WHAT IS CLAIMED IS:

1. A method for controlling a plurality of vehicles each having wheels located on a fixed path, the method comprising:

mounting a processor on each vehicle;

mounting a vehicle sensor device to each vehicle;

using each processor and each vehicle sensor device to determine an actual velocity of each vehicle while each vehicle is moving along the path; and

using a position control correction module to compare each vehicle's actual velocity to each vehicle's velocity commands to determine if wheel slip is occurring and to decrease the magnitude of vehicle velocity commands where wheel slip occurs.

2. The method of claim 1, wherein the position control correction module is further configured to ramp up the magnitude of vehicle velocity commands after wheel slip is eliminated along the fixed path.

3. The method of claim 1, wherein the position control correction module is further applied to compensate for changes in vehicle velocity because of wheel deterioration.

4. The method of claim 1, wherein the position correction module comprises a cosine algorithm.

5. The method of claim 4, wherein the cosine algorithm corrects velocity error accumulation.

6. The method of claim 1, wherein each vehicle comprises an entertainment vehicle and the path comprises a track having a pair of rails.

7. A ride control system for controlling a plurality of vehicles on a path, the ride control system comprising:

a path processor; and

a vehicle processor supported by each vehicle;

a vehicle driving and stopping system in circuit with each vehicle processor; and

a vehicle sensor device in circuit with each vehicle processor;

wherein each vehicle processor is configured to communicate with the path processor and to use the vehicle sensor device to identify an actual velocity of a particular vehicle and further to use a position control correction module and a vehicle driving and stopping system to correct for variation in spacing between vehicles.

8. The system of claim 7, wherein the position control correction module is configured to compensate for changes in vehicle spacing caused by wheel slip along the fixed path.

9. The system of claim 8, wherein the position control correction module is further applied to compensate for changes in vehicle velocity caused bywheel deterioration.

10. The system of claim 7, wherein the position control correction module comprises a cosine algorithm.

11. A method for determining slippage of at least one wheel of at least one vehicle having a motor and a processor that communicates velocity commands to the motor for varying a velocity of the vehicle, the method comprising:

determining an actual velocity of the vehicle;

comparing the actual velocity of the vehicle to the expected velocity from the magnitude of the velocity commands to determine whether there is slip of the wheel of the vehicle; and

reducing the magnitude of the velocity commands to equal approximately the actual velocity of the vehicle where there is slip of the wheel.

12. The method of claim 11 further comprising ramping up the magnitude of the velocity commands once no wheel slip occurs.

13. The method of claim 11 wherein the at least one vehicle comprises a plurality of vehicles located on a fixed path.

What is claimed is:

1. A method for controlling a vehicle having wheels located on a fixed path, the method comprising:

   using a vehicle processor and a vehicle sensor device to determine an actual velocity of the vehicle while the vehicle is moving along the path, wherein the vehicle processor and the vehicle sensor device are located on the vehicle;

   using a position control correction module to compare the actual velocity of the vehicle to a velocity command generated by the vehicle processor and utilizing a comparison result to determine if wheel slip is occurring; and

   decreasing a magnitude of a subsequent vehicle velocity command from the vehicle processor relative to a magnitude of the velocity command where the comparison result indicates that wheel slip is occurring.

2. The method of claim 1, comprising using the position control correction module to ramp up the magnitude of vehicle velocity commands after wheel slip is determined to have been eliminated based on a subsequent comparison of the actual velocity to the velocity command.

3. The method of claim 1, comprising using the position control correction module to compensate for changes in vehicle velocity because of wheel deterioration by calculating a current wheel diameter and correcting the determined actual velocity based upon the calculated current wheel diameter.

4. The method of claim 1, comprising using the position control correction module to perform an algorithm to gradually ramp up vehicle transition speeds subsequent to decreasing the actual velocity.

5. The method of claim 4, comprising using the position control correction module to correct velocity error accumulation.

6. The method of claim 4, comprising applying the following as the algorithm:

   $F(V_{sp})=\Sigma[^{\theta 2\pi,\lambda}{}_{\pi}(\cos(\theta)+1)\odot[1/2]\odot(V_{Nnew}-V_{Nold})]$

   where:

   $F(V_{sp})$*=vehicle transition speeds*

   $\theta=\theta+\lambda$*, where* $\lambda=F(a)/\pi$

if $V_{Nold} \neq V_{Nnew}$, $\theta = \pi$

V_N=*velocity command*

$F(a) = a_N \odot [(V_N - V_{actual})/V_N]$% *where:*

$V_{actual} = F(V_{sp})(V_N)$

a_N=*acceleration command.*

7. A ride control system for controlling a plurality of vehicles on a path, the ride control system comprising:
a path processor configured to communicate an ideal spacing between each vehicle of the plurality of vehicles on the path;

a plurality of vehicle processors, wherein each of the plurality of vehicles includes a one of the plurality of vehicle processors, and wherein each of the plurality of vehicle processors is configured to receive the ideal spacing;

wherein each of the plurality of vehicle processors is in circuit with a corresponding vehicle sensor device configured to identify an actual velocity of a corresponding one of the plurality of vehicles;

a timer configured to provide time duration of travel data for one or more of the plurality of vehicles along the path;

a plurality of position control correction modules, wherein each of the plurality of vehicles includes a one of the plurality of position control correction modules, and wherein each of the plurality of position control correction modules is configured to determine a variation in an expected position of the corresponding vehicle by comparing the actual velocity of the corresponding vehicle with a velocity command of the corresponding vehicle, in view of time duration of travel data for the corresponding vehicle from the timer, and to determine a corrected velocity that will correct the variation in the expected position of the corresponding vehicle such that the ideal spacing will be corrected without requiring knowledge of a position of adjacent vehicles; and

a plurality of vehicle driving and stopping systems, wherein each of the plurality of vehicles includes a one of the plurality of vehicle driving and stopping systems in circuit with a corresponding one of the plurality of vehicle processors, and wherein each of the plurality of vehicle driving and stopping systems is configured to apply the corrected velocity to the corresponding vehicle to correct for the variation in spacing between the adjacent vehicles.

8. The system of claim 7, wherein each of the position control correction modules is configured to identify and compensate for changes in vehicle spacing caused by wheel slip along the fixed path.

9. The system of claim 7, wherein each of the plurality of the position control correction modules is further applied to compensate for variations in vehicle spacing caused by wheel deterioration by calculating a current wheel diameter and correcting the identified actual velocity based upon the calculated current wheel diameter.

10. The system of claim 7, wherein the position control correction module is configured to employ an algorithm to gradually transition velocity commands to the corrected velocity and prevent position errors from accumulating.

11. The system of claim 10, wherein the algorithm to gradually transition velocity commands comprises:

$F(V_{sp})=\Sigma[^{\theta 2\pi,\lambda}{}_{\pi}(\cos(\theta)+1)\odot[1/2]\odot(V_{Nnew}-V_{Nold})]$

where:

$F(V_{sp})$=*vehicle transition speeds*

$\theta=\theta+\lambda$, *where* $\lambda=F(a)/\pi$

if $V_{Nold}\neq V_{Nnew}$, $\theta=\pi$

V_N=*velocity command*

$F(a)=a_N\odot[(V_N-V_{actual})/V_N]$% *where:*

$V_{actual}=F(V_{sp})(V_N)$

a_N=*acceleration command.*

12. A method for determining slippage of at least one wheel of at least one vehicle having a motor and a processor that communicates velocity commands to the motor for varying a velocity of the vehicle, the method comprising:

determining an actual velocity of the vehicle with a velocity sensor;

comparing, with a processor, the actual velocity of the vehicle to an expected velocity based on a magnitude of the velocity commands;

determining, with the processor, whether there is slip of the at least one wheel of the at least one vehicle based upon the comparison of the actual velocity and the expected velocity; and

reducing the magnitude of the velocity commands to equal approximately the actual velocity of the vehicle where a determination is made that there is slip of the at least one wheel.

13. The method of claim 12, wherein reducing the magnitude of the velocity commands comprises applying the velocity commands to an algorithm that smoothes the reduction of the magnitude of the velocity commands.

14. The method of claim 13, wherein the algorithm comprises:

$F(V_{sp})=\Sigma[^{\theta 2\pi,\lambda}{}_{\pi}(\cos(\theta)+1)\odot[1/2]\odot(V_{Nnew}-V_{Nold})]$

where:

$F(V_{sp})$=*vehicle transition speeds*

$\theta=\theta+\lambda$, *where* $\lambda=F(a)/\pi$

if $V_{Nold}\neq V_{Nnew}$, $\theta=\pi$

V_N=*velocity command*

$F(a)=a_N\odot[(V_N-V_{actual})/V_N]$% *where:*

$V_{actual}=F(V_{sp})(V_N)$

a_N=*acceleration command.*

15. The method of claim 12, comprising ramping up the magnitude of the velocity commands once no wheel slip occurs.