COMMITTEE BD-092

**DR AS/NZS 4994.4:2017**

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# Draft for Public Comment Australian/New Zealand Standard

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## Temporary edge protection
## Part 4: Perimeter protection screens



STANDARDS Australia

STANDARDS NEW ZEALAND PAEREWA AOTEAROA

**Draft for Public Comment**
**Australian/New Zealand Standard**

The committee responsible for the issue of this draft comprised representatives of organizations interested in the subject matter of the proposed Standard. These organizations are listed on the inside back cover.

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The coordination of the requirements of this draft with those of any related Standards is of particular importance and you are invited to point out any areas where this may be necessary.

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For information regarding the development of Standards contact:
Standards Australian Limited
GPO Box 476
Sydney NSW 2001
Phone: 02 9237 6000
Email: mail@standards.org.au
Internet: www.standards.org.au

Standards New Zealand
15 Stout Street Wellington 6011
(PO Box 1473 Wellington 6140)
Freephone: 0800 782 632
Phone: (04) 498 5900
Email: enquries@standards.govt.nz
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**Draft for Public Comment**

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Committee BD-092—Temporary edge protection—Construction Practices

**DRAFT**

**Australian/New Zealand Standard**

# Temporary edge protection

## Part 4: Perimeter protection screens

(To be AS/NZS 4994.4:201X)

Comment on the draft is invited from people and organizations concerned with this subject. It would be appreciated if those submitting comment would follow the guidelines given on the inside front cover.

***Important: Please read the instructions on the inside cover of this document for the procedure for submitting public comments***

This document is a draft Australian/New Zealand Standard only and is liable to alteration in the light of comment received. It is not to be regarded as an Australian/New Zealand Standard until finally issued as such by Standards Australia/Standards New Zealand.

# PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee BD-092, Temporary edge protection—Construction Practices.

The objective of this Standard is to provide requirements for designers of perimeter screens and platforms, guardrails, stairways and ladders that are permanently or temporarily attached to the perimeter screens, to reduce the risks to the safety of persons working on such platforms and to prevent objects falling from the protected perimeters of the permanent structure during construction.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

*This Standard includes a commentary on some of the clauses. The commentary directly follows the relevant clause, is designated by ‘C’ preceding the clause number and is printed in italics in a box. The commentary is for information and guidance and does not form part of the Standard.*

# CONTENTS

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

# Australian/New Zealand Standard
# Temporary edge protection

## Part 4: Perimeter protection screens

## S E C T I O N 1 S C O P E A N D G E N E R A L

### 1.1 SCOPE

This Standard sets out the requirements for the design, manufacture, installation, re-positioning and dismantling of perimeter protection screens of height 1 m and above that are to be attached to formwork or to the permanent structure to provide edge protection for personnel and to minimise falling objects during construction.

NOTES:

1 For a checklist for design of perimeter protection screens, see Appendix A.

2 For a post-operational checklist for perimeter protection screens, see Appendix B.

3 For an illustration of typical components of screen installation, see Appendix C.

### 1.2 EXCLUSIONS

This Standard does not apply to similar screens that remain fixed to a permanent structure to prevent items being thrown from that structure or temporary anti-climbing screens.

### 1.3 NORMATIVE REFERENCES

The following are the normative documents referenced in this Standard:

DRAFTING NOTE: The Standards to be listed will be confirmed during the development of this Standard.

AS

1170 Structural design actions

1170.4 Part 4: Earthquake actions in Australia

1657 Fixed platforms, walkways, stairways and ladders

4100 Steel structures

AS/NZS

1111 ISO metric hexagon bolts and screws—product grade C

1111.1 Part 1: Bolts

1170 Structural design actions

1170.0 Part 0: General principles

1170.1 Part 1: Permanent, imposed and other actions

1170.2 Part 2: Wind actions

1170.3 Part 3: Snow and ice actions

1252 High strength steel bolts and associated nuts and washers for structural engineering

1554 Structural steel welding

1554.1 Part 1: Welding of steel structures

1554.6 Part 6: Welding stainless steel for structural purposes

AS/NZS
1577 Scaffold decking components

1664 Aluminium structures
1664.1 Part 1: Limit state design
1664.2 Part 2: Allowable stress design

1665 Welding of aluminium structures

4600 Cold-formed steel structures

4680 Hot-dip galvanized (zinc) coatings on fabricated ferrous articles

4994 Temporary edge protection
4994.1:2009 Part 1: General requirements

NZ
1170 Structural design actions
1170.5 Part 5: Earthquake actions in New Zealand

## 1.4 DEFINITIONS

For the purposes of this Standard the definitions below apply:

### 1.4.1 Containment sheeting

Sheeting that is fixed to the infill screen mesh to retain small particles including slurry that could pass through the mesh.

### 1.4.2 Deck gap

The gap between the concrete floor of a building and the nearest surface of the screen.

### 1.4.3 Guardrail

The highest rail in guardrailing fixed parallel to a floor or platform.

### 1.4.4 Guardrailing

A system of rails or panels, or both, that provides edge protection at the edge of a floor or platform or walkway.

### 1.4.5 Handrail

A rail that provides a handhold on a platform, walkway, stairway or step-type ladder.

### 1.4.6 Headroom

The minimum vertical distance, clear of all obstacles such as beams or brackets, above a platform or the slope line of a stair tread nosing.

### 1.4.7 Infill

Typically, a solid sheet material or a wire mesh attached to the screen frame that prevents a person or material from falling through the perimeter screen framing.

### 1.4.8 Ladder

**1.4.8.1** *Rung-type ladder*

A structure comprising stiles and rungs on which a person may stand or step in, ascending or descending.

**1.4.8.2** *Step-type ladder*

A structure comprising stiles and treads on which a person may stand on or step in, ascending or descending, and which incorporates handrails.

### 1.4.9 Ladder cage

A fixed enclosure that encircles the climbing space of a ladder.

### 1.4.10 Loading platform

A platform connected to the perimeter protection screen framework that is primarily intended for the storage of materials and equipment.

### 1.4.11 Platform bracket

A fabricated bracket attached to the frame of the perimeter screen to support a working platform.

### 1.4.12 Post

A structural component, other than infill, that is used to support a handrail or guardrailing.

### 1.4.13 Screen frame

A fabricated structure that supports the screen infill and singly or in multiples connects to form the perimeter protection screen.

### 1.4.14 Screen gap

The horizontal or vertical gap between adjacent screens.

### 1.4.15 Screen needle

A horizontal member that projects out from the supporting structure to which the screen rail is attached.

### 1.4.16 Screen pawl

A pivoted bar adapted to engage with the teeth of a ratchet wheel, bar or similar element to prevent movement or to impart motion.

### 1.4.17 Screen rail

A vertical member to which screen panels are attached and which itself is attached to the permanent structure

### 1.4.18 Screen shoe

The component connecting the screen rail to the screen needle.

### 1.4.19 Supporting structure

The structure of a building or other structure that is being constructed or an existing building that is being demolished.

### 1.4.20 Toeboard

A purpose-designed component fixed on edge at the edge of a platform to prevent materials from falling from the platform.

### 1.4.21 Working platform

A platform attached to the perimeter screen framework to support personnel, equipment and materials and used to provide a working area.

## 1.5 PRODUCT INFORMATION

### 1.5.1 Documented information

Appropriate documented information, in plain English and SI units, shall be provided for the perimeter protection screens. The information shall identify the supplier. Except where specified otherwise by this Standard, the information shall include at least the following:

(a) A list of all components with descriptions from which each can be identified.

(b) The nominal weight of each component, in kilograms.

(c) Instructions for erection, re-positioning and dismantling the perimeter protection screens.

(d) Guidance for the servicing and inspection of the equipment and the rejection of damaged components.

(e) Details giving sufficient information to determine—

(i) the maximum height of screens between connections to the supporting structure;

(ii) the maximum freestanding height of screens above highest connection to the supporting structure;

(iii) the maximum horizontal distance the screens can span between connections to the supporting structure;

(iv) the maximum number of platforms supported off a screen and the maximum working load per platform; and

(v) the maximum load that can be placed on a loading platform connected to a screen.

(f) Maximum loads imposed on the supporting structure.

(g) Method of connecting the screen framing to the supporting structure.

(h) Method of safe lifting of screen assemblies by mechanical devices.

(i) Procedure for moving self-climbing screens

(j) Relevant limitations.

### 1.5.2 Maintenance information

As a minimum the following information, in plain English, shall be provided for maintenance:

(a) The frequency of inspections of an erected screen installation.

(b) Advice on correct storage to minimize weathering of components in store.

(c) The extent of physical or rust damage that will require replacement or repair of a component.

(d) Procedures to repair damage to components.

## 1.6 REPAIRS AND MAINTENANCE

All components shall be repaired and maintained to ensure they are fit for purpose in accordance with manufacturers' specifications.

## 1.7 ALTERNATIVE DESIGN METHODS AND MATERIALS

Alternative design methods and materials that are not specified herein may be used, provided it can be demonstrated that the resulting perimeter protection screen satisfies the strength, stability and operational requirements specified in this Standard.

Service life durability shall be a consideration in any assessment of new materials.

# SECTION 2 DESIGN REQUIREMENTS

## 2.1 SCOPE OF SECTION

This Section specifies the parameters that need to be applied to produce a safe perimeter protection screen that may incorporate integral working platforms and loading platforms.

## 2.2 DESIGN REQUIREMENTS

### 2.2.1 General

The design of the perimeter protection screen and any attached platforms shall take into account the following:

(a) The strength, stability and stiffness of the supporting structure.

(b) The method of connecting the perimeter protection screen to the supporting structure.

(c) The need for temporary bracing during erection and dismantling.

(d) The provision of working platforms integral with a perimeter protection screen.

(e) The provision of loading platforms integral with a perimeter protection screen.

(f) The provision of edge protection on working platforms and attached loading platforms.

(g) The provision of formwork integral with the perimeter protection screen.

(h) Interface with formwork.

(i) Possible interference from construction work on adjacent floors.

(j) Method of lifting of the screen.

(k) Details of attachment points for lifting a screen.

(l) The attachment of containment cladding and signage, where required, to the face of the screen

(m) The provision of stairs, ladders and other forms of access.

(n) The safety of persons engaged in the erection, alteration and dismantling of the perimeter protection screen.

(o) The safety of persons accessing and moving around or between the platforms.

(p) The safety of persons in the vicinity of the perimeter protection screen.

(q) The site and environment conditions in which the perimeter protection screen is used.

(r) The service life of the perimeter protection screen.

### 2.2.2 Theoretical analysis

The perimeter protection screen and its component members and connections shall be analysed and designed by limit state procedures in accordance with the relevant Australian and New Zealand material Standards, and as modified by the requirements of this Standard. Potential modes of failure shall be detailed.

### 2.2.3 Testing

The perimeter protection screen and its components may be tested to confirm compliance with the requirements of this Standard.

### 2.2.4 Working platforms

The minimum width of a working platform attached to a perimeter protection screen shall be 450 mm. Platform components shall be positively fixed to the platform bracket. Where a person or object could fall from a working platform attached to a perimeter protection screen, edge protection shall be provided.

NOTE: Legislation regarding the prevention of falls should be followed when determining the distance a person could fall before edge protection is required.

Working platforms shall be designed for the intended superimposed live loading but shall be not less than 2.5 kPa uniformly distributed and a concentrated loading applied through an area 100 mm × 100 mm of not less than 1.1 kN at any point of the deck.

### 2.2.5 Loading platforms

Loading platforms attached to a perimeter protection screen shall be designed for the intended superimposed load including impact loading or 3 kPa, whichever is the greater. The dimensions of a loading platform shall be such as to provide clear access around materials intended to be stacked on the platform.

# SECTION 3 DESIGN AND FABRICATION

## 3.1 GENERAL

The design of the structural work comprising the perimeter protection screen framing, working platforms, ladders and guardrailing shall conform with the following:

(a) Aluminium—AS/NZS 1664.1 and AS/NZS 1664.2.

(b) Steel—AS/NZS 4600, AS 3900 or AS 4100.

(c) Welding—AS/NZS 1554.1, AS/NZS 1554.6 or AS/NZS 1665.

(d) Bolts—AS 1111.1 or AS/NZS 1252.

## 3.2 LOADING

Except where otherwise specified in this Standard, design loadings shall be in accordance with AS/NZS 1170.1. Environmental loads shall be in accordance with AS/NZS 1170.2 and AS/NZS 1170.3. In areas subject to earthquake, the effects of earthquake on an erected screen shall be assessed in accordance with AS 1170.4 in Australia or NZS 1170.5 in New Zealand.

The appropriate load factors and combinations of actions to determine the design actions shall be in accordance AS/NZS 1170.0.

NOTE: Netting may be attached to the screen to contain materials that may fall from the screen, its working platforms or from an adjacent floor of the permanent structure.

Guardrailing, toeboards and supported stairways shall comply with AS 1657.

Working platforms shall comply with Clause 2.2.4.

Normal loading of a perimeter protective screen edge protection components, including attached mesh, shall be assessed in accordance with AS/NZS 4994.1:2009, Appendix B.

Where perimeter protection screens may be subjected to dynamic impact loads from persons or materials, the respective affected components shall be assessed in accordance with AS/NZS 4994.1:2009, Appendices C, D and E as appropriate.

NOTES:

1 Consideration should be given to large signage attached to the external face of the screen mesh as this will affect the wind loading on the screen.

2 The interface with post tensioning installations anchorages should be considered when determining applicable loads on the screen structure and attached working platforms.

3 Shade cloth attached to the screen and when filled with rain water has the effect of impervious cladding when subjected to wind.

## 3.3 SLIP RESISTANCE

The surface of working platforms shall conform to the coefficient of friction requirements of AS/NZS 1577. The treads and rungs of ladders shall be slip resistant.

## 3.4 HEADROOM

The minimum headroom above any access platform or working platform shall be 2000 mm.

## 3.5 FIXING OF GUARDRAILING COMPONENTS

All guardrailing components shall be securely fixed, to ensure that guardrails, posts, intermediate rails and toeboards form an integral structure or system.

### 3.6 WELDING

Welds shall be dressed smooth, sharp edges removed and, where appropriate, plugs fitted to the end of pipe sections.

Welding of steel components shall be in accordance with AS/NZS 1554.1.

Welding of aluminium components shall be in accordance with AS/NZS 1665.

### 3.7 ATTACHMENTS WITHIN THE SCREEN FRAMEWORK

The methods of attachment shall be capable of sustaining the imposed actions, including the environment in which the fixing will be placed.

At every attachment point of a ladder, not less than two fixings shall be used (e.g. at the top of the ladder). Any fixing shall have a minimum tensile capacity of 1.5 kN.

Fixings shall be designed to prevent the deck surface of working platforms and loading platforms being dislodged and to minimize trip hazards.

### 3.8 LADDERS AND LADDER CAGES

Where twin-style rung type ladders and ladder cages are fitted on the outer facade of perimeter protection screens, they shall comply with AS 1657.

### 3.9 SCREEN COVERING

The external surface of a perimeter protection screen shall be enclosed to prevent objects from falling. The surface may be a solid sheet material, a perforated sheet material or galvanized welded steel wire mesh having openings not greater than 50 mm × 50 mm formed from 4 mm minimum diameter wire.

NOTE: These mesh dimensions may not comply with the requirements of Workplace Health and Safety Queensland.

The design shall consider the environmental impact of shadecloth or signage that will be attached to the screens.

### 3.10 SCREEN HEIGHT

The upper edge of the perimeter protection screen shall extend at least 1 m above the finished slab or incorporated working platform, whichever is the higher level.

### 3.11 SCREEN GAPS

Large gaps between screens and the concrete slab of a building will enable objects to get past the screens and fall. Screen gaps shall not exceed the following dimensions.

NOTE: Larger gaps may be reduced or closed off to prevent materials from falling.

(a) The vertical or horizontal gap between adjacent perimeter protection screens or elements of a screen shall not exceed 50 mm, as shown in Figure 3.11(A).

(b) Where the gap between screens exceeds 50 mm additional temporary measures shall be adopted such as a flexible flap that will not be damaged when one of the screens is being lifted, as shown in Figure 3.11(B).

(c) Where a gap between the perimeter protection screen and the edge of a concrete slab exceeds 30 mm a deflecting surface shall be installed to deflect falling objects inwards to the concrete slab or onto an adjacent working platform, as shown in Figure 3.11(C).

(d) A full closure shall be provided at the lowest deck.

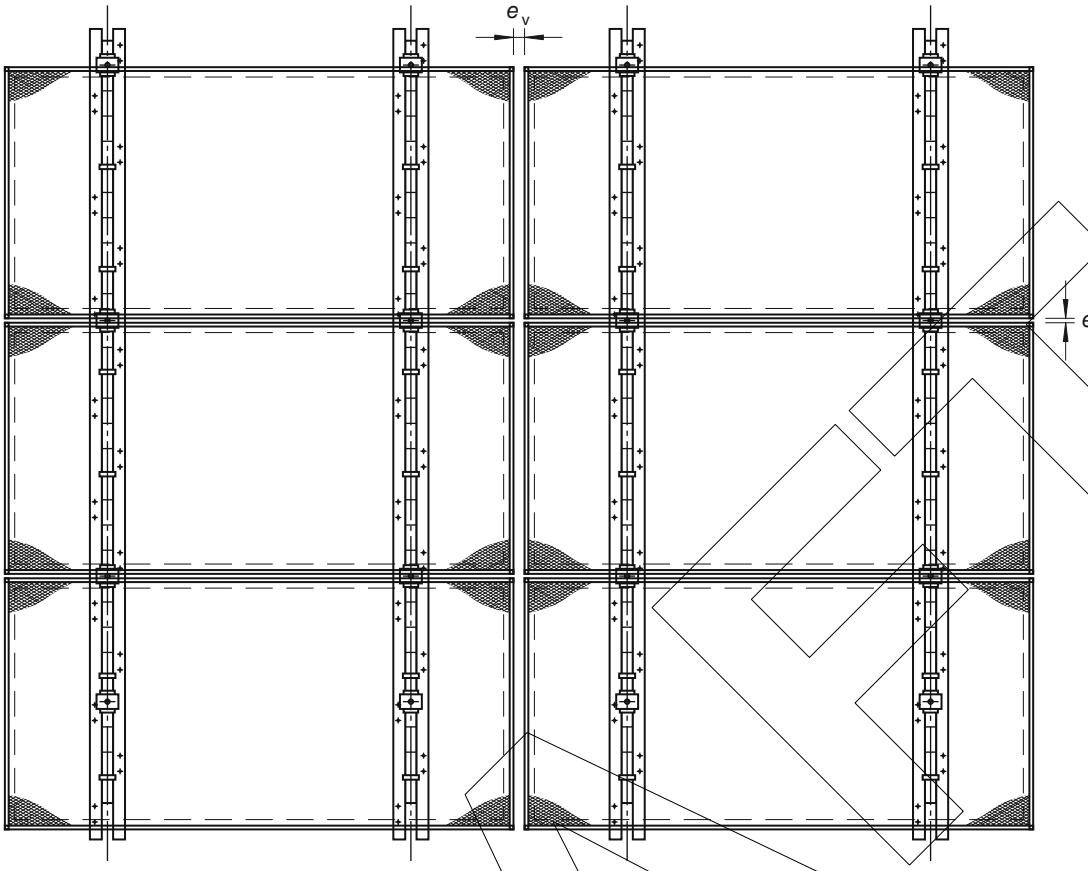



FIGURE 3.11(A) LIMITS OF VERTICAL AND HORIZONTAL GAPS BETWEEN SCREENS

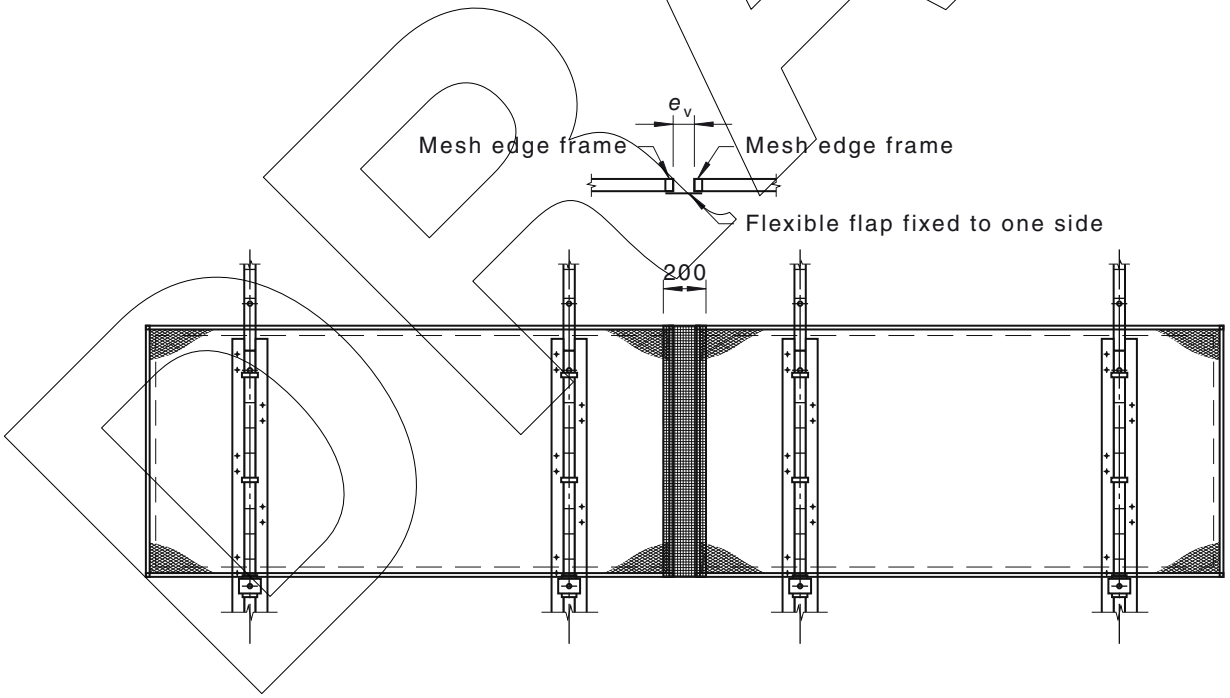



FIGURE 3.11(B) TREATMENT WHERE VERTICAL GAP BETWEEN SCREENS EXCEEDS 50 MM

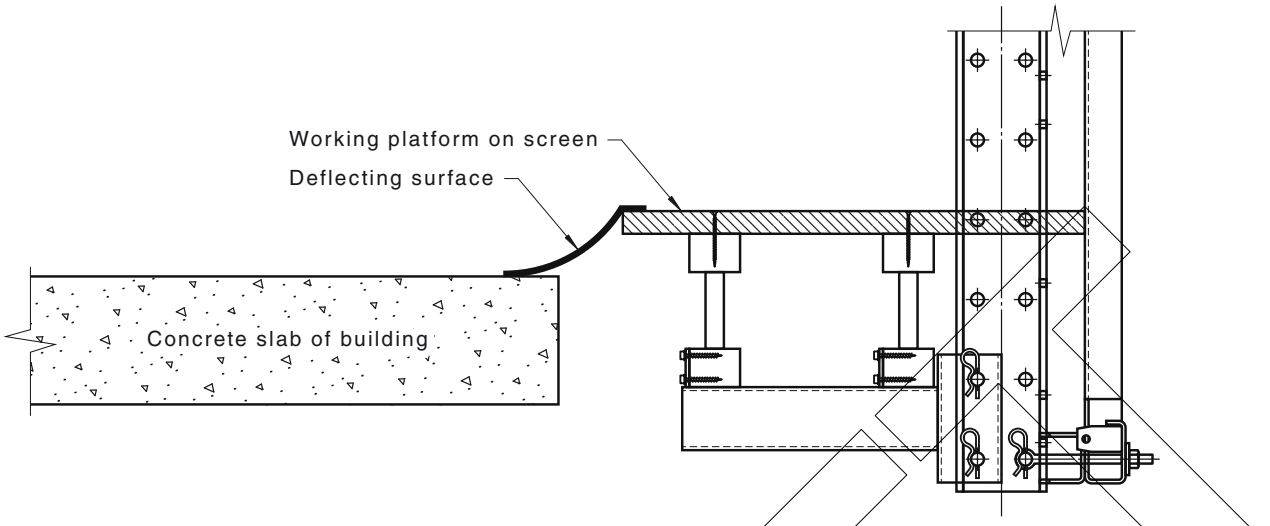



FIGURE 3.11(C) DEFLECTING SURFACE BETWEEN SCREEN PLATFORM AND BUILDING FLOOR SLAB

# SECTION 4 OPERATIONAL REQUIREMENTS

## 4.1 GENERAL

Perimeter protection screens shall be secured to a temporary or a permanent structure in such a manner to ensure stability resulting from wind actions and operational procedures on connected working and access platforms and working areas protected by the screens.

A detailed Work Method Statement shall be prepared for the installation, lifting and dismantling of screens, which shall include as a minimum, the following information.

At each stage of the installation, including the repositioning of screens, a written statement shall be issued indicating that the area is ready for use by future trades.

The installation of screens shall be coordinated with post tensioning of the supporting concrete slabs.

The installation and cutting off of needle beam anchors shall not endanger the reinforcement of the concrete slab that has supported the needles.

## 4.2 UNLOADING ON SITE

Screens shall be delivered to site with the lifting points securely fixed prior to being lifted off the truck. When stacked at the site, they shall be stacked in such a way that does not damage the screens and the stack is stable.

NOTES:

1 Lifting points should be certified prior to delivery to site.

2 Slings should not be placed around the screen load as the screens may be deformed. The screens should be lifted as per the manufactures specifications

## 4.3 ASSEMBLY AT SITE

Wing panels, other accessories including internal working platforms, if applicable, should be attached to the screen while lying flat.

## 4.4 INSTALLATION, LIFTING AND DISMANTLING OF CRANE-LIFTED SCREENS

### 4.4.1 Installation

As a minimum, the following procedure shall apply to the installation of crane-lifted screens:

(a) Check that the concrete slabs have achieved sufficient strength to support the load of the screens.

(b) Ensure that items that are to remain connected to the screens during lifting are securely fastened.

(c) Ensure anchorages intended to connect the screens to the structure are in the correct positions to receive the screen.

(d) Ensure that barriers are erected to exclude persons from being under the screen during its positioning on the structure.

(e) Provide edge protection as required to control the risk of falls.

(f) Using a crane, slowly lift the screen into a vertical position and move to the intended position on the structure.

(g) With the screen suspended from the crane, set the screen on the supporting components that are connected to the structure.

(h) Use jacks or props to plumb the screen in both directions.

(i) Check all connections between the screen and the structure are sound and then slowly release the weight off the crane.

(j) Remove crane hooks and slowly withdraw the lifting chains upwards until clear of the screen.

(k) Attach working platforms, if applicable.

(l) Repeat Steps (d) to (i) for each subsequent screen for that part of the project.

(m) Close off gaps between the screens or between the screens and the adjacent floor as required.

### 4.4.2 Lifting

As a minimum, the following procedure shall apply to the lifting of crane-lifted screens:

(a) Check that all work required with the screens in place is complete.

(b) Clean the adjacent slab edge and working platforms attached to the screens that are to be crane lifted to prevent falling debris.

(c) Remove materials closing off gaps between screens, the slab and any other restraints.

(d) Erect temporary edge protection to the immediate areas from where the protective screens are to be crane-lifted and the area at the bottom of the screen is unprotected.

(e) Ensure that needles or other connections on the slab above are in place.

(f) Attach crane hooks to the topmost screen lifting points and check that the line of lifting chains is vertical.

(g) Remove pins at prop and needle connections.

(h) Check that there is no formwork interference with the screen.

(i) Slowly lift the screen to the next level, continuously checking for possible snagging.

(j) With the screen suspended from the crane set the screen on the supporting components that are connected to the structure.

(k) Repeat Steps (h) to (k) of Clause 4.4.1.

### 4.4.3 Dismantling

As a minimum, the following procedure shall apply to the dismantling of crane-lifted screens:

(a) Check that all work required with the screens in place is complete.

(b) Clean the adjacent slab edge and working platforms attached to the screens that are to be lifted to prevent falling debris.

(c) Remove materials closing off gaps between screens, the slab and any other restraints, if applicable.

(d) Erect temporary edge protection to the areas where the screens are to be dismantled from where applicable.

(e) Prepare a screen removal priority list to enable the widest screen to be positioned at the bottom of the load and label the screens accordingly.

(f) Prepare dismantling areas for screens laying down.

(g) Re-install lifting points to the screen framing.

(h) Slowly lift each screen checking for possible snagging.

(i) Lay the screen flat on a flat surface.

(j) Ensure screens are assembled into bundles of similar length.

(k) With lifting hooks attached to appropriate lifting points, load a bundle of screens onto a truck for removal from the site

## 4.5 INSTALLATION, CLIMBING AND DISMANTLING OF HYDRAULICALLY CLIMBING SCREENS

### 4.5.1 Installation

As a minimum, the following procedure shall apply to the installation of hydraulically climbing screens:

(a) Ensure that items that are to remain connected to the screens during lifting are securely fastened.

(b) Ensure anchorages intended to connect the screens to the structure are in the correct positions to receive the screen.

(c) Ensure that barriers are erected to exclude persons from unprotected edges.

(d) Ensure that barriers are erected to exclude persons from being under the screen during its positioning on the structure.

(e) Attach the first set of guiding shoes to the floor slab.

(f) Using a crane slowly lift the screen into a vertical position and connect it to the guiding shoes attached to the floor slab and stabilize the screen frame with temporary supports.

(g) Use the temporary supports to plumb the screen.

(h) Check all connections between the screen and the structure are sound and then slowly release the weight off the crane.

(i) Repeat the procedure for each subsequent screen for that part of the project.

(j) Close off gaps between the screens, the adjacent floor as required.

### 4.5.2 Climbing

As a minimum, the following procedure shall apply to the climbing of hydraulically climbing screens:

(a) Connect the hydraulic system jacks to the screen framing.

(b) Check the guide paths are free.

(c) Use the hydraulic jacks to lift the screen a short distance off the temporary supports and remove the temporary supports.

(d) Raise the screen by the stroke of the jack until the pawl connects to the next position on the screen rail.

(e) Continue the climbing procedure until the screen has reached the intended level and connect the screen to the next set of shoes that are fixed to the concrete floor.

(f) Before climbing to the next level, check that all work required with the screens in place is complete.

(g) Clean the adjacent slab edge and working platforms attached to the screens that are to be climbed to prevent falling debris.

(h) Erect temporary edge protection to the area where the protecting screens from where the screens are to be moved upwards.

(i) Repeat Steps (b) and (c) for each subsequent screen for that part of the project until the screen has reached the next intended level.

### 4.5.3 Dismantling

The procedure set out in Clause 4.4.3 shall apply to the dismantling of hydraulically climbing screens.

# SECTION 5 TESTING

## 5.1 GENERAL

Where applicable, testing of protection perimeter screens and specific components shall be carried out to confirm that they can safely support the intended loads.

Edge protection components shall be tested in accordance with the static test requirements of AS/NZS 4994.1:2009, Clause 4.1 and Appendices A and B.

Mesh that is attached to and forms part of the screen shall be tested to the requirements of AS/NZS 4994.1:2009, Clause 4.1 and Table 4.1. Mesh shall be subjected to static testing in accordance with Appendix B of AS/NZS 4994.1:2009. Where the mesh of a perimeter protection screen is likely to be impacted by objects resulting from construction activities adjacent to the screen, dynamic testing in accordance with Appendix E of AS/NZS 4994.1:2009 shall apply.

APPENDIX A

# PERIMETER PROTECTION SCREENS DESIGN CHECKLIST

(Informative)

| Question | | Explanatory notes |
|---|---|---|
| **1 Screens** | | |
| 1.1 | Are the screens to be attached to the formwork? | Need to confirm that the formwork can support the screens and whether the formwork will be left in place for the expected time the screens are required. Also, the stability of the screen has to be confirmed if the formwork is to be stripped before the screen is moved. |
| 1.2 | Does the formwork profile work with the screen profile? | If the floor will not have a uniform edge profile, it may be difficult to design an effective screen installation. |
| 1.3 | Are the screens to be supported from a floor slab on needles? | Need to confirm that the floor slab has been designed to support the screens' load. |
| 1.4 | Are working platforms to be attached to the screens? | Need to confirm that the attachment points can support the working platforms and whether they are movable when the screens are moved. |
| 1.5 | Are the screens to be self-climbing or mechanically lifted? | Need to consider temporary edge protection for slabs when screens are lifted. |
| **2 Working platforms** | | |
| 2.1 | Are working platforms to be fitted to the screens? | What live loads are required? Has the screen structure been designed for these loads? |
| 2.2 | Are the working platforms to be at least 450 mm wide? | Platforms less than 450 mm wide are not suitable for working on (see Clause 2.2.4). |
| 2.3 | Will the working platforms have a slip-resistant surface? | This is a matter of safety as the platforms can become slippery when wet. |
| 2.4 | Will the working platforms be more than 500 mm above the adjacent concrete floor? | Platforms more than 500 mm above the adjacent floor are difficult to access and get off safely. |
| 2.5 | If platforms are to be more than 500 mm above adjacent floor, will ladder access be provided? | Has suitable ladder access been provided? AS/NZS 1576.1 specifies a maximum of 500 mm height for access to hop-up platforms before ladder access has to be provided. |
| 2.6 | Are the working platforms and/or formwork decks to be more than 1m below the top of the screen framing? | If the working platforms and or formwork decks are too close to the top of the screen there are safety issues for persons on the platform and the possibility of materials and tools falling over the top of the screen. |

(*continued*)

| Question | | Explanatory notes |
|---|---|---|
| 2.7 | Are the working platforms (not formwork decks) to be above the adjacent concrete floor? | Platforms above an adjacent floor may need edge protection to prevent persons falling from the working platform and injuring themselves (see Clause 2.2.4). |
| 2.8 | Have the working platforms been designed to have toeboards at least 150 mm high? | Toeboards are essential on both the inner side of the platform where items can fall and possibly injure workers but also on the outer edge to prevent items passing through the outer covering, of mesh, and falling to a lower level where other persons may be injured. |
| **3 Screen details** | | |
| 3.1 | Will the screen be fixed through the concrete slab or connected to cast-in anchors? | Fixing through a concrete slab where soffit formwork is present creates a risk when stripping the formwork before screen support/restraint conditions are loosened or removed. |
| 3.2 | Does the concrete have to reach a minimum concrete strength before a screen can be attached? | The attached screen will impose a load on the concrete which, if of insufficient strength at the time of attachment, can be damaged. |
| 3.3 | Will the concrete design strength be sufficient to support the load of the screen on its supporting needles? | It may be necessary to consider back-propping of the slab to augment the concrete slab strength to support the load to be imposed by the needles. |
| 3.4 | Is the screen to have covering on the outer face? | This is important to ensure objects cannot fall from the concrete slabs or working platforms but increases the wind load on the screen. |
| 3.5 | Will the screen mesh have openings not greater than 50 mm × 50 mm and be from 4 mm diameter steel wire? | This is the minimum requirement for mesh. Queensland has more stringent requirements. |
| 3.6 | Will the screen extend at least 1 m above the adjacent concrete floor? | Low screens will not provide edge protection for persons and materials, which may fall over the top of the screen. |
| 3.7 | Does the design require vertical gaps between adjacent screens greater than 50 mm? | Large gaps will not prevent most objects from falling through gaps between screens. |
| 3.8 | Will gaps between screens be closed with wire mesh or other material to prevent items falling out? | The closing material has to be sufficient to prevent objects from falling through? |
| 3.9 | Will there be a horizontal gap between the screen platform and the edge of the concrete slab? | There should not be a gap that will allow objects to fall to lower levels. |

(*continued*)

| Question | Explanatory notes |
|---|---|
| 3.10 If there is a horizontal gap, will there be a deflecting surface fitted to deflect falling objects? | This is an alternative to having close gaps (see Clause 3.11). |
| **4 Stairs** | |
| 4.1 Is there a requirement for a stairway to be supported by the screen framing? | An attached stairway will significantly increase the weight of the screen and it will be necessary to check if the concrete slab supporting the screen requires strengthening or propping. |
| **5 Movement of screens** | |
| 5.1 If the screen is to be moved will there be a plan to have debris cleaned off the working platform before moving? | Loose debris can fall from the working platform and cause injury to persons below. |
| 5.2 When the screen is about to be moved will there be a plan to close the area below for access? | Persons below should be kept away from the possibility of injury from falling objects when the screen is being lifted off its fixings to the slab or formwork. |

APPENDIX B

PERIMETER PROTECTION SCREENS POST-OPERATIONAL CHECKLIST

(Informative)

| Question | Answer | Comment | Explanatory notes |
|---|---|---|---|
| **1 General** | | | |
| 1.1 Has a Work Method Statement been prepared and is it available on site? | | | This may be a regulatory requirement. |
| **2 General** | | | |
| 2.1 Are the screens attached through the concrete slab and formwork? | | | Need to confirm stability of the screens if the formwork, stripped before the screens, are moved. |
| 2.2 Are the screens supported from a floor slab on needles? | | | Need to confirm that the floor slab has been designed to support the screens load. |
| 2.3 Are the working platforms attached to the screens? | | | Need to confirm that the attachment points can support the working platforms and whether they are movable when the screens are moved. |
| 2.4 Are the screens self-climbing or mechanically lifted? | | | Need to establish if temporary edge protection for the floor is required when the screens are moved. |
| **3 Working platforms** | | | |
| 3.1 Are working platforms fitted to the screens? | | | If fitted, have they been fitted according to manufacturer's specification. |
| 3.2 Are the working platforms at least 450 mm wide? | | | Platforms less than 450 mm wide are not suitable for working on. |
| 3.3 Do the working platforms have a slip-resistant surface? | | | This is a matter of safety as the platforms can become slippery when wet. |

(*continued*)

| Question | Answer | Comment | Explanatory notes |
|---|---|---|---|
| 3.4 Are the working platforms more than 500 mm above the adjacent concrete floor? | | | Platforms more than 500 mm above the adjacent floor are difficult to access and get off safely. |
| 3.5 If platforms are more than 500 mm above adjacent floor has ladder access been provided? | | | Has suitable ladder access been provided? AS/NZS 1576.1 specifies a maximum of 500 mm height for access to hop-up platforms before ladder access has to be provided. |
| 3.6 Are the working platforms or formwork deck more than 1 m below the top of the screen framing? | | | If the working platforms are too close to the top of the screen there are safety issues for persons on the platform and the possibility of materials and tools falling over the edge. |
| 3.7 Are the working platforms (not the formwork deck) elevated above the adjacent concrete floor? | | | Platforms on an elevated level above an adjacent floor need edge protection to comply with legislation prevent persons falling and injuring themselves. |
| 3.8 If working platforms (not formwork deck) are more than 2 m above the adjacent floor, has edge protection been provided? | | | Is the edge protection adequate to protect workers on the platforms? |
| 3.9 Do the working platforms have toeboards at least 150 mm high on the external perimeter? | | | Toe boards are essential on the outer edge to prevent items passing through the outer covering if mesh. |
| **4 Screens** | | | |
| 4.1 Is the screen fixed through the concrete slab or connected to cast-in anchors? | | | This may be important where the screens may be subjected to high speed winds. |
| 4.2 Is the covering mesh of size 50 × 50 × 4 mm steel wire? | | | This is the minimum requirement for mesh. Queensland has more stringent requirements. |

(*continued*)

| Question | Answer | Comment | Explanatory notes |
|---|---|---|---|
| 4.3 Does the screen have attached shadecloth or signage? | | | If this has not been allowed for in the design, wind forces may result in damage to the screen and its attachment to the permanent structure. |
| 4.4 Does the screen extend at least 1 m above the adjacent concrete floor? | | | Low screens will not prevent objects falling from the top concrete floor. |
| 4.5 Are the vertical gaps between adjacent screens greater than 50 mm? | | | Large gaps will not prevent most objects from falling. |
| 4.6 Are the screen gaps closed with wire mesh or other material to prevent items falling out? | | | The closing material has to be sufficient to prevent objects from falling through? |
| 4.7 If there is a horizontal gap, is it protected by a deflecting surface fitted to deflect falling objects? | | | This is an alternative to having close gaps. |
| 4.8 Is there a horizontal gap between the screen platform and the edge of the concrete slab? | | | Large gaps will not prevent objects from falling to lower levels. |
| 4.9 Is there a stairway attached to the screen? | | | The installation drawings have to show that the screen has been designed to support a stairway. |
| 4.10 If the screen is to be moved, has all debris been cleaned off the working platform? | | | Loose debris can fall from the working platform and cause injury to persons below. |
| 4.11 When the screen is about to be moved, has temporary edge protection been erected on the concrete slabs previously protected by the screen? | | | With the screen not firmly in place there is the safety issue of inadequate edge protection for persons working in the vicinity. |

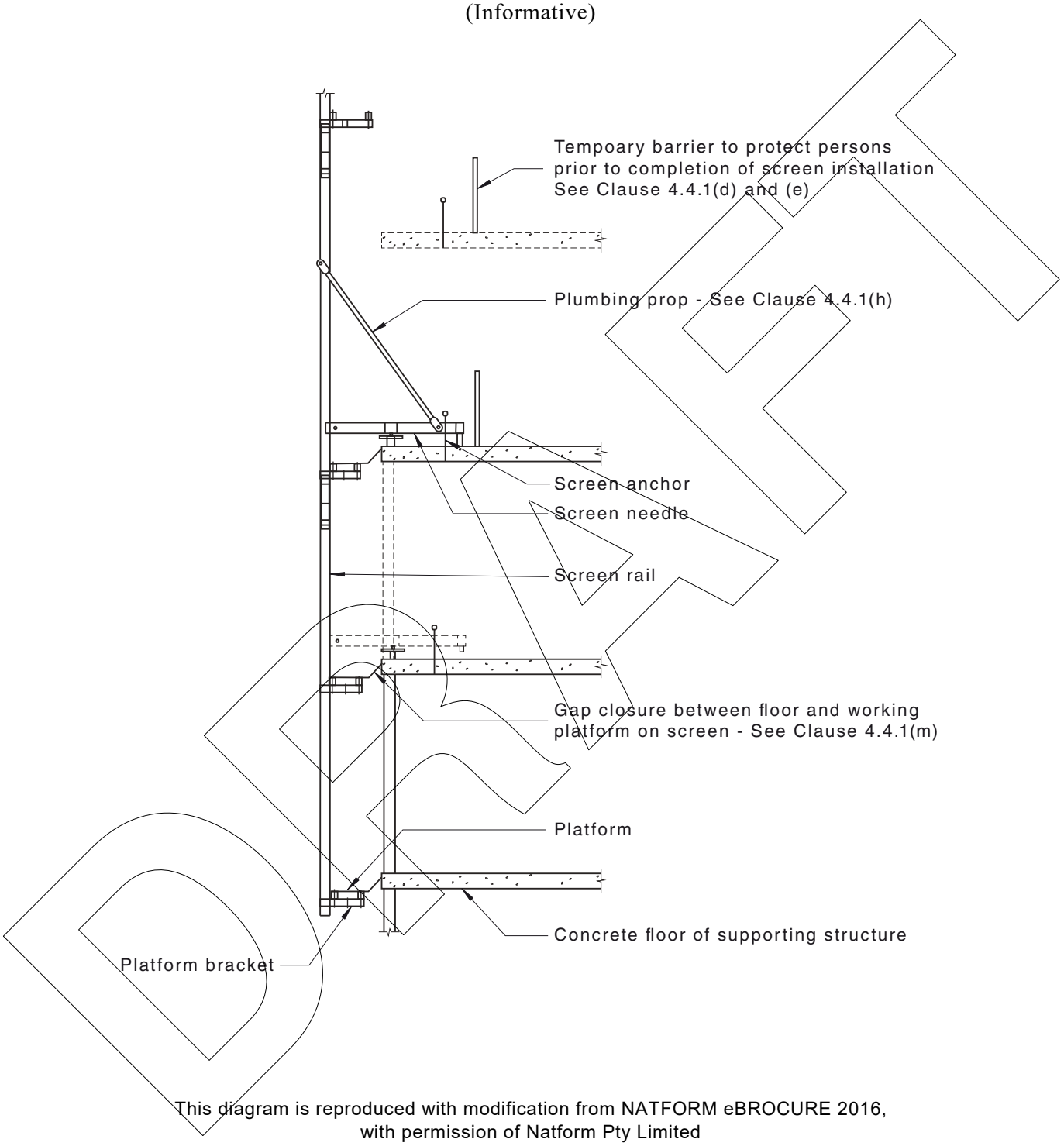
(*continued*)

| Question | Answer | Comment | Explanatory notes |
|---|---|---|---|
| 4.12 When the screen is about to be moved has the area below been closed for access? | | | Persons below have to be kept away from the possibility of falling objects when the screen is being lifted. |

# APPENDIX C

# ILLUSTRATION OF TYPICAL COMPONENTS OF SCREEN INSTALLATION

(Informative)




This diagram is reproduced with modification from NATFORM eBROCURE 2016, with permission of Natform Pty Limited

FIGURE C1 TYPICAL COMPONENTS OF A SCREEN INSTALLATION

*** END OF DRAFT ***

## PREPARATION OF JOINT AUSTRALIAN/NEW ZEALAND STANDARDS

Joint Australian/New Zealand Standards are prepared by a consensus process involving representatives nominated by organizations in both countries drawn from all major interests associated with the subject. Australian/New Zealand Standards may be derived from existing industry Standards, from established international Standards and practices or may be developed within a Standards Australia, Standards New Zealand or joint technical committee.

During the development process, Australian/New Zealand Standards are made available in draft form at all sales offices and through affiliated overseas bodies in order that all interests concerned with the application of a proposed Standard are given the opportunity to submit views on the requirements to be included.

The following interests are represented on the committee responsible for this draft Australian/ New Zealand Standard:

Australasian Wire Industry Association

Australian Chamber of Commerce and Industry

Australian Council of Trade Unions

Australian Industry Group

Australian Institute of Building Surveyors

Housing Industry Association

Master Builders Australia

Master Plumbers Australia

National Edge Protection and Platform Association

Roofing Tile Association of Australia

SafeWork NSW

Scaffolding, Access and Rigging New Zealand

Site Safe New Zealand

WorkSafe Victoria

**Standards Australia**

Standards Australia is an independent company, limited by guarantee, which prepares and publishes most of the voluntary technical and commercial standards used in Australia. These standards are developed through an open process of consultation and consensus, in which all interested parties are invited to participate. Through a Memorandum of Understanding with the Commonwealth government, Standards Australia is recognized as Australia's peak national standards body.

**Standards New Zealand**

The first national Standards organization was created in New Zealand in 1932. The New Zealand Standards Executive is established under the Standards and Accreditation Act 2015 and is the national body responsible for the production of Standards.

**Australian/New Zealand Standards**

Under a Memorandum of Understanding between Standards Australia and Standards New Zealand, Australian/New Zealand Standards are prepared by committees of experts from industry, governments, consumers and other sectors. The requirements or recommendations contained in published Standards are a consensus of the views of representative interests and also take account of comments received from other sources. They reflect the latest scientific and industry experience. Australian/New Zealand Standards are kept under continuous review after publication and are updated regularly to take account of changing technology.

**International Involvement**

Standards Australia and Standards New Zealand are responsible for ensuring that the Australian and New Zealand viewpoints are considered in the formulation of international Standards and that the latest international experience is incorporated in national and Joint Standards. This role is vital in assisting local industry to compete in international markets. Both organizations are the national members of ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission).

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