



Lapping Days East Track Miller Motorsports Park

Morning Meeting All Drivers

Become better drivers and safer drivers Become Pro-Active, not Re-Active!

Car control is not inborn, it is learned. Today's track driving allows us to explore precision driving in a safe environment.

Interestingly enough, track driving will make us much better street drivers as well. Track driving simulates real world conditions and the skills learned today can be directly applied to day to day driving.

There are plenty of sensory inputs from behind the wheel...

- *Eyes*
- *Ears*
- *Hands*
- *Feet*
- *Seat*

Today we will learn to use all of them!

We want today's reactions to become proactions, to become instinctual. We want to anticipate what is coming, anticipate what we will do many seconds ahead of where we are now.

We want to be proactive, not reactive!

Classroom Session 1

General Driving Discussion

Driver Position

seating position ... upright, and forward!
hands on wheel at 9 and 3 o'clock positions, or shuffle (pre-positioning)
mirrors adjusted properly ... left-right should be outboard of the side of car

VISION... peripheral awareness... 180 degree vision

Your car goes where you look... *look ahead*, where you want to go!
Look ahead, look through, look left and right look out side windows
Looking ahead slows things down, gives us time to do things slowly
Anticipation ... Smooth left right left right transitions
Look ahead ... scan forward and back, left and right
Turn on the proper line... like a ski racer, set up for the next cone...
We Choose, We don't React!

Braking ... **Slow in, Fast out, Smooth inputs... Squeeze, don't Jab!**

squeeze on the brakes firmly, and early...Do not "stab" the pedals
firm squeeze allows suspension to adjust
Braking is done in a straight line!
come off brakes gently at turn in
10-8-6-4-3-2-1 Breathe OFF

Shifting ...

Shifting does NOT slow the car, it positions you for corner exit acceleration
Downshifts are done late in the braking zone, but BEFORE turn-in
Do not downshift IN a corner ... Do not upshift IN a corner

Accelerating ...

Smooth inputs... Accelerate smoothly
Squeeze onto the throttle, do not "floor it"
Carry speed and momentum, do not "take it off", then "put it on"

Car Balance... **contact patch management**

front loaded under braking
rear loaded under acceleration
left/right front loaded under braking while turning
balance is critical, anticipation of future moves helps keep car balanced
Braking and throttle application ... = smooth inputs

UNDERSTEER VS OVERSTEER

Understeer...built in to today's cars, front end won't turn, plows straight
Adding steering makes things worse since car has lost front end grip
Correct by opening the wheel (counterintuitive) lift off gas or brake gently

Oversteer .. rear end tries to come around the front
Correct by steering in the same direction the rear is going...
Breathe off throttle or brake, don't dramatically lift!
LOOK where you want to go, steer toward where you want to go
Corrections are smooth, not dramatic

Over Correcting If you drop two wheels (or 3 or 4) off the pavement,
Drive off straight if you can. If you are Spinning, lock the brakes!
Stay off, slow down, check mirrors and gently come back on when safe!
Don't overcorrect, give the car a chance to catch it's breath!

OFF TRACK EXCURSIONS!

IF... you are heading quickly toward the outside of the pavement, and the car is not pointed in the direction you need to go, open the wheel AND>>>

**DRIVE OFF STRAIGHT with authority, as if you meant to do it.
SLOW DOWN ... DO NOT come back on until you are slowed and it is clear
IF IN DOUBT about coming on, STOP and wait for a worker to wave you on**

DO NOT GO OFF SIDEWAYS AND TRY TO COME BACK ON ...

Three things to remember!

*If the car gets loose,
Use CPR ... correct, pause, recover!*

*In a small slide, no abrupt inputs ...
When in doubt, both feet out!*

*If the rear is rapidly coming around,
In a spin, both feet in!*

CORNERING SKILLS ... (tear off the last page)

The Driving Line ... What is it, and Why do I drive it?

The LINE is the fastest, safest, and smoothest way around a track

The shape of the track dictates the line

The smoother and larger the radius, the faster we can go

Inside – Outside – Inside

Creates a much larger turning arc (radius) allows us to carry more speed

Use ALL of the road... (discuss Braking cones, turn-in, apex- track out (exit))

What is an Apex?

An apex is the inner most edge of a turn, and the slowest part of a turn

At the apex we should have 100% of the turning input completed

At the apex we should begin unwinding (opening) the wheel toward straight

At the apex we should begin squeezing on to the throttle

Early Apex .. turning too soon, bad idea!

Touching the inner most part of a turn before the halfway point (turning in early)

Early apex causes all sorts of problems

- forces you to add steering input later in the corner
- prevents you from adding throttle for proper car balance
- causes you to run out of pavement at the corner exit
- forces you in some cases to drop wheels off the road, or worse, spin out!

Geometric Apex

- The exact halfway point in a corner (45 degrees of a 90, 90 degrees of a 180)
- Not an effective place to put the car...
- Risky at speed, Requires steering input all the way to the exit

Late Apex .. patience, turn 'late', good idea!

Touching the inner most part of a turn AFTER the geometric center of the corner

Late apex is the solution to all of the world's problems... PATIENCE!

- late apex is the safest way through a corner
- requires 100% the steering input to be done before the apex
- late apex allows us to unwind the wheel coming onto the straight
- late apex gives lots of road to work with at the exit of the corner
- late apex allows us to add throttle to balance the car with confidence

LATE APEX REQUIRES PATIENCE!

DON'T CHEAT THE WHEEL IN WHEN VISUALLY SCANNING THROUGH CORNER

DON'T TURN WHEN YOU INTUITIVELY WANT TO... WAIT!

Classroom Session 2

TYPES OF CORNERS ... EAST TRACK MAP REVIEW

Closing radius ... Turn 1

Looks wide with large radius at entry, but closes dramatically later in the corner

requires great vision and great anticipation

Look through the turn WAY ahead ... scan through turn to the exit

very late apex, almost onto the next straight

enter corner mid track, ignore inside curbing on left

let car arc to the right, almost to the right edge of track

move to throttle mid-corner to settle car, add gas toward apex

treat as a single round arc, very little steering input after corner entry

smooth inputs are super important, breathe off brakes, breathe on gas

Combination Sweeper Corners

Right - left sweepers Turn 3-4

Sweepers are fast, requiring smooth balance and little, if any, braking

TURN 3 Right sweeper ... car position at entry is far left side of straight

No brakes, constant throttle, or accelerating throttle through corner

Single wheel input... very smooth steering inputs

Very Late Apex ALMOST on the straight at the exit

TURN 4 left sweeper ... car position at entry far right

Turn in toward mid corner apex, stay mid-track at exit

single inputs allow suspension to take a set, slowly releasing at exit

gentle transition to the opposite direction maximizes car balance

Linked Corners

Right - right Turns 5-6

Second right, turn 6 in the pair is important to get to T7

TURN 5 Late apex right hander – car positioned mid to right side of track

straight line braking before corner, breathe off brakes at turn in

Patient Turn In DON'T turn early, target is late apex on second half of curb

Add throttle all the way to exit, open wheel to short straight

Position left side for turn in to Right hand T6

TURN 6 ... Again a late apex ... be patient for this one

Important turn to get correct, add throttle at apex

Track out all the way to left curb, gradually move car right toward T7 entry

Large, Single Arc Corner ... Double Apex

Left turn, round turn 7

TURN 7 Left , large radius 180 ...

car position at entry is far right side of straight along curbing

preferred line is one single round arc, with virtually no additional input

straight line for most of braking, settle car, BUT carry light brakes into turn

enter turn mid- track, let arc carry car out to right curbing

should be looking left to single LATE apex, almost on straight, up the hill

continue arc to apex, adding throttle, track out to right side curb

Combination Corners ... The Attitudes

Left – right - left combinations Turn 8-9-10

Sacrifice the first AND second corners to correctly execute the third corner

T8 - enter from the far right, very late apex , turn parallel to left side of track

pause & stay parallel to left side, don't start next turn early

T9 - enter from far left side, late apex on right side curbing

T10 - enter from mid-track, turn in toward normal late apex

unwind wheel sweep to right side of track at exit, and onto throttle

Opening radius ... Turn 11 Tooele

Turn looks like a normal left, with a late apex BUT...

It opens a bit, and adds an uphill for greater grip mid corner through the exit

requires great vision and a clear sight picture to add throttle early

Look and think through the turn WAY ahead ...

geometric apex, pretty much mid corner or a smidge past

turn in earlier than you think, get decisive turning done by apex

firmly feed on throttle as wheel opens quickly to a wide right track out

Sacrifice Left... Turn 13 Clubhouse

late apex outside - inside – mid-track exit

car position at entry to turn is far right side of track

fairly heavy braking, patient turn in

mid-corner apex, goal is to exit far right side at curbing

move car to mid-track for turn-in to T14, Windup

Round Sweeper... Turn 14

Late, late apex outside - inside - inside

car position at entry to turn mid-track

patient, round arc at turn in

stay mid track halfway around corner, gradually move right to curb

late apex, almost on the short chute between 14 & 15

finish turn mid- track, look left toward T15 apex

Round Sweeper... Turn 15

late apex outside - inside - outside

car position at entry to turn is middle of track

RULE OF ONE! single wheel input... Good vision = smooth, round arc

Arc brings you inward to the late apex, then

Same arc carries you back out toward the pit wall at corner exit

At the apex begin unwinding wheel, add throttle to move to far right



