2012

Redesigning the Warren Animal Shelter

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cpc
Community Partnerships Center
at Roger Williams University

Redesigning the Warren Animal Shelter

Community Partner:
Warren Animal Shelter

Academic Partner:
School of Architecture, Art and Historic Preservation
School of Engineering, Computing and Construction Management

Fall 2011 and Fall 2012

The Roger Williams University Community Partnerships Center

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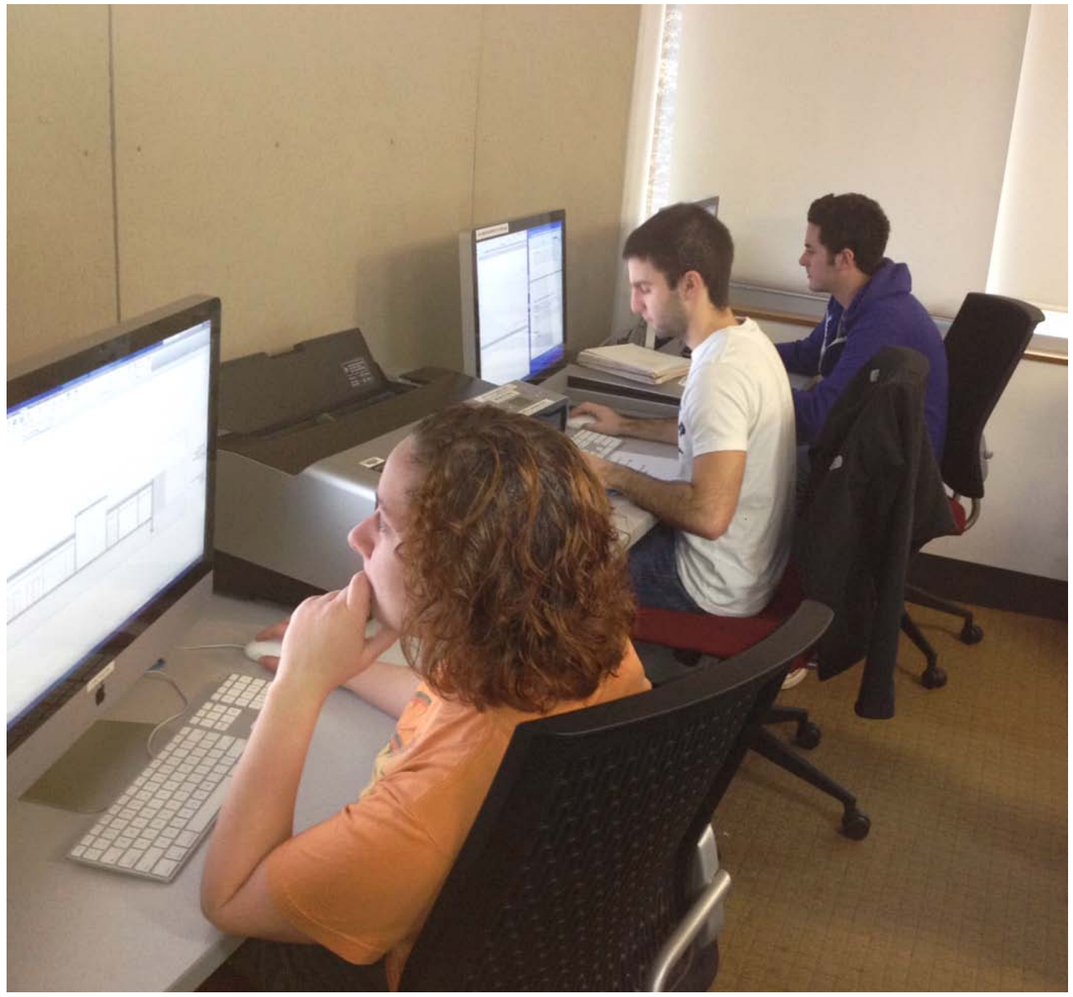

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Introduction

Over the course of two semesters — the fall of 2011 and the fall of 2012 — students enrolled in the Architecture 530, Architecture 488 and Construction Management 445 courses collaborated with the Warren Animal Shelter to investigate the existing conditions of the shelter and to provide insight into its potential redesign or expansion.

The student teams assessed the existing facility and performed a precedent study of other animal shelters. They incorporated suggestions and recommendations from the shelter staff to create conceptual designs which would better suit the needs of the staff, the animals and the community.

Work from students in the fall 2011 ARCH 530 course provided the foundation for students in the fall 2012 ARCH 488 course. Work from both courses are detailed in this book.

Students from CMT 445 utilized designs and concepts from the two Architecture courses to attain cost estimates for the potential projects. Together, these materials can be used by the Warren Animal Shelter for future fundraising opportunities.

The Warren Animal Shelter's current building.

Goals and Objectives

Currently, the Warren Animal Shelter does not meet the needs of the surrounding town nor the community which it supports. The facility itself is both outdated and too small to properly care for the animals. Even if the facility were to be repaired, it would still be too small to meet the growing needs of the community.

The shelter is in need of additional space to care for the animals that reside there. The new design should incorporate natural lighting and ventilation, and provide space for 40 cats and 20 dogs, plus isolation spaces.

The proposed program for the new Warren Animal Shelter will consider the following issues:

- Adequate parking for visitors.
- Proper circulation with space considerations given to the tasks necessary for animal care.
- A large lobby where guests enter the center.
- A retail space to generate revenue for the shelter.
- Appropriate adjacencies between public and private areas.
- Natural lighting and ventilation.
- Separation of HVAC systems.
- A free-roam space for cats.
- Additional cat cages and dog kennels.
- A large, free-roam caged outdoor space for dogs.
- Garage space for animal retrievals and holding space.
- Potential separate entrances for animals and the public.
- Views that incorporate the surrounding landscape.
- Protected areas for the animals away from the sounds of the road.
- Washable surfaces.

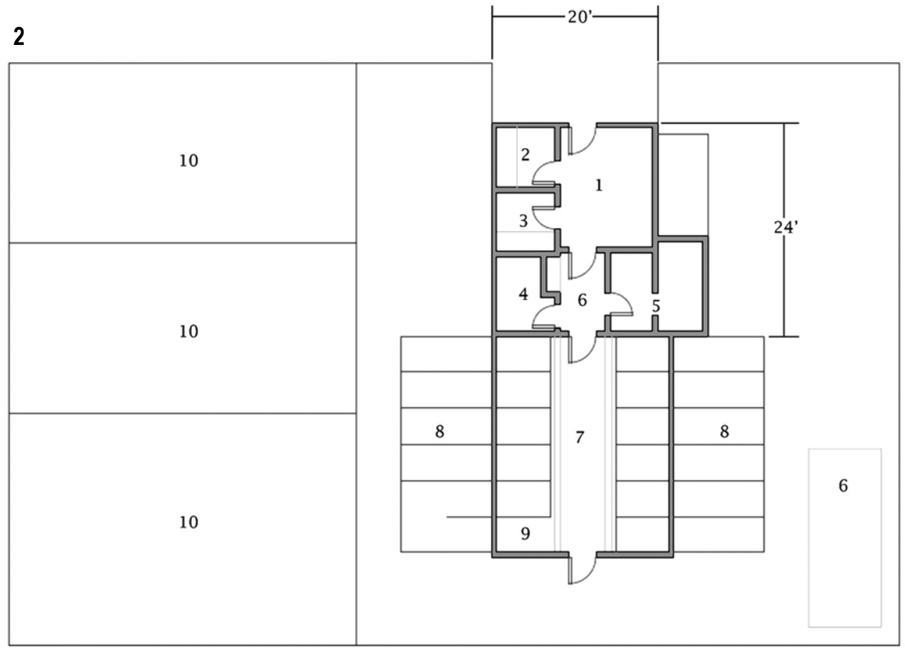
Large dog kennels with natural lighting and ventilation are an important factor in the shelter redesign. Image courtesy of Potter League for Animals.

Existing Conditions and Recommendations

The existing animal shelter consists of roughly 400 square feet of conditioned interior space (containing program pieces one through six) plus another 500 square feet of interior dog kennels. With only four windows, there is a significant lack of natural ventilation, and the insufficient mechanical ventilation frequently breaks.

The four available windows offer little to no natural light, forcing the entire facility to rely on fluorescent lighting.

1



2

1. Entry/Adoption/Office/File Storage/ Cat +Small Animal Spillover 14' x 15' 210 SF
2. Cat Room 1 6' x 6' 36 SF
3. Cat Isolation Room 6' x 6' 36 SF
4. Bathroom 9' x 5' 45 SF
5. Cat Play Room 9' x 10' 90 SF
6. Storage/Food Prep 9' x 5' 45 SF (+Storage Container 160 SF)
7. Interior Dog Kennels 24' x 22' 528 SF
8. Exterior Dog Kennels (2) 25' x 8' 400 SF
9. Laundry 5' x 4' 20 SF
10. Dog Runs 60' x 25' 1500 SF

1. Existing Warren Animal Shelter.

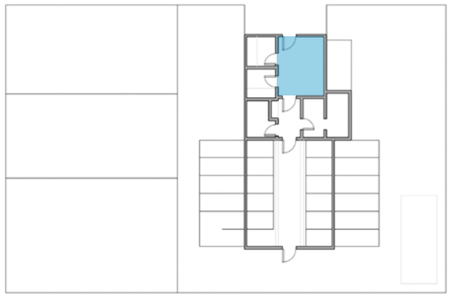
2. Existing floor plan.

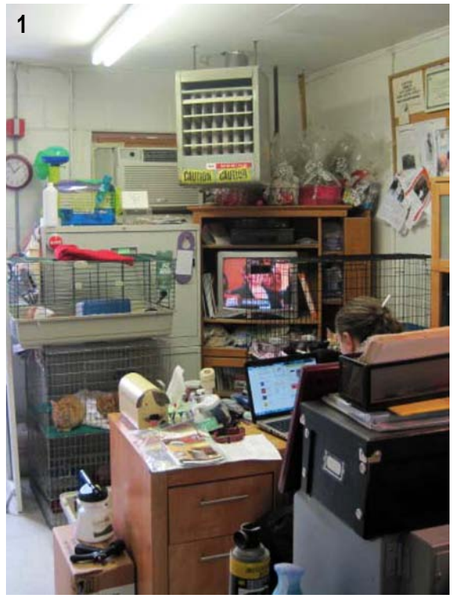
Entry / Adoption / Office / File Storage / Cat and Small Animal Spillover

Description of Spatial Needs:

- Private desk space for staff and volunteers.
- Private and secure file storage space.
- Space to organize adoption paperwork.
- Space for merchandise.

The current office is located in the entry space of the building and has only one desk for all the staff to share. All pet adoptions, merchandise sales, paperwork and staff breaks occur here. The main source of heat in this space is a loud gas heater hanging from the ceiling. Since there is not enough space for all of the animals in the shelter, many cages and crates are located here.



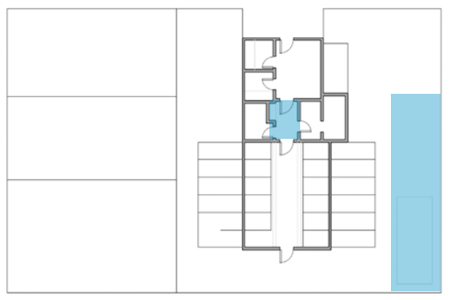


Storage / Food Prep

Description of Spatial Needs:

- Food prep counter space.
- Storage for several days worth of food.
- Separation yet easy access to the kennels.
- Cooking implements.

In the existing structure, there is not a proper place to prepare food for all of the animals, many of which require special diets. Currently, the hallway that is used for this purpose is a cramped transitional area between the office and the dog kennels. Due to the lack of space, food preparation requiring a microwave is done in the cat isolation room, and most animal food is stored outside in a shipping container.



1. The overcrowded office serves many purposes.

2. Food storage space inside the building.

3. Outdoor container where much of the animal food is currently stored.

Cat Rooms 1 and 3

Description of Spatial Needs:

- Cat kennels.
- Adequate space for cats to interact.
- Proper ventilation.
- Adoption paperwork space.

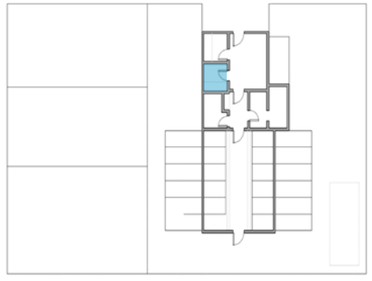
The cat rooms are very small, providing space for only six cats to be out of the kennels at one time. There is currently not enough room to house the number of cats that are typically at the shelter.

Cat Isolation Room

Description of Spatial Needs:

- Proper ventilation.
- Cat kennels.
- Medication storage.
- Examination table.

The existing isolation room for the cats is a closet with cat kennels located in it. The purpose of the room is to house new strays to the shelter, keeping them away from the other cats until deemed healthy. Sick cats are also housed in this room and require space for examination and medication administration.



1. Cat rooms 1 and 3 are not big enough to house the shelter's cats.

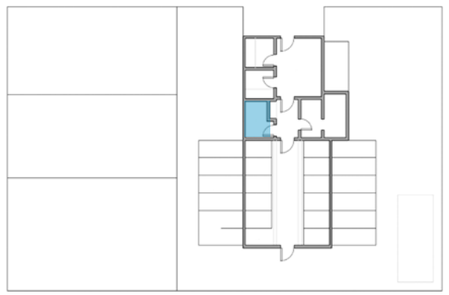
2. The current cat isolation room is a closet.

Bathroom

Description of Spatial Needs:

- Privacy.
- Toilet.
- Sink.
- Storage for bathroom supplies.

Due to the lack of space in the building, the current bathroom is being used to store items needed to run the shelter and care for the animals.

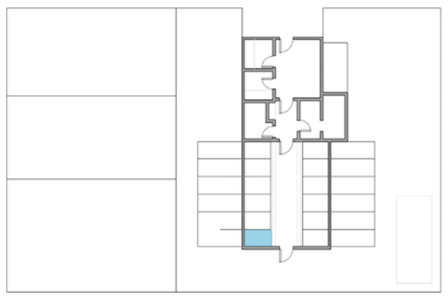


Laundry

Description of Spatial Needs:

- Industrial washer and dryer.
- Room to store soiled and clean laundry separately.

The laundry room is housed in a single kennel in the interior dog kennel room. Due to the tight space, there is no room to store linens (clean or dirty), and the noise of the machines causes undue stress for the dogs. Currently, the shelter runs at least six loads of laundry a day.



1. The bathroom acts as storage space.

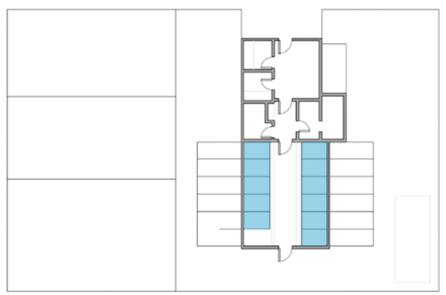
2. Laundry room noise stresses the dogs next door.

Interior Dog Kennels

Description of Spatial Needs:

- Safe enclosures for the dogs.
- Planning that encourages a quiet environment.
- Floors that can be hosed down.
- Guillotine doors to the exterior kennels.
- Proper ventilation.

Because the interior kennel space is isolated from the rest of the building, the dogs bark anytime someone enters the room. They occasionally hurt themselves with the existing chain-link separations. The space does not have proper ventilation, and there is not a way to isolate a single dog from the others, should the need arise.

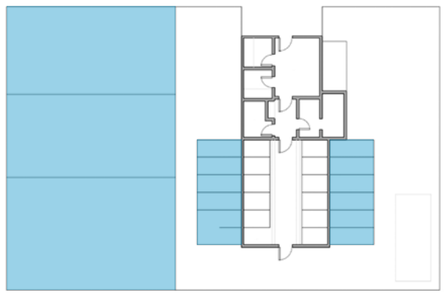


Exterior Dog Kennels and Runs

Description of Spatial Needs:

- Safe enclosures for the dogs.
- Floors that can be hosed down.
- Guillotine doors to the interior kennels.
- Individual access and isolation of runs.

The existing kennels are constructed from chain-link, on which the dogs sometimes injure themselves. Of the three existing runs, only two can be used at the same time without the dogs fighting through the fence due to proximity. There is currently no individual, direct access to the dog runs.



1. Interior dog kennels lack proper ventilation.

2. Exterior kennels are composed of unsafe chain-link.

Precedent Study

Potter League for Animals - Middletown, RI

The Potter League for Animals is dedicated to making a difference in the lives of animals. We promote the humane treatment of all animals and provide shelter and care for lost or unwanted companion animals. Through community education and the fostering of relationships between people and animals, we enhance the animals' future and enrich the human experience.

Architect: ARQ Architects
Project Completion: 2008

Highlights of the Site

- Permeable, gravel paving systems.
- On-site storm water management and treatment measures.
- Green roof system.
- Cistern system for reuse of rain water.
- Use of recycled and local materials.

1. Aerial of Potter League for Animals.
2. Upon entering the building the user is greeted at a large desk where adoption paper work is done.
3. The dog kennels allow for natural light and provide access to the outside runs.
4. Six to eight cats share a play area with natural light.

Images courtesy of ARQ Architects and Potter League for Animals.

Forsyth County Animal Shelter - Winston-Salem, NC

We are committed to preventing pet overpopulation by promoting responsible pet ownership and by providing for the welfare of homeless dogs and cats. We maintain a "no-kill" shelter where dogs and cats are cared for while they await adoption by qualifying individuals.

Architect: Lambert Architecture
Project Completion: 2012

1. Exterior of Forsyth County Animal Shelter.

2. Interior finish materials were carefully selected to balance sanitation, disease control, cost, ease of maintenance, durability and aesthetics.

3. Air-conditioning and control is of paramount importance in terms of odor and prevention of disease among animals. 100% outside air is provided for six air changes per hour and an energy recovery unit assures "e" efficient operation.

4. The main corridor through the building is lined with kennels for animal viewing.

Design Goals and Objectives

The Warren Animal Shelter is looking to improve the quality of life for its inhabitants as well as the people who run the facility.

The new shelter should incorporate improved natural lighting and ventilation, adequate space for laundry facilities and more space for the animals' living and bathing needs. The design should consider how to prevent dogs from barking and disturbing one another while in the kennels. Increased storage is necessary for the animal shelter to contain the food and living amenities for the incoming animals.

Front perspective.

Goals and Objectives for Shelter Users

The Warren Animal Shelter needs more room for its animals. The average population typically includes about 40 cats and 20 dogs. Each cat and dog requires its own kennel. Both the cats and dogs require space to interact and play with the other animals, as well as space dedicated to isolation and animal care.

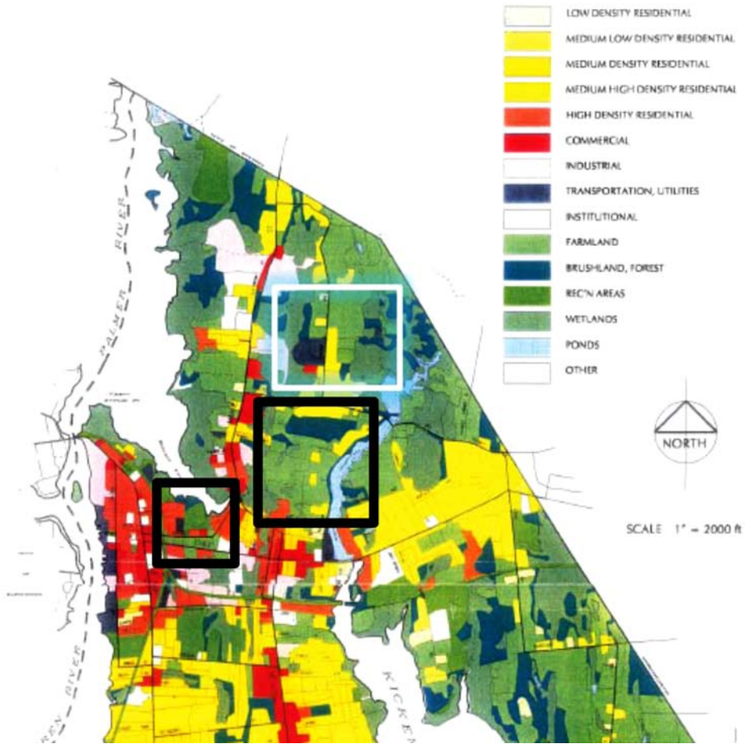
In order to provide proper space for shelter operations and visitors, a larger entrance or lobby should be incorporated into a future design of the shelter. The shelter also requires a separate and private office space. The staff and volunteers are in need of a designated space for breaks that includes lockers, a refrigerator and a table.

A separate room for interested parties to have individual contact with an animal would help provide a space for bonding prior to adoptions. Additionally, the shelter is in need of an area where abandoned animals can be dropped off any time of day. It is also important to have a public space that can be used for community outreach programs to help increase adoption and animal care awareness. The addition of a retail space would provide the shelter with revenue by providing adoptees and visitors the opportunity to purchase animal supplies.

Site Selection and Anaysis

Fall 2011Work - ARCH 530

Within Warren, we considered three site possibilities for a new animal shelter. Each site had similarities and differences. Neighborhoods, location, proximity, environmental and future use concerns were just a few of the considerations given to each site during the decision-making process.

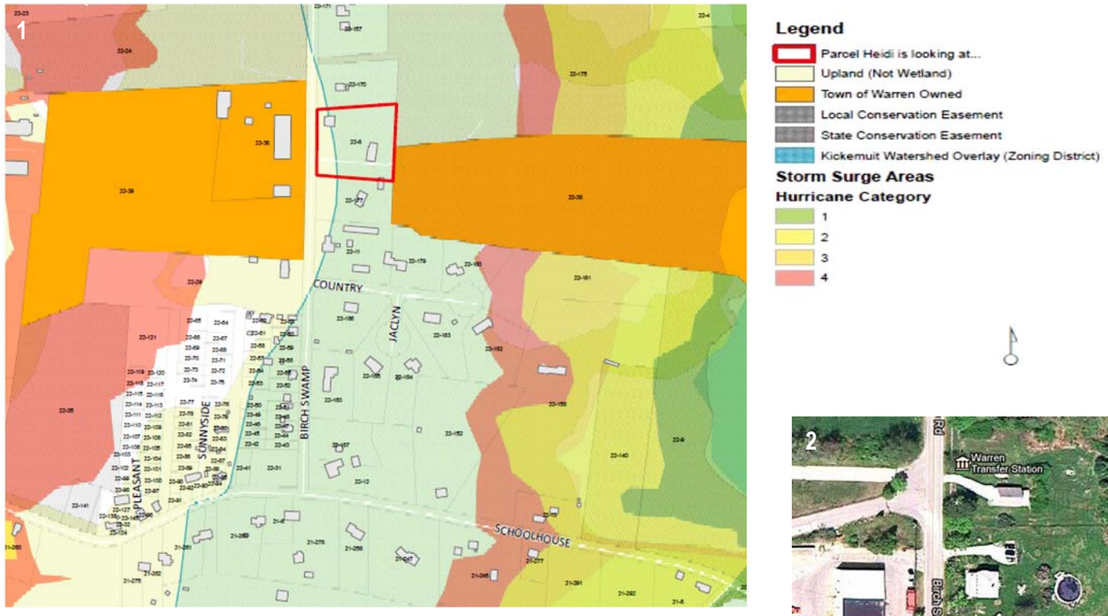


Map identifying three potential sites for the proposed Warren Animal Shelter.

Site 1 Analysis

The first site option is a 90,000 sq. ft. (approx. two acres) parcel off of Birch Swamp Road, across from the Warren Highway Department. The site is situated between two town-owned areas, highlighted in orange on the map.

The site is located in the Kickemuit Watershed, however it is not in any storm surge areas. While the property sits on protected farmland, the areas surrounding the site are zoned for residential and wetland use. There are a few built structures on the site that would most likely be demolished upon reuse of the site. The cost of acquisition of the site is unknown.



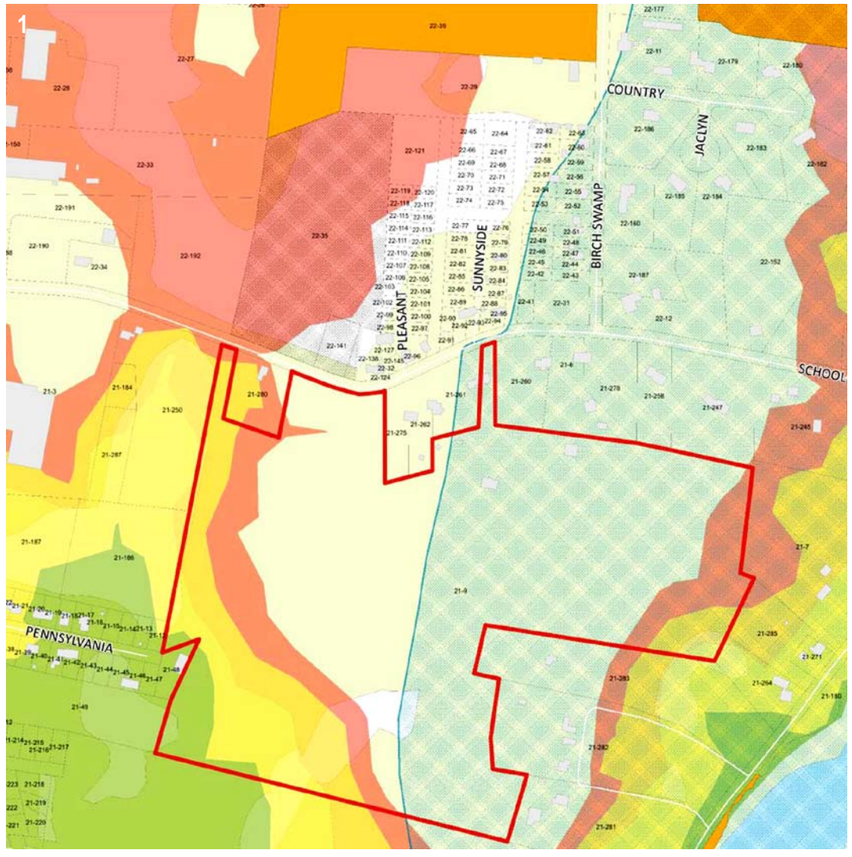
1. Birch Swamp Road parcel.

2. Aerial view of site off Birch Swamp Road.

Site 2 Analysis

The second site option is a 4,774,018 sq. ft. (approx. 110 acres) parcel located at 35 Schoolhouse Road. It is currently a golf course with some road frontage, but is primarily green space. This site is the largest option with existing parking and a structure, which would presumably be removed upon reuse of the land.

A portion of this site is located in the Kickemuit Watershed, and a large amount of the perimeter is in various storm surge areas. The site is currently zoned as farmland, wetlands and brushland/forest but sits in the middle of a future medium-density residential and central business area, which could be an issue as a neighbor in a future neighborhood. The cost of acquisition of this site is unknown.



1. 35 Schoolhouse Road parcel.

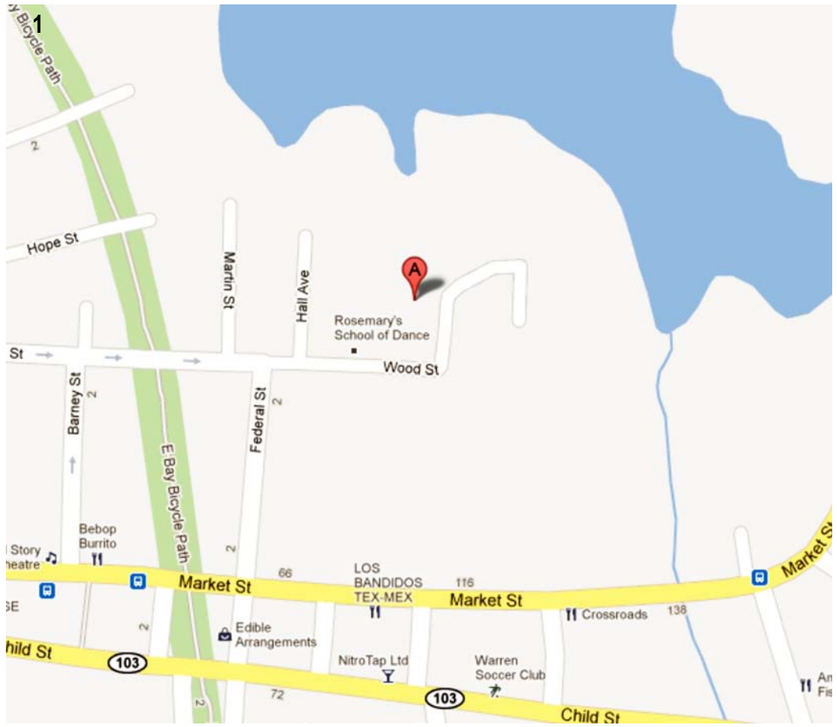
2. Aerial view of site at 35 Schoolhouse Road.

Site 3 Analysis

The third site to be considered is the current location at 80 Wood Street. However, there are many restrictions on this site that could be problematic.

The majority of the site is in a flood zone, which would require extensive work to allow for reuse. Additionally, there are power lines that run across a portion of the site, preventing any construction within direct proximity of their location. The site does have existing parking, but due to the size of the site and the restrictions, having enough space for a building, exterior space and parking could be problematic.

The site is currently zoned for a mixture of high-density residential, commercial, recreation and brushland/forest area. There are future plans for development of this area into a high-density residential and business area, relating more to the center of town. Proximity to the main portion of town is a big plus for the animal shelter, which will encourage the involvement of the community. With proper design, the new animal shelter could become a wonderful destination for Warren residents and have little noise impact on the area.



1. Current Warren Animal Shelter site at 80 Wood Street.

2. Aerial view of site at 80 Wood Street.

Preferred Site

Taking into consideration the many characteristics that affect the three sites, and rating them using a matrix, the site on Birch Swamp Road seems to be the best site solution for the Warren Animal Shelter. While the cost of acquiring the site is unknown—and a more thorough soil conditions and existing site pollutants survey should be conducted—there seems to be minimal risk of possible water pollution from runoff. Although the Birch Swamp Road site is the furthest from the center of town, it is located near other town-owned properties and is still easily accessible for the community.

1

The matrix is a methodology students use to evaluate the relative benefits of each site. The numbers in black represent the students' subjective assessment for each site selection criteria on a five-point scale. The first column is a "weighting" of the criteria, ie: some criteria is more important or significant than others. This yields the red columns, which is the weighting factor times the assessment.

2

	Weight	Existing Site		Site 1		Site 2	
Location		Wood St		Birch Swamp Rd		School House Rd	
Size		1.16 acres		2 acres		109 acres	
Watershed		No		Yes		Yes	
Power Lines (restriction)		Yes		No		No	
Existing Structures		Yes		Yes		yes	
Location (relative to Downtown)	3	5	15	3	9	1	3
Accessibility	3	2	6	5	15	3	9
Visibility	2	2	4	2	4	2	4
Environmental Concerns	2	2	4	2	4	4	8
Neighborhood Impact	2	4	8	3	6	5	10
Site Size	1	1	1	5	5	3	3
Site Maintenance	1	3	3	3	3	4	4
Site Regulations	2	1	2	4	8	4	8
Totals		20	43	27	54	26	49

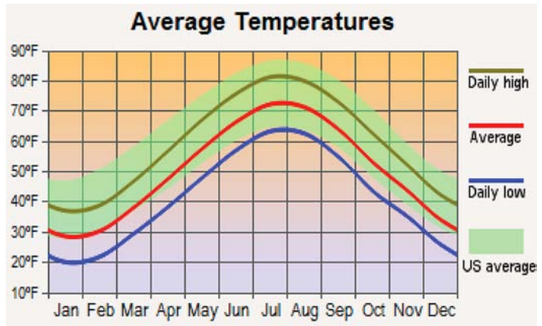
1. Aerial of selected site (#1) off Birch Swamp Road.

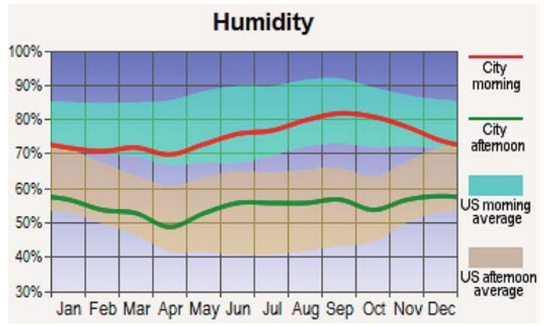
2. Matrix used to evaluate the benefits of all three sites.

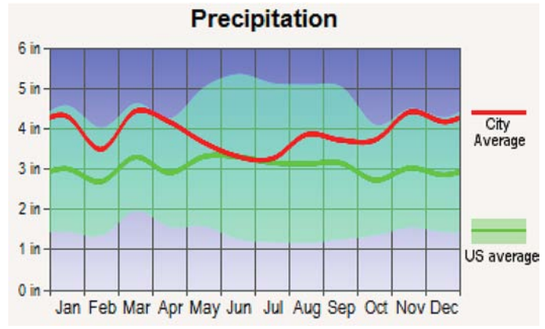
Climate Analysis

The climate in Warren is consistent with that of other New England areas. The design should consider the amount of rainfall, which will effect run-off and water retention issues. The new site should account for the cooler winter temperatures since animals will need to have outdoor access and space throughout the year.

There is enough sunlight that the new animal shelter could incorporate natural day lighting methods into the building's design. The building should also take advantage of the primarily south-southwest winds throughout the year to help with natural ventilation—although natural ventilation should not be the only ventilation system onsite.







Activities/Schedules and Space Criteria

Animal Areas

- Examining animals.
- Tending to the sick animals (preparing medicine, needed medical care).
- Feeding the animals (preparing and serving).
- Grooming and bathing the animals.
- Providing proper attention and care.

Lobby/Reception Area

- Greet visitors.
- Waiting area for 3-4 adults.
- Adoption/interview room.
- Finalizing necessary paperwork.
- Conducting interviews to see if caretaker of the animal is the right match.

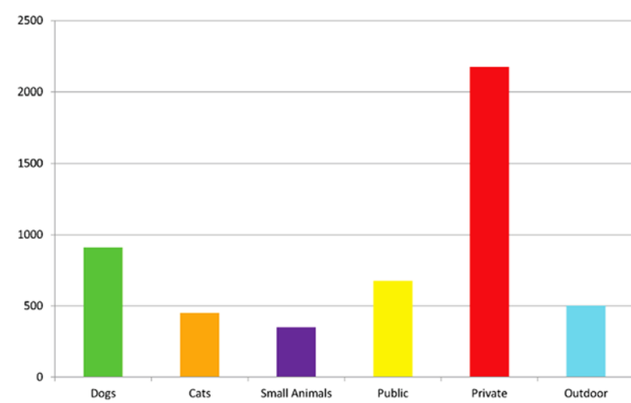
Meet and Greet Room

- Meeting animals of choice
- Area with couch to see how animal reacts to human environment.

Outdoor Areas

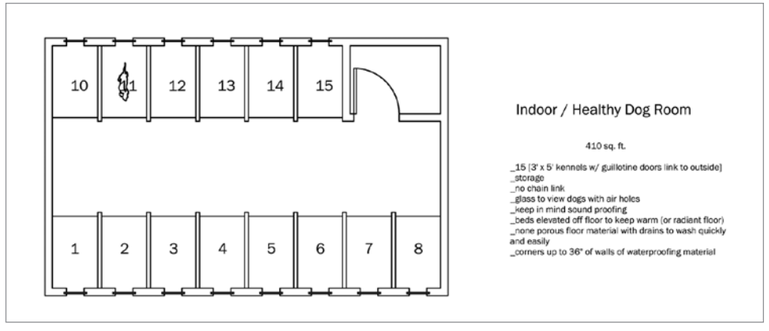
- Walking animals.
- Letting animals run around and catch some fresh air.
- Possible meet and greet.
- Adoption day held outside to view all the animals.

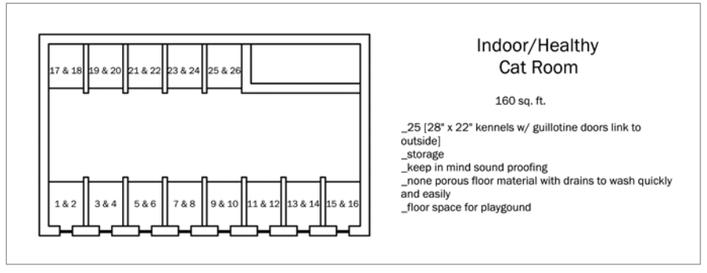
Program	Sq. Ft.
Dogs	910
Cats	450
Small Animals	350
Public	675
Private	2175
Outdoor	500

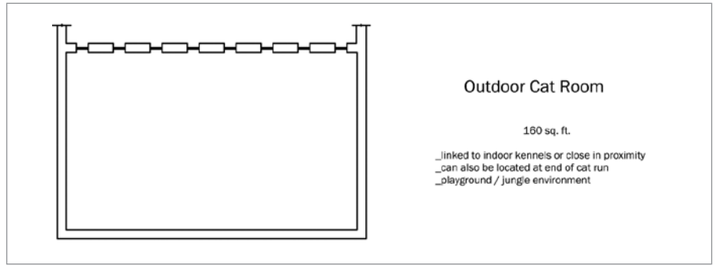


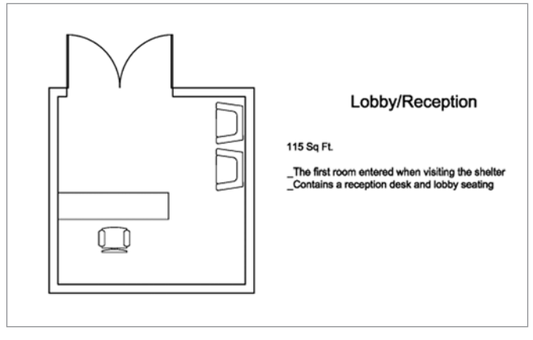
Proposed program and space requirements for the Warren Animal Shelter.

Spaces were broken down by the needs of the occupants for building. Once research was done on the specific spaces of the building, room data sheets were constructed. The largest amount of space will be consumed by private programmatic spaces. The combined animal spaces will take the next largest amount of programmatic space, followed by public and outdoor spaces.









A sampling of individual room floor plans for activities and space criteria.

Program

There are three recommended programs for the Warren Animal Shelter — one at a recommended size, one at a maximum and one at a minimum.

Maximum net square footage	6,350 sq. ft.
Minimum net square footage	3,750 sq. ft.
Optimum net square footage	4,560 sq. ft.

Photo courtesy of Potter League for Animals.

Warren Animal Shelter				
Program Requirements - Minimum				
Program Requirements	Number	Sq. Ft.	Total Sq. Ft.	Notes
Dogs				
Isolation	1	100	100	4 kennels @ 3'x4' - With Storage
Dog Intake Room	1	75	75	4 kennels @ 3'x4'
Indoor/Healthy Dog Room	15	15	225	20 kennels @ 3'x5'. Keep in mind sound proffing materials other than chain link and storage for foods, not facing each other
Outdoor Dog Kennels	15	15	225	20 kennels @ 3'x5'. Connected to indoor dog room via guillotine doors (is this needed)
Indoor Bath/Grooming Area	1	100	0	Cabinets and Drawers with counter for supplies
Sub Total			**625**	
Cats				
Isolation	1	150	150	20 kennels @ 28"x22" larger for expecting mothers
Cat intake room	1	100	100	10 kennels @ 28"x22"
Indoor/Healthy Cat Room	1	100	100	25 kennels @ 28"x22" with food storage inside
Outdoor Cat Room	1	100	100	connected to indoor cat room via guillotine doors
Sub Total			**450**	
Small Animals (Lizards, Iguanas, Birds, Guinea Pigs, Ferrets, Gerbils, Rabbits)				
Isolation	1	100	100	Cages and tanks. Different sizes for different animals w/hooks for bird cages. Storage for odd supplies.
Intake	1	75	75	Cages and tanks. Different sizes for different animals w/hooks for bird cages. Storage for odd supplies.
Indoor - Healthy	1	100	100	Cages and tanks. Different sizes for different animals w/hooks for bird cages. Storage for odd supplies.
Sub Total			**275**	
Public				
Lobby w/ Reception Desk	1	150	150	
Adoption/Interview Room	1	50	50	Meet perspective owners
Meet & Greet Room	1	75	75	Homey feeling furnished with comfortable furniture to meet animals
Retail	1	75	75	Engravings, leashes, etc.
Memorial Pond	1	25	25	
Training Room	1	50	100	
Restroom	2	150	0	
Sub Total			**475**	
Private				
Staff Lounge	1	100	100	
Office	2	100	200	
File Storage Room	1	100	100	
Kitchen	1	50	50	Joined with staff lounge as a kitchenette
Exam & Medical Room	1	100	100	Stainless steel shallow tub for easy cleaning (Euthanasia)
Laundry/Wash Room	1	75	75	Commercial sized washer and drier (6-14 loads daily) in close proximity to donation bin
Animal Food Storage	1	700	700	Centrally located w/counter for food prep
Restroom	2	50	100	
Garage	1	500	500	Large enough for two cars (use of sally port so animals can not escape when being transferred. 2-3 Kennels
Sub Total			**1925**	
Outdoor				
Barn Area	1	300	0	Cows, horses, goats, etc. approximately 4 stalls
Outdoor Play Area	3	200	0	Flexible arrangement allowing for one large open space or divided into several smaller play areas.
Sub Total			**0**	
Total Net Sq. Ft.			3,750	
Total Gross Sq. Ft.			4,988	Assuming 75% Efficiency

Minimum program requirements.

Warren Animal Shelter

Program Requirements - Maximum

Program Requirements	Number	Sq. Ft.	Total Sq. Ft.	Notes
Dogs				
Isolation	1	150	125	4 kennels @ 3'x5'
Dog Intake Room	1	150	100	4 kennels @ 3'x5'
Indoor/Healthy Dog Room	15	15	410	20 kennels @ 3'x5'. Keep in mind sound proffing materials other than chain link and storage for foods, not facing each other
Outdoor Dog Kennels	20	24	480	20 kennels @ 3'x5'. Connected to indoor dog room via guillotine doors (is this needed)
Indoor Bath/Grooming Area	1	140	100	Cabinets and Drawers with counter for supplies
Sub Total			**1215**	
Cats				
Isolation	1	150	150	20 kennels @ 28"x22" larger for expecting mothers
Cat intake room	1	90	90	20 kennels @ 28"x22"
Indoor/Healthy Cat Room	1	160	160	25 kennels @ 28"x22" with food storage inside
Outdoor Cat Room	1	160	160	connected to indoor cat room via guillotine doors
Sub Total			**560**	
Small Animals (Lizards, Iguanas, Birds, Guinea Pigs, Ferrets, Gerbils, Rabbits)				
Small Animal Room	1	160	160	Cages and tanks. Different sizes for different animals w/hooks for bird cages. Storage for odd supplies.
Sub Total			**160**	
Public				
Lobby w/ Reception Desk	1	115	115	
Adoption/Interview Room	1	100	100	Meet perspective owners
Meet & Greet Room	1	80	80	Homey feeling furnished with comfortable furniture to meet animals
Retail	1	100	100	Engravings, leashes, etc.
Memorial Pond	1	25	25	
Training Room	1	150	150	
Restroom	2	75	75	
Sub Total			**645**	
Private				
Staff Lounge	1	150	150	
Office	2	150	300	
File Storage Room	1	100	100	
Kitchen	1	50	50	Joined with staff lounge as a kitchenette
Exam & Medical Room	1	100	100	Stainless steel shallow tub for easy cleaning (Euthanasia)
Laundry/Wash Room	1	75	75	Commercial sized washer and drier (6-14 loads daily) in close proximity to donation bin
Animal Food Storage	1	700	700	Centrally located w/counter for food prep
Restroom	2	50	100	
Garage	1	420	420	Large enough for two cars (use of sally port so animals can not escape when being transferred. 2-3 Kennels
Sub Total			**1995**	
Outdoor				
Barn Area	1	300	0	Cows, horses, goats, etc. approximately 4 stalls
Outdoor Play Area	3	200	0	Flexible arrangement allowing for one large open space or divided into several smaller play areas.
Sub Total			**0**	
Total Net Sq. Ft.			4,575	
Total Gross Sq. Ft.			6,085	Assuming 75% Efficiency

Maximum program requirements.

Warren Animal Shelter				
Program Requirements - Optimum				
Program Requirements	Number	Sq. Ft.	Total Sq. Ft.	Notes
Dogs				
Isolation	1	200	200	4 kennels @ 4'x6' - With Storage
Dog Intake Room	1	150	150	4 kennels @ 4'x6'
Indoor/Healthy Dog Room	20	25	500	20 kennels @ 4'x6'. Keep in mind sound proffing materials other than chain link and storage for foods, not facing each other
Outdoor Dog Kennels	20	40	1000	20 kennels @ 4'x10'. Connected to indoor dog room via guillotine doors (is this needed)
Indoor Bath/Grooming Area	1	200	100	Cabinets and Drawers with counter for supplies
Sub Total			**1950**	
Cats				
Isolation	1	150	150	20 kennels @ 28"x22" larger for expecting mothers
Cat intake room	1	100	100	10 kennels @ 28"x22"
Indoor/Healthy Cat Room	1	100	100	25 kennels @ 28"x22" with food storage inside
Outdoor Cat Room	1	100	100	connected to indoor cat room via guillotine doors
Sub Total			**450**	
Small Animals (Lizards, Iguanas, Birds, Guinea Pigs, Ferrets, Gerbils, Rabbits)				
Small Animal Room	1	200	200	Cages and tanks. Different sizes for different animals w/hooks for bird cages. Storage for odd supplies.
Sub Total			**200**	
Public				
Lobby w/ Reception Desk	1	300	300	
Adoption/Interview Room	1	100	100	Meet perspective owners
Meet & Greet Room	1	100	100	Homey feeling furnished with comfortable furniture to meet animals
Retail	1	150	150	Engravings, leashes, etc.
Memorial Pond	1	25	25	
Training Room	1	300	300	
Restroom	2	100	200	
Sub Total			**1175**	
Private				
Staff Lounge	1	200	200	
Office	2	200	400	
File Storage Room	1	100	100	
Kitchen	1	50	50	Joined with staff lounge as a kitchenette
Exam & Medical Room	1	150	150	Stainless steel shallow tub for easy cleaning (Euthanasia)
Laundry/Wash Room	1	75	75	Commercial sized washer and drier (6-14 loads daily) in close proximity to donation bin
Animal Food Storage	1	700	700	Centrally located w/counter for food prep
Restroom	2	50	100	
Garage	1	900	900	Large enough for two cars (use of sally port so animals can not escape when being transferred. 2-3 Kennels
Sub Total			**2675**	
Outdoor				
Barn Area	1	300	0	Cows, horses, goats, etc. approximately 4 stalls
Outdoor Play Area	3	200	0	Flexible arrangement allowing for one large open space or divided into several smaller play areas.
Sub Total			**0**	
Total Net Sq. Ft.			6,450	
Total Gross Sq. Ft.			8,579	Assuming 75% Efficiency

Optimum program requirements.

Cost Anaylsis

The cost analysis for the Warren Animal Shelter is based on a preliminary program analysis for an animal shelter of approximately 6,650 square feet. An animal shelter of this size would cost an estiamted $2,357,490.04 to build. This amount includes architectural design fees as well as construction costs.

Front perspective with view of stables.

Program

Fall 2012 Work - ARCH 488

Building upon the work from students in ARCH 530, students in ARCH 488 worked with staff of the Warren Animal Shelter to develop a program that contained the minimum requirements for the shelter to remain at their current location at 80 Wood Street. The total square footage needed to fulfill the program needs for the shelter is larger than the existing square footage of the current building. The program selected by the students looks at expansion of the current shelter programs without a dramatic increase to the gross net ratio.

Initial Square Footages

Net Area: 5,400 sq. ft.
Gross Area: 8,172 sq. ft.
(1.5 Gross to Net Ratio)

Final Net: 6,077 sq. ft.
Final Gross: 8,631 sq. ft.
(1.42 Gross to Net Ratio)

Initial to Final Comparisons

1.125 final initial net ratio
1.05 final to initial gross ratio

Town of Warren
Proposed Animal Shelter
Minimal Program Requirements

Public Functions				
Lobby & Reception (2)	1	400	400	(Including Gift Shop/Display)
Adoption Interview Room	1	100	100	
Meet and Greet Room	1	150	150	Homey feeling - Domestic Furnishings
Public Toilets	2	50	100	Handicapped Accessible
Training Room	1	400	400	Multipurpose - Open Space
Subtotal			**1150**	
Adminstrative Functions				
Office - Director	1	120	120	
Office - Staff	1	100	100	
Workroom - Volunteers (3)	1	150	150	
File Storage Room	1	80	80	
Kitchenette	1	60	60	
Staff Lounge	1	120	120	
Staff Toilets	2	40	80	
Subtotal			**710**	
Dog Areas				
Isolation	1	100	100	4 Kennels - 3' x 5'
Dog Intake Room	1	100	100	4 Kennels - 3' x 5'
Indoor/Healthy Dog Room	15	15	225	15 Kennels - 3' x 5'
Outdoor Dog Room	15	15	225	Connected by Guillotine Doors
Indoor Bath/Grooming Area	1	100	100	Cabinets and Doors for Supplies
Indoor Exercise/Play Area	1	200	200	Accessible from Kennels
Storage	1	50	50	Equipment
Subtotal			**1000**	
Cat Areas				
Isolation	1	120	120	20 Kennels @28" x 22"
Cat Intake Room	1	100	100	10 Kennels @28" x 22"
Indoor/Healthy Cat Room	1	150	150	25 Kennels @28" x 22"
Indoor Exercise/Play Area	1	200	200	Part of Indoor Healthy Cat Room
Storage	1	50	50	Equipment
Subtotal			**620**	
Small Animal Area				
Isolation	1	50	50	
Intake Room	1	50	50	
Indoor/Healthy	1	100	100	
Subtotal			**200**	
Support Space				
Food Prep	1	80	80	w/service access
Food Storage	1	400	400	
Exam/Medical	1	200	200	
Housekeeping/J.C.	2	20	40	
General Storage	1	400	400	
Garage	1	400	400	
Mechanical	1	200	200	
Parking (10)	0	300	0	Not in area totals (See Site)
Subtotal			**1720**	
Total NSF			**5400**	

Summary of Space Requirements		
Total Net Square Feet		5400
Total Gross Square Feet @ 1.35 x Net	**1.35**	**7290**

Proposed program for the Warren Animal Shelter.

Cost Estimate

The ARCH 488 project team used the 2012 RS Means Building Construction Cost Data to derive cost estimates for the redesigned Warren Animal Shelter. Since no categories existed for animal shelters, the team used the estimations for a one-story healthcare facility as a comparison for cost analysis. A healthcare facility was chosen for its similar structures and systems to provide the best estimate during the schematic design stage.

Original Estimate for Fall 2012 Proposed Plan: $1,598,089 (Project Cost)

Revised Estimate for Fall 2012 Proposed Plan: $1,721,885 (Project Cost)

Cost Reduction

In order to reduce costs, the team decided to replace concrete walls and ceilings in the building with medal-stud construction. This change to the interior would allow for easier construction and lower costs.

Original Construction Cost for Fall 2012 Proposed Plan: $943,093

Revised Total Construction Cost for Fall 2012 Proposed Plan: $904,679

Final Cost Estimates

In order to obtain a more accurate cost estimate for the project, students from CMT 445 used an assemblies estimation for the individual items of construction. Since this process allows costs to be based on the individual construction elements, the end cost provides a more accurate picture of what the projected project costs will be. The final cost estimates from the construction management team came in lower than the architecture team predicted.

Corner perspective.

Original Estimate for Fall 2012 Proposed Plan: $1,273,176 (Project Cost)

Revised Estimate for Fall 2012 Proposed Plan: $1,309,626 (Project Cost)

Project Evolution

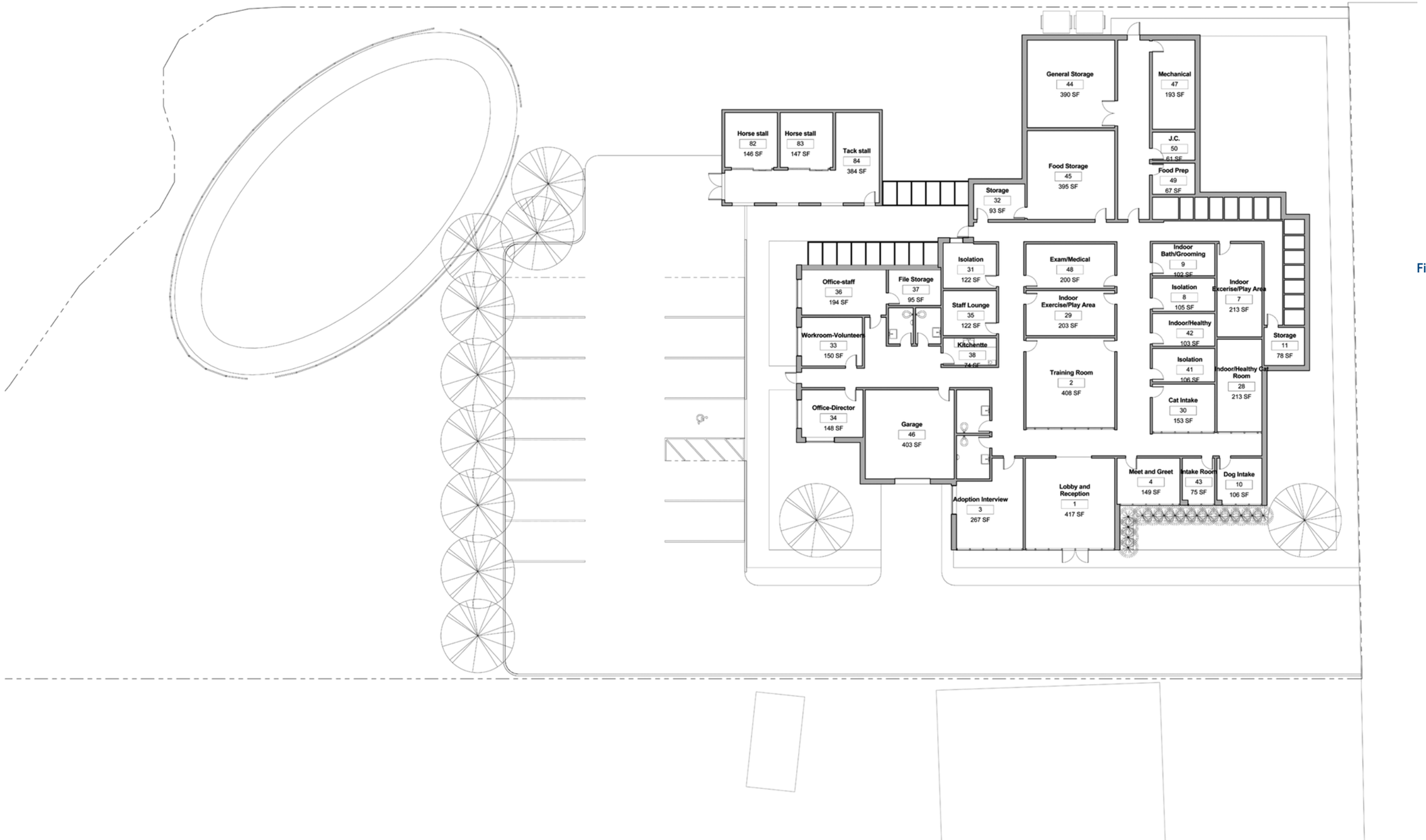
Choosing by Advantages

Factors	Scheme A	Scheme B	Scheme C
Goals/Vision for Project	Quality design and construction that meets sustainable standards	Quality design and construction that meets sustainable standards	Quality design and construction that meets sustainable standards
Conformance with Program	Front access to public welcome functions as well as the animal intake and office space.	Front access to public entry in addition to easy access to storage and garage spaces for utility vehicles.	Mechanical spaces and storage rooms are easily accessed from existing road, while public spaces are visible on the front. The dog rooms face the more private back of the site.
Efficiency of program layout	Parallel Circulation routes allow for ease of travel through building.	Smooth circulation flows around program spaces without leaving any dead ends.	Circular navigation scheme allows for navigation through the building and around program spaces.
Life-cycle performance	$438,947	$403,666	$377,467
Construction/Schedule sequencing	Building is phased out while construction commences, allowing for transition from existing to new construction	The best usage of existing site is achieved while allowing for the most flexibility in design. The existing building would be demolished before construction commences	Building is phased out while construction commences, allowing for transition from existing to new construction.
Quality of design	The centralized training room allows for public visibility while creating a pivot point on which the building rotates around.	Hallways extended to the exterior walls to allow for light to flood the interior spaces.	Distinct bars of public and private program allow for clear separation between program elements. The dog rooms are grouped together for ease of access as well as food transport.
Neighborhood acceptance	Mechanical spaces face away from the residential area, and reduce noise pollution.	Dog rooms are all facing away from the residential neighborhoods.	Non-obtrusive massing blends in with local residential sizing and scale.

Gross Square Feet	7,929 sq. ft.	7,311 sq. ft	6.552 sq. ft.
Net to Gross Ratio	1.47	1.35	1.21
Maximum Occupancy	74	68	61
Construction Cost	$1,192,604	$1,099,651	$985,490
Project Cost	$1,598,089	$1,473,532	$1,320,556

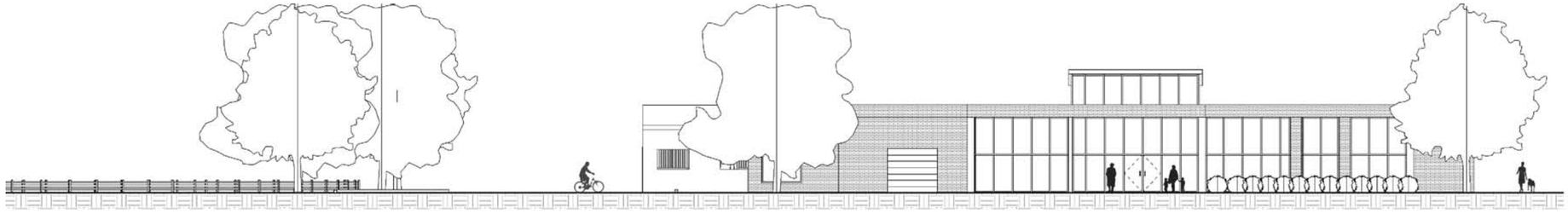
1. Perpective.

2. Lobby perspective.



Final floor plan.

1



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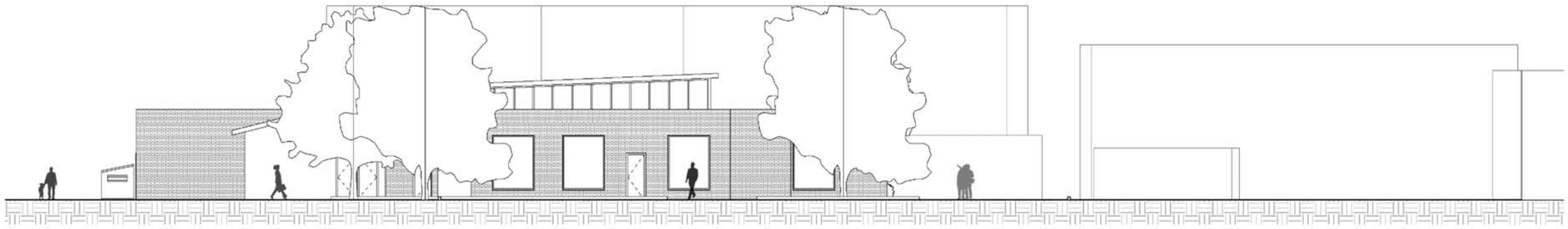
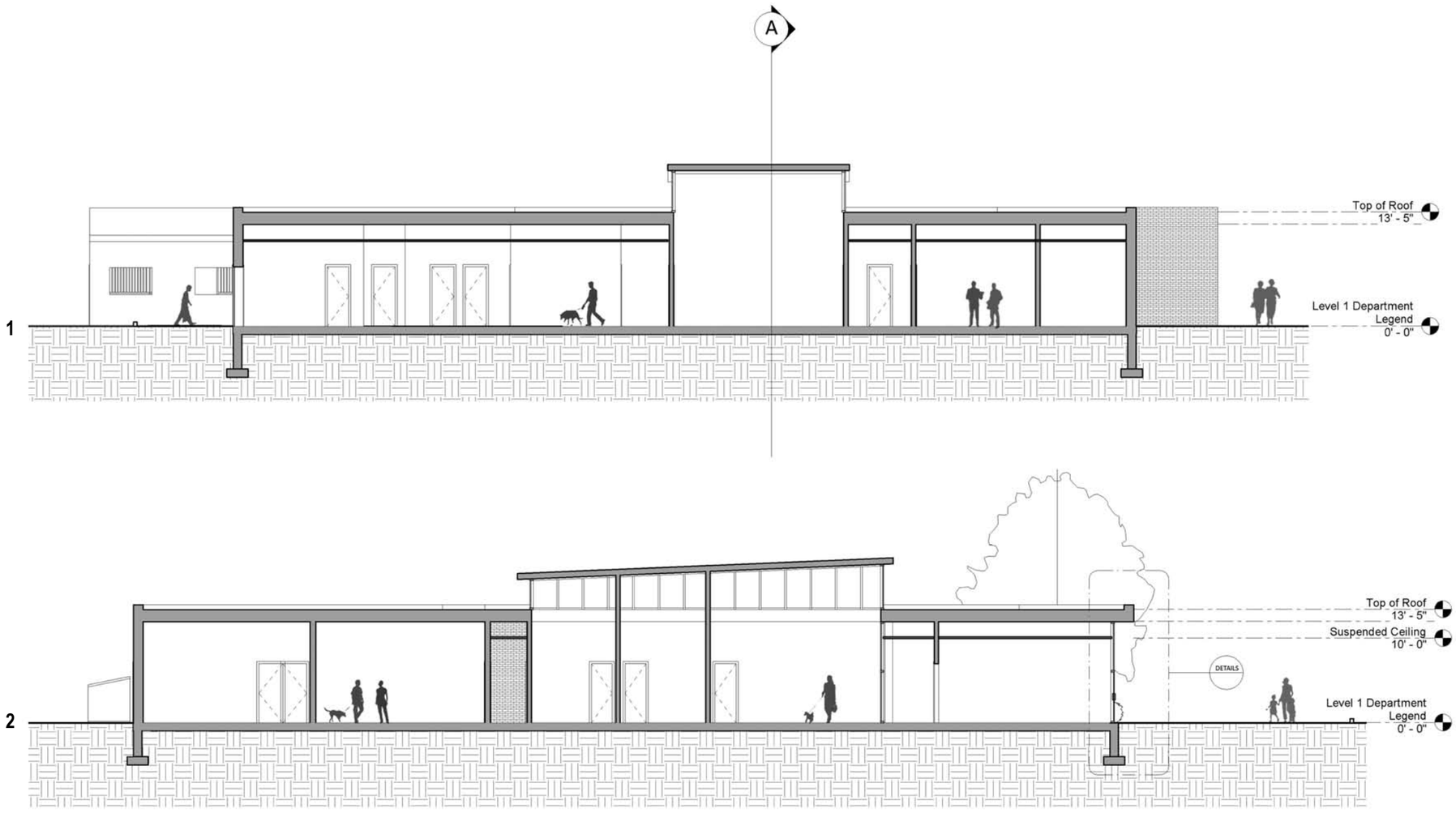


1. South elevation.

2. West elevation.



1. Section B.

2. Section A.

Building Performance Analysis

Annual Energy Use: 105,870 kWh
Monthly: 8822.5 kWh
Daily: 294.1 kWh
Hourly: 12.3 kWh

Annual Energy Cost: $17,467

Annual Carbon Emissions: 95.2 tons (electric)
Monthly: 8 tons
Daily: 0.26 tons
Hourly: 0.01 tons

Total Water Usage: 1,197,156 gallons/year

Total Water Cost: $7,201 per year

Alternative Solutions

Base Run Energy Cost Analysis	Design Alternative Energy Cost Analysis
Energy, Carbon and Cost Summary Annual Energy Cost: $17,467 Lifecycle Cost: $237,899	**Estimated Energy and Cost Summary** Annual Energy Cost: $18,608 Lifecycle Cost: $253,444
Annual CO2 Emissions Electric: 95.2 tons Onsite Fuel: 16.4 tons Large SUV Equivalent: 10.1 SUVs/Year	**Annual CO2 Emissions** Electric: 91.7 tons Onsite Fuel 22.8 tons Large SUV Equivalent: 10.4 SUV's/Year
Annual Energy Energy Use Intensity (EUI): 97 kBtu/ft2/year Electric: 105,870 kWh Fuel: 2,828 Therms Annual Peak Demand: 38.4 KW	**Annual Energy** Energy Use Intensity (EUI): 97 kBtu/ft2/year Electric: 102,645 kWh Fuel: 3,928 Therms Annual Peak Demand: 36.9 KW
Lifecycle Energy Electric: 3,176,094 KW Fuel: 84,842 Therms	**Lifecycle Energy** Electric: 3,079,350 KW Fuel: 117,844 Therms

Base Run Energy Cost Analysis Changes:

- Metal frame roof with high insulation
- Metal frame wall with high insulation
- Insulated clear low-e cold climate glass

Design Alternative Energy Cost Analysis Changes:

- Central VAV, HW heat
- Chiller 5.96 COP
- Boilers 84.5 eff
- Lighting efficiency: LPD 10% less than base run
- Occupancy/daylighting sensors and controls
- Metal frame roof with super high insulation
- Insulated concrete form wall 10" thick
- Super insulated 3-pane clear low-e glass

Next Steps

Engage

- Engage the Town Administration and raise awareness of the project.
- Present concept to the Town Council to request support for further development.

Funding

- Consider funding sources and fundraising opportunities.
- Expand Steering Committee to include key stakeholders and others motivated to make this project happen.
- Formulate a business plan for the shelter.

Partnerships

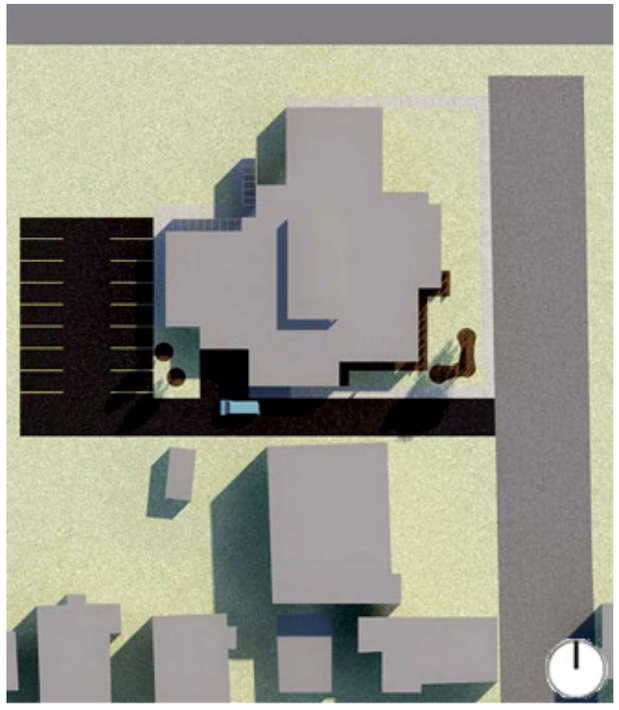
- Consider further collaboration between the town and RUFF Organization.
- Engage consultants to further assess site and building design relative to available funds and partnership opportunities.

Campaigns

- Community information campaigns.
- Open community workshops.
- Formation of a town committee.

Land Selection

- Consider negotiations for site selection.
- Evaluate town-owned land.



Aerial view of the proposed Warren Animal Shelter at it's current location.

Outdoor perspective.

Conclusion

Constructing the Warren Animal Shelter as a one-story facility allows for ease of transport of the animals from one area to another. Therefore, the design should consider the possibility of the long and relatively low horizontal massing with curb appeal to attract future animal adopters.

The convenience for employees and volunteers is important to consider when building the site. To maximize efficiency for staff and volunteers, long corridors should be avoided and an efficient circulation to the building will need to be considered. There also needs to be a distinction between private and public space, allowing employees and volunteers to conduct the work necessary for the shelter.

At the animal shelter, it is important that potential adopters be able to see the animals upon entering the facility and have defined viewing areas throughout the building. This will help increase animal adoption rates.

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