

*The  
Canadian Electrical  
Code (Saskatchewan  
Amendments)  
Regulations, 1995*

*Repealed*

by Chapter E-6.3 Reg 6 (effective March 18, 1999).

*Formerly*

Chapter E-6.3 Reg 3 (effective September 7, 1995) as  
amended by Saskatchewan Regulations 1/96.

**NOTE:**

This consolidation is not official. Amendments have been incorporated for convenience of reference and the original statutes and regulations should be consulted for all purposes of interpretation and application of the law. In order to preserve the integrity of the original statutes and regulations, errors that may have appeared are reproduced in this consolidation.

## CHAPTER E-6.3 REG 3

### *The Electrical Inspection Act, 1993*

#### Title

1 These regulations may be cited as *The Canadian Electrical Code (Saskatchewan Amendments) Regulations, 1995*.

#### Canadian Electrical Code amended

2 Part I of the latest prescribed edition of the *Canadian Electrical Code*, being Canadian Standards Association standard C22.1-1994, is amended in the manner set forth in the Appendix.

22 Sep 95 cE-6.3 Reg 3 s2.

#### Repeal

3(1) *The Canadian Electrical Code (Saskatchewan Amendments) Regulations, 1991*, being chapter E-6.2 Reg 2 of *The Revised Regulations of Saskatchewan*, are repealed.

(2) *The Canadian Electrical Code (Saskatchewan Amendments) Regulations*, being chapter E-7.1 Reg 3 of *The Revised Regulations of Saskatchewan*, are repealed.

22 Sep 95 cE-6.3 Reg 3 s3.

## APPENDIX

### PREFACE AND SCOPE

The Canadian Electrical code, Seventeenth Edition, as supplemented and amended by these requirements, issued under Section 5 of *The Electrical Inspection Act, 1993*, shall govern the workmanship and all other matters whatever pertaining to electrical equipment and the installation of electrical equipment in or upon any land, buildings, structures and premises. It contains supplementary and amendatory requirements which by their inclusion herein are adopted as requirements under Section 5 of *The Electrical Inspection Act, 1993*.

#### Section 0: Definitions

Section 0 is supplemented by the following:

**Grade Level** means the level of earth surrounding a building, and in cases where the electrical installation is performed before the building is back-filled, shall be considered as that level 50 mm below the basement windows, other than those in window wells, or 150 mm below siding, or stucco line on basementless homes.

**Kiosk** means an enclosure of steel or a combination of masonry and steel and which may be partly buried and within which may be installed a standard oil-filled transformer and protective equipment.

**Pad-mounted transformer** means a transformer consisting of compartmented steel enclosure with space for standard oil-filled transformer, high-voltage protective and switching equipment and low-voltage feeder connections or distribution transformers of special design to which compartmented enclosures can be attached, all of such equipment designed to be mounted on a concrete or fibreglass pad of suitable dimensions on grade.

**Rural Area** means an area outside of the limits of any hamlet, village, town or city.

**Service Factor** means a multiplier which, when applied to the rated horsepower of an AC motor, the rated armature current of a DC motor, or to the rated output of a generator, indicates a permissible loading which may be carried continuously at rated voltage and frequency.

**Service Stack** means that portion of service conductors including raceway, armour or sheathing, between the point of attachment to the service supply and the consumers service box or equivalent service equipment.

**Shallow Box** means an outlet box with a depth less than 1 1/2 inches and a minimum depth of 1/2 inch.

**Tamperproof** as applied to pad-mounted transformers and kiosks, means that live parts cannot be contacted by inserting through any openings, wire and other foreign objects, nor can access to the unit be gained by the use of common tools. Such units will not have any covers or doors which can be opened by the removal of externally accessible bolts or hinge pins and such access doors as are provided have adequate provision for padlocking. In addition, such equipment has no external means for operation of switching equipment nor will it have any glass-viewing windows.

**Temporary Wiring** means a wiring installation to be utilized for a period not exceeding 90 days, unless otherwise stipulated.

## Section 2: General Rules

### 2-010 Posting of Permit

Rule 2-010 is deleted.

### 2-014 Plans for High-Voltage Installations

Rule 2-014 is deleted and the following substituted.

Plans for high-voltage installations shall be submitted for examination **and review** and shall contain the following data:

#### (1) Schematic (One-Line Diagram)

This is a diagram which indicates by means of single lines and simplified symbols the sequence of component devices or parts of an electric circuit or system of circuits and should indicate:

- (a) All voltages of the proposed installation.
- (b) Transformer-bank capacity, rating, impedance, type of cooling, etc.
- (c) Primary and secondary protective and switching devices and their short-circuit capacity and rating.

(d) Where additions or alterations are being made, clearly distinguished from existing or unchanged portions of the installation.

**(2) Site Plan**

This should indicate the location of the station, relative to buildings, structures, roads, property lines and equipment not associated with the station and the route of supply, if possible.

**(3) Electrical Arrangement**

This portion of the plan must provide the following data:

- (a) Plan, elevation and profile views of the electrical and physical arrangement of the equipment.
- (b) Dimensions to clearly indicate the electrical physical and work clearances and relative locations of the equipment.
- (c) Fencing arrangement where required on outdoor substations.
- (d) Details of vault construction where required in indoor installations.
- (e) Grounding details.
- (f) Interlocking arrangements and an explanation of the sequence of operation.
- (g) A Bill of Material properly referenced to the drawings.
- (h) Provisions made for metering equipment where required.
- (i) Manufacturers drawings of tower structures, power transformer and of metalclad switchgear, showing the internal arrangement of equipment, means of access and provisions for personnel safety. Except in special cases, manufacturers drawings of other equipment will not be required.
- (j) Copy of Electrical Specifications

(4) One copy of all plans and specifications shall be submitted for examination **prior to construction**, and the submitter will receive a report on the proposed installation.

**(5) All plans must be submitted before service connection is authorized.**

**2-015 Plans for Low Voltage Installations (See Appendix B)**

Rule 2-015 is added.

Plans and specifications for installations as **required by** Section 19 of the Act shall be submitted where ampacities exceed 200 Amps or voltages exceed 300 V, and in hazardous locations, **other than** service stations or oil wells, and shall contain the following:

- (1) calculated loads;
- (2) main and feeder sizes; and
- (3) maximum short circuit current available at each point of application of protective devices in installations exceeding 600 amperes.

(4) a schematic (one-line diagram) indicating all voltages of the proposed installation.

(5) One copy of all plans and specifications shall be submitted for examination **prior to construction**, and the submitter will receive a report on the proposed installation.

#### **2-021 Removal of Substandard Equipment**

Rule 2-021 is added.

All dead or disused conductors and equipment which do not conform to present requirements shall either be removed from the building, where exposed, or otherwise rendered useless for electrical purposes, to the satisfaction of the Inspector.

#### **2-028 Availability of Work for Inspection**

Rule 2-028 is amended as follows:

An inspector may post a notice requiring that an electrical installation not be rendered inaccessible by sheathing of walls or backfilling of trenches, and concealment of such wiring shall only be done after it has been approved.

#### **2-031 Deviation or Postponement**

Rule 2-031 is added.

Request for special permission shall be made in writing, in duplicate, giving all details pertaining to the requests; if acceptable, permission applying to the particular installation will be confirmed in writing.

#### **2-033 Lightning Protection**

Rule 2-033 is added.

Installation of systems for the protection of buildings and other structures from lightning damage shall comply with CAN/CSA B72-M 87 Installation Code for Lightning Protection Systems.

#### **2-203 Cables Awaiting Utilization Equipment**

Rule 2-203 is added.

**Where utilization equipment is not available for connection, the circuits shall be terminated in a junction box complete with cover.**

#### **2-322 Electrical Equipment Near Gas Meters**

Rule 2-322 is deleted and the following substituted:

**Electric meters, receptacles, and other** arc producing electrical equipment shall not be installed within a **900 mm** of a meter or pressure regulator used to measure or regulate natural gas, manufactured gas, or liquefied petroleum gases which are distributed in a gaseous state.

#### **2-400(4) Weatherproof Enclosure Terminations**

**2-400(4) added as follows:**

Raceways or cables shall not enter a weatherproof enclosure, unless the enclosure is provided with an **approved** weatherproof fitting for termination.

## Section 4: Conductors

### 4-005 Conductors Exposed to High Temperatures

Rule 4-005 is added.

(1) Conductors in raceways located on roofs directly exposed to the sun shall be deemed to have an ambient temperature of 50 degrees C.

(2) Conductors in cables placed above thermal insulation in unventilated attic spaces shall be considered as being exposed to not less than 50 degrees C.

(3) Subrule (2) pertains to high ambient conditions in unventilated attic spaces. It is to be noted that natural ventilation is not mentioned. A ventilated attic space means a mechanical ventilation and thermostatically controlled system is in place to maintain an inexcessive ambient temperature in an attic space.

### 4-022 Size of Neutral Conductor

Rule 4-022 is supplemented as follows:

**(5) For residential services without electric heat loads, the size of neutral conductor shall be not less than two trade sizes smaller than the ungrounded conductors and not less than #8 Cu. or #6 Al.**

### 4-036 Colour of Conductors

Rule 4-036 is supplemented as follows:

**(6) No 240 volt single-phase load from a 4 wire Delta connected system shall be connected to:**

- (a) the red colored phase-A, or**
- (b) from a three phase panel.**

## Section 6: Low-potential Services

### 6-111 Renewal of Services

Rule 6-111 is added.

(1) Where a building is relocated, or where additional loading exceeds the capacity of the service in an existing structure, adequate alterations shall be made to the existing substandard service, or a new service entrance of adequate capacity shall be installed to replace the substandard service.

**(2) Where a permit is required for connection or re-connection of an electric service, the electrical service shall be made to comply with the requirements of the current Canadian Electrical Code.**

### 6-115 Service Splitter

Rule 6-115 is added.

Where an outdoor splitter is required for connection of utility conductors to consumer service conductors the following shall apply:

(1) Splitter boxes shall be constructed of code gauge steel and shall be CSA approved for outdoor use (**TYPE 3R**) with covers secured by bolts or non-slotted screws.

(2) If locking provisions are furnished, such provisions must be for padlocking only, with keyed handles strictly prohibited.

(3) The boxes shall contain the required number of terminal blocks or connectors to accommodate termination of the utility service cables.

(4) Terminals and duct openings into the splitter box shall be arranged to allow for a bending radius of not less than 180 mm for the utility cables.

(5) The bottom of the box shall be mounted a minimum height of 0.6 m from grade level, and the top shall not extend beyond a maximum height of 1.8 m from grade level.

(6) The dimensions of the enclosures shall be in accordance with those for instrument transformer enclosures as specified **by the supply authority**.

### **6-200 Service Equipment**

**Rule 6-200 is supplemented as follows:**

**(4) Where a panelboard can employ more than two single-pole breakers, one two-pole breaker, or one three-pole breaker they shall be installed in an approved assembly on the load side of a main fused switch or breaker.**

**(5) A single phase meter socket rated at 400 Amps or less with dual wire connectors on the load side shall be permitted to have two subdivisions made in the meter socket provided such subdivisions are not contained in the same building.**

### **6-206 Consumers Service Equipment Location**

**Rule 6-206(1) is supplemented as follows:**

**(f)** within 6 **conduit** meters of the point where the service conductors enter the building provided such conductors are in rigid conduit, EMT, metal armour, or metal sheathing.

**(g)** Service boxes or combination service and panelboards shall not be recessed in walls containing thermal insulation.

### **6-300 Underground Consumers Services**

Subrule (1) is deleted and the following substituted therefor:

(1) Consumer service conductors run underground from an underground supply system or from a pole shall be:

(a) installed in rigid conduit and be of a type acceptable for use in wet locations as indicated in Table 19; or

(b) single and multi-conductor armoured cables, metallic sheathed cables or concentric neutral cables in accordance with Table 19 for service entrance use below ground providing that:

(i) the installation is in accordance with rule 12-012, and

(ii) a rigid conduit is used for mechanical protection where portions of the cable are exposed to injury, and

(iii) there is no splice or joint in the cable from the point of connection at the supply service to the point of connection at the service equipment in the building, and

(iv) all cables are protected with a corrosion resistant outer covering in accordance with rule 2-112.

(v) when USEB 90 cable is used as a subservice, a subservice switch and a ground electrode shall be required. **USEB 90 cable is not to be used as a sub-service feeder within the same building.**

(vi) an additional conductor installed together with and alongside of a 3 conductor cable shall not be accepted for a 3 phase 4 wire installation and only a 4 conductor cable shall be permitted.

### **6-302 Consumers Service Conductors**

Subrule 1(k) is added as follows:

(k) Liquid-tight flexible conduit in short lengths, where flexibility is required, or protection from liquids, vapours or solids is necessary.

### **6-308 Bare Neutral Service Conductors**

Rule 6-308 is extended as follows:

(2) **The bare neutral conductor must be terminated in the main service disconnect.**

(3) The neutral conductor in an underground service to any type of premises shall not be bare or unjacketed when directly buried in the earth.

### **6-312 Condensation in Service Conduit**

Subrule (1) is deleted and the following substituted therefor:

(1) Service conduit or the equivalent shall be effectively drained outdoors and sealed with **an electrically approved duct sealant.**

## **Section 8: Demand Factors**

### **8-106 Use of Demand Factors**

Subrule (4) is deleted and the following substituted therefor:

(4) Where it is known the electric space heating, car plug heating loads and air conditioning loads will not be used simultaneously, whichever is the greater load shall be used in calculating the demand.

### **8-202 Apartments**

Rule 8-202 is supplemented as follows:

(5) Notwithstanding subrule (1), an **existing** residential unit with only one or two rooms, that is equipped with a range, may have service feeder conductors rated at not less than 40 amperes.



## Section 10: Grounding

### 10-204 Grounding Connections for Alternating-Current Systems

Paragraph (b) of subrule 10-204(1) is supplemented as follows:

NOTE: The term “another device specifically intended for the purpose located in the grounding circuit” refers to tingle voltage filter or similar devices.

**10-302 See Diagram 27 for assistance in conductor enclosure bonding.**

### 10-406 Non Electrical Equipment

Subrule (4) is deleted and the following substituted therefor:

(4) All metallic gas piping shall be made electrically continuous and shall be bonded in accordance with the requirements of subrule (2).

**10-606 See Diagram 27 for assistance in bonding of service conductors.**

### 10-702 Artificial Electrodes

Subrule (3) of Rule 10-702 is supplemented as follows:

(f) be galvanized or provided with other corrosion resisting cladding.

Rule 10-702 is extended as follows:

(7) A driven electrode, which must protrude 150 mm above grade for accessibility of the connection, shall be bent towards the building or pole to which it is adjacent.

(8) Additional electrodes, as required by rule 10-702 may be buried completely below grade.

### 10-808 Equipment Bonding Conductors

Rule 10-808 is supplemented as follows:

(8) Aluminum shall not be used for an equipment **bonding** conductor where corrosion may occur, as at buried electrodes or at water pipes.

## Section 12: Wiring Methods

### 12-012 Conductors Buried in Earth

Subrule (4) is deleted and the following substituted therefor:

**(4) Direct buried conductors or cables shall be installed so that they run adjacent to each other and do not cross over each other and covered with a layer of earth free of particles larger than 6 mm, to a depth of 75 mm below and above the conductors.**

Subrule (13) of Rule 12-012 is supplemented as follows:

(13) Underground cable, or conductors installed under a building shall be in a raceway that extends beyond the outside walls of the building.

### 12-013 Burial of Conductors in Proximity to Gas Lines

(1) No electrical wiring shall be installed within 600 mm of a utility natural gas service.

(2) Electrical wiring may be installed in the same trench as customer-owned propane or natural gas lines provided the conductors are placed at a greater depth and a separation of at least 300 mm of earth or 150 mm if a treated plank is installed between the piping and conductor.

**12-021 Nylon Cable Ties**

**Rule 12-021 is added:**

**The use of nylon cable ties will be allowed only when they properly support cables in an approved manner.**

**12-200 Open Wiring Rules**

Rule 12-200 is extended as follows:

In all new indoor installations no open wiring shall be installed except by special permission.

**12-318 Use of Neutral-Supported Cables (See Appendix D-15 for Sag Table)**

Clause (e) is deleted and the following substituted therefor:

- (e) Where dead-ended, the messenger of the neutral-supported cable shall:
  - (i) be anchored, by means of **an approved** anchoring device, to a bolted hook, bolted insulator, or bolted bracket with eye; and
  - (ii) be provided with a tail for the connection thereto of the neutral conductor.

**12-1118**

**Rule 12-1118 is amended as follows;**

**A minimum of one expansion joint shall be installed for every 12 lineal meters of conduit in a run.**

**12-3026 See Diagram 27 for assistance in terminating to avoid heating when single conductor cables enter a metal box.**

**Section 14: Protection & Control****14-501 Mounting Height of Switches and Circuit Breakers**

**Rule 14-501 is added.**

**Except as provided by rule 26-442(2) Switches and circuit breakers shall be so installed that the centre of the grip of the operating handle when in its highest position will not be more than 2 m above the floor or working platform.**

**Section 18: Hazardous Locations**

**NOTE: See Diagram 26 for assistance with sealing in hazardous areas.**

**18-403 Line Grain Elevators, Farm Elevators, Seed Cleaning Plants and Feed Mills**

Rule 18-403 is added as follows:

Line grain elevators, farm elevators, seed cleaning plants and feed mills shall be classified hazardous locations as shown in Diagram 11, 12 & 13.

**18-405 Ammonia Compressor Rooms (see Appendix B)**

Rule 18-405 is added as follows:

**When ammonia is used in a refrigerant system the room shall be considered Class 1, Div 2 hazardous location unless the room is constructed to Class T machinery room as specified in CSA Standard B52-95 Mechanical Refrigeration Code.**

**Section 20: Flammable Liquid Dispensing and Service Stations, Garages,  
Bulk Storage Plants, Finishing Processes, and Aircraft Hangars**

**20-004 Rule 20-004 is supplemented as follows: (Refer to diagram 14 & 15 for area classification)**

**(11) Where above ground dispensing tanks (Envirotanks) are installed an area of 1.5 m around the storage tank and an area of 450 mm above grade extending 6 m in all directions from the tank shall be classified as Class 1 Division 2.**

**20-035 Rule 20-035 is added as follows:**

**Domestic heating propane tanks shall meet the requirements of Table 63 Part J.**

**20-102 Diagram 16 is included to assist in determining hazardous area classification in commercial garages and repair shops.**

**Bulk Storage Plants**

**20-301 Anhydrous Ammonia Plants**

Rule 20-301 is added.

Anhydrous ammonia distribution or bulk storage plants shall be wired in accordance with Rules 20-302 to 20-312 and the Boiler and Pressure Vessel Act and current Regulations 361-77 and 1983 amendments.

**20-302 Diagrams 17 & 18 are included to assist in determining hazardous area classification for flammable liquids bulk plants.**

**Finishing Processes**

**20-402 Diagram 19 is included to assist in determining hazardous area classification for finishing processes.**

**20-403 Fibreglass Finishing and Storage**

Rule 20-403 is added.

Fibreglass manufacturing, finishing, or raw material storage areas shall be wired in accordance with Rules 20-400.

**20-502 Diagram 20 is included to assist in determining hazardous area classifications for aircraft hangars.**

## **Section 22: Wet & Corrosive Locations**

### **22-700 Bulk Fertilizer Storage**

Rule 22-700 is added.

(1) All equipment in ammonium nitrate bulk storage structures shall be considered as subject to corrosion from a combination of the fertilizer dust and moisture.

(2) Raceways shall be PVC or aluminum, with fittings and enclosure entries of such design as to not constitute dissimilar metals in contact with each other, and to exclude dust.

(3) Teck 90 cable shall be permitted to be installed in bulk fertilizer storage structures.

### **22-800 Sewage Lift & Treatment Plants**

(1) Classification of such areas shall be as follows:

(a) Unless provided with adequate heating and ventilation, all below ground location suitably cut off from locations in which sewage gases are present, shall be deemed Category 1 locations.

(b) All locations in which sewage gases are present shall be deemed Category 2 locations.

(c) All locations suitably cut off from Category 2 locations and not classed as Category 1 may be considered ordinary locations.

(d) Locations not suitable cut off from a Category 2 location may be considered ordinary locations if provided with:

(i) ventilation such as will maintain a positive pressure therein, with clean air;

(ii) effective safeguards against ventilation failure.

(2) For purposes of this rule suitable cut off means an area cut off from another, with no communication such as by doors, windows, grills or similar openings.

## **Section 26: Installation of Electrical Equipment**

### **26-701 Receptacle Terminal Screws**

Rule 26-701 is added.

(1) Unused terminal screws shall be done up tight.

**(2) A maximum of 4 wires and a ground may be connected to a receptacle.**

#### **26-702 Receptacles in Residential Occupancies**

Subrule (19) is deleted and the following substituted therefor:

(19) All receptacles installed outdoors of single-family dwellings and located within 2.5 m of ground or grade level **or raised platforms with access to ground,** shall be protected by a ground fault **interrupter** of Class A Type.

Subrule (25) is added as follows:

**(25) Where receptacles are required for outdoor wheel chair lifts they must be a single locking receptacle connected to a separate circuit and must not be ground fault protected.**

#### **26-703 Automobile Heater Receptacles**

Receptacles shall be installed with mechanical protection against damage by vehicles by one of the following or other equivalent means:

- (a) Approved manufactured pedestals provided with mechanical protection.
- (b) Where mechanical protection is not utilized, the receptacles and conduit shall be installed on structures of adequate strength, such as fences or walls, and the receptacles and conduit shall be installed not less than 750 mm above finished grade.
- (c) A reinforced concrete post with a dimension of not less than 300 mm may be used, and shall be installed to a height of not less than 750 mm and a depth of not less than 750 mm. The receptacles and conduit shall be installed on the face of the post not exposed to vehicular damage. The receptacles may, if desired, be installed on the face of the post exposed to vehicles provided the conduit and outlet boxes are installed within the post. Mounting height of the receptacles shall not be less than 750 mm above finished grade.
- (d) Conductors for wiring of these receptacles shall have an insulation or covering suitable for installation and use at temperatures down to minus 40 degrees C **except conductors approved for and used underground.**

#### **26-954 Deep Well Submersible Pumps Installed in Wells**

Paragraph (e) is added.

- (e) Metal well casing shall be bonded to the equipment grounding means.

### **Section 30: Lighting**

#### **30-302 Supports**

Rule 30-302 is supplemented as follows:

(5) Lighting fixtures installed in or on suspended ceilings shall be provided with supplementary means of support unless written confirmation is submitted to the effect that the suspended ceiling has been designed to support the additional weight of the fixtures.

### **Section 32: Fire Alarm Systems and Fire Pumps**

#### **32-110 Installation of Smoke Alarm Devices in Dwelling Units**

Rule 32-110 is supplemented as follows:

(e) New construction of residential units shall be pre-wired at the time of construction to accommodate smoke alarms as required by the NBC plus one location in the basement, to be terminated in a junction box c/w cover plate and labelled.

#### **32-204 Consumer's Service for Fire Pumps**

Subrule (1) is deleted and the following substituted:

(1) When fire pump equipment is installed, a consumer service independent of the building consumer service is required.

### **Section 36: High-potential Installations**

#### **36-007 High-Voltage Substation Connections**

Rule 36-007 is added.

High voltage substations shall not be connected to the Utility supply lines before a final inspection is made or approval for the connection is granted by the Inspections Dept.

### **Section 45: Stand-by Power Systems**

#### **45-000 Scope**

Rule 45-000 is added.

(1) This section applies to stand-by systems installed to provide an alternative source of electrical energy to serve loads, such as heating and refrigeration systems, power outage, which could cause discomfort, serious interruption of the process, or damage to the product or process or the like.

(2) This section does not apply to the installation, operation, and maintenance of circuits, systems and equipment intended to supply on-site generated power to "selected loads", automatically or manually, in the event of failure of the normal source of electrical service.

(3) The systems covered by this section shall include those with provisions for plug-in of portable or transportable power source and prime mover combinations.

#### **45-002 Other Requirements**

Rule 45-002 is added.

All applicable requirements of this Code shall apply to the stand-by systems, except as amended by this section.

#### **45-004 Controls and Transfer Equipment**

Rule 45-004 is added.

(1) Equipment shall be suitable for intended use and be so designed and installed as to prevent the inadvertent interconnection of normal and standby sources of supply in any operation of the transfer equipment.

(2) A manual transfer means shall comprise a double-throw switch with required number of poles, or individual switches so interlocked as to prevent the interconnection of the two power sources.

(3) Mechanically interlocked fused switches shall not be used.

#### **45-006 Systems Protection**

Rule 45-006 is added.

Transfer equipment and wiring associated with the stand-by system shall be provided with suitably rated **thermal protection**.

#### **45-008 Wiring**

Rule 45-008 is added.

Stand-by system wiring is not subject to the provisions of Section 46, and wiring of such a system may occupy the same raceways, boxes, cabinets and panelboards with other wiring as permitted by Section 12, except that the wiring shall not occupy the same raceways, boxes or cabinets as wiring for emergency systems.

### **Section 52: Diagnostic Imaging Installations**

#### **52-013 Industrial and Laboratory Equipment**

Rule 52-013 is added.

(1) All radiographic and fluoroscopic-type equipment shall be effectively enclosed or shall have interlocks that de-energize the equipment automatically to prevent ready access to live current-carrying parts.

(2) Diffraction and irradiation-type equipment shall be provided with a positive means to indicate when it is energized; the indicator shall be a pilot light, readable meter deflection, or equivalent means

(3) Equipment or installations in (2) above, which are effectively enclosed or provided with interlocks to prevent access to live current-carrying parts during operation, need not be provided with an indicating means.

### **Section 62: Fixed Electric Space and Surface Heating Systems**

#### **62-114 Overcurrent Protection and Grouping (see Appendix B)**

#### **62-214 Installation of Heating Panel and Heating Panel Sets**

**Rule 62-214 is supplemented as follows:**

**(13) Until such time as the appropriate standards have been revised, the following requirements will apply to flexible (thin sheet) radiant ceiling heating panel installations:**

**(i) Heating panels shall be certified and marked with a rating of 18 watts/ft<sup>2</sup> or less, and**

(ii) The upper surface of the plasterboard in contact with the heating panels must not exceed 60 degrees C, and

(iii) Heating panels must pass the abnormality test of CSA Standard C22.2 No. 217-M89 and the results must not exceed a temperature of 90 degrees C, and

(iv) Full compliance with the manufacturers' installation practices, including the installation of building materials, must be verified in writing by a manufacturer's representative to the Electrical Inspection Department, and

(v) Manufacturers of heating panels must have a letter on file in the office of the Chief Electrical Inspector of SaskPower confirming their product complies with these requirements, and

(vi) Installation will only be permitted by licensed electrical contractors.

#### Section 68: Swimming Pools, Therapeutic Pools and Hydromassage Bathtubs

##### 68-300 Protection

Rule 68-300 is deleted and the following substituted therefor:

All permanently wired therapeutic pools or hydromassage bathtubs and their associated electrical components shall be protected by a ground fault circuit interrupter of the Class A Type, fed by a dedicated circuit serving no other equipment.

##### 68-401 Protection

Rule 68-401 is added:

68-401 Refer to 68-068 for protection of spas and hot tubs.

#### Section 90: Oil-Gas Field Installations

Section 90 is added

##### 90-000 Scope

(1) This section applies to electrical equipment used in the search for or transmission or production of oil, natural gas and related hydrocarbons.

(2) This section does not apply to electrical equipment used in

(a) petroleum refineries, or

(b) gas pipeline systems operated at a pressure of 700 kpa or less, unless the gas pipeline system is part of a wellhead or gathering facility or scheme.

(3) These requirements shall be considered to be additional to or amendatory of the requirements in the Canadian electrical Code.



**90-002 Definition**

(1) Totally-enclosed, gasketed means so enclosed that **transient vapour** does not enter the enclosure. This includes material with threaded hubs or approved tech connectors with sealing rings. This wiring method shall be used in all areas classified as transient vapour locations.

**(2) Transient Vapours means combustible gases or vapours that are capable of migrating from hazardous locations through air movement.**

**90-004 Horizontal Clearance of Overhead Power Lines**

**Where an overhead powerline is adjacent to an oil or gas well, the horizontal clearance from the pole will conform to the SaskPower utility standard.**

**Gas and Oil Drilling and Servicing Rigs****90-100 Area Classifications (Diagram 21)**

(1) Areas within 2 m horizontally and 3 m vertically of the centre of the well hole or any area where accumulation of ignitable vapours may occur, such as mud tanks or confined space under the drilling floor, shall be classified as Class I Division 2 hazardous areas.

(2) Areas outside of the Class I Division 2 location surrounding the well hole shall be considered subject to possible transient combustible vapours, if:

- (a) within 22.5 m horizontally and vertically of a well;
- (b) enclosed within the derrick structure; or
- (c) in a building, any part of which is within 22.5 m of a well.

**Oil Well Pump Installations****90-200 Area Classification (Diagram 22)**

(1) Areas within 2 m horizontally and 3 m vertically of the centre of a well hole shall be classified as a Class I Division 2 hazardous location.

(2) Areas outside of the Class I Division 2 location but within 6 m of the well horizontally and vertically shall be considered exposed to transient vapours.

**90-202 Equipment**

- (1) Electrical equipment in areas as outlined in Rule 90-200(2):
  - (a) Where plug receptacles are installed, they shall be a weatherproof type and so constructed that accidental disconnection of the cord is prevented.
  - (b) Equipment, including pressure switches, which is frequently moved for well-servicing operations shall be connected with a type SO, SOW, STW, or equivalent flexible cord, as short as possible, with approved fittings and shall have an approved means for readily connecting and disconnecting the flexible cords.

(c) The disconnecting means for the flexible cord shall be rigidly mounted 450 mm above ground level or pump base.

(2) A warning sign must be posted on pumps which are automatically controlled with wording similar to the following:

**WARNING:** This equipment is automatically controlled, and the main switch must be disconnected before work is done on the equipment.

**Battery Installations and their Associated Equipment, Pumps, Automatic Custody Transfer Assemblies, Manifolds, Treaters, Separators, and other Sources of Ignitable Vapours.**

**90-300 Area Classification (Diagram 24)**

(1) Areas within building or housing treaters, separators, manifolds, or other equipment which may result in hazardous concentrations of flammable gases or vapours continuously, intermittently, or periodically, under normal operating conditions shall be considered as Class I Division 1 hazardous locations.

(2) The following areas shall be classified as Class I Division 2 hazardous locations:

(a) Outdoor areas within 3 m of the outer confines of building or housings in which the conditions outlined in subrule (1) exist, plus an additional horizontal distance of 4.5 m to a height of 450 mm above ground level.

(b) Areas within 3 m of oil storage or surge tanks and extending horizontally to the perimeter and the height of dykes or fire walls enclosing the tanks.

(c) Outdoor or unhoused areas within 3 m horizontally and 2 m vertically of pumps, manifolds, treaters, separators, and associated automatic custody transfer units which incorporate valves, checks, meters or any potential source of leakage.

**Water Flood, Disposal Systems, and Injection Wells**

**90-400 Area Classification (Diagram 23)**

**(1) The area above the produced water in a vessel or tank used as a storage facility shall be Class 1, Division 1, and an area within 1.5 m in any direction of a ventilation opening into a Class 1, Division 1 hazardous location will be classified Class 1, Division 1. The area between 1.5 m and 3.0 m from a ventilations opening will be classified Class 1, Division 2.**

(2) Areas within buildings or housing at water flood and disposal systems that enclose wells which extend into oil and gas-producing zones shall be classified as Class I Division 2 hazardous areas, unless provisions, acceptable to the inspection authority, are made.

(3) Areas within buildings in which water produced in conjunction with crude oil, or fresh water, containing gas, is stored, processed, or subjected to pumping operations shall be classified as Class I Division 2 hazardous location, except that such areas may be regarded as non-hazardous if:

- (a) the produced or gas-entrained fresh water has been sufficiently processed to remove any hazardous vapours; and
- (b) the disposal well is not located in the building, or
- (c) Buildings housing injection wells will be regarded non-hazardous if:
  - (i) Provision of a concrete floor which will establish an essentially gas-tight seal over the ground surface and around the surface casing, and
  - (ii) Provision of an acceptable underfloor vent, extending outside the building structure, which will vent surface or marsh gases that may accumulate under floor, adjacent to the surface casing, and
  - (iii) Venting of the annular space between surface and production casings to outside atmospheres shall be provided. Valves which are used in conjunction with this vent must be tagged with a warning to the effect that they shall be maintained in the open position, and
- (d) Adequate cross ventilation of the building shall be established by the provision of louvres, or openings, or forced ventilations.

### **Gas-pressuring and Storage Systems, Gas Compressor Stations**

#### **90-500 Area Classification (Diagram 24)**

(1) Areas within buildings or housings, which enclose gas compressors and their associated equipment, shall be regarded as Class I Division 1 hazardous locations, except that such areas may be regarded as Division 2 locations, where:

- (a) The building or housing is of the shed type and is open on three sides from grade to roof levels, and the roof ventilators are provided if lighter than air gases are involved; or
- (b) The gas compressors and their associated piping and equipment are so designed and installed that they satisfy the conditions set out in Rule 18-004(b)(i) of the Code; or
- (c) Suitable safety features are provided in the form of:
  - (i) combustible gas-detection equipment which will automatically de-energize the electrical system in the case of unattended locations, or set off an alarm in attended locations, before the concentration of gas reaches 40 percent of the lower explosive limit; or
  - (ii) actuation of a visible or audible alarm upon failure or forced ventilation, as outlined in Rule 18-004(b)(ii), in attended stations and de-energization of the electric system in the case of unmanned stations.

(2) All areas below grade level in buildings or housings shall be regarded as Class I Division 1 locations.

(3) Outdoor areas within 3 m of the outer confines of buildings or housings in which the Class I Division 1 conditions outlined in subrule (1) exist, plus an additional horizontal distance of 4.5 m to a height of 450 mm above ground level shall be classed as Class I Division 2 hazardous locations.

**Section 92: Electrical Installations on Farms**

Section 92 is added

**92-000 Scope**

This section applies to electrical installations on farms, farm irrigation units, feed lots and other qualified farm-related operation.

**General****92-001 Definition of Farm**

Farm shall mean a rural land holding, located outside the corporate limits of a city, town, village or within the boundaries of an area legally zoned for agricultural use, where the use and development of the land holding is exclusively for purposes of agricultural production.

**Yard Wiring and Services****92-100 Aerial Conductors on Utility Poles**

(1) Overhead conductors forming parts of the farm wiring system shall not be supported on, or fastened to, any utility pole, except the yard transformer pole.

(2) Where additional guying of the yard pole is made necessary, such guying shall be **at the cost of the owner** upon consultation with the utility.

**92-102 Customer-Owned Poles**

(1) Where additional poles are required for support of overhead conductors, shall be:

- (a) 7.5 m or more in length with a minimum top diameter of 125 mm;
- (b) set into the ground at least 1.5 m;
- (c) treated for prevention of rot; and
- (d) guyed at corners and deadends

(2) Installation or addition of overhead conductors shall be made only if the pole is capable of withstanding the resultant directional stresses.

**92-104 Yard Light on Transformer Pole**

(1) The yard light may be mounted on the transformer pole provided:

- (a) it is located below the secondary rack where there is one;
- (b) with a separation of at least 500 mm between the bottom of the transformer and the fixture base where there is no secondary rack;
- (c) on the quadrant of the pole which would not interfere with pole climbing and transformer removal.

## Services

### 92-200 Subdivision of Service

(1) Where the main service switch or breaker is located outdoors, subservice drops may be run from a splitter located on the load side thereof or from a service rack.

(2) **Where three phase 4-wire systems are installed, four wires must be present in the service.**

### 92-202 Classification of Services to Buildings

(1) On all farms a **service box** shall be installed at the residence, buildings housing livestock and buildings requiring 3-wire 120/240 volt supply when such buildings are to be supplied with energy directly from the transformer-pole secondary rack, or a splitter box

(2) **On any farm building, other than the residence, the service stack may be installed on a wooden mast of at least 100 X 100 mm securely fastened to the building with two through bolts.**

### 92-204 Splitter Box on Yard Pole

(1) Where one or more underground services are being connected to a yard pole supply and the utility service is not provided with a splitter compartment, an approved weatherproof splitter box shall be installed.

### 92-206 Service Drops

(1) Where a farm building is extended, a second service drop may be run to the extension, other than the residence.

(2) **Services including the grounding electrode shall be installed a minimum of 9 m from any watering bowl.**

## Grounding

### 92-300 Grounding Service Equipment

Service equipment shall be grounded in the following manner:

(1) The service to the residence, pump house, buildings housing livestock and any other building shall be grounded by means of at least one electrode and when there is only one service on a farmstead, at least two electrodes shall be provided.

## Wiring Methods

### 92-400 Wet Locations

(1) Non-metallic boxes shall be installed at outlets in buildings housing livestock or poultry and other buildings subject to condensation or moisture.

(2) Ceiling-mounted lighting outlets in moist or wet locations may be wired with NMW or NMWU.

### **Installation of Equipment**

#### **92-500 Portable Motors**

Portable motors shall meet the requirements of Section 28 of the C.E.C.

#### **92-502 Heat Lamp Installations (Brooder Fixtures)**

- (1) Circuits supplying infra-red heat lamps must be permanently installed.
- (2) heat lamps shall only be used in approved brooder fixture assemblies, and the assemblies shall be suitable for use in damp locations.
- (3) Brooder fixtures shall be the 3-wire grounded type.
- (4) Brooder fixtures shall be independently supported by a chain, wire or bracket, and shall not be suspended by the cord.
- (5) Brooder fixtures shall be so suspended as to be more than 450 mm from litter or from combustible material.
- (6) Brooder fixtures shall be protected by barriers to prevent animals from contacting and damaging the brooder units.

#### **92-504 Electric Heaters in Buildings Housing Livestock**

Electric heaters for use in buildings housing livestock shall be approved for the purpose and marked Suitable for Use in Buildings Housing Livestock or a similar wording.

### **Electrically Driven Pivot Irrigation Machines**

#### **92-600 General**

Rule 92-602 to 610 apply to pivot type multi-motor irrigation machines which revolve around a central pivot and employ alignment switches or similar devices to control individual motors.

#### **92-602 Several Motors on One Branch Circuit**

- (1) Several motors, each not exceeding 2 H.P. rating, may be used on an irrigation machine circuit protected at not more than 30 amperes at 600 volts or less, provided all of the following conditions are met:
  - (a) The full-load rating of any motor in the circuit shall not exceed 6 amperes.
  - (b) Each motor in the circuit shall have individual running overload protection in accordance with Section 28.
  - (c) Taps to individual motors shall not be smaller than 14 AWG copper and not more than 7.5 m in length.
- (2) Individual branch-circuit short-circuit protection for motors and motor controllers shall not be required where the requirements of subrule (1) are met.

**92-604 Disconnecting Means**

(1) The main disconnecting means for machine shall be located at the point of connection of electrical power to the machine, be readily accessible and capable of being locked in the open position, and have the same horsepower and current ratings as required for the main controller.

**92-606 Interconnecting Wiring**

(1) Wiring to interconnect the unit collector rings, control panels and motors may be multi-conductor, jacketed cables suitable for outdoor use, suitable for hard usage according to Table 11, and have a grounding conductor.

(2) Cables may be supported along water pipe sections between towers.

(3) Supporting of cables shall be at intervals not exceeding 1.2 m and within 300 mm of terminal fittings by means of straps, hangers or similar fittings.

(4) Where routing of cables is such that additional strain might be imposed on terminal fittings, supplemental strain relief shall be provided.

(5) Protection by location, or by supplemental means shall be provided for cables subject to mechanical damage such as at tower drive motors.

**92-608 Lightning Protection**

If an irrigation machine has a stationary point, a driven ground rod shall be connected, with minimum #6 AWG copper conductor to the machinery at the stationary point for lightning protection.

**92-610 Ground Fault Protection**

**Connection and re-connection of new and existing irrigation equipment must meet the requirements of the current CEC Part 2 standards with respect to ground fault protection.**

Table 66 is added.

**TABLES****Table 66**

Limits of Approach to Normally Live Parts

Nominal Voltage Phase-to- Phase	Voltage to Ground	Minimum Recommended Working Clearance for Personnel	*Absolute Limit of Approach for Personnel and Tools
230 kV	133 kV	1.83 m	1.40 m
138 kV	79.8 kV	1.22 m	1.00 m
72 kV	41.6 kV	0.80 m	0.60 m
25 kV	14.4 kV	0.60 m	0.30 m
15 kV	8.6 kV	0.60 m	0.30 m
4.16 kV	2.4 kV	0.60 m	0.15 m

\* Absolute limit of approach is the least permissible distance between live electrical apparatus and the position that an experienced qualified tradesman's body (or tools and material he may be handling) could be in, through an accidental or unplanned movement.

Diagram 11

# LINE OR COUNTRY GRAIN ELEVATOR

18-403 Sask. Supplement

## HAZARDOUS AREA CLASSIFICATION

CLASS II  
DIVISION 2 

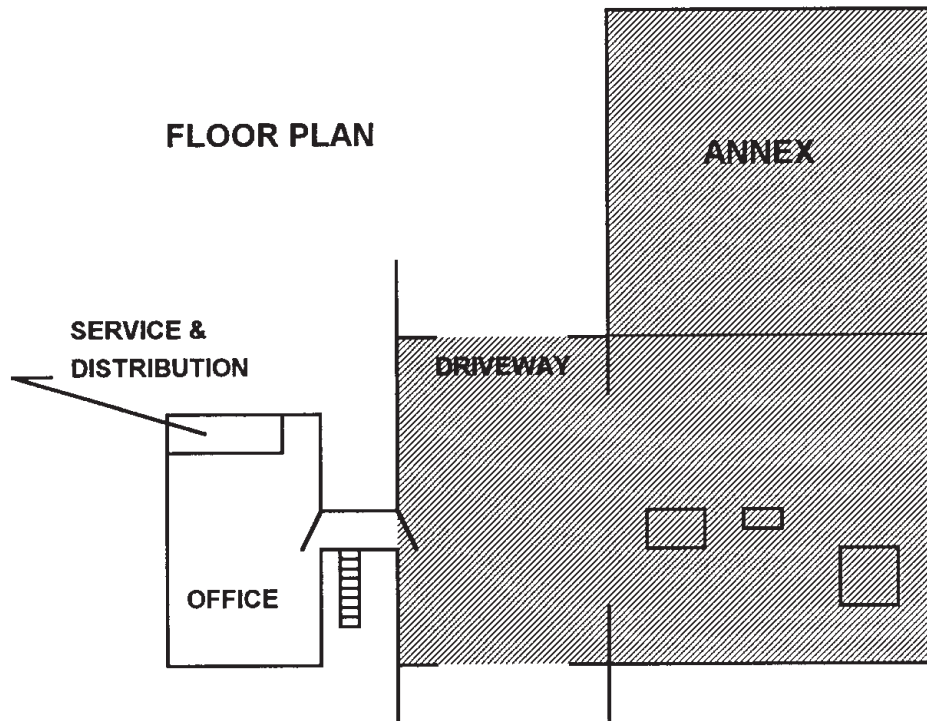




Diagram 12  
**MAIN FLOOR PLAN  
SEED CLEANING PLANT**

18-403 Sask. Supplement

**HAZARDOUS AREA CLASSIFICATION**

CLASS II  
DIVISION 2 

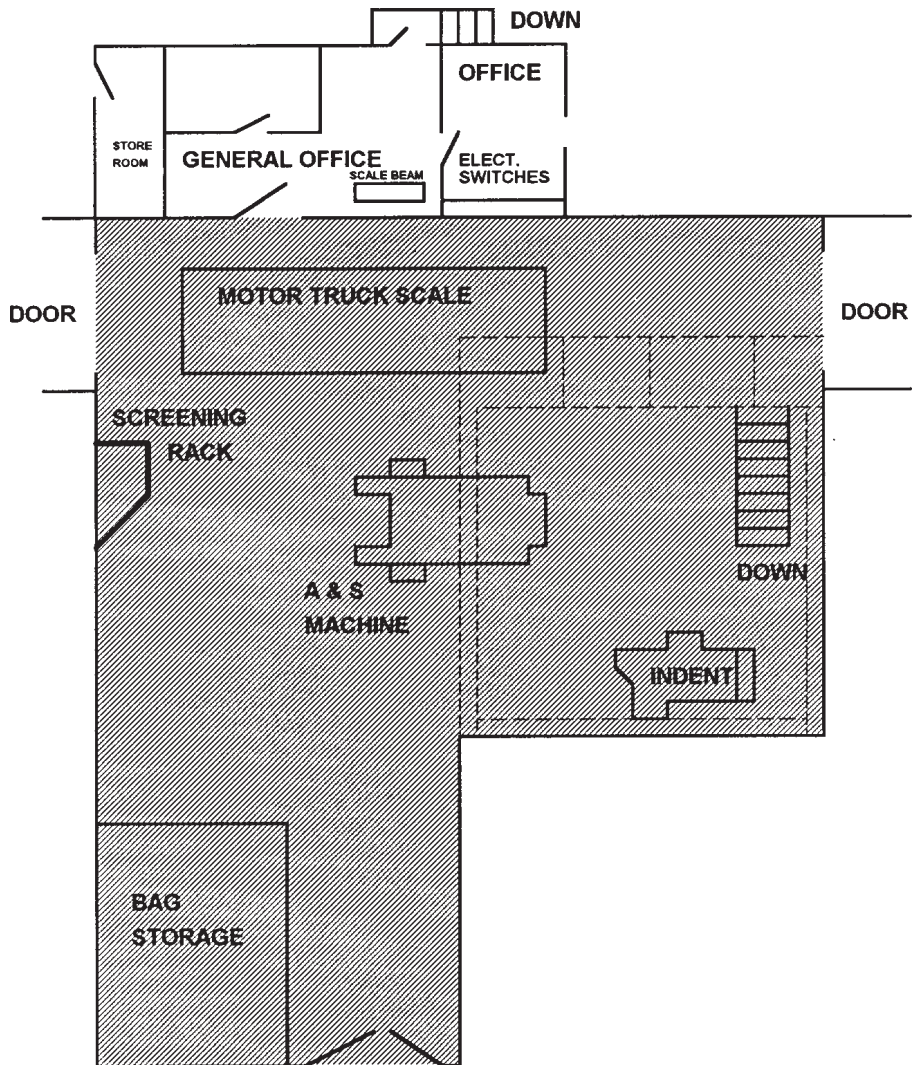


Diagram 13

# FEED MILL FLOOR PLAN

18-403 Sask. Supplement

## HAZARDOUS AREA CLASSIFICATION

CLASS II  
DIVISION 1 

CLASS II  
DIVISION 2 

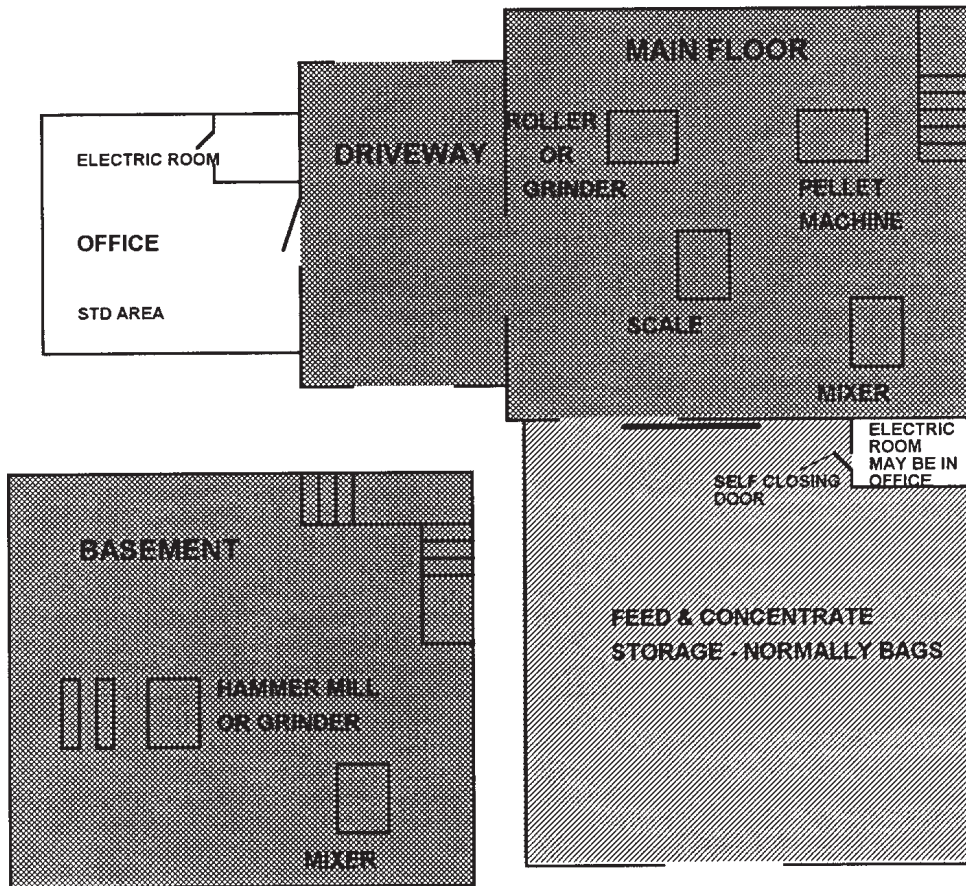


Diagram 14

# GASOLINE DISPENSING STATION

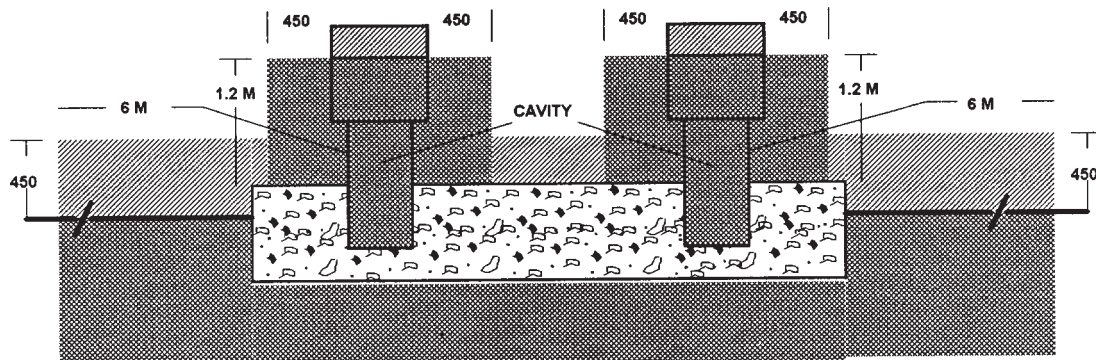
Rule 20-004

## HAZARDOUS AREA CLASSIFICATION

CLASS 1  
DIVISION 1



CLASS 1  
DIVISION 2



MEASUREMENTS ARE IN mm UNLESS OTHERWISE NOTED

Diagram 15

# GASOLINE STORAGE TANKS

Rule 20-004

## HAZARDOUS AREA CLASSIFICATION

CLASS 1  
DIVISION 1



CLASS 1  
DIVISION 2

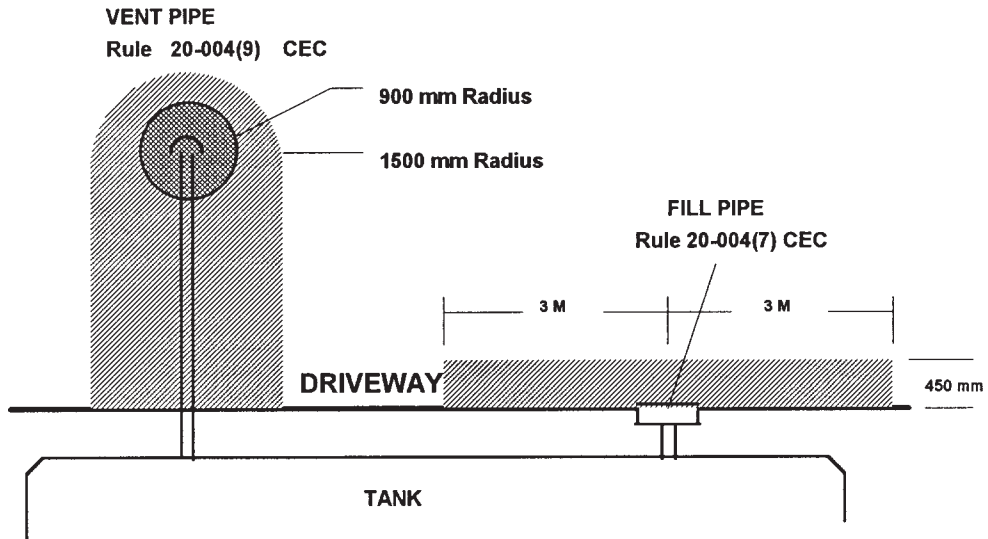
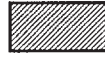


Diagram 16

# COMMERCIAL GARAGES AND REPAIR SHOPS

Rule 20-102

## HAZARDOUS AREA CLASSIFICATION

CLASS 1  
DIVISION 2 

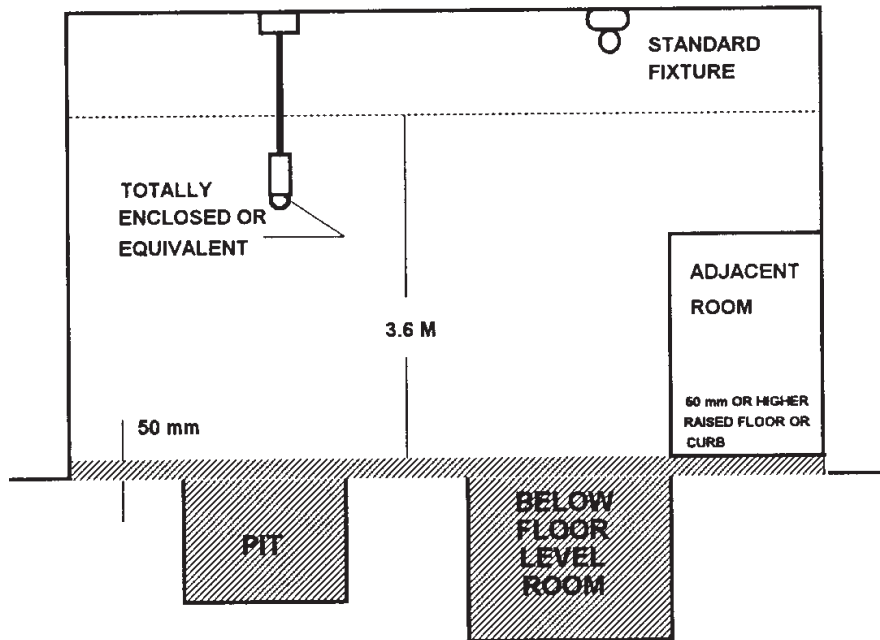


Diagram 17

# FLAMMABLE LIQUIDS BULK PLANTS

Rule 20-302

## HAZARDOUS AREA CLASSIFICATION

CLASS 1  
DIVISION 1

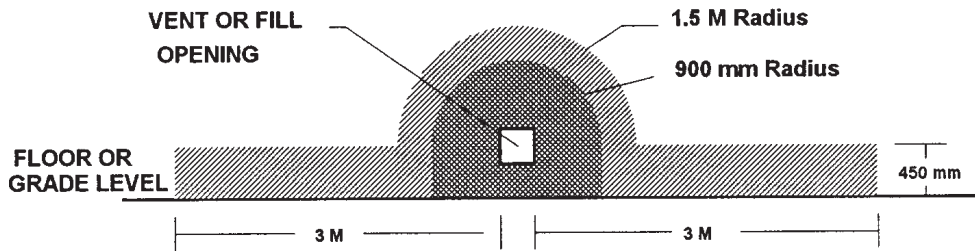


CLASS 1  
DIVISION 2



Rule 20-302 (2)(a)

### TRANSFER OF FLAMMABLE LIQUIDS OUTDOORS OR INDOORS WITH MECHANICAL VENTILATION



Rule 20-302 (2)(b)

### TRANSFER OF FLAMMABLE LIQUIDS INDOORS WITHOUT MECHANICAL VENTILATION

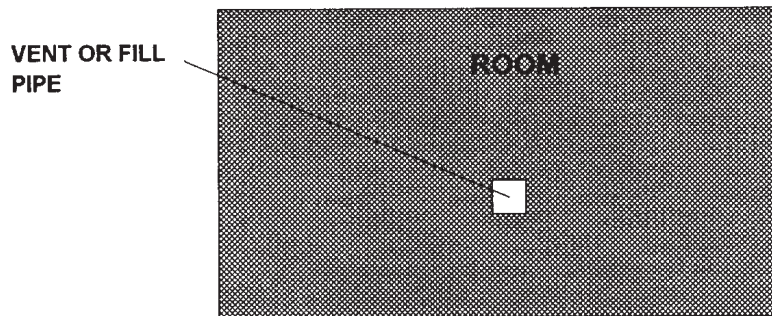


Diagram 18

# FLAMMABLE LIQUIDS BULK PLANTS

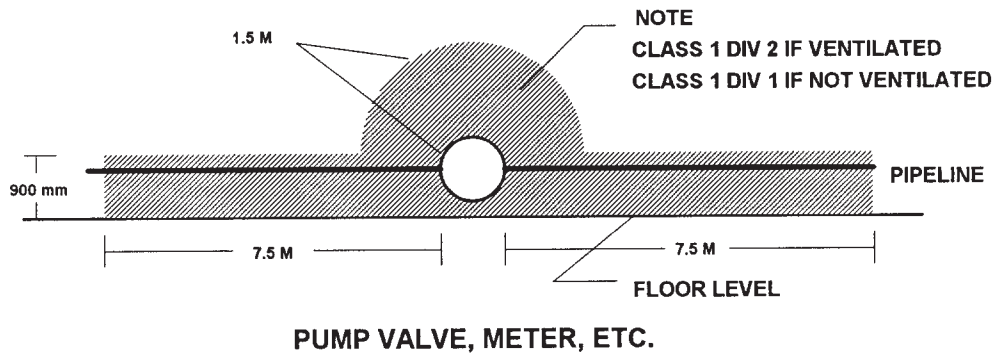
Rule 20-302

## HAZARDOUS AREA CLASSIFICATION

CLASS 1  
DIVISION 1 

CLASS 1  
DIVISION 2 

### BULK STORAGE INDOOR AREA



### BULK STORAGE OUTDOOR AREA

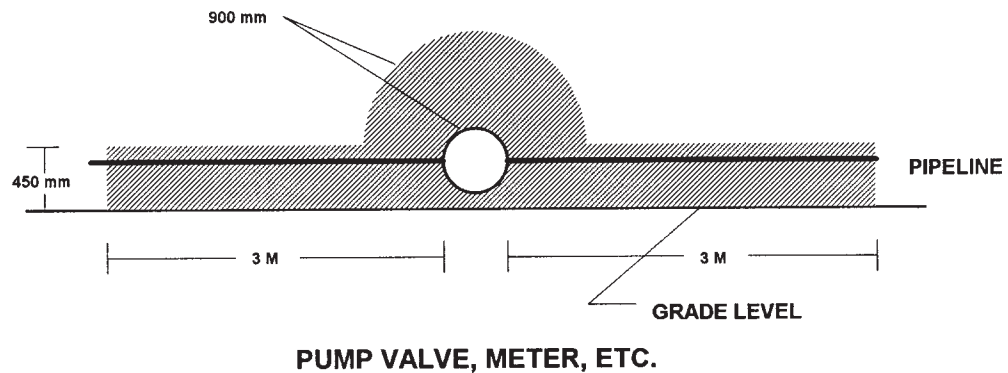


Diagram 19  
**FINISHING PROCESSES**

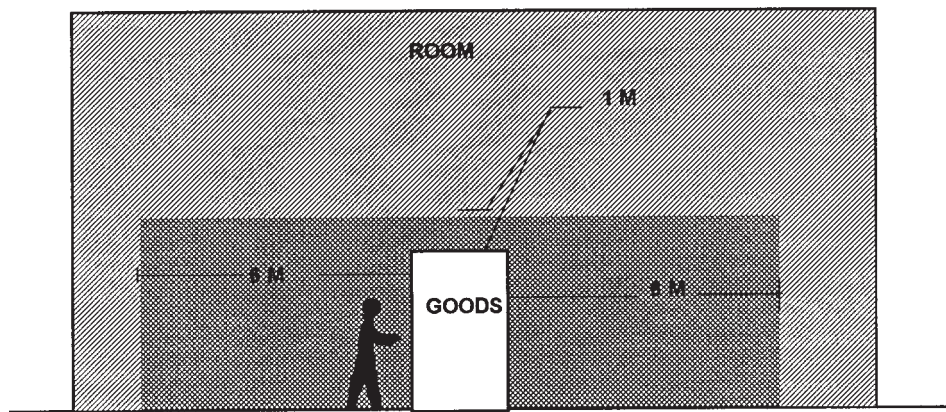
Rule 20-402

**HAZARDOUS AREA CLASSIFICATION**

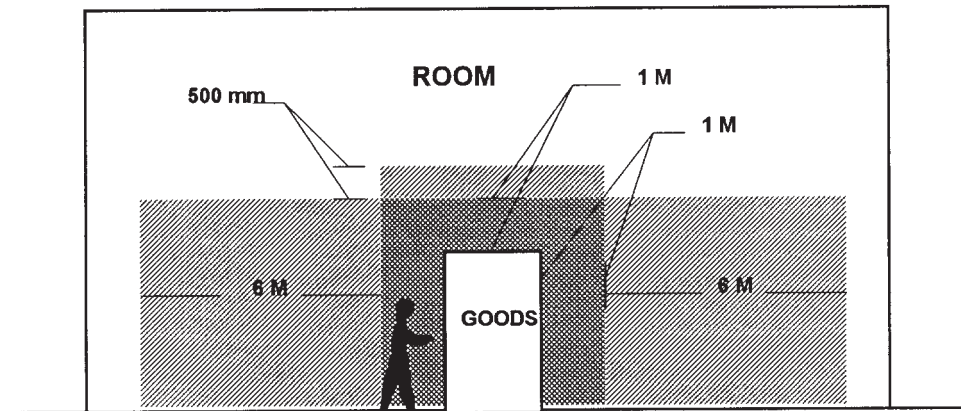
CLASS 1  
DIVISION 1



CLASS 1  
DIVISION 2



**EXTENSIVE OPEN SPRAYING**  
RULE 20-402 (1)(b) & (4)



**OPEN SPRAYING MACHINE VENTILATION WITH INTERLOCKS**  
RULE 20-402 (7)

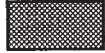


Diagram 20  
**AIRCRAFT HANGAR HAZARDOUS AREAS**

Rule 20-502

**HAZARDOUS AREA CLASSIFICATION**

CLASS 1  
DIVISION 1



CLASS 1  
DIVISION 2

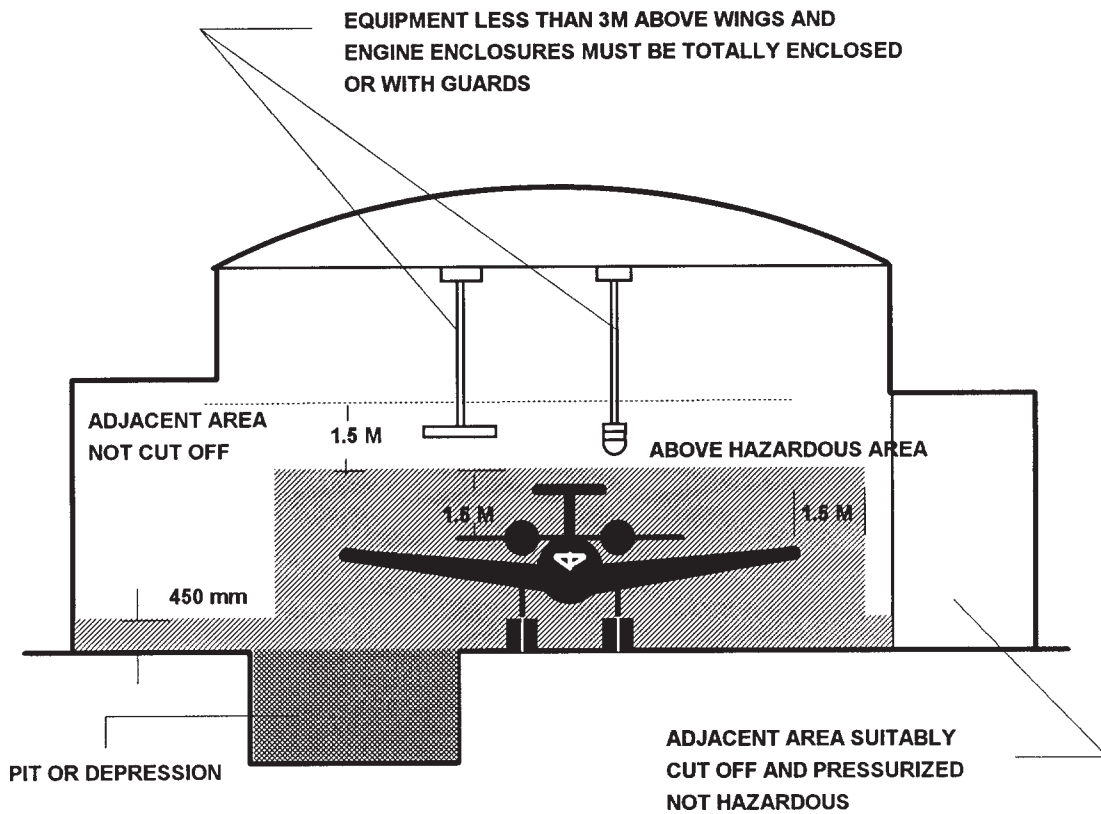


Diagram 21

# DRILLING AND SERVICE RIGS

Rule 90-100 Sask Supplement

## HAZARDOUS AREA CLASSIFICATION

CLASS 1 DIVISION 2  SUBJECT TO TRANSIENT VAPOURS 

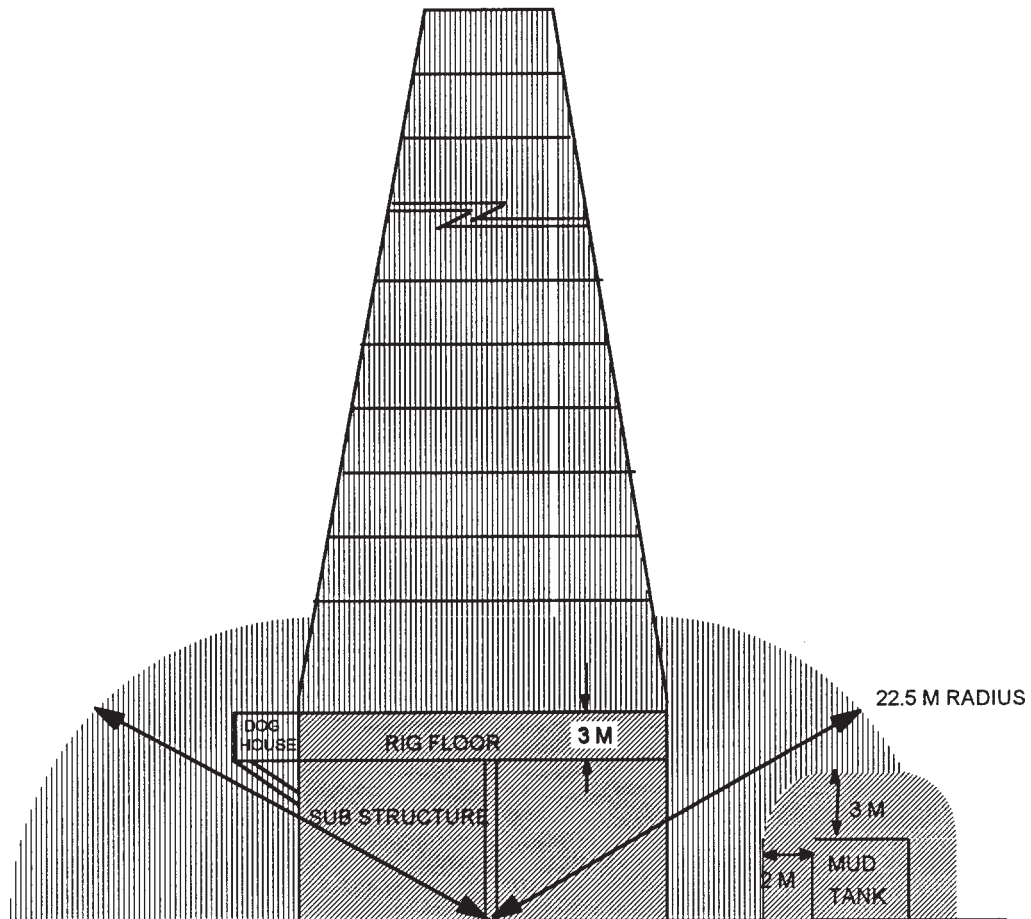
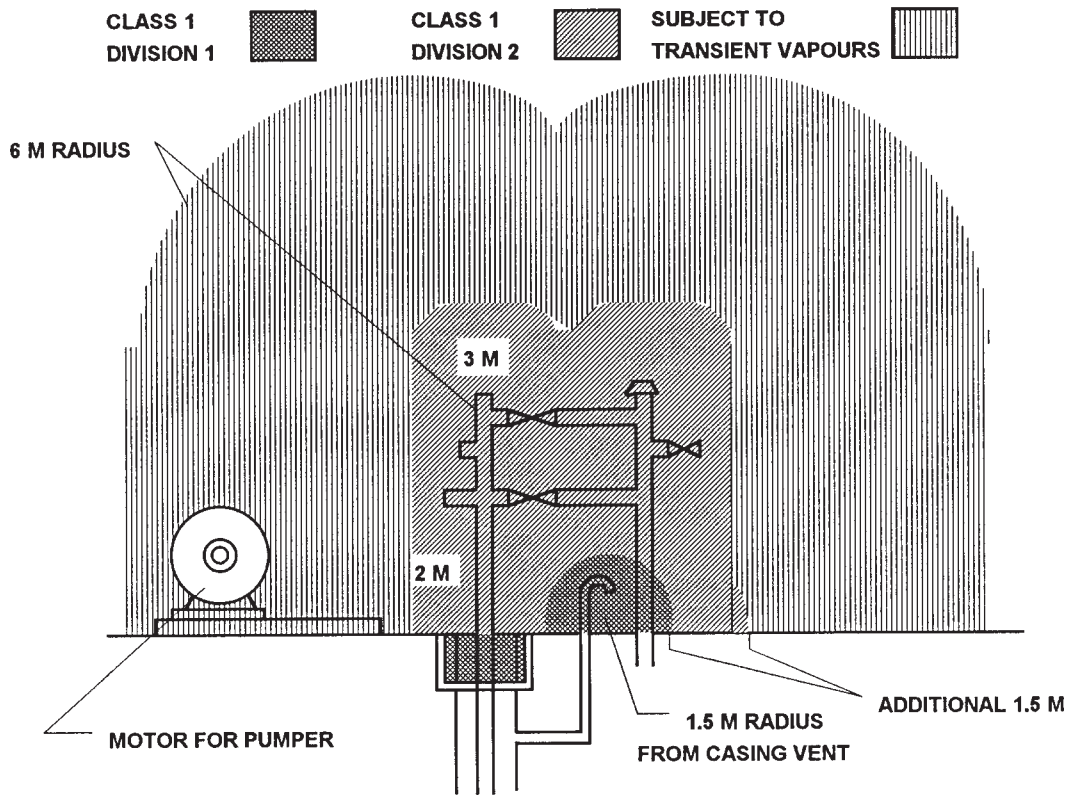


Diagram 22  
**TYPICAL WELLHEAD**

Rule 90-200 Sask Supplement

**HAZARDOUS AREA CLASSIFICATION**



**VALVES, PUMPS, MANIFOLDS, ETC., OUTDOORS**

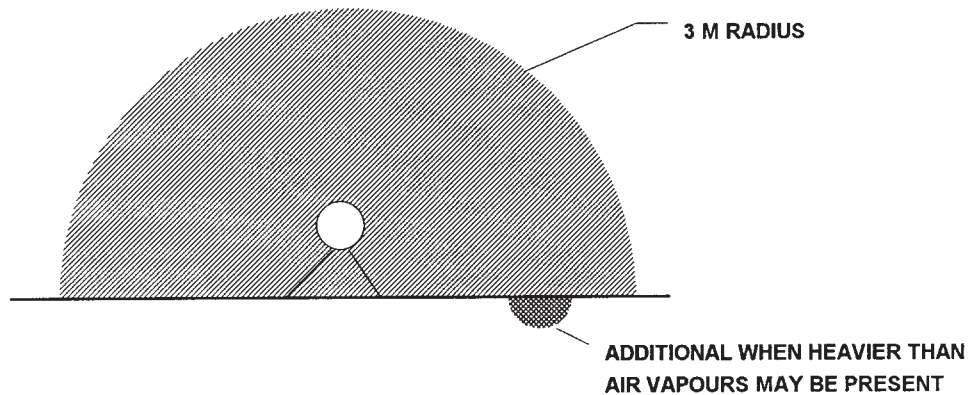


Diagram 23

# WATER AND FLOOD DISPOSAL

Rule 90-400 Sask. Supplement

## HAZARDOUS AREA CLASSIFICATION

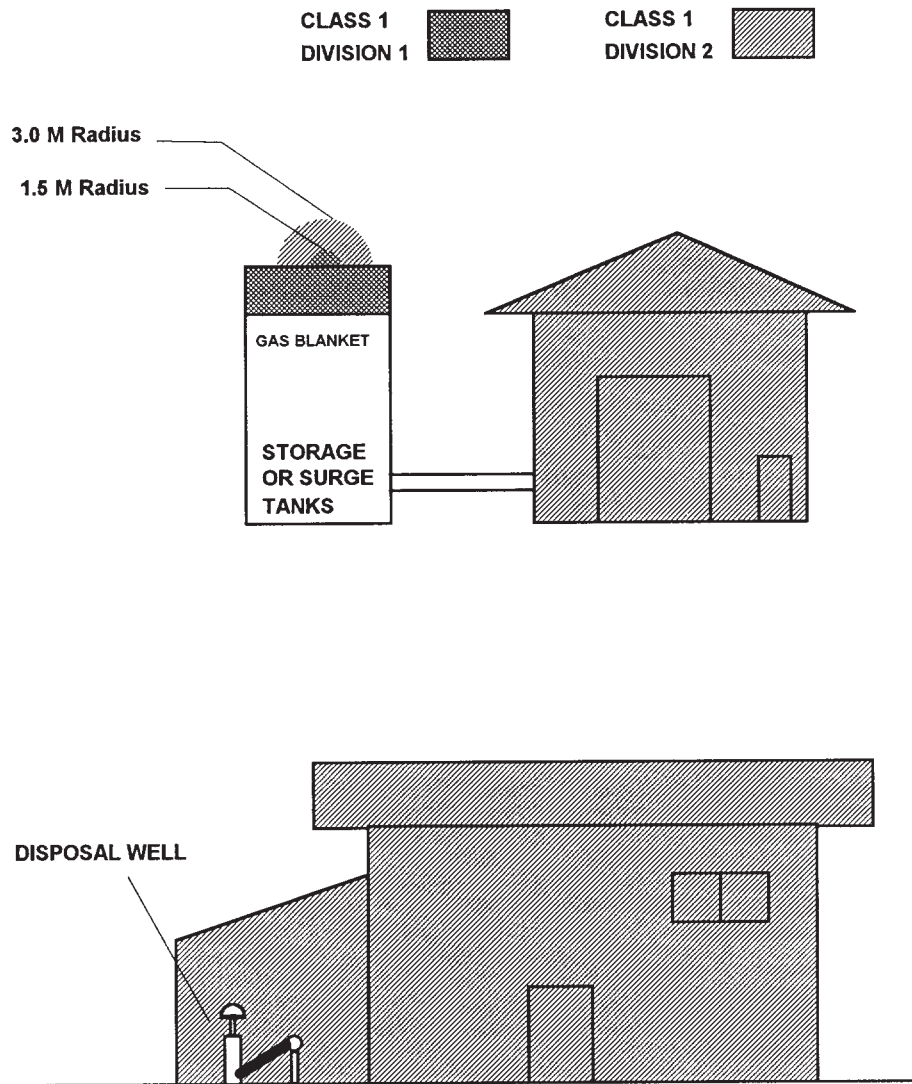


Diagram 24  
**TRANSMISSION OR PROCESS FACILITY**

Rule 90-300 & 90-500 Sask. Supplement

**HAZARDOUS AREA CLASSIFICATION**

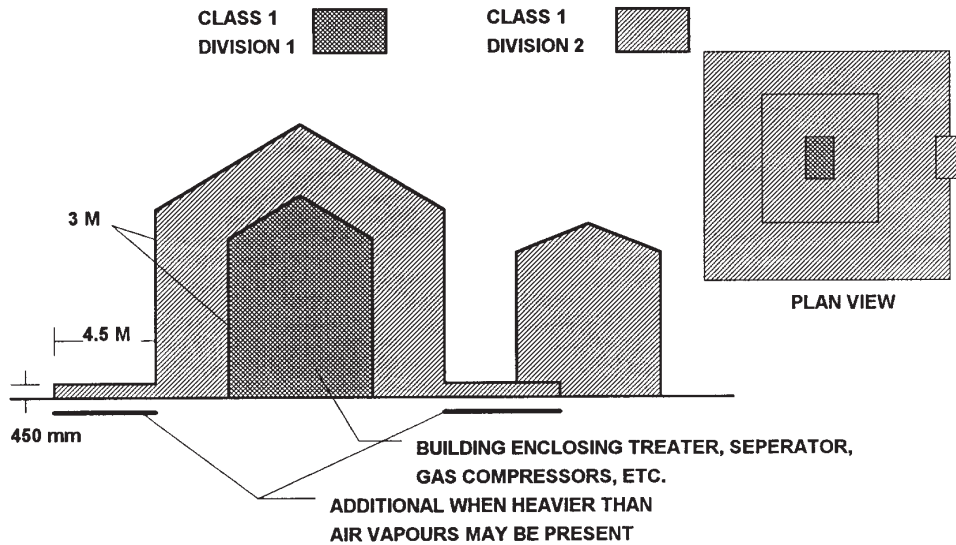


Diagram 25  
**FLAMMABLE LIQUID STORAGE TANK IN A  
NON-ENCLOSED ADEQUATELY VENTILATED AREA**

Rule 20-302(4)

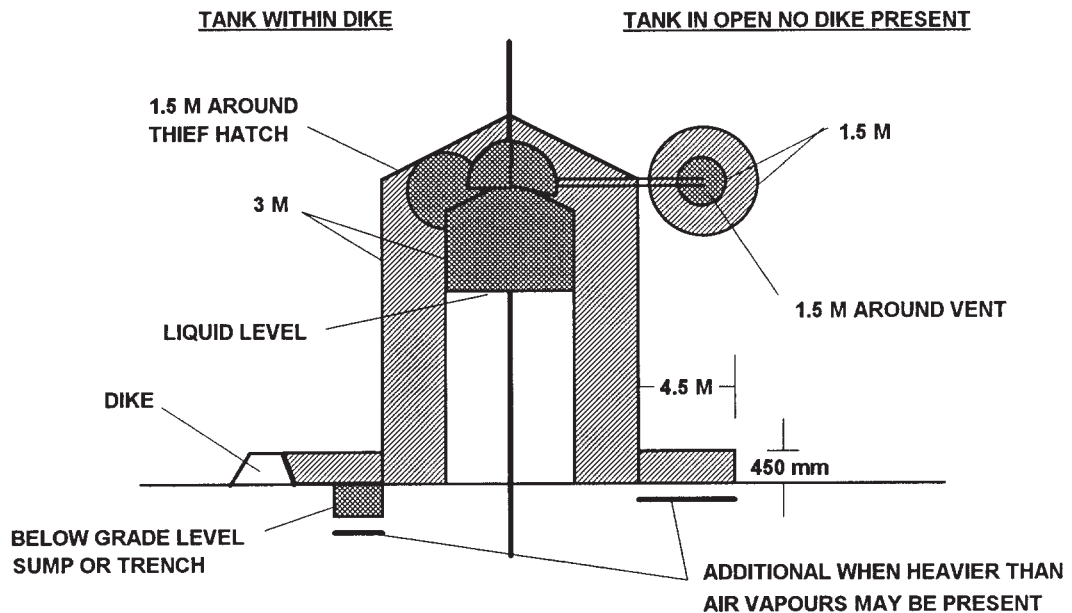
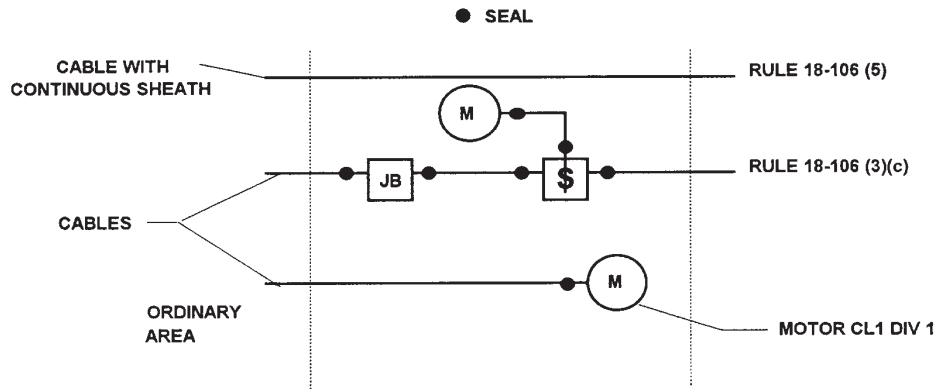


Diagram 26  
HAZARDOUS LOCATION SEALING

CLASS 1 DIVISION 1 CABLE



CLASS 1 DIVISION 2 CABLE

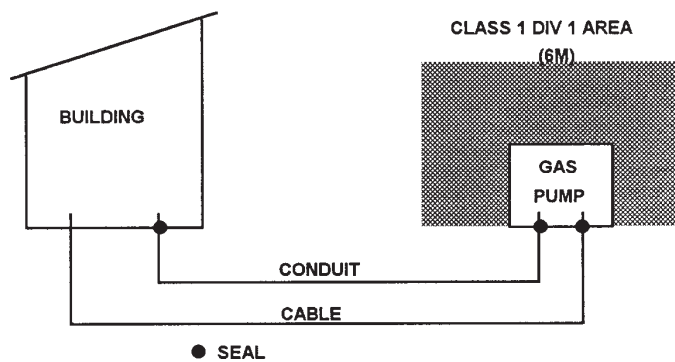
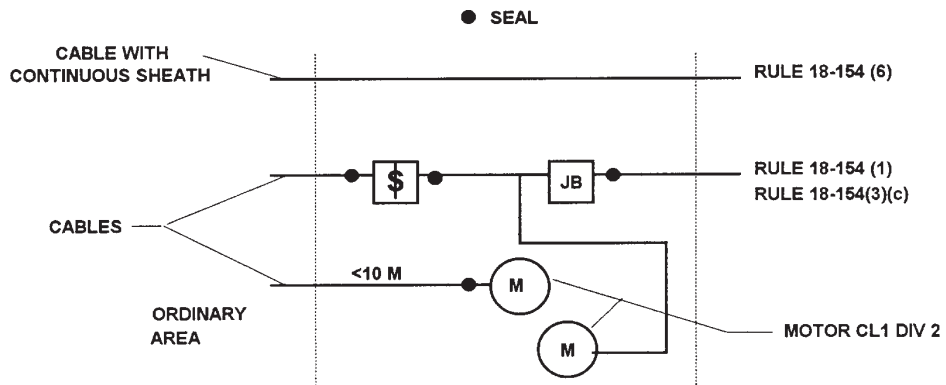
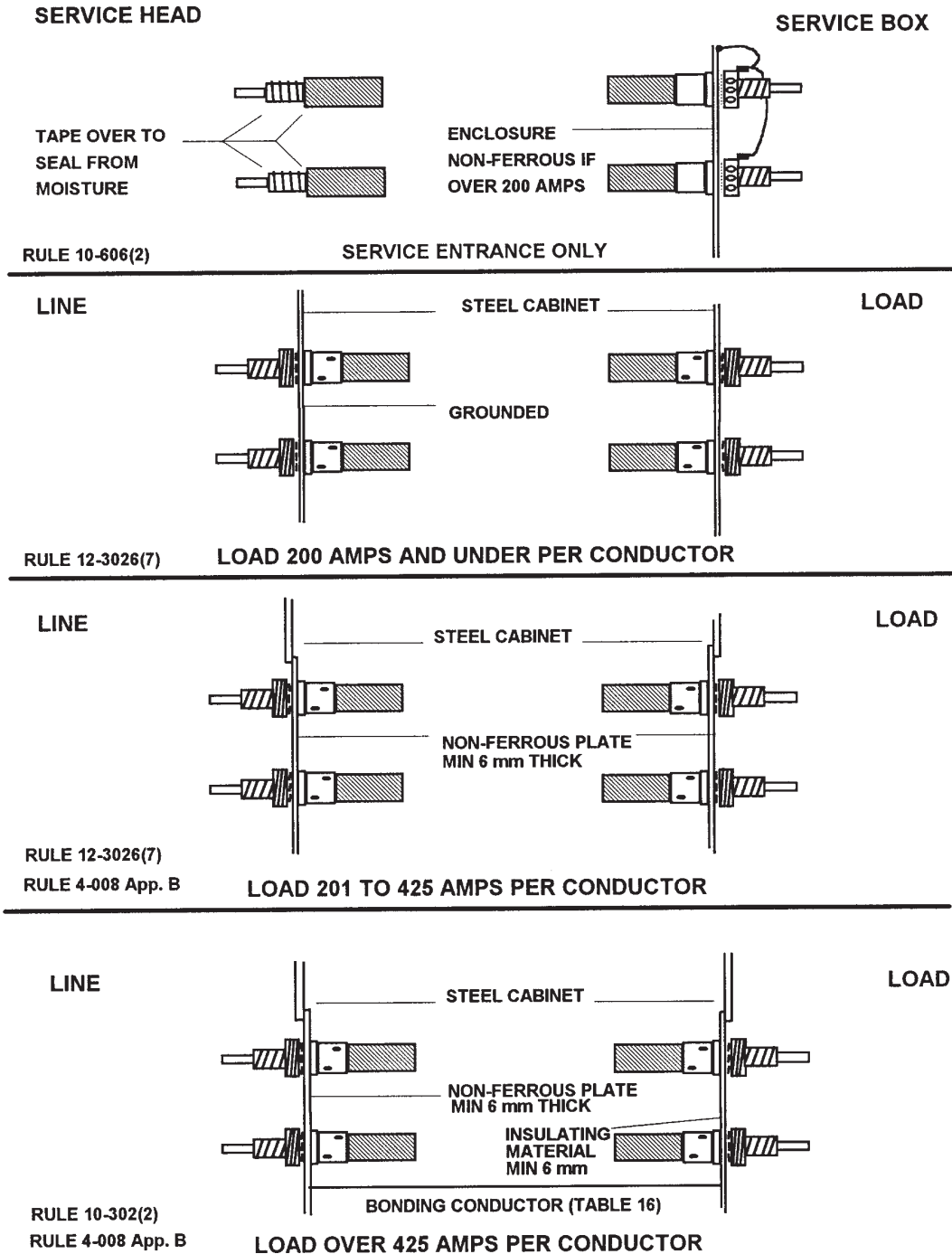


Diagram 27

**SINGLE CONDUCTOR ALUMINUM SHEATHED CABLE INSTALLATIONS**



**APPENDICES****Appendix B**

2-015 Appendix note 2-015 is added pertaining to Rule 2-015.

Rule 2-015 requires that plans and specifications shall, in addition to other details, contain the maximum short circuit current available at each point of application of protective devices in installations exceeding 600 A. Because of the lower impedance's in the energy-efficient transformers currently being used by utilities and available for customer-owner installations, the resultant higher short circuit availability makes the requirement in this rule even more important. For example, a 500 KVA 120/208 V transformer with 2% impedance has a short circuit current of 69400 amp available at its terminals (based on infinite primary) whereas one with 5% impedance would have only 27760 amp available.

On the basis that code fuses and many circuit breakers have an interrupting capacity rating of 10000 amps, it will be apparent from the tabulation below, that a substantial number of systems will require careful fault current analysis to ensure compliance with rule 14-012 and related note in Appendix B of the Code. Whereas the short circuit current available for the overcurrent device to interrupt is dependent upon several factors, such as distance, type and size of circuit conductors careful attention must be given to arrangements with a short bus between a transformer and a distribution centre.

Review of plans not having the required short circuit current information will be withheld until it is made available and the selected overcurrent devices are determined to have satisfactory IC rating. If values are not available from utilities (on rare occasions) the inspection office should be consulted for concurrence with an estimated value.

**18-405 Appendix note 18-405 is added regarding Rule 18-405**

**As per CSA Standard B52-M a Class T machine room requires the following:**

**A Class T machinery room shall have no ignition source apparatus permanently installed and operated and also shall conform to the following:**

**a) Emergency remote controls to stop the refrigerant compressor shall be provided and located immediately outside the machinery room;**

**b) An independent mechanical ventilation system conforming to Clause 7.10.4 shall be provided for all machinery rooms. In basements and sub/basements the ventilation system shall be operated continuously. In all other locations the machinery rooms shall have continuous ventilation or be equipped with a gas-monitoring system that will automatically start up the ventilation system and actuate a remote alarm at the lowest practical instrument-detection level not exceeding 25% of the lower explosive limit;**



**c) Emergency remote controls for the mechanical means of ventilation shall be provided and located outside the machinery room.**

62-114 Appendix note 62-114 is added pertaining to subrules 62-114 (6) and (7).

With continuing increase in use of electric furnaces and the need for proper sizing of disconnect, overcurrent protection and supply conductors, the table thereunder has been prepared for ease of reference.

**ELECTRIC FURNACES AND OTHER HEATING EQUIPMENT**

Ref. C.E.C. 62-114 (6) and (7)

Nameplate Furnace Rating (KW)	Conductor Size		Fuse or C.B. Rating
	Copper	Aluminum	
5 KW	No.10 AWG R90	No. 8 AWG R90	30 Ampere
10 KW	No. 8 AWG R90	No. 6 AWG R90	60 Ampere
15 KW	No. 4 AWG R90	No. 3 AWG R90	100 Ampere
20 KW	No. 3 AWG R90	No. 1 AWG R90	125 Ampere
25 KW	No. 2 AWG R90	No. 0 AWG R90	150 Ampere
30 KW	No. 1 AWG R90	No. 00 AWG R90	175 Ampere

A sample selection for a 20 KW furnace follows: The ampacity of the conductors supplying the electric furnace and the size of the overcurrent devices are determined by applying Rule 62-114.

The overcurrent device for the furnace must be sized so that the total connected load of the heating equipment does not exceed 80% of the rating of the overcurrent device in accordance with subrule (6). In this case, the load is 83.3 amps, the minimum size of overcurrent devices is  $83.3 / 0.8 = 104$  amperes. The next available fuse is 125 amperes.

Since this fuse is supplying a heating load, Rule 14-610 requires that the fuses be a time delay type or HRC Form I.

The conductor size is determined by applying subrule (7) of 62-114. The conductor must be of an ampacity sufficient to carry the load, must have an ampacity rating at least 80% of the rating or setting of the branch circuit overcurrent device. A conductor rated at 100 amperes, i.e. #3 AWG R90 (Column 3 of Table 2) would satisfy these requirements.

Based on the conduit fill requirements of Rule 12-1014 and Tables 6 and 10, it can be determined that the 2 #3 AWG R90 conductors require a 1 1/4" conduit.

The size of the conduit used for bonding equipment must be considered. Rule 10-814 and Table 16 require a 1 1/2 EMT conduit where the overcurrent protection exceeds 100 amperes.

Therefore in this installation the 1 1/4 EMT conduit would have to be increased to 1 1/2 EMT.

CANADIAN ELECTRICAL CODE  
(SASKATCHEWAN AMENDMENTS), 1995

**E-6.3 REG 3**

Table D-13 is added.

**Table D-13**

Table D-13 suggested maximum capacitor rating when motor and capacitor are switched as a unit (For 3-phase, 60 Hz NEMA Class B motors to raise full-load power factor to 95%).

MOTOR RATING HP	NOMINAL MOTOR SPEED IN RPM											
	3600		1800		1200		900		720		600	
	CAPS KVARs	AMPRE REDUCE %	CAPS KVARs	AMPRE REDUCE %	CAPS KVARs	AMPRE REDUCE %	CAPS KVARs	AMPRE REDUCE %	CAPS KVARs	AMPRE REDUCE %	CAPS KVARs	AMPRE REDUCE %
3	1.5	14	1.5	15	1.5	20	2	27	2.5	35	3.5	41
5	2	12	2	13	2	17	3	25	4	32	4.5	37
7.5	2.5	11	2.5	12	3	15	4	22	5.5	30	6	34
10	3	10	3	11	3.5	14	5	21	6.5	27	7.5	31
15	4	9	4	10	5	13	6.5	18	8	23	9.5	27
20	5	9	5	10	6.5	12	7.5	16	9	21	12	25
25	6	9	6	10	7.5	11	9	15	11	20	14	23
30	7	8	7	9	9	11	10	14	12	18	16	22
40	9	8	9	9	11	10	12	13	15	16	20	20
50	12	8	11	9	13	10	15	12	19	15	24	19
60	14	8	14	8	15	10	18	11	22	15	27	19
75	17	8	16	8	18	10	21	10	26	14	32.5	18
100	22	8	21	8	25	9	27	10	32.5	13	40	17
125	27	8	26	8	30	9	32.5	10	40	13	47.5	16
150	32.5	8	30	8	35	9	37.5	10	47.5	12	52.5	15
200	40	8	37.5	8	42.5	9	47.5	10	60	12	65	14
250	50	8	45	7	52.5	8	57.5	9	70	11	77.5	13
300	57.5	8	52.5	7	60	8	65	9	80	11	87.5	12
350	65	8	60	7	67.5	8	75	9	87.5	10	95	11
400	70	8	65	6	75	8	85	9	95	10	105	11
450	75	8	67.5	6	80	8	92.5	9	100	9	110	11
500	77.5	8	72.5	6	82.5	8	97.5	9	107.5	9	115	10

Table D-14 is added.

**Table D-14**  
**CAPACITOR SWITCHING DEVICES**

RECOMMENDED SWITCHING DEVICES (for separate mounting)																	
CAP RATING		AMPERES				CAP RATING		AMPERES				CAP RATING		AMPERES			
Volts	kVar	Cap Amps	Fuse Amps	MC Brkr	PC Brkr	Volts	kVar	Cap Amps	Fuse Amps	MC Brkr	PC Brkr	Volts	kVar	Cap Amps	Fuse Amps	MC Brkr	PC Brkr
240	2.5	6.01	15	15	15	480	2	2.41	15	15	15	600	5	4.81	15	15	15
	5	12	20	20	20		5	6.01	15	15	15		10	9.62	20	15	15
	7.5	18	30	30	30		7.5	9	15	15	15		15	14.4	25	30	20
	10	24.1	40	40	40		10	12	20	20	20		20	19.2	35	30	30
	15	36.1	60	70	50		15	18	30	30	30		25	24.1	40	40	40
	30	72.2	125	125	100		20	24	40	40	40		30	28.9	50	50	40
							25	30	50	50	50		40	38.5	70	70	70
	45	108	200	175	150		30	36.1	60	70	50		50	48.1	80	100	70
	60	144	250	225	200												
	75	180	300	275	250		40	48.1	80	100	70		60	57.8	100	100	90
	90	217	400	350	300		50	60.1	100	100	90		75	72.2	125	125	100
	120	289	500	500	400		60	72.2	125	125	100		80	77	150	125	125
	135	325	600	500	500		75	90.2	150	150	125		100	96.2	175	150	150
							80	96.2	175	150	150		120	115	200	175	175
	150	361	600	600	500		90	108	200	175	150		125	120	200	200	175
	180	433	800	700	600		100	120	200	200	175		150	144	250	225	200
	225	541	900	900	800		120	144	250	225	200						
	240	578	1000	900	800								160	154	300	250	225
	270	650	1200	1000	1000		125	150	250	225	200		180	173	300	300	250
	360	866	1600	- - -	1200		150	180	300	300	250		200	192	350	300	300
							160	192	350	300	300		225	217	400	350	300
							180	216	400	350	300		240	231	400	350	350
							200	241	400	400	350		250	241	400	400	350
							225	271	500	500	400		300	289	500	500	400
							240	289	600	500	400						
							250	301	500	500	400		320	306	600	500	500
													360	347	600	600	500
							300	361	600	600	500		375	361	600	600	500
							320	385	700	600	600		400	385	700	600	600
							360	433	800	700	600		450	433	800	700	600
							375	451	800	700	600						
							400	481	800	800	800						
							450	541	900	900	800						

Rule 26-214

MC = Moulded Case Breaker or equivalent. PC = Power Circuit Breaker or equivalent.

CANADIAN ELECTRICAL CODE  
(SASKATCHEWAN AMENDMENTS), 1995

**E-6.3 REG 3**

Table D-15 is added.

Rule 12-318 Sask. Supp.

**Table D-15**

<b>RECOMMENDED SAGS FOR NEUTRAL-SUPPORTED CABLE</b>												
	2-No. 1/0 Al 1-No. 1/0 Bare ACSR Span in Meters				2-No. 2 Al 1-No. 2 Bare ACSR Span in Meters				2-No. 4 Al 1-No. 4 Bare ACSR Span in Meters			
Temp.	15	23	30	38	15	23	30	38	15	23	30	38
Deg. C	Sag in Centimetres				Sag in Centimetres				Sag in Centimetres			
-29	25	58	102	157	20	43	76	119	18	43	76	119
-18	28	58	104	163	20	46	81	127	20	46	79	124
0	28	61	109	17	23	48	86	135	20	46	81	130
16	28	64	114	178	23	53	94	147	20	48	84	132
32	30	66	117	183	25	56	99	155	23	51	89	137

Table D-16 is added.

**Table D-16**

<b>THREE PHASE TRANSFORMER FULL LOAD LINE CURRENT IN AMPERES</b>								
KVA	208v.	240v.	480v.	600v.	2400v.	4160v.	13800v.	14400v.
3	8.3	7.2	3.6	2.9	0.72	0.42	0.126	0.120
6	16.6	14.4	7.2	5.8	1.46	0.82	0.251	0.241
9	25.0	21.7	10.8	8.7	2.17	1.25	0.377	0.361
15	41.7	36.1	18.2	14.5	3.61	2.09	0.628	0.601
30	83.4	72.3	36.1	28.9	7.23	4.17	1.26	1.202
45	125	108	54.2	43.4	10.8	6.26	1.88	1.805
50	139	120	60.2	48.2	12.0	6.96	2.09	2.00
75	208	181	90.3	72.3	18.1	10.4	3.14	3.005
112.5	313	271	135	108	27.1	15.7	4.71	4.51
150	417	361	181	145	36.1	20.9	6.28	6.01
200	556	482	241	193	48.2	27.8	8.37	8.02
225	625	542	271	217	54.2	31.3	9.41	9.025
300	834	723	361	289	72.3	41.7	12.55	12.02
450	1249	1083	541	433	108	62.5	18.83	18.04
500	1390	1204	602	482	120	69.6	20.92	20.07
750	2082	1804	902	722	180	104	31.38	30.07
1000	2776	2406	1203	962	241	139	41.84	40.09
1500	4164	3608	1804	1443	361	208	62.76	60.14
2000	5552	4811	2406	1925	481	278	83.67	80.19
KVA = 1.73 x VOLTAGE X CURRENT / 1000								

Table D-17 is added.

**Table D-17**

<b>SINGLE PHASE TRANSFORMER FULL LOAD LINE CURRENT IN AMPERES</b>							
<b>KVA</b>	<b>120v.</b>	<b>240v.</b>	<b>480v.</b>	<b>600v.</b>	<b>2400v.</b>	<b>4160v.</b>	<b>14400v.</b>
2	16.7	8.3	4.2	3.3	0.83	0.48	0.139
3	25.0	12.5	6.3	5.0	1.25	0.73	0.208
5	41.7	20.8	10.4	8.3	2.08	1.2	0.347
7.5	62.5	31.3	15.6	12.5	3.13	1.8	0.521
10	83.3	41.7	20.8	16.7	4.17	2.4	0.694
15	125	62.5	31.3	25.0	6.25	3.6	1.04
20	167	83.3	41.7	33.3	8.33	4.8	1.39
25	208	104	52.1	41.7	10.4	6.0	1.74
30	250	125	62.5	50.0	12.5	7.2	2.08
37.5	313	156	78.0	62.5	15.6	9.0	2.61
50	417	208	104	83.3	20.8	12	3.47
75	625	313	156	125	31.3	18	5.21
100	833	417	208	167	41.7	24.0	6.94
167	1391	695	347	278	69.6	40.1	11.6
200	1667	833	417	333	83.3	48.1	13.9
250	2083	1041	520	416	104	60.1	17.4
333	2115	1387	693	555	138	80	23.1
500	4167	2083	1042	833	208	120	34.7
750	6250	3125	1563	1250	313	180	52.1
1000	8333	4167	2083	1667	417	240	69.4
KVA = VOLTAGE (CURRENT) / 1000							