
APPENDIX II:

SHELTER DESIGN-DISEASE CONTROL

Appendix II Shelter Design-Disease Control

Importance of Facility Design in Sanitation

The third principle is to understand how proper management and facility design can greatly ease the burden of shelter sanitation during peak animal population periods. It should be recognized that the management and facility design described here may exceed the budget for a given community. However, it must be clearly understood by all parties involved that a reduction in the proposed program will, in all likelihood, result in a proportionate increase in disease problems for a facility.

Obviously, the first step is to get budgetary personnel, shelter administrators and a veterinarian to agree on the level of sanitation they want maintained in the facility. If a facility is poorly designed, good management can only do so much to maintain high sanitation and health standards. On the other hand, poor management of a well designed facility will only result in a facility which quickly becomes the cesspool of disease for a community. You must have good management and an adequate physical plant if the program is to be successful. Obviously this requires a commitment of money from the budgetary units involved. They must understand that a quality program cannot operate on a shoestring budget.

A community wishing to build a new animal control facility should consider these points on planning for a good sanitation program in a new facility.

Choosing the Building Site

There are three basic considerations for choosing the best building site.

- 1) The facility should have an aesthetic appearance if it is to receive the support of the general public. This means the facility should be placed in a pleasant surrounding, such as on a knoll by a lake with trees, and with easy access to a well paved street.
- 2) The building site should be secluded. The public in general supports the efforts of an animal control facility; however, no one wants to have it adjacent to their subdivision or in a place where they must see, hear or smell these animals on a daily basis.

In large cities it may be necessary to construct an animal holding facility in a very populated area. If this is the case, it will usually mean constructing an entirely enclosed animal holding facility, which has an air filtration or an incineration system for the removal of odors and infectious agents. These high efficiency particulate air filters are called HEPA filters and, even though they are expensive, they will do an adequate job. Air incineration systems are also available, but they are even more expensive.

If the building is to be placed on the outskirts of the city, the building should face toward the prevailing winds making sure that the odors are carried away in a direction that is not populated. In like manner, do not locate the facility downwind from an industrial plant

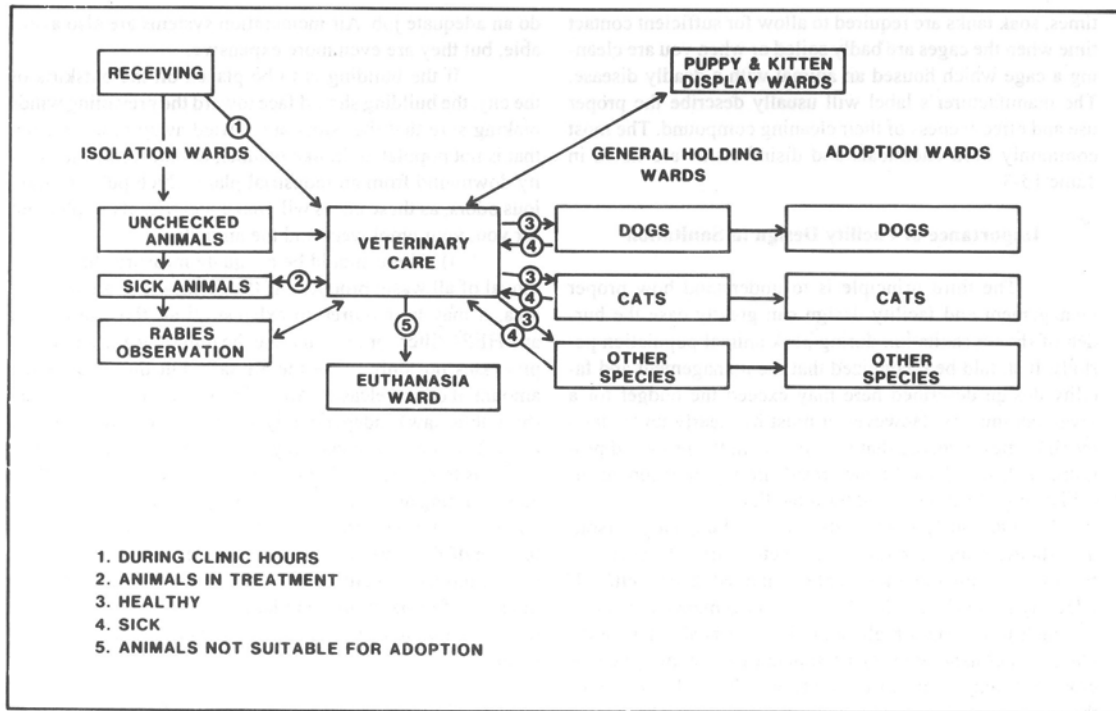
which puts out noxious odors, as these odors will make it extremely unpleasant for you, your employees and the animals.

3) There should be adequate measures for the removal of all waste products. If the facility is in a populated area, it may be required to exhaust all air through carbon and HEPA filters or to incinerate the outgoing air. These two processes not only make the air safe, but they reduce the amount of odors released. Animal sewerage must be handled (by public law) independently from human sewerage systems. The most accepted way for disposing of animal carcasses is to incinerate them; however, the costs of installing and operating an incinerator will often rule out this possibility. Some facilities are still transporting the dead carcasses to a landfill where they are buried. Another method is to have a rendering plant pick up the carcasses and reprocess them into fertilizers and supplements. No doubt the method used in an area will be dictated by local and city governments.

Constructing the Animal Control Facility

Once the building site has been chosen, there are several key areas which must be included in a properly designed facility: 1) animal holding space, 2) auxiliary animal care space, 3) veterinary support space, 4) laboratory space and 5) administrative support space.

Obviously, the major portion of an animal control facility should be devoted to animal holding and service space; however, each component must be managed so that there is a proper flow of animals, sick and healthy, through a facility (Fig. 15-2). The animal holding space should be divided into an animal receiving area, a general holding ward, a euthanasia ward, an isolation ward, an adoption ward, a puppy and kitten display ward, a research conditioning ward and a veterinary clinic. The following is a discussion of these areas, and the importance of good management and animal flow as these areas relate one to another.



Animal Receiving Area. The animal receiving area should be an enclosed area, which has ample space to hold at least one animal transport vehicle. This area should be well ventilated or air-conditioned, and it is preferable to have this area of the building away from the public view. It should have a concrete, well-drained floor as this area will receive wastes from animals. Usually there is a high-pressure water system located here to clean out the holding areas of the transport vehicles and to keep the vehicles washed and sanitized on a daily basis. Remember it is important to disinfect the animal holding compartments of these vehicles...

An initial record keeping office is also housed here so that each animal examined can be properly identified before entering the facility. It is recommended that each animal receive a neck chain with a tag number on it or that the animal be tattooed in the ear. Obviously the latter is the preferred method as this provides for a permanent means of identification which can be followed after the animal leaves the animal control facility.

Since this is the first line of defense against disease in a facility, the daily operation of this area is very critical. The animal control officer in charge needs to be educated to readily recognize disease problems and injuries, and he needs to be able to administer the basic medications or vaccinations required. A great deal of responsibility is placed on this person as they must decide the course each animal will take in the facility. If a veterinarian is in the clinic, professional advice will be readily available. However, if the clinic is not open, the animal control officer must decide if the animal is healthy and can be placed in the general holding ward. If there is some question about its health, the animal should be placed in the isolation ward and held for veterinary clinical examination. Obviously, the last choice is to decide that the animal is too sick or too

badly injured to salvage, and the animal should be transferred directly to the euthanasia ward.

The receiving area should also be equipped with a drop-off area for those people who may need to bring an animal to the shelter outside of normal operating hours. This facility should have one way doors on the cages which will allow an animal to be placed inside. Once the outside door is closed, it will not re-open, so the animal can only be removed from inside the facility (Fig. 15-3). Don't forget to sanitize these cages on a daily basis using the same disinfecting compounds discussed previously.

The animal receiving area should also have a dip tank. All animals processed through the facility, except for those going to the euthanasia ward, should be led through a dip tank containing a parasiticide to remove all external parasites. This is a critical step to enforce, or your facility will soon become infested with parasites. A good design for this dip tank is shown in (Fig. 15-4). A listing of appropriate chemicals, which can be used in the dip tank are listed in Table 15-1. Once the animal has been led through the tank it is good to place them in a well drained holding area to drip off before moving them on to their next destination.

Isolation Ward. The isolation ward is a must if you are to maintain a clean facility. The isolation ward serves as a barrier to disease problems, as it is the only place a diseased animal should be housed. There are two basic functions for an isolation ward and, in facilities which can afford it, these two functions should be maintained separately. Newly received animals, which have not been through the veterinary clinic, should be housed here initially. Only when they have successfully passed a health examination in the clinic, should they be moved on to the general holding ward.

It is understandable that these animals may be healthy or sick, and that is why it is best to have at least two isolation wards. One for apparently healthy animals, and one for obviously sick animals. A second function of the isolation ward is to house animals being held for rabies observation. Again, the same principle should hold. Place the healthy looking animals in one isolation ward and the diseased animals in a sick bay area.

Since an animal control facility will usually accept most animals brought to their premises, there should be separate isolation facilities for dogs, cats, large animals, and exotic species. This principle will hold true for any of the animal holding wards, as it is the policy of the United States Department of Agriculture (USDA) not to mix species. Even though animal control centers do not fall under their jurisdiction, it must be accepted that this is good advice in any shelter management program.

Veterinary Clinic Support Area The design and equipping of a veterinary clinic should be done by a veterinarian. However, a few suggestions are appropriate because the clinic is a passageway for almost all animals entering the facility. It must be designed so that it can be thoroughly sanitized following the examination of every sick animal. This means the floors, walls and ceiling must be constructed of materials which are impervious to moisture and will withstand rigid cleaning methods many times each day. The walls and floors should be poured concrete and they should be coated with an epoxy paint. The

concrete floors may also be covered with products such as DexotexR, MipolamR or StoueshieldR, just to name a few.

All countertops should be laminated heat-resistant plastic or stainless steel to facilitate cleaning. Wall cabinets should be metal with lockable sliding glass doors. All wood construction should be avoided as wood furniture is very difficult to maintain and clean. Attempt to keep all cabinets off the floor so that the entire floor can be readily sanitized and to avoid hiding places for vermin. The room must be well lighted and air-conditioned with at least 12-14 exchanges of air per hour. Other items to include in this room would be a stainless steel examination table, stainless steel instrument stand, surgery light, autoclave, gas anesthesia machine, refrigerator/freezer and a stainless steel double sink. Again, the selection and placement of these items are best made by the veterinarian. All animals going directly to the display wards, adoption wards or research conditioning wards should receive proper immunizations in the clinic before they are moved.

How well a facility is able to maintain a high level of sanitation depends to a great extent on the capabilities of the animal control officer operating the receiving area and maintaining the veterinary clinic. If done properly, very few sick animals should ever reach the general holding wards, display wards, adoption wards or the research conditioning wards. Again, note the location of the clinic in the animal flow chart shown in (Fig. 15-2).

General Holding Ward. The general holding wards will occupy the majority of the space in a facility. It is best to design as many individual species wards as possible. It is even better if males can be housed in separate wards from the females as this will reduce fighting and make animal identification systems easier.

In general, the design of any of the animal holding wards should include some or all of the following principles to aid in sanitation control. All floors in the wards should be sloped to a trough drain to facilitate the daily cleaning program. Again, floors, walls and ceilings should be impervious to moisture and disease agents. If the more expensive floor materials suggested for the veterinary clinic cannot be afforded, it is suggested that they at least be sealed with epoxy resins. Galvanized, stainless steel or aluminum runs and cages should be installed on the sloped floor to provide individual or group housing.

Individual runs should be equipped with resting boards for dogs, and it is important to select materials which cannot be chewed up and swallowed, yet can be easily sanitized. The runs and cages may also be equipped with individual stainless steel feed and water bowls, or you may want to choose an automatic watering system with stainless steel self-waterers and feeders. Although the individual bowls are more labor intensive, they can be easily sanitized and periodically autoclaved. The automatic watering systems are expensive to install, easy to maintain, and hard to properly sanitize, and some animals are slow to learn how to use them. However, because labor is the most expensive component in operating a facility, it is usually best to install automatic watering devices whenever possible. This area should also be well lighted and, depending on its location, should have adequate heating and cooling systems provided.

This is the largest animal holding area in an animal control facility, so it is also the most costly area to operate. For this reason some facilities choose to provide space heaters (gas, electric or hot water) and a high turnover of non-conditioned air in order to reduce costs. The use of space heaters has proven to be an effective way of maintaining animals during the winter in most parts of the country. However, if the climate in your area is very cold (more than 10 days below freezing) it is advisable to install central heating systems and/or heated floors. Obviously, the big problem in most states is that temperatures may rise in the summer into the upper 80 degrees or lower 90 degrees Fahrenheit. However, if the animals are provided adequate ventilation (35-40 exchanges of air/hour) and adequate fresh water, they will usually adjust for the few days they are held in this area. In addition to holding down costs, the high air turnover also helps reduce the spread of any unexpected disease outbreaks. The disadvantages of this arrangement are that: 1) Prolonged housing in this area can increase stress on the animals and thus disease; 2) This environment makes it difficult to keep the animals looking good, so the public may become dissatisfied when they come to claim their missing pet; and 3) This area requires a lot of labor to maintain and most employees would rather work in a cool environment. Unfortunately, the method of cooling is usually dictated by a city council based on building and operational costs.

The major emphasis in a disease control or sanitation program is to establish good preventive medicine policies. As indicated in the veterinary clinic serves as the primary screening area for all animals admitted to the facility. The attending veterinarian or a well trained animal control technician must carefully examine animals to determine their health status. Too many facilities get caught up in the pressures of the day and fail to properly screen animals before they are admitted to the general holding wards. Ideally, only healthy animals should be sent on to the general holding wards. However, whether it was a failure on the part of the health screening interpretations or disease problems which are initiated by the stress of holding the animals in a strange environment, we all recognize that disease outbreaks will occur in the holding wards despite best efforts. The goal must be to screen very carefully to keep diseases to a minimum and then practice good sanitation to properly control these diseases as they arise.

Without a doubt, the animal control officers in charge of this area play a key role in any disease control or sanitation program. These people must be keenly aware of any changes in the health status of these animals on a daily basis. Early recognition of a disease problem will allow for the removal of this animal to the isolation wards and/or the veterinary clinic where diagnosis and treatment can be initiated. Most important is the fact that early recognition and removal of a diseased animal helps prevent the spread of disease in the holding area.

Once the sick animal has been removed, it is essential to immediately sanitize the sick animal's holding pen, the watering pans or automatic waterers, and the feed pans. Usually this is done using chemical sanitizing agents employing one of the disinfecting compounds listed in Table 15-3. The routine use of high-pressure floor cleaning machines and/or the weekly use of live steam with a steam cleaning machine is also essential if diseases are to be kept to a minimum.

The puppy and kitten display wards, adoption wards and research conditioning wards should be operated with the same sanitation principles as those described for the general holding ward. If the facility is operated properly, all animals in the adoption and research conditioning wards should have received proper immunization vaccines; therefore, the incidence of disease in these wards should be kept to a minimum.

Good management requires total objectivity regarding the health of any animal. An animal control officer must not make decisions of a subjective nature. The person responsible for daily health rounds in each of the areas discussed must be willing to quickly identify the first signs of sickness or injury to an animal. Any bias toward particular animals, breeds or species may easily result in the spread of infection within an area. A good record keeping system is also essential, as it provides key information used to identify problem areas before they get out of control. Your role as an animal control officer should be to provide the most up-to-date sanitation policies possible in your community's animal control facility.