

870 GROUND IMPROVEMENT STRUCTURES

This category group includes drainage and storm sewer systems, boundary fencing, gates, guard towers and shelters and other related facilities.

871 GROUNDS, DRAINAGE

871 10 STORM SEWER (LF)

Storm sewers are components of a storm drainage system that collects the surface runoff water and conveys it to outlet points. Storm sewers are required at installations or areas where open drainage ditches would create a hazard to the operation of vehicles and aircraft or would prove hazardous to pedestrians. Storm sewers shall not be combined with sanitary sewers. See NAVFAC DM-5, Civil Engineering, for design information.

871 11 OIL/WATER SEPARATOR - RUNOFF WATER (KG)

871 15 STORM WATER PUMPING STATION (EA)

Requirements for Category Codes 871 11 and 15 must be individually justified. No criteria are available.

871 20 DRAINAGE DITCH (LF)

Drainage ditches serve the same purpose as storm sewers. They are preferable to covered structures to minimize construction, to conserve materials, and to facilitate maintenance. Ditches should be planned to provide adequate depth to contain all runoff water anticipated from snow, ice, thaws, frozen ground, and severe rainfalls. In the planning of the drainage system, consideration should be given to the location of ditches to minimize the creation of hazards to vehicles or personnel. See NAVFAC DM-5, Civil Engineering, for technical information.

871 25 DYKE/DAM (LF)

871 30 IRRIGATION FACILITY (LF)

871 35 RETAINING WALL (LF)

871 40 RECLAIMED OWNED LAND (AC)

871 45 DREDGED SPOIL HANDLING FACILITY (GM)

Requirements for Category Codes 871 25 and 35 must be individually justified. No criteria are available.

872 GROUNDS FENCING, GATES AND GUARD TOWERS

This basic category provides boundary security in the form of fencing, walls, gates, watch towers, guard walks, and guard shelters. The type and amount of security planned is a function of the security classification required, and the economical utilization of security guards.

872 10 STATION SECURITY AND PERIMETER FENCING AND WALLS (LF) **872 15 INTERIOR FENCING (NOT CODED IN 872 10) (LF)**

Security fencing and walls define the limits of security areas, and facilitate the effective and economical use of security personnel. Fencing is planned on the basis of a study of the security classification requirements of the installation. The permanency of the installation, availability of materials, presence of natural aids to security, guard personnel, security hazards, and problems and degree of security required, must be considered in all fence construction. Security fencing is generally of the type known as chain link or cyclone, or under certain conditions it may be barbed wire. Fences should be 50 to 150 feet from buildings or critical supplies to be protected. There should be at least 20 feet between perimeter fences and structures, parking areas, or natural features outside the fenced area which could offer concealment or assistance to unauthorized access to area protected. When this is not possible, perimeter fencing should be increased in height or otherwise designed to compensate for the proximity of aids to concealment or access.

Standard Security Fencing. The average standard security fence of the so-called manproof type is the 7-foot cyclone, chain link fence with 1-1/2 foot outriggers mounting 3 barbed wire strands at 45 degrees, increasing the overall height of the fence to 8 feet.

Barbed Wire. There are instances such as in isolated air stations, where three strand barbed wire cattle fence will suffice around the entire perimeter of the station, augmented by standard security fencing of critical areas, if such exist and can be adequately patrolled.

Walls. Where walls, floors, and roofs serve as barriers, they should be constructed and arranged to provide uniform protection equivalent to that provided by chain link fencing as specified. See Table 872-1 for appropriate applications and characteristics of fences.

872 20 GUARD AND WATCH TOWERS (EA)

Where authorized, guard or watch towers should be constructed at locations that will provide the best observation of security areas. The general building of guard towers at other than correctional facilities and certain special weapons projects is not presently considered appropriate. Each local security situation should be solved on its own merits. For design criteria, see NAVFAC DM-5.

TABLE 872-1
Applications and General Characteristics of Fences

Application	Location or Special Requirement	Suitable Type	Height	
			Feet	Inches
Security	Restricted Areas--See <u>U.S. Navy Physical Security Manual</u> for locations.	Chain link security fence with three strands of barbed wire mounted on outriggers (facing out except for brigs).	See <u>Physical Security Manual</u> .	
Security	Where restrictions of visibility into activity is desired. At radio direction-finder structures. Where chain link materials are not available.	Wooden Security Fence. Wooden Security Fence. Wooden Security Fence.	See <u>Physical Security Manual</u> .	
Protection of sports facilities, users and spectators	Athletic courts. Swimming pools. Playgrounds.	Chain link. Chain link or decorative wood.	10-12 6 5	- - -
Snow fencing	Where drifting snow is a problem.	Picket interwoven with wire-studded metal posts.	4	-
Right-of-way fencing	Railways, highways.	Woven wire fencing or wooden or metal posts with or without barbed wire.	4.5	-

Table continued on next page.

TABLE 872-1 (continued)
Applications and General Characteristics of Fences

Application	Location or Special Requirement	Suitable Type	Height	
			Feet	Inches
Animal fencing	Horses, mules, cattle, general. Hogs. Sheep and goats. Poultry.	Woven wire fencing with wooden or metal posts-- barbed wire as indicated:		
		1 strand top	-	47
		1 strand at bottom	-	32-39
		1 strand at top	-	39-47
		None	-	48-72
Perimeter marking	Property lines, firing ranges, outside security barrier of high security area.	Two strand barbed wire.	-	42
		Three strand barbed wire (wood or metal posts).	-	48
Decorative wood fencing	To discourage passage or access.	Picket fence.	3-5	-
		Post and rail or horizontal board.	4	-
	To provide privacy and screening.	Stockade fence.	6-8	-
		Louver fence.	6-7	-
		Basket weave fence.	6-8	-

See U.S. Navy Physical Security Manual, current OPNAVINST P 5510.45 series for definitions of critical areas.

For design criteria, see NAVFAC DM-5.