

Barn Features to Accommodate Modular Loading of Poultry

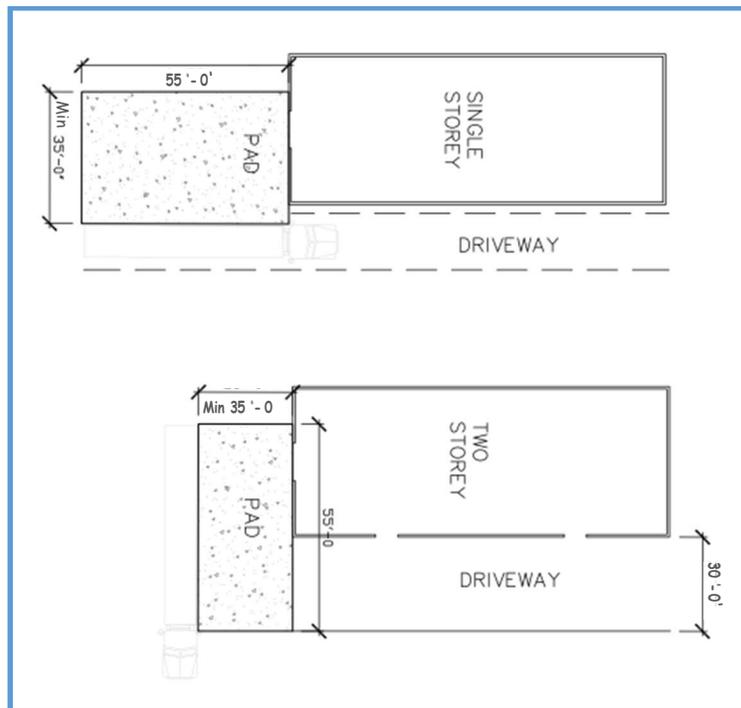
(Prepared by OMAFRA, AOCP, and PSA)¹

A. Recommendations for New Barns

Single storey barns are recommended as they provide the greatest poultry welfare benefits from modular loading due to shorter loading times, less handling of birds resulting in lower stress, and reduced exposure of birds to weather conditions during loading.

1. Build a single storey barn with minimum 9 foot ceilings.
2. Provide minimum doorway opening in end wall of 8 ft (2.4 m) tall x 10 ft (3.0 m) wide for forklift access.
3. Provide hard surface loading area (concrete or equivalent surface) measuring a minimum of 35 ft (10.7 m) x 55 ft (16.8 m) immediately outside doorway to allow for forklift travel and turning during truck loading. The surface needs to extend beyond the width of the barn to include the full loading area over to the truck. Also plan for sufficient room to stage another truck for loading. (See diagram on page 2.)
4. If barn is longer than 300 ft (91.4 m), provide access door and hard surface loading area at both ends of the barn to minimize forklift travel distance inside the barn.
5. Provide a smooth transition from inside barn to outside loading area (no raised door sills or abrupt grade changes) to prevent modules bouncing during transport into/out of barn by forklift.
6. Ensure a minimum clearance height of 8 ft (2.4 m) under all suspended equipment inside barn when it is in the raised position (feeder equipment, watering equipment, ventilation monitoring equipment, etc.) so it is not hit by forklift during loadout.
7. Ensure minimum clearance of 8 ft (2.4 m) under all fixed equipment inside barn (gas lines, heater equipment, circulation fans, etc.) so it is not hit by forklift during loadout.
8. There should be a minimum clearance from ground to any hydro lines, tree limbs, or other obstructions of 15 feet in the driving areas and 20 feet in the loading areas to accommodate solid lift roof trailers. All modular unit trailers are expected to be solid lift roof trailers.

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B. Retrofitting Existing Broiler Barns

Process requirements for farmers **before** beginning renovations to existing barns:

1. Discuss with your processor their future plans for modular loading and confirm the types of modifications that may be required for your particular barn(s).
2. **Renovations for side door loading of second storey are the preferred option.**
3. Have your barn structurally assessed by an Engineering Firm or Architectural Technologist to determine if any changes are required to accommodate modular loading on the second floor. Having the original building blueprints that confirm how the original column footings were constructed is very helpful for the engineer during the assessment process.
4. If structural modifications are necessary, then stamped drawings should be prepared by the Engineering Firm or Architectural Technologist showing the location and type of change necessary to support the expected loads. In most cases, a building permit will have to be obtained to complete the barn modifications and the drawings can also be used for this purpose.
5. After work is complete, a signed engineer's report (may include the stamped drawings) is required to certify that the barn renovations were done correctly and will meet the load requirements necessary to proceed with loading chickens into modules on the second floor. This will give all parties the comfort that the barn is properly prepared for modules and limit any potential liabilities.
6. Your processor and catching company will request a copy of the engineering report for their files and final building inspection.

First floor:

Since many older barns were built with less than 9 ft (2.7 m) ceilings on the first floor, the minimum clearance heights will be less than stated above for new barns. Forklift mast height and cab height will need to be verified as different makes and models will vary in height.

1. Provide a minimum doorway opening in end wall of 8 ft (2.4 m) tall x 10 ft (3.0 m) wide for forklift access.
2. Provide hard surface loading area (concrete or equivalent surface) measuring a minimum of 35 ft (10.7 m) x 55 ft (16.8 m) immediately outside doorway to allow for forklift travel and turning during truck loading. The surface needs to extend beyond the width of the barn to include the full loading area over to the truck. Also plan for sufficient room to stage another truck for loading. See diagram on page 2.
3. If the barn is longer than 300 ft (91.4 m), provide an access door and hard surface loading area at both ends of the barn to minimize forklift travel distance inside the barn.

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4. Provide a smooth transition from inside the barn to the outside loading area (no raised door sills or abrupt grade changes) to prevent modules bouncing during transport into/out of barn by forklift.
5. Ensure minimum clearance height of 7 ft (2.1 m) under all suspended equipment inside barn when it is in the raised position (feeder equipment, watering equipment, ventilation monitoring equipment, etc.) so it is not hit by forklift during loadout.
6. Ensure minimum clearance of 7 ft (2.1 m) under all fixed equipment inside barn (gas lines, heater equipment, circulation fans, etc.) so it is not hit by forklift during loadout.
7. There should be a minimum clearance from ground to any hydro lines, tree limbs, or other obstructions of 15 feet in the driving areas and 20 feet in the loading areas to accommodate solid lift roof trailers. All modular unit trailers are expected to be solid lift roof trailers.

Second Floor:

The preferred option is to renovate the second storey for side door loading.

Side Door Loading Option

1. Install a minimum 30 ft (9.1. m) wide, all-season driving lane (compacted gravel) along one side of building (long axis) to allow for forklift access to side loadout doors on second storey.
2. Starting 25 ft (7.6 m) from one end wall and spaced every 50 ft (15.2. m) down the side of the barn, install minimum 6 ft (1.8 m) wide x 7 ft (2.1 m) tall loadout doors. Ensure there is no door sill across the bottom of doorway to impede movement of modules into and out of second floor doorway.
3. Design and renovate second floor structure in the immediate vicinity of loadout doors to be capable of supporting a minimum distributed live floor load of 4.23 KPa (88 lb/sq ft) which represents the maximum loaded weight of modules sitting on the floor. This is a significantly higher floor load than presently required in the National Farm Building Code for cleanout tractor and litter.

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Train Track Loading Option

The train track system is the least preferred option of loading second floor for numerous reasons:

- the rolling load creates a greater strain on the floor;
 - the set-up of the tracks at the start of loading causes stress to the flock and leads to piling along the sides of the barn;
 - the modules have to be specifically built to operate on a track system and different makes of modules and tracks are not interchangeable; and,
 - transporting tracks between farms creates a biosecurity risk.
1. Install a minimum 7 ft (2.1 m) high x 10 ft (3.0 m) wide doorway in centre of end wall on second floor. This could be directly above ground floor loadout door.
 2. Have a structural engineer design the second floor to support the loaded modules, portable roller track system, 4 inch (100 mm) depth of litter on floor and birds/people standing on floor near the modules.
 3. Minimum design live loads for this calculation include a uniform, distributed load of 2.0 KPa (floor birds plus litter from National Farm Building Code Table 2.2.1.A) and a line load of 5.1 KN/m (located at center line of track system) for the loaded module plus track.
 4. If a small tractor is also going to be used on the second floor to push the modules on the track, an additional two-wheel, live load of 4.0 KN (represents equipment up to 700 kg including the operator, see National Farm Building Code 2.2.1.4) should be included in the design in addition to the above-listed live loads. Farmer should verify with catching crew the actual weight of this unit before it is placed on the second floor.

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