



Lane Toss Exercise – Flash Card

Note: See that each student masters each level before teaching the next.

1. Flick: Teaching ability to keep vision up and react to the scene, not expectations.
 - a. Only steer/brake. Stop in the lane.
 - b. Watch eyes and hands.
2. Avoidance: Teaching to use throttle to help maintain stability.
 - a. Drive through if possible.
 - b. Jerky driver moves will result in oversteer condition.
 - c. Eyes should move beyond lane as soon as light recognized.

Lane Toss Exercise – Details

What exercise could we do that would more closely simulate some of the high speed maneuvers a driver in the "big" city will experience? It's not if, but, when they will have to respond. The club probably has a letter a year from someone who has just avoided serious injury or accident because of these basic skills. This is a wonderfully humbling experience.

Level 1 - FLICK- FLICK

Assumption: We are assuming that a typical novice driver will reflexively try to stop instead of attempting to avoid an unexpected obstacle, due to fixation of attention on obstacle/obstruction in the road.

Goal: Student must learn to keep vision up and scanning the horizon. Consequently student must learn to look where they wish to go, and not look at what they wish to avoid.

Operation: Setup specific to available equipment. Student accelerates to suitable speed. At Reaction Line, Instructor indicates red lanes. Student is to quickly execute two sequential turns (left/right or right/left) to bring car into the green lane. Nature of control input should be "flick-flick", followed by stopping in the lane.

Critique: As much as possible, watch where student is looking as they approach the Reaction Line. Watch for slow inputs; steering moves must be crisp and precise. Students will naturally anticipate a lane; wrong turns indicate a failure to keep vision up and scanning.

Level 2 – AVOIDANCE

Assumption: We are aware that alert, controlled avoidance of an unexpected obstacle may require the driver to drive past the obstacle rather than stopping next to or before the obstacle. The vehicle dynamics created by brake-turn-accelerate are potentially more unsettling to the car than brake-turn.

Goal: Student should learn how to use the throttle to modulate steering input and to maintain balance during emergency maneuvers.



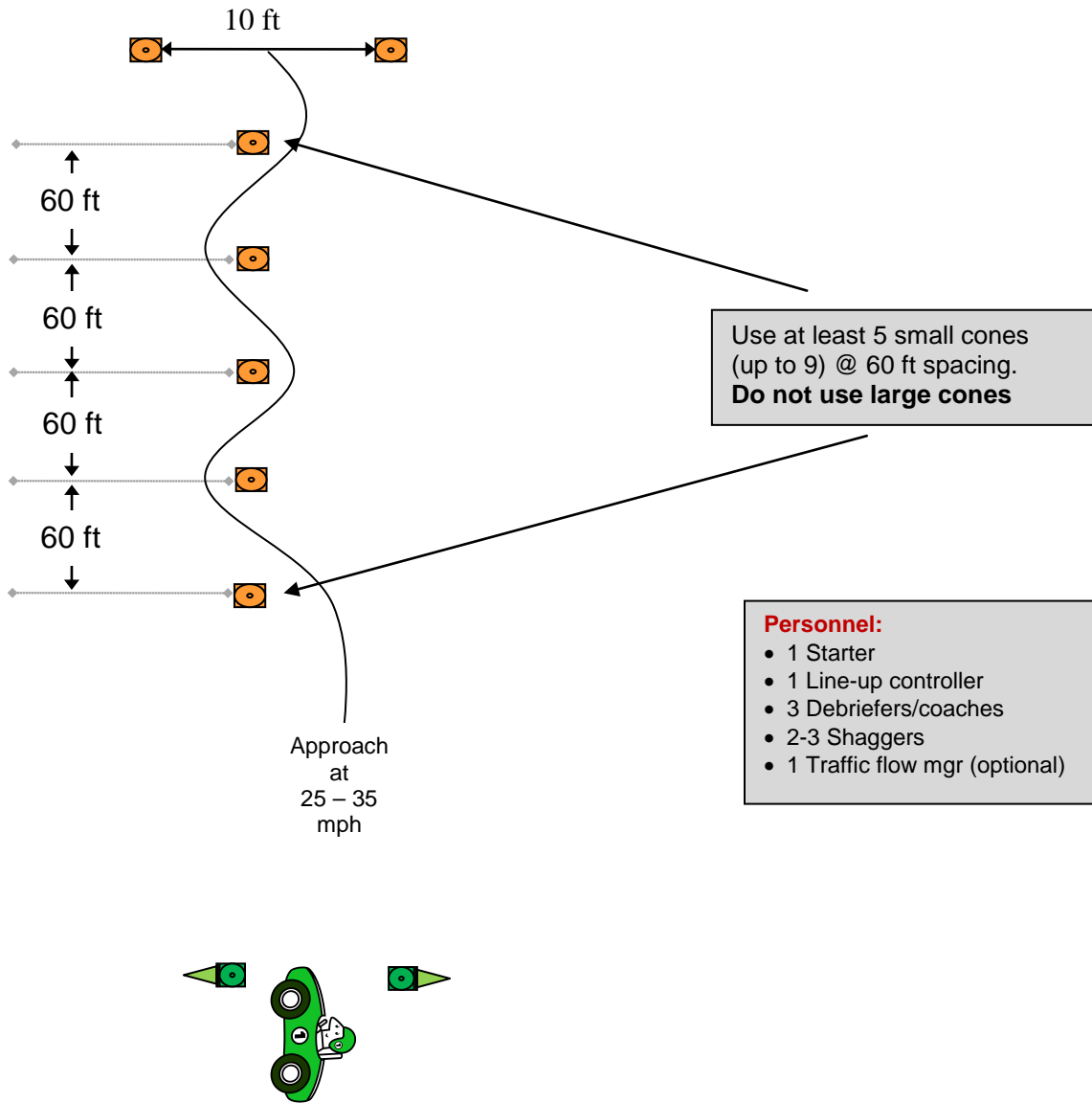
Car Control Exercises

Operation: As above, except that students accelerate through the green lane. The acceleration should begin concurrent with the second steering input (for example, the "right" of a left-right move to slip into the left green lane).

Critique: Abrupt control inputs will result in spins, so Instructors should give students a wide berth at the lanes. Listen for use of throttle. Beware of Red Mist as students begin to grasp the concept of using the throttle to steer the car.



Slalom Exercise - Setup





Slalom Exercise – Flash Card

Note: See that each student masters each level before teaching the next.

1. Weight Transfer: 25 mph. Identifying moving weight without loss of control.
 - a. Close not important.
2. Vision: Learning to look ahead.
 - a. Keeping vision and conscious thought down the road.
 - b. Watch students eyes.
 - c. Should be consistent and close to cones.
3. Control Interaction: Using the throttle to adjust the attitude of the car during turn-in.
 - a. Watch for Oversteer and suspension upset from jerky inputs.

Slalom Exercise – The Details

Once again, we feel that there are levels to this exercise that make it an invaluable tool to both the "teacher" and the student. When the traditional single cone slalom is done well, the car is in constant transition, and the student can experience becoming more and more out of control of a pendulum effect....in a safe place to experience it. Many other versions of the slalom can be set up...w/ cone spacing variable throughout, closer and closer spacing at the finish, double cones and wider spacings to experience lift , turn, throttle, lift, etc. Start the student out with the basics and build from there.

Level 1 - WEIGHT TRANSFER

Assumption: That the typical novice driver is unfamiliar with and/or may be frightened of experiencing lateral loading on the car.

Goal: Familiarize student with the feeling of lateral forces and how that can move from side to side without losing control of the car.

Operation: Student accelerates to 25 mph (stay relatively slow). Negotiates slalom course turning steering wheel progressively left than right, at steady throttle. No straight-ahead steering, no throttle modulation

Critique: Watch for too much speed, as evidenced by cones down. Listen for steady throttle setting.

Level 2 – VISION

Assumption: That the natural tendency for untrained drivers is to look where the car is going, not where one wishes the car to go. This prohibits appropriate planning and setup for subsequent cones on the slalom (or avoidance on the highway...trees in the woods, etc.). This is a critical skill for students to develop prior to lapping on the track.

Goal: Students are to learn to look 3-4 cones beyond the next cone in the slalom.

Operation: Accelerate to 30-35 mph. Execute slalom at steady throttle, with continuous left-right-left-right turning motion on steering wheel.



Car Control Exercises

Critique: Typically, the student who is watching the next cone will knock down or drive over the third or fourth cone after failing to keep the vision far ahead.

Level 3 - CONTROL INTERACTION

Assumption: The sensitive balance and total interdependence or interaction of throttle and steering is not appreciated by the novice or "typical" driver.

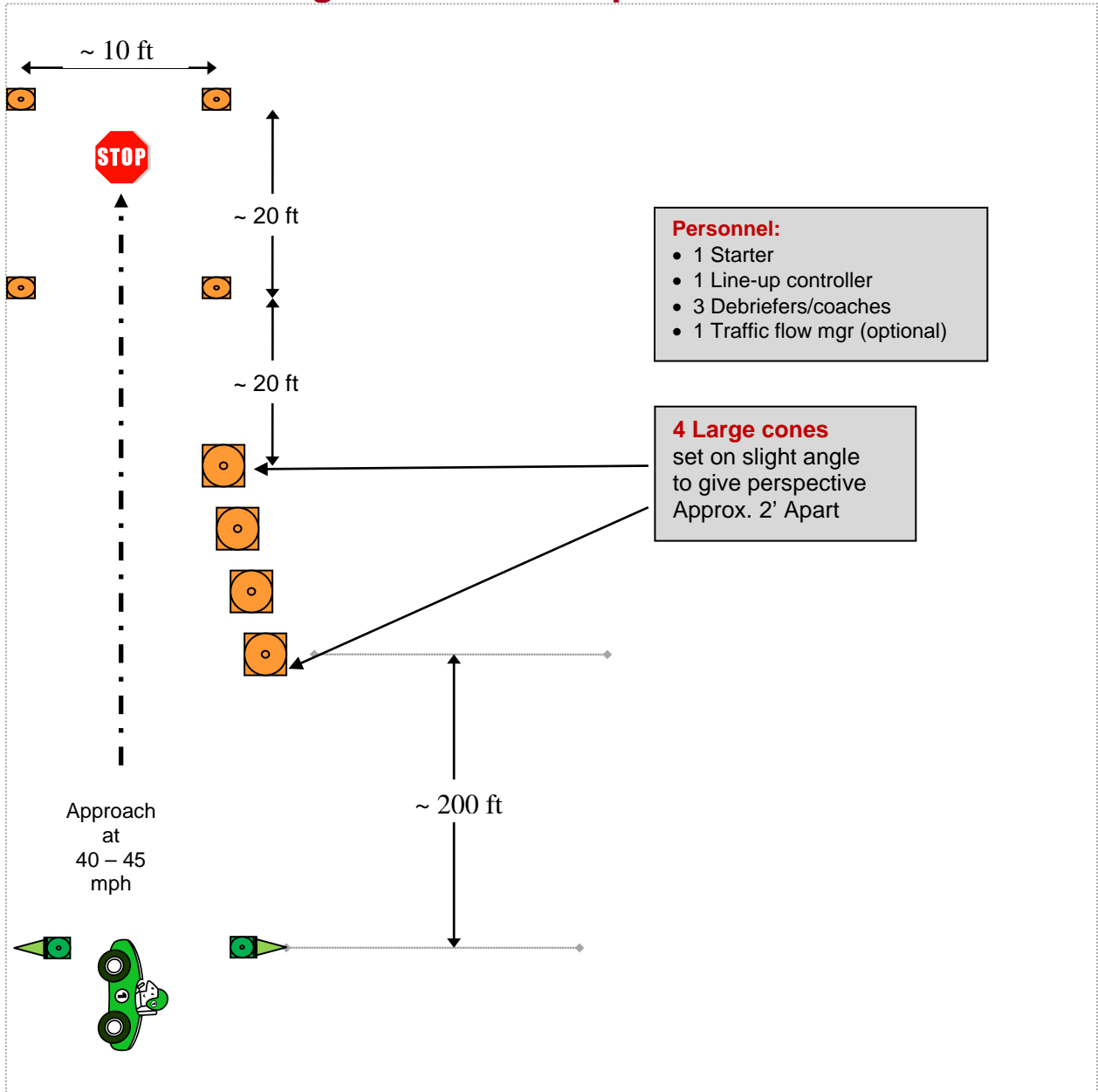
Goal: Experienced students should learn how to modulate steering response by using the throttle.

Operation: *NOTE: Students who are not yet routinely exhibiting an "eyes up" driving technique are not ready to learn this interaction!* Student accelerates to 30-40 mph. As turn-in is initiated before cone, throttle is slightly lifted to transfer weight to outside front tire. As car turns, student straightens the steering wheel and accelerates to next turn-in point. Steering input will be left-straight-right-straight-etc...

Critique: Watch for too much speed (cones down), abrupt inputs (spins). Not all students will be ready for this aspect of the slalom; do not push it as the reluctant student will not be tolerant of the spin.



Threshold Braking Exercise - Setup





Threshold Braking Exercise – Flash Card

Note: See that each student masters each level before teaching the next.

1. Absolute: Appreciate full brake power, engage ABS.
 - a. Stopping point not critical.
 - b. No release until stopped.
2. Release: Smooth and gradual release of brake pedal.
 - a. Chauffeur stop.
 - b. Watch car nose.
3. Application: easing the car into a braking mode.
 - a. Avoid sudden weight change.
 - b. Watch car nose.
4. Threshold Braking: Try to beat the ABS.
 - a. Learning pedal Sensitivity under hard braking.
 - b. Watch front tires.
5. Goal-Braking: stop in the box.
 - a. One application, hold pressure, one release.

Threshold Braking Exercise – The Details

Braking Philosophy: We are assuming the instructors will encounter students with widely varying experience levels. We hope that instructors will realize that we are trying to give just the "tip of the iceberg" in terms of techniques to the students. However, we are letting them know that there are at least five levels of skill that they can exhibit/aspire to in just this one exercise. Where possible, instructors should adjust the goals for each repetition in the exercise process, to the student and their skill level. Even more importantly, we want all instructors to understand these levels, and encourage students (and themselves) to progress in their mastery of these elements.

Braking correctly may well be the most difficult task to do well in the car. Operation: The student should accelerate to 40-50 mph and hold their speed steady. At the Brake Line/Cone, the student should apply the brakes with maximum strength. The students should be instructed not to let pressure off the brake pedal until the car has completely stopped. Initially, the point where the car stops is not a critical concern. Critique: The student should bring their car up to speed well in advance of the braking line. Instructors should ensure that the student quickly gets to maximum braking; they should look for sudden nose drops and observe/listen for ABS engagement. The instructors should ensure that the student maintains full braking until the car is completely stopped; the nose of then car should bob up and rebound at full stop.

Level 1 - FULL BRAKING WITH GRADUAL RELEASE.

Assumption: Unlike emergency stopping, smooth corner entry technique on the track or highway requires a gradual transition from full braking to no braking condition.



Car Control Exercises

Goal: To help the student who is now familiar with the "full on" brake application to learn to how to ease off the brake pedal to minimize "bounce" upon fully stopping. The student can attempt to achieve a chauffeur stop."

Operation: The student accelerates their car to 40-50 mph and maintains that speed into the braking zone. At a predetermined point/cone the student should apply full brake pressure. As their car slows, the student should gradually ease off the brake pedal, so that at the moment the car is fully stopped, the student is just then off the brake pedal and the car smoothly comes to a stop with no bounce or bobbing.

Critique: Most of the critique elements are exactly as in the first level, however, at the end of braking there is ideally no nose bob. The front of the car gradually comes up due to progressive brake release. Once again, the actual precise stopping point/distance is not important.

Level 2 - SMOOTH, YET EFFECTIVE APPLICATION OF BRAKING PRESSURE.

Assumption: For beginning drivers, smooth application of hard braking is not a natural skill, yet it is required for optimal suspension and tire loading at initiation of braking (i.e. controlled weight transfer)

Goal: To help the student who is now familiar with full braking and chauffeur stopping techniques to quickly but gradually increase braking pressure when applying the brakes, in order to effect smooth weight transfer from rear to front contact patches.

Operation: The student accelerates their car to 40-50 mph. They should engage full braking at the designated brake point/line, easing into the pedal over a second or two (as opposed to the forceful "stabbing" of the pedal previously used).

Critique: The areas to watch and listen for are the same as in the first two skill levels. In addition, instructors should be alert and watch the nose of car at brake application, looking for smooth (if any) dipping and that the car maintains a constant attitude. The ABS should still fully engage.

Level 3 - THRESHOLD BRAKING

Assumption: A trained human brain-foot unit is more desirable for controlling the car under more sophisticated maneuvers, than handing the situation over to the ABS via the car's computer and hydraulic valves.

Goal: The student who has learned to smoothly apply and release the brake pedal now should learn to recognize when they are approaching forcing ABS engagement, and therefore, learn to modulate brake input to stay just beneath the ABS threshold.

Operation: The student should accelerate to 40-50 mph; smoothly apply their brakes at the brake line/point, quickly increasing pressure until ABS engages. At this point the student should practice slightly releasing the brake pressure to stay just below ABS threshold. If possible they should try to maintain this pressure on the pedal until car stops, using smooth release technique.



Car Control Exercises

Critique: All of the elements in the foregoing skill sets. In addition, Instructors should watch for inadvertent engagement of ABS (wheel jumping or sliding) and for smooth transition back to Threshold condition. The tendency will be for the student to release too much, so watch nose of car for bobbing during braking.

Level 4 - GOAL – BRAKING

Assumption: The typical novice driver is totally unfamiliar with how much or little distance is required to stop from different speeds.

Goal: Students at this level should have pretty well mastered some level of Threshold Braking skills. They should now begin to learn how to judge the distance required to stop/or slow precisely their car under maximal braking effort (at Threshold). set at end of braking zone (End Zone cones) to serve as a goal. Student is to Threshold Brake at Brake Line and take note of distance to end zone cones. At next pass, student should delay braking by that distance, so that Threshold braking sequence ends with minimal distance before End Zone cones.

Critique: Natural tendency is to adjust braking effort to accommodate the distance. Watch for this, and remind students to use full Threshold Braking and adjust their application point on their next pass.