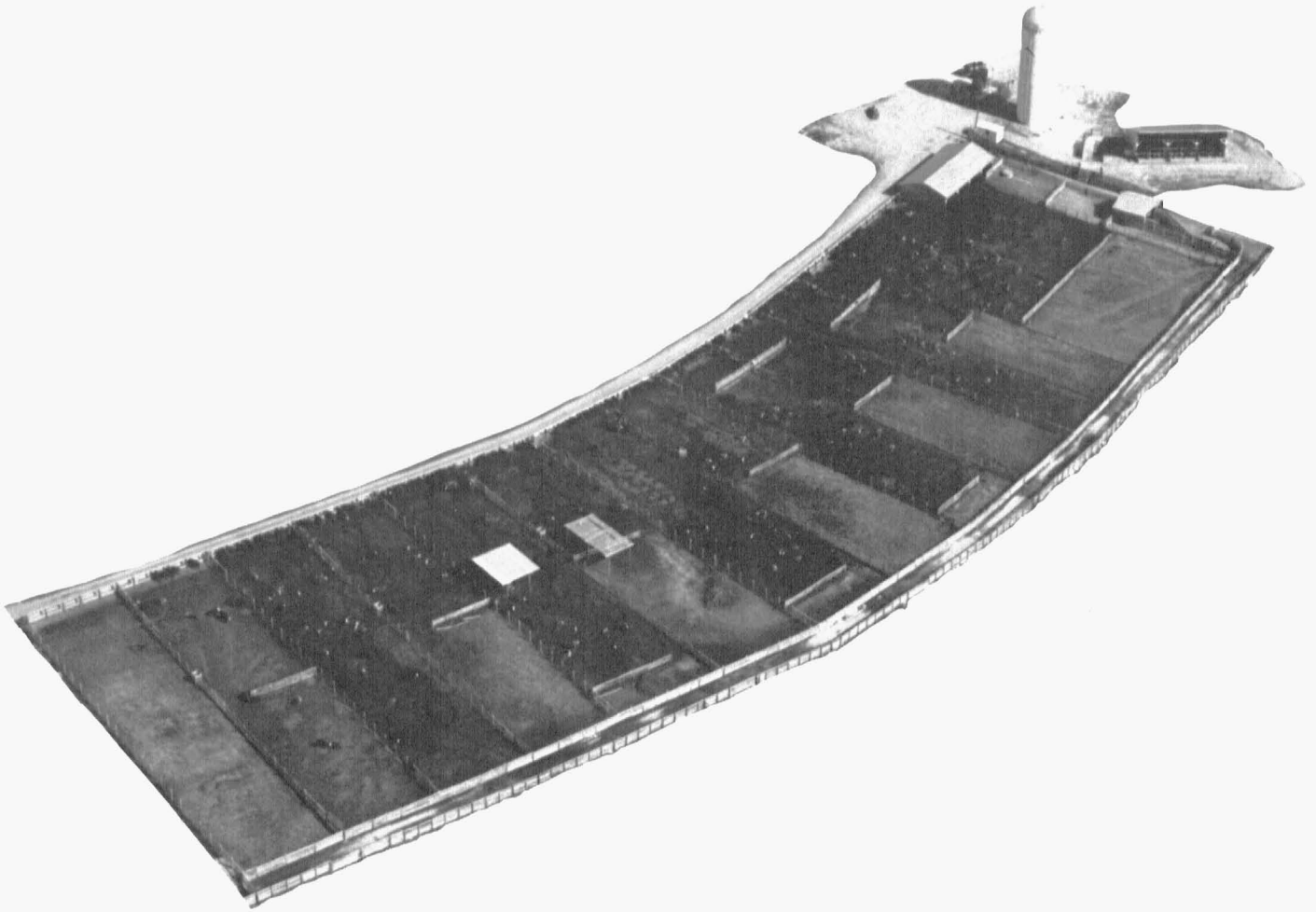
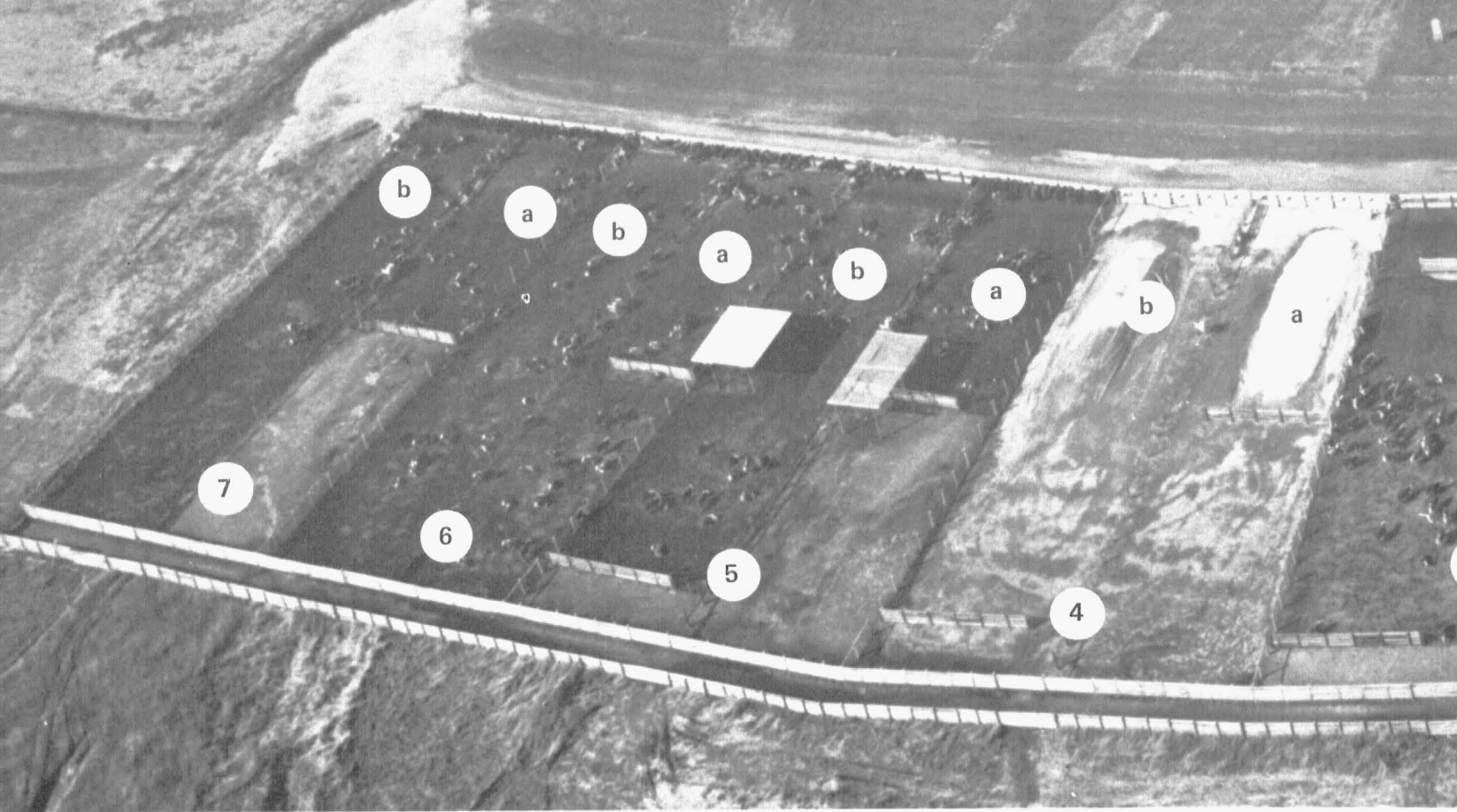


Report Second Year Tests  
Weldon Springs Experimental Feedlots

# CATTLE FEEDLOT FACILITIES And MANAGEMENT





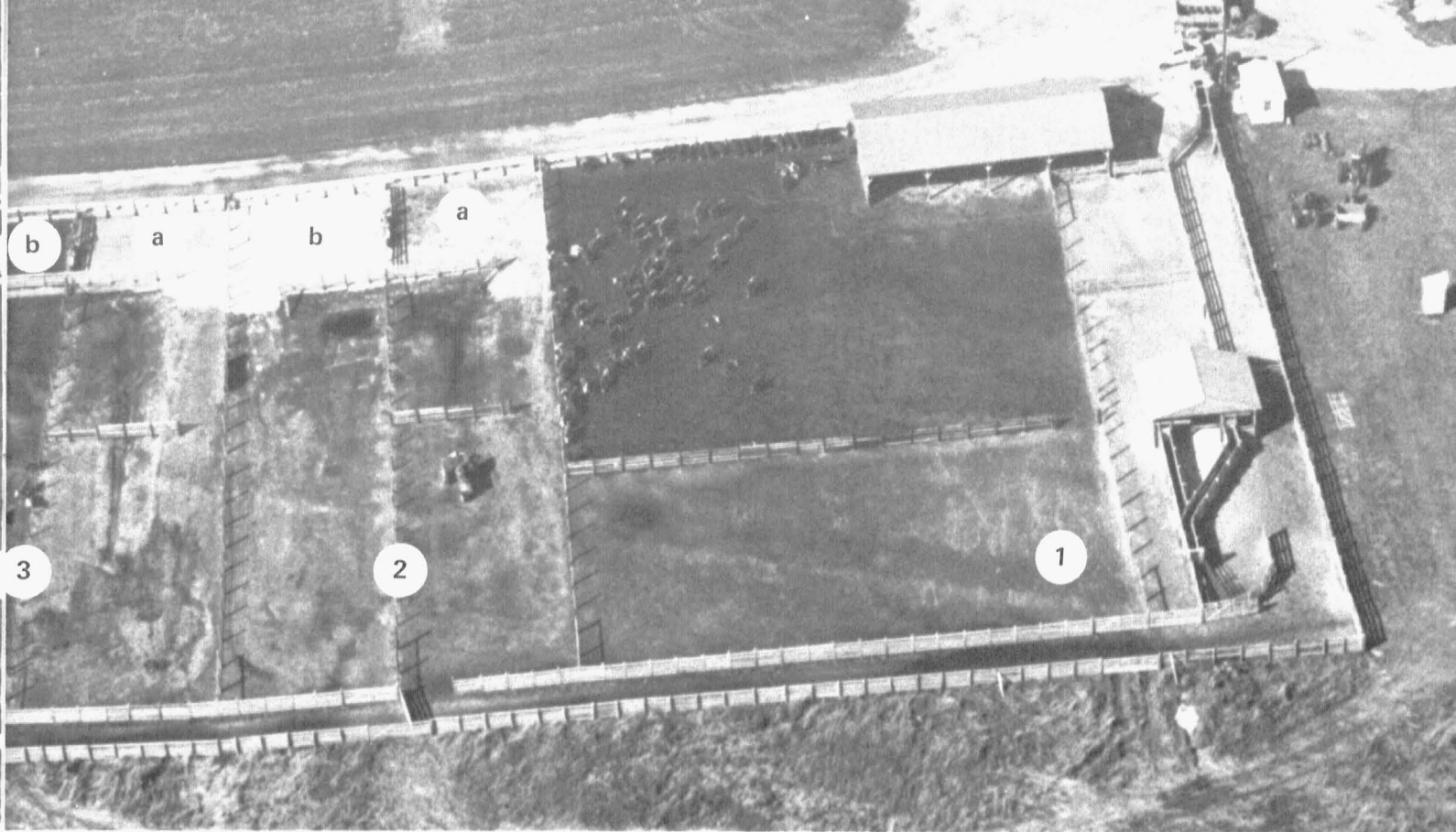
# CATTLE FEEDLOT FACILITIES AND

## **A Progress Report on the Second Test at the University's Weldon Spring Experimental Feedlots.**

This is a report of the second test wherein the effects of facilities upon the performance of cattle were measured. Weaner calves were fed a growing ration for 124 days and then a finishing ration until the cattle graded U.S. Good and Choice. The same ration was fed to all cattle and they were handled

alike so that differences in performance could be attributed to differences in facilities.

In the first test, 1965-66, seven lots were used. In this test, six of the original seven lots were divided equally. The stocking rate was not the same: it was varied to permit a study of bunk space effects upon



*Weldon Springs experimental feed lots. See next page for description of lots.*

# MANAGEMENT STUDY

By Albert J. Dyer, *Dept. of Animal Husbandry*  
Albert Kennett, Graduate Student, *Animal Husbandry*  
Harold V. Walton, *Dept. of Agricultural Engineering*  
Robert Finley, *Dept. of Agricultural Economics*

performance. The average square footage of lot space per head was the same in all lots, accomplished by appropriate cross fencing. The 1966-67 winter was very mild and lot conditions were generally good. The results obtained are applicable only to similar weather conditions.

Drawings on the following page show how the lots differed from one another. The main features of each lot are listed along with a summary of construction inputs.

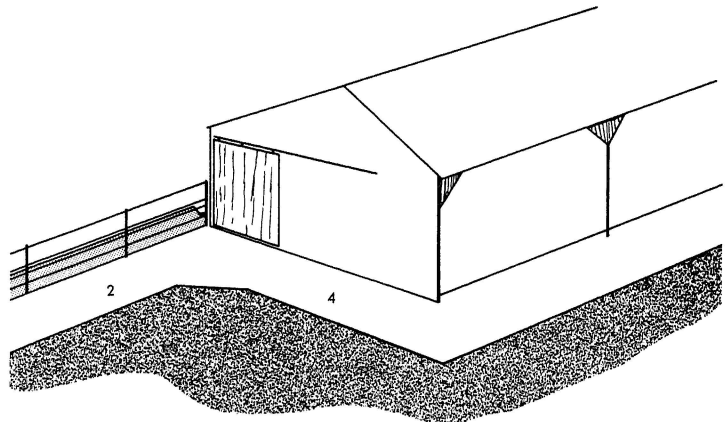
The remainder of the report gives a more detailed account of results of the second test.

# Description of Facilities

## LOT #1 - DISTINCTIVE FEATURES

1. 30' x 48' Clear Span Shed
2. 12' Concrete Apron Along Feed Bunk
3. 15' Concrete Apron Along Front of Shed with 3' Extending into Interior
4. 10' Concrete Apron Connecting Feed Bunk Apron with Shed Apron

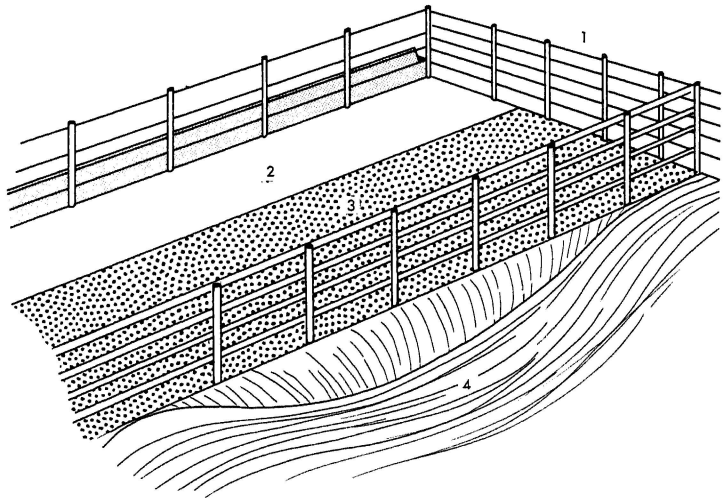
MATERIALS & EQUIPMENT		LABOR	
	<u>Costs</u>		<u>Hours</u>
Fencing	\$ 359	Fencing	307
Feed bunks & concrete area	852	Concrete & bunks	141
Water system	231	Site preparation	30
Equipment charge	103	Water installation	43
Shed	1271	Other	12
		Shed Construction	370
<b>Total</b>	<b>\$2816</b>	<b>Total</b>	<b>903</b>



## LOT #2 - DISTINCTIVE FEATURES

1. Cattle Confined to 36' Width
2. 12' Concrete Apron Along Feed Bunk
3. 24' Wide Limestone Area
4. Manure Storage Pit

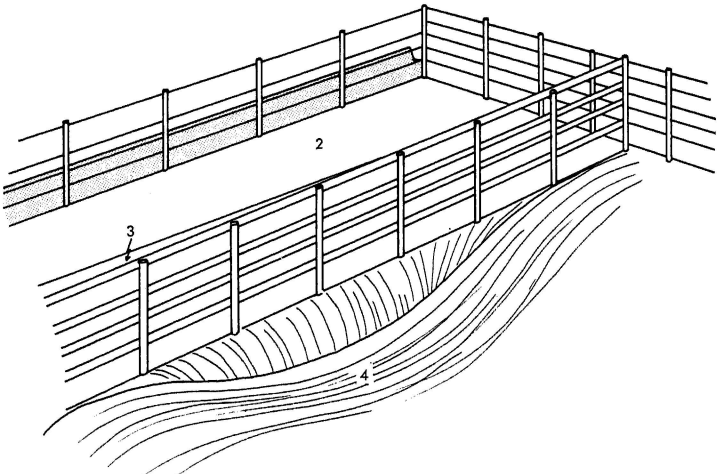
MATERIALS & EQUIPMENT		LABOR	
	<u>Costs</u>		<u>Hours</u>
Fencing	\$ 412	Fencing	254
Feed bunk & concrete area	539	Concrete & bunks	91
Water system	231	Site preparation	41
Equipment charge	103	Water installation	43
Rock & lime	26	Others	12
<b>Total</b>	<b>\$1311</b>	<b>Total</b>	<b>441</b>



## LOT #3 - DISTINCTIVE FEATURES

1. Cattle Confined to 27' Width
2. 12' Concrete Apron Along Feed Bunk
3. 15' Concrete Slab with 3/4" per Ft. Slope
4. Manure Storage Pit

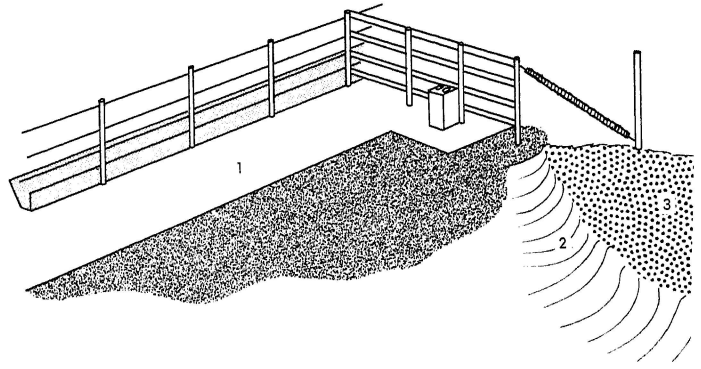
MATERIALS & EQUIPMENT		LABOR	
	<u>Costs</u>		<u>Hours</u>
Fencing	\$ 459	Fencing	277
Feed bunk & concrete area	839	Concrete & bunks	139
Water system	231	Site preparation	41
Equipment charge	103	Water installation	43
		Others	12
<b>Total</b>	<b>\$1632</b>	<b>Total</b>	<b>512</b>



LOT # 4 - DISTINCTIVE FEATURES

1. 12' Concrete Apron Along Bunk
2. 30' x 42' Mound
3. Top 24' Width of Mound Covered with Limestone

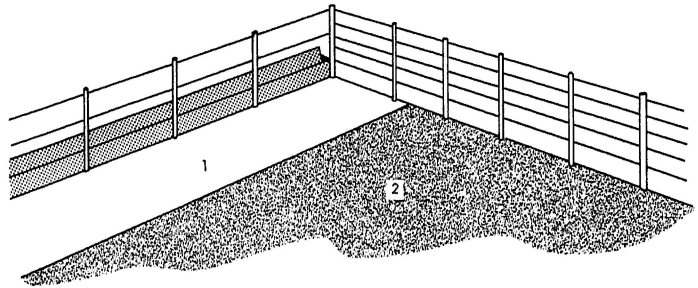
MATERIALS & EQUIPMENT		LABOR	
	<u>Costs</u>		<u>Hours</u>
Fencing	\$ 383	Fencing	283
Feed Bunk & concrete area	584	Concrete & bunks	91
Water system	231	Site preparation	53
Equipment charge	103	Water installation	43
Lime (for mound)	81	Others	12
<b>Total</b>	<b>\$1382</b>	<b>Total</b>	<b>482</b>



LOT # 5 - DISTINCTIVE FEATURES

1. 12' Concrete Apron Along Bunk
2. Dirt Lot
3. Sun Shades

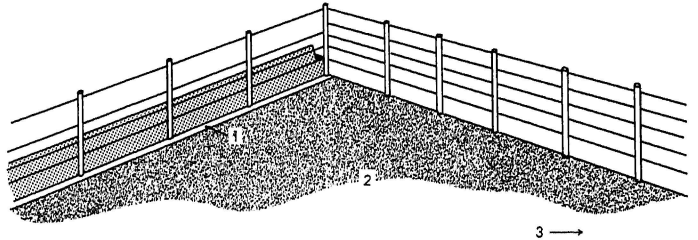
MATERIALS & EQUIPMENT		LABOR	
	<u>Costs</u>		<u>Hours</u>
Fencing	\$ 376	Fencing	279
Feed bunk & concrete area	584	Concrete & bunks	91
Water system	231	Site preparation	30
Equipment charge	103	Water installation	43
<b>Total</b>	<b>\$1294</b>	<b>Total</b>	<b>455</b>



LOT # 6 - DISTINCTIVE FEATURES

1. 2' Concrete Apron Along Bunk
2. Dirt Lot
3. Pasture Access

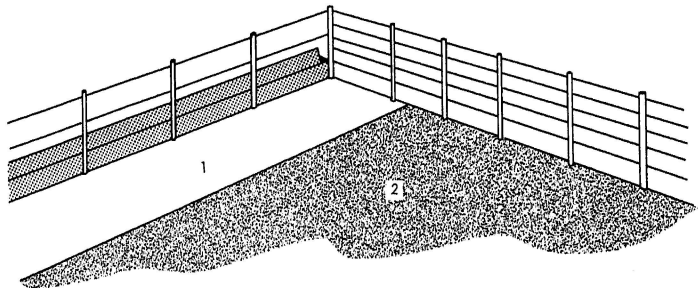
MATERIALS & EQUIPMENT		LABOR	
	<u>Costs</u>		<u>Hours</u>
Fencing	\$ 345	Fencing	254
Feed bunk & concrete area	392	Concrete & bunks	55
Water system	231	Site preparation	30
Equipment charge	103	Water installation	43
<b>Total</b>	<b>\$1071</b>	<b>Total</b>	<b>394</b>



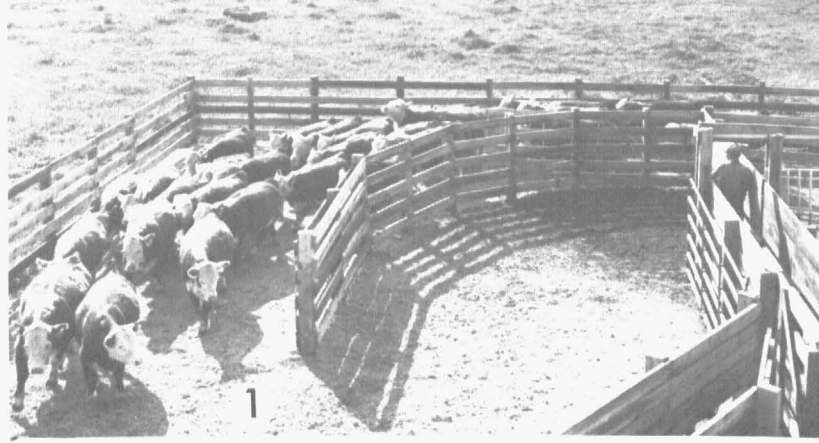
LOT # 7 - DISTINCTIVE FEATURES

1. 12' Concrete Apron Along Bunk
2. Dirt Lot
3. Sun Shades
4. Pasture Access

MATERIALS & EQUIPMENT		LABOR	
	<u>Costs</u>		<u>Hours</u>
Fencing	\$ 332	Fencing	254
Feed bunks & concrete area	584	Concrete & bunks	91
Water System	231	Site preparation	30
Equipment charge	103	Water installation	43
<b>Total</b>	<b>\$1250</b>	<b>Total</b>	<b>430</b>



# Handling of the Cattle



Hereford steer calves of good and choice grade were purchased from the Cato-Gage Ranch, Marathon, Texas and delivered on October 22, 1966.

## Treatment Upon Arrival

Cattle were brought to a full feed of corn silage as quickly as possible. They were fed hay only on the first day. On the second day fresh silage was added to the bunks in the following manner: two pounds per head were supplied until that was cleaned up, then this was replenished until the cattle reached a full feed of silage during the third day. Protein supplement at the rate of 1 pound to 25 pounds of silage was provided. Vitamin A and aureomycin were added to the water supply so that an average of 40,000 USP of Vitamin A and 75 milligrams aureomycin were provided daily per head.

Each steer was tattooed, ear tagged and implanted with 24 milligrams Stilbestrol November 3. Cattle were to be assigned at random to lots on November 17. However, shortly before that date, an outbreak of Red Nose occurred. This sickness and treatment delayed the beginning of the official test until December 15, 1966.

## Sickness and Death Loss

A total of ten head of cattle died. This was 2.25 percent of the original total. One head died from shipping fever about two weeks after arrival: no other cases of shipping fever occurred. "Red Nose" accounted for six others. One died from listeriosis in February and another in May. One died in April from actinobacillosis.

The outbreak of "Red Nose" was put under control through the use of IBR vaccine and good management.

## Allocation to Lots

Cattle were assigned at random to lots. The difference in average weights between high and low lots was 30 pounds; the range was from 490 to 520 pounds.

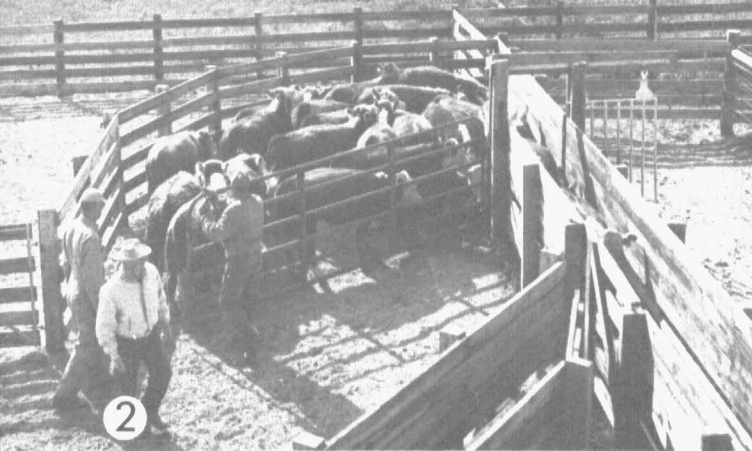
## Wintering

A growing ration was fed once a day from December 15, 1966, to April 18, 1967. It consisted of corn silage full fed and protein supplement at a ratio of 1 pound of supplement to 25 pounds silage. Protein supplement consisted of the following ingredients, pelleted:

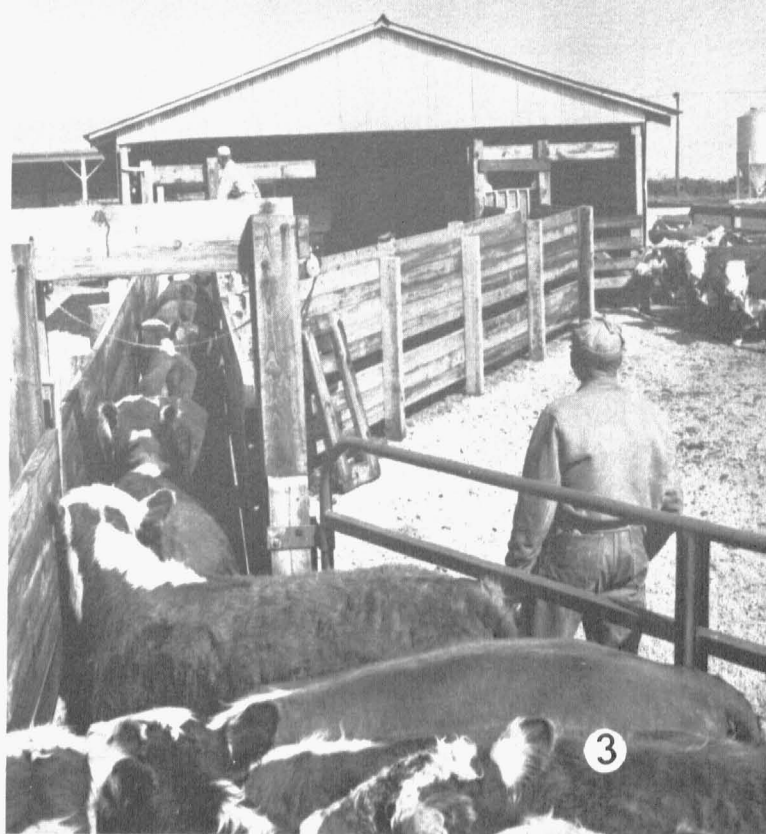
25%	ground shelled corn
50%	soybean oil meal
25%	urea premix
a)	28.3 % urea
	32.65% limestone
	13.06% dicalcium phosphate
	.96% Vitamin A; 10,000 u/gm.
	25.03% trace mineral salt mixture
	consisting of:
	Salt 98.91 %
	MnSO <sub>4</sub> .50 %
	FeCitrate .225%
	Copper .043%
	Iodine .011%
	Cobalt .011%
	Zinc .3 %

## Finishing Ration

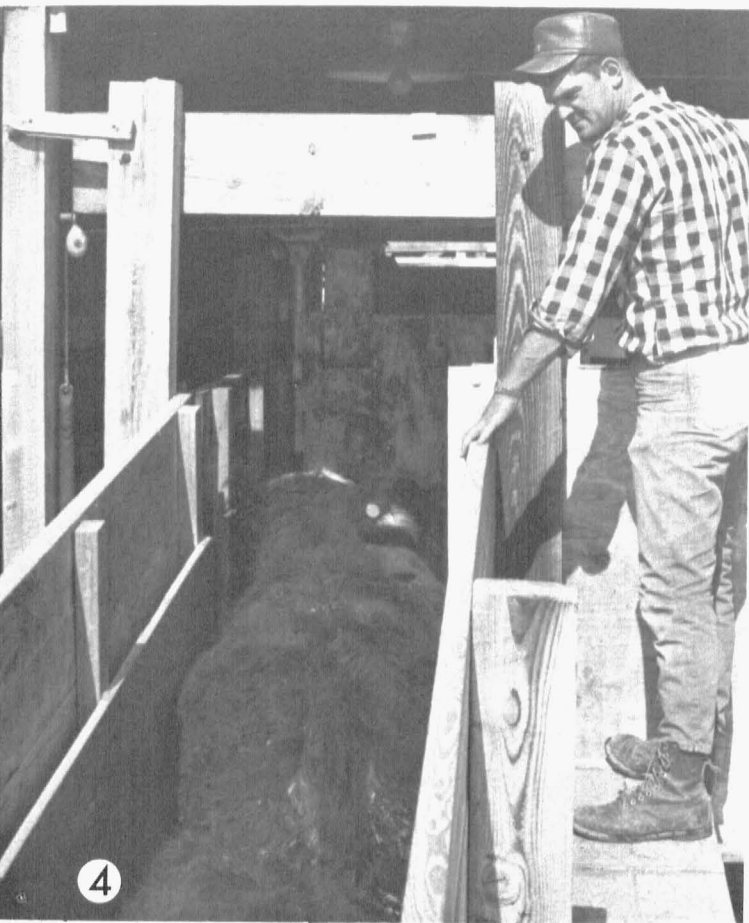
The finishing ration consisted of ground ear corn and protein supplement mixed at a ratio of 10 pounds corn to 1 pound of supplement. The supplement in the growing and finishing phase was the same except that in the finishing phase 5 milligrams of Stilbestrol



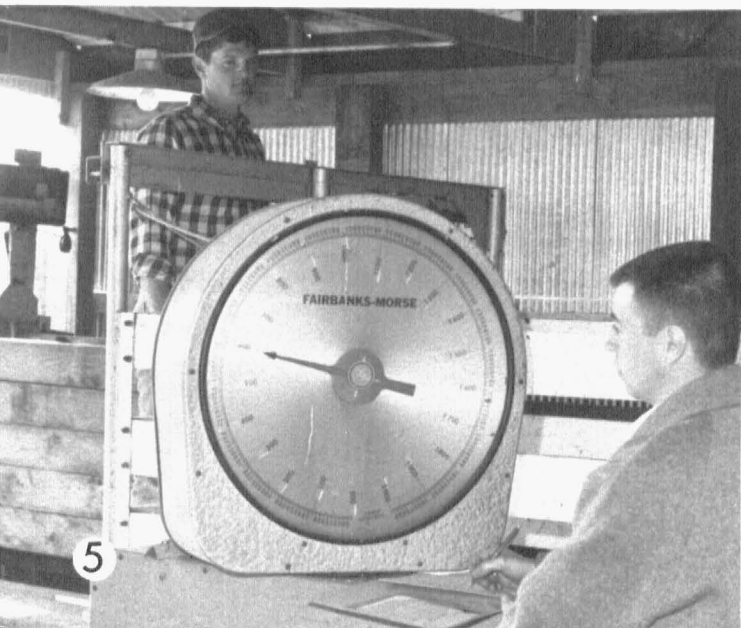
2



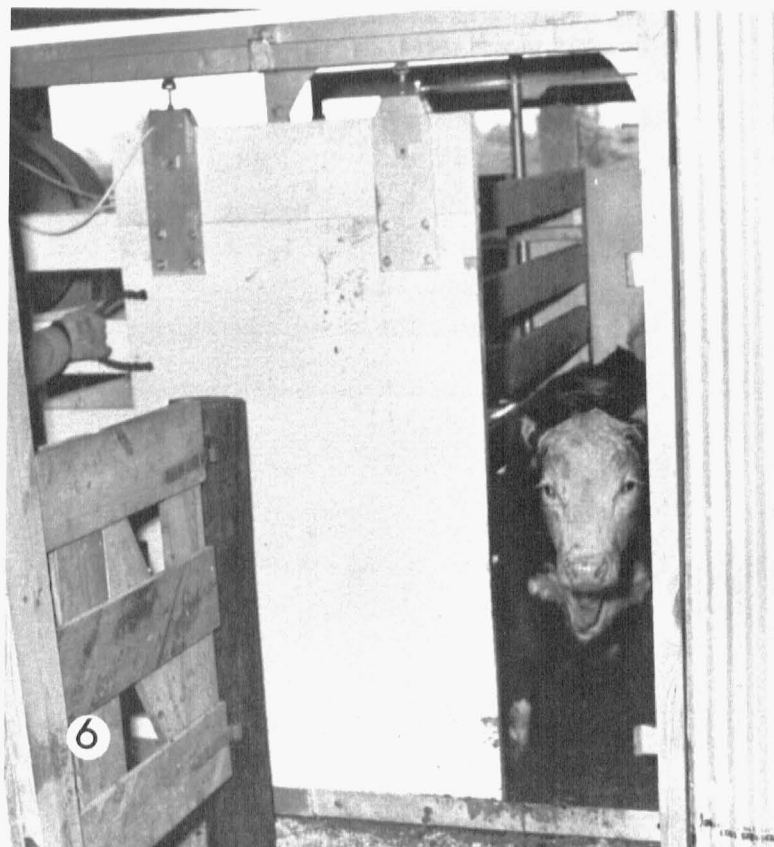
3



4



5



6

*Pictures 1 to 6 show steps in the weighing process using the working corral that appears at right in the aerial photo on pages 2 and 3. Cattle were weighed individually every 28 days.*



*Precast concrete feed bunks were set in position with a wench truck.*

were added per pound of supplement. The finishing ration was fed from April 19 to August 8, 1967.

### General Feeding Procedure

All cattle were fed alike according to appetite. The amount to feed daily was indicated by the amount of feed either refused or "cleaned up" on the preceding day. The intent was to always have some feed before the cattle.

A self-unloading truck equipped with a batch mixer and electronic load cells was used to weigh, mix, and deliver feed to the bunks. Whenever possible, the total amount of feed for all cattle was mixed as a single batch.

The end of the growing period was the beginning of the finishing period. Corn silage in ever-decreasing amounts was fed with ever-increasing amounts of the finishing ration. After 13 days silage was completely omitted from the ration.

### Report of the test

Cattle made relatively good gains during the growing phase when the ration consisted of good corn silage and protein supplement. Gains ranged from an average of 1.57 to 1.89 pounds per head daily. Detailed figures for each lot are given in the appendix table.

There was very little difference in the performance of the cattle. The bunk space gave these results:

<i>Feed Bunk Space and Performance During Growing Phase</i>	
Bunk Space per Steer	A.D.G.
1 foot	1.71
9 inches	1.57
2 feet	1.75

During the finishing period of 112 days, daily gains ranged from 1.68 to 1.85 pounds; this rate was unsatisfactory. All causes for the slow gain aren't

known—one important cause was frequent rains which made the feed in unprotected bunks, unpalatable. The difference in performance between lots was not significant. The difference in bunk space did not affect the rate of gain. The shades did affect performance.

### Shade Effects

Cattle which had access to shades made faster gains from 11 July to 8 August.

#### *Effect of Shelter or Shade on Performance of Cattle*

	Lot 1 (with shed)	Lot 5A&B (shades)	Other Lots (No shade)
Avg. Daily Gain (lbs.)	1.5	1.22	1.19

Temperatures during this period ranged from 75° to 98°; on 16 days out of 28 temperatures exceeded 90°.

### Marketing

It was the intent to market the cattle at the highest possible price and with minimum bruises.

As cattle were weighed off test on the 112th day of full feeding they were grouped as follows:

1. Group 1—1000 pounds and over—40 head.  
These cattle were big, grading choice.
2. Group 2—965 to 1000 pounds—72 head.  
These cattle in general seemed fatter (slightly) than Group 1.
3. Group 3—less than 965 pounds—323 head.

Within two weeks, Group 3 was divided into two groups: one group of 227 head similar in grade and weight and another of 96 head containing the misfits. These last cattle did not fit any distinct pattern—some were pony-type; some were tall and narrow; they did not fit any common denominator as to size, finish or type.



Thus, two new groups were formed:

Group 3—a new group containing uniform cattle (227 cattle).

These cattle were smaller than Groups 1 and 2, but seemed fatter than many in Groups 1 and 2.

Group 4—misfits (96 cattle)

Groups 1 and 2 were the first to be offered. Two packing company cattle buyers from St. Louis made offers on the cattle. Later, an Ottumwa, Ia., company bid on some cattle. One company was willing to buy on grade and yield and also on a live weight basis. Each prospective buyer wanted to settle on the basis of weight upon arrival at his receiving pens less a pencil shrink from 2 to 3 percent. If bought on a grade and yield basis, the hot carcass weight would be pencil-shrunk 2½ percent and loss from bruises would be deducted. All grading would be done by the meat packing company graders. An Ohio meat packer was willing to buy cattle on a live weight basis and also on a grade, yield, and cuttability basis. The plant is more than 400 miles from the feed yard.

The first cattle were sold to the Ohio meat packer on the basis of weight off the truck at a price agreed upon at the feed lot. Carcass yield and grade reports were obtained; no bruises were reported. The next group was sold at the St. Louis Central market to an order buyer who registered no complaints. Next, cattle were sold at the yards to a St. Louis local packer. Swift and Company bought the next draft of cattle at the yards, wanted more, and we sold them more on a bought-to-arrive-basis.

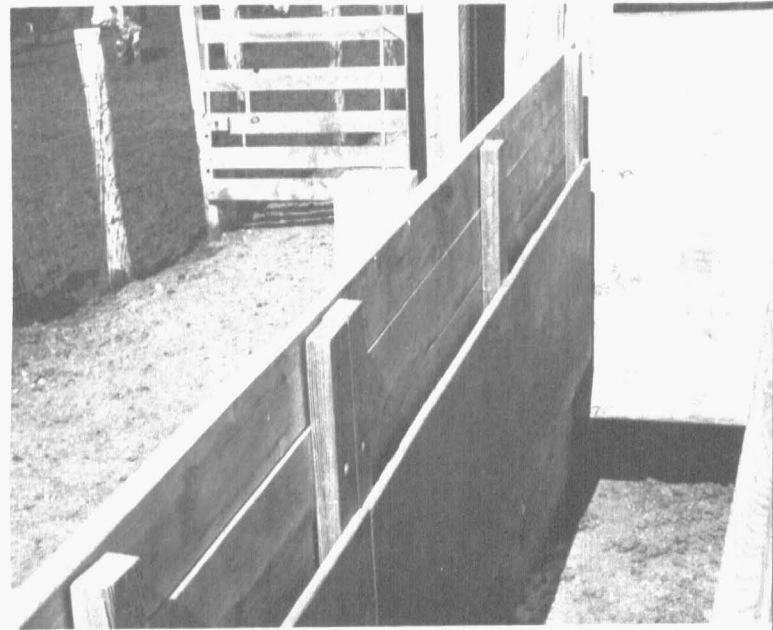
At about this same time, Independent Packing Company bought cattle on a grade and yield basis. Cattle sold to Independent were weighed upon arrival even though this was not the basis of settlement; Independent wanted this information and it was helpful to us. Our experience on grade and yield selling, where we could make valid comparisons with other marketing methods, resulted in greater net return figured back on a live weight basis, and the marketing costs were less. In our marketings, we avoided bruise incidence of consequence until our last shipment of the smaller, non-uniform, poor doing, bad temperament cattle. Total costs at the central market amounted to 30 cents per hundred live weight.

### **Facilities and Equipment**

The feedlots drain southeast on a 6 percent slope. Linear feet of bunk space varied from 9 inches to 2 feet. Bunks were assembled from precast concrete

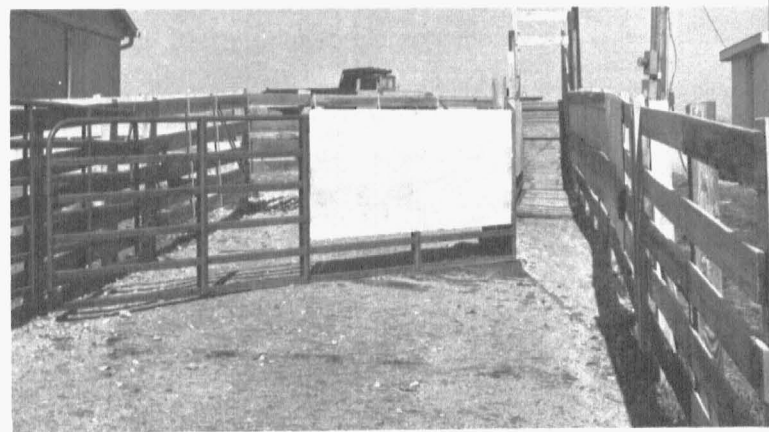


*A mound was provided in lot 4. It is covered with limestone and connects with paved apron in front of feed bunks.*



*Working alleys were narrowed from 26 inches to 23½ inches to prevent cattle from turning around.*

*Improved loading facilities protected market cattle from being bruised as they were loaded on trucks.*





*Spring loaded cables make good dividing fences. Six strands would be better; some animals got through this five-strand fence.*



*Manure pile-up develops around automatic waterers and dividing fences.*

units. A three-foot gap was left in the bunk line at each lot division for cleanout purposes and easy access to the lots.

Automatic waterers in the fence line of every other lot accommodated two lots. A concrete pad around each waterer connected to the feed bunk paving. Water spillage was minimized by reducing water pressure to 30 pounds per square inch. Waterers caused some manure pile-up around them and often a wet, sloppy condition.

Where only a 2-foot strip of concrete was used along the feed bunk, excessive erosion occurred at the edge of the paved strip. The result: cattle would stand full length on the two-foot strip and turn their heads to eat. Although the eroded area was filled with gravel, the condition continued to recur.

Cattle had approximately 200 square feet of space per head in all lots. Manure movement from the extended concrete and limestone areas in lots 2 and 3 was very limited. Manure piled up back of a 6- to 8-foot wide clean area at the bunks; cattle traffic kept this area clean. Cattle preferred to lie in this clean area.

Limestone covered mounds stayed dry and firm when lots became muddy. Cattle used these mounds

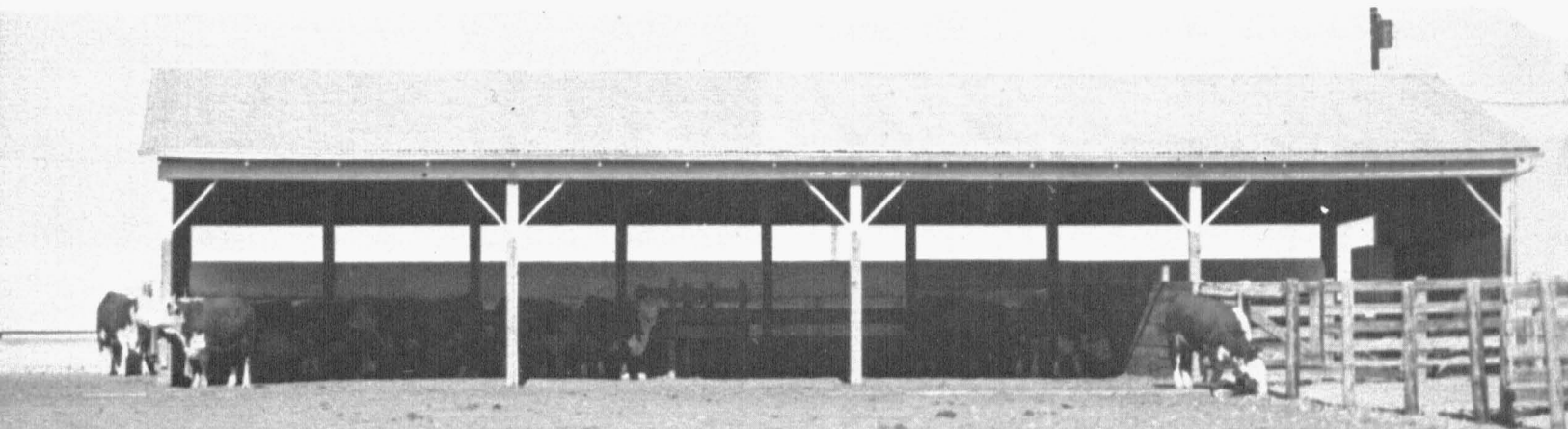
a large portion of the time. Two years continuous use of the mounds has, however, resulted in some deterioration at the edge of them.

The sun shades in lots 5A and 5B were built to different standards. One shade was covered simply with snow fencing. The other was covered with sheet metal which was painted white on top to reflect the sun and black on the bottom to absorb radiation from surrounding ground surfaces and the cattle.

Fences constructed of five cables spaced ten inches apart failed to prevent a few cattle from slipping through when animals either became excited or were crowded against them. Six strands appear more desirable. The end panel posts for a cable fence need to be anchored in concrete or by special anchors since all fence forces are carried to the end panels. Strong spring loaded cables make maintenance of the fence both easy and cheap. Cables having  $\frac{1}{8}$  inch diameter were easier to keep tight than cable  $\frac{3}{8}$  inch in diameter.

A study of cross fences was begun. The following types of cross fences were used: (1) woven wire fence with an electric barbed wire set 20" out; (2) a six strand barbed wire fence, with one strand electric; (3) a 47" woven wire fence with a barbed wire

*Cattle in lot 1 had access to this shed.*





*Spillage from waterers led to some erosion of fill adjacent to the concrete aprons.*



*Erosion of fill resulting from too narrow apron presents an awkward situation (lot 6).*

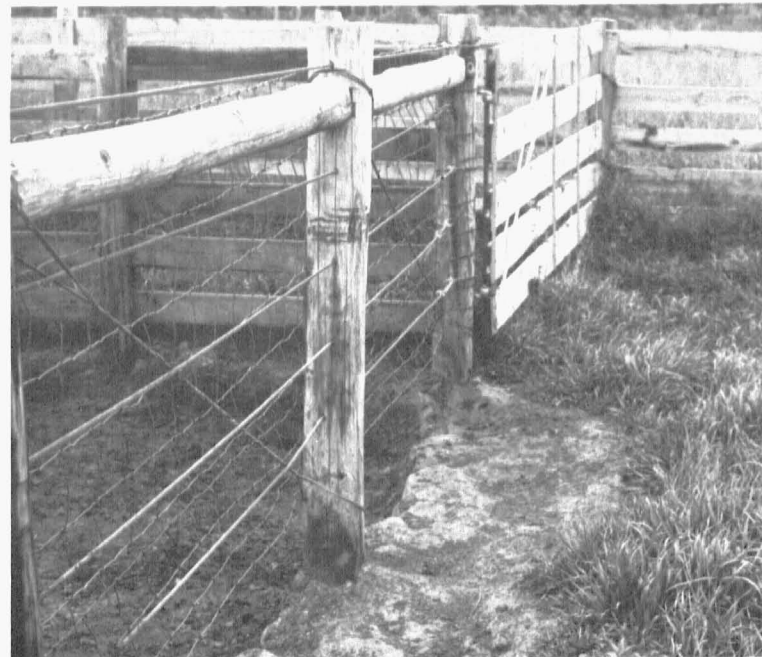
along the top; (4) a woven wire fence with a crash board on one side; (5) a six strand barbed wire, none electrically charged, and (6) a six strand barbed wire with a crash board.

Drawings on page 12 describe the details of these fences.

The barbed wire without electrical charge proved to be the least effective. Problems arose with loose strands as the cattle continuously rubbed on them. This also resulted in some broken strands. Both the barbed wire electric fence and the woven wire with an electric barbed wire set out 20 inches proved the most effective. Some maintenance is required on the electric fences. The woven wire and barbed wire fence with a crash board seemed very effective except for an occasional broken board. The straight woven wire fence required constant tightening and repair.

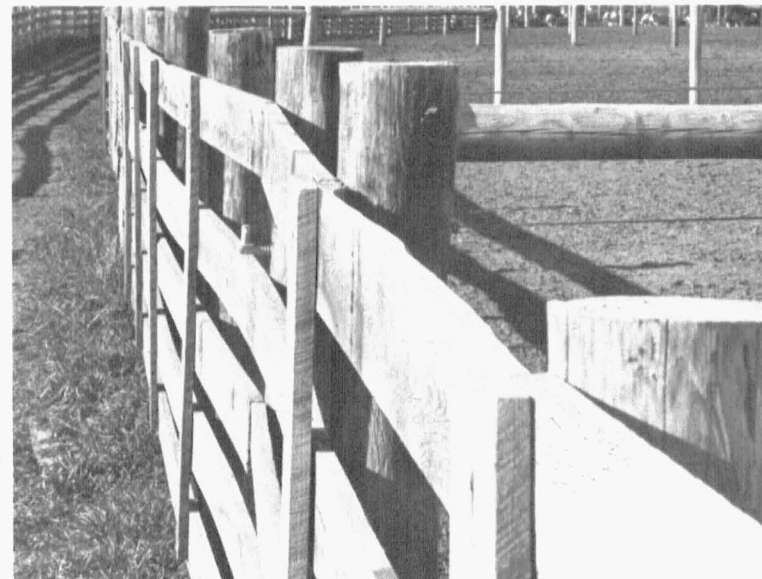
Back rubbers, recharged as needed with toxaphene and fuel oil, controlled external parasites in both the winter and summer. During wet weather, muddy conditions often result around the back rubbers due to their frequent use.

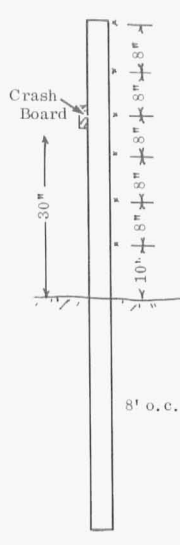
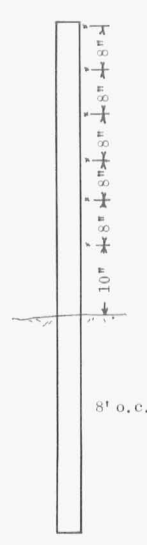
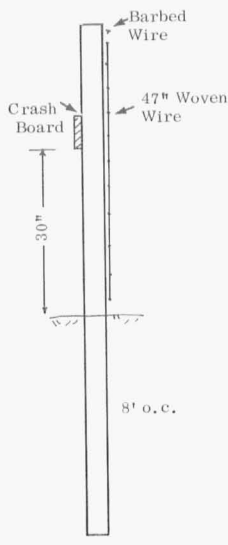
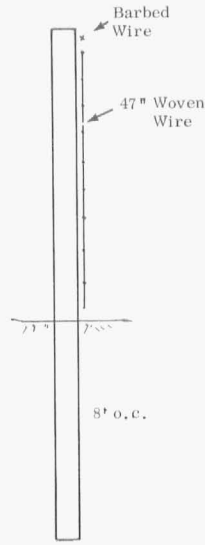
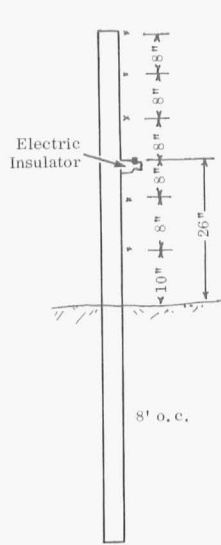
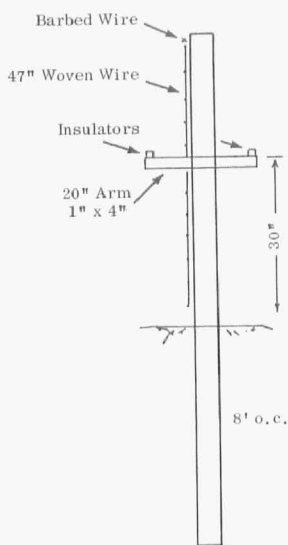
In the first year's test, many problems were encountered in attempting to load the cattle by driving them directly into and up the loading chute. As a result, several changes were made in the loading facility. First a narrow alley about 30 feet long was built. This alley was then boarded up with plywood to protect the cattle from rough, sharp edges and corners. A gate was angled across the driveway approaching the alley to direct the cattle into the alley. This gate could then be closed behind the cattle. Cattle were loaded in small groups with as little handling as possible. These precautions resulted in a minimum of bruises on 435 head of cattle sold.



*Extra support was needed for boundary fences as cattle attempted to graze outside the lots.*

*End post movement in cable fence is evident below, suggesting need to anchor posts with concrete or special anchors.*





LOT 2 FENCE DETAIL

WOVEN WIRE & ELECTRIC  
 Use Pressure Treated Posts  
 4" Top Diameter  
 8' Long  
 Use Double Brace Panel Each End  
 Place Barbed Wire 3" Above Woven Wire  
 Electric Wire of Light Weight Barbed Wire  
 Man Hours Labor - 44 1/2  
 Cost of Materials and Labor - \$113.30

LOT 3 FENCE DETAIL

BARBED WIRE & ELECTRIC  
 Use Pressure Treated Posts  
 4" Top Dia., 8' Long  
 Use Double Brace Panels each end  
 Electric Wire to be regular barbed wire  
 Man Hours Labor - 47  
 Cost of Material and Labor - \$91.50

LOT 4 FENCE DETAIL

WOVEN WIRE  
 Use Pressure Treated Posts  
 4" Top Dia., 8' Long  
 Use Double Brace Panels Each End  
 Place Barbed Wire 3" Above Woven Wire  
 Man Hours Labor - 32 1/2  
 Cost of Material and Labor - \$95.10

LOT 5 FENCE DETAIL

WOVEN WIRE & CRASH BOARD  
 Place Crash Board On Lot A Side  
 Use Pressure Treated Posts  
 4" Top Dia., 8' Long  
 Use Double Brace Panels Each End  
 Place Barbed Wire 3" Above Woven Wire  
 1" x 6" Crash Board, rough, Pressure Treated  
 Man Hours Labor - 51  
 Cost of Material and Labor - \$136.20

LOT 6 FENCE DETAIL

BARBED WIRE  
 Use Pressure Treated Posts  
 4" Top Dia., 8' Long  
 Use Double Brace Panels Each End  
 Man Hours Labor - 40  
 Cost of Materials and Labor - \$96.00

LOT 7 FENCE DETAIL

BARBED WIRE & CRASH BOARD  
 Use Pressure Treated Posts  
 4" Top Dia., 8' Long  
 Use Double Brace Panels Each End  
 1" x 6" Crash Board, rough, Pressure Treated  
 Man Hours Labor - 35 1/2  
 Cost of Material and Labor - \$101.75

*These are the sun shades that are being tested in lot 5. Left, sheet metal top; right, snow fence top. (See page 8 for some test results.) This lot was divided for the present test.*



# Appendix

Table 1  
 FEED INPUT-OUTPUT RELATIONSHIPS TO CATTLE FEEDING--GROWING PERIOD  
 December 15, 1966 - April 18, 1967 (124 days)  
 All weights represent averages in pounds unless stated otherwise

Lot No.	1	2A	2B	3A	3B	4A	4B	5A	5B	6A	6B	7A	7B
No. Cattle	80	20	40	20	40	20	40	20	40	20	38 <sup>(a)</sup>	20	40
Wt. April 18	709.6	735.5	705.4	707.9	702.1	722.0	709.6	716.5	732.1	716.0	730.0	699.5	684.3
Wt. Dec. 15	500.9	519.5	507.5	494.8	496.7	496.7	490.4	499.4	515.0	500.0	496.2	496.4	490.1
Total Gain	208.7	216.0	197.9	213.1	205.4	225.3	219.2	217.1	217.1	216.0	233.8	203.1	194.2
Daily Gain	1.68	1.74	1.60	1.72	1.66	1.82	1.78	1.75	1.75	1.75	1.89	1.64	1.57
Total Feed Fed													
Corn Silage <sup>(b)</sup>	5643	5606	5649	5646	5656	5646	5640	5686	5710	5661	5915	5661	5657
Supplement <sup>(c)</sup>	225	223	225	225	225	225	225	226	227	225	235	225	225
Daily Ration													
Corn Silage	45.5	45.2	45.6	45.5	45.6	45.5	45.5	45.9	46.0	45.7	47.7	45.7	45.6
Supplement	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.8	1.8
Feed / 100 lbs. gain													
Total <sup>(d)</sup>	882	847	932	865	899	818	840	855	858	855	826	930	951
Corn Silage	2703	2595	2854	2748	2753	2505	2572	2619	2630	2620	2529	2787	2912
Supplement	107.8	103.2	113.6	105.5	109.5	99.8	102.6	104.0	104.5	104.1	100.5	110.7	115.8

(a) Two steers died at beginning of this period; one with red nose and one with listeriosis (circling disease).

(b) Corn silage composition:      Moisture      Protein      Fat      Fiber      Ash  
   69.3            3.36      1.14      6.96      1.8

(c) Protein Supplement - 46% Crude Protein

(d) Converted to air dry feed (90% dry matter)

Table 2  
 FEED INPUT-OUTPUT RELATIONSHIPS TO CATTLE FEEDING--FINISHING PERIOD  
 April 19, 1967 - Aug. 8, 1967 (112 days)  
 All weights represent averages in pounds unless stated otherwise

Lot No.	1	2A	2B	3A	3B	4A	4B	5A	5B	6A	6B	7A	7B
No. Cattle	79 <sup>(a)</sup>	20	40	20	40	20	39 <sup>(a)</sup>	20	40	20	38	20	39 <sup>(a)</sup>
Wt. Aug. 8	915.5	924.0	912.5	901.0	890.7	917.1	911.5	924.4	931.9	921.1	925.2	904.8	883.5
Wt. April 19	709.6	735.5	705.4	707.9	702.1	722.0	709.6	716.5	732.1	716.0	730.0	699.5	684.3
Total Gain	205.9	188.5	207.1	193.1	188.6	195.1	201.9	207.9	199.8	205.1	195.2	205.3	199.2
Daily Gain	1.83	1.68	1.84	1.72	1.68	1.74	1.80	1.85	1.78	1.83	1.74	1.83	1.77
Total Feed Fed/Head													
Corn Silage <sup>(b)</sup>	798	798	798	798	798	798	798	798	798	798	798	798	798
Corn & Cob Meal	1638	1571	1594	1562	1591	1605	1641	1590	1624	1617	1595	1534	1604
Supplement	202	195	197	194	197	198	203	198	200	200	198	191	199
Daily Ration Per Head													
Corn Silage	31.9	31.9	31.9	31.9	31.9	31.9	31.9	31.9	31.9	31.9	31.9	31.9	31.9
Corn & Cob Meal	14.6	14.0	14.2	13.9	14.2	14.3	14.6	14.1	14.5	14.4	14.2	13.6	14.3
Supplement	1.80	1.74	1.75	1.73	1.75	1.76	1.81	1.76	1.78	1.78	1.76	1.70	1.77
Feed/100 lb. Gain													
Total <sup>(c)</sup>	1020	1080	990	1050	1090	1060	1040	990	1040	1010	1050	970	1040
Corn & Cob Meal	795	833	769	808	843	822	812	764	812	788	817	747	805
Supplement	98.1	103.4	95.1	100.4	104.0	101.4	100.5	95.2	100.1	97.5	101.4	93.0	99.8

(a) One steer died with listeriosis; one died with actinobacillosis; one foundered steer was sold.

(b) Fed for only 25 days during the change over period and 12 days while feed truck was broken down.

(c) Pounds of silage fed converted to 90% DM basis; 272 pounds.

Table 3

## INPUT-OUTPUT RELATIONSHIPS TO CATTLE FEEDING--GROWING AND FINISHING COMBINED

Total Period Dec. 15, 1966 - Aug. 8, 1967 (236 days)

All weights represent averages in pounds unless stated otherwise

Lot No.	1	2A	2B	3A	3B	4A	4B	5A	5B	6A	6B	7A	7B
No. Cattle	79	20	40	20	40	20	39	20	40	20	38	20	39
Wt. Aug 8, 1967	915.5	924.0	912.5	901.0	890.7	917.1	911.5	924.4	931.9	921.1	925.2	904.8	883.5
Wt. Dec. 15, 1966	500.9	519.5	507.5	494.8	496.7	496.7	490.4	499.4	515.0	500.0	496.2	496.4	490.1
Total Gain	414.6	404.5	405.0	406.2	394.0	420.4	421.1	425.0	416.9	421.1	429.0	408.4	393.4
Daily Gain	1.76	1.71	1.72	1.72	1.67	1.78	1.78	1.80	1.77	1.78	1.82	1.73	1.67
Total Feed Fed/Head													
Corn Silage	6441	6404	6447	6444	6454	6444	6438	6484	6508	6459	6713	6459	6455
Corn & Cob Meal	1638	1571	1594	1562	1591	1605	1641	1590	1624	1617	1595	1534	1604
Supplement	427	418	422	419	422	423	428	424	427	425	433	416	424
Feed/ 100 lb. Gain													
Corn Silage	1554	1583	1592	1586	1634	1533	1529	1526	1561	1534	1565	1581	1641
Corn & Cob Meal	395	383	393	385	404	382	389	374	390	384	372	376	408
Supplement	103	103	104	103	107	101	102	100	102	101	101	102	108

A Guide For Computing Feed Costs Using Lot 1 As An Example

Amount Fed and its Cost per 100 lbs. Gain at Various Feed Prices

<u>1554 lbs. Corn Silage</u>		<u>395 lbs. Corn and Cob Meal</u>		<u>103 lbs. Protein Supplement</u>	
Price	Cost	Price	Cost	Price	Cost
\$8/ton	\$6.22	\$1.00/bu.	\$5.48	\$3.00/cwt.	\$3.09
		1.10/bu.	6.03	3.50/cwt.	3.61
\$9/ton	6.99	1.20/bu.	6.58	4.00/cwt.	4.12
		1.30/bu.	7.12	4.50/cwt.	4.64
\$10/ton	7.77	1.40/bu.	7.67	5.00/cwt.	5.15
		1.50/bu.	8.22	5.50/cwt.	5.67

EXAMPLES: Assuming lowest feed prices in the table (corn silage, \$8 per ton; corn and cob meal, \$1 per bushel; protein, \$3 per cwt.), the silage would cost \$6.22, the corn and cob meal \$5.48, and the protein supplement \$3.09 per hundred weight of gain for a total cost of \$14.79 for 100 pounds of gain. Using the highest prices in the table, the silage would have cost \$7.77, the corn and cob meal \$8.22, and the protein supplement \$5.67 for a total of \$21.66 per 100 pounds of gain.

### ACKNOWLEDGMENT

The committee planning the facilities and research included Ralph Ricketts, Department of Agricultural Engineering; G. B. Thompson, Department of Animal Husbandry; Gary Krause, Statistics Department; and Wayne Decker, Atmospheric Science in addition to the authors. Jack Riley, graduate assistant also provided assistance.

The financial assistance provided by the Metropolitan St. Louis Agricultural Resources Development Corporation added to Agricultural Experiment Station funds made this study possible.