TS 04955.2:2.0

ESB 004

Standard

Services, Systems and Equipment

Part 2: Stations

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Document history

Revision	Effective date	Summary of changes
1.0	31/08/2022	Supersedes ESB 004, v1.1. First issue as TS 04955.2. Version number recommenced in line with new designation.
2.0	28/03/2024	Second issue. Changes include broadening scope to apply to metro stations.

Preface

This standard is the second issue as TS 04955.2.

This document forms part of TS 04955 series of documents related to services, systems and equipment.

Transport facilities are considered an increased risk environment with constraints that may not be present in other buildings. Specific requirements are therefore necessary to ensure the safety, functionality and desired technical characteristics of the services and systems installations present within a transport facility.

This document outlines the requirements and guiding principles associated with services, systems and equipment for train stations and metro stations. This document contains functional, technical and operational requirements.

Changes from the previous version include broadening the document scope to include metro stations.

This document should be read in conjunction with TS 04955.1.

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1 Scope

This standard sets the requirements for services and systems at stations (train stations and metro stations) across NSW, to facilitate compliance with legislative and TfNSW requirements.

This document covers services, systems, infrastructure and equipment in stations.

Services and systems provided in stations depend on the size and importance of a station, and the functional and operational environment. Stations may include partially enclosed or fully enclosed structures or buildings of different sizes.

Refer to TS 04955.1 for detailed list of services, systems, infrastructure and equipment in TfNSW facilities, including stations.

2 Application

This document applies to personnel involved in the provision of services and systems for stations.

This document applies to new installations, and upgrades, additions and changes to existing installations.

This document applies to the planning, design, construction, operation, maintenance, and decommissioning stages of services and systems life cycle.

This document should be read in conjunction with TS 04955.1.

3 Referenced documents

The following documents are cited in the text. For dated references, only the cited edition applies. For undated references, the latest edition of the referenced document applies.

Transport for NSW standards

TS 00008.2 *Fire Life Safety – Part 2: Stations*

TS 00050 *Video Surveillance System Architecture*

TS 03954 *Low Voltage Electrical Installations*

TS 04935 (T HR SS 80001) ST *Infrastructure Lighting*

TS 04936 (T HR SS 80003 ST) *Infrastructure Emergency Lighting*

TS 04955.1 *Services, Systems and Equipment – Part 1: Principles*

TS 04955.3 *Services, Systems and Equipment – Part 3: Lifts*

TS 04955.4 *Services, Systems and Equipment – Part 4: Escalators and Moving Walks*

TS 04989 *Public Transport Closed Circuit Television Functional Requirements Standard*

TS 04992 *Surface Transport Fixed Infrastructure Physical Security Standard* (This document is not publicly available. To obtain access email standards@transport.nsw.gov.au)

TS 06207 (T MU TE 61006 ST) *Help Points*

Legislation

Rail Safety National Law (NSW) 2012 (NSW)

Transport Administration Act 1988 (NSW)

4 Terms, definitions and abbreviations

The following terms, definitions and abbreviations apply in this document:

ECS environmental control system; HVAC and other ventilation systems

HVAC heating, ventilation and air conditioning

metro station a place to get on and off metro services

SFAIRP so far as is reasonably practicable

station includes train station and metro station

train station a place to get on and off trains

TfNSW Transport for NSW

5 General requirements

The provision of services, systems, and equipment in stations shall comply with TS 04955.1.

Station services, systems and equipment shall facilitate safety SFAIRP. Requirements in *Rail Safety National Law (NSW) 2012* and the *Transport Administration Act 2018* apply.

6 Services

6.1 General

All station services and systems installations shall observe safe separation distances to high voltage overhead line and traction structures, and related safety precautions. Services, such as services crossing a station concourse or a pedestrian bridge, should not run above high voltage overhead lines.

Above-ground metallic components of services, systems and equipment shall observe 2.5 m clearance from any metallic structure that can become electrified.

Maintenance access to all services and systems installations shall be available at all times. Station services and systems shall not be located in areas where access can only be achieved

by securing a possession, for example under platform copings. All equipment shall be accessible from behind the platform yellow line. Where platform edge screen doors are provided the same principle shall be applied for access to services.

Services and systems installations shall be mounted such that they do not impede access paths, circulation routes or create a hazard to station users or interfere with access to any equipment.

6.2 Heating, ventilation and air conditioning

6.2.1 General

HVAC shall support normal and emergency operation of a station, and include smoke management and smoke exhaust, designed, constructed and operated to comply with location-specific fire life safety strategy and the resultant fire engineered solution.

6.2.2 Occupied spaces

Concourse and platform areas are large spaces where adequate air conditioning can be difficult to achieve. Additional contaminant sources from the trains (such as brake dust) are often present at stations. Airflow effects from the trains moving into and out of the station shall be taken into account while designing station air conditioning and ventilation.

Natural ventilation shall be prioritised over mechanical ventilation where reasonably practicable, to ventilate concourses, platforms and similar transit spaces. For stations open to outdoor ambient conditions, architectural features such as awnings and shades may be used to achieve acceptable comfort conditions.

Natural ventilation shall aim to maintain the temperature of ambient conditions. The temperature shall not exceed a maximum of 5^{o}C above ambient temperature.

Air conditioning to public spaces of above ground and underground stations shall be provided where ventilation alone is not able to ensure acceptable standards of passenger comfort.

In underground and enclosed stations, the concourse cavern and each of the platform levels shall be equipped with separate air-conditioning and ventilation systems, with each system capable of maintaining design conditions during normal operation and fire emergency. This is not required for stations where the concourse cavern and the platforms are in the same space cavity.

Air-conditioning and ventilation system supply and exhaust points shall be arranged to provide sufficient air movement to avoid capture and stagnation of warm air in the platform space.

Canopies and shading structures shall be capable of restricting at least 80% of summer solar radiation to improve the thermal comfort of sheltered occupants.

6.2.3 Track exhaust and smoke extract

The following shall be evaluated to determine the provision of track exhaust systems at underground and enclosed stations:

- tunnel ventilation interfacing requirements
- fire engineered smoke exhaust requirements
- train brake dust
- heat dissipation (for example, from trains, air-conditioning plant and so on)
- station environmental conditions, air-conditioning and ventilation requirements
- mitigation of trackside air infiltration into the station environment.

Where track exhaust is provided, the under-platform exhaust system shall be designed to prevent dissemination of brake dust.

Where connected to the over track exhaust system, station ECS ductwork shall be utilised as a dual-purpose system, operating as a smoke exhaust system for the following areas:

- track and platform smoke extract to maintain tenable conditions during a fire emergency, for the length of time required for emergency evacuation of the station and adjacent tunnel
- where applicable, underground concourse smoke extract to maintain tenable conditions during a fire emergency, for the length of time required for emergency evacuation of the station and adjacent tunnel.

The station air-conditioning and ventilation system shall be integrated with adjacent tunnel and track ventilation systems to ensure that all relevant systems are designed, constructed, and operated as a coordinated, holistic solution.

All trackway exhaust system exhaust discharge points shall be located greater than 12 m from any air intakes including, but not limited to, the following:

- station entrances
- openings from platforms to concourses
- air-conditioning and ventilation fire air intakes
- tunnel draught relief shaft outlets and intakes
- tunnel ventilation fan intakes.

6.2.4 Concourse exhaust and smoke extract

The concourse exhaust and smoke extract system shall be designed as part of the ventilation arrangement to provide the following:

- exhaust to ensure comfortable conditions for the users during day-to-day operation
- smoke extract to ensure tenable conditions during a fire emergency, for the length of time required for emergency evacuation of the station and adjacent tunnels if attached to the station.

6.2.5 Exhaust and smoke extract for on-grade and open stations

Exhaust and smoke extract systems may be provided for on-grade and open stations including elevated parts of the station and elevated platforms, depending on station design and configuration of station spaces.

6.3 Lifts and escalators

Lifts in stations shall comply with TS 04955.3. Escalators and moving walks in stations shall comply with TS 04955.4.

6.4 Electrical

Electrical services in stations shall comply with TS 03954.

6.5 Lighting

Lighting services in stations shall comply with TS 04935.

Emergency lighting services in stations shall comply with TS 04936.

6.6 Hydraulic

Pipe for underground installations near 1500 V dc track should be non-metallic.

Where this is not possible, in-ground metallic pipes greater than 50 mm diameter shall be layered with a corrosion protection system (petrolatum impregnated synthetic fabric tape). Any metallic pipe serving a building or facility located near 1500 V dc structures shall be equipped with an isolating spool, installed in an approved location at the boundary of the rail corridor. All exposed metallic pipework shall be adequately bonded to earth to minimise the effects of stray current corrosion.

Platform drainage systems shall enable the platform to be drained centrally (that is, not towards the track) and to then discharge water to the stormwater drainage system. Ponding on platforms shall not be permitted. Stations with underground or completely covered platforms, concourses

and so on, shall be drained to gravity or pumped stormwater systems to accommodate flows associated with accidental damage to piping systems or sprinkler discharge.

Station or platform stormwater, or both, shall not drain to the track or into the track drainage in the adjacent rail corridor, at any time.

6.7 Fire

The risk of injury or fatality during normal rail operation, or in case of an adverse event such as an accident, collision or fire, shall be eliminated or minimised SFAIRP. Requirements in *Rail Safety National Law (NSW) 2012* apply.

The design, installation and operation of all station services and systems that serve passenger rail network facilities including stations, tunnels, and ancillary buildings shall identify and manage relevant risks and include appropriate mitigation measures that are compliant with fire safety strategy for a particular location.

Fire life safety services for stations and adjacent infrastructure, for example tunnels, shall comply with TS 00008.2.

7 Systems

7.1 Electronic security

7.1.1 General

Rail security networks are integrated to provide 24/7 support and coordination to achieve a timely and efficient response to network infrastructure incidents.

The extent of electronic security installations that are required at a particular location shall be determined in response to a specific risk assessment prepared in collaboration with the operator or maintainer and TfNSW security agencies. Refer to TS 04989 and TS 04992 for more information and requirements.

Station alarms shall be installed in accordance with TS 04992 including remote monitoring through a centralised security monitoring centre.

7.1.2 Help points

Help points shall be integrated with the CCTV systems. Help points shall be compliant with TS 06207 and TS 04992, to allow emergency communication.

7.1.3 CCTV

CCTV shall comply with TS 04989 and TS 00050. The operator or maintainer shall undertake CCTV surveillance for the following purposes:

- safety and security of staff and customers
- protection of property and other assets
- effective network operations and protection of public interest
- deterrence, prevention, reduction, investigation and prosecution of crime in areas monitored by CCTV
- provision of evidence to the police and authorised agencies.

In addition to security functions, where required by fire engineered solutions, CCTV cameras shall be installed in nominated locations to aid fire life safety response. Refer to TS 00008.2 and TS 04955.1 for further requirements.

7.1.4 Train guard visual access CCTV

On station platforms with difficult or obstructed sightlines, a locally positioned platform visual aid monitor (VAM) shall be used where necessitated by platform physical layout to provide feeds from CCTV cameras to facilitate visual aid to train guards.

7.1.5 Remote operation of toilet doors

CCTV shall be installed to capture toilet entrances in accordance with TS 04989 and to assist the operation of unlocking passenger toilets that are not within a direct line of sight of station staff, without them having to leave their post.

For unmanned stations, operation from a remote location on the network should be enabled.

7.2 Electronic ticketing

Electronic ticketing in stations shall comply with TS 04955.1.

7.3 Customer information systems

For customer information systems in stations, refer to TS 04955.1 for a list of standards that apply.

8 Infrastructure

Transport infrastructure systems extend network wide to facilitate train operation and customer service.

8.1 Infrastructure integrated with stations

Refer to TS 04955.1 for requirements for rail network infrastructure and public infrastructure that is integrated with stations.

8.2 Infrastructure not integrated with stations

Rail network infrastructure systems that are passing through a station but are not connected to any of the station systems and services (for example, signalling installations) are not covered by this document.

However, while some of the infrastructure systems are not required to be connected to any equipment on a particular station, they still require accommodation within the station spaces, utilising agreed and coordinated service routes.

The following are examples of rail-network-wide infrastructure that can pass through a station without necessarily being connected to station services or systems. These infrastructure routes shall be coordinated with station architectural and structural features as well as station engineering systems and services:

- track, including track geometry, track support, clearance limits and requirements
- civil, including bridges and civil structures, and related road and pedestrian structures, retaining walls, platform structures, overhead wiring support structures, tunnels, and track drainage
- signal, including signals and control systems, guards indicators, level crossings
- traction power, electrical HV, and LV power distribution systems that pass through but do not feed power to the station.

9 Maintenance and upgrade strategies

All services, systems and equipment maintenance and upgrades shall comply with TS 04955.1. These strategies shall be applied within the context of a station environment and appropriate possession frameworks.

10 Assurance

All services, systems and equipment shall be assured in accordance with TS 04955.1.