

<b>Items to Consider when Building or Renovating a Dairy Barn</b>	
<p><b>Purpose:</b> Building a barn requires many decisions and the topics in the document are to provide farmers with some barn features that would meet proAction requirements. Additional items are also listed to provoke thought into additional concepts discussed in proAction but are not required. The items below do not include the various building codes and regulations, including the National Dairy Code, that farmers must adhere to when building a barn.</p>	
<b>proAction requirement</b>	<b>Items to consider</b>
AC1, AC10 – Calf housing	<p>Calves must:</p> <ul style="list-style-type: none"> <li>• easily stand up, lie down, the ability to turn 180°, and adopt normal resting postures</li> <li>• have bedding</li> <li>• see other cattle</li> <li>• have easy access to clean water</li> <li>• And when in groups, can all lie down at the same time</li> </ul>
AC2 – Heifer housing	<p>Heifers must</p> <ul style="list-style-type: none"> <li>• easily stand up, lie down, and adopt normal resting postures</li> <li>• have bedding</li> <li>• see other cattle</li> <li>• when in groups, can all lie down at the same time</li> <li>• base size and number of groupings on heifer size or age to allow good growth of heifers at all stages of life</li> <li>• Have enough feed bunk space to minimize competition at the feed bunk</li> </ul>

<p>AC3 – Bull housing</p>	<p>Bull must:</p> <ul style="list-style-type: none"> <li>• easily stand up, lie down, adopt normal resting postures and mount safety</li> <li>• have bedding</li> </ul>
<p>AC4, AC18 – Dry and lactating cows space requirements and housing AC19 – Cleanliness of lactating animals</p>	<p>Adequate housing for dry and lactating cows:</p> <ul style="list-style-type: none"> <li>• at least 120 ft<sup>2</sup> for animals on bedding packs*</li> <li>• does not exceed 1.2 cows per stall in free stalls</li> <li>• consider feed bunk space according to animal status (lactating, fresh or dry cows)</li> <li>• ensure housing and management practices maintain high levels of lactating cow cleanliness</li> <li>• all animals must be provided bedding</li> </ul> <p>* See proAction Manual for space allowance information for smaller breeds such as Jerseys</p>
<p>AC16 - Cattle handling</p>	<p>Design barns and traffic areas to facilitate quiet animal handling</p>
<p>AC5 – Calving cattle</p>	<p>Calving Area features:</p> <ul style="list-style-type: none"> <li>• clean and dry, prior to and after delivery of calf</li> <li>• separate from sick area</li> <li>• adequate space for all cows in pen – recommend 160 ft<sup>2</sup> for each cow</li> </ul>
<p>AC6, AC12 – Sick and injured animals BIO1 – RAQ</p>	<p>Sick Pen/Area features</p> <ul style="list-style-type: none"> <li>• large enough to comfortably house all sick and injured animals</li> <li>• should be in a location that is away from the vulnerable (fresh, calving and calves) and where farmer can easily observe cows in pen</li> <li>• separate from dry cows</li> <li>• ability to restrain for cows’ safety (e.g. chute, locking head gates)</li> <li>• easy ability to provide plenty of fresh feed and water</li> </ul>
<p>AC20 – Down cattle</p>	<p>Down cattle</p> <ul style="list-style-type: none"> <li>• prevent giving cattle access to areas where they could get stuck</li> <li>• designing easy access points for appropriate equipment to help move down cattle (e.g. Rotary parlour designed with one or more easy access points)</li> <li>• area for recovery – with non-slip footing, shelter from elements and access to food and water</li> </ul>

FS4, FS16, FS33 – Milk house	<p>Milk house features</p> <ul style="list-style-type: none"><li>• medication storage areas are closed, contained and refrigerated, if needed</li><li>• used exclusively for storage of equipment used in production and handling of milk</li><li>• use materials that are easy to clean</li><li>• appropriate storage areas for cleaners, sanitizers, etc.</li><li>• appropriate storage for pesticides, if stored in the milkhouse</li></ul>
EN3, EN4, EN5	<p>Milking Center Wastewater:</p> <ul style="list-style-type: none"><li>• ensure that disposal of milking center wastewater does not contaminate soil, groundwater or surface water.</li><li>• management options for milking center wastewater include:<ul style="list-style-type: none"><li>○ storage within a liquid manure storage system – construction design should incorporate expected volumes of wash water.</li><li>○ disposal within a separate liquid storage or septic tank. Note that septic tanks need to be monitored and pumped when the level of solids in the tank approaches capacity.</li><li>○ treatment within sediment tanks and/or flocculator. Flocculators add lime to coagulate milk solids. Liquids can be removed from the top and the heavy milk solids fall to the bottom where they can be removed. Regular maintenance of flocculators is required.</li><li>○ treatment within constructed wetlands or vegetated filter strips – often done in association with settling tanks and/or grease traps. Constructed wetlands and filter strips should be designed by an engineer. These areas will remove organic matter from the wash water. Constructed wetlands may need to be renovated 10-15 years following construction if solids build up in the cells.</li><li>○ in some cases when soil conditions are suitable and regulations allow, ejection systems into vegetated areas are acceptable.</li></ul></li></ul>

EN3, EN4, EN5	<p>Manure Storage:</p> <ul style="list-style-type: none"><li>• in association with a qualified engineer or geoscientist, ensure manure storage construction meets or exceeds provincial regulations related to siting, capacity and safety.</li><li>• where possible, locate manure storage away from public roads and/or plant windbreaks to help reduce odour impacts on neighbours.</li><li>• build secondary containment in case of leaks and/or install monitoring wells around the site.</li><li>• the required number of days of storage varies by province, though some provinces have not stipulated storage capacity requirements. Farms in all provinces need to take measures to avoid any application of manure which has the potential to create an environmental risk.</li></ul>
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Non-mandatory but recommended best management practices	Items to consider
BIO	<p>Outline Movement Pathways</p> <p>Design flow in farmyard to minimize disease transmission:</p> <ul style="list-style-type: none"> <li>• control traffic patterns on your farm</li> <li>• designate biosecurity zones</li> <li>• assign risk areas and outline movement pathways</li> <li>• create transition points such as milk house, loading chute and feed storage</li> <li>• allow for cattle exit out of barn and ability for cows to have freedom of movement</li> </ul>
BIO, AC	<p>Design to optimize flow in barn to limit disease transmission:</p> <ul style="list-style-type: none"> <li>• encourage farm worker movement from young, to old then sick</li> <li>• regular traffic is diverted from sick area</li> <li>• boot washes between different production areas</li> <li>• equipment designated by area (e.g. separate equipment kept in sick area and not shared with other areas)</li> <li>• dedicated area for truckers to access picking up animals that will ensure animals are not isolated for a long period of time</li> </ul>
BIO	<p>Staff clean area:</p> <ul style="list-style-type: none"> <li>• lockers</li> <li>• access to appropriate clothing for work conducted</li> <li>• visitors kept out of this area unless biosecurity measures followed</li> </ul>

<p>BIO</p>	<p>Entrance to milk house to include the following for visitors:</p> <ul style="list-style-type: none"> <li>• hand washing and boot washing station,</li> <li>• area to put on coveralls/plastic boots,</li> <li>• disposal for coveralls and boots,</li> <li>• separate area to ensure regular barn employee traffic does not move through this area on regular basis</li> </ul>
<p>BIO, AC, LT, FS</p>	<p>Additional barn items:</p> <ul style="list-style-type: none"> <li>• designing farm to minimize ear tag loss</li> <li>• adequate lighting</li> <li>• breeding area – separate area for cows in heat</li> <li>• adequate fans/misters/air flow</li> <li>• video camera in barns, to monitor heat, calving or for security</li> <li>• screens to keep pests (e.g. birds) out</li> <li>• manhole into pens – ability to enter pens without walking through the feed bunk</li> <li>• dead stock disposal – easy access and removal</li> </ul>
<p>BIO 4 &amp; 5, FS27</p>	<p>Designate an isolation area for incoming and returning cattle that is separate from other isolation areas (e.g. for sick animals or those under treatment)</p> <ul style="list-style-type: none"> <li>• have dedicated isolation area feeders and waterers as well as equipment (Shovels, forks, wheelbarrows, etc)</li> <li>• if feasible, isolate animals from different source herds separately</li> <li>• if lactating cows are introduced, establish a plan for milking to include testing for antibiotics. Ensure that the cattle in isolation are milked last, and that all equipment is cleaned and disinfected prior to its next use with the home herd</li> </ul>