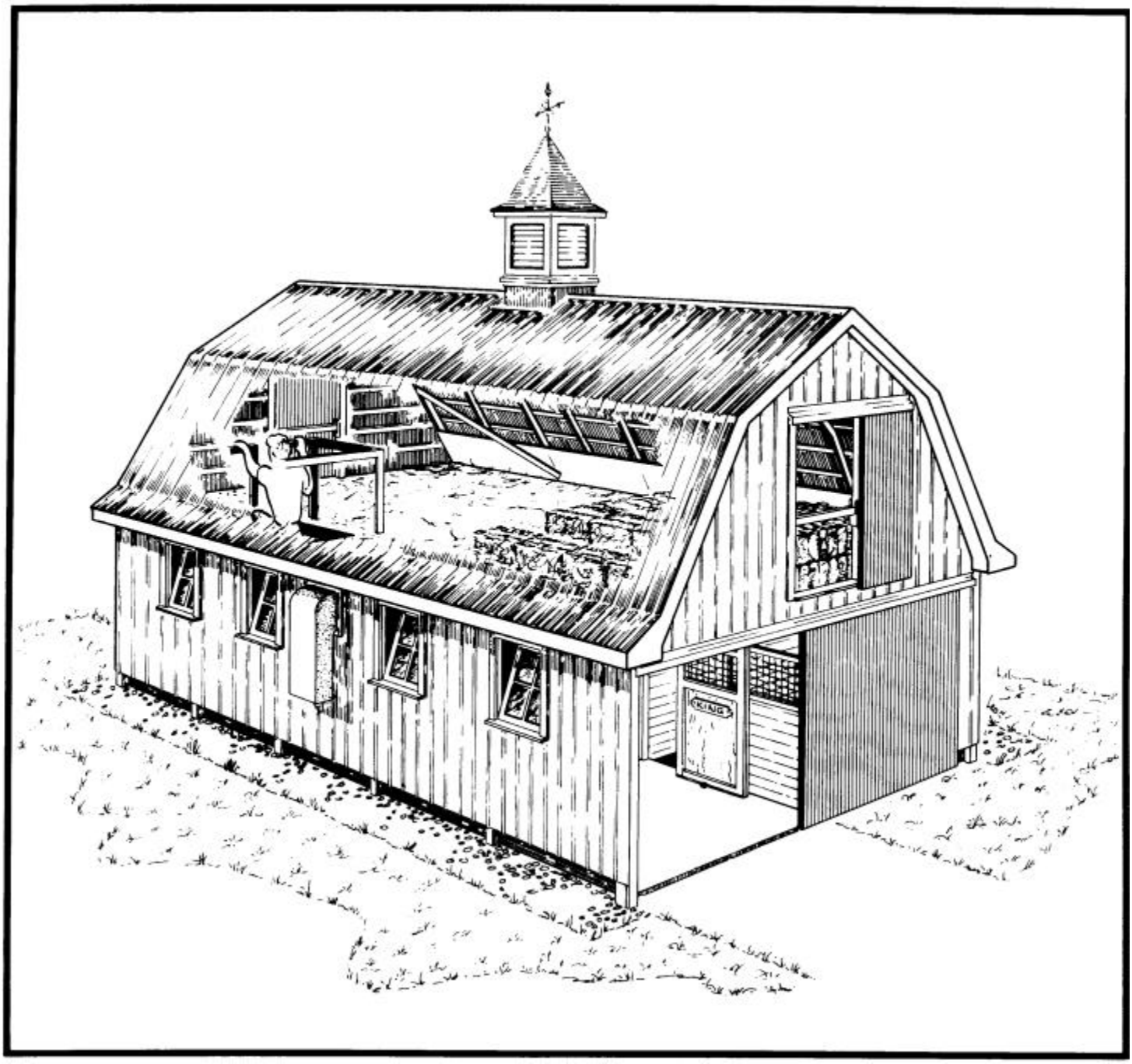
PLAN
M-8203

TWO-STORY HORSE BARN



CANADA
PLAN SERVICE

The Canada Plan Service prepares detailed plans showing how to construct modern farm buildings, livestock housing systems, storages and equipment for Canadian Agriculture.

This leaflet gives management information and describes one of these detailed plans. To obtain a copy of the Canada Plan Service detailed plan, contact your local provincial agricultural engineer or extension advisor.

TWO-STORY HORSE BARN

PLAN M-8203 REV 85:03

This plan is for a 7.2 x 12 m (24 x 40 ft) barn for light horses. The floor layout is similar to plan 8201, with a tack room, small feed room, three box stalls and a wide work alley A loft area provides overhead storage for hay and bedding.

CONSTRUCTION The exterior walls are of insulated pole frame construction using spaced 6 x 6 pressure-treated wood poles on concrete footings. Exterior wall plates notched into the tops of the poles support the ceiling joists and roof rafters. These ceiling joists are also supported near the building centerline by a beam and posts at the front of the box stalls. The plan shows how to lap the joists at mid-length and stagger the joints of the exterior wall plates to take advantage of the increased bending strength of members that are continued over supports.

Alternate details are given for a conventional concrete foundation with insulated stud walls.

BOX STALLS The 3 x 3.6 m (10 x 12 ft) box stalls feature earth floors and plank partitions. The open tops of the partitions are fitted with welded wire mesh for good ventilation. Each stall has a window protected by a wire mesh guard, and a sliding door that opens to the work alley.

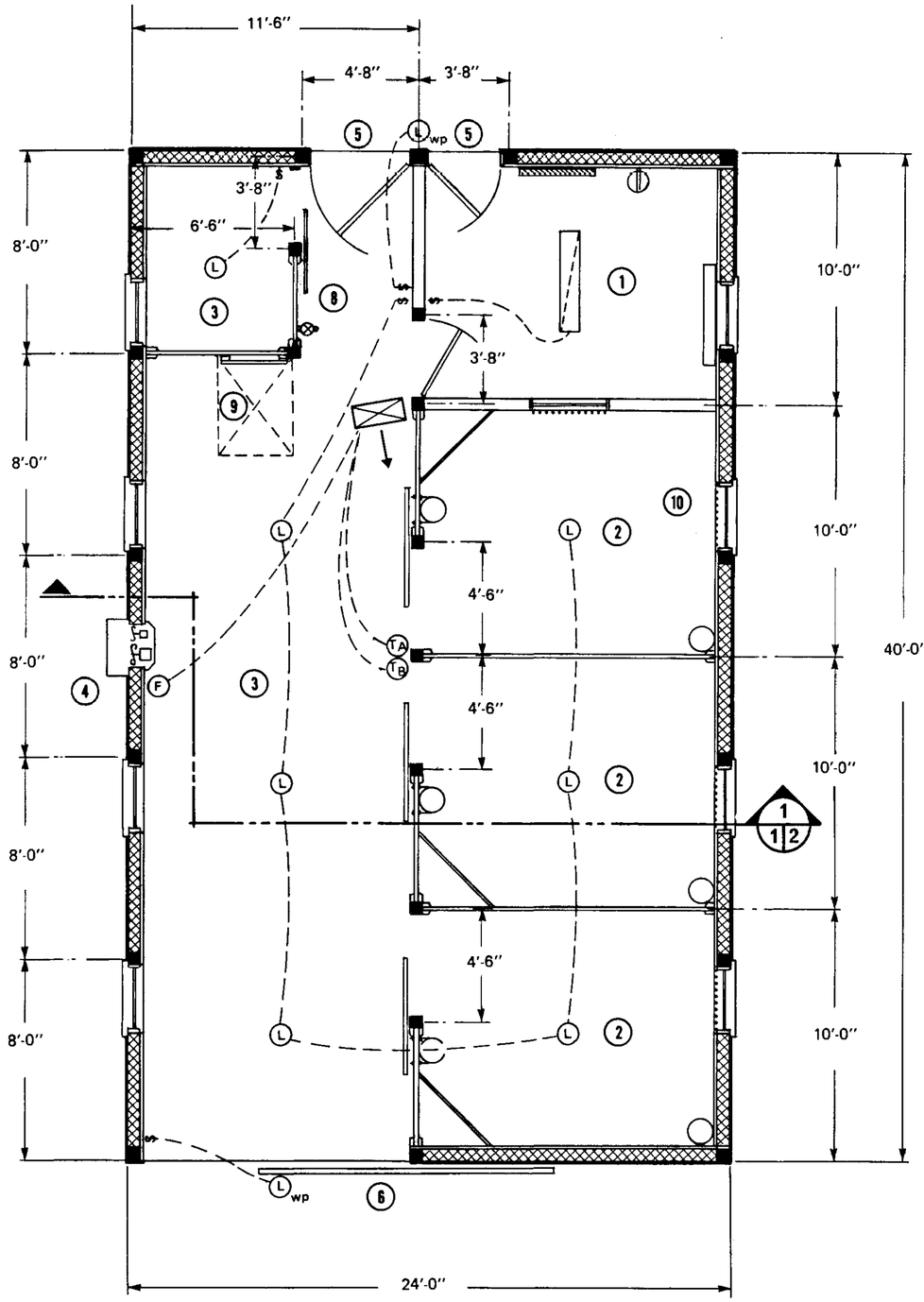
TACK ROOM AND OFFICE The tack room provides for supplies and equipment. This area could also be converted into a fourth box stall.

FEED AND BEDDING STORAGE The feed room will store a limited amount of grain. Bales can be lifted by bale-elevator through a sliding door in each end-wall. A floor hatch and inside ladder give access for putting down hay and bedding. The roof is the traditional gambrel arch, a popular and economical way to build hay and bedding storage overhead. In winter, be careful to leave a deep layer of dry hay or bedding over the entire loft floor to insulate. the warm stable below.

VENTILATION During mild and warm weather, ventilation can be supplied by opening windows and doors. The barn has a small two-speed fan controlled by a thermostat interlocked with electric heating. In cold weather, this automatically controls temperature with minimum heat waste. Because of the low cold weather ventilation rate required by the few horses in this building, adequate fresh air can be easily supplied by the small cracks around windows and doors. Be careful to weatherstrip or close off large cracks that could cause a draft by letting the fresh air in all at one point.

MANURE HANDLING AND STORAGE The wide work alley with a full-width sliding door at one end permits loading manure directly from the stalls into a trailer, spreader or truck box.
Check local regulations for storage and disposal of manure, and consider the following recommendations:

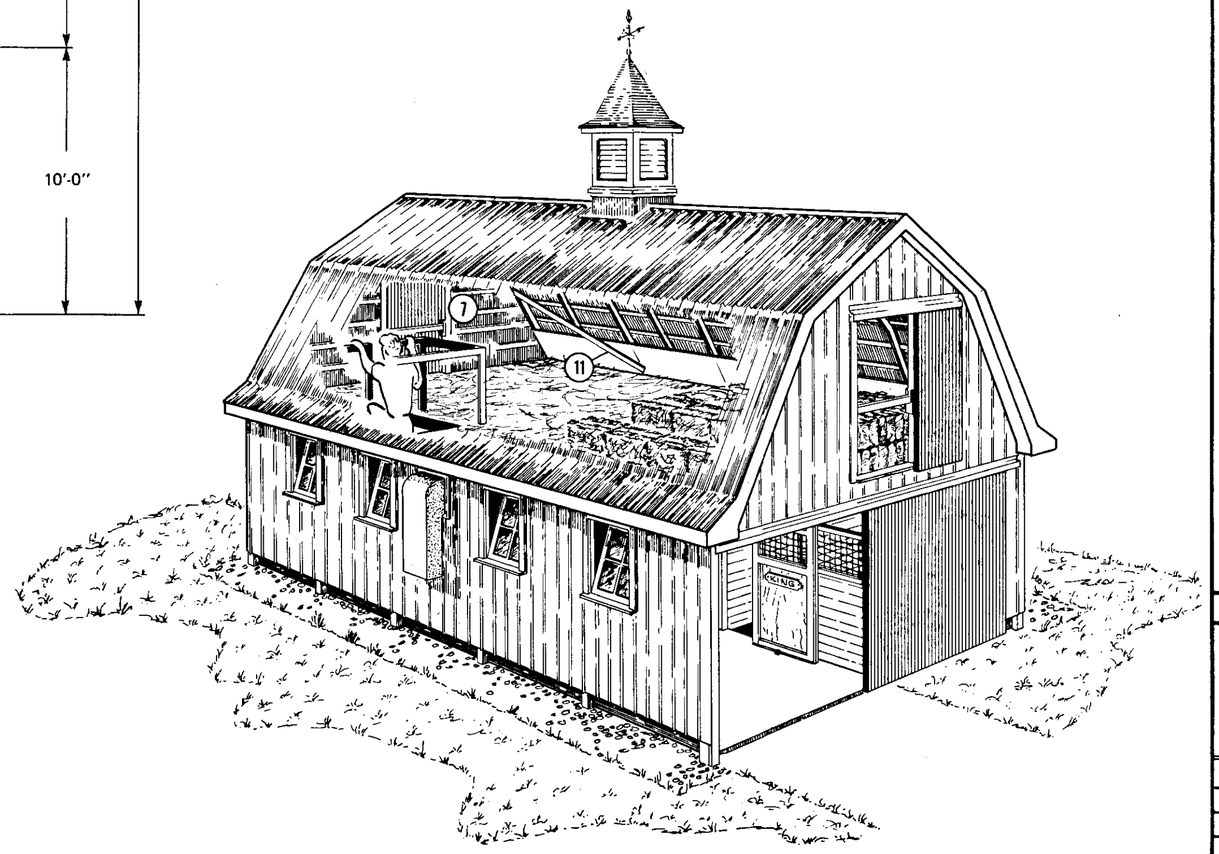
- Dispose of manure daily when possible.
  Provide temporary storage for manure that cannot be disposed of daily; this requires at least 2 cu ft of storage per horse per day.
- Locate the storage in an approved safe area for convenient removal, away from any water source or natural drainage channels.
- Empty the storage at least weekly during fly-breeding season (from spring temperatures above 10°C until the first killing frost in the fall).
- Keep all runoff that may be polluted with animal waste from reaching water supplies.



ELECTRICAL

ceiling wall

- Incandescent Lampholder
- Weatherproof Incandescent Lampholder
- Flourescent Fixture (draw to scale)
- Duplex Convenience Outlet
- Fan Outlet
- Thermostat
- Single Pole Switch
- Fan Forced Heater
- Baseboard Unit Heater
- Distribution Panel



WARNING
This plan may require structural and other changes to meet local site conditions, climatic loads, user requirements and applicable building regulations (such as the Canadian Farm Building Code). Before construction, the user of this plan is responsible to ensure that all required changes are made.

1 tack room/office (concrete floor), optional viewing window with guard grill

2 box stall, clay floor (alternate: plank, asphalt or concrete); hay manger, mineral bowl, 2 eye bolts with bail for water/grain buckets

3 work area & feed room (concrete floor)

4 exhaust fans: 1 - 2 speed 150/230 cfm (Canarm S8-B2 or equal) 1 - 2 speed 640/1470 cfm (Canarm S12-E2 or equal) see plan 9701 for fans, thermostats and heater interlock

5 2'-0" x 8'-0" and 4'-0" x 8'-0" insulated doors; 2" x 8" jamb, side jambs butt-soaked in penetrating wood preservative and exended through concrete floor to prevent frost heave

6 12'-0" x 9'-4" insulated sliding door, (see plan 9341)

7 4'-0" x 7'-8" sliding door with 2" x 6" removable guard rail (both ends of hay loft)

8 hose bib; use frost-proof hydrant if there is a risk of freezing

9 ladder and 3'-0" x 3'-10" insulated trap door to loft; ladder & guard rail extends to 3'-0" above loft floor; double floor joists beside opening

10 window guard of 4" x 4" x 4/4 welded wire mesh or 1/2" dia. rebars @ 4" oc, notched into window frame & covered with casing

11 2" x 6" x 10'-0" diagonal wind bracing, four corners of loft

SPECIFICATIONS

Unless otherwise specified, all cast-in-place concrete is to be min. 4,000 psi, @ 28 days, 6% air entrainment

All exposed steel to be galvanized or painted to resist corrosion from moisture & manure gases

All wood indicated 'pressure-treated' is CCA pressure-treated to a net retention of 0.4 lb/ft3 (ground contact specification, CSA-080 Wood Preservation)

All framing lumber is No. 2 (or better), S-P-F species group, unless otherwise specified

This plan conforms to the requirements of the Canadian Farm Building Code. The user of this plan must ensure that the design criteria indicated herein will meet all local design conditions, building regulations and special requirements.

ONE SET OF DRAWINGS AND LEAFLETS SHOULD INCLUDE:

CPS no.	sheet no.	Title
8203	-1-	Two Story Horse Barn
8203	-2-	Cross Section & Details
AND ONE OF		
9314		Insulated Post Frame Walls
9324		Insulated Stud Frame Walls
AND		
9341		Sliding Doors
9701		Interlocked Heating, Ventilation Control for Livestock Bldgs.

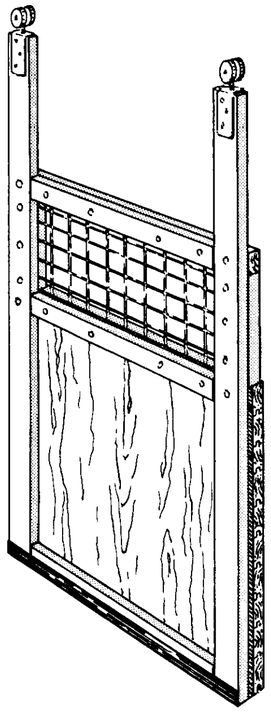
SYM	REVISIONS	CHECKED	DATE	APPROVED

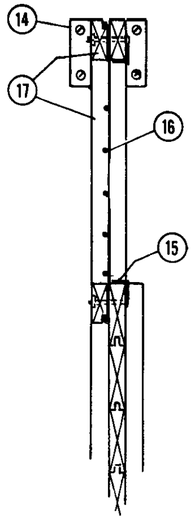
CANADA PLAN SERVICE

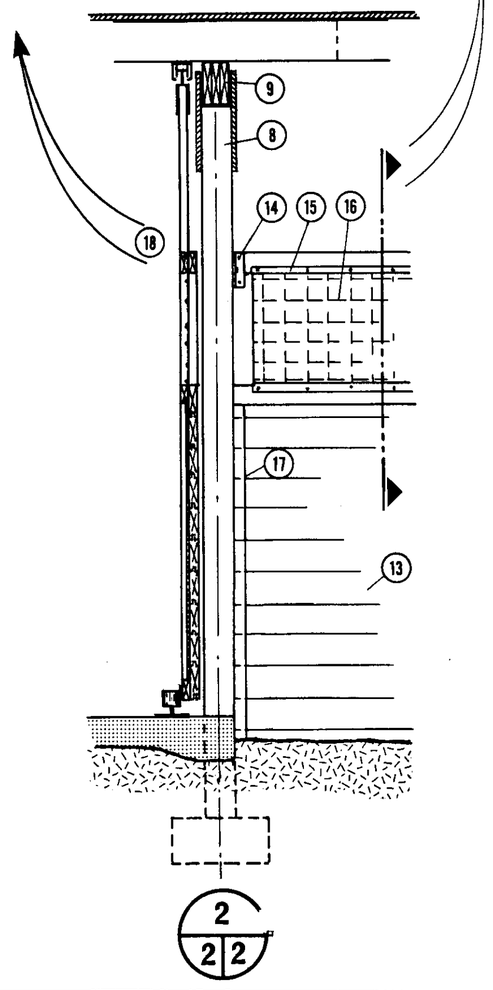
TWO STORY HORSE BARN

(NOT TO SCALE)

DESIGNED JET	DATE DEC 75	PI AN 8203
DRAWN LEO BLAIS	REVISED 84/10	
TRACED	DETAIL NUMBER A, ORIGINATES ON SHEET B, DRAWN ON SHEET C	SHEET 1 OF
CHECKED J.A.M.		







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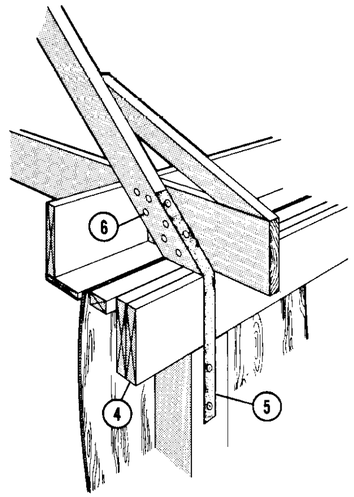
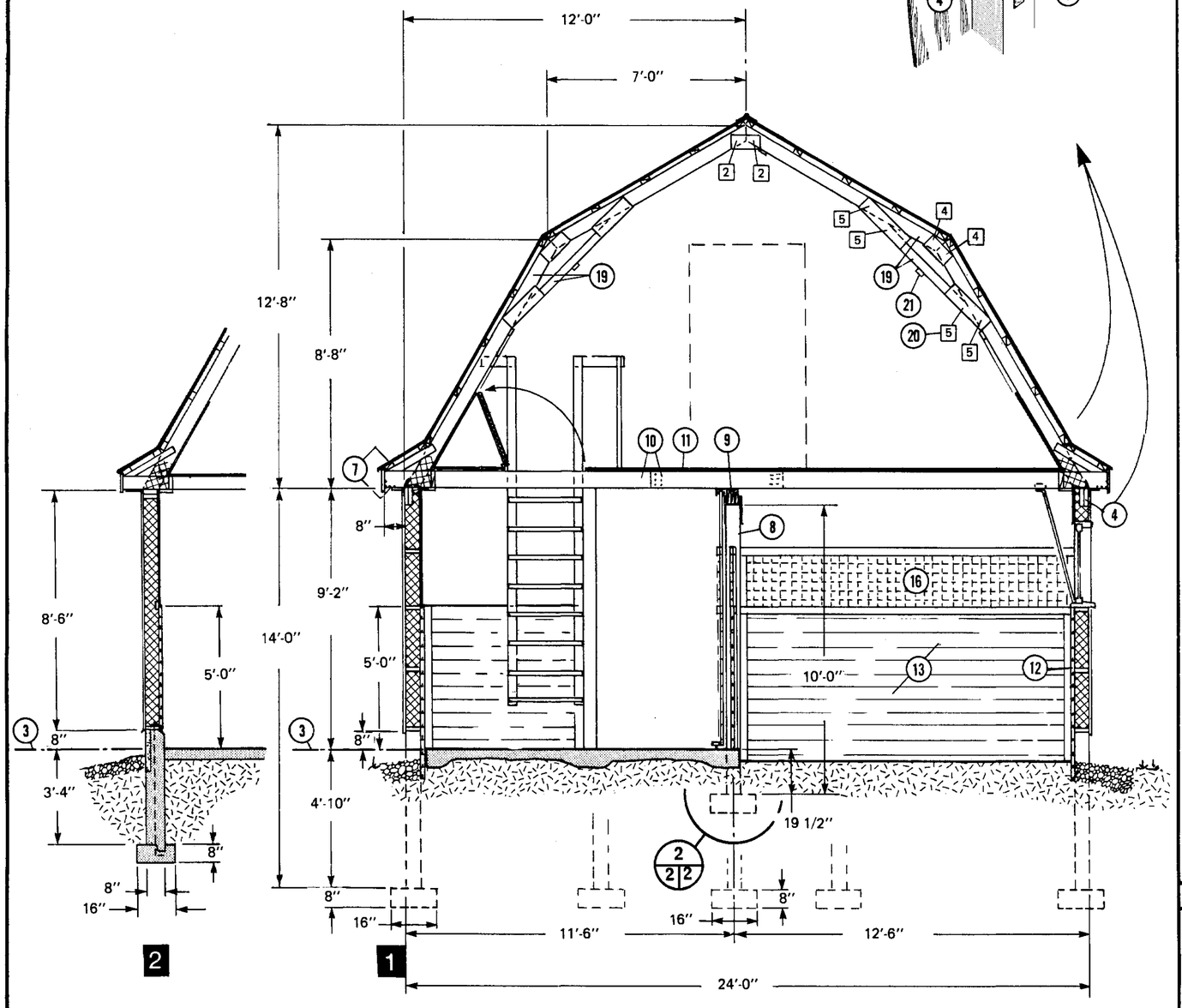
2 2





1 pole frame wall option; 6" x 6" pressure-treated poles (see sheet 1 for spacing,see plan 9314 for details)

2 stud frame wall option (see plan 9324)

3 datum line

4 plate beam notched into poles, joints staggered at poles; 2 - 2" x 10" x 16" safe to 30 psf ground snow + 8'-0" baled hay; 2 - 2" x 12" x 16'-0" safe to 60 psf ground snow + hay

5 framing anchor from 20 ga. x 2" galv. steel strap, one each rafter to wall; center punch holes for 4" spiral nails

6 six 4" spiral nails, clinched

7 galv. steel over 2" x 4" roof purlins @ 2'-0" oc, 2" x 4" lookout & 1" faceboard, 2" vent slot with bird screen

8 6" x 6" pressure-treated interior poles on concrete footing (see sheet 1 for spacing)

9 center beam; laminated from 3 - 2" x 10", all joints staggered, safe for 8'-0" depth of baled hay

10 1 - 2" x 10" x 14'-0" and 1 - 2" x 10" x 16'-0" lapped floor joists @ 2'-0" oc; 6 - 4" spiral nails (clinched) at each end of 4'-6" lap joint, safe to 8'-0" depth of baled hay in loft

11 5/8" T & G plywood flooring and wall sheathing, insulate floor with hay or straw

12 2" x 6" T&G splash planking (4 bottom planks pressure treated); stagger joints 8'-0" oc on poles; rabbet top plank 3/8" for plywood & nail through into girts

13 2" x 6" T&G splash planking stall dividers, 3 bottom planks CCA pressure treated

14 1/8" x 1 1/2" x 1 1/2" x 6" long steel angle fastened with lag bolts to wall & poles

15 1 1/4" x 1 1/4" x 18 ga. galv. steel angle fastened to exposed edges to prevent horses chewing

16 4" x 4" x 4/4 welded wire mesh or 1/2" steel rod @ 4" oc

17 2" x 2" and 2" x 4" framing both sides of dividers 13 , 5" spiral nails to 8 & walls

18 stall door with door lock from 2" x 6" verticals, 2" T&G planking, 3/8" select sheathing plywood, 4" x 4" x 4/4 welded wire; thru-bolted with 3/8" carriage bolts (nuts and washers recessed)

19 braced rafter; 2" x 6" x 8'-0" upper rafter, 2" x 6" x 10'-0" lower rafter with 2" x 4" x 6'-0" brace, 1/2" sheathing fir plywood gussets nailed to front and back of rafters:
space @ 4'-0" oc, for 30 psf gnd. snow load
space @ 2'-0" oc, for 60 psf gnd. snow load

20 [5] denotes number of 2 1/2" concrete nails from each side of each member, typical all gusset joints

21 1" x 3" continuous stiffener

SYM	REVISIONS	CHECKED	DATE	APPROVED

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CROSS SECTION AND DETAILS

(NOT TO SCALE)

DESIGNED JET	DATE DEC 75	PLAN 8203
DRAWN LEO BLAIS	REVISED 84/10	
TRACED	DETAIL NUMBER A, ORIGINATES ON SHEET B, DRAWN ON SHEET C	SHEET 2 OF
CHECKED J.A.M.		