

Pineview Run
Road Course Rules & Drivers Manual



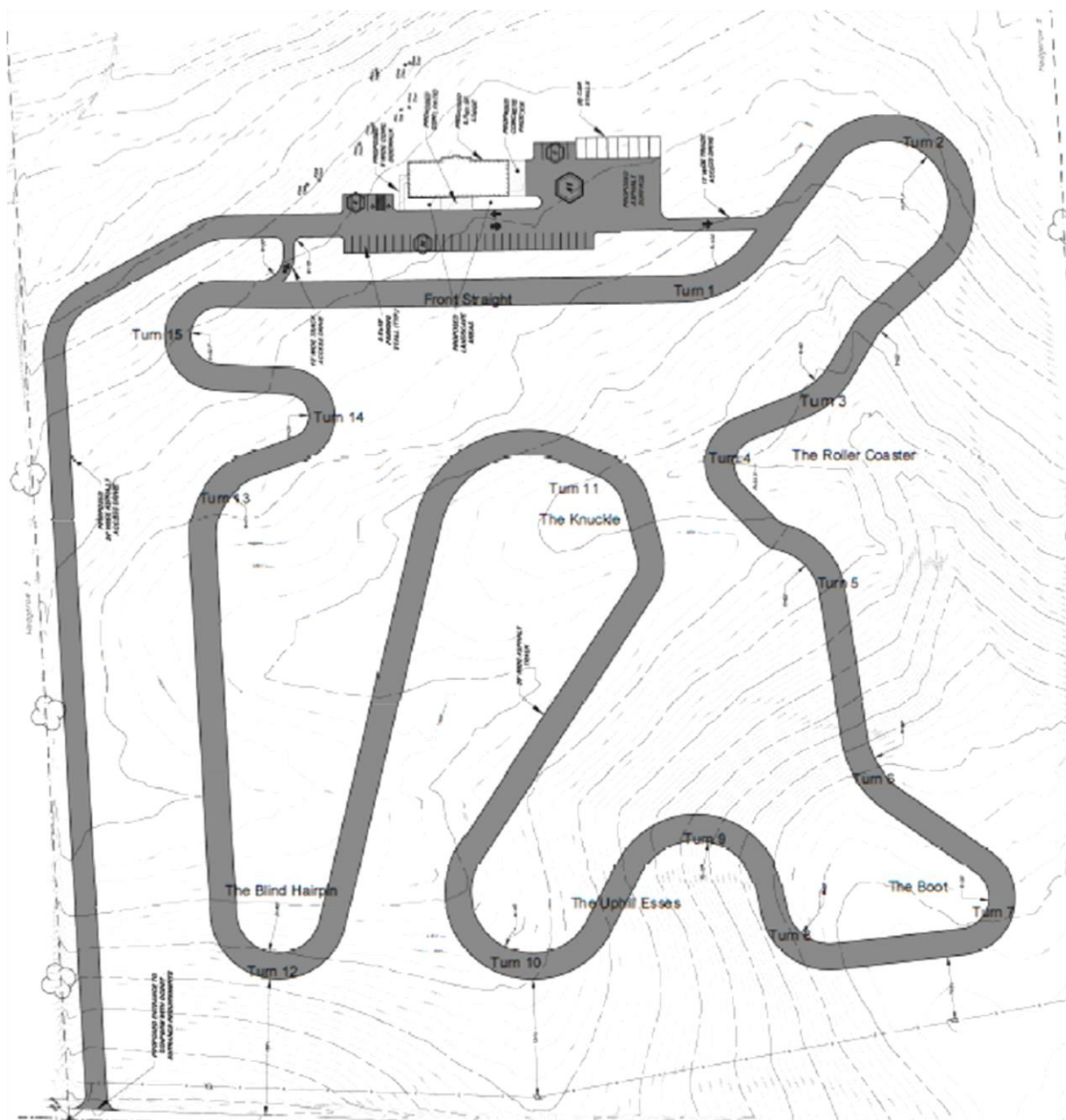
Pineview Run
AUTO & COUNTRY CLUB
A Premiere Lifestyle Club

Dated: February 2021

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Track Map



Pineview Run Facility and Track Rules

Members shall not drive on the track without FIRST signing-in with PRAC management in the clubhouse or designated area. Then, following management procedures as directed by PRAC management, including reporting to the Track Manager (designated steward/instructor). Then following the steward's track inspection and readiness procedure in place at that time.

Procedural Rules

1. No member or guest shall ride or drive without first signing the waiver provided by PRAC management. All members shall complete the annual release, while any guest will complete the event waiver as determined by PRAC.
2. Members or guest shall not drive the track without being approved by the track manager or PRAC designee and after completing the TRACK SAFETY CLASS (ONLINE 2020-21 *Covid safe) Plus the following process:
 - a. First, a ride with an PRAC driving instructor to learn the course layout, entry and exit ramps, driveway, parking lot and paddock rules.
 - b. Second, driving with the same PRAC driving instructor to learn, apply and display the minimal knowledge and skill required for car control, track flag rules, procedure, and facility rules. For experienced drivers, this may take a minimum of one driving session as determined by PRAC instructor, or this may take several driving sessions and possible classroom (off track) instruction.
 - c. Third, a solo driving test while being observed for a minimum of one session by the PRAC driving instructor. After displaying full competency, and the driver has been approved to drive (solo), they will be provided a temporary or permanent driving license. The **PRAC Drivers Training – competency form** will be completed and signed by both the instructor and member or guest.
3. No driver may enter the track without being flagged onto the entry ramp by a PRAC steward.
4. Drivers must obey all track flag rules (provided in drivers manual) and steward instructions or will be suspended for the first violation.
5. New 2021* - All drivers are required to have a track approved One-Way Radio to receive direct communications from Track Safety Marshals. *See: Rules & Tech Inspection Information #4*
6. No passing unless in designated passing zones and Intermediate or Expert run group per driving manual.
7. All vehicles exiting the track must come to a full stop where the off ramp meets the driveway, then safely proceed down the driveway and across the parking area at a safe and controlled speed of 5 mph.
8. A **driving session** may include a (10 to 20 minute) segment controlled by PRAC stewards, or as determined by PRAC management as follows:
 - a. A brief safety check by PRAC to check safety equipment, vehicle (tech inspection sticker), quick visual, driver readiness.
 - b. 10 to 20 minute open track session. (as determined by management)
 - c. 5-minute instructor debrief.

Track sessions for typical days, weekends, events or planned periods of high track use will be as follows:

- d. xx:00 – xx:15 - Novice (green run group)
- e. xx:15 – xx:30 - Intermediate (blue run group)
- f. xx:30 – xx:25 - Advanced (black run group)
- g. xx:45 – xx:00 – Motorcycles or Go-Karts

*PRAC will adjust daily run groups based on demand to provide the most track time to members while maintaining our safety protocols. For example, we will run expert drivers in the blue run group, unless we have filled out the blue session. PRAC will prominently post the schedule for the day.

No member or guest will be allowed to drive after consuming alcohol. PRAC reserves the right to test and/or refuse any member or guest who shows or displays cause for any reasonable suspicion as determined by PRAC management.

Basic Track Rules

Vehicles

1. A Tech Form shall be completed by all drivers prior to attending for the season for each vehicle and after any modifications or service. Please find the form online, and submit to admin@pineviewrun.com
2. The PRAC Instructor or track steward will accomplish a brief safety inspection for tire pressure, tread, and loose items in the cockpit.
 - Cars with fluid leaks of any type will **not be allowed** on track.
 - There will be a minimum charge of \$75 for oil or fuel spills on the track or parking lot (asphalt).
 - Additional assessments for permanent damage to the asphalt or large fluid spills requiring significant loss of track time or repairs may be assessed up to a maximum of \$500.
3. The window should be open on the driver's side, and the passenger's side.

Driving & Safety Equipment

1. Passengers are not allowed except when a PRAC instructor is driving or riding in the vehicle, or for Advanced (black run group) drivers – limited to 1 passenger; For Touring laps controlled by pace car; or for Coaching with one vehicle on the track. *2020-1 until further notice- COVID restrictions require facemasks and special waiver for any passengers on the track.
2. Helmets will be required for all high-performance driving sessions with an instructor or when driving solo. Helmets will not be required for Touring Laps where there is a pace car leading/controlling the touring lap group. Other on-track activities such as parent/child instructional sessions do not require helmets. Helmet standards are outlined in the Tech inspection Information.
3. * New 2021 - **SFI approved Fire Suit** (min. -certified to SFI Level 3.2 A/5 standard) is required for any driver driving an aftermarket or homemade vehicle, or a vehicle with an altered OEM fuel system including: alteration of fuel lines from the tank to engine compartment; altered fuel tank type/location; removal of barrier separating the cockpit from engine compartment and/or trunk and fuel tank area. For clarifications and exceptions, please request a tech review.
 - Fire Retardant Driving Gloves are required.
 - It is recommended a fire retardant (Nomex) head sock and underwear are used.
4. No Passing in Green Run Group
5. Passing in Blue/Black run group in designated areas with point-by ONLY. See Track Safety Class PowerPoint for specific procedural rules.
6. Any car driving in an unsafe manner will be black flagged.

7. You may only enter the track by direction of the corner worker at the track entrance (pit out)
8. Be alert and follow any direction from the corner workers
9. Leaving the track - going to the 'pits'
 - Check your mirrors to see if there is traffic behind you.
 - Give the pit in signal (hand out the driver's window with fist vertically in the air) after exiting the hairpin (turn 12) and down the back straight area and s-trap.
 - Do not slow down excessively – drive at $\frac{3}{4}$ pace from the hairpin (turn 12) to pit in.
10. If you drop 2 wheels off the track:
 - Do not attempt to steer back on to the track quickly – drive straight, slow down and then steer back on the pavement.
 - Immediately report to the pits to discuss the incident with the track steward.
11. If you drop 4 wheels off the track:
 - Do not attempt to steer back on to the track, come to a complete stop and look for direction from the nearest corner worker. They will signal you when it is safe to reenter the track.
 - Immediately report to the pits to discuss the incident with the track steward.
 - The car must be inspected for damage in the paddock before being allowed on the track again
12. If your car is disabled on the track:
 - If possible park the car in a safe location off the track edge.
 - Wait for assistance and do not exit your car unless there is a dangerous issue (smoke/fire). Other cars are still at speed on the track and you may have left fluids on the track. Safest place is inside your car.
 - If there is smoke coming from under the hood DO NOT OPEN THE HOOD, wait for trained fire personnel
13. If you feel fatigued or dizzy please take a break.
14. If you experience car to car contact or any other on-track impact situations; All incidents will be Investigated by the Track Manager and will involve the Pit Steward, instructor (if on duty), involved parties, and GM and would involve implementation of our disciplinary/suspension procedure defined in membership agreement. This may be a reduction of driving group level and/or suspension. Damages, if any, to be determined by GM against offending party.

Rules & Tech Inspection Information

High Performance Driving exerts a different set of demands on an automobile relative to street driving; hence all cars participating in PRAC on-track activities should properly undergo a thorough TECH Inspection. At bare minimum, all cars expecting to see track use should have a properly filled out TECH form on file at the start of the driving season. Depending on frequency of use, TECH inspections should be performed on a regular basis. Refer to attached TECH form for recommended best practices.

1. FINAL TECH: Before the start of each track day session, your vehicle will be visually inspected at the track for any obvious safety issues that may need to be addressed. Your instructor and or the track steward will do this.
2. FINAL TECH GUIDELINES: Before each track day, PRAC recommends that all loose objects must be removed and or secured. A loose object is anything that is not securely fastened (bolted or screwed) to a metal surface, or secured inside a console, glove box or trunk of the vehicle. Items attached with Velcro or suction cups will be inspected for safe installation. No cameras are to be mounted outside the vehicle without prior permission and inspection. At the final tech be prepared to have your car inspected with particular attention to brakes, tires, leaks and seat belts/harnesses. PRAC driving Instructors have discretionary authority to make recommendations on any safety related issue.
3. HELMETS: Must be Snell 2015 or later and SA or SAH rating is highly recommended. Be sure the helmet has no cracks and the interior padding is in excellent condition. Motorcycle DOT helmets will not be allowed.
4. REQUIRED ONE WAY RADIO: Raceceiver one-way in car radio (new for 2021) are mandatory for all high performance driving laps. Name: Fusion+ Scanner with programmable default channel and button lock; Brand: RACEceiver; Part Number: RCVY1600. Other radio receivers compatible may be approved with a submittal to PRAC Track Manager. Frequency range UHF: 462.550 – 462.725
 - a. Starting in 2021, we will utilize the one-way radio communication for all drivers to receive safety communications from the Chief Starter/Flag Marshal and Race Control. Safety Marshals will communicate in a broadcast relative to starting, cautions, hazards and managing on-track safety. This will enable quicker and more reliable signaling for improving our track safety procedures. Additionally, we can provide drivers with exacting problems and directions while on track to improve efficiency with track control and management.
 - b. Drivers will not be allowed to use devices (if approved) to communicate back to the Track Marshals. This could interfere with Track Marshals relaying communications and potentially causing delays and confusion in track safety operations. Any attempt to do so, may result in dismissal or suspension.
5. TIRES are very important. It is recommended that Street tires should be no more than 5 years old. DOT approved track tires should be no more than 3 years old. Tires are the same brand and type front and rear. Tread 40% or more of original depth with even wear. Slicks must have visible tread depth indicators. Tire carcass free of cuts/cracks/repair plugs. Tires may not be underinflated. The clearance between the tires and any potential rubbing point may be checked. Lug nuts torqued to factory specs. Wheels are free of cracks or bends. Valve stems not cracked/cut. Any tires showing cracking or dry rot will not be allowed on the track.

6. EXCELLENT BRAKES are essential. Be certain they are carefully inspected and do meet the standards as expressed on the Tech Form. Do not underestimate the importance of having a recent brake fluid change using a quality brake fluid. Brake pads are very important. They will get worn down fairly quickly.
7. CONVERTIBLES that have been modified for track use should have roll bars/cage that meet Race specs for materials, design and installation. The top of the main hoop must be a minimum of 2 inches above the driver's/passenger's helmet and meet the "broomstick test". Convertibles and other cars with deployed roll bars are acceptable. Vehicles with removable hardtops and other T-top cars should run with the top in place. Convertibles should run with the top up. Please Refer to Our Online Tech Section Regarding Convertibles, specifically car makes and models allowed and those requiring aftermarket roll bar protection.
8. KIT CARS built and assembled by the manufacturer are eligible to participate. Kit Cars built by the customer will require a thorough inspection for quality of construction. Open top Kit cars must meet all the safety and rollover protection requirements of convertibles (#7 above). All rollover protection will be carefully inspected for proper installation. The "broomstick test" must be passed.
9. All student and instructor cars MUST have similar seats and similar restraints on both sides.

Safety at the Track

The key is to minimize and manage possible risks to the best extent possible, knowing that we can never completely eliminate them. I believe that safety MUST FIRST come from within, using your brain to incorporate the correct attitude as well as incorporating the things you have learned about this sport. It is not enough to just go out and drive, but you must learn the proper technique(s) and always be alert and prepared for any possible happenings on track. You must be in the game 100%, all the time. Safety equipment is certainly high up on the required list but the goal is to never have to use it. You must also realize that things can and do happen that are simply beyond your control.

- Mechanical failures
- Other driver mistakes
- None of us are pro drivers
- Getting caught up in track debris such as oil etc. from a car in front of you
- The key here is to be prepared and have had some forethought on how to handle these situations. There are a number of things you can do to increase your level of safety, as well as that of the other drivers on the track even before you go out for your first session:
 - Be mentally prepared and with the right attitude
 - Big egos at the track simply do not work
 - Ensure your car is as ready as it can be
 - Develop a check sheet and complete it prior to each and every event
 - Ensure YOU are ready as you can be
 - If you are not feeling well, are dehydrated etc. simply do not go out
 - KNOW the flags and how to react to them
 - KNOW where the corner workers are stationed and be prepared to follow their direction

- Be courteous on track at all times
- Be a Great Sportsman/women at all times
- Plan ahead and be mentally prepared for various situations BEFORE they actually happen
- Pay attention to other drivers when they discuss past experiences such as cold track, cold tires, Red Mist etc. You can actually learn quite a bit from them

Once on track, there are some basic things that you can do to again, increase your level of safety as well as that of the other drivers:

- Adhere to the stated event rules at all times
- Employ "situational awareness"
- You should know who is around you and/or coming up on you at all times
- Pay attention to your car. If something does not feel or sound right, it most likely is not, Bring it in
- If you are a Novice driver, listen to what your instructor is telling you but do not do anything that may make you feel uncomfortable
- Be courteous, give obvious point bye's and pit in signals
- Drive the line and be predictable
- If you do go off track, STAY IN YOUR CAR with safety equipment in place
- The only exception would be if the car is on fire or if fumes etc. make unsafe to remain in the car
- Adhere to all flag commands
- When in doubt, back out

The above represents those very basic items that can increase your level of safety. If you noticed, each and every one of them starts with your brain and your willingness to drive in a safe manner. Nothing above costs any money, we will save that for later discussions. Nothing above is difficult but everything above will make you safer. Come to the track with safety in mind.

Driver Skill Sets: Expectations and Guidelines for Run Group classification:

GREEN RUN GROUP – NOVICE STUDENT SKILL SET

A driver is considered to be in the green run group (Beginner/Novice) when just starting out with very limited or no high performance driving experience. For your safety and for all other participants. PRAC requires a mandatory classroom session to get everyone acclimated and familiarized with all the basics, rules, regulations, flag meanings, on and off track protocols, and all safety related topics. All green run group drivers require an instructor. Instructors will have the discretion to allow an "upper level" beginner level driver to solo.

Goal: To introduce a new student to the basic culture of the driving school and begin to develop the skills needed to successfully move to the next level. Driving Skills to be consistently emphasized:

1. Braking

- a. Emphasize braking up to the turn-in point, releasing the brake as the turn-in is initiated.

- b. Develop an understanding of the four types of braking. Threshold- required when the approach speed is much greater than the entry speed. Trim- reduces speed and settles the car on the suspension; for corners where approach speed is slightly higher than the corner entry speed. Modulation- adjusting braking force while braking as when just before entering the corner or when the braking surface is so uneven that a constant high pressure on the pedal will lock the brakes. This is not an on/off but a squeezing of the brake. Both feet in HARD. In a spin situation, one on the brake, one on the clutch.
- c. Application of the brake pedal is smooth...both on and off.

2. Throttle application

- a. Emphasize smooth on/off application of the throttle.
- b. Understands that the degree of throttle application depends upon the amount of turn yet to be completed and the power of the car.

3. Cornering

- a. Development of the idea of the desire for a consistent line thru each corner.
- b. Understands that the selected entry point to a corner and the speed of the Car determines how well the corner 'will go'.
- c. Understand the dynamic difference between an early and later apex entry...and can recognize which they have done immediately upon entry.
- d. Begins to practice holding the apex of a corner to assure a late apex exit.

4. Passing

- e. **No passing** in the Green Run Group

BLUE RUN GROUP – INTERMEDIATE STUDENT SKILL SET

A driver is considered a White Run Group Driver (Intermediate Level) when they have demonstrated a clear understanding and consistent application of track and driving protocols in a safe and predictable manner. Typically, a driver would advance to the Intermediate level after having earned solo status. Requires instruction on a need basis to progress further and becomes proficient in consistently applying the skill sets described below. Can benefit from on-going classroom instruction specific to Intermediate level drivers.

Braking

- a. Consistently brakes up to the entry to the corner. Reduces brake pedal pressure as the car slows and gets near the turn-in point of a corner. Practices braking later for corners and maintaining some braking into the first quarter to third of a corner. Recognizes that, at the limit, as the car is asked to do more turning it has to do less braking.
- b. Uses appropriate braking techniques depending on the amount of speed reduction necessary, the braking surface's condition and its gradient.

- c. Brakes right up to the apex of a corner when making a late pass. Recognizes that the braking zone of any corner can extend right up to the apex of the corner. Extending the braking zone into the corner is best accomplished with an early entrance to a corner....such as when making a late pass.

Throttle application

- a. Practices smooth application of throttle...both on and off. Application should always be smooth and progressive. Even the release of throttle should be seamless...no jerking of the car.
- b. When cornering upon exit, unwinds the wheel as throttle is applied, uses the entire track.
- c. Understands the concept of being able to re-distribute the car's weight in a corner front to rear using the throttle and how that helps to balance a car.
- d. All students should be practicing and becoming proficient in heel-and-toe shifting....
- e. Understands and practices....the higher the horsepower. The straighter the steering wheel needs to be before the throttle is fully depressed.

Cornering

- a. Utilizes the brake to redistribute weight to the front end of the car so as to help the car turn better into a corner.
- b. Immediately recognizes an early entry into a corner and knows how to make adjustment by holding the apex longer and delaying throttle application.
- c. Practices off-line entries into corners. Comfortable being off-line.
- d. Practices early entries into selected corners carrying more speed and reducing speed by extending the brake zone into the apex of the corner. Dynamically, this means the slowest part of the corner comes at the apex. The apex must be held longer to change the early entry into a late exit. With this type of corner there can be no throttle application until the car is beginning to exit the apex.
- e. Knows how to give and take late point-byes.
- f. Drives consistent lines thru all corners

Blending into the ebb and flow of traffic.

- a. Is always aware of all conditions on track
- b. Is able to anticipate well in advance...sees everything.
- c. Is always aware of cars coming up from behind and gives timely passing signals.

On-track Driving Protocols

- a. All passing done with a point-by.
- b. Utilizes all passing zones.
- c. Offers late passing signals whenever appropriate.

BLACK RUN GROUP – SKILLS OF AN ADVANCED RUN GROUP STUDENT

A driver is considered to be an Advanced Driver (Black Run Group) when they can clearly and consistently demonstrate complete track awareness coupled with high degrees of proficiency in demonstrating exemplary car

control, effectively managing speed differentials, and courteous practice of track and safety etiquette automatically. Can benefit from classroom instruction geared for advanced drivers and can also benefit from in-car coaching sessions with PRAC Senior Instructors. Only Black run group drivers and Instructors are allowed to take a guest/passenger out for hot lap sessions.

BRAKING

- a. Uses brakes smoothly, consistently with appropriate application
- b. Brakes right up to and into the corner to enhance turn-in.
- c. Trail brakes up to the apex of a corner for the purpose of extending the braking zone or balancing the car in a corner.

THROTTLE APPLICATION

- a. Uses the throttle to balance the car throughout the corner
- b. Reduces the view of the throttle as an on/off switch
- c. identifies corners where part throttle application could begin sooner

PRACTICES NON-DRIVING SCHOOL TECHNIQUES

- a. Explores different lines through corners
- b. Practices off-line entries to corners
- c. Develops an understanding of the better line, earlier entry under braking, adjusting line at the apex of a corner to create a “flatter” exit from the corner

BLENDS INTO THE EBB AND FLOW OF TRAFFIC

- a. Maintains an absolute awareness of all cars and conditions in the immediate area.
- b. Understands and practices protocols implemented by drivers in a less structured environment
- c. Practices techniques, which allow others to maintain their momentum.

Driver Instruction

On-going Classroom sessions for all run groups will be posted during scheduled intervals so PRAC members can continue to learn and hone their driving skills. Classroom sessions typically address skill sets appropriate for any run group classification and are geared to each specific driving category.

Guest drivers should ideally be scheduled at least 3 days in advance so PRAC can provide an instructor as needed. If the guest is a returning guest who has previously been vetted by a PRAC instructor to be able to safely drive solo, the guest can be slotted into the appropriate run group. If a guest is an unscheduled arrival, instructors may not be present or available, therefore said guest can only participate in a touring session not requiring an instructor, but no hot laps allowed.

All PRAC Members are highly encouraged to participate in run group specific classroom sessions. These classroom sessions will be designed to allow for a greater understanding of the theory behind high performance driving that will translate directly while in-car during on-track activities. These classroom sessions will be scheduled on a rolling basis to coincide with before the start of weekend on-track sessions.

For Green run group drivers or new drivers to Pineview Run, **the Track Safety Class** is required for all new drivers to the facility stressing facility rules and safety procedures. This includes a classroom session, then on track ride with an instructor, then a drive with instructor (right seated) to demonstrate knowledge and demonstration of

safety procedures along with proficiency in skills required to solo in one of the run groups. If the driver is not approved to solo after the first Track Safety class, the driver will need to purchase additional instruction until approved to solo. The instruction can be scheduled on an hourly basis. For Intermediate and Advanced Driver instruction and or coaching sessions, a similar hourly rate will be billed to Members' account.

Appendix

Pineview Run - High Performance Driving Flags and their Meanings

PINEVIEW RUN HIGH PERFORMANCE DRIVING FLAGS AND THEIR MEANINGS



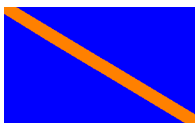
GREEN FLAG – Means “GO” Track conditions are good and the current session is in progress.



YELLOW FLAG – Exercise caution. Track conditions are not optimal. If the flag is waving, exercise extreme caution. Possibly dangerous conditions are in your immediate area. **NO PASSING.**



BLACK FLAG – If pointed at you directly, you need to come into the pits. Someone needs to talk to you. Full course black flag means everybody needs to come into the pits. **NO PASSING** under full course black flag. **DO NOT ASSUME YOU HAVE DONE ANYTHING WRONG.**



BLUE FLAG – There is a faster car approaching from behind. Check your mirrors and give proper point-by at next earliest legitimate passing zone.



DEBRIS FLAG – Be on the look-out for debris on track. This can include but not limited to car parts, standing water, rain, dropped fluids, slippery conditions, dirt, speedy-dry or any other foreign matter on track.



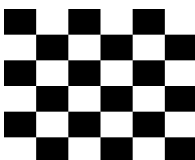
MEATBALL FLAG – If this is displayed to you, there is something mechanically wrong with your vehicle. You need to come into the pits. If you know you are dropping fluid, you need to drive “off-line”



RED FLAG - ALL action on track needs to come to a **STOP**. First, check you mirrors, then pull off-line and come to a controlled stop within sight of the next flag station as quickly and as **SAFELY** as you can. Wait for flag station for indication on when you can move again.



WHITE FLAG – There is a slow moving vehicle on track. This can be an emergency or safety vehicle, or it can be a fellow track participant. In either case, proceed cautiously upon approaching slower vehicle.



CHECKER FLAG – Session is over. **NO PASSING.** You should try to “cool-down” on your way back to the pits but be mindful of traffic behind you. You need to maintain a reasonable pace on the way back.

The Line - By Dev Clough

The line is the path around the track, that when driven at the limit, will yield the fastest lap time.

The line through any particular corner is accomplished using a “connect the dots” approach. There is a specific “turn in”, or “corner entry” point, which is the point where you begin turning the wheel. At the approximate middle of the corner is the “apex” which is the point in the turn where the inside wheels are closest to the inside edge of the pavement. At the end of the turn is the “corner exit”, which is the point where the car is no longer turning, and the wheel is straight.

Going quickly requires that you learn the line and drive it consistently and precisely. One of the biggest stumbling blocks to learning the line is overdriving the car while trying to learn the line. (Particularly at corner entry).

If you are going slower than the traction limits will allow, you can place the car exactly where you want to. If you are going too fast, the car will be controlling you, and you will be forced to follow the line established by the speed of the car.

Racing drivers are all aware of the adage “In slow, out fast”. The most important goal of most corners is to carry as much speed as possible onto the straight following the corner. It has been said that the race winner is not the guy who goes fastest around the corners, but the guy who gets between the corners fastest.

The proper line can often be felt. Some things to look for:

At the “turn in” point, the car should be as close to the outside edge of the track as possible, this will allow the car to travel the arc of the greatest radius through the corner. At the “apex”, the car should be as close as possible to the inside edge of the track, and at “corner exit” the car should be all of the way to the outside edge of the track again. Many turns have “berms” (Usually a concrete curbing) at the apex and corner exit. Racing drivers commonly drive on the berms to increase the radius of the turn by another few inches. I don’t advocate that in a street car, but I ask my students to try to just “feel” the edge of the berm, to know they have used the whole width of the track. Note: It can be helpful in learning the line to look at where the rubber has been left on the berm by the race cars.

Hot tip: You will know when you are on the correct line when you turn in at corner entry and do not have to change the wheel position again until you begin to “unwind” (straighten) the wheel about 50-75% of the way through the corner. You must hit your apex, and wind up at the outside edge of the track for this to be meaningful.

This is what you will want to feel: At corner entry the car should turn in easily. The car will lean on its suspension, and “take a set”, when it does you should gently begin to apply a small amount of throttle (the car is more stable under throttle than if just rolling free). Gently increase the throttle, feeling how much the car can take, if the car begins to go wide (remember, you must hit your apex!) either stop increasing throttle application, or lift very gently. Lifting quickly will probably spin the car if you are anywhere near the limit, but lifting gently will just point the car in to the apex. As you pass your apex point you should be able to gradually apply more throttle, as you do you will feel the car tell you it wants to go straighter (because you are going faster) and you will have to unwind the wheel. This unwinding should carry you all of the way out against the edge of the track at your corner exit point. If the entire corner felt smooth, and felt like the car was developing a consistent “G” force from the beginning to the end of the corner, you probably nailed it. Remember, none of this means anything if you do not “connect the dots”!

Most drivers use visual reference points to establish where they apply their brakes, the turn in point, the apex and corner exit points. It is the easiest way to be consistent, particularly when learning a new track. Look for objects that will always be there, and that won’t move. Cones are a bad idea, a missing chunk of pavement is a good idea. When establishing a braking point, be conservative. First, because of “slow in, fast out” and secondly because as the day progresses you will probably be exiting the previous corner faster, and therefore carrying more speed into the braking zone.

Hot tip: While learning the line, if you find yourself running out of pavement at corner exit, move your turn in point closer to the turn. If you have pavement left over at corner exit, move it back. You must hit your apex for this to work!

Shifting, Up, Down and Heel Toe

Upshifting

Up-shifting should be done smoothly. Speed shifting will shorten the gearbox life. The only time I force an upshift is in a side-by-side race to the next corner, for position. I will sometimes “bang a gear” in an effort to take or hold a position. Listen to the in-car shifts of professional racers on TV, and they rarely bang shifts. Upshifts are done quickly and smoothly, but are not forced. If you want your gearbox to have a long, happy life, feel the gears, the changes should fall in, without being forced.

Downshifting

The first thing to understand, is the purpose of the downshift. It is not to slow the car that is the job of the brakes. The purpose of downshifting is to have the car in the correct gear to accelerate through and out of the corner.

Here is the process:

As you enter the braking zone, apply the brakes, but do not immediately downshift. The downshift should be done after the RPM's have dropped, but must be complete before you begin the turn-in. Downshifting too early can over-rev the motor, waiting too long means you will be rolling the car through the corner entry, giving up the ability to use the throttle to balance the car.

Heel toe Downshifting

Why is “Heel toe” important? Remember, as you approach the traction limit of your tires, anything that takes traction can cause the car to slide. Have you ever downshifted and released the clutch too quickly and felt the car jump as the engine RPM's were forced up to match the cars speed? Kind of like tapping the brakes. Think of this, if you are driving at 70 mph in 4th gear, at 4000 rpm's and shift down to 3rd, your engine rpm's will go up, to say 5200 rpm's. You can accomplish this by easing out the clutch, until the engine is forced up in rpm's by the car. This works, but it is slow, hard on the clutch and transmission synchro's, and uses up some of your traction to force the RPM's up. The alternative is to match the engine speed to the transmission speed (in the lower gear). This can be done by pushing in the clutch, blipping the throttle, selecting the lower gear and releasing the clutch. The problem is, downshifting is done at the same time we are braking. Guess what, we have two feet and three pedals to operate simultaneously! The Heel Toe technique solves this problem.

“Heel toe” is a misnomer. It can be done in many ways, depending on the pedals in the car, and the anatomy of the driver. Although it can be, it is not usually done with the heel and toe. The process is commonly done by placing the ball of the foot on the right side of the brake pedal, and while holding consistent brake pressure, the side of the foot rolls onto the throttle, “blipping” the throttle. Depending on your anatomy, and the pedals, it can be done any way that allows the brakes to be used while the throttle is blipped.

Heel Toe cannot be done smoothly unless two things are done:

- 1) The pedals must be matched. Normally this is done by adjusting until the brake and throttle are even in height, when the brakes are pressed on. The pedals must also be properly spaced. In my car it required adjusting and bending the gas pedal until I got the match I needed. In many cars, the pedals have some range of adjustment, making the process easier. One thing to remember, as you adjust the gas pedal, make sure that there is a mechanical stop for the pedal. If you rely on the stops in the carburetor or injection system to stop the motion, you will probably bend or break something as you try to squeeze a couple more horsepower out of the pedal. Also, make sure the linkage allows the butterflies in the carburetor to be fully open when the pedal hits your mechanical stop.

- 2) The technique must be practiced. Do not come to the track, with the intention of learning to Heel Toe. Learn the technique on the street, and practice it until it is second nature, before trying it at the track. If your street car is different from your track car, and your street car has a manual transmission, set its pedals for Heel Toe, and learn the technique. Try to get the pedal arrangement similar for both cars. If you must learn the technique in

your track car, make it low on your priority list. When driving the line is second nature, you are comfortable in traffic, you've got all of the corner stations figured out, start working on it.

Heel Toe is not a required skill at your first event or two, as a matter of fact, you don't ever have to learn it. It is a tool that will make you a smoother driver (i.e. faster!), and you will be easier on your equipment. It's a tool to add to your arsenal of skills as your high performance driving becomes more polished.

In Slow, Out Fast

Many drivers believe that the key to driving quickly is to drive into the corner as deep as possible, slam on the brakes at the last possible instant, jerk the wheel into the turn, and then slam the throttle as hard as possible to the floor.

It's really much simpler than that!

The single most important objective is to carry as much speed out of the corner as possible.

Think about this, if you delay your braking at corner entry by 10-15 ft., you might gain 1-2 hundredths of a second per lap. However, if you can exit a corner 2-mph faster, you can carry that extra speed all the way to the next corner, this will often result in lowering your lap times by several tenths of a second.

Why not do both? Ultimately that is the goal, but for most of us (Alex Zanardi, Jeff Gordon excluded) it just requires us to be too perfect. So, since we have shown our greatest gains to be at corner exit, which should be our focus. If you come in a little too fast, you will wind up fighting the car for control through the turn, instead of concentrating on corner exit speed.

After you have maximized your corner exit speed, and can do it consistently, it becomes appropriate to hone your corner entry. Just remember, corner entry offers the smallest opportunity for speed improvements, but has the greatest potential for disaster.

Approaching the Limit Safely

Some people believe that an occasional spin or crash is essential to learning to drive quickly. This is not true. A spin or crash is the result of an extreme case of exceeding the limits of the car and driver.

Losing control of the car is a hazard to the car involved as well as the other cars on the track, and the driver usually learns very little as he tries to save the car in a panic.

Consider this technique:

Enter the turn at a speed that is well within the capabilities of the car and driver. Observe the braking points, corner entry speed, establish a "line" through the corner, and observe your corner exit speed. Make sure you can repeat this. Now, without changing your braking point, slightly decrease your braking to bring your corner entry speed up, in small increments, and observe your speed at corner exit. You will have optimized the corner when increasing your entry speed any further has a negative effect on your corner exit speed. You now know the maximum speed you can carry through the turn that gives the best drive off the corner. Next, move your braking point closer to corner entry, in small increments, to maximize your braking.

No spins, no crashes, but you have found the limit.

Weight Transfer

What is weight transfer?

A car, at rest, distributes its weight over the four tires.

When you accelerate, the front gets lighter – an extreme example is a drag car doing a “wheelie”. The result is “weight transfer” off the front tires, and onto the back tires.

When you step on the brakes, weight transfers from the back to the front.

When you turn, weight transfers from the tires on the inside of the turn, to the tires on the outside of the turn.

That’s all simple enough, but gets a little more complicated in fast driving because you are often performing a combination of these things simultaneously. Sometimes (actually quite often) you are still doing some braking while turning at the entry of a turn, and a key to going faster is beginning your acceleration before completing the turn.

The amount of traction you have at each tire is dependent on how hard the tire is being pressed against the pavement. Since any kind of weight transfer causes a change to this pressure, than the traction you have at each tire is constantly changing with weight transfer.

If weight transfer did not occur, traction would always be consistent, and the car would be easy to drive quickly. Since weight transfer is unavoidable, the next best thing is to cause the weight to transfer as predictably as possible. This is done by driving smoothly. When you apply the brakes, don’t slam them on, progressively squeeze them on. Squeeze into and out of the throttle. Turn the steering wheel gently, and try to make only one turn of the wheel to achieve the arc you want through the corner. As you accelerate out of the corner, unwind the wheel as you squeeze on the throttle.

TRANSITIONS

The above does not mean that you do not use the brakes, the gas, or the cornering ability of the car to their limits. It means you transition between them gently, with touch, and in a way that minimizes how they upset the car. In order to go really fast It is essential to first become smooth and consistent in your handling of the car.

Terminology

APEX

The point during the corner where the car comes closest to the inside edge of the turn.

APEX "Early"

An early apex occurs when the car touches the inside edge of the track too soon which will cause the car to run out of track at the corner exit unless you slow the car and/or increase the turning of your steering wheel.

Remember though, your tires can only do so much at one time. If you slow the car and turn at the same time, the car must be going slower than if you did either function alone.

APEX "late"

A late apex occurs when the car touches the inside edge of the road further around the corner than necessary, leading to the car to use less than the full track width at the exit of the corner unless the driver begins to unwind the steering wheel and/or accelerates the car.

BALANCE

The mix of front vs. rear end grip. In cornering, the aim is to get a balance of front and rear cornering traction. In braking, it is a matter of having the front and rear ends of the car do their appropriate share of braking in proportion to their different downloads.

Proper balancing of the car is essential in road racing. It is a main factor in obtaining safer / higher speeds.

BLIP

In order to perform a proper downshift at higher speeds, a throttle blip enables an increased engine RPM to allow smooth engagement of the next lower gear. This is usually done while braking which means you are using the brake and the gas pedals at the same time.

This is NOT something you learn at the track. You should practice this technique, often called "heel-toe" downshifting at lower speeds on a clear highway. You perfect it at the track, but learn it elsewhere.

Missing a throttle blip and downshifting while turning may cause you to spin.

BRAKE POINT

This is a specific point prior to corners where you must be on the brakes, slowing the car for the turn. If you go past your brake point at a high rate of speed, you will not make the turn.

You are best served and it will be MUCH safer to begin your laps by braking EARLY into a turn and then slowly gaining the skill and confidence to brake later. Besides, you have more to gain by working on your exit speed.

CONSTANT RADIUS CORNER

A corner which can be defined by a single radius throughout the entire corner.

CORNER ENTRY

This is the area where you are decelerating while making your turn into the corner. Once you begin the corner, you will then slowly begin to apply throttle, all the way through the turn.

You may also hear your instructor refer to this as your "Turn in Point".

DECREASING RADIUS CORNER

A corner where the first section of the turn has a larger radius than the second part.

DEEP "into a corner"

This is where you delay your corner entry "turn in" as long as possible. This allows for several things, one of which is a "late apex".

EXIT SPEED

The speed a car can attain at the "track out" point of the corner and consequently the speed carried onto the following straight.

Ah Yes, this is one of the most important part of road racing, working on obtaining higher exit speeds. This will where you can greatly decrease your lap time.

HEEL and TOE DOWNSHIFTING

This is where you "blip" the throttle in order to synchronize gears while downshifting, and at the same time continuing to have constant pressure on the brake pedal.

This is not something you will learn quickly. In fact, it could take a very long time to master it, but if you never start practicing it, you will not get proficient at it.

INCREASING RADIUS CORNER

A corner where the radius of the early section of the corner is tighter than the radius of the later section.

LIFT

Lifting off the gas pedal, even if a small amount.

Be cautioned, Lifting while in a corner can be very dangerous. It can cause the rear of the car to get light and spin around to the front.

LINE

This is the "best" path around the course. The "line" can vary with track conditions and the type of car you are driving as well as the type of tires you are using.

You are looking to find the "fast line" around the track.

LOOSE

This can also be termed "Oversteer" and can cause the front of the car to turn in more than you thought it would as the rear end comes around.

PINCHING

Adding a bit of steering, usually in the second half of a turn to make up for an early apex.

Don't pinch if you have to. Let the car track out to the edge of the track.

REFERENCE POINT

A point on or off the track that you can visualize in order to know when to turn in etc.

NOTE: If you are going to use a reference point that is off the track, make sure it is not something that can move such as a parked car or spectator.

TRACK CAMBER

Camber is the same as "Banking"

Negative camber is when the track "leans" away from the inside of the corner.

Positive camber is when the track "leans" into the inside of the corner.

Negative camber works against you and Positive camber works with you.

TURN IN

This is the point at the start of a corner where the driver begins to turn the steering wheel into the turn.

TRACK OUT

This is the point of exiting the turn where the car gets as close as it can to the outside of the track.

TRAIL BRAKING

Caution, you will hear this term at the track. It is NOT for beginners.

Trail braking is the art of continuing your braking while turning into the corner. If not done correctly, it will cause you to spin.