



**SCCA Colorado Region Advanced PDX
High Plains Raceway
March 2010**



Advanced PDX Sessions

- **Pre-Study BEFORE Session 1:**
 - Safety, Workers, Flags,
 - Track Map, Passing Zones,
 - Terminology, Driver Goals, Evaluation Criteria
- **Session 1: Vision**
 - Finding/Seeing/Drive the Line
- **Session 2: Kinesthetic**
 - Feeling/Sensing the Car and Track
- **Session 3: CTT Simulation**
 - Rolling Start, Session Management, Passing, Flags

SAFE Race Car Drivers . . .



- Know the rules
- Understand grid and start procedures
- See and react properly to flags
- Demonstrate good judgment and awareness
- Know the line/Drive the line
- Stay cool and calm
 - On track
 - In traffic
 - Off track
- Can pass and be passed safely
- Keep their cars under control at all times

... Stay Safe By...

- Once on track, you are responsible to be safe and follow the rules
- Track activities are managed by:
 - Start/Finish flag stand – “starters”
 - Grid and Hot Pits Workers
 - Corner Workers
 - Safety Crews
 - Other drivers
- It is *your responsibility* to know what is going on and what to do about it...

Who Are These People?



Race Grid Workers

Who Are These People?



Corner Workers

Who Are These People?



Safety Workers

Who Are These People?



Race Officials

Flags



- GREEN - Track is clear. Your session is under way.
 - Session starts when shown at starters stand on formation lap
 - No flag shown at a corner station implies GREEN

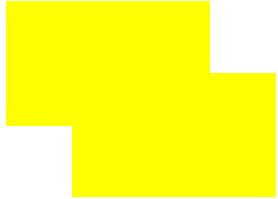


- RED - Indication of a serious problem on the track.
 - Shown at all stations. Session is to be halted.
 - Acknowledge, check mirrors, pull off line (stay on track!), come to a controlled, safe stop in view of the next corner worker.
 - Do not stop around the other side of a blind corner! Think!!
 - Look to flagging station for instruction when to come into pits.
 - Remain in your car!

Flags

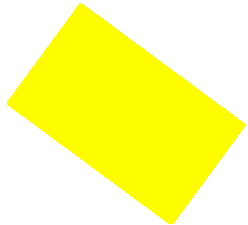


- **STANDING YELLOW** – There is a problem somewhere on the track ahead of you requiring caution.
 - Check mirrors and slow car down safely; do not slam on brakes.
 - May be displayed during warm-up/formation laps.
 - **NO PASSING ALLOWED** until in sight of the next corner station without a yellow flag and only in an approved passing zone.



- **DOUBLE YELLOW** means caution for the ENTIRE track

- **WAVING YELLOW** – There is a problem that may require evasive action in your immediate area.

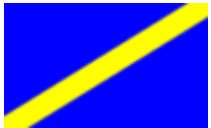


- Slow car down; do not slam on brakes.
- Be prepared to go off line safely.
- Check behind you.
- **NO PASSING ALLOWED** until in sight of the next corner station without a yellow flag and only in an approved passing zone.

Flags



- DEBRIS – YELLOW/RED - Oil, debris, or animals on track creating a potentially hazardous condition.
 - Slow car down; do not slam on brakes.
 - Be prepared to go off line safely.
 - Debris may still be there after flag is put away



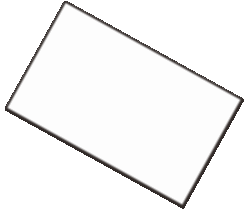
- BLUE/YELLOW STRIPE – There is a faster car approaching behind you.
 - Check mirrors.
 - Give passing signal in, or if possible, before the next approved passing zone.
 - Lift off throttle and let car pass.
 - In some situations a car will not be behind you, but you may be shown this flag to be aware that a car is closing on you and will catch you in a few corners; so, start watching your mirrors more actively.

Flags



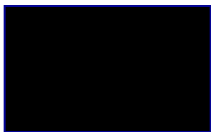
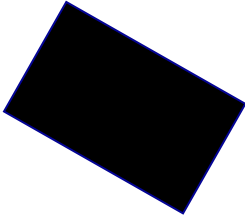
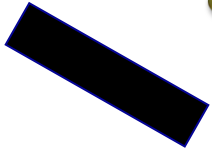
WHITE - Slow-moving or emergency vehicle in your immediate area (i.e., ahead of you). Does *NOT* mean one lap to go!

- Proceed—not required to slow down—but be aware a slow support or emergency vehicle is on course
- A waving white flag means the slow-moving vehicle is between you and the next flag station. BE ALERT!



BLACK - Multiple Meanings depending on how displayed

- When FURLED—the “black stick”—a corner worker saw what you did. Acknowledge and BEHAVE!
- When OPEN and pointed at you (perhaps with your number shown) something is wrong with your car or your driving. Acknowledge and proceed to hot pits and meet the Steward to discuss the problem.
- When STANDING at all stations, the session has been suspended. Proceed to hot pits and await further instructions



Flags



- 'MEATBALL' – There may be mechanical problem with your car.
 - Acknowledge the flag, slow down and get off line—you may be leaking fluid or about to have a part fall off!
 - Pull safely into the hot pits
 - A steward or pit worker will tell you what was reported



- CHECKERED – Session has ended
 - Check mirrors, ease off throttle but maintain a reasonable pace, and commence cool-down lap.
 - Cool Down – don't use brakes, reduce your pace and attempt to drive the perfect line!
 - Passing is allowed – but ONLY with a point-by
 - Drive through hot pits, then enter paddock -- watch your speed in paddock!



5-1-99 Don Castle Det. Reg.









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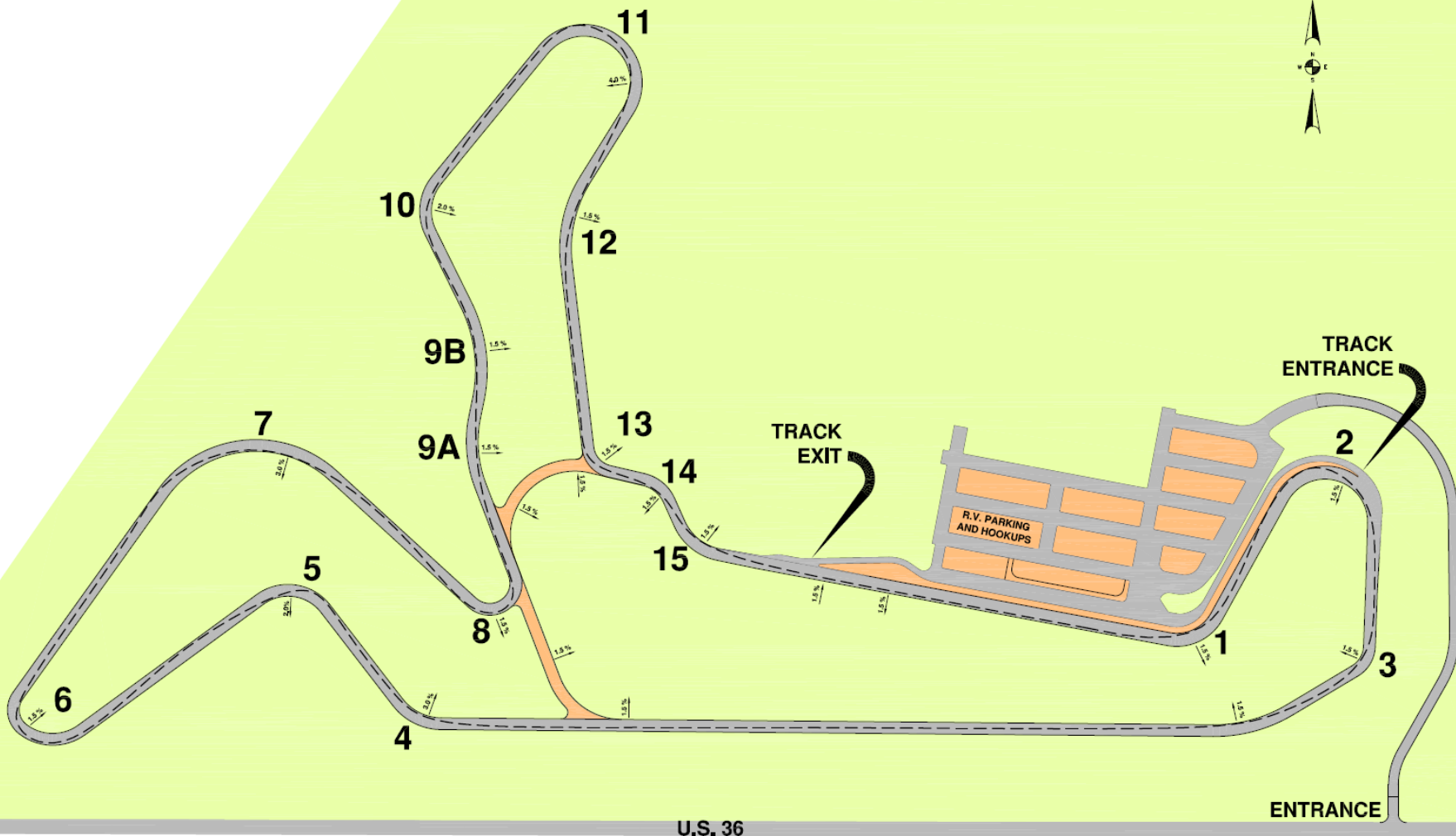






HPR Track Map

Courtesy RG Consulting Engineers



U.S. 36

PDX/CTT Passing Rules and Zones



PASSING RULES

- No point-by, no pass.
- Car being passed determines on which side the pass should occur, and signals accordingly
- Hand signals only—**NO turn signals**
- Pass must be **completed** before entering the next corner
- Car being passed should reduce speed only **after completing** the corner leading to the passing zone
- Passing car is not required to pass until ready; wave off a passing signal if not taking the pass

PASSING ZONES

Highway Straight (T3-T4)

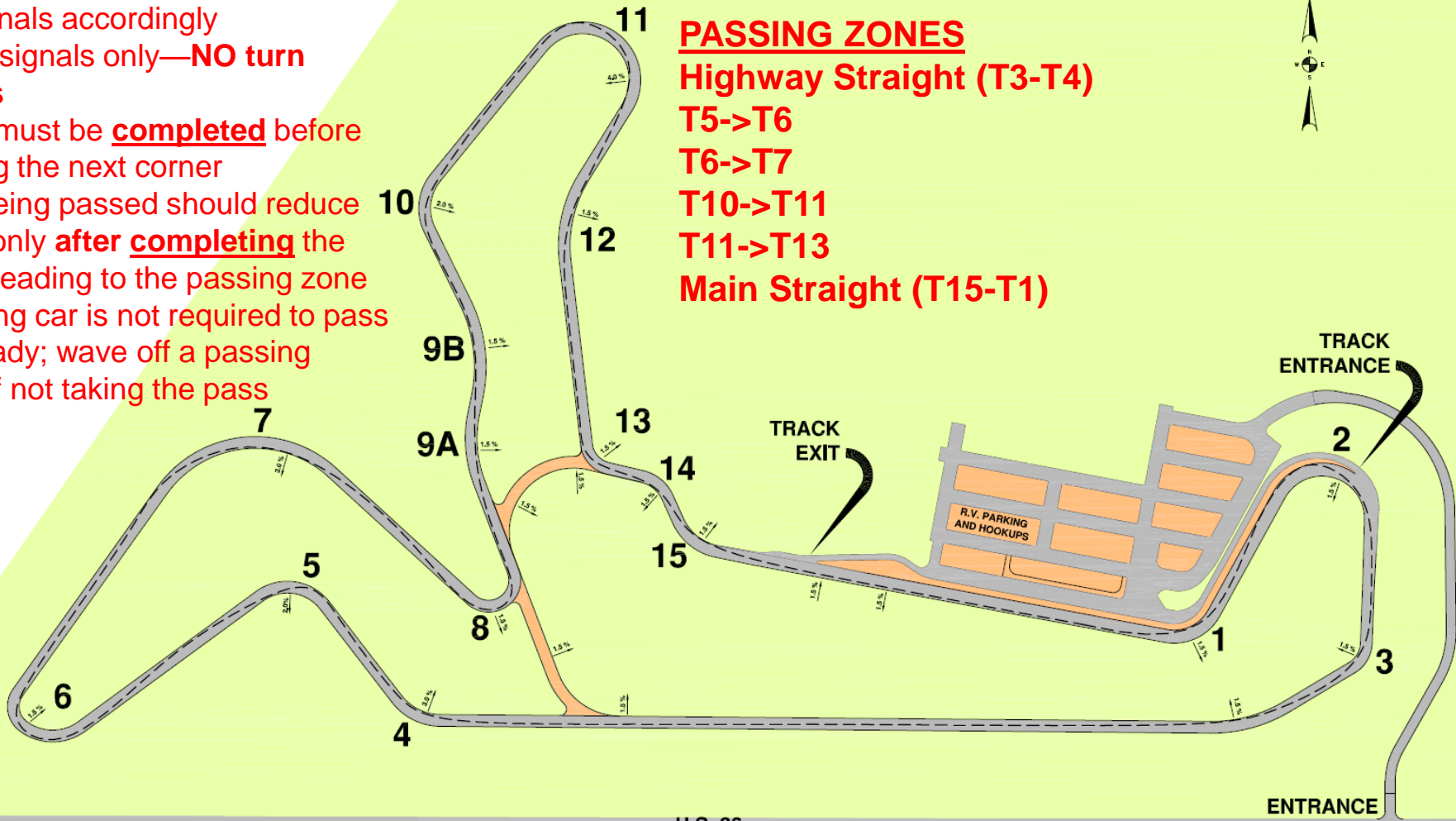
T5->T6

T6->T7

T10->T11

T11->T13

Main Straight (T15-T1)



HPR Alternative Track Configurations



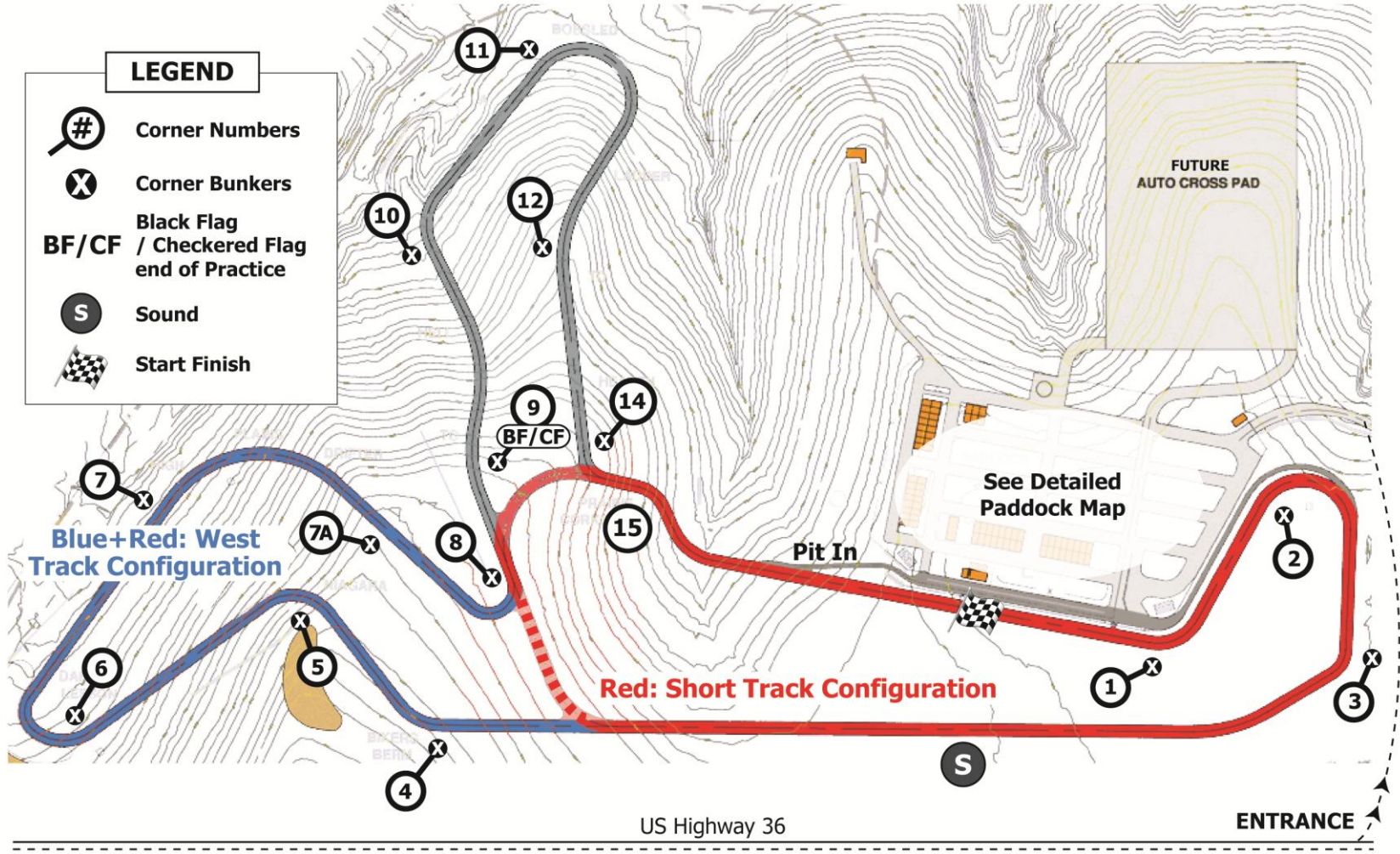
Colorado Region SCCA Welcomes You To
HIGH PLAINS RACEWAY



Byers, CO
2.55 mi
Altitude: 5,193'

LEGEND

- # Corner Numbers
- X Corner Bunkers
- BF/CF Black Flag / Checkered Flag end of Practice
- S Sound
- Start Finish



Terminology – Track Position

- “THE LINE”
 - *The safest, straightest, most repeatable line, using all the track*
- TURN IN
 - *The point where the car changes from going straight to beginning a corner*
- APEX
 - *Point on the course where the car meets the inside of a corner*
- TRACK OUT
 - *Point on the course where the car meets the outside of the corner and the car returns to going straight*
- (TOO) EARLY APEX
 - *Car meets the inside of corner too early, caused by turning in too early or too much steering input*
- (TOO) LATE APEX
 - *Car meets the inside of corner too late, caused by turning in too late or not enough steering input.*

Terminology – Instructor “Action” Phases

● Throttle

- Squeeze the throttle
- Breathe out of the throttle
- Modulate the throttle
- Progressive throttle
- Throttle Steer

● Steering

- Unwind the wheel
- Freeze the wheel
- Progressive turn in

Terminology – Instructor “Action” Phases

● Braking

- Threshold brake
- Brush the brakes
- Bleed off the brakes

● Be Patient

- Patient on the turn in
- Patient on the throttle

● Look Ahead

- Eyes up
- Look around the corner
- Find track out

Terminology – Instructor Commands

- PULL IT IN , OR TIGHTEN IT UP
 - *Apply a little more steering input; usually trying to hit apex*
- LET IT OUT
 - *Relax the steering input a little, usually to let the car out to meet the track out*
- BRAKE or TAP AND TURN
 - *Apply the brake to slow the car prior to a turn, to transfer weight to front tires*
- BRAKE **BRAKE BRAKE!!!!!!!**
 - *Apply the brake hard, keep the car going straight, do not turn the car while braking, if the rear of the car lifts or wiggles ease off the brake*
- DON'T LIFT
 - *Do not lift off the accelerator, usually in a turn where lifting will decelerate the car and make it oversteer*

Terminology – Instructor Commands

- BREATH OFF
 - *Ease off the accelerator , usually at the entrance to a turn , this will settle the nose of the car an make a better turn in.*
 - *or while in the turn, breath out but don't lift*
- EASY OR DON'T JUMP ON IT
 - *Apply power smoothly, usually on exiting a turn*
- BOTH FEET IN
 - *Hopefully given in a calm reassuring voice by the instructor.*
 - *Immediately hit both brake and clutch, lock the car up you are about to spin*

Terminology – Car Behavior

- UNDERSTEER OR PUSH
 - *Car tends to go straight rather than turn where the steering wheel is directing it.*
- OVERSTEER OR LOOSE
 - *Rear of car wants to break loose , or over steer*
- TRAILING THROTTLE OVERSTEER
 - *A controlled rotation of the car by lifting slightly off the throttle WHILE TURNING; the rear of car will oversteer*
- TRAIL-BRAKING
 - *Braking and cornering at the same time. Allows maintaining straightaway speed longer into a corner. Major braking still occurs on the approach to a corner which transfers weight to the two front tires, enlarging front contact patches, giving added steering effectiveness*

Driver Goals

1. Have *Fun*. This is SCCA.
2. *Listen* to your instructor.
3. Learn *one thing* each session.
4. Constantly work at improving your *skills*.
5. Be *Safe*. Be *Safe*. Be *Safe*.

Driver Evaluation

- Your instructor will evaluate you in 8 categories:
 - Judgment
 - Technique
 - Attitude
 - Reactions
 - Courtesy
 - Comparative Lap Times
 - Time Trials Rules Knowledge
 - Flag Recognition
- Session 3 will be your “checkout” ride, where you’ll be expected to demonstrate proficiency in each of the eight categories to your instructor.
- Session 4 will be a simulated Club Time Trials race, where you’ll drive solo, and instructors will be on track to provide traffic and observation.

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- **Session 4: CTT Simulation Solo**
 - Rolling Start, Session Management, Passing, Flags

Session 1: Vision

Finding, Seeing, Driving the Line

- Session goal is for the student to know what corner is coming up, what shape it is, how to approach and exit the turn
- This exercise is about ***programming your vision*** to see the elements of this track, not about absolute speed or lap times
- In this session, you will
 - Learn track entry and exit procedures and where to look for traffic
 - Find, see, and drive the “qualifying line” your instructor recommends when driving HPR for driving fastest lap times
 - Locate and see flag stations every time through a corner
 - Find, see, and drive consistent turn-in, apex, and track out points
 - Identify references to help you see through each corner, including up and down the elevation changes
 - Practice using your mirrors to watch for closing traffic

Session 1: Vision

Classroom Discussion

- What parts of the track are particularly challenging to see?
- What visual reference points did you identify and use?
- Which corners are early/neutral/late apex?
- How did you use your vision to see through the corners and up/down the elevation changes?
- Exercise: mentally/visually driving the track
- Exercise: cross crawls

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Session 2: Kinesthetic/Sensory Feeling/Sensing the Car and Track

- Session goal is for the student to focus on feeling car balance and weight transfer in the corners and elevation changes
- This exercise is about ***programming your “feel”*** of the car balance and feed that input to your driving decisions
- In this session, you will drive the line learned in the first session, plus develop your “feel” of car balance to:
 - Identify what the car is doing when entering, apexing, and exiting each turn, and going through the elevation changes
 - Identify what is due to the track, and what is due to driver input
 - Identify low/high grip areas on the track
 - Identify positive and negative camber available in each corner
 - Try suggestions by your instructor to utilize the sensory inputs to improve speed and balance: i.e., changing apexes, trail braking, entry speed, ...

Session 2: Kinesthetic/Sensory Classroom Discussion

- What did you feel the track do in each corner?
- Which corners are on, off camber?
- Which corners are high grip, low grip? Why?
- What do the elevation changes do to car balance? Grip?
- How did your car respond to the track? Your inputs?
- How can you use car balance to better get in/through/out of the corners?
- What changes can/did you make with this information?

- Brief discussion of next on track exercise--driving a CTT competition session

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- Rolling Start, Session Management, Passing, Flags

Session 3: Club Time Trials Simulation

Rolling Start, Session Mgmt, Passing, Flags

- CTT start
 - Formation lap at reasonable speed, keep tight grouping
 - Rolling start
- Session Management
 - First green lap is a throw away - warm up car and driver
 - What lap will be your fastest? Depends on tires, traffic, brakes—learn to sense them
 - Manage yourself, your car, your situation
- Passing
 - Visualize safe passing start/stop zones
 - Practice passing and being passed
 - Use clear hand signals, judgment, courtesy
- Flag Vision and Reaction
 - Treat all flags seriously; some may be for drills
 - Program vision of corner stations, workers, flags

Session 3: Club Time Trials Simulation

Class Discussion

- Instructor and student debrief, critique the session
- Instructor completes student evaluation in their logbook

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Session 4: Club Time Trials Simulation

Rolling Start, Session Mgmt, Passing, Flags

- CTT start
 - Formation lap at reasonable speed, keep tight grouping
 - Rolling start
- Session Management
 - You're in the car solo this time, with instructors on track providing traffic of various "skill"
 - Use what you've learned in the previous sessions to optimize your session and deal with traffic
- Passing
 - Visualize safe passing start/stop zones
 - Practice passing and being passed
 - Use clear hand signals, judgment, courtesy
- Flag Vision and Reaction
 - Program vision of corner stations, workers, flags
 - Treat all flags seriously; may or may not be a drill

Session 4: Club Time Trials Simulation

Class Wrap-up

- Instructors and students debrief, critique the session
- Instructor reviews evaluations with Chief Instructors, Chief Steward
- Decisions made on CTT signoff