

## 740 40 BOWLING CENTER (SQ.M./SF)

Project Review: EFD, NAVFAC HQ, BUPERS (Pers-656D)  
Commandant of the Marine Corps (CMC) code LFL  
Design Criteria: *(Military Handbook is not currently available)*

1. **GENERAL.** See General Notes to 740 series category codes for General Instructions regarding facility allowance planning procedures.
2. **DEFINITION.** Bowling Centers are recreational facilities which accommodate bowling and related functions, which may include: open bowling, leagues, tournaments, youth bowling, instruction, exhibitions, and support activities such as equipment sales and rental, food and beverage service, electronic and table games, and meetings.
3. **RELATED FACILITIES.** Consideration should be given to collocating the Bowling Center with the following recreational facilities in order to (i) take advantage of potential savings in space requirements and operating costs, and (ii) provide users with the increased convenience of clustered facilities:
  - 740 28 Amusement Center
  - MWR recreational and foodservice facilities, generally.
4. **BOWLING DEMAND.** The number of bowling lanes required in a Bowling Center is based on the usage demand at each installation, as follows:
  - a) Use projected base loading data to determine the population for each significant population category, as listed in Table 740 40A.
  - b) Calculate the annual bowling linage demand by multiplying the population for each category by participation factors drawn from the installation's most recent Smart Compass Leisure Needs Assessment data, and by adjustment factors as indicated in Table 740 40A. If Leisure Needs Assessment data is not available or not statistically valid, Navy-wide bowling percentages (available from BUPERS) should be used.
  - c) Find the number of lanes required to accommodate the bowling linage demand in Table 740 40B. These allowances are based on the minimum number of lines required to generate sufficient revenues to meet standard operating expenses.
  - d) Calculate the capacity requirements for foodservice and games components by multiplying the numbers of bowling lanes and of projected non-bowling patrons by the usage factors in Tables 740 40C through 40G. See Section 5, below, for explanation of these Tables.
  - e) Multiply the number of units required for each functional component by the space allocation factors in Table 740 40. Add the net square area for all components and add support area factors as directed in Table 740 40, to derive the Total Facility Allowance.

\* For **Marine Corps Installations** use historical patron data to determine the participation factor.

**TABLE 740 40A  
BOWLING LINAGE DEMAND CALCULATION**

<u>Note</u>	<u>Population Category</u>	<u>Population (per base loading)</u>	x	<u>Participation Factor</u>	x	<u>Adjustment Factor</u>	=	<u>Lines Bowled per Year</u>
(1),(2),(3)	Officers	.....	x	.....%	x	111	=	.....
(1),(2),(3)	Enlisted	.....	x	.....%	x	17	=	+ .....
(1),(2),(3)	Retirees	.....	x	.....%	x	31	=	+ .....
						<b>Total Lines Bowled per Year</b>	=	+ .....
(4)						<b>Add linage for installations in locations with harsh or long winter</b>	=	+ <b>32,500</b>
						<b>Adjusted Total Linage Demand</b>	=	.....

**Notes for Bowling Linage Demand Calculation:**

- (1) Population numbers should be consistent with projected base loading data. Officers are O-1 through O-10 and enlisted are E-1 through E-9. Retirees are all military retirees within a 30-minute drive of the installation.  
For facility planning purposes at installations with deployable forces, the active duty demand population is comprised of all of the non-deployable population, plus two-thirds of the deployable population, to reflect time away on deployment. However, calculation of the deployable population may be adjusted based on the actual deployment experience at individual installations.
- (2) Participation factors are to be taken from the installation's most recent Smart Compass Leisure Needs Assessment data. If Leisure Needs Assessment data is not available or not statistically valid, Navy-wide bowling percentages (available from BUPERS) should be used. Usage of facilities by spouses, dependents, and authorized civilians has been statistically incorporated in the participation factors. These participation factors may be revised periodically by NAVFAC HQ and BUPERS, and the most current figures must be used in all demand calculations. For Marine Corps Installations use historical patron dat to determine the participation factor.
- (3) The adjustment factors modify linage demand to reflect differential usage patterns among the different user population categories.
- (4) Linage demand for installations in locations with harsh or long winters is adjusted by adding an extra 32,500 lines to the total number of lines bowled per year. This includes all installations located in the following states: Alaska, Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming and the District of Columbia.

**TABLE 740 40B  
LANE ALLOWANCES FOR BOWLING CENTERS**

<u>Note</u>	<u>Lines Bowled per Year</u>	<u>Number of Lanes Authorized CONUS</u>	<u>Number of Lanes Authorized OCONUS</u>
	Fewer than 10,000	0	0
(1)	10,000 - 18,000	2	2
(1)	18,001 - 36,000	4	4
(1)	36,001 - 54,000	6	6
(1)	54,001 - 69,120	8	8
(1)	69,121 - 86,400	10	10
(1)	86,401 - 107,640	12	12
	107,641 - 124,200	14	18
	124,201 - 140,760	16	20
	140,761 - 165,600	18	24
	165,601 - 231,840	24	32
	231,841 - 298,080	32	40
	298,081 - 364,320	40	50
	Each incremental increase of 17,280	additional 2	additional 2

**Note for Bowling Lane Allowances:**

- (1) Bowling Centers with 12 lanes or fewer are generally considered uneconomic to operate. Centers of such size can only be approved in exceptional cases, with substantial justification of economic viability.

5. **DEMAND FOR FOODSERVICE AND GAMES.** The numbers of seats in the snack bar and lounge and the numbers of video games and pool/billiards tables required in the Bowling Center should represent the sum of the demand from both bowling patrons and other users -- guests, spectators, and patrons primarily using the food service or games areas of the center. The size of the non-bowling clientele will depend on such local installation factors as the location of the facility, proximity of potential patron populations, competing food service and amusement center facilities, type and attractiveness of food service and games program operations, and historic usage patterns.

Demand for meeting/function room space must be based on other users than bowling patrons. The seat capacity requirement should be based on the type and size of specific functions for which there is a justifiable local demand.

Tables 740 40C through 40G provide usage factors for calculating the demand for the functional components in the foodservice and games areas.

Notes for Foodservice and Games Demand Calculation - Tables 740 40C through 40G:

- (1) Use number of bowling lanes as derived in Table 740 40B.
- (2) The projected number of non-bowling patrons for each functional component must be determined by the installation and justified based on analysis of specific local experience and requirements. In the absence of local installation data, assume that the numbers of seats required for non-bowling patrons in the foodservice areas, and the numbers of machines and tables for non-bowling patrons in the games area, are equal to those calculated for the bowling patrons.

<b>TABLE 740 40C</b>					
<b>SNACK BAR DEMAND CALCULATION</b>					
<u>Note</u>	<u># Demand Units</u>	x	<u>Usage Factor</u>	=	<u>Peak Demand</u>
(1)	.....Bowling Lanes	x	.50 seats per lane	=	..... seats
(2)	.....Non-Bowling Patrons per Peak Hour	x	.25 seat-hours per patron	=	+ ..... seats
<b>Total Demand (round to the nearest whole unit)</b>				<b>=</b>	<b>..... seats</b>

<b>TABLE 740 40D</b>					
<b>LOUNGE DEMAND CALCULATION</b>					
<u>Note</u>	<u># Demand Units</u>	x	<u>Usage Factor</u>	=	<u>Peak Demand</u>
(1)	.....Bowling Lanes	x	.44 seats per lane	=	..... seats
(2)	.....Non-Bowling Patrons per Peak Hour	x	.50 seat-hours per patron	=	+ ..... seats
<b>Total Demand (round to the nearest whole unit)</b>				<b>=</b>	<b>..... seats</b>

**TABLE 740 40E  
COMBINED SNACK BAR/LOUNGE DEMAND CALCULATION**

<u>Note</u>	<u># Demand Units</u>	x	<u>Usage Factor</u>	=	<u>Peak Demand</u>
(1)	.....Bowling Lanes	x	.72 seats per lane	=	..... seats
(2)	.....Non-Bowling Patrons per Peak Hour	x	.33 seat-hours per patron	=	+ .....
<b>Total Demand (round to the nearest whole unit)</b>					<b>..... seats</b>

**TABLE 740 40F  
VIDEO GAMES DEMAND CALCULATION**

<u>Note</u>	<u># Demand Units</u>	x	<u>Usage Factor</u>	=	<u>Peak Demand</u>
(1) machines	.....Bowling Lanes	x	1.0 machines per lane	=	.....
(2) machines	.....Non-Bowling Patrons per Peak Hour	x	1.0 machine-hours per patron	=	+ .....
<b>Total Demand (round to the nearest whole unit)</b>					<b>..... machines</b>

**TABLE 740 40G  
POOL/BILLIARDS DEMAND CALCULATION**

<u>Note</u>	<u># Demand Units</u>	x	<u>Usage Factor</u>	=	<u>Peak Demand</u>
(1)	.....Bowling Lanes	x	.22 tables per lane	=	..... tables
(2)	.....Non-Bowling Patrons per Peak Hour	x	.20 table-hours per patron	=	+ .....
<b>Total Demand (round to the nearest whole unit)</b>					<b>..... tables</b>

6. **SPACE ALLOWANCES.** Space allowances for Bowling Centers are determined according to the planning criteria presented in Table 740 40 below. The total allowance for a facility is the sum total of the space allowances for each functional component. The number of units of each component required to meet the demand is obtained from the calculations in Tables 740 40A through 740 40G.

**TABLE 740 40  
SPACE ALLOWANCES FOR BOWLING CENTERS**

<u>Note</u>	<u>Table</u>	<u>Functional Component</u>	<u># Units</u>	x	<u>Space Allocation Factor</u>	=	<u>Total Net Area</u>	<u>Minimum or Maximum Net Area</u> sq.m.(SF)
		<b>ACTIVITY AREAS</b>						
		<b>Bowling</b>						
	A,B	Bowling Lanes (incl. pinspotting, settee, promenade, lockers)	.....	x	60sq.m.(650 NSF) per lane	=	+ .....	
	A,B	Workroom	.....	x	7sq.m.(70 NSF) per lane	=	+ .....	11(120) min. 78(840) max.
		<b>Food Service</b>						
	C	Snack Bar (incl. seating, kitchen, serving counter, storage)	.....	x	3sq.m.(27 NSF) per seat	=	+ .....	
	D	Lounge (incl. seating, bar, storage)	.....	x	2sq.m.(20 NSF) per seat	=	+ .....	
(1)	E	Combined Snack Bar/Lounge (incl. seating, kitchen, serving counter, bar, storage)	.....	x	(2sq.m.25 NSF) per seat	=	+ .....	
(2)		Meeting/Function Room	.....	x	1sq.m.(12 NSF) per seat	=	+ .....	
		<b>Games</b>						
		Video Games	.....	x	3sq.m.(30 NSF) per machine	=	+ .....	
		Pool/Billiards	.....	x	34sq.m.(370 NSF) per table	=	+ .....	
		<b>Subtotal Activity Areas</b>				=	.....	
		<b>ACTIVITY SUPPORT AREAS</b>						
		Toilets			3% x Subtotal Activity Areas	=	+ .....	
		Administration (incl. pro shop, control counter, storage)			3% x Subtotal Activity Areas	=	+ .....	93(1,000) max.
		<b>Subtotal Activity Support Areas</b>				=	.....	
		<b>BUILDING SUPPORT AREAS</b>						
(3)		Lobby/Circulation/Structure/Partitions/Janitor			4-5% x (Subtotal Activity Areas + Subtotal Activity Support Areas)	=	+ .....	
		Mechanical/Electrical/Communication Equip. Space			5-10% x (Subtotal Activity Areas + Subtotal Activity Support Areas)	=	+ .....	
		<b>TOTAL FACILITY ALLOWANCE</b>				=	.....	Gross Area

**Notes for Space Allowance Table:**

- (1) Combined snack bar/lounge may be provided as an alternative to separate snack bar and lounge spaces.
- (2) Meeting/function room seating capacity should be based on usage by other than bowling patrons. Usage projection must be justified by demand and economic operations analysis, serving local function requirements.
- (3) Lobby/circulation/structure/partitions/janitor area -- use 5% factor for centers of 24 lanes or less; 4% for 26 lanes or more.

sq.m. = square meter

NSF = Net Square Feet

GSF = Gross Square Feet

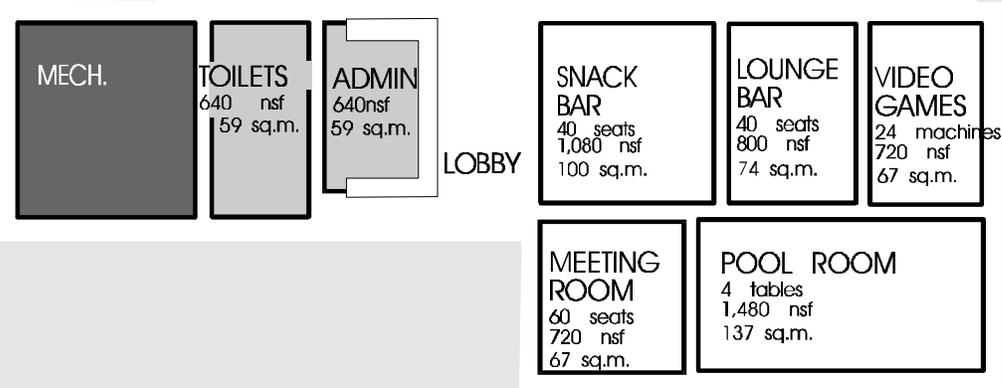
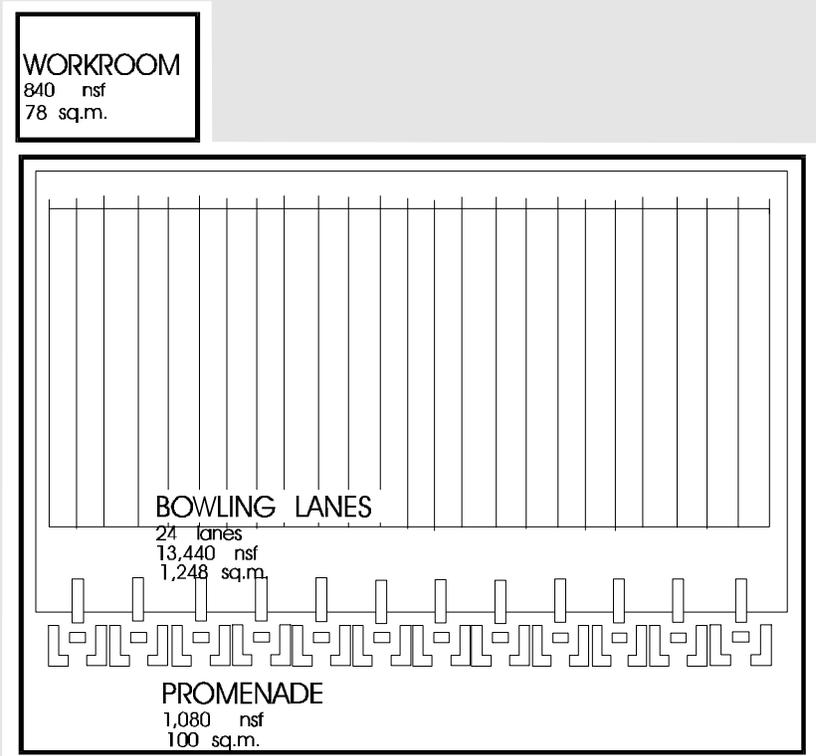
Minimum or Maximum NSF = Minimum or maximum space allowance to be provided for the particular function or activity.

6. **ILLUSTRATIVE SPACE PROGRAMS.** Three space programs for small, medium and large Bowling Centers are presented to illustrate the application of the space allocation factors, and the range of spaces and capacities which may be included in a facility. These space programs are for illustrative purposes only.
  
7. **SAMPLE LAYOUT DIAGRAM.** A layout diagram is presented for a medium-size Bowling Center. This diagram is an example of the composition of such a facility in terms of its functional components, their respective sizes and adjacencies. The layout diagram is for illustrative purposes only.

## BOWLING CENTER (Category Code 740 40)

### Sample Space Programs

Functional Components/ Sub-Components	Facility Size -- SMALL			Facility Size -- MEDIUM			Facility Size -- LARGE		
	Capacity	Net Area	Total Area	Capacity	Net Area	Total Area	Capacity	Net Area	Total NSF
		sq.m./SF	sq.m./SF		sq.m.SF	sq.m./SF		sq.m./SF	sq.m./SF
<b>ACTIVITY AREAS</b>									
<b>BOWLING</b>									
Bowling Lane (including lane, pinspotting, settee, service aisle)	12	624/6,720		24	250/13,440		32	660/17,920	
Workroom		78/840			78/840			78/840	
Promenade (including spectator seating, lockers)	12	100/1,080		24	200/2,150		32	267/2,870	
<b>FOODSERVICE</b>									
Snack Bar (including seating, serving counter, kitchen, storage)	20	50/540		40	100/1,080		60	151/1,620	
Lounge Bar (including seating, bar, storage)	20	37/400		40	74/800		60	111/1,200	
Function/Meeting Room				60	67/720		90	100/1,080	
<b>GAMES</b>									
Video Games Area	12	33/360		24	67/720		32	89/960	
Pool Room	2	69/740		4	137/1,480		6	206/2,220	
<b>Subtotal Activity Areas</b>			<b>992/10680</b>		<b>1,970/21,230</b>			<b>2,670/28,710</b>	
<b>ACTIVITY SUPPORT AREAS</b>									
Toilets		30/320			59/640			80/860	
Administration (including offices, pro shop, storage, control counter)		30/320			59/640			80/860	
<b>Subtotal Activity Support Areas</b>			<b>60/640</b>		<b>119/1,280</b>			<b>160/1,720</b>	
<b>BUILDING SUPPORT AREAS</b>									
Lobby/Circulation/Structure/Partitions/Janitor's Closet		53/570			105/1,130			141/1,520	
Mechanical/Electrical/Communication Equip. Space		105/1,130			157/1,690			170/1,830	
<b>Sutotal Building Support Areas</b>			<b>158/1700</b>		<b>262/2,820</b>			<b>311/3,350</b>	
<b>TOTAL GROSS AREA (sq.m./SF)</b>			<b>1,210/13,020</b>		<b>1,210/13,020</b>			<b>3,140/33,780</b>	
<b>Total Gross Area per lane (sq.m./SF)</b>	<b>12</b>		<b>101/1,085</b>	<b>24</b>		<b>98/1,055</b>	<b>32</b>		<b>98/1,056</b>



BOWLING CENTER - Medium Capacity