

Structural Design Guide for Concrete Skate Parks

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Acknowledgement of Country

City and Environment Directorate (CED) acknowledges that Aboriginal people are the Traditional Owners of Australia. We acknowledge and pay respect to the Ngunnawal people as the custodians of the land and waters that we live and thrive on today and recognise any other people or families with connection to the lands of the ACT and region.

CED acknowledges that Canberra's cultural and natural heritage was maintained by the Traditional Custodians for many generations before colonial settlement on Australian soil. Aboriginal people's management of the land preserved the natural balance of local plants and animals. This knowledge of the environment in which we live is critical to the protection and restoration of our land today.

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1 Introduction

1.1 Purpose and scope

This guide sets out best-practice principles for the planning, design, documentation, construction and ongoing maintenance of concrete skate parks, with a focus on durability, rideability, safety and long-term value. The primary intended purpose of this guidance is to support designers in the development of skate parks. Nonetheless, it may also be referenced by engineers, asset owners and contractors involved in public skate park delivery.

1.2 Strategic design context

1.2.1 Role of skate parks in the public realm

Skate parks are purpose-built recreational facilities intended specifically for use by skateboarders and related wheeled sports. However, skate parks should be designed to support a diverse range of users, including skateboarders, BMX riders and scooter riders. Access to general facilities should also be provided for wheelchair users, spectators, families, carers and other visitors. Successful skate parks function as active community assets, contributing positively to their surroundings. They shall not be treated as residual or leftover spaces but deliberately integrated into the broader urban and open space network.

From the outset of design, careful consideration shall be given to integration with the surrounding public space. Visibility, ease of access and lighting are critical to safety, usability and long-term activation. Supporting amenities such as seating, shade, gathering spaces and circulation routes should be considered to improve accessibility, comfort, passive surveillance and overall user experience. When these aspects are addressed early, skate parks are more likely to support inclusive use and become well-used, well-regarded elements of the public environment.

District and regional skate parks may also function as venues for organised events and competitions. Where appropriate, the design should consider supporting infrastructure such as spectator areas, event access, lighting, temporary event facilities, storage and ancillary amenities.

1.2.2 Skate park typology and scale

Skate parks may be delivered at different scales depending on their intended role within the wider open space and recreation network. These facilities are commonly categorised as either neighbourhood/local skate parks or district/regional skate parks.

Neighbourhood or local skate parks are typically smaller in scale and cater primarily to nearby users, whereas district or regional facilities serve a broader catchment. District and regional skate parks are generally designed to accommodate a wide range of skill levels and skateboarding styles. This is achieved through the provision of sufficient spatial area and a balanced mix of elements, allowing for both street-style features and transition-based skating within the same facility.

The scale and typology of a skate park therefore directly influence its layout, functionality and user experience, and shall be aligned with its intended level of service.

2 Design principles

2.1 Standards and compliance

Skate park structures shall be designed for a minimum design life of 50 years from a strength, serviceability and durability perspective, excluding surface condition. Noting that regular preventative maintenance of the concrete surface will be required, the concrete surface shall be expected to maintain its surface texture and experience minimal abrasion, chipping and cracking for a 25-year period without any major maintenance intervention or repairs, recognising the high-impact, repetitive loading and intensive daily use associated with skateboard, BMX, scooter and Wheelchair Motocross (WCMX) activity. The design shall respond to site-specific constraints and opportunities, including requirements for Safety in Design (SiD), considerations obtained from stakeholder engagement, and local site constraints (flooding, acoustics, travel paths and utilities).

Design documentation shall demonstrate compliance with applicable structural, durability, accessibility and safety requirements. The design is to conform with Municipal Infrastructure Standards (MIS), Municipal Infrastructure Technical Specifications (MITS), relevant Transport for New South Wales (TfNSW) Standards for concrete pavements, *AS 3600*, *AS 1170*, *AS 1379* and *AS EN 14974 Skateparks – Safety requirements and test methods*. Any departures from the mentioned standards or technical exception clauses shall be fully documented with technical justification and risk assessment, and receive prior written approval from CED. Design requirements shall be documented to ensure requirements for geometry, reinforcement, jointing, surface finish and curing are clearly nominated.

2.2 Design considerations

Skate park design is to be undertaken by designers with proven skate park-specific experience, which is considered to be:

- Previous experience designing specialised skate park facilities of a similar size and typology, or other projects which require equivalent skills and expertise relevant to skate park design.
- Previous experience preparing detailed documentation for specialised skate park facilities of a similar size and typology, or comparable projects involving complex concrete formwork, public realm, recreational, or sport and recreation facilities.
- Experience working through site-specific or project-specific engineering challenges relevant to specialised skate park facilities.
- An understanding of skate park design principles, user requirements, safety considerations and operational outcomes.

Further, designers with proven skate park-specific experience should have a clear understanding of the following and should understand how these attributes are incorporated into their designs:

- Flow, speed and momentum
- Line development and user intent
- Trick functionality and terrain progression
- Tight construction tolerances required for rideability

Structural and pavement design shall explicitly consider dynamic wheel impacts, edge and coping loads, and repetitive abrasion at ledges, transitions and landing zones. Concrete strength, reinforcement layout, cover, joint detailing and curing regimes shall be selected to minimise:

- shrinkage cracking
- surface delamination
- premature surface degradation

Surface finishes shall provide consistent ride performance, appropriate friction characteristics and long-term durability.

Design shall prioritise smooth, continuous movement ('flow') throughout the skate park. Users should be able to maintain speed and rhythm without unnecessary pushing or stopping. Abrupt changes in grade, inconsistent radii, misaligned elements, and poorly placed obstacles are identified as common design errors and shall be avoided. Jointing strategies shall be skate-specific and coordinated with geometry and pavements to minimise joint frequency without compromising pavement jointing requirements that may result in unplanned cracking and avoid joints within ride lines and reduce long-term maintenance.

Cast in situ reinforced concrete skate parks provide superior ride quality which contributes to an improved service life and minimised whole-of-life costs. Prefabricated or modular skate park systems are discouraged. These systems commonly:

- deteriorate quickly under high-impact loads
- generate excessive noise
- restrict park progression
- require higher long-term maintenance

High wear elements such as copings and grind features shall be detailed for durability/wear resistance and, where appropriate, replaceability. The design shall minimise whole-of-life maintenance requirements and avoid details requiring frequent renewal.

2.3 Safety considerations

Safety in Design (SiD) principles shall be incorporated throughout all stages of design development. The design shall address SiD risks, which shall include the following:

- Fall risks associated with height changes and transitions
- Rider conflict points and intersecting travel paths
- Sightlines within bowls, transitions and flow areas
- Interfaces with adjacent public spaces

Joint detailing shall minimise catch points, trip hazards, and reduce the likelihood that spalling of edges will occur. Surface finishes shall provide safe traction for all users, including WCMX participants.

Skate park design shall incorporate Crime Prevention Through Environmental Design (CPTED) principles to enhance user safety and passive surveillance. Key considerations include:

- clear sightlines
- avoidance of concealed spaces
- integration with surrounding public activity

- appropriate lighting levels also considering the lighting requirements for the precinct
- passive surveillance
- elimination of hidden corners

Passive surveillance, lighting and CPTED principles shall be incorporated without compromising skate functionality and amenity. Accessible routes, entry points and circulation paths shall be safely integrated with riding areas. Skate parks shall be integrated into their context rather than imposed as isolated objects.

3 Site selection and layout

Site selection and layout shall prioritise locations that are highly visible, easily accessible by foot, bicycle and public transport, and integrated with other recreational or civic facilities to promote regular use, passive surveillance and long-term sustainability. Isolated or poorly overlooked sites are discouraged, as they are consistently associated with reduced usage, increased maintenance and user safety issues. Skate park layout shall consider site-specific constraints and opportunities, including:

- flooding and overland flow paths
- acoustics and noise sensitivity
- pedestrian and cyclist travel paths
- existing and proposed utilities

Site topography shall inform layout approach, with sloping sites offering opportunities for multi-level skate parks that naturally support flow and speed, while flat sites are well suited to plaza-style and street-based layouts.

Supporting amenities such as shade, drinking water, lighting, seating and bins shall be provided in proportion to the size and expected use of the facility. Toilets shall be provided where suitable facilities are not already available within the surrounding precinct. Larger skate parks shall incorporate multiple entry points aligned with surrounding paths and desire lines to improve access and reduce congestion. All paths shall be accessible, legible and, where required, clearly separated from skateable surfaces. Internal circulation within the skate park shall support intuitive movement, minimise conflict, and avoid pedestrian routes or access paths crossing primary skate lines.

4 Subgrade design requirements

The designer shall adopt earthworks performance criteria consistent with *MIS 02 Earthworks and site grading* and *MITS 02B Bulk Earthworks*, unless superseded by project-specific requirements. Any departures from these standards and specifications shall be clearly identified and justified within the design documentation.

The ground beneath a skate park plays a critical role in the long-term performance of concrete riding elements. Subgrade behaviour shall be considered as part of the overall structural design, alongside slab thickness, geometry and detailing.

The designer shall assess the need for a subbase, selected material layer, stabilised layer or working platform beneath skate park concrete elements based on site-specific geotechnical conditions and constructability requirements. The adopted support system shall provide uniform bearing conditions and minimise differential settlement, localised soft spots and abrupt changes in foundation stiffness to achieve requirements as nominated below.

Where a granular subbase or selected material layer is adopted, it shall:

- Provide a stable and uniform platform for construction of the skate park features.
- Minimise variability in support conditions across the skate park footprint.
- Reduce the risk of localised settlement and differential movement affecting skateable surfaces.
- Facilitate drainage of moisture away from the underside of concrete elements.
- Prevent migration of underlying fine soils into overlying support layers.

Where the natural subgrade exhibits variable strength, moisture sensitivity and/or reactivity, the designer shall consider:

- placement of selected material
- mechanical stabilisation
- chemical stabilisation

The design shall define suitable performance requirements for the supporting ground, including the following minimum values:

- Achieving uniform support beneath slabs and skate elements, avoiding abrupt changes in ground stiffness considering stiffness transitions across the site, wherever practicable.
- Minimum subgrade strength or stiffness beneath concrete elements of:
    - CBR (California Bearing Ratio) ≥ 3% for lightly loaded or non-vehicular skate park elements, or
    - equivalent elastic modulus ≥ 30 MPa.
- Improved subgrade or working platform (e.g. selected material or stabilised layer) where natural ground does not meet the above criteria.
- Differential settlement limits generally not exceeding Span/250.

Ground conditions may vary across a site. The design shall respond to this variability through appropriate slab thickness, detailing, reinforcement, joint layout or local ground improvement. Where variable ground conditions remain, design measures shall be adopted to ensure performance equivalent to that of uniformly supported slabs.

Where reactive or moisture sensitive soils are present, the design shall allow for potential ground movement over the design life of the skate park. The designer shall accommodate in their design the following:

- Expected ground movement magnitudes, typically:
    - Maximum 40 mm for moderately reactive soils.
- Acceptable movement tolerances for concrete skate park elements, generally:
    - ≤ 1 mm differential movement affecting riding surfaces or transitions.
- Detailing measures such as jointing, articulation zones, slab separation or local stiffening to accommodate movement without cracking or loss of ride quality.

Key assumptions regarding soil reactivity and moisture variation shall be documented as part of the design through site-specific geotechnical investigation and testing where required, with assumptions documented and supported by available data.

Where skate park elements are supported on earth formed berms or batters, the design shall be based on the following typical assumptions:

- Earthworks formed in controlled layers of approximately 200 mm thickness, compacted to the required compaction density (not less than 95% Standard Maximum Dry Density (SMDD)).
- Berms and batters shaped to provide stable, long-term support, with slopes compatible with the soil type and compaction method.
- Concrete slabs designed to distribute loads effectively and reduce stress concentrations on the supporting ground using appropriate slab thickness, reinforcement continuity, load distribution through geometry, and detailing at transitions or support changes to promote more uniform load transfer to the supporting ground.

These assumptions shall be reflected in final ground levels, slab geometry and load transfer paths.

Vehicular elements shall be designed in accordance with *AGPT02-24*.

5 Material design requirements

5.1 Concrete performance requirements

Concrete performance requirements for skate park structures shall be in accordance with *MITS 10A Concrete Works for Skate Parks*, in conjunction with the requirements of relevant Australian Standards. Any project-specific departures shall be clearly documented as part of the design.

Concrete shall be designed and supplied in accordance with *AS 1379* and *MITS 10A Concrete Works for Skate Parks*. Pedestrian Area Works shall use concrete with a minimum characteristic compressive strength of 32 MPa. Skate Area Works shall use either 40 MPa concrete with a minimum curing period of 5 days, or 32 MPa concrete with a minimum wet curing period of 14 days. Where supplementary cementitious materials (SCMs) are incorporated into the concrete mix design, the designer shall limit the total SCM content to a maximum of 45%. The designer shall nominate concrete workability parameters suitable for achieving the required finished surface quality of skateable elements.

Where steel-trowel burnished finishes are required, the design shall consider a target slump range of 80–100 mm appropriate to the intended finish and placement methodology. The concrete mix design specified by the designer shall limit the maximum water to cement ratio to 0.45. The designer shall specify nominal maximum aggregate sizes appropriate to the concrete application in accordance with *AS 2758.1*, including 20 mm nominal maximum aggregate size for cast in situ concrete and 10 mm or 7 mm nominal maximum aggregate size where shotcrete is adopted.

The design shall include limits on drying shrinkage in accordance with AS 3600 to support crack control objectives, including: maximum shrinkage at 56 days of 600 micro strain for cast in situ concrete and 800 micro strain for shotcrete. Shrinkage limits shall be considered in conjunction with reinforcement design, joint detailing, and slab geometry.

5.2 Surface finish

Surface finish requirements for skate park structures shall be designed in accordance with *MITS 10A Concrete Works for Skate Parks*, in conjunction with the requirements of relevant Australian Standards.

5.2.1 'Skate Areas' – skateable surface finish

For skateable areas, the designer shall specify surface finishes that provide smooth, seamless riding surfaces. The design shall require:

- a steel-trowelled finish suitable for skate use
- a smooth, flat, lightly polished surface suitable for continuous riding
- an impervious and durable finished surface
- finished surfaces free from visual or physical defects that may affect skate performance, including trowel marks, kinks, bumps or uneven patches

Surface finish requirements shall be clearly detailed on drawings and schedules to ensure continuity across skateable elements and transitions.

5.2.2 'Pedestrian Areas' – slip resistance requirements

For pedestrian and non-skate areas, the designer shall specify a surface finish that:

- provides a slip-resistant concrete surface appropriate for pedestrian safety
- achieves a light, uniformly textured finish
- does not significantly impede skate wheels where pedestrian and skate movements may overlap

The designer shall consider the interface between skate and pedestrian zones to ensure a consistent and safe transition between surface textures.

5.3 Curing and sealing

Curing and sealing requirements shall be designed in accordance with *MITS 10A Concrete Works for Skate Parks*, in conjunction with the requirements of relevant Australian Standards.

The design shall nominate curing requirements appropriate to the specified concrete properties and intended exposure conditions. Cure the newly placed concrete for at least the duration specified in **Table 1** by sealed curing, wet curing or using curing compounds.

Table 1 Concrete curing requirements for skate parks

Concrete mix	Minimum strength grade	Curing requirements	
		Minimum duration of curing by water curing	Minimum duration of curing by use of curing compound
Skate Area Works (32 MPa concrete mix)	32 MPa	14 days	Not acceptable
Skate Area Works (40 MPa concrete mix)	40 MPa	5 days	5 days[1]
Pedestrian Area Works	32 MPa	7 days	7 days[1]
Walls and blocks	32 MPa	7 days	7 days

[1] For Skate Area Works and for Pedestrian Area Works, the curing compound must be a water based acrylic compound complying with *AS 3799*.

The designer shall specify sealing systems intended to:

- protect concrete surfaces from moisture ingress, wear and environmental exposure
- improve abrasion resistance
- maintain the functional requirements of skateable surfaces, including consistent skateability and surface performance

Where a water based acrylic curing compound is used for curing, the sealer shall be compatible with the underlying curing compound, without the need for removal of the curing compound by any means which may damage or impair the concrete surface, such as light grinding, to achieve the required bond strength.

Sealing systems shall be selected and specified as part of the design to ensure compatibility with concrete finishes and long-term use of the skate park in accordance with the manufacturer's recommendations. The timing of application shall be as recommended by the supplier following concrete placement.

5.4 Corrosion protection for steel

Steelwork shall be designed with appropriate corrosion protection systems suitable for the intended exposure conditions. Steel elements shall typically be specified as hot-dip galvanised or otherwise protected in accordance with relevant Australian Standards. Where hot-dip galvanising is adopted, coating requirements shall comply with *AS/NZS 4680 Hot dip galvanized coatings on fabricated iron and steel articles – Specifications and test methods* or *AS/NZS 4792 – Hot-dip galvanized (zinc) coatings on ferrous hollow sections, applied by a continuous or a specialized process*.

6 Structural design requirements

While *AS EN 14974* sets functional and safety outcomes for skate park facilities, the structural design of slabs shall be undertaken in accordance with *AS 3600* and relevant TfNSW Standards for concrete pavements. All slabs shall account for imposed loads arising from skate, scooter and localised concentrated loads from BMX use and ramp transitions, construction plant loads, maintenance loads, thermal and shrinkage effects, and ground support conditions.

Slab thickness shall be selected based on:

- applied loads (static and dynamic rider actions, and maintenance vehicles where applicable)
- support conditions (typically, slab-on-ground)
- subgrade CBR value
- crack control and long-term durability requirements

Slab design shall demonstrate acceptable serviceability performance, including:

- limiting crack widths to values appropriate for exposed concrete riding surfaces
- controlling slab deformation to maintain smooth, predictable riding characteristics
- preventing differential settlement at joints, edges and transitions

Minimum slab thicknesses shall be sufficient to limit flexural tensile stresses and control crack widths under serviceability limit states. Minimum cover shall be 50 mm as specified in *MITS 10A Concrete Works for Skate Parks*.

Reinforcement shall be designed in accordance with **Section 6.2**.

Joints shall be designed in accordance with **Section 6.3**.

Joint layout and reinforcement design shall work together to manage crack location and minimise uncontrolled cracking, consistent with the safety and performance intent of *AS EN 14974*.

6.1 Geometry and transitions

Concrete blend zones shall be incorporated into the design to transition between differing skate profiles, slab thicknesses or feature geometries. Blend zones shall be designed to eliminate kinks, steps or abrupt directional changes that could adversely affect skate performance or safety. The location, extent and geometry of blend zones shall be explicitly detailed in the design documentation. The design shall specify tolerances for flatness, stepping and geometric continuity in accordance with *MITS 10A Concrete Works for Skate Parks*. Any departures from these limits shall be clearly identified and justified within the design documentation. These tolerances shall be tightly controlled through the design to ensure safe riding conditions and consistent surface performance. Tolerance requirements shall be clearly defined in drawings and design documentation, particularly in areas of critical skate transitions and interfaces.

Where specific geometric, jointing or transition requirements are critical to performance, the designer shall include sketches, diagrams or visual details within the design documentation. These visuals shall be used to clearly communicate design intent, acceptable geometry and transition requirements for skateable surfaces.

6.2 Reinforcement

Concrete skate park structures shall be designed using conventional steel reinforcement only, with reinforcement grade 500 MPa steel. Concrete cover requirements shall be clearly defined by the designer and shown on all relevant drawings and details.

Minimum reinforcement ratios for crack control shall be satisfied in accordance with *AS 3600* and TfNSW Standards, using accepted reinforced concrete design principles and accounting for shrinkage, temperature effects and slab geometry. Reinforcement distribution shall consider direction of principal tensile stresses, slab geometry, curvature and transitions, and joint spacing and detailing.

Steel reinforcement detailing shall comply with TfNSW Standards requirements for:

- spacing
- anchorage and lap lengths
- edge detailing and local thickening at highly stressed regions

The designer shall detail reinforcement to suit the complex geometry typical of skate park elements, including curved profiles, transitions and changes in slab thickness. Reinforcement layouts shall be developed to:

- maintain required concrete cover throughout curved and irregular forms
- avoid congestion that could compromise cover, durability or structural performance
- provide continuity of reinforcement through transitions and blend zones

Reinforcement detailing shall reflect final skate geometry and shall not rely on generic or simplified layouts where geometry is complex. Where slab geometry changes (e.g. bowls, radius transitions and varying slab thicknesses), reinforcement quantities may need to be increased locally to maintain consistent crack control and structural behaviour.

Where slabs are irregularly shaped or do not suit standard mesh layouts, reinforcement design shall be treated as project-specific. In such cases, mesh configuration, bar placement and sizing shall be explicitly detailed on the design drawings. No assumptions shall be made regarding standardised mesh arrangements for odd-shaped slabs; reinforcement shall be designed to match the slab geometry shown.

The use of macro synthetic fibre reinforcement, steel fibre reinforcement and glass fibre reinforced polymer (GFRP) reinforcement is not permitted in the design of concrete skate park structures.

6.3 Construction and saw cut joints

Suitable jointing for skate parks typically includes narrow saw cut contraction joints, well detailed construction joints with load continuity and formed joints with smooth, flush profiles. Wide open joints, exposed flexible fillers and abrupt level changes are generally not suitable for riding surfaces. **Figure 1** illustrates typical joint types commonly used in skate park construction.

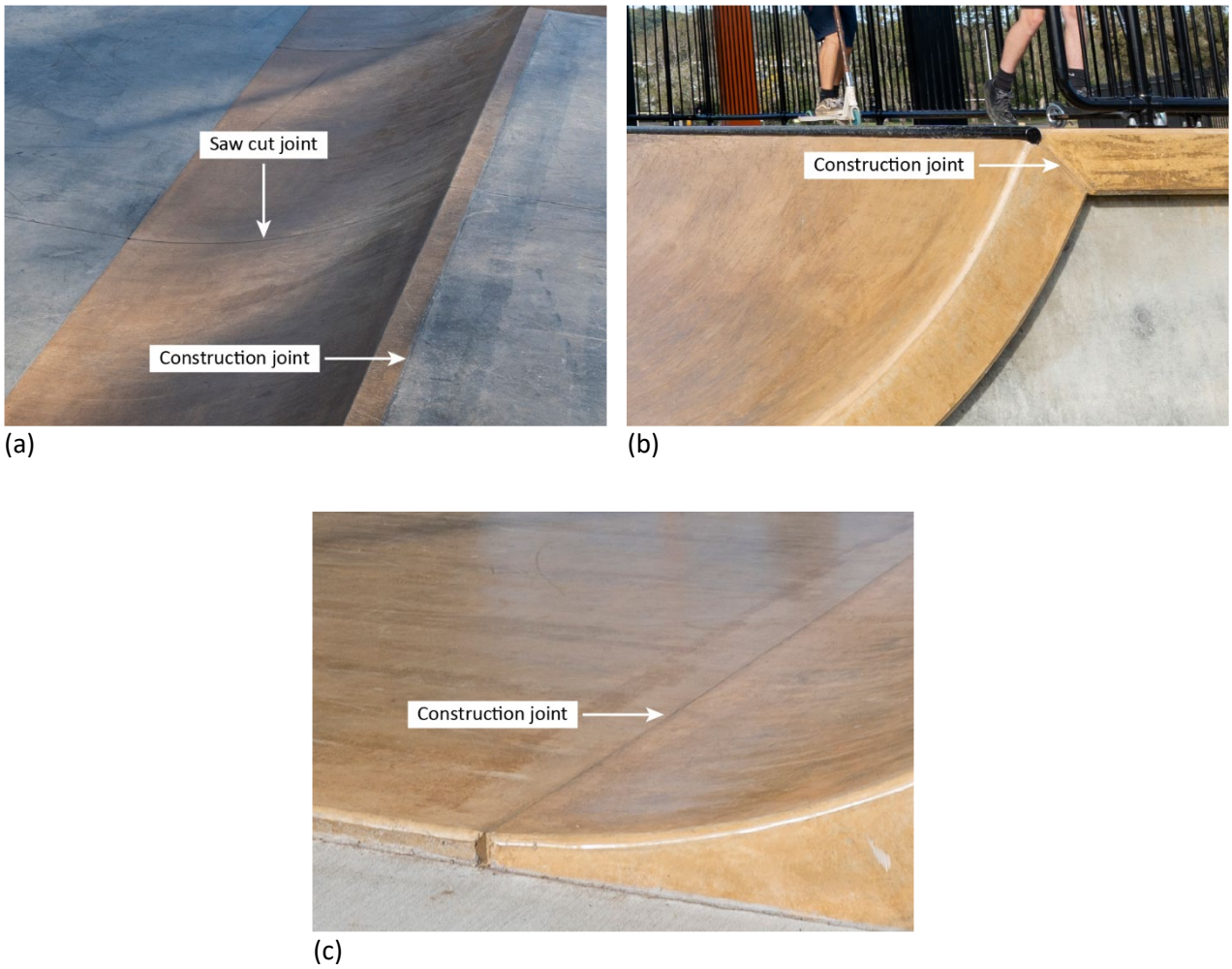


Figure 1 Typical joint types commonly used in skate park construction: (a) Construction joint at the top and toe of a curved ramp, including a saw cut joint (b) Construction joint concealed beneath the steel coping (viewed from outside the skate park looking inward) (c) Typical construction joint at the toe of a ramp (viewed from outside the skate park looking inward).

The design should aim to minimise the number of joints within rideable areas wherever practicable. Considerations to be adopted include:

- locating joints in non-rideable zones (e.g. flat surrounds, run-outs, behind features, or areas not normally traversed by riders) where possible.
- maximising joint spacing through appropriate slab thickness, reinforcement and detailing, while remaining consistent with crack-control requirements.
- using joint types and detailing that maintain flush, smooth surfaces and avoid steps, lips or features that could affect safety or ride quality.
- avoiding joints within high-speed riding lines where practicable
- aligning joints with changes in geometry or slope rather than across smooth transitions
- avoiding short joint returns or re-entrant corners

Joint locations and detailing shall be considered early in the design, taking into account slab geometry, ground movement and long-term serviceability, consistent with the safety intent of *AS EN 14974*.

Construction joints shall be nominated on the design drawings considering an aligned position, wherever practicable, with planned contraction (saw cut) joints or slab geometry breaks, and formed true and straight, with no offsets or abrupt changes in level. Reinforcement continuity across construction joints shall be maintained unless the joint is specifically detailed as an isolation or movement joint. Unplanned construction joints shall not be permitted without prior approval and justification.

Construction joints shall be detailed to:

- Minimise differential vertical movement. The designer shall provide an appropriate load-transfer mechanism across construction joints, which may include dowels, continuous reinforcement or an alternative engineered solution.
- Where dowelled construction joints are adopted, dowel spacing, size, alignment and debonding arrangements shall be designed to permit limited horizontal movement while maintaining vertical load transfer and surface continuity. Joint design shall limit the risk of differential settlement, faulting, vertical steps and loss of ride quality over the design life of the facility.

Saw cut contraction joints shall be provided to:

- control shrinkage-induced cracking
- define crack locations away from critical riding lines and transitions
- work in combination with reinforcement to limit crack widths

Saw cut joints shall be continuous, cleanly cut and free from ravelled edges and be coordinated with slab geometry, reinforcement direction and surface features. Unless otherwise justified by design, saw cut joints shall be placed such that slab panels maintain acceptable aspect ratios for crack control and serviceability.

Unless otherwise specified, saw cut depth shall typically not be less than one-quarter to one-third of the slab thickness. However, the designer shall assess the appropriate saw cut depth for each concrete element, taking into consideration the slab thickness, reinforcement layout, concrete cover and the need to avoid damaging reinforcing steel. Saw cuts shall not compromise the durability or structural performance of the element by cutting into reinforcement. Saw cut widths shall be 3.5 mm ±1 mm. Joint widths shall be minimised to maintain ride quality, while remaining adequate for crack initiation and long-term performance.

Joint layout shall be coordinated with coping, features, drainage falls and surface finishes.

6.4 Tolerances

Tolerance requirements shall be designed in accordance with *MITS 10A Concrete Works for Skate Parks*, in conjunction with relevant Australian Standards.

6.5 Coping design

Coping design shall support smooth skating performance and continuity of geometry, in accordance with *AS 14974*.

Coping details shall incorporate bespoke structural design detailing to achieve a durable and secure connection with the concrete structure which accounts for potential impact loading conditions. The detailing should minimise movement of the coping over time, reduce the risk of cracking and spalling of adjacent concrete, optimise load transfer and minimise long-term maintenance requirements associated with wear, impact loading and environmental exposure.

Selection and detailing of coping profiles and materials shall be specified in design documentation. Coping profiles and materials shall be suitable for skate use and compatible with the surrounding concrete geometry and finishes. Where coping follows curved skate geometry, radiused coping pieces shall be designed to join tangentially to adjacent elements. Coping geometry shall be detailed to avoid kinks, steps or abrupt changes that may affect skate performance or safety. Where steel coping or exposed steel edges are incorporated into the design, the designer shall ensure that edges are capped, fully welded and ground smooth.

7 Drainage and water management

Stormwater and drainage systems shall be designed in accordance with *MIS 08 Stormwater*, in conjunction with *AS 14974*. Any project-specific departures shall be clearly documented.

The designer shall incorporate drainage and water management measures into the skate park design to prevent water ponding, manage surface and subsurface flows, and minimise ongoing maintenance requirements.

7.1 Surface drainage

All skate park surfaces shall be designed with appropriate grades to prevent ponding. Even minor water retention shall be treated as a safety risk and maintenance issue and shall be addressed through careful geometric design and surface grading.

Where bowls or similar enclosed skate features are incorporated, the designer shall include drainage pits within bowls as part of the surface drainage strategy. Pit locations and surrounding geometry shall be designed to avoid interference with skate lines and transitions.

7.2 Subsurface drainage

The designer shall include subsoil drainage where required to manage groundwater and subsurface water, including:

- behind retaining or structural walls
- beneath slabs and high pavement areas
- within adjacent or integrated landscape zones

Subsurface drainage shall be in accordance with *AGPT10-09 Part 10: Subsurface Drainage*, including:

- preventing ponding within bowls, transitions and flat areas
- managing runoff to avoid staining, lime leaching and surface degradation

Where sites are flood-prone or low-lying, the design shall incorporate

- flood resilience measures
- subsoil drainage
- post flood serviceability considerations

8 Construction practices

Construction quality is critical to the successful performance, safety and longevity of concrete skate park structures. Poor construction quality is identified as a major contributor to premature structural failure and increased risk of user injury. The skate park works are to be undertaken by contractors with demonstrated experience in skate park construction. Construction shall be performed by skate park-specific contractors with:

- demonstrated experience
- understanding of concrete shaping and finishing including burnished steel-trowel finish for 'Skate Areas'
- ability to meet strict tolerances
- understanding of skate park flow and function

These requirements shall be addressed through procurement or prequalification processes defined in the project documentation.

The Contractor's responsibilities are as follows:

- Adhere to design drawings and technical specifications.
- Produce sample panels for surface quality approval.
- Provide a maintenance manual upon completion.
- Fix defects within a 1-year defects liability period.

These requirements shall be clearly stated as contractual quality and compliance obligations.

Defects such as coping set too high or too low, kinked transitions, poor drainage, thin concrete leading to delamination, incorrect steel grade and rushed curing resulting in premature cracking shall be avoided and addressed as soon as identified either during design, construction or defects liability stages of works.

8.1 Quality control and inspection requirements

The designer shall require a project-specific quality control and inspection regime appropriate to skate park construction. Quality control provisions shall account for:

- inspection of geometric accuracy, transitions and blend zones
- verification of surface finish suitability for skate use
- identification of surface defects, steps, kinks or irregularities
- assessment of drainage performance, including identification of water ponding

Where appropriate, the designer shall allow for post-construction review focused on skate functionality and user safety.

8.2 Post-construction review and functional assessment

The designer may specify a post-construction functional review process to confirm that the completed skate park aligns with design intent. This may include:

- review of riding lines, transitions and flow
- identification of areas requiring early remedial works
- functional assessment of surface finish and drainage performance

9 Maintenance and asset management consideration

Maintenance of the riding surface is the highest priority for skate park assets, as proper maintenance significantly extends service life, with well-maintained skate parks achieving substantially longer operational lifespans than those without dedicated care. Skate parks require a maintenance approach that is distinct from playgrounds or generic concrete pavements, recognising the unique functional and safety demands of skate use.

Regular inspections are essential to identify early signs of surface wear, cracking, drainage issues and steel deterioration, with prompt repairs reducing safety risks and extending asset life. Maintenance practices shall be compatible with skate park-specific concrete finishes, as inappropriate cleaning methods or graffiti removal techniques can damage riding surfaces. Protecting the riding surface requires keeping the concrete clean, dry, undamaged and free of debris at all times. Typical recommended inspection regimes:

- High frequency: Remove debris, check hazards, and inspect drainage, seating, bins and signage
- Moderate frequency: Surface checks, graffiti review and detailed inspection
- Low frequency: Expert audit by skate park professionals

Debris such as rocks, broken glass, leaves, mud, wax build-up and even very small objects can pose significant injury risks by interfering with skate wheels.

Repairs and surface management, including epoxy patching, coping block replacement, surface honing in appropriate areas and periodic resealing, shall be undertaken in accordance with the asset owner's maintenance manuals. Graffiti management requires care, with abrasive methods such as sandblasting and high-pressure cleaning to be avoided in favour of low-pressure warm-water washing, compatible coatings and rapid response removal strategies.

Steel elements require ongoing maintenance, including surface protection, removal of burrs and replacement of damaged components, while drainage systems shall be kept clear and functional, with water ponding, seepage and leaf accumulation addressed promptly to prevent deterioration of the riding surface.

10 Future upgrade and adaptation considerations

Skate parks evolve over time in response to changes in skateboarding practice, user expectations and patterns of use. Periodic audits of existing facilities may identify opportunities for targeted upgrades, refurbishment of worn elements, or the addition of new features to improve functionality and extend asset life. Design and construction documentation shall therefore, where feasible, allow for future adaptability, enabling modifications or extensions to be undertaken without compromising the integrity or performance of the original skate park design.