



# *Permit Handbook*

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## ***Introduction***

**Superior Safety Codes Inc. is an Authorized Accredited Agency in the Province of Alberta dedicated to providing you, our client, with the best service possible relating to the Safety Codes Industry.**

***“Our mission is to provide all individuals ethical and timely service through an absolute commitment to integrity”.***

**This booklet provides information on some of the more common items we encounter, and is designed as a quick reference guide only. It should not be used as an instructional manual. Superior Safety Codes Inc. are not liable in any way for the possible incorrect interpretation of the information contained in this handbook and highly recommend that qualified contractors be hired for your installation/construction project.**

**If you require further clarification or have any questions specific to your project, please call us at 1-866-999-4777.**

## **Commonly Asked Questions:**

### **When do I need a permit?**

A variety of local bylaws and provincial regulations govern when you need a permit. This may also vary with specific circumstances surrounding your project. Generally speaking, whenever building or renovating a structure, you will require one or all of the following permits: Building, Electrical, Gas, Plumbing and/or Private Sewage

### **What type of work requires a permit?**

The Safety Codes Act requires that all contractors and homeowners in Alberta obtain permits prior to commencing work on buildings covered by the Alberta Building Code, the Canadian Electrical Code, the Alberta Gas Code, or the Alberta Plumbing Code.

### **What are the benefits of obtaining a permit?**

The major benefits of obtaining a permit is knowing that the installation conforms to the safety standards that have been adopted under the Safety Codes Act, and that inspections will be provided by a certified Safety Codes Officer.

### **Who can I call if I have questions about my construction project?**

Give Superior Safety Codes a call and a certified Safety Codes Officer will be happy to assist you.

### **Is there a difference between a development permit and a building permit?**

Yes. A development permit deals with such items as zoning, and any restrictions on what type of building you may be constructing. Development permits are issued by the Municipality.

A building permit allows construction to proceed on condition of compliance with the Alberta Building Code. It deals with structural integrity and public safety. Building permits are issued by Superior Safety Codes and the Municipality.

### **What other permits do I require?**

Depending on the nature and scope of your project, you may also require electrical, gas, plumbing and sewage permits.

### **Who should apply for the permits, me or my contractor?**

If you have hired contractors to do the work, they are responsible to obtain the permits.

If you are doing the work yourself, you should obtain the permit provided you are the owner and you live or will be living at the premises (some restrictions may apply).

### **What services do I get with my permit?**

Services will include, but are not limited to, a plans review and report, technical advice, site inspections and reports and a final status report (Permit Services Report).

### **How long are my permits valid?**

Permits are valid for one year, provided the project is not suspended for more than 120 days and work is commenced within 90 days of permit issuance. Time extensions may be granted upon written request.

### **I have obtained my permits, now I have decided not to proceed with my project, can I get a refund?**

Providing you have not started the work and the permit has not expired, you are entitled to a refund. A processing charge may apply.

### **How much notice does Superior Safety Codes require when I am ready for an inspection?**

We request that you give us 2 days notice for proper scheduling. Same day service may be available depending on the Safety Codes Officers' schedule.

### **I am building a garage; can I build it on a slab?**

A garage can be built on a slab providing it is no larger than 55 square meters.

### **I am moving in a mobile (or modular) home. Do I need a building permit?**

Yes. Your home was built off-site to a standard, however, the onsite work such as foundation/or blocking still requires a permit.

### **I have an older home that requires updating. Do I need to re-wire/re-plumb the entire house to meet today's standards?**

You are only required to bring effected systems up to today's standards. It is however; highly recommended to bring all systems up to date.

### **I require a new residential furnace, do I require a permit?**

If you have to make alterations to your gas piping and/or venting, you will require a permit.

### **I am building a deck, do I need a permit?**

Yes, if the deck is 2 feet or more off the ground. Ensure you install 36" hand rails and 42" hand rails if the deck is 6 feet or more off the ground. The verticals must have a maximum spacing of 4".

## **Permit Application Requirements**

All permits will be issued in accordance with the Safety Codes Act and Regulations. Permits are available to customers via fax, email, mail and walk-in.

### ***Building Permits***

In order to issue a building permit, the applicant must submit:

- Two complete sets of construction drawings which include: elevation, floor plan, foundation, cross section and site plan.
- Completed permit application.
- Method of payment.
- Copy of the Municipal Development Permit.

### ***Electrical Permits***

In order to issue an electrical permit, the applicant must submit:

- Completed Permit Application.
- Method of Payment.

Note: For electrical installations greater than \$10,000, it will be at the discretion of the Safety Codes Officer as to whether construction documents (including plans and specifications) will be required.

For electrical installations greater than \$25,000, construction documents are required. An additional hourly rate will apply for electrical plans review.

### ***Gas Permits***

In order to issue a gas permit, the applicant must submit:

- Completed permit application
- Method of payment

### ***Plumbing Permits***

In order to issue a gas permit, the applicant must submit:

- Completed permit application
- Method of payment

## ***Private Sewage Disposal System Permit***

In order to issue a Private Sewage Disposal System permit, the applicant must submit:

- Completed permit application.
- A site plan.
- Expected volume of sewage per day.
- The criteria used to determine the expected volume of sewage per day.
- Description and details of all sewage system treatment and effluent disposal component(s).
- Details of the method(s) used to determine the soil effluent loading rate, including the results of the method(s) and who they were conducted by, and the depth to the water table from ground surface.
- Method of payment.

Private Sewage Disposal System Permit application requirements must be reviewed by a Level 2 Plumbing Safety Codes Officer prior to issuance.

## **RESIDENTIAL BUILDING CODE INFORMATION**

### **Foundation Requirements**

There are several variations of building foundations that can be used. Each is designed for various purposes and has specific requirements. Remember, this information is to be used as a guide only. Please contact our office for more detailed information.

### **Concrete Strength**

Recommended concrete strength should be a minimum of 20 mPa except for garage floors, carport floors and exterior stairs which should be a minimum of 25 mPa.



### **Height**

Concrete foundation walls must extend a minimum of 150 mm (6") above finished grade level.

### **Anchorage**

Building frames must be anchored to the foundation unless specific analysis is conducted. Anchoring can be achieved using one of these methods:

Embedding the ends of the floor joists in the concrete.

Use of the 'ladder system'

Using ½" diameter anchor bolts embedded at least 100 mm (4") into the concrete and spaced no more than 2.4 m (8') o/c.

### **Anchorage – Mobile Homes**

Anchorage in mobile homes is for preventing the structure from overturning.

Mobile homes shall be rated as to their resistance to overturning and installed in accordance with the manufacturer's instructions.

Except where it can be shown by calculation that mobiles will remain stable under a particular range of design wind pressures, ground anchorage shall be provided. Anchorage shall have a pullout resistance of at least 2.0 kN/m (135 lb/ft) of mobile home length.

The anchorage systems shall incorporate adjustment. In areas subject to frost action, anchorage shall provide free vertical movement of 75 – 100 mm (3-4”) before resisting uplift forces.

Anchorage shall be spaced not more than 12 m (40 ft.) apart and shall be corrosion resistant. Anchors shall be installed at sufficient depth to be free from movement due to frost action and to develop the required pullout resistance. Pullout resistant shall be determined using recognized engineering practice or from the anchor manufacturers’ instructions for the soil type in question.

## **FOUNDATION TYPES**



### **Thickened Slab**

The Alberta Building Codes states that Thickened Slabs require engineering; except in the case of a detached garage under 55m<sup>2</sup>.

### **Concrete Foundation Wall on Strip Footings**

The thickness of concrete foundation wall relies on the height and lateral support at the top of foundation. An 8” thick foundation would be permitted in most residential construction.

100 mm (4”) of granular materials such as gravel well compacted under the slab.

100 mm (4”) minimum thickness for the concrete slab.

12.7 mm (1/2”) diameter anchor bolt.

Pressure treated bottom plate.

### **Concrete Strip Footing**

Granular fill (optional)

Minimum 75 mm (3”) thick concrete slab or asphalt.

12.7 mm (1/2") diameter anchor bolts.

150 mm (6") poured concrete foundation wall

150 mm (6") concrete block

10" x 4" minimum supporting one floor

14" x 4" minimum supporting two floors

18" x 6" minimum supporting three floors

Depth of footings must be at least 1.2 m below finish grade.

### **Pile and Grade Beam**

A pile and grade beam foundation requires engineering - (see Standata 97-DR-008)

### **Pier Type Foundation**

Piers shall be spaced not more than 3.5 m apart. The height of piers shall not exceed three times their least dimension at the base of the pier.

Depth of pier type foundation must be at least 1.2 m below finished grade.

### **Slab on Ground**

Granular material under the slab is recommended, but not mandatory.

Thickness of slab shall not be less than 3" exclusive of topping. When concrete topping is provided, it shall not be less than 20 mm.

### **PWF Foundation**

A preserved wood foundation may be either designed by a professional engineer or be designed and constructed in conformance to the CSA standard CAN/CSA S-406-92.

### **ICF (Insulated Concrete Foundation)**

ICF foundation wall must conform to the ABC 1997 and the following conditions:

- must be listed under CCMC,
- must be created under direct supervision of a certified installer.
- Construction must be in compliance with the manufacturer's specifications.
- Must be protected from the interior with a minimum 15 minute thermal barrier (i.e. 1/2" drywall).

## **Screw Pilings**

Screw pilings must be either pre-engineered or custom engineered. They must also be fabricated by a CWB certified welder.

## **USEFUL CONSTRUCTION TIPS**



### **Mark the location of the joists and beams**

Start at one side and work towards the other using a measuring tape and a pencil to mark the location of the floor joists and beams, keeping with the engineers required joist spacing as per the structural plan, or the manufacturer's specifications.

### **Install the beams and floor joists**

Install the beams as specified on the plan. The ends of the beams should rest in the notches provided for that purpose in the foundation wall (if specified on the plan). Based on the beams length and load-bearing requirements, it is determined how many adjustable posts are required in the basement. There are several types of beams: steel beams, LVL (laminated veneer lumber), several types of I joists. Joists must be attached to the beams with joist hangers.

### **Sub Floor**

Before laying down the sub floor panels, spread a construction adhesive over the joists. The adhesive will increase the rigidity of the floor and reduces and/or prevents squeaking.

Lay the sub floor sheets perpendicularly to the joists in order to conform to building codes and get maximum rigidity. Be sure not to align seams with unsupported joints. Screws are recommended as an alternative method of fastening the sub floor.

When using tongue and groove sub floor, use a piece of wood to hit the edges of the panels to reduce edge damage.

### **Assemble the exterior walls**

Assemble the walls horizontally on the floor. Lay the bottom plate where you want to erect the wall and nail the studs perpendicularly onto it. Be sure to nail the studs on 16 in. centers. Install top plates – two 2" x 6" (38 mm x 152 mm) beams nailed together – on top of the studs.

## **Build window headers**

Headers transmit their weight to the king studs located on either side of the window opening. To install a header, all you need to do is make a sandwich of lumber and plywood consisting of three 2" x 10" (38 mm x 235 mm) and a piece of ½" plywood nailed together.

Once the outside walls are framed, it's time to install the sheathing. The sheathing consists of large panels measuring 4 ft. x 8 ft. (1.22 m x 2.44 m), which act as a screen against wind and rain and stiffens the structure.

## **Erect inside partitions**

There are load-bearing walls that support the weight of the ceiling of the upper floor and non-load bearing walls whose only role is to divide space into rooms. Load-bearing walls are built with 2" x 6" (38 mm x 140 mm) studs and require double plates.

Non-load-bearing walls don't need double plates. They can be built of 2" x 4" (38 mm x 89 mm) studs.

Use a chalk string to mark the interior partitions on the floor. The chalk string is easy to use and prevents errors. First erect the longer partitions, then the cross-partitions before erecting the closet and vestibule partitions.

## **Miscellaneous Information**

Fire stops are to be provided at all concealed spaces including the space between the chimney flue and shaft where it passes through a wall, floor or ceiling.

The roof or attic space is to be provided with an unobstructed vent area of not less than 1/300 of the insulated ceiling area, distributed uniformly on opposite sides of the building, with min. 25% of the required openings at the top and 25% at the bottom of the space.

Where the roof slope is less than 1 in 6 or in roofs that are constructed with roof joists, the unobstructed vent area is to be not less than 1/150 of the insulated ceiling area.

When ventilating a cathedral ceiling, it is to have a 63 mm air space between the insulation and the roof sheathing where insulation stops are not provided, or not less than 25 mm where insulation stops are provided. Except where each joist space is separately vented, roof joist spaces shall be interconnected by installing min. 38 mm x 38 mm cross purlins on top of the roof joists.

Crawl spaces are to be ventilated by natural or mechanical means. Natural ventilation is to be not less than 0.1 m<sup>2</sup>. (1 ft<sup>2</sup>) of unobstructed vent for every 50 m<sup>2</sup> of floor area.

Attic or crawl space access hatchways are to be at least 500 mm x 700 mm (20" x 28") and attic hatches are to be insulated (R-34) plus be weather-stripped around the perimeter.

A smoke alarm installed by permanent connections to an electrical circuit is to be provided:

- a) on each floor level including basements, that is 900 mm or more above or below an adjacent floor level
- b) within 5 m of a bedroom

Required smoke alarms are to be interconnected so that if one is set off they will all sound.

The building site is to be graded so that surface water will drain away from the building.

For attached garages, any common wall is to provide an effective barrier against the passage of gas and exhaust fumes. Any door between the garage and the house is to be tight fitting, weather-stripped, and fitted with a self-closing device.

At the intersection of roofs with exterior walls provide sheet metal flashing of at least 0.33 mm (0.013”) thick galvanized steel or other acceptable material.

## **ELECTRICAL**



### **Installing outlets, switches, ceiling fittings, etc.**

Plan your needs and the locations for the outlets.

Draw up a list of all the devices you will be putting into your home: appliances, washer, dryer, electric heating system (if this is what you are planning), lamps, water heater, etc. Determine the electrical needs for each room. The layout of your furniture will give you a starting point for selecting the location of some of the outlets.

For interior design purposes, remember it's always better to have more outlets than to use extension cords. Who knows what you may want or need later on, a heat pump, garbage disposal unit, home theatre, air exchange system, etc.

If you are planning on doing this work yourself, make sure the power is off at the breaker box before doing any electrical work. Outlets and switches should be installed in switch boxes. These are placed between the studs (except the boxes with plates that are nailed to the stud). For duplex switches, join two or more boxes by removing the knock out(s) in each box.

To connect the outlets, loosen the screw terminals. Splice the cable back far enough to allow at least 6 in. (152 mm) of wire to stick out and remove the outer casing on each wire. Remove the insulating sleeve and bare approximately 1 in. (25 mm) of the copper wire. Install the appropriate connector. The connector is a metal piece to which the metal box is screwed. Use a wire nut to fasten the wires. To connect the wires to the outlet, use long-nose pliers to make a loop on the bare end wire to hook clockwise around the terminal screw. Tighten the screw.

### **Dining Area (which forms part of a kitchen)**

Put at least one receptacle on a separate circuit in the area.

### **Laundry Room and area**

Install a separate circuit and include at least one receptacle for the washing machine and another one in a convenient location.

## **Utility Room or area**

Install at least one receptacle on a separate circuit for the utility room.  
Install one receptacle in each undeveloped area.

Note: Built in vacuum motors require a receptacle on a separate circuit located adjacent to the unit.

## **Bathrooms and Washrooms**

Install one duplex receptacle, protected by a Class A Ground Fault Circuit Interrupter (GFCI) within 1 m (39 inches) of the wash basin. This GFCI receptacle must be located at least 1 m (39 inches) away from a bathtub or shower stall. Measure this distance between the receptacle and the inside edge of the bathtub or shower without piercing a wall, partition or similar obstacle. Receptacles installed in areas (i.e. Bedrooms) that are not separated from the bathroom by a door, should be protected by a Class A Ground Fault Circuit Interrupter if they are within 3 m of a tub or shower.

## **Outdoor**

Provide at least one receptacle on a separate circuit. Receptacles located on the dwelling, including attached carports and attached garages are to be protected by a ground fault circuit interrupter.

## **Electric Range**

- Provide a 40 amp circuit breaker with a 2 pole common trip.
- Use #8 copper wire (NMD-90).
- Use a 50 amp receptacle rated 125/150 volt (14-50R).

## **Receptacles (General)**

- Install duplex receptacles in the walls of every finished room or area so that no point along the floor line of any usable wall space is more than 1.8 m (6 feet) horizontally from a receptacle. The usable wall space includes a wall space of 900 mm (3 feet) or more in width but doesn't include doorways, windows that extend to the floor, fireplaces or other permanent installations that would limit the use of the wall space.
- Ground all receptacles.
- Connect the receptacles so that the silver terminal screw (or the screw identified as "white") on the receptacle is connected to the white circuit wire, the brass terminal screw (or the screw identified as "black" or "hot") on the receptacle is connected to the black (or red) circuit wire.
- Connect only one wire under each terminal screw.

## **Receptacles (Located in sleeping areas)**

- Arc Fault Circuit Interrupters (AFCI) are required on new circuits feeding receptacles in sleeping facilities of a dwelling unit.

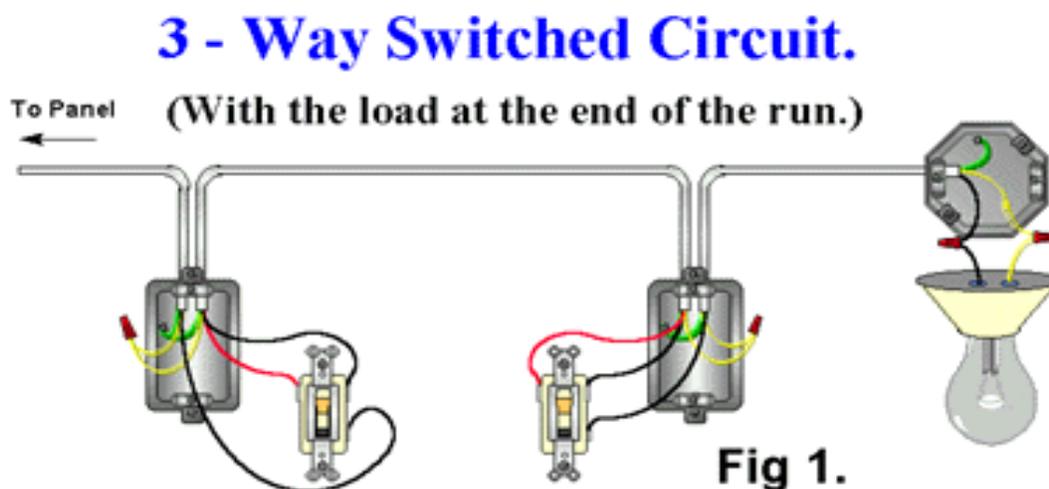
## Kitchen Receptacles

- Provide a sufficient number of split receptacles along the wall behind the counter work surface so that no point along the wall line is more than 900 mm (3 feet) from a receptacle outlet measured horizontally along the wall line. Sinks, built-in equipment, and isolated work surfaces less than 300 mm (1 foot) long at the wall line may be excluded from this requirement. Install a minimum of two – 3 wire circuits but no more than two split receptacles on that circuit.
- Do not connect adjacent receptacles to the same 3-wire circuit.
- Refrigerators, dishwashers and microwave ovens require separate circuits.

## Stairway Lighting

Three way switching is required on stairway lighting when a stairway has 4 or more risers and is leading to a finished area or to an outside entrance. Refer to Figure 1 for a simple 3 way switching wiring diagram.

Figure 1



## Smoke Alarms

- Install smoke alarms on each floor level, including basements.
- Install smoke alarms within 5 m (18 feet) of bedrooms.
- Smoke alarms are to be powered from a branch circuit containing lighting. Smoke alarms are not to be installed on a GFCI or AFCI part of the circuit.
- When more than one smoke detector is being installed, interconnect the smoke detectors with 14/3 NMD-90 cable and connect according to manufacturers instructions.

Note: The Alberta Building Code permits only wired-in smoke alarms (Alberta Building Code Article 9.10.18.3).

## Garages

- Provide at least one separate circuit to the garage and one duplex receptacle for each car space. The lighting may come off this circuit.
- Using the same trench for gas sub-service lines and electrical power conductors may be permitted.  
- Local authority must be consulted (i.e. electrical/gas utility)

## Electric Dryer

- Provide a 30 amp circuit breaker with a 2 pole common trip.
- Use #10 copper wire (NMD-90).
- Use a 30 amp receptacle rated 125/250 volt (14-30R).

## General Rules for Non-Metallic Sheathed Cables:



1. Use only copper conductors.
2. Use 14 AWG copper wire for general purpose wiring (lights and receptacles).
3. Provide over-current protection of 15 amperes for general purpose wiring (lights and receptacles).
4. Install a maximum of twelve outlets on a general purpose circuit (lights and receptacles).

5. Run cable as a loop system in continuous lengths between outlet boxes, junction boxes and panel boxes. Make joints, splices and taps in the outlet boxes.
6. Where cables pass through a hole in a joist or stud, bore the hole 32 mm (1.25 inches) back from the face of the stud or joist or protect the wires from driven nails by using metal plates.
7. Secure wires every 1.5 m (5 feet) when run on the sides of joists or studs and 300 mm (12 inches) from each outlet box.
8. Protect wires that are exposed within 1.5 m (5 feet) of the floor.
9. Keep cables a minimum of 25 mm (1 inch) from heating ducts.
10. Where cables run through or along metallic studs, joists, sheathing or cladding, ensure that the cables are:
  - protected from mechanical damage both during and after installation.
  - protected by an insulation insert secured to the opening in the stud, and,
  - isolated from the stud by an insulating material supported to the member.
11. Protect cables from mechanical damage and from driven nails and screws when they are installed behind baseboards or horizontally behind cupboards.
12. Sub-panels may be added to existing service panel boards provided the main service panel has a main disconnecting device.
13. Where communication cables are to be installed in joists or studs, maintain a minimum separation of 50 mm (2 inches) from any power non-metallic sheath cable.

## **OUTLET BOXES**



1. Set outlet boxes with the finished wall or ceiling and secure them to studs or joists.
2. Ground all outlet boxes.
3. Ensure all junction boxes are accessible after installation.
4. Leave at least 150 mm (6 inches) of wire out of each outlet box for joints and connection of equipment.
5. Surround the outlet boxes with a moisture barrier when the wall or ceiling requires a vapour barrier.

**The maximum number of conductors permitted in outlet boxes is:**

**Light Fixtures**

<b>Common Types</b>	<b>Dimensions</b>	<b>Capacity (ml) (cu-in)</b>	<b>#14</b>	<b>General Usage</b>
Octagonal	4 x 1 ½	245 (15)	8	Light or junction
Square	4 x 1 ½	344 (21)	12	Junction
#1103	3 x 2 x 1 ½	131 (8)	3	Switch or plug
#1102	3 x 2 x 2	163 (10)	4	Switch or plug
#1104	3 x 2 x 2 ½	204 (12.5)	5	Switch or plug
#1104	3 x 2 x 3	245 (15)	7	Switch or plug

Note: When a dimmer switch, a timer, or a GFCI receptacle is used in an outlet box, reduce the number of permitted conductors by three.

6. Install three way switches according to Figure 1.
7. Totally enclosed light fixtures must be installed in clothes closets.

## PLUMBING INFORMATION



### Planning your rough-in plumbing

Plumbing requires a lot of planning. You first need to draw a list of all the fixtures that need to be connected to the water supply, and determine their precise location. Rough-in plumbing includes all water, drainage and vent piping, including the piping under the floor.

Legally, you can do rough plumbing work yourself, but you need to comply with plumbing codes and municipal standards dealing with such things as connections to the municipal water supply system, and materials used for drain pipes.

### Plumbing Materials

Despite the research and innovation in plastics, good old copper remains the most used material for water supply systems. However, soldering is necessary to connect copper pipes.

PEX, a new arrival in plumbing materials, is used more and more in the manufacturing of supply pipe and features good durability, more flexibility, and can be connected without soldering.

The drainage network is made of ABS (acrylonitrile-butadiene-styrene plastic), a very rigid plastic which has replaced the cast iron pipe. Special glue is required to assemble this material.

### The Plumbing Plan

Draw your plan from the list of the fixtures (toilets, showers, wash basins, sinks, outside taps, etc) and electrical appliances you think you may want to add in the near future.

The plumbing plan includes:

- water distribution system;
- drainage system;
- vent lines



## **Water Distribution System**

Water is brought to your house under pressure through a  $\frac{3}{4}$  in. or 1 in. pipe which is connected to the main shut-off. It splits into two separate pipes (one for hot water, one for cold water) coming out of the water heater. From that point on, these two pipes run through the house, side by side, and connect to the various fixtures and appliances. On your plan, locate the water heater in the basement, as close as possible to the chimney. Keep in mind the water distribution system to the main fixtures and appliances for the kitchen and bathrooms in order to minimize the length of the required pipes.

### **Water heater shut off**

Install a shut off at the inlet connection of the water heater so you can turn it off the system in case of emergencies or for maintenance purposes.

### **Fixture shut offs**

Install a shut-off cock designed to cut off the water supply only to the fixture to which it's attached in case of an emergency or for maintenance or repair purposes.

## **The DWV (Drainage, Waste and Vent) System**

One main stack must run from the basement through to the attic. The minimum size must be 3 inches and increase to 4 inches before passing through the roof.

### **Main Cleanout**

The waste stack must be fitted with a cleanout and plug in the basement. This plug is used for inspection and cleaning purposes.

### **The Vent Lines**

The waste stack could not do its job without air. Every trap requires a vent which in turn is connected to a network of other vents or may go separately and directly to the outdoors and terminates through the roof.

Air inlets balance the pressure in the pipes thus allowing P-traps to do their job. P-traps hold a small quantity of water in waste pipes which is used to stop sewer gases that would otherwise find their way back into the house. All sanitary fixtures are fitted with P-traps, except for toilets in which P-traps are integrated.

## Private Sewage System Information



How safe, effective, and economical an onsite sewage system is greatly depends on the use and maintenance of the system. Properly used and maintained systems provide years of service. Proper use begins with waste disposal habits. Individuals determine how much, and what enters the system. Many of us were used to “just flushing and it went away”, and had never heard of onsite sewage systems until we moved to a rural setting. Coming up with and sticking to proper use and maintenance guidelines will go a long way to maximizing the longevity of an onsite sewage system.

The suggestions outlined below are meant to give some insights into most conventional systems and help with developing proper use and maintenance habits. More sophisticated systems may require additional maintenance. For specific information about a particular system, contact Superior Safety Codes Inc.

***Note: All systems should be installed by a qualified and certified private sewage contractor.***

### **Tips for Using Your Onsite Sewage System:**

- Make efforts to minimize the amount of water that goes into the onsite sewage system; typical water use is about 227 litres (50 gallons) per day for each person. Try not to exceed that amount. Having a water meter installed will help you monitor your water use.
- Systems are designed to handle domestic wastewater. Things that do not break down easily (facial tissue, large amounts of vegetable scrapings, coffee grounds, chemicals, paints, oils, sanitary napkins, applicators, condoms, medicines, pesticides, poisons, strong disinfectants, etc.) can damage of substantially increase need for cleaning the septic tank.
- Restrict the use of in-sink garbage disposals. They add a large amount of organic and inorganic material to your sewage, which may exceed your system’s capacity and cause it to fail.
- Do not pour grease or cooking oil down the drain (including toilet). Grease is hard to break down. It will eventually move into the soil, plugging it off.
- Keep your fixtures in good repair. A slow running toilet can add large amounts of water. A running toilet discharging  $\frac{1}{4}$  gallon per minute will result in 360 gallons per day. This is more water than a sewage system for a 3-bedroom home is designed for. To test the toilet, put a few drops of food colouring in the toilet tank. If it shows up in the bowl, it is leaking. It may take as long as an hour for colour to show in bowl.

## **Tips for Maintaining Your Onsite Sewage System**

- Wastewaters not included in the system's design shall not be put into the system. This may include wastewater from:
  - foundation weeping tile drains,
  - a hot tub, spa or hydro massage bath exceeding a 2-person capacity,
  - a swimming pool,
  - an iron filter,
  - water conditioning equipment that generates excessive amounts of wastewater
- Have a diagram showing the location of your septic tank and disposal field.
- If not already in place, install watertight manhole extensions to simplify septic access.
- Make sure the access lids are structurally sound, secure and childproof.
- If access lids are buried, consider raising them above grade to facilitate access.
- Have the septic tank checked annually to determine how often the tank needs to be pumped out. (Typically tanks are pumped out by a vacuum truck approximately every two years).
- If pumps are used in the system, have any pump screens cleaned (make sure they are re-installed) and have the control operations checked.
- Maintain adequate vegetative cover over the disposal field. Keep the grass trimmed.
- Direct eaves trough down spouts and other surface water flows away from the septic tank and disposal field.
- Systems are installed near the surface – keep automobiles and heavy equipment off the system. The piping and septic tanks can be damaged by heavy traffic, and traffic will compact the ground reducing its ability to absorb sewage effluent. In winter, traffic (even from snowmobile paths) will drive frost into the system causing it to freeze.

## **Commonly asked questions:**

### **1. Will I need to pump the tank?**

Yes, every person using the plumbing contributes solids that will accumulate in the septic tank. These solids (sludge) collect, and are digested very slowly by microorganisms in the anaerobic environment of the septic tank. Solids accumulate over a period of time and reduce the storage capacity of the septic chamber. This reduced storage capacity allows less time for the sewage to be in the tank so solid will not separate from the water as well. Also, there is a quantity of grease, soap curds and other materials that float on the surface of the liquid (scum). Both sludge and scum must be removed from the septic tank periodically and disposed of in a safe manner, usually by hiring a vacuum truck.

If a septic tank is not cleaned soon enough, suspended solids and organic materials will not settle out, and will be discharged into the soil absorption portion of a system. The additional suspended solids and organic material will clog the soil, eventually causing failure of the system. It can be very expensive to fix.

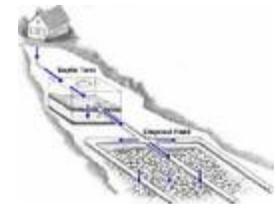
### **2. How will I know when to have the Septic Tank pumped out?**

Tanks should be checked every year in the spring or early summer to determine how much sludge and scum has accumulated. The size of the septic tank and the waste received affects how often it needs to be pumped out. A septic tank with 300 mm of sludge in its first compartment is ready to be pumped out. Pumping a tank more often than is required is much better than leaving it to the last minute. Having the tank pumped out in the spring will allow the biological action to re-establish quicker during the warm summer months. It is not necessary to thoroughly scrub and flush the septic chamber until it is visibly clean. The small amount of sludge that remains on the floor and walls will “re-seed” the septic tank, and contribute to the establishment of its normal operation.

Vacuum trucks are available to pump out septic tanks. They are capable of doing an excellent job without spillage. (You might want to ask your neighbors who they use when they need their tank pumped, or look in the “Yellow Pages” under Septic Tank and Cleaning Systems – Cleaning). The pumper will take the septage to an approved site such as a municipal treatment plant. Inquire about where your pumped sewage will go. For more information, see the Private Sewage Handbook.

### **3. Are septic tank additives necessary?**

No. These products include biologically based materials (bacteria, enzymes, and yeast), inorganic chemicals (acids and bases), or organic chemicals (including solvents). If the additives reduce the need for regular pumping of the septic tank, the question must be asked, “where did the septage go?” If the additive increases the level of biological activity in the tank, the additional digestion of the sludge can increase the amount of gas given off by the microorganisms digesting the solids. The gas bubbles up and can cause the suspended material in the sewage to be buoyed and not settle out in the tank as it should. It is then carried into the final soil port of the system and can plug the soil pores that accept the water. Other chemicals emulsify greases, which will then not float and be trapped as scum in the tank. They will then flow out to the soil and plug the soil pores. Some of these products may contain chemicals that will damage the effluent absorption portion of the system and will percolate down through the soil to contaminate groundwater and nearby wells. Systems work on natural biological processes similar to composting.



#### **4. Is special care needed for a disposal field?**

Yes, there are things you can do to help maintain the disposal field. Disposal fields do not have an unlimited capacity. Limiting water use can help prevent hydraulically overloading a system. Once a disposal field is overloaded with water, the soil becomes saturated. Water moves slower through saturated soil and the oxygen is driven out of the soil. The aerobic soil microorganisms (and larger worms etc.) are driven away, slowing the digestion of the organic particles in the sewage where there is lack of air. Worms and other such insects that keep soil spaces open will also move out. Once saturated, the system will take a long time to recover. A continuously overburdened system will fail and is hard to rejuvenate.

Good water conservation practices and immediately repairing any leaky faucets or toilets can help reduce the amount of wastewater to be treated. Keep grass cut short and direct surface runoff water away from the field area. Do not allow heavy traffic over the disposal field area. Continued traffic, even things like snowmobiles, over disposal field or treatment mound during the winter can cause frost to go deeper into the ground and freeze the system. For more information, see the Private Sewage Handbook:

[http://www.municipalaffairs.gov.ab.ca/ss/handbook/appendix-b.cfm#DisposalFields-General\(SubsurfaceandRaiseddisposalfields\)](http://www.municipalaffairs.gov.ab.ca/ss/handbook/appendix-b.cfm#DisposalFields-General(SubsurfaceandRaiseddisposalfields)).

#### **5. Is your existing system effectively treating sewage?**

Some older systems such as leaching cesspools do not provide adequate treatments. The cesspools were dug deep in the ground, so there is little biological activity and oxygen in the soil to properly treat the effluent. The bottom of the cesspool may also be close to a shallow water table, which would allow untreated sewage into the groundwater. Cesspools often had a large lid at or just below ground, which can create a hazard if the lid is not sound, as someone could fall into them. They were often built out of lumber, which can rot and collapse over time. If you have a cesspool, even if installed when codes allowed their use, you should consider replacing it to enhance the level of treatment you provide for your sewage, in order to prevent groundwater contamination.

Other older systems may not have been designed to treat the increased amount of sewage you now generate in your home. You need to consider the use your family puts on the system. Failures don't always result in effluent coming to the surface. Systems are not intended to simply dispose of sewage ("make it disappear"). Systems must adequately treat wastewater prior to its reintroduction into the environment (the ground water). Have your system evaluated and know what you have.

## Private Sewage System Minimum Distances

If there is not a main building between the disposal system and the water course the minimum distance between the effluent disposal component of the private sewage system and the water course is 90 meters.

### Septic tanks, sewage holding tanks or sewage effluent tanks shall not be located within:

- 1 meter from any property line;
- 9 meters from any water source;
- 9 meters from any water course; and
- 1 meter from any building.

### A disposal field, measured from any part of a weeping lateral trench shall not be located within:

- 1.5 meters from any property line;
- 9 meters from any basement or cellar;
- 15 meters from any water source;
- 15 meters from any water course;
- 1 meter from any non-basement building; and
- 1 meter from a septic tank.

### A treatment mound shall not be located within:

- 3 meters from any property line;
- 15 meters from any water source;
- 15 meters from any water course;
- 3 meters from a septic tank;
- 9 meters from any basement or cellar; and
- 3 meters from any (non-basement) building.

### An effluent discharge to the ground surface shall not be located within:

- 45 meters from any water source;
- 45 meters from any water course;
- 45 meters from a dwelling; and
- 90 meters from any boundary property line.

### A lagoon serving a single family dwelling or duplex shall not be located within:

- 45 meters from a dwelling;
- 30 meters from any property line;
- 90 meters from any water source; and
- 90 meters from any water course.

#### Definitions:

**Water Source** – a man-made or natural source of potable water.

**Water Course** – a river, stream, creek, swamp, marsh or other natural body of water marked by the shore, or a canal, reservoir or other man-made surface feature intended to contain water for a specified use, whether it contains or conveys water continuously or intermittently

## **Building Classification and Professional Involvement Information**

Permits are required on any building that falls under the scope of the Alberta Building Code. A building permit must be obtained prior to the start of construction. Other required permits that may be required are Electrical, Plumbing, Gas and Private Sewage Disposal.

### Building Classification and Professional Involvement Information

*Reminders: Professional Involvement for Part 9 or Part 3 buildings*

- Where required in Part 2 of the Alberta Building Code, for buildings requiring professional involvement, Schedules A1, A2, B1, and B2 must be submitted.
- If drawings are required to be imprinted with the seals or stamps of a registered architect or a professional engineer, the drawings must be sealed or stamped by the respective professional.

*The building classification, (type of occupancy) building area, building height, and the number of stories must be identified to determine the following:*

- Construction material required - combustible or non-combustible.
- Fire resistance ratings for floors, roof, and load-bearing wall, columns, beams etc.
- Numbers and location of exits.
- Requirements for fire protection such as sprinkler, fire alarm, standpipe systems, hydrants.
- Water supply for fire fighting.

**(Building Classification and Professional Involvement Charts Attached)**

*The following benefits may help you determine construction methods for your project.*

### **Firewalls**

Firewalls may be used to divide one building into two or more smaller buildings so that less restrictive code requirements may apply. The results:

- Reduces building areas that may eliminate the need for sprinkler/fire alarm system.
- Water supply for fire fighting may be eliminated.
- May be used to separate major occupancies that are otherwise prohibited by the code to be in the same building.
- To have the option to choose from combustible or non-combustible construction.
- May be used to keep the building under Part 9 of the code except for A, B, and F1 occupancies.



**Masonry Firewall**

## **Sprinkler Systems**

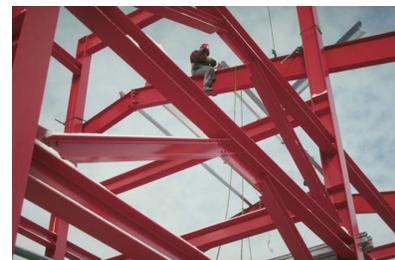
- Allows construction of larger buildings using combustible material.
- Eliminates certain types of roof assembly's fire resistance rating.
- Eliminate certain room fire rated separations.
- Increases limits of surface flame spread rating.
- Can reduce the required fire resistance rating of exposing building face, increases the area of unprotected openings, and/or reduce the limiting distance.
- Increases exit travel distance and permits larger room floor area.
- An appropriate sprinkler system allows bigger size of glazing in interior fire separations, and in some cases it may be possible to allow windows in exposed building faces.
- Sprinkler systems allow for more design options in buildings such as interconnected floor spaces and exiting through lobbies, which would otherwise not be permitted in the Alberta Building Code.



**Sprinklers**

## **Non-Combustible Construction**

- Allows increased building size.
- In some cases eliminates fire resistance rating of roof, floor, mezzanine, and supporting elements.
- Decreases limiting distance for exposed building faces with proper fire resistance rating.
- Note: Fabrication and Erection of Steel shall be done by a certified welder under the Canadian Welding Bureau.



**Non combustible construction**

## Submission Requirements

- To obtain a building permit, two sets of architectural, structural, mechanical, and electrical drawings must be submitted. Drawings must have sufficient information to determine that the proposed work will conform to the building code.
- Site Plan
- Completed Permit Application
- Copy of Development Permit
- Payment

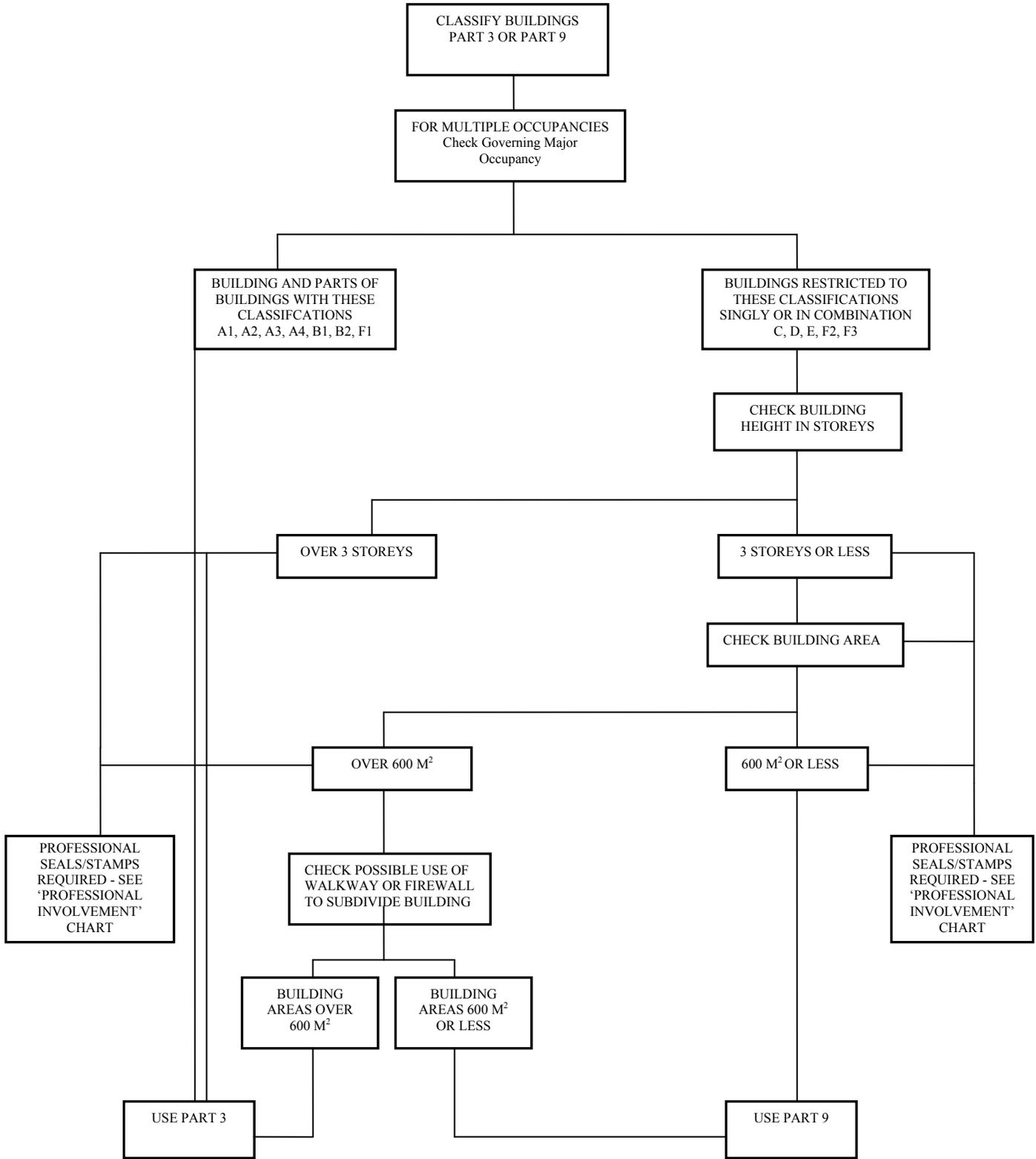


**Drawings**

The information presented in this document are guidelines only that deal primarily in determining the basic building structure requirements relative to building size and classification. Other requirements in the code such as barrier free standards, health, safety measures at construction site, multiple occupancies, heating and ventilation, interior fire separations and safety in general must also be considered.

If you have questions or require assistance regarding code or permit requirements, please contact Superior Safety Codes Inc.

## BUILDING CLASSIFICATION CHART



## Professional Involvement Chart

### Professional Seal Requirements of the Alberta Building Code 1997

**Classification  
Group A, B  
2.3.3.1.(2)**

Max 300 m <sup>2</sup>	Max 150 m <sup>2</sup> Max 150 m <sup>2</sup>	Max 100 m <sup>2</sup> Max 100 m <sup>2</sup> Max 100 m <sup>2</sup>	<b>Three Storeys Max</b>	<sup>1</sup> Seals/ Stamps Not Required
> 300 m <sup>2</sup>	> 150 m <sup>2</sup> > 150 m <sup>2</sup>	> 100 m <sup>2</sup> > 100 m <sup>2</sup> > 100 m <sup>2</sup>	<b>More Than Three Storeys</b>	<sup>2</sup> Architect and Engineer

**Classification  
Group C  
2.3.3.1.(2)**

Max Units	4	Dwelling	Single Family	<sup>1</sup> Seals/ Stamps Not Required
<b>Apartments or Similar 2.3.3.1.(3)</b>			<b>Three Storeys Max</b>	<sup>2</sup> Architect and Engineer
<sup>3</sup> 5 to 20 Dwelling Units				
<b>2.3.3.1.(4)</b>			<b>More Than Three Storeys</b>	<sup>2</sup> Architect and Engineer
More Than 20 Dwelling Units				

<b>Hotel, Motel or Similar 2.3.3.1.(2)</b>	Max 400 m <sup>2</sup>	Max 200 m <sup>2</sup> Max 200 m <sup>2</sup>	Max 130 m <sup>2</sup> Max 130 m <sup>2</sup> Max 130 m <sup>2</sup>	<b>Three Storeys Max</b>	<sup>1</sup> Seals/ Stamps Not Required
<b>Hotel, Motel or Similar 2.3.3.1.(2)</b>	> 400 m <sup>2</sup>	> 200 m <sup>2</sup> > 200 m <sup>2</sup>	> 130 m <sup>2</sup> > 130 m <sup>2</sup> > 130 m <sup>2</sup>	<b>More Than Three Storeys</b>	<sup>2</sup> Architect and Engineer

**Classification  
Group D, E  
2.3.3.1.(2)**

Max 500 m <sup>2</sup>	Max 250 m <sup>2</sup> Max 250 m <sup>2</sup>	Max 165 m <sup>2</sup> Max 165 m <sup>2</sup> Max 165 m <sup>2</sup>	<b>Three Storeys Max</b>	<sup>1</sup> Seals/ Stamps Not Required
> 500 m <sup>2</sup>	> 250 m <sup>2</sup> > 250 m <sup>2</sup>	> 165 m <sup>2</sup> > 165 m <sup>2</sup> > 165 m <sup>2</sup>	<b>More Than Three Storeys</b>	<sup>2</sup> Architect and Engineer

**Classification  
Group F  
2.3.3.1.(2)**

Max 500 m <sup>2</sup>	Max 250 m <sup>2</sup> Max 250 m <sup>2</sup>	Max 165 m <sup>2</sup> Max 165 m <sup>2</sup> Max 165 m <sup>2</sup>	<b>Three Storeys Max</b>	<sup>1</sup> Seals/ Stamps Not Required
> 500 m <sup>2</sup>	> 250 m <sup>2</sup> > 250 m <sup>2</sup>	> 165 m <sup>2</sup> > 165 m <sup>2</sup> > 165 m <sup>2</sup>	<b>More Than Three Storeys</b>	<b>Architect or Engineer</b>
Occupant load designed: Greater than 28 m <sup>2</sup> / person				
> 500 m <sup>2</sup>	> 250 m <sup>2</sup> > 250 m <sup>2</sup>	> 165 m <sup>2</sup> > 165 m <sup>2</sup> > 165 m <sup>2</sup>	<b>More Than Three Storeys</b>	<sup>2</sup> Architect and Engineer
Occupant load designed: Less than 28 m <sup>2</sup> / person				

**Mixed Occupancies  
2.3.3.1.(3)**

Occupant load designed: Greater than 28 m<sup>2</sup> / person  
Major Use Must be Group F Occupancy  
Other occupancy not to exceed 400 m  
Total on all floor areas > 500 m

**Architect  
or  
Engineer**

Group F Major Occupancy	Other Occupancy
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**Others:  
2.3.3.1.(2)**

**Farm buildings that are not for public use**

<sup>1</sup>Seals/Stamps  
Not Required

**Relocatable industrial camp building**

<sup>1</sup>Seals/Stamps  
Not Required

**Swimming Pools  
7.3.1.2.(1)**

**Architect  
or  
Engineer**

**Notes to the Chart:**

- 1) Seals/Stamps may be required for specific design items (such as structural) for virtually all buildings (except single family homes that are built to the prescriptive requirements in Part 9).
- 2) Check also for architect or engineer with restricted practitioner.
- 3) This refers to a building which could be sold as a legal entity together with the land it is on. There may be more than one of these buildings in a development.
- 4) Structural components of load-bearing assemblies must be designed by a professional engineer (ABC 97 10.2.1.1.)
- 5) The height and area limits are to be interpreted as follows:
  - (a) in the case of a new building, by using the chart for the height, area, etc. of the building,
  - (b) in the case of an addition, by using the chart for the height, area, etc. of the addition, and
  - (c) in the case of alterations, by using the chart for the height, area, etc. of the portion of the building affected by the alterations.
- 6) Building area means the area of a building that is contained within the outside surface of the exterior walls of the building.
- 7) The 'height' of a building is the *building height* of the building determined in conformance with the Alberta Building Code.