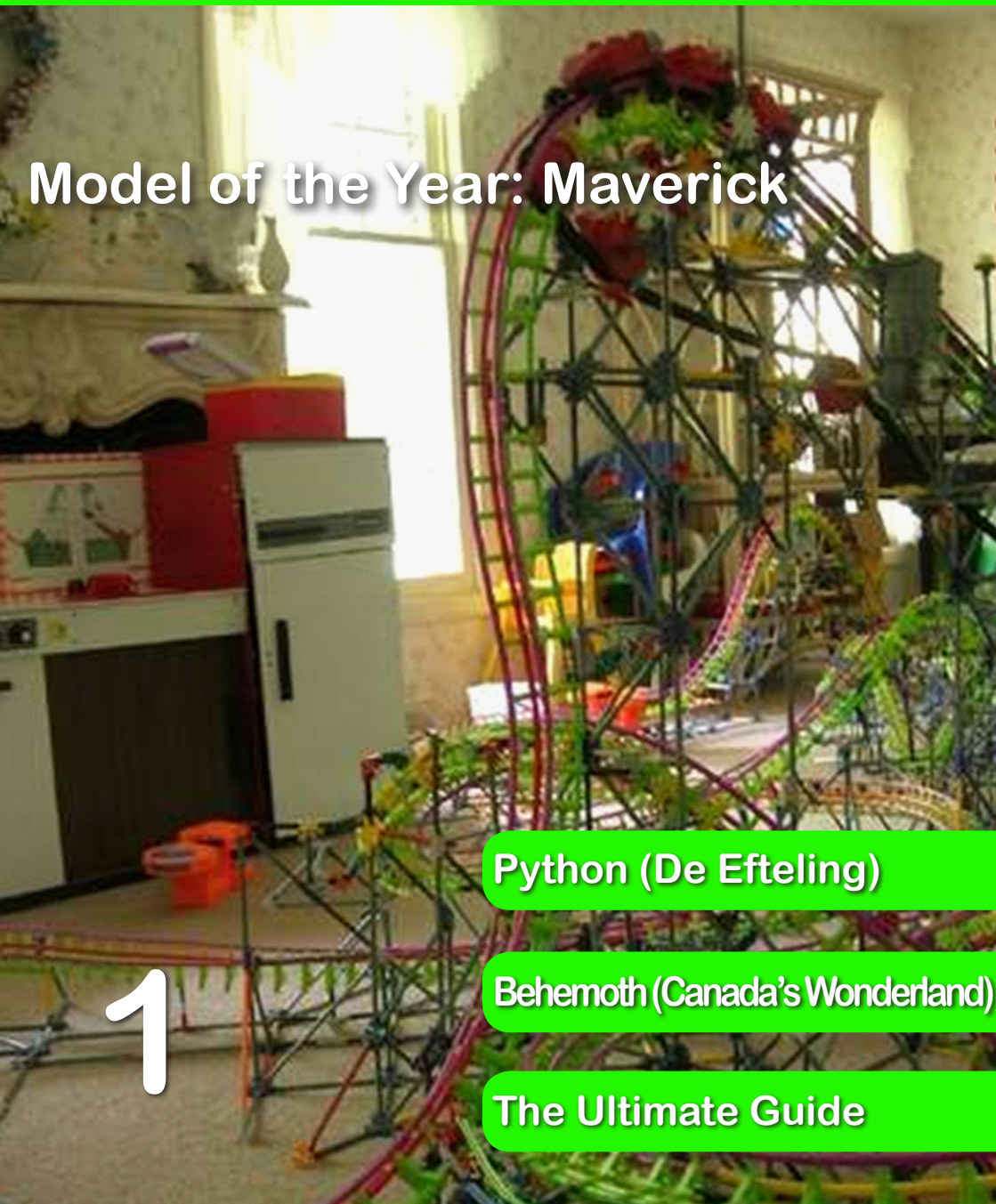
SSC Magazine

The one and only magazine about model roller coasters



Model of the Year: Maverick

Python (De Efteling)

Behemoth (Canada's Wonderland)

The Ultimate Guide

1

From the editor

Welcome readers, to the first SSC Magazine. We used to have a newsletter once in a while, although we were not able to keep up the work. Now we want to try to set up a whole magazine dedicated to real roller coasters and especially model roller coasters, the pride of SSC. Once every three months, we hope to publish a new issue. This issue was published at January 1st, so I'd also like to wish you all a happy new year!

Just right of this column is the table of contents. In there you can see what this issue contains, like a few model roller coaster reports. One of them is the spectacular Model of the Year. In upcoming issues we want to cover events like Top Model or the SSC Awards.

Lately the forums have been changing quite a bit. There have been changes within the staff, we got rid of the Elite tags and now this SSC Magazine has been published. Other changes may be at hand, so keep reading the forums.

Now my thought is that you desperately want to continue reading this magazine, so I will stop talking. I wish you a lot of fun reading the articles and keep on building!

Jochem Giesbers a.k.a. Jogumpie

Table of contents

Python

A European Vekoma classic

5

Behemoth

The tallest coaster in Canada

6

Guide for beginners

The ultimate guide

8

The complete list...

Surge	4
Python	5
Behemoth	6
New for 2009	7
The Ultimate Guide for Beginners	8
Backdraft	9
Maverick	10
Monarchy	11
Forbidden Mine Expedition	13

Surge

A B&M Hypercoaster

Brennan Selby (rollercoasterfanatic919)

It took three months to build, it is 4 feet tall, and it took 8 Screamin' Serpents. What is it? Surge, the B&M Hypercoaster! It includes a lift hill, a turning hill like on Nitro (Six Flags Great Adventure), hammerhead, J-turn, airtime hill, two horseshoe turns, a bückel, two turning hops, and a station. But, Surge did run into some problems on the way.

Picture 1 – Surge, a hypercoaster by Brennan Selby.

The most frequent problem was the train failing to clear all of the elements. Multiple times I had to wipe the dust off the track, or lower an element a bit. I also had to add more supports in places and smooth out the track. But the biggest problem was when I had just finished the airtime hill. A few of my friends came over and accidentally messed up the first pull-out, and it stopped making it over the first hill. I fixed the pull-out the best that I could, but to no avail. I also lubed the train again, but that just made the situation worse! At this point I was so frustrated that I raised the lift hill just a bit. And boy am I glad I did it. It runs fine now, and it didn't affect the layout at all in the long run.

I decided to make Surge a B&M Hypercoaster because I really like hypercoasters for a few reasons. I like the airtime on all of the hills, and going down the huge drops. I also wanted to out-do my old hypercoaster, Terminal Velocity. I think I definitely did. I tried to make the track very smooth, just like a real B&M Hypercoaster would be. Nitro and Goliath (Six Flags Over Georgia) inspired me the most to build it. Anarchy (Rollerdude) was the K'nex coaster that inspired me the most.

I decided to make the theme consist of lighthouses, a tunnel covered in blue tape to represent water, and four palm trees placed in different positions, hence the name, Surge (thanks to Planetsaturn56). I also got the idea for the station from Top Thrill Dragster's curving roof, so I used purple flexi-rods for the roof.

The most challenging part of Surge's building process would have to be building the station and queue. I always find it hard to make sure none of the pieces are stressed in any way, and I think I succeeded this time. At first I tried to make a very complex station, figuring I could do it, but it turned out that I didn't have enough pieces left, and it was very difficult and time consuming. So, I decided to make a less complex station, and it turned out great! The hardest part of the track was making a constant curve on all of the drops. They took forever!

Surge was a very fun coaster to build, but it was also a learning experience. I learned how to build better and stronger supports, make smoother track, and conserve speed and pieces. Thanks for reading!

Surge... by rollercoasterfanatic919

Python

A European Vekoma Classic

Jochem Giesbers (Jogumpie)

In every issue of the SSC Magazine we will review a European roller coaster. This first issue will feature an article about Python, the steel roller coaster with four inversions.

Almost 28 years ago, in the summer season of 1981, De Efteling opened their first roller coaster. When Walibi Belgium opened their Tornado, also a Vekoma looping coaster, De Efteling warned the park they would attract an unwanted crowd. Tornado became a success, though. This made De Efteling decide to get their own steel roller coaster and so they contacted Vekoma. The Dutch roller coaster manufacturer designed a steel roller coaster with two loops and two corkscrews. This, and a height of 95 ft / 29 m, made the Python the largest steel roller coaster of the European mainland at that time.

Picture 1 - Python at a misty day.

The ride

Needless to say, the roller coaster ride starts in the station, which is slightly declining. A small pre-drop gives the train enough speed to go through a 180 degrees turn to the left and to connect to the chain lift. This lift slowly takes the train up to to the top, where it lets the train go down another pre-drop. A second turn of almost 180 degrees follows and then it is finally time to start the thrill! A 72 ft / 22 m drop at an angle of 45 degrees lets the train accelerate up to 50 mph / 80 km/h. With this speed, the train goes through two consecutive loops, followed by a small hill with airtime. A heavily banked turn to the right throws the passengers into two consecutive corkscrews. After these last inversions is a hill without any airtime, which will lead into the bayern curve. This is actually a helix that starts downwards, but becomes upwards halfway through. This last element drained almost all the speed out of the train. The passengers travel back to the station and are slowed down at the brake run right before that station.

Trains

Python is currently using its third set of trains. The first set was designed and built by Arrow Dynamics. Vekoma used to equip all their MK-1200 roller coasters with trains designed by Arrow. In 1996, those trains had to be renewed. Vekoma, being evolved through the years, decided to supply their own trains. These were not as noisy as the Arrow trains and since noise is an important factor in De Efteling, the choice was easy to make. However, in 2005 the trains were replaced again. The trains have a snake-look with seats that look like bones.

Marathon

In 2005 there was a Dutch guy that sacrified his autumn break to a Python marathon. In seven days he rode the roller coasters a marvelous 300 times! The first three days were very sunny and the queue was over an hour. The guy was lucky, though. He was able to fill empty seats and by doing this he got 60 rides on the first day, 50 on the second and 100 on the third. The fourth day was much more rainy and the queue shrinked down to 15 minutes, so he lost his permission to fill empty seats. The last four days he was able to ride Python 20 to 30 times a day. The funniest thing is that I am that guy.

Picture 2 – Different Python trains.

Behemoth

Canada's pride

Marc Antinossi (rollerdude)

It's fast, it's long, and it's freaking huge! New for 2008, Canada's Wonderland in Vaughan, Ontario opened Behemoth, Canada's tallest and fastest roller coaster. Behemoth opened on May 4th of last year as the king roller coaster of the country. It took 18 months of planning and building, and had a hefty price tag of 26 million Canadian dollars.

Picture 1 - Behemoth is a B&M Hypercoaster.

Built by Bolliger and Mabillard of Monthey, Switzerland, Behemoth is 230 feet high with a total length of 5,318 feet, over a mile. It only takes four seconds to reach the top speed of 77 miles per hour, plunging down the 75 degree first drop. Although the ride has no inversions, it still packs a huge punch with five camel back hills, a hammerhead turn, and two helixes to throw you into submission. The entire ride takes over two minutes to complete the circuit and runs three trains with eight cars per train for a total capacity of 1,545 riders per hour. Behemoth features prototype trains from B&M, where the two outside seats have been moved back a few feet to allow for a more open feel. Behemoth is Canada's Wonderland's 15th roller coaster.

Construction on this monstrosity was started early in the season of 2007 with some ground work and site preparation. As time rolled on closer to the announcement, track started to arrive. At the time, everybody was thinking it would be an inverted coaster, only to find out that it was not. On August 27th, Behemoth was announced to the public. Construction went on for five months, with the ride being completed on January 22nd, 2008. This was one month behind schedule. After electrical and testing was complete, the ride opened for a preview night on April 25th. The ride's grand opening was on May 4th, 2008.

I have had the fortune to ride Behemoth for myself this past summer. It was quite an experience. You sit down in the comfy trains and pull down your restraint. Your train is dismissed and you make a right turn and ascend 230 feet. As you fall, you experience the sensation of weightlessness (in the last row, it's complete ejector). You pull out and turn and ascend into the first hill and are airborne again.

Picture 2 - B&M's new hypercoaster cars.

Next up is the overbanked hammerhead turnaround. You twist three different ways and dive down towards the water in the lake next to the ride. Three hills follow, all with incredible sustained airtime. You reach the mid course brakes and receive a breather before entering the first larger helix. You gradually gain speed as you go faster and faster, barely missing supports. In between the two helixes, your photo is taken and you enter the second helix. You decelerate as you unbank and drop to the ground once again. One last bunny hill, and a last moment of airtime as you enter the brakes, and the ride is over. You've just experienced Behemoth, Canada's powerhouse hypercoaster.

Behemoth is situated in Canada's Wonderland, an amusement park with fifteen roller coasters. The park is located in Vaughan, Ontario, Canada. The park is currently closed. However, it will open up in a few months. So if you're a dare-devil, get to Canada's Wonderland and take up the challenge: ride the tallest roller coaster of Canada: Behemoth!

New for 2009!

A report on coasters opening in 2009

Rhys Mogford (Minimoggi)

Blue Fire – Europa Park - Germany

Blue Fire is a LSM Launched coaster being built by a company called Mack. Its eventual height will be 124 feet and its length 3464 feet. It has 4 inversions: loop, in-line twist, twisted horseshoe roll.

Similar to: Maverick – Cedar Point – USA

Diamondback – Kings Island – USA

Diamondback is a 230 feet tall hyper coaster being built by Bolliger and Mabillard. Its total length will be 5282 feet and its maximum vertical degree is 74 degrees. It is a hyper coaster, and ergo has no inversions. It features the same cars as seen on Behemoth, seating the riders in a V shape, not the usual rows of 4.

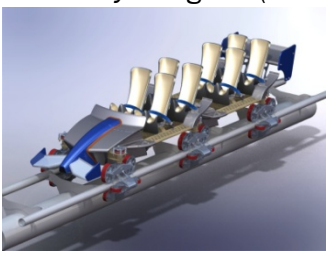
Similar to: Behemoth – Canada's Wonderland – Canada

Ring Racer – Nürburgring – Germany

Ring Racer is a 'Thrust Air Coaster' by S&S Power. It utilizes a 'compressed air launch' to speed the riders up to a maximum speed of 134.8 MPH, in 2.5 seconds!

It has a relatively small train size, with just 8 riders per train. It will take the record of the world's fastest coaster from Kingda Ka, when opened on 6/11/09.

Similar to: Back Lot Stunt Coaster – Kings Island – USA



Terminator Salvation: The Coaster - USA

Terminator is a wooden coaster from the guys down at GCI (Great Coasters International). It will reach a top speed of 50.1 MPH. It will cost a whopping $10,000,000 USD when it has completed construction.

It will be able to take 24 riders per train.

Similar to: Evel Knievel – Six Flags St. Louis – USA

Manta – SeaWorld Orland – USA

Manta is a flying coaster, made by Bolliger and Mabillard. It has a total length of 3359 feet and a total height of 140 feet. It will run three trains of 32 people. In the duration of the track, it will have four 'special' elements, ranging from an in-line twist, to a pretzel loop to a couple of flatspins.

Similar to: Tatsu – SFMM – USA

The ultimate guide for beginners

Need help with building?

Mathieu Désilets (Coastermaniac)

1. You

First thing may be stupid but it is very important for the rest of the guide. What do you want? If you chose K'nex there must be a reason. Some of you may have found their old K'nex sets and want to make something useful with them, but most of you want to make models. The first option is that you want to make realistic models*, then you will need a lot of pieces of different kind to be able to build without worrying about the pieces you have left. The second is that you want to make simple model but still want something decent. Then you just need the basic coaster pieces (tubing, crossties, flexi-rods, chain, etc…) to realize your coasters. Once you determined which type you are, read step 2.

**You might want to consider CoasterDynamix if you want to make realistic models, if so, read step 6.*

2. Your pieces

I know that you are probably all excited about building and you want to make a six feet hyper coaster, but you need to realize how much pieces and space you have. I recommend about four Screamin' Serpents (±5000 pieces) to start. Then you will slowly increase your pieces over time. If you want more pieces, your best bet is eBay. There is also Amazon, but it is more expensive. Always keep a look on offers on eBay, because the good deals are rare and you won't have a lot of chances to get them. Your space is also important, because your layout might work in your head, but once you started it may be not exactly the same thing.

3. Building

Use a layout that flows very well. If you are a coaster enthusiast, you will know how a coaster works. However, if you are new to the coaster world, take a look at some real coaster and see how its layout is made. If it is your very first coaster, listen carefully to the criticism we make. This way you will improve faster. If you already made some coaster then it's a different story. You may think you made a good coaster, but all our first ones sucked. Listen to our advice and try to improve and don't be stubborn. The best thing to do with K'nex is taking your time, not rushing anything and then it will make a better coaster and you will understand better how building with K'nex works.

4. Improving

To see a difference of quality on your coasters it is really like everything. Practice, practice and more practice. Try different style of coasters, inversions and elements. There are no limits on what you can do with K'nex. Don't be mad if your coaster doesn't work. Just try again and improve your weaknesses.

5. Building tips

Base rod: A base rod is the type of rod you will use for the edges of your box supports. The standard base rod is yellow, the width of your coaster should be a yellow rod in length. If it's not, it would be too wide or too narrow.
Simple lift: A lift should not be piece-consuming. When we refer to a simple lift, we ask a triangle with a support tower at the highest point. DDRman732865's tutorial shows how a lift can be done.
http://www.sscoasters.net/forum/showthread.php?t=8076
Woodies: Woodies are the most piece-eating coasters, don't start one before you know that you have enough pieces for it. The main difference between woodies and steel K'nex coasters is that the lift is fully supported and there is no gap in the supports frame.
Tubular supports: Jogumpie started a new craze with his famous SoF tubular supports. I know that you want to give it a shot, but these are extremely hard to do since they are weaker than box supports and shaping the track is even harder. Consider building more coasters before trying tube supports.

6. CoasterDynamix

CoasterDynamix is the alternative to K'nex. It is a modeling kit that allows you to create coasters while having realistic proportions (1:48 scale) and a realistic looking model. The Scorpion model fits easily on a desk because the track is much smaller than K'nex.
The first thing that disheartens people is the price. The Scorpion costs $200. The Dragon costs $500 and the new Phoenix set will cost $150. The big modeler will buy the Dragon, since it includes a lot of parts and you won't need to buy a lot afterwards. Buying the Scorpion is probably your best choice if you want CD. When you buy your first set, you realize that you only need to buy the specific parts that you want, therefore not having to buy another full set. The second thing that some people don't like is the speed of the models. Be happy, CoasterDynamix is very efficient.

Backdraft

A twist on B&M

Brian Ruggles (cardsandcoasters)

My fourth coaster, Backdraft, began with the idea of introducing riders to the coaster with an unusually large dose of airtime. I knew that if a drop started at zero G's, then no time would be wasted decreasing from one G to zero G's, and the riders can feel more airtime, and sooner. The best way to do this would be to make the main drop come directly out of a zero-g-roll. This way, the ride's drop begins at zero G's, causing more airtime to be imposed on riders. At the time, I thought building this layout was a ridiculous idea, because it wasn't realistic. But many people at SSCoasters liked the idea, and Backdraft was born. The zero-g roll and drop combination turned out to be a great element, and this is what separates Backdraft from all other B&M styled coasters.

The four feet coaster packs in six inversions, including a jojo Roll, zero-g roll, loop, dive loop, and ending with interlocking corkscrews. It takes a basic B&M form, but it has an obvious twist with the zero-g roll as the first element, creating the main drop. This is my first coaster with a drill lift. The regular lift wasn't fast enough for the layout, and the drill's speed adds a nice touch to the coaster. At the top of the lift, I added fire trees. It was the best spurt-of-the-moment theming that I could think of that represented the name. On the topic of theming, Backdraft's station was my favorite of all that I've made (even though it's only my second station). It had a unique roof, and for some reason it just appealed to me. When I took the coaster down, I saved the station and put it on my desk!

The beginning of Backdraft was created entirely in my room. Everything up to the first corkscrew was assembled here. When school started, the coaster had to be moved to the living room for space issues. I'm glad I did this because I had very limited space in my room. As a result, the corkscrew was misshapen, and the turn between the interlocking corkscrews was not turning out well. However, the living room allowed these two elements to be widened and overall shaped much better.

The construction of the zero-g roll became frustrating at times. After building it the first time, I realized that the cars were flying through the inversion. The element was rebuilt again, but the same thing happened. Overall, I ended up rebuilding the roll four times. The turning drop was great, and so was the loop. Then the dive loop, this was originally meant to circle around the lift, but my room gave me limited space, so I changed things a little. Now the inversion is above the pre-lift straightaway. It took three weeks for this element to be completed. I worked on it the first week, but the shaping wasn't that well. I gave up for almost two weeks, but when I couldn't bear to not be building any longer, I worked like crazy, rebuilt it a couple times and finally made it work. For the pullout, I had to cram myself underneath my desk for thirty painful minutes. The next element was a MCBR through the loop. The turn into the brake run was difficult, and I think the banking could have been better. I had the interlocking corks to build next. Corkscrews aren't my specialty, so it was a bit difficult to get shaping and smoothness correct. The worst part was that I had the second corkscrew at less than half the height of the first cork. I was running out of pieces and time so it was constructed too fast and out of proportion. On the other hand, the heartline roll looked much better. I made this and then a long runway to the lift so that riders would be dizzy, and then they'd see the massive dive loop above them. Just to give riders a taste of what's ahead.

Backdraft placed second in Top Model Two, and was nominated a couple times in the 2008 SSCoasters Awards.

Maverick

The one and only Model of the Year 2008!

Jeromy Dunne (the_burrito_master)

This article takes you through the troubles I had to overcome during the construction process and the success – it even got me the MOTY award - of my K'nex roller coaster. I started off with the quote "yeah a noob like me is building the maverick". A lot of members said they wanted to see how it would turn out. I, however, could see that they wanted to see me fail. And I thought I would.

I started building that night and I managed to make the lift hill pretty close to scale. Then I had to work on the drop, which turned out to be much harder. After the drop was the turn, banked at 90˚ because of my support structure. The turn itself was not bad, but the banking was terrible.

When I showed pictures on SSCoasters, I got this response from DeAzncy: "your twist is way too sharp!!! also, fix that drop and crest. look at this pic. you're exaggerating the drop a little." Thanks a lot, DeAzncy, for pointing this out.

Picture 1 - Maverick features a lift and a launch.

Throughout the whole building process I had trouble with the transitions. Somehow they always become messed up again, even after refurbishing them.

Now my birthday came and just in the nick of time I got a new Screamin' Serpent. I also bought another one myself a couple of days before my birthday. While waiting for extra crossties, I built a station. It wasn't the best station ever, but it got the job done for the time being. The Screamin' Serpent came and I started construction again. I started building the large turn after the launch, which was hard, since I had a lack of space. I even had to move a couch. After a couple of tries I managed to complete the turn.

During construction on the turn, the twisted horseshoe roll kept on falling apart, which wasn't funny at all. I had to rebuild it almost all the way.

Next was the heartline roll after the large turn. In real life it pulled too many G's, so it was replaced by a simple unbanking curve. For my model I also chose to use that curve.

Next was a Stengel dive underneath the first drop. It was really hard to get right, because the main support structure of the first drop was there. There wasn't enough room for me to heartline it properly. I kept on modifying it until I recorded the final video.

Since I moved the coaster into the room I do my school in, I was able to do my school at the same time I built, in some classes. I had a lot of time to build and that is why the second part of the ride looked a lot better. I had a problem with fitting in the second half of the Stengel dive between the flat turns in the beginning of the ride. Actually, I failed.

The second Stengel dive was very strange to me. I did not even have the slightest idea of was I was building. I thought it was an overbanked turn.

One of the last parts of the ride was the upward turn into the brake run. I couldn't get the brake run as high as the station, so I had to add a small lift towards the station. It had to be very abrupt, because of the launch underneath the station.

Then I built a wheel drive back to the station and it turned out looking good. Last thing I did was adding cardboard and white paper, and then Maverick was finished.

Monarchy

MOTY's runner-up

Marc Antinossi (rollerdude)

In the summer of 2008, SSC got to witness one of the greatest K'nex models get built. Construction started in late April with the start of the lift hill. Once that was complete, the ride was built backwards through the station up until the brake run. Then the station frame was built, just to be safe.

After this I finally started on the first drop. I knew that the pullout had to be large, to save speed and to prevent what happened on Anarchy. Everybody thought that Anarchy's pullout was too small, and it made building the second hill very hard. A large pullout was built on Monarchy and then I started working on the hammerhead.

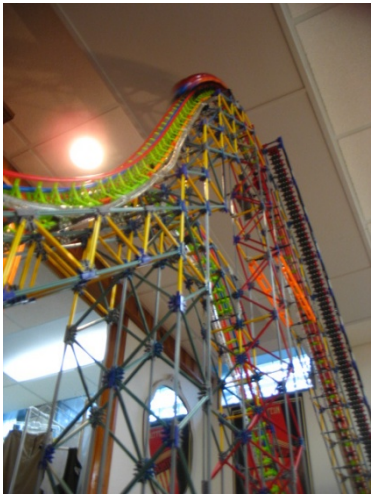
This was one of the trickiest elements on the ride. It was the first element, and a high speed one at that. The banking had to be just right and it had to be extremely well-supported. The further in construction the ride got, the weaker I thought the supports were. In the end, I added some string to strengthen the ride, just like I did with Monarchy.

The opposite side of the hammerhead and pullin to the first hill mirrored the first side, a strategy I enjoyed using. It really sped up the building process. The camelback hill was built next. This element didn't give me trouble at first. The J turn was built next, and needed to be lowered about an inch.

After this, I was sick of the bad pacing and wanted to speed up the ride. I changed the layout design to incorporate smaller elements and built a horseshoe turn into a crazy airtime hill/headchopper. Another horseshoe turn followed. I was really picking up the pace in the construction at this point because I wanted to get as much done as I could before I left for

Mexico for a month. I started the lift catwalk and completed that. I got all the way to the final bunnyhill and I had to leave.

A month later, I resumed construction and finished the ride with a lackluster turnaround. Now came the tedious part of building the ride. I had to build the queues and the exit path as well as the station platform and roof. I also had to build a maintenance catwalk for the brake run. Finally, on September 8th, 2008, Monarchy was complete. This giant stood five feet, eleven inches and was over seventy five feet long. In the three and a half months (if you don't count the month I was gone) I spent building this, I faced many hardships, and I built just what I wanted to, one amazing model.



Forbidden Mine Expedition

Not your usual coaster

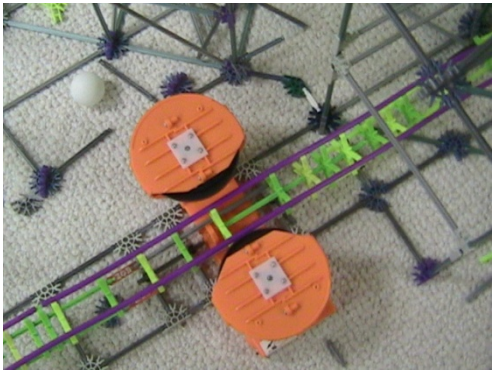
Thomas Price (DDRman732865)

One day I was in my room, bored out of my mind, uninspired to work on Kumba because of its epic crappiness. I was bouncing a ball off the wall when it flew off and hit a random SS car sitting in my room. Then it hit me (not literally, of course): I should build an adventure coaster featuring a "boulder" chasing a train. And then the deconstruction of Kumba began, and a new breed of coaster was formed...

That night, I built the lift, the first drop, and the first transfer track. I was very surprised at how easy it was to get it to work. At first the only problem was aligning the track, but that was also easily fixed. I went on to build a small hill, and I realized that I needed to put the ball in somewhere. So after several trial and error of putting it after the transfer track, I incorporated it into the transfer.

After this is where some problems arise. I built a turn about a gray shorter than the transfer drop, and it was only making it about half the time. A simple downward incline solved my problems temporarily. Then I built, getting the ball off the track and finally down to the Elevator Drop. This first-of-its-kind element was originally going to be 90 degree connectors on a gray rod, until I discovered a way to do it with SS track. This was also actually very easy to make, and it coincidentally worked very well without any real problems or modifications.

I was going to end it there, when I realized: "Wait a minute, it's too short." So I added an RR booster, and made a tilt section. From there, it was a straight shot to the station, and back to the lift.



Once that was done, I made a ball lift system, which also turned out unexpectedly well. The whole coaster was done, and each part worked completely automatically. Well, when I put it all together, it was a different story.

As soon as I finished it and ran it for the first time, everything kind of just went to hell. The transfer was also bouncing, so the front axels were slipping off the track about 70% of the time. In the 30% of the time it made it, 70% it didn't make the turn after the dip. Out of the 30% it did, it would get jammed on the elevator drop 70% of the time. Out of the 30% that made it, 70% did not clear the hill after the booster. And of course 5% of the time the claws on the elevator lift broke while carrying the ball. So I had a dilemma. It made the course by itself only about 6% of the time. Tie that in with the excessive amount of theming this coaster should have, and I have a lot of work set for myself in the next couple of weeks before it can be pronounced done.

Want to publish your roller coaster model in SSC Magazine?

Write an article and send it to us!

Maybe your article will be published in the next edition!

Colophon

Who are responsible for the SSC Magazine?

The SSC Magazine is SSCoasters' own magazine which is published four times a year. Everyone and especially members of SSCoasters can read the magazine online at the forums.

Year: 1
Edition: 1

Publish date: January 1st 2009

Editors:

Jochem Giesbers (Primary Editor)

Contact:

jogumpie@gmail.com
http://www.sscoasters.net

Thanks to:

Marc Antinossi, Mathieu Désilets, Jeromy Dunne, Jochem Giesbers, Rhys Mogford, Thomas Price, Brian Ruggles, Brennan Selby.

Articles can be sent to jogumpie@gmail.com in .doc(x) or .txt format. Pictures or photographs can be added as attachments.

The next SSC Magazine will be published at April 1st 2009.

SSCoasters Magazine is brought to you by Jochem Giesbers (Jogumpie).

The authors are responsible for the content of the articles.
The editors have the right to adjust or reject articles.


KAALINRICHTING