

SAE INTERNATIONAL

**FORMULA SAE
DYNAMIC EVENTS DRIVERS BRIEFING**

Michigan International Speedway
May 2017



The Drivers Meeting will only cover selected content in this briefing plus event/weather specific updates.

Please review briefing in detail in advance.

Event captains will be available for questions after the Drivers Meeting.

General announcements

Hot area appropriate behavior and dress

- Long pants, closed-toe shoes, no running

Only four team members allowed in hot area with dynamic passes

- Course maps will be posted on SAE.org

Weather

- Track condition tire requirements (see next slide)
- Emergency locations – tunnels, listen for announcements



Weather and Tires

Track Weather Condition	Tire Type	
	Dry	Rain
Dry	✓	
Damp	✓	✓
Wet		✓

Note: If Weather Condition Changes during Endurance, see D.3.8.2 for procedure

General Safety

**Event captains wear pink vests –
find us if any problems or questions**

**SCCA Course marshals wear all
white, take direction from them while
on track**

**Data Logging locations (Endurance
only)**

- See John, Ed, Cindy, or Matt if you need to set up a data beacon
- Beacon must be set up and retrieved only when track is cold

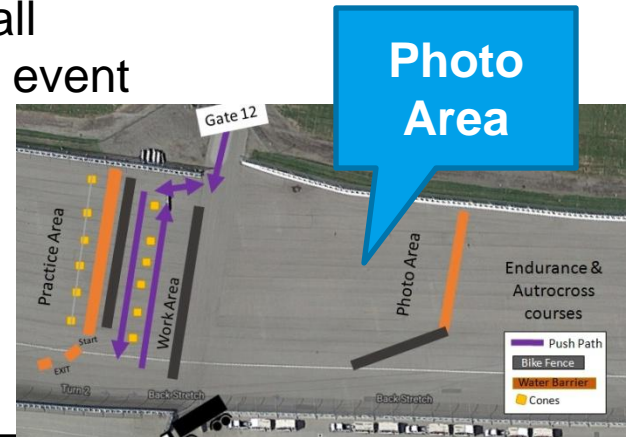


No photographers allowed on track during skidpad and acceleration events

- Photographers may take pictures from roof of suites for acceleration
- Photographers may take pictures from infield side of fence walls for skid-pad

Designated photographer area for autocross and endurance at Gate 12 behind water barrier wall

- Any photographer who crosses the water barrier wall will cause team to be disqualified from the dynamic event
- Teams may only have photographer in area when car is on track; Spotter required



Cone Penalties: Down or Out

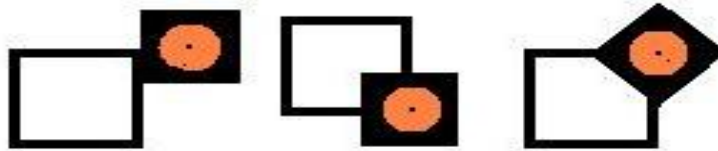
Penalty
Assessed



Cone is knocked over OR outside the box



No Penalty
Assessed



Cone remains standing AND
any part is still touching OR inside the box



Time penalties for down or out cones are event specific



Safety Steward:

John Lisiecki

Co-Steward:

Ed Arthur

Co-Steward:

Cindy Wisner

SCCA Flags for Autocross



GREEN -- Enter the course under direction of the starter.



CHECKER -- Your session has been completed



GREEN -- Enter the course under direction of the starter.



RED -- Come to an immediate safe controlled stop on the course. Follow worker directions.

SCCA Flags for Endurance



GREEN -- Your session has started, enter the course under direction of the starter



YELLOW -- Danger, SLOW DOWN, be prepared to take evasive action, NO PASSING unless directed by the corner workers



RED -- Come to an immediate safe controlled stop on the course



BLUE -- Pull into the designated passing zone to be passed by a faster competitor



BLACK -- Pull into the penalty box for discussion with the Chief Marshall or other official concerning an incident



MECHANICAL BLACK -- Pull into the penalty box for a mechanical inspection of your car



CHECKER -- Your session has been completed

Fire Safety

- **If your car catches on fire, an official will hold a fire extinguisher and wave it at you**
- **Pull over immediately, turn off the vehicle, and exit**
- **If you are able to pull off the course, it helps clean up go faster**

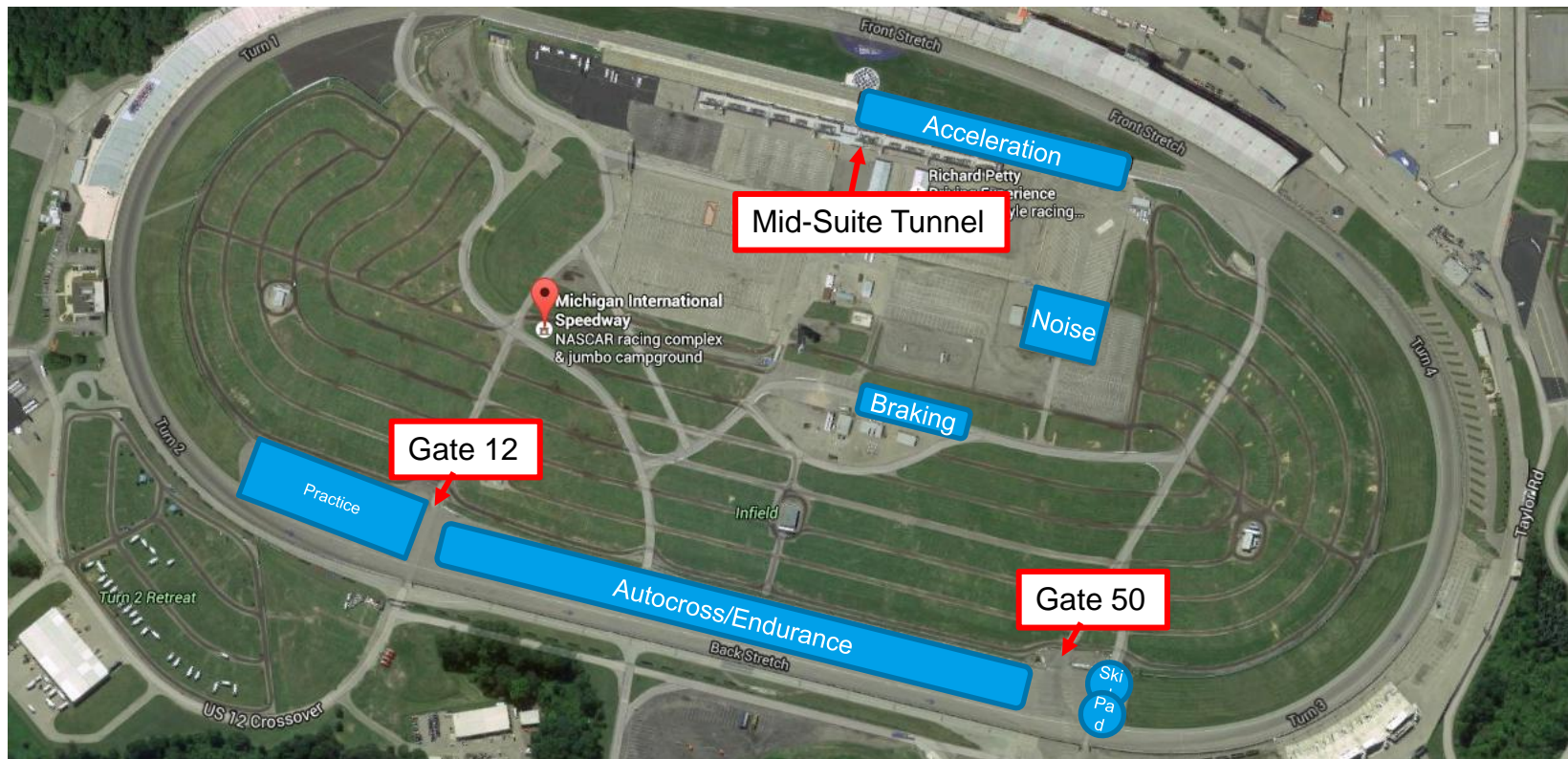


Be Prepared: Check the Rules

- If you do not understand one of the rules or have questions, **find the event Captain before the event starts**
- For teams with non-English speaking drivers
 - Please ensure prior to Friday/Saturday that all drivers understand the dynamic-area rules, flags, and procedures
 - Teams with drivers who do not speak English must provide a translator to stand near race control while the driver is on course
- The Event Captains have final discretion over operational / rules decisions



Dynamic events layout



PRACTICE AREA

GATE 12

CAPTAIN:

FRANK PUTMAN

CO-CAPTAIN:

GARY GODULA

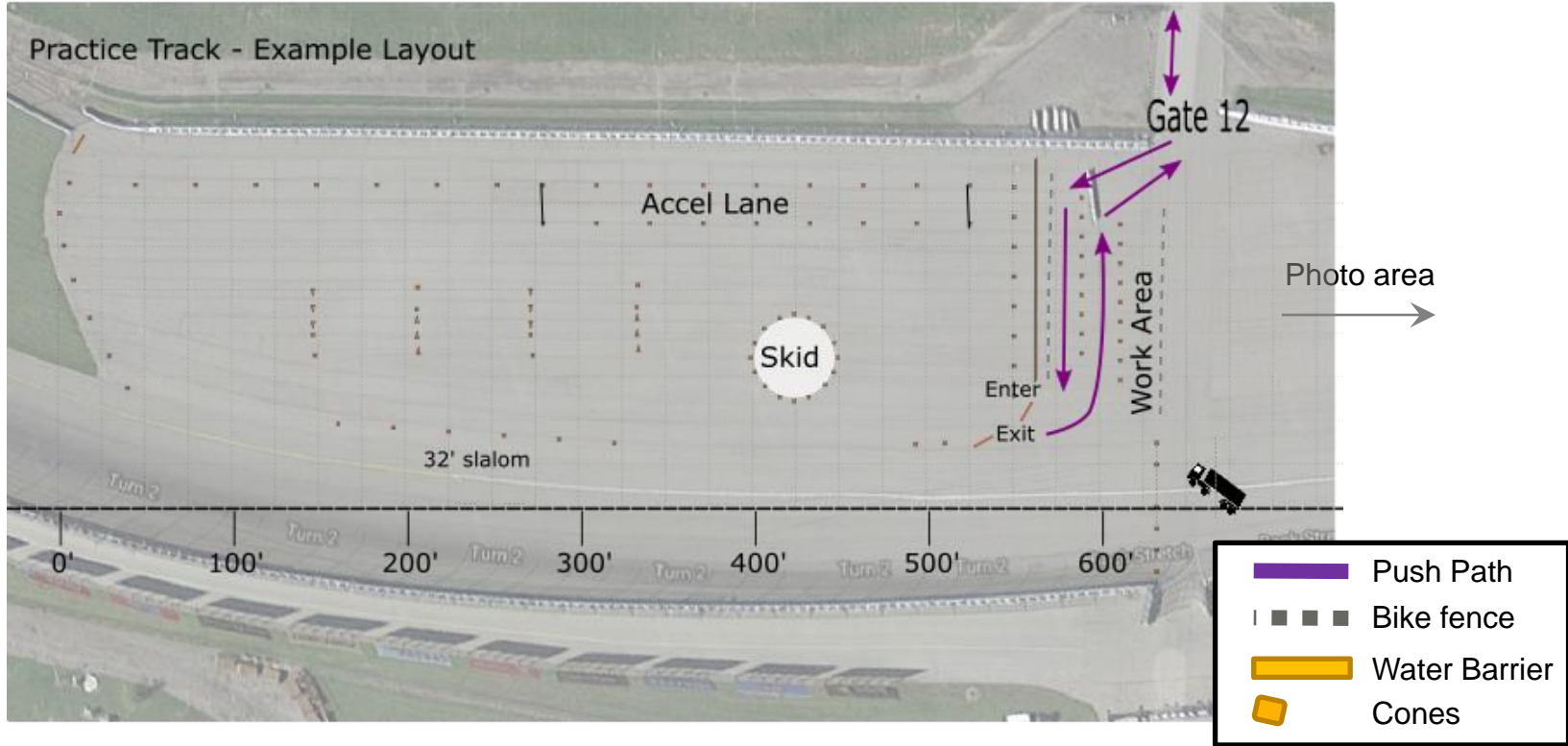
Dynamic Practice Area

PURPOSE: Provide teams a safe, controlled, and reduced-speed environment for the purposes of vehicle testing (shake down), data gathering (tire temps/logging), dynamic brake bias/sway bar adjustments, driver practice, and crew practice, familiarization, and training.

General Rules:

- Team safety briefing prior to each practice session
- Engine start only in designated hot area. Team member (dynamic pass) with fire extinguisher at the ready.
- Practice is “first come, first serve only”
- Practice session duration is 5 minutes (may be reduced at Event Captain’s discretion)
- Only SCCA personnel or Emergency Crews are allowed to respond to practice area emergencies. Response instructions will be provided by Event Captains.

Practice layout



ACCELERATION

PIT ROAD

CAPTAIN:

ASSISTANT CAPTAIN:

ASSISTANT CAPTAIN:

BOB GOPPOLD

STEVE BALANECKI

REID COLLINS

Acceleration layout



Acceleration event

- **Acceleration event is located on Pit Road, with entrance at mid-suite tunnel**
 - There are TWO Opportunities to Exit to Return Lane (see map)
 - First exit comes up quickly, slow down IMMEDIATELY after finish line / checkered flag
 - If you miss first exit, continue straight to second exit
 - 2 drivers per team, 2 runs each driver
- **Three staging lanes, with priority order: (1) 2nd run, (2) Driver #1, (3) Driver #2**
 - Team may use prep area/cold pad to work on car or prepare for runs
 - Enter staging Lanes ONLY when car is ready to run and safety equipment check
 - Event worker will call car to start line – STOP AT START LINE!!!
 - Green flag gives permission to start - timing starts when timing light / beacon is triggered
 - Double cones at finish line; checkered flag shown after finish line
 - Following finish line, quickly brake to slow, turn, and take second run immediately (or exit track)
 - To exit track, turn left to exit; come to a stop, and team can then meet
- **GET BRAKING DONE IN A STRAIGHT LINE!!!!!!.**
 - If your car cannot slow sufficiently to turn, COME TO A CONTROLLED STOP – WAIT FOR EVENT WORKERS

Acceleration scoring

Cone down or out is 2 second penalty

Off course is a DNF for that run – no rerun

Failure to Observe Event Procedures can result in loss of fastest run time



SKID-PAD

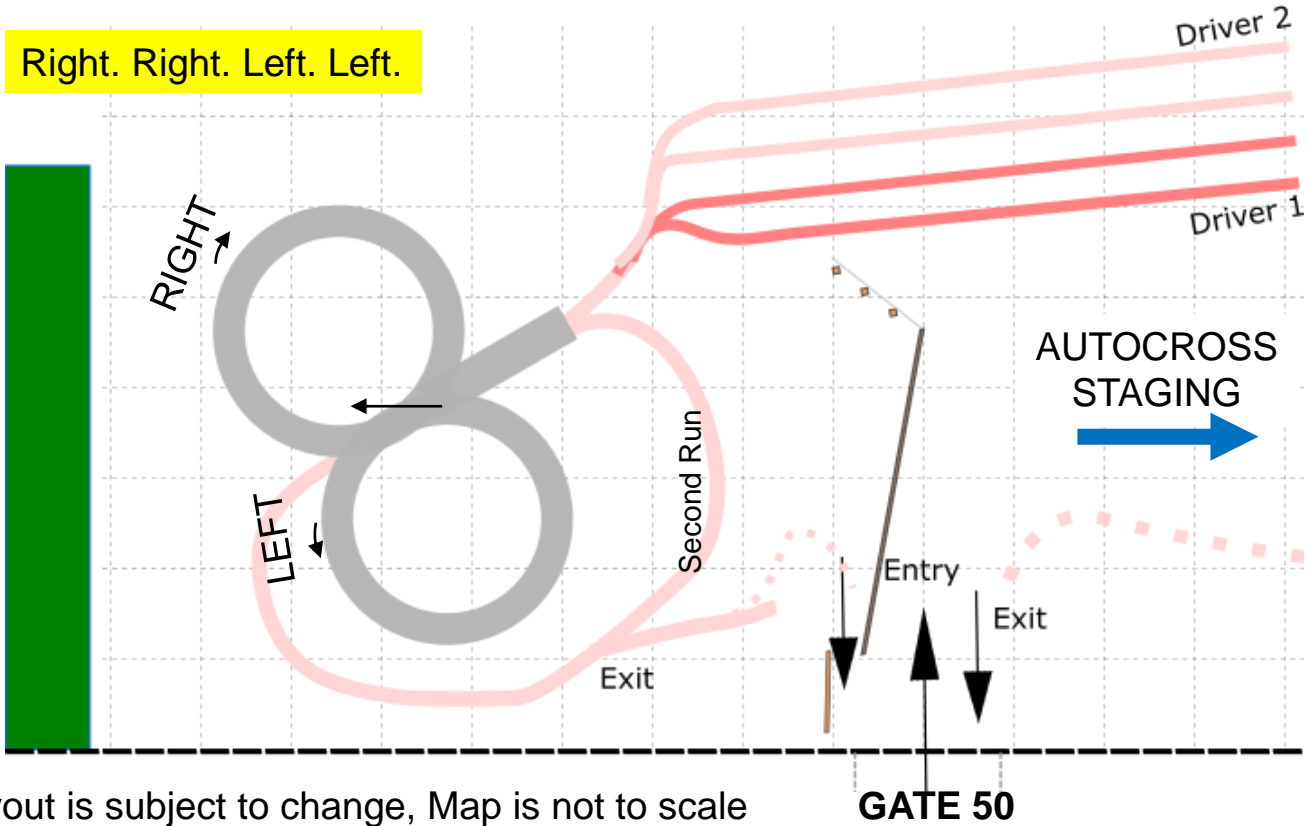
GATE 50

CAPTAIN: **SETH GOSLAWSKI**
CO-CAPTAIN: **AVERY SNYDER**

Skid-Pad event

- **Event runs on one Skid-Pad only**
 - Must maintain steady flow of teams in order for every team to get all 4 runs
 - We highly encourage getting 1-2 runs in AM to ensure a score
- **2 drivers per team, 2 runs each**
- **First drivers are prioritized over Second drivers**
- **Flow of Event**
 - Team pushes car into appropriate Driver line
 - Staging worker will call for car when ready
 - Starter person has a green flag; they will help stage car at start point and release car
 - Driver drives right circle twice then left circle twice
 - During second left circle, the middle cone will be pulled so driver can exit
 - Driver can take second run immediately or exit (other teams can be run in between driver's 1st and 2nd runs)

Skid-Pad layout



Skid-Pad scoring

- **Only the second lap of each circle is timed**
- **Score is the average of 2nd lap on each circle**
- **Down or out cones are 0.25 second penalty**
 - Rerun and exit lane cones also count
- **Off course = DNF**
- **Incorrect laps = DNF**

AUTOCROSS

GATE 50

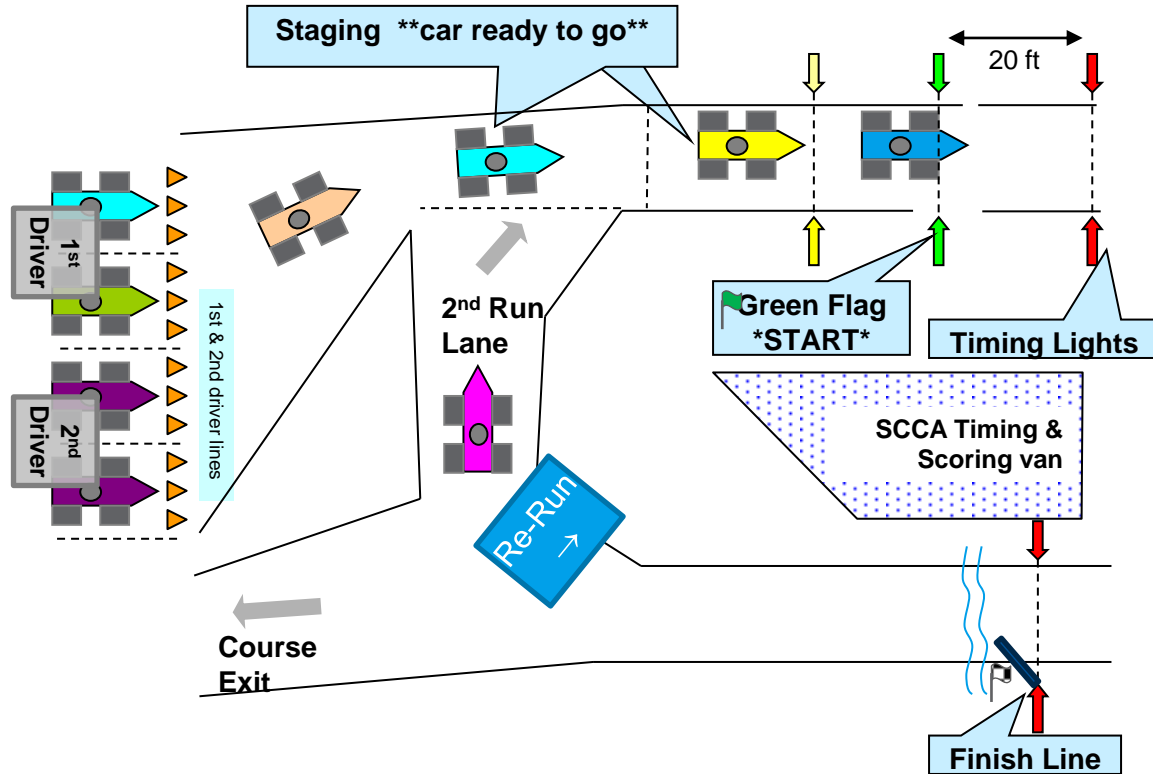
**CAPTAIN:
CAPTAIN:**

**MATT KALMUS
CORRY JOHNSON**

Autocross Event

- Solo Course: ~0.6-0.65 mi/lap
- 2 drivers per team, 2 runs each driver → First drivers are prioritized over second drivers
- Flow of Event
 - Team pushes car into appropriate driver line; car can be started any time
 - Staging worker will call for car when ready, car slowly drives to start line
 - Green flag releases car onto track. Timing line / light is 20 feet after flag
 - Driver completes course. Follow the cones – *NOT* the chalk
 - Checkered flag is shown after end timing light. Car must SLOW DOWN at flag
 - Driver can take second run immediately or exit and return to the appropriate driver line later
- Red Flag Procedure
 - A red flag will be shown if a car has an issue on track that causes a safety concern. Other cars on track will get a re-run.
 - When you see the red flag, SLOW DOWN and carefully drive back / follow-direction to staging for a re-run

Auto-X staging, timing, start & finish area diagram



Note: Not to scale

Autocross Scoring

- Cone down or out = 2 second penalty
- Off course = 20 second penalty
 - If you can safely enter course through same gate you left, there is no penalty
- Missed Slalom is considered an off course
- Cars that stall and cannot restart on course will be DNF for that lap – no rerun



ENDURANCE & FUEL ECONOMY

BACK STRAIGHT / GATE 50

FUEL CAPTAIN:

HERB SEUBERT

CO-CAPTAIN:

MIKE THODOROFF

CO-CAPTAIN:

ROB EGENOLF

EFFICIENCY CAPTAIN:

ALBA COLON

CO-CAPTAIN:

MARK SCOTT

ENDURANCE CAPTAIN:

LAURA KLAUSER

ENDURANCE CAPTAIN:

MATT KALMUS

Tire Selection

- **To start the event, teams are required to run the weather-appropriate tire**
 - If track is dry, team must run dry tires
 - If track is wet, team must run rain tires
 - If track is damp, team may choose tire type
- **During the event, tire-changing rules are weather dependent:**
 - If track is damp, teams may change from dry to rain tires at any time and will receive 10 minute allowance to complete change
 - If track is damp or dry, team can switch from rain to dry tires, but cannot change tires during driver change nor does team receive any time allowance
 - If track changes from dry or damp to wet, teams with dry tires will be called in for a required tire change to rain tire
- **Please refer to official FSAE dynamic rules for further detail/clarification**



Endurance Run Order

- The Run Order will be posted Friday evening once the Autocross event is over and preliminary scores processed
- Only teams who have completed all four areas of tech by 5:30pm on Friday are eligible to participate in Endurance
- Run order will be slowest to fastest Autocross times (including penalties)
- Teams who did not participate in any dynamic event prior to Endurance will run first at 9am (teams with only Skid-Pad or Accel. will be slotted by captains)
- Lunch will begin at approximately 12:30pm, depending on cars on track
 - Teams scheduled immediately after lunch must keep their equipment in the dynamic area during lunch
- Any team that runs out of order in Endurance will receive a 2 minute penalty

①

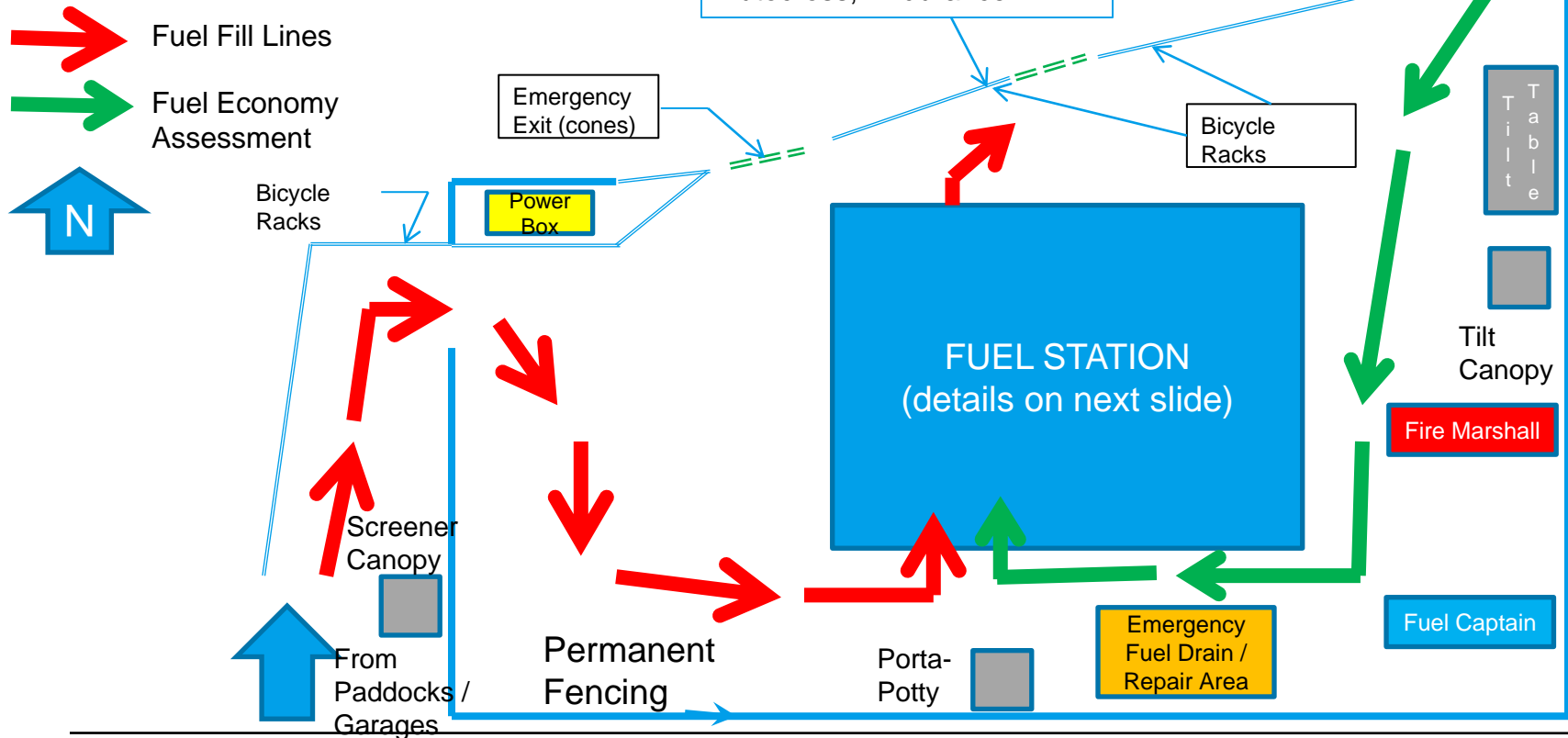
Fuel for the Event

- The Announcer will call batches of teams to fuel their car based on run order
- Endurance cars will be filled in the sequence of their scheduled run time
- Process is similar to other fills. Car enters the fuel bay, driver removes fuel cap, confirms fuel type and fill line
- Car is filled to bottom most part of the fill line. Driver confirms fill, installs fuel cap.
NOTE – no vehicle shaking will be allowed before or after running endurance
- Cars must proceed directly to Endurance (Dynamic Gate 50) after leaving Fuel area



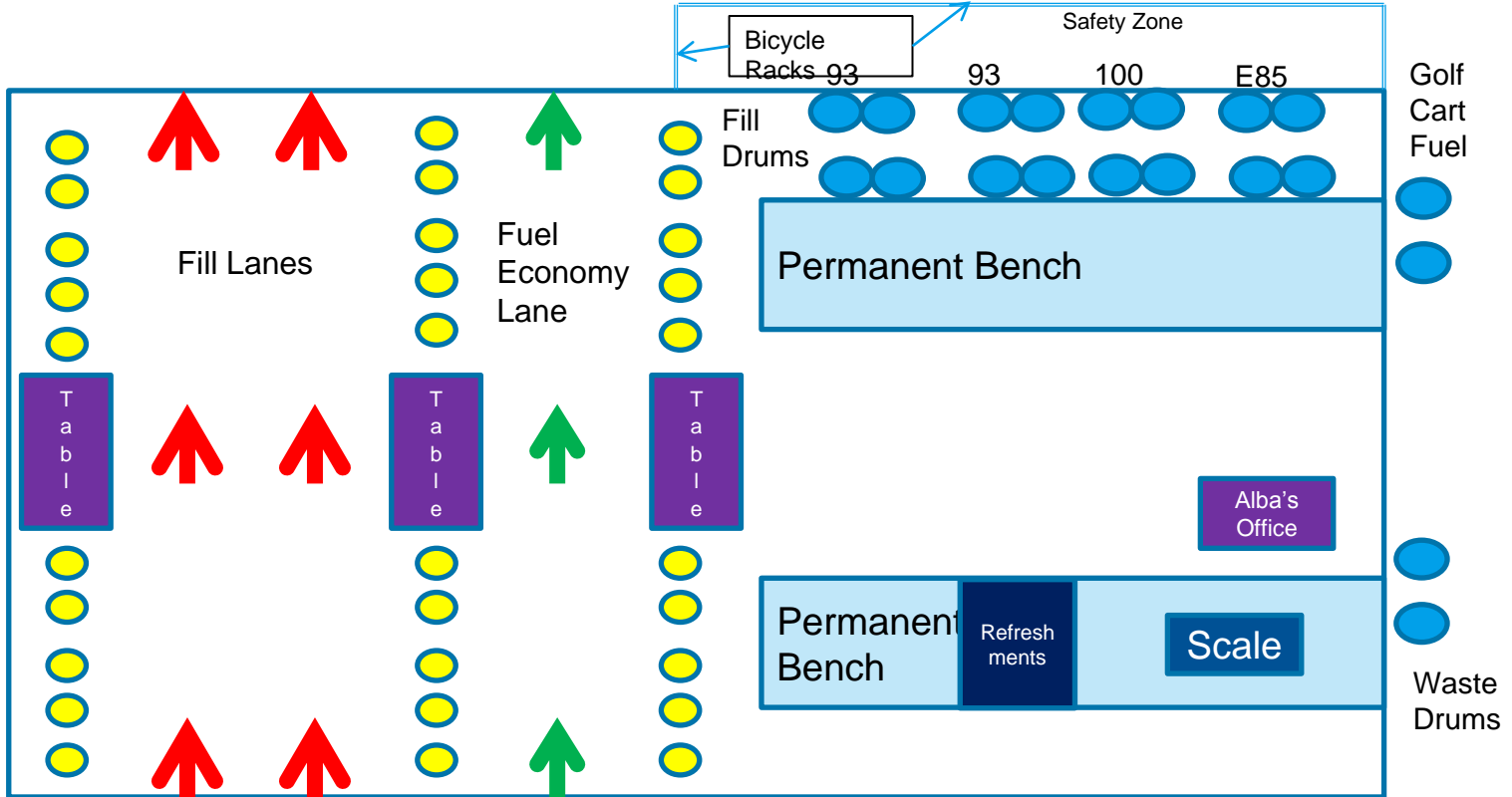
FSAE Fuel Station

Covering all days



FSAE Fuel Station

Detailed layout



NOTES: (1)
Yellow dots
represent place
savers for chairs,
gas cans, fire
extinguishers. (2)
Tables to be used
for funnels,
syringes, turkey
basters, diapers,.
Pens, clipboards

② Arrive at the Dynamic Area

- Dynamic Gate workers control how many teams are inside the hot area – you may have to wait outside
 - Queuing cars, toolboxes, and team members should stay within 8 feet of the edge of the pavement, leaving a clear path in the middle of the road
- Once inside the hot area you will be directed to a parking spot for your equipment
- Toolboxes are allowed into dynamic area ONLY in the “parking area” located in the space previously used by skid-pad
 - We suggest teams bring alternate tires if weather forecast is unclear
- Teams may work on cars prior to starting endurance – Note all changes must be approved by Tech
- Cars can be started anywhere in the dynamic area, BUT car CANNOT move under its own power until entering the track



③ Stage for Start

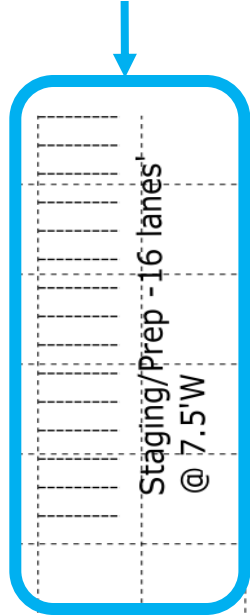
- Car must be “race ready” when called to staging
 - No external batteries, laptops, pressure gauges, baffles, tire wraps, etc.
 - Only allowed are the car, push-bar/fire extinguisher, anything for driver seating position adjustment during driver change, and team members
- Team will be directed into one of the three staging lines
- Next team to go out on track will be called to the starting line
 - If this car cannot start or drive to the staging line, the next car will be called and the non-start car will receive the out of order penalty
 - If the non-start car is able to start/move before the car ahead of it goes on track, it will not receive the out of order penalty despite entering the track in the wrong order
- Teams that fail to run at their designed time slot (due to no-start, etc), may begin their run later in their specified heat with the following limitations:
 - I. If > 20 teams remain in the heat, up to 20 further run-order slots, but not less than 15 minutes
 - II. If < 20 teams, until the last run-order slot in the heat or 15 minutes, whichever is longer

Example: The team that is in the run order position 10 must run before run order position 30



③ Endurance Staging

Only area where toolboxes are allowed and work may be preformed



Track Video Viewing Tent

Entry

EXIT

DRIVER CHANGE

STAGING

Staging Line

Starting Line

Once car has been pushed to the staging line, driver must be ready to drive and no other team member can touch the car.

Timing

④ Driver 1 Drives

- Driver 1 is called to start: start the car and slowly drive to the green flagger
- The other three team members should move away from the staging line to the track video viewing area in the parking area
- The green flagger waits for an opening on the track and then sends the car out for first 11km
- Watch for flags – passing only allowed in passing zones
 - COURSE TO LEFT (inside lane), STAY RIGHT if blue-flagged
- If you hit a barrier, you will be towed off the course and will not be permitted back on the track
 - For severe hits an Ambulance will be called to check the driver before they are allowed to exit the vehicle

⑤ Driver Change

- At the end of his/her last lap Driver 1 will be shown a checkered flag to enter driver change
 - Driver change volunteers direct the car into the correct lane and the driver turns the car off
 - Each team has three minutes to swap drivers
 - Hand tools are only permitted to adjust seating position – car must start on its own (only tool allowance exception is for tire change due to weather)
- Once Driver 2 is ready, driver starts their car and waits to be called to staging.



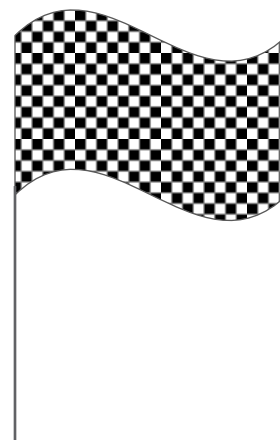
⑥ Driver 2 Drives

- Driver 2 is called to staging and then to the start line
 - Staging workers will direct
- The green flagger waits for an opening on the track and sends the car out
- Driver 2 completes 11 km
- Watch for flags – passing only allowed in passing zones
 - COURSE TO LEFT (inside lane), STAY RIGHT if blue-flagged
- If you hit a barrier, you will be towed off the course and will not be permitted back on the track
 - For severe hits an Ambulance will be called to check the driver before they are allowed to exit the vehicle

7

Finishing the Event

- On the last lap the driver is shown a checkered flag and exits
- As soon as the exit is cleared, shut down the car and stop. Do not drive (or coast) to team equipment area
- Hooray! You just completed Endurance
- Gather your team and equipment and head to the dynamic gate for instructions to proceed to fuel



⑧ Refuel for Efficiency Points

- Cars that did not complete endurance still need to report to fuel for points for Efficiency score
- Car returns directly to fuel bay
- Driver exits car, selects a full gas can with the appropriate fuel grade, and is escorted to obtain the initial can weight
- Driver returns the can to the car, removes the fuel cap, confirms fuel type and fill line.
- Car is filled to bottom-most part of line. Driver confirms fill and installs fuel cap.
- Driver returns to the scale, carrying the gas can. The new can weight is registered, along with the driver signature, which defines the correct and accurate Fuel Efficiency score.

Endurance Scoring Notes

- Cone down or out = 2 second penalty
- Off course = 20 second penalty
 - If you can safely enter course through same (or prior) gate you exited, there is no penalty
- The Endurance penalties are not assigned to the lap that they were received. There will be a total number of cones and off courses listed for teams for the event.
- No outside data for protests – video footage, data logging, etc. Event captain does not have time to review entire endurance run video for every team.
- Endurance Tmax rule gives the ability to pull a team out of the event, but is not a requirement that we do so
 - We will never pull a team without a warning – the team will be black flagged and offered the chance to correct



Endurance Red Flag Protocol

- Safely bring vehicle to a complete stop & turn off the car
- Everyone will be towed into the driver change area
- Driver must stay fully belted in car
- The lap in which the red flag was shown will not count in time or fuel economy calculations
- Restart rules are the same as driver change
- Teams involved with a red flagged track will not be able to add any fuel to their vehicle

Black Flag Protocol

- Exit the track on the lap you see the black flag – do not go another lap
- You will be guided into the black flag penalty box located next to driver change
- The Black Flag Marshall will talk to you about why you were brought in
 - If you are assessed a time penalty, it will happen at this time.
 - The driver has the choice to leave the car running or not during this penalty
 - driver change restart rules apply
- The clock is still running while you are off the course
- You will be released onto track once the time is up with the guidance of the staging workers



Mechanical Flag Protocol

- Exit the track on the lap you see the mechanical flag (or meatball) – do not go a second lap
- You will be directed into a lane in the driver change area and your car will be inspected by Tech
- The time off course will not count towards your overall time
- If the issue is deemed OK, you will be released back on track with the guidance of the staging worker
- If the issue is deemed a failure, the team will be disqualified and will not be able to complete the event