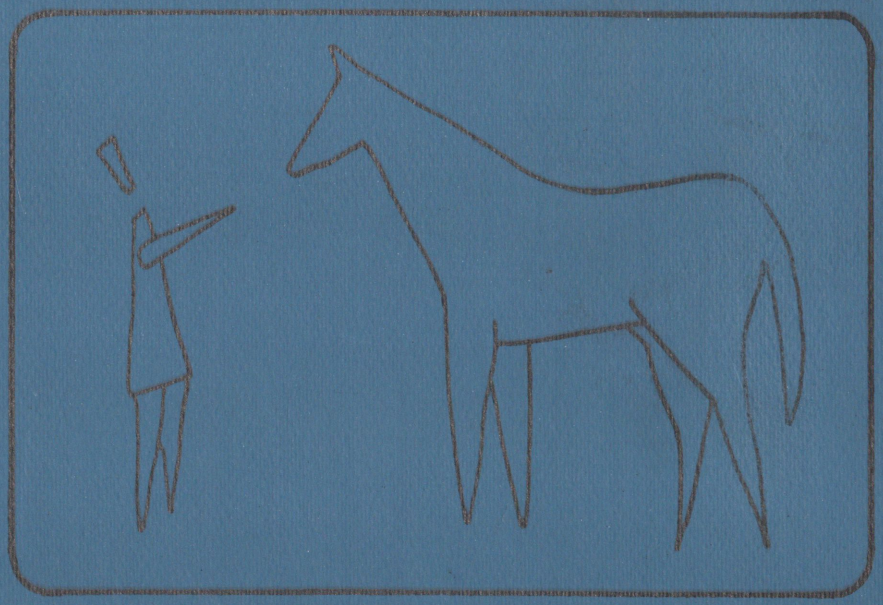
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THESIS PROJECT

BY: RUSSELL PAGE

EQUESTRIAN CENTER

MANCHESTER, MONTANA



EQUESTRIAN CENTER

by

Russell Page

A Thesis submitted to the Architecture Faculty in partial fulfillment of the requirements for the degree of Bachelor of Architecture

Montana State University
Bozeman, Montana
June, 1974

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INTRODUCTION

Descartes pronounced that "animals were merely machines." Ever since James Watt developed the steam engine Horse-Power has been the measuring unit for mechanical power.

"The outside of a horse is good for the inside of man".

ADVISORS:

Mrs. Elmira Smyrl - Architecture

Dr. Chuck Milne - Ag Engineering

Mr. Sandy Gagnon - Animal Science

Dr. O. Thomas - Feeds & Feeding Animal Science

Dr. William Shontz - Professor of Psychology

Dr. Jack Catlin - Vet Research

Doug and Nancy Dear - Quarter Horse Breeders

THESIS STATEMENT:

A state of stress results from an organism being placed in an environment that has been insensitively built.

Therefore man-made environments should try to meet both the psychological and physiological needs of the animal and man's use of them.

PROJECT:

This problem has led me to believe that there is a need for an Equestrian Center. I have chosen Great Falls, Montana, for the location of this center. It will either be privately owned, or owned by an organization such as a saddle club. It will be a place to board horses, have shows, sales, research in the forms of study and clinics, teaching or instruction on riding, lectures, demonstrations, commercial exhibits, and clubs from a kid's pony club to the saddle club. There will also be trails for pleasure riding.

SUBJECT:

The horse population has increased approximately three times between 1959 - 1970. There are now around eight million horses in the United States, with the majority of them in the west. In 1920 there were 25,199,552 horses and mules on farms and ranches in the U.S. By 1960 there were 3,089,000 head on the nation's farms and ranches. Draft horses have been replaced with machinery leaving light horses for sport and recreation the main reason for participation and spectator increase in the horse population. The Census Bureau figures on horses have been limited to farms and ranches, and have given no consideration to those owned by suburbanites. Most population figures fail to reflect the shift in the horse population from farm to town.

NEED:

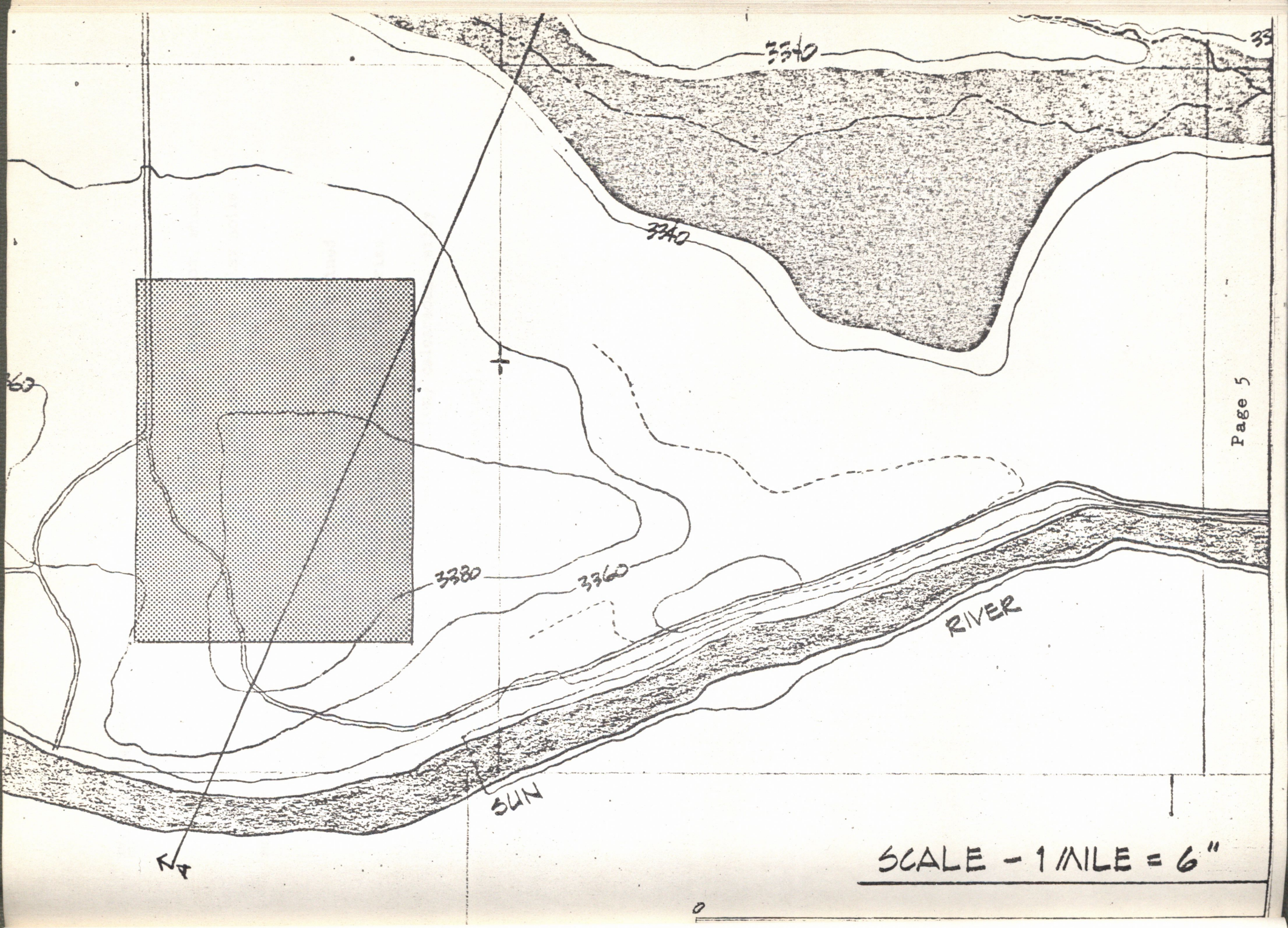
Available money, leisure time, and emphasis on the out-of-doors has created great interest in light horses for recreation and sport. This interest has led to the problem of where to put these horses. Horses are being placed in small quarters in back yards. Most of these conditions are very poor for both horse and man. A facility to board horses, have sales, shows, and clubs, or just a place for people to go on an afternoon to ride for fun and pleasure is what I feel is very much needed.

SITE

The site that I have used for my Equestrian Center is at Manchester, which is five miles west of Great Falls, Montana. It is a fairly flat site with no buildings and few trees. Most of the vegetation grows on the Sun River that flows by the southern edge of the site..

The area that my site is in is very much animal oriented. Many of the residences out on the west end of Great Falls have horses and there is a cattle feed lot and sales ring located there, so the site is well suited for an Equestrian Center.

I feel that the site is centrally located with a four lane interstate highway leading to the site from the east (Bozeman, Billings, Great Falls) and from the west (Missoula, Canada) There is an interstate exit right at Manchester with a frontage road and railroad tracks passing in front of the site.


3340
3340
3380
3360
RIVER
SUN
SCALE - 1 MILE = 6"

SOIL INFORMATION

The soil on my site is Marias - Kobar - Abor Association, which is nearly level to undulating, light colored, calcareous, clay soils more than 20" deep to shale.

Marias soils - (35% of this Association) well-drained soils - level ground.

Kobar soils - 30% of this Association) same as Marias but with less clay.

Abor soils - (10% of this Association) calcareous, silty clay soils.

Other soils - (25% of this association).

YEARLY CREST READINGS ON THE SUN RIVER AT MANCHESTER:

Manchester Sun River gauge zero reading = 3314 ft. m.s.l.

1963	5.5
1964	24.0
1965	11.8
1966	7.9
1967	15.0
1968	7.1
1969	6.6
1970	10.6
1971	12.1
1972	14.3

100 year high - 1964 at 24.0
24.0 + 3314 = 3338.0

10 year average - 10.4
10.4 + 3314 = 3324.4

CLIMATOLOGY OF MANCHESTER, MONTANA

Yearly precipitation total - 14.99 inches. Rainy season May and June with normal total of 5.64 inches. Strong Southwest winds dominate weather from November through March and very little snow or rain falls with a southwest wind. Most of the storms are with winds from WNW though East. Southwest winds can reach 80 m.p.h. in this area and in rare cases northwest to northeast winds may reach 70 m.p.h. July and August usually are the hot months and winds are light except with thunderstorms which often occur during the late afternoon and evening hours.

An average summer would have afternoon highs reaching 90 degrees or more about 20 days. Nights are cool due to excellent radiation in the relatively dry air masses usually present during the warmest time of the year.

Yearly prevailing wind direction southwest with a mean hourly speed of 14.2 m.p.h. Lightest winds July and august.

Average yearly snowfall for area - 55.3 inches.

All time low temperatures - 49 degrees below zero.

All time high temperatures - 107 degrees.

INTRODUCTION TO

HORSE EVOLUTION, DOMESTICATION & BEHAVIOR

EVOLUTION

First - Eohippus; lived in marshes and swamps, 58,000,000 years ago, small and dog-like.

Later - Equis; moved out onto the plains, 1,000,000 years ago. 6,000-12,000 years ago Equis became extinct on the North American Continent, so there were no horses when Columbus arrived.

Now - Horse; life of domestication under man's leadership.

DOMESTICATION:

French caves - Cro-Magnons drew some 20,000-25,000 drawings of horses on cave walls. From these drawings it is assumed that they used the horse for food.

Mesopotania - The first domestication of the horse was in the year 3,000 B.C. when the Red Earth people used the horse to pull their carts.

Greece - In the year 1500 B.C. the horse was used in chariot races.

Arabians - In the year 1300 A.D. the Arabs had the first breed of domesticated horses - called the Arabians

710 A.D. - Moslems invaded and beat Spain riding horses.

1492 - Columbus brought the Spainish horse to the New World.

American History of horses:

1495 - Spainish Conquistidors conquered the Inca Indians.

1600 - Horses were in Florida, South America and Mexico.

1607 - Santa Fe - First introduction of horses in western U.S.

1659 - Apache - First indian tribe to have horses.

1680 - Pueblos.

1690 - Shoshone.

1710 - Nez Peirce.

By 1750 horses were wide-spread among the indians, and it only took 50 years. Indians roped their horses with buffaloe ropes, and the their horses had good conformation.

THE INFLUENCE OF DOMESTICATION:

Horse and man are two very different species, yet they get along quite well together. Man can get the horse to do many things that are far divorced from anything which nature had intended, and yet the horse still looks to man for leadership. Although the domesticated horse looks to man for leadership, he still carries some inherent compulsion to respond to various stimuli in the way that his early ancestors would have done.

The horse has been educated and taught to respond to stimuli quite different from those of days long ago. The main difference between the mentality of the modern horse and that of the wild horse prior to domestication lies in the degree of ability it shows in establishing mental contact with its owner.

HORSE PHYSIOLOGY

All processes of the body which involve an output of energy may be regarded as chemical processes. The muscles and other tissues act as a furnace in which the organic substances are oxidized and reduced to simple compounds, such as carbon dioxide and water.

Food can be classed in two general groups: (1) the carbohydrates (starches) and fats. (2) the proteins. The carbohydrates are the so called gasoline of the animal engine. The proteins furnish the building stones or repair parts of the animal engine.

Glucose is stored in muscles and called glycogen. During exercise oxidation of glucose results in its destruction with carbon dioxide (gas) and water. Incomplete oxidation may leave the glucose in lactic acid. Fatigued muscles have alot of this acid and is found to be very toxic and poisonous.

Professor A.V. Hill has found that the body may "run into debt for oxygen." When the body is in debt for oxygen it is necessary to breath violently. This is why a long cooling-out and walking period is necessary after hard work.

Training is very important, along with the method of training. Young horses have hearts, bones, tendons and nervous systems that are unable to withstand heavy work. So a progression of work is needed.

HORSE BEHAVIOR

GENERAL:

The horse was domesticated some 5,000 years ago. During these 5,00 years horseman have achieved a pretty good understanding of how horses behave or react to the conditions and demands of their domestication.

EVOLUTION:

The evolution of the behavior of horses began over 58 million years ago when the primitive horse known as Eohippus first appeared on earth. This horse was a small dog-like animal living in swamps with little intelligence and ability. The drying of the earth forced the Eohippus to adopt to drier terrain. As physical characteristics changed with the environment, so did his behavior. From a small, swamp dwelling animal, the horse adapted to dry ground and open cou country. Here survival depended upon keen senses and great speed.

The horses basic behavior is a result of living on the open plains of the world. Here he ate the grass-like plants and raced for miles, when his life was threatened.

SELF PROTECTIVE BEHAVIOR:

From the elements:

Wind, particularly in cold weather, is the principle element that all horses seek protection from. They seek this protection by using trees, wind breaks and buildings. When grazing in the wind, a horse will have his tail towards it.

When the sun comes out after a cold, frosty night, a horse will stand broadside to the sun. On hot days horses will line up with the sun.

From predators:

Of the two ways animals respond to attack, fighting or running, the horse has almost totally depended on running. The anatomy and p physiology of his body gradually changed to provide the agility, speed and endurance for swift flight.

Twelve million years ago, the horse had evolved the foot it has now, a single digit with three bones, or phalanges. The early pre-horse had five toes. This single digit evolved from the fact that the horse had to run to escape predators.

Also, because of this dependence upon flight to escape predators, the horse has a strong urge to eat more or less continously whenever possible, because he may have to run for long distances without eating. The horse has well developed senses of hearing, sight, and smell, to give warning of danger. Confinement meant death to the wild horse. This is why it is hard to halter break a young horse. Since the horse does depend on flight, they are especially fearful of having their feet caught, even broken horses get excited when they unexpectedly get their leg caught in some wire.

Something, like a rider, on a horses back is very frightening to the horse. To wild horses, it was not uncommon for mountain lions to jump on a horses back and kill.

Domesticated horses, if given the opportunity, will revert back to a wild horse very quickly. This has been proven on some of the areas today that still have wild horses running free. And these wild horses were direct descendants of the domesticated horse.

INGESTIVE (EATING) BEHAVIOR:

The horse has gone from eating soft plants in the swamps, to dry hard plants on the plains. Along with his need for flight from predators the horses legs got longer. Since his legs got longer, his neck had to get longer so he could graze. The horse uses it's upper lip to grasp food, unlike the cow that uses it's tongue. When snow is on the ground the horse will paw the snow to get to the grass.

Eating behavior:

Grass is the horses main food source. When feeding grains, one has to be careful not to overfeed, because it can cause founder or death to the horse. Horses can even founder on grass, when confined to a small area and get little exercise.

Horses have no grazing and resting patterns as cattle and sheep do. They graze and rest intermittently, with more time spent grazing than resting. It has been proven that the horse does better if fed small amounts often rather than larger amounts infrequently. However confined and hand-fed horses do have a schedule, and they know when it is time to be fed.

Drinking behavior:

Horses have been observed as drinking in evenings or just before dawn. They prefer cool fresh, clean water. If horses are being hand watered, one should water them at least twice a day. They will eat snow when available.

ELIMINATIVE BEHAVIOR:

Horses will defecate and urinate in certain areas and graze in others. This habit is more predominant in stallions then mares

and geldings. It is believed to be because of one of two reasons - first this habit would mark out a certain territory, and second it might protect the horses from infestation by internal parasites. Parasites are a problem of horsemen today. Manure should be picked up, horses should be wormed, and feeding should be done in a manger not the ground.

SEXUAL BEHAVIOR:

The physiological control of sexual behavior lies in the endocrine (hormone) system. Horses tend to be seasonal breeders. Mares have a stronger tendency to be sexually active in the spring and early summer, stallions are, just about any time of the year. This allows for the foals to be born during the time of green grass and good weather. Artificial lights inside stalls can also control a mares estral cycle.

Mating behavior of the stallions:

Courtship or teasing prepares the stallion and involves senses of sound, sight, smell and feel. It also can tell whether or not the mare is in heat.

Mating behavior of the mare:

The horse is the most difficult farm animal to produce. The horse only has a 50%-60% foal crop. The average length of time that a mare is in heat is about six days. The average mare will start a new estral cycle every 19 to 21 days.

SOCIAL BEHAVIOR:

Need for company:

When horses are seperated from each other, they fear for their life. Together horses feel secure. However horses will often times

learn that they are safe and protected in a barn or home pasture - this is what is known as "barn sour."

Social order:
There is a definite order of dominance that exists in horses, sometimes called the "pecking order." In the horse there is a difference between aggressiveness and ability to lead, and two different horses may rule in each factor. Horses also show an agonistic behavior- fighting by biting and kicking. Two studs will fight very viciously and can do each other serious damage.

COMMUNICATION & SOCIAL LIVING:

Voice signals:

Snort - warning of impending danger.

Neigh or whinny - distress call, expresses great concern, anxiety and even terror.

Nicker - greeting.

Squeal - anger.

Visual signals:
The horses ears are the best visual signal with which a horse communicates it's feelings to humans.

Anger - ears are turned back and laid down on top of head, he also gets a gleam in his eyes and extends his head as if to bite. It is an indication of great stress.

Interest - ears up and forward. Shows that horse is awake, interested and observant.

Fear - ears up, eyes forward, concentrating hard and a tense body.

Relaxation - relaxed body and ears slightly to the side and back.

Kink in tail - excited and playful.

Tail held high - indicates to other horses it is time to run and play.

Tail between legs - frightened or preparing to kick.

Tail switching - shows horse is irritated.

INVESTIGATIVE BEHAVIOR:

Or curiosity is very closely related to fear and thus to self-protective behavior. Curiosity is a part of the learning process. Once a horse has learned, he will shy and run from things he is afraid of.

MATERNAL BEHAVIOR:

A mare ready to foal will try to get to a secluded place to get away with her foal. Mares become very suspicious of anything that tries to approach her and her foal.

Imprinting:

There are two reasons why a mare ready to foal leaves the other horses: (1) so the young foal can identify or imprint on its mother. (2) protective measure against predators. Mares never go off grazing and leave their foal. Recognizing a mare's foal is done by smell, sight and sound. However, horses, unlike other farm animals. have no instinct to return to the last place they saw each other.

SPECIAL SENSES:

Sense of sight:

Horses have monocular vision, that is each eye is independent of the other and can see different pictures. They have poor depth

perception, but with their eyes on the side of their head they can see alot around them - as if watching for predators. Horses also have pretty good night vision.

Sense of hearing:
The early Eohippus horse had to have a good sense of hearing since he lived in the swamps and brush, thus limiting how far it could see. Today horse trainers use voice cues, that need not be spoken loudly.

Sense of smell:
Horses don't have as well developed a sense of smell as animals who have to hunt for their food, however, the horse used its sense of smell to detect predators.

Modern day horses use of smell:
1. memory for the odor of other horses.

2. memory for the odor of man.

3. stallions detect odor when mare comes into heat.

4. mares use oder to identify their new-born foals.

Sense of touch:
The horse is very sensitive to touch around the nose, eyes and ears. They are also fearful of anything touching or holding their legs, because this could mean death to the horse, since he relies on flight to escape danger. The flank and withers are two other areas which are quit sensitive.

HOMERANGE & HOMING INSTINCT:
Horses have a territorial behavior, that is they seek out and stick to a certain territory. The horse also has the homing instinct. Since it escaped predators by running, after it escaped

it had to get back to its territory - thus acquiring the homing instinct. This homing instinct holds true with horses in barns and stalls. It is where a horse will feel safe and secure.

MEMORY:

Horses have an excellent memory. They needed it to find food and water, and to get back to their home range.

The domesticated horse remembers both the good and bad things. Proper training will teach the domesticated horse just about anything

Most of the learning of the horse comes with training explained by the stimuli-response theory. If a horse is given a certain stimuli or cue, he will respond in a certain manner. There are two types of stimuli; primary - one the horse is born with, and secondary- one he acquires by learning. There are many things man uses the horse for, and once properly trained the horse will never forget what he has learned.

SLEEPING AND RESTING:

Young foals sleep lying flat on their side while older horses sleep standing up. While standing up they rest one hind foot, so the horses weight is only on three legs.

GROOMING:

After a hard work-out or just for a pleasant experience, a horse will groom or clean itself by rolling in the dirt. Since the horses tongue is not as well suited for the job as a cats, it rolls. This method seems to have evolved as a type of control on external parasites, or to get rid of long winter hair.

DISEASES, UNSOUNDNESSES,

STABLE VICES, & AILMENTS

DISEASES:

Distemper (or Strangles) - a communicable disease prevailing especially among young animals.

Encephalomyelitis (or sleeping sickness) - a brain disease infected by the mosquito and tick.

Equine Influenza - highly contagious disease that appears where a number of horses are assembled.

Tetanus (or lockjaw) - a wound-infection disease.

These are four of the main diseases that are very common around this area, but all of them can be prevented with the right vaccinations at the right time. An isolation area would prevent many of the common diseases, if there was available land and money for such a facility. A new horse being brought to a center would be put in an isolation area for three weeks before adding them to the regular herd. Vets can then a) administer sleeping sickness vaccine and tetanus toxiod b) make parasitic examinations.

UNSOUNDNESSES:

Founder (or Laminitis) - caused by a) overheating on grain and grass b) overwork c) giving cold water, when horse is too hot.

Working horses on hard surfaces can cause:

a) Sidebones b) Splints c) Stifled d) Windpuffs e) Bowed Tendons f) Bucked Shins g) Osselets h) Sesamoiditis i) Navicular Disease.

Muddy, dirty stalls can cause:

a) Thrush b) Scratches (or Grease Heel)

Heaves - in the horses lungs, the air cells break. It is like Emphysemia in humans. It is caused mainly by dusty hay.

STABLE VICES:

Bolting - eating too fast.

Cribber - biting on wood and then sucking up air.

Halter Pulling - pulling at a halter rope that is used to tie-up a horse.

Kicking - kicking with feet at side walls of stall.

Tail Rubbing - usually caused by parasites.

Weaving - rhythmical swaying back and forth while standing in the stall.

AILMENTS:

Azoturia - "Monday morning disease" caused by too much grain with no exercise. Prevention - exercise everyday and don't feed grain on days you don't work horse.

Colic - Abdominal pain, kicking at stomach, restless, caused by impaction of food. Constriction of food or gas. Colic at its more serious stage is, Telescoping of Intestines or Twist on Intestine.

PARASITES

The term parasites refers to those forms of animal life that live in or on the bodies of host animals, deriving their food therefrom. There are 150 kinds of internal parasites and every every animal some time or another has parasites, its just a matter of degree.

INFLUENCING FACTORS:

1. poor nutrition
2. poor sanitation
3. age - the young and the old are the most affected.
4. climatic conditions
5. teeth - the older the horse, the worse his teeth.

TYPES OF PARASITES:

1. Strongyles:

   Bloodworms - large and small

   Life cycle a) larvae b) worms (male and female when in digestive system c) produce eggs d) eggs layed out.

2. Ascarids:

   Round worms - large and white

   Life cycle a) infected eggs b) hatch in intestines c) migrate (penetrate intestine wall and get into blood d) go into intestines and mature.

   These are found mostly in young horses - older horses build an ammunity.

3. Bots:

Larvae of fly (found in this area)

Life cycle a) flies lay eggs on horses hair b) two days to two weeks they become infected c) taken into mouth and migrate to stomach d) stay in stomach all winter e) come out of horse in the summer f) in July - September hatch into flies.

DON'T feed on the ground.

If you have pastures, rotate the use of them.

"BOOBY TRAPS"

Fences - leading cause of leg wounds.

Gates - can cause injury when not opened all the way - protrusions.

Corners - 90 degrees where horses can get caught up in are bad.

Protrusions - of any kind are bad.

Metal - edges that are sharp should be avoided.

Glass Windows - when low enough should be bared or screened.

Casting - can be eliminated by enlarging the stalls.

Feed Racks -

Waterers -

Doors & Latches -

Low Ceilings -

EQUIPMENT

Horse Walkers -

Automatic Waterers -

Manure Removal System -

Water Hydrants & Bibs -

Portable Training Jumps - for jumping classes.

Portable Stalls - for horses at shows.

Barrels - for barrel racing.

Poles - for pole bending.

Trail Obstacles - for trail classes.

Other Training Equipment -

IN STALL AREA:

Grooming Area:

Wash Rack - for washing horses.

Vacuum - for cleaning horses.

Other Grooming Tools - brushes, combs, etc.

FENCES

Fences should have NO sharp edges (nothing protruding or sticking out). Barb wire is a very bad fence for horses, because it is a sharp fence, and a hard fence to see. A fence should be easily visable to the horse, so that he doesn't run into it.

BOARD FENCES:

When constructing a board fence, the boards should be placed on the inside or pasture side of the fence, and the posts should be placed on the outside of the pasture. The wood should be treated with cresote to prevent decay and insect attack and discourage horses from chewing on the wood. The lowest board should be 24 inches off the ground, so that the horse doesn't get it's foot caught in the fence.

WIRE FENCES:

Wire fences cost less in the long run both in the original cost of the materials and the upkeep of the fence. cyclone wire works the best, because it is easier to see, and it is stronger. Cedar posts every 10-12 feet o.c. would hold the wire up, and a wood 2 by 6 board would be placed on top of the fence to make it visable to the horse.

GATES:

Gates in direct corners should try to be avoided, and all gates should swing back to meet adjoining fence and fasten securely.

METAL PIPE FENCES:

These are good fences for paddocks, because they are easy to construct and very safe thus making it difficult for horses to get hurt.

MANURE HANDLING AND STORAGE

I have set this facility up to allow for manure handling to be done by stall managers hired by the facility. I feel that this will assure that stalls, breezeways, etc., will be maintained and kept clean.

In each stall unit there is a manure disposal pipe that will carry small waste to a septic tank system, but the main manure removal will be done by little bobcat tractors that can go inside a stall, clean it, and drop the manure into an outside dumpster. A truck will then come along and take these dumpsters to the manure disposal pits. From these pits, which are tight concrete containers, the manure is taken by farmers, etc., to be used again for fertilizer, etc.

MANAGEMENT:

Order for horse care:

1. Feed horse and clean stall.
2. Grooming and 1st aid treatment.
3. Ride.
4. Clean tack and brush horse.
5. Night feeding and rearrange bedding.

Since a horse has to be checked for injuries quite often, and since they like to see humans, and each horse requires different amounts and rations of feed, most feeding is individually done by the horse's owner, unless specified.

VENTILATION

There is a need for cross air movement, or ventilation, in stalls or barn facilities, to remove moisture and odors, and to control temperatures. However, a direct draft on the horse is undesirable. This need for ventilation and the undesirability of direct draft, has led to a very fine line of design.

The approximate amount of heat produced by a horse is:

A 1,000 pound horse gives off about 1,790 B.T.U. per hr.

A 1,500 pound horse gives off about 2,450 B.T.U. per hr.

The moisture produced by a horse is:

grains/hour	pounds/hour	pounds/day
5,100	.729	17.5 - or 2.1 gal. of moisture/day

Winter ventilation - a minimum of 60 cubic feet per minute for each 1,000 pounds of horse.

Summer ventilation - a minimum of 100 cubic feet per minute for each 1,000 pounds of horse.

Cold housing - use eave openings, ridge ventilators, adjustable windows or wall panels.

Warm housing - use ventilating fans, fresh air inlets, adjustable windows or wall panels.

TWO VENTILATION SYSTEMS:

1. Pressure Ventilation System - use fans to force fresh air into building and let old air flow out through vents. Buildings that are 24-36 feet wide, use a center row of fans. For wider buildings put fans with baffles every 20 feet o.c.

2. Exhaust Ventilation System - use fans to force old air out of building and let fresh air in through vents, etc.

FANS:

Place fans away from large openings such as doors or windows, hay chutes or stair wells. Fans on walls should not face prevailing winds.

WINDOWS:

2'-0" by 2'-0" is sufficient window space for ventilation. There should be 6'-0" between window sill and floor.

SKYLIGHTS:

Used to allow natural light. Try to avoid direct summer sunlight down into the stalls.

SECURITY:

Security is a big problem, since many expensive horses will be boarded at this facility. For this reason, I have placed all stalls, paddocks, and pastures away from the road. There is a fence around the whole site, along with trees in many places.

Between the main road and the stalls, paddocks, and pastures, I have put a central caretaker. The fence and road lead to this caretaker's house, so that nobody can get into the facility without passing him.

During shows, show people (competitors) and the public are restricted from getting into the boarding facilities by the main indoor arena. Competitors and the public don't get too far into the site.

EVENTS

TRAIL HORSE:

Purpose of this class is to measure a horse's ability to perform on the trail. Obstacles such as wooden bridges, logs and gates confront the contesting horses. This event is for all ages to participate in.

HALTER:

Halter show judges base their decisions on the structure, type, muscling, freedom from inherited unsoundness, and manner in which the horses travel, for these factors are fundamental requirements of a good horse whether it is used for breeding or performance. Points awarded a horse showing at halter reflect credit on its sire and dam, add immeasurably to the value of its offspring, and vastly increase the sale value of the horse itself.

BARREL RACING:

Barrel racing is one of the best tests of combined speed and agility of horseflesh, for it is a race against time coupled with ease of maneuvrability around obstacles (barrels). Women and girls are the main ones that participate in this event.

WESTERN PLEASURE:

Western pleasure is primarily a walk, trot, and canter class designed to demonstrate an unruffled disposition of a horse and its quick response in changing gaits. Being in the proper lead is important, too, since there is a noticeable lack of pleasure when a horse travels while using the wrong lead.

JUMPING:

The versatility of the horse is further demonstrated by his ability and willingness to jump over obstacles.

POLE BENDING:

Pole bending involves "Bending" back and forth through a line of upright poles at top speed without knocking over any poles. It is an excellant test of the speed and maneuvrability of the horse.

REINING:

Reining is among the most exacting and beautiful of all patterns a horse performs in the approved contests. The horse follows a prescribed course, and is required to demonstrate his proficiency in changing leads, turning, stopping and backing.

DESIGN CRITERIA

Board Horses:

Permanent (30) - used in classes.

Training (10).

Boarding (50 stalls) (75 - 100 paddocks and pastures).

Portable (100 stalls) - used for shows.

190 Total stalls.

Types of Boarding:

a. Stalls w/paddocks - 1 horse.

b. Large paddocks - 1 or 2 horses.

c. Pastures - 2 or more horses.

d. Portable Stalls - 1 horse per stall.

Different Functions:

a. Trainer - trains horses for people - 10 horses.

b. Classes - with facilities horses - beginning classes - 30 horses.
with student's own horses - advanced classes.

c. People with their own horses - pleasure.

d. Horse shows.

e. Horse sales.

People Needed at Facility:

a. (1) Trainer.

b. (2) Instructors - 10 people in a class.
30 total horses - 20 in stalls, 10 in paddocks.

c. (2) Stall cleaners.

d. (1) Caretaker (security).

Parking:

a. Boarders and students - 50 cars.

b. Indoor- outdoor arena - 500 cars.

c. Shows - competitors - 75 cars and trailers.

I - BOARDING HORSES

Fac. No.	DESCRIPTION	NET AREA
I - 1	Stalls - 16' x 16'	15,360 s. f.
I - 2	Paddocks - 16' x 40'	38,400 s. f.
I - 3	Breezeway - 15'-0" w. by (x) L	
I - 4	- large paddocks w/covered feeders	
I - 5	- pastures w/covered feeders	
I - 6	Grain storage - 80 horses (2 wk. supply)	720 cu. ft.
I - 7	Hay storage - 80 horses (2 wk. supply)	2,100 cu. ft.
I - 8	Bedding storage - 50 horses (2 month supply)	1,510 cu. ft.
I - 9	Tack room - 1 per unit Restrooms - 1 per unit Showers - 1 per unit	375 s. f. 100 s. f. 70 s. f.
I - 10	Tool shop	81 s. f.
I - 11	Grooming area Wash rack (2 horses - 180 s. f.) Tie area (2 horses - 260 s. f.)	440 s. f.

II - TRAINING HORSES

Fac. No.	DESCRIPTION	NET AREA
II - 1	10 - stalls at 16'-0" x 16'-0"	2,560 s. f.
II - 2	10 - paddocks at 16'-0" x 40'-0"	6,400 s. f.
II - 3	Breezeway - 15'-0" w. by (X) L	
II - 6	Grain storage - 10 horses (2 wk. supply)	90 cu. f.
II - 7	Hay storage - 10 horses (2 wk. supply)	262 cu. f.
II - 8	Bedding storage - 10 horses (2 month supply)	300 cu. f.
II - 9	Tackroom (training equipment) (tools)	375 s. f.
II - 11	Grooming Tie area and wash area	440 s. f.
II - 31	Training rings 1 - walled and roofed 1 - walled w/no roof 1 - walled and roofed w/walker 1 - outside walker	 900 s. f. 900 s. f. 600 s. f. 400 s. f.
II - 32	Trainer's living quarters	1,200 s. f.

III - HORSE CLASSES

Fac. No.	DESCRIPTION	NET AREA
III - 1	20 - stalls 16' x 16'	5,120 s. f.
III - 2	20 - paddocks 16' x 40'	12,800 s. f,
III - 3	Breezeway 15'-0" w by (X) L	
III - 4	10 - large paddocks per 80'-0" x 80'-0"	32,000 s. f.
III - 6	Grain storage - 30 horses (2 wk. supply)	270 cu. f.
III - 7	Hay storage - 30 horses (2 wk. supply)	787 cu. f.
III - 8	Bedding storage - 20 horses (2 month supply)	600 cu. f.
III - 9	Tackroom (facility owned tack)	375 s. f.
	Use arena's restrooms, lockers, and showers	

IV - HORSE SALES

Fac. No.	DESCRIPTION	NET AREA
IV - 33	Sales ring Sales stand Low fence	
IV - 34	Seating - 1,000	4,500 s. f.

V - HORSE SHOWS

Fac. No.	DESCRIPTION	NET AREA
V - 35	1 - Shop @ 780 s. f.	780 s. f.
V - 36	75 - Portable stalls @ 12'-0" x 12'-0"	

VI - COMMON AREAS

Fac. No.	DESCRIPTION	NET AREA
VI - 12	Entry foyer - exhibit area	500 s. f.
VI - 13	Receptionist	160 s. f.
VI - 14	Business/manager office	210 s. f.
VI - 15	Lounge - Trophy room	1,450 s. f.
VI - 16	Trainer's office	225 s. f.
VI - 17	Instructor's office	225 s. f.
VI - 18	Trailer storage, 75 permanent trailers, 100 show trailers	
VI - 19	Loading chute	100 s. f.
VI - 7	Hay storage - 120 horses (1 year supply)	75,600 cu. ft.
VI - 20	Manure storage	225 s. f.
VI - 21	Stall manager living (4) 1200 s. f. each	4,800 s. f.
VI - 22	Outdoor arena 120'-0" x 240'-0"	28,800 s. f.
VI - 23	Indoor arena (small) 110' x 140'	15,400 s. f.
VI - 24	Indoor arena (large) 100' x 250'	25,000 s. f.
VI - 25	Equipment storage	640 s. f.
VI - 26	Riding trails	Infinite
VI - 27	Restrooms (2) @ 200 s. f. each Dressing (2) @ 200 s. f. each	400 s. f. 400 s. f.
VI - 28	Seating (1500)	6,800 s. f.
VI - 29	Classrooms	632 s. f.
VI - 30	Snack bar	48 s. f.

FACILITY NO. I, II, III - 1

TITLE: Stalls

NUMBER REQUIRED: 8 units with 12 stalls = 96 stalls.

FLOOR AREA: 16' x 16' = 256 s.f.

LOCATION: 10 - near training area, close to feed and bedding storage, easy manure disposal, near groom area and tool shop.
70 - near riding arenas - outdoor and indoor, easy access for horse and man.

USE: Provide an environment that protects the horse from temperature extremes. Keeps them dry and out of the wind, eliminates drafts, provides fresh air, and protects them from injury.

REQUIREMENT(S): Moveable back door for light, ventilation, and access to outside paddocks. Jalousie type windows.
Automatic waterers.
Opening in stall wall from breezeway for easy feeding.
Natural light.
4'-0' x 10'-0" doors - sliding.
Bedding - wood chips (odor free, good absorbsent).
10'-0" ceiling heights.
150 watt incandescent light/stall.

MATERIALS: Walls - concrete (block) 2" thick x 8 or 10 oak planks up 5'-0", above 5'-0" iron grill or wood lattice.
Flooring - layer of crushed rock w/ packed clay over.
Ceiling - 10'-0" high, recessed lights into ceiling.

ORIENTATION: Placed on flat ground - slope ground away from stalls.
Sunny exposure.

REMARKS: All protrusions should be avoided. Wood corners easily accessible for horses to chew on should be eliminated. Labor saving convenience.
Door heights:
Small equipment - 10' x 10'
Horse and rider - 12' x 12'
Large equipment - 16' x 14'

FACILITY NO. I, II, III - 2

TITLE: Paddocks

NUMBER REQUIRED: 96 - off of stalls.
16 - at corners.

FLOOR AREA: 96 at 16' x 40' = 640 s. f. each = 61,440 s. f. total.
16 at 50' x 50' = 2500 s. f. each = 40,000 s. f. total.

LOCATION: Right off of stalls - connected w/stalls.

USE: Area for horses to run, get fresh air, and exercise.

REQUIREMENTS:

MATERIALS: Fences - pipe (so horses cannot chew on them).
Ground - clay and dirt mixture.

ORIENTATION:

REMARKS: Avoid "Booby Traps" such as protrusions, gates, anything sharp, etc.

FACILITY NO. I, II, III - 3

TITLE: Breezeways

NUMBER REQUIRED: One per stall unit.

FLOOR AREA: 15'-0" wide by stall length.

LOCATION: Right off of stalls, tack room, grooming area, and tool shop.
Near feed and bedding storage.

USE: Easy access alley for man, horse, and equipment.
Alley or passageway for travel.

REQUIREMENTS(S): Crested at the center of alley. (Stall floor higher than alley edge.)

Fire extinguishers.
All light switches.
Electrical outlets every three stalls.
Tie rings.
Water hose bibs.

MATERIALS: Flooring - crushed rock w/packed clay and dirt over the rock.

ORIENTATION:

REMARKS:

FACILITY NO. I, III - 4

TITLE: LARGE PADDOCKS

NUMBER REQUIRED: 16 - to house 40 - 50 horses.

FLOOR AREA: 80'-0" x 80'-0" = 6,400 s. f. each.
100'-0" x 100'-0" = 10,000 s. f. each.

LOCATION: Closer to barn and arenas than pastures.

USE: House 1 or 2 horses - each has a covered shelter for feeding and protection from the elements.

REQUIREMENT(S):

MATERIALS: Fences - woven wire w/2"x8" boards (cyclone wire).
No barbed wire.
6" x 6" posts in ground.

ORIENTATION:

REMARKS: Fences should be visible.
"Booby traps" such as protrusions, square corners, etc., should be avoided.

FACILITY NO. I - 5

TITLE: Pastures

NUMBER REQUIRED: 6 - to house 20 horses.

FLOOR AREA:

LOCATION: In flood plain - farthest from the main facilities.

USE: To house 2 or more horses. These horses are not used or ridden as much. Each has a covered shelter for feeding and protection from the elements.

REQUIREMENT(S): Pasture shelters - 80 s. f. per horse, 24'-0" deep.

MATERIALS: Same as large paddocks.

ORIENTATION:

REMARKS: Same as large paddocks.

FACILITY NO. I, II, III - 6

TITLE: Grain Storage

NUMBER REQUIRED: 1 per stall unit = 8 total
1 central storage

FLOOR AREA: 2,000 cu. ft. for stalls
360 cu. ft. for central storage

LOCATION: In main barn near stalls and grooming area, convenient for everyday feeding.
Easy access for grain delivery trucks.

USE: Storage for all grain feeds. Working and young horses need grain: Oats = muscle builders; bran = laxative; corn = fattening and very heating.

REQUIREMENT(S): Amount of storage depends on:
1. Number of horses
2. Their total weight
3. How often feed supply is replenished

1 lb. of grain a day per 100 lbs of horse = 10 lbs. for a 1000 lb. horse.

Whole oats = 26 lb./cu. ft. (1 ton = 2000 lbs., so 80 cu. ft. per ton.)

10 lbs. x 40 horses x 14 days = 5,600 lbs. of grain requires approx. 220 cu. ft. of grain storage for 40 horses = two weeks supply.

6'-0' x 6'-0" x 10'-0" = 360 cu. ft.

MATERIALS: Wood lined w/metal to make vermin-proof.

ORIENTATION:

REMARKS: Water after oats can cause colic. 1) water, 2) hay, 3) then oats.

FACILITY NO. I, II, III, VI- 7

TITLE: Hay Storage

NUMBER REQUIRED: 1 large outside hay storage. 1 year supply - roofed to keep dry.

1 per stall unit.

FLOOR AREA: 73,500 cu. ft. for outside storage.
1,200 cu. ft. per stall.

LOCATION: In main barn, near stalls. If outside storage - close to main barn.

USE: Hay - main source of horse feed. Needs to be dry and free from dust.

REQUIREMENT(S): 1 3/4 lbs. of hay per day per 100 lbs. of horse wt = $\frac{17\ \frac{1}{2}\text{ lbs. per 1,000 lb. horse}}{200\text{ cu. ft./ton}}$.

Hay = 10 lb./cu. ft. (1 ton = 2,000 lbs.)
$17\frac{1}{2}$ lbs. x 40 horses x 30 days = 21,000 lbs. = 10.5 tons.
Need approx. $\frac{2,200\text{ cu. ft. of hay storage for 40 horses,}}{1\text{ month supply.}}$
(Inside storage for 40 horses need 1050 cu.ft. of hay storage for two weeks.)

10' x 10' x 10' = 1,000 cu. ft.
12' x 12' x 8' = 1,008 cu. ft.
(Outside storage for 80 horses for 1 year = 60'-0" 60'-0" x 20'-0".

MATERIALS:

ORIENTATION:

REMARKS: Keep dry and free of dust with good ventilation.

FACILITY NO. I, II, III - 8

TITLE: Bedding Storage

NUMBER REQUIRED: 1 per stall unit = 8 total.

FLOOR AREA: 2,000 cu. ft. for stalls.

LOCATION: Near the stalls.
Easily accessible for trucks to unload bedding.

USE: Store bedding to keep it dry.

REQUIREMENT(S): 10 lbs./animal/day
20 lbs./cu. ft 1 ton - 2,000 lbs. So 100 cu. ft./ton
10 lbs. x 40 horses x 60 days = 24,000 lbs. = 12 tons
Need approx. 1,200 cu. ft. of bedding storage for 40 horses - 2 month supply.
11' x 11' x 10' = 1,210 cu. ft.

MATERIALS:

ORIENTATION:

REMARKS: Similar to hay storage

FACILITY NO. I, II, III -9

TITLE: Tackroom

NUMBER REQUIRED: 1 per stall unit = 8 total.

FLOOR AREA: 25' x 15' = 375 s. f. each.
Shower = 7' x 9' = 63 s. f. each.
Toilet = 9' x 9' = 81 s. f. each.

LOCATION: Center of stall area - right off of breezeway.
Near grooming area and feed storage.

USE: Storage for bridles, blankets, saddles, halters, ropes, etc.
Locker areas for clothes and tack - showers to clean-up.
Counter and sink, cabinets, refrigerator, shelves and first-aid kit.
Toilet.

REQUIREMENTS:

MATERIALS: Flooring - concrete (easy to wash down).
Walls and ceilings - finished off.

ORIENTATION:

REMARKS: Should be enclosed, dry, and free of dust and rodents.

FACILITY NO. I -10

TITLE: Tool Shop

NUMBER REQUIRED: 1 per stall unit = 8 total.

FLOOR AREA: 9' x 9' = 81 s. f. each.

LOCATION: In barn near stalls - off of breezeway.

USE: General repair area
Work bench, shelves, cabinets, tool rack.
Stall cleaning tool storage.

REQUIREMENT(S):

MATERIALS: Floor - concrete (easy to wash down.)

ORIENTATION:

REMARKS:

FACILITY NO. I, II - 11

TITLE: Grooming Area

NUMBER REQUIRED: (1) Boarding horses and horse classes. (1) Training horses.

FLOOR AREA: Wash rack (for 2 horses) - 360 s. f.
Tie area - 1,000 s. f. = Total - 1,360 s. f.

LOCATION: Near stalls - next to feed storage and tack room.

USE: For cleaning, washing, brushing, clipping, shoeing, and general care of the horse.
Circle wash rack hung from the ceiling, work bench, shelves, tack boxes.

REQUIREMENT(S):

MATERIALS: Flooring - concrete w/artificial turf over, soft for horses.
Can get wet and not be slippery when wet - drain in middle.

ORIENTATION:

REMARKS:

FACILITY NO. VI-12

TITLE: Entry Foyer

NUMBER REQUIRED: One

FLOOR AREA: 500 s. f.

LOCATION: In main facility - easily accessible for people coming to the center. Should be near center of facility - first place people come to.

USE: Entrance to main building - commons area. Also used for displays and exhibits.

REQUIREMENT(S):

MATERIALS: Flooring - quarry tile.

ORIENTATION:

REMARKS:

FACILITY NO. VI - 13

TITLE: Receptionist

NUMBER REQUIRED: One

FLOOR AREA: 160 s. f.

LOCATION: Right off of entry foyer - easily accessible for people coming to facility.

USE: Information center for facility secretary.

REQUIREMENT(S):

MATERIALS: Flooring - quarry tile

ORIENTATION:

REMARKS:

FACILITY NO. VI - 14

TITLE: Business Manager Office

NUMBER REQUIRED: One

FLOOR AREA: 210 s.f.

LOCATION: Next to receptionist's office.

USE: Administrative office.

REQUIREMENT(S): Desk, chair, and storage cabinets.

MATERIALS: Flooring - carpet.
Walls - vinyl wall covering or painted gypsum board.

ORIENTATION:

REMARKS:

FACILITY NO. VI - 15

TITLE: Lounge

NUMBER REQUIRED: One

FLOOR AREA: 450 s. f.

LOCATION: Off of entry foyer - near the offices and reception area.

USE: Conference, sitting area - trophy room (of shows and horse clubs.)

REQUIREMENT(S):

MATERIALS: Flooring - carpet
Walls - Vinyl wall covering or painted gypsum board.

ORIENTATION:

REMARKS:

FACILITY NO. VI - 16

TITLE: Trainer's Office

NUMBER REQUIRED: One

FLOOR AREA: 225 s. f.

LOCATION: In main arena building.

USE: Office for trainer.

REQUIREMENT(S):

MATERIALS: Floor - tile.
Walls - painted walls or vinyl wall covering.

ORIENTATION:

REMARKS:

FACILITY NO. VI - 17

TITLE: Instructor's Office

NUMBER REQUIRED: One for 2 instructors.

FLOOR AREA: 225 s. f.

LOCATION: In main arena building next to all other offices.

USE: Office for horse instructors.

REQUIREMENT(S):

MATERIALS: Floor - tile
Walls - vinyl wall covering or painted walls

ORIENTATION:

REMARKS:

FACILITY NO. VI - 18

TITLE: Trailer Storage

NUMBER REQUIRED: Two areas - 1 for shows and 1 for boarding people's use.

FLOOR AREA:

LOCATION: Rear boarding facilities and loading chutes.

USE: Storage of trailers not in use.
A green area when not filled w/trailers.

REQUIREMENT(S):

MATERIALS:

ORIENTATION:

REMARKS: Obscure so that the area is not an eye sore.

FACILITY NO. VI - 19

TITLE: Loading Chutes

NUMBER REQUIRED: Two

FLOOR AREA: 100 s. f.

LOCATION: 1 near stalls.
1 near indoor arena (main building).

USE: Loading and unloading horses.

REQUIREMENT(S):

MATERIALS:

ORIENTATION:

REMARKS:

FACILITY NO. VI - 20

TITLE: Manure Storage

NUMBER REQUIRED:

FLOOR AREA: 15' x 15' x 5' = 1,125 cu. ft.

LOCATION: Storage building - just outside of main barns.

USE: Conveyor - Used to move manure and wet bedding from stalls to storage area. Conveyor underground at edges of breezeway.
Storage area - Holds manure until trucks come and take manure away.

REQUIREMENT(S):

Tons excreted/yr/ 1000 lbs. live wt.	Excrement	Lbs./ ton	Water %	Nitrogen	Phosphorus	Potassium	Value/ ton ($)
	liquid	400					
8	solid	1600	60	13.8	2.0	12.0	2.76
	total	2000					

MATERIALS: Storage building is concrete w/floor drain to septic tank system.

ORIENTATION:

REMARKS: Wash tank, to wash down disposal pipe - this would go into a septic tank system.

FACILITY NO. VI - 21

TITLE: Stall Manager's Living Quarters

NUMBER REQUIRED: Four

FLOOR AREA: 1200 s. f. each - Total 4,800 s. f.

LOCATION: Near stalls and entry road to observe who comes and goes from the center.

USE: Stall manager's and his families house.

REQUIREMENT(S):

Kitchen - dining	= 100 s. f.
Living	= 400 s. f.
Bath	= 50 s. f.
Halls and walls	= 40 s. f.
Master bedroom	= 225 s. f.
Bedroom	= 144 s. f.
Bedroom	= 144 s. f.

MATERIALS:

ORIENTATION:

REMARKS:

FACILITY NO. VI - 22

TITLE: Outdoor Arena

NUMBER REQUIRED: One

FLOOR AREA: 120'-0" x 240'-0" = 28,800 s. f.

LOCATION: Central to all stalls.

USE: Riding, shows, and training outside.

REQUIREMENT(S):

MATERIALS: Sand and dirt mixture.

ORIENTATION: SW - NE

REMARKS:

FACILITY NO. VI - 23

TITLE: Indoor Arena (Small)

NUMBER REQUIRED: One

FLOOR AREA: 110' x 140' = 15,400 s. f.

LOCATION: Indoors, next to large indoor arena.
Near stalls and loading chute.

USE: Small classes, riding, training, and during shows a waiting area and place for portable stalls.

REQUIREMENT(S):

MATERIALS: Sand and dirt mixture.
Sprinkler system over head to hold down dust.

ORIENTATION:

REMARKS: Prevent dust.

FACILITY NO. VI - 24

TITLE: Indoor Arena (Large)

NUMBER REQUIRED: One

FLOOR AREA: 100' x 250' = 25,000 s. f.

LOCATION: Inside main building.

USE: Riding, shows, and training inside.

REQUIREMENT(S): 14'-0" ceiling height for just horse and rider.
18'-0" ceiling height for jumping.

MATERIALS: Sand and dirt mixture.
Sprinkler system over head to control dust.

ORIENTATION:

REMARKS: Control the dust.

FACILITY NO. VI - 25

TITLE: Equipment Storage

NUMBER REQUIRED: One

FLOOR AREA: 640 s. f.

LOCATION: Right off of indoor arenas.

USE: Storage of event obstacles such as jumps, barrels, etc.
Storage for tractor and other tools used to groom the arena.

REQUIREMENT(S):

MATERIALS: Dirt floor

ORIENTATION:

REMARKS:

FACILITY NO. VI - 26

TITLE: Riding Trails

NUMBER REQUIRED: Infinite

FLOOR AREA: Infinite

LOCATION: Outside, away from other facilities, along river.

USE: Pleasure riding or training

REQUIREMENT(S):

MATERIALS:

ORIENTATION:

REMARKS:

FACILITY NO. VI - 27

TITLE: Restrooms - Dressing

NUMBER REQUIRED: Two

FLOOR AREA: Restroom - 200 s. f. each = 400 s. f.
Dressing - 200 s. f. each = 400 s. f.

LOCATION: Off of small indoor arena in main arena bldg.

USE: Restroom and changing area during shows.

REQUIREMENT(S):

Restrooms should have entrance to them from dressing area and from outside for the public.

MATERIALS:

ORIENTATION:

REMARKS:

FACILITY NO. VI - 28

TITLE: Seating

NUMBER REQUIRED: 1500

FLOOR AREA: 34' x 200' = 6,800 s. f.

LOCATION: Off of the main indoor arena (large)

USE: For class graduation shows.

REQUIREMENT(S):

12 seats every 20'-0"
13 seats every 34'-0"
200'-0" long = 1440 seats

MATERIALS:

ORIENTATION:

REMARKS:

FACILITY NO. VI - 29

TITLE: Classrooms

NUMBER REQUIRED: One

FLOOR AREA: 632 s. f.

LOCATION: In main arena building - at a more quiet place.

USE: Classroom instruction or meeting room for horse clubs, etc.

REQUIREMENT(S):

Desks (student)
Desk and chair (instructor)
Counter, shelves, and storage

MATERIALS:

ORIENTATION:

REMARKS: Classroom can be used by horse clubs, etc., and during horse shows a shop that sells western things and riding specialties can be temporarily set up in it.

FACILITY NO. VI - 30

TITLE: Snack Bar

NUMBER REQUIRED: One

FLOOR AREA: 48 s. f.

LOCATION: In main arena building.
Central location for riders and the public.

USE: Place where students in classes and people at shows or sales can get a snack.

REQUIREMENT(S):

Easy unloading of supplies from supply trucks.
Storage area.
Small kitchen.
Walk-up counter area.

MATERIALS:

ORIENTATION:

REMARKS: Vending machines during classes, so snack bar doesn't have to be open all of the time.

FACILITY NO. II - 31

TITLE: Training Area

NUMBER REQUIRED: One

FLOOR AREA: Total = 2,800 s. f.

LOCATION: Near training horse stalls.

USE: Train and exercise horses.

REQUIREMENT(S):

1 - Walled and roofed	900 s. f.
1 - Walled w/no roof	900 s. f.
1 - walled, roofed w/ walker	600 s. f.
1 - outside walker	400 s. f.

Slope walls of the rings.

MATERIALS:

ORIENTATION:

REMARKS: Each horse being trained should be worked at least 1 hour per day.

FACILITY NO. II - 32

TITLE: Trainer's Living Quarters

NUMBER REQUIRED: One

FLOOR AREA: 1200 s. f.

LOCATION: Near training horses stalls and training area.

USE: Trainer's house.

REQUIREMENT(S):

Same as stall manager's house (19)

MATERIALS:

ORIENTATION:

REMARKS:

FACILITY NO. IV - 33

TITLE: Sales Ring

NUMBER REQUIRED: One

FLOOR AREA:

LOCATION: Within small indoor arena.

USE: Place to hold horse sales.

REQUIREMENT(S):

Tie stalls
Sales stand
Low portable fence

MATERIALS:

ORIENTATION:

REMARKS:

FACILITY NO. IV - 34

TITLE: Seating

NUMBER REQUIRED: 1,000

FLOOR AREA: 4,500 s. f.

LOCATION: Off of small indoor arena.

USE: Seating for people while watching and buying at horse sales.

REQUIREMENT(S):

Same as horse class seating (28).

MATERIALS:

ORIENTATION:

REMARKS:

FACILITY NO. V - 35

TITLE: Shops

NUMBER REQUIRED: One

FLOOR AREA: 210 s. f.

LOCATION: In main arena building - near the public.

USE: Sale of merchandise.

REQUIREMENT(S):

Shop and classroom may be same space, but interchangeable.

MATERIALS:

ORIENTATION:

REMARKS:

FACILITY NO. V - 36

TITLE: Portable Stalls

NUMBER REQUIRED: 75

FLOOR AREA: 144 s. f. each = 10,800 s. f. total.

LOCATION: Within small indoor arena.

USE: For boarding horses during a show.

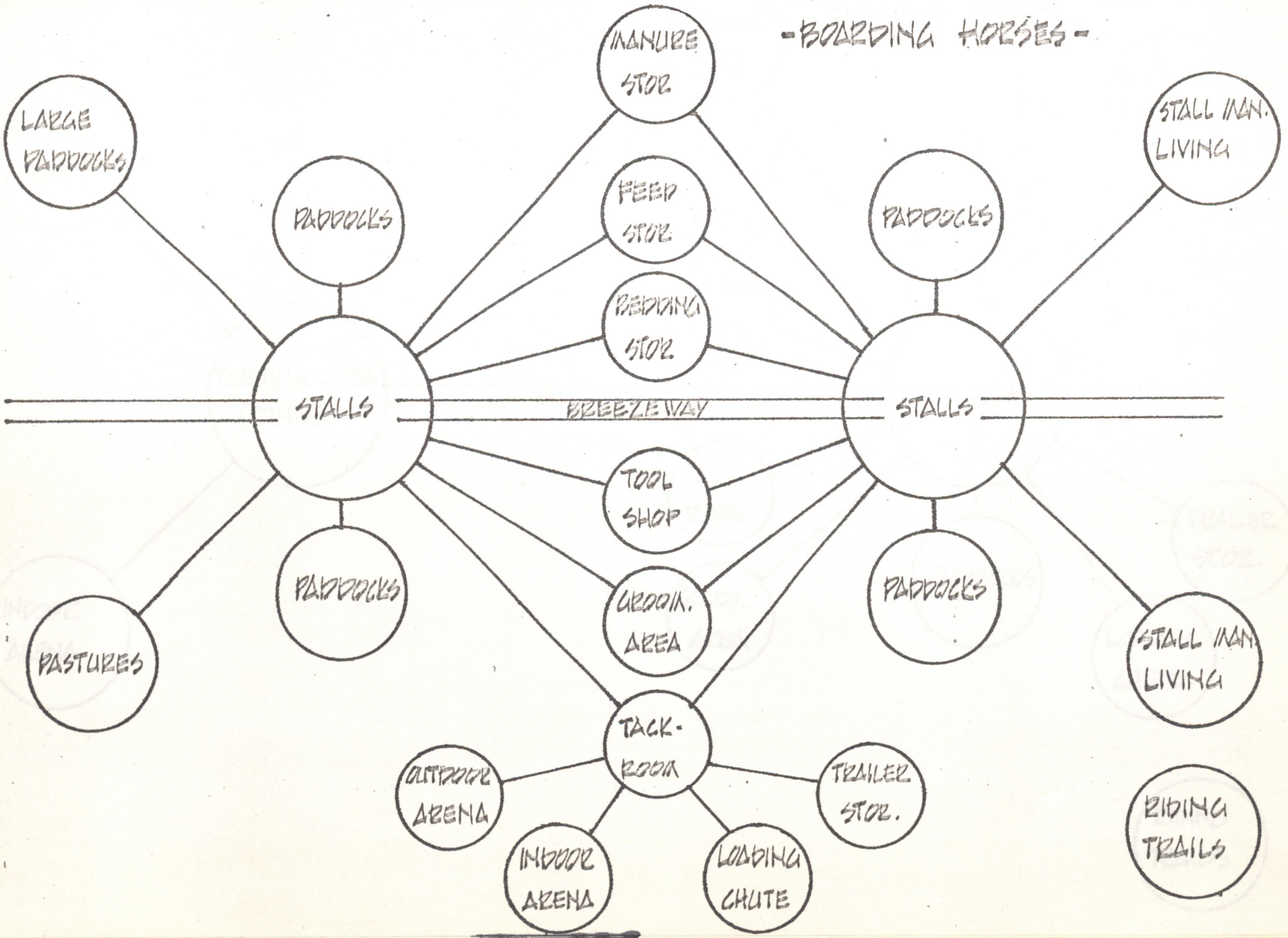
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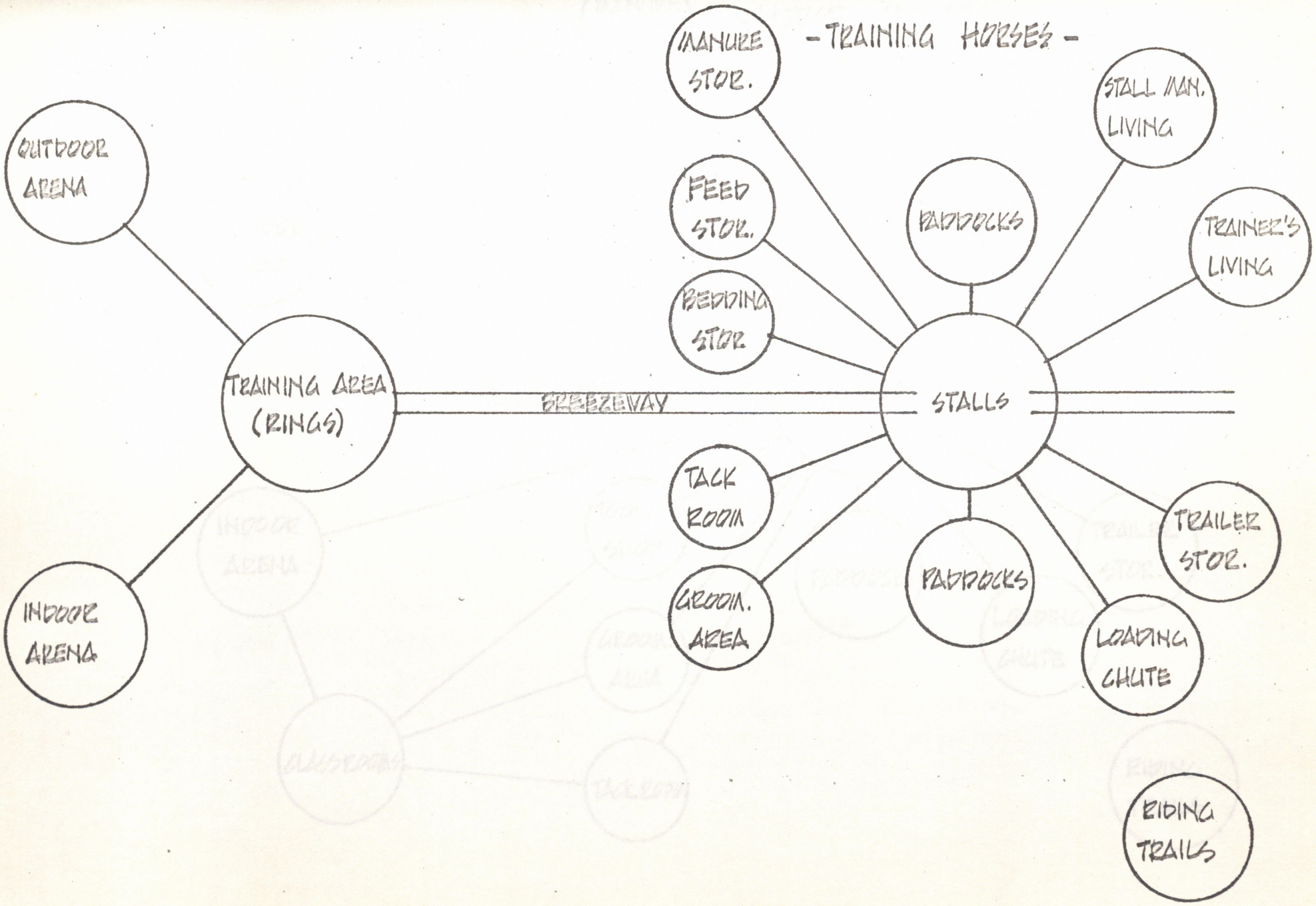
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REMARKS:

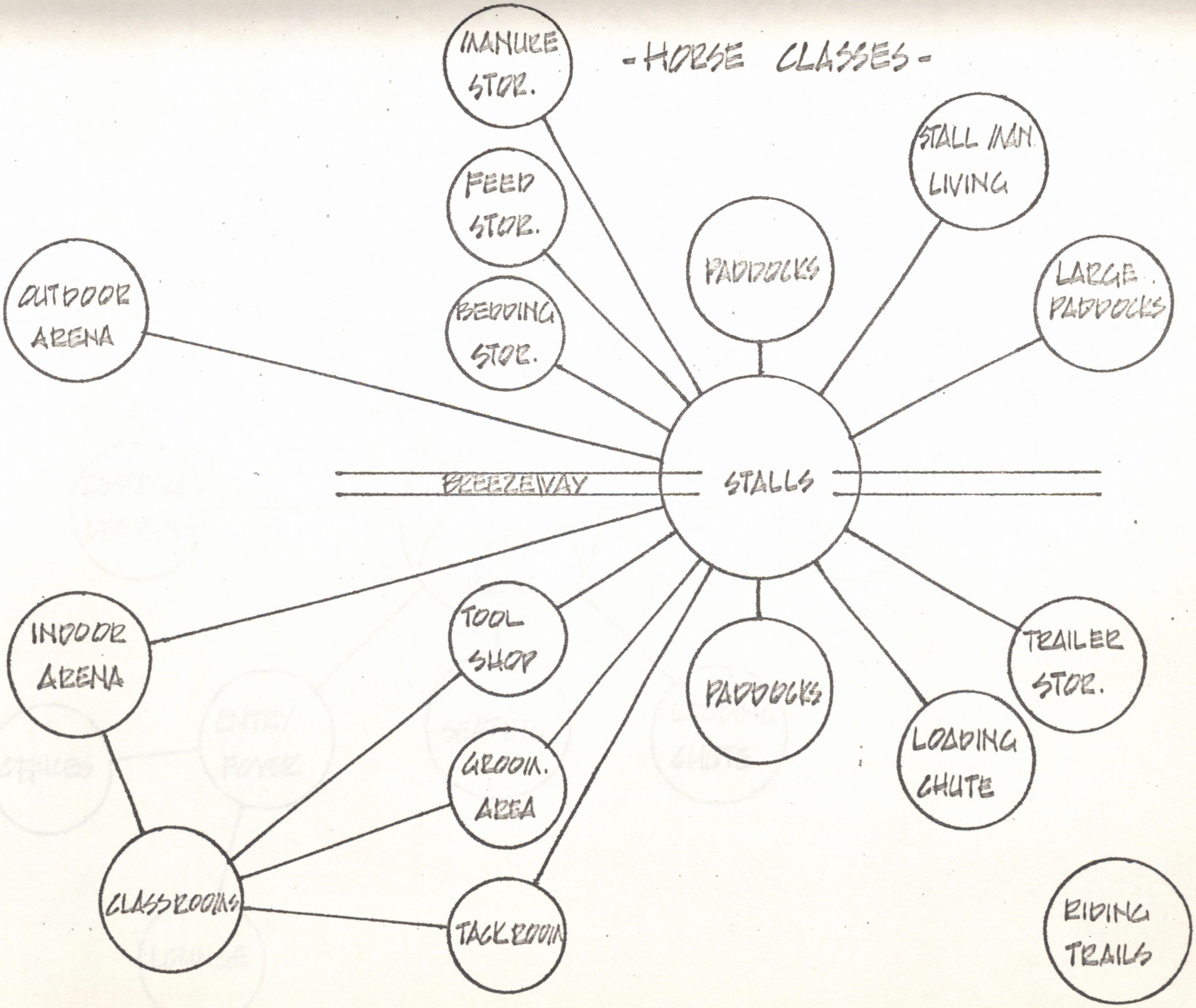
-BOARDING HORSES-



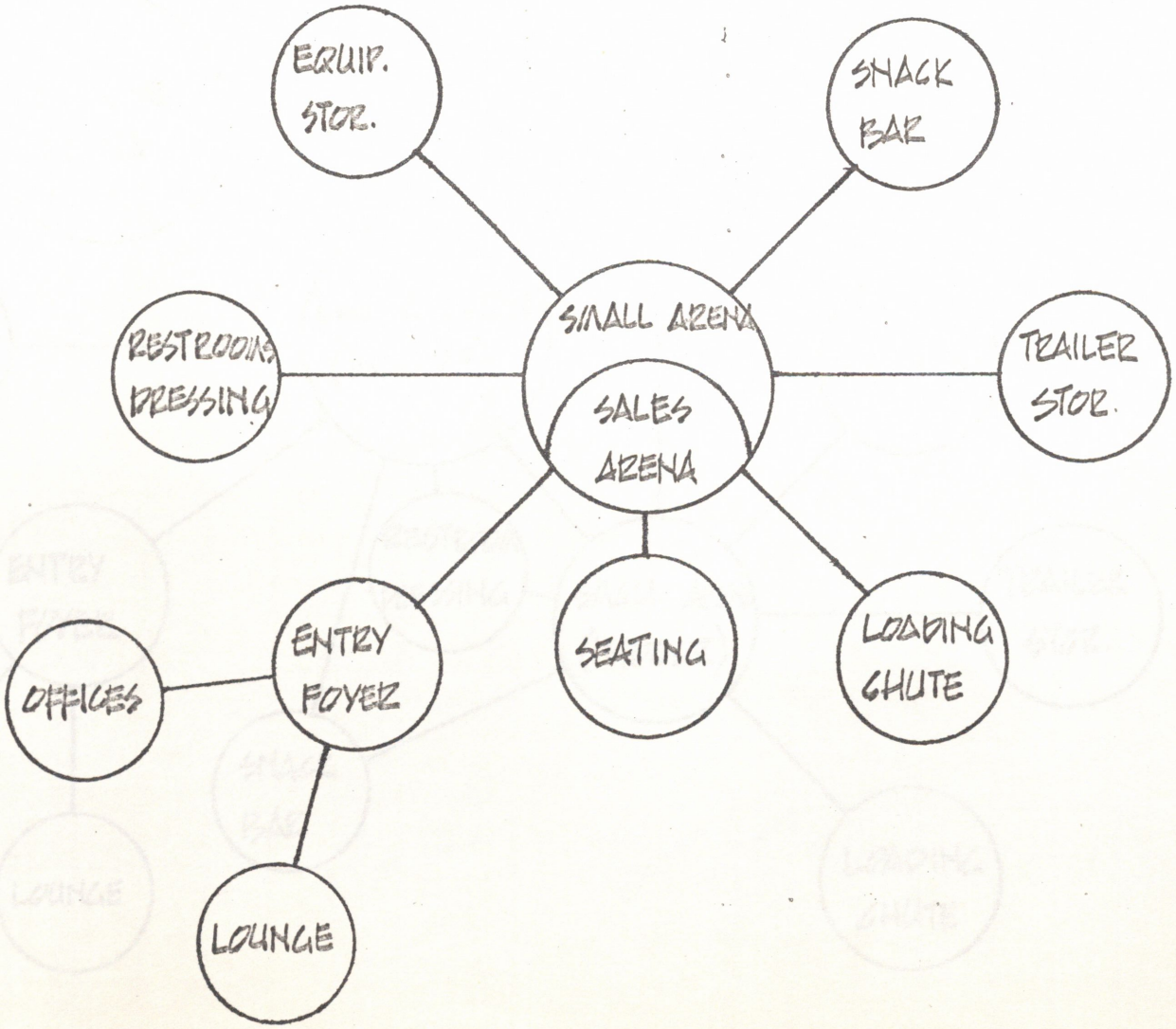
- TRAINING HORSES -



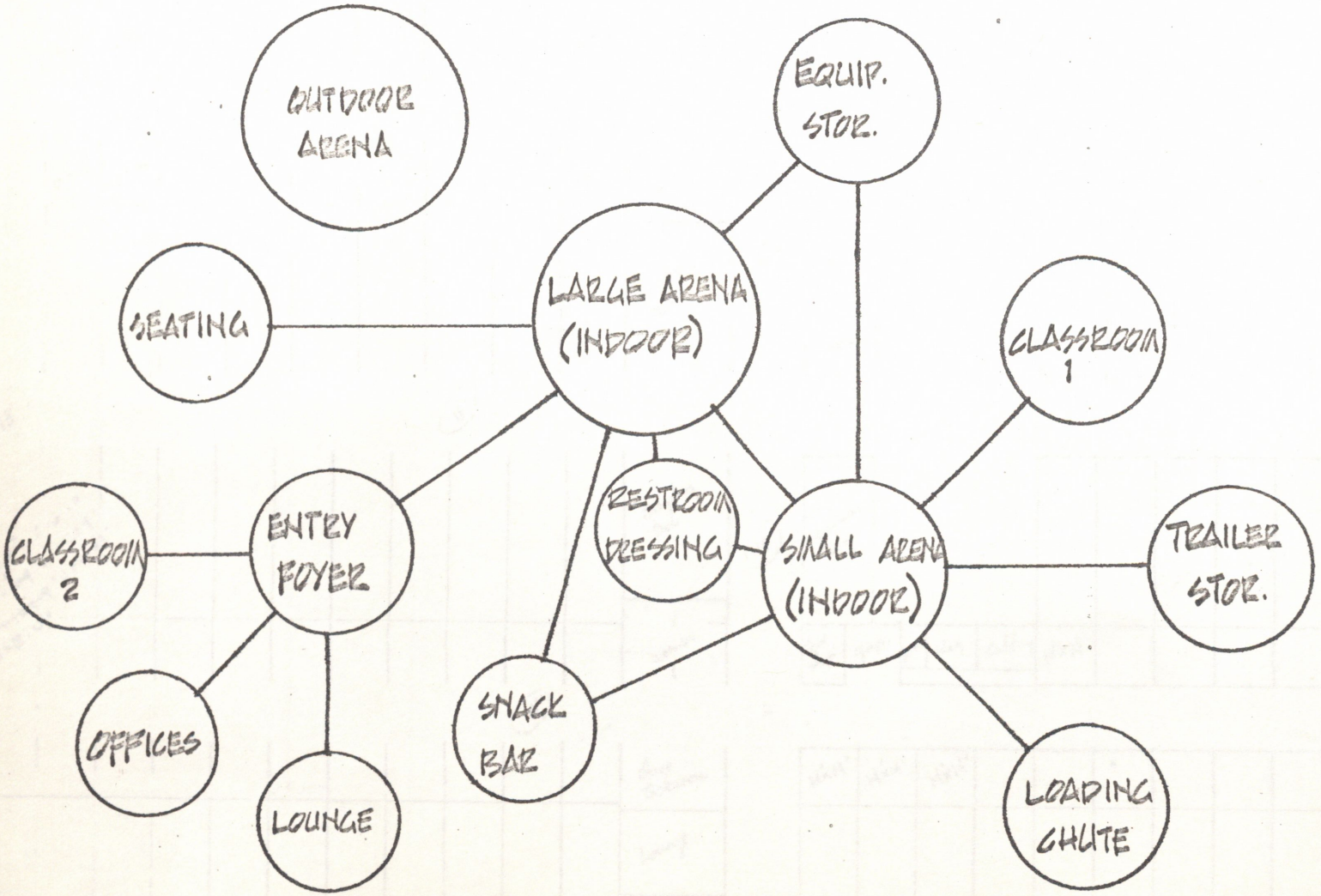
-HORSE CLASSES-

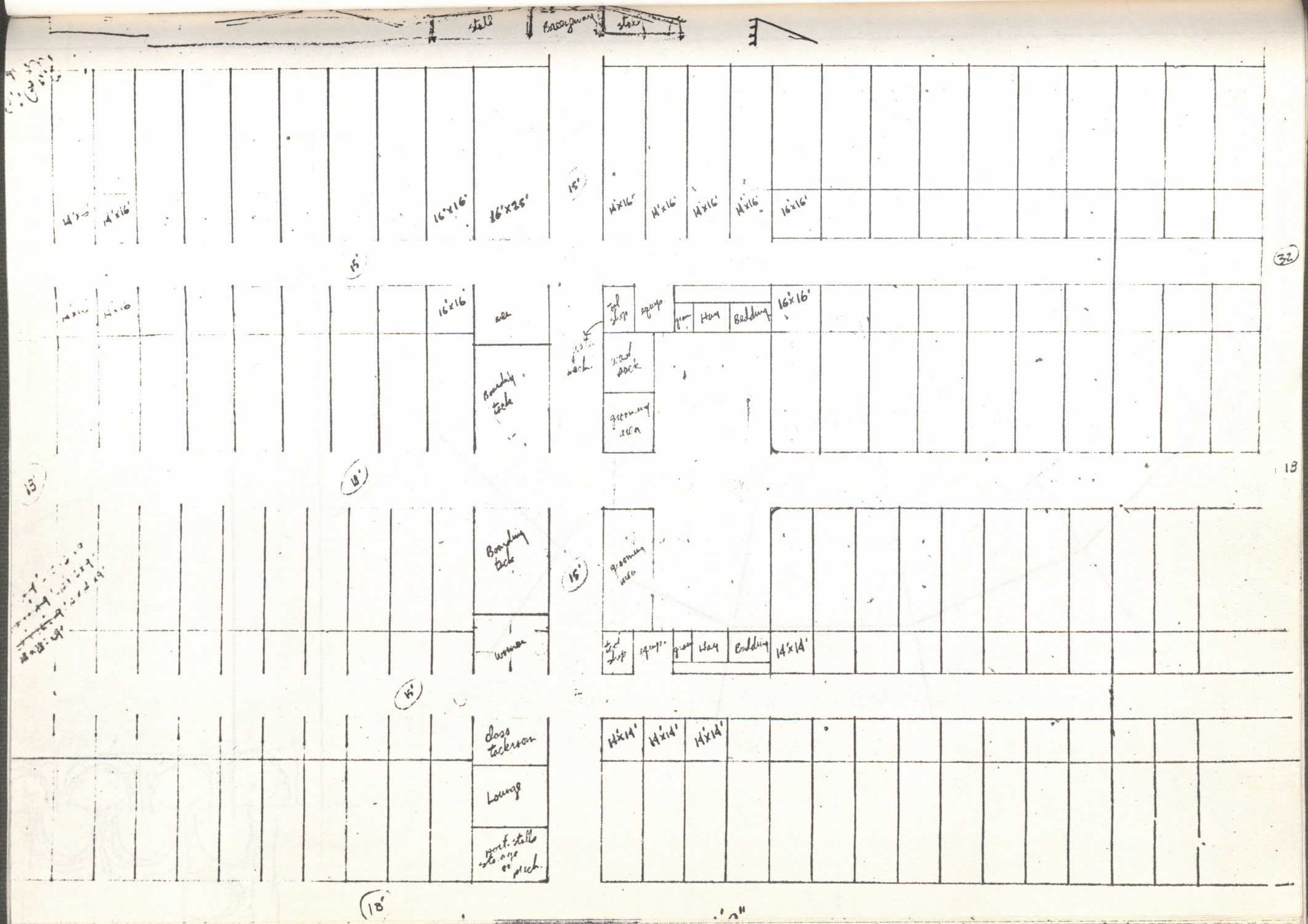


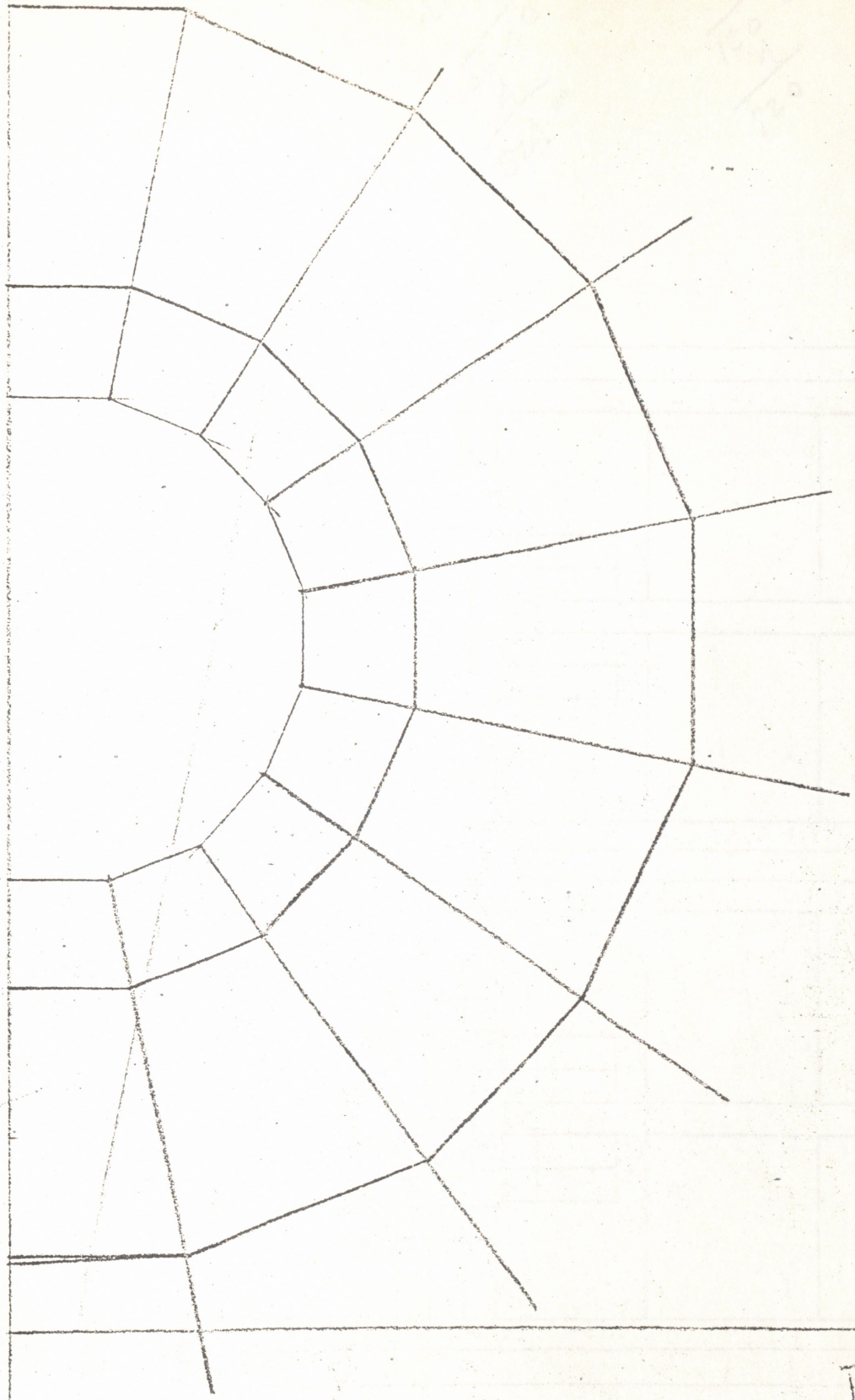
- HORSE SALES -

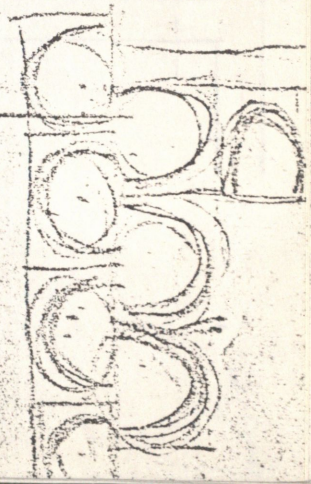

EQUIP. STOR.
SNACK BAR
SMALL ARENA
RESTROOMS DRESSING
SALES ARENA
TRAILER STOR.
ENTRY FOYER
SEATING
LOADING CHUTE
OFFICES
LOUNGE

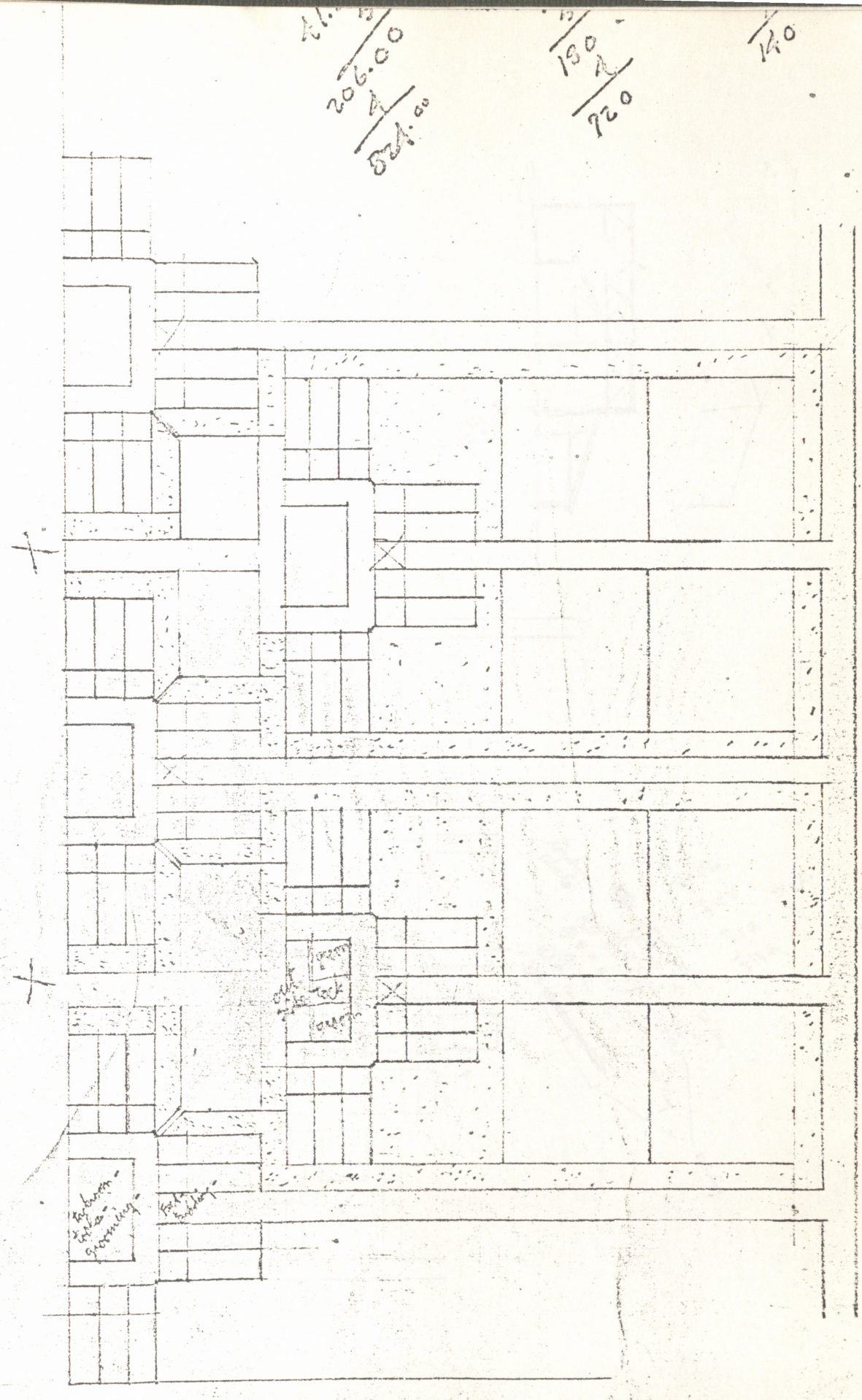
-HORSE SHOWS-

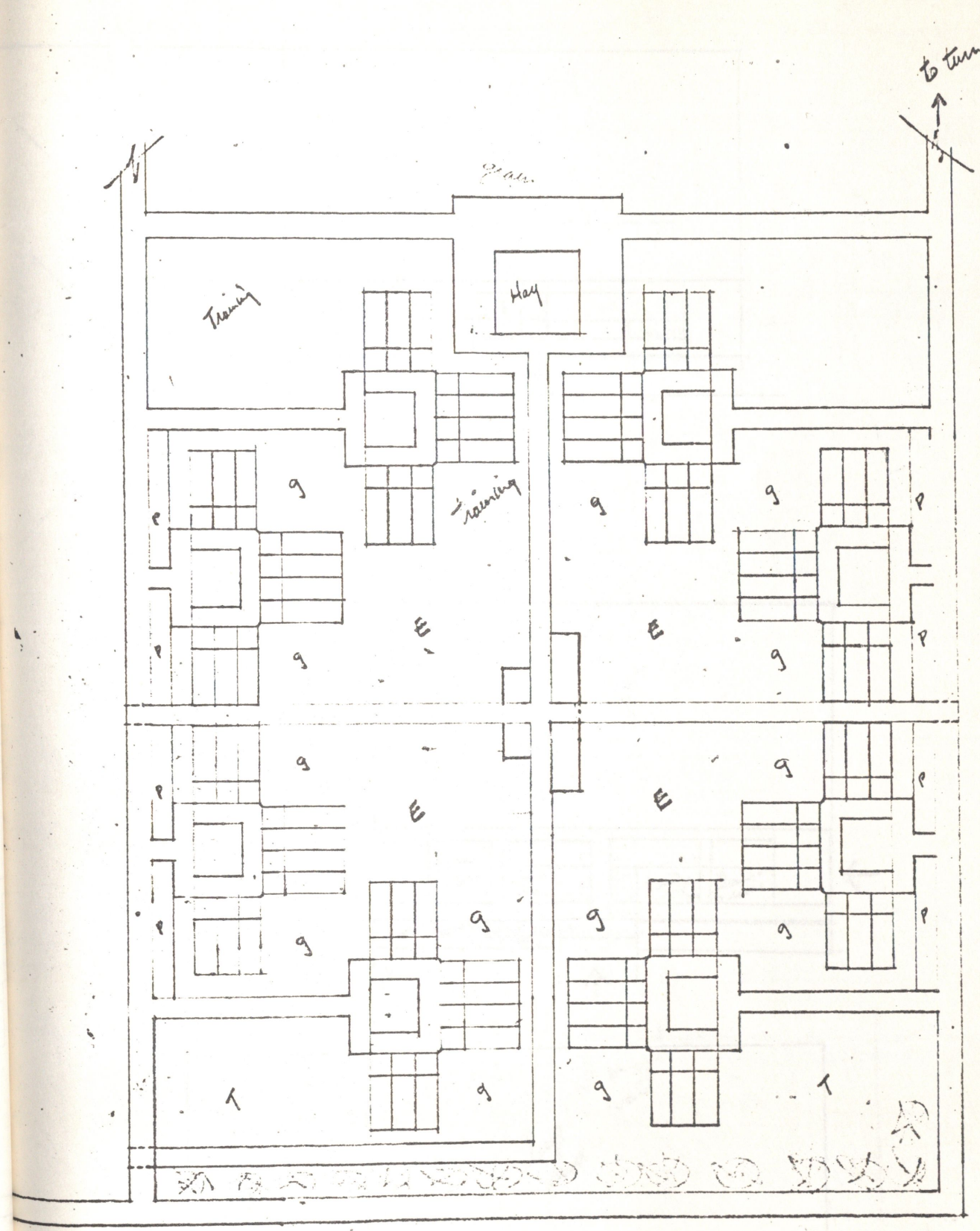

OUTDOOR ARENA
EQUIP. STOR.
SEATING
LARGE ARENA (INDOOR)
CLASSROOM 1
CLASSROOM 2
ENTRY FOYER
RESTROOM DRESSING
SMALL ARENA (INDOOR)
TRAILER STOR.
OFFICES
SNACK BAR
LOUNGE
LOADING CHUTE


stall
passageway
stall
14'x16'
16'x16'
16'x25'
15'
14'x16'
14'x16'
14'x16'
14'x16'
16'x16'
32
16'x16'
wall
Boarding tack
tool shop
equip.
grm.
Hay
Bedding
16'x16'
wood deck
grooming area
18'
15'
Boarding tack
Women
15'
grooming area
tool shop
equip.
grm.
Hay
Bedding
14'x14'
15'
Dogs tackroom
Lounge
front stalls storage
14'x14'
14'x14'
14'x14'
18'

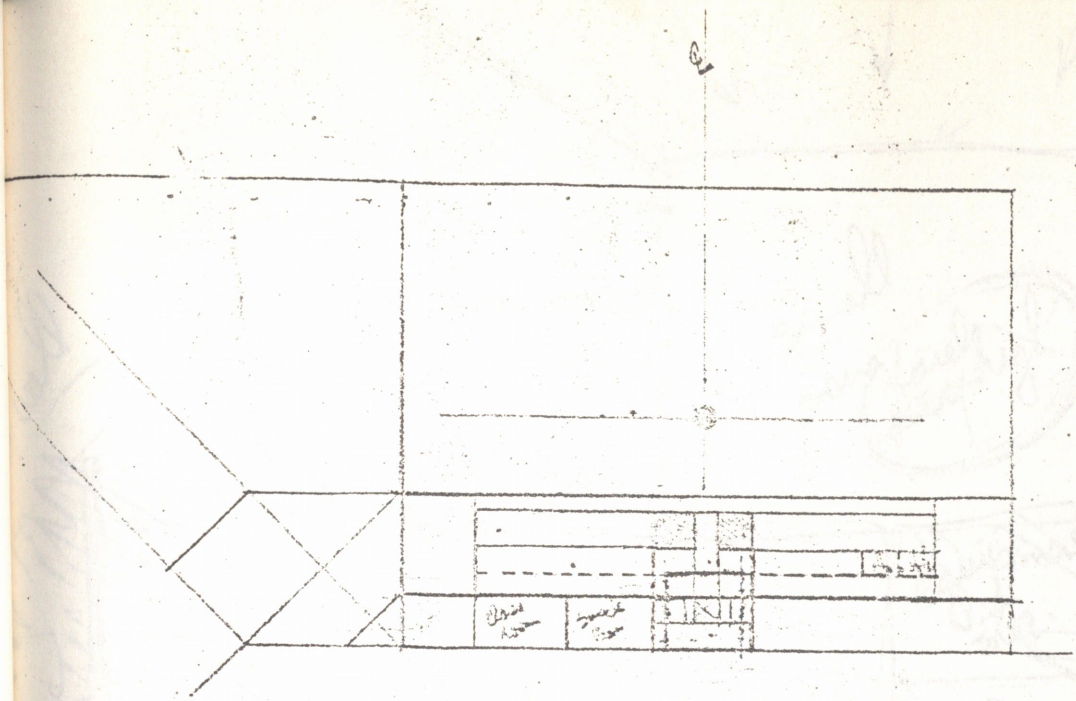


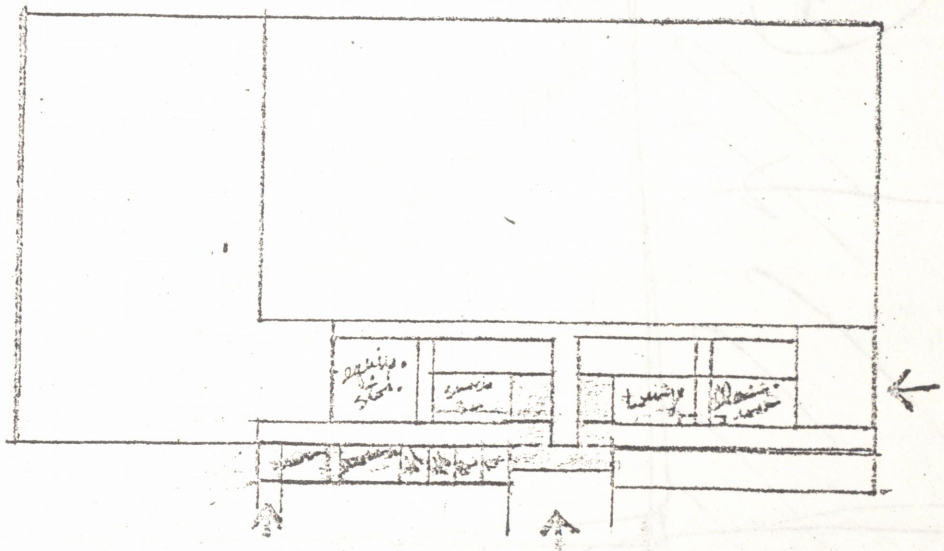


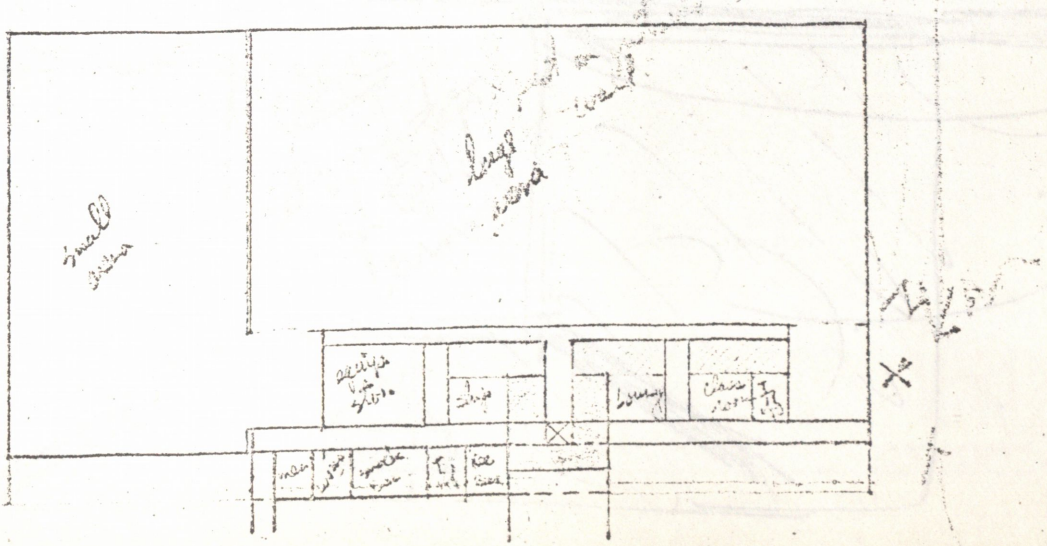


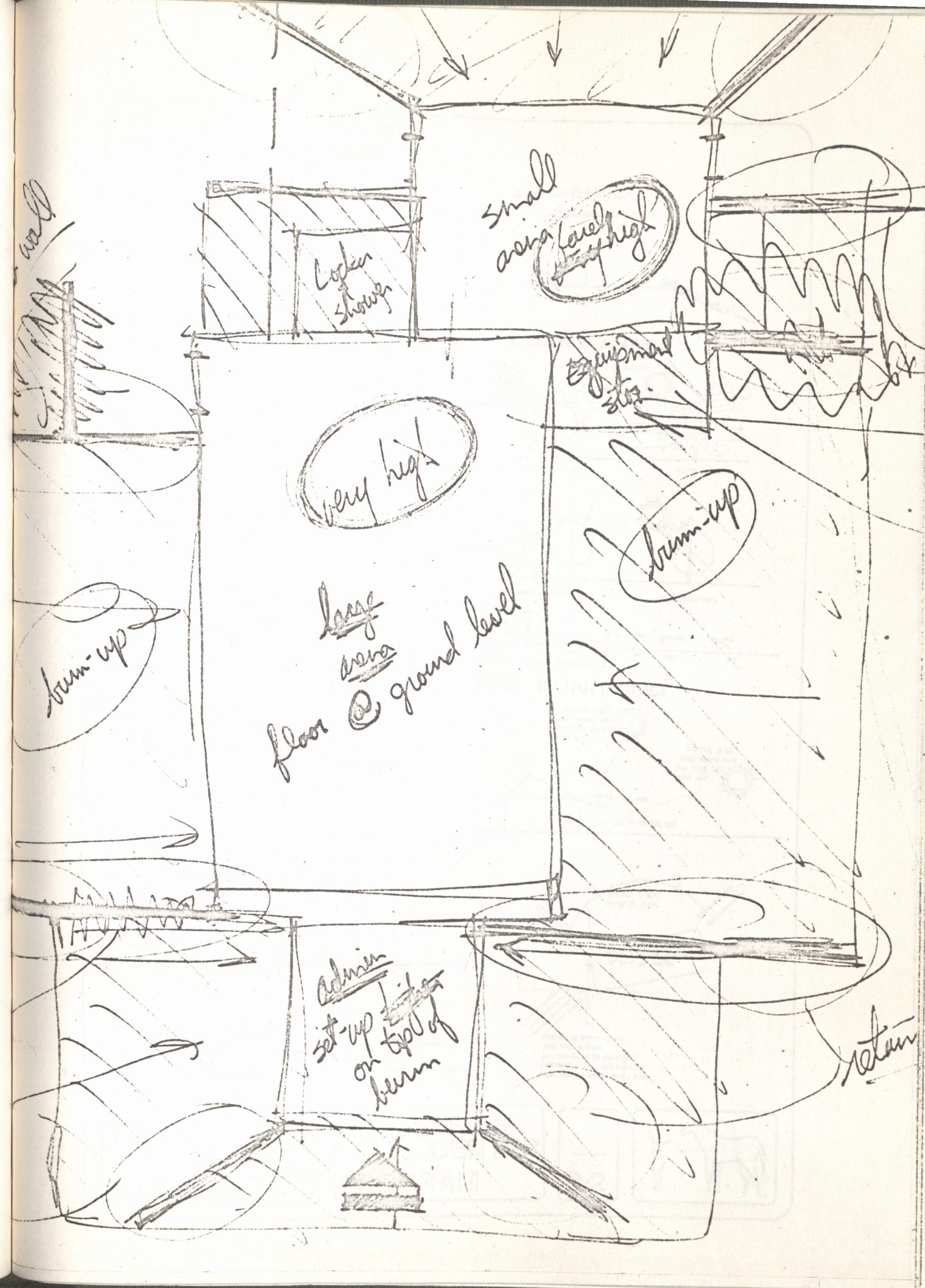


15/12/39





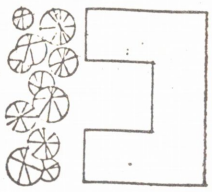



small area
Locker Shower
equipment storage
very high
drum-up
large area floor @ ground level
drum-up
admin
set-up
on top of
return

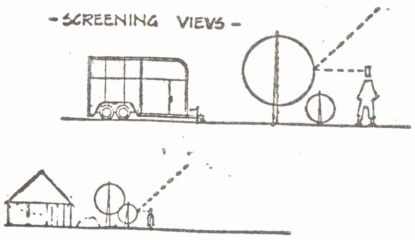
FUNCTIONAL USE OF: PLANT MATERIALS

1. ARCHITECTURAL

- SPACE ARTICULATION -

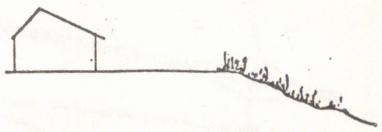


- SCREENING VIEWS -



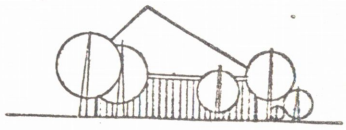
2. ENGINEERING

- EROSION CONTROL -



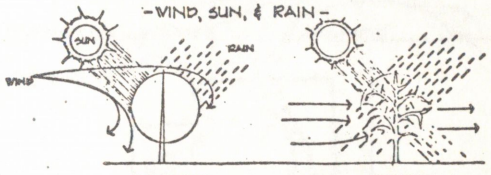
3. ESTHETIC

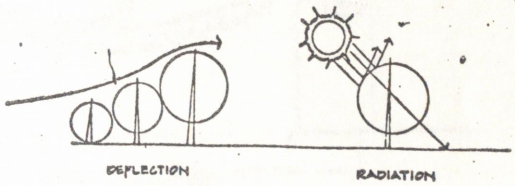
- COMPLEMENTING OR SOFTENING ARCHITECTURE -

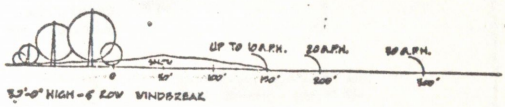


4. CLIMATE CONTROL

- WIND, SUN, & RAIN -



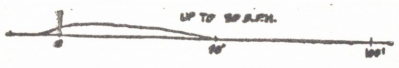




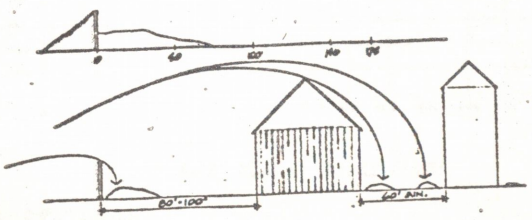
3.5'-6' HIGH - 6 ROW WINDBREAK

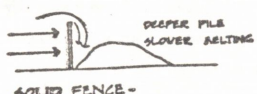
FENCES

4'-6'- SNOW FENCE

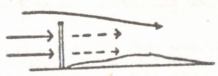


6'-8'- SOLID FENCE



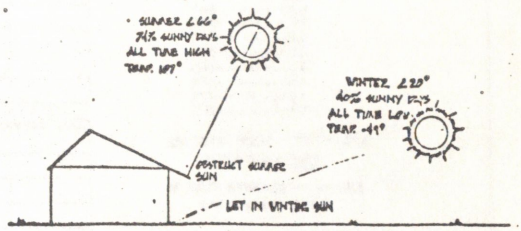


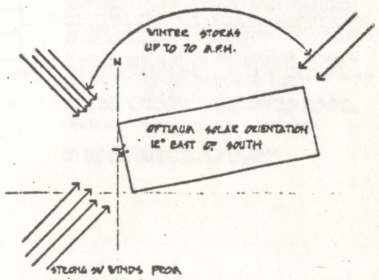
SOLID FENCE - BETTER WIND PROTECTION



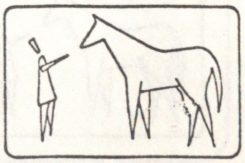
80% SOLID FENCE BETTER SNOW PROTECTION

THE SUN, WIND

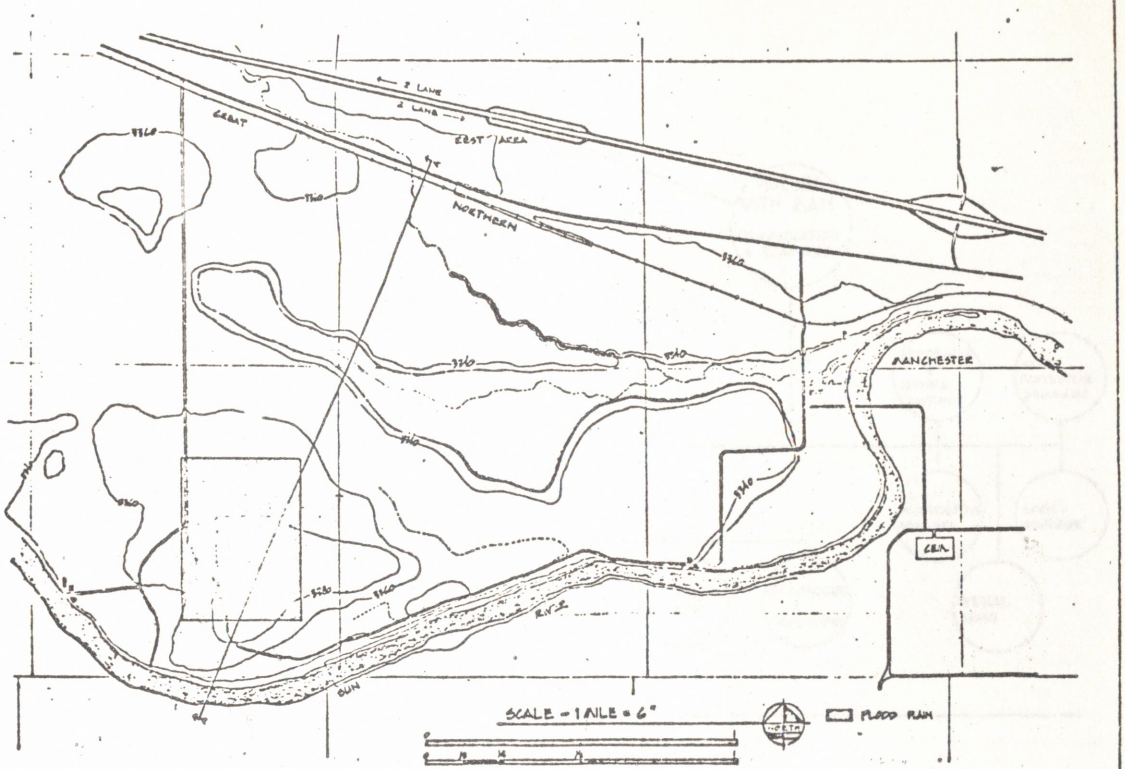


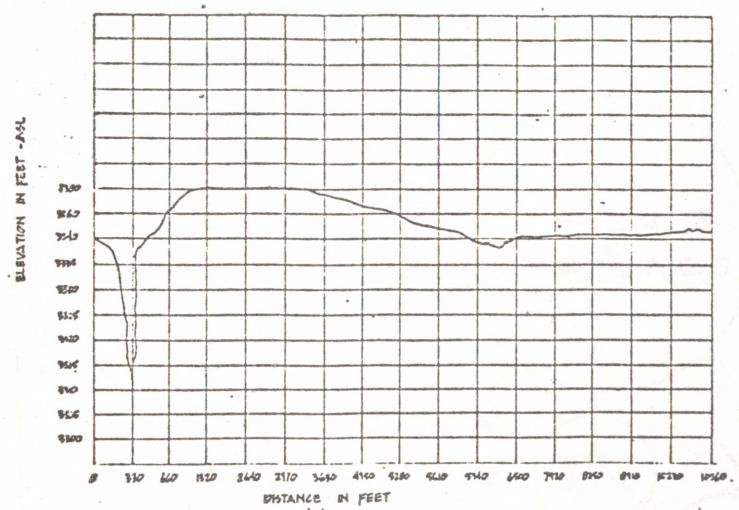


STRONG ON WINDS FROM NOR. THRU S.W.S.E.
CAN REACH UP TO 80 M.P.H
LIGHTEST WINDS JULY & AUGUST
MEAN HOURLY SPEED OF 11.1 M.P.H.

THESIS PROJECT RUSSELL PAGE	EQUESTRIAN CENTER PROGRAM	D-2	

SITE





FLOOD PLAIN INFORMATION

RANCHESTER SONEMER GAGE
ZERO READING - 5314 Ft ASL

1963	5.6
→ 1964	24.0
1965	11.8
1966	7.9
1967	15.0
1968	7.1
1969	6.6
1970	10.6
1971	12.1
1972	14.9

100 YEAR HIGH - 1964 --- 24.0
24.0 + 5314 = 5338

10 YEAR AVERAGE ----- 10.4
10.4 + 5314 = 5324.4

CLIMATOLOGY OF MANCHESTER

YEARLY PRECIPITATION TOTAL 14.99....MOST SEASON MAY AND JUNE WITH NORMAL TOTAL OF 3.64 OF AN INCH. STRONG SOUTHWEST WINDS DOMINATE WEATHER FROM NOVEMBER THRU MARCH AND VERY LITTLE SNOW OR RAIN FALLS WITH A SOUTHWEST WINDS. MOST OF THE STORMS ARE WITH WINDS FROM NW THRU EAST. SOUTHWEST WINDS CAN REACH 80 MPH IN THIS AREA ALSO IN RARE CASES NORTHWEST TO NORTHEAST WINDS MAY REACH 70 MPH. JULY AND AUGUST USUALLY THE HOTTEST MONTHS WITH HIGHS ARE LIGHT EXCEPT WITH THUNDERSTORMS WHICH often OCCUR DURING THE LATE AFTERNOON AND EVENING HOURS.

AN AVERAGE SUMMER WOULD HAVE AFTERNOON HIGHS REACHING 90 DEGREES OR MORE ABOUT 24 DAYS. HEATS ARE COOL DUE TO EXCELLENT RADIATION IN THE RELATIVELY DRY AIRMASSES USUALLY PRESENT DURING THE WARMEST TIME OF THE YEAR.

YEARLY PREVAILING WIND DIRECTION SOUTHEAST WITH A MEAN HOURLY SPEED OF 14.2 MPH. LIGHTEST WINDS JULY AND AUGUST.

AVERAGE YEARLY SNOWFALL FOR AREA.....33.3 INCHES

ALL TIME LOW TEMPERATURES 40 BELOW ZERO.
ALL TIME HIGH TEMPERATURES 107 DEGREES.

SOIL INFORMATION

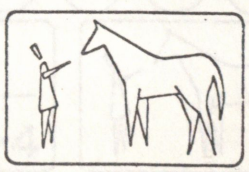
ARRIAS-KOSSE-ANDE ASSOCIATION:
NEARLY LEVEL TO UNDULATING, LIGHT COLORED, CALCAREOUS, CLAY SOILS MORE THAN 20" DEEP TO SHALE.

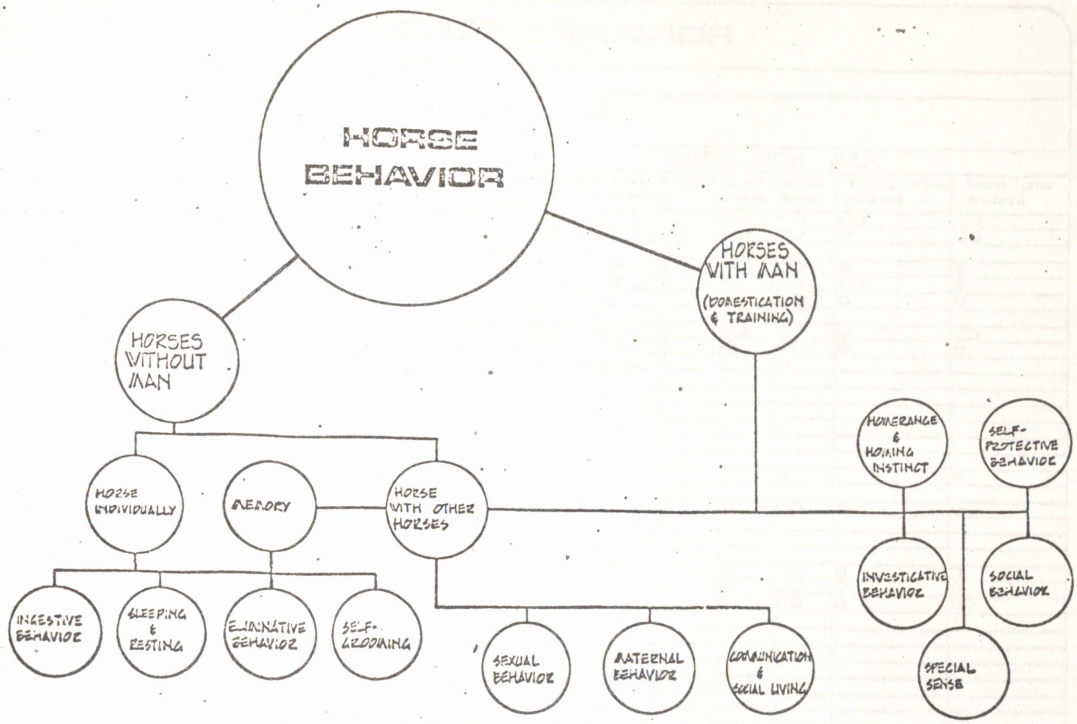
ARRIAS SOILS-(35% OF THIS ASSOCIATION) WELL DRAINED SOILS - LEVEL GROUND
KOSSE SOILS-(30% OF THIS ASSOCIATION) SIMILAR TO ARRIAS BUT WITH LESS CLAY
ANDE SOILS-(10% OF THIS ASSOCIATION) CALCAREOUS, SILTY CLAY SOILS.
OTHER SOILS-(25% OF THIS ASSOCIATION)

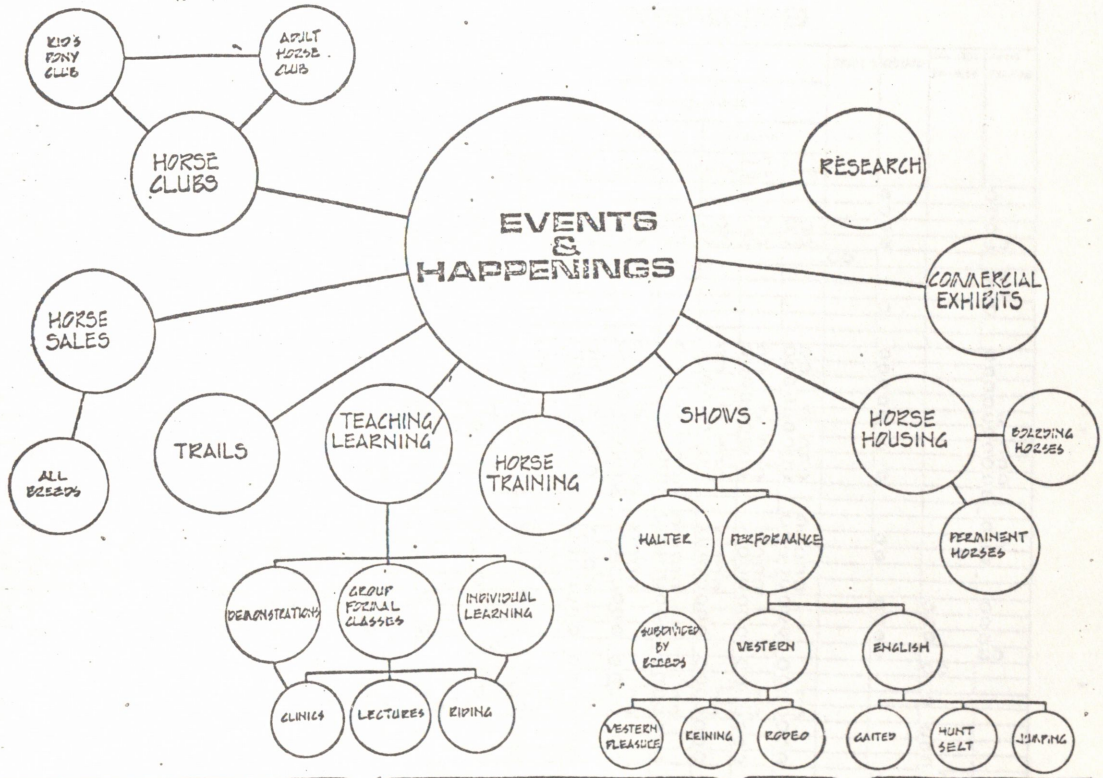
THESIS PROJECT
RUSSELL PAGE

EQUESTRIAN CENTER
PROGRAM

S-3







THESIS PROJECT RUSSELL PAGE	EQUESTRIAN CENTER PROGRAM	P-4	

LEGEND

- ○○ IMMEDIATE IMPORTANCE
- ○ IMPORTANT
- ○ OCCASIONAL IMPORTANCE
- MINOR IMPORTANCE

HORSE BEHAVIOR

HORSE WITHOUT MAN

HORSE INDIVIDUALLY

	EXPLORATORY BEHAVIOR	SLEEPING ROUTINE	EATING ROUTINE	SELF-GROOMING
PASTURES	○	○	○	○○
CORRALS	○	○	○	○○
TRAILER STOR.				
OUTDOOR ARENA			○	○
RIDING TRAILS				
TRAINING RING			○	
TRAILERS IN USE				
MAIN STALLS	○	○	○	○○
BROODMARES	○	○	○	○○
STALLIONS			○	
FOALING STALL		○○		
NURSING STALL			○○	
HAY STORAGE	○○			
GRAIN STOR.	○			
TACK ROOM				
FEED ROOM				
GROOMING & EQUIPMENT			○	
VET. EQUIPMENT				
INDOOR RIDING			○	○
LARGE ARENA	CATTLE CHUTES			
SALES RING				
EQUIPMENT STOR.				
SMALL ARENA			○	○
TIE STALLS	○	○	○	○
PORTABLE STALLS	○	○	○	○
SPECTATOR SEATING				
SMALL RING				
EQUIPMENT STOR.				
HARNESS ROOM				
LOUNGE				
TRAINER'S OFFICE				
ENTRY FOYER				
RECEPTIONIST				
REGISTRAR				
SEATING				
SHOWS				
SNACK BAR				
CONCESSIONS				
CLASS ROOMS				

HORSE WITH OTHER HORSES

	SEXUAL BEHAVIOR	MATERNAL BEHAVIOR	COMMUNICATION/SOCIAL LIVING
PASTURES	○○	○○	○○
CORRALS	○	○	○○
TRAILER STOR.			
OUTDOOR ARENA			○
RIDING TRAILS			○○
TRAINING RING			○○
TRAILERS IN USE			
MAIN STALLS	○	○○	○○
BROODMARES	○	○	○○
STALLIONS			○
FOALING STALL			
NURSING STALL		○○	
HAY STORAGE			
GRAIN STOR.			
TACK ROOM			
FEED ROOM			
GROOMING & EQUIPMENT			○
VET. EQUIPMENT			
INDOOR RIDING			○
LARGE ARENA	CATTLE CHUTES		
SALES RING	○○		
EQUIPMENT STOR.			○
SMALL ARENA	○	○	○○
TIE STALLS			
PORTABLE STALLS	○		
SPECTATOR SEATING			
SMALL RING			
EQUIPMENT STOR.			○
HARNESS ROOM			
LOUNGE			○○
TRAINER'S OFFICE			
ENTRY FOYER			
RECEPTIONIST			
REGISTRAR			
SEATING			
SHOWS			
SNACK BAR			
CONCESSIONS			
CLASS ROOMS			

HORSE WITH MAN

	SOCIAL BEHAVIOR	MEMORY	HOMERANGE & HOMING	SPECIAL SENSES	SELF-PROTECTIVE BEHAVIOR	INVEST.-ATIVE BEHAVIOR
PASTURES	○○		○○	○○	○○	○○
CORRALS	○○		○○	○○	○	○○
TRAILER STOR.						
OUTDOOR ARENA	○		○	○○	○	○
RIDING TRAILS	○			○○	○○	○
TRAINING RING				○○	○	○
TRAILERS IN USE						
MAIN STALLS	○○		○○	○○	○	○○
BROODMARES	○		○	○○	○	○
STALLIONS				○		
FOALING STALL						
NURSING STALL						
HAY STORAGE						
GRAIN STOR.						
TACK ROOM						
FEED ROOM						
GROOMING & EQUIPMENT				○		○
VET. EQUIPMENT						
INDOOR RIDING	○		○	○○	○	○
LARGE ARENA	CATTLE CHUTES					
SALES RING						
EQUIPMENT STOR.						
SMALL ARENA	○		○	○○	○	○
TIE STALLS						
PORTABLE STALLS	○		○	○○	○	○
SPECTATOR SEATING						
SMALL RING						
EQUIPMENT STOR.						
HARNESS ROOM						
LOUNGE						
TRAINER'S OFFICE						
ENTRY FOYER						
RECEPTIONIST						
REGISTRAR						
SEATING						
SHOWS						
SNACK BAR						
CONCESSIONS						
CLASS ROOMS						

LEGEND

- ○○ IMMEDIATE IMPORTANCE
- ○ IMPORTANT
- ○ OCCASIONAL IMPORTANCE
- MINOR IMPORTANCE

EVENTS & HAPPENINGS

	HORSE CLUBS: CHILDREN'S 4-H CLUB	HORSE CLUBS: ADULT HORSE CLUBS	HORSE HOUSING: PERMANENT HOUSING	HORSE HOUSING: BOARDING HOUSE
PASTURES	○	○	○○	○○
CORRALS	○	○	○○	○○
TRAILER STOR.	○○	○○		○○
OUTDOOR ARENA	○○	○○	○	○
RIDING TRAILS	○	○		
TRAINING RING	○	○		○
TRAILERS IN USE				○
MAIN STALLS	○	○	○○	○○
BROODMARES	○	○	○○	○○
STALLIONS	○	○	○	○
FEEDING STALL	○	○	○○	○○
NURSERY STALL	○	○	○○	○○
HAY STALL	○	○	○○	○○
GRAIN STALL	○	○	○○	○○
TACK ROOM	○○	○○	○	○
TOOL STALL	○	○	○	○
GROOMING AREA	○○	○○	○	○
VET. EQUIPMENT	○	○	○○	○○
INDOOR ARENA	○○	○○	○	○
CATTLE CHUTES	○	○		
SALES RING				
EQUIPMENT STOR.	○	○	○	○
SMALL ARENA	○○	○○	○	○
TIE STALLS	○	○	○	○
PORTABLE STALLS			○	○
SPECTATOR SEATING	○○	○○		
SMALL RING				
EQUIPMENT STOR.	○	○	○	○
HARNESS ROOM	○	○	○	○
LOUNGE	○	○	○	○
TRAINER'S OFFICE			○	○
ENTRY FOYER	○	○		
RECEPTIONIST	○	○		
REGISTRAR	○	○		
SEATING	○	○		
SHOWS	○	○		
SNACK BAR	○	○		
CONCESSIONS	○	○		
CLASS ROOMS	○	○		

	HORSE TEACHING/LEARNING: SALES	BEGINNING RIDING	INTERMEDIATE & ADVANCED CLASSES	NON-RIDING
PASTURES				
CORRALS				
TRAILER STOR.				○
OUTDOOR ARENA		○○		○○
RIDING TRAILS				○○
TRAINING RING		○○		○○
TRAILERS IN USE		○○	○	○○
MAIN STALLS	○			
BROODMARES				
STALLIONS				
FEEDING STALL				
NURSERY STALL				
HAY STALL				
GRAIN STALL				
TACK ROOM		○○	○	○○
TOOL STALL		○		○
GROOMING AREA	○	○	○	○○
VET. EQUIPMENT		○		○○
INDOOR ARENA		○○		○○
CATTLE CHUTES				
SALES RING	○○			
EQUIPMENT STOR.		○		○
SMALL ARENA	○	○○		○○
TIE STALLS	○			
PORTABLE STALLS	○			
SPECTATOR SEATING				
SMALL RING				
EQUIPMENT STOR.				
HARNESS ROOM				
LOUNGE				
TRAINER'S OFFICE				
ENTRY FOYER	○			○
RECEPTIONIST	○			○
REGISTRAR	○	○	○	○
SEATING	○	○○	○○	○
SHOWS	○			○
SNACK BAR	○			○
CONCESSIONS	○			○
CLASS ROOMS	○	○	○○	

	SHOWS: HALTER: CONFIRM. & FEEDS	PERFORMANCE: WESTERN: WESTERN PLEASURE	PERFORMANCE: WESTERN: REINING	PERFORMANCE: WESTERN: COWS	PERFORMANCE: ENGLISH: SADDLE	PERFORMANCE: ENGLISH: HUNT SEAT	PERFORMANCE: ENGLISH: JUMPING
PASTURES							
CORRALS							
TRAILER STOR.	○○	○○	○○	○○	○○	○○	○○
OUTDOOR ARENA	○○	○○	○○	○○	○○	○○	○○
RIDING TRAILS							
TRAINING RING							
TRAILERS IN USE							
MAIN STALLS							
BROODMARES							
STALLIONS							
FEEDING STALL	○○	○○	○○	○○	○○	○○	○○
NURSERY STALL	○○	○○	○○	○○	○○	○○	○○
HAY STALL	○	○	○	○	○	○	○
GRAIN STALL	○	○	○	○	○	○	○
TACK ROOM	○○	○○	○○	○○	○○	○○	○○
TOOL STALL	○	○	○	○	○	○	○
GROOMING AREA	○○	○○	○○	○○	○○	○○	○○
VET. EQUIPMENT	○	○	○	○	○	○	○
INDOOR ARENA	○○	○○	○○	○○	○○	○○	○○
CATTLE CHUTES	○			○○	○○		
SALES RING							
EQUIPMENT STOR.	○	○	○	○	○	○	○
SMALL ARENA	○○	○○	○○	○○	○○	○○	○○
TIE STALLS	○	○	○	○	○	○	○
PORTABLE STALLS	○○	○○	○○	○○	○○	○○	○○
SPECTATOR SEATING	○○	○○	○○	○○	○○	○○	○○
SMALL RING							
EQUIPMENT STOR.	○	○	○	○	○	○	○
HARNESS ROOM	○	○	○	○	○	○	○
LOUNGE	○	○	○	○	○	○	○
TRAINER'S OFFICE							
ENTRY FOYER	○	○	○	○	○	○	○
RECEPTIONIST	○	○	○	○	○	○	○
REGISTRAR	○	○	○	○	○	○	○
SEATING	○	○	○	○	○	○	○
SHOWS	○	○	○	○	○	○	○
SNACK BAR	○	○	○	○	○	○	○
CONCESSIONS	○	○	○	○	○	○	○
CLASS ROOMS	○	○	○	○	○	○	○

	TRAILS	RESEARCH	CONCESSIONS & EXHIBITS	HORSE TRAINING
PASTURES		○		○
CORRALS		○		○
TRAILER STOR.		○		○
OUTDOOR ARENA		○		○○
RIDING TRAILS	○○			
TRAINING RING				○○
TRAILERS IN USE				○○
MAIN STALLS		○		○
BROODMARES		○		○
STALLIONS		○		○
FEEDING STALL		○		○
NURSERY STALL		○		○
HAY STALL		○		○
GRAIN STALL		○		○
TACK ROOM		○		○○
TOOL STALL		○		○
GROOMING AREA		○		○
VET. EQUIPMENT		○		○
INDOOR ARENA		○		○○
CATTLE CHUTES				
SALES RING				
EQUIPMENT STOR.		○		○
SMALL ARENA		○		○○
TIE STALLS		○		○
PORTABLE STALLS		○		○
SPECTATOR SEATING				
SMALL RING				
EQUIPMENT STOR.		○	○	○
HARNESS ROOM		○	○	○
LOUNGE		○	○	○
TRAINER'S OFFICE		○		○○
ENTRY FOYER			○	
RECEPTIONIST				
REGISTRAR			○	
SEATING				
SHOWS			○	
SNACK BAR			○	
CONCESSIONS		○	○○	
CLASS ROOMS				

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STALLS

NUMBER REQUIRED

FLOOR AREA
MARES - 11'-0" x 11'-0" = 144 sq ft
STALLIONS - 16'-0" x 16'-0" = 256 sq ft
FOALING STALLS - 14'-0" x 23'-0" = 336 sq ft

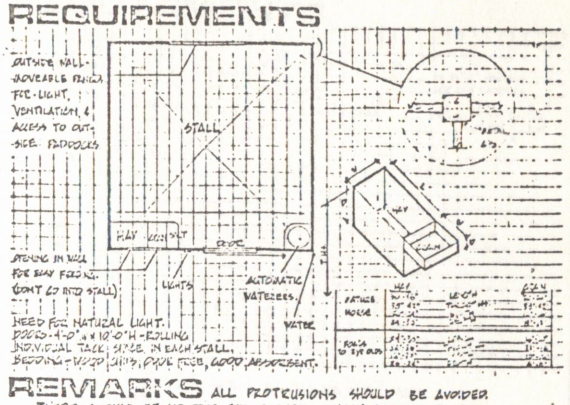
LOCATION
EASILY ACCESSIBLE FOR HORSE AND MAN TRAFFIC (RIDING HORSES, DELIVERY OF FEED & BEDDING & DISPOSAL OF MANURE. - HIGH & DRY - NEAR PADDOCKS AND CORRALS, FEED STORAGE, BEDDING STORAGE, GROOMING AREA, TOOL STORAGE, MANURE STORAGE, & EASY ACCESS TO RIDING

USE
PROVIDE AN ENVIRONMENT THAT PROTECTS THE HORSE FROM TEMPERATURE EXTREMES, KEEPS THEM DRY AND OUT OF THE WIND, ELIMINATES DRAFTS, PROVIDES FRESH AIR, AND PROTECTS THEM FROM INJURY.

MATERIALS
WALLS - 2" THICK 2x12 - HARDWOOD PLANKS SHOULD GO UP 5'-0" HIGH. ABOVE 5'-0" SHOULD BE HEAVY SCREEN, OR LATTICE OR IRON GRILLS. FLOORING - PACKED CLAY W/ LAYER OF CRUSHED ROCK BENEATH. CEILING - MIN. 10 FT HIGH - LIGHTS RECESSED INTO CEILING.

ORIENTATION
PLACED ON FLAT GROUND.
NEED SUNNY EXPOSURE - 2 ROWS OF STALLS FACING OPPOSITE DIRECTIONS; EAST-WEST EXPOSURE. 1 ROW OF STALLS FACING 1 DIRECTION: SOUTHERN EXPOSURE. ADJOINING PADDOCKS SHOULD BE TO THE EAST OR WEST.

REQUIREMENTS



REMARKS
ALL PROTRUSIONS SHOULD BE AVOIDED
THERE SHOULD BE NO FREE STD. CORNERS EASILY ACCESSIBLE FOR HORSES TO CHEW ON.
* LABOR SAVING CONVENIENCE.

BREEZEWAY

NUMBER REQUIRED
1 PER BARN

FLOOR AREA
15'-0" WIDE - AS LONG AS BARN IS.

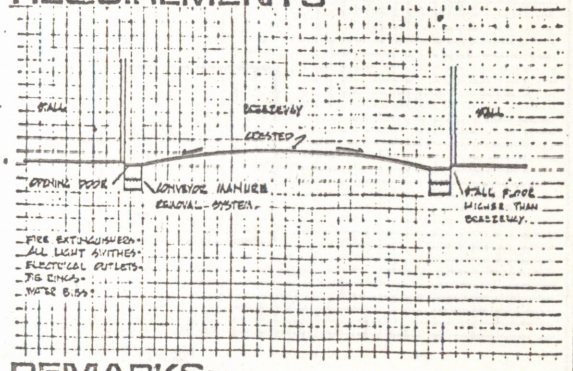
LOCATION
RIGHT OFF OF STALLS, TACK ROOM, GROOMING AREA, & TOOL STORAGE. NEAR FEED AND BEDDING STORAGE.
EASILY ACCESSIBLE FOR HORSE, MAN, AND EQUIPMENT

USE
ALLOWS ALLEYWAY FOR MOVING HORSES AND EQUIPMENT & TRAILERWAY.
AN ALLEY TO USE WHEN CLEANING OUT THE STALLS - MANURE & BEDDING REMOVAL

MATERIALS
FLOORING - PACKED CLAY AND DIRT W/ LAYER OF CRUSHED ROCK UNDERNEATH, FOR DRAINAGE.

ORIENTATION

REQUIREMENTS



REMARKS

PADDOCKS, CORRALS, PASTURES

NUMBER REQUIRED
PADDOCKS - 1 PER 1 OR 2 STALLS
CORRALS -
PASTURES -

FLOOR AREA
PADDOCKS - SMALLER SIZE -
CORRALS - MEDIUM SIZE -
PASTURES - LARGEST SIZE -

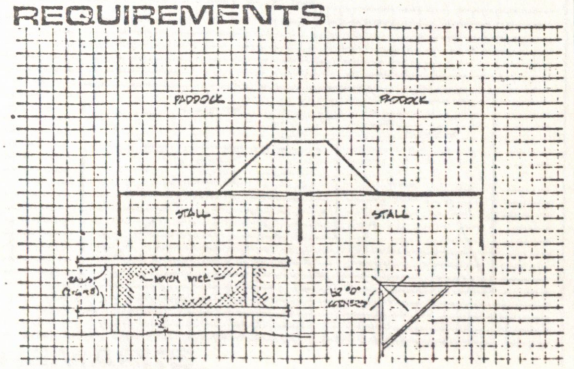
LOCATION
PADDOCKS - RIGHT OFF OF STALLS
CORRALS - CLOSER TO BARN & MAIN FACILITIES THAN PASTURES.
PASTURES - CAN AFFORD TO BE FURTHER AWAY FROM EVERYTHING - BECAUSE THESE HORSES BEING WORKED LESS, AREN'T RIDDEN AS MUCH, THUS THEY DO NOT NEED AS MUCH ATTENTION. ALLEYS BETWEEN PASTURES & CORRALS FOR EQUIP. WHEN FEEDING.

USE
PADDOCKS - GIVE HORSE FRESH AIR AND EXERCISE - 1 HORSE
CORRALS - HOUSE 1 OR 2 HORSES - COVERED SHELTER IN EACH FOR FEEDING AND PROTECTION FROM THE ELEMENTS
PASTURES - HOUSE MORE THAN 2 HORSES - COVERED SHELTER IN EACH FOR FEEDING AND PROTECTION FROM THE ELEMENTS.

MATERIALS
PADDOCKS - FENCES - STEEL PIPE, EASY TO SEE & WALK OUT OR TAKE DOWN, HORSE CAN NOT CHEW ON IT. OR CYCLONE WIRE.
CORRALS & PASTURES - NO BARBED WIRE - CYCLONE WIRE (WOVEN WIRE) PUT ON OAK POSTS W/ A TOP 2"x6" or 2"x8" WD. RAIL ON TOP SO FENCE IS VISIBLE.

ORIENTATION

REQUIREMENTS

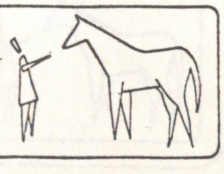


REMARKS
HAVE NO 90° CORNERS WHERE HORSES CAN GET TRAP - THIS CAN BE AVOIDED BY ANGLING CORNERS AVOID OTHER 'BOGGY TRAPS' SUCH AS PROTRUSIONS, GATES AND FEEDERS & WATERERS.

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TACK ROOM

NUMBER REQUIRED

FLOOR AREA DRYING (TACK) AREA -
LOUNGE AREA -

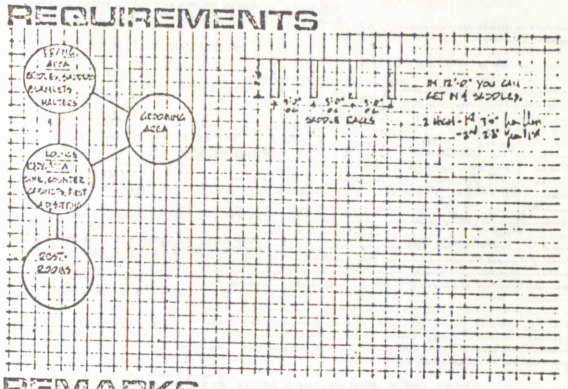
LOCATION RIGHT OFF THE BREEZEWAY, NEXT TO THE GROOMING AREA, NEAR THE FEED STORAGE & THE STALLS. THE TOOL SHOP AND REST ROOMS SHOULD BE RIGHT OFF FROM THE TACK ROOM.

USE FOR STORAGE OF BRIDLES, BLANKETS, SADDLES, HALTERS, ROPES. A DRYING AREA TO DRY MOST TACK - EX. BLANKETS THAT A HORSE HAS SWEAT IN ALOT. PORTABLE SADDLE RACKS FOR SPECIAL CLEANING. COUNTER, SINK, CABINETS, SHELVES, FIRST AID KIT. LOUNGE AREA.

MATERIALS FLOOR - CONCRETE, EASY TO WASH DOWN.
WALLS - WOOD (FINISHED)
CEILING - WOOD (FINISHED)

ORIENTATION

REQUIREMENTS



REMARKS SHOULD BE ENCLOSE, DRY, & FREE OF DUST, & RODENTS.

TOOL SHOP

NUMBER REQUIRED 1 PER BARN

FLOOR AREA 14'-0" x 14'-0" = 196 SQ FT.

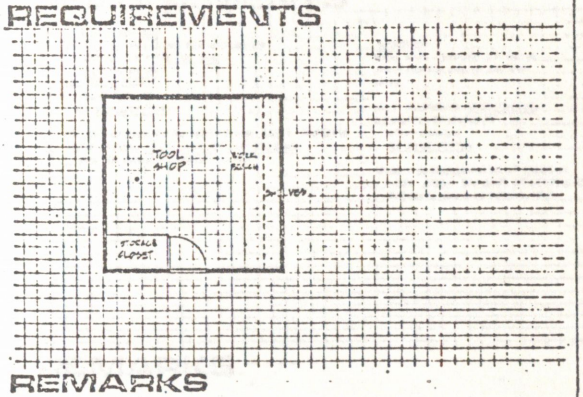
LOCATION IN BARN NEAR STALLS. RIGHT OFF BREEZEWAY.

USE FOR A GENERAL REPAIR AREA - HAVE A WORK BENCH, STORAGE SHELVES & CABINETS, TOOL RACK FOR STORAGE OF ALL WORK TOOLS: EX. ALL TOOLS THAT THE STALL CLEANER WOULD USE WHEN CLEANING THE MANURE & BEDDING IN THE STALLS.

MATERIALS FLOORING - CONCRETE; EASY TO CLEAN.

ORIENTATION

REQUIREMENTS



REMARKS

GROOMING AREA

NUMBER REQUIRED 1 PER BARN

FLOOR AREA 16'-0" x 32'-0" = 512 SQ FT.

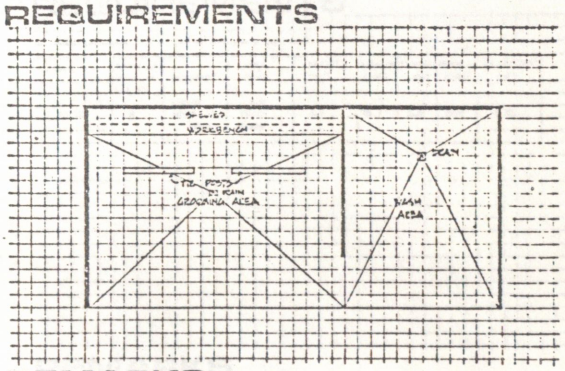
LOCATION IN BARN NEAR STALLS.
RIGHT NEXT TO FEED STORAGE AND TACK ROOM

USE FOR CLEANING, WASHING, BRUSHING (GROOMING), CLIPPING, SHOEING AND GENERAL CARE FOR THE HORSE.
A WASH RACK HUNG FROM THE CEILING THAT MOVES IN A CIRCLE WILL BE USED TO WASH THE HORSE. A TIE-UP AREA TO HOLD THE HORSE WHILE ONE GROOMS HIM. WORK BENCH WITH SHELVES & TACK BOXES W/ BRUSHES, ETC.

MATERIALS FLOORING - CONCRETE WITH ARTIFICIAL TURF - SOFT FOR HORSE, NOT SLIPPERY WHEN WET, AND CAN GET WET.

ORIENTATION

REQUIREMENTS

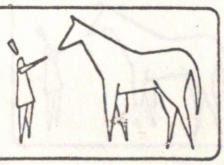


REMARKS

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GRAIN STORAGE

NUMBER REQUIRED 1 PER BARN

FLOOR AREA 6'-0" x 6'-0" x 10'-0" = 360 CU. FT.

LOCATION IN MAIN BARN NEAR STALLS AND BEDDING AREA NEXT TO TOOL SHOP.
CONVENIENT & EASY FOR EVERYDAY FEEDING.
EASY ACCESS FOR GRAIN DELIVERY TRUCKS.

USE TO STORE ALL GRAIN FEEDS - YOUNG OR WORKING HORSES NEED GRAIN. OATS - MUSCLE BUILDERS - BRAN - LAXATIVE - CORN - FATTENING & VERY HEATING.

MATERIALS METAL LINED SO AS TO BE VERMIN-PROOF.

ORIENTATION

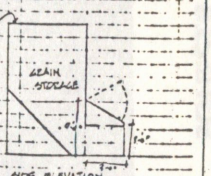
REQUIREMENTS

AMOUNT OF STORAGE DEPENDS ON:
1. NUMBER OF HORSES
2. THEIR TOTAL WT.
3. HOW OFTEN FEED SUPPLY IS TO BE REPLENISHED

SIZE REQUIRED:
1 LB. OF GRAIN PER DAY PER 100 LBS OF HORSES WT. = 10 LB. PER 1,000 LB HORSE.
WHOLE OATS = 25 LBS/CU. FT.
1 TON = 2,000 LBS
40 CU. FT. IN 1/2 TON

10 LBS x 40 HORSES = 400 LBS x 14 DAYS = 5,600 LBS OF GRAIN.
NEED APPROX. 225 CU. FT. OF GRAIN STOR.
FOR 40 HORSES - 2 WEEK SUPPLY.

SIZE = 6'-0" x 6'-0" x 10'-0"



REMARKS WATER, HAY, THEN OATS. WATER AFTER OATS CAN CAUSE COLIC.

HAY & BEDDING STORAGE

NUMBER REQUIRED 1 BEDDING STOR/BARN.
1 LARGE OUTSIDE HAY STOR.
1 INSIDE STOR/BARN.

FLOOR AREA

LOCATION BEDDING STOR. - IN MAIN BARN NEAR STALLS FOR EASY HAULING TO STALLS.
HAY STOR. - (OUTSIDE) EASILY ACCESSIBLE FOR HAY DELIVERY TRUCKS - EASY ACCESS TO INSIDE HAY STOR. - THIS WOULD BE COVERED, TO KEEP DRY. (INSIDE) NEAR STALLS FOR EASY FEEDING TO THE HORSES.

USE HAY - MAIN SOURCE OF HORSE FEED - NEEDS TO BE DRY & DUST FREE.
BEDDING - USED ON FLOOR OF STALLS FOR WARMTH - NEEDS TO ALSO BE DRY & DUST FREE.

MATERIALS GOOD VENTILATION, FREE FROM DUST.
KEEP BOTH HAY & BEDDING DRY.

ORIENTATION

REQUIREMENTS

AREA REQUIRED: HAY
15 LBS OF HAY A DAY PER 100 LBS OF HORSES WT. = 17½ LBS PER 1000 LB HORSE
1 TON = 2,000 LBS.
40 CU. FT. IN 1/2 TON

17½ LBS x 40 HORSES x 90 DAYS = 63,000 LBS = 1685 TONS
NEED APPROX. 2,400 CU. FT. OF HAY STORAGE FOR 40 HORSES - 3 MONTH SUPPLY.

BEDDING:
WOOD CHIPS - 300 LBS OF WATER ABSORBED PER CUT. OF AIR DRY CHIPS.

DAILY ALLOWANCE - 10 LBS / 24 CU. FT.
WOOD CHIPS - 25 LBS / CU. FT.
1 TON = 2,000 LBS
80 CU. FT. / TON

10 LBS x 80 HORSES x 14 DAYS = 11,200 LBS.
NEED APPROX. 210 CU. FT. OF BEDDING SOR FOR 80 HORSES - 2 WEEK SUPPLY.

REMARKS

MANURE STORAGE

NUMBER REQUIRED 1 PER BARN

FLOOR AREA CONVEYOR - 1'-0" WIDE - LENGTH OF BREEZEWAY. STORAGE - 12'-0" x 12'-0" x 5'-0" = 720 CU. FT.

LOCATION CONVEYOR - IN BREEZEWAY, JUST OUTSIDE EACH STALL; SUNK INTO GROUND. STORAGE BUILDING - STRAIGHT OUT FROM END OF BREEZEWAY, SEPARATE FROM THE BARN.

USE CONVEYOR - USED TO MOVE MANURE & BEDDING FROM STALL TO A STORAGE BUILDING; IS JUST UNDERGROUND & HAS TRAP DOORS AT EACH STALL. STORAGE BUILDING - HOLDS THE MANURE UNTIL A TRUCK COMES TO PICK IT UP & TAKE IT AWAY.

MATERIALS STORAGE BUILDING IS CONCRETE W/ A FLOOR DRAIN

ORIENTATION

REQUIREMENTS

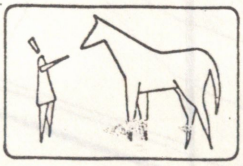
TYPE & QUALITY M/HORSE WT. PER DAY	DESCRIPT	LBS/TON	MOISTURE (%)	NITROGEN (LBS)	PHOSPHORIC ACID (LBS)	POTASH (LBS)	VOL. CU. FT/TON
HORSE .8	LIQUID SOLID TOTAL	400 1600 2000	60	19.2	8.0	11.0	2.7

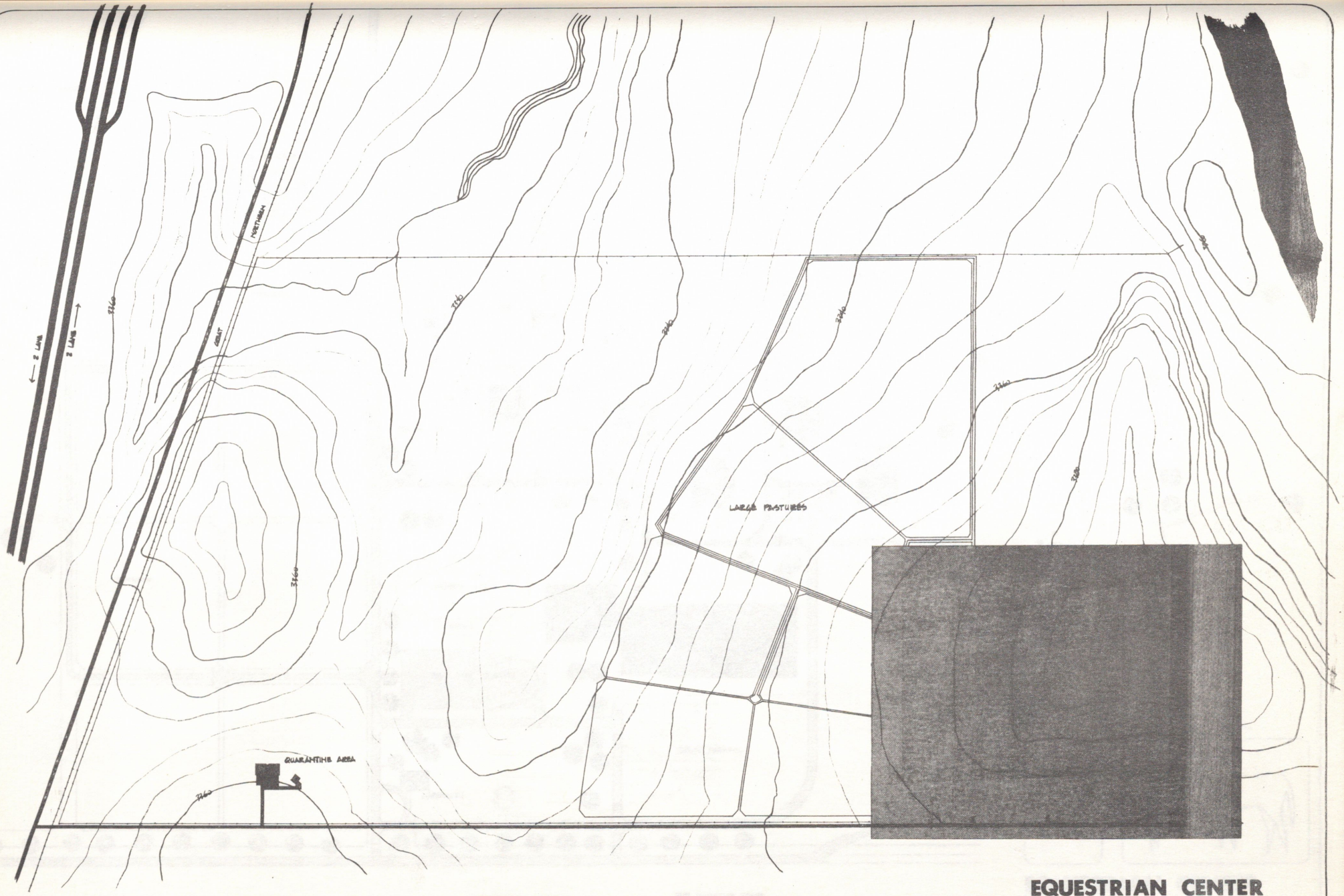
REMARKS

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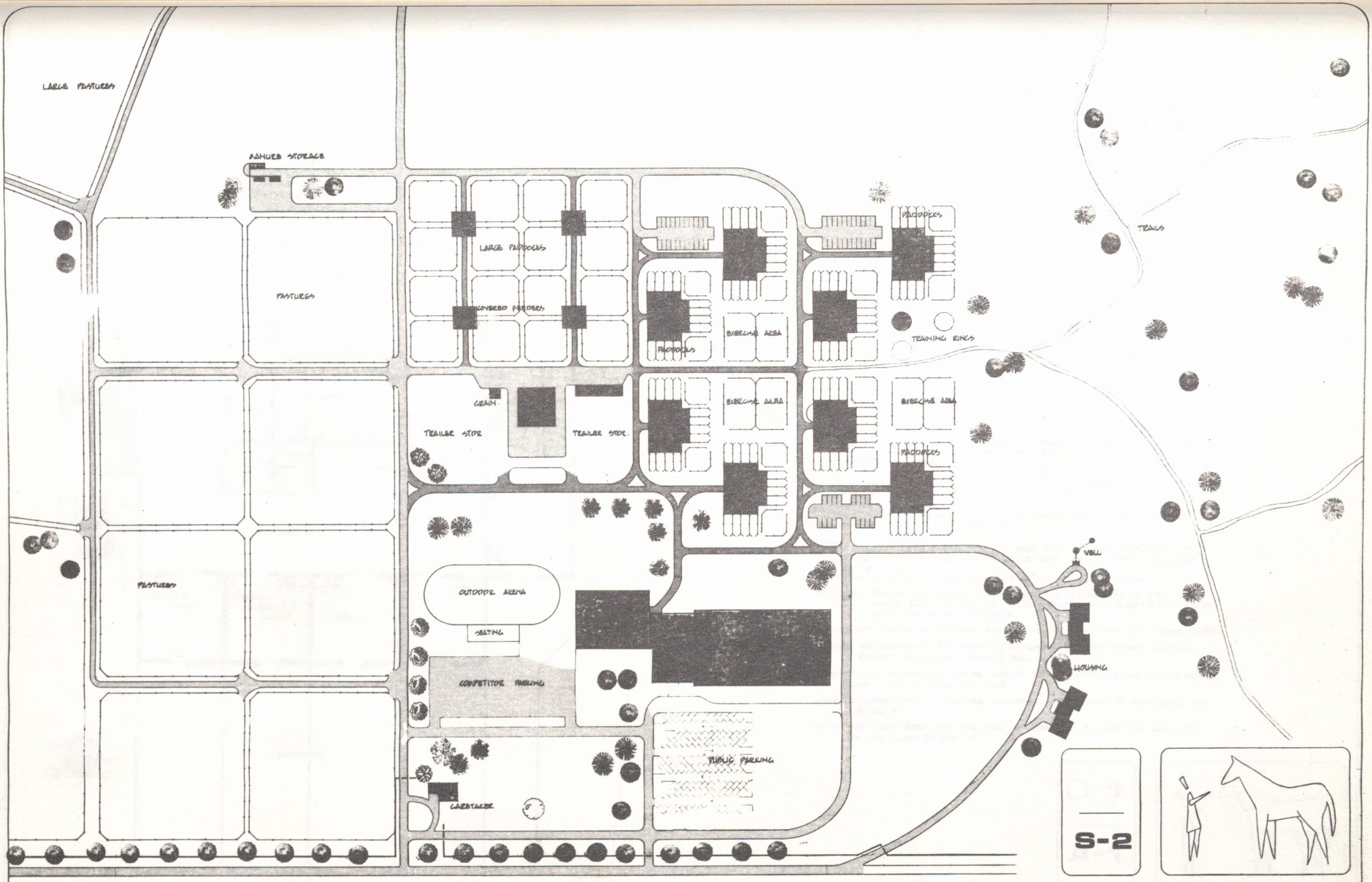


SITE PLAN

SCALE: 1/500" = 1'-0"

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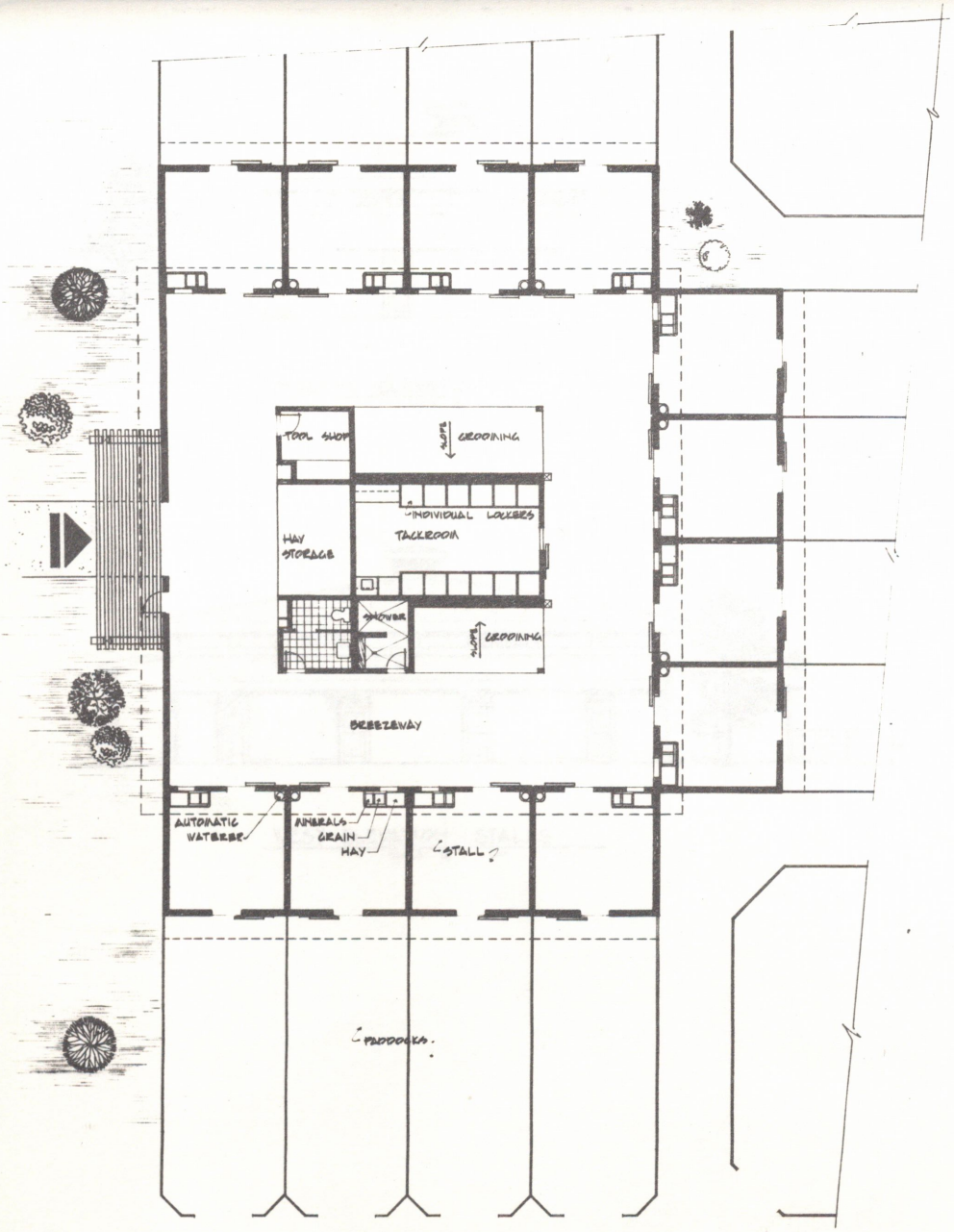


SITE PLAN
SCALE 1/80 = 1'-0"

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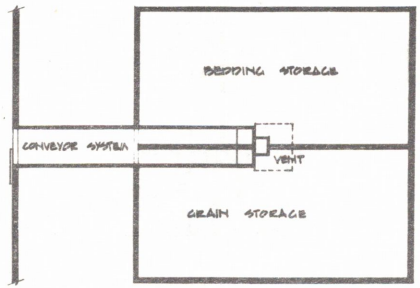
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1ST FLOOR PLAN - STALLS

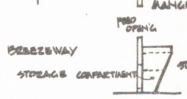
SCALE: 1/8" = 1'-0"



2ND FLOOR PLAN - STALLS

SCALE: 1/8" = 1'-0"

DESIGN NOTES:



STALLS: FLOOR - TAMED PACKED CLAY WITH WOODCHIP BEDDING. WOODCHIPS ARE GOOD FOR ABSORBING MOISTURE & GETTING RID OF ODORS.
MANGERS - ONE WOOD UNIT LINED WITH METAL THAT CONTAINS MINERALS, GRAINS, & HAY. SLOPED BACK SO HORSE CANNOT BUMP ITS LEGS.
A HOLE IN THE WALL IN FRONT OF THE MANGER ALLOWS FOR ONE TO FEED FROM THE BREEZEWAY WITHOUT HAVING TO GO INSIDE THE STALL.
UNDER THE MANGER FROM THE BREEZEWAY SIDE IS A SMALL STORAGE COMPARTMENT FOR EACH STALL.

FIRES: 8 SEPARATE UNITS WITH 12 STALLS IN EACH, HELPS THE FIRE PROBLEM IN THAT IF ONE UNIT CATCHES FIRE, ALL THE OTHER UNITS STAND A BETTER CHANCE OF NOT BEING HARMED
WATER SUPPLY IN THE FORM OF HYDRANTS ARE IN THE BREEZEWAY

VENTILATION: EXHAUST VENT SYSTEM - FANS UP BY VENTS TO FORCE OLD AIR OUT THUS PULLING FRESH AIR INTO THE BUILDING. SELF-CLOSING LOUVERS & WIND SHIELDS. HAY & GRAIN IS WELL VENTILATED.

HEATING: ANY HEATING IS ELECTRICAL FROM SMALL ONE ROOM UNITS TO BIG SPACE HEATERS.

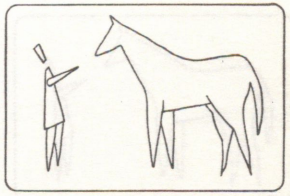
PADDOCKS: DIRT GROUND WITH PIPE FENCES (NO PROTRUSIONS & NO 90° CORNERS) 16'-0" WIDE BY 40'-0" LONG - OUTSIDE EXERCISE AREA.

WATER: AUTOMATIC WATERERS WITH HEATING ELEMENT SO WATER DOESN'T FREEZE IN COLD WEATHER. ROUND SO NOT TO INJURE THE HORSE

WINDOWS: LOUVERED WINDOW TO ALLOW FOR VENTILATION. HIGH ENOUGH SO HORSE COULD NOT DAMAGE IT.

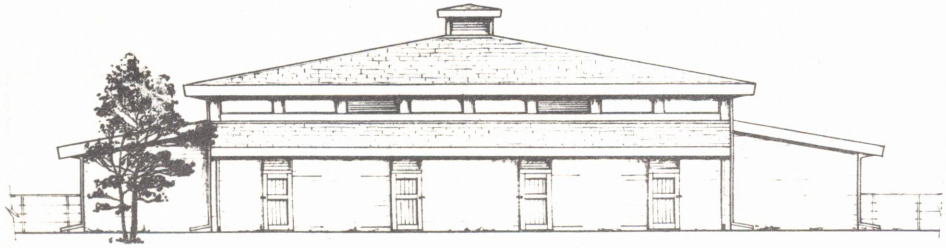
DOORS: HEAVY WOOD DOORS WITH METAL BARS ON UPPER PART TO ALLOW FOR HORSE TO SEE OUT & LIGHT TO COME IN.

1
A-1



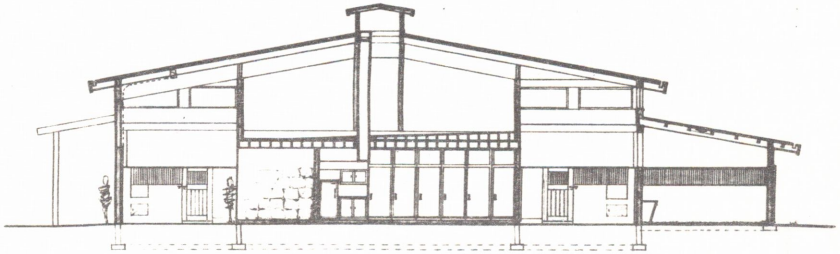
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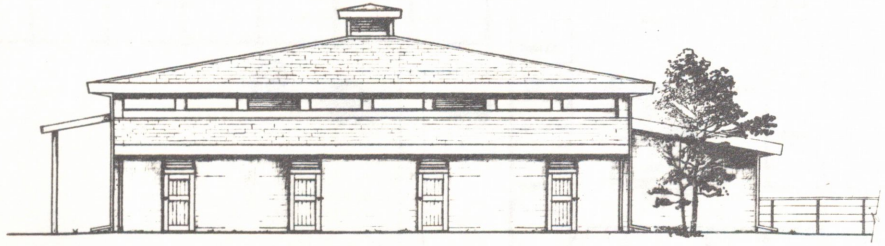
SOUTH ELEVATION - STALLS

SCALE: 1/8" = 1'-0"



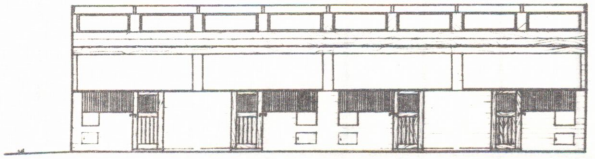
SECTION - STALLS

SCALE: 1/8" = 1'-0"



WEST ELEVATION - STALLS

SCALE: 1/8" = 1'-0"

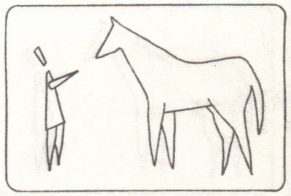


ELEVATION INSIDE - STALLS

SCALE: 1/8" = 1'-0"

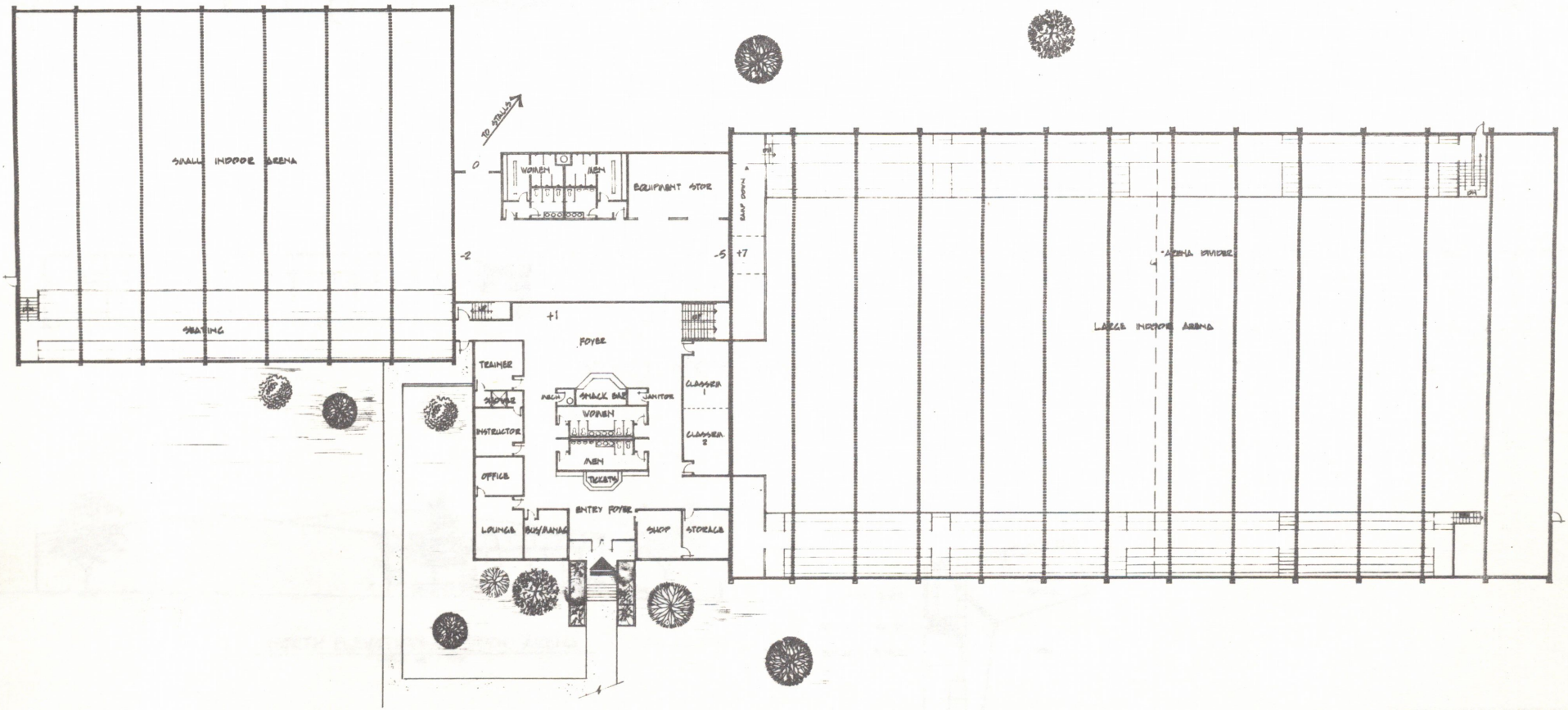
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A-2



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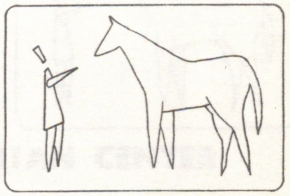


FLOOR PLAN - INDOOR ARENA

SCALE: 1/16" = 1'-0"

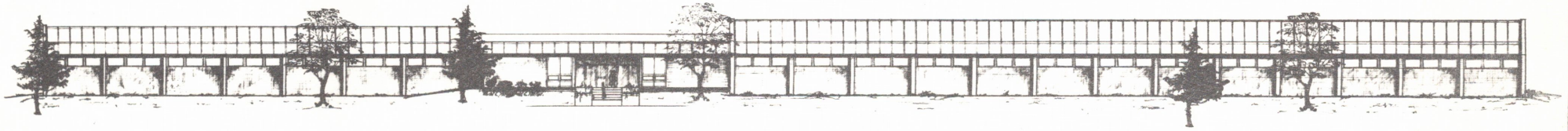
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A-3



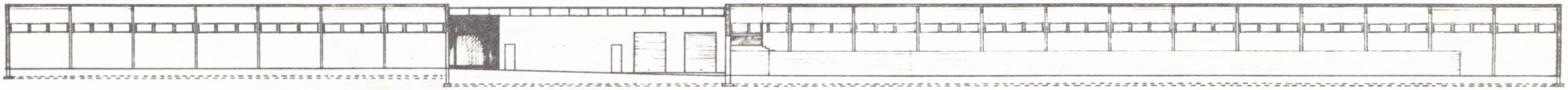
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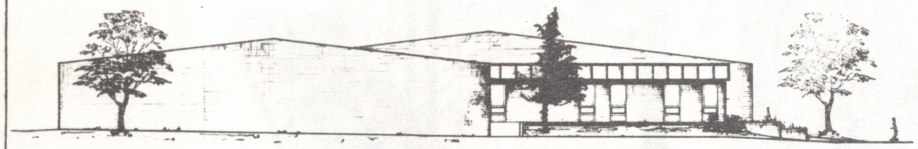
WEST ELEVATION - INDOOR ARENA

SCALE: 1/16" = 1'-0"



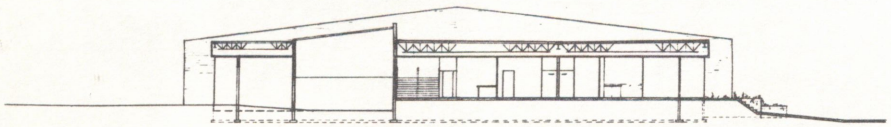
SECTION - INDOOR ARENA

SCALE: 1/16" = 1'-0"



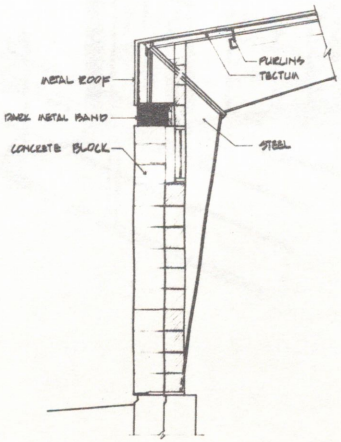
NORTH ELEVATION - INDOOR ARENA

SCALE: 1/16" = 1'-0"



SECTION - INDOOR ARENA

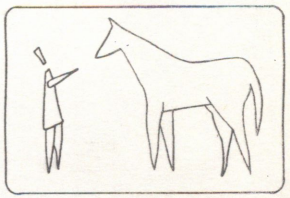
SCALE: 1/16" = 1'-0"



WALL SECTION

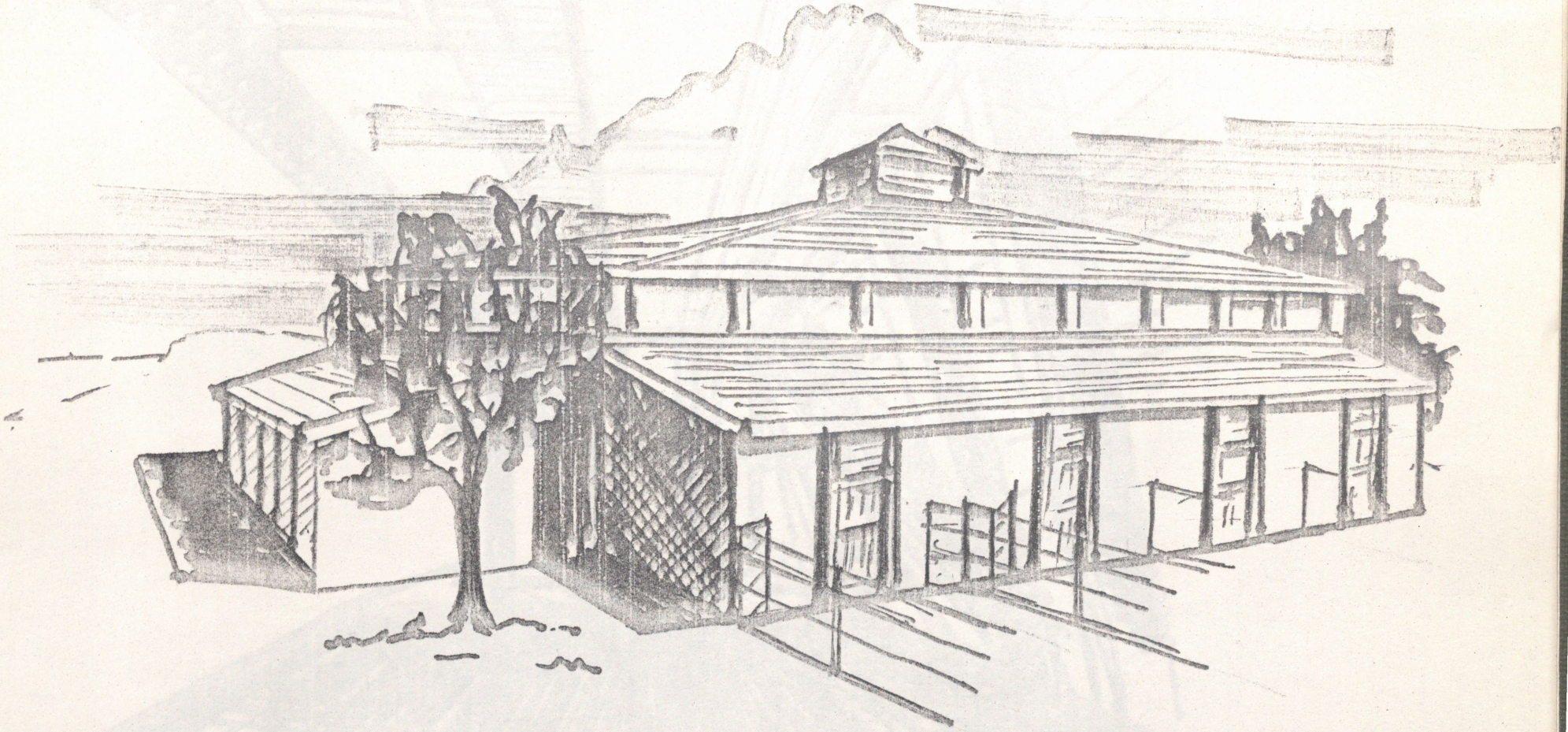
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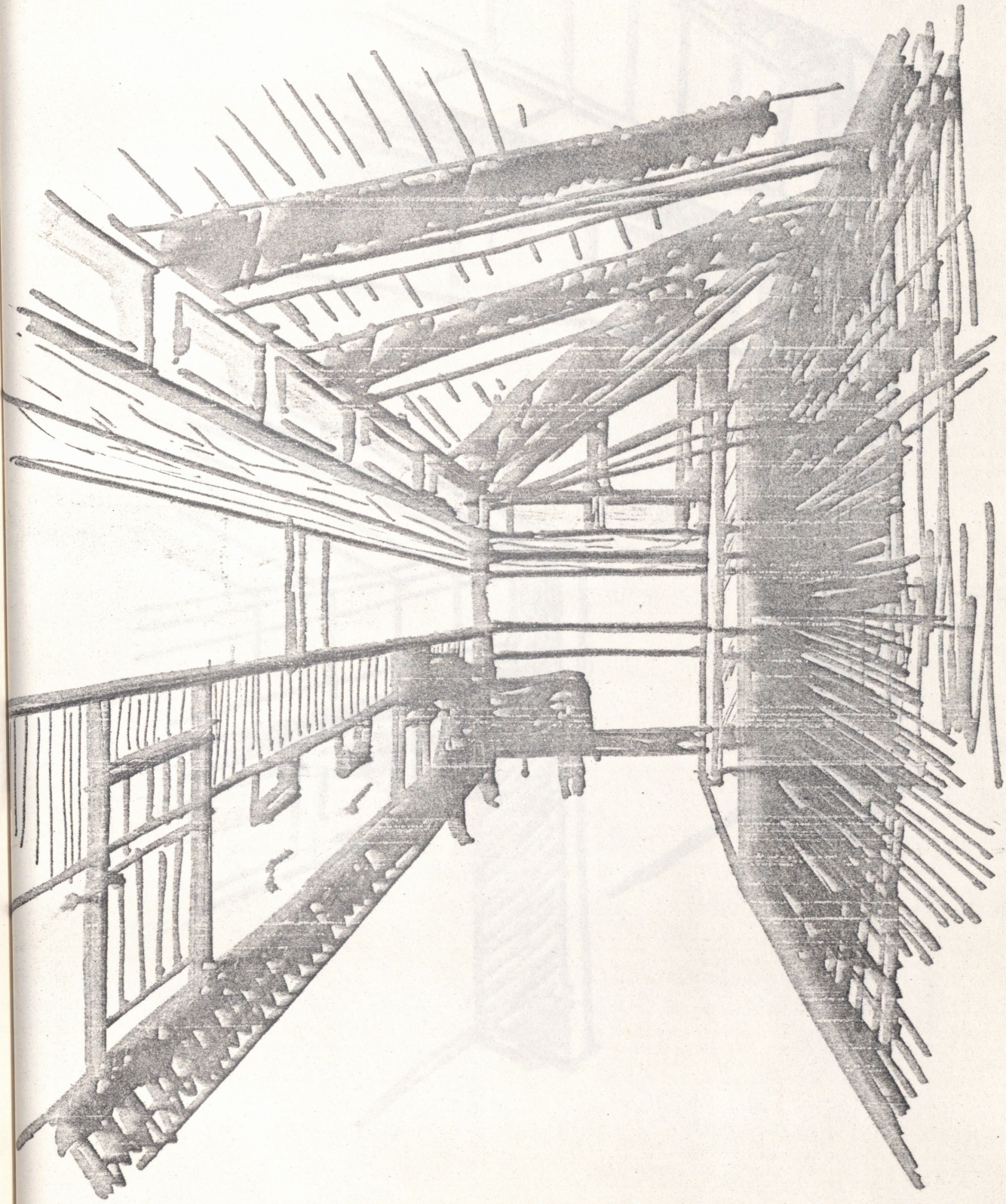
A-4

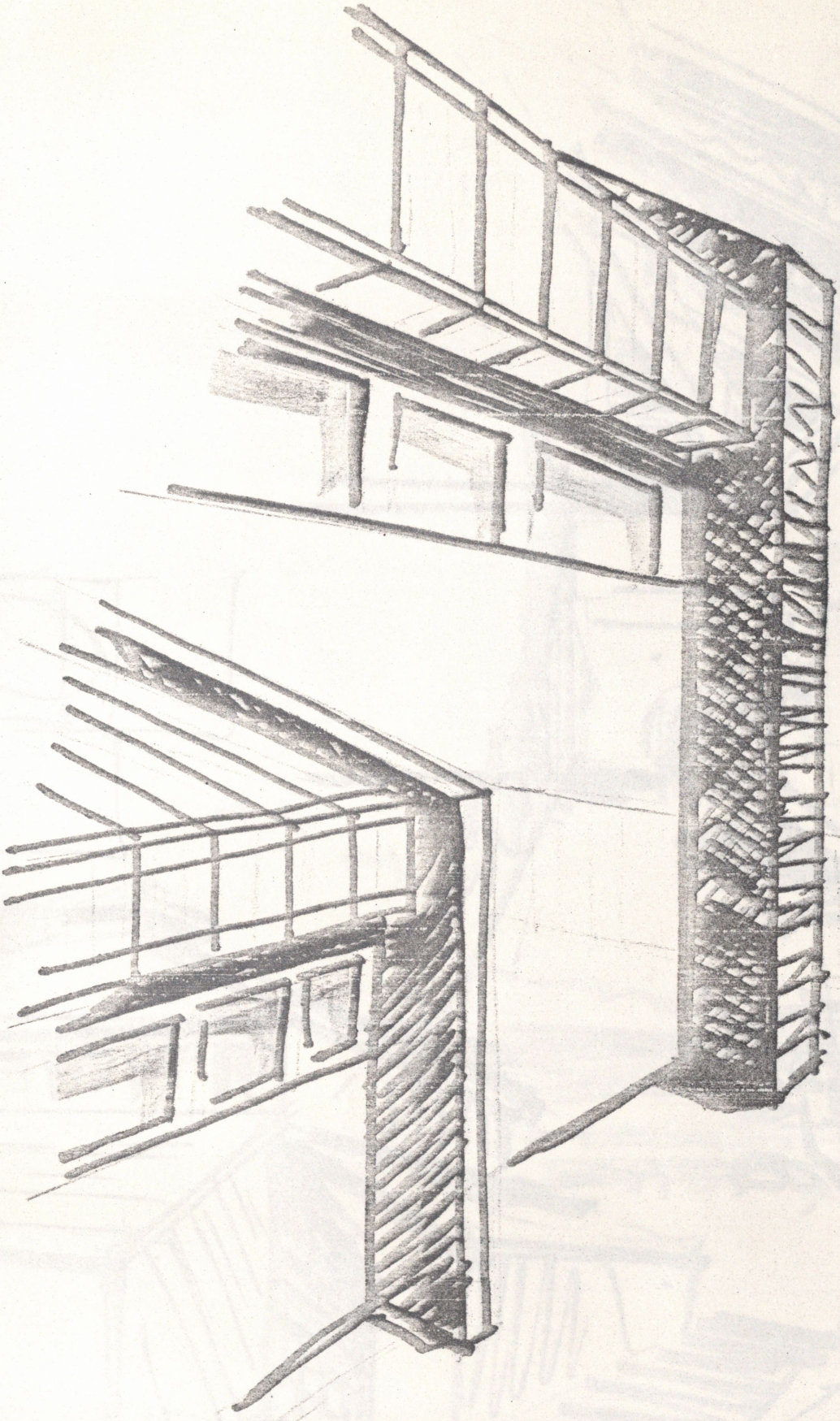


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LIST OF FIELD REVIEWS

Quinta Horse Ranch - Thoroughbred breeders, Lewis Beard - manager

Inverness Horse Ranch - Quarter Horse Trainers, Mike Lund - manager,
Barney Hines - trainer

Jim Lodge - campus sanitarium

Dr. Jack Catlin - Vet Research Lab - Veterinarian

Dr. Chuck Milne - Ag Engineering

Mr. Sandy Gagnon - Animal Science - Horse Management

Dr. O. Thomas - Animal Science - Feeds and Feeding

Doug and Nancy Dear - Quarter Horse breeders

SHOWS:

Winter Fair 1975 - Horse Show

4-Dot Ranch - Horse Show

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