

214 MAINTENANCE - TANK, AUTOMOTIVE

Facilities for maintenance and repair of combat and noncombat motorized vehicles. For weapons see Code 215, for tracked amphibious vehicles see Code 213, for construction equipment see Code 218.

214 10 COMBAT VEHICLE MAINTENANCE SHOP (SF)

This facility provides specialized work areas, equipment, and storage for overhaul of combat vehicles such as self-propelled gun carriages and tanks. For Marine Corps Organizational Maintenance Shop see Code 214 51, for Field Maintenance Shop see Code 214 53.

214 20 AUTOMOTIVE VEHICLE MAINTENANCE SHOP (SF)

1. Purpose and Function. Automotive vehicle maintenance facilities are required to provide covered work areas for inspection, maintenance, and repair of all transportation equipment assigned to an installation, and as applicable, its supported activities. For reasons of overall efficiency and economy, the maintenance and operations function for automotive, construction, materials handling, and railroad equipment are combined. In areas where combined facilities are not feasible, special facilities for construction equipment maintenance and railroad equipment maintenance will be provided. See Code 218 20 and 218 40 for planning data for separate shop facilities.

2. Requirements. The number and types of the equipment maintained by the activity will govern the size of the facility required, that is, the size is directly proportional to the number of general repair bays required to perform the assigned maintenance task. General repair space requirements are computed from the productive space factors contained in Tables 214-208, 214-20B and 214-20C. A 2-bay facility will be considered as the minimum requirement. After the repair bay requirements have been computed, the area required for administrative and indirect as well as direct support functions can be determined from Table 214-20D.

Space requirements for an automotive vehicle maintenance shop are computed as follows:

Step 1. Prepare an inventory listing by equipment costs codes for all of the equipment supported (see Column 1 of Tables 214-20A, 214-20B, and 214-20C). If a combined automotive/construction equipment/weight-handling maintenance shop is planned, consider all equipment codes; if a separate construction/weight-handling equipment shop is planned under Code 218 20, omit equipment cost codes 2300 to 2840, 3100 to 3720, 4210 to 4952, and 8120 to 8800 (to be used for determining Code 218 20 requirements).

Step 2. Multiply the total equipment inventory as listed in Step 1 for each equipment code group by its corresponding space factor, (shown in Column 3 of the tables) to determine the repair bay requirements for that specific code group.

Step 3. Total the individual code computations to determine the number of repair bays required for all of the equipment supported. For example:

Equipment code	Number of pieces	Productive space factor	Repair bay requirements
0061-0099	1	.063	.063
0102-0299	11	.015	.165
0300-0700	60	.023	1.380
0800	25	.016	.400
1000	26	.020	.520
2000	2	.016	.032
3000	1	.025	.025
4000	26	.020	.520
5000	47	.016	.752
7000	6	.030	.180
8000	3	.092	.276

Total repair bay requirements 4.313
(or 4 bays)

The interpolation and the selection of the number of repair bays in Table 214-20D, Column (1) is done in even numbers. If the calculation of the number of repair bays is less than the odd number 5 as shown in the example, round down to the next even number 4. If the calculation is more than the odd number of bays (i.e., 5.313), round up to the next even number of bays (i.e., 6).

To determine the total square-footage of area required for general repair bays multiply the number of bays determined in Step 3 by 480 (the square footage of a single 16 by 30 foot general repair bay). The number of square feet of administrative and indirect support area requirements is directly proportional to the number of repair bays, as shown in Column 3 of Table 214-20D.

The administrative and indirect support area includes the following facilities:

1. Administrative office for maintenance and operations personnel.
2. Drivers and operators training, licensing, and ready room.
3. Locker, lunch, and conference room.
4. Toilet facilities.
5. Parts supply, issue, and storage room.
6. Tool room.

In addition to repair bay and administrative area requirements, consideration must also be given to such direct support facilities as tire shop, body shop, battery shop, engine and accessories overhaul shop, paint shop, dynamometer test bay, steam cleaning and wash bay, and lube storage. Engine overhaul and paint and body shops should be provided.

The direct support facility requirements shown in column 4 of Table 214-20D provide for complete shop facilities. The total gross space allowance in

column 5 is the maximum allowed for the indicated number of repair bays.

General Work Bay Space Factors

TABLE 214-20A
Automotive Equipment
Codes 0061 Through 0905

Equipment Cost Code (Column 1)	Abbreviated Description (Column 2)	Productive Space Factor (Column 3)
0061 to 0099	Buses	.063
0102 to 0299	Sedans, station wagons, and ambulances	.015
0300 to 0745	Trucks	.023
0800 to 0897	Trailers	.016
0900 to 0905	Motorcycles, scooters, etc.	.004

TABLE 214-20B
Materials Handling Equipment
Codes 1100 Through 1900

Equipment Cost Code (Column 1)	Abbreviated Description (Column 2)	Productive Space Factor (Column 3)
1100 to 1900	Tractors (warehouse) Trucks (fork-lift, crane platform and side loaders)	.020

TABLE 214-206
Construction and Allied Equipment
Codes 2300 Through 8800

Equipment Cost Code (Column 1)	Abbreviated Description (Column 2)	Productive Space Factor (Column 3)
2300 to 2840	Crushing, mixing, batching and paving equipment (mixers, pavers, distribu- tors, spreaders, heaters)	.016

(Table continued on next page.)

TABLE 214-20C (Continued)
Construction and Allied Equipment
Codes 2300 Through 8800

Equipment Cost Code (Column 1)	Abbreviated Description (Column 2)	Productive Space Factor (Column 3)
3100 to 3720	Drilling, blasting, and driving equipment (compressors and drills)	.025
4210 to 4952	Excavating and grading equipment (crawler cranes, graders, loaders, rollers, scrapers, tractors, etc.)	.020
5110 to 5930	Miscellaneous construction and maintenance equipment (generators, pumps, cleaners, sweepers, mowers, snowplows, garbage trucks, mobile shops)	.016
7100 to 7501	Firefighting equipment (trucks, pumps, etc.)	.030
8120 to 8800	Weight handling equipment (truck mtd., cruiser, and boat cranes)	.092

3. Site Location. In choosing a site for a new transportation equipment maintenance facility a number of conditions should be given careful consideration. The facility should be located adjacent to or within the major industrial area which it serves. Caution should be exercised to ensure that the site selected has adequate land area to accommodate all support facilities, equipment holding and parking area, and sufficient room for employee parking. Site location may be influenced to some degree when railroad equipment is involved because of the track location and approach.

When available sites for the automotive vehicle maintenance facility prove to be either inadequate or inappropriate for the inclusion of construction and/or railroad equipment maintenance, separate shop structures for the service and maintenance of these types of equipment will be provided. See Code 218 40 for planning criteria for a special railroad equipment maintenance shop. Four sizes of public works transportation shops are shown in Definitive Designs, NAVFAC P-272.

TABLE 214-20D
Space Requirements for Automotive
Vehicle Maintenance Facility

Repair Bays		Administrative and Indirect Support Area (Sq ft.) (Column 3)	Direct Support Area (Sq ft) (Column 4)	Total Gross Space Allowance (Sq ft) (Column 5)
(Sq ft.) (Column 1)	(Sq ft.) (Column 2)			
2	960	600	1,440	3,000
4	1,920	1,500	2,720	6,140
6	2,880	1,950	3,480	8,310
8	3,840	2,400	4,230	10,470
10	4,800	3,100	4,270	12,170
12	5,760	3,800	5,210	14,770
14	6,720	4,200	6,000	16,920
16	7,680	4,700	6,070	18,450
18	8,640	5,100	6,080	19,820
20	9,600	5,500	6,170	21,270
22	10,560	5,900	6,210	22,670
24	11,520	6,300	6,250	24,070
26	12,480	6,850	6,290	25,620
28	13,440	7,400	6,330	27,170
30	14,400	7,750	6,370	28,520
32	15,360	8,100	6,480	29,940
34	16,320	8,400	6,520	31,240
36	17,280	8,700	6,560	32,540
38	18,240	9,000	6,580	33,820
40	19,200	9,300	6,600	35,100
42	20,160	9,600	6,640	36,400
44	21,120	9,900	6,680	37,700
46	22,080	10,200	6,720	39,000
48	23,040	10,500	6,780	40,320

214 30 REFUELING VEHICLE SHOP (SF)

Aircraft refueler trucks and other portable fuel dispensing equipment are not serviced or repaired in the automotive vehicle maintenance shop because of the explosive hazard involved. Accordingly, a separate explosion proof and fire-resistant maintenance/repair facility is provided. The facility is located a minimum of 100 feet from other structures. See Table 214-30 for the refueling vehicle shop space allowances.

TABLE 214-30
Space Allowances - Refueling Vehicle Shop

No. of Refuelers Supported	No. of Repair Stalls	Gross Area (Sq ft)
up to 8	1	1,080
9 to 16*	2	1,800

*One additional 720-square-foot (16 x 45 ft) stall may be planned for each increment of eight refuelers above sixteen.

One 16 x 45 foot pad for purging fuel tanks should be provided for each facility. See DM-28 for design criteria and P-272 for a definitive drawing of a 2,520-square-foot facility (3 stalls).

214 40 VEHICLE HOLDING SHED (AWAITING PARTS AND REPAIR) (SF)

This facility is a part of the automotive vehicle maintenance shop with the main purpose of providing a covered area for holding deadlined equipment awaiting repairs. Whenever possible, it should be located near the main repair shops. Space requirements are computed as follows:

Provide one bay or stall for every 30 pieces of self-propelled equipment supported up to 1,000 units and one additional bay for every 50 units supported over 1,000. Bays will be 12 feet by 35 feet or 420 square feet in area.

For typical siting of this facility, see Definitive Designs, NAVFAC P-272, Drawing No. 1038013.

214 51 AUTOMOTIVE ORGANIZATIONAL SHOP (SF)

This facility provides work areas for Fleet Marine Force (FMF) units to perform maintenance on items of organizational equipment. The shop space includes administrative and dispatching areas as well as storage for OEM equipment, tools, and parts.

This category code includes requirements previously given in Category Code 214 52, Combat Organizational Shop (now deleted).

See Definitive Designs, NAVFAC P-272, Part 4, for space allowances.

214 53 FIELD MAINTENANCE SHOP (COMBAT/AUTOMOTIVE/TRACK) (SF)

This facility provides specialized work areas for performing 3rd and 4th echelon maintenance functions on items of tactical equipment involving primarily rolling stock items of motor transport and engineer equipment. These are limited to use by the Service Battalion of the Marine Division and appropriate elements of the Force Service Regiment. The shop space includes administrative and training areas as well as storage space for tools, parts, and maintenance float equipment.

For other field maintenance functions see Category Codes 215 60, 217 30, and 218 80.

See Definitive Designs, NAVFAC P-272, Part 4, for space allowances.

214 55 VEHICLE WASH PLATFORM (SF)

Vehicle wash platforms equipped with hose connections should be provided on the basis of one vehicle washing space for each 50 vehicles assigned to the motor pool.

214 56 GREASE RACK (EA)

One grease rack (two vehicles) will be provided for each 125 vehicles.