THE CITY OF EDMONTON PLAYGROUND EQUIPMENT STANDARD

Effective: March 2016
MEMORANDUM

POURED-IN-PLACE RUBBER:
RE-EVALUATION OF ITS VIABILITY AS AN APPROVED PLAYGROUND PROTECTIVE SURFACING

• The purpose of this memo is to notify all current Contractors, Suppliers, Installers and Stakeholders of poured-in-place rubber that a re-evaluation of the product was started in 2015. This will include:

  • CAN/CSA-7614 compliance testing of existing poured-in-place rubber
  • A cost comparison analysis to other accessible protective surfaces
  • Supplier and/or Installer warranties
  • Conditions to new pre-qualified Suppliers and/or Installers
  • Upon completion, the outcome of this re-evaluation will be reflected in an updated and revised poured-in-place rubber standard.
# TABLE OF CONTENTS

**MEMORANDUM**  page 1

**PART A: SCOPE OF STANDARD**

PREFACE  page 4

INTENT OF CITY OF EDMONTON STANDARD  page 4

DEFINITIONS  page 6

**PART B: SUPPLEMENT TO CAN/CSA – Z614: APPLICATION OF CITY OF EDMONTON STANDARD**

TESTING METHODS  page 8

PROTECTIVE SURFACES  page 8

SLIDES  page 8

SWINGS  page 9

PLATFORMS  page 10

ROTATING EQUIPMENT  page 10

CLIMBING WALLS  page 11

PLAYGROUND ROOFS DESIGN GUIDELINES  page 12

OUTDOOR FITNESS EQUIPMENT  page 13

SPRAY DECKS  page 13

WHEELED SPORT FACILITIES  page 13

OTHER EQUIPMENT  page 13

PROHIBITED PLAYGROUND EQUIPMENT  page 14

OTHER HAZARD CONTROLS  page 15

**PART C: ADDITIONAL CONSTRUCTION STANDARDS**

ANNEX H  page 17

TEST/TRIAL AND PROHIBITED EQUIPMENT  page 17

EQUIPMENT LAYOUT DESIGN APPROVAL PROCESS  page 18

UNINTENDED USE-ACCESS TO ROOF  page 19

DETERMINATION, IDENTIFICATION AND CORRECTION OF DEFICIENCIES  page 19

EQUIPMENT HAZARD CLASSIFICATION  page 20

**PART D: LANDSCAPE DESIGN STANDARDS**

Introduction  page 21

WARRANTY REPLACEMENT WORK MAXIMUM REPLACEMENT TIMES  page 22

RESPONSIBILITIES OF THE SUPPLIER / CONTRACTOR  page 22

PROTECTIVE SURFACING SPECIFICATIONS  page 24

POURED-IN-PLACE RUBBER  page 31

PLAYGROUND SAND  page 31

ENGINEERED WOOD FIBRE (EWF)  page 34

SPECIFICATIONS FOR WHEELED SPORTS FACILITIES  page 38

Playground Development Standard 2016
PREFACE

- The City of Edmonton has developed a standard to address the planning, design and construction of children’s Playgrounds. This standard shall apply to all new Playgrounds and those undergoing renovation.

- The Owner/Operator supports a ‘designed’ approach to development of play and natural learning spaces under its jurisdiction. As such designers are expected to

- Establish a comprehensive ‘program’ from which to establish the design. As part of this process, input is to be sought from children, students, caregivers and associated staff

- Utilize a ‘universal design’ approach in the preparation of a site master plan which in turn complies with all applicable codes and regulations, and provides for a diverse range of settings and play opportunities

INTENT OF CITY OF EDMONTON STANDARD

- The intent of this standard is to state the City of Edmonton’s interpretation of the Canadian Standards Association CAN/CSA Z614 Children’s Playgrounds and Equipment and to outline supplemental standards. The standard identifies requirements intended to meet design objectives in a manner that promotes positive play experiences in a safe environment.

- CAN/CSA Z614 Children’s Playgrounds and Equipment (CSA) has been adopted as a minimum standard; The City of Edmonton has clarified, modified and enhanced CSA standards in several specific areas to reflect past experience and accident report information.

- In the event that the C.S.A. Technical Committee on Children’s Playgrounds and Equipment releases and updated version of CAN/CSA Z614, the updated version shall take precedence and replace the existing standard on the date of release. Playground designs that have not received final approval shall be evaluated and modified to comply with the new standard.

- Exceptions to the standard may be reviewed upon submission of documentation in support of the requested change by the proponent. This information should provide examples of the proposed exception that can be either field inspected or reviewed through literature. The proponent is responsible to provide the documentation.
DEFINITIONS

● Annex H – is a supplemental document approved for the CSA Z614 titled “Children’s Play and Equipment that are Accessible to Persons with Disabilities”. The document spells out a minimum requirement for Playground accessibility. It is written in mandatory language for where it is required as a policy.

● CSA – is the abbreviation for Canadian Standards Association, a non-profit governing body of independent, autonomous organizations that work towards the further development and improvement of voluntary standardization in the national interest. CAN/CSA Z614 Children’s Play and Equipment is the standard developed by the Technical Committee on Children’s Playgrounds and Equipment. In all cases, refer to the most recent version of the document.

● Professional Judgment – refers to the ability of an individual with current knowledge, skill, or experience, or a combination of these characteristics, in the field of Playgrounds/Playground equipment design, use, or operations, which enables the person to form an opinion or make a decision, or both, concerning a matter within that area of expertise. (current CAN/CSA Z614 ‘definitions’).

● Review Committee – consists of the Project Manager, Landscape Architect, and the Playground Supervisor for the project.

● Measurement - Where both metric and imperial measurements are provided in a standard, the metric measurement shall be used
TESTING METHODS

- In areas of uncontrolled motion on a slide, climbing wall, climbing net, or sliding pole, there shall be no entanglement hazards that could entangle drawstrings or other clothing. (CSA 12.4.1).

- Testing methods described and illustrated for entanglements, CSA clauses 12.4.6, 12.4.7 and figures 14 to 17, shall not apply to the testing protocol used by the City of Edmonton. The nature of the entanglement will determine the size of toggle selected and method used for testing. The toggle size may vary from 10mm to 25mm diameter.

- Testing method for all Playground safety surfacing shall refer to Playground Safety Surfacing Impact Testing Protocol. (See ENCLOSURE D1). The Playground shall remain closed until all testing protocol has been implemented and compliance achieved.

PROTECTIVE SURFACES

Regardless of the type of protective surfacing all playground footprints shall have compliant weeping tile that allows sub-drainage from the footprint to an approved outflow system.

The following safety surfacing materials are approved for use:

No change of surfacing within fall zones
- Engineered wood fiber specification
- Poured-In-Place rubber safety surfacing specification
- No rubber color changes within a single pod
- Seamless application of rubber is strongly preferred
- Sand
- Sand cannot be used as a protective surfacing adjacent to other surfacing types and shall be contained within its own border.
- Other alternative materials may be considered and shall be subject to the new product approval process.

- Drainage: all playground footprints shall have compliant weeping tile that allows sub-drainage from the footprint to an approved outflow system.

The minimum standard for depth of loose fill at installation shall be 356mm. The minimum standard for depth of loose fill after settling shall be 305mm.

SLIDES

The maximum acceptable height for all starting platforms shall not exceed 2438mm.

- Exception: A deck higher than 2438mm up to a maximum of 2743mm shall be permitted if all of the following conditions are met;
- the deck shall have a roof which complies with our standard

Playground Development Standard 2016
● all barricade panels shall be continuous from floor to roof (including slide entrance)
● No opening shall exist between top of slide sidewall and deck vertical support. The sitting section shall have guardrails, handholds and a means of forcing the user to sit down (sit-down bar, hood, guardrail, etc.).
● All slides shall be metal. To minimize solar heating of the sliding surface, slides shall be positioned with chutes facing between northwest and east locations.
● All slides shall be designed and installed to eliminate all drawstring entanglements (CSA 15.5.1.2). See Playground Development Standard, section TESTING METHODS.
● A no-encroachment zone shall be provided in front of the lower exit protective surfacing zone of a slide regardless of the vertical height.

SWINGS

● Senior swing belt seats and tot swing bucket seats shall not be located within the same bay.

● Senior swing crossbar heights shall be between 2438mm and 3048mm above the protective surface.

● Chain shall be a minimum of grade 8 steel, with corrosion-resistant coating and shall have a minimum gauge of 6.4mm (¼”). The strength shall be a minimum grade 30 low carbon steel. The working load limit shall be minimum 590kg (1300 lbs.).

● Installed senior swing seats under load, shall be between 406mm minimum and 508mm maximum, above the surface.

● Tot bucket swing seats shall be between 610mm and 762mm above the protective surface. Tot swing cross bar heights shall be between 2134mm and 2438 above protective surface.

● Concrete footings shall be a minimum of 610mm deep (measured from the bottom of the hole to the top of the clay surface, with vertical or angled-drilled holes and 305mm in diameter. An anchoring bar shall be inserted through the vertical support at a minimum 305mm depth.

● For swings that incorporate two single vertical posts as structural supports, the concrete footings shall be a minimum 762mm deep and 610mm in diameter. An anchoring bar shall be inserted through the vertical support at a minimum 305mm depth.

● For saucer swings, footings shall be: 1/3rd concrete (base), 2/3rd compacted clay (flush with top of sub-base).

Playground Development Standard 2016
PLATFOMS
The maximum senior deck height shall not exceed 2438mm
Exception: A deck higher than 2438mm shall be permitted if:
  o All barricade panels shall be continuous from floor to roof.
  o The deck shall have a roof (roof shall comply to COE section 12)

- The maximum tot deck height shall not exceed 1219mm
- Spaces between adjacent platforms shall be closed off to prevent crawl through motion, and entrapment. Protective infill panels (kick plates) shall be required between all upper and lower decks. (Refer to CSA figure 21).
- Any equipment with uncontrolled motion cannot be attached to platforms that act as transfer stations or service other equipment (such as track rides).

ROTATING EQUIPMENT

- The City of Edmonton has modified CSA standards for rotating equipment (see CSA definitions pg. 15 ‘Rotating equipment’ and clause 14.3). COE standards apply to the full range of angled rotation between horizontal and vertical axis rotational equipment.
- Vertical, semi-vertical (angled axis) rotational equipment intended for standing or sitting shall considered on a trial basis.
- Stand-alone vertical, semi-vertical (angled axis) rotational equipment intended for standing or sitting shall not be permitted unless the structural support is the axis (ex: spinner cups).
- Upper body rotational equipment intended for grasping, having a diameter greater than 610mm, shall require a minimum fall zone of 1.8m and a no-encroachment zone.
- Rotating equipment with a diameter of 1219mm or greater shall be installed over a rubber protective surface that extends a minimum distance of 1.2 m beyond the edge of the apparatus.
- Multi-overhead event upper body rotational grasping wheels are exempt from the COE modifications listed above.
- Rotating equipment axis must have surfacing line indicated to meet CSA standard of 350 mm.
CLIMBING WALLS

- Grasping and standing points must be secured with at least 2 fasteners to prevent rotation

- Stand-alone climbing walls shall not exceed 2743mm in height. Stand-alone climbing walls with last climbable surface 1829mm and higher shall have a minimum 3000mm fall zone. Stand-alone climbing walls with last climbable surface lower than 1829mm in height shall have a minimum 1829mm fall zone.

- Climbing walls shall only be linked or functionally-linked with one another or with composite structure platforms. All other play elements surrounding a climbing wall within the composite structure shall require a minimum fall zone of 1829mm

- Climbing walls that are functionally-linked with one another shall be positioned no closer than 254mm and no farther than 305mm apart. Climbing walls positioned at distances greater than 305mm from one another are not considered functionally-linked and shall comply with standards specified in clause 10.1 above for stand-alone climbing walls.

- Climbing walls that are functionally-linked with composite structure platforms shall be positioned no closer than 254mm and no farther than 305mm apart.

- The highest horizontal or stepping surface on climbing walls that are linked or functionally-linked to composite structure platforms, shall not exceed 305mm above the platform it serves to access for tot structures and 457mm above the platform it serves to access for senior structures.

- The maximum height permitted for a composite structure platform that is linked or functionally-linked to a climbing wall shall not exceed 1829mm

- No rock-climbing wall shall be positioned in a manner to function as a sole means to link or access platforms (bridging).

- As per COE testing method identified in clause 4.2; no drawstring entanglements

- Standards described for climbing walls in clauses 10.1, 10.2, 10.3, and 10.4 shall also apply to climbers. Exception to 10.3: For rung ladders, flexible components, and arch climbers, the stepping surface used for final access shall not be above the designated play surface it serves (C.S.A. 13.3.3).
To prevent injuries from striking lower internal components during a fall, multi-dimensional (spatial geometric) stand-alone and attached climbers shall not incorporate lower, inner horizontal elements that are constructed of metal rungs or chain. Examples: Jungle gyms and castle towers.

‘Fire Towers’, ‘Mine Shaft’ Climbers and similarly designed climbers that are constructed of metal rungs or chains and do not incorporate multi-dimensional internal components shall have a minimum internal fall zone of 1800mm.

‘Chimney’ Climbers and similarly designed climbers that are constructed of rope or cable shall be exempted from the minimum internal fall zone restriction specified in 10.3 above.

Multi-dimensional climbers incorporating internal rope or cable elements shall be reviewed on an individual basis prior to granting approval.

PLAYGROUND ROOFS DESIGN GUIDELINES

- Roof designs should not have easily accessible hand holds or gripping points on the roof and no accessible ornamental features on top of the roof. (flags, chimneys, banners, etc)

- Roof designs should have no adjacent components/features located in close proximity to roofs that promote access to the roof.

- Roofs should overhang the outside of the support posts to make them harder to climb.

- Roofs should have a minimum 30° slope.

- Four 3-D views of the proposed Playground structure are required.

- Four enlargement views of all roofs in the Playground design along with measurements of the distance between the top of barrier railing and the bottom portion of the roof are required.
OUTDOOR FITNESS EQUIPMENT
- Outdoor fitness sites must meet Playground protective surfacing standards
- Outdoor fitness sites must include suitable drainage
- Preference is for equipment with no moving parts
- A separate standards document will need to be established

SPRAY DECKS
- No climbable structures
- No features designed for exiting into pools of water (i.e., Water slides)
- A separate standards document will need to be established

WHEELED SPORT FACILITIES
- A separate standards document (attached) will need to be updated

OTHER EQUIPMENT
- Zip lines - On trial now, need to monitor safety fall zone. May require rubber surfacing or sub surfacing, wear mats etc
- Natural form play structures require the same fall zone protection as conventional Playground equipment
- Natural form play structures require the same height restrictions as conventional Playground equipment
- The following clause shall supersede CSA: CSA clauses 14.11.1 (small children’s Fenced Playgrounds) shall not apply within The City of Edmonton.
  - All Playhouses, activity panels and other Playground equipment shall have protective surfacing zones.
  - The following clause shall supersede CSA: CSA clause 14.2.1.2, second sentence in the first paragraph, shall not apply within the City of Edmonton.
  - Equipment designed so that a user maintains constant contact with the ground during play shall have a minimum 1829mm protective surfacing zone.
- Chain extending into concrete piles shall be a minimum of grade 8 steel and no less than 1/4” in diameter. If the chain extends in to pour-in-place it requires a sleeve and pivot mechanism.
- To eliminate lacerations caused from peeling plastic and to allow inspection to determine the degree of wear, all metal chain shall be free from plastic or rubber coating.
- All overhead equipment rungs shall be free from plastic or rubber coating.
- Bottom rung of metal rail and chain bridges shall not be installed higher than 304.8mm above the surface.

Playground Development Standard 2016
● Equipment incorporating cable/rope components shall not be installed over sand protective surfacing.

● Telescopes shall not have the ability to retain liquid.

● Sand and water tables shall not be constructed of fiberglass material.

● Sand and water tables must have grounding tabs, stainless steel studs or holes for grounding wires.

● Sand and water tables grounding wires must be enclosed in conduit and be installed at a minimum depth of 2” below sub-base.

● Sand and water tables must drain freely.

PROHIBITED PLAYGROUND EQUIPMENT
Types of prohibited equipment:
● Sand diggers
  *Concrete statues must provide a function with play value*
● Tube see-saws
● Spring toys with chain
● Slide starting platform barrier panels that do not extend all the way down to platform
● Mesh decks and mesh in-filled components
● Poly/plastic bubble panels
● Pressure-treated wood*
● Untreated wood*
● Sectional rubber safety tiles
● Poly/plastic slides
● No roller slides
● Rubber and plastic-coated chain
● Rubber and plastic-coated graspable overhead equipment rungs
● Playground carpet protective surfacing
● Teeter-totters with automobile tires as shock-absorbing material
● Functionally-linked climbers that are not configured in a straight line
● For a comprehensive listing of items specific to each approved manufacturer, refer to the list provided in the prequalification letter of approval.

• *all untreated wood products for Playground equipment (exception: City crews performing day to day repairs or Playground Conservation may use untreated wood products to maintain existing wood Playgrounds).
OTHER HAZARD CONTROLS

- Above grade cross-structural bracing systems shall not be permitted in the City of Edmonton. Footings cannot protrude above the sub-base. If a sub-base grade elevation change exists, the footing shall conform to grade.

- Equipment attached to decking (chain ladders, slides, arch climbers, fire poles, etc.) shall be anchored in concrete. Pinning in clay is not acceptable. Ground bound ends shall be secured in concrete footings with a minimum depth of 610mm and a minimum diameter of 152mm. **There shall be a minimum depth of 305mm surfacing above the anchor.**

- Talk tube pipes and mounting clamps shall be buried below the top of the sub-grade.

- All mis-drilled holes on Playground structure shall be filled with the appropriate material.

- To prevent post-settlement of Pour-In-Place safety surfacing sub-base, any mis-drilled piling hole shall be filled in with concrete and troweled level with sub-grade.

- All threaded fasteners shall be secured with a thread locking ("Loctite") compound.

- Fencing, lighting, walkways, washrooms, storage, emergency phone, trees, park furniture, trash units, etc. are amenity considerations for playspace facilities on a project-by-project basis accounting for location, surrounding, and adjacent uses.
ANNEX H

The City of Edmonton supports building barrier free Playgrounds and on providing support and increasing opportunities for people of all abilities to grow and learn together through outdoor play. The framework for this is provided in Annex H of the CSA Z614 standards.

The scope of this Annex does not include the area surrounding or beyond the Playground including, but not limited to, parking, washrooms, drinking fountains, and recreation facilities. Note: For more information about accessible design beyond the Playground see CSA B651.

TEST/TRIAL AND PROHIBITED EQUIPMENT

● The updated prohibited equipment list is available together with the Pre-qualification Playground Equipment Form

EQUIPMENT LAYOUT DESIGN APPROVAL PROCESS

● The general process for approving equipment layout design plans shall be as follows:
 ● Site development plan to be confirmed and approved prior to finalization of equipment layout design. Fencing, lighting, walkways, washrooms, storage, emergency phone, trees, park furniture, trash units, etc. are amenity considerations for playspace facilities on a project-by-project basis accounting for location, surrounding, and adjacent uses.
 ● Review Committee will review the proposed equipment layout
 ● Supplier will be contacted about equipment and/or layout concerns identified by the Review Committee and given the opportunity to give feedback and/or suggest alternate equipment or layout
 ● Final equipment approval by Review Committee, and project can proceed to construction detail phase when all funding is in place
 ● All design changes shall be solely communicated through the City of Edmonton Project Manager for approval, prior to implementation.
 ● Playground equipment shall be constructed and installed according to specifications as shown on the approved design plan, notes and manufacturer’s specifications. Equipment suppliers’ plans shall include the following:
   o Project title/description
   o Equipment layout plan revision #, and date of revision
   o Provide an itemized final list of equipment installed
   o Listing/logo of each Equipment Supplier represented
   o Statement of C.S.A. compliance
   o Specified protective surface zones around the equipment, no change of surfacing within entry
   o Specified no-encroachment zones

Playground Development Standard 2016
Heights of all decks/platforms, overhead apparatus and swing cross-bars
Built-in scale
3-D drawings from all 4 angles
3-D drawings of all roofs in Playground design
Roof heights showing distances from all climbable structures and components
Installation detail for roof design
Table specifying number and type of ground level play components confirming accessible requirements according to Annex H
Age-specific designation for applicable equipment
PDF version of the AutoCAD drawing
AutoCAD drawing (.dwg) saved as version 2004
Drawing in metric to scale
Drawing in 2D
All drawing layers turned on that are required for use by COE (ie: play apparatus, fall zones, labels, pour in place layout, piles)
Cross-references associated with the drawing
Blocks associated with the drawing
Project title
Equipment layout plan revision # and date
Equipment drawn in the Playground pod
Equipment labeled
Heights of all decks/platforms, overhead apparatus and swing cross bars
Logo of each equipment supplier represented
No encroachment/safety zones for all equipment
Pile layout for all equipment
Bar scale
Fall height chart
Universal Access chart specifying the number and type of ground level play components confirming accessible requirements according to Annex H
Age specific designation for applicable equipment
PDF version of the AutoCAD drawing
PDF highlighting the piles the installer would like staked by Survey
CSA conformance disclaimers
UNINTENDED USE-ACCESS TO ROOF

Equipment design shall not encourage access to roof. Hazardous use is promoted when the upper surfaces of roofs become directly or indirectly accessible by the relative positioning of:

- barrier panels
- climbers having rungs positioned higher than the adjoining deck
- Any climbable component higher than the platform (see COE standard 19)
- All efforts shall be made to identify and eliminate hazards during the design review process. The Review Committee shall use professional judgment to determine hazardous equipment relationships during design review.
- If the hazard becomes evident after the installation, the Review Committee shall use professional judgment to determine whether equipment relationships are hazardous. Identified hazards shall require modification, replacement or removal.

DETERMINATION, IDENTIFICATION AND CORRECTION OF DEFICIENCIES

The Inspectors are authorized to determine and prioritize deficiencies by applying The Canadian Standards Association standard (C.S.A.), the City of Edmonton Playground Standard and their professional judgment in order to identify hazardous conditions and maintenance concerns.

Deficiencies shall be documented on the “City of Edmonton – Playground Construction Inspection Report”. In determining or clarifying a deficiency and its severity, the inspectors are authorized to:

- assign class hazard criteria to prioritize correction deadlines
- quote references from, or provide an interpretation of C.S.A. and the City of Edmonton Playgrounds Development manuals.
- document deficiencies in cases where no written standard currently exists

The Review Committee shall make every effort to identify and correct hazards and maintenance concerns on the plan prior to the installation, and shall use their professional judgment to determine deficiencies pertaining to equipment relationships that encourage hazardous use on plans and as-built composite structures.

Equipment shall not be accepted until after the site installation inspection.

All equipment deficiencies shall be corrected by the Supplier and approved by the Review Committee.
EQUIPMENT HAZARD CLASSIFICATION
The Inspectors shall assign class hazard criteria* to indicate the nature and priority of repairs:

<table>
<thead>
<tr>
<th>EQUIPMENT HAZARD CLASS</th>
<th>CRITERIA*</th>
<th>NATURE OF CORRECTION</th>
<th>CORRECTION TIMELINE upon issuance of the inspection report</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS ‘A’</td>
<td>Any condition which has the potential to be life threatening or can cause severe, permanent injury</td>
<td>Equipment shall be removed, modified or replaced</td>
<td>5 working days</td>
</tr>
<tr>
<td>CLASS ‘B’</td>
<td>Any condition which has the potential to cause serious but non-disabling injury</td>
<td>Equipment shall be removed, modified or replaced</td>
<td>8 working days</td>
</tr>
<tr>
<td>CLASS ‘C’</td>
<td>Any condition which can cause slight injury, or may not have caused injury but does not meet current standards</td>
<td>Equipment may be removed, modified, replaced, or be placed on a one year trial and monitored, or require no action or follow-up</td>
<td>14 working days or as negotiated</td>
</tr>
<tr>
<td>Equipment hazards and all construction-related deficiencies</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PART D.
ADDITIONAL CONSTRUCTION STANDARDS
To be submitted as part of the Landscape Design Standards

The following are items which have been part of the playground development standard. More appropriately they are part the construction standards and should be part of the ‘Blue book’. Some of this is better included in the tender process.
WARRANTY REPLACEMENT WORK MAXIMUM REPLACEMENT TIMES
Approved City of Edmonton Suppliers shall ensure that replacement parts for any pre-qualified Playground or water play product is available within the following timelines:

<table>
<thead>
<tr>
<th>TYPE OF EQUIPMENT</th>
<th>TIMELINES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasteners &amp; Bolts</td>
<td>5 working days</td>
</tr>
<tr>
<td>Common Wear &amp; Tear Components Moving and Swivel Components</td>
<td>7 working days</td>
</tr>
<tr>
<td>Cables, Ropes &amp; Connectors</td>
<td>14 working days</td>
</tr>
<tr>
<td>Technical or Electronic Replacement Parts</td>
<td>7 working days or as negotiated</td>
</tr>
<tr>
<td>Manufactured Structural Components</td>
<td>Within 6 weeks</td>
</tr>
</tbody>
</table>

RESPONSIBILITIES OF THE SUPPLIER / CONTRACTOR
Playground and Water Feature equipment Suppliers are responsible to arrange for delivery of the equipment at the predetermined location, and must be onsite at time of delivery to receive, inspect and unload.

The Supplier shall provide a CPSI certified installer for Playground equipment. The certified installer shall be on site at all times during the installation of the Playground equipment.

The Playground site shall not be opened until all deficiencies are corrected and the C.C.C. issued. Only the City of Edmonton Playground Inspector shall collaborate with the project manager to remove of the security fencing, if appropriate for the stage of the site development.

The play equipment Supplier shall return 30 days after the installation, to inspect and tighten all loose hardware. The Supplier is responsible to contact the Project Manager with a scheduled date and time prior to the maintenance.

The Supplier is responsible to provide the City of Edmonton with a fully stocked maintenance kit and an operations / maintenance manual upon the completion of each Playground Installation before the playground will be opened. These will include detailed specifications for each component.

Playground Development Standard 2016
Project manager or Contractor shall provide a timeline charter to the team leaders before construction begins

CONSTRUCTION SPECIFICATIONS

- The security fencing shall be 1829mm. Each panel shall be attached to adjacent panels with fastening brackets similar in design to example shown in pictures below. The minimum size of fastening hardware shall be 9/16” nut and 3/8” bolt.

[Images of fastening brackets]

- All concrete flat-work shall use minimum 2”x6” forms.

- Clay footings are not allowed. Alternatives for large footings are concrete or soil cement.

- No vegetation (other than grass) within 10m of a playspace

- Fencing, lighting, walkways, washrooms, storage, emergency phone, trees, park furniture, trash units, etc. are amenity considerations for playspace facilities on a project-by-project basis accounting for location, surrounding, and adjacent uses.

Playground Development Standard 2016
PART D. ENCLOSURES

ENCLOSURE D1
Last revised FEBRUARY 2011

PROTECTIVE SURFACING SPECIFICATION
Poured-In-Place Rubber Surfacing

Part 1 – General

1.1 Summary
   A) Section Includes: Poured-in-Place resilient Playground safety surfacing
   B) Related Work: Playground equipment installation, sub-surface preparation, storm
      drainage, security fencing, and similar work shall be provided by the General
      Contractor or other assigned party.
   C) At the time of sign off to Surfacing Contractor, the surfacing contractor accepts the
      like and kind of the base preparation as suitable to the base applied.

1.2 References
   A) CAN/CSA-Z614-03 & ASTM F1292-04: Standard Specifications for Impact
      Attenuation of surface systems under and around Playground equipment.
   B) ASTM 2157: Running Track Standard
   C) ASTM D2859: Standard Test method for flammability of finished textile floor
      covering materials as per ASTM 2157
   D) ASTM 1951: Standard specification for determination of Accessibility of surface
      system under and around Playground equipment

Part 2 – Product Specifications

Poured-In-Place Applications

2.1 Description of System
   A) Product: Poured-in-Place protective safety surfacing or approved equal

   B) Description: A dual density, resilient impact attenuating safety surfacing system that
      is mixed, troweled and compacted on site to form a resilient seamless surface.
      Surface system shall consist of an impact layer and a wear layer consisting of
      recycled tire crumb, chips, or thread, blended with a polyurethane binder throughout
      the entire depth of surfacing.

Playground Development Standard 2016
C) **Materials**: The surfacing contractor shall be responsible for all labor, materials, tools, equipment and applicable taxes to perform work and services required for the installation of the protective surfacing

i) **Impact Layer**: Binder to rubber ratio range (by weight) for impact layer shall be within 12-15% unless otherwise specified. Variations to this specification may be considered but will require pre-approval by the City of Edmonton. Impact layer shall be installed to thickness sufficient to the impact attenuation requirements as determined by the designated play surface or a location otherwise specified in CAN/CSA-7614 and the protective surfacing beneath it. (see CSA 15.16 'Elevated Platforms').

ii) **Wear Course**: Shall be manufactured using a mixture of EPDM rubber granules and polyurethane binder mixed at a ratio range of 21-23% binder to rubber (by weight) unless otherwise specified. Variations to this specification may be considered but will require pre-approval by the City of Edmonton. Wear coarse shall be installed to a minimum thickness of 9mm

iii) **Colors**: EPDM colored crumb shall be used unless otherwise specified. Color shall not be obtained by way of pigmented binder unless specified or pre-approval is obtained. Colored rubber shall be colorfast and UV resistant. Colors may applied as one solid color, as a combination of variegated speckles, or as specified by design.

2.2 Quality Assurance
A) CAN/CSA-Z614 & ASTM F1292: Gmax less than 200; HIC less than 1000 within 3 temperature laboratory tests (standard lab test temperature is –1 C). Field Testing will be conducted within temp range of -5 C and +49 C in a clean condition

B) The fall height around elevated platforms shall be measured from the protective surfacing to 724mm above the elevated platform when intended for children 18 months to 5 years old and 950mm above the elevated platform when intended for children 5 to 12 years old. The fall height of an elevated platform that is totally enclosed by protective barriers that meet the roof shall be the height of the elevated platform. (See CAN/CSA-Z614, clause 15.16).

C) In the case of inclement weather, the sub-base contractor shall be responsible for ensuring that reasonable steps have been taken to protect the sub-base area from the undesirable weather elements. In cases where heavy rainfall or other threatening environmental conditions persist, compaction retesting may be required prior to the installation of the impact layer or wear course surfacing.

Playground Development Standard 2016
D) In keeping with the need for ambient temperatures required for installation, Poured-In-Place rubber surfacing shall not be installed when temperatures fall below 10 degrees Celsius. Exceptions may be granted upon special request and approval by the City of Edmonton, in which case necessary heating and hoarding may be required. Rubber surfacing installed outside the specified conditions must still comply with the specified warranty conditions required of this agreement.

E) Scope of Warranty will meet or exceed the specified requirements referenced in Warranty

2.3 Submittals
A) Surfacing Contractor shall supply a materials list of items proposed for identified project

B) Surfacing Contractor shall supply Manufacturer specifications and other related test data needed to prove compliance with specified requirements

C) Verification samples showing product color and texture will be provided prior to installation

D) Surfacing Contractor shall supply recommended maintenance and repair procedures to Owner operator.

E) Surfacing Contractor shall supply Certificate of qualifications of surfacing installer

F) Surfacing Contractor shall supply MSDS & Product data sheets for all component materials supplied

G) Warranty documents shall be supplied in writing to all parties delineating specific terms and conditions for all applicable warranty items.

2.4 Supplied
A) Construction drawings in sufficient detail will be provided to the surfacing contractor as part of the scope of work tender package.

B) Sub-Base preparation and specific installation requirements shall be supplied to the Surfacing Contractor prior to installation by way of the tender package or as directed by the Landscape Architect.
Part 3 – Execution of

3.1 Installation
♦ Refer to published sub-base, drainage, and installation requirements as specified in defined scope of work detail supplied by project tender and Landscape Architect.
♦ Areas and conditions within the defined scope of work shall be examined prior to commencement and officially signed off by the General Contractor, Landscape Architect, Surfacing Contractor, and Project Manager as suitable to proceed.
♦ Conditions detrimental to timely and proper completion of the work must be corrected prior to proceeding with installation. Installation shall not proceed until unsatisfactory conditions are corrected.
♦ In areas where Surfacing Contractor requires thicker protective surfacing (following sub-base sign off), the Surfacing Contractor shall be responsible for modifying the subbase accordingly.

3.2 Sub Base Preparation
A) Compacted Aggregate:
♦ 150 mm – 200 mm, minus 20-25 crushed gravel base spec, with < 5% fines, compacted to 95% or better standard proctor density
♦ Shall maintain a planarity of plus minus 6mm over 3m in any direction unless otherwise specified
♦ When protective surfacing is applied after equipment installation it is difficult to obtain the required compaction standard. Hand tamping may be required in areas difficult to access. In such cases, compaction around the existing post or support structure shall be tamped with a hand block in 50mm lifts, adding moisture (dampen) as each lift is applied.
♦ NOTE: Any compacted clay beneath crushed gravel base spec shall require confirmed compaction to 98% or better standard proctor density.

B) Concrete/Asphalt (as per City of Edmonton Specification Standards):
♦ Concrete 120 mm minimum thickness; Asphalt 75mm minimum thickness
♦ Slope as specified on drawings supplied
♦ Light broom finish
♦ Must be new or if old concrete, appropriately cleaned to ensure proper adhesion
♦ Asphalt must be at least two weeks old and washed down once prior to application of base mat material

C) Edges:(Refer to manufacturers edge details
♦ Concrete retainer as specified on drawings supplied
♦ Sloping edge 30% degree minimum
♦ Keyway, 50mm width, 100mm depth

Playground Development Standard 2016
D) Protection:
♦ Site shall be protected from unintended walking on installed surfacing until 100% cure is obtained, unless otherwise agreed to and a sign off inspection has occurred with Surfacing Contractor and City of Edmonton. Cure time will vary depending on temperature and humidity.

**NB.** Generally that is achieved within 36-48 hours. Product will cure faster when outside temperature is warm and humid and much slower when cold and dry.

3.3 **Proof of Competence**
A) Bidder shall submit proof of competence and ability to carry out work as per submittal references and Certificate of qualifications of installer

3.4 **Contractor Pre-Qualification**

**Reference list**
♦ A minimum of three years of direct experience installing pour in place rubber surfacing, including a list of projects completed within that time frame.

♦ List shall include names of project representatives & respective phone numbers

**Assurance**
♦ Supply bid security issued by a reliable surety company in the amount 10% (minimum) of the entire bid amount

♦ All bidders must be prepared to submit a performance bond for their work

**Insurance**
♦ General liability of not less than $2,000,000 per occurrence for personal injury and/or property damage.

♦ Standard Automobile Liability of not less than $2,000,000 per accident for bodily injury and/or property damage

**Warranty**
♦ Materials & Workmanship - Protective Surfacing Supplier shall provide a minimum 2 year warranty on materials & workmanship

♦ Performance Criteria - Protective Surfacing installed must meet the performance criteria of less than 150 Gmax and less than 900 HIC when tested according to ASTM F1292. Test results performed on the installed protective surfacing using a Triax2000 instrument (conforming to the technical requirements of ASTM F1292-99) between 10 to 25 days after the installation will be required and must confirm the Gmax of less than 150 and HIC of less than 900.

Playground Development Standard 2016
An independent 3rd party will conduct the Triax test. The City of Edmonton will arrange for the on site field test within 10 to 25 days after installation. At the discretion of the City of Edmonton, additional follow up test(s) may be conducted prior to the issuing of the Final Acceptance Certificate (FAC). The FAC will occur 2 years after the issuance of the Construction Completion Certificate (CCC). If a follow up test is applied, the performance criteria required shall comply to the current CAN/CSA-Z614 standard in effect at the time of installation.
1. **GENERAL**

   **SCOPE:** Supply and delivery of sand to be used for Playground construction.

2. **PRODUCTS**

   **GENERAL:** Sand shall be uniform, natural and coarse and conform to the specifications in this section.

2.1.2 Sand shall be free from vegetation, clay balls or other extraneous material.

2.1.3 All sand shall be washed and conform to the sieve analysis shown below.

2.1.4 Sand shall contain no more that 2% of lightweight pieces floating on a liquid of specific gravity 2.0.

2.1.5 The allowable moisture content shall be 4% based on the dry weight of sand. If the moisture content is higher then the weight of water in excess of 4% shall be computed and deducted from the total weight of sand supplied.

2.2 **SELECTION:**

2.2.1 The source of the sand must be submitted with the tender and approved by the Project Manager before the commencement of operations.

2.2.2 The Contractor shall use reasonable care in the selection of material from a pit so as to produce a uniform product.
2.3 SIEVE ANALYSIS

2.3.1 When tested by means of laboratory sieves, the sand shall meet the following grading requirements and be uniformly graded between the limits:

<table>
<thead>
<tr>
<th>Sieve Size (mm)</th>
<th>% Passing by Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 mm (No.8)</td>
<td>100 – 100</td>
</tr>
<tr>
<td>1.25 (No.16)</td>
<td>85 – 100</td>
</tr>
<tr>
<td>0.8 mm (No.20)</td>
<td>48 - 70</td>
</tr>
<tr>
<td>0.315 mm (No.50)</td>
<td>2 – 30</td>
</tr>
<tr>
<td>0.16 mm (No.100)</td>
<td>0 – 6</td>
</tr>
<tr>
<td>0.063 mm (No.200)</td>
<td>0 - 1</td>
</tr>
</tbody>
</table>

2.3.2 Sieve analysis and sample for the sand shall be provided with the tender. Samples shall be approximately 2 to 3 kilograms contained in plastic lined jute bags. The type of material bagged shall be clearly identified.

3. EXECUTION

DELIVERY STORAGE AND HANDLING

One grading test shall be taken for every 300 tonnes of sand produced.

3.1 Sand Delivered to a Stockpile

When sand is to be delivered from the screening/washing plant to a stockpile the average grading of the first eight consecutive sieve tests shall confirm to the specified grading band. If they do not then the production process shall be adjusted so that average grading of the first eight tests and the subsequent eight consecutive tests confirms to the specifications. If this does not happen then the sand produced should not be transported to the stockpile.

3.2 Sand Delivered Directly to Site

When sand is not be delivered from the screening/washing plant to site, then the average grading of any three consecutive tests shall conform to the specified grading band.

Playground Development Standard 2016
DELIVERY

3.2.1 The Contractor should be prepared to deliver to site or sites indicated within the City of Edmonton upon receipt of 48 hours notice.

3.2.2 Sand may be inspected and tested at any time during the contract period as directed by the Project Manager. If the material does not confirm to the specification, then it may be rejected and delivery refused.

3.2.3 Rejected sand already delivered to site shall be removed by the Contractor at the Contractor’s expense within 24 hours. If the sand is not removed within the designated time frame, then it will be removed by others and the cost of the removal charged to the Contractor. Supply and delivery costs for reject sand will not be paid.

3.2.4 Random Sampling will be submitted for testing

TRUCK SIZE AND CAPACITY

3.3.1 The capacity and type of the truck the Contractor proposes to use to deliver sand shall be submitted to the Project Manager for approval prior to the start of the contract.

3.3.2 The use of semi-trailer type units may be restricted when hauling sand to certain sites.

3.3.3 Trucks may be measured for size during the contract as determined by the Project Manager. Trucks falling outside of the previously approved limits shall be removed from service immediately.

LOAD LIMITS

3.4.1 The loading of trucks will be subject to the City of Edmonton Traffic Bylaw No. 5590.

3.4.2 In addition, the Project Manager may further limit the loading of trucks to prevent spillage of material or damage to public thoroughfares.
CONSTRUCTION SPECIFICATIONS
ENGINEERED WOOD FIBRE (EWF)
FOR Playground CONSTRUCTION

1. GENERAL

1.1 OTHER MULCHES SUPPLIED TO CITY OF EDMONTON
Notwithstanding other mulches that may be supplied to City of Edmonton, Engineered Wood Fibre (EWF) is very specific to Playground safety surfacing. The following specification shall be adhered to for EWF when supplied to City of Edmonton for Playground construction tenders.

1.2 SCOPE
The supply and delivery of Engineered Wood Fibre [EWF] for Playground safety surfacing and accessibility during a Playground construction project must adhere to the following specifications.

2. PRODUCTS

2.1 GENERAL

2.1.1 EWF shall be uniform and natural in composition and conform to these specifications as well as any manufacturer specifications of the supplier.

2.1.2 EWF shall be free from vegetation or other extraneous material. The fibre should come mainly be from deciduous trees and not contain such items as bark, twigs or needles.

2.1.3 All EWF shall be clean, free from prohibited materials (peat moss, manure, raw compost, paper products, plastics, rubbers, gelatinous sprays, plywood or other lumbers containing chemical adhesives or wood preservatives) and must conform to the sieve analysis shown below.

2.1.4 EWF shall be of high quality; free from diseases, molds, fungi and insect infestations. All organic fibre shall be free of inorganic materials (metal, glass, rock and other foreign materials).

2.1.5 EWF shall contain no more than 2% of dust floating on a liquid of specific gravity.

2.1.6 The allowable moisture content shall be no more than 2%.

Playground Development Standard 2016
2.2 **SELECTION**

2.2.1 The source of the EWF must be submitted with the tender and approved by the Project Manager before the commencement of operations (please see approved supplier listing prior to bid submission).

2.2.2 Substitutions during the construction season will not be allowed unless the new supplier meets the requirements and has filled out a new supplier application.

2.2.3 The Contractor shall use reasonable care in the selection of material as to produce a uniform product, so that it will meet the following sieve analysis.

2.3 **SIEVE ANALYSIS**

2.3.1 When tested by means of laboratory sieves, the EWF shall meet the following grading requirements and be uniformly graded between the limits.

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4 &quot;</td>
<td>99%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>3/8 &quot;</td>
<td>75%</td>
<td>100%</td>
<td>86%</td>
</tr>
<tr>
<td>No 16</td>
<td>0</td>
<td>15</td>
<td>12</td>
</tr>
</tbody>
</table>

2.3.2 Samples for the EWF shall be provided with the tender. Samples shall be approximately 2 to 3 kilograms contained in plastic lined jute bags. The type of material bagged shall be clearly identified.

3. **EXECUTION**

3.1 **DELIVERY STORAGE AND HANDLING**

3.1.1 **EWF Delivered to a Stockpile**

When EWF is to be delivered from the mill to a stockpile the average grading of the first eight consecutive sieve tests shall conform to the specified grading band. If they do not then the production process shall be adjusted so that average grading of the first eight tests and the subsequent eight consecutive tests conforms to the specifications. If this does not happen then the EWF produced should not be transported to the stockpile.
3.1.2 EWF Delivered Directly to Site

When EWF is to be delivered from the mill, the average grading of any three consecutive tests shall conform to the appropriate sieve analysis prior to shipping from the mill. This analysis must be provided to Parks Design and Construction early in the spring of each construction season before any release to site.

3.2 DELIVERY

3.2.1 The Contractor should be prepared to deliver to site or sites indicated within the City of Edmonton upon receipt of 72 hours notice.

3.2.2 EWF may be inspected and tested at any time during the contract period as directed by the Project Manager. If the material does not conform to the specification then it may be rejected and delivery refused.

3.2.3 Rejected EWF already delivered to site shall be removed by the Supplier at the Supplier’s expense within 24 hours. If the EWF is not removed within the designated time frame, then it will be removed by others and the cost of the removal charged to the Supplier. Supply and delivery costs for reject EWF will not be paid.

3.3 TRUCK SIZE AND CAPACITY

3.3.1 The capacity and type of the trucks the Contractor proposes to use to deliver EWF shall be submitted to the Project Manager for approval prior to the start of the contract. (A standard Tandem 1 Ton Dump type truck or equivalent is deemed appropriate).

3.3.2 The use of semi-trailer type units may be restricted when hauling EWF to certain sites.

3.3.3 Trucks may be measured for size during the contract as determined by the Project Manager. Trucks falling outside of the previously approved limits shall be removed from service immediately.

3.4 LOAD LIMITS

3.4.1 The loading of trucks will be subject to the City of Edmonton Traffic Bylaw, No 5590.

3.4.2 In addition, the Project Manager may further limit the loading of trucks to prevent spillage of material or damage to public thoroughfares.
3.5 BASE PREPARATION FOR EWF MATERIAL

3.5.1 Preparing base for EWF product must be done in accordance with the manufacturer's specifications for their product as it may affect warranty.

3.6 SPREADING, TOPPING AND TAMPING OF MATERIAL

3.6.1 Contractor or Supplier shall spread fibre evenly throughout the footprint in tamped lifts of 150mm to an overall settled depth of 305mm. To ensure the settled depth, the fibre shall be topped up to a minimum of 50mm above the top of the curbing.

SHADE STRUCTURES
- Shade structures shall be reviewed by the City of Edmonton Review Committee prior to approval. All shade structures must have manufacturer stamped engineered drawings and detailed installation specifications as well as an Alberta Engineer’s stamp.

- Shade Structure posts and frames shall be constructed of steel.

- Shade structures shall be vandal resistant, durable and low maintenance with tamper proof hardware and paint coating that is spray-paint resistant.

- Design shall not allow access to roof.

PARK FURNITURE
- Park furniture shall be vandal resistant, durable and low maintenance with tamper proof hardware and paint coating that is spray-paint resistant.

- Park furniture shall be easily serviceable for parks operations, or easily removed and replaced if required.

- Suppliers are responsible to provide liners with all Garbage/Waste containers.

- Park furniture shall be assembled by supplier or manufacturer.
ENCLOSURE D4

SPECIFICATION FOR WHEELED SPORTS FACILITIES
(Skatepark)

Last Revised FEBRUARY 2007

Contents

<table>
<thead>
<tr>
<th>Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td></td>
</tr>
<tr>
<td>1 SCOPE</td>
<td></td>
</tr>
<tr>
<td>2 REFERENCED STANDARDS</td>
<td>72</td>
</tr>
<tr>
<td>3 TERMS AND DEFINITIONS</td>
<td></td>
</tr>
<tr>
<td>4 DIMENSIONS</td>
<td></td>
</tr>
<tr>
<td>5 DESIGN</td>
<td></td>
</tr>
<tr>
<td>6 MATERIALS</td>
<td></td>
</tr>
<tr>
<td>7 SURFACING AND SURROUNDING AREAS</td>
<td>93</td>
</tr>
<tr>
<td>8 ANCILLARY</td>
<td>93</td>
</tr>
</tbody>
</table>

Playground Development Standard 2016
Foreword

This City of Edmonton Wheeled Sports Facilities Guideline applies to facilities for unpowered skateboarding, in-line skating, roller skating and BMX riding, installed in unsupervised areas. Where supervision is available or where access is controlled different considerations may apply. These facilities generally include manufactured items such as rails, ramps and pipes on which a wheeled device such as a skateboard or other roller sport equipment can be used.

The Guideline specifies safety requirements to protect users and third parties from hazards that they may be unable to foresee when using the equipment as intended, or in a manner that can be reasonably anticipated. Requirements are specified for the equipment, and recommendations are given for site location.

The Guideline does not apply to competition or commercially operated facilities, though many aspects covered by the document may be relevant to such facilities.

The specification includes requirements relating to materials, dimensions and construction of equipment, but specific designs are not given for ramps as these may vary with type of facility and use.

Compliance with these guidelines is required for all facilities located on City land. The City of Edmonton, Asset Management & Public Works requires that all skatepark product suppliers must comply with the Skatepark Product Supplier pre-approval process as specified by Parks Design & Construction, Parks Branch.

1. Scope

This Guideline specifies requirements for facilities for unpowered skateboarding, in-line skating, roller skating and BMX riding, installed in unsupervised areas. These facilities include manufactured items such as rails, ramps and pipes on which a wheeled device such as a skateboard or other roller sport equipment can be used.

It applies to ramps and general riding surfaces, and to fixed and movable streetcourse equipment.

It does not apply to competition facilities or to commercially operated facilities.
2. Referenced Standards

The following standards contain provisions referenced in this text.


City of Edmonton Design & Construction Standards Volume 2 Construction Specifications

Canadian General Standards Board CAN/CGSB-12.12-M90
Plastic Safety Glazing Sheets
CSA-Z614-03
Canadian Playground Safety Standard.


3. Terms and definitions

For the purposes of this document, the following definitions apply.

Professional Judgment
Where an interpretation is necessary, City Safety Inspector use professional judgement to ensure that there is compliance to the Standard.

Facility
Area dedicated to the use of unpowered skateboards, roller skates or similar roller-sport equipment, and BMX cycles, and which comprises a constructed riding surface including ramps and other structures

Street course Equipment
Items other than half-pipes which may be used for wheeled sports

Competition Facility
Facilities which are accessible for the duration of a competition under the supervision of the event organizer

Commercially Operated Facility
Facilities which are constantly supervised by the operator and may include an admission fee

Transition
Connection of curved profile between two levels of a riding surface

Playground Development Standard 2016
Riding Surface
Surface on which wheels are intended to be used

Flat
Horizontal part of the riding surface usually between transitions

Coping
Circular tube or bar which is firmly attached to the top of a transition/ or a ramp

Structure
Constructed feature forming a riding surface

Ramp
Structure incorporating one or more transitions and/or straight profiles

Platform
Flat surface at the top of a ramp and/or transition

Flat Bank
Structure incorporating one or more constant riding surfaces and a platform (see Figure 2)

Jump Ramp
Ramp without a barrier, guardrail or platform (see Figure 3)

   NOTE: Jump ramps are sometimes known as “wedge ramps”.

Spine Ramp
Ramp incorporating two opposite transitions forming a ridge (see Figure 6)

Wall Ramp
Ramp leading to a vertical surface (see Figure 7)

Quarter Pipe
Pipe consisting of a single transition surmounted by a platform (see Figure 5)

Half-Pipe
Pipe consisting of two platforms separated by two opposite transitions and a lower flat
section (See Figure 8)

Free-Fall Height
Perpendicular distance between one surface and a lower adjacent surface

Safety Area
Area around a structure or facility necessary for its safe use

Playground Development Standard 2016
Run-Up
Space which is required for safe wheeled access to a structure

Run-Out
Space which is required for safe wheeled exit from a structure

Barrier
In filled panel designed to stop the user from falling

Grind Rail
Curb or rail along which it is possible to grind or slide

Depth (of a platform)
Dimension in the same direction as the transition to the platform

4. Dimensions

General

If a wheeled sports facility is provided for use in conjunction with a Playground, it shall be clearly separated from the general play area by a space at least 25 m wide and/or by a physical barrier at least 1200 mm high.

No free-fall height from a platform shall exceed 1 000 mm unless barriers are provided. No ramp shall rise to a height of more than 2 000 mm. Exceptions may be granted for competitions.

Accessible metal edges shall be rounded off with a minimum radius of 3 mm.

Where ramps abut run-up surfaces, the change in levels between the run-up surface and the ramp shall not exceed 5 mm.

NOTE: A maximum change in levels of 3mm is preferred

Grind Rail/ Curb

The height of the grind rail shall be at least 150 mm measured from the riding surface.

The grind rail shall be at least 50 mm wide.
If the height of the grind rail exceeds 600 mm, the space between the underside of the rail and the ground shall be filled. The width of the infill shall not exceed the width or diameter of the rail.

4.2.4 A curb simulates the edge of a pavement and makes it possible, for example, to skateboard along it.

4.2.5 The curb shall be a minimum 150 mm and a maximum 1000 mm high.

4.2.6 The curb shall be 40 mm minimum width.

4.2.7 One or two pipes may be installed on the curb. If two pipes are used refer to item 5.6.4 and Figure 16.B

**Flat banks**

Flat banks shall not exceed 3 000 mm in height and should be at least 1 200 mm wide.

Flat banks higher than 1 000 mm shall have barriers.

**Jump Ramps**

The upper edge of a jump ramp shall be rounded off with a minimum radius of 3 mm and may be 40 mm to 100 mm wide.

A jump ramp shall be at least 150 mm high and no more than 1 000 mm high. The ramp shall be at least 1 200 mm wide.

4.4.3 The radius shall be a minimum of 1 800 mm

**Coping Ramp**

A coping ramp is a skateboarding facility with a coping to enable tricks to be performed along the edge.

4.5.2 The radius shall be min. 1 800 mm.

The coping ramp shall be provided with a platform. This platform shall be min. 900 mm deep. At the top end of the transition, there shall be coping along the entire width of the ramp.

4.5.4 If the ramp is greater than 1 000 mm in height, then crash barriers are required for the platform area of the ramp (see section 5.4, Barriers). With an overall height greater than 1000 mm, the dimensions of the platform, barrier and skateboarding surfaces width and radius shall correspond to the respective dimensions of the mini-pipe (see Table 2).

Playground Development Standard 2016
Quarter pipes

The quarter pipe shall be provided with a platform. If the height of the quarter pipe is 1200 mm or less, the platform shall have a depth of at least 900 mm. If the height of the quarter pipe is greater than 1 200 mm, the platform shall have a depth of at least 1 200 mm.

The minimum width of a quarter pipe shall be 1 200 mm.

NOTE: Greater heights may require increased widths

Spine Ramps

The height of a free-standing spine ramp shall not exceed 1 500 mm. The maximum overall height of a spine ramp shall be 2 000 mm.

A spine ramp shall have two copings at its apex.

The width of a spine ramp shall be at least 1 200 mm.

NOTE: Greater heights may require increased widths (Refer to Table 1)

Table 1: Dimension of a Spine Ramp

<table>
<thead>
<tr>
<th>Overall Height $h$</th>
<th>Width $b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\leq 1 000$</td>
<td>$\geq 1 200$</td>
</tr>
<tr>
<td>$&gt; 1 000 \leq 1 250$</td>
<td>$\geq 2 400$</td>
</tr>
<tr>
<td>$&gt; 1 250 \leq \text{max. 1 500}$</td>
<td>$\geq 3 600$</td>
</tr>
</tbody>
</table>

Wall ramps

4.8.1 A wall ramp is a skateboarding facility which gives way to a vertical wall. The wall against which the ramp stands shall be vertical and smooth. The total height of the wall shall be at least twice the overall height of the ramp measured at the end that abuts the wall. The ramp shall be securely attached to the wall. The connection to the wall shall conform to 4.1.4.

4.8.2 The width of the ramp shall be a minimum 2 400 mm.

4.8.3 The overall height of the ramp shall correspond to the radius of the transition.

Playground Development Standard 2016
4.8.4 The radius shall be a minimum 1500 mm to a maximum 2000 mm.

## Half-pipes

The width of a half-pipe shall be at least 2400 mm.  
**NOTE:** Greater heights may require increased widths

Platforms shall extend over the full width of the half-pipe. If the height of the platform is 1200 mm or less the platform shall have a depth of at least 900 mm. If the height of the platform is greater than 1200 mm the platform shall have a minimum depth of at least 1200 mm to maximum 1500 mm. Platforms should be provided with crash barriers of minimum 1000 mm height as specified in 5.4.

It shall only be possible to reach the platforms via the riding surface.

If the transition reaches vertical the height of the vertical section of a half-pipe shall not exceed 450 mm. The vertical section shall be fitted with coping along its entire upper edge. **NOTE:** The half-pipe should be constructed in a way that does not facilitate climbing. Exceptions may be granted for competitions.

4.9.5 The radius of a half pipe shall be a minimum 2400 mm and a maximum 3000 mm.

4.9.6 The length of the flat shall not be less than the radius.

### Table 2a: Dimensions of a Half-Pipe

<table>
<thead>
<tr>
<th>Type</th>
<th>Height $h$</th>
<th>Width $b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>$\leq 1250$</td>
<td>$\geq 2400$</td>
</tr>
<tr>
<td>1 and 2</td>
<td>$\geq 1250$</td>
<td>$\geq 3600$</td>
</tr>
<tr>
<td>3</td>
<td>$&lt; &gt; 1250$</td>
<td>$\geq 5000$</td>
</tr>
</tbody>
</table>

## 4.10 Mini Pipes

4.10.1 A Mini Pipe is a skateboarding facility comprising of two adjacent transitions connected by a flat, the radii of which do not reach vertical. The ends of the mini-pipe are formed by platforms.

The following types are allowed:

- **Type 1:** Track without barrier or profile edge
- **Type 2:** Track with profile edge
- **Type 3:** Track with barrier

Playground Development Standard 2016
4.10.2 The radius of mini-pipe shall be a minimum 1,800 mm or at least 1 to 2 times the height.

4.10.3 A height \( h \) of a maximum 2,000 mm is permissible. Up to a platform height of 1,250 mm, a minimum width of 2,400 mm shall be complied with. If this height is more than 1,250 mm, the minimum width is 3,600 mm. If a mini-pipe is provided with a barrier, its width shall be minimum 5,000 mm.

4.10.4 The platform shall be fitted with crash barriers depending on the free fall height. The length of the platforms shall be a minimum 1,200 mm and a maximum 1,500 mm.

4.10.5 The length of the flat shall not be less than the radius.

Table 2b: Dimensions of a Mini-Pipe

<table>
<thead>
<tr>
<th>Type</th>
<th>Height ( h )</th>
<th>Width ( b )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>( \leq 1,250 )</td>
<td>( \geq 2,400 )</td>
</tr>
<tr>
<td>1 and 2</td>
<td>( \geq 1,250 )</td>
<td>( \geq 3,600 )</td>
</tr>
<tr>
<td>3</td>
<td>( &lt; &gt; 1,250 )</td>
<td>( \geq 5,000 )</td>
</tr>
</tbody>
</table>

5. Design Calculation

The strength, load bearing capacity and stability of the platforms and riding surfaces shall be calculated in accordance with CSA-Z614-03. The calculation for riding surfaces shall be based on a loading of two users per 1 m length. These calculations shall be documented.

Stability
Ramps and other structures shall be secured by their dead weight or by non-removable ground anchors.

Playground Development Standard 2016
**Riding surface**
The riding surface shall be cambered or inclined to permit drainage.

There shall be no projections, other than copings, exceeding the thickness of the material and not exceeding 3 m on, to or within the riding surface, including joints between transitions and flats, but excluding expansion joints.

The gap between surfaces at expansion joints shall not exceed 5 mm.

**NOTE** A maximum gap of 3 mm is preferable.

Asphalt used for riding surfaces shall conform to The City of Edmonton Standard Construction Specifications # 400 - # 440. ‘Sandy half’ mix is recommended.

**Barriers**

Barriers shall be fitted where there is a free-fall height greater than 1000 mm on quarter-pipes, half-pipes and flat banks.

**NOTE:** Where street course platforms have a free-fall height greater than 1200 mm, a barrier is required.

Barriers shall be at least 1000 mm high. No opening within a barrier shall have a dimension greater than 100 mm.

**NOTE:** Barriers should be constructed in a way that does not facilitate climbing.

Barriers shall be able to sustain a loading of 2L, where L is the loading requirement specified in CSA –Z614-03.

**NOTE:** The doubling of the loading specified in CSA-Z614-03 allows a dynamic element for collisions at speed.

There shall be a horizontal gap of 150 mm to 400 mm between the coping of a quarter-pipe, half-pipe or flat bank and the end of the barrier that extends along the depth of the platform.

**Safety Areas**

**NOTE 1** The safety areas may overlap if the equipment forms a continuous course unless otherwise specified.

**NOTE 2** Safety areas are not intended for use by spectators. Spectator areas designed into a facility can be considered and will be reviewed as non-encroachment zones on an individual design basis.

Playground Development Standard 2016
General

Safety areas shall be clear of obstacles. Safety areas may overlap.

Bank and Jump Ramps

The width of the safety area around jump ramps shall be at least 2 000 mm at the sides and at least 3 000 mm minimum to 5 000 mm maximum (for maximum allowable height) behind.

NOTE: Consideration should be given to increasing this distance in proportion to the height of the ramp up to the maximum allowable height.

Spine Ramps and Coping Ramps

The width of the safety area around both spine ramps and coping ramps shall be at least 2 000 mm at the sides and at each end.

NOTE: Consideration should be given to increasing this distance in proportion to the height of the ramp.

Wall Ramps

The safety area for a wall ramp shall be at least 5 000 mm long in front of the ramp and at least 2 000 mm wide at each side.

NOTE: Consideration should be given to increasing these dimensions in proportion to the height of the ramp.

Quarter-Pipes, Half-Pipes and Flat Banks with a height of less than 1 900 mm

Quarter-pipes, half-pipes and flat banks where the height from the base level to the platform is less than 1 900 mm shall be provided with a safety area on both sides, except on a side which is placed against a smooth-surfed wall. This safety area shall be at least 2 000 mm deep.

A safety area shall extend for at least 3 000 mm from the front of the pipe, unless the area has means to restrict access.

Quarter-Pipes, Half-Pipes and Flat Banks with a height equal to or greater than 1 900 mm

Playground Development Standard 2016
Pipes where the height of the curved section is equal to or greater than 1 900 mm shall have a safety area at least 3 000 mm deep on each side.

A safety area shall extend for 3 000 mm from the front of the pipe, unless the area has means to restrict access.

**Copings and Profile Edges**
Copings shall project from the platform or riding surface by no more than 12 mm.

The diameter of copings shall be at least 40 mm and no more than 80 mm. The wall thickness of any tubing shall be at least 3 mm.

The ends of the coping shall be sealed.

5.6.4 If two copings are used, they shall be arrayed in parallel. If the distance between two copings is greater than 8 mm, the space between the axial dimension of the pipes shall be designed to be sealed.

**Profile Edge** can be provided along the entire length of the skateboarding surface.

5.6.6 The height of the profile edge above the skateboarding surface and width shall be 45 mm +- 5 mm.

5.6.7 If a pipe is not used as a profile edge, the side surface of the respective profile edge construction shall not deviate from the vertical by more than 10

**Entrapment**
The entrapment requirements of F08.66.03 Z9571Z shall apply throughout the facility (including ancillary items).

**Fixings**
Fixings shall conform to CSA-Z614-03

    NOTE: All structures and parts thereof for the equipment should be fixed in a manner which minimizes the possibility of unauthorized removal.
6. Materials
Flammability
Materials used should be fire-retardant (or have some degree of fire retardancy). Documentation indicating fire retardancy is required.

Metal - Documentation re: toxicity is required
- Metal parts shall be protected against corrosion.
- Additional protection should be considered where atmospheric pollution is prevalent. Metals that produce toxic oxides which scale or flake shall be protected by a non-toxic coating.

Synthetics
When components made of glass-reinforced plastics are tested in accordance with CAN/CGSB-12.12-M90, the layer beneath the gel coat of the glass-reinforced plastics shall not become exposed.

When tested in accordance with ASTM Test Method D2583-95, the resin of the glass-reinforced plastic shall achieve the Barcol hardness quoted by the manufacturer.

The performance of synthetic materials with respect to embrittlement on exposure to ultra-violet light shall be documented.

Documentation shall be obtained from the manufacturer concerning the expected service life of any component made from synthetic material.

Concrete
The concrete mix for concrete castings shall be specified in accordance with City of Edmonton Standard Construction Specifications # 200 - # 220.

NOTE: Engineering calculations for structural integrity of precast concrete components should be available on request.

Concrete used for riding surfaces shall be specified in accordance with City of Edmonton Standard Construction Specifications #200-#220 and shall cure to a characteristic compressive strength of at least 50 N/mm² at 28 days, tested in accordance with City of Edmonton Design & Construction Standards Volume 2.

Steel reinforcement shall be placed to meet the design calculations, and shall be covered by concrete in accordance with City of Edmonton Design & Construction Standards Volume 2, Construction Specifications #200-#220.
Concrete for foundations shall cure to characteristic compressive strength of at least 30 N/mm$^2$ at 28 days, tested in accordance with City of Edmonton Design & Construction Standards Volume 2, Construction Specifications # 200-# 220.

The grading of in-ground structures shall conform to City of Edmonton Design & Construction Standards Volume 2, Construction Specifications, Section 02310 for in-ground work and Section 03055 for riding surfaces.

**Dangerous Substances**
Confirmation shall be obtained from the relevant suppliers that no substance known to adversely affect health is present in the equipment or facility.

NOTE: Examples of such substances are asbestos, lead, formaldehyde, coal tar oils, carbolineums and polychlorinated biphenyls (PCBs).

7. **Surface of Surrounding Areas**
The surface shall be of a bound uniform material. Loose material, e.g. sand, shall not be used.
Riding surfaces and surrounding surfaces shall be free-draining

NOTE: Grass areas should be maintained in good condition. The provision of footpaths to ramps sited on grass is recommended.

8. **Ancillary**
- Fencing, lighting, walkways, washrooms, storage, emergency phone, trees, park furniture, trash units, etc. are amenity considerations for wheeled sport facilities on a project-by-project basis accounting for location, surrounding, and adjacent uses.

- Tagging or graffiti of wheeled sport facilities will be reviewed as acceptable on a project-by-project basis or specified areas will be identified for graffiti use by the project design. Maintenance practices regarding tagging should be considered.