


# *Driving School - Contents*

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## **Important Information to Study**

- ✍ Emotions - Apprehension is Normal.
  - ✍ **Safety is ABSOLUTELY the #1 Priority**
  - ✍ Instruction is for YOUR Benefit ... but requires effort and concentration by YOU
  - ✍ Please Define Your Objectives ... what YOU should expect to accomplish
  - ✍ Before -- the Event, the First Track Session and Each Track Session
  - ✍ After Each Track Session
  - ✍ Driving Sessions or Run Groups
  - ✍ Corner Workers & Dangers
  - ✍ Track Etiquette and Passing ... it takes two
  - ✍ Quick Car Inspection Tips
  - ✍ Seat Adjustment, Hand Position, Mirror Adjustment and Seat Belts
  - ✍ **Be Gentle, Smooth and Progressive** with ALL Motions
  - ✍ Physical Skills and Mental Skills
  - ✍ Car Control Physics and 5 Cornering Steps
  - ✍ A Complete Lap ... driving the safe and correct line
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# *Driving School - Introduction*

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## Emotions and Safety

- ✍ Emotions - Apprehension is Normal.
  - ✍ We all started out in the same place with the same feelings.
  - ✍ The event is structured to prevent students from being apprehensive, and from causing each other to be apprehensive.
- ✍ **Safety is ABSOLUTELY the # 1 Priority**
  - ✍ We will keep the car on the pavement and drive it home !!
  - ✍ Speeds Are Always Safe
    - ✍ Students are never pressured to drive faster than they are comfortable.
      - ✍ Drive at your level not someone else's, we are NOT racing
    - ✍ Students are sometimes constrained to drive slower than they might like
      - ✍ The instructor will never let a student go faster than the instructors believes is safe.
  - ✍ We Will Teach You the Safest Path (Line) Around the Track
    - ✍ Learn the ONE correct and safest line
    - ✍ Do not experiment with multiple lines
- ✍ Be Safe and Have Fun !!

*"Our doubts are traitors and make us lose the good we oft might win by fearing to attempt." Shakespeare*

# *Driving School - Introduction*

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## Instruction and Objectives

- ✍ Instruction is for YOUR Benefit ... but requires effort and concentration by YOU
  - ✍ The ideal student makes sincere efforts to listen, learn and be responsive to instruction
  - ✍ The instructor caliber is high - they can contribute a great deal to your education.
  - ✍ Instructor objectives are to support student learning.
    - ✍ There is no such thing as a dumb question !!!
    - ✍ If you don't get an answer that makes sense the first time, ASK AGAIN !!!
- ✍ Please Define Your Objectives ... what YOU should expect to accomplish
  - ✍ You should learn about yourself & your car, while improving driving skills.
    - ✍ Mental Skills (tricks for your brain)
    - ✍ Physical Skills (eyes, ears, hands and feet)
    - ✍ Car Control Physics (braking, turning, and accelerating)
    - ✍ Maximize SAFETY with gentle, smooth and progressive car control inputs
    - ✍ Maximize SAFETY by driving the Correct Line around the track

*"Press On: Nothing in the world can take the place of persistence. Talent will not; nothing is more common than unsuccessful men with talent. Genius will not; unrewarded genius is almost a proverb. Education alone will not; the world is full of educated derelicts. Persistence and determination alone are omnipotent." Unknown*

# *Driving School - Maximizing the Benefits*

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## Preparation Begins Early

### ✍ Before the Event

- ✍ Know the Track - turns numbers, left or right turn
  - ✍ Study the Shelby American Automobile Club (SAAC) track diagrams & notes
    - ✍ Available on the web at <http://norcal-saac.org/ot/otbook.htm>
- ✍ Know the Flags
- ✍ Take Tech Inspection Seriously
- ✍ Reduce Stress and Apprehension
  - ✍ Pack for the Track 1 or 2 weeks early, not the night before
  - ✍ Arrive early, unpack, organize materials and relax

### ✍ Before the First Track Session

- ✍ Make Sure the Car is Completely Empty
- ✍ Remove Hubcaps or Wheel Rings, Check Air Pressure and Lug Bolts
  - ✍ Set cold pressure between 34 to 37 psi, then leave alone unless having problems
  - ✍ BMW lug bolt torque is normally 80 to 82 ft-lbs, confirm this for your car
- ✍ Know the Passing Zones - where, left, right, hand signals

*"Failure to prepare is preparing to fail." Unknown*

# *Driving School - Maximizing the Benefits*

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## Preparation and Review

*"Success is what happens when preparation meets opportunity." Seneca*

### ✍ Before Each Track Session

#### ✍ **CRITICAL - Make a Plan and Adjust Your Plan As You Progress**

- ✍ Set objectives for mental, physical, car control and driving the correct line
- ✍ Use the SAAC diagrams to document your plan and take notes
- ✍ It is CRITICAL to Set Objectives for EACH Session with Your Instructor
- ✍ Be Ready Early to Stay More Relaxed
- ✍ Concentrate and Focus on Driving
  - ✍ Leave life's problems and distractions outside the front gate and outside the car
- ✍ Review flag station locations and run off areas
- ✍ Stay Well Hydrated (Drink Constantly) In Order to Stay Alert
  - ✍ **THIS IS A VERY SERIOUS MATTER**

### ✍ After Each Track Session

- ✍ Review What Went Right and What to Work On
- ✍ Sit in the Car and Drive 2 or 3 Laps with Your Eyes Closed
  - ✍ Trust us this really works, plus it is free track time !!
- ✍ Adjust Your Plan and Notes Accordingly

# *Driving School - On Track Considerations*

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## Methods & Procedures

### ✍ Driving Sessions or Run Groups

- ✍ Run Groups are separated and based on experience ... A, B, C & D
- ✍ Sessions begin by staging/parking cars in the “Hot Pits”
  - ✍ This is where you pick up your instructor as they finish the previous session
  - ✍ This is a good time to review your session objectives with your instructor
- ✍ Driving starts with a slower warm-up lap
  - ✍ Drive the line very precisely, review flag stations & review run-off areas
- ✍ Driving ends with a slower cool down lap
  - ✍ This is a good time to obtain feedback from your instructor
  - ✍ Acknowledge the corner workers with a wave, they deserve it !!

### ✍ Corner Workers & Dangers

- ✍ **Know the Flags Instinctively** - you will have no time to figure them out
- ✍ Look at Corner Workers - the very moment you can see them
- ✍ Look Well Ahead or Across the Track
  - ✍ **Realize but don't fixate on danger** ... flags, dust, smoke, other cars, et cetera

*“Trust your instinct to the end, though you can render no reason.” Emerson*

# *Driving School - On Track Considerations*

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## Methods & Procedures

- ✍ Track Etiquette and Passing ... it takes two
  - ✍ **Drive at Your Own Pace**
    - ✍ Learn not to be anxious about faster cars behind you
  - ✍ The Slower Car - How to be Passed
    - ✍ Check mirrors before each passing zone - realize but don't fixate
    - ✍ Finish cornering before signaling a pass
    - ✍ Signal each passing car individually and separately
    - ✍ Use clear, pronounced, full motion arm signals
  - ✍ The Faster Car - How to Pass
    - ✍ Present yourself but do not tailgate
    - ✍ Anticipate the passing zone and build momentum
    - ✍ Time the pass **SAFELY**, don't rush the next corner

*"You cannot have a proud and chivalrous spirit if your conduct is mean and paltry; for whatever a man's actions are, such must be his spirit." Demosthenes (384 BC - 322 BC), Third Olynthiac*

# *Driving School - Setup for Best Results*

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## Before You Turn the Key

*"A man cannot be comfortable without his own approval." Mark Twain*

### ✍ Quick Car Inspection Tips

- ✍ Check - fluid leaks under the car, fluid levels, tire wear and pressure
  - ✍ Hot tire pressures will be greater than cold pressures
- ✍ Keep the hood open when parked to help cool the engine
- ✍ Keep the windows free and clean to maximize vision

### ✍ Seat Adjustment

- ✍ Set the seat position so that your knee remains bent when you push on the floor beneath the brake pedal.
  - ✍ Insures that the knee will never be locked during braking, and helps avoid hip and knee injuries in collisions
- ✍ Set the seat back "... to its' full upright and locked position".
  - ✍ Keeps you more alert, and helps you better feel the car's behavior
  - ✍ Helps keep the hands at 9 and 3 o'clock positions, and the head straight
- ✍ Set seat position so that your hand falls over the top steering wheel, as your left leg pushes you back into the seat, with your left foot on the dead pedal.
  - ✍ Allows you to steer the car without moving the shoulders forward and away from the seat back.

# *Driving School - Setup for Best Results*

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## Before You Turn the Key

### ✍ Hand Position

- ✍ Confirm that your elbows are bent when your hands are at 9 and 3 o'clock.
  - ✍ Allows you to rapidly and easily return the wheel to straight ahead if required
  - ✍ Bent elbows allow you to apply greater force to the steering wheel if required
  - ✍ Keeps your hands safely to the side, away from the air bag

### ✍ Mirror Adjustment

- ✍ Set the mirrors just outward of being able to see the sides of the car.

### ✍ Seat Belts

- ✍ With the belt in place and almost latched, fix the belt position by engaging the ratchet with a quick tug. Then snap the belt in place for an extra snug fit.
  - ✍ Helps the belts work properly in a collision, whether on the street or the track
  - ✍ Helps keep you firmly positioned in the seat for better car control.

*"God is in the details, they matter."* Unknown

# *Driving School - Techniques and Tips*

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## Driving on the Track

- ✍ **Be Gentle, Smooth and Progressive** with ALL Motions
  - ✍ Applies to Braking, Steering and Acceleration Inputs
  - ✍ **Gentle** - use firm but minimum force, which can be significant at times
    - ✍ Do not dive the car nose with hard braking, followed by a jerky release
  - ✍ **Smooth** - avoid abrupt input, jerks and on-off pulsations
    - ✍ Twitchy panic moves WILL unsettle the car with possible dire consequences
  - ✍ **Progressive** - start lightly, quickly increase and decrease, finish lightly
    - ✍ No sudden steering or pedal motions
- ✍ Goal is to strive for predictable and consistent motions **EVERYTIME**, in a seamless, balanced and controlled manner
  - ✍ Maximizes grip and safety
  - ✍ Focus on driving, the speed will come as technique improves
  - ✍ Horsepower does not drive this equation

*"If it is light and balanced it is right -- If it is heavy and forced it is wrong." Jackie Stewart*

# *Driving School - Techniques and Tips*

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## Driving on the Track

### ☞ Physical Skills

- ☞ Vision - constant eye movement sees everything, but fixates on nothing
  - ☞ Practice a wide angle of view in order to see as much as possible
  - ☞ The car will go where you look, use vision to aid anticipation and control
    - ☞ Look ahead at the target, not over the hood ornament
    - ☞ Turn your head and look at the target in corners
  - ☞ Look through the top half of the windshield to aid anticipation
  - ☞ Keep the eyes and the head level

### ☞ Steering Inputs

- ☞ Keep your hands quiet and at 9 and 3 o'clock
- ☞ Do not move your hands on the wheel unnecessarily
- ☞ Pull and push the steering wheel, pull down for the most control
- ☞ Avoid random or twitchy motions of the wheel that can upset the car

*"Driving is a 70% visual exercise. You cannot hit the bull's eye if you do not aim at the target." Carl McGinn*

# *Driving School - Techniques and Tips*

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## Driving on the Track

### ✍ Physical Skills

#### ✍ Shifting Gears

- ✍ Shift as little as possible using gentle smooth and progressive inputs
- ✍ Anticipate shift points and integrate smoothly with other motions
- ✍ Use hand positions & motions that promote consistent shifting
  - ✍ Push in with one motion, instead of pulling out and in with two motions
- ✍ Consider using heel/toe technique to combine braking and shifting inputs

#### ✍ Seat Tips

- ✍ Brace yourself with the seat, so that you can use a light steering touch
  - ✍ If you use the steering wheel as a brace or grab handle, you cannot steer effectively
- ✍ Brace yourself with the seat so that you can better feel what the car is doing
- ✍ When possible use your left leg and the dead pedal to brace yourself by pushing backwards into the seat

*"The best and most beautiful things in the world cannot be seen or even touched. They must be felt." Helen Keller*

# *Driving School - Techniques and Tips*

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## Driving on the Track

### ☞ Mental Skills

*"The best way to predict the future is to invent it." Alan Kay*

#### ☞ Concentration

- ☞ Pause and leave life's issues and problems behind, before you close the door
- ☞ Think only about the driving tasks at hand, do not let the mind wander


#### ☞ Anticipation - learn to stay ahead of the car

- ☞ Think Ahead - keep your brain and eyes ahead of the car
- ☞ Plan Ahead - for turns, passing, flags and what is coming next
- ☞ Develop a mental lap plan and vision and use it to think ahead
  - ☞ Use track diagrams to document and review your plan

#### ☞ Focus and Priorities

- ☞ Focus on the task at hand, while anticipating the next task
  - ☞ brake point, turn in point, apex, exit, passing, flags, dangers, et cetera
- ☞ Constantly adjust and progress priorities as tasks and situations change
- ☞ Keep the mind moving - do not fixate or focus on any one single priority

*"What we anticipate seldom occurs: but what we least expect generally happens." Benjamin Disraeli (1804 - 1881)*



# *Driving School - Techniques and Tips*

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## Driving on the Track

### ☞ Mental Skills

#### ☞ “Let the Data Flow Freely”

- ☞ Do not analyze or judge information, this slows down thinking and processing
- ☞ Do not dwell on mistakes, correct and move on quickly to the next priority
- ☞ Use vision, feel and sound to understand what the car is doing

#### ☞ Relaxation

- ☞ Looking and thinking ahead slows things down making relaxation easier
  - ☞ Allows more time to coordinate the next inputs
- ☞ Breathing reduces tension, making relaxation easier

*“There are no right or wrong data inputs, there is only stark reality. Wishing for a different reality or judging reality slows down your ability to think and react.” Don Alexander*

*“Only in quiet waters do things mirror themselves undistorted. Only in a quiet mind is adequate perception of the world.” Hans Margolius*

# *Driving School - Car Control Techniques*

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## Driving on the Track

### ✍ Car Control Physics

- ✍ Traction or Tire Grip is like a bank account there is only a limited amount
- ✍ There are three ways to withdraw money ... brake, steer or use the throttle
  - ✍ This concept is know as the Friction Circle
- ✍ Any SINGLE action or COMBINATION of actions can break the bank with dire consequences
  - ✍ If you brake too hard before the corner, no traction is available to turn the car.
  - ✍ If you steer to much, less traction is available to brake or accelerate.
  - ✍ If you lift off the throttle in a corner, less traction is available to turn the car.
  - ✍ If you accelerate too hard in a corner, no traction is available to keep the car on the track.
- ✍ Gentle, smooth and progressive control inputs avoid breaking the bank.

*" The adhesion of a tire on the road is the same in all directions. Therefore any amount of grip that is used up by acceleration or braking, reduces the amount of grip available for cornering and visa versa." Paul Frère*

# *Driving School - Cornering Techniques*

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## Driving on the Track

### ✍ 5 Steps for Safe Cornering

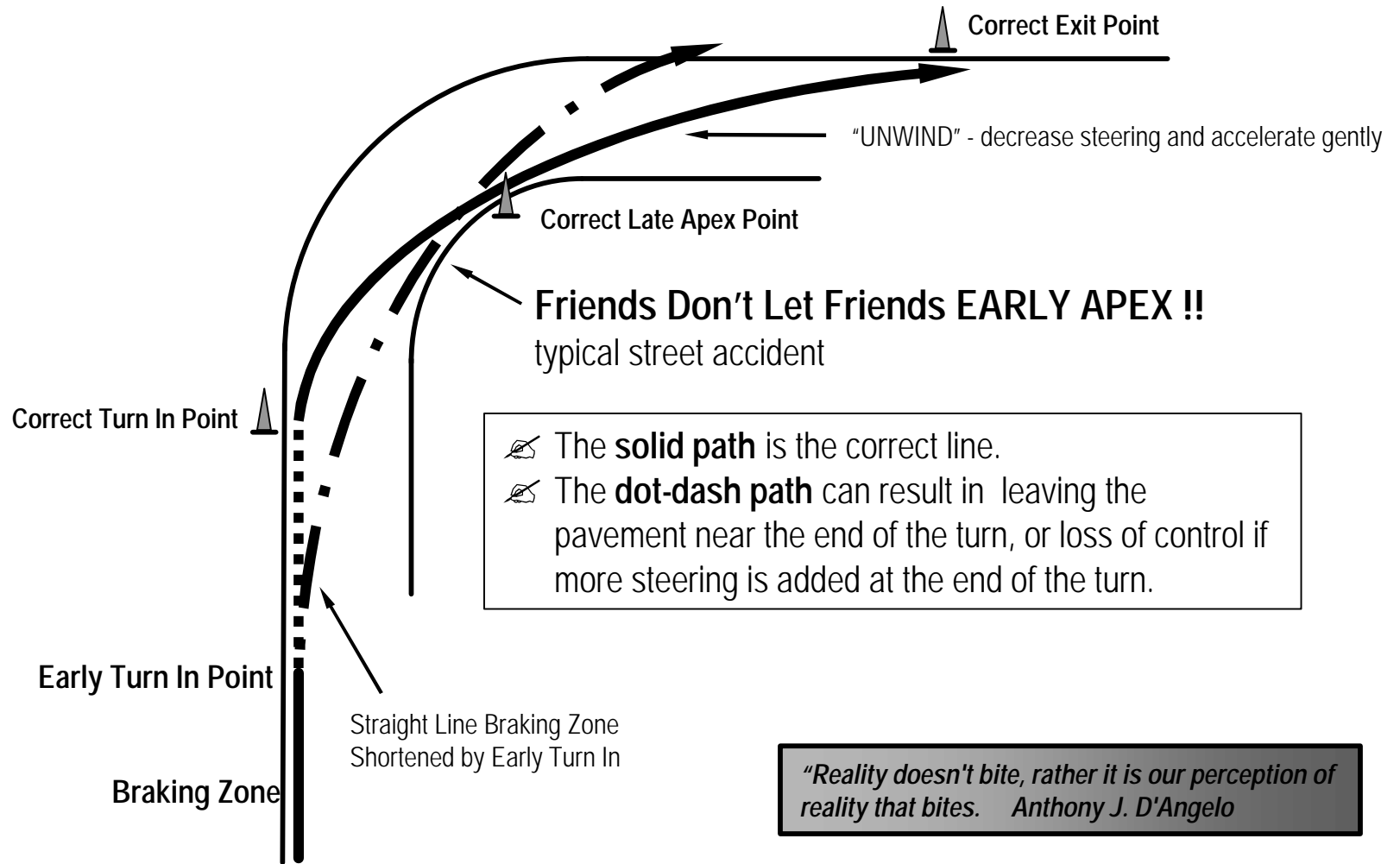
- ✍ BRAKING is always done in a straight line before entering turn
- ✍ The ENTRY point is where steering input begins
- ✍ The APEX is where steering reduction begins, i.e. unwinding the wheel
- ✍ ACCELERATION is applied as the corner ends AND as steering is reduced
- ✍ The EXIT is the end of the corner, where the car is pointed straight ahead
- ✍ **The SAFEST LINE uses a late apex.**
  - ✍ Wide and early apexes are less safe.
  - ✍ Wide entry and narrow exits are less safe.

*Walk the track if at all possible to better understand the subtleties of each corner. Then follow the correct line right away, regardless of speed so that it becomes habit. Piero Taruffi*

# Driving School - Cornering Techniques

## Driving on the Track

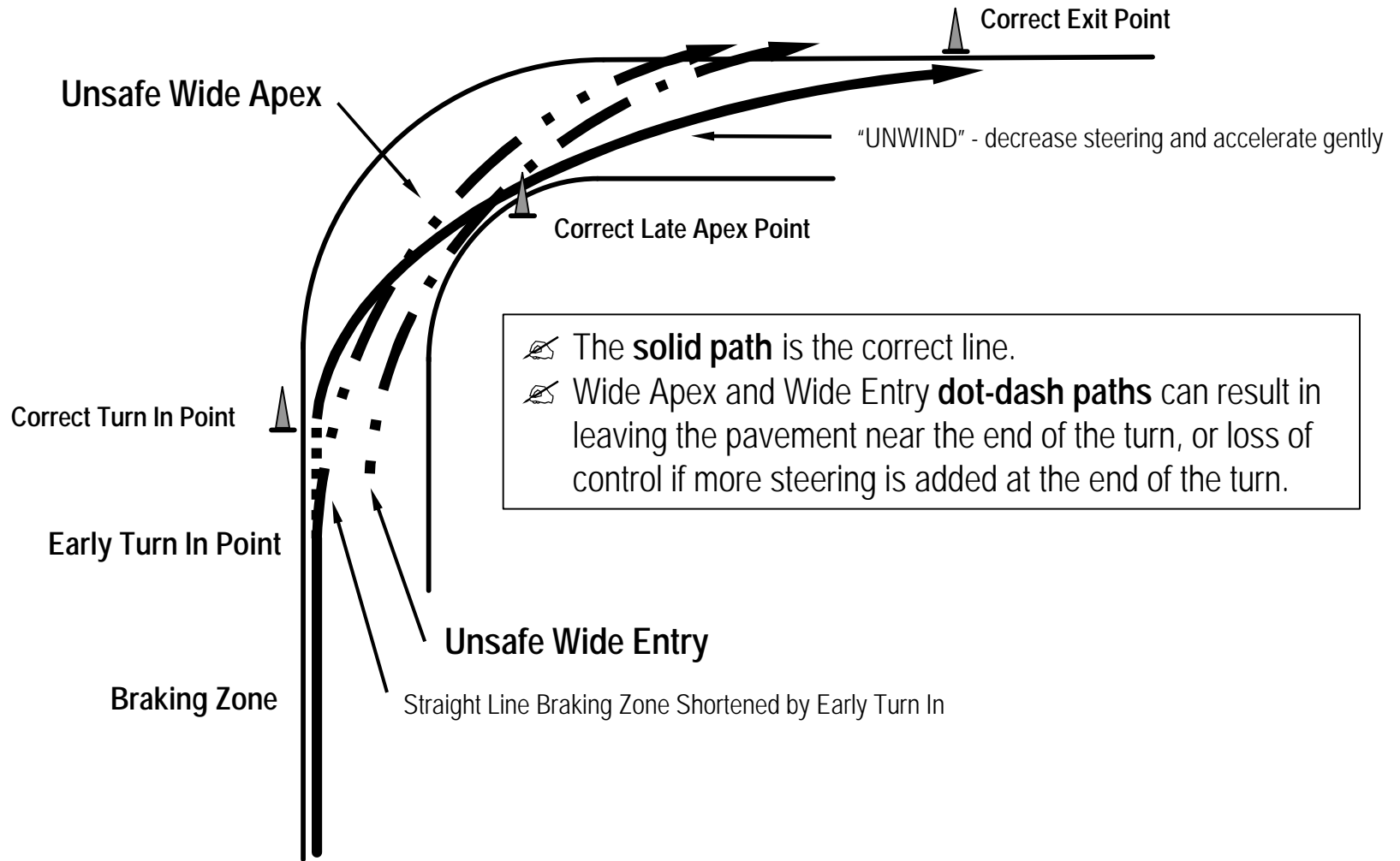
👁 5 Cornering Steps - Brake, Turn In, Apex, Accelerate, Exit



# Driving School - Cornering Techniques

## Driving on the Track

☞ 5 Cornering Steps - Brake, Turn In, Apex, Accelerate, Exit



# *Driving School - Cornering Techniques*

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## Driving on the Track

### ✍ Cornering Tips

*"Common sense is instinct. Enough of it is genius." George Bernard Shaw*

#### ✍ Slow in, fast out

- ✍ Enter slow and accelerate out only if you have not made a mistake

#### ✍ Connect your steering wheel to your knee with a string


- ✍ As you wind in steering, you must use less throttle
- ✍ As you unwind steering, you can use more throttle

#### ✍ Count as the steering increases 1-2-3-4-5 or decreases 5-4-3-2-1

- ✍ Throttle must be reduced 5-4-3-2-1 as steering increases 1-2-3-4-5
- ✍ Throttle can be added 1-2-3-4-5 as steering is reduced 5-4-3-2-1

#### ✍ Fast in the fast corners -- Slow in the slow corners

### ✍ Common Cornering Problems

- ✍ Too much entry speed, especially on the slow corners
  - ✍ Turning in too soon, resulting in an early apex
  - ✍ Not turning enough, resulting in a wide or missed apex
  - ✍ Not using the full width of the track, resulting in a wide entry or narrow exit
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# *Driving School - Putting It All Together*

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## Driving on the Track

- ✍ A Complete Lap ... driving the safe and correct line
  - ✍ Put it all together with your instructor
    - ✍ Let your instructor show you the line during the first session
    - ✍ Follow your instructor's advice if you hear conflicting input
  - ✍ For a smooth lap, repeat the 5 cornering steps precisely and consistently
    - ✍ Use visual reference points to help initiate, conduct and complete each corner
      - ✍ Brake markers, cones, pavement shading, paint, track structures, horizon points, etc.
  - ✍ **THINK TO BE SAFE** ... use Mental Skills on each corner
    - ✍ Is there safe run off area ? If not have extra respect !!!
    - ✍ Are there burms, paint, depressions or curbs that will upset the car ?
    - ✍ Are there gentle curbs that you can drive on at the turn in, apex and exit ?
  - ✍ **MAKE A PLAN AND USE IT !!**
    - ✍ Supplement your learning with track diagrams and notes
    - ✍ Drive mental laps in your car in between sessions to memorize your plan
    - ✍ Update your plan after each track session to improve weak points

*"It is not always possible to be the best, but it is always possible to improve your performance." Jackie Stewart*

# *Driving School - Summary*

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## Key Things to Remember

- ✍ Emotions - Apprehension is Normal.
- ✍ **Safety is ABSOLUTELY the #1 Priority**
- ✍ Instruction is for YOUR benefit ... but requires effort and concentration by YOU
- ✍ Define your objectives then make a plan and adjust your plan as you progress
- ✍ Preparation is an on going process both before and during the school ... car, mind and body
- ✍ Be aware of and anticipate corner workers, dangers and passing zones
- ✍ **Be Gentle, Smooth and Progressive** with ALL motions
- ✍ Driving precisely and consistently blends both physical and mental skills
- ✍ Keep the traction bank account balanced
- ✍ Use the 5 cornering steps consistently and precisely
- ✍ **THINK TO BE SAFE**
- ✍ **MAKE AN PLAN AND USE IT**

*HAVE FUN AND ENJOY THE SCHOOL !!*