

NNJR “Trackside” Classroom

Proper Track Braking Technique

Mario Andretti: “Its amazing how many drivers, even at the F1 level, think the brakes are for slowing the car down.”



Disclaimer

The techniques shown here have been compiled from experienced sources believed to be reliable and to represent the best current opinions on driving on track. But they are advisory only. Driving at speed at Lime Rock, Watkins Glen, or any other track, requires skill, judgment and experience. These techniques assume the reader has high performance driving knowledge and applies them as applicable to their level of driving experience.

High-performance driving can be very dangerous, carries inherent risks and may result in injury or death. NNJR and PCA make no warranty, guarantee or representations as to the absolute correctness or sufficiency of any representation contained herein. Nor can it be assumed that all acceptable safety measures are contained herein or that other or additional measures may not be required under particular or exceptional conditions or circumstances.

- The Learning Sequence
- Corner Entry Steps
- Braking/Tail Braking
 - Lime Rock examples
 - Watkins Glen examples
- Summary



“High performance driving is all about the correct timing, application of pressure, and release of the brakes.”

-- Ross Bentley

NNJR “The Learning Sequence”



1. The line
 - i.e. the right one for you and your car
2. “Corner exit car control”
 - Maximize exit speed—and safety
 - “Throttle Application Point”
 - “Wide Open Throttle”
3. Braking and entering the turn
 - Smooth transition from straight to throttle application point

Carl Lopez: *Going Faster!*



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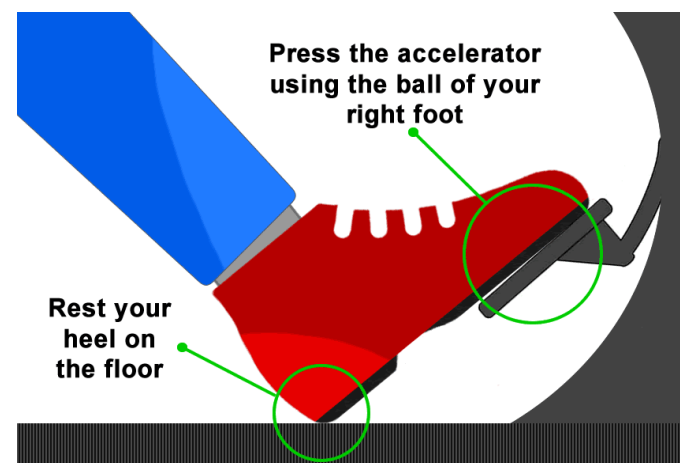
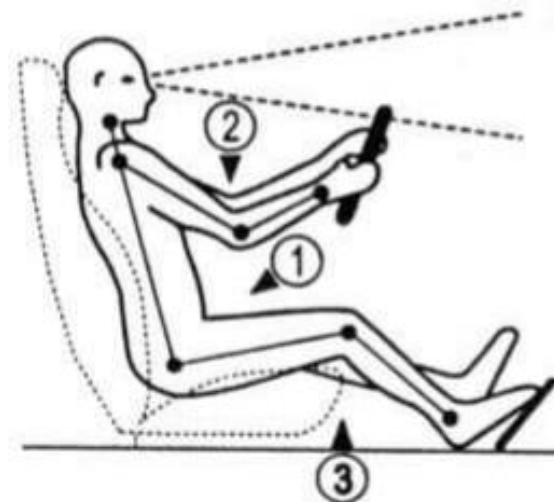


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NNJR Braking Basics



- Proper Seating Position
 - Can't be reaching with right foot!
- Right heel stays on floor
 - Pivot point between gas and brake
- Pick consistent point to begin braking
 - Be aware of varying approach speeds
- Heel and Toe
 - Learn on the street, not the track

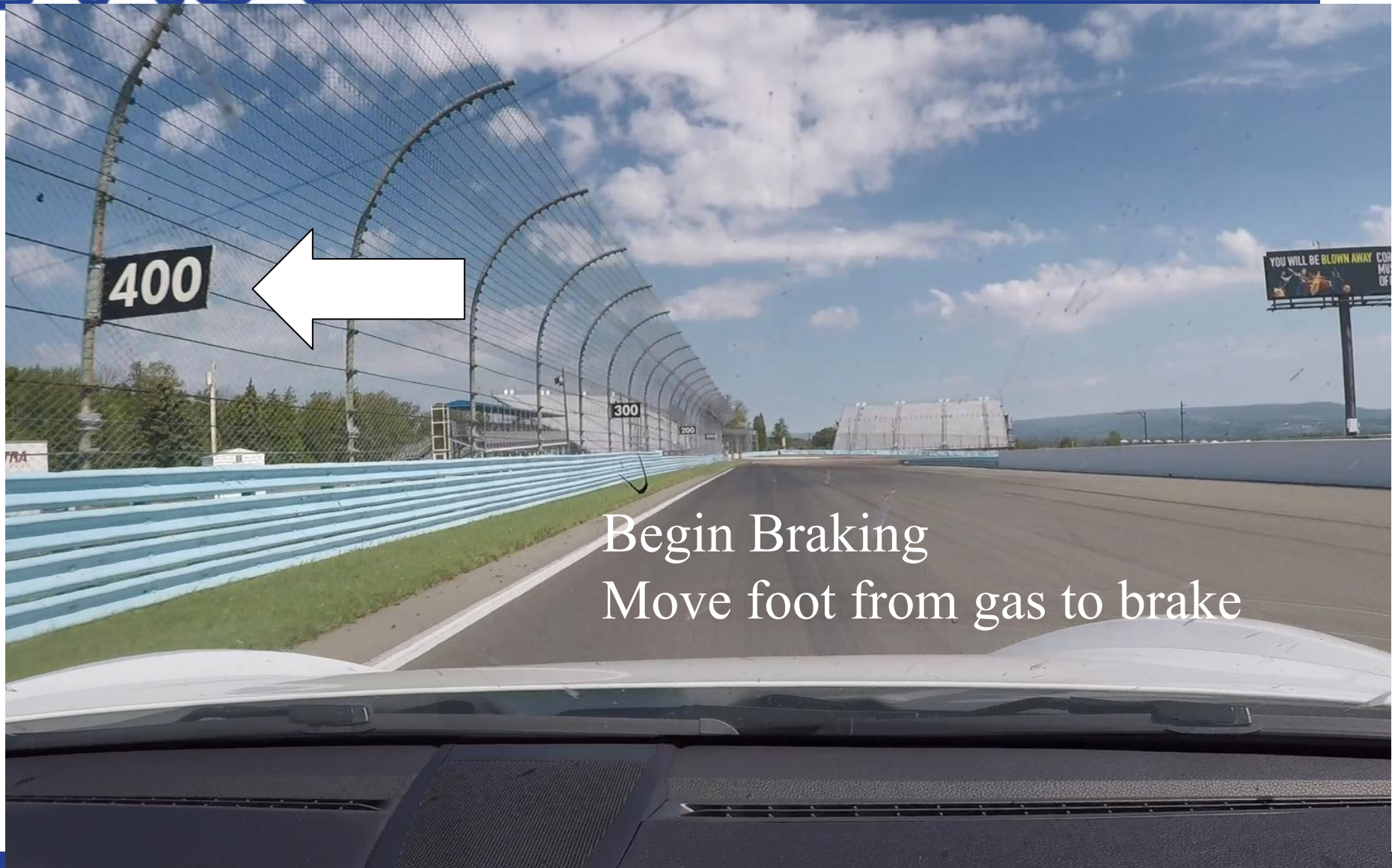


1. Throttle to Brake transition
2. Straight line deceleration
3. Trail Braking (braking while cornering)
 - Most, but not all corners
4. Brake to Throttle transition

Carl Lopez: *Going Faster!*

“I spend more time coaching drivers on their brake release than anything else.”

--Ross Bentley



NNJR Straight Line Braking



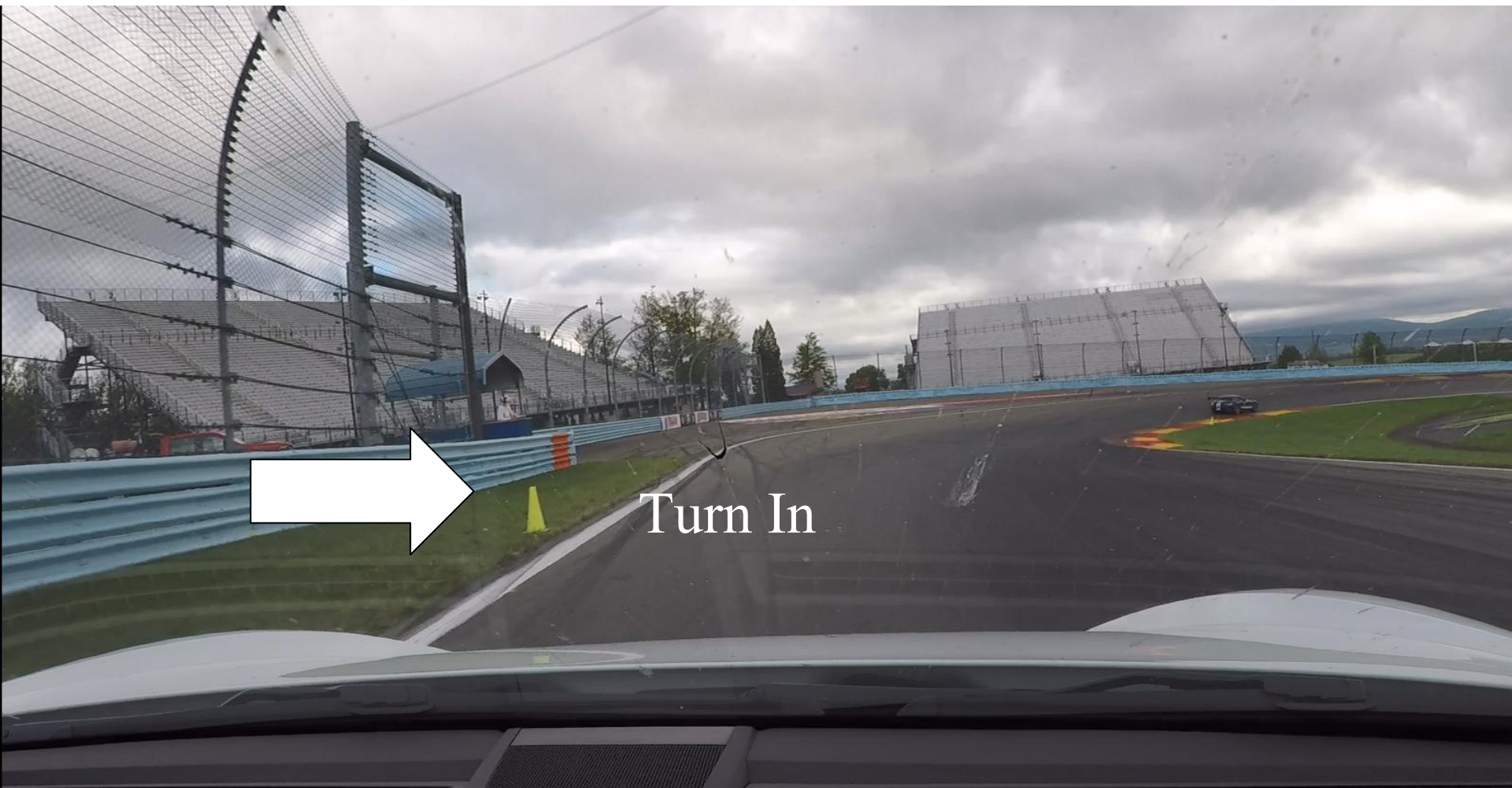
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NNJR End of Braking (EOB)



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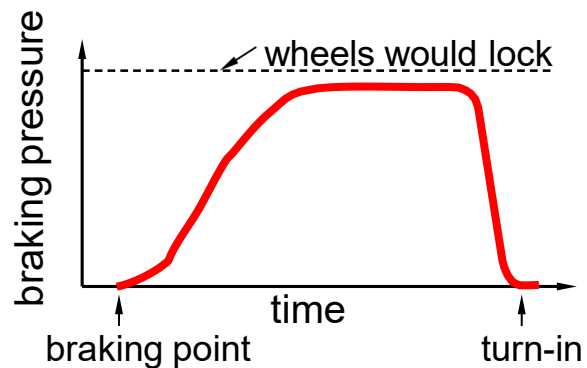
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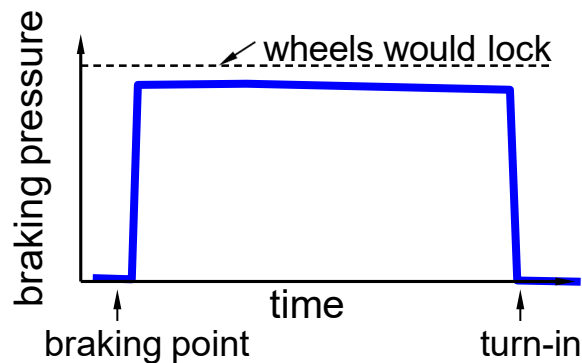


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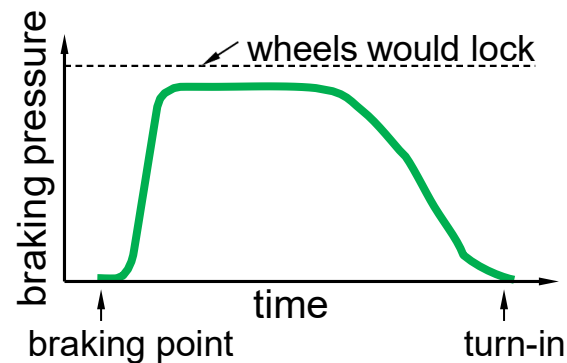
NNJR Hard Braking Zone



smooth on, quick off



full strength, full time



on hard, then ease off



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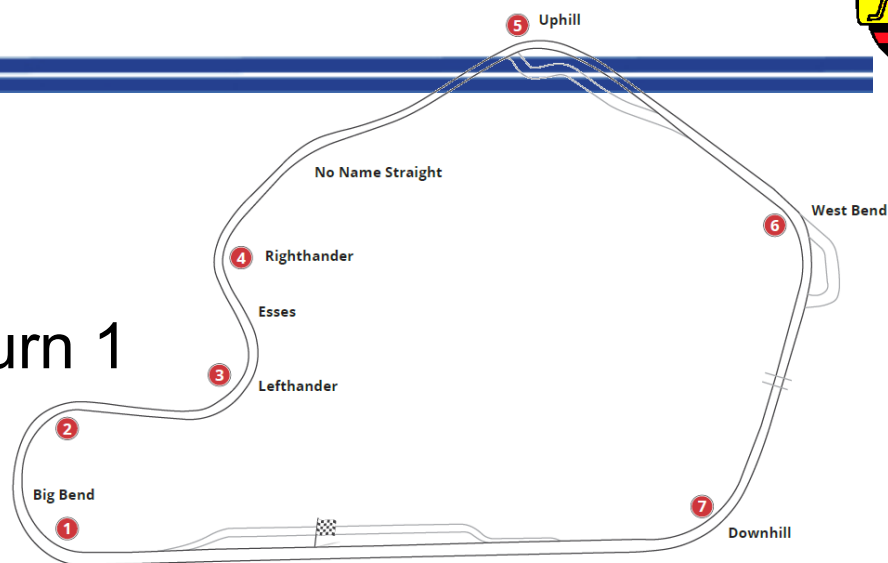
NNJR Common Braking Mistakes



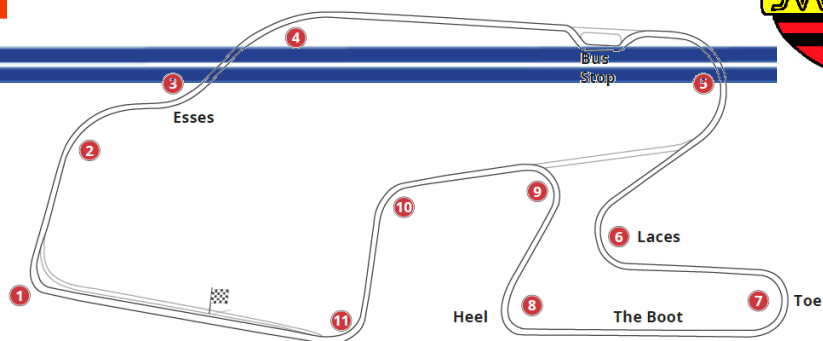
- Green run group
 - Inconsistent braking point, brake pressure
 - “Jump” on and off the brake pedal
 - Too little pressure early, too much late
- Yellow and Blue run groups
 - Too little pressure early, too much late
 - Jump from heavy brake to heavy gas
 - Trying to “brake late”



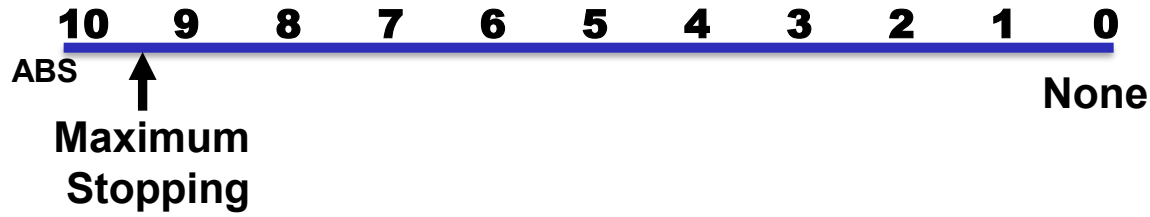
- No slow corners
- High speeds
 - Only one heavy brake: Turn 1
- Trail braking
 - Turn 1: Classic long trail
 - Left hander
- Elevation helps and hurts braking
 - Uphill, Downhill
- Fast corners
 - Uphill, West Bend, Downhill
 - Very little trail brake (most braking in straight line)
 - Require gentle braking to avoid upsetting the car



- No slow corners
- High speeds
 - Heavy brake zones: Turn 1, Bus Stop
- Trail braking
 - Turns 6, 8, 9, Bus Stop
- Elevation helps and hurts braking
 - Turn 6: downhill vs. turn 7 uphill
- Turns 10 and 11
 - Fast Corners
 - Very little trail brake (most braking in straight line)
 - Require gentle braking to avoid upsetting the car



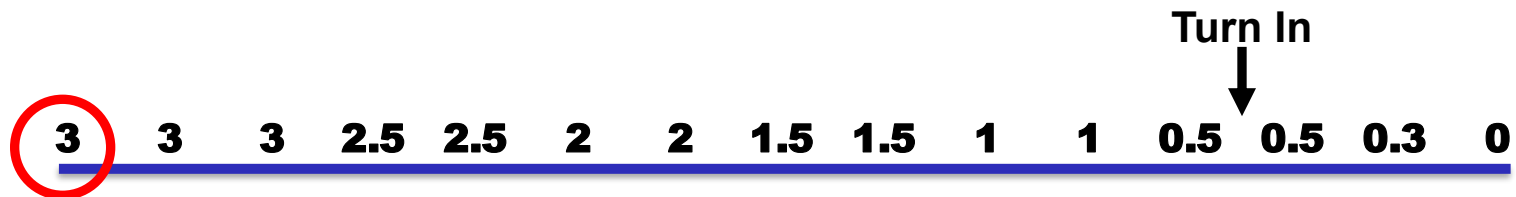
- Focus on brake pressure



- Hard braking (WG, VIR Turn 1)

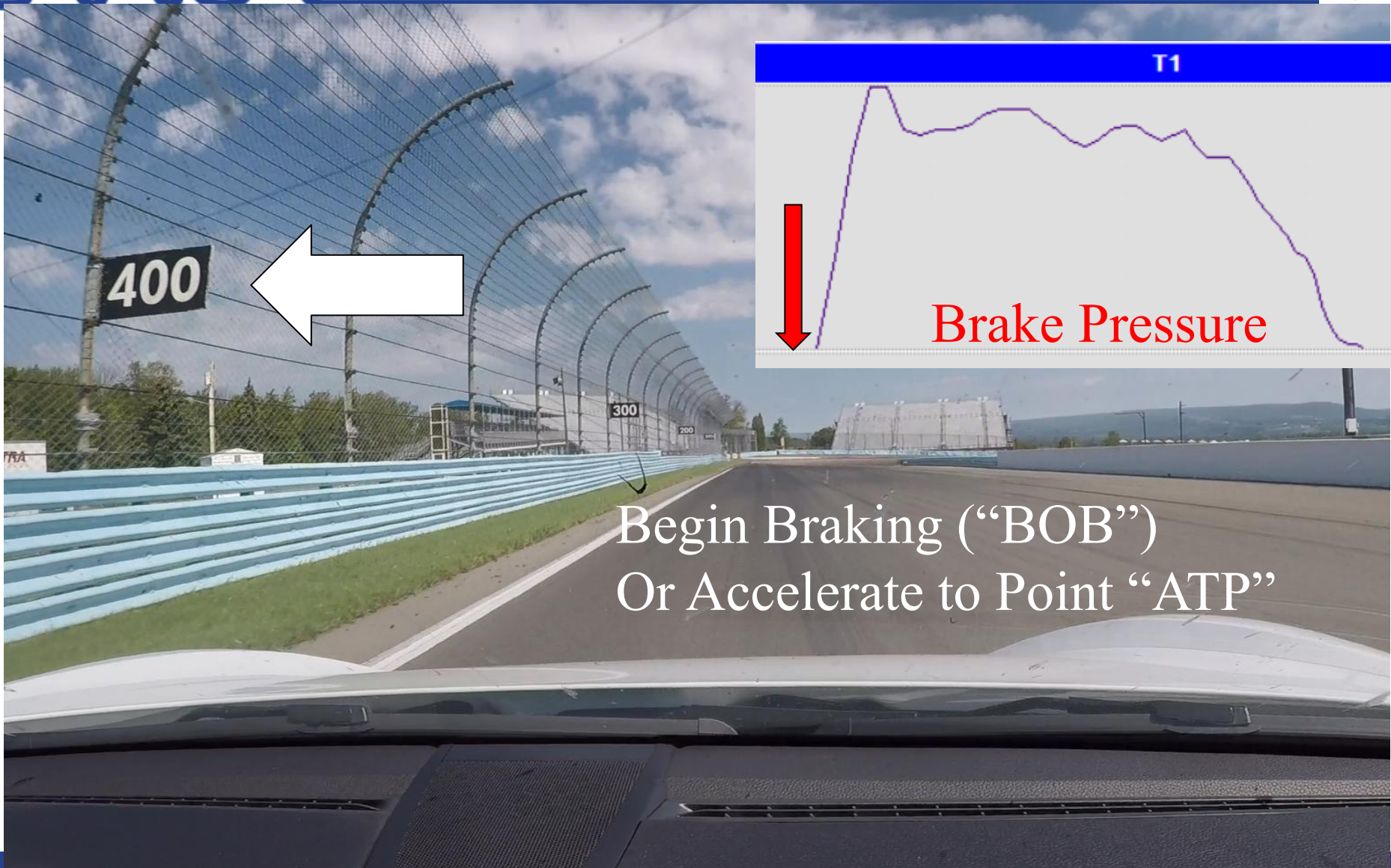


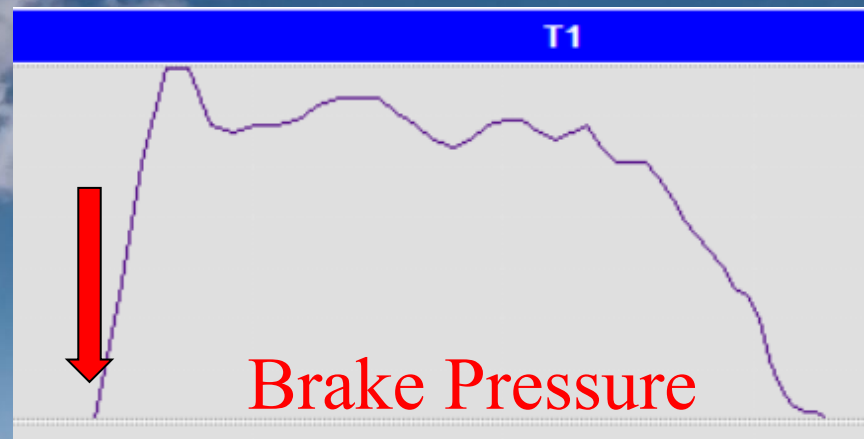
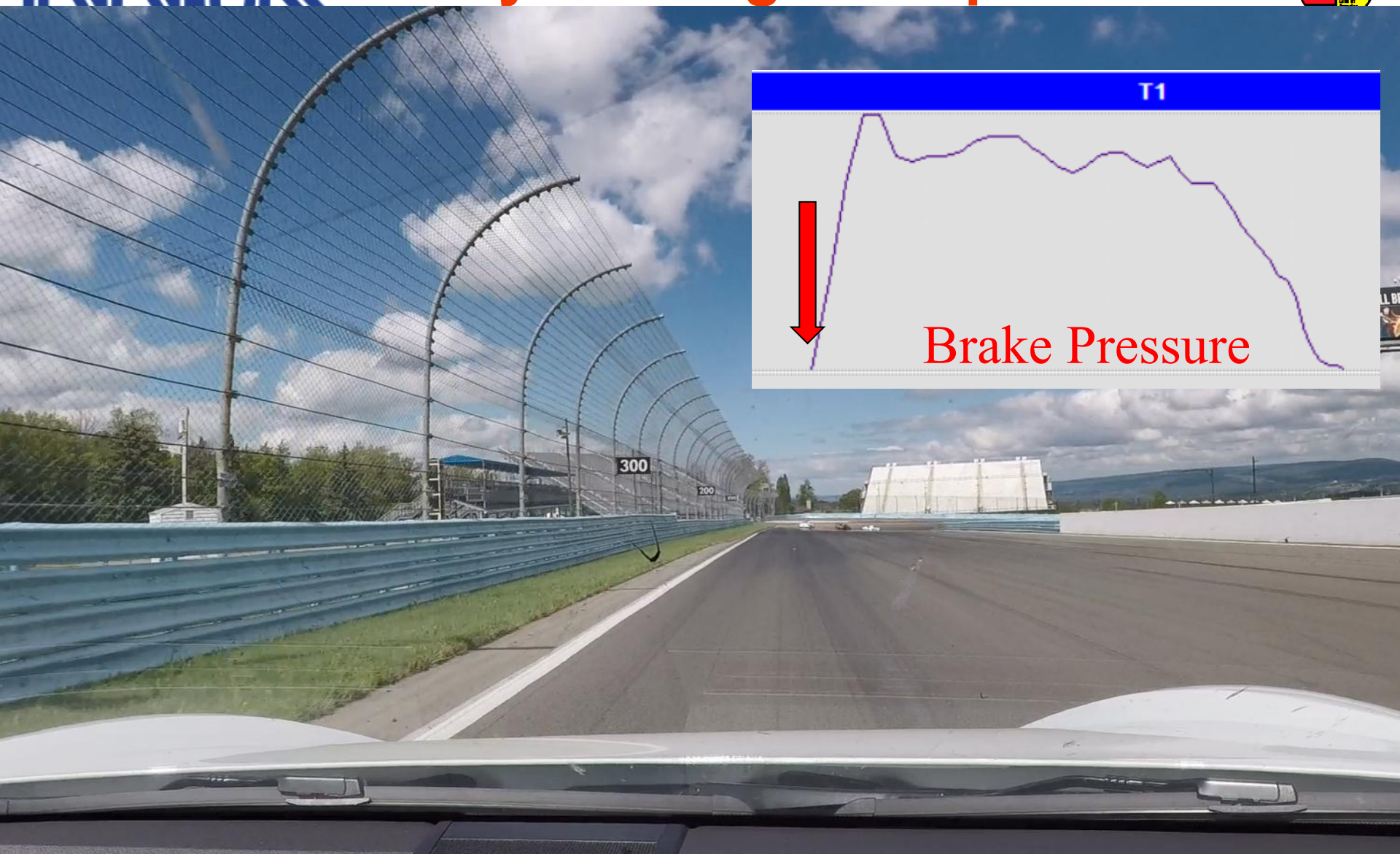
- Fast Corners (WG, VIR Turn 10, LR Uphill, West Bend, Downhill)



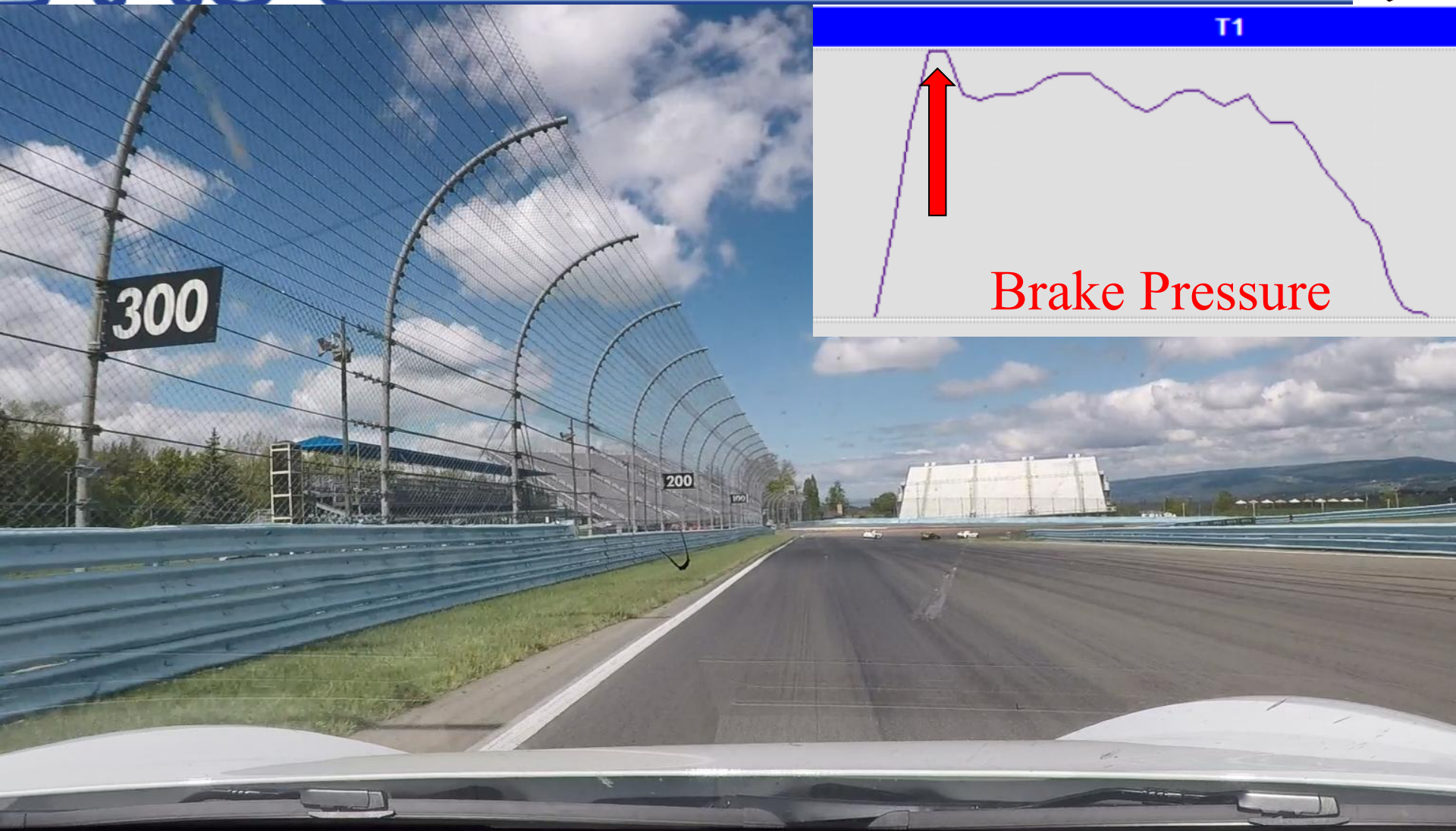
- Focus on End of Braking (EOB)
 - Much more important than start of braking
 - Always better to begin braking a few feet earlier and modulate
 - End of Braking is a critical Reference Point
 - Same point, speed (+/- 1-2 mph) each lap
 - First Step: Be aware of brake pressure at Turn In
 - Should be the same each lap

NNJR Heavy Braking Example



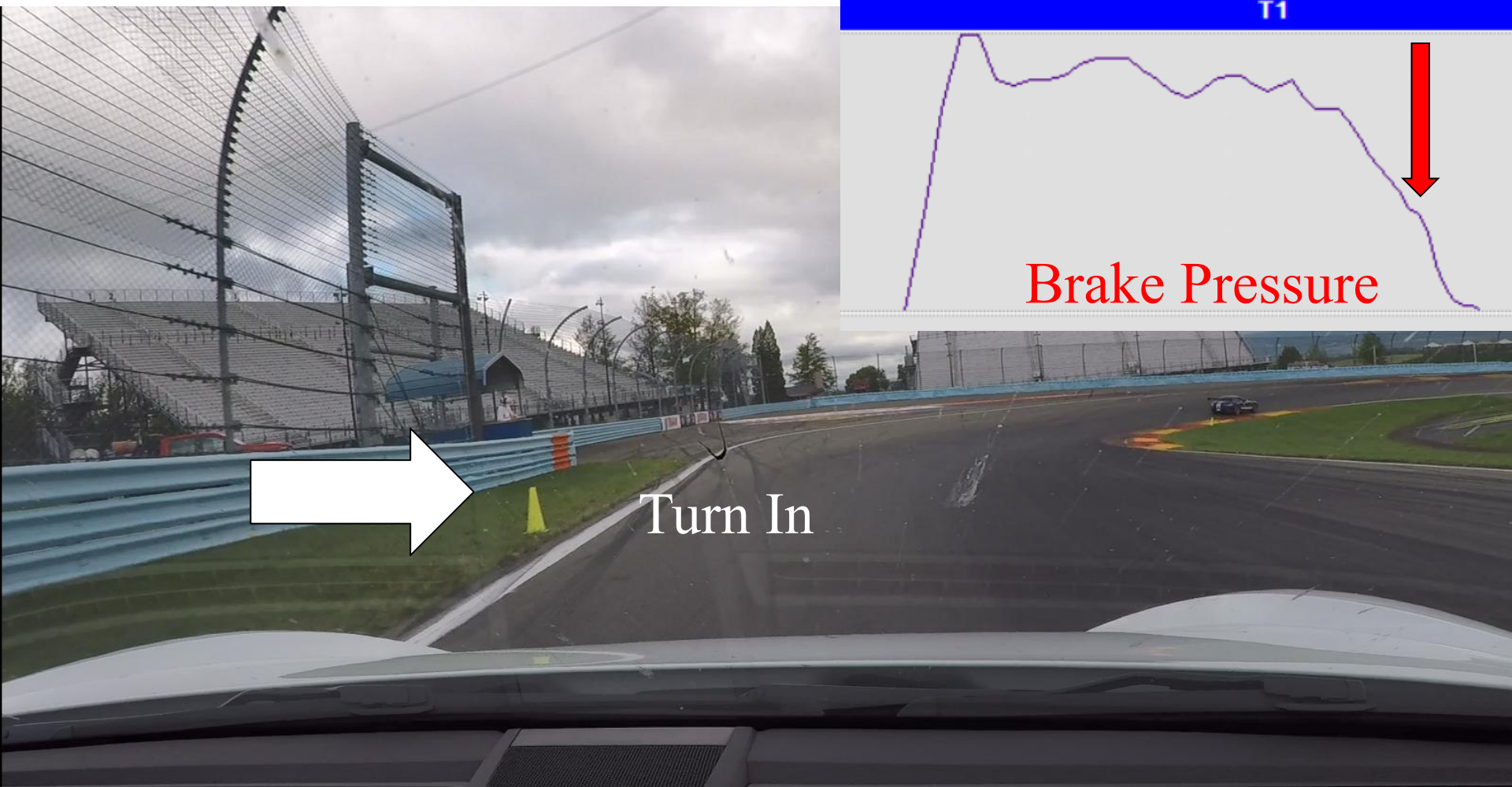


NNJR Full Brake Pressure

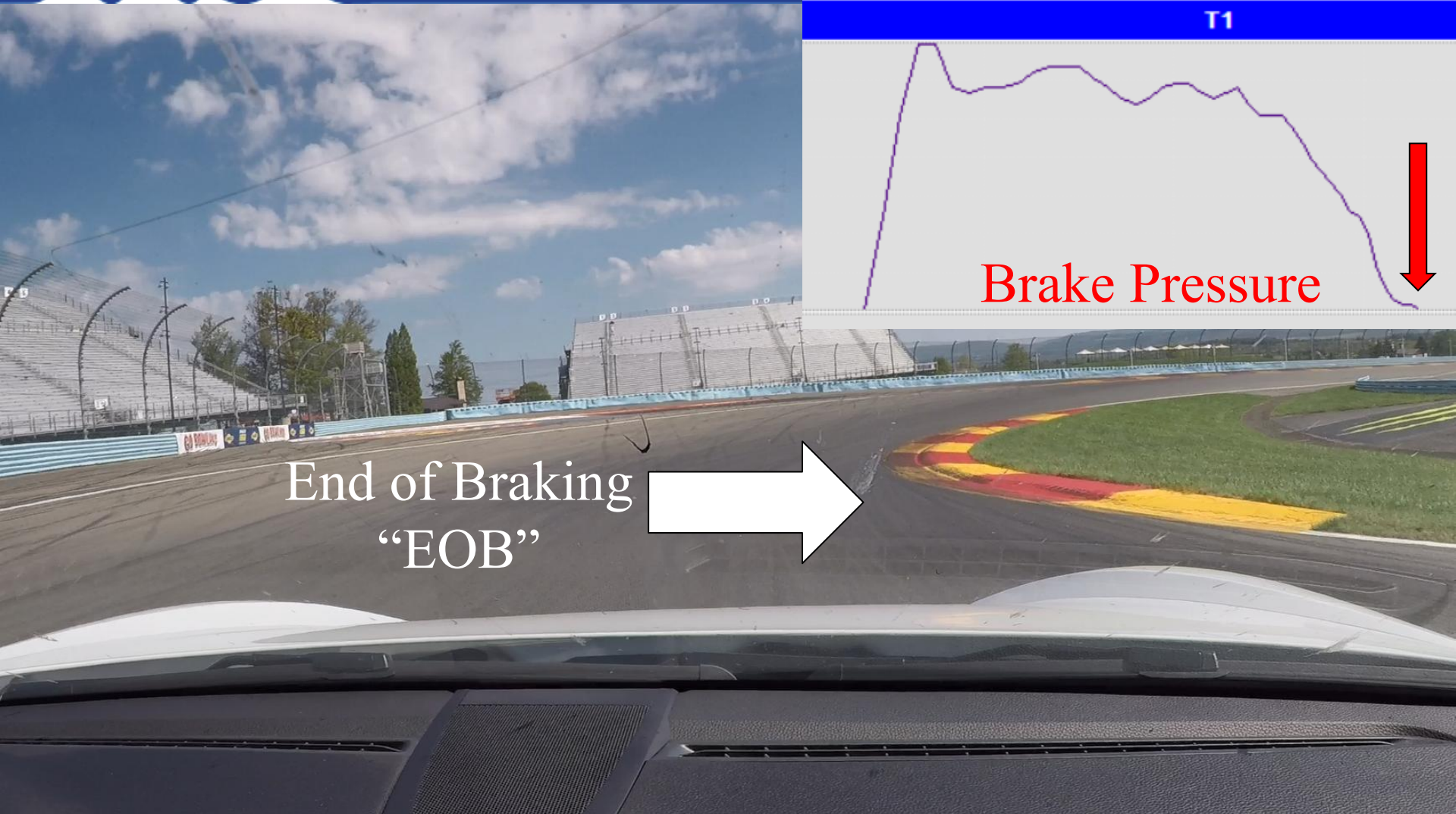




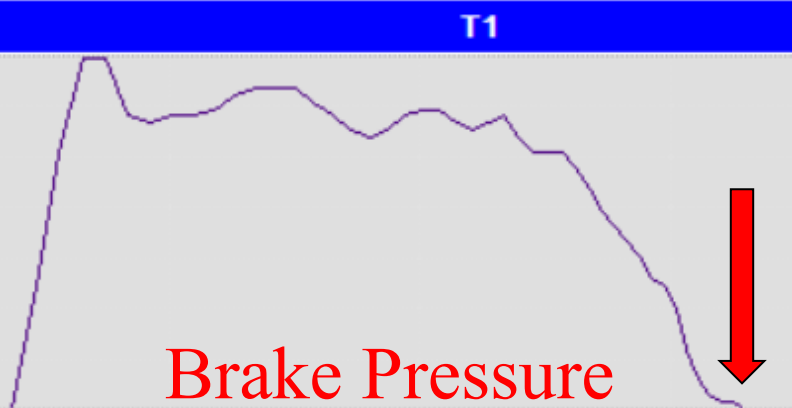
NNJR Trail Braking: Preparing to Turn



NNJR End of Braking



End of Braking
“EOB”



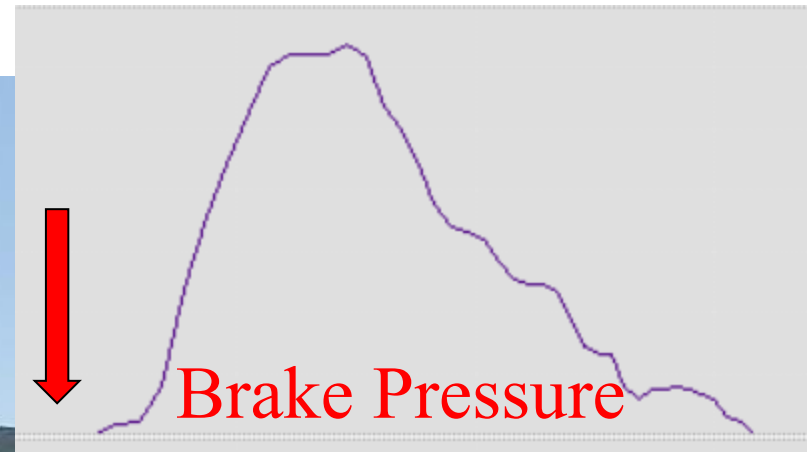
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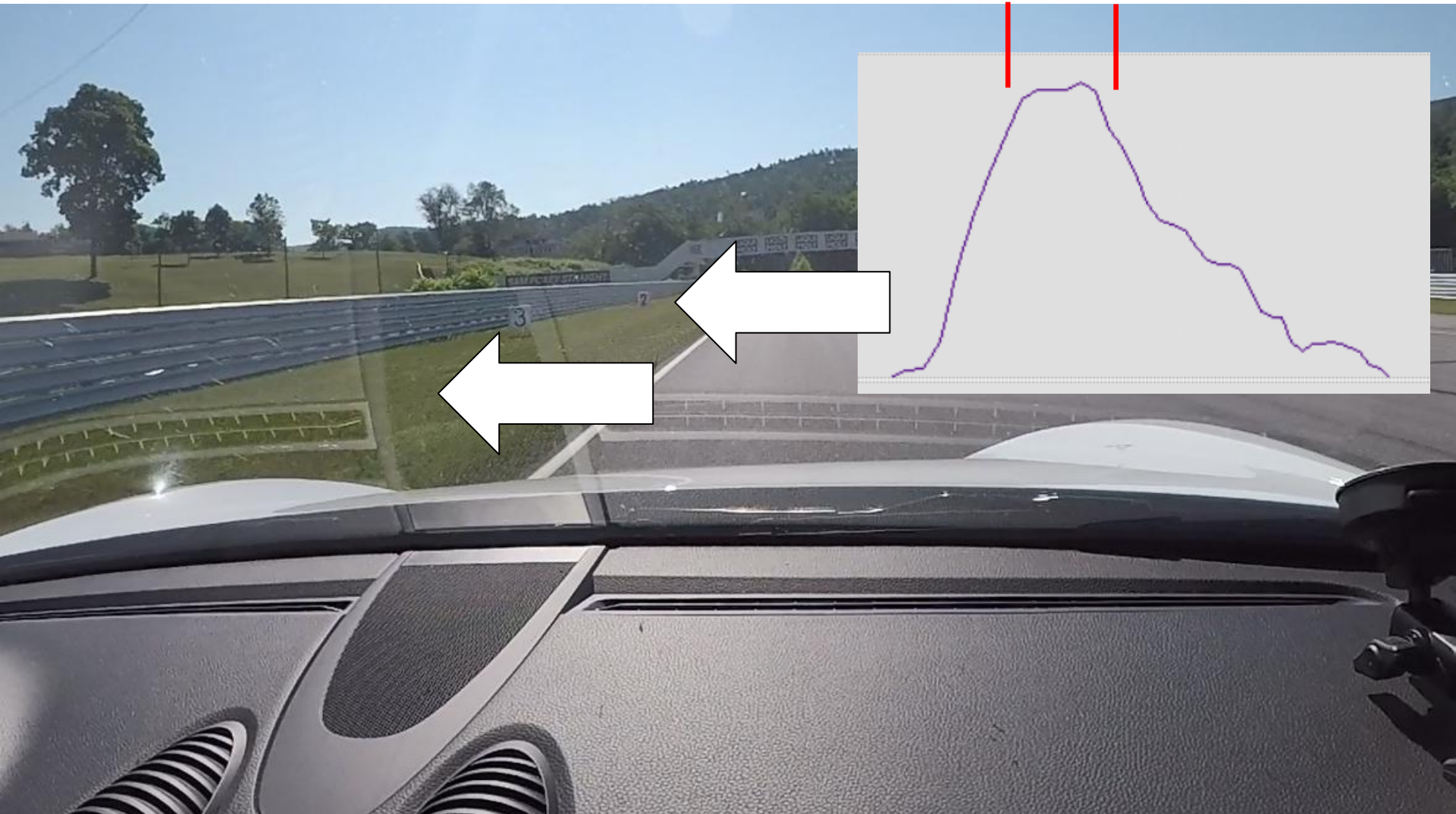


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Begin Braking
Accelerate to Point
Move foot from gas to brake

NNJR Heavy, Straight-Line Braking



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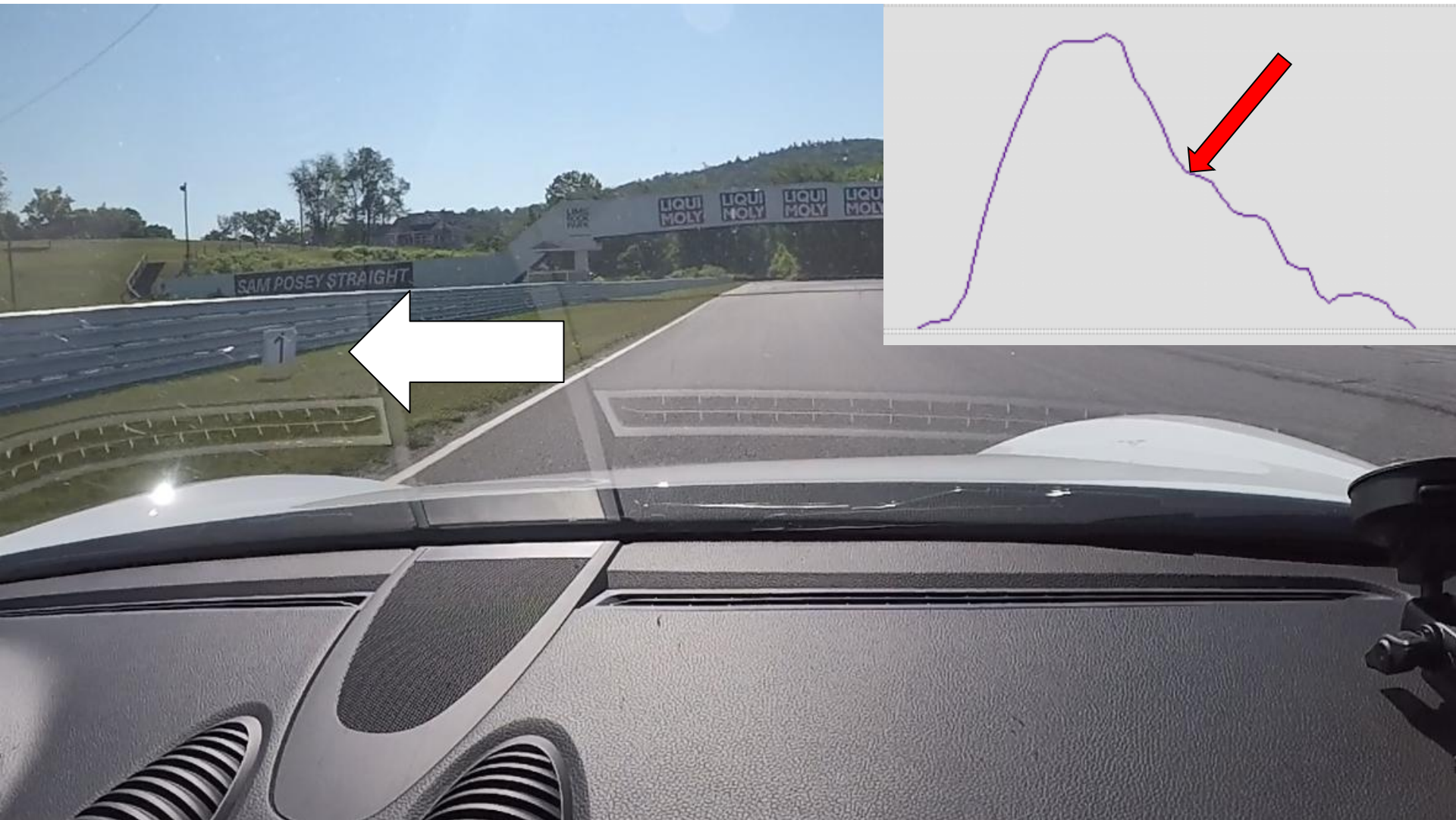
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NNJR Slowly Reduce Braking



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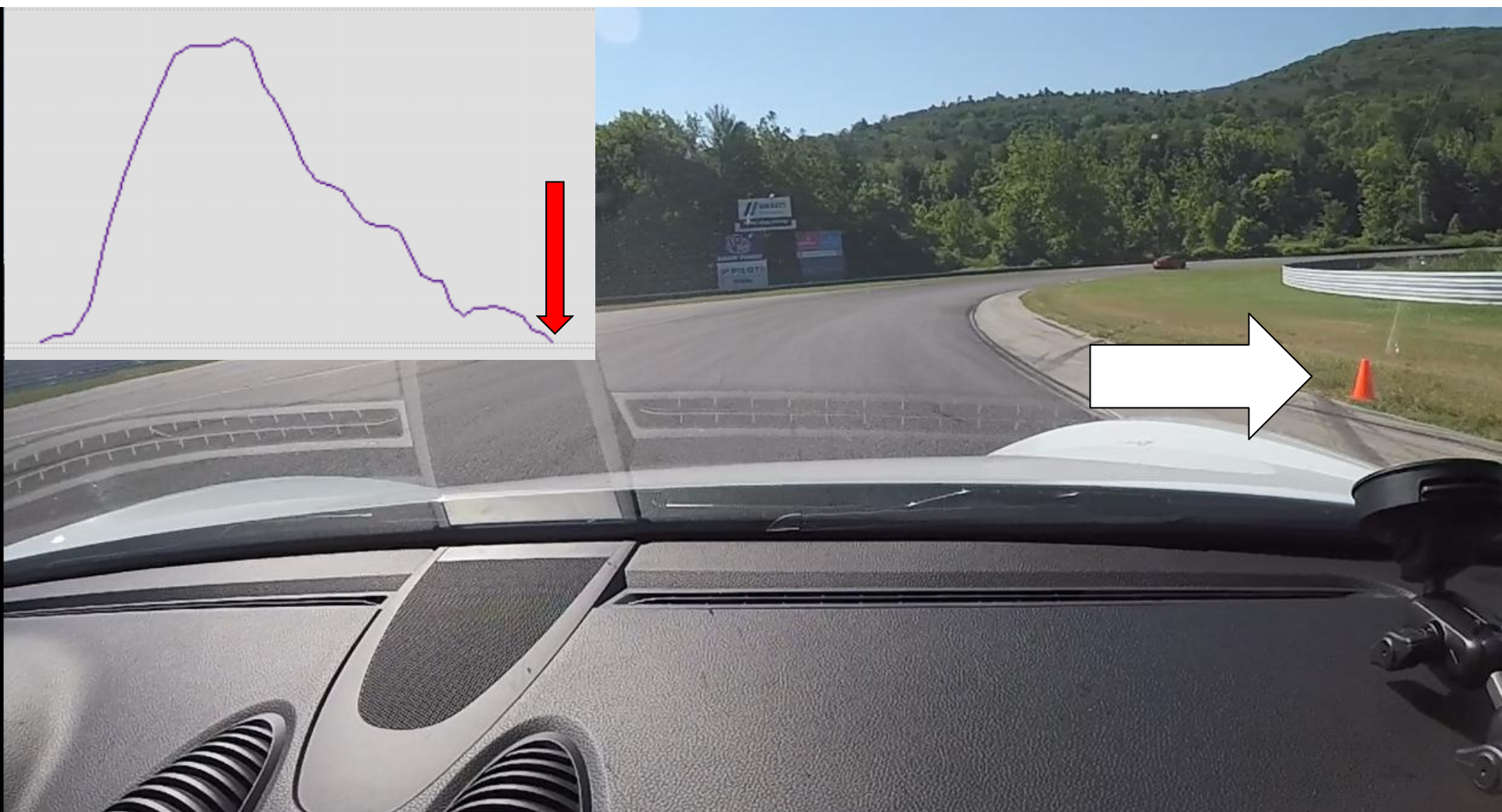
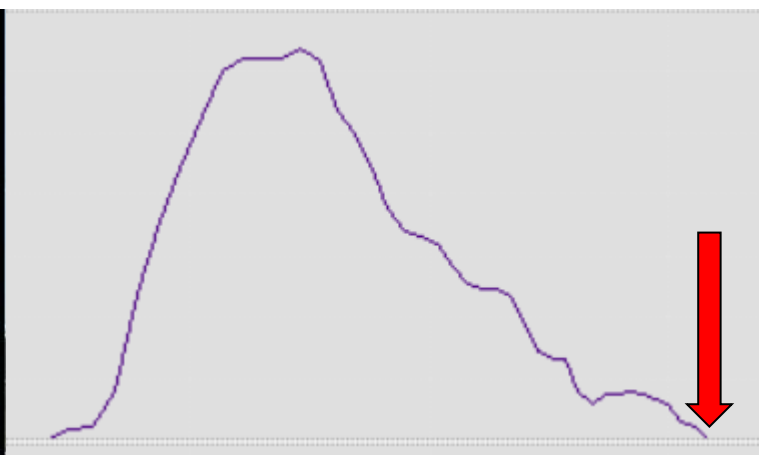
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NNJR End of Braking (EOB)



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NNJR Braking: Summary



- Learn track braking technique
 - Basics: seating position, heel pivot
 - Hard initial brake, gentle release
 - Most braking in first third of brake zone!
- Amount of trail braking
 - Varies by corner (a lot)
 - Affected by elevation, corner length, etc.
- As you get better
 - Focus on EOB, not BOB
 - Work on smooth transition off brake on to gas
 - Goal: imperceptible

Note: practice smooth brake release on the street!



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