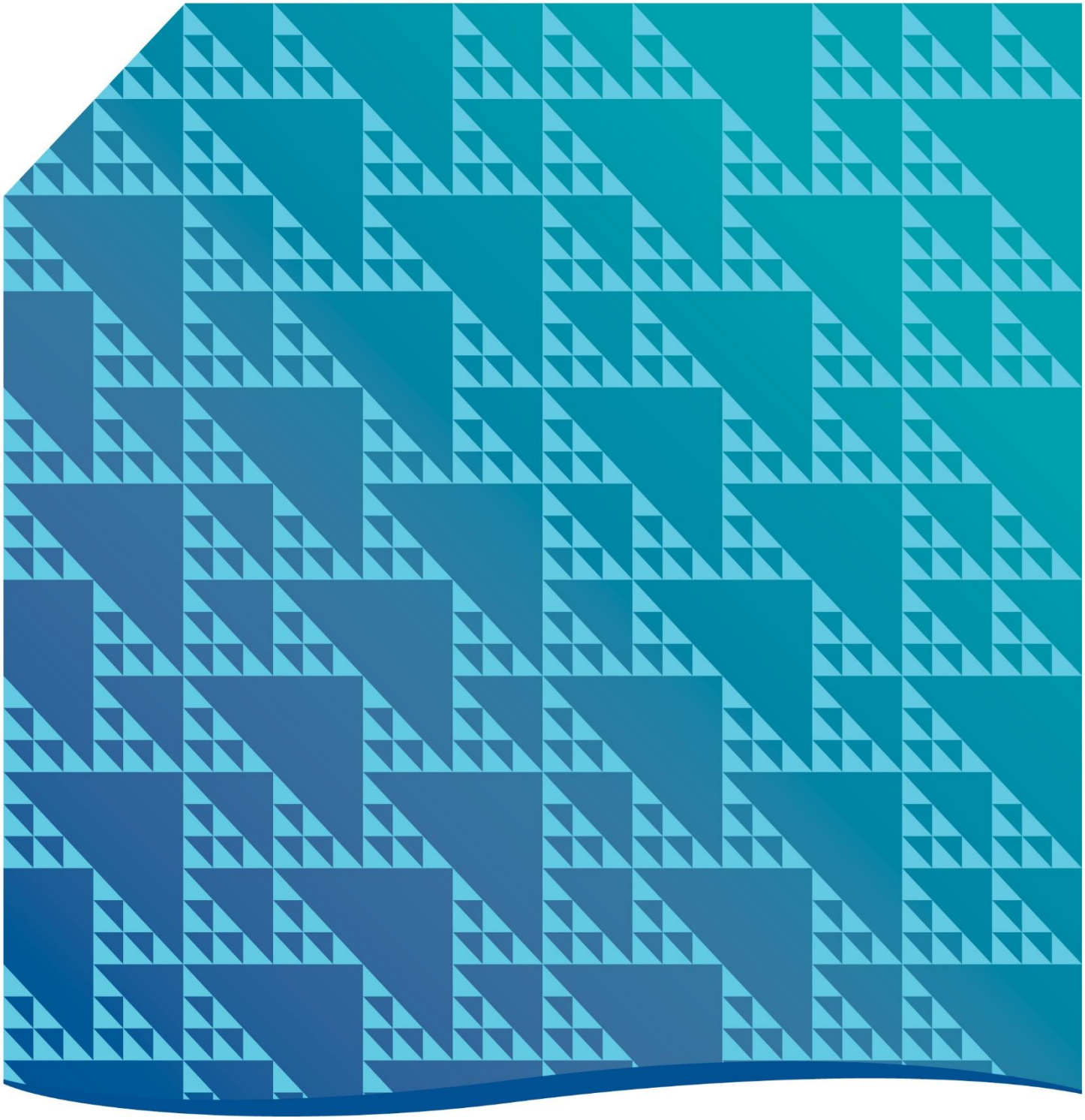
Professional Services
Specifications (PSS)

S2 – Structures Design

Last updated:
August 2020



Department of State Growth

Tasmanian Government

Contents

Revision History

Version No.	Date	Description of changes
1.1	17 Aug 2020	Template updated and old references to superseded documents/entities updated

S2.1 Scope

This Professional Services Specification (PSS) sets out the requirements for design of projects. It applies to the design for the reinstatement and reconstruction of existing Transport Infrastructure, the design of new alignments, bridges, and other structures.

S2.2 Process

The design shall be undertaken in two stages.

- Stage 1: Preliminary Design – This stage shall develop options for meeting the project objectives, identify the constraints and risks for the options and recommend the option that most fully meets the requirement of the Brief.
- Stage 2: Final Design – This stage will develop the accepted preliminary design to a set of tender documents including drawings, specification and Design Report.

S2.3 Standards

The design shall be in accordance with:

- the Tasmanian *Traffic Act 1925*;
- Tasmanian *Road Rules 2019*;
- Cross sections and Clearances requirements of **Appendix S2.B**;
- Parts of the Professional Services Specifications;
- Australian Standards;
- Austroads Guidelines;
- other relevant authorities publications.

with precedence as listed.

S2.4 Preliminary Design

A Preliminary Design Report shall be prepared and shall as a minimum:

- state the project objective;
- define the standard to which the project is being designed;
- define the design vehicle including any variation between various design elements;
- identify any proposed departures from Austroads Guidelines, other parts of this Standard Brief or Australian Standards and the reasons for the departure;
- identify the risk to the Principal;
- include an estimate of cost of the project. This estimate should be based on the significant construction cost items. An item for any necessary access management options and land acquisition shall be identified separately. The amount of the contingency item must be stated

The order of accuracy of the estimated cost should be such that the final cost is within a range of +20% to –10% of the Preliminary Design estimate.

- include Preliminary Design Drawings which have sufficient information such that the functionality of the design can be determined from the drawings.

S2.5 Final Design

S2.5.1 Property Drawings

These drawings shall show the property boundary adjustments that are required to provide sufficient land for the construction of the project.

S2.5.2 Tender Documentation

The requirements for Tender Documents are defined elsewhere in this Standard Brief. The standard Schedule of Rates or Bill of Quantities shall be used without alteration where ever possible. If the Consultant considers alternative payment items are required they shall be included in Part 1 in the Schedule of Rates or Part 11 of the Bill of Quantities as Project Specification Items. Payment clauses shall be provided for Project Specific Items.

Tender Documents shall provide all the necessary information for the setting out and construction of the works.

S2.5.3 Engineer's Estimate

The Engineer's estimate shall be as priced on the Schedule of Rates or Bill of Quantities.

The rates adopted shall be such that the total of all the items is within ±10% of the medium tender price received for the works.

S2.5.4 Calculation of Liquidated Damages

The Liquidated Damages shall be calculated in accordance with the standard Tender Documents Brief.

S2.5.5 Design Report

The Design Report shall provide all supplementary information to clearly explain why the major design decisions have been made. The Design Report is complimentary to the Tender Documents.

S2.6 Hold Points and Deliverables

A Schedule of Hold Points and Deliverables is attached in **Appendix S2.A**.

Appendix S2.A - Schedule of Hold Points and Deliverables

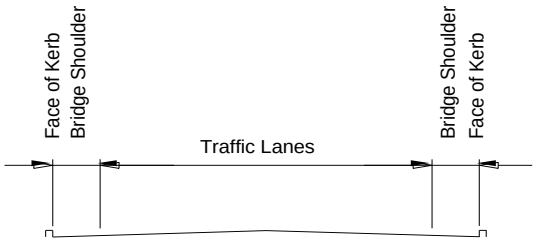
Schedule of Hold Points

Description of Hold Points	**Nominated Work not to proceed**
Acceptance of the Preliminary Design	Final Design
Acceptance of the Tender Documents	Printing of the Tender Documents

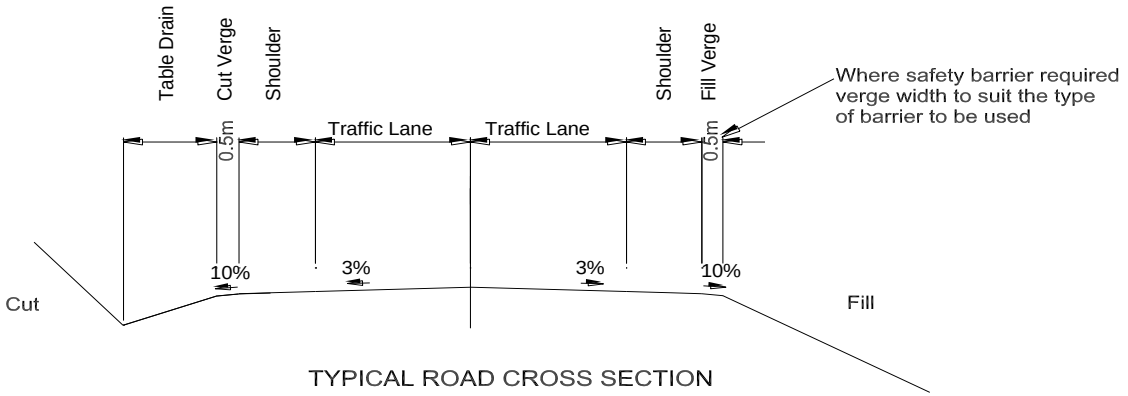
Schedule of Deliverables

Name	**Timing**	**No. of Copies in Format Shown**		
		Hard Copies		**Electronic Copies**
		Bound	**Unbound**	
Preliminary Design Report	At conclusion of Preliminary Design	3	0	0
Property Drawings	Three weeks after notification of acceptance of Preliminary Design	0	1	1#
Tender Documents	Hold point release copy 3 weeks prior to conclusion of Final Design	4	0	0
	At the conclusion of Final Design	20	0	1*#
Engineer's Estimate	At the conclusion of Final Design	0	1	1*
Calculation of Liquidated Damages	At the conclusion of Final Design	0	1	1*
Design Report	Three weeks after delivery of Tender Documents	3	0	1
Centreline Description	With Design Report	0	0	1

Appendix S2.B – Cross Sections and Clearances



TYPICAL BRIDGE CROSS SECTION



TYPICAL ROAD CROSS SECTION

DESIGN CROSS SECTIONS - ROADS & BRIDGES

Section	Traffic Lane Width (m)	Road Shoulders (m)	Long Bridge Shoulder (m)	Short Bridge Shoulder (m)	Max Length for Short Bridge (m)
Sealed					
A1	3.5	2	1	2	75
B1	3.5	1.5	1	1.5	30
C1	3.5	1	1	1	N/A
D1	3	1	1	1	N/A
D2	3	0.5	0.5	0.5	N/A
E1	2.75	0.5	0.5	0.5	N/A
Interchange Ramps	4	1	1	1	N/A
Unsealed					
F1	3.25	0.5	0	0	9
F2	3.25	0	0	0	9

NOTES:-

1. KERB AND GUTTER
Face of kerb and gutter to be located at back of shoulder.

2. CROSSFALLS
In areas subject to snow and high intensity rainfall ,and for unsealed pavements, typical crossfalls shall be 4%.

3. TABLE DRAIN
Table drain width shall be sufficient to ensure invert of table drain is 0.1m below sub base. Table drain slope shall not be steeper than 3:1, (desirable in flat terrain is 6:1).

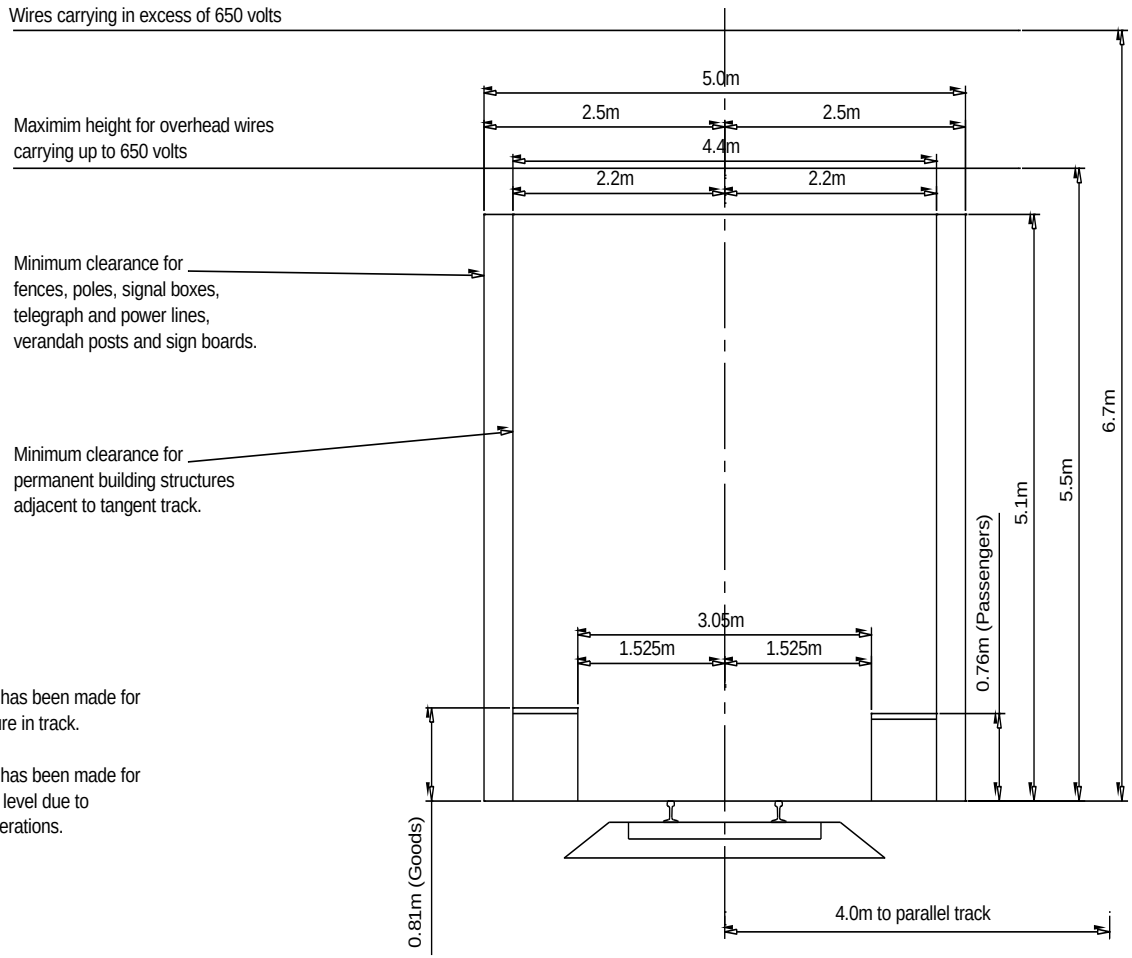
4. BRIDGES
For single lane bridges, lane width = 4.5m

5. Curve widening shall be applied to horizontal curves.

6. Right shoulder width for interchange ramps shall be 0.5m..

7. Dual carriageway median shoulder and verge widths shall be 1.0m and 0.5m. respectively.

8. EARTHWORKS
Nominal cut slopes shall be 1.5:1
Nominal fill slopes shall be 2:1

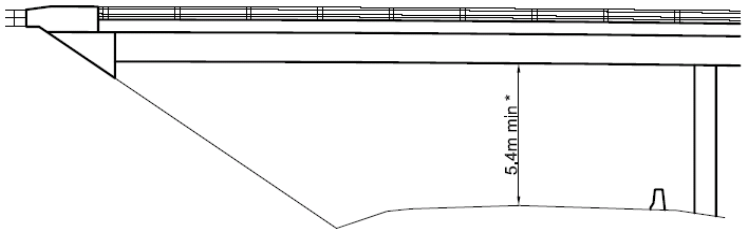


Copied from A.N.R.C. drawing R-97

NOTES:-

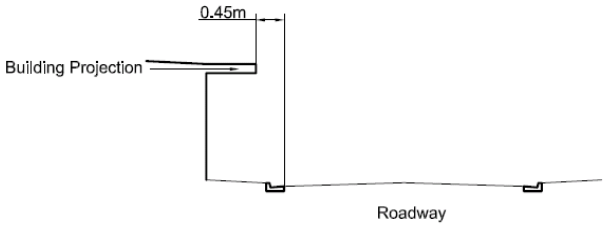
1. No allowance has been made for cant or curvature in track.

2. No allowance has been made for changes in rail level due to reballasting operations.

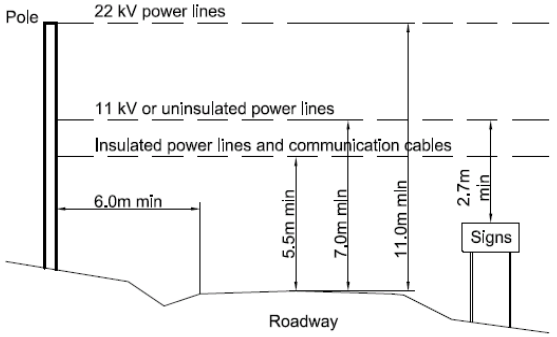


CLEARANCE TO STRUCTURES

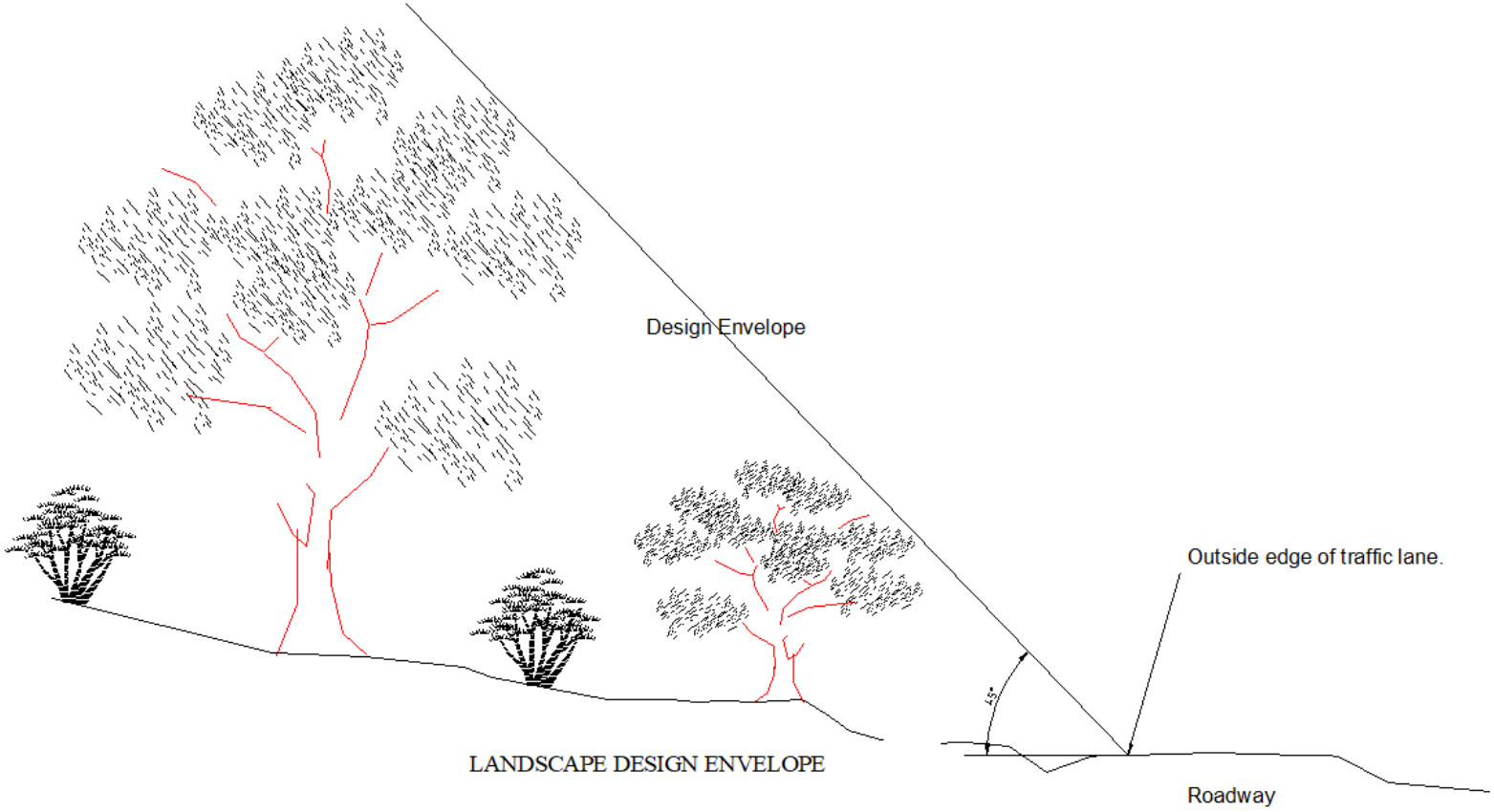
* +0.2m for pedestrian bridges



CLEARANCE TO BUILDINGS



CLEARANCE TO OVERHEAD SERVICES



LANDSCAPE DESIGN ENVELOPE

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