



FRONTIER COASTER PARK
CORPORATION OF TEXAS

MEMORANDUM

March 19, 1992

TO: Mr. Dan Slayden
Fiesta Texas Show Park
VIA FAX: 512-697-5474

RE: "The Rattler"
Roller Coaster
Fiesta Texas Show Park
San Antonio, Texas

FROM: Mike Black

We learned Monday, March 16th, that you did not run "The Rattler" on Sunday due to excessive speeds in the range of 1:24 - 1:28. This, we were informed, was after the track was oiled and after experiencing slow prior speeds in the range of 1:50. We think this was a wise decision as excessive uncontrolled speed causes forces exerted on riders to go up exponentially, even though this shut down meant taking one of your main attractions out of operation that day.

Dana Morgan, John Pierce, Alton Pardue, our field supervisors, and myself discussed this situation and the other problems you experienced by immediate conference call and following is our combined recommendations:

1. Speed Ranges and Climatic Effect

Speeds in the range of 1:24 - 1:28 are too fast
Speeds in the range of 1:50 plus are too slow

It is obvious to the Designer and Train Manufacturer that the attraction is climatic (weather) sensitive. As such, the ride will require a set of check brakes, which are automatically adjustable to compensate to varying and changing conditions.

The original design, optimum speed range for this ride was calculated at 1:35 - 1:40. Practical experience in running the trains thus far extends this range to 1:45. A median

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speed of 1:40 would be ideal. This is based upon a design chain speed of 9 feet per second, however, chain speed should be varied as conditions warrant.

2. The Check Brake

I have ordered our field forces to immediately take the two brakes originally destined to be relocated from the Station to the "fly-by" and install them at the flattest, slow area coming out of the helix prior to going over the cliff and down to the tunnel.

These brakes will have their own independent, adjustable air system and ultimately an automatic speed sensing control.

Installation of check brakes at this location will allow train speeds and forces to be controlled prior to entering the tunnel and the Station area.

3. Current options and/or combinations for controlling speed of Trains (prior to check brake installation):

- * Heavier/lighter lubrication oil as conditions warrant.
- * Varying chain speed from 9 feet per second to 4 - 6 feet per second.
- * Option of substituting a 2nd, reserve, train.

In operating with all or a combination of these options, train performance changes will be limited; however, it can be effected. You also need to watch the wind speed and its direction, (i.e., in the face of train over the first drop and up the second incline or in face of train up third incline to the helix. These are critical directions.

Also, the installation of the anti-roll back angles at the tunnel exit hill will prevent what happened on March 7, 1992, when the train failed to make the crest.

4. Recommendation:

In addition to the check brake as addressed above, we recommend that this coaster have a permanent speed sensing monitor system and wind speed/direction instruments placed at critical locations on the ride. RCCT will prepare a design/proposal to accomplish this for park consideration.

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Other Actions and Conditions:

- a.-- RCCT will have a supervisor on site and workmen on call every weekend as long as RCCT forces remain at the site and in San Antonio.
 - b. Dana Morgan does not think that the "break-in" kerosene/oil mix is causing the train to slow down by the lubrication over-heating and seizing-up bearings.
 - c. The performance characteristics of this ride and its two trains are still being determined and your operation/maintenance people should continue to operate, experiment, keep good notes and to immediately report any problems or inconsistencies to us for discussion, resolution and action.
 - d. When warming up the train prior to operation, run chain at 9 feet per second, then drop back to 5 - 6 feet per second. However, be sure of wind speed and direction. Even at 3 - 4 feet per second chain speed (in normal wind conditions), the train should have adequate speed to carry the second incline.
 - e. Continue to run and alternate both trains. Keep watch on the hitch conditions, particularly on Train No. One.
 - f. New hitch balls are being ordered and prepared by Morgan Manufacturing for Train No. One and should be available in about two weeks' time. The original "flat top" balls as modified are acceptable to use until the new ones arrive.
 - g. Also, a new spindle will be welded on the existing axle when it is returned to Morgan to replace the one that was bent in Train No. 1. A new (spare part axle) will be air freighted to the Park this week.
 - h. We also think you are wise for delaying the two-train operation at least until:
 1. Operation personnel gain experience;
 2. Modifications are made on the brakes;
 3. Train No. One is certified as fully operational and hitch problems are resolved.
 4. Finally, when ready would be the Park's call.
6. Reminder

The next testing by Dr. Brown is scheduled to occur March 30 and 31, 1992.

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