

# *BMX Track Guide*

*Developing the Sport of BMX Racing*

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## Introduction



Since January 1993, the sport of BMX Racing has been fully integrated into the Union Cycliste Internationale (UCI). In 2008, BMX Racing entered the Olympic Games in Beijing. With further successful editions in 2012 and 2016 during the Olympic Games in London and Rio de Janeiro, BMX has established a solid position within the Cycling sports and as an Olympic cycling discipline.

Though BMX Racing is still a relatively young sport, inclusion in the Olympic program has caused the elite level of the sport to mature and professionalise rapidly.

In early 2017, the UCI published a major revision of the UCI BMX Track Guide. This document provides requirements for tracks that will be used for major events, as well as guidelines for other BMX tracks.

The intended audience for the UCI BMX Track Guide is people in countries in which the sport of BMX racing has already begun to develop. At very least, such countries already have several BMX tracks and active clubs supporting them, and probably already organise a national championship. It is intended to help countries already active in BMX to improve their BMX tracks.

However, the advice provided by the UCI BMX Track Guide is too detailed for countries not yet active in BMX or that are only just beginning to develop BMX racing as a sport.

This new version of the UCI BMX Track Guide “Developing the Sport of BMX Racing”, is a resource for national federations who wish to begin developing BMX in their country, or who have recently started doing so.

BMX racing as a sport can’t exist without a track. However, the main obstacle to getting started in BMX is the construction of a first BMX track when the knowledge needed to do so can’t be found locally.

This guide provides complete, detailed plans for a simple BMX track as well as construction advice. This will allow a local contractor to build a first BMX track which is good enough to begin developing the sport.

### Version in Force

The version of this document that is presently in force is always that which is published on the UCI web site, [www.uci.ch](http://www.uci.ch).

Any past versions should be discarded; only the latest version should be used.

## How to Use this Guide

This guide consists of 2 documents.

- A detailed design for a beginner-level BMX track.
- This document, which introduces and explains the detailed BMX track design, as well as how to maintain the BMX track once construction is finished.

## Developing the Sport of BMX Racing

Every country that succeeds in BMX racing has strong grass-roots participation in the sport. This is made possible by having strong, active BMX clubs, each of which either owns or is responsible for a BMX track.

As such, if BMX racing will succeed as a sport in a country where it is not practiced, the best approach is to build the sport from the ground up. The first BMX tracks that a country builds should be simple tracks that attract people to the sport and allow them to learn how to race.

Building a track capable of hosting major events is a fine goal, but it only makes sense after a good level of participation in the sport has developed. Even the most advanced BMX nations only need (at most) a few tracks that are capable of hosting world cup or world championships events.

Every country wanting to develop BMX needs as many beginner-level community tracks as possible, a lower number of more difficult tracks for developing riders, and eventually, perhaps 1 or 2 “professional” level tracks to allow Elite and Junior riders to develop the skills needed to compete internationally.



## Preparing to Build the BMX Track

There are 4 main phases involved in building any BMX track. They are:

1. Selection of the site where the track will be built

2. Designing the track
3. Prepare the land where the track will be built
4. BMX track construction

## Selection of a Site for the BMX Track

### Available Space

The most important factor in the design of a BMX track and the venue around it is the amount of space available.

It is common that BMX tracks are built on available land that is given free (or nearly free) to the BMX club that will run the track.

The amount of space needed to build the BMX track design included in this guide is an area **120m long by 70m wide**.

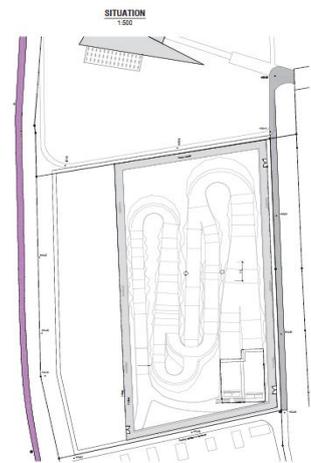
Important: this is the amount of space required for the BMX track. More space is needed for other elements of the venue, which are described below.

### Venue Facilities

Most BMX tracks are intended to be competition venues. The facilities which make competition possible must not be forgotten. The following basic venue facilities are needed. In general, BMX venues adapt to their layout and the land available. However, at minimum, the total venue area for a beginner BMX track is about twice the space needed for the track itself. Most of this space is needed behind the start hill, and along the longer edges of the track. As the track develops and the club grows, more space than this will probably be needed, especially for the rider area, parking and spectators.

If there are several possible locations for a new BMX track, the best advice is to take the location with the largest amount of space, unless there is some strong reason not to (land is in a dangerous or undesirable area, or far away from the local population).

- Parking, including a drop-off / pick-up zone
  - At least some parking is important – if the track is to succeed, the track must be accessible to the public, which usually means that some parking is needed.
- Registration / administration office
  - Over time, many local BMX tracks build a small building which houses the administrative office for the track, as well as some equipment storage. However, this is not needed when a track is first begun. This can be done from a volunteer's car, or under a tent.
- Storage
  - Some secure storage at the track is necessary, unless the equipment and materials needed for events will be brought to the track each time an activity is held. This includes the ram and control system for the starting gate, and some maintenance tools such as hoses and brooms.



- First aid
  - For events, this can be done under a tent or in an ambulance which is stationed at the venue.
  - It is important to plan ambulance access to the track to ensure that the ambulance entrance / exit is not blocked.
- Water
  - Water is an essential element for most BMX tracks. Maintaining the surface layer usually requires watering both before and during practices and events. However, this depends upon the materials used to construct the track.
- Power
  - At very least, a power hookup is needed to run the starting gate and air compressor which serves it. Also, in case a computer system is used to create the start lists and handle results for each stage of the event, power will be needed. This can be supplied by a generator.
- Rider / Team Area
  - A flat area close to the start hill is needed for the riders to wait when they are not practicing or racing. It should be suitable for setting up tents.
- Warm-up area
- Staging area
- Information and posting boards
- Team managers viewing area
- Space for a TV broadcast compound
- Timing / scoring office
- Toilets
- Finish area
- Spectator facilities such as concession stands, grandstands and expo area

A track that will host a major international event needs all of these things to at least some extent, while a beginner level track in a region that is just getting started in BMX can make do with a more simple venue.

However, regardless of the level of track, all of these things usually need to be considered to some extent.

Most important of all, a BMX venue is a place where people come to practice the sport of BMX. Even the most basic venue and track should be set up in way to welcome the public and to give a good perception of the sport of BMX racing. Care should be taken to plan the venue so that people know where it is, and will want to spend time there.

The most successful BMX venues are normally those that:

- Are located close to a population and are visible to the public eye
- Can be easily reached, ideally by bicycle or public transport
- Have at least some space for car parking
- Have at least a few basic facilities for the people who will use it, such as shelter, water and toilets

## Designing the Track

Before construction begins, it is essential to have a good understanding of what will be built. A detailed design for the track will provide this.

A knowledgeable and reputable BMX track builder should normally be hired to work with the track owners on the design of the track before construction begins.

However, in this case the UCI has engaged a track builder to provide a complete design for a beginner-level BMX track. It is this design which is the core of this guide. It is presented in PDF format as an appendix to this document.

This design will also provide you with the necessary information you need to plan construction – this includes:

- Preparation of the land before construction begins
- Type and quantity of materials needed
- Type and quantity of equipment needed
- The amount of time required

Key considerations influencing BMX track design and construction:

- A basic BMX track normally takes between 2 and 3 months to complete.
- Construction should normally take place during dry weather - avoid wet conditions.
- When planning the location and orientation of the track, consider the aligning the track with the most common wind direction in the area (that is, riders will normally experience a head-wind or a tail-wind, not a cross-wind).
- It is very important to choose a flat area on which to build the track.



- About the construction: 60% of a BMX Track construction is moving and shaping soil. The other 40% includes concrete work, installation of water drainage around the track, venue preparation such as installation of a fence around the track, et cetera.
- The materials used. Many tracks have concrete start hills and paved corners. However, this is not strictly necessary. Building the track entirely out of compressed soil can save money. The main

benefit of using concrete and / or asphalt in key areas of the track is that the amount of maintenance that the track will need is reduced.

## About the Beginner BMX Track Design



- The track design enclosed is a standard 3-corner layout (that is, the riders turn 180 degrees through each corner).
- It features a single starting hill 3.5 meters tall with a minimum distance from the gate to the bottom of the starting hill of at least 12 meters. It includes access stairs and safety railing along the start hill. It includes mounting points for a starting gate.
- The start hill and the track are made of compressed soil.
- As an option, the start hill and turns can be surfaced with high grip concrete or asphalt.
- The track is built with an intermediate layer of 0/31.5 non-clay materials and a topsoil of 0/4 limestone to prevent erosion during hard rain.
- Drainage channels are included in the design to remove standing water from the area around the track.
- The total length of the track is 370 meters.
- Safety zones of 2 meters wide are included around the edge of the track.

## Budget

A complete budget to build the beginner track design is not included; indeed, it is impossible to provide an accurate budget, as this will depend entirely upon the location and country where the BMX Track is being built. Necessary construction materials and services have different costs, depending upon the country in question.

However, a list of the services and materials that are usually needed is found below. This will assist you with planning.

Items marked as 'optional' can be eliminated to save money.

Description	Remarks
<b>Preliminary Works</b>	
Construction Site Temporary Fence	
Temporary facilities during construction facilities (Toilets, workforce shelter, et cetera)	
Temporary common electricity	
Temporary common water	
<b>Earthworks</b>	
Earthwork for light poles (excavations, pipes, concrete manholes...)	Optional – if a lighting system will be installed around the track
Timing System Earthwork (excavations, pipes, concrete manholes...)	Optional – in case a transponder timing system will be installed
Track Drainage (excavations, gravel, pipes...)	
Water system network (excavations, pipes...)	
<b>BMX Track Construction</b>	
Base Material Supply (Jumps / Turns) - Approx 10000 m3	
Base Material shaping	
Sub Base Material Supply (Intermediate Layer) - Appox 1000 m3	
Sub Base Material Shaping	
Surface Material Supply - 500 m3	
Surface Material Shaping	
Asphalt (Turns) Supply and Shape	Optional, if the turns will be paved
<b>Concrete Works</b>	
Concrete Base for Lighting Mast	Optional – if a lighting system is installed
Concrete Base for starting hill (Plot)	Optional – if concrete start hill will be created
<b>Electric Works</b>	
Electrical panel, plugs, cables, conduits	Needed for the starting gate and compressor
<b>Starting Hill</b>	
Base Material Supply	
Asphalt Works	Optional – if start hill surface is paved
Concrete Works	Needed as a mounting point for the starting gate (even if a compressed soil start hill is built)

Starting Gate	
Start hill railing	Needed to prevent falls from the start hill
<b>Landscaping</b>	
Organic Dirt (jump sides, turns)	
Grass seeding or sod	Recommended along the sides of turns and jumps to prevent erosion
Stones	
<b>Fences</b>	
Site Permanent Fences	Recommended – but depends on sport field access / liability policies of community where the track is built
<b>Engineering</b>	
Civil Engineer	
Land surveyor	

## Construction Steps

Step 1: remove organic soil from the area where the track will be built

- This is done to provide a solid base on which the track can rest, and to grade the area so that it is flat.



#### Step 2: Installation of Services (electric, drainage, water)

- Before construction of the track begins, it is best to install drainage channels, water pipes and electrical conduits in the areas specified in the design.

#### Step 3: Starting Hill Construction

- Includes the main form of the starting hill, as well as compacting the riding surface. It can also include the mounting point for the starting gate.
  - Important: Be sure to consult with the starting gate provider to ensure that the mounting point for the gate is prepared correctly!

#### Step 4: Build the Turns

- This includes shaping and compacting of the riding surface as well as asphalt, if used.



#### Step 5: Jumps shaping and surfaces

- This includes shaping and compacting of the riding surface.



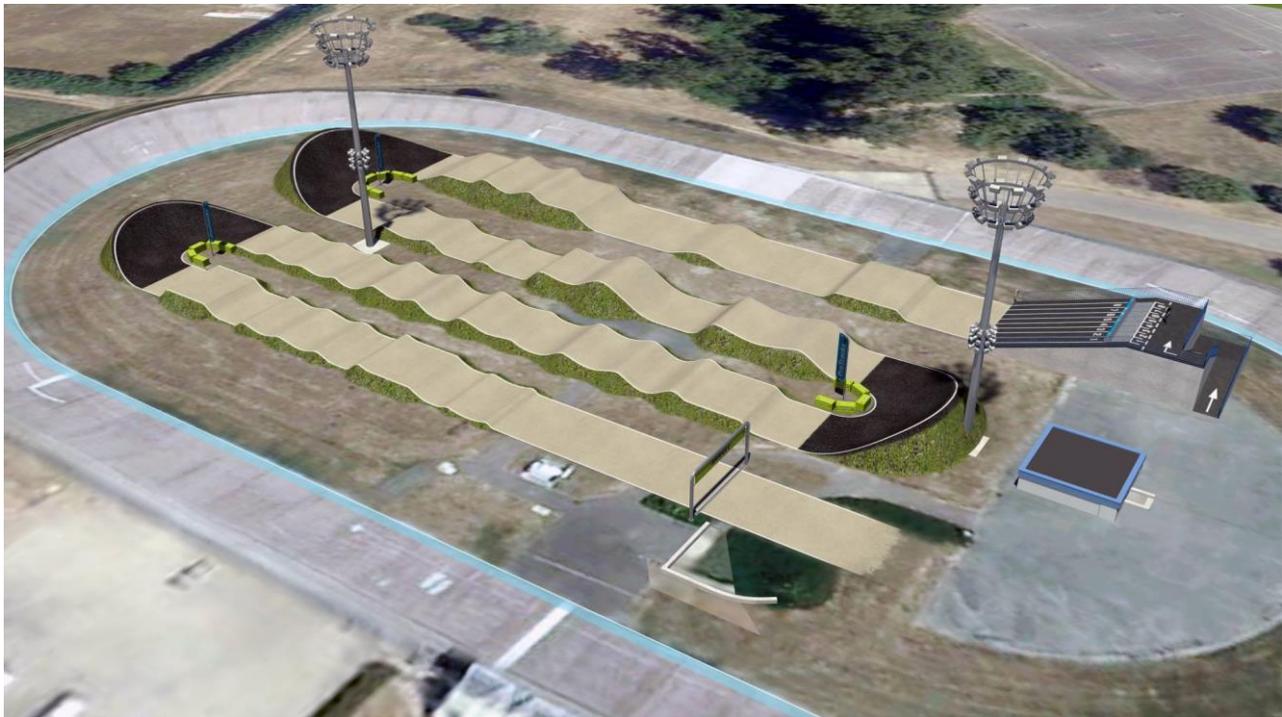
### Step 6: Starting Gate Installation

- Must be done in accordance with the starting gate manufacturer's instructions.



Step 7: Installation of venue infrastructure (lights, boundary fence)

Step 8: Landscaping works



Example: Completed Beginner BMX Track

## Equipment Needed for Construction

Examples of the types of heavy equipment that may be needed during construction are found below.

### Earth Moving Equipment

			
Skid-steer Loader on Tracks	Excavator 15 T	Excavator 13 T	Wheel loader
Needed for shaping turns and jumps Filling and shape layers of intermediate and surface materials	Needed for shaping of turns and jumps.	Basic shaping for small jumps Also necessary for landscaping	Moving materials around the work site.

### Compacting Equipment

		
Vibrating compactor	RAMMAX Compactor	Regular Compactor
Surface compaction	Base compaction (Q2 Q3 factor)	Intermediate layer compaction

## After Construction – BMX Track Maintenance

Like any other sport facility, a BMX track requires regular maintenance to ensure that it stays in good condition. This maintenance is normally the responsibility of the track owners, or of the club which is the primary user of the track. Maintenance of a BMX racing track is important; the condition of the surface can have a direct impact on the safety of those using it.

Before discussing the equipment needed to maintain the track, the following points are important to note:

- It is normally for a thin layer of gravel to rise to the track surface over time. Do not sweep it away, but instead water the track and compact the surface. A 4-wheel All-Terrain-Vehicle (ATV) with smooth tires or a vibrating plate compactor can be used for this.
- Regular use of the track (racing / practice) will also help smooth and pack the surface layer.
- In dry weather, it is important to regularly water the track to help the surface maintain its integrity. This may need to be done each evening.
- In dry weather, always water the track before it is used.
- Do not ride on the track when it is very wet; this will help prevent ruts from forming.
- If puddles appear on the track surface during rain, it is important not to sweep it away the water. Let the puddle dry and if needed, cover the area with a little bit of spare surface material (0/4) and pack it.

## **Suggested Equipment for Maintenance**

- 1 x small rake
- 1 x long-handled squeegee
- 1 x square point shovel
- Watering hoses (approximately 200m total length)
- Spray gun for watering hoses
- Wheelbarrow
- Vibrating plate compactor or garden roller
- 4-wheel All-Terrain-Vehicle (ATV) with slick tires

## **Maintenance Method for the Surface (0/4 sand material)**

The aim of maintenance is to keep the surface layer solid and firm, almost as a 'crust'. Without maintenance of the surface, it will dry up before disintegrating, and lose its compaction.

When the compacted surface becomes a bit too loose, there is no need to worry; it can be repacked.

However, to prevent this problem, it is better to maintain the surface regularly. Here are some key points to remember:

- Water the track as much as possible every night and before each use in case of daily use, and also in very dry weather.
- It is highly recommended to identify the times of peak of use of the BMX track and plan watering accordingly (for example, on the weekend). Water as much as possible – that is, to the point where puddles just begin to form. Then stop watering.
- Identify the common damages areas on the track. There are normally as follows:
  - Jump landings: The surface can begin to break-up in areas where the riders commonly land after jumping
  - Take offs of jumps: these can gradually degrade
  - Areas on the track where riders commonly stop to rest or watch what others are doing; quite often these are on obstacles located just before the turns.

Common damage areas must be treated with a special care:

- Instant replacement of the surface material after each session with the rake, the square point shovel and the squeegee.
- This is especially important in the period after the track is first built; the surface will continue to harden with use; however, after construction, the surface will be more susceptible to damage than usual.
- Thoroughly water these areas before and after each practice session or race, ideally, watering the track just before the facility closes for the night. This will allow the deep penetration of the water into the track surface, which helps to stabilize it.

- Areas damaged by riders should be closed after watering. BMX brakes are very powerful and can degrade the limestone surface when it is not hard packed. Smooth the area then pass a vibrating plate compactor or roll with an ATV with a pendulum movement in order to pack the surface (that is, don't start and stop the compacting movement of the ATV directly on top of the area that is being repaired; this will help to keep it smooth).

Over time, good maintenance will progressively allow the track surface to become stronger and thicker and the amount of work needed to maintain it will be reduced.

Likewise, it is wise for coaches to set some good usage rules for the first year after construction and also in case of very dry weather. These include:

- Prohibit intentional skids.
- Prohibit any motorized vehicle.
- Prohibit unnecessary walking on the track.
- Ask people to ride only in the normal riding direction on the track (don't ride the track backwards).
- Prohibit U-turns on the obstacles.

In case small areas of the track begin to loosen or become less solid than others:

- Close the harder areas next to the soft spot with small cones to force riders to roll on the soft / sandy area; this will help to compact it.
- Water the soft area abundantly.
- Re-compact the sandy area with the garden roller, ATV or the plate compactor.
- Force riders to roll over this soft area until it becomes as hard as the rest of the track surface.

Again, please note:

- Do not sweep away loose material if an area appears too loose or sandy. Sometimes the mistake is to think "there is too much surface material in this location").
- Instead:
  - Replace the loose material with the squeegee (replace any loose material which has collected at the bottoms of the obstacles higher up where it came from).
  - Water the area abundantly.
  - Pack the area with the plate compactor, garden roller, or the ATV.

Tips for Selecting and Using a Compactor

- When choosing a compactor, select a model which can withstand daily use, even after a year.
- Some compactors have a vibration mode. It is highly recommended to NOT use vibration mode on already compacted areas. This can cause the material to loosen, rather than to become more solid. Simply roll back and forth over the area with the compactor.

Maintaining a BMX track is daily work. Weather such as wind or sun can degrade the track surface quickly. Someone must be assigned responsibility for maintaining the BMX track.

## Other Notes

This guide provides basic information which is needed to plan and build the beginner-level BMX Track design which accompanies it.

However, more detailed information including best practices about BMX track design and construction is found in the UCI BMX Track Guide, which is available on the UCI web site ([www.uci.ch](http://www.uci.ch)).

Enough information should be provided with this document and in the design, in order for civil construction contractors in most countries to build the BMX track with few problems. However, it is still advised to invite someone with knowledge of BMX tracks to assist the builder with the final shaping of the corners and the jumps. It is best if this person is a skilled BMX rider; they can also test-ride the track to uncover any problems with the surface or the form of the track before construction is finalised.

## Contact Information

To receive the plans for the 5m or 8m start hills, or for any questions concerning BMX tracks or this guide, please contact the UCI.

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Updates to this document, as well as other information related to BMX is available at the UCI web site:

[www.uci.ch](http://www.uci.ch)

## **Annex 1 – Detailed Beginner-level BMX Track Design**

Found in the document “UCI Beginner-Level BMX Track Design”.