NCR-SARE Presents

Build It Yourself!

Tenant Farmer Friendly Design

LOW COST MILKING PARLOR

Detailed plans, pictures, and part lists

Construction Guide

Mounts to a concrete pad, skids, or on wheels

Start Your Sustainable Dairy Today!

Milking time is now

Safe & Efficient
Portable
Off Grid Compatible

No Special Tools Required

Novice Builder Approved

Table of Contents

Acknowledgements

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About SARE

The Sustainable Agriculture Research and Education (SARE) program is a decentralized competitive grants and education program operating in every state and island protectorate. SARE is divided into four different regions that operate as separate entities and run grant programs for their states.

The Sustainable Agriculture Research and Education (SARE) program is a producer-driven, decentralized competitive grants and education program operating in every state and island protectorate. Funded by the United States Department of Agriculture's National Institute for Food and Agriculture, the program is run by four regions (North Central, Northeast, South and West) hosted by land grant institutions. SARE Outreach provides communication and technical support at the national level.

North Central SARE strengthens communities, increases producers' economic viability, and improves the environment through grants and education.

Contributors

North Sky Farm
North Sky Farm is a Certified Organic regenerative farm originally from central Virginia where we milked 20, 100% grass-fed Dutch Belted cows seasonally, and operated a large egg layer flock on leased land. In the Spring of 2022 we purchased and moved our business to a 60 acre dairy farm in northern Illinois. Current farm infrastructure includes a 60 cow stanchion barn and attached milk house. The farm has been Certified Organic since 2025 and has on site cheese making facility.

Travis Hurt
Travis has been working in agriculture and livestock for 8 years and has an undergraduate degree in Appropriate Technology and Sustainable Development. He has raised and managed his own livestock since 2016. He has apprenticed and worked with multiple livestock farms during that time in Virginia, New Jersey, Wyoming and South Dakota and is a graduate of the Vermont Institute of Artisan Cheese. He is a skilled carpenter, mechanic and fence builder and able to safely and efficiently operate a wide range of tools and heavy machinery.

Mariah Hurt
Mariah has an undergraduate degree in Biology as well as a Master's degree in Data Science and has extensive scientific, analytics, and accounting experience. She is a certified Quickbooks Pro Advisor, and holds certificates in budgeting, modeling, and financial forecasting from the Corporate Finance Institute. She has co-managed a diversified livestock operation since 2016 including large animal livestock handling and management, poultry and egg management and sales, equipment operation and rotational grazing implementation management.

Roger Dahlberg
Mr. Dahlberg has been a Wisconsin dairy farmer since 1979. In 1998 he build a low cost milking parlor and switched his farm to a pasture based system which was in use for 20+ years.

Steven Weaver
Mr. Weaver is a New York dairy farmer and milking parlor construction contractor specializing in low cost swing type parlors. He is a technical advisor on the project through phone conversations.

Other Contributors
Henry Dewale, Lily Hurt, Nate Klein, Will Rajewski, Robbie Shelnut

Introduction

Getting Big Milk Out of Small Dairy: A Milking Parlor Construction Guide For Herdshares, Creameries and Those Bootstrapping on Rented Land

The high cost of milking infrastructure, low availability of land with existing infrastructure, and prevalence of tenant farming combined create an insurmountable barrier to entry for small grass-based dairy farms. This project has three main objectives that as far as we can find are not fulfilled by any existing guides available: complete portability, low cost, and excellent cow comfort and safety for farmers.

1. Complete portability: While pastureland may be available for rent, farmers need milking equipment that can be transported as their business and lease arrangements change.
2. Low cost: While some plans exist for low cost milking systems, they're generally still very expensive. An example from Kansas State Extension lists a cost of $90,000. Our guide is aimed at farmers with a budget of $10,000 or less.
3. Excellent cow comfort and safety for farmers: Many older dairy farms have stanchion milking systems. Stanchion milking systems pose a real risk to farmer safety. The physical strain required to work with these contraptions limit their use to farmers who are young, physically strong, and those willing to suffer tirelessly. Our system will be a parlor system which is superior both in terms of farmer safety and cow comfort.

Objectives of This Guide

This project will focused on research to create a do-it-yourself construction guide to build a portable, low cost, safe and efficient milking parlor. Research will entailed a meta-analysis of existing parlor designs and construction methods, conducting interviews with experts, and draws on personal experience constructing the parlor.

The construction guide uses step-by-step photos of the actual construction of the low-cost parlor, and will provides farmers with the process to build the parlor for themselves. The guide includes detailed layouts, part lists, and high-resolution photos of the process. Accompanying the photos are specific instructions written with a novice builder in mind and explain the process in a way that someone with basic skill and hand tools can construct it in a reasonable amount of time.

Introduction

This guide is has been created for aspiring grass-based sustainable dairy farmers in need of a concrete plan to get started. Farmers can build the parlor at a low cost on rented land, easing the land access barrier - widely known to be the biggest concern facing beginning farmers. Please research the design of your own parlor accordingly as we take no responsibility for your actions or guarantee the parlor in the guide will work for your particular situation.

The swing style parlor is a well-researched and popular milking facility design particularly in New Zealand on grazing-based dairy systems. It has been slowly rising in popularity in the US due to the contribution of University funded research. We used published information from three main sources for this project:

"The TRANS Iowa Low-Cost Milking Parlor Design: Transitioning Your Iowa Dairy for Future Profit and Quality of Life"

The TRANS Iowa Low Cost Milking Parlor developed by Larry Tranel of the Iowa State Extension is a swing style parlor that is meant to be installed as a complete system. The design allows for milking 10 cows per side to accommodate large cow numbers, and covers critical details to increase cow flow through the parlor.

“You, too, can have a parlor” written in the April 2001 issue of “Graze” magazine.

Vance Haugen, Wisconsin Agricultural Extension Agent in Crawford County (Retired), has produced multiple articles and videos on low cost milking facilities. He has personally designed and helped construct low cost swing parlors for 60 farms. He is a champion of keeping costs low and the parlor ergonomic.

“Remodeled Parlors” David W. Kammel

David W. Kammel, Professor Biological Systems Engineering Department of the University of Wisconsin at Madison, has conducted research and produced design publications utilized by both the Trans Iowa design and the work of Vance Haugen. In his work titled “Remodeled Parlors” he describes in detail different types of milking facilities.

These experts in the dairy field have produced facility designs that have been thoroughly tested for efficiency and safety.

Background Research

Dahlberg Farm Visit

We visited Roger Dahlberg at his farm in Eastman, WI. Mr. Dahlberg started dairy farming in 1979. He gave us a tour of his low cost swing 6 milking parlor which he built in the Summer of 1998. At that time he built the parlor for a total cost of $3,662. His wife noted that she often milked the herd herself over the years and found it easy to use.

The Dahlberg's low cost milking parlor.

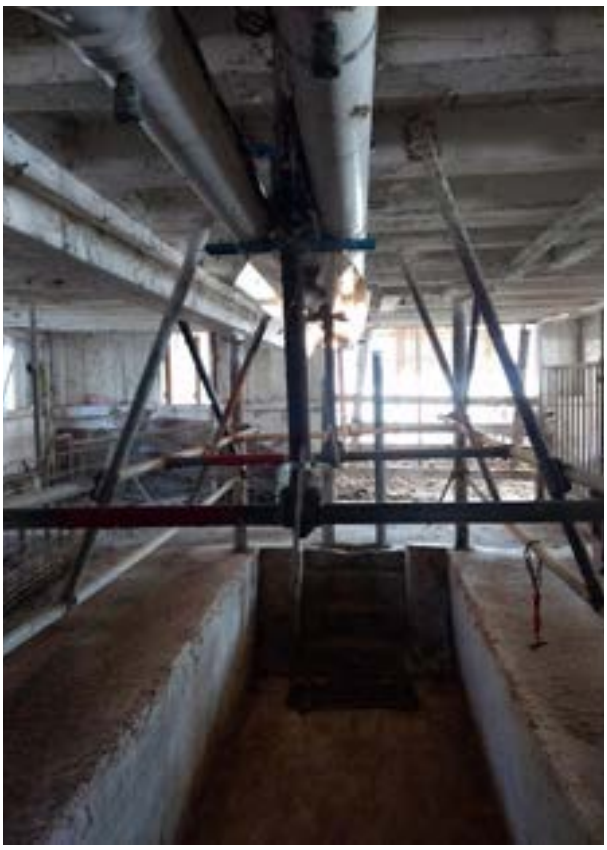
A cost breakdown of the parlor built in 1998.

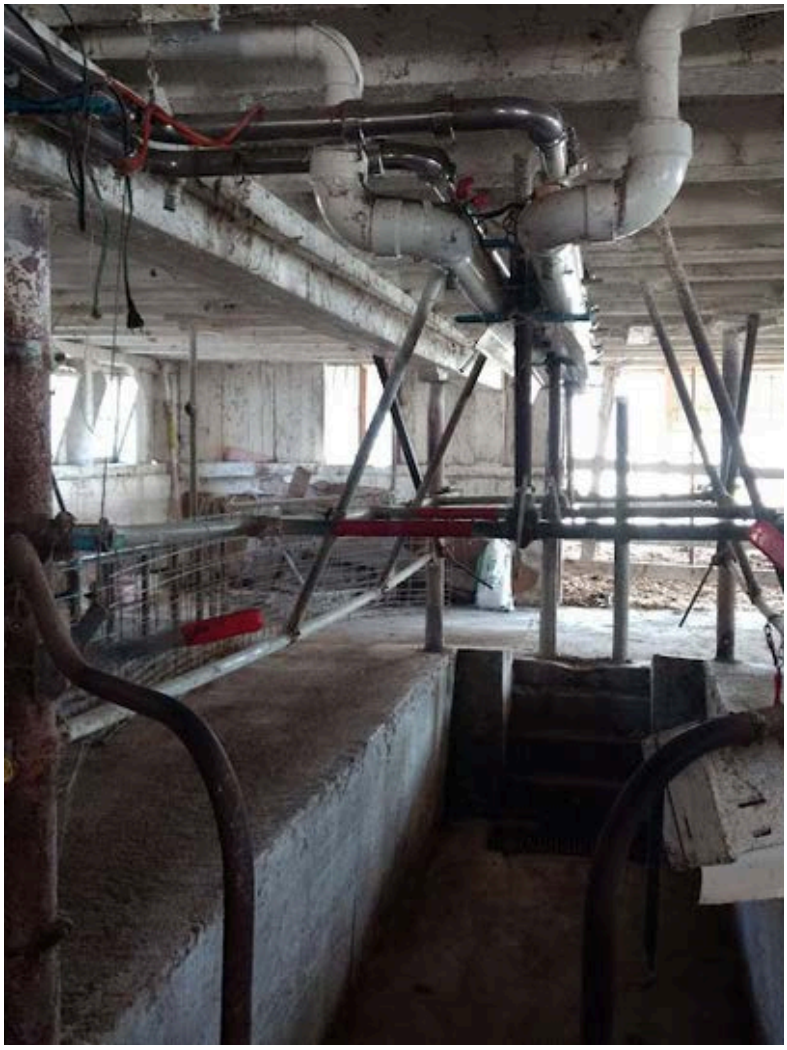
Mr. Dahlberg shows some of the details of the build captured in photos.

Mr. Dahlberg shows some of the details of the build captured in photos.

Background Research

Dahlberg Farm Visit





Background Research

Dahlberg Farm Visit

Rear gate set on 70 degree angle. He used dairy cow magnets to hold the gate arm open while letting in cows. Then lowered once cows entered the platform.

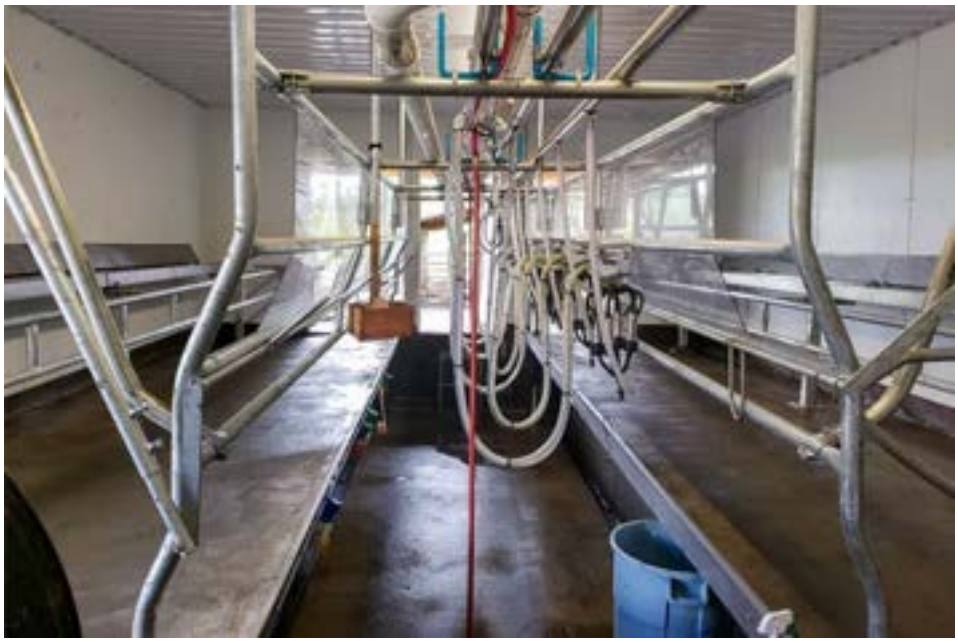
Feed auger installed to feed in the parlor without leaving the milking pit.

Exit gate with spring loaded latch made by a bungee cord. Remote operation by long pull string.

Background Research

Weaver Low Cost Parlor

Phone conversations with Mr. Weaver helped us work through some of the technical details of build and offered insight on materials to use and where to purchase those materials.



Weaver low cost milking parlor. Mr. Weaver utilizes welding and pipe bending for some components as well as clamp on fittings. Even with advance fabrication methods the parlor design simple and very open.

Swing 8 parlor with splash guard, chop gate, and feed trough. Mr. Weaver noted that they no longer feed in the parlor. Once the cows were trained, feeding created more problems then it solved: cows rushing to get in, not wanting to leave or being slow to exit.

Background Research

Viroqua Low Cost Parlor

We visited a retired dairy farmer in Wisconsin who built a low cost swing 6 parlor himself and used it successfully for 10+ years. Additional photos were lost however these 2 provide a glance at how he went about construction.

The frame is welded and he utilized diagonal cross bracing as well as a metal splash guard. He used a simple exit gate and plastic barrels cut in half for feeders. He had a home built ladder to enter the milking pit instead of stairs.

The pipeline and PVC vacuum line need to be be high enough for cows and workers to cross under it as it returns to the milk house. Milking units must be hooked in from the cow platform, prior to entering the milking pit.

Background Research

Trans Iowa Low Cost Parlor

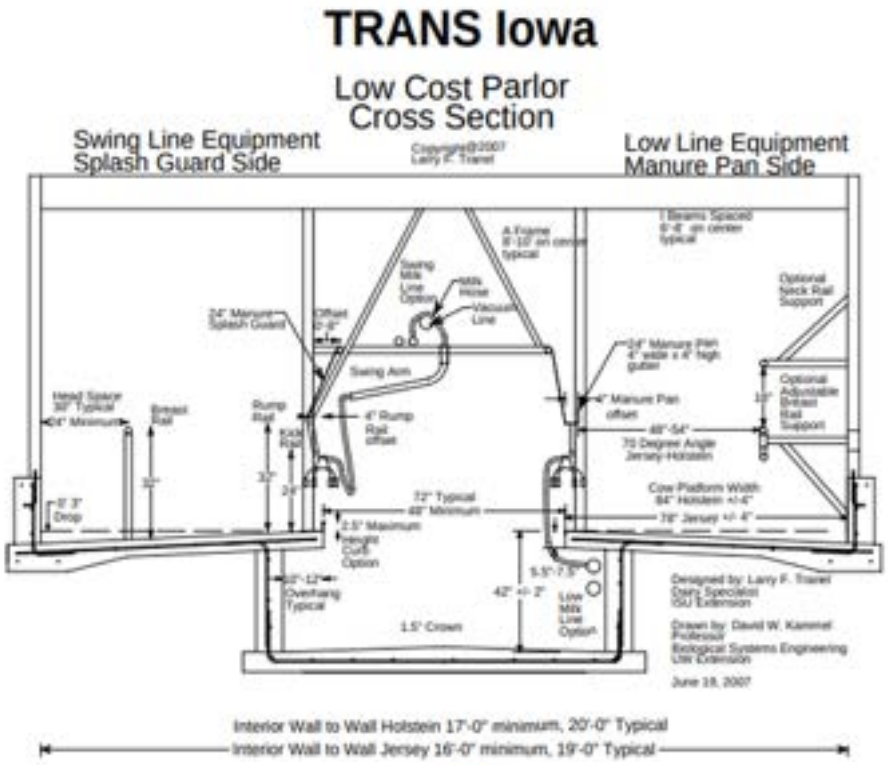
All design measurements for this guide are based on the TRANS Iowa low cost parlor. To simply the design, concessions had to be made for the novice builder on a budget (I am including us in that description)- if you have the skill, financing, and/or are milking a lot of cows - following the TRANS Iowa design closely may result in a more efficient parlor. The Iowa State Extension Dairy Team is a fantastic resource for dairy farmers and Mr. Tranel - The developer of the TRANS Iowa parlor design has lots of resources on Youtube as well as on their website.

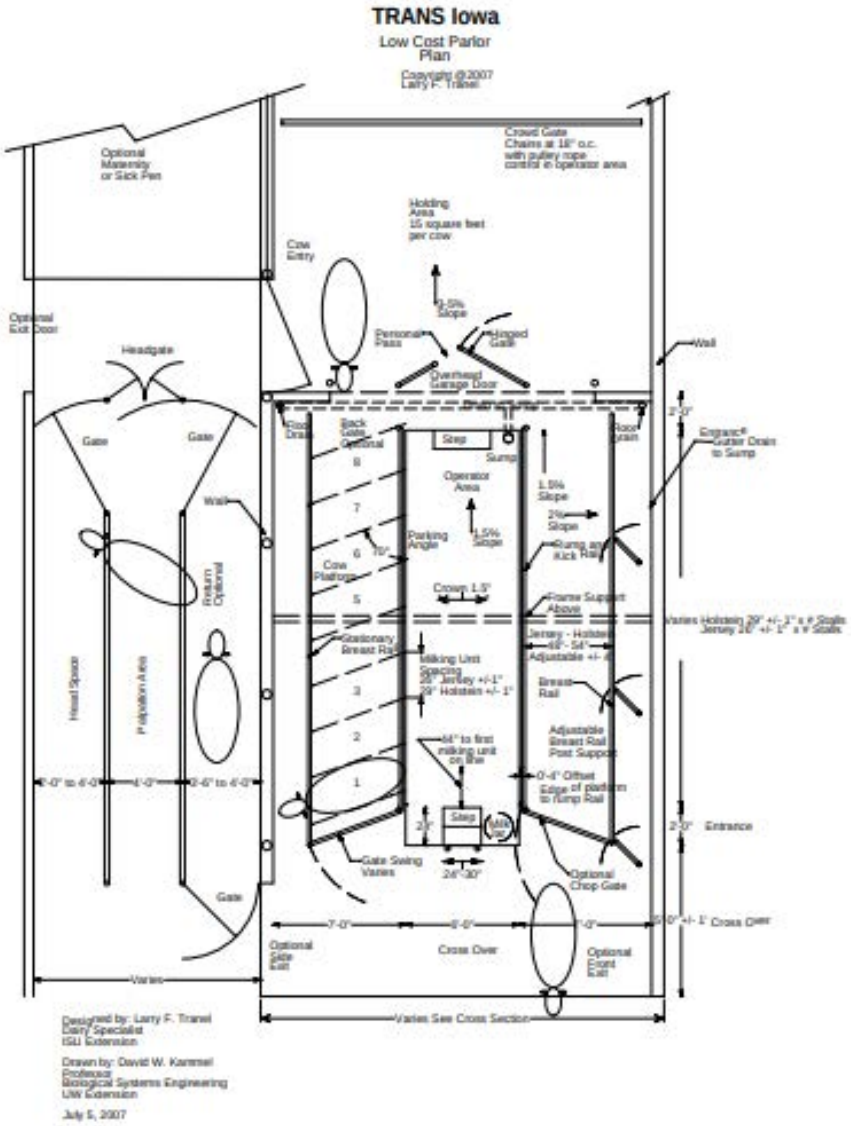
From Their website:

The Trans Iowa low cost milking parlor was deloped by the Iowa State Agricultural extention and For more than 30 years, Larry Tranel has helped farm families with their joys and struggles, visiting them in person on their farm, holding workshops and publishing reports that help them be more successful. As a dairy specialist with Iowa State University Extension and Outreach, his goal is to improve profits and quality of life for dairy producers, both in production and farmer mental health.

Contact Dairy Team
313H Kildee Hall
Ames, IA 50011-1178
dairyextension@iastate.edu
(515) 294-9085
https://www.extension.iastate.edu/dairyteam/milking-systems

Background Research





Material List and Budget

Vendors and Parts

Merchant Metals
www.merchantsmetals.com
Parts used:
FS40 1-5/8x21: **28**

Freudenthal Manufacturing
https://freudenthalmfg.com/
W6322 Co. Hwy. O
Medford, Wisconsin 54451
800-688-0104
Parts used:
#2025 Round Tee Clamp: **68**
#2028 Corner Clamp: **4**
#2042 STD Top-Rail Clamp: **26**
#2043 - Gate Hinge: **8**
#2065 - Splice: **4**

CK Manufacturing, LLC
https://www.ckmanufacturing.com
330 Millwood Road
Lancaster, PA 17603
717-464-2166
Parts used:
LWF1400GALV Wall flange: **18**

Menards Building Supply
www.menards.com
Parts used:
18" x 20' Corrugated Dual-Wall Solid Plain End Culvert Drainage Pipe: **1**
36" Pro-Rib® Galvanized Steel Panel: **26**
PVCLite 26" Corrugated Roofing Panel:**6**
#12 x 1" Self drilling roofing screws: **~500**

VersaTube Building Systems
versatube.com
50 Eastley Street
Collierville, TN 38017
Parts used:
Frame Only - Pinnacle Series - 20'W x 21'L x 9'H: **1**

Blaine' Farm and Fleet
https://www.farmandfleet.com
Parts used:
Red Brand brand 12.5 Gauge High Tensile Smooth Wire: **1**
Zareba brand pageHD In-Line Strainer: **6**

Lowes Hardware
Lowes.com
Parts used:
Red Head Trubolt 3/8-in x 3-3/4-in Wedge Anchors: **36**
Fernco 3x3 PVC DWV Mechanical Flexible Coupling: **1**
¾ -1-3/4 Stainless Steel Hose Clamp: **6**
3 in. Rigid 2-Hole Conduit Strap: **3**
PVC 3" x 10' Schedule 40 Pipe: **3**
PVC 3" 90 Degree Elbow: **1**
PVC 3" Long Sweep Wye: **1**
PVC 3" Clean out adapter: **2**
PVC 3" Clean Out adapter cap: **2**
Zip Ties: **20**

Parts Deptarment Dairy Equipment
Partsdeptonline.com
58 Modley Rd
Sharon CT 06069
Parts Used:
Stall Cock -Straight 1/2": **6**
Complete Bucket for cows with Nupulse Claw: **2**
Single Loop Adjusting Hook 2": **2**

Fleet Farm
Fleetfarm.com
Parts Used:
4' Heavy-Duty Bull Gate: **2**
6' Heavy-Duty Bull Gate: **2**

Amazon.com
Parts Used:
LED Construction String Light 100FT: **1**
12" x .012 Strip Curtain 150ft rolls: **7**
16' Strip Curtain Mount: **2**
8' Strip Curtain Mount: **1**

Material List and Budget

Vendors and Parts

W.W. Grainger Inc.
www.grainger.com
Parts used:
Reducing Tee 3 x 3/4 x 3" PVC Fitting : **6**
Reducing Bushing ¾ x ½ PVC Fitting: **6**

Component	Quantity	Unit Price	Unit Total
FS40 1-5/8x21 Pipe	23	$54.78	$1,260.00
Pipe Delivery	1	$50.00	$50.00
#2025 Round Tee Clamp	68	$5.75	$391.00
LWF1400GALV Wall flange	18	$14.06	$253.08
#2042 STD Top-Rail Clamp	26	$7.95	$206.70
#2028 Corner Clamp	4	$9.95	$39.80
#2065 - Splice	4	$5.75	$23.00
#2043 - Gate Hinge	8	$18.50	$148.00
4' Gates	2	$129.99	$259.98
6' Gates	2	$149.99	$299.98
Carport- 20'W x 21'L x 9'H	1	$2,489.27	$2,489.27
Stall Cock	6	$13.50	$81.00
Lighting	1	$79.99	$79.99
Feed Trough	1	$364.99	$364.99
Nupulse Milking Machine	2	$499.00	$998.00
Air Line Hooks	2	$18.95	$37.90
3" Sch 40 PVC Pipe	3	$19.82	$59.46
3" Sch 40 PVC Long sweep wye	1	$11.99	$11.99

Material List and Budget

3" Fernco Flexible coupling	1	$6.35	$6.35
3" Clean out adapters	2	$4.29	$8.58
3" Clean Out adapter caps	2	$1.89	$3.78
3" 90	1	$7.61	$7.61
Fencing Wire	1	$127.89	$127.89
In-Line Strainer	6	$8.99	$53.94
Red Head Anchors	1	$34.98	$34.98
Steel Roofing	1	$529.33	$529.33
Stainless Steel Hose Clamp (10-Pack)	1	$17.98	$17.98
3 in. Rigid 2-Hole Conduit Strap	3	$4.27	$12.81
Reducing Tee 3 x 3/4 x 3" PVC Fitting x 6	1	$79.24	$79.24
14 in. UV Resist Zip Ties, Black (20-Pack)	1	$4.97	$4.97
100' x 12" x 0.12" Clear Ribbed PVC Curtain	1	$428.88	$429.88
Strip Curtain Mounting Hardware	1	$391.86	$392.86
Steel Side Wall Panels	12	$33.28	$399.36
#12 x 1" Self-Drilling Screw - 1 lb. Box	6	$11.49	$68.94
PVCLite 26" Corrugated Roofing Panel	6	$16.98	$101.88
		Total:	**$9,334.52**

Milking Pit and Cow Platform

Concrete and gravel were not funded by NCR-SARE but included here for informational purposes:

Concrete: $2,553.11
8x8x16 Hollow Concrete Blocks: $330.65
Gravel and Ag Lime Topping: $1,290
Total: $4,173.76

Cut List

Make sure to plan your design before cutting everything!

21'
Leg: 84"
Leg: 84"
Leg: 84"

21'
Leg: 84"
Leg: 84"
Leg: 84"

21'
Leg: 84"
Leg: 84"
Feed Trough leg: 30.5"
Feed Trough leg: 30.5"

21'
Diagonal Bracing: 58"
Diagonal Bracing: 58"
Diagonal Bracing: 58"
Diagonal Bracing: 58"
Rump and Kick rail Spacer: 8"
Rump and Kick rail Spacer: 8"

21'
Diagonal Bracing: 58"
Diagonal Bracing: 58"
Floating Mid-Span Leg: 62"
Floating Mid-Span Leg: 62"
Rump and Kick rail Spacer: 8"

21'
Brisket or feed trough leg: 30.5"
Brisket or feed trough leg: 30.5"
Brisket or feed trough leg: 30.5"
Brisket or feed trough leg: 30.5"
Feed trough cross support: 24"
Feed trough cross support: 24"
Feed trough cross support: 24"
Feed trough cross support: 24"
Rump and Kick rail Spacer: 8"

Full Length Components:

Top Rails Length: 21'
Top Rail Length: 21'
Rump Rail: 21'
Rump Rail: 21'
Kick Rail: 21'
Kick Rail: 21'
Brisket Rail: 21'
Brisket Rail: 21'
Feed Trough Outside Rail: 21'
Feed Trough Outside Rail: 21'
Upper Pipeline Rail: 21'
Upper Pipeline Rail: 21'

21'
Top Rail Width: 177"
Rump Rail Supports: 70"

21'
Top Rail Width: 177"
Rump Rail Supports: 70"

21'
Top Rail Width: 177"
Rump Rail Supports: 70"

21'
Upper Pipeline Support Rails: 66.5"
Upper Pipeline Support Rails: 66.5"
Upper Pipeline Support Rails: 66.5"
Feed trough cross support: 24"
Feed trough cross support: 24"

21'
Brisket or feed trough leg: 30.5"
Brisket or feed trough: 30.5"
Feed trough cross support: 24"
Feed trough cross support: 24"

Material and Layout

We are using 1-5/8 SS 40 pipe- standard for chain link fence top rail. It comes in 21' lengths. We had it delivered and unloaded with tractor. If needed you could unload by hand piece by piece. Schedule 40 can also be used although SS40 is stronger and lighter. Other less expensive thin walled pipe is not strong enough to be used in this design. You may be able to use used pipe but make sure you can source fittings for it first if you are going to purchase it.

Using bolt cutters to un-band the pipe

Bolt cutters

Material and Layout

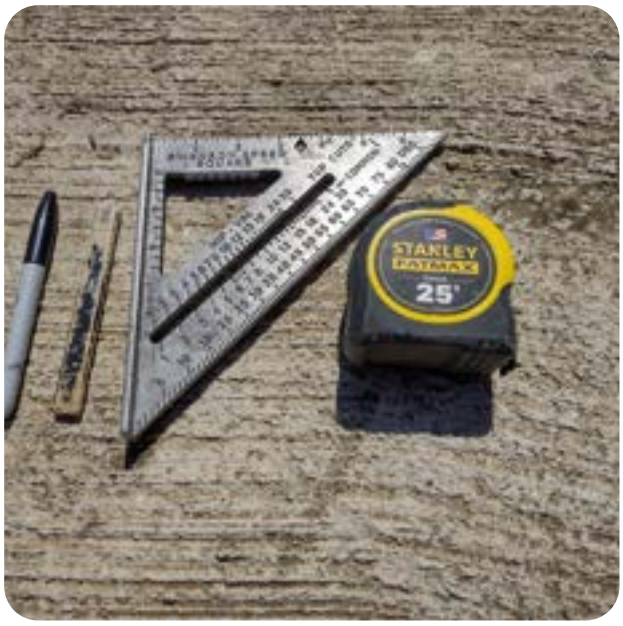
Inventory of fittings

Organizing fittings

We staged fittings in general location to help visualize the build

We also staged pipe to help us think through the build process

Cutting Pipe



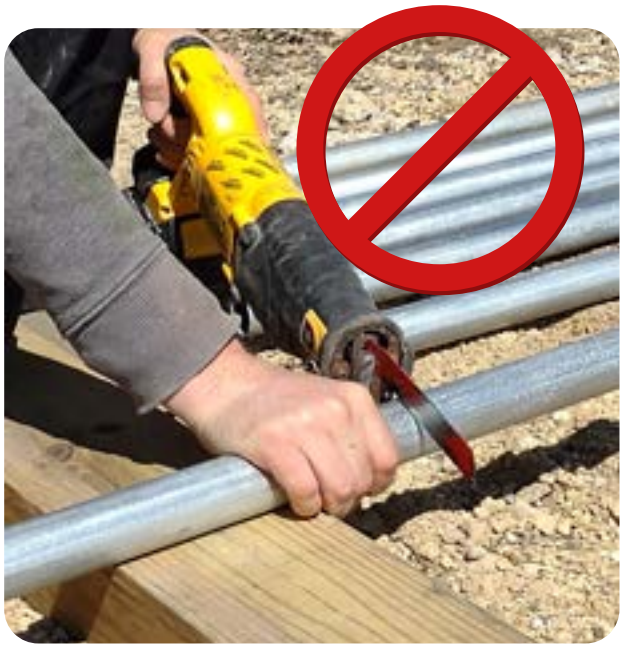
Basic measuring tools. Sharpie marker for marking pipe, a pencil, table measure, and speed square (optional)

Hearing and eye protection if using power tools is a must! Cutting metal is dangerous!

Metal pipe cutting options: A basic hack saw, a reciprocating saw with a metal blade, or a hand band saw. All 3 will do the job. I have a band saw so we used it but when the blade dulled, we switched to the reciprocating saw.

A new blade will make all the difference no matter which saw you use. Small teeth work best for cutting metal.

Cutting Pipe



Keep hands away from blade.

Have a helper hold the pipe, use a clamp or use your foot far from the blade.

A hand saw can bind and jump when you get into the rhythm of cutting. If your hand is there it can cut you.

keep hands and feet at a safe distance

Cutting Pipe

We started by measuring a cutting the legs. 7' was chosen because the pipe comes in 21' sections

Using a speed square can be useful in ensuring a straight line

8, 7' sections are needed so we are cutting down 3, 21' lengths.

8 legs are cut. The 9th will be cut again and used elsewhere.

Parlor Walls

Basic tools for securing nuts and bolts. A wrench will be needed to hold the nut while another wrench, ratchet, or impact ratchet is used to thread the bolt.

Use a permanent marker to mark the layout. We found a pencil hard to see. Be consistent on what your mark means. The middle, bottom or top of pipe or fitting.

Wrench and ratchet combination

Some fittings utilize a carriage bolt. The square part of the bolt head fits in the fitting so it won't spin. Only 1 wrench or ratchet is needed for carriage bolts.

Parlor Walls

If you are going to utilize the 20' culvert pipe for a feed trough, the length of the parlor needs to be 20' or less. If you are not going to feed in the parlor or use something else, it can be the full 21'. We will have a swing 7-8 with a 20' parlor based on cow size.

We didn’t cut the 21' length pipe - just adjusted our fittings to a 20' mark because we were unsure how the culvert feed trough was going to work and wanted flexibility. You can cut the ends off at the end - but we kept them for mounting the PVC vacuum line.

The top rail goes at the top utilizing the corner fittings and the brisket rail is set at 32" using the cross rail fitting. We placed ours on inside of the legs.

The top rail should go all the way through the fitting with the leg butting up under it. This will provide a stronger connection.

Parlor Walls

We cut the mid-span support at 30.5". If using 1.5" pipe this would put the top of the rail right at 32".

Utilizing a tee clamp fitting.

The brisket rail mid-support leg should go half way based on your parlor length. 10' for a 20' length.

Rail should pass through tee clamp fitting and the leg butting up under it. Note the square hole for carriage bolt. Nuts and bolts were provided with the fitting.

Standing Walls Up

To stand the walls up we are using stakes - made or bought to anchor leg supports to.

Making stakes out of scrap wood.

A simple point.

General layout of where the legs will go. You will be able to shift things later but having the legs close to where they need to be will help.

Standing Walls Up

We will be using long boards for the wall support. Measuring to make sure our boards will reach the stakes.

Pounding stakes in using mini sledge hammer. Make sure they are strong and can support the forces of the wall during construction.

Attaching 2, 1"x 4" boards to either side of our stakes using screws. Any type of board will work if your screws are long enough.

Our favorite screws are the #9 star drive. These are 3" long. We are using a impact driver to drive them.

Standing Walls Up

Fittings are tightened down, wall is moved into place and lifted vertical.

They are a little floppy so it’s at least a two person job unless you get creative.

Once vertical, one person can stabilize and the other can attach bracing.

Using the a 3" screw one on either side of the pipe will keep it from falling (3/4" board, 1.5" pipe, 3/4" board = 3"). We used a magnetic level to level the legs prior to securing to bracing.

Standing Walls Up

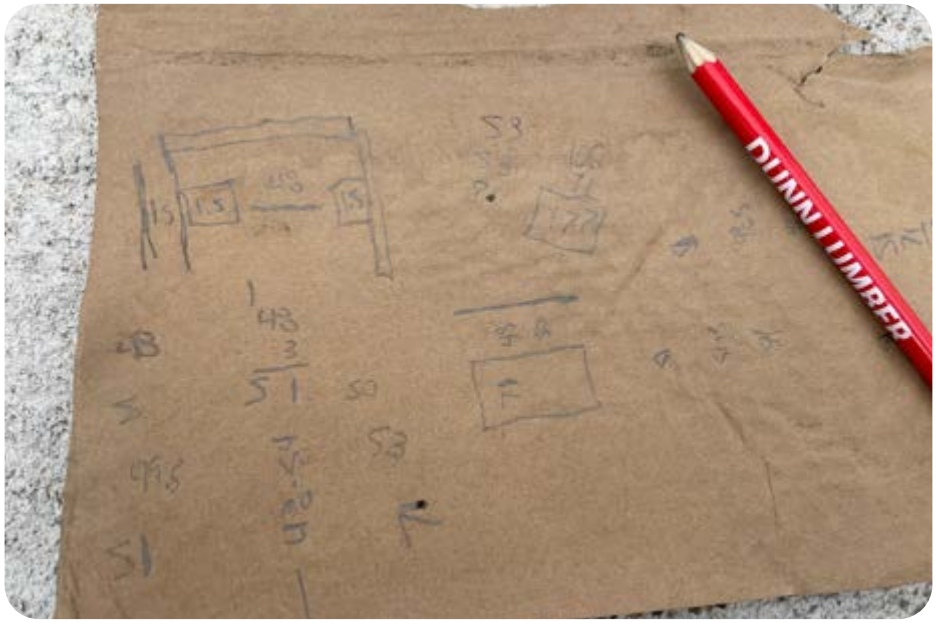
Repeat process on other side.

To determine overall width of parlor you need to determine, stall width and location of inside parlor legs.

For our layout we have a 3" overhang over our pit walls, then wanted to anchor directly into top of our block wall that is filled with concrete so we added another 4". Total 7" from end of overhang to inside leg. Think critically about this step.

The wall flange fitting is utilized for mounting legs to your foundation, wooden skids, trailer, wall, or ceiling based on your situation

Top Width Rails



A major decsion is determining how wide to make your parlor. We designed for a mixed herd at 51" (53"/48" for Holstein/Jersey See TRANS Iowa Design). The angle of the cows can also provide adjustment so your measurement is important but not success or failure. Add your stall width + pit width (or milking ally width) + stall width = overall width. Ours came out to be 177". The corner fitting does not allow for both length and width top rails to run long- one measurement will have to be cut.

Cut 3 pieces of pipe for your width top rail pieces. One for either end and one for middle. Use tee clamp fittings to attach middle width rail.

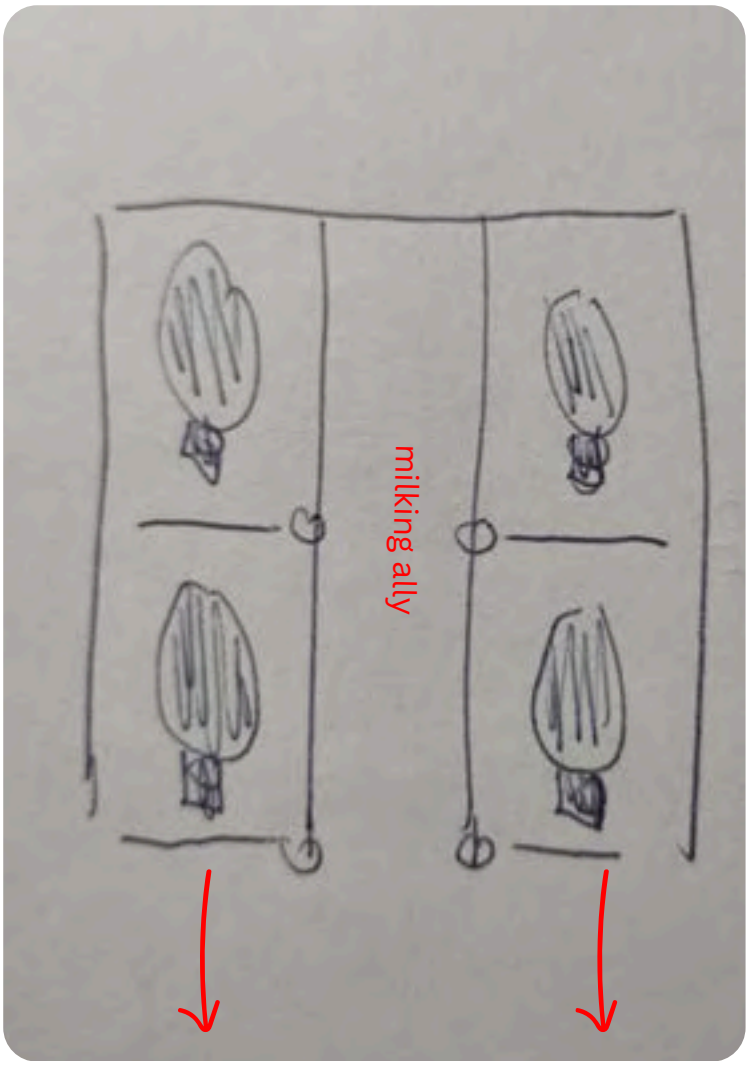
With your walls secure, you can install width top rail one end at a time and secure fittings with proper bolts. Be aware that working with heavy pipe overhead should be taken with extreme care and caution - children and pets should be kept away in case pipes fall!

Top Width Rails

Design Consideration

If you do not have a pit, potentially you can build this parlor similar to old style surge parlor where the cow is milked from the side. Adding a few gates would allow for the cows to stand head to tail and you would kneel down to attach the miking unit from the side. Without the pit milking the cows from behind may be difficult or less safe than from the side. This walk through design may also reduce the need for cross supports allowing you to walk up and down the milking ally. See sketch below:

Surge walk though parlor popular in the 1960s and 70s.



It may be possible to utilize this guide to build a walk through parlor which may reduce the amount of cross supports needed because the cattle are not actively pushing on the rump rail. This is a factor if you do not have a milking pit as it would allow you to have a unobstructed milking ally.

Top Width Rails

Ensure width top rail is all the way into fitting

Use hammer or block of wood to drive pipes together if needed

Tighten bolts

We used a tape measure to generally square the build. Checking that the diagonal measures are the same. This can be done anytime before it is bolted down to foundation.

Inside Legs

Our cow platform is sloped. Se we had to trim the inside legs so our top rail would be level.

I measured from top rail down and trimmed the 4 inside legs slightly.

Use tee clamp fittings to attach the inside legs.

Use a tape measure and a level to adjust legs along top rail based on your determined stall width. Mark on the ground and level up or mark top rail and level down.

Rump and Kick Rails

This is the orientation of the kick rail and rump rail.

Mark inside legs at 32" for rump rail and 24" for kick rail. These are subjective numbers based on your cows. For shorter cows they may need to be lowered. The 8" between the 2 rails will stay the same.

Installing rails can be done with 2 people or using a clamp.

8" mid-span supports. This step can also be left to the end to utilize any small scraps of pipe left over.

Rump and Kick Rails

Use 2, 8" spacers per side. Find middle (10') then middle of that measurement (5'). So you'll have support at 5', a middle leg at 10' (yet to come) and another 8" at 5'

If you are utilizing a milking pit you can you can have cross bracing between your rump rails. This design element was tricky to figure out and if you are not using a pit you will need to figure it out based on your own situation and desired sturdiness. Potentially a X design would work simalar to Viroqua WI. design.

The cross supports will need to be high enough that you don't hit your head on them. For us that meant securing them to the legs and not the rump rail.

Rump and Kick Rails

To extend the rump and kick out out for cattle management after they leave the parlor, splice fittings can be utilized to connect like sized pipe.

We used a 1" pipe and slid it into the 1.5" pipe. We utilized this method because we had used 1" pipe available.

We used 1" pipe to extend rails past the pit and secured with cross rail fittings. The fittings are for 1.5" pipe so washers were used as a spacer so the 1" was snug.

Upper Pipeline Support Rails

The upper pipeline support rails and associated cross supports act in two functions: adding rigidity to the parlor structure and providing a mounting location for a milk pipeline. When the pipeline is exiting the parlor it will need to cross the cow platform so it should be installed high enough that it will not be in the way but also reachable by whoever might need to attach milking units. Ours is set at 67" but we just measured 3" down from the tee clamp fittings.

The pipeline support rail is mounted on the inside of the inside legs using cross rail fittings. This allows the middle floating leg to connect to the rump and kick rails and remain plumb. The pipeline rail supports use tee clamps and are cut at 66.5".

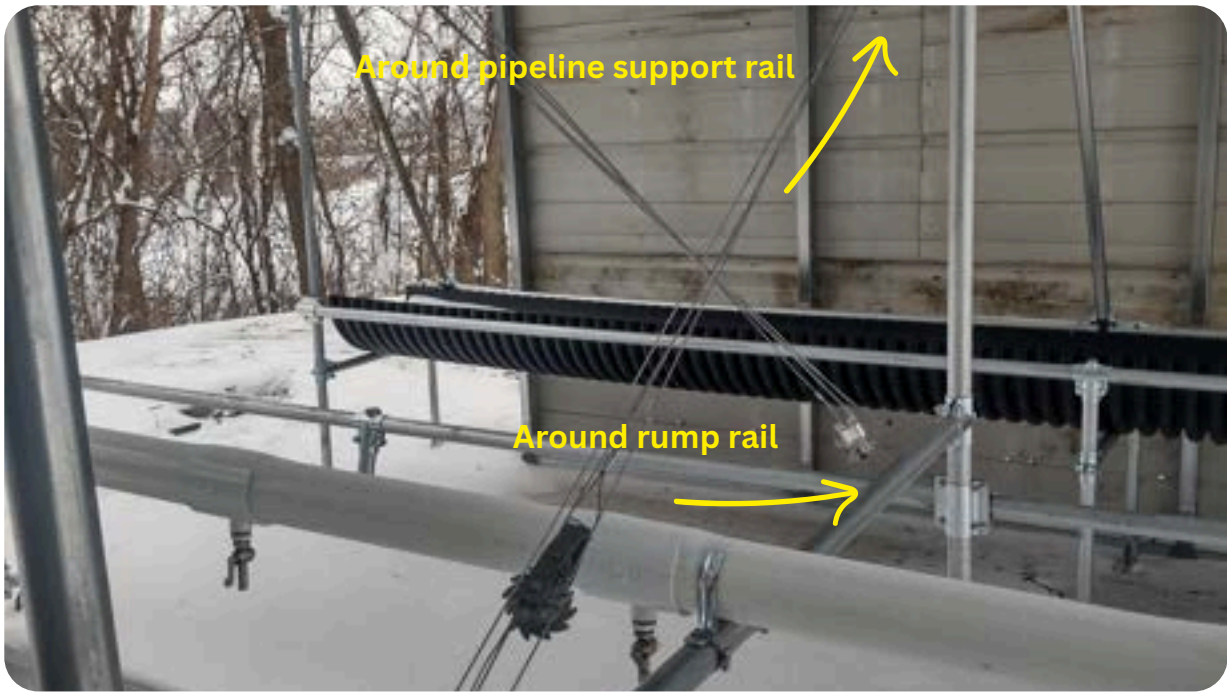
Floating Leg and Cross Wires

Using 1.5" pipe and a 20' parlor your rump, kick, and pipeline support rails will sag in the middle. To counter this a middle leg is needed.
You can either have a leg mid-span and milk around it or, what we opted to do, is have a floating leg. This will reduce the chance of worker injury do to the close relations of cows hooves, a metal pipe, and workers hands. To accomplish this the floating leg was installed just like the inside legs: attaching to the rump and kick rails, the upper pipeline support rail as well as top width rail. Utilizing a bottle jack we pushed the floating leg up, “pre-loading” the sag. we tightened all fittings in their ideal locations then lowered the bottle jack. Using a string to track our sag rate, we could reduce the sag to about 1" in the center of the 20' span. If you are building inside a barn or a structure you may be able to attach mid-span leg to ceiling and avoid any sag at all.

We cut off the excess off the bottom of the floating leg once all fittings are tightened

Using ratchet straps to fine tune rump and kick rail locations (pulling them up or down to desired height) while utilizing bottle jack to pre-load floating leg

Floating Leg and Cross Wires



Once pipeline and rump rail cross supports are in place, fencing wire can be utilized to add rigidity by creating a X between them using fencing wire. Similar to building a H style fencing brace, we did two wraps and secured with a ratchet strainer and crimp style splice. You can attached the wire strainer by twisting the wire but I have found a crimp slice to be a stronger connection. You can easily move fittings and pull legs out of plumb with the ratchet strainers -use a level and measuring tape to check progress when tightening.

Not completely necessary but crimping makes for a secure, neat, connection. Hand tying wire or using Gripple type connection can also work.

Ratchet strainer that utilizes a wrench instead of a strainer tool. Either work well.

Floating Leg and Cross Wires

The cross wires add rigidity to the system by creating a X between the pipeline support and rump rails. There is still movement in the parlor but eliminating completely would require securing to a structure or welding.

Keep wires from crossing each other. Under tension this can cause them to break.

The floating leg can be confusing. This picture is labeled with fittings needed. It is the same as the entry and exit of parlor just in the middle.

Feed Trough and Support Frame

Use tee clamp fittings to build the feed trough support system. The far rail is 32" high, level with the brisket rail and supports are 24" long

Supports should be high enough so feed trough is level with brisket rail. Ours is set to ~23"

A 20', 18" double wall culvert is being used as a feed trough. Double walled is important because it is smooth on the inside

Use a circular saw with the blade reversed to cut in half length wise.

Feed Trough and Support Frame

The pipe has lines on both sides at the center from the factory. We cut on these lines.

A fine tooth blade turned backwards made a nice clean cut.

Double walled pipe is smooth on inside.

Feed trough in place with sides level with brisket and outside rails.

Feed Trough and Support Frame

Since we used a 18" pipe in a 24" space we pushed it to the outside rail leaving a gap in the front. 24"-30" is needed for cow head room. If you are not feeding in parlor you still need this space.

We drilled a small hole and secured with fencing wire.

This seemed like a simple and sturdy way of attaching feed trough. The perforations in the feed trough will most likely become filled with feed and dirt. As of right now we don't have a good fix.

Diagonal Bracing

Diagonal supports are needed if your parlor will be free standing and not braced by a wall or structure.

Use ratchet straps to pull legs plumb. You may need to loosen inside leg tee clamps on top width rail in order to get all legs plumb.

We found generally the measurement to be around 57.5-58" although we just used straps to get both sides as equal as we could. Better to be a little tight than loose.

Utilize tee clamp fittings to attach diagonal bracing to feed trough rail and top rail.

Diagonal Bracing

The middle diagonal supports will need to be offset slightly of the middle top width rail.

Anchoring to Foundation

Design Considerations

If your milking operation will be inspected by a regulatory agency, not having a concrete floor will be difficult to avoid.

It is an attainable task for amateurs to pour a simple concrete slab or build a milking pit as seen in our pictures. Two of us, with little concrete knowledge were able to build the walls and form and pour the slabs by ourselves. The Dalhberg parlor's milking pit was also poured by amateurs - himself and fellow farmers. Mr. Dalberg was the first to admit the concrete work wasn't perfect but the financial savings made up for any defects- a point we also agree with.

For tenant farmers who need a concrete slab in order to operate, and if you need to move farms, as long as you didn't go overboard when pouring the slab, you can rent a skid loader, have a dumpster delivered and you can remove it (if the landowner wants you to) without too much expense. **For those with a can-do attitude, concrete is a hurdle that can be overcome.**

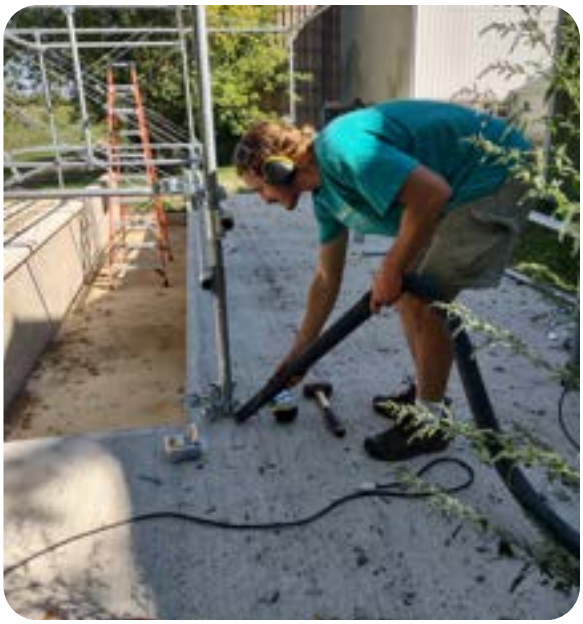
For those operating outside the confines of regulation, the parlor can in theory be completely mobile by attaching it a big sled or skids made out of 6x6's and moved with a truck or tractor around your pastures. There is lots of potential for mobile foundations that the parlor and carport structures can be mounted to for pasture based milking however those designs are too specific for this guide.

The tenant farmer friendly design outlined in this guide allows a farmer to construct and and take down the parlor with just a ratchet, wrench, and an impact driver (depending on type of shelter is used). Everything can be moved and rebuilt as situations and lease agreements change .

Anchoring to Foundation

Use a hammer drill if mounting parlor into concrete. A normal drill with a hammer feature may work but in my experience it does slow job. These can be rented if needed.

We used 3/8" by 3" expansion type anchors to secure the parlor legs into concrete. These will not work for asphalt or wood.



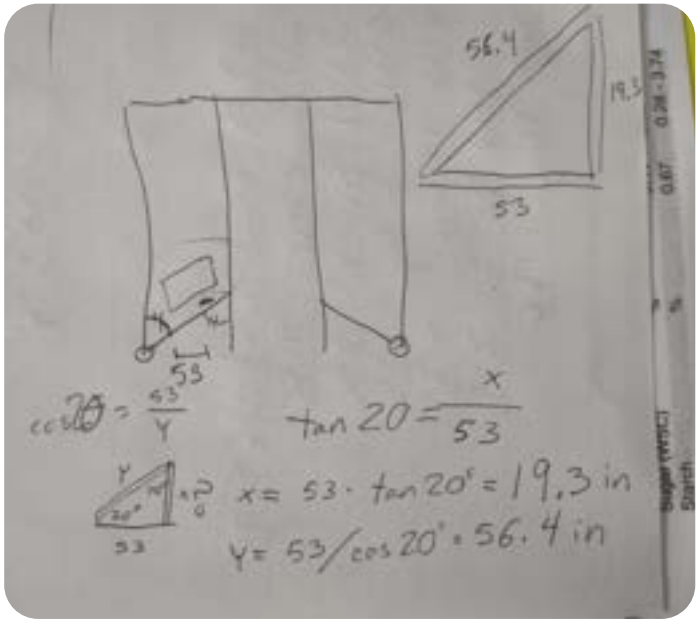
Mark your hole locations with a pencil or marker using the wall flange as a guide. Remove flange and drill your holes. Follow the directions carefully that come with the concrete anchors you choose. We vacuumed out all the dust, installed anchors, and bolted down wall flange to foundation, and then to parlor legs. Install washer and nut on anchor before hammering your anchors into the concrete - the hammer will wreck the treads and it will be difficult to thread the nut on.

Entry and Exit

To keep the cows on a roughly 70 degree angle the exit gate needs to be at an angle. to achieve this angle the exit gate must be mounted to the outside leg. This creates a few issues that this section will help you work through and resolve. They are listed below from most simple to difficult.

Most Simple: Use 4' farm gate on 70 angle. Because the gate needs to be able pass through the stall when swinging out, a 4' gate is the only option. There will be a large gap when the gate is indexed at a 70 angle and a chain from the gate to rump rail is utilized. Once the gate swings open to release cows, a shepherds crook, or pulley system for shutting the gate will need to be used to prepare for the next set of cows. This is the simplest design option.

A little more difficult: Building an index rail. The index rail allows for the gate to hang in line with the post. The rail set up utilizes 2 tee clamp fittings, pipe, a drill, and some long bolts to build.



The calculations we used to determine the measurements of our index rail so the cows are positioned at a 70 degree angle. We marked this measurement on the rump rail.

Entry and Exit

We mocked up our angles to make sure they were right. The index rail lines up with our mark on the rump rail. A new drill bit and a little WD40 made drilling easy. We are using a 1/4" x 4" bolt and going straight through the middle of the 2 pipes. We drilled our hole at 17.5" from the gate. This may be different for your situation.

The index rail is pretty strong even without a support pipe. Our gates are 2" so 1-5/8" x 2" tee clamps are needed. As long as the gate can swing all the way open, the index rail does not obstruct the exit.

Entry and Exit

Requires design change: If you change the entire parlor design as outlined in this guide you can mount your gate hinges on the inside posts instead of the outside. This would be advantageous in a lot of ways - mainly you can use a rope to pull your gate latch and then just swing the gate by hand to close it.

Longer gates mounted to inside legs in this New Zealand Swing Parlor

Mr. Dahlberg opening exit gate with rope

Advanced: A chop gate is the best solution however will require welding and a lot of design knowledge and is too advanced for this guide.

Entry Gate: This may not be needed depending on cow flow and your particular situation. For this guide a chain is used and can be slid along the feed trough and rump rail based on how many cows you have on the platform. Mr. Dalhberg built a single arm lift gate that could slide along the kick rail and was bent to a 70 degree angle to match the cows being indexed by the exit gate.

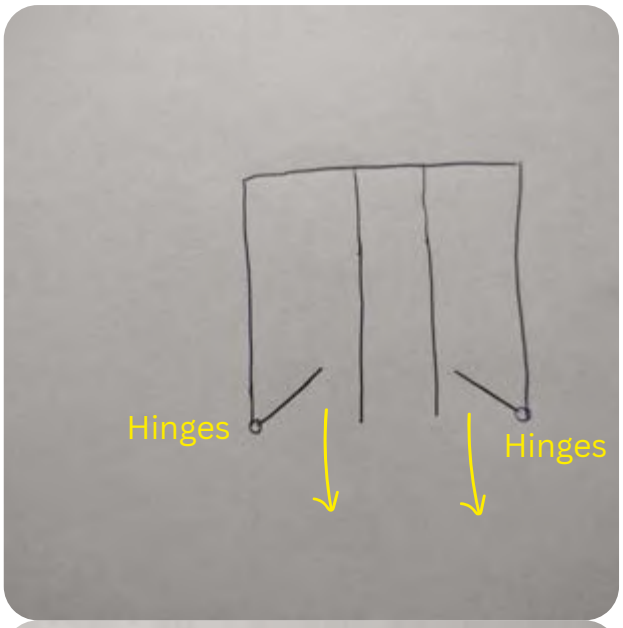
Chain attached to rump and feed rail using 3/8" rope tied using a pipe hitch. This allows the chain to slide forward but not back when tight. A simple hook to open and close to let in cows.

Pipe hitch.

Lift arm.

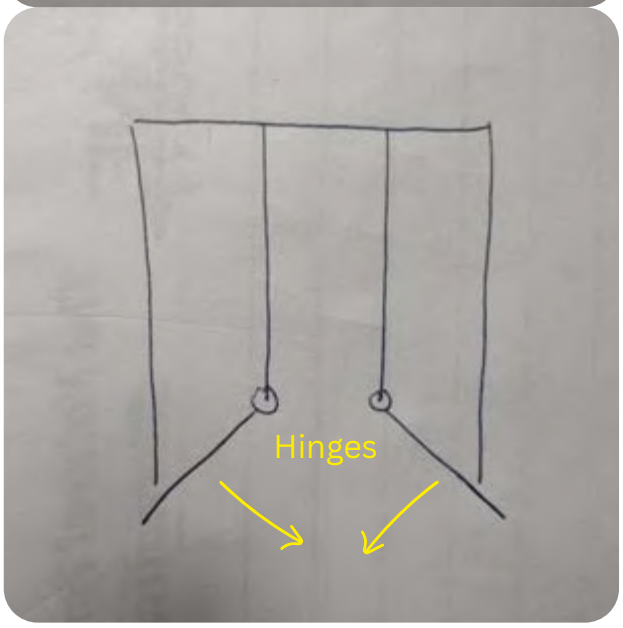
Entry and Exit

Exit gates options. Chop gate not discussed



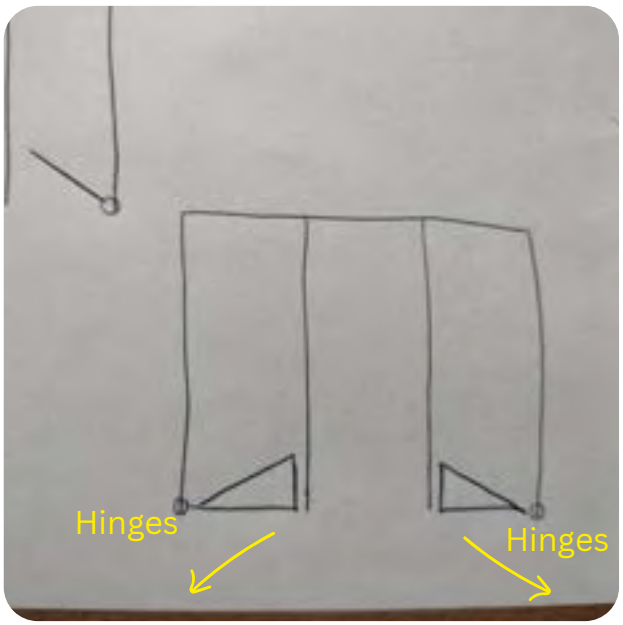
4' gates with no modification

This is the simplest exit gate design. Using 4' gates on a 70 degree angle. They won't reach all the way across so a chain will need to be used to extend to rump rail to be secured. They will swing out, and a shepherds crook or pulley and rope system will need to be used to close it.



6' gates with change to parlor design

If you change the fundemental design of the parlor you can mount the gates on the iside legs instead of the outside legs. This will require pre-planning before starting construction and is different than what is outlined in this guide. This will allow using 6' gates and allow you to easily swing gates shut once open. Using a rope and spring loaded latch the gates can be opened remotely.



4' gates with index rail modification

The index rail bolted to 4' gates allows gate to fully span stalls while still utilizing the simple layout described in this guide. The gates will still need to be closed using a shepherds crook, pulley system, or other closing method.

Shelter

Design Considerations

The parlor outlined in this guide is completely free standing and does not need to be supported by a building or structure. For those boot strapping on rented land, existing infrastructure can be hard to come by. Because the parlor is freestanding, the shelter over it does not need to be incredibly robust. We opted for a car-port type structure to house our parlor. These structures are relatively inexpensive, come in all different sizes and are simple to construct using basic tools.

The shelter we chose was a 20'x21'x9' Pinnacle Series by Versa-Tube Inc. The Pinnacle Series allows for greater snow loads and was recommended based on our location.

The 21' length is actually only 18' although the roof covers the full 21'. The 9' height provides plenty of height to clear the parlor, however since the building is only 18', the end gable ends up being right above the parlor frame. This means going any lower with this length building, while using the gable kit is not feasible. Without the gable or with a longer building, 8' would be sufficient or potentially a 7' height would also work although you may need to trim your parlor legs to make it fit.

We enclosed the parlor on 2 sides with steel roofing. Because our structure is so tight to the parlor this became necessary for 3 reasons: To block rain from drenching the feed trough, to block cows from eating out of the feed trough from the outside, and to block heifers from trying to jump out of the parlor.

A removal strip curtain was also added to the entry and exit of the parlor to demonstrate that a 4 season parlor is attainable on a budget and still being completely transportable. The parlor in this design cannot be kept warm long term, but a propane heater running just before milking takes the chill out of the air. In warm months, the strip curtains can be removed to achieve a open and airy parlor.

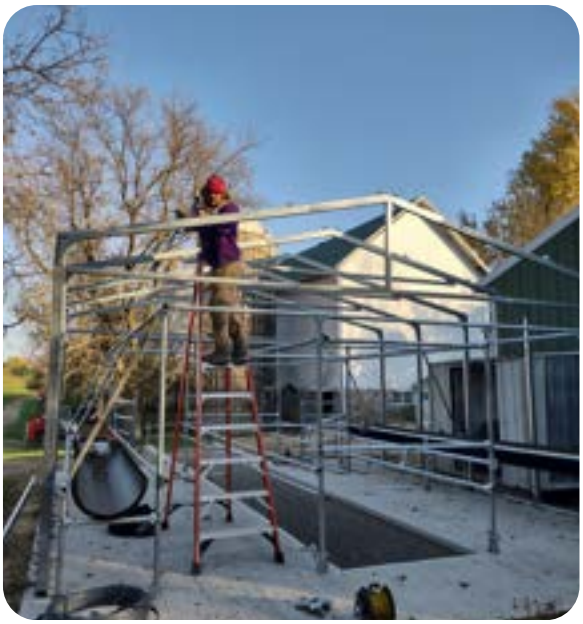
A 24'x24' or larger shelter would be advantageous in a number of ways. Since the metal sides were added, accessing the feed trough from the outside is no longer feasible. Accessing the feed trough from the outside would allow to add feed when cows were on the platform and also access their heads if needed. With our shelter, feeding will need to be done prior to cows entering or with an auger and drop feeder system. Having a longer parlor would allow for the parlor structure to be completely inside the shelter allowing for the strip curtains to hang unobstructed. We had to trim and modify our curtain so it could work with our shelter. See Strip Curtain section for photos.

You will need to make the best decision based on budget and space restraints.

Shelter

We used a carport structure from Versa Tube. It came by truck and we unloaded with tractor. They also offered a lift gate to unload.

The build process is very DIY friendly as long as you follow the directions closely. We chose this company because they advertise how DIY friendly their buildings are.



We were able to assemble the structure with 2 people in 1.5 days with a ladder, tape measure, and impact driver (or drill)

We chose a carport that utilizes purlins in hope that a tarp may be used instead of metal roofing. Once built, it was clear a tarp option was not going to be feasible. If you added more purlins or a really good tarp, this option may work for you.

Shelter

We installed steel roofing on the roof. The sheets were ordered to the reccommend length sent by the carport manufacturer. They were 10'7" sheets and were manageable with 2 people and a ladder. It took us ¾ of a day to complete. We found it important to measure and mark the purlins for the width of the sheet metal - ours was every 36"(first sheet 38" then 36" after that). This ensures your metal stays square going across the roof. With just 7 sheets per side, you can start to get off by a few inches by the end! Marking the sheet metal with the purlin spacing before it's on the roof is also important. If you live in a low snow load area - you won't have to use purlins and the roofing steel can run horizontally instead of vertically- this will be based on the structure you use. The wall steel runs horizontally and was installed utilizing 2 clamps and an impact driver. The sides made the shelter much more rigid as well.

We installed the gable kit for the building and installed pvc clear roofing on the gable to limit driving rain and wind but also to let in light. The pvc is brittle - if you are going to be moving the carport for mobile milking using steel may be better.

PVC Vacuum Line and Milking System

Design Considerations

For this guide we are installing a vacuum line only for machine milking. This is typically called bucket milking, describing milk flowing from udder, through milking unit, into a milk bucket which is then transported to the milk house and poured into a bulk cooling tank. Bucket milking is an old way of milking but still used today by small farms. No milk enters the PVC vacuum line and is for air only.

For this guide we selected Nupulse style milking claws. They are an all-in-one milking unit and pulsation combo and operate off of one milk hose. This makes for a very simple design and allows for the use of basic stall-cocks.

A 3" line is used, however a smaller PVC vacuum can also work - a larger line allows for more vacuum reserve in case you are running multiple milking units at one time and there is a loss of vacuum (like a cow kicking off a milking unit). If you were going to run 6 buckets at a time, a loop should be created instead of a straight run so equal vacuum is supplied to both sides of the line. We will be using 2 buckets at once so no loop is really necessary.

We ran our vacuum line back to vacuum pump although if you are mobile milking the vacuum pump can be hooked to the vacuum line by a milk hose and an additional stall cock. Or forgo the PVC vacuum line altogether and utilize the mobile vacuum pump as is.

The vacuum line should be sloped for draining of condensation and have a self draining valve at the low point. We also installed clean out caps so we can hose out the line to keep the inside clean. Milk residue can enter the PVC vacuum line and if you overflow your bucket, milk will enter the line and potentially your vacuum pump so take precautions that this does not happen.

Vacuum design is too complex for this guide however generally you will need 5-10 CFM (Cubic Feet Per Minute) per milking unit operating at one time. If buying new, the retailer can tell you how many units the pump can operate - if buying used off the farm, you can just ask how many milking units they used at once. A ballast tank, vacuum regulator, and vacuum gauge will also be needed to complete the system.

PVC Vacuum Line and Milking System

Basic stall-cock. These can be threaded into fitting or a hole can be drilled and threads cut with a 1/2" tap. We had success with both methods.

Nupulse milking units are a popular choice for small farms and are simple to use and maintain. They use just one hose for milk and vacuum.

We built a small shed out of recycled materials to house our vacuum pump, ballast tank and regulator. The shed was built on skids and is completely transportable.

Vacuum shed adjacent to parlor with auxiliary PVC vacuum line run into milk house (far left) to operate Nupulse Claw washer.

PVC Vacuum Line and Milking System

Tools needed to install stall-cocks- wrench or channel locks, Teflon tape and/or thread sealant

Cutting PVC pipe air line. A circular saw, reciprocating saw or hack saw will work well. Wear eye protection!

Stall-cock alignment. Measure the inside of the fitting to determine insertion depth- so when you glue everything up they are spaced the way you want. Dry fitting PVC fittings typically does not work as the glue acts as a lubricant. Measuring and hoping for the best is normally how it goes. We used the lines on our pipe and fittings from the factory to insure all of our fittings were pointing the same way and will be in a straight line. Our spacing was cutting sections at 26" for a 26.5" stall-cock spacing which is the average of Holstein/Jersey recommended spacing.

PVC Vacuum Line and Milking System

We used 3" conduit brackets and worm gear hose clamps to secure vacuum line.

Because the vacuum is just for air we mounted it low for ease of use. A Fernco splice fitting was utilize as a shock absorber and for easier installation. Screw on clean out adapters allow for cleaning.

Our stall cocks are ½” National Pipe Tread. The fittings were for 3/4" so a bushing was used to reduce. The stall cock, and reducing bushing were installed with teflon tape and pipe sealant for a good seal without having to over tighten them.

3" schedule 40 Solid Core PVC, Reducing Tee 3 x ¾ x 3 and ¾ to ½ bushing

PVC Vacuum Line and Milking System

Clean-out fitting and cap for ends of vacuum line for easy cleaning.

A ½” tap can also be used to cut threads into the PVC pipe.

Teflon tape and thread sealant are used to make a air tight seal.

The PVC airline is run inside the milk house using 1.5" pipe and 2 additional stall-cocks are used to operate the Nupulse claw washers. A clean out at the low point allows for draining any water that enters the line.

PVC Vacuum Line and Milking System

These Nupulse claw washers work well and are easy to install and operate.

We use a garden cart to keep our milk buckets off the ground. Milk line hooks are used to support air and milk hoses.

Using a bucket milking system in a parlor is unorthodox but if you have no infrastructure on the property and would like to expand in the future this is a low cost way to get started. A pipeline can be added in the future as your business grows. A local dairy supply company quoted us $15,000 to a install a pipeline in this parlor utilizing used equipment.

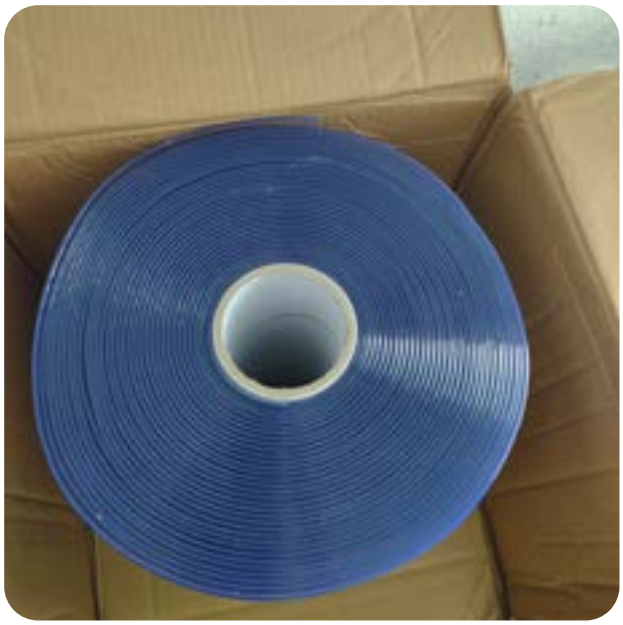
Lighting

We chose simple weather proof LED shop lights for the parlor. They can be easily removed, added to, or powered by a generator. No electrician needed.

These shop lights were pre-wired with 10 lights every 10'. We used zip ties to mount them. The directions say up to 3 strands can be hooked together if more light is needed.

Shadows can scare cattle- make sure to have plenty of light to avoid creating shadows - moving or adding lighting as needed.

Strip Curtain



There are a lot of retailers of strip curtains on the internet. Many I contacted ended up being the same company. Buyer beware! To save money we bought bulk rolls and built the curtain ourselves. This is a 100' roll x 12" of .012 thick material. We used 6 rolls doing a 100% overlap which is a 12" strip every 6".

After being cut to length we used the mounting brackets as a template to drill holes in the curtains.

Using the bracket as the template and drilling one at a time ensured each one was correct.

Installing the brackets.

Strip Curtain

We used left over screws from the metal roofing to install the brackets. 1", 12 gauge self taping screw.

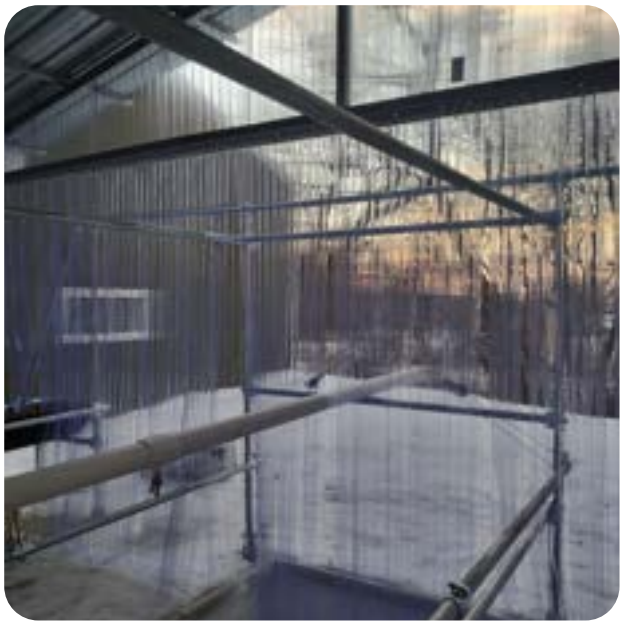
We had to trim one bracket with the reciprocating saw. With a new blade it cut the bracket easily.

Since our shelter doesn't extend the full width of the parlor, the strip curtain needed to be trimmed around the rails and PVC vacuum line. This was an unforeseen situation.

A razor blade and scissors was used to cut the strip curtain.

Strip Curtain

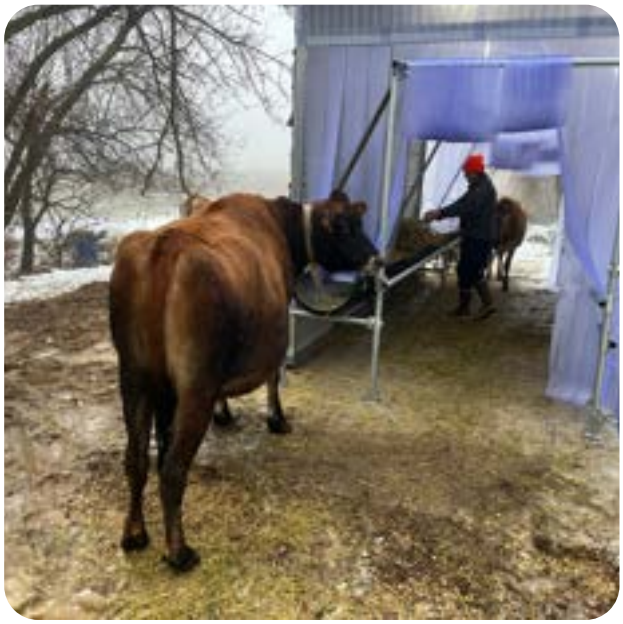
Even with trimming around the frame and feed trough, just stopping the wind made a huge difference in the cold.



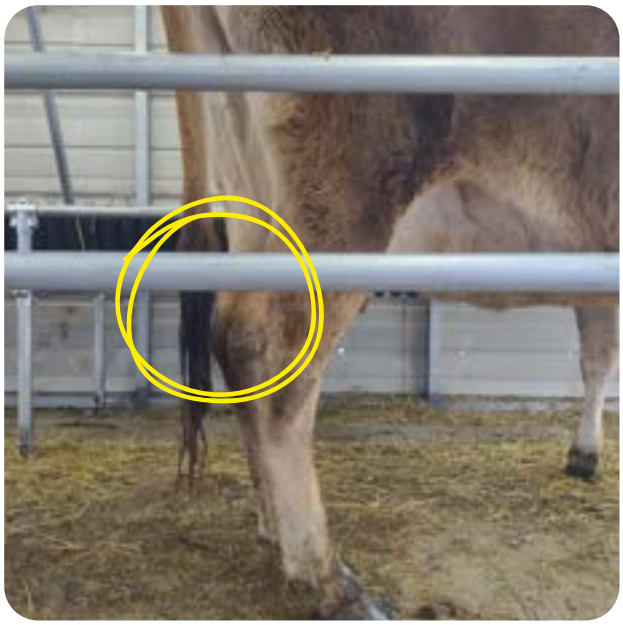
Can easily see what is happening outside the parlor and allows for natural light.

The strip curtain interferes with the gates swinging freely. A longer shelter would mitigate this. The cow platform can hold 14 +/- cows at a time so depending on cattle numbers, you may only need to open the gates a few times per milking and can work around this incapability.

Operational Testing



Filling feed trough with hay. Strip curtain is pulled out of the way.



The kick rail seems to be located at the right height - just above the hock. We lowered ours to 30" (rump) and 22" (kick) for Jersey.

Feed trough preformed as designed. Cattle seemed to have no problems reaching or consuming the hay. Having the trough pushed forward allowed for a more natural eating position.

5 Year Pro forma Using Do-It-Yourself Parlor

The purpose of these sheets is to aid in projecting 5 year farm finances. The sheets allow for you to input custom values for things such as numbner of cattle, estimated costs, and initial investment in infrustructure. The sheets will help you to estimate projected revenue as well as cost and to see what the next five years might look like for your farm.

Values that are Blue are inputs that you can change and customize.

Values that are Black represent formulas and should not be directly changed.

1. Start with the InfrastructureCosts sheet. Input the number of cows you are buying and the cost per cow. You might also include things specfici to your operation such as cattle shipping costs, and fencing material costs.

2. Next go to the SG&A sheet. This represents your selling, general, and administrative expenses. This is where you will include all of your farm overhead. The sheet includes some sample data but your numbers will be unique to your farm.

3. Next go to the RevCostEst sheet. Here you can fill in the inputs in the top box. This includes the total number of cows in your operation, how much you pay for hay and feed and how much your cows consume annually. It also includes the price that you are paid per CWT. This number can widely vary depending on if you are selling direct to consumer, to a co-op, are conventional, or organic. You can also input here the annual CWT you get per cow, this will

4. Next on the RevCostEst sheet you will input your annual costs per cow. This includes any other direct costs per cow if you have them, an example might be supplements or mineral.

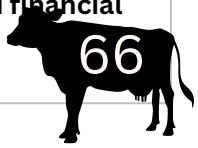
5. Finally on the RevCostEst sheet you can input your annual labor costs.

6. Now you are ready to look at your projected financial statements. The **Income** statement includes in **blue** cells for you to input any depriciation and interest that comes out of your income before tax. It also includes cells in **red** to input your estimted taxes. Estimated taxes will vary based on your income and tax rate, make sure to update this with numbers that are accurate for your operation.

7. On the Balance sheet you can fill in your cash on hand, any outstanding accounts recieveable amounts, and the total for your property and equipment. This number represents the total assets of your operation. Below you can fill in any debts, make sure you records them as a negative number in the sheet.

8. On the CashFlow sheet you can fill in any investments you are making into your business as well as any money you are getting from financing.

Adjust these sheets as needed to meet the needs of your operation. This is a simple starting baseline and financial statements can be much more detailed depending on your operational needs.



5 Year Pro forma Using Do-It-Yourself Parlor

Inputs	
Cost of a Cow	$2,000.00
Number of Cows	5
Milking Parlor	
Milking Parlor Materials	$8,000.00
Other Milking Parlor Costs 1	$0.00
Other Milking Parlor Costs 2	$0.00
Dairy Herd	
Cows	$10,000.00
Mobile Fencing Materials	$1,500.00
Other	
Other Initial Infrastructue Cost 1	$0.00
Other Initial Infrastructue Cost 2	$0.00
Other Initial Infrastructue Cost 3	$0.00
Other Initial Infrastructue Cost 4	$0.00
Total Initial Infrastructure	**$19,500.00**

5 Year Pro forma Using Do-It-Yourself Parlor

SG&A	2026	2027	2028	2029	2030
Initial Infrastructure	**$19,500.00**				
General Farm					
Supplies	$500.00	$515.00	$530.45	$546.36	$562.75
Fuel	$2,000.00	$2,060.00	$2,121.80	$2,185.45	$2,251.02
Vehicle Repair	$2,000.00	$2,060.00	$2,121.80	$2,185.45	$2,251.02
Insurance	$3,500.00	$3,605.00	$3,713.15	$3,824.54	$3,939.28
Utilities	$1,000.00	$1,030.00	$1,060.90	$1,092.73	$1,125.51
Vet	$0.00	$0.00	$0.00	$0.00	$0.00
Mortgage or Rent Payment	$12,000.00	$12,360.00	$12,730.80	$13,112.72	$13,506.11
Dairy					
Cleaning Supplies	$300.00	$900.00	$900.00	$900.00	$900.00
AI	$0.00	$1,750.00	$2,625.00	$3,500.00	$3,500.00
Vaccines	$50.00	$50.00	$75.00	$100.00	$100.00
Misc Cattle Supplies	$200.00	$200.00	$300.00	$400.00	$400.00
Infrastructure Improvments					
Improved Hay Storage	$0.00	$0.00	$0.00	$0.00	$0.00
New Equipment	$0.00	$0.00	$0.00	$0.00	$0.00
Other Long Term Farm Improvements	$0.00	$0.00	$0.00	$0.00	$0.00
Total SG&A	$41,050.00	$24,530.00	$26,178.90	$27,847.27	$28,535.69

5 Year Pro forma Using Do-It-Yourself Parlor

Inputs	2026	2027	2028	2029	2030
Total number of cows	20	20	20	20	20
Price Per Lb Hay	$0.20	$0.20	$0.20	$0.20	$0.20
Price Per Lb Grain	$0.30	$0.30	$0.30	$0.30	$0.30
Lbs of Hay Per Cow	7300	7300	7300	7300	7300
Lbs of Grain Per Cow	7300	7300	7300	7300	7300
Pay Per Cwt	$40.00	$40.00	$40.00	$40.00	$40.00
CWT/Year/Cow	240	240	240	240	240
Annual Cost Per Cow					
Hay	$1,460.00	$1,460.00	$1,460.00	$1,460.00	$1,460.00
Feed	$2,190.00	$2,190.00	$2,190.00	$2,190.00	$2,190.00
Other Cost 1	$0.00	$0.00	$0.00	$0.00	$0.00
Other Cost 2	$0.00	$0.00	$0.00	$0.00	$0.00
Other Cost 3	$0.00	$0.00	$0.00	$0.00	$0.00
Total	**$3,650.00**	**$3,650.00**	**$3,650.00**	**$3,650.00**	**$3,650.00**
Labor					
Employees	1	1	1	1	1
Hourly Rate	$25.00	$25.75	$26.52	$27.32	$28.14
Hours Per Year	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Total Labor	**$50,000.00**	**$51,500.00**	**$53,045.00**	**$54,636.35**	**$56,275.44**
Annual Cost and Revenue Totals					
Total Annual Cost	$123,000.00	$124,500.00	$126,045.00	$127,636.35	$129,275.44
Total Revenue	$192,000.00	$192,000.00	$192,000.00	$192,000.00	$192,000.00

5 Year Pro forma Using Do-It-Yourself Parlor

USD	2026	2027	2028	2029	2030
Income Statement					
Revenue	**$192,000.00**	**$192,000.00**	**$192,000.00**	**$192,000.00**	**$192,000.00**
COGS	$123,000.00	$124,500.00	$126,045.00	$127,636.35	$129,275.44
Gross Profit	$69,000.00	$67,500.00	$65,955.00	$64,363.65	$62,724.56
SG&A	$41,050.00	$24,530.00	$26,178.90	$27,847.27	$28,535.69
EBITDA	$27,950.00	$42,970.00	$39,776.10	$36,516.38	$34,188.87
Depreciation	$0.00	$0.00	$0.00	$0.00	$0.00
Interest	$0.00	$0.00	$0.00	$0.00	$0.00
EBT	$27,950.00	$42,970.00	$39,776.10	$36,516.38	$34,188.87
Taxes	$6,987.50	$10,742.50	$9,944.03	$9,129.10	$8,547.22
Net Income	**$20,962.50**	**$32,227.50**	**$29,832.08**	**$27,387.29**	**$25,641.66**

5 Year Pro forma Using Do-It-Yourself Parlor

USD	2026	2027	2028	2029	2030
Cash Flow Statement					
Operating Cash Flow					
Net Earnings	$20,962.50	$32,227.50	$29,832.08	$27,387.29	$25,641.66
Investing Cash Flow					
Investments in Property & Equipment	$0.00	$0.00	$0.00	$0.00	$0.00
Cash from Investing					
Financing Cash Flow	$0.00	$0.00	$0.00	$0.00	$0.00
Net Increase(decrease in					
Opening Cash Balance	**$0.00**	**$20,962.50**	**$53,190.00**	**$83,022.08**	**$110,409.36**
Closing Cash Balance	**$20,962.50**	**$53,190.00**	**$83,022.08**	**$110,409.36**	**$136,051.02**

5 Year Pro forma Using Do-It-Yourself Parlor

USD	2026	2027	2028		2030
Balance Sheet					
Assets					
Cash	$20,962.50	$32,227.50	$29,832.08	$27,387.29	$25,641.66
Accounts Receivable	$0.00	$0.00	$0.00	$0.00	$0.00
Property & Equipment	$20,000	$20,000	$20,000	$20,000	$20,000
Total Assets	$40,962.50	$52,227.50	$49,832.08	$47,387.29	$45,641.66
Liabilities	($1,000.00)	($1,000.00)	($1,000.00)	($1,000.00)	($1,000.00)
Accounts Payable	($1,000.00)	($1,000.00)	($1,000.00)	($1,000.00)	($1,000.00)
Debt	($1,000.00)	($1,000.00)	($1,000.00)	($1,000.00)	($1,000.00)
Total Liabilities	($3,000.00)	($3,000.00)	($3,000.00)	($3,000.00)	($3,000.00)
Total Assets & Liabilities	**$37,962.50**	**$49,227.50**	**$46,832.08**	**$44,387.29**	**$42,641.66**