60 percent RDX, 39.5 percent TNT, and 0.5 percent calcium silicate.

Composition C4 (C4) A composite explosive containing 91 percent RDX and 9 percent nonexplosive plasticizers; it is effective in temperatures between -70 and + 170 degrees Fahrenheit but looses its plasticity in colder temperatures.

concrete-stripping charge Bulk, surface-placed charges designed to remove concrete from reinforced-concrete beams and slabs, exposing the steel reinforcement.

continuous bridge A bridge that does not fit the miscellaneous or simply supported bridge category.

cook off When blasting caps are detonated because of exposure to extreme heat.

counterforce charge A special breaching technique that is effective against rectangular masonry or concrete columns 4 feet thick or less.

cratering charge A calculated amount of explosives placed to create a crater.

cratering effect The cratering effect of high explosives depends on their total energy content, which determines the amount of energy available to throw the broken material from the crater. Because a shattering effect is not required to form a crater, low-velocity explosives are generally more effective for cratering purposes. Therefore, a relative effectiveness factor is not considered in determining the effect of a cratering charge. Blasting road craters or ditches normally requires large amounts of explosives. Because it is effective and inexpensive, an ammonium nitrate-based cratering charge is used as a standard cratering charge.

cross-section ditching method Used when it is necessary to blast the full width of the ditch in one operation.

cyclonite (RDX) A highly sensitive and very powerful military explosive; it forms the base charge in the M6 electric and M7 nonelectric blasting caps; when desensitized, it serves as a subbooster, booster, bursting charge, or demolition charge; used in composite explosives.

d required depth

D depth

DA Department of the Army

deliberate road crater A V-shaped crater approximately 7 to 8 feet deep and 25 to 30 feet wide with side slopes of 30 to 37 degrees; extends about 8 feet beyond the end boreholes.

demolition equipment set An assembly of tools necessary to perform demolition operations.

detonating cord Transmits a shock wave from the initiation set to the explosive charge; useful for underwater, underground, and above-ground blasting because the blasting cap of the initiation set does not have to be inserted directly into the charge.

detonating-cord priming Involves fewer blasting caps, makes priming and misfire investigation safer, and allows charges to be primed at State of Readiness 1 (Safe) when in placed on a reserved demolition.

diamond charge Used on high-carbon or alloy steel bars up to 12 inches in diameter or having a cross-sectional area of 12 square inches or less. *See also* **stress-wave method.**

direction of initiation The direction in which the shock wave travels through the explosive; may be parallel to the surface of the target or perpendicular to the target; determines the rate of energy transmitted to the target.

ditching charge A calculated amount of explosives placed to create a ditch.

DODIC Department of Defense identification code

dust initiator charge Uses small quantities of explosives with larger amounts of powdered materials to destroy thin-walled, wooden buildings or railroad boxcars; works best in an enclosed area with few windows.

dynamite *See* **standard dynamite, military dynamite.**

E total end clearance

E$_R$ required end clearance

elec electric

electric priming The insertion of an electric blasting cap directly into the charge.

end-priming method Priming explosives from the extreme end.

engr engineer

ENL enlisted

EOD explosive ordnance disposal

equip equipment

expedient flame fougasse Consists of a 55-gallon drum of thickened fuel, a kicker charge, a trip flare, and detonating cord; used in defensive and offensive operations for its incendiary, illuminating, and signaling effects.

explosives Substances that, through chemical reaction, violently change to a gaseous form. In doing so, they release pressure and heat equally in all directions. They are classified as low or high according to the detonating velocity or speed (in meters or feet per second) at which this change takes place and other characteristics such as their shattering effect. *See also* **low explosives** *and* **high explosives.**

external charge Placed on the surface of the target.

firing point Located as close to the target as safety allows; must protect the firing party from the effects of blast and falling debris; should be close to or collocated with the command post.

firing system The system placed between the initiation system and the charge.

firing wire The electric wire used between the initiation set and the electric blasting cap.

FM field manual

ft foot, feet

forty-pound, ammonium-nitrate block demolition charge A standard US Army munition consisting of 30 pounds of ammonium nitrate with a 10-pound TNT border.

fps foot/feet per second

GEMSS Ground Emplaced Mine Scattering System

GP general purpose

grapeshot charge Consists of a container, projectiles, buffer material, a charge, and a blasting cap.

H borehole depth

H depth, rise, height

hasty road crater Forms a V-shaped crater about 6 to 7 feet deep and 20 to 25 feet wide, extending approximately 8 feet beyond each end borehole. While it takes the least amount of time to construct, it is also the least effective barrier because of its depth and shape.

HE high explosive

HEAT high-explosive antitank (ammunition)

HEP high-explosive plastic

high explosives Change to a gaseous state almost instantaneously at 1,000 meters (3,280 feet) per second to 8,500 meters (27,888 feet) per second, producing a shattering effect on the target. Use high explosives when a shattering effect, or *brisance,* is required.

HQ headquarters

hydroscopic Material that readily takes up and retains moisture.

improvised cratering charge Consists of a mixture of ammonium nitrate fertilizer and diesel fuel, motor oil, or gasoline; the ratio of fertilizer and fuel is 25 pounds to 1 quart.

in inch(es)

internal charge Placed in boreholes in the target.

jamming Failure to completely collapse the span.

K *See* **material factor (K).**

kg kilogram(s)

kicker charge A l-pound charge of explosive placed high on a tree used to influence the direction of fall when employing timber charges.

kw kilowatt

L length

lb pound(s)

L_c required length of span removed

leapfrog series circuit Useful for firing any long line of charges; starts at one end of a row of charges and primes alternate charges to the opposite end and then primes the remaining charges on the return leg of the series; eliminates the need for along return lead from the far end of the line of charges.

lin line

line main Will fire multiple charges, but if a break in the line occurs, the detonating wave will stop at the break; use only when speed is essential and the risk of failure is acceptable.

low explosives Change from a solid to a gaseous state slowly over a sustained period (up to 400 meters or 1,300 feet per second). This characteristic makes them ideal when a pushing or shoving effect is required. Examples of low explosives are smokeless and black powders.

L_s average length of the bearing supports.

m meter(s)

mm millimeter(s)

Ml adhesive paste A sticky, putty-like substance that is used to attach charges to flat, overhead or vertical surfaces.

Ml detonating-cord clip A device for holding two strands of detonating cord together, either parallel or at right angles.

Ml military dynamite An RDX-based composite explosive containing no nitroglycerin; packaged in 1/2-pound, paraffin-coated, cylindrical paper cartridges that have a nominal diameter of 1.25 inches and a nominal length of 8 inches.

M10 universal explosive destructor A high-explosive charge in an assembled metal device; used to destroy ammunition and to convert loaded projectiles and bombs into improvised demolition charges.

M112 block demolition charge A l¼-pound block of C4 packed in a plastic envelope.

M118 block demolition charge A block of four 1/2-pound sheets of flexible explosive packed in a plastic envelope.

M180 demolition kit, cratering Consists of an M2A4 shaped charge, a modified M57 electrical firing device, a warhead, a rocket motor, a tripod, and a demolition circuit.

M183 demolition charge assembly Consists of 16 Ml 12 (C4) demolition blocks and 4 priming assemblies; is used primarily for breaching obstacles or demolishing structures when large demolition charges are required.

M186 roll demolition charge A 50-foot roll of sheet explosive.

M1A2 Bangalore-torpedo demolition kit Consists of 10 loading assemblies, 10 connecting sleeves, and 1 nose sleeve.

M1A4 priming adapter A plastic, hexagonal-shaped device, threaded to fit threaded cap wells.

M2 cap crimper Used to squeeze the shell of a nonelectric blasting cap around a time blasting fuse, standard coupling base, or detonating cord.

M51 blasting-cap test set A seIf-contained unit with a magneto-type impulse generator, an indicator lamp, a handle to activate the generator, and two binding posts for attaching firing leads; the set is waterproof and capable of operating at temperatures as low as -40 degrees Fahrenheit.

M60 weatherproof fuze igniter Used to ignite time blasting fuse in all weather conditions, even underwater, if properly waterproofed.

M700 time fuse A dark green cord, 0.2 inches in diameter, with a plastic cover; burns at approximately 40 seconds per foot.

M8 blasting cap holder A metal clip designed to attach a blasting cap to a sheet explosive.

max maximum

material factor (K) Represents the strength and hardness of the target material.

military demolition The destruction by fire, water, explosive, mechanical, or other means of area structures, facilities, or materials to accomplish a military objective. Demolitions are explosives used for such purposes. Demolitions have offensive and defensive uses. Examples are the removal of enemy barriers to facilitate the advance and the construction of friendly barriers to delay or restrict enemy movement.

military dynamite A composite explosive that contains 75 percent RDX, 15 percent TNT, and 10 percent desensitizers and plasticizers.

min minute(s), minimum

miscellaneous bridge Represents a small portion of bridge structures; examples include suspension, lift, and cable-stayed bridges.

mud-cap method Away of removing boulders in which the charge is placed in a crack or seam in the boulder and covered with 10 to 12 inches of mud or clay.

NA not applicable

NATO North Atlantic Treaty Organization

NCO noncommissioned officer

nitroglycerin Highly sensitive and extremely temperature-sensitive; the explosive base for commercial dynamites; not used in military explosives because of its sensitivity.

No. number

nonelectric priming The insertion of a nonelectric blasting cap directly into the charge.

NSN national stock number

obstacle folder Provides all the information necessary to complete a specific demolition operation.

Ohm's Law Defines the amount of voltage necessary to detonate the blasting caps.

oz ounce(s)

P weight of the explosive

pentaerythrite tetranitrate (PETN) A highly sensitive and very powerful military explosive; its explosive potential is comparable to RDX and nitroglycerin; insoluble in water.

pentolite (PETN-TNT) A mixture of PETN and TNT.

PETN *See* **pentaerythrite tetranitrate (PETN).**

PETN-TNT *See* **pentolite (PETN-TNT).**

platter charge Uses the Miznay-Shardin effect to turn a metal plate into a powerful, blunt-nosed projectile.

Plt platoon

pneumatic floats Airtight compartment of rubberized fabric inflated with air.

prac practice

pressure-sensitive adhesive tape Effective for holding charges to dry, clean wood, steel, or concrete; has better holding properties and is more easily and quickly applied than Ml adhesive paste.

QSTAG Quadripartite Standardization Agreement

qty quantity

R *See* **breaching radius (R).**

radial cracking. If the charge is large enough, the expanding gases can create a pressure load on the object that will cause cracking and therefore displace the material.

RDX cyclotrimethylenetrinitramine. *See also* **cyclonite (RDX).**

RE *See* **relative effectiveness (RE) factor.**

recon reconnaissance

reconnaissance order Specifies the objectives of the reconnaissance party commander.

relative effectiveness (RE) factor The amount of explosive used is adjusted by a relative effective (RE) factor which is based on the shattering effect of the explosive in relation to that of TNT. The shattering effect of a high explosive is related to its detonating velocity. For example, TNT with a detonating velocity of 6,900 meters per second has an RE factor of 1,00, while

Composition C4 with a detonating velocity of 8,040 meters per second has an RE factor of 1.34.

relieved-face crater A trapezoidal-shaped crater about 7 to 8 feet deep and 25 to 30 feet wide with unequal side slopes.

ribbon charge A special cutting charge used to cut flat, steel targets up to 3 inches thick.

ring charge A band of explosives completely circling the tree; it should be as wide as possible and up to 1-inch thick depending on the diameter of the tree.

ring main Will detonate an almost unlimited number of charges; preferred over the line main because the detonating wave approaches the branch lines from two directions.

rqr required

s borehole spacing

saddle charge A special cutting charge that uses the destructive effect of the cross fracture formed in the steel by the base of the charge; used on mild steel bars up to 8 square inches or 8 inches in diameter.

safety fuse Consists of black pow&r tightly wrapped with several layers of fiber and waterproofing material; burn rate varies with atmospheric and climatic conditions; burns significantly faster underwater.

satchel charge *See* **M183 demolition charge assembly.**

sec second(s)

see-saw collapse mechanism A method of allowing abridge to collapse under its own weight.

shaped charge Concentrates the energy of the explosion released on a small area, making a tubular or linear fracture in the target.

sheet explosive *See* **M118 block demolition charge.**

side-priming method A method of priming certain types of explosive, for example, dynamite and 40-pound cratering charge.

simply supported bridge Abridge in which the ends of each span rest on the supports; there are no intermediate supports.

single-line ditching method The most common ditching method; detonates a single row of charges along the centerline of the proposed ditch, leaving further widening for subsequent lines of charges.

shpd Shaped

snake-hole method Removing boulders by digging a hole large enough to hold the charge beneath the boulder.

SOP standing operating procedure

spalling Occurs when the charge's shock wave chips away at the surface of the object directly under the charge; if the charge is large enough, it will span the opposite side of the object.

springing charge A comparatively small charge for enlarging a borehole to accommodate a larger charge.

special cutting charge Uses considerably less explosive than conventional charges; however, it requires exact and careful target measurement to achieve optimal effect; examples include ribbon, saddle, and diamond charges.

STANAG Standardization Agreement

standard dynamite Does not include military dynamite; contains nitroglycerin plus varying combinations of absorbents, oxidizers, antacids, and freezing-point depressants.

State of Readiness 1 (safe) When the demolition charges are in place and secure; vertical and horizontal ring mains are installed but are not connected.

State of Readiness 2 (armed) When all charges and firing systems are complete and ready for detonation; all vertical and horizontal ring mains are connected.

stemming The process of packing material on top of an internal borehole or crater charge.

stress-wave method Employs the destructive effect of two colliding shock waves, which are produced by simultaneously detonating the charge from opposite ends.

supplementary adhesive Used to hold demolition charges when the target surface is below freezing, is wet, or is underwater.

T tracked

tamping Placing a calculated quantity of material on or around a charge to increase its effectiveness.

tamping factor (C) Depends on the charge location and materials used for tamping; do not consider a charge tamped with a solid material as fully tamped unless the charge is covered to a depth equal to or greater than the breaching radius.

tamping material Dirt, mud, sand, sandbags, water, or other available materials.

tetryl An effective booster charge in its noncomposite form and a bursting or demolition charge in composite forms; more sensitive and powerful than TNT.

tetrytol A composite explosive containing 75 percent tetryl and 25 percent TNT; the explosive component in demolition charges.

three-pin arch effect The result of an unsuccessful collapse mechanism.

time blasting fuse Transmits a delayed spit of flame to a nonelectric blasting cap; there are two types: M700 time fuse and safety fuse.

TNT *See* **trinitrotoluene (TNT).**

TNT block demolition charge Standard military munitions packaged in ¼-, ½-, and l-pound blocks.

TM technical manual

top attack Forms a hinge at the bottom; as the span falls, the cut ends at the top move outward.

TRADOC United States Army Training and Doctrine Command

trinitrotoluene (TNT) 'The most common military explosive; may be in a composite or noncomposite form; as a standard explosive, it is used to rate other military explosives.

US United States (of America)

USAR United States Army Reserve

v volt(s)

w required width

W wheeled

W_d required ditch width

x row spacing