



Toilet Design: Requirements and Reference Design

Version 2.0, February 2017





Document history

The table below is a record of the changes that have been made to this document:

Revision date	Version	Summary of changes
August 2016	1.0	First version for general issue.
February 2017	2.0	Updates include: <ul style="list-style-type: none">• Door hardware amended, an undercut shown for toilet doors and floor waste gullies added (sections 2.12, 3.6, 3.7 and 3.8).• Mechanical extract rates to toilet areas increased (section 2.9).• Any windows within new self-contained toilets required to be fixed pane (section 2.10).• For operable window sashes within existing toilet areas, consideration to be given for the retro-fitting of security stays (section 2.10).• Reference design layouts in Appendix 1 updated to reflect the latest requirements.



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1 Introduction

This reference design guidance document provides general requirements and standard layouts for toilets in new buildings and, where practical, in existing buildings which are being remodelled. The main intended users of this document are property professionals. Boards of Trustees and other people who make decisions about school property may also find it useful.

This guidance document sets out the Ministry of Education's (the Ministry) additional requirements beyond the New Zealand Building Code. The requirements of the Building Code must be met and NZS 4121: 2001, Section 10 *Toilet and Shower Facilities*, must also be followed.

This document supports the Ministry's *Designing Schools in New Zealand – Requirements and Guidelines* document, which is available on the Ministry's [property pages](#).

Note that the reference design layouts in Appendix 1 may need to be amended to suit the specific needs of individual projects. The layouts will also need to be documented and coordinated with other multi-disciplinary design documentation such as structure, building services and interior fit out. These layouts are not intended to relieve the design team of their obligations to ensure that toilet areas are Building Code compliant and appropriately designed for each individual school project.

High dependency bathrooms for new and existing schools (including those within a satellite facility) will be covered in separate design guidance documents.

Questions and feedback about this document or other Ministry design guidelines can be directed to Property.Help@education.govt.nz. Your feedback will help us maintain these guidance documents as valuable resources for all of those involved in designing our schools as effective learning environments.



2 General requirements

Toilets are to be evenly distributed around the school and located in close proximity to learning areas, so that students are able to use them during learning activities.

Toilets are to be located and configured to allow dual access, and where possible, configured to allow access from both indoor learning and outdoor activity areas.

Toilets are to be configured so they can be easily passively supervised. Toilets with high levels of passive surveillance and dual access discourage anti-social behaviour and are less likely to suffer vandalism. These toilets are likely to be better cared for and offer improved access for all students.

Toilets shall be designed as self-contained units with full height floor to ceiling walls, floor to (industry standard) head height doors and with basin and hand drying facilities within each cubicle.

Schools shall allocate the use of toilets acknowledging gender balance, student age, and cultural considerations.

Compliance with the toilet reference designs is strongly recommended for school projects that include new toilets or substantive refurbishments.



2.1 General

- Toilets are to be available for use during the school's opening hours and when spaces are used for specific purposes (i.e. examinations, performances or extra-curricular activities).

2.2 Locations

- Toilets are to be dispersed throughout the buildings and arranged in small groups (not in large central blocks).
- Small toilet groups increase opportunities for passive supervision, which discourages anti-social behaviour, reduces disruption caused by cleaning and maintenance, and cuts down curriculum time lost when students visit toilets during lessons.
- Each group of teaching spaces should contain a group (suite) of toilets.
- Each suite of toilets is to be located and configured to allow dual access and, where possible, configured to allow access from both indoor learning and outdoor activity areas.

2.3 Numbers

- Pans and basins are to be provided in accordance with the Building Code as a minimum requirement.
- The calculation is to be carried out school wide to ensure compliance. Provision in individual buildings should be considered in the context of the school wide provision. This will ensure a balance is achieved for toilet provisions between individual buildings and the overall school.
- The number of toilet cubicles needs to be determined on the basis of separate male and female cubicles to ensure that an adequate number is provided. This then provides the school with onward flexibility in allocating either unisex or dedicated male / female groupings.

2.4 Style

- Toilets are to be fully self-contained with a basin and hand drying facilities within each cubicle.
- Walls and partitions are to be full height (floor to ceiling).
- An additional basin may be provided in the lobby area for those students just wishing to wash their hands. However, localised floor finish, hand drying provision and acoustic constraints should be considered.
- Toilet lobbies may open onto an interior circulation or covered exterior space. In all cases it is recommended that dual lobby access is provided, along with access from both indoor learning and outdoor activity areas where possible.



2.5 Accessible facilities

- Every school is to provide sufficient toilets for students with special needs.
- Each suite of toilets is to contain an accessible toilet that is available to both sexes. Therefore, in order to meet the required distribution across a school site, the provision of accessible toilets may need to be above the Building Code requirements.
- Where only one toilet is provided it is to be accessible.
- Accessible toilets and those with showers are to comply with requirements of the Building Code.

2.6 Toilet lobby

- The toilet lobby is to be highly visible from adjacent circulation areas to deter undesirable behaviour in this space.
- Ensure lobby areas have glazed doors and sidelights to enable adequate supervision of the toilet lobby.
- Ensure toilet pans are not able to be seen from adjacent spaces outside of the toilet lobby.
- Consider placing windows and glazed doors in toilet lobby areas, to provide high levels of passive supervision and to meet compliance and privacy requirements of the Building Code. If planning necessitates that windows or glazed doors are placed directly opposite toilet cubicle doors, glazing in the height band of between 400mm and 1200mm above finish floor level should be translucent so that users of adjacent spaces cannot see the toilet pans.
- Ensure lobby areas have two means of entry / egress to maximise the safety of users.
- Ensure lobby areas have acoustic absorptive flooring of a resilient nature and ceilings to control noise transfer between self-contained cubicles and adjacent learning spaces.
- Ensure that provision is in place for toilet lobby security so that toilet cubicles can be accessed from the outside where required for afterhours functions, whilst maintaining the security of the learning and / or other interior spaces.

2.7 Urinals

- For new buildings, slab-type urinals are not permitted.
- For remodelling existing buildings, slab urinals should be removed. Check whether there are an adequate number of pans at the school, and if not, replace the urinal with pan toilets.

2.8 Lighting

- Wherever possible, toilet areas are to be located so that they can benefit from natural lighting.
- Artificial lighting is to be automatically controlled through the use of presence detection.



2.9 Ventilation

- Mechanical ventilation is required for all self-contained toilets. Continuous extract rates are to follow the Building Code. Intermittent extract rates are as follows:
 - 35 L/s for student self-contained toilets;
 - 25 L/s for staff self-contained toilets;
 - 25 L/s for cleaners' rooms.
- Toilet doors shall have a 25mm undercut to allow for make-up air to the cubicle.
- Toilet lobbies require transfer grilles that are sufficient to provide make-up air to all cubicles and cleaners' rooms. Where lobbies are directly adjacent to teaching and learning spaces, transfer grille systems will need suitable acoustic treatment.
- Wherever possible, toilets are to be designed so that ventilation can continue to occur securely and safely after school hours.
- Mechanical ventilation for toilet areas is to:
 - achieve a slight negative pressure relative to adjacent spaces; and
 - be controlled either:
 - by the master heating / ventilating / air conditioning (HVAC) system; or
 - via a seven day timer (with manual override) set to operate during school opening hours; or
 - by a presence detector with a run-on timer set for 30 minutes where only extract is required. For staff toilets, the run-on timer is to be adjustable with a range of 3 to 30 minutes.

2.10 Windows

- If windows are incorporated into the self-contained toilet cubicle area, use fixed pane windows to mitigate against their use as a means of entry or egress.
- Where existing toilets have operable window sashes, consider retrofitting appropriate security stays that restrict the clear opening to a maximum distance of 100mm in accordance with Building Code requirements, to mitigate against their use as a means of entry or egress.

2.11 Warm water

- All basins are to be supplied with warm water at a max temperature of 45°C.

2.12 Drainage

- Self-contained toilet cubicles, accessible toilets and cleaners' rooms shall each have a floor waste gully with the basin / sink set up to provide a running trap. Designers shall consider a common waste for the basin / sink and the floor waste gully.
- All floor drains shall be provided with suitable access points for clearing of blockages.



2.13 Area heating

- Toilet facilities do not generally need to be heated.
- In cold climates, it might be appropriate to heat the lobby areas in winter, especially if these are accessed from external walkways.

2.14 Acoustics

- Refer to the Ministry's *Designing Quality Learning Spaces (DQLS) – Acoustics (version 2.0, September 2016)* document for sound insulation and separation requirements. This document is available [online](#).
- Toilet, plumbing components, and electric hand dryers are not to be located on any wall shared with a teaching or office space without incorporating additional acoustic treatment to control noise transfer and vibration.
- Aural privacy is to be provided between self-contained cubicles.
- Consider the use of sound absorptive ceiling, floor and wall finishes to toilet lobby areas as these can assist in limiting the transfer of noise from toilet areas into learning areas.

2.15 Durability

- All interior finishes and surfaces to toilets and cleaners' rooms are to be robust, resilient, impervious and easily cleaned.

2.16 Sustainability

- Construction materials are to be sourced locally wherever practicable to minimise transport impact.
- Rainwater harvesting systems are a useful educational resource for raising awareness of conservation issues and can assist in:
 - minimising the mains water requirement (by as much as 50%); and
 - minimising surface water runoff from the site.
- Rainwater may be used for toilet cisterns.
- Dual flush cisterns and timed-flow-control taps are to be used to conserve water.



3 Finishes, fittings and fixtures

3.1 Ceilings

- Ceiling finishes to toilets and cleaners' rooms are to be robust, moisture resistant, easy to clean and inaccessible to students.

3.2 Walls

- Wall finishes to toilets and cleaners' rooms are to provide an impervious and graffiti resistant surface.
- Wall finishes are to be fully waterproof in shower and wet spill areas.
- Pre-finished wall linings are to be fixed over an impact resistant underlay such as water resistant plasterboard or fibre-cement sheet.
- Acceptable finishes to toilets and cleaners' rooms include the following:
 - ceramic tile (except where low reflectivity is required);
 - sheet vinyl with thermo-rod welded joints;
 - pre-finished fibre cement (but not permitted in showers or wet spill areas);
 - pre-finished water resistant hardboard (but not permitted in showers or wet spill areas).

3.3 Floors

- For timber framed floors in any area containing a shower, appropriately treated plywood is to be used as the flooring substrate.
- The finishes selected for toilets and cleaners' rooms are to be water resistant, easily cleaned and slip resistant.
- Sheet materials for toilets and cleaners' rooms are to:
 - be set out to minimise the number of joins;
 - have all joins thermo-rod welded, in the case of vinyl;
 - incorporate a watertight covered upstand of minimum 150mm height above floor level, to enable the floor surface to be washed without risk of damage to the wall surface.
- Acceptable finishes to toilets and cleaners' rooms include the following:
 - resin coatings;
 - ceramic tile (except where low reflectivity is required);
 - vinyl or rubber with 2mm minimum impervious wear layer.
- Non-conforming finishes include the following:
 - carpet;
 - cork tiles;
 - particleboard without an overlay material.



3.4 Shower areas

- Floor finishes are to have slip resistance that complies with the Building Code. The slip resistance properties are to be embedded through the full depth of the material in order to remain constant throughout the life of the product.
- Where vinyl is used on floors and the wall, wall vinyl is to overlap and be sealed to the coved upstand.

3.5 Height of fittings

- The following items are to be mounted at an appropriate height for the age group, giving particular consideration to junior students:
 - cubicle door hardware;
 - basins;
 - mirrors;
 - hand dryers.

3.6 Toilet doors

- The doors to accessible toilets are to be fitted with 900mm high stainless steel kick plate.
- Elsewhere, doorways are to be fitted with 300mm high stainless steel kick plate.
- All doors are to be full height, solid-core (timber or carbon core type), clashed four edges and fitted with four rising butt hinges.
- Doors are to swing into the cubicle area, with exception to accessible toilets where the requirements of *NZS 4121:2001 Design for Access and Mobility – Buildings and Associated Facilities* shall apply.
- Doors shall have a 25mm undercut as an allowance for make-up air to the cubicle.
- The operability of doors is to be appropriate for use by younger students.
- Consider sliding doors where possible for accessible toilets.

3.7 Toilet door hardware

- Hardware selection criteria shall :
 - be robust with tamper proof fixings;
 - be easy to service;
 - have a minimum amount of moving parts to reduce malfunction risk;
 - have replacement parts readily available;
 - be easy to use by junior students.
- Accessible facilities are to have doors fitted with complying lever locking furniture.
- For self-contained toilets, use push plates on the outside face of doors and 'D' profile pull handles on the inside face with an overall length between 250 to 300mm. Pull handles are to be prefixed to backing plates.



- Use standard robust indicator bolt sets that can be opened in an emergency from the outside.
- All hardware to be commercial quality, and in stainless steel, with smooth edges.

3.8 Cleaner's room door hardware

- Ensure that free to open handles are provided to the inside face of access doors.

3.9 Heaters

- Where spaces are required to be heated and individual room heaters are provided, they are to be:
 - wall or ceiling mounted;
 - fan assisted (for quick warm-up);
 - operated by a manual switch with duration controlled by a presence detector.

3.10 Light fittings

- Lighting shall be designed to provide a maintained illuminance of 100 lux throughout the self-contained toilet and lobby areas.
- Luminaires shall be LED type and shall be controlled by occupancy sensor.
- Emergency lighting shall be provided in common toilet lobbies and accessible toilets.

3.11 WC pan, cistern, seat and flap

- Pans are to be:
 - vitreous china;
 - floor mounted;
 - back-to-wall type;
 - height to comply with NZS 4121:2001 for accessible toilet facilities;
 - standard height in all other situations.
- Cisterns are to be:
 - dual flush;
 - push button operation that does not require a separate power feed;
 - concealed in wall cavity with vandal resistant access panel and fixings.
- Seats are to be soft closing type.
- Flap is to:
 - not be fitted to student cubicles;
 - be soft close type in other situations.



3.12 Basins

- Basins that are recessed into vanity tops:
 - are more vandal resistant;
 - allow traps and water-supply pipe-work to be concealed from view.
- Basins shall be:
 - vitreous china with a single tap-hole and an overflow facility;
 - wall mounted in self-contained and accessible toilets;
 - supplied without plugs.

3.13 Sinks

- The cleaners' room sink shall be in stainless steel with an overflow facility.

3.14 Taps

- Taps are to be:
 - tamper proof;
 - timed flow-control type.
- Only one tap is required per basin, delivering warm (tempered) water.
- Taps may be:
 - electronic sensor type (hard-wired, not battery type); or
 - push button auto stop type (where this type is fitted for junior students, the push operation is to be sufficiently 'soft' for them to use); or
 - toggle or lever auto stop type.

3.15 Mirrors

- Mirrors are to:
 - be provided at a height appropriate for the age of the students and for wheelchair users;
 - have polished edges sealed to protect against moisture deterioration;
 - be adhesive fixed to the wall, clear of the basin.

3.16 Hand drying

- Fittings for this purpose are to be mounted at a height appropriate to the age of the students, and mechanically secured / fixed to the wall framing.
- Fittings are to be positioned:
 - close to basins to avoid water on floor;
 - so as not to cause congestion in one part of the room.
- Accessible toilets are to have paper towels.
- Electric hand dryers can be provided in all other student toilets. Isolating switches are to be mounted at a high level.



- Electric hand dryers are not to be located on any wall shared with a teaching space, office or other habitable space without incorporating additional acoustic treatment to control noise and vibration. Refer to the Ministry's *Designing Quality Learning Spaces (DQLS) – Acoustics* (version 2.0, September 2016) for acoustic performance criteria.
- Electric hand dryers can be blade type (i.e. systems that use a thin layer of unheated air travelling at high speed) as shown in Appendix 1. Conventional warm air dryers (non-blade type) can also be used.

3.17 Soap dispensers

- Dispensers shall be provided adjacent to toilet basins and not fixed to mirrors. The units shall be tamper proof, wall mounted and robustly fitted.

3.18 Toilet paper dispensers

- A toilet paper dispenser is to be provided in the accessible toilet in the position set by NZS 4121:2001.
- In all other areas, dispensers are to meet the school's requirements and be robustly fitted.

3.19 Durability

- Fixtures and fittings selection criteria shall:
 - be robust with tamper proof fixings;
 - be easy to service;
 - have a minimum amount of moving parts to reduce malfunction risk;
 - have replacement parts readily available;
 - be easy to use by junior students.



Appendix 1 Reference design layouts

TOILET TYPES

TYPE - A

- 1: STUDENT SELF CONTAINED WC & CLEANER - PLAN
- 2: STUDENT SELF CONTAINED WC & CLEANER - ELEVATIONS

TYPE - B

- 3: STAFF SELF CONTAINED WC & ACCESSIBLE WC SHOWER - PLAN
- 4: STAFF SELF CONTAINED WC & ACCESSIBLE WC SHOWER - ELEVATIONS

NOTES:

THIS REFERENCE DESIGN SET PROVIDES EXAMPLES OF CURRENT TOILET LAYOUTS THAT MEET THE MINISTRY'S REQUIREMENTS AND SERVE AS AN EXAMPLE TO ASSIST DESIGN TEAMS. IT IS IMPORTANT TO NOTE THAT THE ATTACHED LAYOUTS MAY NEED TO BE MODIFIED TO SUIT THE NEEDS OF INDIVIDUAL PROJECTS AS WELL AS BEING DOCUMENTED AND CO-ORDINATED WITH OTHER MULTI-DISCIPLINARY DESIGN DRAWINGS SUCH AS STRUCTURE, BUILDING SERVICES AND INTERIOR FIT OUT. THIS REFERENCE DESIGN SET DOES NOT RELIEVE THE DESIGN TEAM OF ITS OBLIGATIONS TO ENSURE THAT TOILET AREAS ARE CODE COMPLIANT AND APPROPRIATELY DESIGNED FOR EACH INDIVIDUAL SCHOOL PROJECT.

MINISTRY OF EDUCATION

TOILET REFERENCE DESIGN

Version 2.0, February 2017

LINE OF POSSIBLE SMALL HEIGHT WINDOW TO IMPROVE PASSIVE SURVEILLANCE AND POSITIONED SO THAT USERS OF ADJACENT SPACES CANNOT SEE TOILET PANS

GLAZED DOOR WITH MIN. 760 CLEAR OPENING

CLEAR FULL LENGTH GLAZING FOR SURVEILLANCE

SHELF ABOVE DASHED

BASINS TO BE OFFSET TO AVOID PIPES CLASHING

AIR BLADE DRYER

GLAZED DOOR WITH MIN. 760 CLEAR OPENING

710 CLEAR OPENING

LOBBY

NOTE: CONSIDER THE USE OF SOUND ABSORBING CEILING TILES, WALL AND FLOOR FINISHES IN THE LOBBY AREA TO REDUCE THE TRANSFER OF TOILET AREA NOISE INTO LEARNING AREAS

EXTERIOR

NOTE: DRIER IS NOT MOUNTED ON WALL ADJACENT TO LEARNING SPACE

FLOOR WASTE GULLY

A PLAN
SCALE = 1:50 @ A3

LINE OF POSSIBLE SMALL HEIGHT WINDOW TO IMPROVE PASSIVE SURVEILLANCE AND POSITIONED SO THAT USERS OF ADJACENT SPACES CANNOT SEE TOILET PANS

EXTERIOR

1500
1900

LOBBY

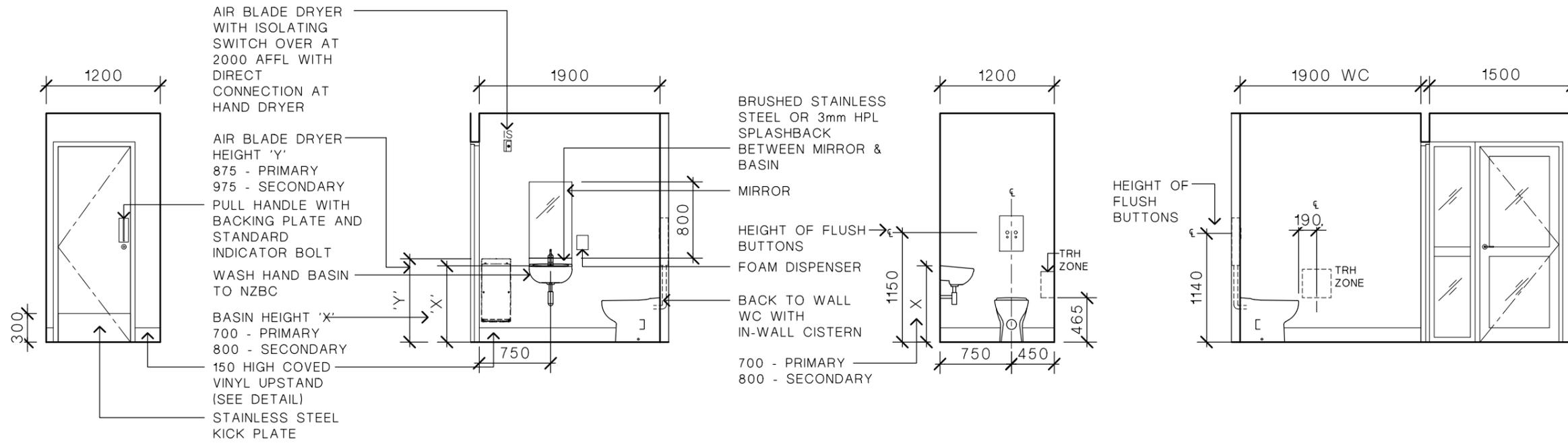
INTERIOR

PAPER TOWEL DISPENSER

FLOOR WASTE GULLY

MIN. 1600

A ALTERNATIVE PLAN
SCALE = 1:50 @ A3

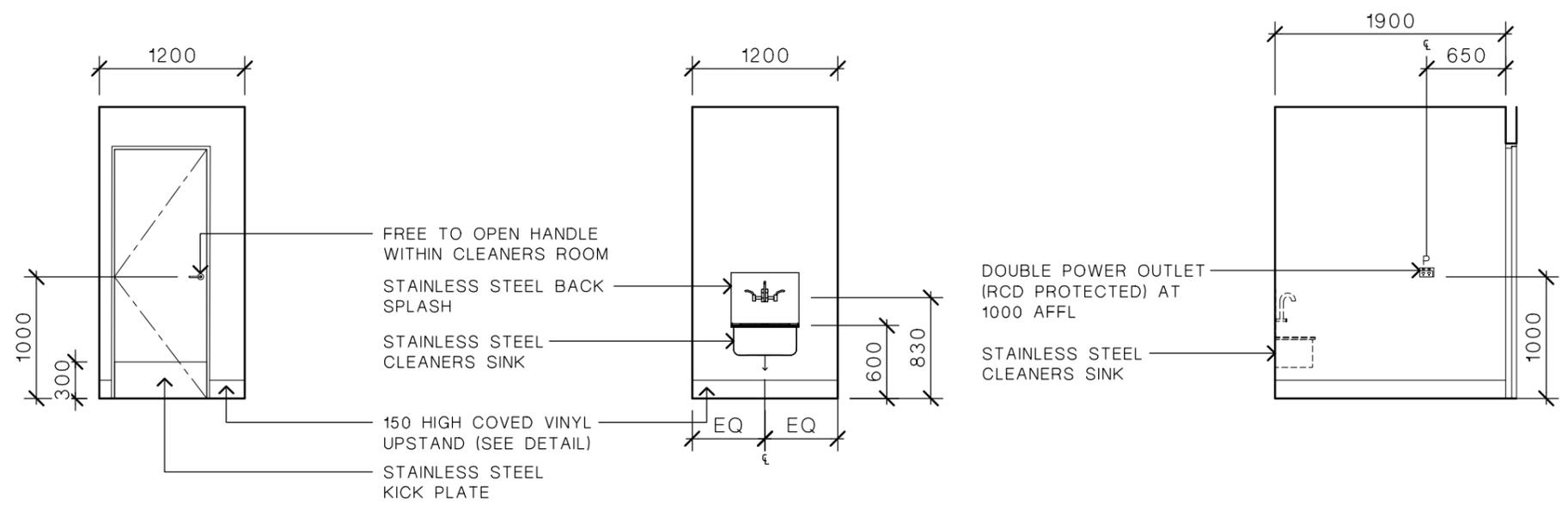


A1 ELEVATION
 SCALE = 1:50 @ A3

A2 ELEVATION
 SCALE = 1:50 @ A3

A3 ELEVATION
 SCALE = 1:50 @ A3

A4 ELEVATION
 SCALE = 1:50 @ A3

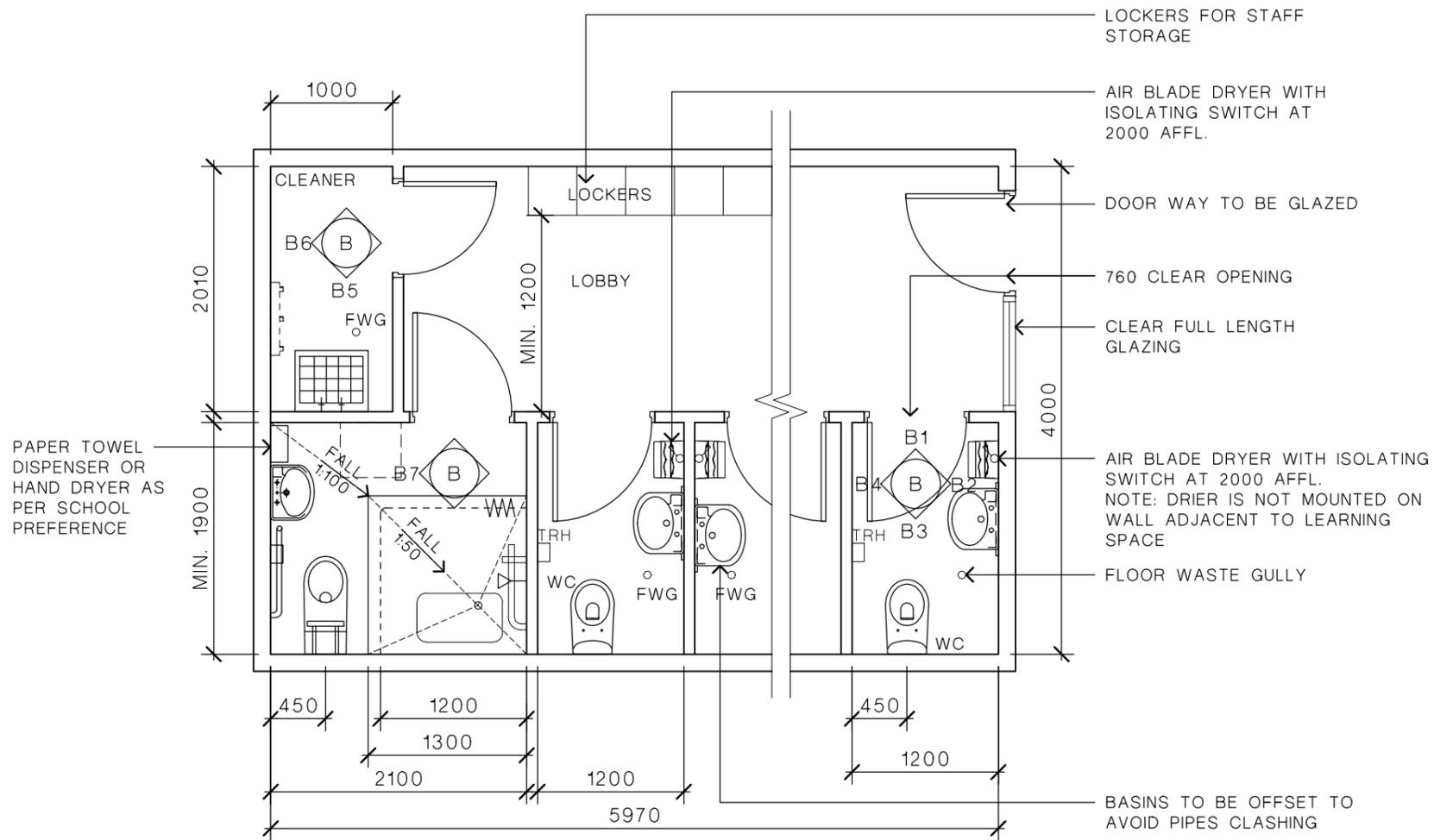


A5 ELEVATION
 SCALE = 1:50 @ A3

A6 ELEVATION
 SCALE = 1:50 @ A3

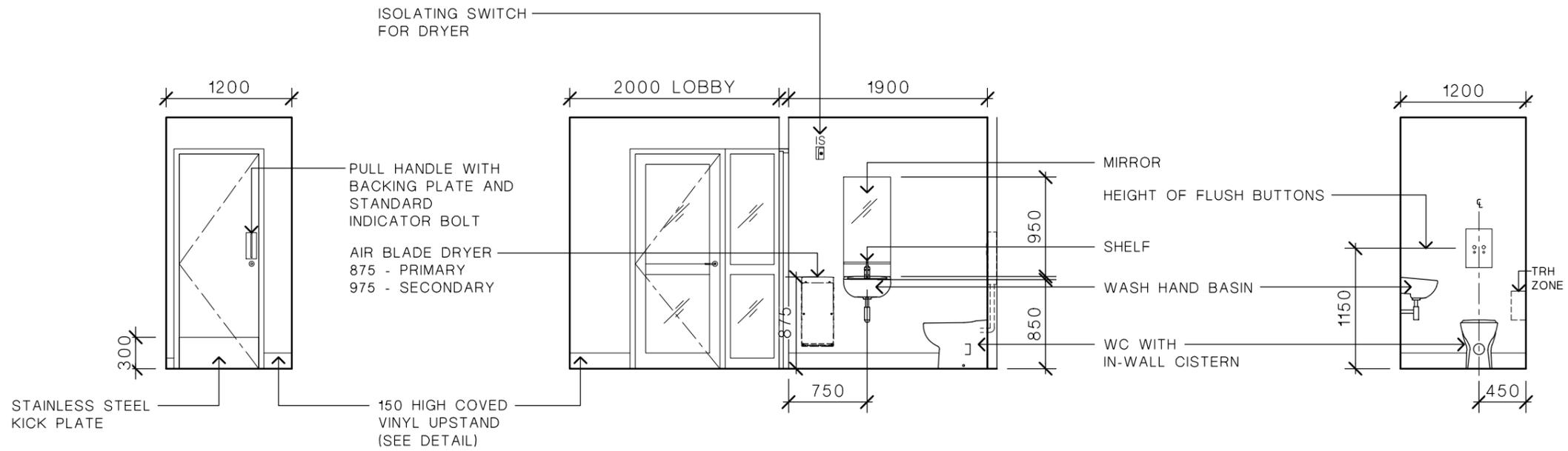
A7 ELEVATION
 SCALE = 1:50 @ A3

NOTE: FOR INTERNAL ELEVATIONS OF THE ACCESSIBLE WC CUBICLE, REFER TO THE BUILDING CODE (NZS 4121)



B PLAN
 SCALE = 1:50 @ A3

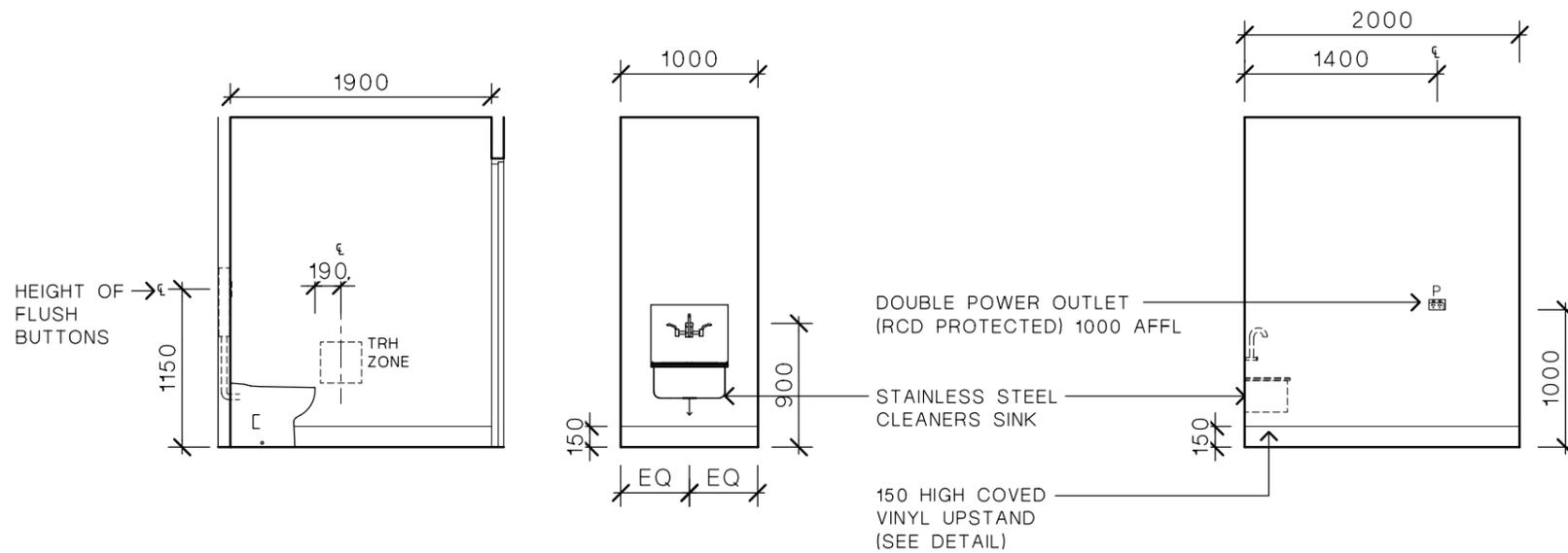
NOTE: FOR INTERNAL ELEVATIONS OF THE ACCESSIBLE WC CUBICLE, REFER TO THE BUILDING CODE (NZS 4121)



B1 ELEVATION
SCALE = 1:50 @ A3

B2 ELEVATION
SCALE = 1:50 @ A3

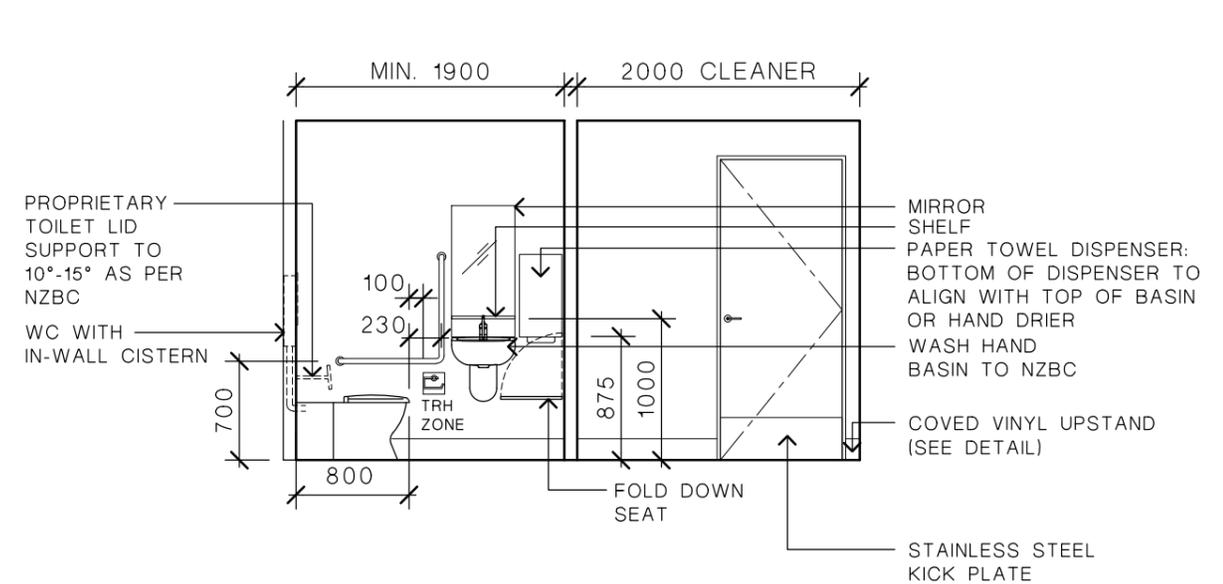
B3 ELEVATION
SCALE = 1:50 @ A3



B4 ELEVATION
SCALE = 1:50 @ A3

B5 ELEVATION
SCALE = 1:50 @ A3

B6 ELEVATION
SCALE = 1:50 @ A3



B7 ELEVATION
SCALE = 1:50 @ A3



Published by the New Zealand Ministry of Education,
Education Infrastructure Service, February 2017

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PO Box 1666, Thorndon 6140
Wellington, New Zealand

www.education.govt.nz

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