



BRIDGE TECHNICAL DIRECTION BTD2008/03

USE OF PROFILED STEEL SHEETING IN BRIDGES AND MINOR STRUCTURES

Background

This Bridge Technical Direction is about the use of proprietary profiled steel sheeting for permanent formwork in bridge structures designed in accordance with AS 5100 *Bridge Design*. It also covers the use of profiled steel sheeting for permanent formwork or formwork acting compositely with concrete slabs for minor structures designed in accordance with AS 3600 *Concrete Structures*.

Profiled steel sheeting is used extensively for the construction of floor slabs in interior environments in enclosed buildings with an expected design life of 40-60 years. Bridges are designed for a design life of 100 years. Profiled steel sheeting used in bridges will also be subject to the more aggressive exposure conditions in exposed exterior environments.

Information and Bridge Technical Direction

Proprietary profiled steel sheeting is supplied for use either as permanent formwork and reinforcement acting compositely with a concrete slab (referred to as participating permanent formwork in Clause 6.1.5 of AS 5100.6) or as permanent formwork only (non-participating permanent formwork).

The typical corrosion protection provided for the steel sheeting is claimed in manufacturers' literature to satisfy durability requirements specified by AS 3600 for exposure classifications A1, A2 and B1.

Based on the claimed durability of profiled steel sheeting, its use in bridges and minor structures shall be as follows:

1. Because the claimed design life of profiled steel sheeting is significantly less than the 100 years for bridges required by AS 5100 *Bridge Design*, profiled steel sheeting shall only be used as non-participating permanent formwork. However, profiled steel sheeting may be used as participating permanent formwork for minor concrete structures designed in accordance with AS 3600 *Concrete Structures* for a design life of 40 – 60 years.
2. Use of profiled steel sheeting shall be limited to interior and above ground exterior environments in exposure classifications A and B1 for bridges designed in accordance with AS 5100 and A1, A2 and B1 for other structures designed in accordance with AS 3600.
3. Direct contact between the profiled steel sheeting and supporting steel members is only permitted in exposure classification A. In exposure classification B1, approved durable insulation material shall be inserted between the profiled steel sheeting and supporting steel members.
4. The base metal of the profiled steel sheeting shall be a minimum 1.0 mm thick.
5. The protective zinc coating shall be at least Class Z450 to AS 1397.

Contact:	Mark Bennett
Section:	Bridge Engineering
Telephone no:	8837 0802
File no:	94M3917
Circular Number:	BTD2008/03

6. As the durability of the protective coating may be less than the bridge design life, the exposed surface of the profiled steel sheeting may require painting. To enable painting of exposed surfaces, the following shall apply:
 - The exposed surface of the profiled steel sheeting shall be smooth with no deep recesses and gaps;
 - Profiled steel sheeting shall not be used over carriageways of roads where repainting would require closure of any traffic lane or any restriction on speed or height of vehicles. As a general rule, profiled steel sheeting shall not be used over freeways, motorways, highways or multi-lane arterial roads. However, use of profiled steel sheeting over such roads may be considered by the Authority at bridge sites where the vertical clearance is significantly in excess of that required for traffic and for provision of temporary scaffolding for painting. Use of profiled steel sheeting over any other roads may be considered by the Authority based on repainting requirements.
7. Use of profiled steel sheeting shall be approved in writing by the Authority prior to commencement of design.

Effective date: 25/02/2008

Approved: Wije Ariyaratne
Principal Bridge Engineer

DISTRIBUTION:

All Bridge Engineering staff and Skill Hire Contractors

All registered holders of controlled copies of RTA Standard Bridge Drawings

All holders of controlled copies of the Bridge Technical Direction Manual

Corporate Document Registrar (Hard Copy and Electronic)

Manager, Asset Management Technology (Electronic)

Manager, Project Management Office (Hard Copy and Electronic)

Contact: Mark Bennett
Section: Bridge Engineering
Telephone no: 8837 0802
File no: 94M3917
Circular Number: BTD2008/03