



Property Services
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Version Control

This document will be updated and re-issues to reflect approved change to content, and is subject to version control. The version record and status is documented below

Document Change History ¹:

Version	Date	Author	Comments
7.0	31/07/2015	Property Services	Complete review of standards

Owner

The overall responsibility for these standards resides with RMIT University Property Services

Review

This Document is reviewed every two years

¹ Printed copies of this document are considered uncontrolled and may not reflect the most recent revision

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1. Introduction

1.1 Background

This document details the minimum RMIT design requirements for hydraulic systems. It forms part of the suite of RMIT Design Standards set out below. All volumes of the standards are available on the RMIT Property Services Design Standards web page.

- Volume One Introduction
- Volume Two Architecture and Planning
- Volume Three Electrical Systems
- Volume Four Fire Protection Systems
- Volume Five Hydraulic Systems
- Volume Six Mechanical HVAC Systems
- Volume Seven Vertical Transportation Systems
- Volume Eight Building Management Systems
- Volume Nine Electronic Security
- Volume Ten Communications
- Volume Eleven Audio Visual
- Volume Twelve Landscape
- Design Standards Checklist

This document should be read in conjunction with *Volume One - Introduction*, which provides context on the organisational and governance arrangements that apply to the design and construction of new facilities and describes the key principles that underpin the requirements of the Standards:

- Safety
- Accessibility
- Innovation
- Student Experience
- Maintainability and Serviceability
- Modularity and Standardisation
- Reliability
- Compatibility
- Sustainability
- Heritage
- Life Cycle
- Precinct Wide Solutions

1.2 Purpose

The purpose of this brief is to set out the minimum requirements for the design of hydraulic systems. The aim is to achieve the maximum possible consistency and standardisation across the hydraulic systems on the RMIT University campuses.

Any design aspects not specifically addressed by this brief shall be identified by the consultant during the design process and shall be brought to RMIT University's attention for resolution.

1.3 Demonstrating Compliance with the Standards

Designers are required to confirm compliance and justify any proposed deviations by completing the Design Standards Checklist.

All deviations must be approved by RMIT prior to commencing design. Unless a robust justification is provided for deviations from the Standards, it is unlikely that approval will be given. Design Standards compliance is achieved through completion of the Design Standards Checklist and endorsement by RMIT of any proposed non-compliances.

2. Hydraulic Systems Design Standards

2.1 General

2.1.1	A charged/wetted Floor Waste Outlet is provided and installed in fire services, hydraulics and/or mechanical services plant rooms. It is prudent that the FW outlet location has been coordinated with the Architect so as to avoid clash with floor mounted equipment.
2.1.2	Check valves, Double RPZDs and TMVs are installed at low level for improved access and they shall have locks fitted to the valves to avoid tampering of the same.
2.1.3	Isolating valves for external ponds or fountains shall be installed locally at the pond/fountain and clearly labelled to the outside of the associated external surface, for improved isolation of the water supply of the same.
2.1.4	Where LPG type gas bottles are to be provided within a building the future transportation of the gas bottles shall be assessed and the relevant Architect shall be informed of a required and compliant goods lift (gas bottle transportation via a passenger lift is not allowed). Note also: This item must be included and/or resolved during the required Safety in Design phase/discussions including any certification required.
2.1.5	Above ground and full flow Gate Valves shall be used in all projects. Wheel operated butterfly valves can be used for pipe sizes under 100mm.
2.1.6	The Hydraulics services designer shall inform the Architect of the need for inconspicuous ventilation of under bench hot water units and confirm/document resolution of the same.
2.1.7	'Zip' brand Drinking and Boiling Water Units to be specified as RMIT standardized supplier.
2.1.8	All under bench boiling water units are to be fitted with programmable, daily 24/7 type time clocks with override switches.
2.1.9	Usage of the harvested/stored rainwater shall be sub-metered and shall be wired to and monitored off the relevant building and/or site-wide BMS
2.1.10	Pump(s) used for the circulation/supply of stored/harvested rainwater shall be wired to and monitored from the relevant building and/or site-wide BMS so as to signal an alarm on the BMS upon pump failure so as to minimize unnecessary use of and by-pass to the town's main potable water supply.
2.1.11	Where a building and/or site-wide BMS is not available the pump(s) used for the circulation/supply of stored/harvested rainwater shall have a localized pump failure alarm. A ceiling or wall mounted (at high level) visual/coloured pump status alarm shall be provided within the main reception area (i.e. green = pump OK, red/yellow = Pump failure) complete with the required identification signage All concealed, under bench or under sink pumps must be included on the relevant asset register.
2.1.12	The use of gravity run waste pipes shall be applied. Where possible the use of under bench/sink waste pumps, shall be avoided. Where the use of under sink waste pump(s) is the only alternative the type of pump shall be the macerator type.
2.1.13	All plumbed in safety showers and eye wash stations shall be monitored by security control and BAS.
2.1.14	Where possible use of Solar Hot Water Units with gas fired instantaneous boost units shall be installed for new buildings and for the replacement of HWUs of existing buildings.
2.1.15	Hydraulics service designer shall co-ordinate and liaise with the Architect and/or principal consultant to ensure that adequate walkways are provided to hydraulic services equipment to be installed on roofs.

2.1.16	Trade Waste related tanks shall be stainless steel and High density/polymer plastic.
2.1.17	Trade Waste tanks/pits are to be located at ground level, and at a sufficient distance from any outside air intake louvres, grilles or openeable windows. Trade waste tanks shall be located/installed so as to have clear and safe access to the same. Trade waste tanks shall not be installed within plant rooms, particularly in plant rooms that are used for outside air intake for mechanical services.
2.1.18	Greasy Waste tanks/pits are to be located at ground level, and at a sufficient distance from any outside air intake louvres, grilles or operable windows. Greasy waste tanks shall located/installed so as to have clear and safe access to the same. The frequent access and pumping/cleaning of the greasy tanks by an appropriate vehicle shall be considered when assessing the location of the greasy waste tank/pit. Greasy waste tanks/pits shall not be installed within plant rooms, particularly in plant rooms that are used for outside air intake for mechanical services.
2.1.19	Provide clearly and permanently labelled localised isolation valves to water supply of dedicated rooms/areas, i.e. Kitchens, laboratories and amenity areas.
2.1.20	As a minimum, separate isolation valves are required to each floor level of a building and for dedicated water uses facilities/zones i.e. Kitchens, Laboratories, Amenity areas.
2.1.21	No Plumbing or sewer drainage shall be provided below the level of the main sewer lines (i.e. Ejector pumps shall not be used).
2.1.22	Drinking fountains shall include bottle filler spouts.
2.1.23	Primary or sub-metering to the domestic cold water supply and 'primary' hot water supply (only if building is served by central hot water system) is to be provided for each building and, where available, connected to the building or site-wide BMS.
2.1.24	Primary or sub-metering to the domestic cold water supply is to be provided for each building and, where available, connected to the building or site-wide BMS.
2.1.25	Primary or sub-metering to the reticulated domestic hot water supply is to be provided for each building and, where available, connected to the building or site-wide BMS.
2.1.26	Primary or sub-metering to the reticulated gas supply for each building is to be provided and, where available, connected to the building or site-wide BMS.
2.1.27	No tube bushes shall be used in gate valve, control valves and gas cocks.
2.1.28	Exposed internal non-potable domestic cold water pipework, flushometers, etc., exposed to view in other than plant or services areas, are to be chrome or stainless steel plated.
2.1.29	Electrically operated hot water units shall have automatic reset buttons which operate upon re-instatement of power after failure.
2.1.30	Mains pressure chrome plated flushometers are specified in public amenities.
2.1.31	New Hydraulic Services equipment shall have a minimum 5 years warranty.

2.2 Stormwater

2.2.1	Underground stormwater drainage shall be sewer class uPVC pipes and fitting for sizes up to 300mm in diameter.
2.2.2	Provide stormwater pits at changes in direction, grade, junctions and at spacings no more than 60 meters for pipes 225mm in diameter or greater.
2.2.3	Provide an inspection opening at the base of all downpipes
2.2.4	Stormwater pits to be either precast or insitu concrete. Insitu concrete pits to have a minimum wall thickness of 150mm and placed using inner and outer forms
2.2.5	Provide silt traps and litter cages to all external drainage systems, as necessary.

2.2.6	Provide step irons in pits exceeding 1.2 meters in depth
2.2.7	Consideration shall be made in the stormwater design to exclude garden mulch from entering the drainage system causing blockages and reducing efficiency. The designer is to discuss this requirement with the Architect/Landscape Architect and ensure that detail drawings reflect this feature.
2.2.8	Stainless Steel box gutters shall be specified/installed only.
2.2.9	Minimum 0.48mm roof iron to be specified/installed only

2.3 Sewer Drainage

2.3.1	Inspection opening under concrete paving is to be extended to the finalized level to provide access to the drainage installation.
2.3.3	Provide inspection chambers at changes in direction, grade, main junctions and at spacings of no more than 60 meters.
2.3.4	Provide step irons in pits exceeding 1 meter in depth.
2.3.5	Provide at least one overflow relief gully for each building.
2.3.6	Neutralizer tanks shall not be located in plant rooms.
2.3.7	Floor wastes to have a removable chrome plated brass grate. Floor waste risers to be not less than 80mm diameter. All risers shall be fitted with an approved flange and shall be cast into the concrete floor slab. Floor waste shall be charged with a fixture. Deep seal traps (75mm) to be provided to plant/air handling and laboratories.
2.3.8	The use of Automatic Air Emittance Valves AAVs, shall be kept to an absolute minimum. The use of standard/traditional sewer vent pipes shall be the primary means of sewer pipe/system ventilation

