

Penn State **Extension**

Gates, Stiles, Passages & Cattle Guards

Agricultural and Biological Engineering

abe.psu.edu

No. IP 770-27

This Idea Plan is intended to provide educational information and ideas concerning various methods for building gates, stiles, passages, and cattle guards for use with fences. The following attached drawings are based on historical plans and may not meet design and construction standards for your area:

- Wood Gates, Stiles, and Fence Passages (USDA 5505)
- Gates and Fences for Stock Corrals (USDA 5961)
- Stiles and Special Gates (PSU 20)
- Variable Clearance Gate (USDA 6365)
- Cattle Guard, Wood Construction (USDA 5903)
- Cattle Guard, Concrete and Wood Construction (USDA 5904)

If you decide to build a facility similar to any of these plans, be sure to check building requirements for your area. Your local building inspector, engineer, building supplier, or building contractor can help you determine what is a safe and legal facility for housing rabbits in your area. In addition to the rules and regulations covering design and construction of buildings, be sure to consider how you will handle the manure and potential nuisance problems for neighbors, including flies, odor, and noise.

The Department of Agricultural and Biological Engineering at Penn State has a variety of educational material available related to agricultural and biological engineering. This material is intended to help Pennsylvania farmers and others develop buildings and facilities for modern, environmentally-compatible farm facilities. The material can be used in conjunction with county extension staff, builders, suppliers, consulting engineers, the Natural Resources Conservation Service, financial management advisors, farm lenders, veterinarians, and others to assemble a facilities plan suitable for local conditions.

Publications are available in the areas of agricultural safety and health, animal housing systems, building and farmstead planning, crops and greenhouses, machinery systems and tractors, residential housing, soil and water resources, and solid waste management. Contact your county Penn State Extension Office for more information on these subjects. You can also obtain an index of publications concerning the above areas by calling, writing, faxing or e-mailing:

Department of Agricultural and Biological Engineering
246 Agricultural Engineering Building
University Park, PA, 16802-1909
Telephone: 814-865-7685
Fax: 814-863-1031
Email: agbioeng@psu.edu

For more information, the following comprehensive handbook covering design and construction of small pole buildings is available:

NRAES-11—High Tensile Wire Fencing (1987) \$4.00 (Contact NRAES below for more information)

NRAES, Cooperative Extension
PO Box 4557
Ithaca, NY 14852-4557
Telephone: (607)255-7654 Fax: (607)254-8770
Email: NRAES@cornell.edu

MWPS-6-Beef Housing and Equipment Handbook (1987) \$20.00 136 pages (Contact MWPS below for more information)

Midwest Plan Services (MWPS)
122 Davidson Hall
Iowa State University
Ames, IA 50011 USA
Phone: 515-294-4337 Fax: 515-294-9589
Email: mwps@iastate.edu

An OUTREACH program of the College of Agricultural Sciences

Penn State College of Agricultural Sciences research and cooperative extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

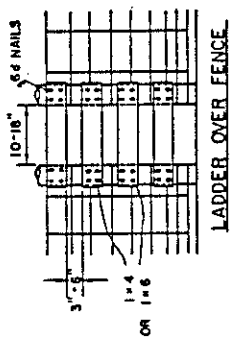
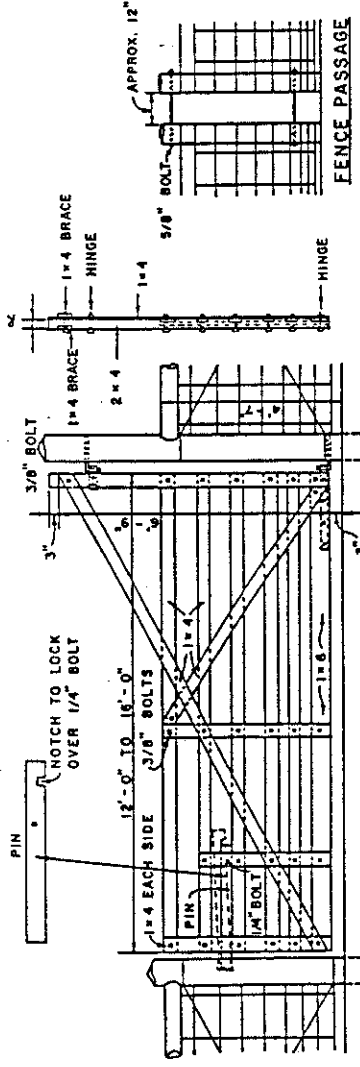
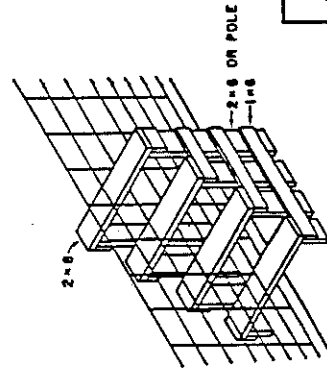
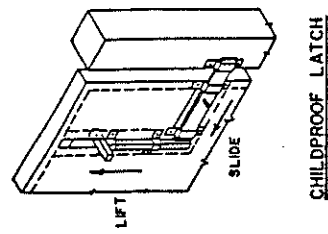
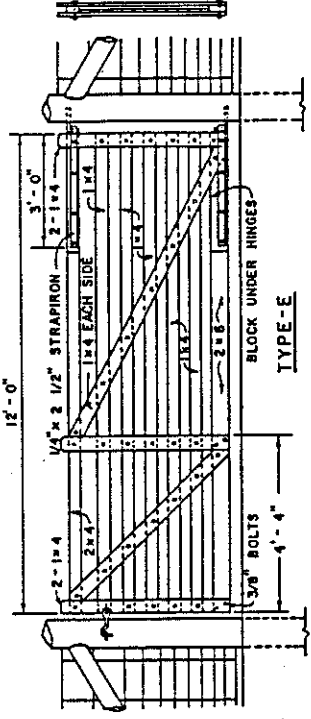
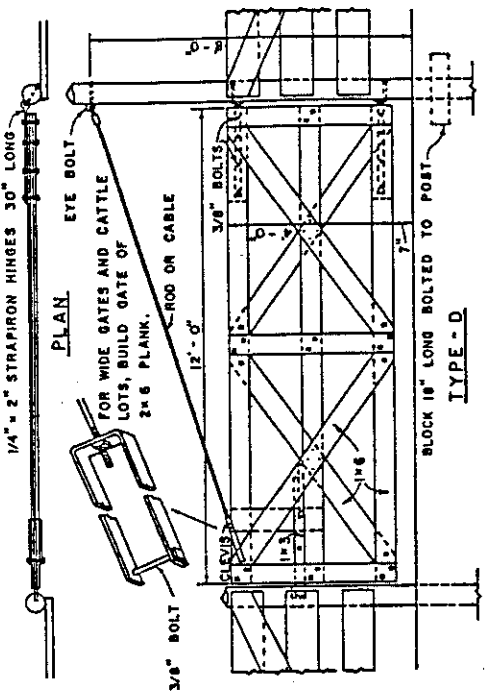
Visit Penn State Extension on the web: extension.psu.edu

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Cooperative Extension is implied.

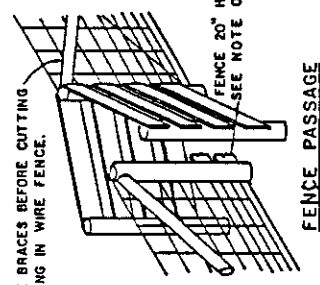
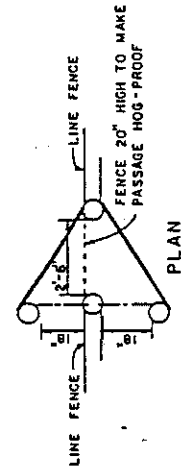
Penn State encourages persons with disabilities to participate in its programs and activities. If you anticipate needing any type of accommodation or have questions about the physical access provided, please contact [Name and phone number] in advance of your participation or visit.

This publication is available in alternative media on request.

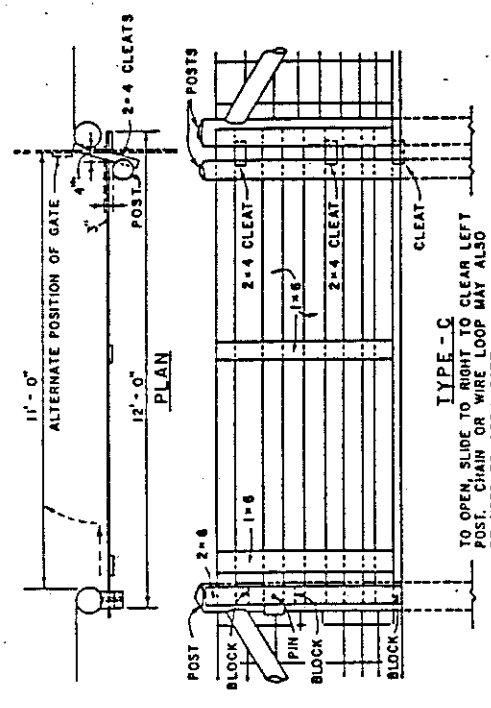
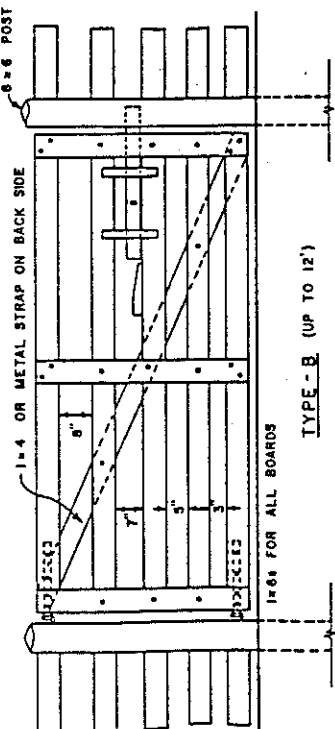
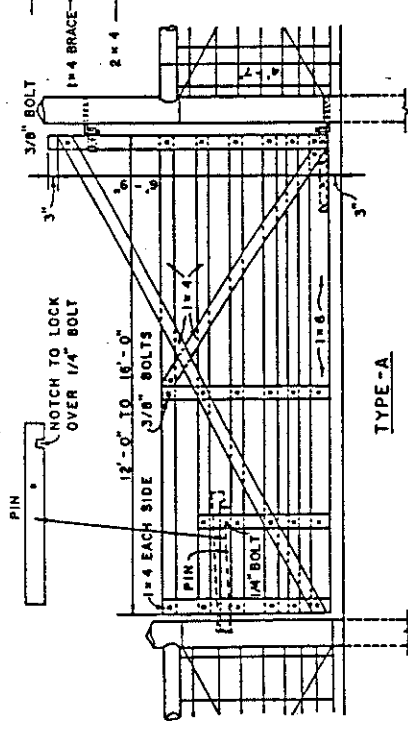
The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, gender identity, or veteran status. Discrimination or harassment against faculty, staff, or students will not be tolerated at The Pennsylvania State University. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Director, The Pennsylvania State University, 328 Boucke Building, University Park, PA 16802-5901; Tel 814-865-4700/V, 814-863-1150/TTY.



NOTE: FOR EASE OF HANDING GATES, IT IS BETTER TO HAVE BOTH HINGE PINS POINT UPWARD. USE BENT NAIL THROUGH TOP OF PIN IN CASES WHERE THERE IS A POTENTIAL PROBLEM OF UPLIFT BY ANIMALS.

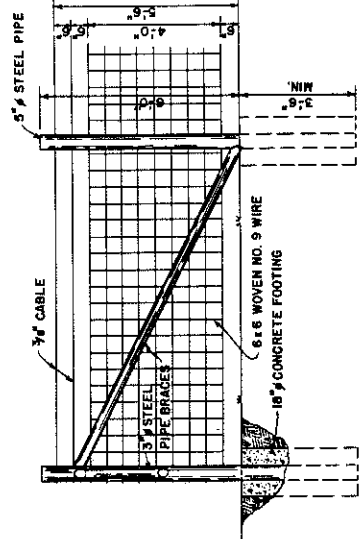


NOTE: "CLINCHED NAILS" MAY BE USED INSTEAD OF BOLTS TO CONNECT 1-6 BOARDS. (AT LEAST THREE 88 OR 64 NAILS PER BOLT.)

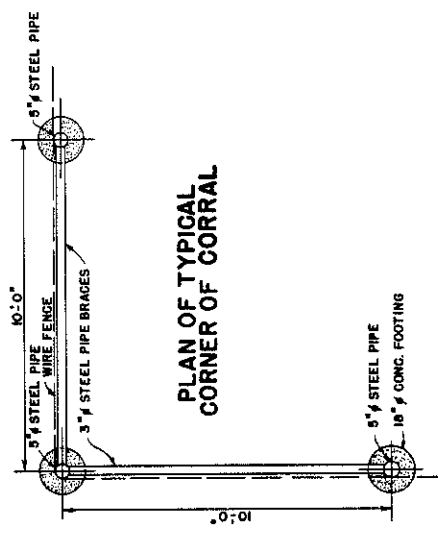


COOPERATIVE EXTENSION SERVICE
AGRICULTURE AND HOME ECONOMICS
The Pennsylvania State
University
UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

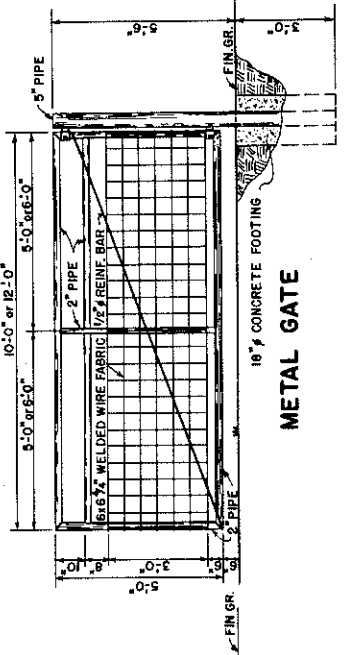
WOOD GATES, STILES, AND FENCE PASSAGES	USDA 39	5505	SHEET 1 OF 1
	REV '87		NOT TO SCALE



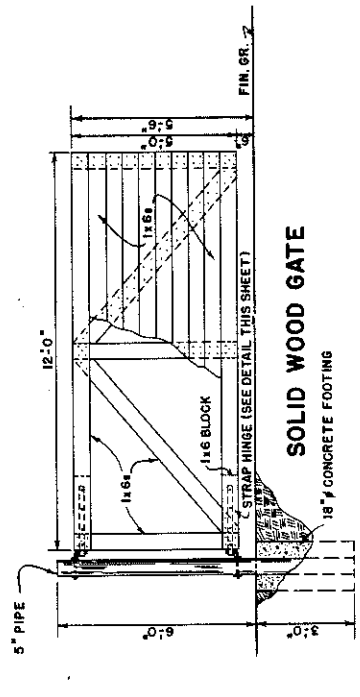
ELEVATION OF FENCING
TYPICAL CORNER



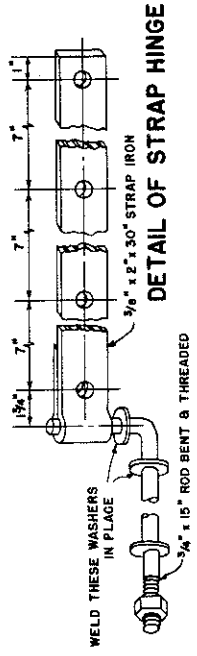
PLAN OF TYPICAL
CORNER OF CORRAL



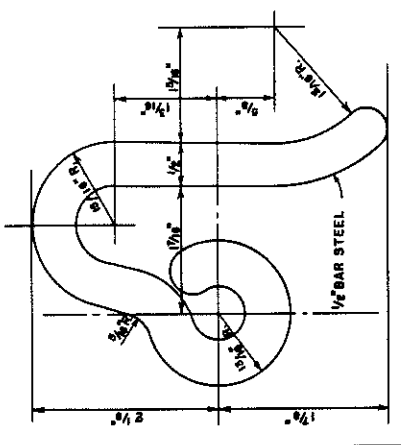
METAL GATE



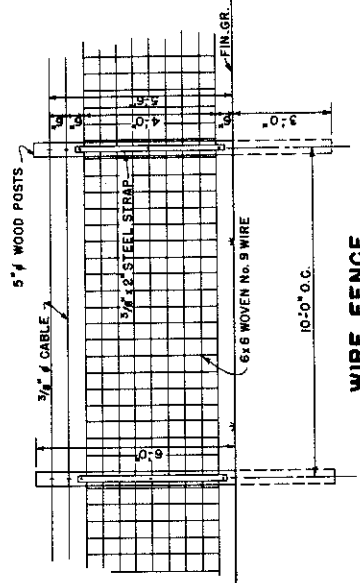
SOLID WOOD GATE



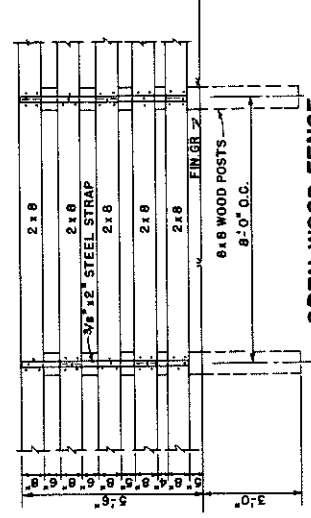
DETAIL OF STRAP HINGE



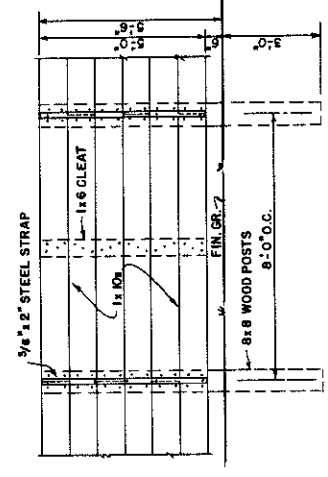
GATE HOOK



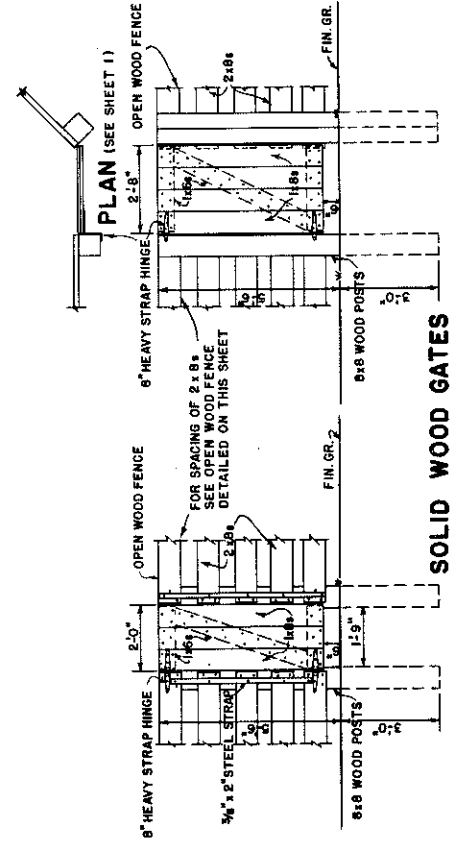
WIRE FENCE



OPEN WOOD FENCE



SOLID WOOD FENCE



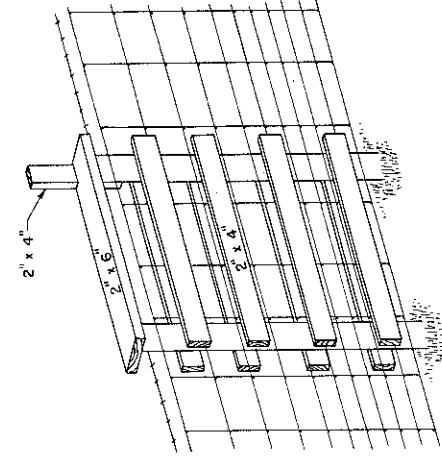
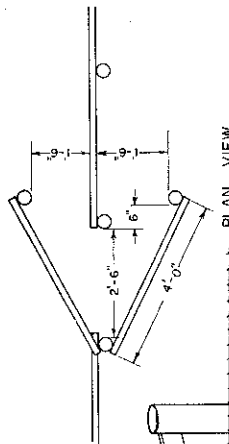
SOLID WOOD GATES

SCALE: 3/8" = 1'-0" UNLESS OTHERWISE NOTED.
COOPERATIVE EXTENSION WORK IN
AGRICULTURE AND HOME ECONOMICS
THE PENNSYLVANIA STATE UNIVERSITY
UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

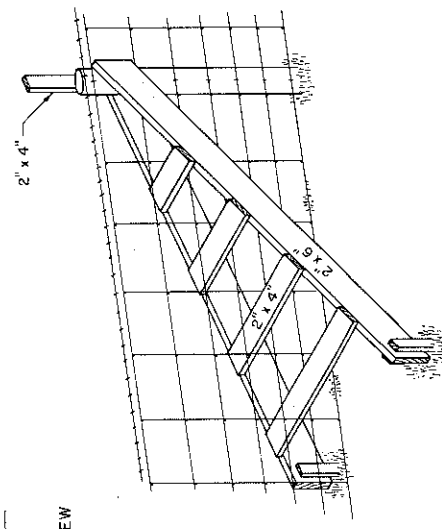
GATES AND FENCES
FOR STOCK CORRALS

USDA '63 EX-5961 SHEET 1 OF 1

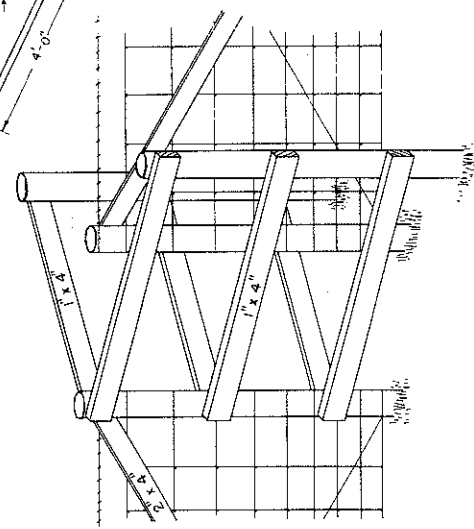
ORDER NO. 770-5961



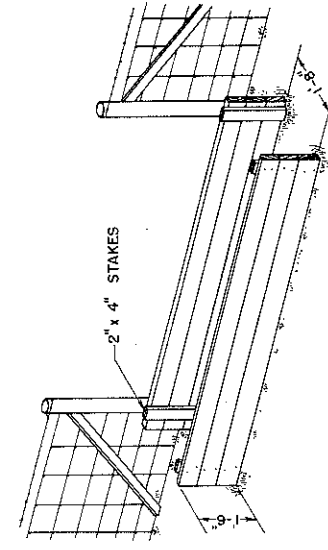
IN-LINE STILE



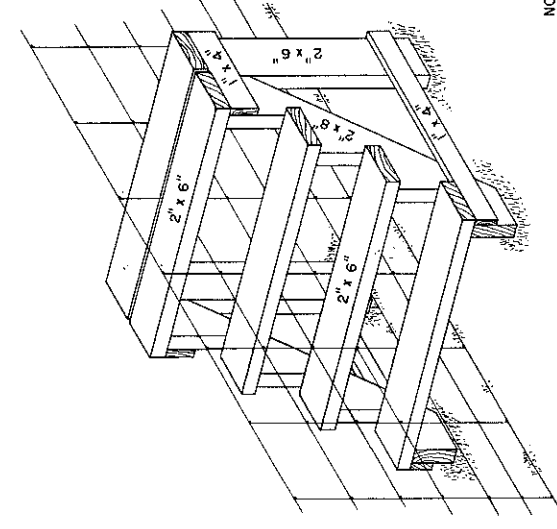
RAIL STILE



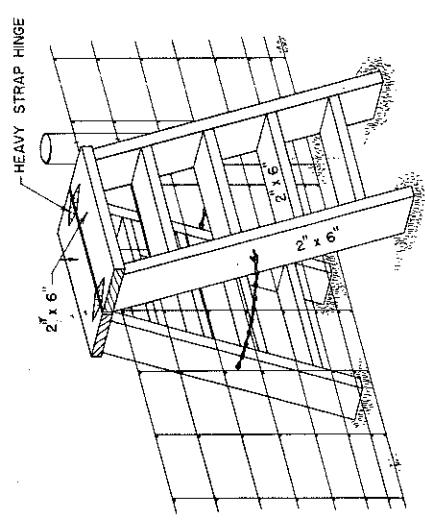
WALK-THROUGH STILE



CATTLE-ONLY GATE



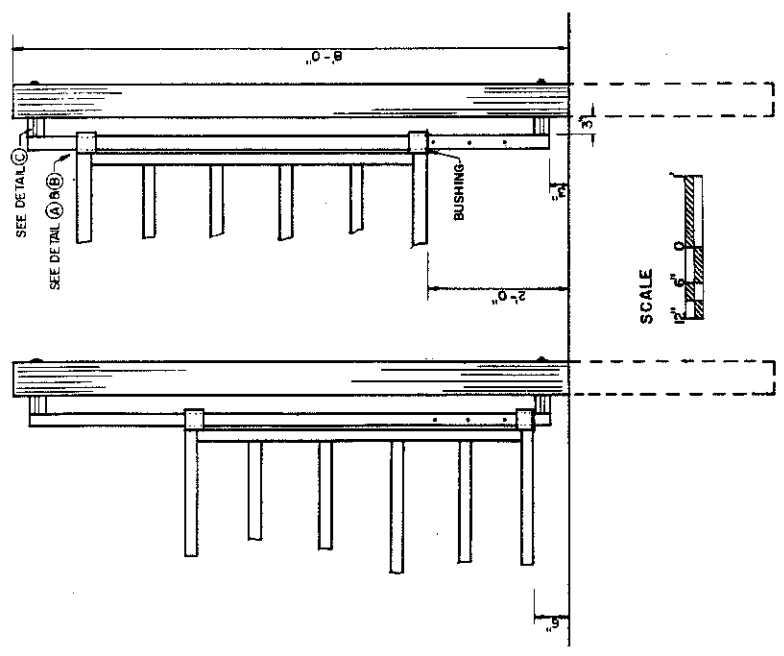
STEP-OVER STILE



PORTABLE STILE

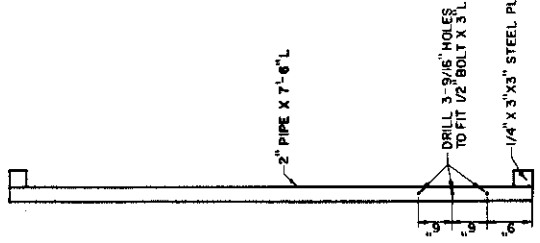
NOTE:
8" RISE ON STEPS

NOTE: IF USING A 6 X 6 OR 6" DIA. TREATED POST, FOLLOW DETAIL C. OTHERWISE, IF USING A STEEL POST OR PIPE, WELD THE 1/4" X 3" X 3" STEEL PLATE.

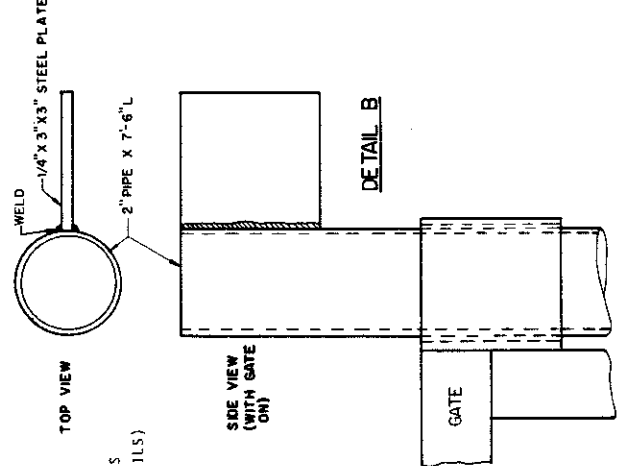


WOOD POST DETAILS

- NOTE: FOLLOW THESE ASSEMBLY STEPS.
1. WELD 2 1/3" x 3" L. PIPES ON GATE (DETAIL A)
 2. INSERT 2" x 7'-6" PIPE INTO THE 2 1/2" x 3" PIPES
 3. WELD 1/4" x 3" x 3" STEEL PLATE TO 2" PIPE (DETAILS)

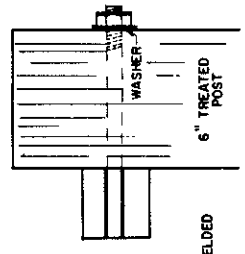


STEEL PIPE DETAIL

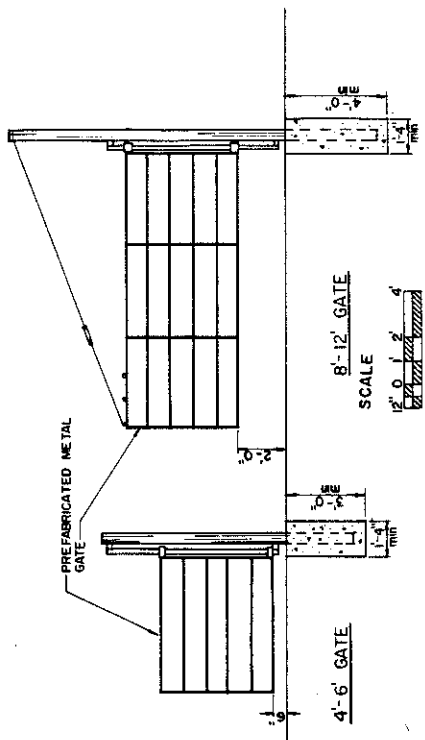


DETAIL A

DETAIL B



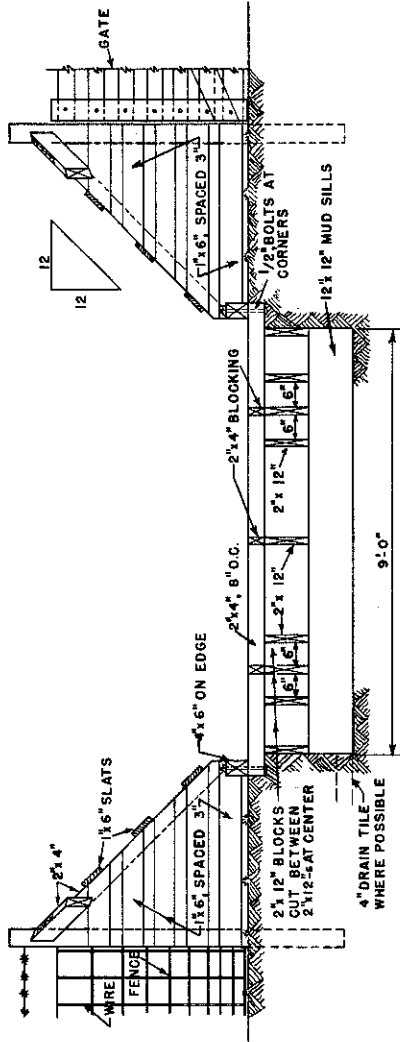
DETAIL C



8'-12" GATE

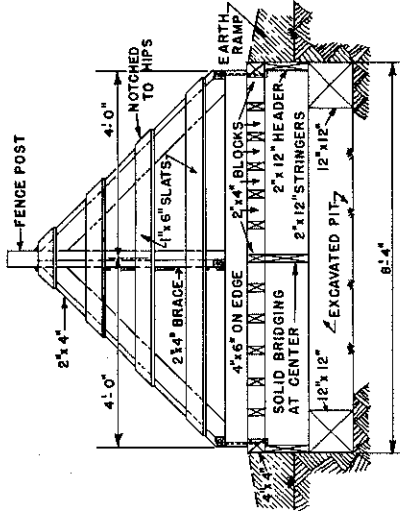
4'-6" GATE

THIS SNOW AND WINDURE GATE CAN BE USED IN GATTLIE CORRALS, FEEDLOTS OR ANYWHERE ON THE FARM. IT CAN BE EFFECTIVELY USED IN WIDTHS OF 4 TO 12 FEET. THE GATE CAN BE LIFTED BY VARIOUS POSITIONS ON THE GATE HINGE BAR BY MOVING THE 1/2 INCH ROLL POSITION INTO DIFFERENT BORED HOLES IN THE HINGE BAR WHICH IS MADE OF 2 INCH STANDARD STEEL PIPE. HOLES ARE 9/16 INCH IN DIAMETER AND SPACED 6 INCHES APART. IT IS SUGGESTED THAT FOR GATES UNDER 8 FEET IN LENGTH THE GATE POST BE AT LEAST 6 FEET ABOVE GROUND LEVEL. THE POST SHOULD BE PLACED AT LEAST 3 FEET IN THE GROUND DEPENDING ON SOIL CONDITIONS. FOR GATES 8 TO 12 FEET LONG, 4 FEET IN THE GROUND WILL BE NECESSARY. POUR CONCRETE AROUND THE POST. HOLE DIAMETER SHOULD BE AT LEAST 1/2 TO 1 INCHES LARGER THAN THE PIPE DIAMETER. USE A 6" X 6" OR 6 INCH DIAMETER TREATED WOOD POST OR 6 INCH DIAMETER STANDARD STEEL PIPE POST. FOR WIDER GATES (8-12 FEET), THE GATE POST SHOULD EXTEND 12 FEET ABOVE THE GROUND LEVEL SO THAT A STEEL CABLE WITH A TURN BUCKLE CAN BE USED TO ADJUST GATE LEVEL FOR EASIER OPERATION.



SECTION A-A

SECTION A-A, SHOWS GUARD FLOOR BUILT LEVEL WITH GRADE
SECTION B-B, SHOWS GUARD FLOOR RAISED ABOVE GRADE

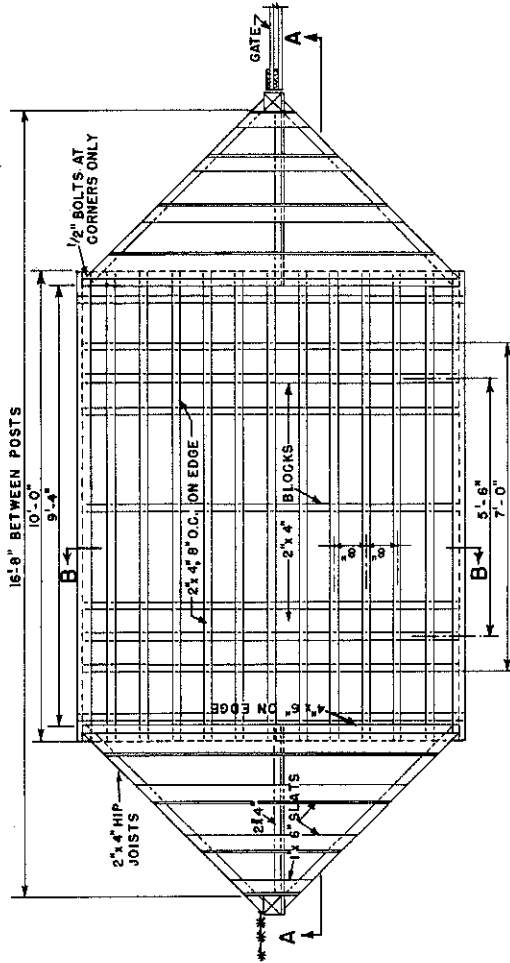


SECTION B-B

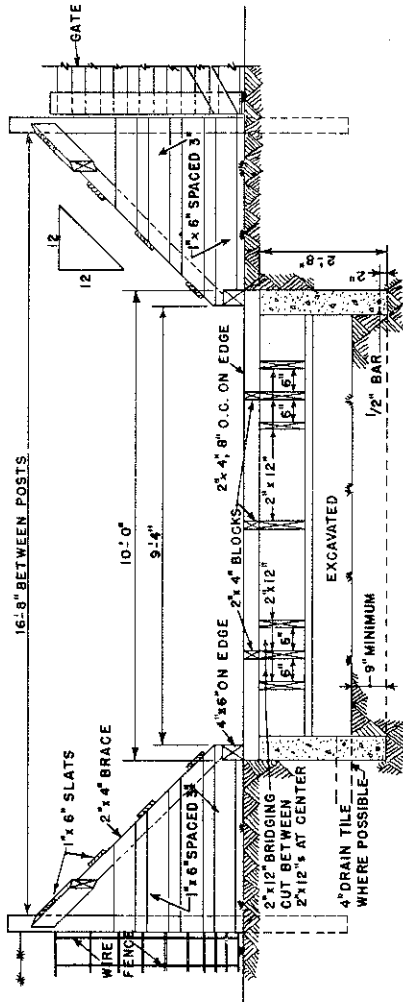
BILL OF MATERIALS

- LUMBER
 FENCE POST: 2-PCS 4x4x7.0'
 FRAMING:
 2-PCS 12x12x9.0'
 2-PCS 4x4x10.0'
 3-PCS 2x12x10.0'
 9-PCS 2x12x8.0'
 11-PCS 2x4x10.0'
 3-PCS 2x4x8.0'
 6-PCS 2x4x6.0'
 SLATS:
 GUARD RAILS: 2-PCS 1x6x18.0'
 MISCELLANEOUS
 ANCHOR BOLTS: 4-1/2" 12" GALV.

NOTE:
 TIMBERS IN CONTACT WITH EARTH ARE TO BE
 PRESSURE-TREATED WITH PRESERVATIVE

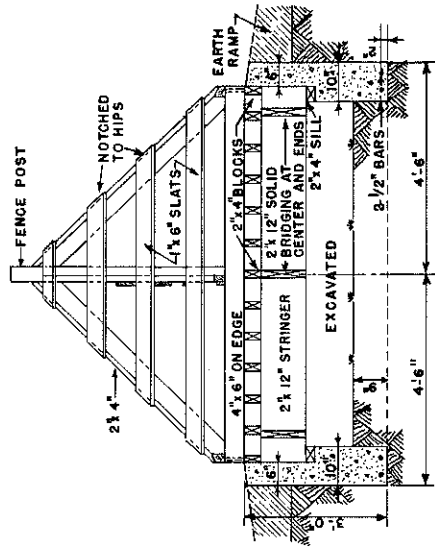


PLAN



SECTION A-A

SECTION A-A, SHOWS GUARD FLOOR BUILT LEVEL WITH GRADE
SECTION B-B, SHOWS GUARD FLOOR RAISED ABOVE GRADE

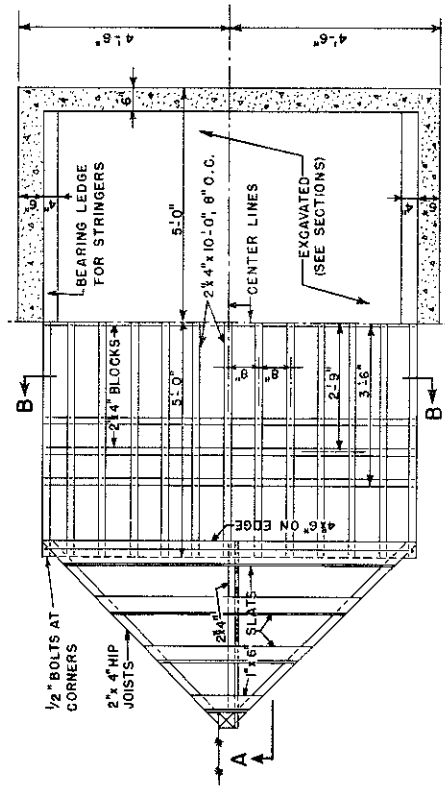


SECTION B-B

BILL OF MATERIAL

- LUMBER**
- FENCE POSTS: 2-PCS 4"x4"x7'-0"
 - 3-PCS 2"x12"x10'-0"
 - 7-PCS 2"x12"x8'-0"
 - 13-PCS 2"x4"x10'-0"
 - 2-PCS 2"x4"x9'-0"
 - 3-PCS 2"x4"x8'-0"
 - 6-PCS 2"x4"x6'-0"
 - 9-PCS 1"x6"x8'-0"
 - 2-PCS 4"x6"x8'-0"
- FRAMING:**
- 12 SACKS
 - 1.25 CU. YDS.
 - 2.15 CU. YDS.
- SLATS:**
- GUARD RAILS: 4-1/2"x12" GALVANIZED
 - ANCHOR BOLTS: 4-1/2"x9.9"
 - REINFORCING RODS: 2-1/2" #8-1.9"
- CEMENT:**
- 1.25 CU. YDS.
 - 2.15 CU. YDS.
- MISCELLANEOUS:**
- 2-1/2" #8-1.9"

NOTE:
TIMBERS IN CONTACT WITH EARTH OR CONCRETE ARE TO BE PRESSURE TREATED WITH PRESERVATIVE.



1/2 OF PLAN 1/2 OF FOUNDATION

COOPERATIVE EXTENSION WORK IN
AGRICULTURE AND HOME ECONOMICS
THE PENNSYLVANIA STATE UNIVERSITY

UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

CATTLE GUARD
CONCRETE AND WOOD

USDA '60 EX-5904 SHEET 1 OF 1

ORDER NO. 770-5904