SPACE REQUIREMENTS	Adequate space must be provided for all animals. [3.6, 3.28, 3.53, 3.80, 3.104, 3.128, Policy #24]
Criteria	Adequate space must provide for: • freedom of movement • normal postural adjustment
Species Specific	**Dogs & Cats** [3.6] Adequate space must allow each dog and cat: [3.6(a)(2)(xi)] • to turn about freely • to sit, stand and lie in a comfortable manner • to walk in a normal manner No more than 12 adult *nonconditioned* dogs or cats may be housed in the same primary enclosure. [3.6(b)(2), 3.6(c)(3)] *Food & Water Bowls* Floor space taken up by food and/or water bowls must be subtracted from the available floor space. ***Dogs only*** Interior height of the primary enclosure must be at least 6 inches higher than the head of the tallest dog in the enclosure. [3.6(c)(1)(iii] Resting shelves in dog cages may be counted as floor space if: • the shelf and floor of the cage are contiguous • the dog can easily step up onto and off of the resting shelf • the area above the resting shelf meets the interior height requirement • the resting shelf does not appreciably affect the dog's ability to make postural adjustments Innovative primary enclosures which do not precisely meet the height and floor space requirements for dogs may be used if they: [3.6(d)] • provide the dog with an adequate volume of space, and • provide the opportunity to express species-typical behavior, and

- are approved by the IACUC

Calculation of Floor Space

Floor space for each **dog and weaned puppy** is calculated as follows: [3.6(c)(1)(i)]

1) measure the dog in inches from tip of nose to base of tail (see page 11.4.25)
2) add 6 inches to this number
3) multiply the number in line two by itself (i.e., square it). This is required floor space in square inches.
4) divide by 144 to calculate square feet (see page 11.4.26)

Example:
For a dog measuring 14 inches:
1) 14 inches + 6 = 20 inches
2) 20 x 20 = 400 square inches
3) 400 sq. in. divided by 144 sq. in./sq. ft. = 2.8 sq. ft.

Additional floor space for each **bitch with nursing puppies** is determined by: [3.6(c)(1)(ii)]

- bitch's breed, such as:
  - rottweilers
  - boxers
  - dalmations
- bitch's behavioral characteristics, such as:
  - extreme nervousness
  - high strung
  - overly protective
- the attending veterinarian, and
- the minimum space formula shown below

The minimum space requirement is calculated as follows:

1) determine the required floor space in square inches for the bitch as shown above
2) multiply this number by 0.05
3) multiply the number obtained in line two by the number of puppies. This is the amount of additional floor space required.
4) add the additional floor space for the puppies to the required floor space for the bitch

5) divide by 144 to calculate square feet

Example:
For a bitch measuring 14 inches with 5 puppies:
1) 14 inches + 6 = 20 inches
2) 20 inches x 20 inches = 400 square inches (bitch's floor space)
3) 400 sq. in. x 0.05 = 20 sq. in. (additional floor space per puppy)
4) 20 sq. in./puppy x 5 puppies = 100 sq in (total additional floor space)
5) 400 sq. in. + 100 sq. in. = 500 sq. in.
6) 500 sq in divided by 144 sq in/sq ft = 3.5 sq. ft. (total floor space for bitch and puppies)

If the available floor space does not meet the minimum required as calculated for the bitch and her nursing puppies, then the housing must be approved by the research facility's attending veterinarian. [3.6(c)(1)(ii)]

Cats only
Interior height of primary enclosure containing cats and/or weaned kittens must be at least 24 inches high. [3.6(b)(1)(ii)(A)]

Innovative primary enclosures which do not precisely meet the height and floor space requirements for cats may be used if they: [3.6(d)]
- provide the cat with an adequate volume of space, and
- provide the opportunity to express species typical behavior, and
- are approved by the IACUC

Calculation of Floor Space
Floor space for **cats and weaned kittens** is determined as follows:
1) cats up to and including 8.8 lbs (4 kg) require at least 3.0 sq. ft. [3.6(b)(1)(ii)(B)]
2) cats over 8.8 lbs (4 kg) require 4.0 sq. ft. [3.6(b)(1)(ii)(C)]
3) area taken up by food and water pans is not considered part of the minimum required floor space [3.6(b)(1)(ii)(A)]

4) litter pans may be considered part of the minimum floor space if kept cleaned and sanitized [3.6(b)(1)(iv)]
5) resting surfaces that do not allow the space under them to be used by the cat are counted as floor space but may not be counted as elevated resting surfaces [3.6(b)(4)]

Additional floor space for **queens and nursing kittens** is determined by: [3.6(b)(1)(iii)]

- the queen's breed
- the queen's behavioral characteristics, such as:
  - extreme nervousness
  - high strung
  - overly protective
- minimum space formula as shown below

The minimum space requirement is calculated as follows:
1) determine the required floor space for the queen as above
2) multiply this number by 0.05
3) multiply the number obtained in line two by the number of kittens. This is the amount of additional floor space required.
4) add the required floor space for the kittens to the required floor space for the queen

Example
For an 8 pound queen with 5 kittens:
1) queen requires 3 sq. ft.
2) 3 sq. ft. x 0.05 = 0.02 sq. ft. (additional floor space per kitten)
3) 0.02 sq. ft. x 5 kittens = 0.1 sq. ft. (total additional floor space)
4) 3.0 sq ft + 0.1 sq. ft. = 3.1 sq. ft. (total floor space for queen and kittens)

If the available floor space does not meet the minimum required as calculated, then the housing must be approved by the research facility's attending veterinarian. [3.6(b)(1)(iii)]

Guinea Pigs & Hamsters
Guinea Pigs [3.28(b)]
Primary enclosures acquired before August 15, 1990:
Interior height of primary enclosures must be at least 6.5 inches. [3.28(b)(2)(i)]

Minimum floor space for **each** guinea pig is determined as follows: [3.28(b)(2)(ii)]

Weaning to 350 grams.....60 sq in
350 grams or more.....90 sq in
Breeders.....180 sq in

Primary enclosures acquired on or after August 15, 1990:
Interior height of primary enclosures must be at least 7.0 inches. [3.28(c)(1)(ii)]

Minimum floor space for **each** guinea pig is determined as follows: [3.28(c)(1)(iii]

Weaning to 350 grams.....60 sq in
350 grams or more.....101 sq in
Nursing female with litter..... 101 sq in

Innovative primary enclosures which do not precisely meet the height and floor space requirements may be used if they: [3.28(c)(3)]

- provide the guinea pig with an adequate volume of space, and
- provide the opportunity to express species typical behavior, and
- are approved by the IACUC

Hamsters
Primary enclosures acquired before August 15, 1990:
Interior height of primary enclosures for:

- ***dwarf hamsters*** must be at least 5.0 inches. [3.28(c)(3)(i)]
- ***other hamsters*** must be at least 5.5 inches. [3.28(c)(3)(i)]

Minimum floor space for **each** hamster is determined as follows: [3.28(c)(3)(ii) and (iii)]

	Dwarf	Other	Max # /enc
Weaning to 5 wks.....	5.0 sq in	10.0 sq in	20
5 to 10 wks.....	7.5 sq in	12.5 sq in	16
10 wks or more.....	9.0 sq in	15.0 sq in	13
Nursing female with litter....	25 sq in(total)	121 sq in(total)	--

Nursing female hamsters with litters may not be housed with any other hamsters. [3.28(c)(3)(ii)]

Primary enclosures acquired on or after August 15, 1990:
Interior height of primary enclosures must be at least 6.0 inches. [3.28(c)(2)(ii)]

Minimum floor space for **each** hamster is determined as follows: [3.28(c)(2)(iii) and (iv)]

<60 grams	10 sq in
60 to 80 grams	13 sq in
80 to 100 grams	16 sq in
>100 grams	19 sq in
Nursing female with litter	25 sq in total for dwarf 121 sq in total for other

Nursing female hamsters with litters may not be housed with any other hamsters. [3.28(c)(2)(iv)]

Innovative primary enclosures which do not precisely meet the height and floor space requirements may be used if they: [3.28(c)(3)]

- provide the hamster with an adequate volume of space, and
- provide the opportunity to express species typical behavior, and
- are approved by the IACUC

Rabbits [3.53]
Primary enclosures acquired before August 15, 1990
Minimum floor space for **each** rabbit, exclusive of space taken up by food and water receptacles, is determined as follows: [3.53(b)]

	Weight		Space/rabbit	
	lbs	kgs	in^2	ft^2
Groups	3-5	1.2-2.6	144	1.0
	6-8	2.7-4.0	288	2.0
	≥ 9	≥ 4.1	432	3.0
Individual Adults	3-5	1.2-2.6	180	1.25
	6-8	2.7-4.0	360	2.5
	9-11	4.1-5.4	540	3.75
	≥ 12	≥ 5.5	720	5.0

	Weight lbs	Weight kgs	Space/rabbit in^2	Space/rabbit ft^2
Nursing Females.....	3-5	1.2-2.6	576	4.0
	6-8	2.7-4.0	720	5.0
	9-11	4.1-5.4	864	6.0
	≥ 12	≥ 5.5	1080	7.5

Primary enclosures acquired on or after August 15, 1990
Interior height of primary enclosures must be at least 14 inches. [3.53(c)(2)]

Minimum floor space for **each** rabbit, exclusive of space taken up by food and water receptacles, is determined as follows: [3.53(c)(2)]

	Weight lbs	Weight kgs	Space/rabbit ft^2
Individual (weaned)....	< 4.4	< 2.0	1.5
	4.4-8.8	2.0-4.0	3.0
	8.8-11.9	4.0-5.4	4.0
	> 11.9	> 5.4	5.0
Females with litters.....	<4.4	<2.0	4.0
	4.4-8.8	2.0-4.0	5.0
	8.8-11.9	4.0-5.4	6.0
	>11.9	>5.4	7.5

Innovative primary enclosures which do not precisely meet the height and floor space requirements may be used if they: [3.53(c)(3)]

- provide the rabbit with an adequate volume of
- space, and
- provide the opportunity to express species typical behavior, and
- are approved by the IACUC

Nonhuman Primates [3.80]
Primary enclosures must provide sufficient space for the nonhuman primate to make normal postural movements, such as lying down, stretching out, or hanging by the tail.

The minimum floor space for **each** nonhuman primate is determined as follows: [3.80(b)(2)(i)]

Group*	Weight lb	Weight kg	Space/animal(sq. ft.)	Height(in)
1	<2.2	<1	1.6	20
2	2.2-6.6	1-3	3.0	30
3	6.6-22	3-10	4.3	30
4	22-33	10-15	6.0	32
5	33-55	15-25	8.0	36
6	>55	>25	25.1	84

*Nonhuman primates in each Group include, but are not limited to:

Group 1 - marmosets, tamarins, and infants <6 months of age of various species

Group 2 - capuchins, squirrel monkeys and similar size species, and juveniles 6 months to 3 years of age of various species

Group 3 - macaques and African species

Group 4 - male macaques and large African species

Group 5 - baboons and nonbrachiating species larger than 33.0 lbs

Group 6 - great apes over 55.0 lbs and brachiating species

NOTE: Great apes weighing over 110.0 lbs must be provided an additional volume of space to allow for normal postural adjustments. [3.80(b)(2)(ii)]

Mothers with infants less than 6 months of age may be housed together in primary enclosures that meet the floor space and height requirements for the mother. [3.80(b)(2)(iv)]

Low perches and ledges that do not allow the space underneath them to be occupied by the nonhuman primate must be counted as part of the floor space. [3.80(b)]

Any exemptions from the floor space requirements must be: [3.80(b)(2)(iii)]

- approved by the IACUC, and
- required by a protocol, or
- necessary in the judgment of the attending veterinarian

Innovative primary enclosures which do not precisely meet the height and floor space requirements may be used if they: [3.80(c)]

- provide the nonhuman primate with an adequate volume of space, and
- provide the opportunity to express species typical behavior, and
- are approved by the IACUC

Marine Mammals [3.104]
Space requirements for marine mammals are based on the following factors:

- species
- horizontal and vertical distances
- normal postural adjustments in and out of the water
- normal social adjustments in and out of the water
- training requirements
- veterinary requirements

Each marine mammal requires its own minimum space regardless of age.

NOTE: When calculating the minimum space requirements for a marine mammal, do **not** measure the actual animal. Use the average adult lengths listed in Table III.

Only enclosures that meet the minimum space requirements may be used for permanent housing purposes. [3.104(a)]

Examples of enclosures that may **not** meet the minimum space requirements include, but are not limited to:

- medical pools or enclosures
- holding pools or enclosures
- gated side pools

Enclosures smaller than required by the standards may be **temporarily** used for: [3.104(a)]

- isolation or separation for medical treatment or medical training (See Adequate Veterinary Care - page 15.1.3)

- nonmedical training
- breeding
- holding
- transfer purposes

The use of smaller than required enclosures for nonmedical training, breeding, or holding for more than 2 weeks requires a justification: [3.104(a)]

- in writing
- written by the attending veterinarian
- renewed weekly

The use of smaller than required enclosures for transfer purposes for more than 1 week requires a justification: [3.104(a)]

- in writing
- written by the attending veterinarian
- renewed weekly

Rotating animals between enclosures that meet and do **not** meet the minimum space requirements is not an acceptable means of complying with the minimum space requirements. [3.104(a)]

Cetaceans [3.104(b)]
Cetaceans require only a pool and no dry resting surface.

POOL AREA
The minimum space requirement is based on:

- species
- minimum horizontal dimension (MHD)
- depth
- volume
- surface area

Species
Cetaceans are divided into Group I cetaceans and Group II cetaceans as shown in Table III.

Minimum Horizontal Dimension (MHD) [3.104(b)(1)]
The MHD is the diameter of a circular pool of water.

Group I cetaceans require an MHD of: [3.104(b)(1)(i)]

- 24 feet OR
- two times the average adult length of the longest species housed in the pool, whichever is greater (see Tables I and III)

Group II cetaceans require an MHD of: [3.104(b)(1)(ii)]

- 24 feet OR
- four times the average adult length of the longest species housed in the pool, whichever is greater (see Tables II and III)

In a pool containing both Group I and Group II cetaceans, the MHD must be the longest length required for any cetacean housed therein. [3.104(b)(1)(iii)]

In irregularly shaped or rectangular pools, the MHD may be reduced 20% in one direction if it is enlarged 20% in the other direction at a 90 degree angle. [3.104(b)(1)(i)]

EXAMPLE: MHD for a cetacean has been calculated to be 24ft. If the pool were round, a pool 24ft in diameter would meet this requirement. To determine the minimum size of a rectangular-shaped pool, increase the calculated MHD by 20% to find the length and decrease the calculated MHD by 20% to find the width:

20%	24ft x 0.2 = 4.8ft
Length	24ft + 4.8ft = 28.8ft
Width	24ft - 4.8ft = 19.2ft

Pool must be 28.8ft by 19.2ft.

Depth [3.104(b)(2)]
The minimum depth for both Group I and Group II cetaceans is:

- 6 feet OR
- ½ the average adult length of the longest species in the pool, whichever is greater (see Tables I, II, and III)

Any part of the pool which does not meet the minimum depth requirement cannot be included in the minimum space requirement calculation.

Volume [3.104(b)(3)]
If the pool meets the MHD and the depth requirements, then the pool will have sufficient volume to house:

- two Group I cetaceans, or
- four Group II cetaceans

Volume of the pool is calculated using the following formula:
Volume = (MHD/2)squared x 3.14 x depth

If the pool houses **more than two Group I cetaceans**, see Table I for the volume of water required for each additional cetacean.

If the pool houses **more than four Group II cetaceans**, see Table II for the volume of water required for each additional cetacean.

Surface Area [3.104(b)(4)(i)]
A pool containing up to 2 Group I or 4 Group II cetaceans that meets the required MHD and depth will have the required amount of surface area.

In a mixture of Group I and Group II cetaceans:
1) the MHD, depth and volume must be met, AND
2) any additional surface area required must be met using Table IV

Sirenians [3.104(c)]
Sirenians require only a pool and no dry resting surface.

POOL AREA
The minimum space requirement is based on: (see Table V)

- minimum horizontal dimension (MHD)
- depth
- volume
- surface area

Minimum Horizontal Dimension [3.104(c)(1)]
The MHD is the diameter of a circular pool of water.

The required MHD is two times the average adult length of the longest species housed in the pool. (see Table III)

Depth [3.104(c)(2)]
The minimum depth of the pool must be:

- 5 feet OR
- ½ the average adult length of the longest species housed therein, whichever is greater (see Table III)

Volume [3.104(c)(3)]
If the pool meets the MHD and the depth requirements, then the pool will have sufficient volume to house one or two sirenians.

The volume requirement for additional animals is calculated using the following formula:

Volume = (MHD/2)squared x 3.14 x depth [see above for depth requirement]

Surface Area [3.104(c)(3)]
If the pool meets the MHD and the depth requirements, then the pool will have sufficient surface area for one or two sirenians.

The surface area requirement for additional animals is calculated using the following formula:

Surface Area = (average adult body length/2)squared x 3.14 x depth [see above for depth requirement]

Pinnipeds [3.104(d)]
Pinnipeds require: [3.104(d)(1)] (see Table V)

- a pool, and
- a dry resting or social activity area which is close enough to the surface of the water to allow easy access to and from the pool

POOL AREA
Minimum Horizontal Dimension [3.104(d)(3)(ii)]

MHD = 1.5 x average adult length of the longest species of pinniped housed in the enclosure

NOTE: The MHD may be reduced up to 20% if the amount of the reduction is added to the MHD at the 90-degree angle.

EXAMPLE: MHD for a pinniped has been calculated to be 24ft. If the pool were round, a pool 24ft in diameter would meet this requirement. To determine the minimum size of a rectangular-shaped pool, increase the calculated MHD by 20% to find the length and decrease the calculated MHD by 20% to find the width:

20% 24ft x 0.2 = 4.8ft
Length 24ft + 4.8ft = 28.8ft
Width 24ft - 4.8ft = 19.2ft

Pool must be 28.8ft by 19.2ft.

Depth [3.104(d)(3)(iii)]
Depth of the pool must be at least 3.0 feet or ½ the average adult length of the longest pinniped in the pool, whichever is greater.
NOTE: Any part of the pool which meets the depth requirement may be used in calculating the required dry resting/social area, or as part of the MHD or required surface area.

Surface Area [3.104(d)(3)(i)]
The surface area of the pool must be at least equal to the required dry resting/social area

DRY RESTING AREA (DRA) [3.104(d)(2)]
Group I Pinnipeds (see Table III) - [3.104(d)(2)(i)]
Single-housed animal -

DRA = 2 x (average adult length)squared

Group-housed animals-

DRA = sum of the [(average adult length)squared] for each pinniped in the enclosure

Group II Pinnipeds (see Table III) [3.104(d)(2)(ii)]
Single-housed animal-
Dry resting area must be computed for a minimum of two pinnipeds:

DRA = [(average adult length)squared x 1.5] + [(average adult length)squared x 1.4]

Group-housed animals-
The dry resting area is calculated as follows:
1) list all the pinnipeds in the enclosure by average adult length in descending order from the longest to the shortest
2) square the average adult length of each pinniped
3) multiply the squared average length of the longest pinniped by 1.5
4) multiply the squared average length of the second longest pinniped by 1.4
5) multiply the squared average length of the third longest pinniped by 1.3
6) multiply the squared average length of the fourth longest pinniped by 1.2
7) multiply the squared average length of the fifth longest pinniped by 1.1
8) for the 6th and additional pinnipeds only square the average adult length as instructed in Step 2.
9) add the figures obtained above

NOTE: If two or more sexually mature males are housed together in the same primary enclosure, the dry resting/social area must be divided into two or more separate areas with sufficient visual barriers, such as fences, rocks, or foliage, to provide relief from aggressive animals.

Mixed Group I and II Pinnipeds [3.104(d)(2)(iii)]
Dry resting area is calculated as for Group II pinnipeds.

The dry resting/social area must be divided into two or more separate areas with sufficient visual barriers, such as fences, rocks, or foliage, to provide relief from aggressive animals.

NOTE: A small portion of the dry resting area may have up to 4 inches of water.

Polar Bears [3.104(e)]
Primary enclosures housing polar bears must consist of :
- a pool of water
- a dry resting/social activity area
- a den

POOL AREA [3.104(e)]
Minimum Horizontal Dimension
The MHD of the pool must be 8.0 feet or greater.

Depth
The minimum depth of the pool must be 5.0 feet with the **exception** of any entry or exit area.

Surface Area
The minimum surface area for **one or two** polar bears must be at least 96.0 square feet.

For each additional polar bear, the surface area must be increased by 40.0 square feet.

NOTE: Any part of the pool which meets the depth requirement may be counted in the surface area measurement.

DRY RESTING AREA [3.104(e)]
The dry resting/social activity area must provide:

- at least 400 square feet of area for up to 2 polar bears
- at least 40 square feet of surface area for each additional polar bear
- enough shade to accommodate all the polar bears in the enclosure at the same time

DEN [3.104(e)]
The den must be:

- at least 6.0 feet in width and depth
- at least 5.0 feet in height
- positioned so that the viewing public is not visible from the interior of the den

A separate den must be provided for each adult female of breeding age which is permanently housed in the same enclosure with an adult male of breeding age.

Sea Otters [3.104(f)]
The primary enclosures housing sea otters must consist of: (see Table V)

- a pool of water
- a dry resting area

POOL AREA [3.104(f)]
Minimum Horizontal Dimension [3.104(f)(1)]
The MHD must be at least 3 times the average adult length of the sea otter housed therein.

Depth [3.104(f)(1)]
The minimum depth of the pool must be 3.0 feet.

Volume [3.104(f)(2)]
For one or two sea otters:

Volume = [3.14 x (average adult length)squared] x 3.0 ft

NOTE: Average adult length of a sea otter is 4.1 feet.

For **each additional** sea otter in excess two, add 79.17 cubic feet to the above total.

DRY RESTING AREA [3.104(f)(3)]
For one or two sea otters:

DRA = 3.14 x (average adult length)squared

NOTE: Average adult length of a sea otter is 4.1 feet.

For **each additional** sea otter in excess of two, add 6.44 square feet to the above total.

SEE TABLES STARTING ON NEXT PAGE

Table I- Group I Cetaceans			
Average adult lengths (ft)	Minimum horizontal dimension [MHD] (ft)	Minimum required depth (ft)	Volume of water required for each additional cetacean in excess of two (cubic feet)
5.5	24	6	284.95
7.5	24	6	529.87
9.0	24	6	763.02
10.0	24	6	942.00
11.5	24	6	1,245.79
12.0	24	6	1,356.48
14.0	28	7	2,154.04
18.0	36	9	4,578.12
18.5	37	9.25	4,970.33
19.0	38	9.50	5,384.32
22.0	44	11	8,358.68
22.5	45	11.25	8,941.64
24.0	48	12	10,851.84
28.0	56	14	17,232.32

Table II- Group II Cetaceans			
Average adult lengths (ft)	Minimum horizontal dimension [MHD] (ft)	Minimum required depth (ft)	Volume of water required for each additional cetacean in excess of two (cubic feet)
5.0	24	6	471.00
5.5	24	6	569.91
6.0	24	6	678.24
7.0	28	6	923.16
7.5	30	6	1,059.75
8.0	32	6	1,205.79
8.5	34	6	1,361.19
9.0	36	6	1,526.04

Table III--Average Adult Lengths of Marine Mammals Maintained in Captivity \1

Species	Common Name	Average adult length (ft)
Group I Cetaceans:		
Balaenoptera acutorostrata	Minke whale	27.9
Cephalorhynchus commersonii	Commerson's dolphin	5.0
Delphinapterus leucas	Beluga whale	14.0
Monodon monoceros	Narwhale	13.0
Globicephala melaena	Long-finned pilot whale	19.0
Globicephala macrorhynchus	Short-finned pilot whale	18.0
Grampus griseus	Risso's dolphin	12.0
Orcinus orca	Killer whale	24.0
Pseudorca carassidens	False killer whale	14.3
Tursiops truncatus (Atlantic)	Bottlenose dolphin	9.0
Tursiops truncatus (Pacific)	Bottlenose dolphin	10.0
Inia geoffrensis	Amazon porpoise	8.0
Phocoena phocoena	Harbor porpoise	5.5
Pontoporia blainvillei	Franciscana	5.0
Sotalia fluviatilis	Tucuxi	5.5
Platanista, all species	River dolphin	8.0
Group II Cetaceans:		
Delphinus delphis	Common dolphin	8.5
Feresa attenuata	Pygmy killer whale	8.0
Kogia breviceps	Pygmy sperm whale	13.0
Kogia simus	Dwarf sperm whale	9.5
Lagenorhynchus acutus	Atlantic white-sided dolphin	9.5
Lagenorhynchus cruciger	Hourglass dolphin	5.6
Lagenorhynchus obliquidens	Pacific white-sided dolphin	7.5
Lagenorhynchus albirostris	White-beaked dolphin	9.0
Lagenorhynchus obscurus	Duskey dolphin	7.0
Lissodelphis borealis	Northern right whale dolphin	9.0
Neophocaena phocaenoides	Finless porpoise	6.0
Peponocephala electra	Melon-headed whale	9.0
Phocoenoides dalli	Dall's porpoise	6.5
Stenella longirostris	Spinner dolphin	7.0
Stenella coeruleoalba	Striped dolphin	7.5
Stenella attenuata	Spotted dolphin	7.5
Stenella plagiodon	Spotted dolphin	7.5
Steno bredanensis	Rough-toothed dolphin	8.0

Species	Common Name	Average adult length (ft) Male	Female
Group I Pinnipeds:			
Arctocephalus gazella**	Antarctic Fur Seal	5.9	3.9
Arctocephalus tropicalis**	Amsterdam Island Fur Seal	5.9	4.75
Arctocephalus australis**	South American Fur Seal	6.2	4.7
Arctocephalus pusillis**	Cape Fur Seal	8.96	6.0
Callorhinus ursinus**	Northern Fur Seal	7.2	4.75
Eumetopias jubatus**	Steller's Sea Lion	9.4	7.9
Hydrurga leptonyx	Leopard Seal	9.5	10.8
Mirounga angustirostris**	Northern Elephant Seal	13.0	8.2
Mirounga leonina**	Southern Elephant Seal	15.3	8.2
Odobenus rosmarus**	Walrus	10.3	8.5
Otaria flavescens**	South American Sea Lion	7.9	6.6
Phoca caspica	Caspian Seal	4.75	4.6
Phoca fasciata.	Ribbon Seal	5.7	5.5
Phoca larga	Harbor Seal	5.6	4.9
Phoca vitulina	Habor Seal	5.6	4.9
Zalophus californianus	California Sea Lion	7.3	5.7
Halichoerus grypus**	Grar Seal	7.5	6.4
Phoca sibirica	Baikal Seal	5.6	6.1
Phoca groenlandica	Harp Seal	6.1	6.1
Leptonychotes weddelli**	Weddell Seal	9.5	10.3
Lobodon carcinophagus**	Crabeater Seal	7.3	7.3
Ommatophoca rossi**	Ross Seal	6.5	7.0
Group II Pinnipeds:			
Erignathus barbatus	Bearded Seal	7.6	7.6
Phoca hispida	Ringed Seal	4.4	4.3
Cystophora cristata	Hooded Seal	8.5	6.6

NOTE:** Any Group I animals maintained together will be considered as Group II when the animals maintained together include two or more sexually mature males from species marked with a double asterisk (**) regardless of whether the sexually mature males from the same species.

Species	Common name	Average adult length (ft)
Sirenia:		
Dugong dugong	Dugong	11.0
Trichechus manatus	West Indian Manatee	11.5
Trichechus inunguis	Amazon Manatee	8.0
Mustelidae:		
Enhydra lutris	Sea Otter	4.1

\1\ This table contains the species of marine mammals known by the Department

to be presently in captivity or that are likely to become captive in the future. Anyone who is subject to the Animal Welfare Act having species of marine mammals in captivity which are not included in this table should consult the Deputy Administrator with regard to the average adult length of such animals.

Table IV-Minimum Surface Area Required for Each Cetacean

Average adult length of each cetacean (ft)	Surface area required for each cetacean (square ft)
5.5	33.62
7.0	57.70
7.5	66.23
8.5	85.07
9.0	95.38
10.0	117.75
11.5	155.72
12.0	169.56
14.0	230.79
18.0	381.51
18.5	403.00
19.0	425.08
22.0	569.91
22.5	596.11
24.0	678.24
28.0	923.16

TABLE V-Minimum Enclosure Requirements for One Sirenian, Pinniped, or Sea Otter

Species	Common Name	Depth		MHD		DRA	
		M	F	M	F	M	F
Group I Pinnipeds:							
*Arctocephalus gazella***	Atlantic Fur Seal	3	3	8.85	5.85	69.62	30.42
*Arctocephalus tropicalis***	Amsterdam Island Fur Seal	3	3	8.85	5.85	69.62	45.12
*Arctocephalus australis***	South American Fur Seal	3.1	3	9.3	7.05	76.88	44.18
*Arctocephalus pusillis***	Cape Fur Seal	4.48	3	13.49	9	160.56	72
*Callorhinus ursinus*** *Eumetopias jubatus***	Northern Fur Seal Steller's Sea Lion	3.6 4.7	3 3.95	10.81 14.1	7.13 11.85	103.68 176.72	45.12 124.82
Hydrurga leptonyx *Mirounga angustirostris*	Leopard Seal Northern Elephant Seal	4.75 6.5	5.4 4.1	14.25 19.5	16.2 12.3	180.50 338	233.28 134.48
*Mirounga leonina*** *Odobenus rosmarus***	Southern Elephant Seal Walrus	7.65 5.2	4.1 4.3	22.95 15.45	12.31 12.75	468.18 212.18	134.48 144.50
*Otaria flavescens*** *Phoca caspica*	South American Sea Lion Caspian Seal	3.95 3	3.3 3	11.85 7.13	9.9 6.9	124.82 45.12	87.12 42.32
Phoca fasciata *Phoca larga*	Ribbon Seal Harbor Seal	3 3	3 3	8.55 8.4	8.25 7.35	64.98 62.72	60.50 48.02
Phoca vitulina *Zalophus californianus*	Harbor Seal California Sea Lion	3 3.65	3 3	8.4 10.95	7.35 8.55	62.72 106.58	48.02 64.98
*Halichoerus grypus*** *Phoca sibirica*	Gray Seal Baikal Seal	3.75 3	3.2 3.1	11.25 8.4	9.6 9.15	112.50 62.72	81.92 74.42
Phoca groenlandica *Leptonychotes weddelli***	Harp Seal Weddell Seal	3.1 4.75	3.1 5.15	9.15 14.25	9.15 15.45	74.42 180.50	74.42 212.18
Lobodon carcinophagus *Ommatophoca rossi***	Crabeater Seal Ross Seal	3.65 3.25	3.65 3.5	8.55 9.75	8.55 10.5	106.58 84.50	106.58 98
Group II Pinnipeds:							
Erignathus barbatus *Phoca hispida*	Bearded Seal Ringed Seal	3.8 3	3.8 3	11.4 6.6	11.4 6.45	86.64 29.04	86.64 27.74
Cystophora cristata	Hooded Seal	4.3	3.3	12.75	9.9	108.38	65.34

Species	Common Name	Depth M or F	MHD M or F	VOLUME	DRA M or F	SURFACE AREA
Sirenia:						
Dugong dugong	Dugong	5.5	22	2489		142.48
Trichechus manatus	West Indian Manatee	5.75	23	2600		155.72
Trichechus inunguis	Amazon Manatee	5	16	3617		75.36
Mustelidae:						
Enhydra lutris	Sea Otter (up to two animals) *For each additional animal add	3	3X animal length	158.35 *79.17	52.78 *6.44	

Other Animals [3.128, Policy #24]
Primary enclosures must be large enough to allow **each** animal to make normal postural and social adjustments with adequate freedom of movement.

Criteria for determining adequate space include, but are not limited to:

- **all animals** must be able to lie down with limbs extended in a normal manner without obstruction from enclosure sides or having to extend feet through bars or feeder doors
- **animals that normally engage in occasional vertical postures**, such as bears and many felines, must have sufficient vertical space available to accommodate these postures
- **elephants housed on chains** must have chains of sufficient length and arrangement to be able to comfortably lie down, get up, self-groom, and move about within a reasonable distance
- **flying species** must have sufficient unobstructed volume to enable movement by flying and sufficient roosting space to allow all animals to rest simultaneously [Policy #24]
- **species that, under natural conditions, spend a significant portion of time in water,** such as capybaras, beavers, river otters, hippopotami, and tapirs, must have both dry and aquatic portions of the

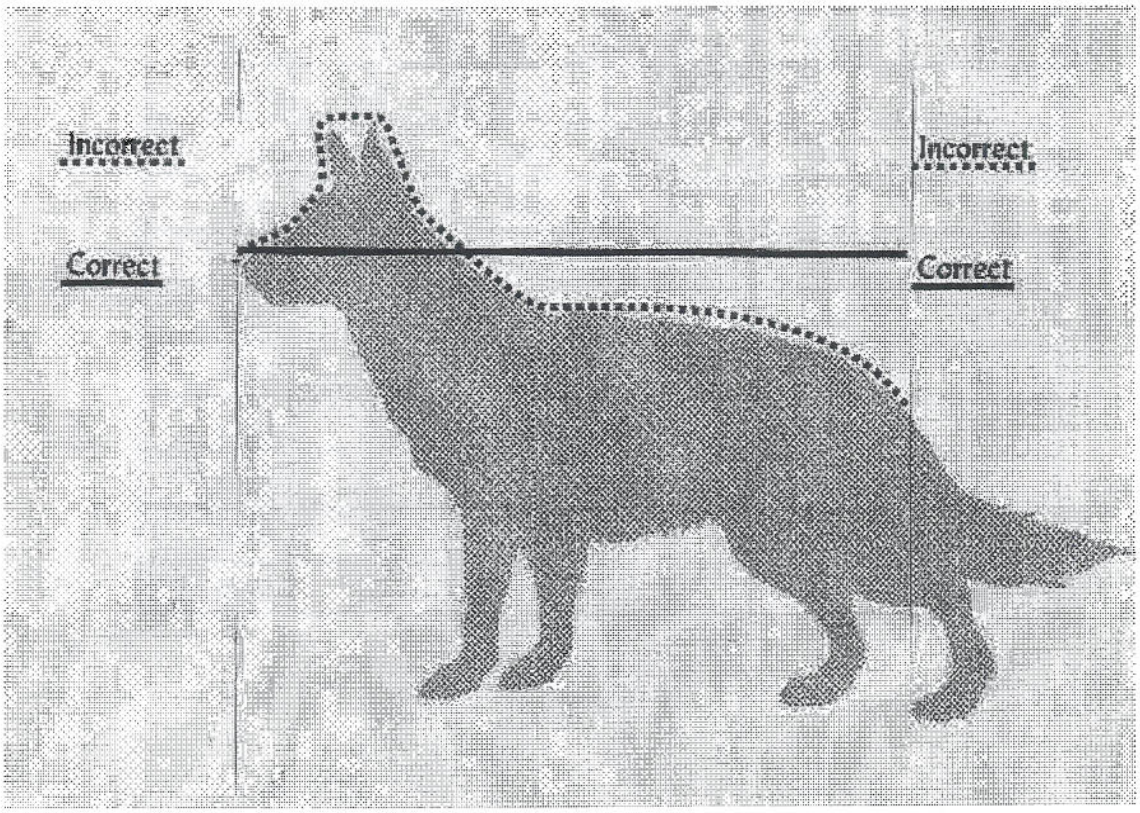
primary enclosure. Each portion must provide, at a minimum, sufficient space for normal postural and social adjustments. [Policy #24]

Signs of inadequate space include, but are not limited to: [3.128]

- malnutrition
- poor condition
- debility
- stress
- abnormal behavior patterns

MEASUREMENT OF DOG LENGTH

Below is a diagram with instructions to determine the length of a dog for the purpose of computing the minimum cage size required under the Animal Welfare Act standards.



WITH THE DOG IN A NORMAL STANDING POSITION OR WITH THE DOG HELD LYING FLAT ON ITS SIDE, MEASURE THE DOG IN A STRAIGHT LINE FROM THE TIP OF THE NOSE TO THE BASE OF THE TAIL. DO **NOT** FOLLOW THE CONVOLUTION OF THE DOG'S BODY WHEN MEASURING THE LENGTH OF THE DOG. SEE DIAGRAM ABOVE FOR THE CORRECT AND INCORRECT WAYS OF MEASURING A DOG'S LENGTH.

MINIMUM SQUARE FEET PER DOG

(length of the dog in inches + 6) x (length of the dog in inches + 6) / 144

DOG LENGTH	SQ FT NEEDED	DOG LENGTH	SQ FT NEEDED	DOG LENGTH	SQ FT NEEDED
10	1.78	21	5.06	32	10.03
11	2.01	22	5.44	33	10.56
12	2.25	23	5.84	34	11.11
13	2.51	24	6.25	35	11.67
14	2.78	25	6.67	36	12.25
15	3.06	26	7.11	37	12.84
16	3.36	27	7.56	38	13.44
17	3.67	28	8.03	39	14.06
18	4.00	29	8.51	40	14.69
19	4.34	30	9.00	41	15.34
20	4.69	31	9.51	42	16.00