



WHAKARATONGA IWI

**FIRE
EMERGENCY**

NEW ZEALAND

Alternative Firefighting Water Supplies

Central Otago

August 2019 v1.1



Executive Summary

This document outlines the requirements for **Residential Properties Only** (Single family dwellings, multi-unit dwelling, but excludes multi storied apartments). It is intended to aid builders, developers, and homeowners in meeting conditions of their consents regarding water storage, for domestic firefighting purposes within the Central Otago District Council (CODC) area. The document is a guide only and must be read in conjunction with the [New Zealand Fire Service Firefighting Water Supplies Code of Practice \(SNZ PAS 4509:2008\)](#).

Water for firefighting purposes is usually provided by fire hydrants installed within a reticulated potable water supply. Rural properties that do not have access to a reticulated supply, are significantly more at risk from fire outbreak. Fire and Emergency NZ strongly recommends that sprinklers are installed in all structures (and specifically houses) that are situated in areas where they are located more than 10 minutes from a Fire Station, or properties that have a significant construction, historical or contents risk.

Water requirements for a Home Sprinkler System:

- Properties with an installed sprinkler system have a water classification of FW1. This classification requires 7,000 litres of water which is dedicated for firefighting operations.

When this cannot be achieved an alternative water supply for firefighting is to be provided by the homeowner, the water classification for homes without a sprinkler system is FW2. This classification requires a set amount of water for firefighting purposes and requirements to access the water supply.

Requirements for an Alternative Water Supply:

- An Alternative Water Supply (AWS) can be in the form of either a water tank, pond, lake, dam or waterway. It must be set aside specifically for the supply of firefighting water, and must contain a minimum storage capacity of 20,000 litres
- The AWS must be located within 90 metres of the buildings that it is to protect, but no closer than six metres to any fire hazard
- Ponds, lakes, dams or waterways must have a safe working platform for firefighters to establish suction equipment
- Access to the AWS must be unimpeded and trafficable at all times
- A hardstand area is to be constructed beside the AWS to support a fire appliance, the hardstand area is to be no further than five metres from the AWS or connection point
- Couplings to comply with SNZ PAS 4505:2007

It is recommended that advice be sought from Fire and Emergency New Zealand (FENZ) prior to the construction of the necessary infrastructure. Where existing assets are provided, FENZ can also advise on any necessary amendments required to meet the provisions of SNZ PAS 4509:2008.

Table of Contents

Executive Summary	2
Table of Contents.....	3
Alternative Firefighting Water Supplies - Central Otago District Council	4
Alternative Water Supplies	4
Home Sprinkler Systems	4
Water Storage Tanks	5
Open Water Sources	8
Other Considerations	9
Appendix 1: 100mm Suction Hose Adapters	11
Appendix 2: 70mm Female Instantaneous Coupling Specifications	12
Appendix 3: Underground Fire Hydrant Specifications	13



Alternative Firefighting Water Supplies

Central Otago District Council

August 2019 v1.1

Provision of Water Supplies for Firefighting

Many councils in consultation with FENZ now require land or building owners to provide a water supply for firefighting purposes, for a new dwelling not covered by a reticulated water supply. In this case, rural properties being developed within the CODC area require an Alternative Water Supply for Firefighting, that aligns with FENZ code of practice SNZ PAS 4509:2008.

Having access to sufficient quantities of water in the early stages of fire may have a significant effect on the outcome of firefighting activities, however compliance with SNZ PAS 4509:2008 does not guarantee that in each and every case, FENZ staff can control or extinguish a fire with the water supply available.

Public Water Supplies

Where a residential building can connect to a public water supply, firefighting water will be provided to the homeowner through the same supply for the purposes of firefighting in line with the provisions of SNZ PAS 4509:2008.

Alternative Water Supplies for Firefighting

Where the above provision is not available, an alternative firefighting water supply must be provided by the homeowner.

An alternative supply of water for firefighting include but not limited to, the following options.

Home Sprinkler Systems

Firefighters take longer to reach rural locations by virtue of travel distance. With a home sprinkler system installed, fire damage will be reduced significantly through early suppression of the fire.

Sprinkler systems are designed to suppress fire after sensing an increase in temperature above a certain trigger point, providing water directly to a seat of fire in the vicinity of the sprinkler.

A sprinkler-controlled fire will typically use between 340 and 720 litres of water; therefore, the required firefighting water supplies volume based on SNZ PAS 4509:2008 is significantly less. Based on an average sized home, a dedicated firefighting water supply volume of 7,000 litres is sufficient for the operation of a home sprinkler system.

It is the best form of protection for your property and Fire and Emergency New Zealand strongly recommend the installation of home sprinklers in rural houses.

Further information is available through [NZS4517:2010 - Fire Sprinkler Systems for Houses](#).

Water Storage Tanks

An uncontrolled fire doubles in size every 30 seconds. While the timely arrival of firefighting crews will begin to reduce the effect of the fire, approximately 30 minutes of active firefighting activities will be required after the arrival of firefighting staff to subdue the fire sufficiently to prevent further fire damage. A significant amount of water is required to:

- protect firefighters entering a structure to account for any missing persons
- protect nearby exposures from the effects of the fire, or
- directly undertake firefighting activities in or around the structure.

Without a home sprinkler installation, sufficient water to allow any or all of the above criteria to be satisfied must be provided by the homeowner. SNZ PAS 4509:2008 defines a residential house without sprinklers in a non-reticulated area as requiring 45,000 litres of dedicated firefighting water.

Consideration must be given to the effects of radiant heat when siting the tank, particularly if plastic tanks are used. Ideally, the stored water is to be accessible to attending fire crews along the path of travel between the entrance to the property and the structure being protected.

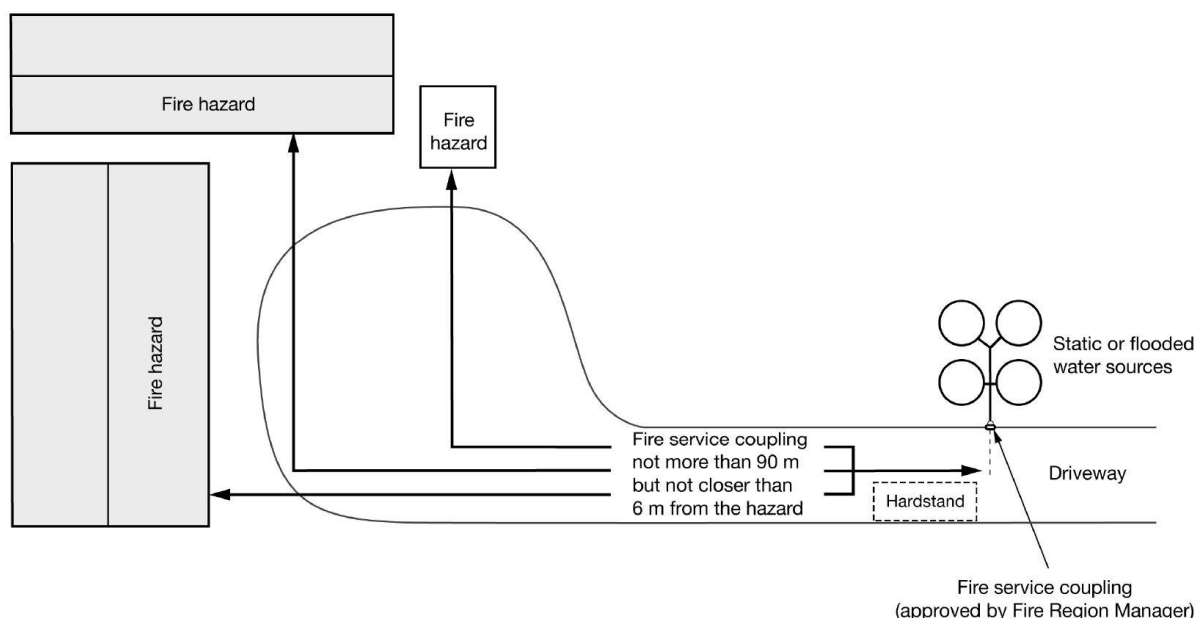


Figure 1: Tank location example (Figure B4 of SNZ4509:2008)

Static Water Source – Ground Level Tanks

Ground level tanks (fitted with a coupling approved by the Fire Region Manager) are often the most common type of water storage. An example of a suction coupling outlet is outlined on page seven.

Hard standing must be provided to ensure that the pump inlet of the attending firefighting appliance is no more than five metres from the coupling of the water source. The coupling must be no further than 90 metres from the structure being protected, but no closer than six metres from any fire hazard.

The tank or tanks are to be arranged so that no less than 20,000 litres of water can be made available when required.



Figure 2: Upstand 100mm Female Suction Coupling



Figure 3: 100mm Female Suction Coupling

Buried Tanks

In order to reduce the aesthetic impact of the water tank presence, property owners have buried tanks, or located them on a flat platform below the level of the hardstand area.

Accessing water from buried tanks can be achieved by two means, if the tank is buried within five metres of the hardstand area then a hatch or opening at the top of the tank will allow for suction hose access. Where the tank is partially buried, and access is via a hatch, the hatch may be no higher than one metre above the ground level.

If access via a hatch/opening cannot be achieved, or the tank is situated more than five metres from the hardstand area, then access to the water can be achieved via an upstand 100mm female suction coupling. The maximum depth the base of the tank can be located is no lower than seven and a half metres. This is to ensure the firefighting appliance can draw the water from the tank.

The coupling or hatch must be no further than 90 metres from the structure being protected, but no closer than six metres from any fire hazard. Hard standing must be provided to ensure that the attending firefighting appliance is no more than five metres from the connection point.

The tank/tanks are to be arranged so that no less than 20,000 litres is available at all times.

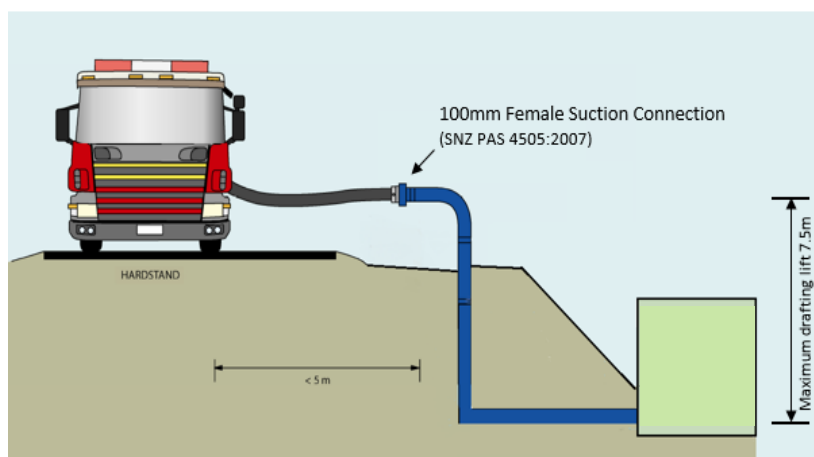


Figure 6: Upstand 100mm Female Suction Coupling
(Connection specifications in Appendix 1)

Flooded Source

To achieve a flooded source at the connection point there must be a minimum flow of 25l/s. To achieve this the tank must be located a minimum of ten metres above the connection point, with a 100mm piping running from the tank to the connection point.

The connection point must be no further than 90 metres from the structure being protected, but no closer than six metres from any fire hazard. The hard standing must be provided to ensure that the pump inlet of the attending firefighting appliance is no greater than twenty metres from the connection point.

The tank or tanks are to be arranged so that no less than 20,000 litres of water is always available.

Two connection types are available for flooded sources:

- 70mm female instantaneous coupling
- Fire hydrant connection

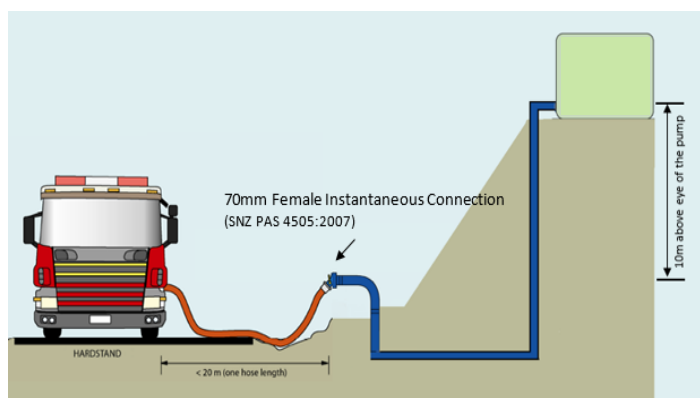


Figure 4: 70mm Female Instantaneous Coupling
(Coupling specifications in Appendix 2)

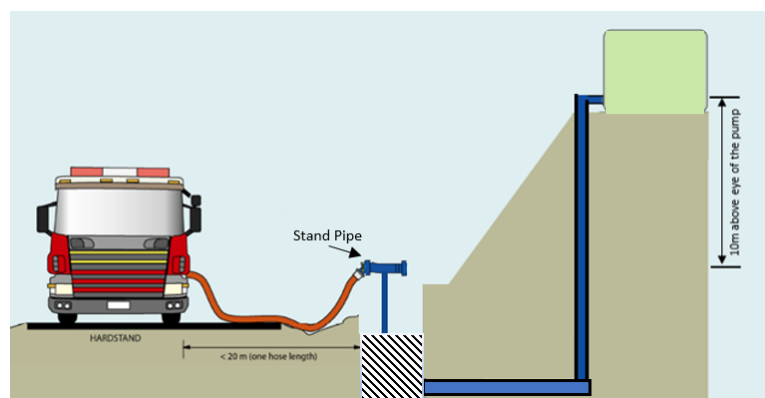


Figure 5: Hydrant Connection
= Hydrant specifications located in Appendix 3

Open Water Sources

Where applicable, an open water source such as a pond, stream or pool may be considered as an alternative firefighting water supply. These may either have a fixed suction pick up fitted with an approved coupling or allow direct access for suction hose.

The coupling or direct access must be no closer than six metres to any fire hazard, and no further than 90 metres from the structure being protected. Hard standing must be provided to ensure that the pump inlet of the attending firefighting appliance is no more than five metres from the coupling or direct access.

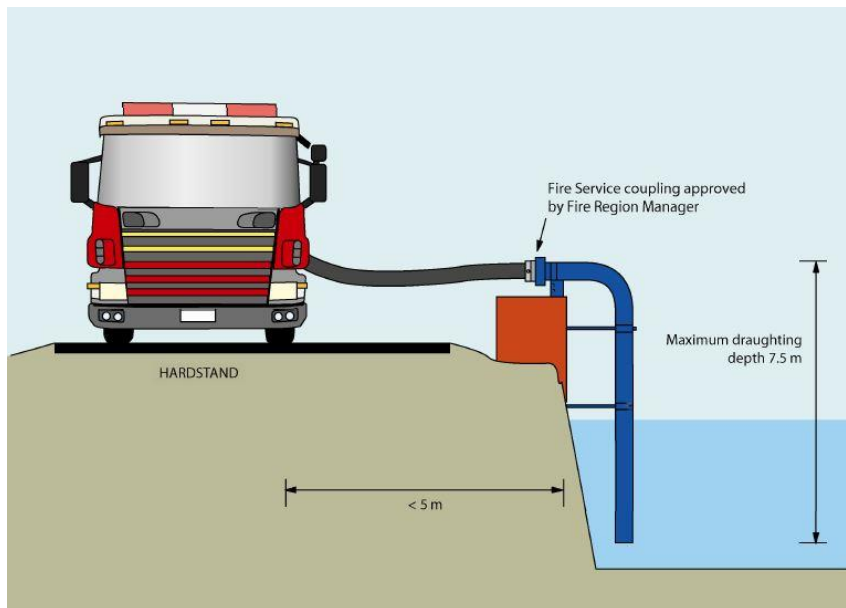


Figure 7: Open water source through fixed suction pick up (App B2 of SNZ4509:2008)

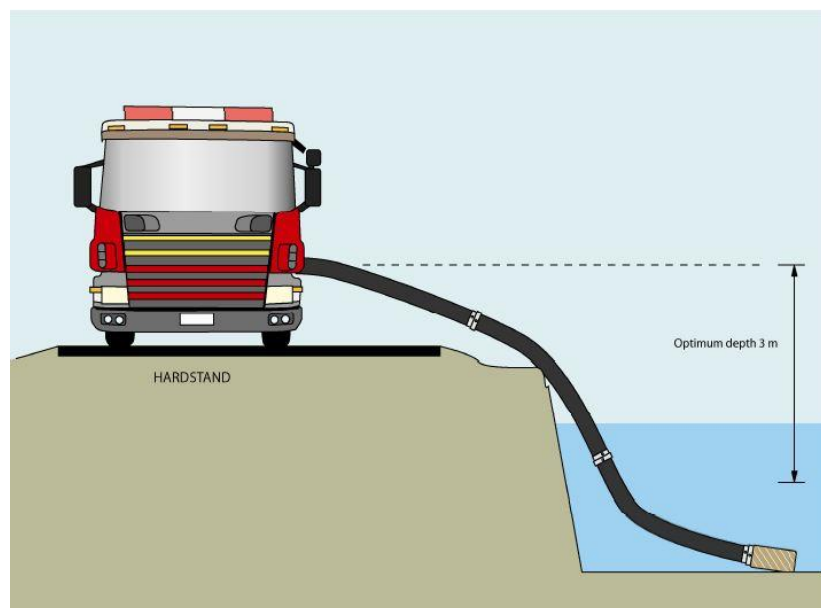


Figure 8: Open water source through suction hose (App B3 of SNZ4509:2008)

Other Considerations

Landscaping and future development

Any future development on the section needs to be considered in terms of accessing the firefighting water supply. Items like fences, gates, garden beds, plants and peripheral structures such as garages or garden sheds can often be established to the detriment of accessing the water supply. Tree growth over time can also restrict the access to the hardstanding area that was once freely available.

Vehicle Access

Firefighting appliances require a corridor four metres high and four metres wide along a surface capable of withstanding a load of twenty tonnes. The Hardstand area must be four and a half metres wide and eleven metres in length. The turning circle for an appliance is approximately 17.5 metres, all reasonable effort should be made to meet these requirements. When positioned on the hard-standing area, there will also need to be sufficient space around the appliance to conduct firefighting activities.

Bridges over creeks and water races must be engineered to support a 20 tonne vehicle.

Roading gradient should not exceed 16% (rise of access / length of access x 100 = %)

In any situation where it is impractical to reach the location of a water source with a firefighting appliance, a buried pipe leading from the tank to an approved coupling adjacent to the hard stand area is recommended.

Visibility

Tanks, couplings and/or water access points need to be visible to attending firefighting crews. The use of signs, marker posts, or other suitable identifiers are encouraged to aid in expediting access to the firefighting water supply.

Shared Firefighting Water Supplies

Shared water supplies for firefighting purposes that cover several adjacent residential properties may also be constructed. In order to meet the criteria of the relevant building consent the continuity of the water supply, the volume of storage and permanent access to the source must be consented to by all parties. The maximum distance of 90 metres from the hard-standing area to all houses covered by the firefighting water supply will also mean a centrally placed location is required.

Agreement to maintain the firefighting water supply and any relevant cost sharing exercise pertaining to the source must also be taken into consideration. Legal arrangements for easements to access firefighting water supplies is highly recommended for shared water supplies held on privately owned land.

Reduced volumes of firefighting water

It is considered *highly undesirable* to hold less than 45,000 litres of firefighting water on site where an alternative firefighting water supply is required.

Fire and Emergency New Zealand and the Central Otago District Council currently have a Memorandum of Understanding that allows for the reduction of fire fighting water supply from 45,000 litres, to 20,000 litres.

An existing firefighting water supply falling below the required volume will most likely need to be augmented to meet the required volume of firefighting water, depending on the assessment of available information, building consent review and/or any on-site investigations.

Exceptional Circumstances

In exceptional circumstances FENZ may consider to accept a deviation in the requirements of an alternative water supply, when all practical steps may not be able to be achieved.

How to get assistance

While specific queries relating to building consents should be directed to the resource management staff at the Central Otago District Council in the first instance, FENZ staff remain accessible to anyone requiring guidance or advice on any aspect of firefighting water supplies.

A visit to the site and a check against the requirements of SNZ PAS 4509:2008 can also be arranged where applicable.

FENZ staff can be contacted through the Central North Otago Area Office.

Central North Otago Area

Five Mile, Building 1

34 Grant Road, Frankton 9300

PO Box 2360, Wakatipu, Queenstown 9349

(03) 441 4537

15 SUCTION HOSE ADAPTORS

15.1

Suction adaptors are female round thread with swivelling cap or male round thread, and may be fitted with blank caps if required.

The adaptor is usually flanged or threaded to customer's specifications, but not limited to these options. These fittings are normally fitted to alternative water supplies for connection to a suction hose.

If welded, welding skills shall comply with the requirements in 3.3.

A flanged style suction hose adaptor is shown in figure 37.

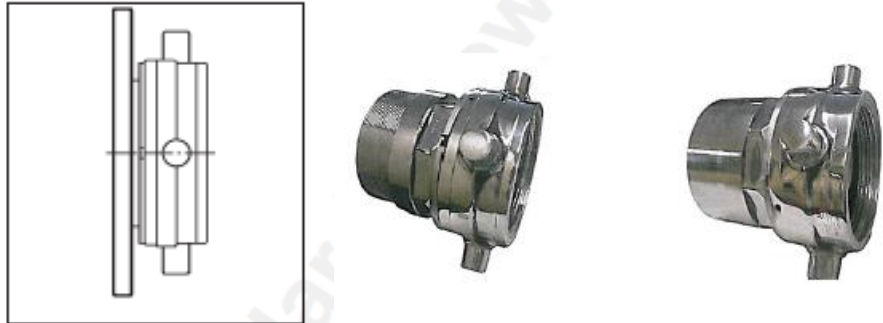


Figure 37 – Flanged style suction hose adaptor



100mm Female Suction Coupling

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Appendix 2: 70mm Female Instantaneous Coupling Specifications

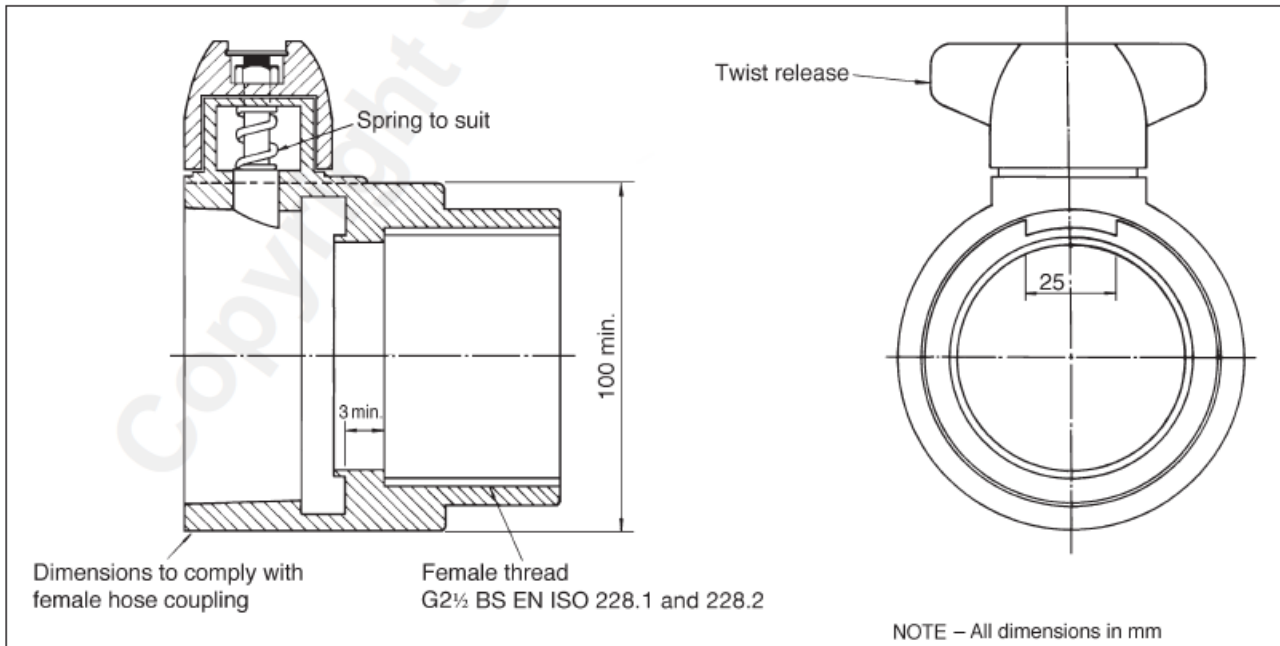


Figure 15 – Single lug twist release instantaneous coupling



Further information on 70mm Female Instantaneous Coupling can be located in NZS 4505:2007

APPENDIX A – TYPICAL ARRANGEMENT FOR HYDRANTS

(Normative)

This appendix provides illustrations of the typical arrangement of the screw-down hydrant (both non-rising spindle and external spindle nut type) and of the gate valve hydrant. See figures A1 to A3.

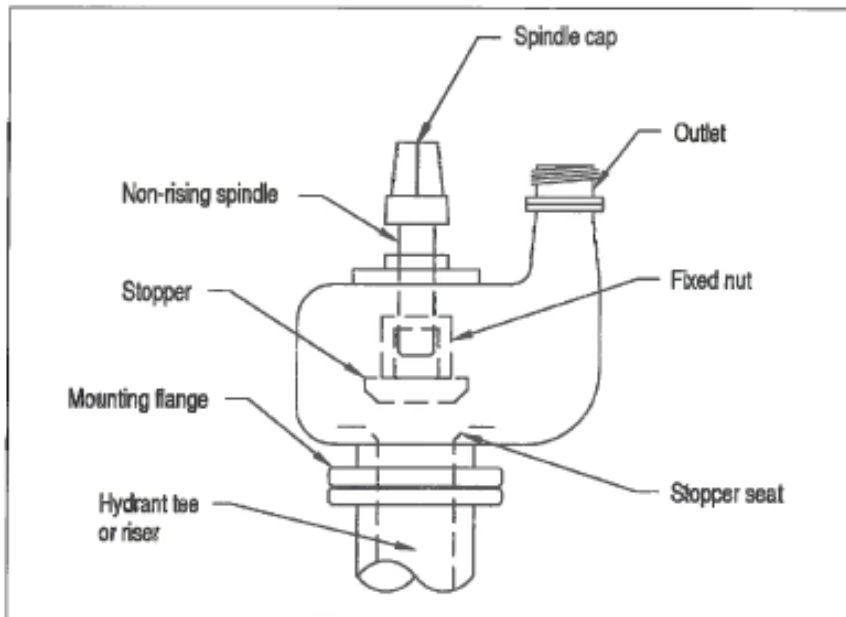


Figure A1 – Typical arrangement of the screw-down fire hydrant – Non-rising spindle type

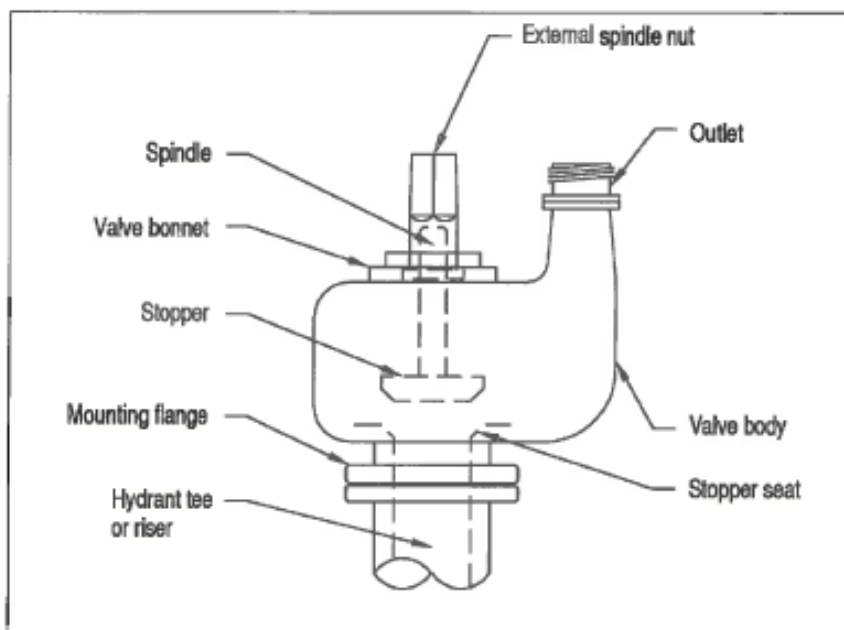
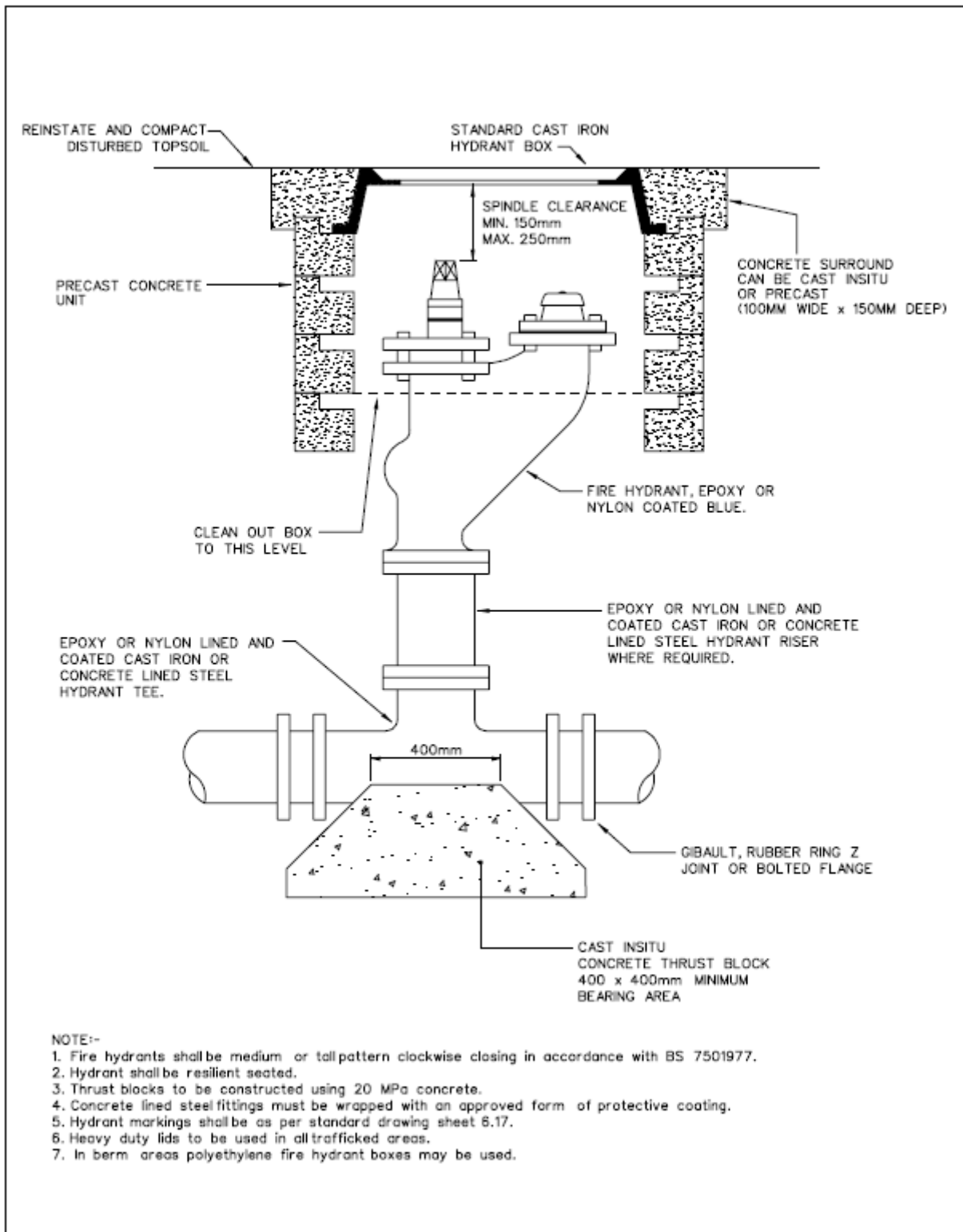


Figure A2 – Typical arrangement of the screw-down fire hydrant – External spindle nut type

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Further information on Underground Fire Hydrants can be located in NZS 4522:2010