

Master Specification Part PC-EDM2

Safety Management in Design

September 2024



Government of South Australia
Department for Infrastructure
and Transport

Build.
Move.
Connect.

Document Information

Document Information	
K Net Number:	13502442
Document Version:	1
Document Date:	30/09/2024

Document Amendment Record

Version	Change Description	Date
0	Initial issue	31/08/2023
1	Updated cover page	30/09/2024

Document Management

This document is the property of the Department and contains information that is confidential to the Department. It must not be copied or reproduced in any way without the written consent of the Department. This is a controlled document and it will be updated and reissued as approved changes are made.

Contents

Contents	3
PC-EDM2 Safety Management in Design	4
1 General	4
2 Documentation	4
3 Prevention through design principles	4
4 Safe systems approach	5
5 Safety in Design	5
6 Crime prevention through environmental design (CPTED)	8
7 Road Safety Audit	9
8 Hold Points	9

PC-EDM2 Safety Management in Design

1 General

- a) This Master Specification Part sets out the requirements for the incorporation of design processes to manage the safety risk during construction, operational and maintenance phases of the Works and Temporary Works, including:
 - i) the documentation requirements, as set out in section 2;
 - ii) prevention through design principles, as set out in section 3;
 - iii) safe systems approach, as set out in section 4;
 - iv) Safety in Design, as set out in section 5;
 - v) crime prevention through environmental design (CPTED), as set out in section 6;
 - vi) Road Safety Audits, as set out in section 7; and
 - vii) the Hold Point requirements, as set out in section 8.
- b) The design of the Works and Temporary Works must comply with the Reference Documents, including:
 - i) Australian Safety and Compensation Council (ASCC): Guidance on the Principles of Safe Design for Work (available from: <https://www.safeworkaustralia.gov.au/>);
 - ii) Safe Work Australia: Code of Practice on the Safe Design of Structures (available from: <https://www.safeworkaustralia.gov.au/>);
 - iii) Safe Work Australia: How to Determine What is Reasonably Practicable to Meet a Health and Safety Duty;
 - iv) Consult Australia: Safety in Design Toolkit (available from: <http://www.consultaustralia.com.au/>);
 - v) Austroads - Safe System Assessment Framework (AP-R509-16); and
 - vi) Crime Prevention Through Environmental Design, Guidelines for Queensland (available from: <https://www.police.qld.gov.au/safety-and-preventing-crime>).
- c) The design, construction, operation and maintenance of the Works must comply with all applicable Laws, including:
 - i) *Work Health and Safety Act 2012* (SA); and
 - ii) *Work Health and Safety Regulations 2012* (SA).

2 Documentation

2.1 Safety in Design procedure

The Contractor must document the Safety in Design procedure as set out in section 5.2.

2.2 Safety in Design report

In addition to the requirements of PC-EDM1 “Design Management” and PC-CN3 “Construction Management”, the Design Documentation and Construction Documentation must include the Safety in Design report as set out in section 5.4.

3 Prevention through design principles

The Contractor must adopt the following principles in the development of the Design Documentation:

- a) hazard identification and risk assessment processes must be integrated early in the project lifecycle and design development process prior to the Preliminary Design Documentation submission to prevent or eliminate risk and minimise the risks of injury throughout the life of the infrastructure;
- b) Safety in Design processes must be implemented as early as possible to enable the elimination of hazards, and to allow for effective risk control measures and efficiencies to be incorporated; and
- c) effective Safety in Design processes must be implemented so that the design of the Works and Temporary Works prioritises the safety of infrastructure for constructors, users and maintainers in ways that benefit the business, workers, operators, maintainers, users and the general public.

4 Safe systems approach

The Contractor must place a high importance on improving road safety and the adoption of a safe systems approach to incorporate a holistic view of the road transport system and the interactions among roads and roadsides, travel speeds, vehicles and road users in the development of the Design Documentation, including adoption of the following principles:

- a) people make mistakes. Humans will continue to make mistakes, and the transport system must accommodate these. The transport system should not result in death or serious injury as a consequence of errors on the roads;
- b) human physical frailty. There are known physical limits to the amount of force human bodies can take before humans are injured; and
- c) a forgiving road transport system. A safe system ensures that the forces in collisions do not exceed the limits of human tolerance. Speeds must be managed so that humans are not exposed to impact forces beyond their physical tolerance. System designers and operators need to take into account the limits of the human body in designing and maintaining roads, vehicles and speeds.

5 Safety in Design

5.1 General

- a) The Contractor must incorporate the prevention through design principles as set out in section 3 and processes as detailed in the Design Management Plan into the development of the Design Documentation.
- b) For the purposes of Section 294 of the *Work Health and Safety Regulations 2012 (SA)* "Person who commissions work must consult with designer", the Contractor must liaise and consult with the Principal with regard to risks to health and safety arising from the design during the construction of the infrastructure.
- c) The Contractor must consult and liaise with authorised representatives of stakeholders who will be:
 - i) constructing the Works and Temporary Works;
 - ii) accessing, operating or utilising the completed Works and Temporary Works; and
 - iii) maintaining the Works and Temporary Works post construction.

5.2 Safety in Design procedure

- a) The Contractor must have a documented Safety in Design procedure outlining the process of managing design implications in construction, operational and demolition phases of the project in accordance with the Reference Documents, including the Safe Work Australia: Code of Practice on the Safe Design of Structures.

- b) The Contractor must document a Safety in Design procedure, which:
- i) complies with the requirements of the Contract Documents, including the Reference Documents;
 - ii) establishes the context for the design;
 - iii) identifies the foreseeable uses of the design;
 - iv) documents processes and methodologies to undertake Safety in Design and identifies what stages of design these process and methodologies will be undertaken;
 - v) details how hazards are to be identified that may materialise during construction, operations and demolitions, including categorisation of each hazard against each phase and at a minimum details the hazard analysis in accordance with section 5.3;
 - vi) details how the Detailed Design Documentation will be assessed prior to the relevant submission of the Detailed Design Documentation and following the hazard analysis required by section 5.3;
 - vii) details how the Final Design Documentation will be assessed prior to the relevant submission of the Final Design Documentation and following the hazard analysis required by section 5.3;
 - viii) details how the Issued for Acceptance Design Documentation will be assessed prior to the relevant submission of the Issued for Acceptance Design Documentation and following the hazard analysis required by section 5.3;
 - ix) details how the identified hazards, proposed safety controls, residual risks and their treatment status based on the SFAIRP principle will be recorded in a Safety in Design risk register;
 - x) includes a CPTED procedure in accordance with section 6;
 - xi) ensures that the design process for each design stage review is monitored and reviewed; and
 - xii) ensures that the Principal and relevant Third Parties (including as required by Third Party Agreements) are consulted regarding Safety in Design.
- c) Subject to section 5.2d), the Safety in Design procedure must be separate from the Design Management Plan, and submitted for review, which will constitute a **Hold Point**. The hazard analysis and risk register in accordance with section 5.3 must not be undertaken until this Hold Point is released.
- d) Subject to the acceptance of the Principal, the Safety in Design procedure may be incorporated within the Design Management Plan.

5.3 Hazard analysis and risk register

- a) The Contractor must undertake and coordinate a hazard analysis with the Principal's maintenance, operational personnel, emergency services personnel and the Contractor's construction team:
- i) to assess the Tender Design (where available) or the Preliminary Design Documentation (where a Tender Design is not available) of the Works and Applicable Temporary Works immediately following the Commencement Date and prior to Preliminary Design Documentation submission;
 - ii) to assess the Preliminary Design Documentation following the Preliminary Design Documentation submission and prior to the Detailed Design Documentation submission;
 - iii) to assess the Detailed Design Documentation following the Detailed Design Documentation submission and prior to the Final Design Documentation submission;

- iv) to assess the Final Design Documentation following the Final Design Documentation submission and prior to the Issued for Acceptance Design Documentation submission;
 - v) which must be in accordance with the Safety in Design procedure;
 - vi) to identify and assess hazards and risks to be managed through the project lifecycle to mitigate the risk SFAIRP;
 - vii) which records the identified hazards, proposed safety controls, residual risks and their treatment status based on the SFAIRP principle, in a Safety in Design risk register;
 - viii) to assess the design utilising a safe systems approach; and
 - ix) to assess the impact on current and proposed operational and maintenance procedures.
- b) The Contractor must utilise the outcome of each hazard analysis required by section 5.3a) in the development of the Safety in Design risk register(s) in accordance with section 5.3c), to demonstrate the relevant Design Documentation has mitigated the risk SFAIRP.
- c) The Contractor must produce Safety in Design risk register(s), which must be included in all relevant submissions of the Construction Documentation and Design Documentation, including Preliminary Design Documentation, Detailed Design Documentation, Final Design Documentation, Issued for Acceptance Design Documentation and Issued for Construction Design Documentation.

5.4 Safety in Design reporting

- a) The Contractor must as part of each Design Documentation and Construction Documentation submission prepare a written Safety in Design report which includes:
- i) a summary of the process to identify hazards and addressing safety risks within the design;
 - ii) assessments and outcomes from addressing safety risks and hazards in the design including:
 - A. records of the consultation with stakeholders on Safety in Design;
 - B. CPTED in accordance with section 6; and
 - C. hazard analysis and Safety in Design risk registers;
 - iii) consideration of how construction, maintenance and operational risks that can be ameliorated by the design process will be addressed, including the following considerations when submitted as part of the Construction Documentation, or when submitted as part of the Design Documentation for those aspects that are known at that time:
 - A. positioning of site access and egress points during construction;
 - B. location of site facilities and accommodation;
 - C. location of traffic and pedestrian routes and proximity to traffic (where applicable);
 - D. safe work at height requirements;
 - E. working in confined spaces and excavations; and
 - F. issues relating to working adjacent to or with live Utility Services, including high voltages or pressures, overhead clearances, dangerous excavations and asbestos materials;
 - iv) how safety in the use and operation of the Works and Applicable Temporary Works will be addressed (if not addressed in other reports); and
 - v) evidence that satisfies the requirements of Section 295 of the *Work Health and Safety Regulations 2012* (SA).

- b) Each Safety in Design report must be used to inform the Construction Documentation, including the Construction Methodologies and Construction Procedures.
- c) Following the last of the Works Design Packages to reach Issued for Construction Design Documentation stage, the Contractor must issue a consolidated Safety in Design report detailing all the Safety in Design processes and outcomes for all design disciplines in a single, holistic and complete report for review. The review will constitute a **Hold Point**.

6 Crime prevention through environmental design (CPTED)

6.1 General

- a) The Contractor must place high importance on safety of the public, users and maintenance personnel using the facilities following completion of the Works and Applicable Temporary Works and during the ongoing operation and maintenance of the facility in the development of the Design Documentation, including adoption of the following guiding principles:
 - i) surveillance: passive or natural surveillance;
 - ii) legibility: allow people to easily understand where they are and how to get to where they are going;
 - iii) territoriality: aware of public and private territory and not trespassing by accident;
 - iv) ownership of the outcome: feeling of individual and community ownership of the public realm;
 - v) management: places that are managed and maintained encourage active legitimate use; and
 - vi) vulnerability: reduce or limit risk from assault.
- b) The Contractor must ensure that CPTED principles are integrated within the design management process and procedures.

6.2 Design requirements

Physical environments must be designed in order to lessen the opportunity for crime by creating environmental and social conditions that:

- a) maximise risk to potential offenders (increasing the likelihood of detection, challenge and apprehension);
- b) maximise the effort required to commit crime (increasing the time, energy and resources required to commit crime);
- c) minimise the actual and perceived benefits of crime (removing, minimising or concealing crime attractors and rewards); and
- d) minimise excuse-making opportunities (removing conditions that encourage and facilitate rationalisation of inappropriate behaviour).

6.3 CPTED procedure

- a) The Contractor as part of the Safety in Design procedure required by section 5.2 (subject to section 6.3e) must develop a CPTED procedure detailing the processes to review and demonstrate how the design will be analysed and the completed works will be reviewed to demonstrate that the requirements of this Master Specification Part, including the CPTED principles have been incorporated.
- b) The Contractor must engage South Australia's police crime prevention unit to also complete an independent review of relevant information of how well the design assists in prevention of crime.

- c) In developing and implementing the CPTED procedure the Contractor must comply with the Reference Documents.
- d) The Contractor must ensure that CPTED principles and procedures are integrated within the design development process and procedures.
- e) Subject to the acceptance of the Principal, the CPTED procedures may be incorporated within the Design Management Plan.

7 Road Safety Audit

Road Safety Audits must be completed in accordance with RD-GM-D2 "Road Safety Audits".

8 Hold Points

Table PC-EDM2 8-1 details the review period or notification period, and type (documentation or construction quality) for each Hold Point referred to in this Master Specification Part.

Table PC-EDM2 8-1 Hold Points

Section reference	Hold Point	Documentation or construction quality	Review period or notification period
5.2c)	Safety in Design procedure	Documentation	10 Business Days review
5.4c)	Consolidated Safety in Design report	Documentation	10 Business Days review