SAE INTERNATIONAL FORMULA SAE®

STUDENT HANDBOOK

FORMULA SAE LINCOLN & ELECTRIC

LINCOLN, NEBRASKA

JUNE 15-18, 2016

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

EVENT SITE REVIEW

ADVICE, EXPECTATIONS & POLICIES:

ASK QUESTIONS– If you have a question – ask! If you have any questions about any part of the competition, the schedule, the procedures, the Rules or anything else, ask one of the officials. The first place to bring questions is to the staff in the registration area. Rules questions may be presented to the technical inspectors.

ANNOUNCEMENTS - Although we have loudspeakers in various parts of the site, FSAE covers a large area and it can be difficult for announcements to be heard everywhere. You can help us make sure everyone knows what's being announced by passing the announcements along to your team mates and others teams in your area. Announcements requesting parts, tools, or assistance can be made by the announcer in the main tent.

BATTERY DISPOSAL EV TEAMS– Battery disposal containers will be placed outside the EV Charging Tent.

BE ON TIME- The schedule is included in the student handbook and posted online. It is your responsibility to be on time and aware of event schedule changes announced.

BRING YOUR DOCUMENTATION - When you come to tech inspection bring all the documentation and correspondence connected to your (1) SEF submission, (2) Impact Attenuator Data Report and (3) any Rules Questions you submitted. The inspectors do not have immediate access to this material and you may need it to answer questions about your vehicles design and construction. The inspectors want you to pass tech and pass it easily, but they need your help to make that happen.

CEREMONIES:

Welcome Ceremony Sponsored by Honda – Main Tent

In addition to the Captains' meeting on Wednesday evening (with its emphasis on "do's and do not's), we are holding a "Welcome Ceremony" sponsored by Honda. Key Volunteers who are present will be introduced. All teams, faculty and any volunteers who are present are welcome to attend. The Honda ceremony starts at 5:30pm. There will also be one prize drawing - a $100.00 Gift Card to Goody's Grill.

*Teams must be present with 3+ members to win.

Award Ceremony Sponsored by GM – Main Tent

Families and friends are welcome to attend with the team. Volunteers are also welcome to attend. The Award Ceremony is scheduled for ~ 7:00 p.m. on Saturday, June 18th. The awards presented for both the IC & Electric Classes. There will also be a prize drawing* for: The "EZ Pass" for a free 2017 FSAE Lincoln Registration provided by SAE International.

*Teams must be present with 3+ members to win.

DON'T RUN– Running tells people there's an emergency. Don't run unless life or limb is in danger.

ELECTRICAL POWER– There is no electrical power on the site. If you need electrical power you must bring a generator. There will be power provided in the Electric Charging Tent; this serves as the "fuel station" for Electric Teams. The other generators onsite will be used by the organizers and are already dedicated to operations.

EVENT SITE REVIEW CONT.

LUNCHES ONSITE:

Volunteers will be provided lunches. These will be delivered to event areas.

Teams will be responsible for providing their own lunches on all days except for Friday. Teams may bring food onsite; cook on site as well in specific areas. Or purchase from onsite Concessions.

Honda Sponsored Pizza Lunch for Teams – Friday, June 17 11:45p.m. (Main Tent)

CONCESSIONS:

Anyone who is interested may purchase food from the concessions near the main tent; there will be several food vendors onsite. The concessions will range in price for breakfast, lunch, dinner and snacks items.

The hours are: Wednesday, June 15– Saturday, June 18: ~8:00 a.m. - ~5:00 p.m.*

*If business dictates, concessions may close earlier.

PADDOCKS – Each team will be assigned a roughly 25' x 75' paddock. Teams may park vehicles and erect tents (only if weighted) and sunshades within their paddock at their discretion – provided the paddock is kept clean and nothing – absolutely nothing – is permitted to blow out of the paddock. Please Note: we are operating near an active runway.

KEEP YOUR PADDOCKS CLEAN– We are responsible for keeping the parts of the Lincoln Airpark used for FSAE clean. Trash cans are provided in the paddocks and throughout the FSAE site. If you need trash bags we have them available - just ask at the announcer. Please keep your paddock clean and make sure it is completely clean before your team leaves at the end of each day in addition to the end of event. PLEASE DO NOT leave any furniture, used tires, etc. behind. IT IS IMPERATIVE THAT YOU KEEP ALL TRASH CONTAINED AS WE ARE CLOSE TO A WORKING AIRPORT RUNWAY.

PARKING – Enter gate through Site Access Point (off of Mathis & 36th Streets). All parking will be directed by volunteers. Teams will be directed to the FSAE Paddock Area; all other individuals (team members, volunteers and spectators) will be directed to general parking.

PHOTOGRAPHY – There will be no photography allowed from within the dynamic areas.

REGISTRATION – Everyone must sign SAE International's liability waivers and receive a wristband, which must be worn at all times throughout the event.

EVENT SITE REVIEW CONT.

RESTRICTED AREAS– At Lincoln Airpark we are only authorized to use area within the ORANGE SNOW FENCE and certain surrounding facilities. We are not permitted on the other parts of event site. Please respect these restrictions. If caught violating this rule, you will be escorted off the premises and may have to deal with Homeland Security.

SECURITY – Keep your equipment locked up. This is a large site and security can't be everywhere. Don't leave your tools, computers and other equipment lying around where they could be stolen. The competition site is open to the public.

SPECTATORS – Spectators are welcome, but must remain within the designated spectator areas. Spectators who disregard the spectator area lines or signs may be ejected from the site. Team members without competitor wristbands are considered to be spectators and must obey all the spectator rules. Please note to all spectators closed toed shoes are not required but preferred. No pets allowed; except Guide Dogs.

SOCIAL MEDIA– Follow us on Twitter @formulaSAE - #fsaelincoln and check out our Facebook Page during the event! https://www.facebook.com/FormulaSAE

RESTROOMS– Portable toilets are positioned at convenient locations throughout the site. There are no other restrooms onsite.

TRASH – Trash control is critical at FSAE Lincoln. This site is adjacent to the Lincoln Airport and trash cannot be permitted to blow onto the airfield. You are required to keep your paddock clean and properly dispose of trash in containers or bags. Use the trash containers and trash bags available. Trash bags are always available at the announcer or registration/information area. Ask and you shall receive.

Nebraska can be very windy and loose paper and trash will blow around. Your paddock's cleanliness is your responsibility. Because the site is so large please help us manage the trash, if you see a trash can to the point it will overflow (1) do not use it and (2) please tell someone in registration tent or nearest event volunteer.

WATER – There is not a readily accessible source of potable water at FSAE Lincoln. If you need water for drinking or cleaning you must bring it with you or purchase from the onsite vendors. NUCOR will also have drinking water available in their tent located at beginning of paddocks.

WEATHER – In June the local weather can be unpredictable. We encourage you to be prepared for all weather types from sun to rain.

WRISTBANDS – Wristbands are required of all participants (students and volunteers) as well as spectators to be onsite. Individuals under the age 18 will receive a hand stamp/wristband for entrance permission.

FIRST AID

There will **NOT** be a First Aid Station onsite. All incidents will be covered EMTs.

To expedite matters in case of serious accident or injury after-hours, call 911. This number works from all land lines as well as mobile and coin-operated phones. It is always free of charge.

HOSPITAL

Closest hospital from Lincoln Airpark is ~10 miles; onsite EMTs will transport patients to:

Bryan West Memorial Hospital

1600 S. 48th Street

Lincoln, NE 68506

(402) 489-0200

It is your team's responsibility to be aware of closest hospital to team's accommodations.

DRIVING DIRECTIONS

DRIVING DIRECTIONS TO THE HOSPITAL

You start at the Lincoln Airpark

1. Start out going west on W Mathis St toward NW 42nd St.
2. Take the 1st left onto NW 48th St.
3. Merge onto I-80 E toward Omaha.
4. Merge onto Homestead Expy / US-77 S via EXIT 397 toward NE-2/Beatrice/Nebraska City.
5. Take the Rosa Parks Way exit.
6. Keep left to take the ramp toward Downtown Lincoln.
7. Merge onto Rosa Parks Way.
8. Rosa Parks Way becomes K St.
9. K St becomes Capitol Pky.
10. Turn left onto A St.
11. Turn right onto S 48th St.
12. 1600 S 48TH ST is on the left.

ELECTRIC SHOCK

WHAT SHOULD I DO IN CASE OF ELECTRIC SHOCK?

- Call for medical help. EMTs are onsite for medical assistance.
- Push one of the emergency shutdown buttons and wait until the TSAL is switched off
- Try to speak with the victim and ask him/her about his/her health
- Insulate yourself if you must move a victim away from a live contact - wear dry gloves or cover your hands with cloth and cover potential contact paths with the car with the HV isolation blanket. Watch your footing to make sure that you do not slip or fall when trying to move the victim.
- Do not move the victim if there is a possibility of neck or spinal injuries unless it is absolutely necessary (for example from a path of live current).
- Cover burns with a sterile dressing. On the surface, electrical burns may not look serious, but the burn can be severe deeper in the tissue.
- Keep the victim comfortable, warm and at rest, and monitor breathing.

STORM SHELTER

In the event of severe weather, we are instructed by Lincoln Airpark Authority to gather inside the Danley Building. *Listen for announcements instructed by SAE via announcer.

CONTACT INFORMATION

Registration Tent is the central contact point for teams and volunteers regarding all issues concerning the event and will be staffed by volunteers with radios and contact list.

Provides:

- Information point for all competitors
- Contact interface to the officials
- Registration of all team members
- Distribution of all event materials and swag
- Posting of event scores

The Official announcer will be in the Main Tent at all times the competition is in progress.

Provides:

- Assistance can be made by the announcer for teams requesting parts, tools and assistance.
- Lost and Found

SAE OFFICIALS:

Kaley Zundel, Manager, Collegiate Design Series	412-719-2865
Sam Barill, Manager, Collegiate Design Series	412-512-7187
Bob Sechler, Education Relations Dept. Manager	
Amanda Paciorkowski, University Programs Developer	
Sara Guffey, University Programs Coordinator	724-591-2324

RESTRICTED AREAS & ACCESS

DYNAMIC AREA & DYNAMIC AREA ACCESS: At Formula SAE the "dynamic area" is one of the "restricted areas" and is defined as any part of the competition site where cars are running under power. The "dynamic area" includes the following parts of the site:

- Brake test area
- Courses
- Event queues and surrounding areas
- Dynamometer and surrounding area
- Noise test area
- Practice track

The dynamic area is considered highly restricted and may only be accessed by individuals with the proper credentials: (1) dynamic area pass and (2) a wristband as follows:

- COMPETITOR: Access limited to times the dynamic area gate is open – Must have a dynamic area pass
- EVENT CREW WITH DYNAMIC AREA PASS: Access limited to times the dynamic area gate is open -- Must have a dynamic area pass AND be assigned to work the dynamic area.
- Note: Scorekeeping crew may access the dynamic event site at any time to install timing/scoring equipment.
- FACULTY: Access limited to times the dynamic area gate is open – Must have a dynamic area pass. Faculty must use one of their team's passes.
- JUDGES: Judges have very limited access to the dynamic area. Only 6 judges allowed at a time.
- MEDIA: Access limited to times the dynamic area gate is open. Notes (1) Photographers and video crews must have a spotter. (2) Media, photographers, video crews and spotters must have dynamic area passes. (SAE staff are responsible for all media access.)
- OFFICIAL/ORGANIZER: All area access at all times
- VIP/SPONSORS: VIPS/Sponsors are not permitted in the dynamic area unless escorted by SAE staff and will not be issued dynamic passes.

DYNAMIC AREA PASSES: Access to the dynamic event area is limited to 4 people per team, including drivers and faculty, and each team is issued four (4) dynamic area passes. To gain access to the dynamic event area team members, including drivers, must wear and display (1) a dynamic area pass, and (2) a plastic wrist band. Team dynamic area passes may be shared with faculty advisors.

Faculty advisors are not issued separate dynamic area passes, but may use one of the 4 passes issued to their team.

Official Translators are issued separate dynamic event passes.

Dynamic area passes are also issued to organizers, event crew working that area, staff and other people needing access to the area.

Dynamic area passes are not issued to spectators and may not be loaned to spectators.

RESTRICTED AREAS & ACCESS CONT.

PADDOCK – The "paddock" is the section of the event site where the teams set up their work site and park their transporters. Individual paddock spaces will be assigned by the organizers.

If you are in the paddock, keep in mind that teams may be pushing their vehicles through the aisle ways and power tools may be in use. Be aware of what is going on around you and use common sense.

PARTICIPANTS – To be classified as a "participant" an individual must (1) be at least 18 years of age and affiliated to university, (2) have signed the FSAE liability waiver and (3) have been issued a wrist band.

Only "participants" have access to the restricted events areas.

RESTRICTED AREA– The "restricted area" is any part of the competition site where teams are likely to be running their vehicle engines.

The dynamic event areas, including the noise test site, the brake test site and the practice area are restricted,

Entry into any restricted area is limited to individuals with the proper wrist band.

Dynamic area entry - The dynamic events area is considered highly restricted and may only be accessed by people with all of the following: (1) FSAE issued I.D. badge, (2) dynamic area pass and (3) a plastic wrist band.

Restricted areas must be separated from the remaining parts of the competition site by a fence or tape /rope area designators.

SPECTATORS – Registration staff will make every effort to have all spectators sign the MIS liability waiver. There is no minimum age for spectators, but as a matter of operational policy any spectator under 18 years of age must be accompanied by an adult at all times.

Spectators over 18 years of age who sign the waiver will be issued wrist bands.

Spectators less than 18 years of age will be issued hand stamp / wrist bands.

Spectators must remain in the parts of the site open to the public.

Spectators are not considered "participants" and may not enter the dynamic events area.

WRISTBANDS – Wristbands are required to enter any of the FSAE restricted areas.

To receive a wrist band a person must (1) be at least 18 years of age and (2) sign the liability waiver.

Individuals under 18 years of age may be issued a hand stamp / wrist band and may not enter any restricted area. Minors will receive a hand-stamp / wrist band indicating their parent/legal guardian has signed the minor waiver on their behalf.

WRISTBAND TYPES:

- PLASTIC: Student, faculty, official, volunteer, sponsor, media, and VIP
- PAPER: Spectators

DAILY OPERATIONS SCHEDULE

Daily Operations	
Lincoln Airpark Site Open:	Wed. 9:00 a.m. - 7:30 p.m. Th. - Sat. 7:30 a.m. - 7:30 p.m.
Student Registration (Tent):	Wed. 9:00 a.m. – 4:30 p.m. Th. & Fri. 8:00 a.m. - 4:00 p.m. Sat. All students will be registered as spectators
Volunteer Registration & Info (Tent):	Wed. - Sat. 7:30 a.m. - 4:30 p.m.
Tech Inspection (Danley Bldg):	Wed. 1:00 p.m. - 7:00 p.m. (no new cars after 6:00 p.m.) Th. 8:00 a.m. - 5:00 p.m. Fri. By appointment until 2:00 p.m.
Scales (Danley Bldg):	Wed. 3:00 p.m. - 7:00 p.m. Th. 8:00 a.m. - 5:00 p.m.
Tilt/Noise/Brake:	Th. 8:30 a.m. - 5:00 p.m. Fri. 8:30 a.m. - 5:00 p.m. (after 2:00 p.m. by appointment only)
Fuel Station	Th.-Fri. 8:30 a.m. - 4:00 p.m. Sat. 7:30 a.m. -~4:00 p.m.
Practice Area:	Th. Noon - 5:00 p.m. Fri. 8:00 a.m. - 5:00 p.m. Sat. 7:30 a.m. - 3:00 p.m.

NOTES:

- - Cars must complete all 3 parts of tech by 5:00 p.m. Friday to qualify for Endurance.
- - 30 minutes' notice is required for all appointments, which can be booked through the announcer in Main Tent.
- - Tech “Take-a-Number” Opens – IC ONLY
- - EV cars operate first come, first served

DETAILED SCHEDULE

(times preceded by * are approximate)

WEDNESDAY, JUNE 15		
10:00 AM	***Tech Inspectors Volunteer Review Session***	Danley Bldg
4:00 PM – 5:10 PM	***Design Judge Orientation/Review***	
5:10 PM – 5:25 PM	***EV Safety Briefing for Design***	
5:30 PM	Welcome Ceremony Sponsored by Honda	Main Tent
6:30 PM	Captain and Advisors Meeting	Main Tent
7:30 PM	Official closing of the site	
8:00 PM	Everyone must be off site	

THURSDAY, JUNE 16		
8:00 AM	Driver's Meeting – Brake & Practice - Mandatory	Main Tent
7:30 AM	***Judges Meeting for Design***	***Danley Bldg***
8:00 AM	***Judges Meeting for Cost***	***Cost Tent***
8:00 AM	***Judges Meeting for Presentation***	***Arnold Elementary School***
8:00 AM – 6:00 PM	Design Judging – 1st Round Open	Danley Bldg
9:00 AM – 5:00 PM	Cost Event Open	Main Tent
9:00 AM – 5:00 PM	Presentation Event Open	Arnold Elementary School
12:00 PM – 1:00 PM	Lunch Break	
2:00 PM	Dynamic Event Courses Open for Driver Walks	
5:30 PM	Drivers Meeting – All Dynamic Events – Mandatory	Main Tent
6:30 PM	***Design Judges Meeting – Judges Only***	***Off Site***
7:30 PM	Official closing of the site	
8:00 PM	Everyone must be off site	
***10:00 PM**	Design Finalist announced online (www.sae.org and social media)	

DETAILED SCHEDULE CONT.

(times preceded by * are approximate)

FRIDAY, JUNE 17		
7:30 AM	***Course Crew Briefing – Accelerations and Skid Pad***	***Event Courses***
8:00 AM – 11:30 AM	Skid Pad Event and Acceleration Events Open	Track
9:00 AM – 4:30 PM	Design Feedback for Non-finalists	Danley Bldg
9:30 AM – 10:30 AM	Presentation Feedback Seminar and Q&A	Main Tent
11:45 AM – 12:45 PM	Lunch Break; Student Pizza Lunch Sponsored by Honda	Main Tent
1:00 PM	***Course Crew Briefing – Autocross***	***Track***
1:30 PM – 4:30 PM	Autocross Event Open	Track
5:00 PM – 7:30 PM	Design Finals	Danley Bldg
7:30 PM	Official closing of site	
8:00 PM	Everyone must be off site	

SATURDAY, JUNE 18		
8:00 AM	***Endurance Course Crew Briefing *EV Safety briefing for Dynamic Volunteers***	***Track***
8:30 AM - *4:00 PM	Endurance/Fuel Economy Event Open	Track
***9:00 AM**	Top 3 Teams Design Finalist Announced	
9:00 AM – 4:00 PM	Design Feedback for all teams, by appointment	Danley Bldg
***12:00 PM – 1:00 PM**	Lunch Break	Main Tent
***4:30 PM**	Presentation Highlights	Main Tent
***5:45 PM**	Design Review of Top IC and EV Teams	Main Tent
***7:00 PM**	Awards Ceremony Sponsored by General Motors	Main Tent
8:30 PM	Official closing of the site	
9:00 PM	Everyone must be off site	

DETAILED SCHEDULE CONT.

SUNDAY, JUNE 19		
9:00 AM – 2:00 PM	Site Open **ONLY** for Pick-Up of Transporters	

SCHEDULE NOTES

Notes:

1. Drivers Meeting – There will be only one drivers meeting covering all dynamic events at 5:30 pm Thursday. There will be a brief drivers meeting for Brake and Practice at 8:00 am Thursday. Drivers are required to attend driver's meetings. Failure to attend driver's meetings may result in the revocation of your driving privileges. (Teams in 8 AM design event **only** may arrange for substitute representative to gather safety information **IF** driver is needed in design. Non-attendance is no excuse for safety violations.)

2. Event Closing Time - Acceleration, Skid Pad and Autocross close exactly at the scheduled time. Your car must have crossed the starting line before the event closing time in order to be allowed to complete that run

3. Course Walks – Autocross and Endurance will be available to walk starting Thursday @ 2 pm and will be accessible up to the start of the event. Drivers are **required** to walk the course for each event in which they will be behind the wheel. Course walks will not be scheduled for individual events.

4. Removing Vehicles – Vehicles may be taken off site at the individual team's discretion provided Part 1 of the Inspection Sticker has been removed by Tech Chief.

5. EMS will provide any/all medical attention.

6. All teams not shipping cars must remove their vehicles, etc. from the site no later than 2:00 pm Sunday, June 19, 2016.

7. Teams shipping cars must have them picked up and removed from the site by 10:00 am Monday, June 20, 2016.

8. Announcements can be heard via FM radio (Frequencies will be posted in the Reg. /Info. Tent).

SUPPORT SERVICES

Lincoln Electric Welding Services

Wed. 1:30 p.m. - 5:00 p.m.

Th. - Fri. 9:00 a.m. - 5:00 p.m.

Sat. 9:00 a.m. - Noon

Hoosier

Wed. 1:30 p.m. - 5:00 p.m.

Th. - Fri. 9:00 a.m. - 5:00 p.m.

Sat. 9:00 a.m. - Noon

Food Vendors - See map for location*

All days ~8:00 am - 5:00 pm

*As business dictates. May close earlier if deemed appropriate.

Lincoln Airpark Fire trucks on site:

Wed. - Sat. 7 a.m. - ~8 p.m.

Ambulance on site

Wed. - Sat.7 a.m. - ~8 p.m.

Information (Main Tent/Danley Bldg):

Th.-Sat. 7:30 a.m. - 5:00 p.m.

IC STATIC EVENT SCHEDULE

CAR #	UNIVERSITY	DESIGN BAY	DESIGN TIME	COST BAY	COST TIME	PRESENTATION BAY	PRESENTATION TIME
1	San Jose State University	E	9:00 AM	A	1:00 PM	E	3:00 PM
3	Univ of Illinois - Urbana Champaign	F	8:00 AM	B	10:30 AM	B	1:00 PM
4	Univ of Kansas - Lawrence	F	1:00 PM	B	9:30 AM	C	4:00 PM
7	South Dakota State Univ	G	4:00 PM	E	10:00 AM	A	1:00 PM
9	Louisiana State Univ	E	10:00 AM	B	2:00 PM	A	3:30 PM
10	Univ of Manitoba	D	10:00 AM	D	2:30 PM	E	3:30 PM
11	Universidade Federal Do Rio Grande Do Su	E	4:00 PM	G	9:00 AM	C	10:30 AM
12	California State Univ - Los Angeles	H	2:00 PM	G	1:00 PM	B	10:30 AM
14	Univ of Nebraska - Lincoln	J	11:00 AM	D	10:00 AM	B	4:00 PM
15	Univ of Oklahoma	D	8:00 AM	C	10:30 AM	A	1:30 PM
16	Miami Univ	D	9:00 AM	G	11:00 AM	A	2:00 PM
17	Western Washington Univ	D	2:00 PM	D	3:30 PM	A	10:00 AM
18	Oregon Inst of Tech	K	9:00 AM	D	1:30 PM	E	11:00 AM
19	California State Univ - Sacramento	F	4:00 PM	A	2:00 PM	E	1:00 PM
20	Univ of Calif - Irvine	H	11:00 AM	E	9:00 AM	E	2:30 PM
21	Univ of Calif - Berkeley	G	9:00 AM	G	2:30 PM	A	11:00 AM
22	Univ of Massachusetts - Dartmouth	L	4:00 PM	E	2:30 PM	C	1:00 PM
23	San Diego State Univ	J	5:00 PM	B	3:00 PM	B	9:30 AM
24	Univ of Wisconsin - Platteville	K	8:00 AM	G	3:00 PM	C	2:00 PM
25	California State Univ - Northridge	D	1:00 PM	D	9:30 AM	D	10:30 AM
27	Drexel Univ	J	4:00 PM	G	1:30 PM	D	11:30 AM
28	Univ of Houston - Houston	G	8:00 AM	D	10:30 AM	D	1:30 PM
29	Arizona State Univ - Tempe	E	5:00 PM	B	9:00 AM	D	3:30 PM
30	Colorado School of Mines	G	10:00 AM	B	1:00 PM	B	3:00 PM
31	Temple Univ	J	9:00 AM	E	1:00 PM	D	11:00 AM
33	Univ of British Columbia - Okangan	E	1:00 PM	F	3:00 PM	E	10:30 AM
34	Univ of St Thomas	L	9:00 AM	C	1:30 PM	F	11:00 AM
35	Univ of Louisville	L	11:00 AM	B	10:00 AM	B	2:00 PM

IC STATIC EVENT SCHEDULE CONT.

CAR #	UNIVERSITY	DESIGN BAY	DESIGN TIME	COST BAY	COST TIME	PRESENTATION BAY	PRESENTATION TIME
36	California State Univ - Long Beach	I	8:00 AM	F	10:30 AM	F	1:30 PM
38	Northwestern Univ	H	8:00 AM	E	10:30 AM	E	1:30 PM
39	Univ of Texas - Austin	F	9:00 AM	C	1:00 PM	A	3:00 PM
40	Univ of Colorado - Denver	H	9:00 AM	F	1:30 PM	B	11:00 AM
41	Instituto Tecnologico de Chihuahua	F	3:00 PM	C	11:30 AM	C	10:00 AM
42	Wichita State Univ	L	2:00 PM	D	11:00 AM	F	9:30 AM
45	California State Poly Univ - Pomona	E	2:00 PM	E	11:00 AM	E	9:30 AM
46	Universidad Nacional Autónoma de México	J	2:00 PM	A	11:00 AM	A	9:30 AM
47	Carleton Univ	E	11:00 AM	G	9:30 AM	B	2:30 PM
48	Texas A & M Univ - College Station	F	10:00 AM	B	1:30 PM	F	3:00 PM
49	Univ of Washington	G	2:00 PM	D	9:00 AM	A	10:30 AM
50	South Dakota School of Mines & Tech	L	3:00 PM	A	2:30 PM	A	4:30 PM
51	Southern Methodist Univ	D	4:00 PM	F	9:00 AM	F	11:30 AM
52	Southern Illinois Univ - Carbondale	F	5:00 PM	C	9:00 AM	B	3:30 PM
53	Univ of Calif - San Diego	J	10:00 AM	G	2:00 PM	C	3:30 PM
54	Univ of Southern California	I	11:00 AM	A	10:00 AM	F	2:30 PM
55	Univ of North Texas	F	11:00 AM	C	2:30 PM	F	3:30 PM
56	Univ of Alberta	K	2:00 PM	C	11:00 AM	B	4:30 PM
57	Univ of Calgary	I	9:00 AM	A	1:30 PM	C	11:00 AM
58	Univ of New Mexico	D	3:00 PM	E	9:30 AM	A	11:30 AM
60	California State Univ - Fullerton	L	8:00 AM	A	10:30 AM	C	1:30 PM
61	Saint Louis Univ	E	3:00 PM	E	11:30 AM	B	10:00 AM
65	Grand Valley State Univ	G	5:00 PM	F	9:30 AM	D	1:00 PM
66	Univ of Illinois - Chicago	K	3:00 PM	C	2:00 PM	B	11:30 AM
67	Univ of North Dakota	H	5:00 PM	C	10:00 AM	D	2:00 PM
68	Chandigarh Engineering College	K	5:00 PM	C	3:00 PM	C	9:30 AM

IC STATIC EVENT SCHEDULE CONT.

CAR #	UNIVERSITY	DESIGN BAY	DESIGN TIME	COST BAY	COST TIME	PRESENTATION BAY	PRESENTATION TIME
70	Honda Technical College Kansai	G	1:00 PM	D	11:30 AM	A	9:00 AM
71	Oakland University	I	1:00 PM	D	3:00 PM	C	9:00 AM
72	Univ of Akron	J	3:00 PM	G	11:30 AM	F	2:00 PM
74	Univ of Arizona	K	10:00 AM	E	2:00 PM	E	4:00 PM
75	Univ of Texas - San Antonio	J	8:00 AM	E	3:00 PM	A	4:00 PM
77	Iowa State Univ	K	11:00 AM	G	10:00 AM	C	2:30 PM
78	Univ of Calif - Los Angeles	E	8:00 AM	F	11:00 AM	B	1:30 PM
80	California State Univ - Chico	F	2:00 PM	A	9:00 AM	F	10:30 AM
81	Western Michigan Univ	J	1:00 PM	B	3:30 PM	D	9:00 AM
82	Universidad Panamericana	K	1:00 PM	A	3:30 PM	E	9:00 AM
83	California State Univ - Fresno	I	5:00 PM	A	11:30 AM	E	2:00 PM
84	Ecole De Technologie Superieure	H	3:00 PM	B	11:30 AM	E	10:00 AM
85	Univ of Massachusetts - Lowell	I	10:00 AM	F	2:00 PM	D	4:00 PM
86	Yeungnam College of Science & Tech	G	3:00 PM	D	2:00 PM	D	10:00 AM
88	Univ of New Brunswick	D	5:00 PM	A	3:00 PM	E	11:30 AM
89	Missouri University of Science and Tech	H	10:00 AM	F	1:00 PM	C	3:00 PM
90	Kettering Univ	G	11:00 AM	C	9:30 AM	D	2:30 PM
91	Wayne State Univ	D	11:00 AM	E	1:30 PM	F	4:00 PM
92	Auburn Univ	I	4:00 PM	B	2:30 PM	C	11:30 AM
95	Univ of Toledo	H	1:00 PM	C	3:30 PM	B	9:00 AM
96	Rose Hulman Inst of Tech	L	10:00 AM	D	1:00 PM	C	4:30 PM
97	Univ of Pittsburgh - Pittsburgh	I	2:00 PM	B	11:00 AM	D	9:30 AM
98	Columbia Univ	H	4:00 PM	F	10:00 AM	A	2:30 PM
99	Univ of Wisconsin - Madison	K	4:00 PM	F	2:30 PM	F	1:00 PM
100	Polytechnique Montréal	L	1:00 PM	G	10:30 AM	F	9:00 AM
102	Colorado Mesa University	I	3:00 PM	F	11:30 AM	F	10:00 AM

EV STATIC EVENT SCHEDULE

CAR #	UNIVERSITY	DESIGN BAY	DESIGN TIME	COST BAY	COST TIME	PRESENTATION BAY	PRESENTATION TIME
E201	Univ of Pennsylvania	A	9:00 AM	I	2:00 PM	H	11:30 AM
E203	Polytechnique Montréal	B	10:00 AM	I	9:00 AM	H	1:00 PM
E204	McGill Univ	A	11:00 AM	H	9:30 AM	H	2:00 PM
E205	Missouri University of Science and Tech	C	8:00 AM	J	10:00 AM	I	1:00 PM
E207	Univ of Michigan - Dearborn	C	10:00 AM	J	11:00 AM	I	1:30 PM
E208	Carnegie Mellon Univ	C	9:00 AM	J	10:30 AM	I	2:00 PM
E209	Univ of Calif - Davis	A	5:00 PM	I	10:30 AM	H	9:00 AM
E210	Purdue Univ - W Lafayette	B	8:00 AM	I	11:00 AM	H	1:30 PM
E211	Centro Universitario Da FEI	C	11:00 AM	H	1:30 PM	H	9:30 AM
E212	California Polytechnic State Univ-SLO	B	1:00 PM	H	11:30 AM	G	9:30 AM
E213	San Jose State University	B	11:00 AM	H	2:00 PM	G	9:00 AM
E214	Univ of Calif - Irvine	A	1:00 PM	I	9:30 AM	H	11:00 AM
E215	Massachusetts Inst of Tech	A	4:00 PM	I	1:30 PM	G	10:00 AM
E216	California Institute of Technology	C	2:00 PM	J	9:30 AM	I	11:30 AM
E217	Georgia Institute of Technology	A	3:00 PM	H	10:00 AM	G	11:00 AM
E218	Olin College of Engineering	A	8:00 AM	H	11:00 AM	G	1:30 PM
E219	Univ of Illinois - Urbana Champaign	B	2:00 PM	I	10:00 AM	G	1:00 PM
E220	Univ of Manitoba	A	10:00 AM	H	9:00 AM	G	2:00 PM
E221	Portland State Univ	B	4:00 PM	H	1:00 PM	I	11:00 AM
E223	Pakistan Navy Engineering College	C	3:00 PM	J	11:30 AM	H	10:00 AM
E224	Univ of Texas - Arlington	C	4:00 PM	J	1:00 PM	I	9:00 AM
E225	Kennesaw State University	C	5:00 PM	J	1:30 PM	I	9:30 AM
E226	Univ of Washington	B	3:00 PM	I	1:00 PM	G	10:30 AM
E229	Univ of Akron	B	9:00 AM	J	2:00 PM	G	11:30 AM
E230	Czech Technical Univ of Prague	A	2:00 PM	I	11:30 AM	H	10:30 AM
E235	Univ of Calif - Santa Cruz	C	1:00 PM	J	9:00 AM	I	10:00 AM

IC REGISTERED TEAM LIST

#	UNIVERSITY	TEAM NAME	COUNTRY
1	San Jose State University	Spartan Racing	United States
3	Univ of Illinois - Urbana Champaign	Illini Motorsports	United States
4	Univ of Kansas - Lawrence	jAYHAWK mOTORSPORTS	United States
7	South Dakota State Univ	Wild Hare Racing	United States
9	Louisiana State Univ	TigerRacing	United States
10	Univ of Manitoba	Polar Bear Racing	Canada
11	Universidade Federal Do Rio Grande Do Su	RS RACING UFRGS	Brazil
12	California State Univ - Los Angeles	Golden Eagle Motorsports	United States
14	Univ of Nebraska - Lincoln	Husker Motorsports	United States
15	Univ of Oklahoma	Sooner Racing Team	United States
16	Miami Univ	Redhawk Racing	United States
17	Western Washington Univ	WWU Racing	United States
18	Oregon Inst of Tech	Oregon Tech Racing	United States
19	California State Univ - Sacramento	Hornet Racing	United States
20	Univ of Calif - Irvine	Anteater Racing	United States
21	Univ of Calif - Berkeley	Berkeley Formula Racing	United States
22	Univ of Massachusetts - Dartmouth	Corsair Racing	United States
23	San Diego State Univ	Aztec Racing	United States
24	Univ of Wisconsin - Platteville	UW-Platteville FSAE	United States
25	California State Univ - Northridge	Matador Motorsports	United States
27	Drexel Univ	Drexel Racing Gas	United States
28	Univ of Houston - Houston	Coogs	United States
29	Arizona State Univ - Tempe	Sun Devil Motorsports	United States
30	Colorado School of Mines	Mile High Formula	United States
31	Temple Univ	Temple Formula Racing	United States
33	Univ of British Columbia - Okangan	UBCO Motorsports	Canada
34	Univ of St Thomas	University of St. Thomas Racing	United States
35	Univ of Louisville	Speed FSAE	United States
36	California State Univ - Long Beach	Gold Digger Racing	United States
38	Northwestern Univ	Northwestern Formula Racing	United States
39	Univ of Texas - Austin	Longhorn Racing	United States
40	Univ of Colorado - Denver	Lynx Motorsports	United States
41	Instituto Tecnologico de Chihuahua	Panteras Racing Team	Mexico
42	Wichita State Univ	Shocker Racing	United States
45	California State Poly Univ - Pomona	Cal Poly Pomona Formula SAE	United States
46	Universidad Nacional Autónoma de México	UNAM Motorsports	Mexico
47	Carleton Univ	Ravens Racing	Canada
48	Texas A & M Univ - College Station	Texas Aggie Racing	United States
49	Univ of Washington	UW Formula Motorsports	United States
50	South Dakota School of Mines & Tech	Formula HardRocker Racing	United States

IC REGISTERED TEAM LIST CONT.

#	UNIVERSITY	TEAM NAME	COUNTRY
51	Southern Methodist Univ	Hilltop Motorsports	United States
52	Southern Illinois Univ - Carbondale	Saluki Racing	United States
53	Univ of Calif - San Diego	Triton Racing	United States
54	Univ of Southern California	USC Racing	United States
55	Univ of North Texas	Mean Green Racing	United States
56	Univ of Alberta	University of Alberta Formula SAE	Canada
57	Univ of Calgary	Schulich Racing	Canada
58	Univ of New Mexico	LOBOMotorSports	United States
60	California State Univ - Fullerton	Titan Racing	United States
61	Saint Louis Univ	Parks Racing	United States
65	Grand Valley State Univ	GVSU Formula Racing Team	United States
66	Univ of Illinois - Chicago	UIC Motorsports	United States
67	Univ of North Dakota	UND FSAE	United States
68	Chandigarh Engineering College	Mechnorobs Motorsports	India
70	Honda Technical College Kansai	HTW-09	Japan
71	Oakland University	Grizzlies Racing	United States
72	Univ of Akron	Zips Racing	United States
74	Univ of Arizona	Wildcat Formula Racing	United States
75	Univ of Texas - San Antonio	Roadrunner Racing	United States
77	Iowa State Univ	Cyclone Racing	United States
78	Univ of Calif - Los Angeles	UCLA Formula Racing	United States
80	California State Univ - Chico	CSU, Chico FORMULA	United States
81	Western Michigan Univ	Bronco Racing	United States
82	Universidad Panamericana	UP Racing	Mexico
83	California State Univ - Fresno	Bulldog Racing	United States
84	Ecole De Technologie Superieure	Formula ETS	Canada
85	Univ of Massachusetts - Lowell	Mill City Motors	United States
86	Yeungnam College of Science & Tech	YUC Formula Expedition	South Korea
88	Univ of New Brunswick	UNB	Canada
89	Missouri University of Science and Tech	S&T Racing	United States
90	Kettering Univ	kettering university motorsports	United States
91	Wayne State Univ	Warrior Racing	United States
92	Auburn Univ	War Eagle Motorsports	United States
95	Univ of Toledo	Rocket Motorsports	United States
96	Rose Hulman Inst of Tech	Rose GPE	United States
97	Univ of Pittsburgh - Pittsburgh	Panther Racing	United States
98	Columbia Univ	Knickerbocker Motorsports	United States
99	Univ of Wisconsin - Madison	Wisconsin Racing	United States
100	Polytechnique Montréal	Formule polytechnique Montreal	Canada
102	Colorado Mesa University	Mesa Motorsports	United States

EV REGISTERED TEAM LIST

#	UNIVERSITY	TEAM NAME	COUNTRY
E201	Univ of Pennsylvania	PennElectricRacing	United States
E203	Polytechnique Montréal	Poly eRacing	Canada
E204	McGill Univ	McGill Formula Electric	Canada
E205	Missouri University of Science and Tech	Missouri S&T Formula Electric	United States
E207	Univ of Michigan - Dearborn	UMD Electric Racing	United States
E208	Carnegie Mellon Univ	Carnegie Mellon Racing	United States
E209	Univ of Calif - Davis	Formula Racing at UC Davis	United States
E210	Purdue Univ - W Lafayette	Purdue Electric Racing	United States
E211	Centro Universitario Da FEI	FÓRMULA FEI ELÉTRICO	Brazil
E212	California Polytechnic State Univ-SLO	Cal Poly Racing	United States
E213	San Jose State University	Spartan Racing Electric	United States
E214	Univ of Calif - Irvine	Anteater Racing	United States
E215	Massachusetts Inst of Tech	MIT Motorsports	United States
E216	California Institute of Technology	Caltech Racing	United States
E217	Georgia Institute of Technology	HyTech Racing	United States
E218	Olin College of Engineering	REVO Electric Racing	United States
E219	Univ of Illinois - Urbana Champaign	Illini Formula Electric	United States
E220	Univ of Manitoba	Polar Bear Racing Electric	Canada
E221	Portland State Univ	Viking Motorsports	United States
E222	Univ of Waterloo	Waterloo Hybrid-Electric	Canada
E223	Pakistan Navy Engineering College	Formula Electric Racing - NUST	Pakistan
E224	Univ of Texas - Arlington	UTA FSAE	United States
E225	Kennesaw State University	KSU EVT	United States
E226	Univ of Washington	UW Formula Motorsports	United States
E229	Univ of Akron	Zips Electric Racing	United States
E230	Czech Technical Univ of Prague	eForce FEE Prague Formula	Czech Republic
E235	Univ of Calif - Santa Cruz	Formula Slug	United States

NUCOR PADDOCK RULES

Everyone (participants, volunteers & spectators) at Formula SAE Lincoln/Electric would like to enjoy an accident free event. The following guidelines have been established to advise teams of potential unsafe practices in the paddock area.

BEHAVIOR: Alcohol, illegal drugs, weapons or other illegal material are prohibited on the event site during the competition. Use of motorcycles, quads, bicycles, skateboards, rollerblades, scooters, or similar person-carrying devices in any part of the competition area, including the paddocks, is prohibited. (Rules D10.5, D11.6, D11.7)

DRIVER'S EQUIPMENT: Anytime the driver is in the cockpit with the engine running, the following approved safety equipment must be worn: helmet, driver's suit, racing gloves, goggles/face shields, racing shoes, and hair covering, if necessary (Rule B17 "Equipment Requirements").

DRIVING PRACTICE: Practice is only to take place in the designated areas during designated hours.

ENGINE RUNNING (IC ONLY): Engines may be run in the paddock provided the car has passed parts 1 and 2 of technical inspection and the following conditions are satisfied (Rule C.2.7):

The car is on an adequate stand, and (B) The drive wheels are at least 10.2 cm (4 in) off the ground, or the drive wheels have been removed. Note – People may not be underneath the vehicles while engines are running.

ENGINE RUNNING/SETTING THE TRACTIVE SYSTEM ACTIVE (EV ONLY): Any time the tractive system is activated an Electrical Safety Officer (ESO) must be involved. Activation of the tractive system in the paddock is allowed provided the car has passed EV tech inspection and the following conditions are satisfied (Rule C.27).The car is on an adequate stand, and (B) The drive wheels are at least 10.2cm (4 in) off the ground, or the drive wheels have been removed. Note – People may not be underneath the vehicles while the tractive system is active.

FIRE EXTINGUISHERS: Fire extinguishers are to be immediately accessible at all times. All team members must be familiar with their use. A fire extinguisher must accompany the car wherever it is in the paddock or moved to any part of the site. A team member must hold a fire extinguisher ready whenever the car is running in your stall.

FIRES & SMOKING: No open fires in the paddock including BBQ grills, oxy-acetylene torches, heaters, cigarettes, etc. Electric hot plates and MIG or TIG welding (with gas bottles safely secured) are allowed in your stall. Propane BBQ grills (NO charcoal) may be used only in the designated grass area near Danley Building. Smoking is prohibited onsite.

FUEL & OIL: No open fuel containers. All fuel containers must be DOT approved. Waste oil, etc., is to be taken to the fuel station for disposal. Fueling/Refueling is only allowed at the fuel station.

JACKING: When supporting cars off the ground, use strong, sturdy stands which support the vehicle in a stable and secure way. Do not use milk crates, piles of wood, four of the strongest team members, etc.

RESTRICTED AREAS: Please reference the Restricted Areas document.

UNDER NO CIRCUMSTANCES IS ANYONE TO CROSS OVER ORANGE SNOW FENCE.

TRASH: It is the Teams' responsibility to keep their Paddocks clean throughout the event. There are trash dumpsters and receptacles near every paddock row. No trash (including broken parts, old furniture, worn out tires or other materials) may be left behind at the end of the event. (Rule D10.7) Please Note: We are operating next to an active runway. Please be receptive to trash overflow.

VEHICLE MODIFICATIONS: If you make any major modifications to your car beside FSAE Rule T1.2.2, cars must return to scrutineering for re-approval

NUCOR PADDOCK RULES CONT.

VEHICLE MOVEMENT (IC ONLY): Vehicles may not move under their own power anywhere but on the practice or competition tracks. Whenever a car is moved, (Rule D13.1) there must be:

- A driver wearing a full safety suit seated in the cockpit
- A fire extinguisher accompanying the car at all times
- Someone pushing the car with a push bar

VEHICLE MOVEMENT (EV ONLY):Vehicles may not move under their own power anywhere but on the practice or competition tracks. Whenever a car is moved, (Rule D13.1) there must be:

- A driver wearing a full safety suit seated in the cockpit
- A fire extinguisher accompanying the car at all times
- Someone pushing the car with a push bar
- The detachable handle or key of the tractive system master switch must be taken-off completely and kept by an Electrical Safety Officer (ESO).
- In the event the car has not passed E-Scrutineering, the HVD must be disconnected while the car is moved around on the event site. This also includes taking part in static events.

WORKING ON THE VEHICLE (ALL TEAMS): Tools are expected to be used safely. Wear safety glasses when cutting, grinding, etc. Wear appropriate eye protection while welding.

WORKING ON THE VEHICLE (EV TEAMS): Additional requirements apply for FSAE Electric. Activities on the energized tractive system or accumulator must take place in the Charging Tent. An Electrical Safety Officer (ESO) and at least one more team member, who can intervene in case of emergency, must attend every activity on the tractive system. Only members of your team and Scrutineers are allowed to stay behind the barrier tape/markings. After any activity on the tractive system during which seals were broken an E-Scrutineering is mandatory! Work on the energized tractive system or accumulator must satisfy the following guidelines:

- Car/accumulator must be separated with barriers
- All team members working on the system must wear appropriate personal protective equipment (gloves).
- Insulated tools must be used when working on any live circuit
- A sign is clearly visible stating “High Voltage Work” including the maximum voltage of the system being worked on and the name/contact info of the ESO.
- At least one team members must not directly be involved in the work conducted on the accumulator, but must be there to assist in case of an incident.

NUCOR PADDOCK RULES CONT.

Activities on the de-energized tractive system outside the accumulator may be performed in the paddock. The following procedure must be followed:

1. Switch off the tractive system master switch and lock out per team procedure.
2. Open/Remove the HV disconnect
3. Check for zero-potential using the three point test
4. Install a sign, that declares the car as electrically secured/de-energized. Note the name of the ESO supervising the activities on the sign. The ESO is the only person who may remove the sign and re-energize the tractive system.

In case of measurements on the energized system or an activation of the tractive system in the tent for testing purposes please keep to the following procedure:

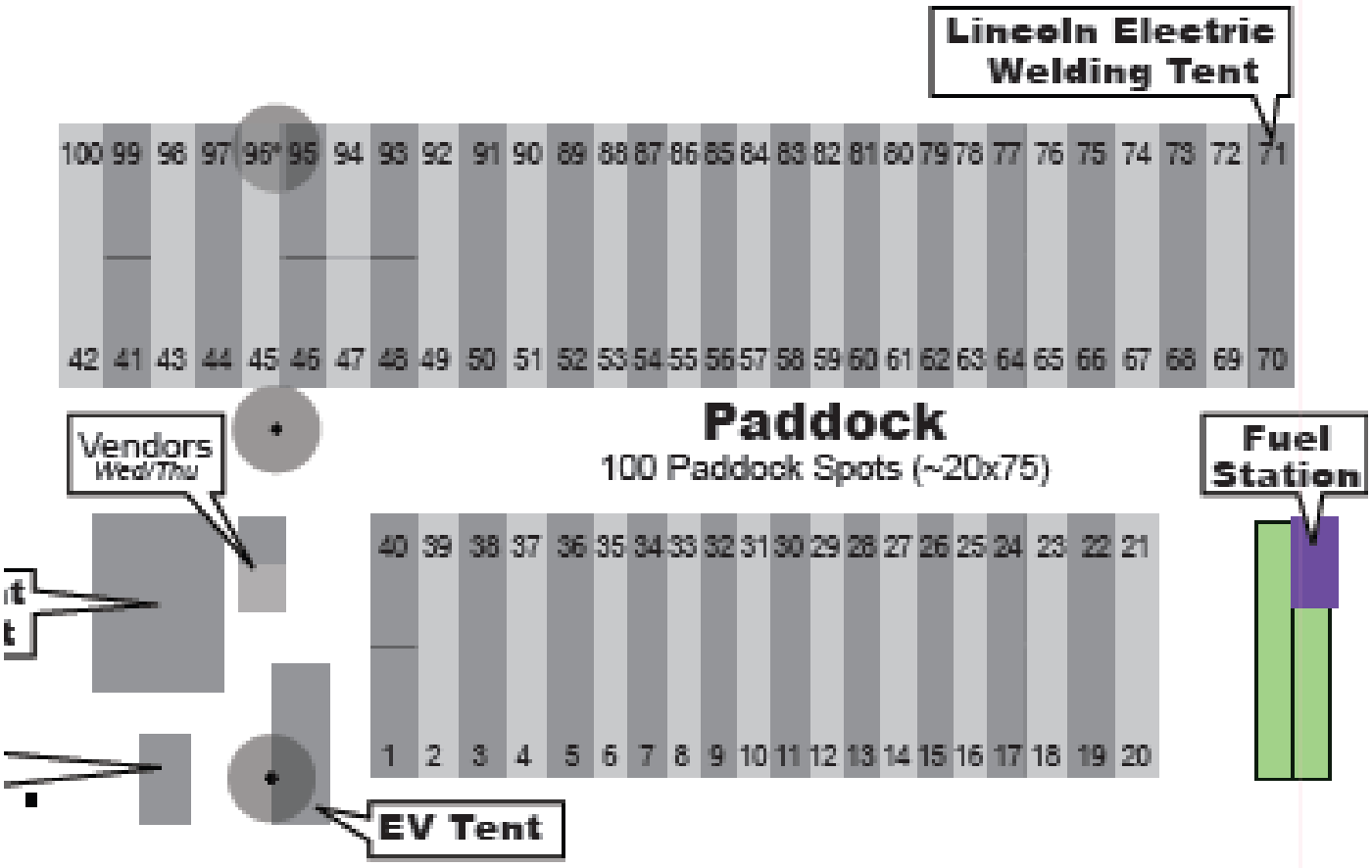
1. Separate the car with barrier tape/markings provided by officials
2. The car must be jacked up and the drive wheels removed
3. One team member must be prepared to push emergency button at any time
4. Team members who take part in the measurement activities must wear compliant safety equipment and use appropriate measurement devices and tools.
5. The tractive system must only be activated for as long as necessary

A SPECIAL NOTE FOR DRIVERS: All drivers should do a check of critical fasteners and components on their vehicles to assure complete control during the driving events. Fasteners come loose, parts break due to fatigue, and occasionally someone forgets to torque a nut – this may have serious consequences for your safety!

REMEMBER: USE THE KILL SWITCH in case of an engine, brake malfunction, or any serious incident such as crash or fire.

HAVE FUN – DRIVE SAFE – USE COMMON SENSE

NUCOR PADDOCK LAYOUT



COST

EVENT CAPTAIN: Susan Zukowski

LOCATION: Main Tent

OVERVIEW:

Each team will prepare a report of their car's cost to be evaluated by the cost judges. The concept of the cost event is to obtain an accurate estimate of cost of the car in a limited production. The report is in effect your cost proposal to the senior management of a company to get them to invest in your product line. The more information that you can supply to them, the more professional the look of your materials, the more likely the company may be willing to look at the product itself. This is the goal of the cost report itself. Additionally, the teams will also prepare an electronic Bill of Materials using a shared database with standard materials and processes and a detailed process description. This evaluates not only the cost of the car, but also the team's ability to prepare an accurate engineering cost estimate and know exactly how the vehicle would be built. The car with the lowest corrected cost and the best report will win the event. The event can be divided in to three separate sections - the cost report itself, visual inspection, and 'real case scenario' discussion.

THE COST REPORT:

The actual cost report is due into the judges approximately six to seven weeks prior to the event at the venue. Books must be mailed before the post mark deadline or the book will incur a penalty of 10 points per day after that date. The cost report is judged on the basis of the cost of the car and quality of the cost report. The cost of the car is determined by the cost of the parts and fabrication using established manufacturing practices and the application of "Lean Manufacturing" principles. The report will follow the guidelines set forth in the published rules. From this analysis, the judges (in 9 distinct areas of expertise) will determine if all parts and processes were included and if unreasonably low (determined by the experience of the judges) - the judges will add penalties if there are errors, items omitted, or have costs below reasonable estimates – at either standard point(s) deduction or at a rate equal to twice the cost error, whichever is greater. We have eight teams that review each and every book based on their expertise. The costs and penalties will then determine the cost score. The report score will be given based on the quality of the report and its overall presentation. The report score ranges from 0 to 40 points. The price score will be awarded based on the following formula:

$$\text{PRICE SCORE} = \frac{40 * (PMax) / (Pyour) - 1}{(PMax) / (PMin) - 1}$$

TOTAL COST SCORE =

Price Score (max 40) [Generated by formula above] + Report Score (max 40) [Accuracy, Format, Part Content] + Visual Inspection and "Real Case" Discussion Score (max 20)

(NOTE: Pyour is the adjusted cost of your team's car with penalties, Pmin is the adjusted cost of the lowest cost car in the competition, PMax is the adjusted cost of the highest cost car in the competition)

THE VISUAL INSPECTION AND "REAL CASE" EVALUATION:

On the day of the event, the cost event judges will man seven bays with appointments in each bay every half-hour in order to see every competing car. This is to make sure that the parts that are on the vehicle are reported in the cost report and that nothing has been added since the cost report's publication.

COST CONT.

The focus of the cost event centers on the cost of the vehicle and the process of building the vehicle and the components contained therein. At the time of check-in at our event, the designated team representative will randomly draw to determine which of the nine random "real case" scenarios the team will be discussing in detail. These cases will encompass real issues that the team may encounter and how they would handle them in reference to their own team vehicle, systems or parts. The cost judges will also question the students regarding the report, process, and "real case". This is a critical step in the cost event process. This discussion of the 'real case' and the visual inspection on the even day can only help the student's team. If this appointment is missed the team will sacrifice the twenty points for this portion of the event. If the team feels that for some reason their appointment time needs to be changed they will need to contact the event captain to make necessary arrangements.

The time allotted for the appointment on event day is ½ hour per team at the designated time for that school. That time can then be broken down as follows.

CHECK IN:	1 or 2 minutes
VISUAL INSPECTION:	4 to 5 minutes
REAL CASE SCENARIO DISCUSSION**:**	20 Minutes

Addenda to the report can be taken into consideration to cover any necessary changes made in the car. These addenda will only be accepted at the time of registration at the event and must be in the format proscribed by the rules (Appendix C-5).

In addition to the above, the cars with the lowest costs will be subject to a physical audit to make sure that they included all processes and materials on their vehicle in the cost report. The audits will be held on the same event day but by a separate team of auditors some time after their initial appointment with the cost area. The adjustments that this team of auditor makes will be included in the final scores as well.

The final scores are tabulated and presented at the end of the judging day to the statisticians and are posted the next morning for the students viewing. Once posted, the scores may be protested for only 30 minutes, after which the scores become final.

TIPS FOR A GOOD COST REPORT:

- Follow the rules - put the items and processes where the guidelines tell you to put them
- Include an eBOM (Electronic Bill of Material) on CD in MS Excel that follows the format of the 2016 FSAE Rules.
- Create the eBOM using the on-line FSAE Cost Event Database utilizing standard materials, processes and tools.
- No receipts necessary any more
- Include any photographs, pictures, drawings, blue prints, etc. in the appropriate sections of the book to help us understand the design processes used in manufacturing the parts
- If you must - err on the high side rather than cut yourself short
- Detail any processes or materials not already specified in the standard tables and submit AIR (add item request) to have them added to the standards table if needed.
- Be careful to postmark by deadline, no need to throw away good points by slack timing.
- Carefully consider Make/Buy decisions – these often result in dollars being spent more wisely.

REAL CASE SCENARIO

Rule C.3.3.3 states that the third part of the Cost Event will be a "real case" scenario where students will have to respond to a challenge related to cost or manufacturing of the student vehicle."

THE REAL CASE SCENARIO FOR THIS EVENT WILL BE ONE OF THE FOLLOWING:

The Cost Judges have reviewed the Cost Report that you have submitted and they have determined that the cost of the _____ on your car is substantially higher than expected.

Your task at the event is to present the Cost Judges with your proposals to reduce the cost of the _____ on your car by 15%.

The presentation must fulfill the following requirements:

- No longer than 5 minutes
- Flip chart pages (optional)
- No handouts or use of electronic devices.
- Must be based on the system on your car.

Your presentation will be evaluated on:

- The process or methodology(ies) used to develop the proposal(s)
- The alternatives presented
- The credibility of the proposals

The team's presentation skills will NOT be scored.

The blanks above will be randomly drawn choices of the following:

1. Wheel Hubs and Lugnuts
2. Seats and Restraints
3. Pedal Assemblies

Rules Committee,

FSAE.

IC COST SCHEDULE

* IC Cost Event - 7 Bays, each appointment is 1/2 hour long

	A	B	C	D	E	F	G
	1	2	3	4	5	6	7
8:00 AM	***training***	***training***	***training***	***training***	***training***	***training***	***training***
8:30 AM	***training***	***training***	***training***	***training***	***training***	***training***	***training***
9:00 AM	80 - California State Univ - Chico	29 - Arizona State Univ - Tempe	52 - Southern Illinois Univ - Carbondale	49 - Univ of Washington	20 - Univ of Calif - Irvine	51 - Southern Methodist Univ	11 - Universidade Federal Do Rio Grande Do Su
9:30 AM	-	4 - Univ of Kansas - Lawrence	90 - Kettering Univ	25 - California State Univ - Northridge	58 - Univ of New Mexico	65 - Grand Valley State Univ	47 - Carleton Univ
10:00 AM	54 - Univ of Southern California	35 - Univ of Louisville	67 - Univ of North Dakota	14 - Univ of Nebraska - Lincoln	7 - South Dakota State Univ	98 - Columbia Univ	77 - Iowa State Univ
10:30 AM	60 - California State Univ - Fullerton	3 - Univ of Illinois - Urbana Champaign	15 - Univ of Oklahoma	28 - Univ of Houston - Houston	38 - Northwestern Univ	36 - California State Univ - Long Beach	100 - Polytechnique Montréal
11:00 AM	46 - Universidad Nacional Autónoma de México	97 - Univ of Pittsburgh - Pittsburgh	56 - Univ of Alberta	42 - Wichita State Univ	45 - California State Poly Univ - Pomona	78 - Univ of Calif - Los Angeles	16 - Miami Univ
11:30 AM	83 - California State Univ - Fresno	84 - Ecole De Technologie Superieure	41 - Instituto Tecnologico de Chihuahua	70 - Honda Technical College Kansai	61 - Saint Louis Univ	102 - Colorado Mesa University	72 - Univ of Akron
NOON	**LUNCH**	**LUNCH**	**LUNCH**	**LUNCH**	**LUNCH**	**LUNCH**	**LUNCH**
1:00 PM	1 - San Jose State University	30 - Colorado School of Mines	39 - Univ of Texas - Austin	96 - Rose Hulman Inst of Tech	31 - Temple Univ	89 - Missouri University of Science and Tech	12 - California State Univ - Los Angeles
1:30 PM	57 - Univ of Calgary	48 - Texas A & M Univ - College Station	34 - Univ of St Thomas	18 - Oregon Inst of Tech	91 - Wayne State Univ	40 - Univ of Colorado - Denver	27 - Drexel Univ
2:00 PM	19 - California State Univ - Sacramento	9 - Louisiana State Univ	66 - Univ of Illinois - Chicago	86 - Yeungnam College of Science & Tech	74 - Univ of Arizona	85 - Univ of Massachusetts - Lowell	53 - Univ of Calif - San Diego
2:30 PM	50 - South Dakota School of Mines & Tech	92 - Auburn Univ	55 - Univ of North Texas	10 - Univ of Manitoba	22 - Univ of Massachusetts - Dartmouth	99 - Univ of Wisconsin - Madison	21 - Univ of Calif - Berkeley
3:00 PM	88 - Univ of New Brunswick	23 - San Diego State Univ	68 - Chandigarh Engineering College	71 - Oakland University	75 - Univ of Texas - San Antonio	33 - Univ of British Columbia - Okangan	24 - Univ of Wisconsin - Platteville
3:30 PM	82 - Universidad Panamericana	81 - Western Michigan Univ	95 - Univ of Toledo	17 - Western Washington Univ	-	-	-

EV COST SCHEDULE

*Electric Cost Event - 3 Bay, each appointment is 1/2 hour long

	H (EV)	I (EV)	J (EV)
	1	2	3
8:30 AM	***Training***	***Training***	***Training***
9:00 AM	E220 - Univ of Manitoba	E203 - Polytechnique Montréal	E235 - Univ of Calif - Santa Cruz
9:30 AM	E204 - McGill Univ	E214 - Univ of Calif - Irvine	E216 - California Institute of Technology
10:00 AM	E217 - Georgia Institute of Technology	E219 - Univ of Illinois - Urbana Champaign	E205 - Missouri University of Science and Tech
10:30 AM	-	E209 - Univ of Calif - Davis	E208 - Carnegie Mellon Univ
11:00 AM	E218 - Olin College of Engineering	E210 - Purdue Univ - W Lafayette	E207 - Univ of Michigan - Dearborn
11:30 AM	E212 - California Polytechnic State Univ-SLO	E230 - Czech Technical Univ of Prague	E223 - Pakistan Navy Engineering College
NOON	**LUNCH**	**LUNCH**	**LUNCH**
1:00 PM	E221 - Portland State Univ	E226 - Univ of Washington	E224 - Univ of Texas - Arlington
1:30 PM	E211 - Centro Universitario Da FEI	E215 - Massachusetts Inst of Tech	E225 - Kennesaw State University
2:00 PM	E213 - San Jose State University	E201 - Univ of Pennsylvania	E229 - Univ of Akron

DESIGN

EVENT CAPTAIN: Dr. David Redszus

LOCATION: Danley Building

ACTIVITIES

THURSDAY: 1st round judging
FRIDAY: Design Finals
FRI & SAT: Team Feedback in Paddocks
SATURDAY: Public Design Review

DESIGN JUDGING PROCEDURE:

Design judging starts promptly at 8:00 am on Thursday (see detailed design assignment schedule) in the Danley building. Each time slot is one hour long, with approximately 45 minutes for the judges to review the vehicle and interact with the team members. The remaining time is used by the judges to compile/compare notes and score the car. Teams will be notified by the judges when the car may be released from the queue. The first round of judging will end at 6:00 pm.

Typically 8-10 cars are selected for Design Finals. Design Finals are to be held Friday evening in the Danley Building (see schedule), and is not open to the general public.

Based upon the result of Design Finals, the top three cars are announced on Saturday morning. These cars will be presented at the Public Design Review (in the Main Tent) on Saturday (see schedule) where the overall Design winner will be announced. Regardless of whether you are one of the top 3, you are strongly encouraged to attend this review.

In addition, judges are available to visit your pit for private team specific feedback/consultation on Friday and Saturday. This opportunity is a great way to see what the Design Judges like (and dislike) about a FSAE car, for your improvement next year.

DESIGN GUIDELINES:

Student teams must submit Design Report (DR) and Design Spec Sheet (DSS) well prior to the competition. These two documents are used to pre-screen the teams, for balanced judging queues, as well as provide judges a 'sneak peak' at the designs. Teams that do not submit both a DR and DSS in a timely fashion are disqualified from the design event, and receive zero points. Per FSAE rules, each DR contains no more than four (4) pages of text, includes three pages of vehicle drawings (3-view drawings) and may include one page of optional material (8 page total). The DR is not judged based on length or amount of material. The DR should highlight design goals, processes, and details in engineering terms. The intended audience is one or more experienced engineers. While concise, the DR should cover all major vehicle systems, highlighting notable features. The DSS is a pre-set template teams use to detail system and component level specifications. This template must be adhered to.

It is the students' responsibility to prove to the judges that their vehicle is a first year car. Second year cars are not allowed at FSAE – Lincoln. If the structure of the frame is not obviously a completely new design from previous years, then thorough photo documentation should be provided to prove that the car is new as defined by the rules. The judges may deduct up to 30 points if photographic documentation shows that the remaining parts of the vehicle have not been significantly altered or if sufficient new design work has not taken place.

All cars must be weighed before Design Judging. It is recommended that you be weighed at least 30 minutes prior to your design judging time slot. Specific weights (with and without driver) are recorded and marked on-car for the duration of the competition. Teams who are late or miss their slots risk not being judged. For instance if a team finishes getting weighed at 9:40 for a 9:30 time slot, they have ten less minutes to be judged. In addition to not being able to earn as many design points, point penalties may also be applied. In fairness to all competitors, vehicles will be rolled in and out on schedule.

DESIGN CONT.

Design judging consists of 11 groups (queues) of judges. Each queue may have as many as five design judges. This means 11 cars are being judged simultaneously. We strive to make this as transparent a process as possible. The judges in each queue evaluate the following areas: Suspension; Frame/Body /Aero; Powertrain; Cockpit/Controls/Brakes/Safety; Systems Management/Integration; Manufacturability/Serviceability; Aesthetics/Style; & Creativity. Teams should make a point of reviewing the Design Judging Score Sheet on the official FSAE website. The score sheet gives the competitors good insight into how they will be judged, as well as giving them a detailed breakdown of each judging category. Each judge has a different area of expertise, and will seek out the student team member(s) responsible for that particular area of the car. There may also be roving judges with expertise in the areas of Aerodynamics, Composites Construction, and Electronics Integration. Such judges bring a higher level of expertise to these difficult areas, as well as help to provide judging consistency between queues. Such judges are assigned based on DR content. If your car makes use of aero, composites, or electronics, please ensure they are noted in your DR!

Each student team should have one representative who is prepared to discuss each of the above areas with each judge individually. This means five or more students. If the judges have to split their time between a single student; lower scores could result according to how much information the judges feel they have received. Students should bring any and all information they feel is relevant (charts, graphs, parts, photos, computers, video, etc.) to support their design efforts. The judges will give more credit (higher Design score) to documented engineering than to word of mouth. Simply showing up with a great car is not good enough. A high emphasis is placed on the student team's ability to Design, Build, Refine & Validate, and most importantly understand its car.

Design judge(s) from your queue are happy to visit you on Friday and/or Saturday, in order to return your score sheet, explain how/why you received the marks you did, as well as provide feedback on your team's design processes. The judges are strongly encouraged to make thorough notes and provide written feedback to the participants. Students are encouraged to approach Design Judges on the days following the Design Event to request additional feedback on their designs. This has historically proven to be among the most valuable parts of the competition for teams!

There will be a phone number posted and announced, which students can call in order to schedule an appointment for a debrief session with your Design Judges. The post-event debrief sessions can be very informative and all teams are encouraged to participate. Also, please ensure judges are given a current team on-site contact phone number, so they may contact you during design feedback scheduling.

At the conclusion of First Round Design Judging on Thursday, each judging queue typically nominates one or more cars for consideration into design finals. Technical comparisons between cars from different queues are considered and additional observations from the Chief Design Judges, Design Event Captain, and roving judges help assure consistency and objectivity in the final grading and finalists' selection. The Design Finalists are announced later that night online. Detailed scores for non-finalist teams are posted prior to mid-day Friday.

During Design Finals, only four team members are permitted with the vehicle at any time to converse with the judges. Any remaining team members must be outside the immediate judging area. Teams with more than four team members that remain in the judging area will be penalized. Team members may switch places (tag in, tag out) to have their proper systems represented.

Remember, the Design Event is an important assessment of your team's demonstrated knowledge of the vehicle design process and the various subsystems of your design. It is an opportunity for you to become a better engineer. It is NOT merely a review of how well you can make your car go faster!

IC DESIGN SCHEDULE

*Design Event - 9 bays - Each time slot is ONE hour long

	D	E	F	G	H	I	J	K	L
	1	2	3	4	5	6	7	8	9
8:00 AM	15 - Univ of Oklahoma	78 - Univ of Calif - Los Angeles	3 - Univ of Illinois - Urbana Champaign	28 - Univ of Houston - Houston	38 - Northwestern Univ	36 - California State Univ - Long Beach	75 - Univ of Texas - San Antonio	24 - Univ of Wisconsin - Platteville	60 - California State Univ - Fullerton
9:00 AM	16 - Miami Univ	1 - San Jose State University	39 - Univ of Texas - Austin	21 - Univ of Calif - Berkeley	40 - Univ of Colorado - Denver	57 - Univ of Calgary	31 - Temple Univ	18 - Oregon Inst of Tech	34 - Univ of St Thomas
10:00 AM	10 - Univ of Manitoba	9 - Louisiana State Univ	48 - Texas A & M Univ - College Station	30 - Colorado School of Mines	89 - Missouri University of Science and Tech	85 - Univ of Massachusetts - Lowell	53 - Univ of Calif - San Diego	74 - Univ of Arizona	96 - Rose Hulman Inst of Tech
11:00 AM	91 - Wayne State Univ	47 - Carleton Univ	55 - Univ of North Texas	90 - Kettering Univ	20 - Univ of Calif - Irvine	54 - Univ of Southern California	14 - Univ of Nebraska - Lincoln	77 - Iowa State Univ	35 - Univ of Louisville
NOON	**LUNCH**	**LUNCH**	**LUNCH**	**LUNCH**	**LUNCH**	**LUNCH**	**LUNCH**	**LUNCH**	**LUNCH**
1:00 PM	25 - California State Univ - Northridge	33 - Univ of British Columbia - Okangan	4 - Univ of Kansas - Lawrence	70 - Honda Technical College Kansai	95 - Univ of Toledo	71 - Oakland University	81 - Western Michigan Univ	82 - Universidad Panamericana	100 - Polytechnique Montréal
2:00 PM	17 - Western Washington Univ	45 - California State Poly Univ - Pomona	80 - California State Univ - Chico	49 - Univ of Washington	12 - California State Univ - Los Angeles	97 - Univ of Pittsburgh - Pittsburgh	46 - Universidad Nacional Autónoma de México	56 - Univ of Alberta	42 - Wichita State Univ
3:00 PM	58 - Univ of New Mexico	61 - Saint Louis Univ	41 - Instituto Tecnologico de Chihuahua	86 - Yeungnam College of Science & Tech	84 - Ecole De Technologie Superieure	102 - Colorado Mesa University	72 - Univ of Akron	66 - Univ of Illinois - Chicago	50 - South Dakota School of Mines & Tech
4:00 PM	51 - Southern Methodist Univ	11 - Universidade Federal Do Rio Grande Do Su	19 - California State Univ - Sacramento	7 - South Dakota State Univ	98 - Columbia Univ	92 - Auburn Univ	27 - Drexel Univ	99 - Univ of Wisconsin - Madison	22 - Univ of Massachusetts - Dartmouth
5:00 PM	88 - Univ of New Brunswick	29 - Arizona State Univ - Tempe	52 - Southern Illinois Univ - Carbondale	65 - Grand Valley State Univ	67 - Univ of North Dakota	83 - California State Univ - Fresno	23 - San Diego State Univ	68 - Chandigarh Engineering College	-

EV DESIGN SCHEDULE

*Electric Design Event - 3 bays - Each time slot is ONE hour long

	A (EV)	B (EV)	C (EV)
	1	2	4
8:00 AM	E218 - Olin College of Engineering	E210 - Purdue Univ - W Lafayette	E205 - Missouri University of Science and Tech
9:00 AM	E201 - Univ of Pennsylvania	E229 - Univ of Akron	E208 - Carnegie Mellon Univ
10:00 AM	E220 - Univ of Manitoba	E203 - Polytechnique Montréal	E207 - Univ of Michigan - Dearborn
11:00 AM	E204 - McGill Univ	E213 - San Jose State University	E211 - Centro Universitario Da FEI
NOON	**LUNCH**	**LUNCH**	**LUNCH**
1:00 PM	E214 - Univ of Calif - Irvine	E212 - California Polytechnic State Univ-SLO	E235 - Univ of Calif - Santa Cruz
2:00 PM	E230 - Czech Technical Univ of Prague	E219 - Univ of Illinois - Urbana Champaign	E216 - California Institute of Technology
3:00 PM	E217 - Georgia Institute of Technology	E226 - Univ of Washington	E223 - Pakistan Navy Engineering College
4:00 PM	E215 - Massachusetts Inst of Tech	E221 - Portland State Univ	E224 - Univ of Texas - Arlington
5:00 PM	E209 - Univ of Calif - Davis	-	E225 - Kennesaw State University

SALES PRESENTATION

SALES PRESENTATION SPONSORED BY: UMICORE

EVENT CAPTAIN: Rachel Trap

LOCATION: Arnold Elementary School, 5000 Mike Scholl St. Lincoln, NE 68524

DIRECTIONS:

1. Head out event site gate; turn left onto NW 36th Street
2. Turn right onto Mathis Street
3. Turn right onto NW 48th Street
4. Turn left onto W Cumming Street (passing Mike Scholl Street)
5. Parking will be located in back upper lot off W Cuming Street
6. Approx. 6 min travel time

PRESENTATION SEMINAR: Friday, June 17, 2016 at 9:30 AM in Main Tent

PRESENTATION HIGHLIGHTS: Saturday, June 18, 2016 at ~4:30 PM in Main Tent

OVERVIEW:

After a year of planning, fabricating, and testing a new, prototype vehicle, each team aspires to sell their vehicle design to a make-believe corporation. The competitors in this event will be judged on their ability to create and deliver a business case that convinces the judges that the team's design best meets the demands of the amateur, weekend competition market, and that it can be profitably manufactured and marketed (see A1.2 in the 2016 Formula SAE rules for notes on Vehicle Design Objectives). The team that makes the best presentation will win the event and score 75 points.

THE PRESENTATION:

Competitors are to make a presentation to upper level executives of an imaginary corporation. The presentation should tie together all factors that would influence the marketability, manufacturing feasibility and profitability of their vehicle design. It should include an understanding of the marketplace and target customer, and show how their team's design meets the requirements for each.

THE EVENT:

Each competitor will be assigned a 30 minute window and location. This includes the time the judges need to score. Judges may allow a team to begin early, but the completion time (30 minutes) should be strictly enforced. The presentation itself is not to last any longer than ten minutes, at which point the judges will stop any presentations continuing. A question and answer period of up to five minutes will immediately follow, wherein only judges may ask questions and only presenters may answer. The audience (usually team members) may not ask questions or make comments. It is allowable for a presenter to only participate in the question and answer section, however he/she must be a member of the 'presentation group,' as defined by S5.3.2 of the 2016 Formula SAE rules.

SALES PRESENTATION CONT.

A team of two to four judges will grade the competitors. The judges will use the form in Appendix S-6 of the Formula SAE rules for event scoring: "Presentation Judging." This form breaks the scoring down into five equally weighted categories: Content, Organization, Visual Aids, Delivery, and Questions. A perfect score on the judges' form will be 50 points. The judges' combined score may be adjusted because some judging teams may grade, on an average, higher or lower than other judging teams. The competitor's final score will be calculated using the equation defined in the PRESENTATION SCORE section.

In an attempt to encourage commonality amongst static events, the 2016 Formula SAE Rules contain Section 3.1, the Business Logic Case. Presentation Event Judges are asked to use the Business Logic Case to judge whether the given presentation is appropriate for the market and business strategy that the team has identified. See Article 3, Sections S3.1 through S3.3 for a detailed description of the Business Logic Case.

PRESENTATION HIGHLIGHTS:

The three top-scoring teams will be required to publicly reprise their presentations. For 2016, the Presentation Highlights remain a non-scored event and will be held (tentatively) at 4:30 PM before the Awards Ceremony. The winners will be awarded immediately following the presentation highlights. The expansion of this event is an effort on behalf of the organizers to inspire creativity amongst competitors in subject matter that is typically not engineering curriculum-inclusive.

PRESENTATION SCORE = 75 * Pteam /Pmax

If a team misses their allocated period, the team will receive zero (0) Presentation points.

PRESENTATION TIPS:

- Spell-check all visual aids, presentation tools, etc.
- There is no dress code. However, bad first impressions are difficult to remedy.
- Remember that equipment has been known to fail. Copies can be ruined in transit, etc. Consider alternatives in case something should go wrong. Each team is responsible for bringing their team's own equipment. Remember, extension cords can be important and laptop speakers may not project sound very well.
- Have a team member record your presentation and the judges' commentary for your team's future FSAE efforts. Teams are allowed to have as many spectators that will reasonably fit into the presentation room. People not associated with the presenting team are allowed to view presentations only if the presenting school gives their permission before the start of the presentation. This includes news reporters and photographers.
- The most technically knowledgeable person on the team may not be the best person to lead the presentation team. A team may want to choose someone who is a charismatic public speaker.

IC SALES PRESENTATION SCHEDULE

*Presentation Event - 6 conf. rooms/suites, each appointment is 1/2 hour long

	A	B	C	D	E	F
	1	2	3	4	5	6
8:00 AM	***Training***	***Training***	***Training***	***Training***	***Training***	***Training***
8:30 AM	***Training***	***Training***	***Training***	***Training***	***Training***	***Training***
9:00 AM	70 - Honda Technical College Kansai	95 - Univ of Toledo	71 - Oakland University	81 - Western Michigan Univ	82 - Universidad Panamericana	100 - Polytechnique Montréal
9:30 AM	46 - Universidad Nacional Autónoma de México	23 - San Diego State Univ	68 - Chandigarh Engineering College	97 - Univ of Pittsburgh - Pittsburgh	45 - California State Poly Univ - Pomona	42 - Wichita State Univ
10:00 AM	17 - Western Washington Univ	61 - Saint Louis Univ	41 - Instituto Tecnologico de Chihuahua	86 - Yeungnam College of Science & Tech	84 - Ecole De Technologie Superieure	102 - Colorado Mesa University
10:30 AM	49 - Univ of Washington	12 - California State Univ - Los Angeles	11 - Universidade Federal Do Rio Grande Do Su	25 - California State Univ - Northridge	33 - Univ of British Columbia - Okangan	80 - California State Univ - Chico
11:00 AM	21 - Univ of Calif - Berkeley	40 - Univ of Colorado - Denver	57 - Univ of Calgary	31 - Temple Univ	18 - Oregon Inst of Tech	34 - Univ of St Thomas
11:30 AM	58 - Univ of New Mexico	66 - Univ of Illinois - Chicago	92 - Auburn Univ	27 - Drexel Univ	88 - Univ of New Brunswick	51 - Southern Methodist Univ
NOON	**LUNCH**	**LUNCH**	**LUNCH**	**LUNCH**	**LUNCH**	**LUNCH**
1:00 PM	7 - South Dakota State Univ	3 - Univ of Illinois - Urbana Champaign	22 - Univ of Massachusetts - Dartmouth	65 - Grand Valley State Univ	19 - California State Univ - Sacramento	99 - Univ of Wisconsin - Madison
1:30 PM	15 - Univ of Oklahoma	78 - Univ of Calif - Los Angeles	60 - California State Univ - Fullerton	28 - Univ of Houston - Houston	38 - Northwestern Univ	36 - California State Univ - Long Beach
2:00 PM	16 - Miami Univ	35 - Univ of Louisville	24 - Univ of Wisconsin - Platteville	67 - Univ of North Dakota	83 - California State Univ - Fresno	72 - Univ of Akron
2:30 PM	98 - Columbia Univ	47 - Carleton Univ	77 - Iowa State Univ	90 - Kettering Univ	20 - Univ of Calif - Irvine	54 - Univ of Southern California
3:00 PM	39 - Univ of Texas - Austin	30 - Colorado School of Mines	89 - Missouri University of Science and Tech	Open	1 - San Jose State University	48 - Texas A & M Univ - College Station
3:30 PM	9 - Louisiana State Univ	52 - Southern Illinois Univ - Carbondale	53 - Univ of Calif - San Diego	29 - Arizona State Univ - Tempe	10 - Univ of Manitoba	55 - Univ of North Texas
4:00 PM	75 - Univ of Texas - San Antonio	14 - Univ of Nebraska - Lincoln	4 - Univ of Kansas - Lawrence	85 - Univ of Massachusetts - Lowell	74 - Univ of Arizona	91 - Wayne State Univ
4:30 PM	50 - South Dakota School of Mines & Tech	56 - Univ of Alberta	96 - Rose Hulman Inst of Tech	0	0	0

EV SALES PRESENTATION SCHEDULE

*Electric Presentation Event - 3 conf. room/suites, each appointment is 1/2 hour long

	G (EV)	H (EV)	I (EV)
	1	2	3
8:30 AM	***Training***	***Training***	***Training***
9:00 AM	E213 - San Jose State University	E209 - Univ of Calif - Davis	E224 - Univ of Texas - Arlington
9:30 AM	E212 - California Polytechnic State Univ-SLO	E211 - Centro Universitario Da FEI	E225 - Kennesaw State University
10:00 AM	E215 - Massachusetts Inst of Tech	E223 - Pakistan Navy Engineering College	E235 - Univ of Calif - Santa Cruz
10:30 AM	E226 - Univ of Washington	E230 - Czech Technical Univ of Prague	-
11:00 AM	E217 - Georgia Institute of Technology	E214 - Univ of Calif - Irvine	E221 - Portland State Univ
11:30 AM	E229 - Univ of Akron	E201 - Univ of Pennsylvania	E216 - California Institute of Technology
NOON	**LUNCH**	**LUNCH**	**LUNCH**
1:00 PM	E219 - Univ of Illinois - Urbana Champaign	E203 - Polytechnique Montréal	E205 - Missouri University of Science and Tech
1:30 PM	E218 - Olin College of Engineering	E210 - Purdue Univ - W Lafayette	E207 - Univ of Michigan - Dearborn
2:00 PM	E220 - Univ of Manitoba	E204 - McGill Univ	E208 - Carnegie Mellon Univ

DYNAMIC EVENT GENERAL INFO

TEAM/DRIVER MEETINGS - MANDATORY: Attending drivers meetings is mandatory if you are planning to drive. All team captains and drivers must attend. The briefings will contain general event information and detailed information about the dynamic events. Check the schedule.

DYNAMIC EVENTS AREA– The dynamic events area will be indicated by lines on the pad and signs on the lines. Although fences defining the dynamic area will exist in some areas – the dynamic event rules remain in effect for any of those that are without fences. Specifically – Each team will be issued four (4) dynamic passes which must be displayed by the team members in the dynamic area.

Team members without dynamic area passes are classified as spectators and must remain in the spectator areas.

DYNAMIC/TECH AREA PASSES- Each team is issued 4 dynamic area passes. FSAE Electric Teams will be given an additional pass for the Electrical Safety Officer. You must have a pass to gain access to the dynamic events area. This pass is also used for tech inspection as we limit the number of team members with the car in tech to 4. FSAE Electric teams will have 5 in Tech with their ESO. Passes will also be required for EV team members entering the Charging Tent.

WEATHER– This is one of the factors which cannot be influenced by the event organization. So please be aware that the timetable will not change due to rain. Under normal conditions, the track is declared dry. If it is necessary to declare damp or wet conditions, there will be signs and announcements made at the dynamic event area. Please read the rules for more information.

CAR SET-UP ALTERATIONS(FSAE Rules T1.2.2) – Teams do not have to use the same car set-up for all the dynamic events and are encouraged to make adjustments (i.e., tire pressure or suspension settings) to give the vehicle characteristics best suited to each specific event. However, the car must comply with the rules (i.e., ground clearance, etc.). Teams that remove their car from the event site automatically lose their stickers from technical inspection (E-Scrutineering or Mechanical Scrutineering).

FUEL STATION (IC ONLY)

FUEL CAPTAIN: Ken Krenk

LOCATION: Near Paddocks. See Map

The fuel station will provide unleaded racing gasoline (93 and 100 octane) or E85 (ethanol). No other fuel or additives are permitted.

All vehicles must indicate with a sticker, the type of fuel on or near the fill pipe. This sticker can be obtained at Tech Inspection.

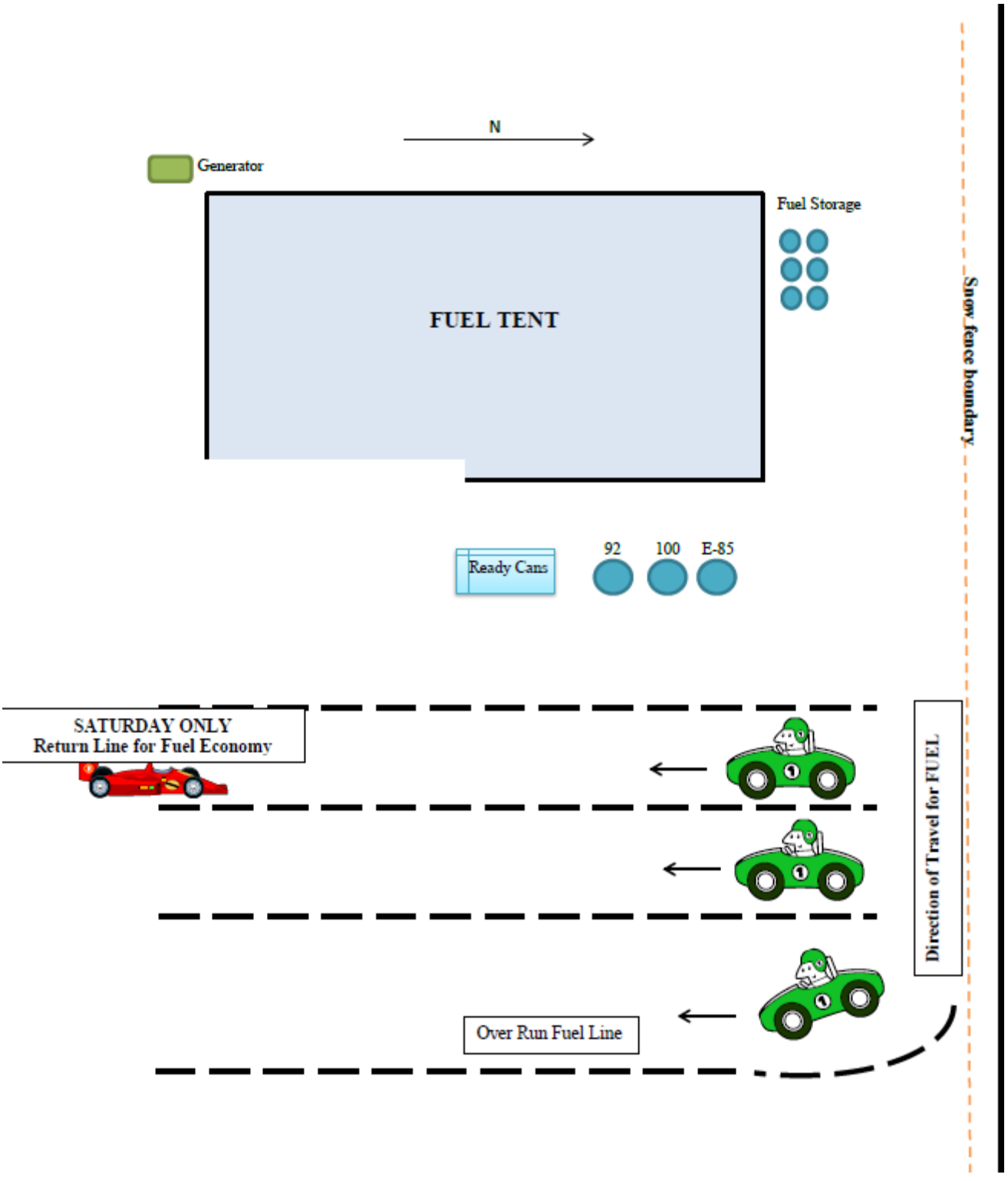
NOTE: No vehicle will be provided with fuel until it has passed scrutineering. The first portion of a four-part sticker will be applied in a location near or on the nose cone of the vehicle.

Follow the specific safety guidelines while in the fueling area:

1. All engines must be turned off; cars are to be pushed to and from fuelling.
2. Only the driver, wearing a driving suit, is permitted in the area as fuel is dispensed.
3. No mobile phones are allowed in the fuelling area!!
4. A permanent line or mark must be used to indicate the “full” level. NO TAPE,
5. The tank is to be filled to the max. level line each time the car is refueled.
6. Re-fueling must be possible without the removal of any body parts of the car.
7. Fuel Station must update the tech sheet before vehicle proceeds to tilt. Tilt will not accept vehicles with a tech sheet lacking fuel information and signature.

The first time the vehicle receives fuel, the car must proceed (with engine off) to the tilt table.

FUEL STATION (IC ONLY) CONT.



CHARGING TENT/ACCUMULATOR WORKPLACE

LOCATION: Near Paddocks. See Map

The charging of tractive system accumulators is exclusively allowed in the charging tent.

No more than four team members of an individual EV team are allowed to be in the charging area at the same time; members must have dynamic passes. Only charging devices marked during E-Scrutineering may be used. Accumulators must be removed from the vehicle and on the accumulator hand cart when charging. A team member has to always stay with the accumulators during charging. The accumulator containers must have a label with the following data:

- Team name
- Safety responsible (SR)
- Approximate time at which the charging period ends (date and time).

The team member supervising the car while charging should have necessary knowledge to act accordingly if any problems occur.

Activities on accumulators are permitted exclusively at the charging tent. Only EV team members and FSAE officials have access to it. A volunteer is present at all times to monitor activity. No more than four team members of an individual EV team are allowed to be in the charging area at the same time. Work on the accumulators must always be supervised by a safety responsible.

Charging Power provided in the charging tent will be 125V, single phase, AC with the circuit breaker at 20A through common North American (NEMA) three write grounding receptacles. Teams should be aware that the continuous current of a circuit breaker installed in an application is dependent on multiple factors and typically the continuous current is ~80% of the rated current. Teams are responsible for providing any electrical cords needed to connect your charging equipment to main power receptacles. PLEASE NOTE: The charging tent is 30' wide and 90' long and all the receptacles are located in single power box. Exactly where that box will be located in relation to the side of the tent cannot be determined until tent is set up.

Each team will be assigned to a roughly 10' x 15' work/charging area. Each bay will be equipped with an 8' long table and 2 chairs. Work/charging stations will not be permanently assigned; they are one first serve, first come basis when team enters tent.

Equipment – Electrical teams are required (Rule EV 8.4) to have the following tools with them whenever their accumulators are being charged or are open:

- Insulated cable shears
- Insulated screw drivers
- Multi-meter with protected probe tips
- Insulated tools, if screwed connections are used in the tractive system
- Face shield
- HV insulating gloves which are within test date
- 2 HV insulating blankets of at least 1.0m2each
- Safety glasses with side shields for all team members that might work on the tractive system or accumulator

NOTE: Only mechanical work that does not involve the energized electrical system or accumulators may be performed in the team's paddock. Under NO CIRCUMSTANCE may you open any electrical system or accumulator container in your paddock.

TECHNICAL INSPECTION

Cars have to pass a technical inspection process before being allowed to practice or take part in the dynamic events. Cars/teams will be given technical inspection stickers for each process they passed as outlined below:

IC Cars –	Part 1	Mechanical Scrutineering
	Part 2	Tilt Test
	Part 3	Noise Test
	Part 4	Brake Test

EV Cars –	Part 1	Electrical Scrutineering (Ready-to-Drive Noise Test will be completed here)
	Part 2	Mechanical Scrutineering
	Part 3	Tilt Test
	Part 4	Rain Test
	Part 5	Brake Test

ELECTRICAL SCRUTINEERING

CHIEF OF TECH: Danny Bocci

LOCATION: Danley Building

The car may only be moved around on the event site with all master switches and shutdown buttons in off-position and the HVD open. Therefore, the CS-master switch, the TS-master switch, the right, the left and the cockpit shutdown button have to be turned off! Furthermore, the detachable handle or key of the tractive system master switch has to be removed and kept safe by a safety responsible.

Technical Inspectors will mark or seal various different approved parts (i.e. insulation monitoring device, accumulator containers, energy meter, tires, rims etc.). The car can be disqualified from any dynamic event by using unmarked parts or substituting marked parts. Parts with broken seals are equivalent to being unmarked.

Broken seals can only be replaced by a technical inspector.

TO SCRUTINEERING YOU MUST BRING::

- Accumulator charger to be used during the event
- All accumulator containers to be used during the event
- Data sheets for all used parts in the tractive system
- Copy of the ESF
- Accumulator Container Hand Cart, if needed
- Tools and protection equipment as defined in the FSAE rules
- Print-out of rule questions (if needed)
- Additional tools/devices necessary to prove functionality of safety systems

NOTE: Four team members maximum in the inspection box

INSULATION MONITORING DEVICE TEST):

The insulation monitoring device will be tested during E-scrutineering. This is done by connecting a resistor between several parts of the tractive system and electrically conductive vehicle parts while the tractive system is active. The size of the resistor is defined as 250 Ohm/V related to the maximum tractive system operation voltage. The test is passed if the insulation monitoring device shuts down the tractive system whenever the resistor connects the tractive system to grounded parts.

The IMDT may be repeated at any time during the event. After the car passes the test for the first time, critical parts of the tractive system will be sealed. The vehicle is not allowed to take part in any dynamic event if any of the seals are broken until the IMDT is successfully passed again.

MECHANICAL SCRUTINEERING

CHIEF OF TECH: Matt Petty

LOCATION: Danley Building

OVERALL PROCEDURE:

Technical Inspection will be broken down into three (3) parts:

- Checks of the all the drivers' safety gear and the "rain" tires. (This is where you will get your "take-a-number" for the Vehicle Checks part of Tech Inspection. Bring your Tech Form.)
- Vehicle Checks
- Starting Thursday, additional Driver Checks (helmet clearance, head restraint, seat belts and egress) for the remaining drivers. Only one member per team will be checked Wednesday

Take-A-Number and the safety gear and rain tire checks time & location will be announced Wednesday. The opening will be announced over the PA.

The checks for additional drivers will open on Thursday morning. If a driver is not at the track by Thursday, the team must contact the Chief of Tech to arrange for an appointment prior to their dynamic event.

WHERE:

- For the Safety Gear checks, outside Danley Building.
- For the Vehicle Checks, enter Danley Building.
- The checks of the additional drivers will be inside Danley Building. (Starting Thursday)

PROCEDURE:

You must have with you:

- The car
- The Inspection Sheet (Tech Form). Fill in the information in the top section.
- The push bar
- Copies of your Structural Equivalency Form, and if any, your Rules question e-mails
- A driver with his/her full set of safety gear.
- The car on your "dry" tires. Per Rule B.6.4.1, your dry tires are the ones on the car at Tech Inspection.
- The Impact Attenuator that you tested (Rule B.3.21.4) & permitted copy of report.

MECHANICAL SCRUTINEERING CONT.

PROCEDURE: ADDITIONAL DRIVER CHECKS

With you, you must have:

- The car
- The Inspection Sheet and Driver Sheet. Fill in the drivers' names.
- The push bar and fire extinguisher.
- Certain Driver's gear: helmet, arm restraints, gloves, long pants, long-sleeved shirt, and close-toed shoes must be worn for the egress, harness, and clearance checks. Driving suits, balaclavas, and race shoes are not required.

Note: Only four (4) team members will be allowed into the actual Tech Inspection area. All other team members, the Faculty Advisor and other spectators will be required to watch from outside the inspection area. The Dynamic Passes will be used as the "pass" into the inspection area. Team members may rotate in and out of the inspection area as required as long as there are no more than four in the inspection area at any one time.

Only when you have all parts of the Tech sticker will you be allowed to compete in the dynamic events or run on the practice track.

If you have items that need to be rectified, the Tech form will be returned to you (the team), you will not get your sticker, and you will have to present your car at Tech again.

TAKE-A-NUMBER INSTRUCTIONS

So that you do not have to stand or sit out in the rain or the hot sun while waiting to get into Technical Inspection, we will again be using the “Take-a-Number” system.

When your car is ready for Technical Inspection:

Come to the area of Tech Inspection marked “Safety Gear Checks”.

BRING:

- Bring all items listed under the "DRIVER'S EQUIPMENT" section of Page 1 of the Tech Form
- Your “rain” tires.
- You do not bring your car at this time.

PROCEDURE:

- Once your safety gear and “rain” tires are approved, you will be given the next available numbered tag.
- When finished with safety gear checks, you may return to your paddock with your tag and relax.
- When your number is next, bring your car to the entrance of Technical Inspection.
- Note: It is a team’s responsibility to keep track of how quickly cars are going into Tech Inspection. So have someone keep an occasional eye on how the numbers are progressing.
- As you enter Tech Inspection, you must hand in your numbered tag.
- If you miss your turn, you have a 30 minute grace period to present the car for Tech before you have to take another number. The 30 minutes starts from the time the team with the next number goes into Tech Inspection. If you miss this window, you have to return your “old” tag and take a new number.
- If you (a team) expect to have a time conflict with a Static Event (Design, Cost or Presentation), please be aware that the Static Event has priority. If your vehicle is currently undergoing Technical Inspection, but you need to leave to attend a Static Event, simply inform your Inspector. You will be allowed to remove your vehicle from the Technical Inspection area, and can resume Technical Inspection later.

TILT TABLE

EVENT CAPTAIN: Gary Young

LOCATION: Dynamic Area. See Map

Tilt testing checks if the vehicle complies with the liquid spillage and rollover stability rules. No vehicle is permitted at this station until it has passed mechanical Scrutineering. The stickers that must be applied to the car will serve as proof of this. At this point we want to remind the teams to bring the car in 'ready to race' condition. That means that all the liquids of the car should be filled properly, all components of the car are mounted.

The vehicle will be placed upon the table with the tallest driver aboard fully suited and all safety restraints secured. The vehicle should be oriented on the tilt table in the direction that is most likely to create spillage. The table will then be tilted to an angle of 45 degrees. There must be no fluid leakage at this angle. If the vehicle passes this test, the angle is increased to 60 degrees. This angle is used to represent a cornering force of 1.5 Gs. If the upper wheels remain on the table the vehicle passes. (Some vehicles may lift one wheel. The event captain should be consulted if this occurs). The person in charge at the tilt table must sign an inspection form, which travels with the car. A sticker is applied (on the car), to indicate it passed the tilt table test.

EV vehicles are now free to proceed to the rain test. IC vehicles are now free to proceed to Brake and Noise areas. Should the vehicle (IC and EV) fail at either of the two angles, the car must be repaired and re-tested. Vehicles may be asked to return to this station for re-certification at the discretion of the officials.

SAFETY GUIDELINES

- Four team members maximum (incl. the tallest registered driver) in the tilt table area
- All engines and master switches off, push car on and off table. Care must be taken to avoid damage to the vehicle when pushed on and off the tilt table.
- Inside wheels are to be placed against the guard of the tilt table.
- Attach a strap to rollover hoop and side of table which is to be elevated. Allow a little slack. (Team members may be asked to hold the car, if a strap is not available).
- Be sure table is clear before raising and especially when lowering. Inform people in area when raising or lowering (e.g. "Coming Down"/"Going Up").
- Use absorbent material to soak up leaks (may be obtained at fuel station). Keep a fire extinguisher at hand.

RAIN TEST (EV ONLY)

EVENT CAPTAIN: EV Scrutineering

LOCATION: Immediately east of the fire station near pad drains. See Map

Teams have to pass a special rain test during scrutineering. The car has to pass E-scrutineering, Scrutineering, and Tilt Table before the rain test can be conducted.

During the rain test, the tractive system has to be active and none of the drive wheels may be in contact with the ground. It is not allowed to have a driver seated in the car during the rain test.

Cars will be exposed to 2 minutes of water spray then monitored for 2 minutes before test is complete. Once passed, teams/car will receive approved tech sticker.

NOISE TEST (IC ONLY)

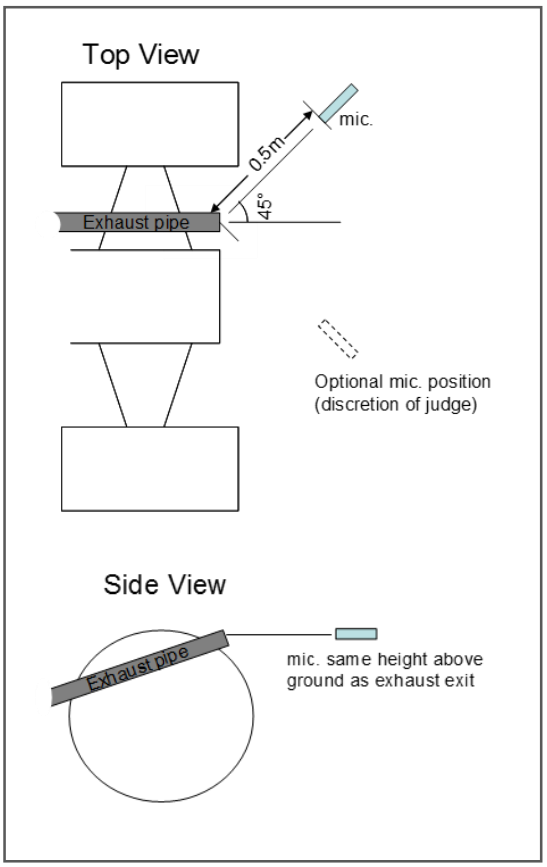
EVENT CAPTAINS: Jerry Frye

LOCATION: Dynamic Area. See Map.

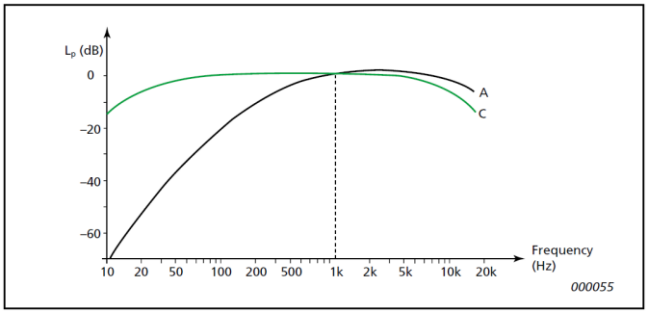
DESCRIPTION: No vehicle is permitted to Noise or Brake testing until it has: a) passed Tech Inspection and, b) passed the Tilt Table Test. Proof of this is the two "tech" stickers, which must be applied to the car. Then teams can proceed to Noise where the noise level will be tested, if passed, a 3rd sticker will be applied to indicate Noise Compliancy. Then teams can proceed to the Brake test for the 4th and final tech sticker. Once all 4 stickers are completed then a vehicle is approved to compete in all dynamic events.

Noise Test Event Description

The static sound level test shall occur at a designated test station on a warmed-up vehicle. The vehicle will be placed in the station with the engine running and the transmission in neutral. The sound level meter will be positioned 0.5m from, and level with, each exhaust outlet. The microphone will be positioned at an angle of 45 degrees from the outlet in the horizontal plane (see drawings) and be un-obstructed. There are two steps to the noise test. 1) With the engine idling, the measurement must not exceed 100 dBC. If the team passes this test, the run up test will be run. If a team fails idle they must exit the area. 2) With the engine at the designated test speed, the measurement must not exceed 110 dBC. The designated test speed is approximately ¾ of the maximum engine speed as calculated by the SAE published formula. In the case of dual exhausts, both exhausts will be tested with the loudest one being the basis for judgment. Meters are calibrated and will be checked and verified on-site on a regular basis! The reading of the meter by the official is final and not open for debate/protest.



PLEASE NOTE – If your vehicle does not have a working tachometer, it is the teams' responsibility to come to the noise area prepared with ALL necessary tools ready for a tachometer reading (laptops, gauges, etc…). The target test speed is set by SAE and is published in advance.
Test speeds will be rounded to the nearest 500.
It is calculated by taking 2X stoke in mm and dividing it into 914.4X1000. If you have a rev-limiter that interferes with you being able to reach the target test speed you must disengage it or set it higher.



ALL TEAMS MUST HIT THE TARGET TEST SPEED – NO EXCEPTIONS!

READY-TO-DRIVE-SOUND TESTING (EV ONLY)

LOCATION: **E-Scrutineering**

The Ready-To-Drive-Sound-Test checks the Ready-To-Drive-Sound for fulfillment of the rules. This test will be completed as part 1 of EV Scrutineering.

The car will be positioned in the testing area with a driver sitting in it with none of the driven wheels touching the ground. The driver will then activate the tractive system and set the car to Ready-To-Drive-Mode being defined as the motors responding to input of the torque encoder.

The car has to make a characteristic sound, once not continuous, when it is ready to drive. The sound level has to be a minimum of 80dBA, fast weighing, for at least 1 second and a maximum of 3 seconds in a radius of 2m around the car. The used sound has to be easily recognizable. No animal voices, song parts or sounds that can be interpreted as offensive will be accepted.

The test may be repeated to conduct several measurements around the car.

BRAKE TESTING (IC ONLY)

EVENT CAPTAINS:: Alba Colon, Ali Zangeneh, & Tim Umshler

LOCATION: Dynamic Area. See Map

When the vehicle passes noise, it may go to the Brake Event. There, the tech sticker will be awarded if the vehicle meets the brake requirements. Provided no changes have been made to the muffler or exhaust system, teams that pass noise but do not pass brake do not have to go through noise again if they work on the vehicle.

At the Brake Test Area, each driver WILL be instructed on the proper procedure. With the car at the start line of the station, a green flag (or similar signal) should be used to signal the start of each run. The driver must accelerate (typically getting into 2nd gear) until reaching the braking area, which is a box defined by water barriers. Once inside this box, the driver must apply the brakes with enough force to demonstrate full lock-up of all four wheels, the engine must remain running during the complete test.

If the vehicle passes, the person in charge will sign-off the approval form and provide the team with the final "tech" sticker. The vehicle is now free to proceed to the practice track or on to the dynamic events. (The approval forms shall be retained by the brake crew and turned in at the tech tent periodically.

If the vehicle is unable to pass the brake tests in three attempts, the car must be repaired and then brought back for retest. The vehicle will not be allowed to compete without passing all tests. Note: The vehicle will not be permitted on the practice track without an entire tech sticker; no exceptions.

Also, Operation of Brake Testing Event Area in DAMP conditions is at the discretion of the Captain of the specific area. See FSAE rules for tire use at specific conditions, Rule #B6.4.1. Also see Part D "Dynamic Event Regulations" Article 2 Weather Conditions and Article 3 Running in Rain for further clarifications.

Re-certification may be required if work is performed on the vehicle's braking system or exhaust system, or if the vehicle is involved in an incident that results in vehicle damage.

**At all times, drivers must be wearing complete and proper safety equipment and proper safety rules must be maintained.

BRAKE TESTING (EV ONLY)

LOCATION: Dynamic Area. See Map

Brake Testing checks that the vehicle can be brought to a controlled stop. No vehicle is permitted at this station until it has passed E-scrutineering, mechanical scrutineering, tilt table testing, rain testing and ready-to-drive-sound-testing. Proofs of this are the respective stickers which must be applied to the car.

Each driver must be instructed as to the proper procedure for the brake test. With the car at the start line of the station a green flag (or similar signal) should be used to signal the start of each run. The driver must accelerate on a short straight until reaching the braking area, which is a box defined by pylons. Before entering in this box, the tractive system has to be switched off by the driver and the brake pedal must be actuated as far as possible. The brake test is successful if all four wheels lock.

Note: It may take up to 5secs until the Tractive System Active Light goes off after shutting down the tractive system.

If the vehicle is unable to pass the test in three attempts, the car must be repaired and then brought back for retesting. The vehicle will not be allowed to compete without passing this test. Re-certification may be required if work is performed on the vehicle's brake system or if the vehicle is involved in an incident which results in vehicle damage.

ENERGY METER INSTALLATION

The energy meter will be installed prior to or during E-scrutineering. The energy meter installer will be situated at E-scrutineering and hand out the energy meter and needed connectors. They will also help with installation, if needed, and answer upcoming questions.

The proper function of the energy meter will be evaluated by the energy meter responsibles after the team has passed E-scrutineering.

The energy meter responsible will read out data from time to time via a wireless connection to determine, if the 80kW limit was obeyed during the dynamic events.

The energy meter data used to calculate the efficiency scoring will be read out in the EV Charging Tent.

After the data is read out, the energy meter has to be removed from the car and returned to the E-Scrutineering area.

We encourage all teams to record own efficiency data for the unlikely event of an energy meter failure during the endurance event. Any attempt to manipulate the intended function of the energy meter may lead to a disqualification from the entire event. If you have any questions with respect to the energy meter, please ask for the energy meter responsible at registration.

PRACTICE TRACK & PAD

EVENT CAPTAIN: Jim McNeil & Will Hiltebeitel
LOCATION: Dynamic Area. See Map

DESCRIPTION: The practice area will consist of two locations; Practice Pad and Practice Track. The practice pad is a relatively large (80' x 130' with cone barriers) open test area designated by the event organizers to provide teams with an opportunity to conduct brief dynamic tests of their vehicle during the available hours of the competition. The Practice Track is a relatively large (200 – 250 m) course providing teams ability to practice handling skills with actual course obstacles. No vehicle will be permitted to enter the Practice Track unless it has a) passed Tech Inspection (EV and ME), b) passed the Tilt Table Test and c) passed the Brake & Noise Inspection Test and for EV cars d) Rain Test. The vehicle will not be permitted on the Practice Track without the fourth or fifth tech sticker; no exceptions.

Each driver must understand and follow proper driving procedures at this facility. In addition, it must be understood that the Practice Track volunteers and SCCA officials are in control of the facility and adherence to their direction is mandatory.

Only one car at a time will be allowed at the Practice Track. At all times, drivers must be wearing complete and proper safety equipment and proper safety rules must be maintained. Once signaled to begin testing, the driver is free to perform any test maneuvers he or she feels necessary to evaluate the vehicle (within the limits of the track perimeter, please.) One SCCA volunteer will be the "official" at the track and coordinate the beginning and end of each team's approximate 5-minute time limit. The official will use green and red flags or some other method of alerting the driver to the beginning and end points.

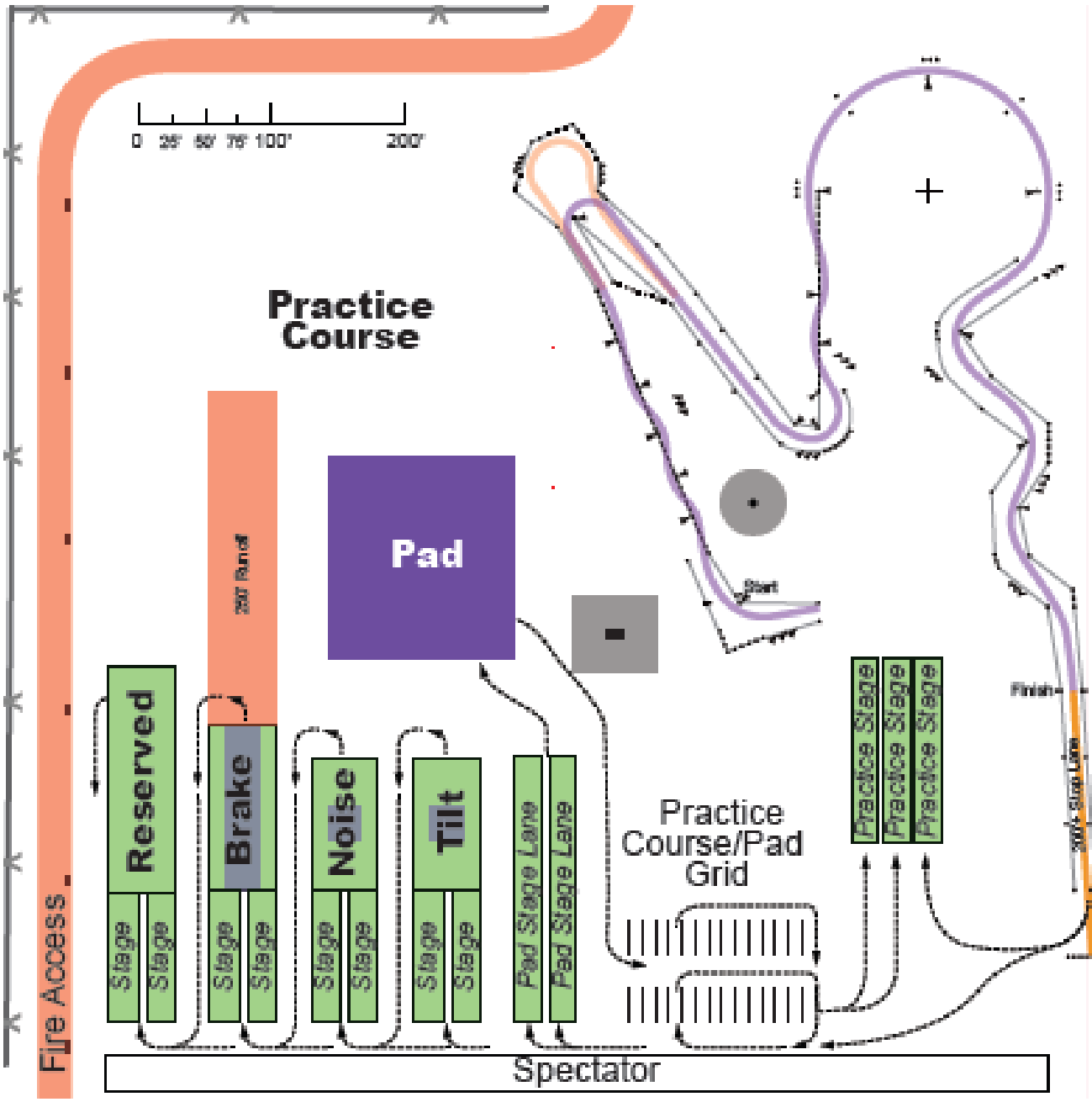
If during the course of dynamic testing the vehicle sustains some type of damage or significant mechanical breakdown, the vehicle will be required to exit the track and make the necessary repairs. The Tech Inspection sticker may be removed from the vehicle by a Practice Area Official thus requiring an additional Tech Inspection prior to participating in additional dynamic tests or events.

PLEASE NOTE – Operation of the Practice Event Area in DAMP conditions is at the discretion of the Captain of the specific area. See FSAE rules for tire use at specific conditions, Rule #B6.4.1 Also see Part D "Dynamic Event Regulations" Article 2 Weather Conditions and Article 3 Running in Rain for further clarifications.

Safety guidelines for the Practice Tracks:

- Only one car at a time in the Practice Track area. The next car will not be permitted to enter the area until the last one has completed its exit.
- Three (3) volunteers (preferably four (4)) will be on hand to manage the operation of the Practice Track.
- Never place yourself in the line of travel of any car. Stay well away from the "hot" areas, always at a safe distance behind the barriers.
- Have fire extinguishers handy.
- Use brooms and oil-dry as needed to keep the Practice Track clean and dry.
- Any vehicle damage or contact must be reported to the area (station) manager(s). Additionally, remove the 1st tech sticker and report car number to tech tent so car can be re-evaluated after repair.
- Do not permit spectators to sit or lean on the barriers surrounding the practice tracks.

PRACTICE COURSE MAP



ACCELERATION

EVENT CAPTAIN: Tim Gornik

LOCATION: Dynamic Course Area. See Map.

EVENT CONCEPT:

The objective of the Acceleration Event is to evaluate the vehicle's demonstrated acceleration capability by measuring the elapsed time required for the vehicle to travel a distance of 75 m (246 ft.) from a standing start. The event is designed to focus on engine performance and on the suspension's ability to maximize tire grip.

EVENT FORMAT:

Up to four Acceleration Runs are permitted for each car. Two drivers are allowed per car. Each driver is permitted two Acceleration Runs. Elapsed Time will be recorded for each Acceleration Run. Any penalties will be assessed to the Acceleration Run during which the penalty occurred. The fastest corrected elapsed time (including penalties) of the completed Acceleration Runs will be used to calculate the score for each car.

- NO Acceleration Runs will be permitted after 12:30 P.M.
- NO tools and/or spare parts are permitted in the staging lanes.
- NO "traction enhancing" agents are permitted to be used on the tires or track surface.
- NO "burnouts" are permitted.

EVENT PROCEDURE:

Stage your car in the appropriate Staging Line for either Driver 1 or Driver 2. Cars in the Driver 1 Staging Line will be given priority. Drivers must be properly belted into the car with all required safety equipment properly installed, as directed by the Event Workers, before the car is first in line to start an Acceleration Run. An Event Worker will direct the driver to approach the Start Line. Cars will be staged approximately 0.3m (1 ft.) behind the Start Line.

The driver is permitted to start an Acceleration Run only when the Event Worker waves the green flag. Timing will start when any part of the vehicle crosses the Start Line. The Acceleration Run is counted (one of the permitted Acceleration Runs) when any portion of the car crosses the Start Line.

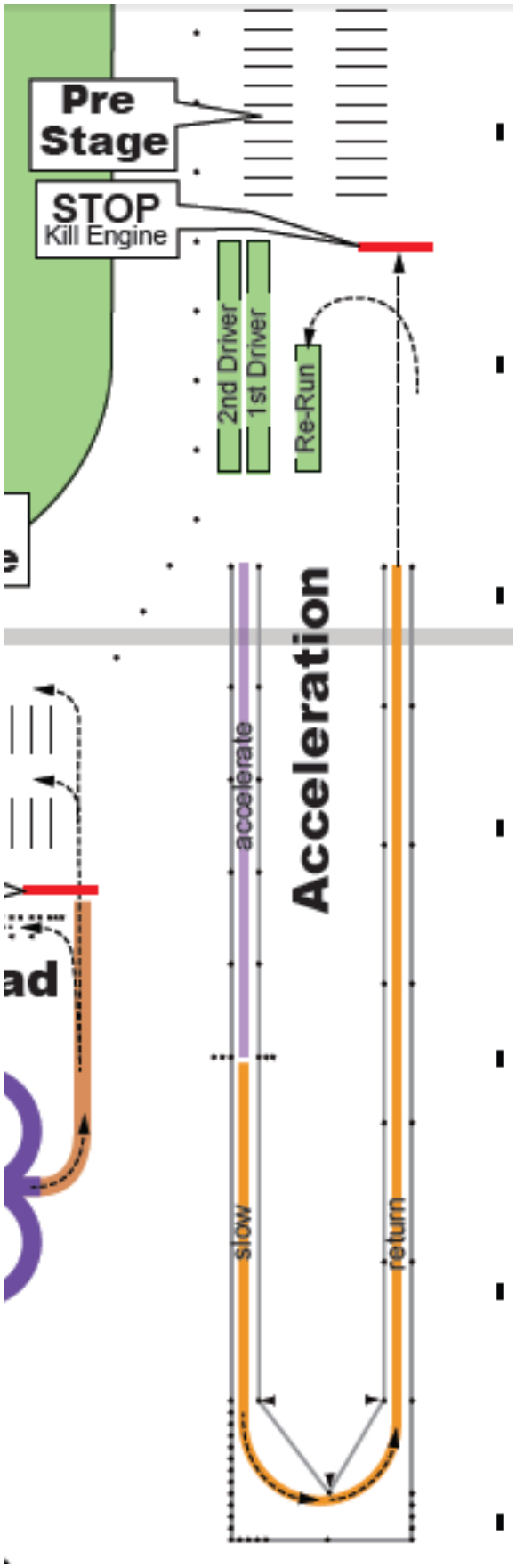
Timing will end when the vehicle crosses the Finish Line located 75 m (246 ft.) from the Start Line. The Finish Line is marked with a Checkered Flag.

After a driver's first run, the driver will have the option to immediately take a second run, or leave the staging area to complete his/her second run later during the event. Each car must exit the staging area before changing drivers.

PENALTIES:

- A two second penalty will be assessed to the Acceleration Run per cone knocked down or out of position.
- A DNF (Did Not Finish) penalty will be assessed to the Acceleration Run for cars that go off course.
- A DNF penalty (forfeit of a permitted Acceleration run) may be assessed to the team for infractions committed in the staging area, start line or return lane.

ACCELERATION COURSE MAP



SKID PAD

EVENT CAPTAINS: Joe Losito

LOCATION: Dynamic Course Area. See Map.

EVENT CONCEPT:

The goal of the Skid Pad event is to measure the vehicle's maximum cornering capability by measuring the total time required for the vehicle to complete one left hand and one right hand circle. The event is designed to focus on the vehicles suspension design characteristics and tune-ability for maximum lateral grip, and minimize the effect of driver reflexes during transitional maneuvers.

EVENT FORMAT:

Two drivers are allowed per car; two runs per driver. Each run consists of a driver completing two (2) right-hand laps immediately followed by two (2) left-hand laps of the course. Lap times will be recorded for the second lap of each the right-hand and the left-hand circle (the first lap of each is not timed).

SCORING:

Lap times will be recorded for the 2nd lap of each circle for a given run on the Skid Pad. These times will be averaged together and added to any penalties and used to calculate lateral acceleration for each run. The fastest average time (including penalties) from either driver during any of the 4 runs will be used to calculate a score for that vehicle.

STAGING:

Cars line up in the staging area. The first 3 cars in line are permitted to run their engines provided the driver is wearing a helmet and securely fastened. A person holding a Green Flag will motion a car to approach the starting line, which is located approximately 20 m (65.62 feet) from the timing line used for scoring. When the starter waves the green flag, the driver will approach the Skid Pad and proceed onto the RIGHT-HAND circle. After completing 2 laps, the driver must continue onto the LEFT-HAND circle and complete 2 more laps. After completing the second Left-hand lap (the fourth lap in total) the driver will exit the Skid Pad. After a drivers first run, they have the option of immediately taking a second run, or leaving the staging area and running later in the day. In order to keep the event running in a timely manner, other teams can run Skid Pad in between a team's first and immediately second run. Each car must exit the staging area before changing drivers.

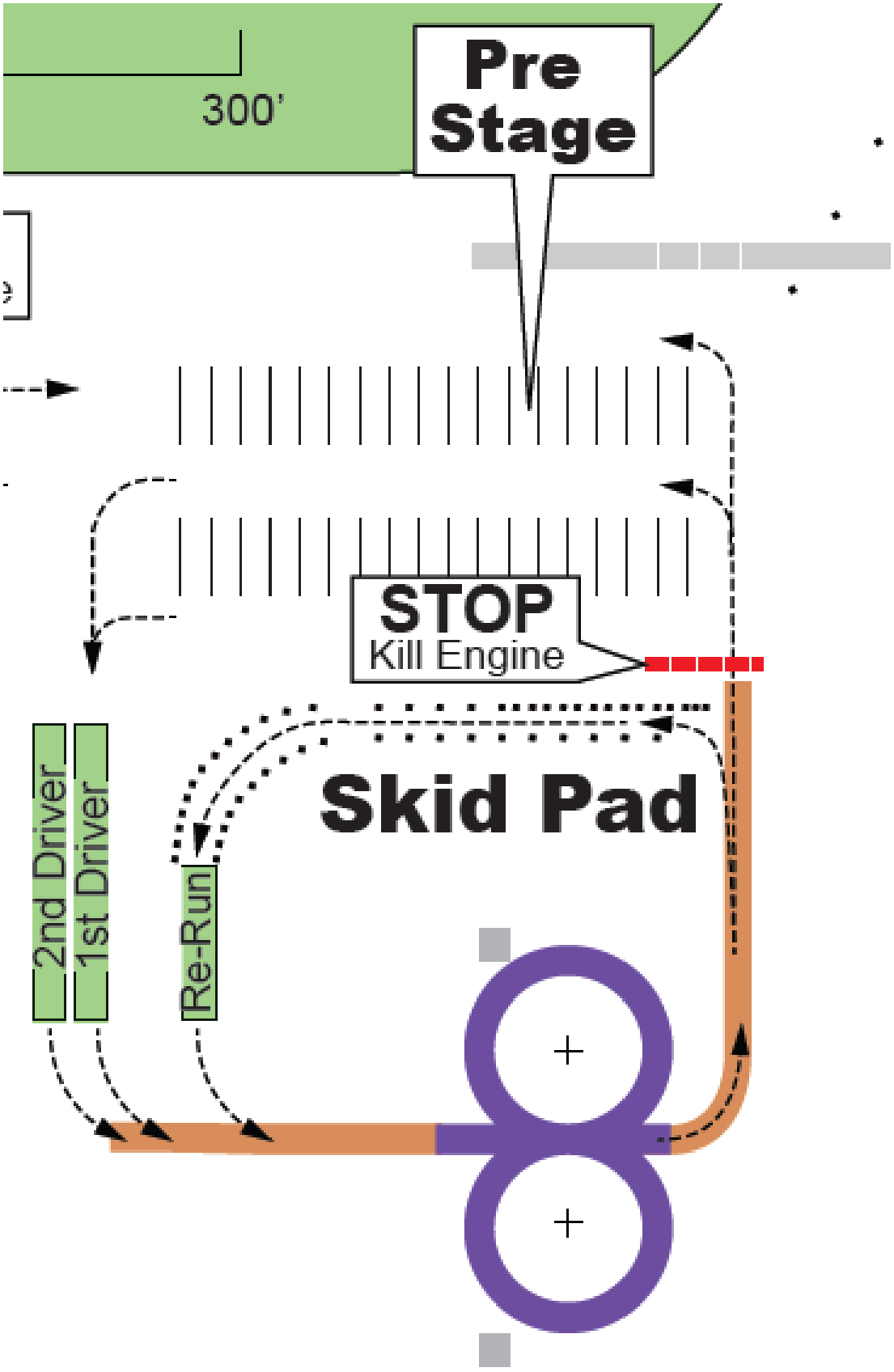
All cars must complete all Skid Pad runs by 12:30 p.m.

PENALTIES:

- 0.25-second penalty per cone knocked down or out of position.
- DNF penalty for cars that go off course.
- DNF for cars that run an incorrect number of laps.

No toolboxes and/or spare parts will be allowed in the queue area or staging lanes unless deemed necessary for starting the vehicle's engine.

SKID PAD COURSE MAP



AUTOCROSS

EVENT CAPTAINS: Jacob Homer

LOCATION: Dynamic Course Area. See Map.

THE EVENT:

The Autocross event is designed to test the car's handling qualities without the hindrance of competing cars. The event has two heats. Each heat has a different driver. A heat is composed of one driver making two runs of the course. The fastest of the runs completed, including penalties, will be used to calculate the team score. Cars that are unable to complete the course with a time within 145% of the fastest car will only be awarded 7.5 points. Track length: Approximately 800m (2600 ft.)

PENALTIES:

- A 2-second penalty for each cone knocked down or out of position (indicated by a chalk square at the base of the cone).
- A 20-second penalty for going off course and not re-entering at a point prior to the missed gate. Missing one or more gates of a given slalom counts as a single off-course penalty.
- All cones in the dynamic area can be scored as penalties. This includes cones before the start line and after the finish line.

STAGING:

Following the announcement of the start of the event, all cars should begin staging in the first heat line on a first come first served basis. Upon completion of the first heat driver's two runs, a car may either go to the second heat line or back to the paddock for repair and/ or adjustments.

- When there are no cars in the first heat line, cars in the second heat line will be allowed to run. Cars that have not run a first heat have precedence over second heat cars. The event may be cancelled or cut short due to weather or time, so it is important to be on time for the first heat. It is encouraged for teams to join the second heat line immediately after completing the first heat.
- At 5:00 PM the Autocross Event is scheduled to close, and no additional runs may be made after the closing. Cars in line will not be allowed to run the course after 5:00. If there are delays in starting the event, rain delays, or extended track closures, the event captain has the discretion to extend the closing time if conditions permit. Please see the event captain or listen for announcements for any extensions.

A safety inspection (helmet, belts, kill switch) will be performed before entering the final staging area; each car will be staged 6.0 m (19.7 feet) behind the start timing lights and will accelerate from a standing start.

After a driver's first run, the driver has the option of taking the second run immediately, or leaving the staging area and running later in the heat. A shortcut-turn, immediately following the finish line, will allow the driver to proceed directly to the start for a second run. This is called the re-run line. If a driver chooses to not take a re-run, he/she should proceed through the exit.

AUTOCROSS CONT.

It is intended that the race be conducted without the hindrance of competing cars. If there is a stopped or slow vehicle ahead, the driver should proceed at a safe distance (3m) around the incident and/or follow the direction of the course workers, and then reenter the track to finish the run. Once past the finish line, the shortcut should be taken to go directly to the start line. At this time, the driver will be notified if another run will be allowed. If a slow or stopped vehicle ahead is judged by the track officials to not be a hindrance, a re-run will not be allowed.

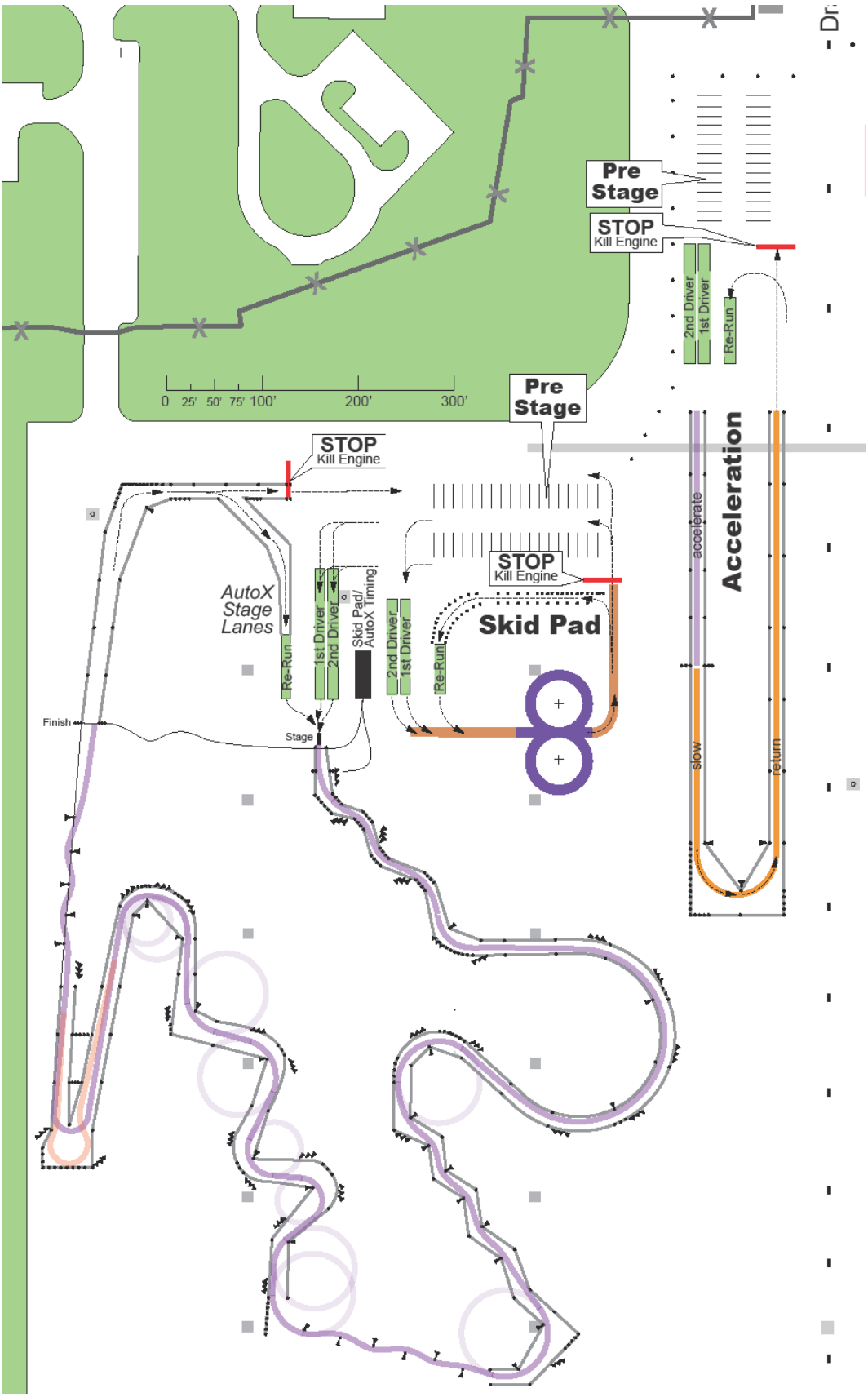
A driver's run may be stopped by a track official (indicated by a waving red flag or hand gesture), your car may be directed to complete the track or directed to follow a straight route back to the starting line (with caution). This is common when a red flag is shown in the first half of the course. Caution – course workers may also signal your car due to a malfunction (broken suspension, muffler, leaking oil, etc.). If this occurs, the car should be driven off course and brought to a controlled stop as soon as possible. Avoid stopping directly on the course. This prevents potential incidents with following cars and limits the amount of oil/water spilled on to the racing surface, preventing long delays.

If a car fails during a driver's first run, vehicle repairs can be made to the car, and the driver can return to complete the second run.

NOTES:

- Once the car passes the start timing line, the run has been officially attempted and cannot be re-started. If the car stalls before triggering the timing lights, it can be pushed back for a re-start. This is only allowed once. If the car demonstrates difficultly in launching it will need to be pulled away and repaired.
- Please be aware that several cars may be running the course at the same time. Once past the finish line, slow the vehicle and exit in a controlled manner. Do not park the car at the exit of the course; this can create an unsafe situation and will cause traffic to back up.
- Drivers will be allowed to walk the course starting Thursday afternoon.

AUTOCROSS COURSE MAP



ENDURANCE & FUEL EFFICIENCY

EVENT CAPTAINS: Lawrence Raitinger

LOCATION: Dynamic Course Area. See Map.

PURPOSE:

The goals of the endurance and fuel efficiency events are to test the durability and fuel efficiency of the vehicles. The dual nature of the event can lead to compromises in designing for its 22 km. Note: No repairs or work may be performed on the vehicle during the event (with the exception of tire changes due to weather conditions and to accommodate the second driver).

DESCRIPTION:

The event is approximately 22 km, with two drivers completing 11 km segments each. No refueling is allowed during the event. Each team is given three minutes to complete the driver change.

The run order for the event will be based primarily on the Autocross event. The run order will be slowest to fastest autocross times. If a team did NOT score in the Autocross event, the vehicle will run at the beginning of the Endurance event, with the order based first on the finishing order of the Acceleration event, and then on the finishing order of the Skid Pad event. Teams without a score in any event used to determine the run order will run in the order established by the event captains. Teams must run within the 20 cars after them in the run order. For example, the team with run order position 10 must run before the team with run order position 30. The out of order penalty will be applied to teams that are not able to run in their designated run order position. The last 20 teams scheduled must run before the last car is called. All teams will be provided a minimum 15-minute window. If the last scheduled team of the heat is not able to run when called, they will receive the "out of order" penalty and will be given 15 minutes to enter the track before they are disqualified.

The event captains reserve the right to adjust the run order as necessary during the event to maintain safe operations and the flow of the event.

If the weather conditions of the prior dynamic events have been variable, a team's Skid Pad or Acceleration result may be used as a substitute or supplement to the team's finish order in the Autocross event.

ENDURANCE PROCEDURES:

In order to compete in the Endurance event, teams must have their four-part tech sticker by 5:00 PM on Friday. Teams who have not successfully passed all parts of tech by 5:00 PM Friday will not be eligible to participate in Endurance on Saturday. Teams who have a sticker pulled have the opportunity to re-visit technical inspection on Saturday to regain the sticker; however, cars are only eligible to run Endurance at their scheduled slot (within 20 cars, or 15 minutes) in the run order.

The team must have their fully fueled (see Fuel Efficiency Procedures below) vehicle in the staging/prep area at the appointed time. Only two crewmembers and the other driver are allowed in the staging area for the vehicles. When the car is called to the staging line (consisting of the next three cars to go on track), the team must push the "race ready" car with driver completely belted in to the staging line. Once the car is pushed to the staging line it cannot be touched by any team member except the driver in the car. The only tools allowed in the possession of the team members at the staging line are those needed for driver seating adjustment during driver change. No laptops, pressure gauges, baffles, tire wraps, etc. will be allowed at the staging line. Nothing can be brought to the starting line that is not intended to stay on the car.

ENDURANCE & FUEL EFFICIENCY CONT.

When there is a space for the vehicle on the course and the timing/scoring system is set, the first driver will be motioned to the starting line. The person staging the vehicles is not obligated to give teams any advance notice prior to entering the track. An official will perform a safety check of the vehicle and the driver restraint system. The starter will stage the vehicle's front tires at the beginning of the entrance to the track. When there is an opening on the track, the course marshal (starter) will wave the green flag, signaling the go-ahead for the driver to start. If the vehicle stalls, the driver must wait for another green flag before being allowed on the course.

Note: If the vehicle cannot be restarted, the team members must move the car away from the staging area. The team will then have until 20 cars have attempted to start or 15 the minutes following in the run order to attempt to start endurance again (an out of order penalty will be incurred). If a team running out of order has a vehicle that stalls and cannot be restarted at the entrance to the track, the car will be deemed disabled and will be disqualified from the event.

On the last lap of the first driver, a checkered flag will be displayed directing the vehicle to exit to the driver change area. It is the Driver's responsibility to correctly exit the track; any person directing the car off the course is an additional aid only. Only three team members (including drivers) are allowed in the driver change area at once. After the vehicle arrives in the driver change area, the team has three minutes to get the second driver belted in, and driving out of the driver change area. Only adjustments to fit the second driver (or weather related tire changes) may be performed on the vehicle. No other work is allowed.

When the second driver is ready, the vehicle should be slowly driven to the starting line queue. An official will perform a safety check of the vehicle and the driver restraint system. The course marshal will stage the vehicle's front tires at the beginning of the entrance to the track. When there is an opening on the track the course marshal will wave a green flag signaling the go-ahead for the driver to start. If the vehicle stalls, the driver must wait for another green flag before being allowed on the course. Note: If the vehicle cannot be restarted without external assistance, the car will be deemed disabled and will be disqualified from the event.

Upon completing the last lap with the second driver, the checkered flag will be displayed and the vehicle will exit the course and will be directed to the fueling station. It is the Driver's responsibility to exit the track, any person directing the car off the course is an additional aid only. The vehicle is to be pushed to the fueling station where the fuel efficiency will be calculated.

If either first or second driver is shown a red flag during their driving session, they must come to a controlled stop within viewing distance of the nearest flagging station and turn off their vehicle. (If they see the red flag just before the driver change exit, they may coast into the driver change area and turn off their vehicle.) All cars on track during a red flag event will be towed to the driver change area where they will wait, with driver belted in vehicle, until the track is clear. The lap in which the red flag was shown will not count in time or fuel economy calculations. When the track is clear, the drivers will be told to start their vehicle and will be released on track to finish their laps. Teams involved with a red flagged track will not be able to add any fuel to their vehicle.

WEATHER CONDITIONS:

- Teams must fit rain tires to their vehicle if the course is declared Wet.
- Teams have the option of dry or rain tires if the course is declared Damp.
- Teams may change tires at any time while their car is in the staging area inside the "hot" area.
- All tire changes after a car has received the green flag to start the event will take place in the driver change area.
- Teams may not perform any work on the vehicle other than the tire change in the driver change area.

ENDURANCE & FUEL EFFICIENCY CONT.

WEATHER CONDITIONS CONT.

- Teams are allowed 10 minutes to change their tires in the driver change area if a Dry track is declared Damp, or if a Dry or Damp track is declared Wet. If the tire change is happening at the same time as a scheduled driver change, the 10 minutes are in addition to the 3 minutes allowed for the driver change.
- Teams are allowed to change their rain tires to dry tires if the course is Dry or Damp. However, this change is not permitted during the driver change, and the time taken to change the tires is included in the team's total time for the event.

The following chart summarizes the possible track condition changes, the team's options, and the time allotted for changes:

TRACK CONDITION	TEAM'S CURRENT TIRE CHOICE	TRACK DECLARED	TIRE CHANGE?	TIME HELP	ALLOWED AT DRIVER CHANGE?
DRY	DRY	DAMP	OPTIONAL	10 MIN.	Y
DRY	DRY	WET	MANDATORY	10 MIN.	Y
DAMP	DRY	WET	MANDATORY	10 MIN.	Y
DAMP	RAIN	WET	---	---	---
DAMP	DRY	DRY	---	---	---
DAMP	RAIN	DRY	OPTIONAL	0	N
WET	RAIN	DAMP	OPTIONAL	0	N
WET	RAIN	DRY	OPTIONAL	0	N

EXAMPLE: The track is Dry -- the team is competing on dry tires. If the track is declared Damp, a tire change is optional to the team. 10 minutes is allowed to make the change during the driver change.

GENERAL NOTES:

- The vehicle will be expected to be ready for competition with the first driver at the team's run order position. If the endurance event is running late, the vehicle is still expected to be ready when its run order position is reached. If the vehicle is not ready when the official starter motions the vehicle to the starting line a two minute "out of order" penalty will be assessed and the team will lose their time slot to run the event. Teams are only allowed to run within the 20 cars after them in the run order in their heat. For example, the team with run order position 10 must run before the team with run order position 30. The last 20 teams scheduled must run before the last car is called. All teams will be provided a minimum 15 minute window. If the last scheduled team of the heat is not able to run when called, they will receive the "out of order" penalty and will be given 15 minutes to enter the track before they are disqualified. Teams cannot run earlier than their scheduled run order.
- The driver change will be scored as an extra-long lap. It will be assumed by scoring that the change was completed in the required time (less than 3 minutes) unless notified otherwise. An official will be in the driver change area timing each vehicle and monitoring that no work is done to the vehicle other than the driver change. The official will keep track of each team's time and will notify scoring if a team has exceeded the three minute limit (from time vehicle arrives in driver change area to time vehicle leaves area). There is no competitive advantage to changing drivers in less than three minutes.

ENDURANCE & FUEL EFFICIENCY CONT.

- Tire changes from dry to rain tires will be scored as an extra-long lap. It will be assumed by scoring that the change was completed in the required time (less than 10 minutes) unless notified otherwise. An official will be in the driver change area timing each vehicle and monitoring that no work is done to the vehicle other than the tire change. The official will keep track of each team's time and will notify scoring if a team has exceeded the ten minute limit (from time vehicle arrives in driver change area to time vehicle leaves area). There is no competitive advantage to changing tires in less than ten minutes.
- Tire changes from rain to dry tires will have the time required to change tires added to the team's total time. The time taken to get to, and out of, the driver change area will NOT be added. An official will be in the driver change area timing each vehicle and monitoring that no work is done to the vehicle other than the tire change. The official will keep track of each team's time and will notify scoring of the time required to change tires (from time vehicle arrives in driver change area to time vehicle leaves area).
- No toolboxes will be allowed in the staging lanes or driver change area. (It is assumed only hand tools would be required to adjust the vehicle for the second driver.) In the event of tire changes due to weather conditions, tire changing equipment will also be allowed in the driver change area. Toolboxes will be allowed in the dynamic area along the wall separating the practice area. Teams may work on the car in this area only. Any work done on the vehicle must be approved by a tech inspector before the team will be allowed on the endurance course.
- If the vehicle leaves the course because of a mechanical/electrical problem of any type, the event is considered over for that vehicle and scoring will be notified and record the team as DNF. The vehicle will NOT be allowed to return to the track.
- If the vehicle contacts a barrier on the course, the event is considered over for that vehicle and scoring will be notified. The vehicle will NOT be allowed to return to the track.
- The vehicle may be restarted if it stalls on the track, but external assistance is not allowed.
- The driver may pull in the driver change area to have belts re-tightened if necessary, though the additional time for this procedure will be counted.
- The driver may also pull the vehicle off course to remove any cones that may become trapped; though the additional time will count against the team.
- The lap times for the vehicle will be monitored. If the vehicle is not running within 145% of the fastest lap time run on the course (by the fastest car) the vehicle may be black-flagged and removed from the event. If this occurs with the first driver, the second driver will NOT be allowed to run, as the event will be considered over.

COURSE PREPARATION:

The endurance course will be set up on Thursday afternoon. Drivers are able to walk the course up to 8:00 a.m. Saturday.

NO MOTORIZED VEHICLES ARE ALLOWED ON THE COURSE EXCEPT DURING THE EVENT ITSELF. VIOLATORS OF THIS POLICY MAY BE DISQUALIFIED FROM THE EVENT.

ENDURANCE & FUEL EFFICIENCY CONT.

FUEL EFFICIENCY PROCEDURES:

Calculation of fuel consumption will be made by the fueling officials and will be based upon the weight of the fuel consumed.

The vehicle starts the endurance event after being fueled to the 'full' mark. After completing the event, the vehicle returns to fuel station and is refueled. The weight of the fuel consumed is determined by weighing a fuel container, filling the vehicle to the 'full' mark, and weighing the fuel container again. The weight of the fuel consumed is the difference of the two measurements. This is accomplished by weighing the fuel can before and after filling the tank. The driver will be asked to observe and initial this measurement.

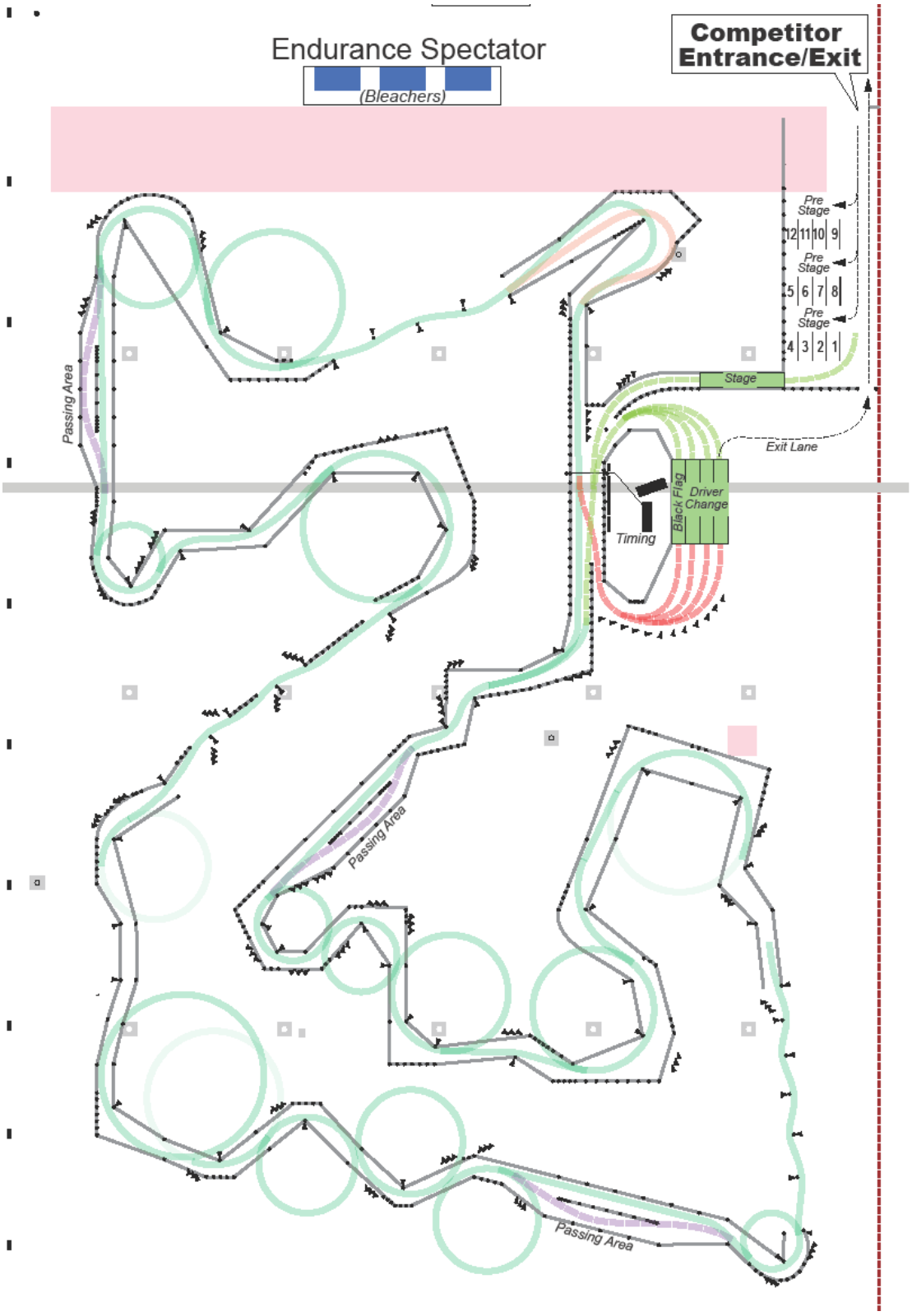
The 'full' mark is a clearly defined scribe line in the filler neck or sight tube as defined by Rule IC2.6.6. The vehicle will be filled to this mark before starting the heat and again upon completion of the endurance event heat.

At the fueling station it is critical that visibility of the scribe line in the fuel filler neck is very clear.

Also, no shaking of the vehicle will be permitted during initial fill (prior to Endurance event) nor final fill (after the Endurance event).

NOTE: All Vehicles must return for re-fuelling, even after as little as one lap to enable the calculation of the efficiency score.

ENDURANCE COURSE MAP



AWARDS

SPIRIT OF EXCELLENCE AWARD – IC CLASS

This award recognizes the Top 10 finishers with overall highest accumulative scores.

SPIRIT OF EXCELLENCE AWARD – EV CLASS

This award recognizes the Top 3 finishers with overall highest accumulative scores.

COST AWARD

This award recognizes the Top 3 IC finishers and 1st Place EV finisher with highest scores in Cost.

ENGINEERING DESIGN AWARD

This award recognizes the Top 3 IC finishers and 1st Place EV finisher with highest scores in Design.

PRESENTATION AWARD

This award recognizes the Top 3 IC finishers and 1st Place EV finisher with highest scores in Presentation.

ACCELERATION AWARD

This award recognizes Top 3 IC finishers and 1st Place EV finisher with the highest scores in Acceleration.

AUTOCROSS AWARD

This award recognizes Top 3 IC finishers and 1st Place EV finisher with the highest scores in Autocross.

ENDURANCE AWARD

This award recognizes Top 3 IC finishers and 1st Place EV finisher with the highest scores in Endurance.

FUEL EFFICIENCY AWARD

This award recognizes Top 3 IC finishers and 1st Place EV finisher with the highest scores in fuel efficiency.

SKID PAD AWARD

This award recognizes Top 3 IC finishers and 1st Place EV finisher with the highest scores in Skid Pad.

NUCOR "PAY FOR PERFORMANCE" AWARD

Awarded to the team who best exemplified the ability to balance cost and performance to maximize profitability based on the dynamic points per cost event dollar."

(Acceleration score + Skid pad score + Autocross score + Endurance score + Economy score) / (dollar amount from cost event) = points/dollar

THREE VIEW DRAWING EXCELLENCE AWARD (IC CLASS ONLY)

Awarded to the top ten Formula SAE teams who submit the best executed three view drawings, per the Formula SAE Rule S6.4. Top three awarded; 4-10 honorable mention.

MERCHANTS

A Street Auto Parts

4003 A St

Lincoln, NE 68510-4620

(402) 489-9378

www.astreetautoparts.com

Advance Auto Parts

2101 S 10th St

Lincoln, NE 68502-3444

(402) 742-0334

www.advanceautoparts.com

AutoZone

2904 Cornhusker Hwy

Lincoln, NE 68504-1518

(402) 467-1075

www.autozone.com

CarQuest Auto Parts

1821 N St

Lincoln, NE 68508-1734

(402) 477-4106

www.carquest.com

Eagle Motorsports

300 Speedway Circle, Ste 165

Lincoln, NE

Call Mike Long @ 217-414-2967

Factory Motor Parts

2829 N 33rd St Ste 3

Lincoln, NE 68504-2325

(402) 464-9306

www.factorymotorparts.com

Fred's Auto Electric

5042 Rent-Worth Ct

Lincoln, NE 68516-2505

(402) 423-7119

www.alternatorsandstarters.com

Alternators and Starters for Virtually Anything"

General Fire & Safety Equipment Co Inc.

2431 Fairfield St

Lincoln, NE 68521-1308

(402) 476-4646

www.generalfiresafety.com

Great Plains Cycle Supply

2542 N 27th St Ste A

Lincoln, NE 68521-1474

(402) 467-4126

www.greatplainscycle.com

HVC Cycle

2521 W L St Ste 6

Lincoln, NE 68522-1026

(402) 817-4795

hvccycle.com

Napa Auto Parts

3630 Cornhusker Hwy

Lincoln, NE 68504-1531

(402) 466-8515

www.napaautoparts.com

Race Again Parts & Service

1359 S. 33rd St.

Lincoln, NE 68510

(402) 601-6817

www.raceagainparts.com

Speedway Motors

304 Victory Ln

Lincoln, NE 68528-1501

(402) 323-3200

www.speedwaymotors.com

Williamson Honda

2770 Yankee Hill Rd

Lincoln, NE 68510

(800) 536-3855

www.williamsonhonda.com

Home Depot

3300 N 27th St

Lincoln, NE 68521-1312

(402) 325-6200

www.homedepot.com

Lowe's Home Improvement

6101 Apple Way

Lincoln, NE 68516-3502

(402) 420-3660

www.lowes.com

Wal-Mart Supercenter #1943-Lincoln

4700 N 27Th St

Lincoln, NE 68521

(402) 438-4377

AUTO PART STORES

Downtown Lincoln
Auto Body Supply Inc.- 2034 O Street- (402) 477-3941
Jim DeFreece Auto Parts- 2210 N Antelope Valley Prkw- (402) 476-0341
Anderson Ford- 6400 Q St- (402) 464-0661

North Lincoln
Olston's Auto Recyclers- 3450 N 35th Circle- (402) 467-4541
Cichoracki Motor- 3100 N 20th St- (402) 325-0000
Anderson Ford- 2500 Wildcat Dr-(402) 458-9830

West Lincoln
O'Reilly Auto Parts- 120 O St- (402) 475-1166
Snow Auto Supply- 1640 West O St- (402) 475-4261
First Street Auto Repair- 1620 S 3rd St- (402) 476-2040
A-1 Automotive- 2540 W O St Ste 3- (402) 477-4660

East Lincoln
O'Reilly Auto Parts- 1201 N 48th Street – (402) 466-4663
Kelly's Auto Repair- 4602 Pierce Dr.- (402) 467-4602
U-Pull-It- 6300 N 70th St- (402) 467-4101
Dynosport- 5735 Johanna Rd Ste D- (402) 475-7223
Adams Auto Service- 1440 N Cotner Blvd- (402) 466-2691

South Lincoln
Duteau Chevrolet Subaru- 7300 S 27th St- (402) 420-3300

Motorcycle Shops
Downtown
Rural Cycle- 1500 N 15th St- (402) 435-1100

North Lincoln
Avenue Cycle- 3304 Madison Ave- (402) 467-1200
Lincoln Cycle & ATV- 3320 Cornhusker Hwy- (402) 464-5551
Star City Motor Sports- 6600 N 27th- (402) 476-7768

West Lincoln
Frontier Harley Davidson- 205 NW 40th St.- (402) 466-9100
JZ Motorcycle- 2130 Magnum Cr Suite 6- (402) 730-6858

East Lincoln
JPK Investment Motors- 2244 N Cotner Blvd- (402) 466-7744

South Lincoln
Brandl Cycle- 5046 Rent-Worth Ct- (402) 423-2825
Rod's Power Sports- Hwy 77 & Saltillo Rd- (402) 474-7777

We strongly recommend calling first to determine if a shop has what you need.

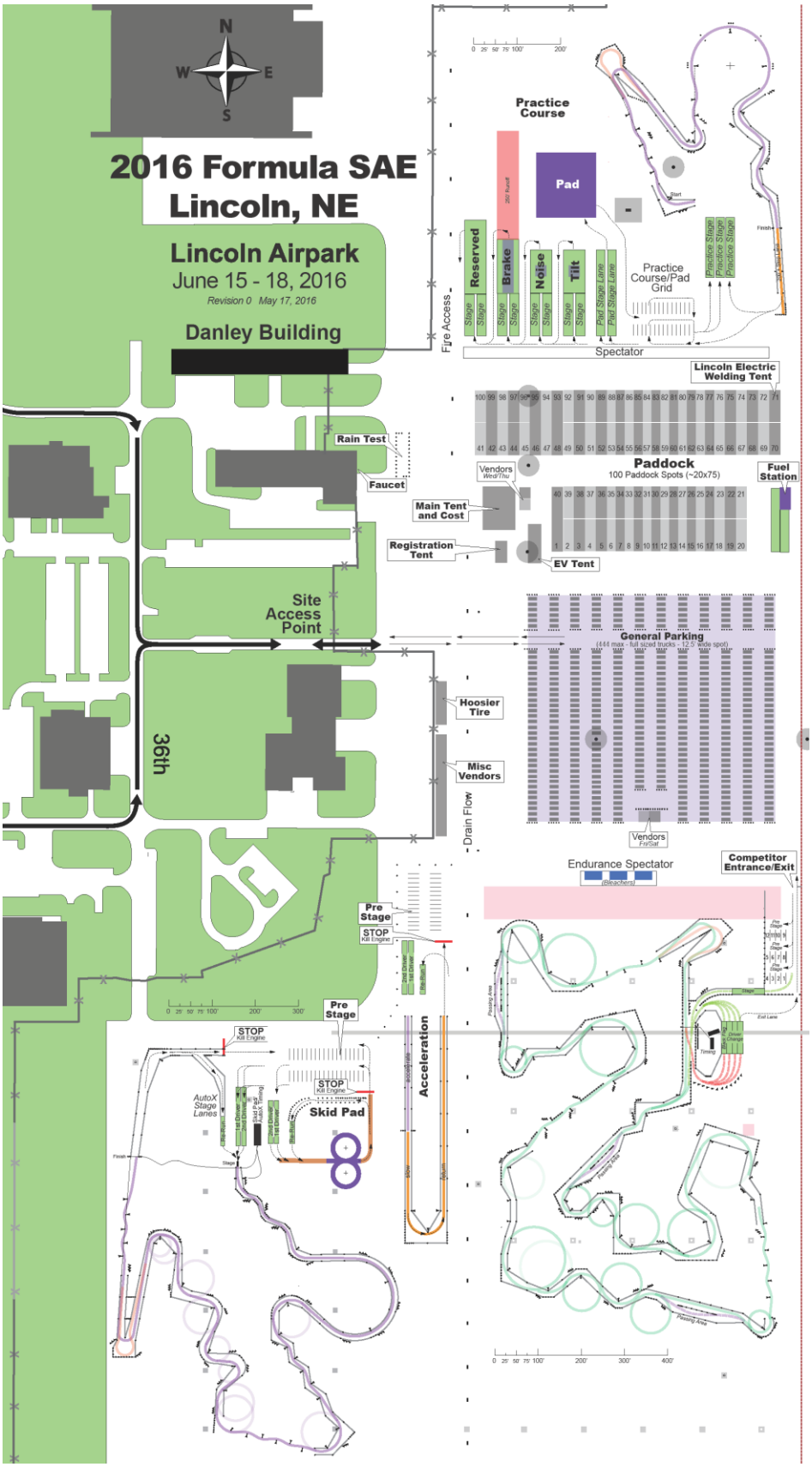
PLACES TO EAT

12th Street Pub	1200 O Street, Lincoln, NE 68508	(402) 435-3358
Ali Baba Gyros	112 N. 14th, Lincoln, NE 68508	(402) 435-2615
Amigos/Kings Classic	1407 Q Street, Lincoln, NE 68508	(402) 475-9819
Applebee's	1133 Q Street, Lincoln, NE 68508	402) 476-5165
Arby's	1425 Q Street, Lincoln, NE 68508	(402) 476-7114
Barry's Bar & Grill	235 N. 9th Street, Lincoln, NE 68508	(402) 476-6511
Beacon Lounge	311 S. 11th, Lincoln, NE 68508	(402) 438-7211
Billy's	1301 H Street, Lincoln, NE 68508	(402) 474-0084
Bison Witches Bar & Deli	1320 P Street, Lincoln, NE 68508	(402) 474-3366
Blue Orchid Thai Restaurant	129 N. 10th Street, Lincoln, NE 68508	(402) 742-7250
Bread & Cup	440 N. 8th Street, Lincoln, NE 68508	(402) 438-2255
Brothers Bar & Grill	1339 O Street, Lincoln, NE 68508	(402) 474-0200
Brown Baggers	151 N. 8th, Lincoln, NE 68508	(402) 477-2244
Brueggers Bagels	1205 Q Street, Lincoln, NE 68508	(402) 474-6001
Burger King	2504 O Street, Lincoln, NE 68510	(402) 476-3050
Buzzard Billy's	247 N. 8th Street, Suite 101, Lincoln, NE 68508	(402) 475-8822
Coffee House	1324 P Street, Lincoln, NE 68508	(402) 477-6611
Coffee Trader	1200 N Street, Lincoln, NE 68508	(402) 475-2739
Cold Stone Creamery	232 N 13th, Lincoln, NE 68508	(402) 477-4500
Crescent Moon Coffee	816 P Street, Lincoln, NE 68508	(402) 435-2828
Cultiva Espresso	727 S. 11 Street, Lincoln, NE 68508	(402) 435-1133
daVinci's	745 S 11th, Lincoln, NE 68508	(402) 475-1111
Danny's Downtown Deli	941 O Street, Lincoln, NE 68508	(402) 438-9410
Dish	1100 O Street, Lincoln, NE 68508	(402) 475-9475
Doc's Place	140 N 8th, Lincoln, NE 68508	(402) 476-3232
Doozy's	101 N. 14th, Lincoln, NE 68508	(402) 438-1616
Duggan's Pub	440 S. 11th, Lincoln, NE 68508	(402) 477-3513
El Potrero	247 N. 8th, Lincoln, NE 68508	(402) 477-4551
Embassy Bar & Grille	1040 P Street, Lincoln, NE 68508	(402) 474-1111
Gourmet Grill	1400 O Street, Lincoln, NE 68508	(402) 476-7147
Green Gateau Restaurant	330 S. 10th, Lincoln, NE 68508	(402) 477-0330
Highnooners	1414 O Street, Lincoln, NE 68508	(402) 435-1414
Huskerville Pub & Pizza	2805 NW 48th St, Lincoln, NE 68524	(402) 261-9895
Ivanna Cone	701 P Street, Lincoln, NE 68508	(402) 477-7473
Jack's Bar & Grill	100 N. 8th, Lincoln, NE 68508	(402) 438-6288
Jimmy John's	101 N. 14th, Lincoln, NE 68508	(402) 477-1400
JTK	201 N. 7th Street, Lincoln, NE 68508	(402) 435-0161
Knickerbocker's	901 O Street, Lincoln, NE 68508	(402) 476-6865
Korn Popper	1417 N Street, Lincoln, NE 68508	(402) 474-5818
La Mexicana Market	1637 P Street, Lincoln, NE 68508	(402) 477-0785
Lazlo's Brewery & Grill	710 P. Street, Lincoln, NE 68508	(402) 434-5636
Lazzari's Pizza	1434 O Street, Lincoln, NE 68508	(402) 475-5556
Lincoln Espresso	112 S. 16th, Lincoln, NE 68508	(402) 438-0650

PLACES TO EAT CONT.

Maggie's Vegetarian Cafe	311 N 8th Street, Lincoln, NE 68508	(402) 477-3959
Main Street Café	1325 O Street, Lincoln, NE 68508	(402) 435-1717
Misty's	200 N. 11th Street, Lincoln, NE 68508	(402) 476-7766
Noodles and Company	210 N. 14th, Lincoln, NE 68508	(402) 475-4131
N-Zone Sports Bar & Grill	728 Q Street, Lincoln, NE 68508	(402) 475-8683
Old Chicago	826 P Street, Lincoln, NE 68508	(402) 477-2277
Oso Burrito	1451 "O" Street, Lincoln, NE 68508	(402) 477-1717
Papa John's Pizza	1601 Q Street, Suite C, Lincoln, NE 68508	(402) 476-6262
Red Onion Grill,	141 N. 9th, Lincoln, NE 68508	(402) 475-4844
Samurai Sam's Teriyaki Grill	230 N. 17th, Lincoln, NE 68508	(402) 475-7267
Scooter's Coffeehouse	1033 O Street, Lincoln, NE 68508	(402) 474-5282
Scooter's Coffeehouse	151 N. 8th Street, Lincoln, NE 68508	(402) 475-0115
Sher-E-Punjab	1601 Q Street, Lincoln, NE 68508	(402) 477-3090
Spaghetti Works	228 N. 12th, Lincoln, NE 68508	(402) 475-0900
Starbucks Coffee	1201 P Street, Lincoln, NE 68508	(402) 435-2622
Subway	1317 O Street, Lincoln, NE 68508	(402) 476-8193
Thai Garden	245 N. 13th, Lincoln, NE 68508	(402) 477-0811
The Alley	1031 M Street, Lincoln, NE 68508	(402) 477-2820
The Mill	800 P Street, Lincoln, NE 68508	(402) 475-5522
The Oven	201 N. 8th Street, Lincoln, NE 68508	(402) 475-6118
Tico's Foods of Mexico	317 S. 17th Street, Lincoln, NE 68508	(402) 475-1048
Village Inn Pancake House	111 S. 29th, Lincoln, NE 68502	(402) 476-6525
Vincenzo's	808 P Street, Lincoln, NE 68508	(402) 435-3889
Watering Hole	1321 O Street, Lincoln, NE 68508	(402) 438-3054
Wendy's	1336 Q Street, Lincoln, NE 68508	(402) 474-2322
Yiayia's Pizza Beer & Wine	1423 O Street, Lincoln, NE 68508	(402) 477-9166
Cafe Indigo	701 P Street, Lincoln, NE 68508	(402) 477-7770
Runza Restaurant	937 S. 13th Street, Lincoln, NE 68508	(402) 475-7320
La Tapatia	1037 L Street, Lincoln, NE 68508	(402) 475-2364
Tam O'Shanter Lounge & Steakhouse	105 S. 25th Street, Lincoln, NE 68510	(402) 474-2394
Panera Bread	211 N. 12th Street, Lincoln, NE 68508	(402) 435-0837
McDonald's	2140 K Street, Lincoln, NE 68510	(402) 477-5001
Qdoba Mexican Grill	211 N. 12th St., Lincoln 68508	(402) 477-0090
Juice Stop	1217 Q Street, Lincoln, NE 68508	(402) 435-4442
Pickleman's	1442 O Street, Lincoln, NE 68508	(402) 477-5700
Five Guys Burgers & Fries	1230 'P' Street, Lincoln, NE 68508	(402) 805-4173
Red Mango	210 N. 14th Street, Suite 210, Lincoln, NE 68508	(402) 405-0032
Buffalo Wild Wings	1328 P. Street, Lincoln, NE 68508	(402) 475-2999
Chipotle Mexican Grill	210 N. 14th Street, Suite 7, Lincoln, NE 68508	(402) 474-1133
Hour Lounge	101 N. 14th Street, Suite 6, Lincoln, NE 68508	(402) 261-5860
Mama's Dream Bakery & Deli	233 N. 19th Street, Lincoln, NE 68508	(402) 261-4863
Sbarro's	Nebraska Union, 1400 R Street, Lincoln, NE 68508	(402) 477-1450
Southwest Pit BBQ	1601 P Street, Lincoln, NE 68508	(402) 405-1000
The Sultan's Kite	1311 O St., Lincoln, NE 68508	(402) 477-0013
Sam & Louie's	1332 P St., Lincoln, NE 68508	(402) 475-0777

EVENT SITE MAP



2016 FSAE PROTEST FORM

School Name: _____ Car Number: _____

Faculty Advisor: _____

Team Leader: _____

Description of Rules Infraction:

Reason for Protest:

Please be aware that the protest window is open for 30 minutes only.

DESIGN JUDGE BIOS

David (Dave) Redszus Ph.D.: (Design Event Captain) **Alma Mater:** Northwestern University: BS Industrial Engineering and Economics, MS Systems Management and Operations Research, Ph.D. Product Development Processes. **Employment History**: Precision AutoResearch (founder, 30 yrs), Over 35 years total (research, engineering services, and specialty products for the motorsports industry). **Expertise:** Technical consultant, engineer, coach, and racer, advanced driving techniques, vehicle design, and engine development. Data analysis techniques and ability to translate complex issues into racer-understandable language. **Currently resides in:** IL **First car:** '70 Porsche 911S Targa. **Favorite race car:** What other than the Porsche 917-30? Or any other car which causes rules-changes ex-post should be a favorite! **Judge since:** 2004

Steven (Steve) Fox: (Chief Design Judge) **Alma Mater:** Iowa State Law Enforcement Academy, U.S. Army Military Police Academy. **Employment History:** '01+: PowerTrain Technology, President. Quarter Master Industries, Senior Engineer, 20 years, responsible for new product development, manufacturing, and testing. **Expertise:** Skilled Mechanic, Journeyman Machinist, Power transmission design over a broad spectrum of applications, Engine Development, Materials Selection & (Lean) Manufacturing Engineering. Over 40 years total motorsports / engineering career. Currently Design Captain, Formula SAE – Michigan. Past Chief Design Judge for Formula Student Germany, Formula Student Austria, Formula Student India. Design Captain, FSAE-Virginia '08 & '09. SAE Industrial Lecturer. **Currently resides in:** IL **First car:** '70 Camaro Z-28 **Favorite Racecars:** Porsche 917-30 & McLaren M8. Sadly, today's liability concerns will never let that much power to weight ratio loose on a racetrack again… **Design Judge since:** 1999 when recruited by Carroll Smith

Siddarth 'Sid' Attravanam: **Alma Mater:** University of Texas at Arlington: BS (Hons.) in Mechanical Engineering (minor in Electrical Engineering) **Employment History**: '14+: Cooper Tire & Rubber Company: R&D Engineer, Vehicle Modeling, Simulation and Track Testing; '13 – '14 Optimum G: Vehicle Dynamics Intern; Jan '13 – June '13: Fixrim Racing: Track Engineer, data acquisition setup, vehicle setup, tuning, driver coach **Expertise:** Vehicle handling modeling, simulation and testing, data acquisition setup, driver metrics **Currently Resides in:** OH First car: '01 Toyota Celica GTS **Favorite Race Car:** Ferrari F2004 driven by Michael Schumacher **Design Judge since:** 2015

D. Isaac Aunkst: **Alma Mater:** Penn State: BS in Electrical Engineering Technology. **Employment History**: '07 – '14: General Dynamics Electric Boat: R&D Engineer developing and testing electric propulsion concepts for submarine applications; '14+: Harley-Davidson Motor Company: Design Engineer - Electrical. **Expertise:** Electrical Propulsion Development, Medium Voltage Motors and Controllers, Power Quality Testing, Instrumentation, Data logging. **Currently Resides in:** WI **First car:** 1987 Toyota 4Runner **Favorite Race Car:** Ford Fiesta RS WRC **Judge since:** 2016

Randy Boone, Ph.D.: **Alma Mater:** University of Iowa: BS in Electrical & Computer Engineering; MS in Electrical Engineering; Ph.D. **Employment History**: '89+: Ford Motor company, Hybrid System Engineer – Vehicle Architecture; '12+: University of Michigan-Dearborn, Adjunct Professor – EE Department. **Expertise:** Vehicle Architecture, Chassis and Hybrid Fuel Economy and Performance attribute simulations **Currently Resides in:** MI **First truck:** '55 Ford F-100 **Favorite Race Car:** Ford GT **Design Judge since:** 2014 (Formula Hybrid)

DESIGN JUDGE BIOS CONT.

Thomas Bracht: **Alma Mater**: Carnegie Mellon: BS and MS Mechanical Engineering. **Employment History**: '13+: Space Exploration Technologies **Expertise**: Aerospace Structures, Composites Structures, Aluminum Forgings, FE Methods/Analysis **Currently Resides in**: CA **First Car**: '89 Mercedes 300E **Favorite Race Car**: Ferrari F40 GTE **Design Judge since**: 2016

John Burford: **Alma Mater**: University of Texas - Arlington. **Employment History**: Altair Engineering '98 – '04, Contractor '04 – present: General Dynamics, Caterpillar, Honda, Boeing and other companies with experience in multiple fields: Military, Automotive, Heavy Duty Trucks, and Aerospace. **Expertise**: CAE analyst focusing on Multi-Body Dynamics and Structural Optimization currently working on Boeing Commercial Aircraft. **Currently resides in**: IN **First Car**: '84 Pontiac Firebird. **Favorite racecar**: Group C/IMSA GTP Mazda 787 **Design Judge Since**: 2011

William (Billy) Burkey: **Alma Mater:** Carnegie Mellon University, BS ME '07 **Employment History:** SpaceX, Lead Structures Engineer **Expertise:** Mechanisms and Kinematics, Structural Design, Analysis and Optimization, Structural Validation and Testing, Aerospace Metallic and Composite Materials **Currently Resides in:** Los Angeles, CA **First car:** 1986 Pontiac Fiero GT **Least-Favorite Race Car:** 1986 Pontiac Fiero GT. **Design Judge since:** 2012.

Patrick Canupp: **Alma Mater:** North Carolina State: BS '91 and MS '93 in Aerospace Engineering; Stanford: PhD in Aeronautics and Astronautics '97 **Employment History**: '03+: Joe Gibbs Racing: Director of Aerodynamics; previously Chief Aerodynamicist for Robert Yates Racing and Petty Enterprises; Research Scientist for the Air Force Research Laboratory at Wright-Patterson AFB. **Expertise:** Low-speed aerodynamics, high-speed aerodynamics, incompressible and compressible flow, computational fluid dynamics, wind tunnel testing, track testing. **Currently Resides in:** NC **First Car:** 1978 Camaro **Favorite Race Car:** Sprint Cup Toyota Camry **Design Judge since:** 2016.

Joe Caparosa: **Alma Mater:** Penn State University: BS in Mechanical Engineering. **Employment History**: '13+: Space X: Structures Engineer **Expertise:** Composite structure design, finite element analysis, and structural testing **Currently Resides in:** CA **First car:** '66 SAAB 96 850 Monte Carlo **Favorite Race Car:** Lancia Stratos **Design Judge since:** 2015

Marko Cater: **Alma Mater:** Carleton University: BS Mechanical Engineering. Purdue University: MS, Mechanical Engineering **Employment History:** '07+: Honda R&D Americas, Inc.: Test Engineer, Vehicle Structure Reliability; '14+: Tesla Motors, Inc.: Test Engineer, Vehicle Durability – Chassis Systems **Expertise:** Chassis and Suspension Systems, Testing **Currently resides in:** CA **First Car:** '93 VW Golf Turbo Diesel **Favorite Race Car**: Mid-2000's Subaru Impreza WRC **Judge since:** 2011

Ryan Crocker: **Alma Mater:** Southeast Community College: A.A.S in Tool and Die Technology. **Employment History**: '13+: Hexagon Composites Cad Tech\Tool Designer: Toolmaker\Designer '00-'13 Lincoln Tool and Design: Toolmaker\Die Designer '93-'00 Overland Products **Expertise**: Tooling and machine design. Metal fabrication tube bending and welding. Chassis setup Practical experience in all things mechanical. **Currently Resides in**: NE **First car**: 1975 Camaro **Favorite Race Car**: Any car I build **Design Judge since:** 2016

DESIGN JUDGE BIOS CONT.

Drake DeVore: **Alma Mater:** Northern Illinois University: BS Mechanical Engineering **Employment History:** International Truck and Engine (NVH Engineer) – '04-'05, MoTeC Systems East '05+ **Expertise:** Electronic fuel injection, data acquisition, power management, electronics integration **Currently resides in:** NC **First Car:** Pro Street '65 Plymouth Barracuda my father and I built **Favorite Race Car**: Our very first FSAE car. We did lots of autocross events and had a great time with that car **Design Judge Since:** 2011

Damon Dilworth: **Alma Mater**: Purdue – Fort Wayne IN, 2004 **Employment History:** '04 – '07: International Truck in Fort Wayne. Suspension group in various positions covering front, rear and cab suspensions. '07+: Hendrickson. Engineering Supervisor for all new front suspension products, both axles and suspensions **Expertise:** suspension kinematics, simulation. **Currently resides in:** IL **First car:** Willys AWD truck **Favorite Race Car:** Baja Trophy Trucks **Judge since:** 2014

Ben DiMarco: **Alma Mater:** University of Akron: BS in Mechanical Engineering. **Employment History**: '12+: Honda R&D Americas Inc: **Expertise:** Brake System Design Engineer –brake system design concept and sizing, verification of performance and manufacturability, and management of cost/weight **Currently Resides in:** OH **First car:** '85 GMC Sierra 1500 Shortbed 4x4 **Favorite Race Car:** McLaren MP4/4 **Design Judge since:** 2016

Brian Dondlinger: **Alma Mater:** University of Wisconsin-Madison: BSME, MSME **Employment History:** Harley-Davidson Motor Co. **Expertise:** Powertrain Design, Chassis Design, Vehicle System Integration, Continuous Improvement and Six Sigma, PLM/ERP systems. **Currently Resides in:** WI **First car(s):** '79 Pontiac Firebird Trans Am **Favorite Race Car:** Group B Audi Quattro **Design Judge since:** 2004

Chris Drew: **Alma Mater:** University of Texas at Austin: BS in Mechanical Engineering. **Employment History**: '14+: Peterbilt Motor Company: Design Engineer; '12-'14 Pratt & Miller: Lead Trackside Engineer IMSA Prototype Program; '11-'12 Cummins: Test/NVH Engineer High-Horsepower Engines **Expertise:** Data Acquisition, Suspension, Tires, Simulation, Aerodynamics, and Design. **Currently Resides in:** TX **First car:** '96 Honda Accord & '82 Mazda RX-7 **Favorite Race Car:** Chaparral 2J **Design Judge since:** 2016

Colin Engebretson (Captain, U.S. Air Force): **Alma Mater:** University of North Dakota: BS in Mechanical Engineering **Employment History**: '08+: United States Air Force **Expertise:** Suspension and vehicle dynamics, Structures and Aerodynamics **Currently Resides in:** CO **First car:** '06 Civic si **Favorite Race Car:** 2015 Porsche 919 Hybrid (Mark Webber's ride) **Judge since:** 2016

Adam Evans: **Alma Mater:** Southern Polytechnic State University: B.S.E.E.T.- Electrical Engineering Technology; Purdue University: M.S.E.- Systems Engineering **Employment History**: ITT Aerospace Systems: Test Engineer (5 Years); SpaceX: Lead Automation and Controls Engineer (3 years) **Expertise:** Data Acquisition, Instrumentation, Electronics Integration **Currently resides in:** TX **First Car:** '96 Chevy S-10/5-speed. **Favorite race car:** BMW M3 E92 GT2. **Design Judge since:** 2016

DESIGN JUDGE BIOS CONT.

Adam Firestone: **Alma Mater:** University of Nebraska - Lincoln: BS Mechanical Engineering, Kettering University: MS Mechanical Engineering. **Employment History**: '09 - Present, Honda R&D Americas, Inc.: Systems and Control Engineer, In-Vehicle Engine Research and Development **Expertise:** Powertrain Control Design, Creation, Calibration and Confirmation **Currently Resides in:** OH **First car:** '72 Pontiac Ventura II 307ci, then 355ci now 496ci **Favorite Race Car:** Outlaw Sprint Car **Design Judge since:** 2015

Oscar N. (Nick) Garcia: **Alma Mater:** Wichita State University: Mechanical Engineering. **Employment History:** Hawker Beechcraft: '07-'10, Spirit Aerosystems: '10-'11, Bombardier Learjet: '12-'14, Spirit Aerosystems '14+ **Expertise**: Airframe stress analysis **Currently Resides in:** KS **First car:** '96 Ford Thunderbird **Favorite Race Car:** Lotus 49 / Gurney Eagle T2G **Design Judge since:** 2013

Zach Gilmor, P.E. **Alma Mater:** Montana State University, Mechanical Engineering '08 **Employment History:** Structural Design Engineer at Terex since '08 **Expertise:** Structural design and analysis; optimization. Controls, ergonomics, and usability. MSU Formula SAE Frame/Aero Team Lead in '07 **Currently Resides in:** WA **First Car:** '95 Ford Contour V6 5-speed **Favorite Race Car:** '05 Aston DBR9 **Design Judge since:** 2014

Rob Giovenale: **Alma Mater:** Western Washington University: Vehicle Research Institute. **Employment History:** 2002 to present Toyota Racing Development, Manufacturing Engineer. '01 Cascade Autosport, shop manager. WWU F-SAE '96-'01 **Expertise:** Powertrain design and manufacturing. Production based racecar chassis construction **Currently Resides in:** CA **First car:** '30 Ford Model A **Favorite race car:** Anything "too fast to race" **Design Judge since:** 2006

William (Billy) Godbold: **Alma Mater:** Florida State University: MS in Physics. **Employment History:** COMP Performance Group (COMP Cams): 19+ Years, Camshaft Design / Valvetrain Engineering Manager **Expertise:** Engine Systems Theory, Design and Development, Metallurgy, Motorsports **Currently Resides in:** TN **First car:** 1986 Jeep CJ7 (V8 engine swap) **Favorite Race Car:** Some affection towards our work on the Panoz Esperante GTR-1, but more like Will Rodgers in never seeing one I did not like **Design Judge since:** 2014.

Ken Gould: **Alma Mater:** Indiana-Purdue University at Fort Wayne, IN with a BS EET **Employment History:** '02+: e-Mobility Technical Systems Engineer for Porsche Cars North America (PCNA), with primary aftersales technical responsibility for the hybrid electric vehicles and GT Sportscars sold in North America. '92 – '00: Ford Europe: System Integration Engineer for European Ford and Jaguar vehicle programs. '81 – '91: Magnavox Government & Industrial Systems (now Raytheon). Developed and manufactured specialized RF and fiber optic defense systems. **Expertise:** Electric propulsion, and controls **Currently resides in:** GA **First car:** 1973 Mercury Capri **Favorite Race Car:** Porsche 917 **Design Judge since:** 2016

Christoph Hahn PhD: **Alma Mater**: TU München: PhD in Mechanical Engineering. **Employment History**: '13+: MathWorks Inc., Technical Education Specialist **Expertise**: Simulation and modeling. Computational mechanics, CFRP manufacturing. Physical testing and validation of simulation approaches. As a hobby pilot, I am certified to repair CFRP components. **Currently Resides in**: Munich, Germany **First car**: '96 VW Passat **Favorite Race Car**: Porsche 356 **Design Judge since**: 2013 (including: FSG & FSUK)

DESIGN JUDGE BIOS CONT.

Ken Halvorsen: **Alma Mater:** University of Nebraska-Lincoln: Mechanical Engineering. Master's Topic – Ethanol Vehicle Conversion- materials compatibility, dyno work **Employment History:** Delphi Automotive Systems – Test Engineer, Environmental Testing Corporation – Engine Test Manager, Hexagon Lincoln 11 years – Project Engineer, Service Manager. Involved in Sprint Car Racing and Drag Racing since the early '80's **First Car:** 1970 ½ Z/28 **Favorite Race Car:** Penske Donahue '69 Trans Am Camaro **Design Judge since:** 2014

Mario Hernandez: **Alma Mater:** University of Edinburgh, UK **Employment History:** Computer Research Institute **Expertise:** FPGA based design on a Network on Chip communications. RTL design using Verilog and system level design and OVM **Currently resides in:** CA **First car:** 1970 Ford Torino **Favorite Race Car:** Anything from the 24 hours of Lemons **Design Judge since:** 2016

Jeff Holm **Employment History:** Lincoln Industries/Director of Lincoln Performance Coatings, USAF (15 years), Aerospace Engineer, Founded High Performance Coatings (HPC) '82 Sold HPC '05, Crew member '93 Top Fuel World Champion Eddie Hill, Crew Member '01-'02 IRL Panther Racing, **Expertise:** Developed CerMet coatings for exhaust components. Piston coatings and Solid Dry Films **First Car:** 1959 Triumph TR3 (Just finished the restoration) **Favorite Race Car:** Our 478mph Bonneville Streamliner **Design Judge since**: 2012

Kurtis Horner: **Alma Mater:** BSME from Arizona State University '07 **Employment History**: Honda Research and Development Americas Inc. 8+ Years Automotive Body and Body Structure Product Design. ASU FSAE Team Vice President ;07. Currently Completing Development of the All New Next Generation Acura NSX as Upper Body Cabin Lead Design Engineer **Expertise:** Body Structure and exterior design engineering **Currently resides in:** OH **First car:** 1982 Toyota Celica Supra **Favorite race car:** Ford GT 40 Mk1 **Design Judge since:** 2016

Mark Hutchison: **Alma Mater:** Kettering University (prev. General Motors Engineering & Management Institute): BS in Mechanical Engineering **Employment History:** '94-present: Harley-Davidson Motorcycle Company: Vehicle Tech Staff Engineer **Expertise:** 2-wheel, 3-wheel and 4-wheel chassis design, vehicle dynamics, steering and suspension design, a bit of motorcycle tire testing and modeling, motorcycle dynamic simulation, bolted joints **Currently Resides in:** WI **First Car:** Soap Box Derby car **Favorite Race Car:** Dan Gurney's 1967 AAR Grand Prix Eagle **Design Judge since:** 2013

Sriram Jala: **Alma Mater:** University of Victoria, BC, Canada B.S. in Electrical and Computer Engineering with specialization in Power Electronics **Employment History:** '08+: Ford Motor Company. Design & Development of Automotive Electronics. **Expertise:** Electric Powertrain Design and Development. Expert in Electric Vehicle Supply Equipment, Onboard Charger Modules, DC-DC Converters, HMI, Standards and Regulations, Electronic Circuit Design, Simulation, Testing and Manufacturing **Currently resides in:** MI **First car:** 1952 Fiat Argotourisimo **Favorite Race Car:** Ford 999 **Design Judge Since:** 2016

DESIGN JUDGE BIOS CONT.

Justin Jang: **Alma Mater:** Cal Poly San Luis Obispo: BS in Mechanical Engineering ('00), MBA ('09). **Employment History**: '16+: Owner – Data Driven, motorsports consulting; '15 Motivo Engineering – Project Manager; '11-'14: Honda Performance Development – Trackside Race Engineer; '10-'11: Black Swan Racing – Data/Assistant Engineer; '08-'09: Turner Motorsports, Data Acquisition Engineer; '05-'07: OptimumG, R&D Engineer **Expertise:** End to end Data acquisition system services; wire harness, installation, calibration, data analyzing/interpreting, driver coaching, suspension design and tuning, trackside engine tuning **Currently Resides in:** CA **First car:** 2003 Toyota Corolla **Favorite Race Car:** Toyota AAR Eagle Mk III **Design Judge since:** 2011

James Kucinskas: **Alma Mater:** University of Oklahoma: BS and MS Mechanical Engineering. **Employment History:** Space Exploration Technologies; Test Operations Engineer. National Instruments; Applications Engineer. Oklahoma FSAE (5 years) **Expertise:** Data Acquisition (sensors, electronics, data reduction and processing), Test Design and Operations, General Structural Design. **Currently Resides in:** TX **First Car:** 1986 Honda Accord **Favorite Race Car:** Porsche Carrera GT **Design Judge Since:** 2016

Evan Martin: **Alma Mater:** Ryerson University (Toronto) – BEng. **Employment History**: '07+: Honda R&D Americas, Inc: Senior Design Engineer **Expertise:** Vehicle dynamics, elastokinematics, suspension structure/component design, strength/durability **Currently Resides in:** OH **First car:** '93 Suzuki Swift **Favorite Race Car:** '88 McLaren-Honda MP4/4 THE definition of dominant performance in F1 **Judge since:** 2012

Jerry A. Ohlemeier: **Alma Mater:** University of Kansas, BSME. **Employment History:** '06+: Trelleborg Sealing Solutions **Expertise:** Product design: Self propelled cranes (chassis, powertrain, controls, booms), Hydrostative drive train and component design and application, Propane, gas, and diesel industrial powertrain application (fork lift trucks), currently building a '66 Cobra replica. **First car:** '66 Ford Fairlane **Favorite race car:** '57 Ferrari 250 Testa Rossa **Design Judge since:** 2016

Tim Patek: **Alma Mater:** University of Texas, Arlington. BS and MS Mechanical Engineering, Masters in Business Administration **Employment History**: Mechanical Engineer at Peterbilt Motors since '04. **Expertise:** Class 8 diesel truck component integration and packaging, chassis design, and air brake systems **Currently resides in:** TX **First truck:** 1985 GMC Scottsdale pickup **Favorite race car:** Any that someone is silly enough to let me drive, typically blue FSAE cars. **Design Judge since:** 2015

William (Bill) E Redinger P.E.: **Alma Mater:** University of Nebraska: Mechanical Engineering '72. **Employment History:** Ford Motor Company Engine and Foundry Division; Advanced Engine Development, Emission Development and Advanced Engine Emission and Fuel Economy Calibration. OPPD; Power Plant Design, Construction and Operation. **Expertise:** Internal Combustion engines, Chassis Engineering, Aerodynamics, Structures **Currently Resides in:** NE **First Car:** Triumph TR3 **Favorite Race Car:** Lotus 38 **Design Judge since:** 1999

DESIGN JUDGE BIOS CONT.

Craig Redinger: **Alma Mater:** University of Nebraska: Mechanical Engineering '97 **Employment History:** Honda Research & Development, 7yrs body-in-white, 5 vehicle concepts, 5 new technology and platform strategies **Expertise:** Platform development, vehicle performance, cost and manufacturability **Currently Resides in:** OH **First Car:** Triumph Mark IV Race Car that was not street legal, purchased at 15yrs of age (Needless to say my mom was not happy at my Dad for letting me purchase it) **Favorite Race Car:** GT40 **Design Judge since:** 2013

Andrew Reimer: **Alma Mater:** UBC BASc in Mechanical Engineering; Oxford Brookes University: MSc in Motorsports Engineering. **Employment History**: Tesla Motors – Mechanical Design Engineer – Propulsion Systems **Expertise:** Structural design & analysis, EV powertrain design, project management, physical testing for performance and reliability **Currently Resides in:** CA **First car:** '60 MGA **Favorite Race Car:** Tyrell P34 6 wheeler **Design Judge since:** 2015

David Rimel: **Alma Mater**: Colorado State University: BS Industrial Management; Colorado School of Mines: MS Environmental Science and Engineering **Employment History**: Vehicular emissions research and testing; Auto paint spray booth consulting, permitting; Body shop owner/operator; 40+ years of vehicle repair and restoration **Expertise**: Automotive body/frame; Vehicular emissions **Currently Resides in**: CO **First Car**: '56 Chevy BelAir w/ 347 ('57Pontiac) tri-power **Favorite Race Car**: Well executed FSAE project **Design Judge since**: 2012

Neil Roberts: **Alma Mater**: Texas A&M: BS in Aerospace Engineering **Employment History**: '12+: Honda Performance Development, Project Lead for Indycar Aero Kit. '10 – '12 Northrop Grumman Corp, UAV Design Engineer. '96 – '10 Swift Engineering, Senior Design Engineer. '91 – '94 Hall/VDS Racing Indycar Team, Assistant Engineer **Expertise**: Design and engineering of everything except the engine **Publications**: Think Fast – The Racer's Why-To Guide to Winning **Currently Resides in**: CA **First car**: AMC Gremlin (Never buy a used car in the dark!) **Favorite Race Car**: Swift 014.a Toyota Atlantic (My first car as Chief Engineer, and a beautiful car) **Judge since**: 2000

Stephen (Steve) Rosenkrantz: **Alma Mater:** University of Delaware, '14 **Employment History:** '14+: Honda R&D Americas **Expertise:** Mass production body and platform engineering **Currently resides in:** OH **First car:** 2002 Saab 9-5 **Favorite race car:** Saab Quantum IV **Design Assistant since:** 2015

Eric Schieb: **Alma Mater:** Georgia Institute of Technology, '92, BS in Mechanical Engineering. **Employment History**: GM, CMI, Kelsey-Hayes, TRW Automotive, Elan Power Products (the bulk of this is system-level, data-driven development of chassis and powertrain controls) **Expertise:** data-based, hands-on, system-level development. **Currently Resides in:** GA **First car:** Mini 1000 **Favorite Race Car:** The one that is making me think **Design Judge since:** 2003

Wes Snaza: **Alma Mater:** South Dakota School of Mines and Technology: Mechanical Engineering **Employment History:** Terex AWP, 8 Years: Design Engineering/Project Management **Expertise:** Industrial equipment design and manufacturing; structures, analysis, testing, controls, hydraulics, customer support, and lean manufacturing. Formula SAE: '04-'08. **Currently Resides in:** WA **First car:** '78 Ford LTD (a.k.a. "Land Yacht") **Favorite Race Car:** Shelby Daytona Coupe **Design Judge since:** 2013

DESIGN JUDGE BIOS CONT.

Sebastian Strauss: **Alma Mater:** UW-Madison: M.Sc. in Mechanical Engineering. **Employment History**: '99 – '00: Outboard Marine Corporation; '00: Ricardo; '00-05: Bombardier Recreational Products; '05-'15: STIHL Inc.; '15+:: Achates Power, Inc: Chief Engineer, Technology Development. **Expertise:** Engine Development, Performance, Emissions, Design and Data Analysis. Avid autocrosser (F125) **Currently Resides in:** CA **First car:** '86 Toyota MR2 **Favorite Race Car:** Lola T70. **Design Judge since:** 2015

Matt Swiderski: **Alma Mater:** Kettering University - BSME, Purdue University - MSME. **Employment History**: '14+: Richard Childress Racing: Head of Vehicle Performance Group, Chief Race Engineer '12 – '14, Race Engineer '07 – '11, Data Acquisition Engineer '05 – '07. '12: Space Exploration Technologies: Dynamic Loads Engineer **Expertise:** Vehicle Dynamics, Simulation, & Race Engineering **Currently Resides in:** NC **First car:** '78 Chevrolet Caprice Classic **Favorite Race Car:** RC-299 (Race winner from last season as Race Engineer in '11) **Design Judge since:** 2016

Benson Tsai: **Alma Mater:** University of Minnesota-Twin Cities and a B.S. in Engineering from Harvey Mudd College. **Employment History:** Founded Motiv Power Systems, Inc. Atieva (3 years), designing battery systems. Currently works at SpaceX, as a senior mechanical engineer. Currently resides in: CA **First car:** 1960 Cadillac Coupe DeVille **Favorite Race Car:** Morris Minor Rally car **Design Judge since:** 2016

John Waldrop: **Alma Mater:** Cal Poly SLO: B.S. Mechanical Engineering **Employment History:** '13+: Tesla Motors: Chassis Engineer, Brakes **Expertise:**. FSAE vehicle design and team management **Currently Resides in:** CA **First car:** Racing kart w/ Yamaha KT100 2-stroke engine **Favorite Race Car:** Anything that goes fast, looks good, and makes noise **Design Judge since:** 2016

Hannah Westbrook: **Alma Mater:** University of Pittsburgh: Electrical Engineering, Mechanical Engineering minor **Employment History:** Motec Systems East: Applications Engineer, Electronics Lead, FSAE **Expertise:** Motorsports Industry, Data Acquisition systems, Electronics Integration, Powertrain **Currently Resides in:** NC **First Car:** 2003 Honda Civic **Favorite Race Car:** Budweiser Rocket Car. The FIRST car to go supersonic… way back in 1979! **Design Judge since:** 2014

James Whisler: **Alma Mater:** Iowa State University: Mechanical Engineering **Employment History**: Motec Systems East: Applications Engineer; Engine Systems Lead, FSAE **Expertise:** Motorsports industry, powertrains, electronics integration, data acquisition systems **Currently Resides In:** NC **First car:** 1976 Datsun 280Z **Favorite Race Car:** Mazda 787B **Design Judge since:** 2013

Christian Yaeger, PE: **Alma Mater:** Georgia Tech, Mechanical Engineering **Employment History:** John Deere Sugarcane Harvesters, Flying Sheep Engineering, Deltawing Racing Cars **Expertise:** Differentials, Torque Vectoring, Transmission Layout, Patent Process **Currently Resides In:** GA **First Car:** '92 Accord, 243k, scheduled for rebuild at 270k **Favorite Race Car:** Audi R18, three wide, on the runoff on the outside **Design Judge Since:** 2012

FSAE LINCOLN SPONSORS

SPONSORS

DIAMOND PARTNERS

EVENT PARTNERS

SOLIDWORKS

HONDA
The Power of Dreams

GOLD SPONSOR

GENERAL MOTORS

SILVER SPONSOR

BLUE ORIGIN

COOPERTIRES

Ford
Go Further

LINCOLN
CONVENTION AND VISITORS BUREAU

MAHLE
Driven by performance

MathWorks

SPACEX

BRONZE SPONSOR

Nebraska Ethanol Board

YAZAKI

FRIEND OF FORMULA

ANSYS

BOLTON WORKS

Brüel & Kjær

DEATSCH WERKS

Hoosier RACING TIRE

HUMAN SOLUTIONS ASSYST AVM

Kawasaki

LINCOLN ELECTRIC

PSIM

SCCA FOUNDATION
Sports Car Club of America

SUNOCO RACE FUELS

TECAT

VI-GRADE