

## Road America Track Notes



### Lap of Road America

#### General Setting

Road America is one of the premier road racing courses in North America, if not the world. RA is nestled in the northern Kettle Moraine of Wisconsin, and the varied, hilly relief is a legacy of the glaciers' meltdown at the end of their last stand in Wisconsin. Views in the fall while driving on the track are spectacular—both colors and topography—but, don't be distracted. RA is a high-speed, high performance track, but well-driven cars with lower horsepower can make time on the twisty "backside" of the course.

#### The track

The track is 4 miles long with fourteen (14) turns. The track surface elevation drops 176' from the crest at turn 1 to turn 12 (Canada Corner), and for those in low horsepower cars, it feels like you have to climb all the way up from turn 14 to the crest at turn 1. There is plenty of run-off room at all of the high speed corners.

The track surface is uphill from 14 to 1, downhill from 1–2–3; downhill continuing into 5; uphill from 5-6; downhill from 6-7 and 7-8; relatively flat to downhill through 9-10 (Carousel) and through the "Kink"; slightly downhill from the "Kink" to 12 (Canada Corner); uphill from 12-13-13A; and flat through 13A-14.

The track has three turns that are considered “throwaways” by some because they are a) extremely tight and require serious braking and speed reduction downhill (5 & 8), b) are blind and tight coming off a short uphill straight (6), or c) are off camber in the corner (8). However, 6 and 8 lead to significant “straights”, so they need to be negotiated well – slow in, fast out.

There are some **blazingly fast** corners if you are set up correctly – 7, The Carousel (9&10), the “Kink” (11) and 13. There are some relatively fast sweepers (14 and 1) and there is turn 12, which you enter off the fastest straight of the track. The longest straights are: 14-1, 3-5, and in reality, for most of our cars, 8-12.



## **Local Names**

Road America Straight – Turn 14 to Turn 1  
Moraine Sweep – Turn 3 to Turn 5  
Hurry Downs – Turn 7 to Turn 8  
Carousel – Turn 9 to Turn 10  
Kink – Turn 11  
Bend – Used instead of the Kink during some events  
Kettle Bottoms – Turn 11 to Turn 12  
Canada Corner – Turn 12  
Thunder Valley – Turn 12 to Turn 13

## **Track Lights**

There are safety light boards at a number of locations around the track. These light boards can display standing yellow, waving (flashing) yellow, red or white lights. The condition of the light will be the same as the corner worker station immediately following the light.

These lights are found in the following locations:

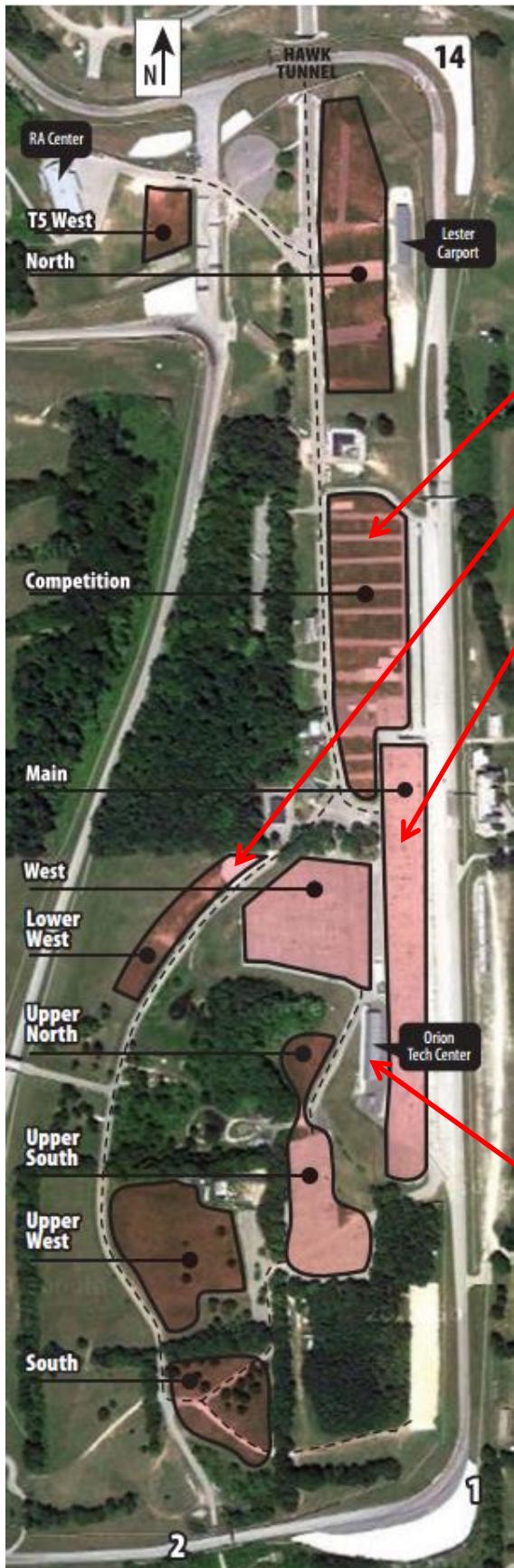
1. Before turn 1 on the left
2. Before turn 5 on the right
3. Before turn 6 on the right
4. Before turn 9 on the left
5. Before turn 11 on the left (this light is attached to the Continental Tire bridge)
6. Before turn 12 on the left
7. Before turn 14 on the left

## **Number Board**

Near the safety light board at turn 14 there's also a number board. This board will display the number of a car that is being black flagged. The corner worker on the right at turn 14 will also point their black flag at you.

## **Credits**

Created by Larry Boyer and Mike Clemens with help from previous write-ups by Jim Furstenburg and Gregg Borland. Updated following many discussions with Duck Waddle and Shields Bergstrom.



## Paddock Parking

For most HPDE events you will be able to park in the following areas:

### Competition Paddock

### Lower West Paddock

### Main Paddock

Some organizations may use the south part of the Main Paddock for car control exercises during an event. If an organization plans to use this area there will be a line of cones at about paddock space 21. Do not park to the south of the line of cones.

Some organizations may also rent the West Paddock for paddock parking during an event. However, in many cases Road America will be using this area for one of their motorcycle or teen driving classes.

In general the other highlighted paddock areas are not available to organizations for HPDE events.

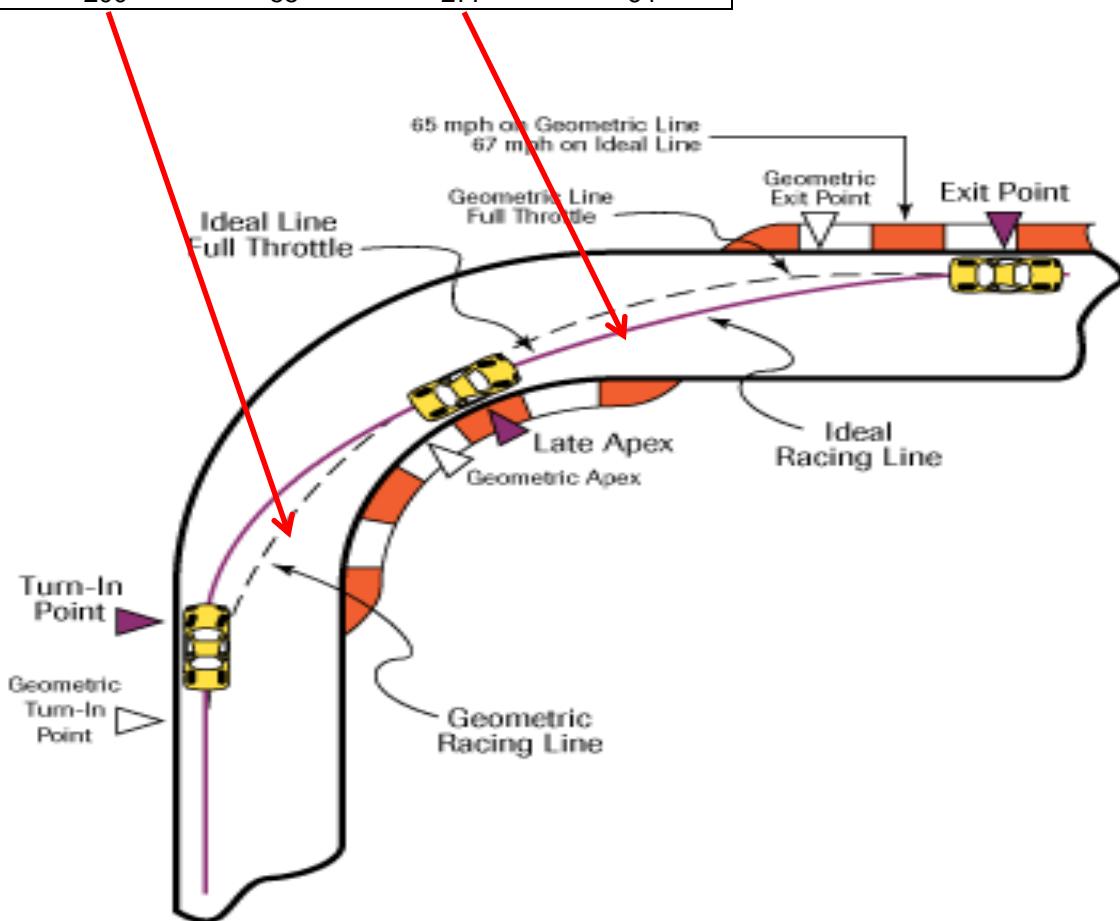
If you want to rent one of the garages in the Orion Tech Center contact Road America directly at 800-365-7223.

## Flags Used at Road America During HPDE Events

	<b>Green</b> – Displayed only at the start finish line, indicates that the track is open for passing. The absence of yellow flags at the turns indicates that passing is permitted.
	<b>Stationary Yellow</b> – Caution, slow down. There is a potentially dangerous condition off the track. No passing until the next corner station that is not displaying a yellow flag. Violators will be black flagged.
	<b>Waving Yellow</b> – Slow down and be prepared to stop. There is a serious condition on the track. No passing until the next corner station that is not displaying a yellow flag. Violators will be black flagged.
	<b>Blue/Yellow Stripe</b> – Check your mirrors. A faster car is coming up behind you. Allow them to pass at the next passing zone.
	<b>Red/Yellow Stripe</b> – The track condition has changed. There may be oil or water on the track. Also used to indicate that there is debris (car parts, glass, dirt, animals) on the track. Usually only displayed until all cars have seen the flag once or twice.
	<b>White</b> – There is a slow moving vehicle on the track ahead. You may pass the slow moving vehicle with caution. The white flag is not used to indicate there's just one lap to go – remember this is not a race.
	<b>White with Red Cross</b> – There is an emergency vehicle on the track ahead. You may pass with caution. The emergency vehicle could be a safety truck, ambulance, wrecker or flat bed truck.
	<b>Black</b> – The driver receiving the black flag at corner 14 or the start/finish line must come into the pits through pit it (after turn 14) to discuss a rules infraction at the black flag station. A number board is also used at turn 14. Don't ignore this flag.
	<b>Black (All stations)</b> – A serious incident has occurred and the track must be cleared. Proceed slowly to the pits and wait for instructions. You may exit either at turn 5 or turn 14.
	<b>Black/Orange Circle</b> – There is something mechanically wrong with your car. Exit the track through pit in (following turn 14) and proceed to the black flag station. This flag is displayed only at turn 14.
	<b>Red</b> – Traffic on the track must be stopped due to a serious incident. When you see this flag slow down and then stop on the side of the track (not on a hill) within sight of a corner worker station. Do not proceed until given instruction by the corner workers. Most often a black flag all will follow a red flag.

## Maximum Corner Speeds Calculated Using Mark Donohue's Formula \*

Corner Number	Center Line Curve Radius	Max MPH for a 1G Car	Largest Possible Radius	Max MPH for a 1G Car
1	348	72	473	84
3	235	59	321	69
5	100	39	182	52
6	112	41	208	56
7	325	70	611	96
8	125	43	242	60
9	525	89	555	91
11	725	104	1199	134
12	170	50	275	64
13	550	91	767	107
14	200	55	277	64

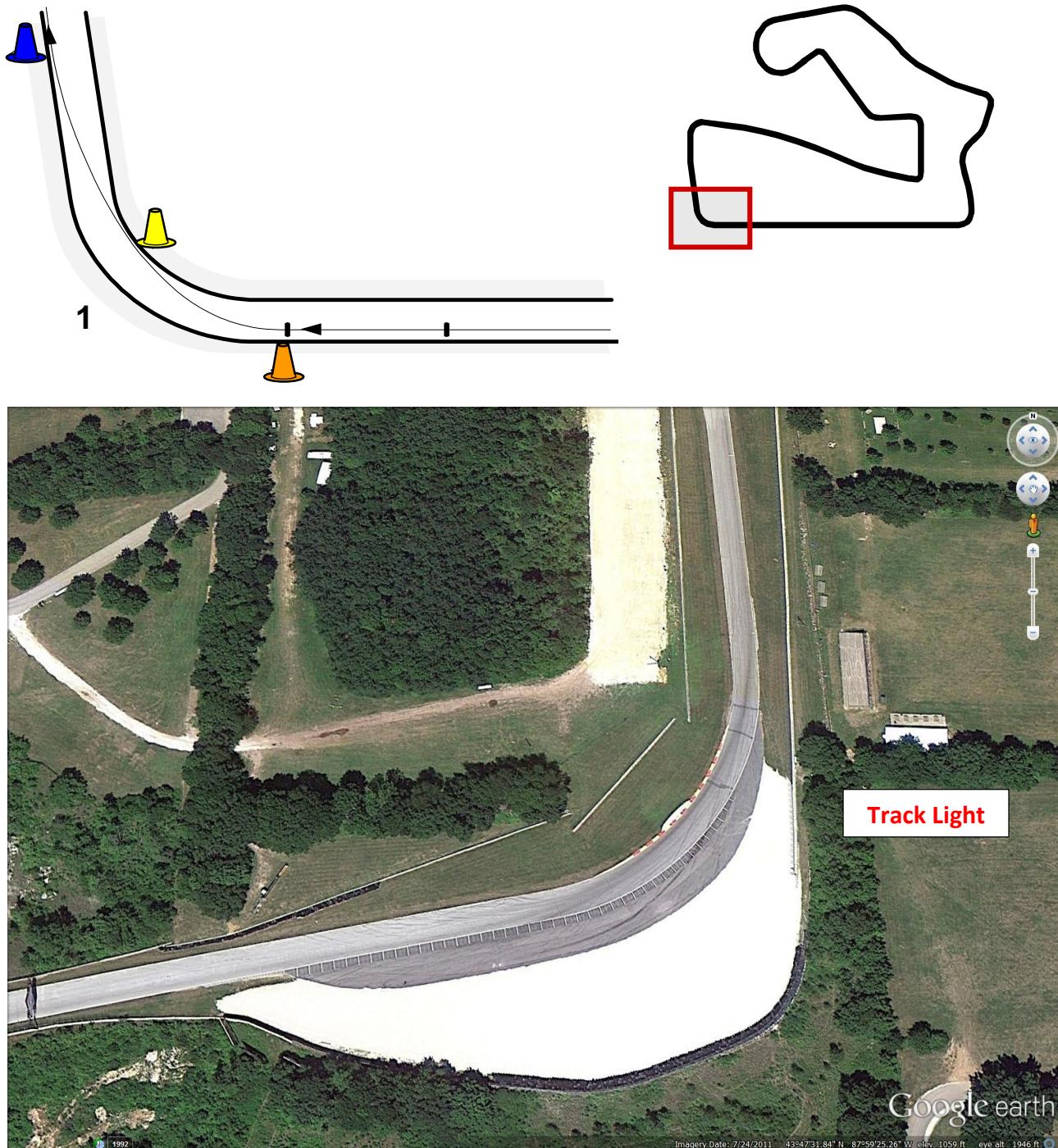


\* Maximum MPH =  $\text{SQRT}(15 * \text{Grip in Gs} * \text{Corner Radius})$

## Turn One

You've driven up this huge hill and it crests just before the braking zone in 1. A clear day gives you a view over the Kettle Moraine towards the south. The turn is much faster than it looks, but as almost all of the turns at RA, you should start out with good straight line braking somewhere after "Alpha" (the 1<sup>st</sup> corner station) and start to "bend" the car into the sweeper at the 1 marker - aiming for a late apex. There may not always be cones out for turn in, apex and track out so as a driver, you should begin to use other visual references to gain comfort on each part of the track.

For some this is a downshift from 5<sup>th</sup> or 6<sup>th</sup> to 4<sup>th</sup> gear turn with balance (not threshold) braking and no added downshifting. For others with different gearing turn 1 may require a shift to 3<sup>rd</sup> gear. Take the turn smoothly; gradually apply power after the turn in and full throttle from apex to track out.

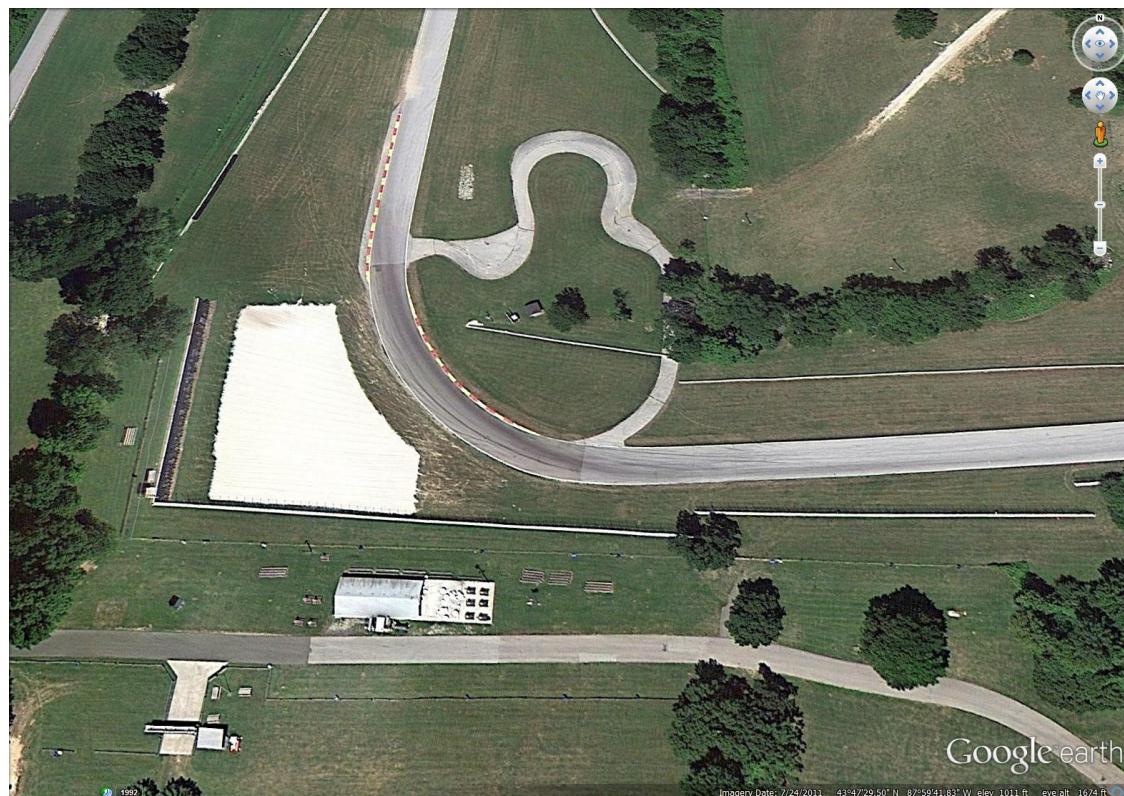
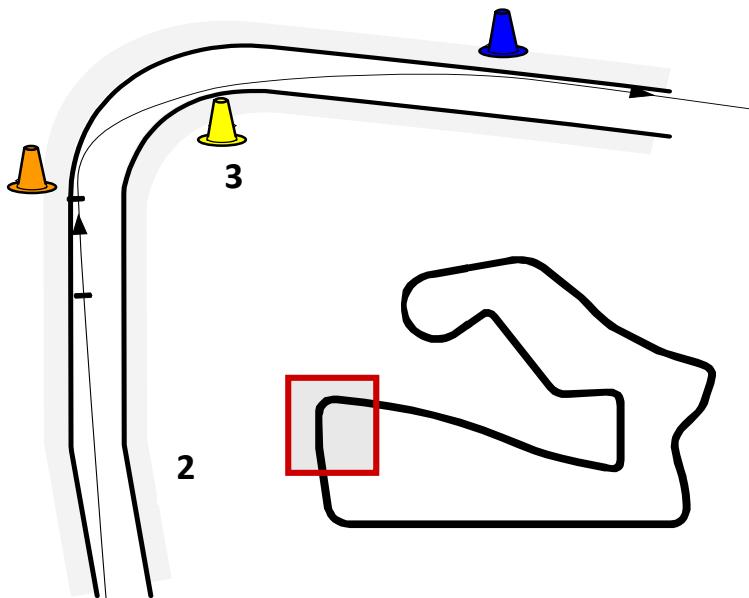


## Turns 2 to 3

Coming out of the track out of turn 1 let the car come out into the center of the track just left of the lower point of the Briggs & Stratton sign. If you do this there really is no turn two.

You are going *downhill* at an angle to the left, straight into the braking zone for 3.

There used to be a little maintenance shed with a green door placed perfectly behind 3 that you could aim at – see if it is still there. It's important to take this turn correctly, as it sets you up for the 2<sup>nd</sup> fastest "straight" at RA. Get your braking done smoothly and downshift and smoothly apply power from the apex to track out. Let the car come back over to right center after track out. Remember at all times, the less you turn the wheel the faster the car goes.



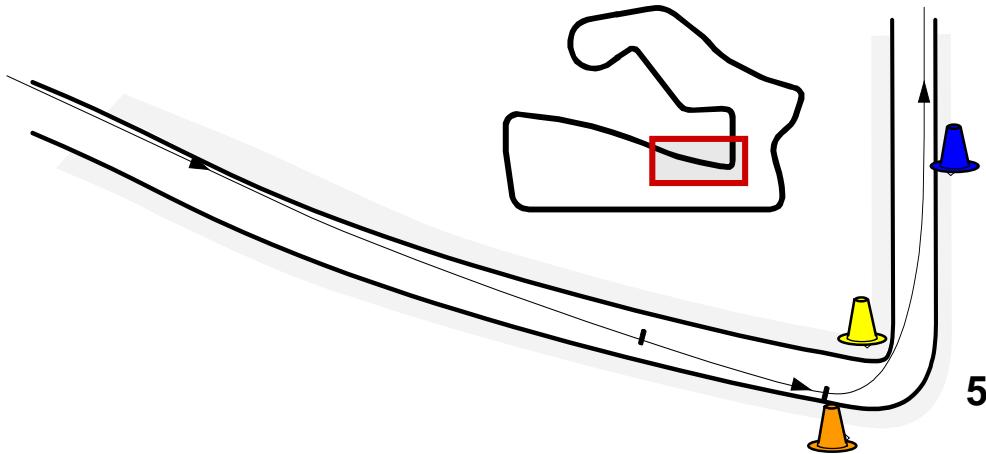
### Turn 3 to Turn Five

From turn 3 to 5 is the 2<sup>nd</sup> fastest part of RA; lots of passes that couldn't be made on the front straight can be completed safely. Check your mirrors and be polite. High horsepower cars will just walk away from you but, be very, very careful with closing speeds in the brake zone.

Drive just to the left of the wheels of the Sargento Cheese tractor – just off the grass drivers right, it's on the bridge, check your map and look for it and then fade left to eliminate turn 4 by getting close to the left edge of the track at "Moraine Sweep" (see your map). What kind of cheese is on that truck?

**Coming downhill into the braking zone, you want to do all of your braking in a straight line starting left and moving diagonally towards the right-hand side of the track.** The track surface is cambered like any other road, and your car is much more stable under braking starting on the left. There is no room for error on the right.

Get the speed off and have the car under control. Keep a little brake on until turned towards the apex, and then apply power smoothly all the way to track out. In all of these braking zones (esp. downhill), leave a tire width or so space from the edge of the track for safety (tire squirm, different pad bite, etc.) Don't worry about saving speed here. Out of five you go uphill past "six flags" (the corner worker station at Corvette Bridge) and into a slow left hand corner 6.

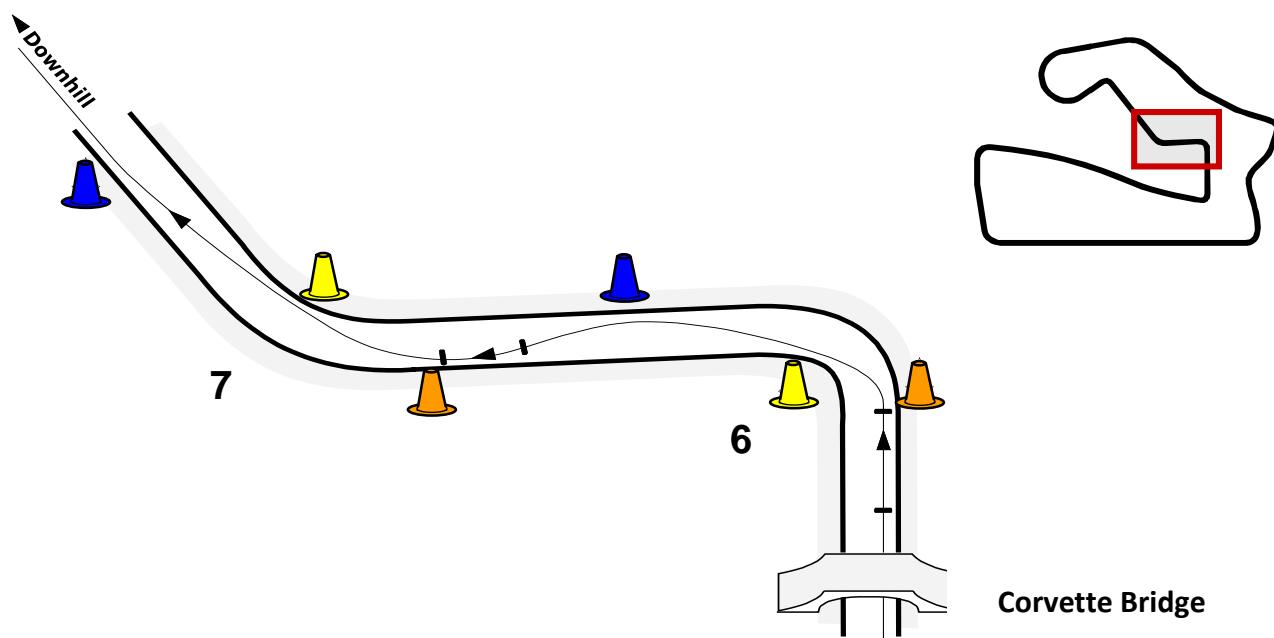


## Turn Six

From turn five you climb up a steep hill on the right hand side of the track and maybe even short shift up a gear just before the crest, or lift and begin braking. If you hammer up the hill you'll get light at the crest and then begin braking it will unbalance the car---you'll likely slide through much of the turn, especially on cool days with low grip. Turn six is a blind left-hander with your view blocked by the hill and the bridge.

As with 5, you don't gain time in 6, you need to set yourself up to do turn 7 correctly, (one of the very fastest corners). So brake *just before* the crest, settle the car and downshift if necessary.

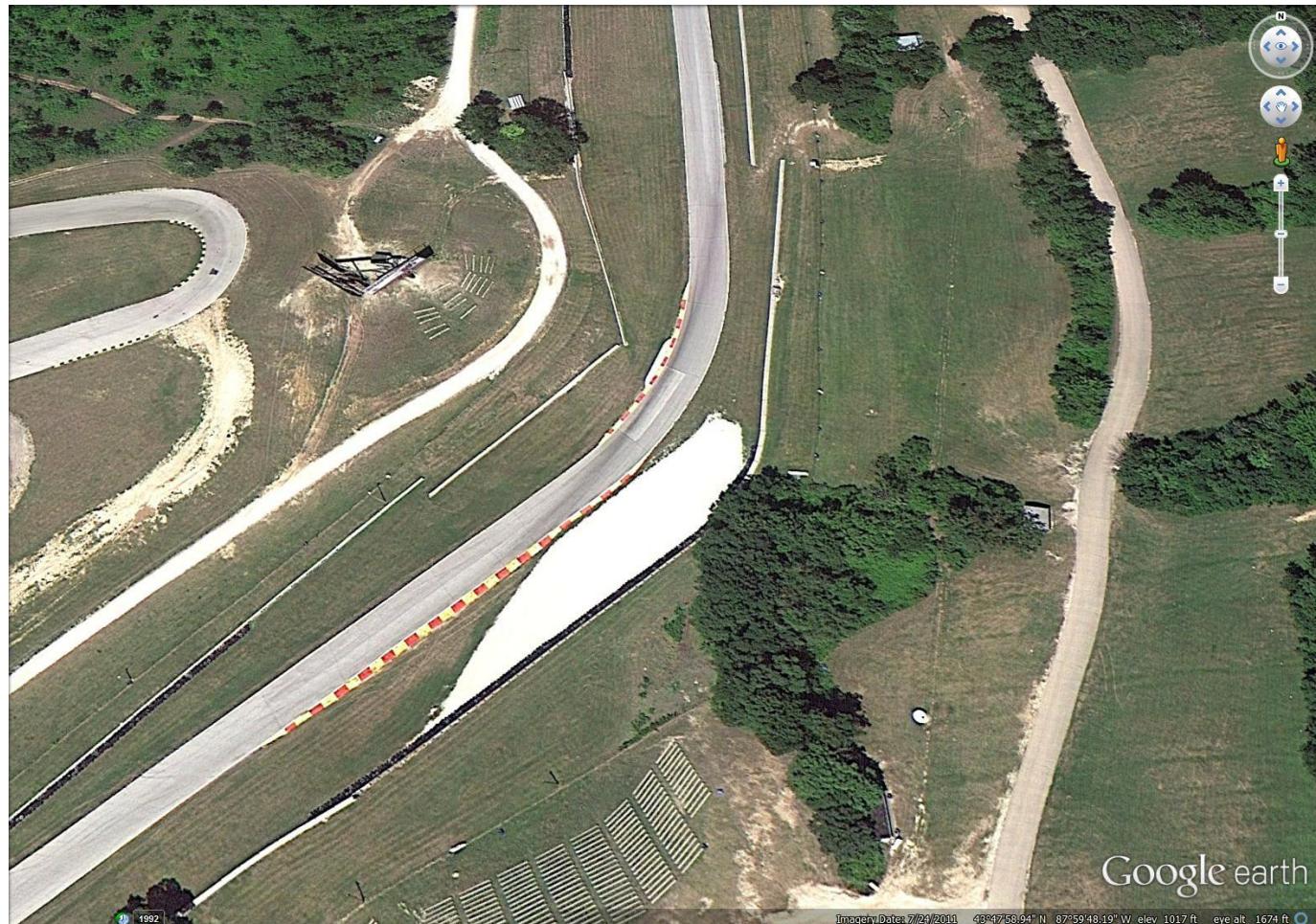
Don't turn in early...Duck Waddle says the turn in is 57 feet past the bridge abutment (don't ask how he knows). Late apex and apply smooth throttle to track out and up shift before turn-in for turn 7. Let the car come immediately, but very smoothly, back to drivers left for the turn in for 7.



## Turn Seven

After you've come back across the track to the left out of six you could lift, brush the brakes or short shift and turn the car in smoothly, applying power until you are at full throttle. This is one of the few mid to early apex turns at RA.

At the very least "Touch" the apex curbing at seven, just so you know you've used the entire track. You may have to either short-shift up before 7 or shift to 4<sup>th</sup> at track out – then smoothly bring the car to driver's right down the short, but very fast, "Hurry Downs" straight.

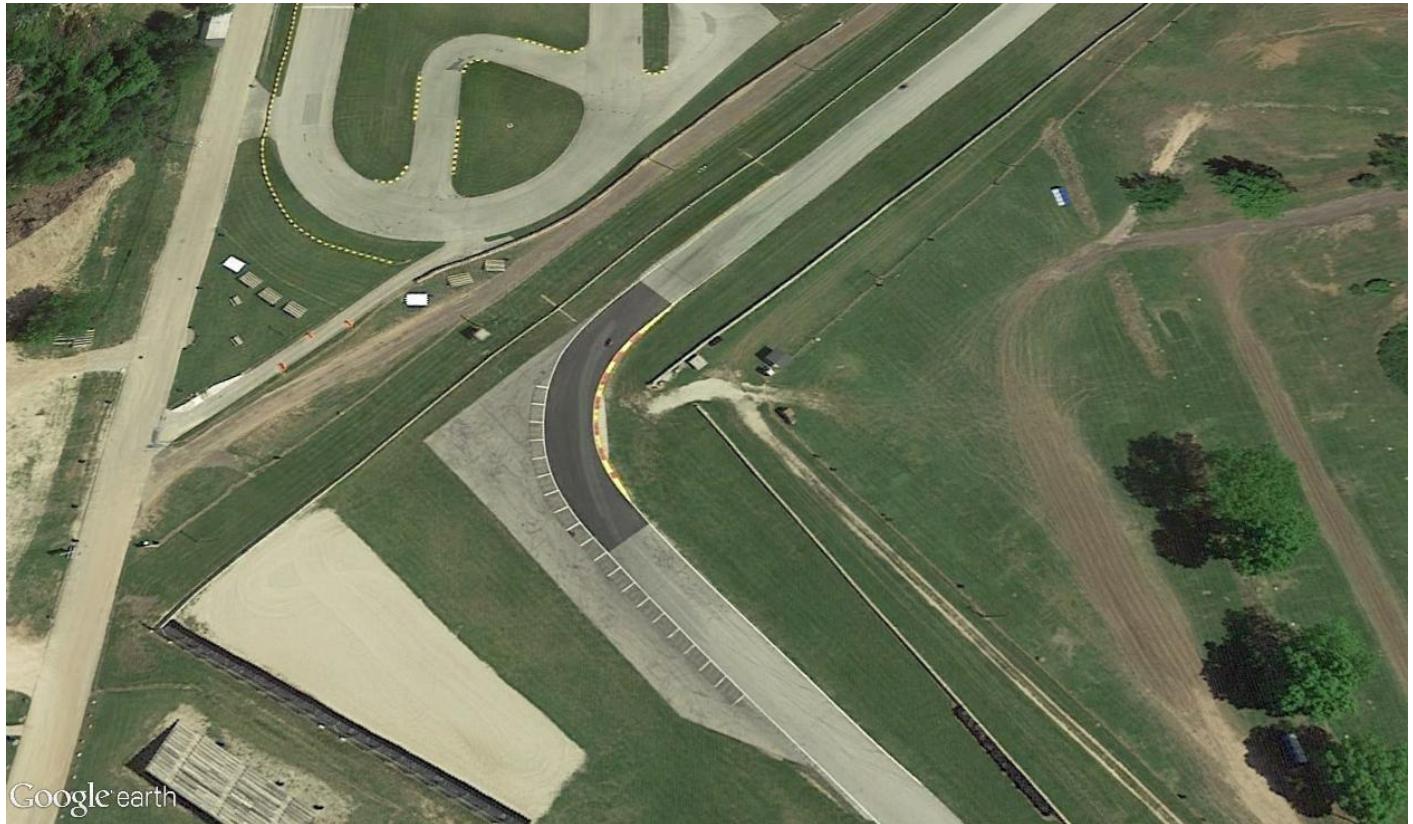
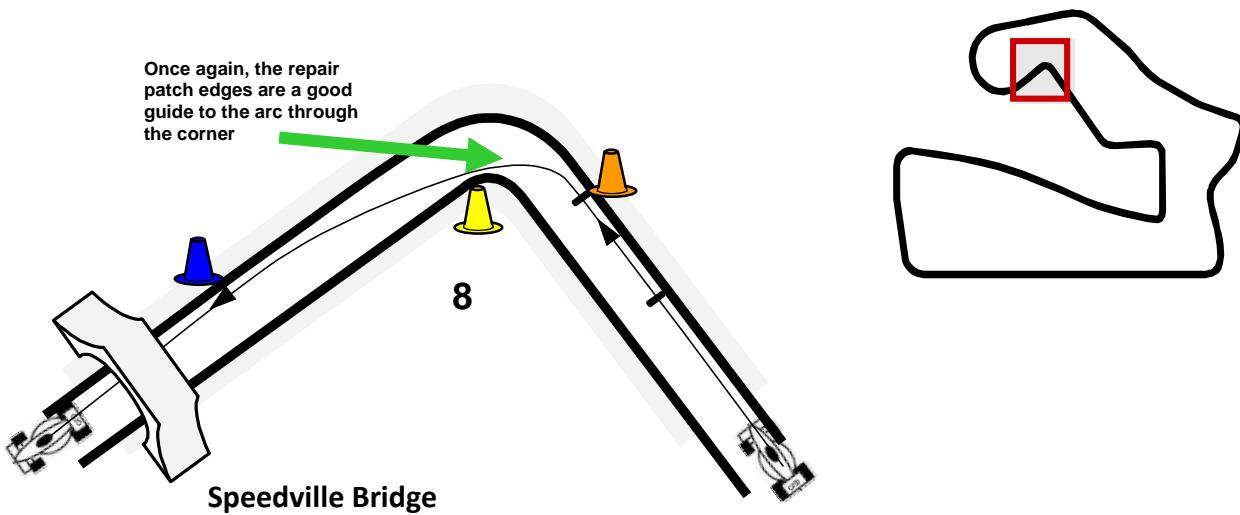


## Turn Eight

Turn 8 is another late apex, downhill, get your braking done in a straight line, turn in and apply power smoothly---like turn 5.

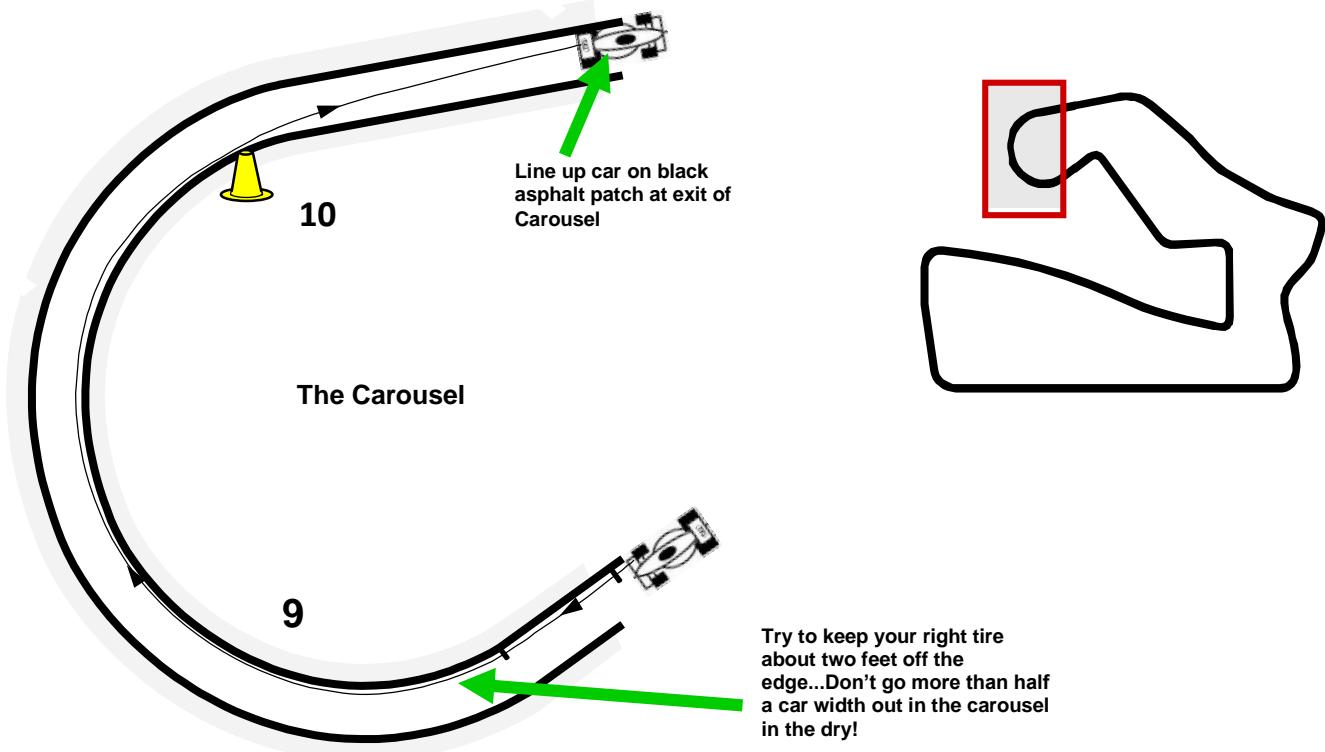
Two things are different though --- you're usually going faster than you think down "Hurry Downs", and the first part of 8 is off camber and still going downhill. Make sure to be really smooth, and keep throttle on and modulated to settle the car as you approach the apex, where you can dial in more and more power.

Once again, you won't save time by trying to charge through here. But, lower horsepower folks, this is the start of "your world". Driven correctly, the next 5 turns are the quickest part of the track. So, set yourself up very smoothly for 9 and 10 by tracking out and staying to the right as you pass under the Speedville Bridge.

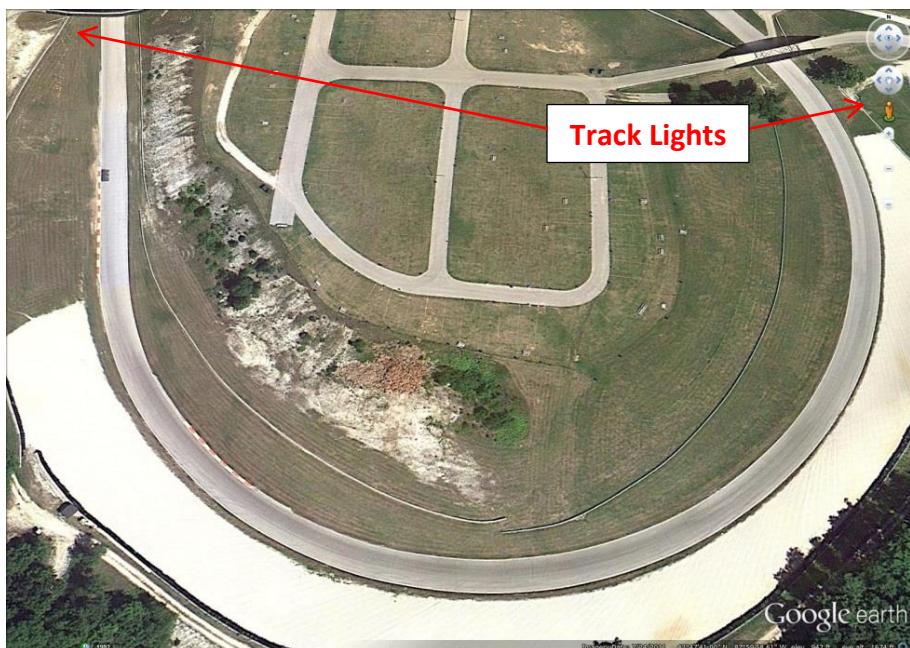


## Turns Nine and Ten (The Carousel)

We recommend starting out entering the carousel with your right wheel about 1-2 feet from the right edge of the track and holding the car there....why drive further than you have to? Higher horsepower cars may want to go out further at entry and get the car to rotate as they move further into the corner. However, if you get out into the "Marbles" out there it's harder to get back to the apex—and the apex is all the way around the corner. Keep your vision up and look for where it is and you'll steer the car perfectly. Be very, very smooth with the throttle and steering input. There's lots of pea gravel and runoff, but no reason to go there.

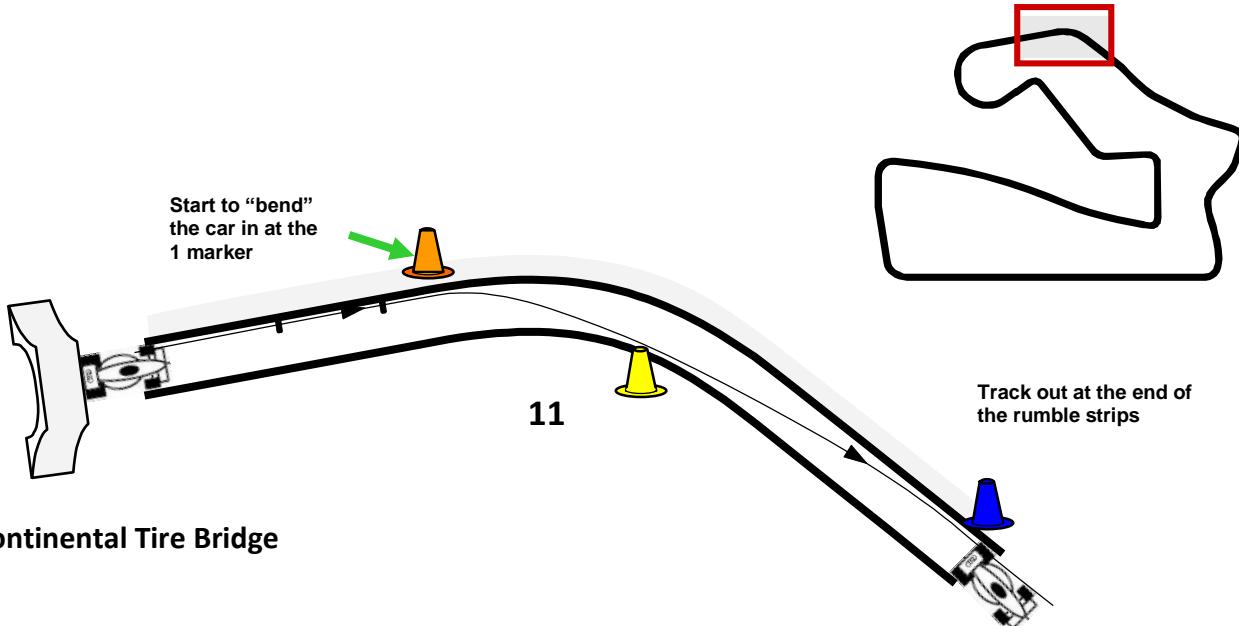


If your car is really set up, it's a hot day, and you've got slicks with plenty of grip – just drive around the inside once to feel the line---- In the wet, drive around the outside. This is a very fast corner, so make sure that all of your inputs to the car are smooth and gentle from here into the "Kink". If you drop a wheel off at track out drive straight. Do not try to muscle the car back over.

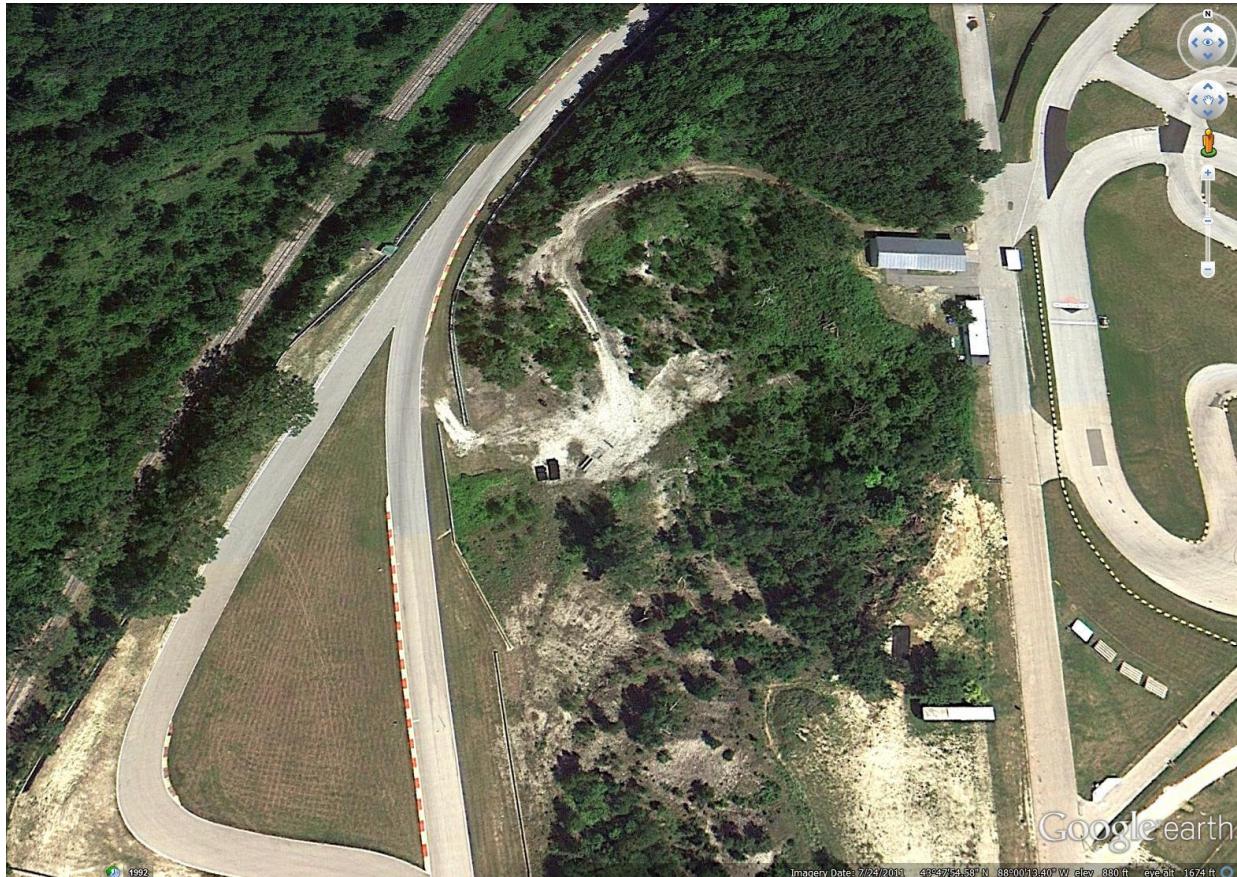


## Turn Eleven (The Kink)

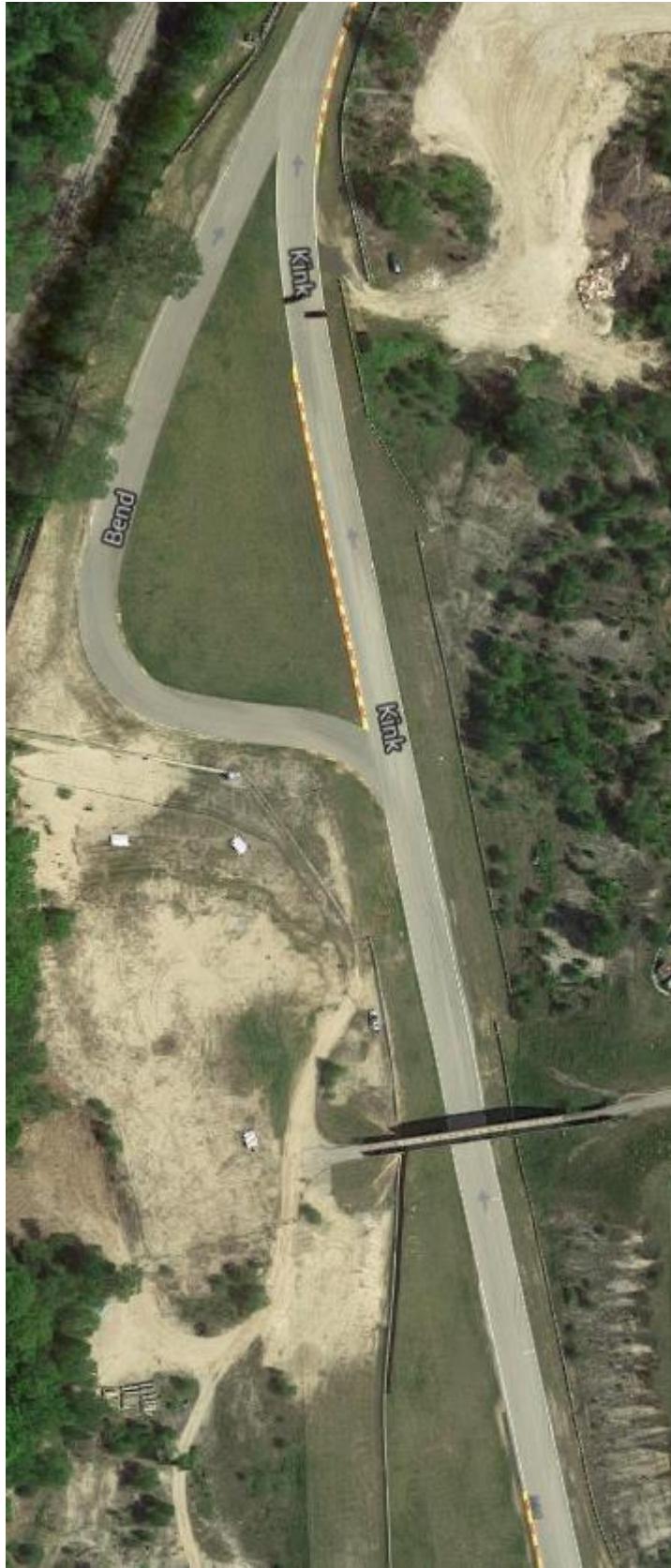
WOW! It's a legend. However, it's a fast sweeper like turn seven....there's **just no real run-off**. So, be very smooth, brush brakes or lift just prior to the turn in, and as Duck says, "bend" the car into the apex at the 1 brake marker. Touch the curbing for a late apex on driver's right, and let the car track all the way out – there's lots of room. Be very smooth and patient and you'll have no problems. As you exit "track out", bring the car gently towards the right and then left through Kettle Bottoms. Be very smooth and careful passing here. If it is raining, be alert and aware that water runs across the track here and many car drivers have crashed just beyond this point in their race – not at the feared "Kink". If you are too early stay early and slow the car gently. If you go off at exit, drive on the grass & go straight and very carefully - wait till the track comes back to you.



Continental Tire Bridge



**The Bend** – Used instead of the Kink for some events.



Complete a normal exit from the Carousel passing over the black patch. Between the black patch and the Continental Tire bridge gradually move to the right side of the track.

Line up on the right side of the track for the turn into the Bend. If you've carried lots of speed from the Carousel you'll find that fairly heavy braking is required for the turn into the Bend. Turn in speed will be around 30 mph.

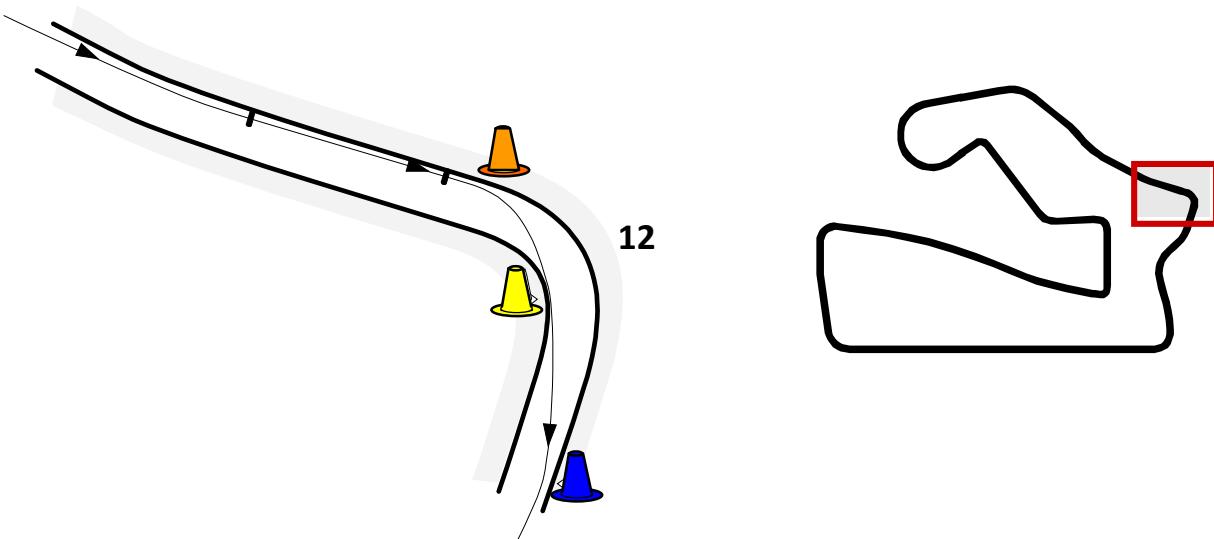
The turn into the Bend is somewhat of a throwaway with the goal being to maximize the radius (and speed) for the Bend's second turn.

The rumbles on left at the turn into the Bend are almost flat so driving over them will not upset the car at all. After the turn in stay well to the left to setup for the second part of the Bend.

Again the rumbles on the right of the second turn are almost flat. The straight following the second turn leads all the way to turn 12 so try to maximize your speed exiting this turn.

## Turn Twelve (Canada Corner)

Turn twelve is probably the hardest braking you will do at Road America, (Although you may brake harder at 5 in a higher horsepower car) brake smoothly, as much to set the car up and balance, as to scrub off the speed from the fastest part of RA. Keep a safety zone on your left as the track narrows from the left into the turn, and it's a slightly bumpy surface. You may want to move over 1/2 a car width—especially if it rains. Brake smoothly, downshift and then apply power out of the turn into the apex. The throttle and the hill will help stabilize the car. Track out to the drivers left and smoothly sweep over to the right for the next left-hander.

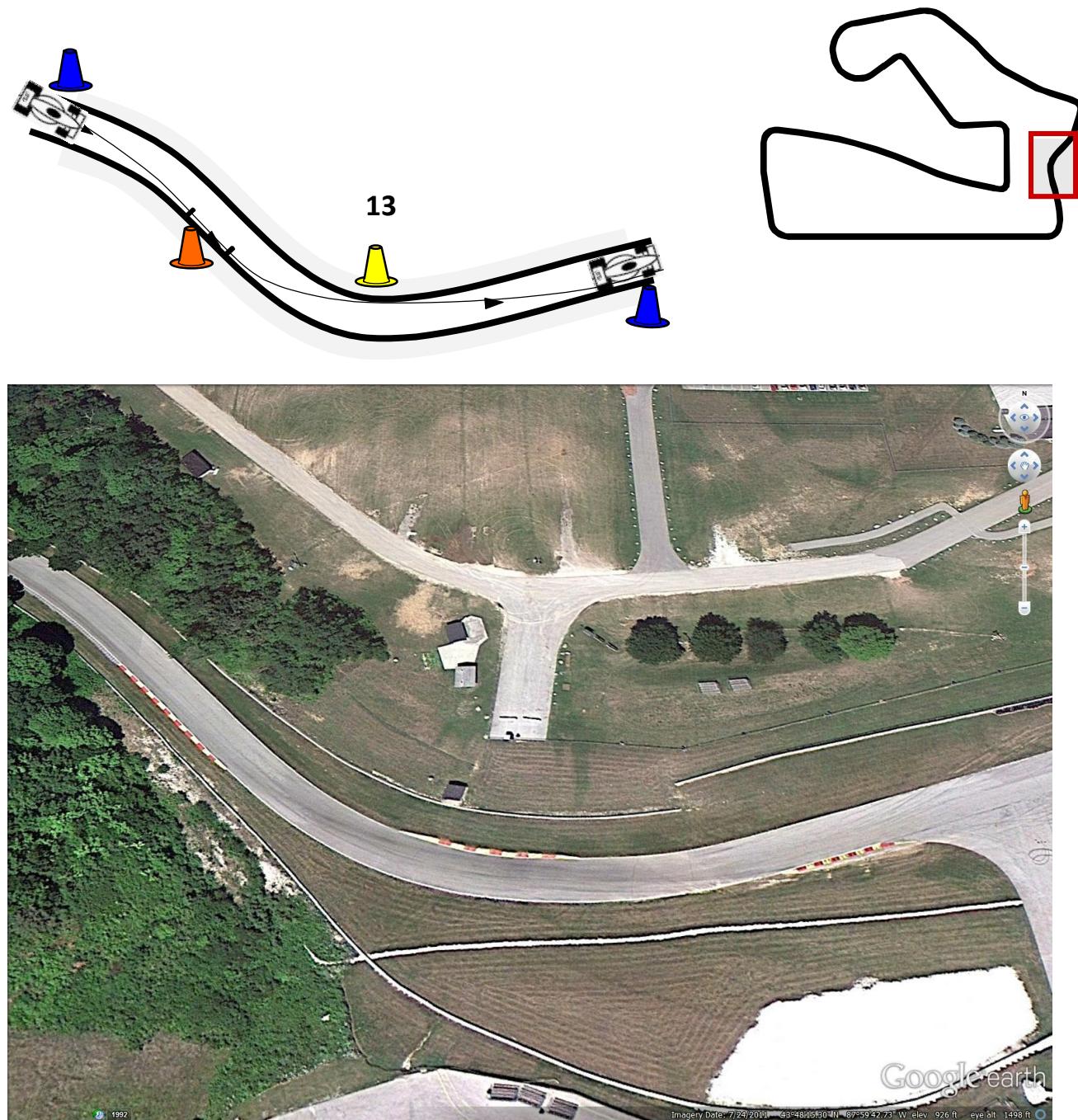


## Turn Thirteen

Going into turn 13 you continue to climb the hill from 12 and the corner begins and then takes you to apex. Track out is well past the turn on driver's right. This is a fast sweeper to the left. Start by slightly lifting off the throttle on the way to touching the rumble strips on drivers right, then "gradually" applying full power to the apex curbing and continuing flat out to track out & turn one.

Unwind the wheel, don't over steer the car here.

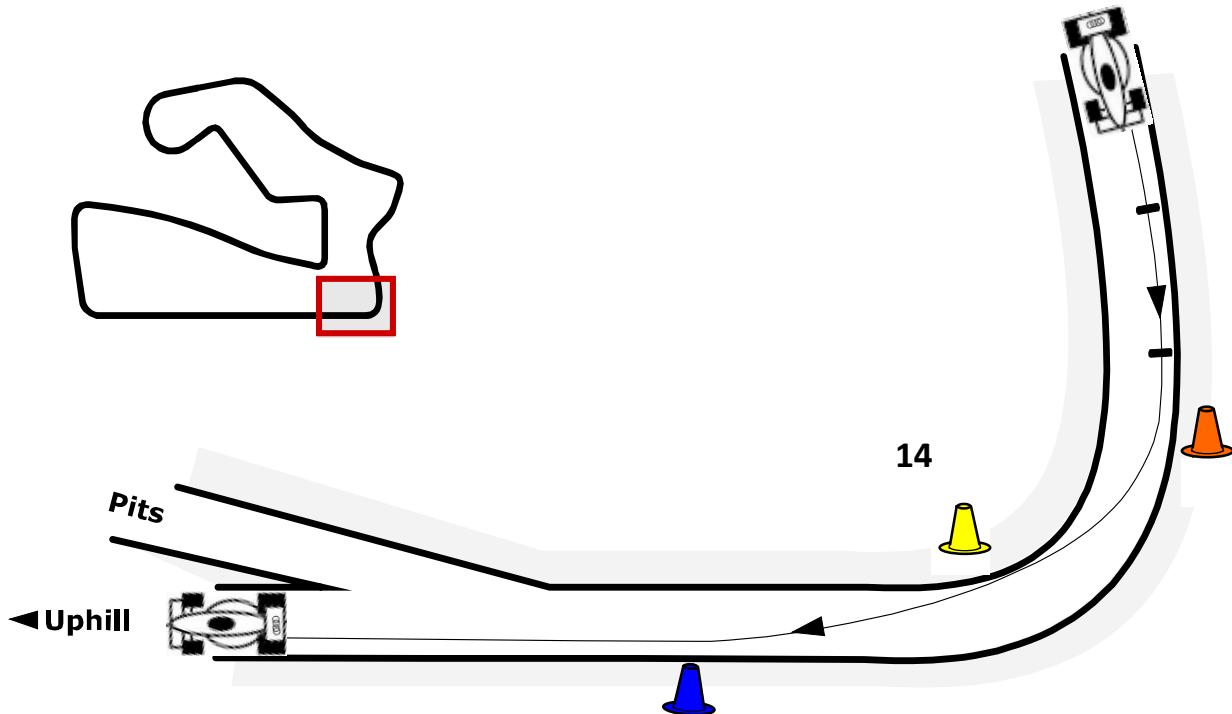
There's a little dip near the apex that can cause a spin. Use the access road on the right as a visual marker and part of extending the radius of the corner. After track out aim pretty much for the number one brake marker on turn 14 from the access road, straight line braking into another relatively fast sweeper. (Watch Your Mirrors).



## Turn Fourteen

Turn Fourteen is relatively fast sweeper (more than 90 degrees) that leads to the main straight and pit lane. Be very careful coming out of the turn. Watch for people with their arms up to signal they are exiting, check your gauges and watch your mirrors. If you commit to go to the pits and raise your arm do not change your mind. You can always come back out, but not if you cause an incident.

Make sure you feel up to another lap yourself. Brake in a straight line to turn in, eyes up for a late apex, and smoothly on the power up the hill. Once again, higher horsepower and torque will win the day here, so in a DE be prepared to signal, and let cars go around. It says nothing about driver skills. Don't worry, let people around – you'll have a clearer track at the end of the straight. Then you're off for another great lap.



## YouTube Videos

[Getting to the Track](#)

[Pit Exit to One](#)

[One to Three](#)

[Three to Five](#)

[Getting off at Five](#)

[Five to Six](#)

[Six to Seven](#)

[Eight to Nine](#)

[Nine to Ten](#)

[Eight to Ten](#)

[Kink to Twelve](#)

[Twelve to Fourteen](#)

[Fourteen to One](#)

[Into the Pits](#)

[Full Lap at Speed](#)

