

- ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS OTHERWISE SPECIFIED
- 1 108 free stalls, to match a herd of 100 milking and dry cows
  - 2 calves (3 - 6 mo.) 13 stalls @ 675 x 1200 mm
  - 3 calves (6 - 9 mo.) 13 stalls @ 750 x 1350 mm
  - 4 calves (9 - 12 mo.) 13 stalls @ 825 x 1500 mm
  - 5 heifers (12 - 15 mo.) 13 stalls @ 900 x 1650 mm
  - 6 heifers (15 - 18 mo.) 13 stalls @ 975 x 1800 mm
  - 7 heifers (18 - 21 mo.) 13 stalls @ 1050 x 1950 mm
  - 8 heifers (21 - 24 mo.) 13 stalls @ 1125 x 2100 mm
  - 9 dry cows, 17 stalls @ 1200 x 2250 mm
  - 10 optional feed room, silos etc.

**SPECIFICATIONS**

Unless otherwise specified, all cast-in-place concrete is to be min. 30 Mpa at 28 days, 6% air-entrainment

All reinforcing steel to be min. Grade 300 deformed bars; provide 50 mm concrete cover over reinforcing steel

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

All wood indicated 'pressure-treated' is CCA pressure-treated to a net retention of 6.4 kg/m<sup>3</sup> (ground contact specification, CSA-080 Wood Preservation)

All nails exposed to treated wood to be hot-dip galvanized

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

This plan is designed to meet the requirements of the Canadian Farm Building Code

Notes thus marked indicate where this plan gives structural choices to be selected to meet local climatic loads (wind, snow), soil bearing capacity and other local conditions. The plan user must ensure that these requirements are met. Consult an engineer if you are not familiar with the details required

**ONE SET OF DRAWINGS AND LEAFLETS SHOULD INCLUDE:**

CPS no.	sheet no.	Title
M-2404	-1-	Free stall dairy calf and heifer barn
M-2404	-2-	Floor plan & stall details
M-2404	-3-	Cross section & wall detail

**AND LEAFLETS**

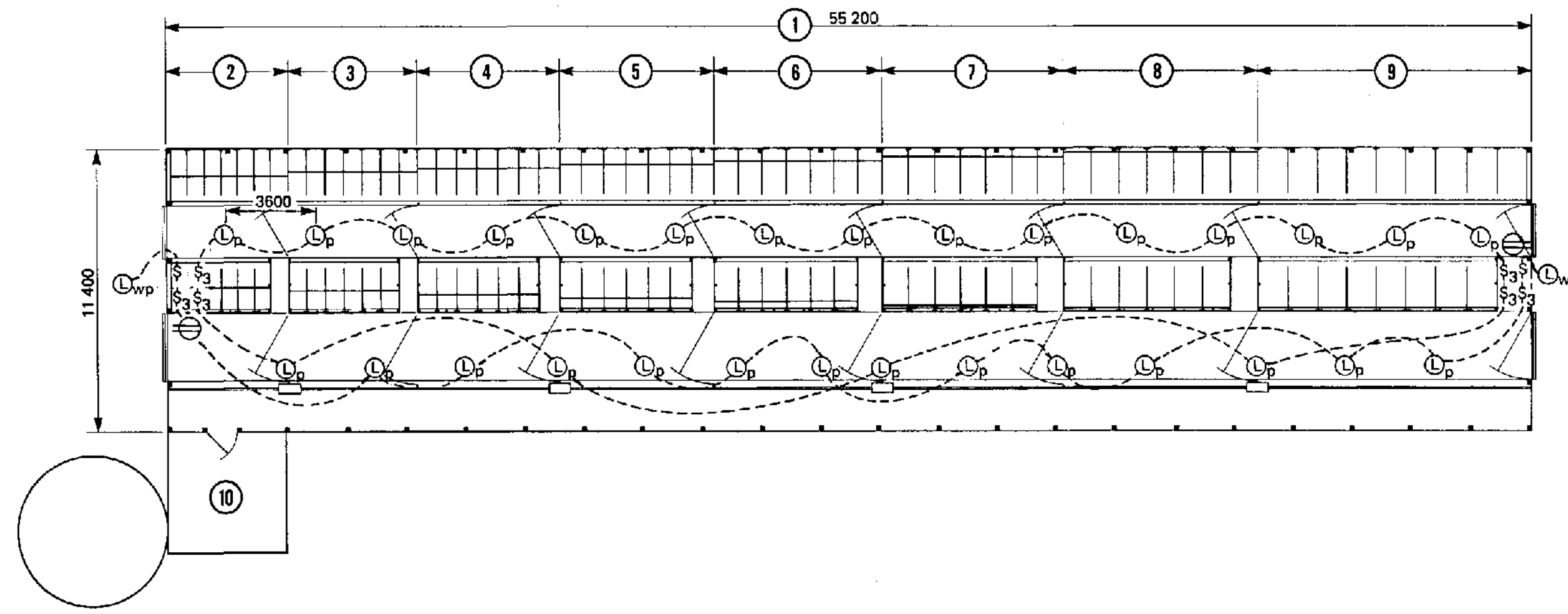
M-2404	Free stall dairy calf and heifer barn
M-2658	Tombstone feed fence for young & adult cattle
M-9101	Building your own roof trusses
M-9102	Truss erection and bracing
M-9341	Sliding doors

SYM	REVISIONS	CHECKED	DATE	APPROVED



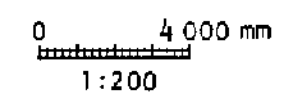
FREE STALL DAIRY CALF AND HEIFER BARN

DESIGNED <i>JAM</i>	DATE 86-06	PLAN
DRAWN <i>D. BROWN</i>	REVISED	
TRACED	DETAIL NUMBER <i>A</i>	M-2404
CHECKED <i>J.E.T.</i>	ORIGINATES ON SHEET <i>B</i> DRAWN ON SHEET <i>C</i>	
		SHEET 1

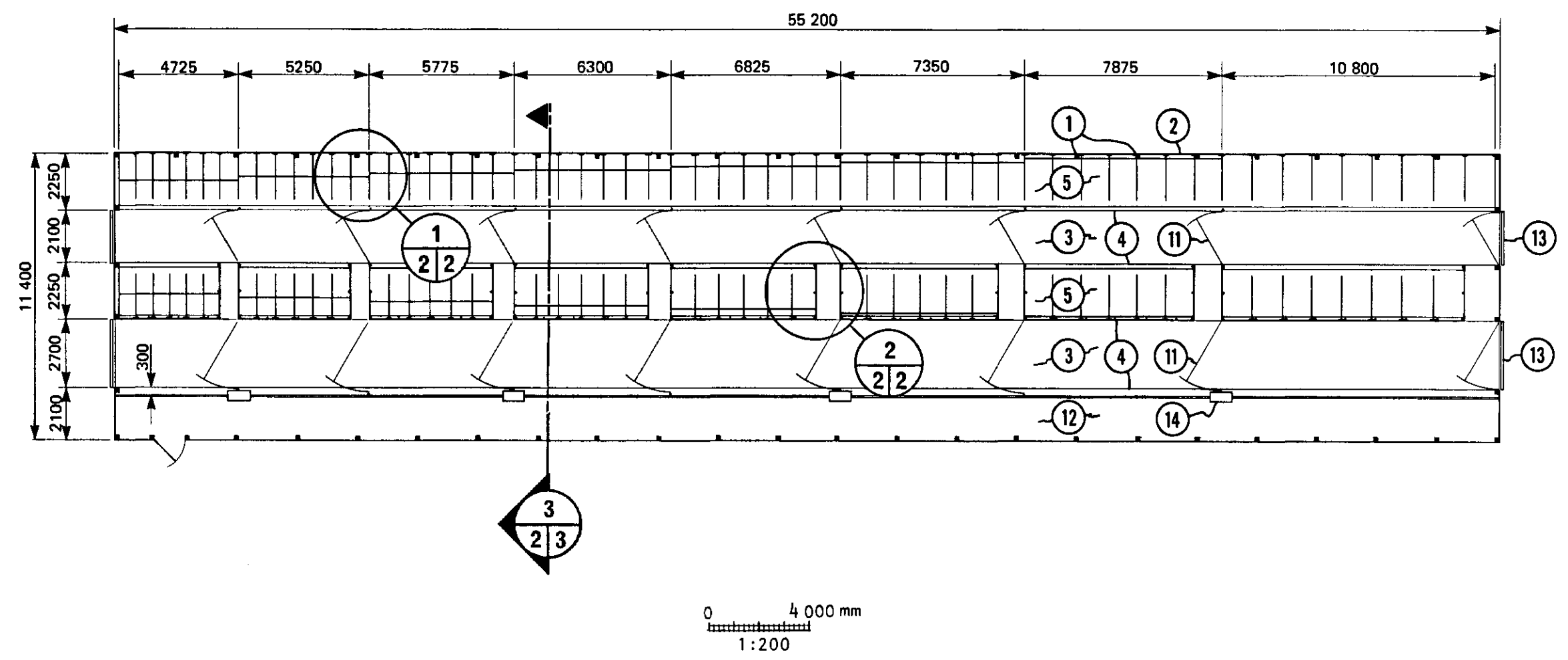


**ELECTRICAL**

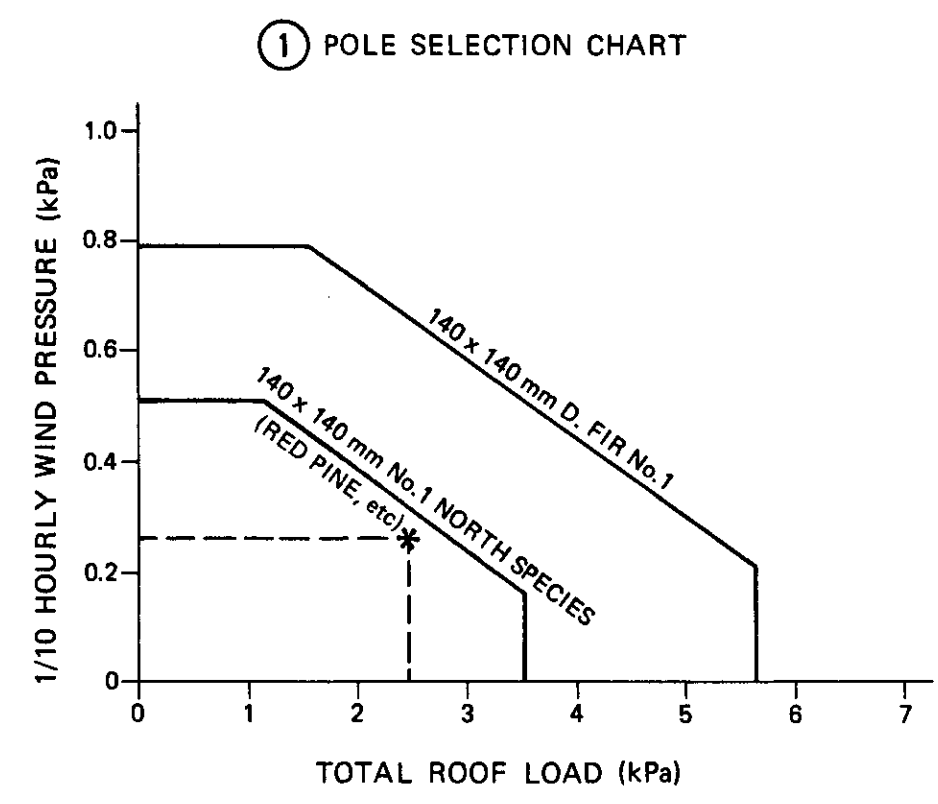
- Incandescent Lampholder, Pigtail Type
- Weatherproof Incandescent Lampholder
- Duplex Convenience Outlet



ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS OTHERWISE SPECIFIED



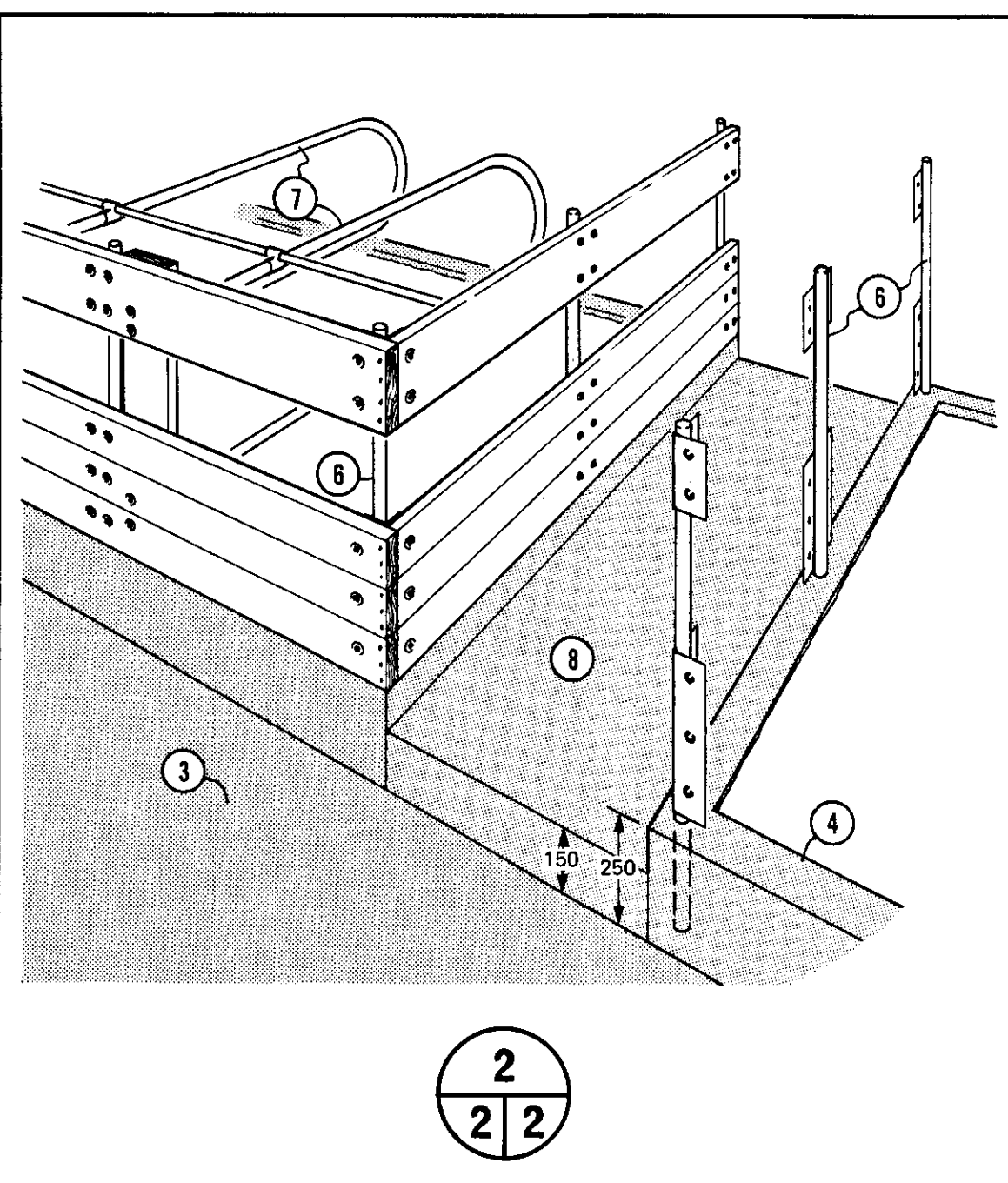
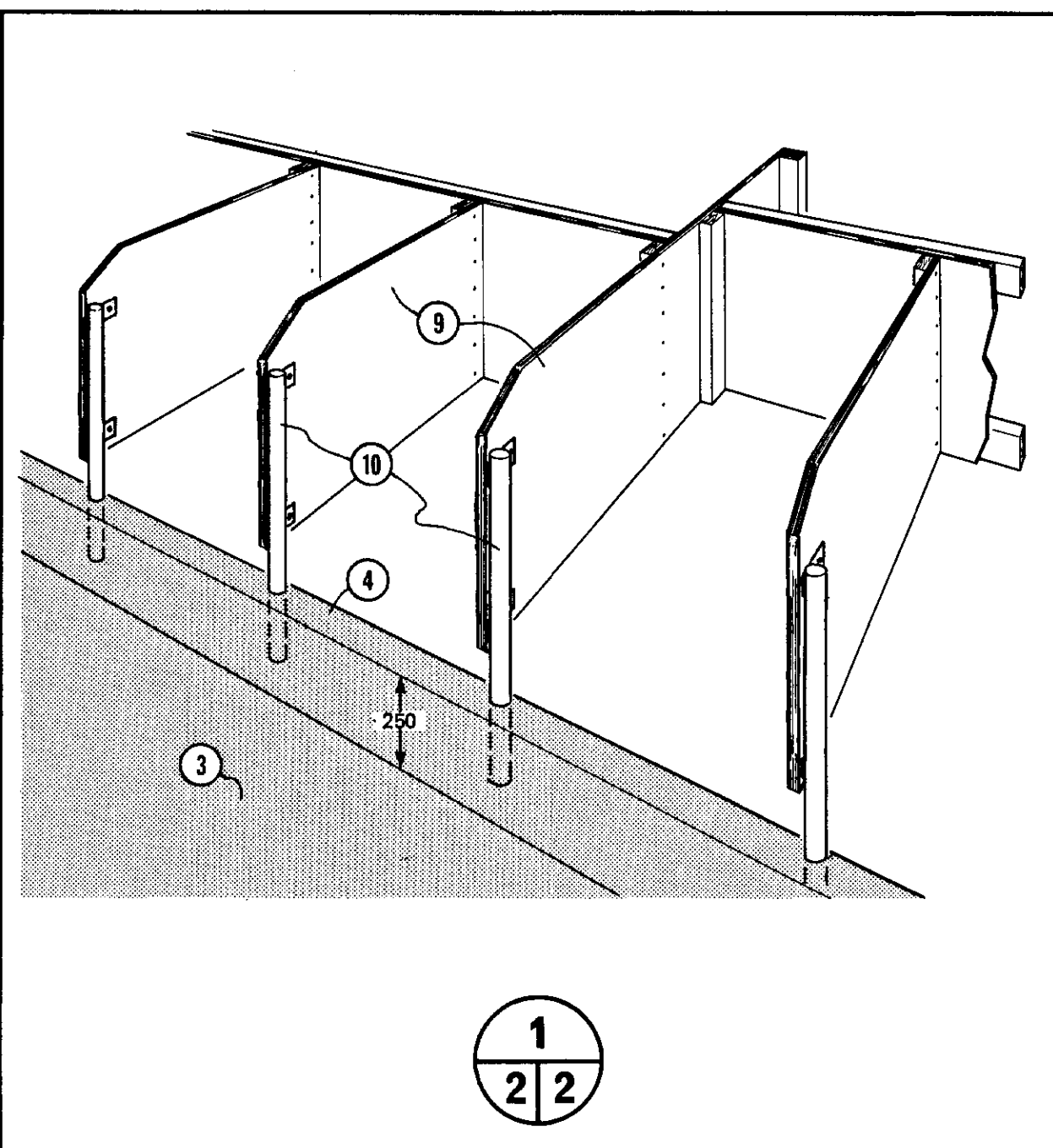
- 1 pressure-treated poles @ 2400 mm oc, see pole selection chart for sizes
- 2 insulated exterior walls, see note ⑬ sheet
- 3 concrete alley with crack control joints @ 6 max.
- 4 continuous concrete curb
- 5 free stalls; effective length of stalls shown see sheet 1 for sizes
- 6 1 1/2" x 1200 mm long galv. steel pipe set in curb ④ @ 1200 mm oc max. weld on and drill plates and angles as required to attach planking
- 7 trombone-type steel tube partition, bolted through 38 x 184 mm vertical plank to plank fence
- 8 cross alley
- 9 optional calf free stall dividers, from 18.5 mm plywood and 38 x 89 mm framing members
- 10 1 1/2" x 750 mm long galv. steel pipe set in concrete curb; weld straps to pipe and drill for bolts to attach stall divider
- 11 pen gates
- 12 feeding alley, tombstone feed fence (see M-2658)
- 13 sliding doors, see leaflet M-9341
- 14 frost free waterers



EXAMPLE Select poles for snow and wind loads at Granby, Quebec (ground snow 2.7 kPa; 1/10 hourly wind pressure 0.26 kPa).

If the roof is not exposed to wind, total roof load is:  
 $0.8 \times 2.7$  (snow) +  $0.3$  (dead) = 2.46 kPa

Enter pole chart ① at 2.46 kPa total roof load and 0.26 kPa wind pressure (see \*). Using No.1 North Species Tumber (red pine, for example), select 140 x 140 mm poles.



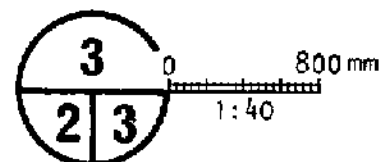
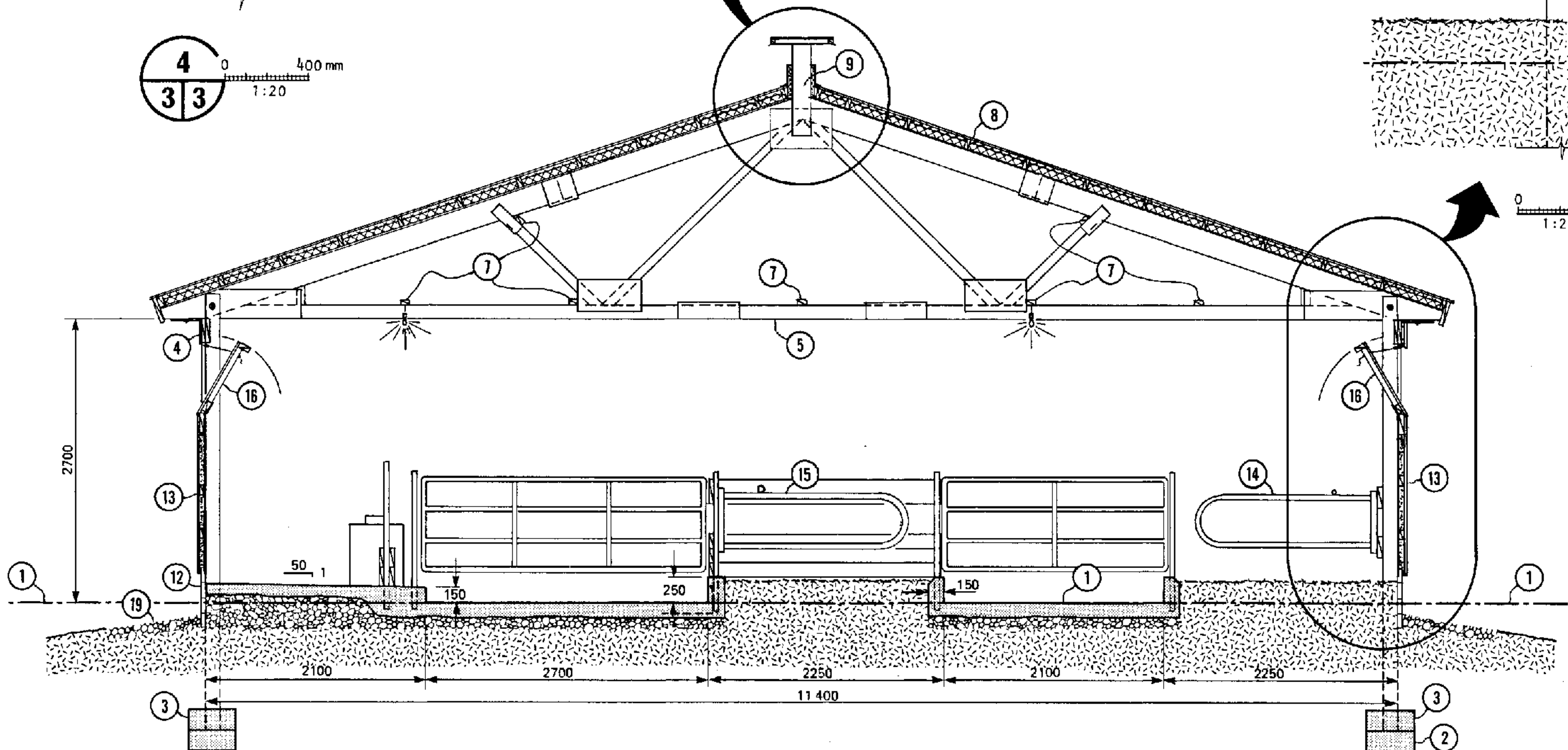
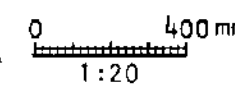
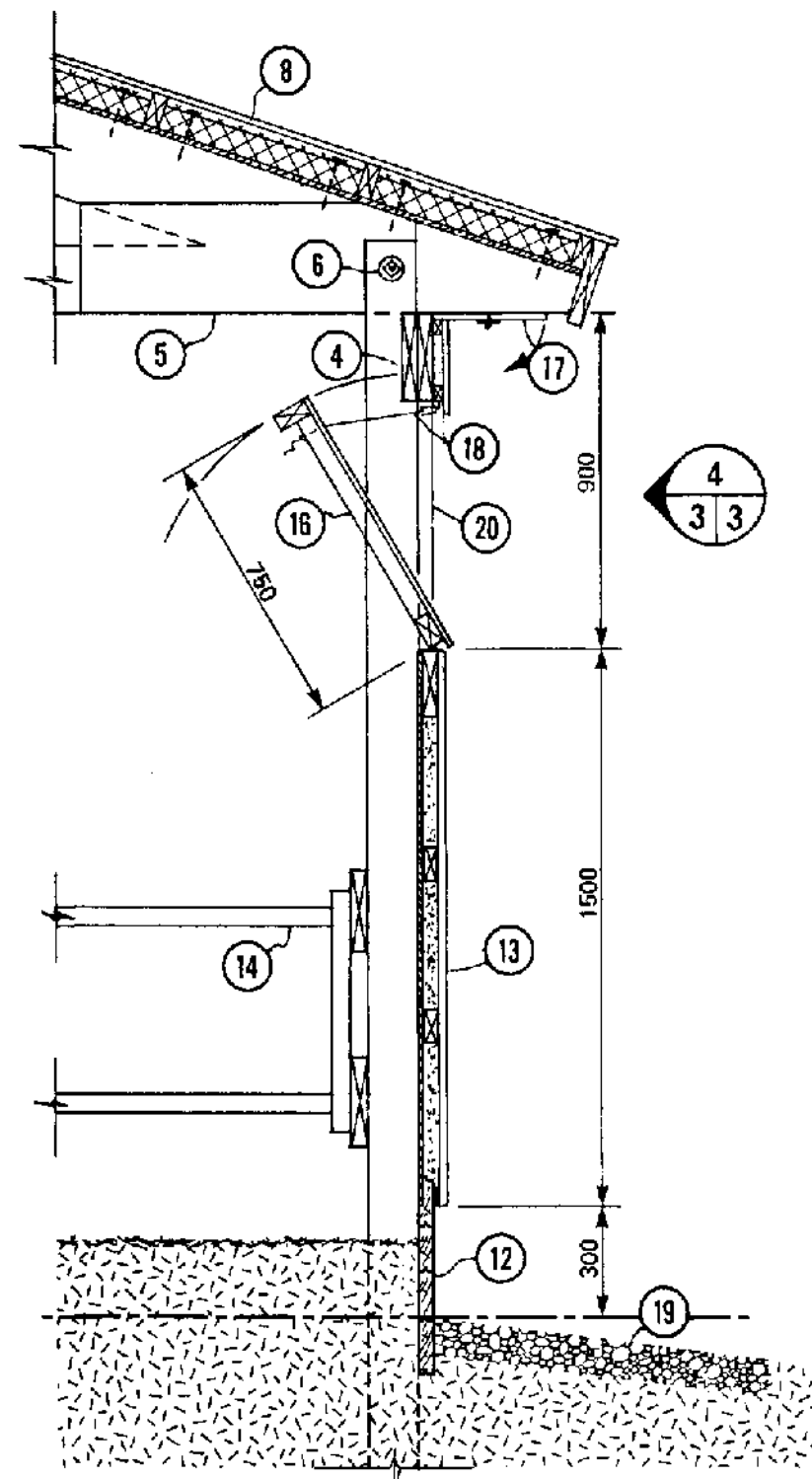
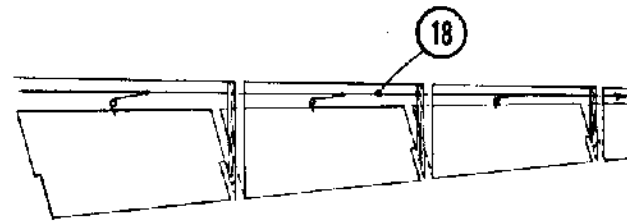
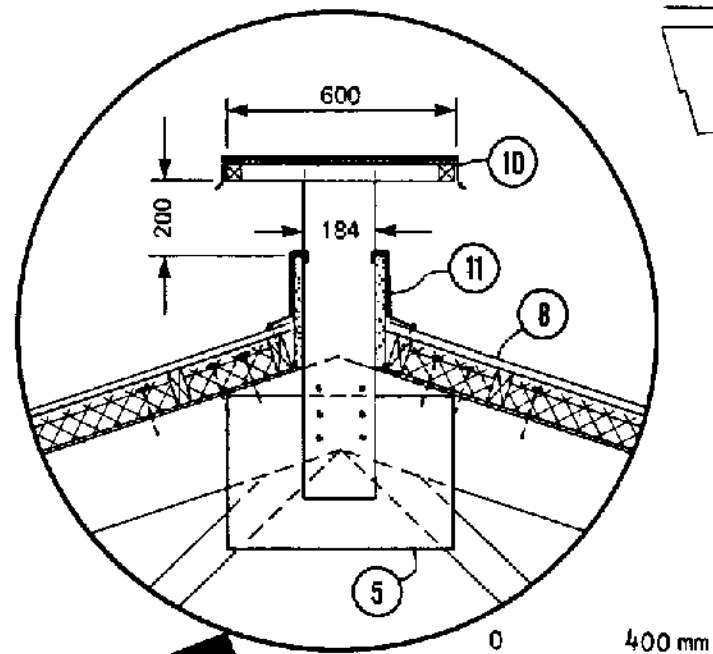
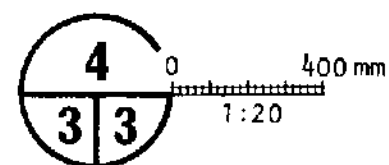
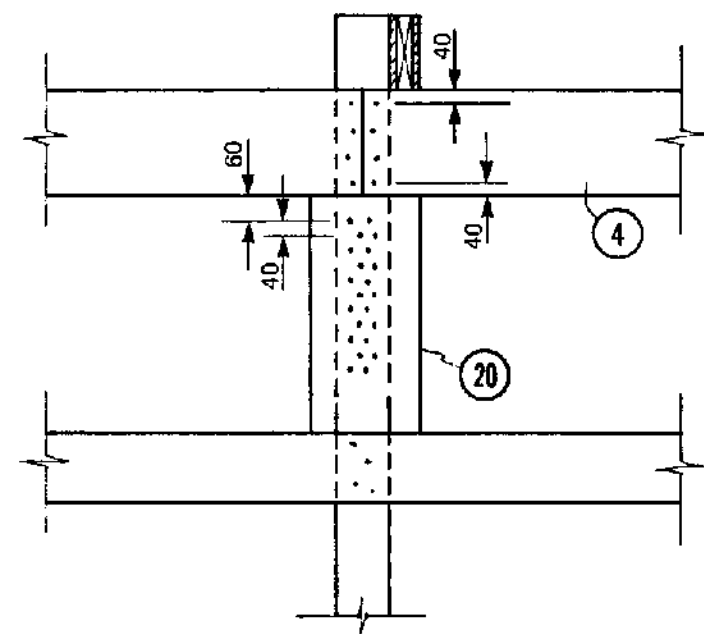
SYM	REVISIONS	CHECKED	DATE	APPRO

FLOOR PLAN &  
STALL DETAILS

DESIGNED <i>J.A.M.</i>	DATE 86-06	PLAN
DRAWN <i>D.BROWN</i>	REVISED	<b>M-2404</b>
TRACED	DETAIL NUMBER <i>A</i>	SHEET 2
CHECKED <i>J.E.T.</i>	ORIGINATES ON SHEET <i>B</i> DRAWN ON SHEET <i>C</i>	

Table (4) Plate beam and support scab details

Beam size No.2 S-P-F	Safe uniform total roof load, kPa			Scab size	No. of 125 mm spiral nails in beam & scab
	Truss spacing, mm on centre				
	1200	800	600		
2 - 38 x 184	1.52	1.28	1.22	38 x 184	15
2 - 38 x 235	2.27	1.84	1.66	38 x 235	23
2 - 38 x 286	2.90	2.24	2.02	38 x 286	29
No.2 D. Fir					
2 - 38 x 184	1.29	1.09	1.03	38 x 140	9
2 - 38 x 235	1.92	1.62	1.55	38 x 140	13
2 - 38 x 286	2.59	2.19	2.08	38 x 184	18



- 1 datum line, top of alley floor
- 2 450 mm dia. x 200 mm min. concrete footing, based on soil strength 200 kPa, roof snow load 2.3 kPa; depth to below frost, 1200 mm min.
- 3 drill poles and retreat holes with wood preservative, insert 2 - 10M x 400 mm rebars, or use 8 - 150 mm spikes, place concrete around rebars or spikes
- 4 notch poles for 2 - 38 x 235 x 4800 mm plate beam (3 in end spans); joints staggered 2400 mm at poles; no.2 spruce safe to 2.27 kPa total roof load; for truss spacings other than 1200 mm oc and/or heavier roof loads, see Table (4)
- 5 11.4 m trusses @ 1200 mm oc or to suit local snow loads
- 6 M12 bolt & washers, truss to pole; intermediate trusses secured to (4) with galv. framing anchors
- 7 38 x 89 mm continuous truss stiffeners (see M-9102)
- 8 insulated roof (design winter temp. -15°C): 9.5 mm plywood ceiling, 100 µm polyethylene vapor barrier, 38 x 89 mm purlins on edge @ 600 mm oc, 38 x 64 mm blocking between purlins to trusses @ 2400 mm oc with 2 - 127 mm spiral nails, RSI-2.1 friction-fit insulation, galv. steel roofing prepainted white
- 9 open ridge vent, stops 2400 mm from each end wall; soak exposed truss joints with wood preservative
- 10 optional ridge cap; 38 x 184 mm upright and 38 x 38 mm frame covered with 12.5 mm plywood & galv. steel flashing
- 11 25 x 300 mm extruded polystyrene (STYROFOAM SM or equal), protect with galv. steel flashing on outside and top edge only
- 12 4 - 38 x 140 mm pressure-treated tongue & groove planking continuous; rabbet top plank for plywood interior cladding
- 13 wall composed of: 9.5 mm plywood, nail over poles from outside; polyethylene vapor barrier; 38 x 184 mm top girt, others 38 x 89 mm; 38 mm fiberglass or polystyrene insulation, 15 lb asphalt felt, and exterior siding
- 14 trombone stall divider, follow manufacturer's instructions for installation
- 15 stall dividers at center alley, see sheet 2
- 16 tilt-in wall panel made of FRP translucent siding to match wall siding profile, on 38 x 89 mm framing
- 17 19 mm soffit and 50 mm continuous vent slot, L-hooks to secure flap when closed
- 18 cable in pulleys, to winch
- 19 100 x 900 mm coarse gravel splash pad
- 20 scab to support outer plate beam member (4); see size in table (4); butt tight top & bottom

REVISIONS	REVISOR	CHECKED	DATE	APPROVED
	H.A.J.		87-09	J.E.T.

**CANADA PLAN SERVICE**

CROSS SECTION & WALL DETAILS

DESIGNED J.A.M.	DATE 88-06	PLAN M-2404
DRAWN D.BROWN	REVISED 87-09	
TRACED	DETAIL NUMBER A	
CHECKED J.E.T.	ORIGINATES ON SHEET B	
	DRAWN ON SHEET C	SHEET 3