

Barn Features to Accommodate Modular Loading of Poultry

(Prepared by AOCP, CFO and PSA)¹

Requirements for New Barns

Single storey barns maximize 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 (2.7 m) ceilings.
2. Provide minimum doorway opening in the end wall of 8 feet (2.4 m) tall x 10 feet (3.0 m) wide for forklift access for end door loading. Side door loading is an option for single-storey clear span barns using a minimum doorway opening in the side wall of 8 feet (2.4 m) tall x 12 feet (3.66 m) wide.
3. Provide hard surface loading area (concrete or equivalent surface) measuring at least 36 feet (11.0 m) x 55 feet (16.8 m) immediately outside doorway to allow for forklift travel and turning during truck loading. The width of the hard surface loading area depends on the width of the barn. See Table 1. The surface needs to extend beyond the width of the barn to include the entire loading area. It is important that the loading area extends right out to where the truck is parked so the forklift is on a level surface at all times. See Figure 1. Also plan for sufficient room to stage another truck for loading.
4. If barn is longer than 300 feet (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 if loading is via end doors.
5. Provide a smooth transition from inside the barn to the outside loading area (no raised door sills or abrupt grade changes) to prevent modules from bouncing during transport into and out of the barn.
6. Ensure a minimum clearance height of 8 feet (2.4 m) under all suspended equipment inside the barn when it is in the raised position (feeder equipment, watering equipment, ventilation monitoring equipment, etc.) so it is not hit by the forklift during loadout.
7. Ensure a minimum clearance height of 8 feet (2.4 m) under all fixed equipment inside the barn (gas lines, heater equipment, circulation fans, etc.) so it is not hit by the forklift during loadout.

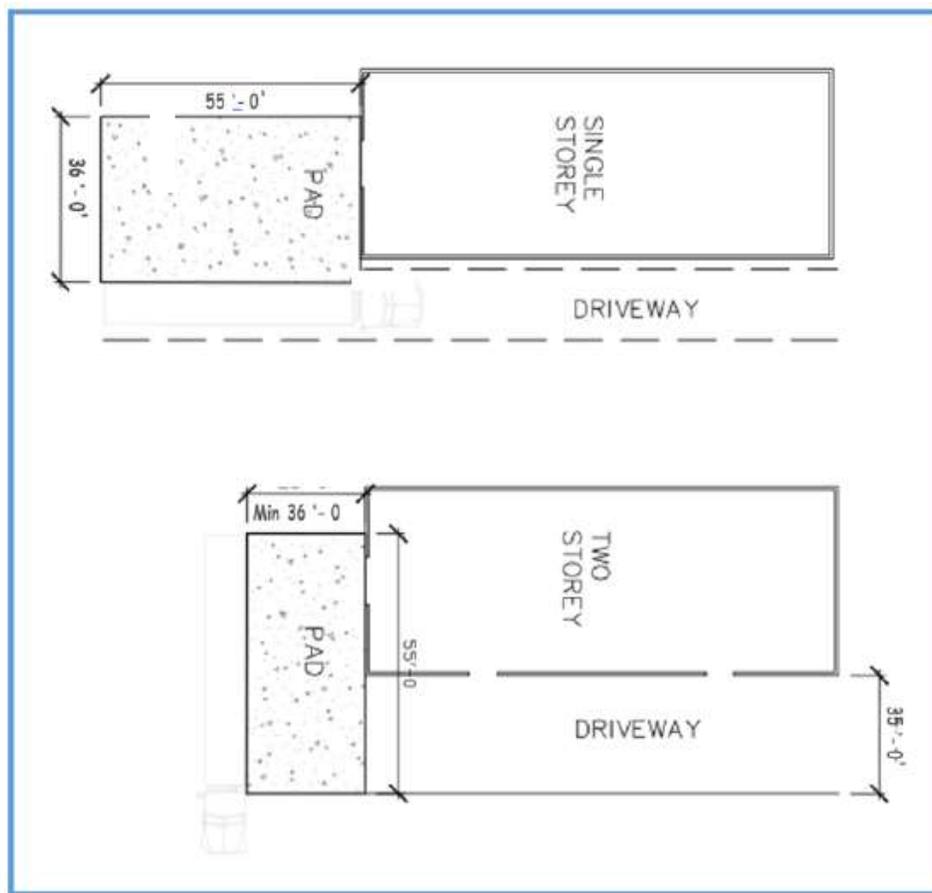
¹ This document was developed by AOCP, CFO and PSA and is intended as a guideline only. Barn owners will need to engage their own professional engineering consultants who will provide the specification and analysis required for each barn. The organizations that developed this document disclaim any responsibility for loss or injury that may occur from the use of this guideline.

- There should be a minimum clearance from the ground to any hydro lines, tree limbs or other obstructions of 15 feet (4.6 m) in the driving areas and 20 feet (6.1 m) in the loading areas to accommodate solid lift roof trailers. All modular unit trailers are expected to be solid lift roof trailers.

Table 1 – Minimum Hard Surface Loading Area (Pad) Size Based on Barn Width

Barn width – feet (m)	Minimum Pad Width – feet (m)	Minimum Pad Length – feet (m)
40 (12.2)	36 (11.0)	55 (16.8)
50 (15.2)	43 (13.1)	55 (16.8)
60 (18.2)	48 (14.6)	55 (16.8)
70 (21.3)	53 (16.2)	55 (16.8)

Figure 1 – Hard Surface Loading Area Set-up Based on Barn Configuration



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Recommended Standards for 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 the second storey are required.**
3. Have your barn structurally assessed by an Engineering Firm or Architectural Technologist to determine what 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. The drawings can also be used to secure the building permit.
5. After the 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 provide assurance to all parties 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 and final building inspection for their files.

First floor:

Since many older barns were built with less than 9 foot (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 the end wall of 8 feet (2.4 m) tall x 10 feet (3.0 m) wide for forklift access for end door loading. Side door loading is a viable option for single storey clear span barns. Minimum doorway opening in the side wall is 8 feet (2.4 m) tall x 12 feet (3.66 m) wide.
2. For single storey barns provide a hard surface loading area (concrete or equivalent surface) measuring a minimum of 36 feet (11.0 m) x 55 feet (16.8 m) immediately outside the doorway to allow for forklift travel and turning during truck loading. The width of the hard surface loading area depends on the width of the barn. See Table 1. The surface needs to extend beyond the width of the barn to include the entire loading area. It is important that the loading area extends right out to where the truck is parked so the forklift is on a level surface at all times. See Figure 1. Also plan for sufficient room to stage another truck for loading.

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3. If the barn is longer than 300 feet (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.
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 from bouncing during transport into and out of the barn.
5. Ensure a minimum clearance height of 6 feet 6 inches (1.98 m) under all suspended equipment inside the barn when it is in the raised position (feeder equipment, watering equipment, ventilation monitoring equipment, etc.) Preferred clearance height is 7 feet (2.1 m) under all suspended equipment and is highly recommended to minimize potential damage to equipment. Minimum clearance height required in the forklift travel lane is 7 feet (2.1 m).
6. Ensure a minimum clearance height of 6 feet 6 inches (1.98 m) under all fixed equipment inside the barn (gas lines, heater equipment, circulation fans, etc.). Preferred clearance height is 7 feet (2.1 m) under all suspended equipment and is highly recommended to minimize potential damage to equipment. Minimum clearance height required in the forklift travel lane is 7 feet (2.1 m).
7. There should be a minimum clearance from the ground to any hydro lines, tree limbs or other obstructions of 15 feet (4.6 m) in the driving areas and 20 feet (6.1 m) in the loading areas to accommodate solid lift roof trailers. All modular unit trailers are expected to be solid lift roof trailers.

Second Floor:

Side Door Loading

1. Install a minimum 35 foot (10.7 m) wide, all-season driving lane (compacted gravel), which must always be fully cleared and never compromised, along one side of the barn (long axis) to allow for forklift access to the side loadout doors on the second storey.
2. Starting no more than 25 feet (7.6 m) from one end wall and spaced every 50 feet (15.2 m) down the side of the barn, install load out doors that have a minimum doorway opening of 7 feet (2.1 m) wide x 7 feet (2.1 m) tall. Preferred doorway width is 8 feet (2.4m) and is highly recommended to minimize potential damage to doors. Ensure that there is no door sill across the bottom of the second floor doorway that could impede movement of modules into and out of the barn.
3. Provide a minimum clearance height of 6 feet 6 inches (1.98 m) under all suspended equipment inside the barn when it is in the raised position (feeder equipment, water equipment, ventilation monitoring equipment, etc.) to allow for proper placement of modules on the second floor. This level of clearance is required from the entrance of the modular door for a distance of 9 feet (2.7 m) inside the barn. Preferred clearance height is 7 feet (2.1 m) to minimize potential damage to equipment when placing the modules inside the second floor loading doors.
4. Provide a minimum clearance height of 6 feet 6 inches (1.98 m) under all fixed equipment inside the barn (gas lines, heater equipment, circulation fans, etc.) to allow for proper placement of modules

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on the second floor. This level of clearance is required from the entrance of the modular door for a distance of 9 feet (2.7 m) inside the barn. Preferred clearance height is 7 feet (2.1 m) to minimize potential damage to equipment when placing the modules inside the second floor loading doors.

5. Design and renovate the second floor structure in the immediate vicinity of loadout doors to be capable of supporting a minimum distributed live floor temporary load of 4.23 Kilopascals (88.35 lb/square foot). This represents the maximum loaded weight of modules sitting on the floor. This is a significantly higher floor load than is presently required in the National Farm Building Code for the cleanout tractor and litter.

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