2011 Student Handbook

June 15-18, 2011
Auto Club Speedway

(If you want full version you will need to print; only partial copies will be distributed onsite)

TABLE OF CONTENTS
(Information up-to-date as of June 2, 2011)

REGISTERED TEAM LIST – NUMERICAL

Car #	University Name	State	Country
002	University of Oklahoma	OK	USA
003	University of Washington	WA	USA
004	University of Alberta		CANADA
005	University of Western Ontario		CANADA
008	Massachusetts Institute of Technology	MA	USA
009	Oregon State University	OR	USA
010	Missouri University of Science and Tech	MO	USA
011	University of Maryland	MD	USA
012	Universidade Paulista		BRAZIL
013	University of Victoria		CANADA
014	University of California-Berkeley	CA	USA
015	California State University -Northridge	CA	USA
016	University of British Columbia		CANADA
017	University of New MEXICO	NM	USA
018	University of Utah	UT	USA
019	University of Saskatchewan		CANADA
020	University of Wisconsin-Platteville	WI	USA
021	San Diego State University	CA	USA
022	Western Washington University	WA	USA
023	Montana State University	MT	USA
024	Polytechnic University of Puerto Rico	PR	USA
025	Kansas State University	KS	USA
026	Vel Tech Engineering College		INDIA
027	University of Texas-Austin	TX	USA
028	Concordia University Montreal		CANADA
029	Instituto Technologico de Chihuahua		MEXICO
030	Ohio State University	OH	USA
031	California Polytechnic State University	CA	USA
032	University of Bath		ENGLAND
033	California State University -Fullerton	CA	USA
034	Honda Technical College Kansai		JAPAN
035	California State University -Sacramento	CA	USA
036	Universidad Nacional Autonoma de MEXICO		MEXICO
037	University of Calgary		CANADA
038	Washington State University	WA	USA
039	South Dakota State University	SD	USA
040	Kettering University	MI	USA
041	University of Southern California	CA	USA
042	Universidad Autonoma del Estado MEXICO		MEXICO
043	University of California-San Diego	CA	USA
044	Portland State University	OR	USA
045	University of Hartford	CT	USA
046	University of Delaware	DE	USA

047	Wichita State University	KS	USA
048	University of Arizona	AZ	USA
049	Universidad Catolica Andres Bello		VENEZUELA
050	Oregon Institute of Technology	OR	USA
051	California State University -Los Angeles	CA	USA
052	Columbia University	NY	USA
053	University of California-Davis	CA	USA
054	Xiamen University of Technology		CHINA
055	Drexel University	PA	USA
056	University of Windsor		CANADA
057	New Jersey Institute of Technology	NJ	USA
058	Hunan University		CHINA
059	McMaster University		CANADA
060	Ecole de Technologie Superieure		CANADA
061	Rensselaer Polytechnic Institute	NY	USA
062	University of Kansas	KS	USA
063	Ryerson University		CANADA
064	California State Polytechnic University -Pomona	CA	USA
065	University of Illinois at Urbana-Champaign	IL	USA
066	Queen's University		CANADA
067	San Jose State University	CA	USA
068	University of Manitoba		CANADA
069	Pennsylvania State University	PA	USA
070	University of Guelph		CANADA
071	University of South Florida	FL	USA
072	University of Wisconsin Madison	WI	USA
073	Rutgers University	NJ	USA
074	University of California - Merced	CA	USA
075	Arizona State University	AZ	USA
076	Escuela Superior De Ingenieria Mecanicay		MEXICO
077	California State University -Fresno	CA	USA
078	ESIA San Luis Potosi		MEXICO
079	IPN ESIME UP Ticoman		MEXICO
080	IPN Esime Zacatenco		MEXICO
081	Lawrence Technological University	MI	USA
082	IPN-UPIITA		MEXICO
083	Faculdade de Engenharia de Sorocaba		BRAZIL
084	Oakland University	MI	USA
085	University of California-Irvine	CA	USA
086	Interamerican Inst Puerto Rico Bayamon		PUERTO RICO

REGISTERED TEAM LIST – ALPHABETICAL

University Name	Car #	State	Country
Arizona State University	075	AZ	USA
California Polytechnic State University	031	CA	USA
California State Polytechnic University -Pomona	064	CA	USA
California State University -Fresno	077	CA	USA
California State University -Fullerton	033	CA	USA
California State University -Los Angeles	051	CA	USA
California State University -Northridge	015	CA	USA
California State University -Sacramento	035	CA	USA
Columbia University	052	NY	USA
Concordia University Montreal	028		CANADA
Drexel University	055	PA	USA
Ecole de Technologie Superieure	060		CANADA
Escuela Superior De Ingenieria Mecanicay	076		MEXICO
ESIA San Luis Potosi	078		MEXICO
Faculdade de Engenharia de Sorocaba	083		BRAZIL
Honda Technical College Kansai	034		JAPAN
Hunan University	058		CHINA
Instituto Technologico de Chihuahua	029		MEXICO
Interamerican Inst Puerto Rico Bayamon	086		PUERTO RICO
IPN ESIME UP Ticoman	079		MEXICO
IPN Esime Zacatenco	080		MEXICO
IPN-UPIITA	082		MEXICO
Kansas State University	025	KS	USA
Kettering University	040	MI	USA
Lawrence Technological University	081	MI	USA
Massachusetts Institute of Technology	008	MA	USA
McMaster University	059		CANADA
Missouri University of Science and Tech	010	MO	USA
Montana State University	023	MT	USA
New Jersey Institute of Technology	057	NJ	USA
Oakland University	084	MI	USA
Ohio State University	030	OH	USA
Oregon Institute of Technology	050	OR	USA
Oregon State University	009	OR	USA
Pennsylvania State University	069	PA	USA
Polytechnic University of Puerto Rico	024	PR	USA
Portland State University	044	OR	USA
Queen's University	066		CANADA
Rensselaer Polytechnic Institute	061	NY	USA
Rutgers University	073	NJ	USA
Ryerson University	063		CANADA
San Diego State University	021	CA	USA
San Jose State University	067	CA	USA

South Dakota State University	039	SD	USA
University of Alberta	004		CANADA
University of Arizona	048	AZ	USA
University of Bath	032		ENGLAND
University of British Columbia	016		CANADA
University of Calgary	037		CANADA
University of California-Berkeley	014	CA	USA
University of California-Davis	053	CA	USA
University of California-Irvine	085	CA	USA
University of California-San Diego	043	CA	USA
University of Delaware	046	DE	USA
University of Guelph	070		CANADA
University of Hartford	045	CT	USA
University of Illinois at Urbana-Champaign	065	IL	USA
University of Kansas	062	KS	USA
University of Manitoba	068		CANADA
University of Maryland	011	MD	USA
University of New Mexico	017	NM	USA
University of Oklahoma	002	OK	USA
University of Saskatchewan	019		CANADA
University of South Florida	071	FL	USA
University of Southern California	041	CA	USA
University of Texas-Austin	027	TX	USA
University of Utah	018	UT	USA
University of Victoria	013		CANADA
University of Washington	003	WA	USA
University of Western Ontario	005		CANADA
University of Windsor	056		CANADA
University of Wisconsin Madison	072	WI	USA
University of Wisconsin-Platteville	020	WI	USA
Universidad Autonoma del Estado MEXICO	042		MEXICO
Universidad Catolica Andres Bello	049		VENEZUELA
Universidad Nacional Autonoma de MEXICO	036		MEXICO
Universidade Paulista	012		BRAZIL
University of California - Merced	074	CA	USA
Vel Tech Engineering College	026		INDIA
Washington State University	038	WA	USA
Western Washington University	022	WA	USA
Wichita State University	047	KS	USA
Xiamen University of Technology	054		CHINA

COMPETITION EVENT SCHEDULE

Revised 14 May 2011
Subject to change

Tuesday, June 14

10:00 am – 4:00pm. Setup day – NO TEAMS ALLOWED on site except for team representatives receiving shipments to the track.

Wednesday, June 15

8:00 am ..... Site opens to student teams.
8:00 am.....…..... Student Team Registration opens - Garage #3 (G3)
12:00 – 1:00 pm..... Lunch break
1:00 pm..... Technical Inspectors Meeting – G2
2:00 pm..... Early Tech Inspection and Weighing open – G2
5:00 pm..... Student Team Registration closes
5:00 – 6:00 pm ….... Welcoming ceremony at stage between G2 & G3
6:00 pm ……..… Team Captains Meeting in Drivers Meeting Room – G2
7:00 pm..... Tech Inspection and Weighing close
8:00 pm..... Site closes – EVERYONE MUST BE OFF-SITE

Thursday, June 16

7:00 am..... Site opens to student teams
7:30 am..... Brake, Noise & Practice Drivers Meeting – Mandatory in Driver Meeting Room – G2
8:00 am..... Student Team Late Registration opens – G3
8:30 am..... Design Judging event open
9:00 am..... Cost and Presentation Judging events open
12:00 – 1:00 pm..... Lunch break
4:00 pm..... Cost and Presentation events close
4:00 pm..... Student Team Late Registration closes
5:00 pm……... Acceleration and Skid Pad Drivers Meeting – Mandatory in Driver Meeting Room – G2
5:30 pm.....…. Design Semi-Finals
8:00 pm..... Site closes – EVERYONE MUST BE OFF-SITE

Friday, June 17

7:00 am..... Site opens to student teams
8:00 am..... Acceleration and Skid Pad Events open
9:00 am – 4:00 pm Design Judging Feedback
10:00 am – 2:00 pm Cost Judging Feedback
11:30 am..... Acceleration and Skid Pad Events close
11:30 - 12:45 pm.....Lunch Break
12:15 - 12:45 pm..... Drivers Meeting for Autocross Event – Mandatory in G2 Driver Meeting Room
12:45 -1:15 pm….. Autocross course open for walk – Mandatory for drivers – Meet at Autocross course
1:30 pm..... Autocross Event opens
4:30 pm..... Autocross Event closes
4:30 - 5:30pm…….. Presentation Judging Feedback
5:00 pm..... Drivers Meeting for Endurance Event – Mandatory in Driver Meeting Room – G2
6:00 – 7:00 pm... Presentation Highlights – Driver Meeting Room – G2.
8:00 pm..... Site closes – EVERYONE MUST BE OFF-SITE

Saturday, June 18

7:00 am..... Site opens to student teams
7:45 – 8:15 am..…. Endurance course walk. Must start by 8:00. Meet at Endurance start. – Mandatory for drivers
8:30 am …….. Endurance Event opens
12:00 pm..... Endurance Event closes – lunch break
1:00 pm..... Endurance Event opens.
After 1:00 pm..….. Design Finals – G3. Start time will be announced.
~4:00 pm.....……. Endurance Event closes*
6:00 pm..... Awards ceremony at stage between G2 & G3
8:00 pm..... Site closes – EVERYONE MUST BE OFF-SITE

Students attending Captains and Drivers Meetings must hold a dynamic pass.
Acceleration, Skid Pad and Autocross close exactly at the scheduled time. To be allowed to complete a run, a car must cross the starting line before the closing time.
*Endurance can close as soon as there are no cars are in the grid.

DAILY OPERATIONS

Technical Inspection
Wednesday..... 2:00 pm – 7:00 pm – (Early Tech Inspection)
Thursday..... 8:00 am – 5:00 pm
Friday & Saturday..... By appointment

Weigh Station
Wednesday..... 2:00 pm – 7:00 pm
Thursday …….…..... 8:00 am – 5:00 pm
Friday & Saturday..... By appointment

Fuel Station
Thursday and Friday..... 8:00 am – 5:00 pm
Saturday…….…..... 7:30 am – 5:00 pm

Tilt Table
Thursday…….…..... 8:00 am – 5:00 pm
Friday and Saturday..... By appointment

Dynamometer
Thursday...……..... 9:00 am – 5:00 pm
Friday…….…..... 9:00 am – 5:00 pm

Brake and Noise Testing, Practice Track
Thursday and Friday..... 8:00 am – 5:00 pm
Saturday..... 8:00 am – 1:00 pm

Lincoln Electric Welding (tentative)
Wednesday..... 4:00 pm – 7:00 pm
Thursday and Friday.....…. 8:00 am – 5:00 pm
Saturday.....…. 8:00 am – 12:00 pm

Volunteer Registration and Information
Wednesday - Saturday..... 7:00 am – 5:00 pm

30 minutes notice is required for all appointments. Appointments can be booked through the announcer at Competition HQ in Garage #3.
This Competition Daily Schedule is subject to change. – Listen for announcements & updates.

Static Events Master Schedule, FSAE California 2011

Car No.	Team	Event (Judge Group/Time)		
		Cost	Design	Present
75	Arizona State U.	4/8:30	4/2:20	4/10:30
64	Cal. State Poly U. Pomona	4/3:30	4/1:30	2/10:00
77	Cal. State U. Fresno	5/10:00	5/4:00	3/1:30
33	Cal. State U. Fullerton	7/10:45	7/8:30	1/2:30
51	Cal. State U. L.A.	6/1:15	6/10:10	4/3:30
15	Cal. State U. Northridge	3/11:30	3/9:20	5/2:30
35	Cal. State U. Sacramento	5/2:45	5/12:40	1/9:30
52	Columbia U.	6/2:00	6/11:00	6/4:00
55	Drexel U.	8/3:30	8/1:30	6/10:00
60	Ecole de Technologie Superieure	3/2:00	3/11:00	3/4:00
78	ESIA San Luis Potosi	4/10:00		2/1:30
83	Faculdade Eng. de Sorcoba	4/11:30	4/9:20	6/2:30
34	Honda Tech. College Kansai	3/8:30	3/2:20	3/10:30
82	Instituto Politecnico Nacional	7/2:45	7/12:40	3/9:30
29	Instituto Tecnologico de Chihuahua	6/10:45	6/8:30	6/2:00
86	Interamerican U. of Puerto Rico	6/10:00		4/1:30
79	IPN - ESIME UP Ticoman	6/9:15	6/3:10	2/12:00
25	Kansas State U.	4/2:00	4/11:00	4/4:00
40	Kettering U.	5/1:15	5/10:10	3/3:30
81	Lawrence Technological U.	5/11:30	5/9:20	1/3:00
8	Mass. Inst. of Technology	7/11:30	7/9:20	3/3:00
10	Missouri Inst. of Sci. and Tech.	4/2:45	4/12:40	6/9:00
23	Montana State U. Bozeman	2/3:30	2/1:30	6/9:30
57	N. J. Inst. Of Tech. (Newark)	3/9:15	3/3:10	5/11:00
84	Oakland U.	2/2:45	2/12:40	4/9:00
50	Oregon Inst. of Tech.	4/1:15	4/10:10	2/3:30
9	Oregon State U.	1/11:30	1/9:20	3/2:30
24	Polytechnic U. of Puerto Rico	2/10:00	2/4:00	6/12:00
44	Portland State U.	3/2:45	3/12:40	5/9:00
66	Queen's U. - Ontario	8/2:45	8/12:40	4/9:30
61	Renssalear Polytechnic Inst.	8/1:15	8/10:10	6/3:30
73	Rutgers U.	1/2:45	1/12:40	3/9:00
63	Ryerson U.	7/2:00	7/11:00	1/9:00
21	San Diego State U.	5/10:45	5/8:30	5/2:00
67	San Jose State U.	7/3:30	7/1:30	5/10:00
39	South Dakota State U.	6/2:45	6/12:40	2/9:30

Car No.	Team	Event (Judge Group/Time)		
		Cost	Design	Present
4	U. of Alberta	5/8:30	5/2:20	5/10:30
48	U. of Arizona	7/1:15	7/10:10	5/3:30
32	U. of Bath	7/9:15	7/3:10	3/12:00
16	U. of British Columbia	2/10:45	2/8:30	2/2:00
37	U. of Calgary	8/10:45	8/8:30	2/2:30
14	U. of Cal. - Berkeley	1/9:15	1/3:10	3/11:00
53	U. of Cal. - Davis	4/9:15	4/3:10	6/11:00
85	U. of Cal. - Irvine	1/8:30	1/2:20	1/10:30
74	U. of Cal. - Merced	3/10:00	3/4:00	1/1:30
43	U. of Cal. - San Diego	6/11:30	6/9:20	2/3:00
46	U. of Delaware	5/2:00	5/11:00	5/4:00
70	U. of Guelph	2/9:15	2/3:10	4/11:00
45	U. of Hartford	1/2:00	1/11:00	1/4:00
65	U. of Illionois - Urbana Champaign	7/8:30	7/2:20	1/11:00
62	U. of Kansas - Lawrence	5/3:30	5/1:30	3/10:00
68	U. of Manitoba	1/1:15	1/10:10	4/3:00
11	U. of Maryland - College Park	8/8:30	8/2:20	2/11:00
17	U. of New Mexico	2/8:30	2/2:20	2/10:30
2	U. of Oklahoma	2/1:15	2/10:10	6/3:00
19	U. of Saskatchewan	3/10:45	3/8:30	3/2:00
71	U. of South Florida	6/3:30	6/1:30	4/10:00
41	U. of Southern Cal.	8/9:15	8/3:10	4/12:00
27	U. of Texas - Austin	2/2:00	2/11:00	2/4:00
18	U. of Utah	7/10:00		5/1:30
13	U. of Victoria	1/10:45	1/8:30	1/2:00
3	U. of Washington	6/8:30	6/12:20	6/10:30
72	U. of Wisconsin - Madison	8/2:00	8/11:00	2/9:00
20	U. of Wisconsin - Platteville	4/10:45	4/8:30	4/2:00
42	Univ. Autonama Estado Mexico	8/11:30	8/9:20	4/3:00
49	Universidad Catolica Andres Bello	8/10:00		6/1:30
36	Univ. Nacion Autonam de Mexico	3/1:15	3/10:10	1/3:30
12	Universidade de Paulista	1/3:30	1/1:30	5/9:30
26	Vel Tech U.	1/10:00	1/4:00	5/12:00
38	Washington State U.	2/11:30	2/9:20	4/2:30
22	Western Washington U.	3/3:30	3/1:30	1/10:00
54	Xiamen U. of Technology	5/9:15	5/3:10	1/12:00

Design Judging, FSAE California 2011

Time	Group/Bay 1	Group/Bay 2	Group/Bay 3	Group/Bay 4	Group/Bay 5	Group/Bay 6	Group/Bay 7	Group/Bay 8
8:30	13 U. of Victoria	16 U. of British Columbia	19 U. of Saskatchewan	20 U. of Wisconsin Platteville	21 San Diego State U.	29 Instituto Tecnologico de Chihuahua	33 Cal. State U. Fullerton	37 U. of Calgary
9:20	9 Oregon State U.	38 Washington State U.	15 Cal. State U. Northridge	83 Faculdade de Engenharia de Sorocaba	81 Lawrence Tech. U.	43 U. of Cal. San Diego	8 Mass. Inst. Of Technology	42 Universidad Autonama Estado Mex.
10:10	68 U. of Manitoba	2 U. of Oklahoma	36 Un'sidad Nacion Auton. de Mex	50 Oregon Institute of Tech.	40 Kettering U.	51 Cal. State U. Los Angeles	48 Univ. of Arizona	61 Rennselear Polytec. Inst.
11:00	45 U. of Hartford	27 U. of Texas Austin	60 Ecole de Technologie Superieure	25 Kansas State U.	46 U. of Delaware	52 Columbia U.	63 Ryerson U.	72 U. of Wisconsin Madison
11:50	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
12:40	73 Rutgers U.	84 Oakland U.	44 Portland State U.	10 Missouri U. of Sci. and Tech.	35 Cal. State U. Sacramento	39 South Dakota State U.	82 Instituto Politecnico Nacional	66 Queen's U., Ontario, Canada
1:30	12 Universidade de Paulista	23 Montana State U. Bozeman	22 Western Washington U.	64 Cal. State Poly U. Pomona	62 U. of Kansas Lawrence	71 U. of South Florida	67 San Jose State U.	55 Drexel U.
2:20	85 U. of Cal. Irvine	17 U. of New Mexico	34 Honda Tech. College Kansai	75 Arizona State U. Tempe	4 U. of Alberta	3 U. of Washington	65 U. of Illinois Urbana Champaign	11 U. of Maryland College Park
3:10	14 U. of Cal. Berkeley	70 U. of Guelph	57 New Jersey inst. Of Tech. (Newark Col.)	53 U. of Cal. Davis	54 Xiamen U. of Technology	79 IPN - ESIME UP Ticoman	32 U. of Bath	41 U. of Southern Cal.
4:00	26 Vel Tech. U.	24 Polytechnic U. of Puerto Rico	74 U. of Cal. Merced		77 Cal. State U. Fresno			
4:50	Dinner							
5:30	**Semifinalists announced**							
5:40-7:15	**Semifinal Round**, best 8 to 10 teams advance to Finals,							
7:15-7:45	**Semifinal scoring,** must be off site by 8 p.m.							

Presentation Judging, FSAE California 2011

O'Neil

Time	Group/Bay 1	Group/Bay 2	Group/Bay 3	Group/Bay 4	Group/Bay 5	Group/Bay 6
8:00	Static event meeting with judges from all static events (Cost, Design, Presentation)					
9:00	63 Ryerson U.	72 U. of Wisconsin Madison	73 Rutgers U.	84 Oakland U.	44 Portland State U.	10 Missouri U. of Sci. and Tech.
9:30	35 Cal. State U. Sacramento	39 South Dakota State U.	82 Instituto Politecnico Nacional	66 Queen's U., Ontario, Canada	12 Universidade de Paulista	23 Montana State U. Bozeman
10:00	22 Western Washington U.	64 Cal. State Poly U. Pomona	62 U. of Kansas Lawrence	71 U. of South Florida	67 San Jose State U.	55 Drexel U.
10:30	85 U. of Cal. Irvine	17 U. of New Mexico	34 Honda Tech. College Kansai	75 Arizona State U. Tempe	4 U. of Alberta	3 U. of Washington
11:00	65 U. of Illinois Urbana Champaign	11 U. of Maryland College Park	14 U. of Cal. Berkeley	70 U. of Guelph	57 New Jersey inst. Of Tech. (Newark Col.)	53 U. of Cal. Davis
12:00	54 Xiamen U. of Technology	79 IPN - ESIME UP Ticoman	32 U. of Bath	41 U. of Southern Cal.	26 Vel Tech. U.	24 Polytechnic U. of Puerto Rico
12:30	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
1:30	74 U. of Cal. Merced	78 ESIA San Luis Potosi	77 Cal. State U. Fresno	86 Interamerican U. of Puerto Rico	18 U. of Utah	49 Universidad Catolica Andres Bello
2:00	13 U. of Victoria	16 U. of British Columbia	19 U. of Saskatchewan	20 U. of Wisconsin Platteville	21 San Diego State U.	29 Instituto Tecnologico de Chihuahua
2:30	33 Cal. State U. Fullerton	37 U. of Calgary	9 Oregon State U.	38 Washington State U.	15 Cal. State U. Northridge	83 Faculdade de Engenharia de Sorocaba
3:00	81 Lawrence Tech. U.	43 U. of Cal. San Diego	8 Mass. Inst. Of Technology	42 Universidad Autonama Estado Mex.	68 U. of Manitoba	2 U. of Oklahoma
3:30	36 Un'sidad Nacion Auton. de Mex	50 Oregon Institute of Tech.	40 Kettering U.	51 Cal. State U. Los Angeles	48 Univ. of Arizona	61 Rennselear Polytec. Inst.
4:00	45 U. of Hartford	27 U. of Texas Austin	60 Ecole de Technologie Superieure	25 Kansas State U.	46 U. of Delaware	52 Columbia U.

Cost Judging, FSAE California 2011

O'Neil

Time	Group/Bay 1	Group/Bay 2	Group/Bay 3	Group/Bay 4	Group/Bay 5	Group/Bay 6	Group/Bay 7	Group/Bay 8
8:00	Static event meeting with judges from all static events (Cost, Design, Presentation)							
8:30	85 U. of Cal. Irvine	17 U. of New Mexico	34 Honda Tech. College Kansai	75 Arizona State U. Tempe	4 U. of Alberta	3 U. of Washington	65 U. of Illinois Urbana Champaign	11 U. of Maryland College Park
9:15	14 U. of Cal. Berkeley	70 U. of Guelph	57 New Jersey inst. Of Tech. (Newark Col.)	53 U. of Cal. Davis	54 Xiamen U. of Technology	79 IPN - ESIME UP Ticoman	32 U. of Bath	41 U. of Southern Cal.
10:00	26 Vel Tech. U.	24 Polytechnic U. of Puerto Rico	74 U. of Cal. Merced	78 ESIA San Luis Potosi	77 Cal. State U. Fresno	86 Interamerican U. of Puerto Rico	18 U. of Utah	49 Universidad Catolica Andres Bello
10:45	13 U. of Victoria	16 U. of British Columbia	19 U. of Saskatchewan	20 U. of Wisconsin Platteville	21 San Diego State U.	29 Instituto Tecnologico de Chihuahua	33 Cal. State U. Fullerton	37 U. of Calgary
11:30	9 Oregon State U.	38 Washington State U.	15 Cal. State U. Northridge	83 Faculdade de Engenharia de Sorocaba	81 Lawrence Tech. U.	43 U. of Cal. San Diego	8 Mass. Inst. Of Technology	42 Universidad Autonama Estado Mex.
12:15	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
1:15	68 U. of Manitoba	2 U. of Oklahoma	36 Un'sidad Nacion Auton. de Mex	50 Oregon Institute of Tech.	40 Kettering U.	51 Cal. State U. Los Angeles	48 Univ. of Arizona	61 Rennselear Polytec. Inst.
2:00	45 U. of Hartford	27 U. of Texas Austin	60 Ecole de Technologie Superieure	25 Kansas State U.	46 U. of Delaware	52 Columbia U.	63 Ryerson U.	72 U. of Wisconsin Madison
2:45	73 Rutgers U.	84 Oakland U.	44 Portland State U.	10 Missouri U. of Sci. and Tech.	35 Cal. State U. Sacramento	39 South Dakota State U.	82 Instituto Politecnico Nacional	66 Queen's U., Ontario, Canada
3:30	12 Universidade de Paulista	23 Montana State U. Bozeman	22 Western Washington U.	64 Cal. State Poly U. Pomona	62 U. of Kansas Lawrence	71 U. of South Florida	67 San Jose State U.	55 Drexel U.

2011 FORMULA SAE COMPETITION AWARDS

STATIC

SAE Cost Award
This award recognizes the team who receives the best score in Cost

SAE Presentation Award
The team that receives the best score in Presentation

Honda R&D Americas Engineering Design Award
This award recognizes the team who receives the best score in Design - $1000, $725, $525

DYNAMIC

Acceleration Award
This award recognizes the team who receives the best score in Acceleration

Skid Pad Award
This award recognizes the team who receives the best score in Skid Pad

Hoosier Tire Autocross Award
Fastest three recorded autocross runs. - 8 Free Tires, 6 Free Tires, 4 Free Tires

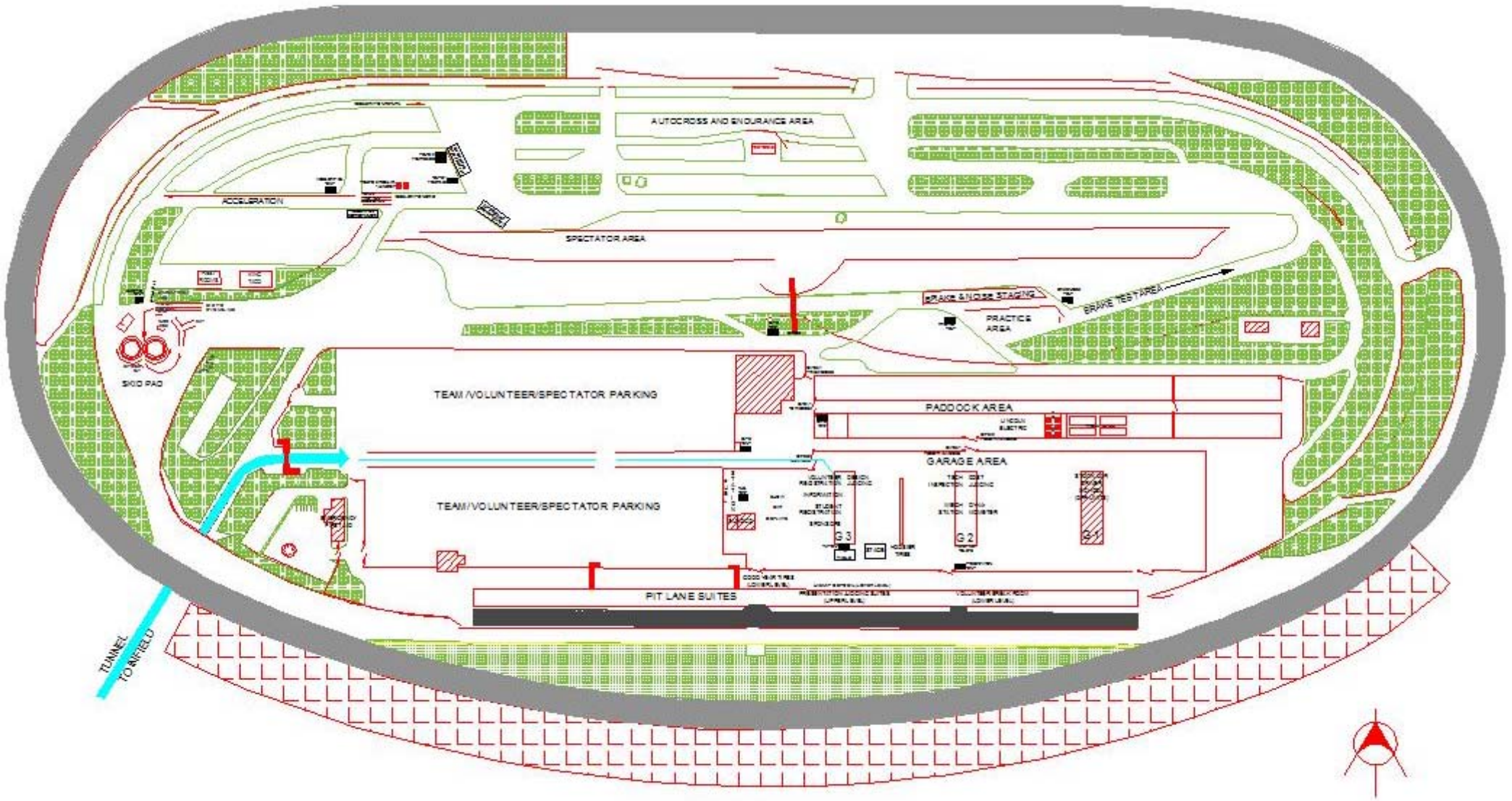
Goodyear Tire Endurance Award
Fastest three recorded endurance runs. - 8 Free Tires, 6 Free Tires, 4 Free Tires

Fuel Economy Award
This award recognizes the team who receives best score in Fuel Economy

Honda R&D Americas Inc Dynamic Event Award
Best Overall In Dynamic Events - $1000, $725, $525

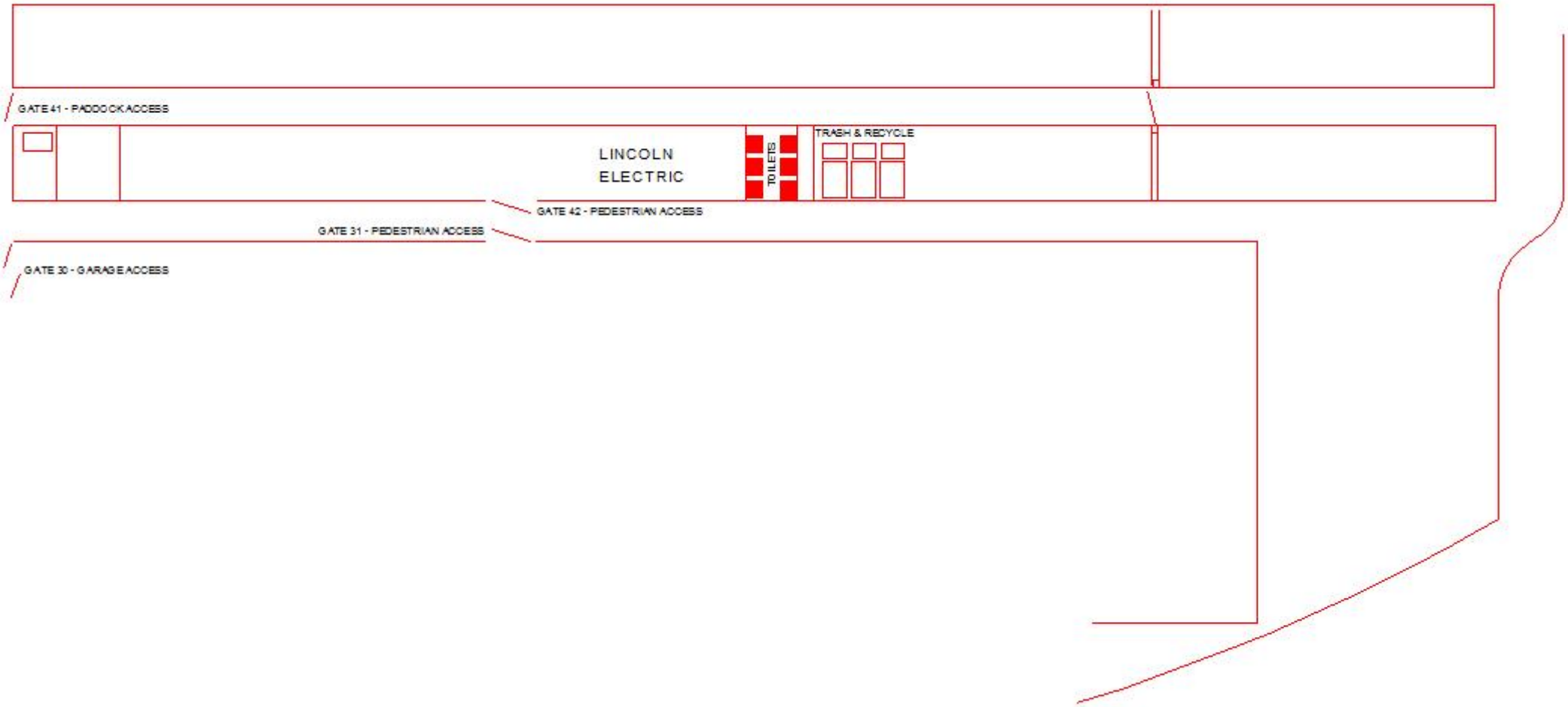
OVERALL

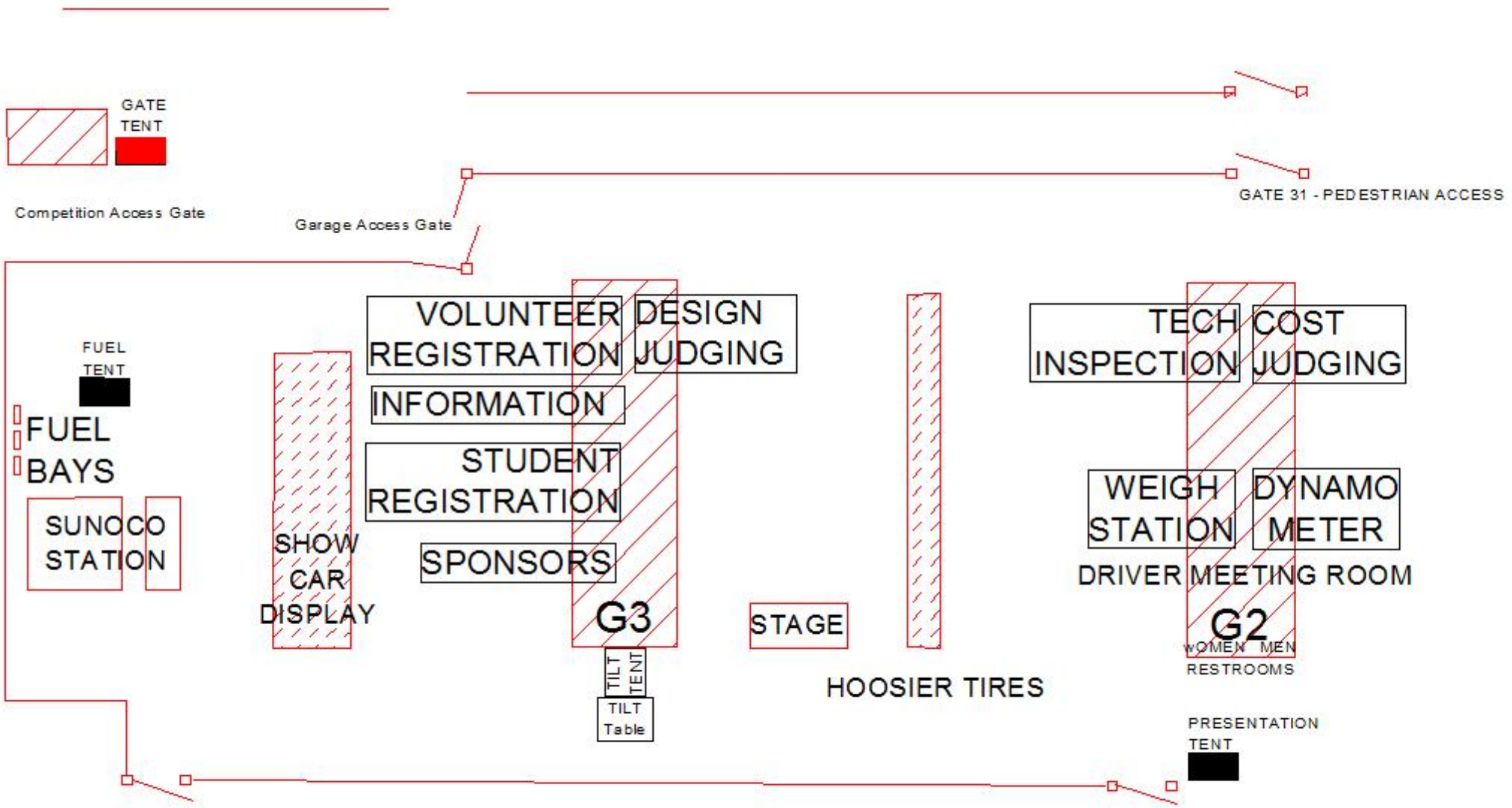
SAE Spirit of Excellence Award
The Award recognizes the top ten finishers overall - Cash prizes awarded to 1st - 3rd finishers only - $3000, $2000, $1000, Trophy, Trophy, Trophy, Trophy, Trophy, Trophy, Trophy



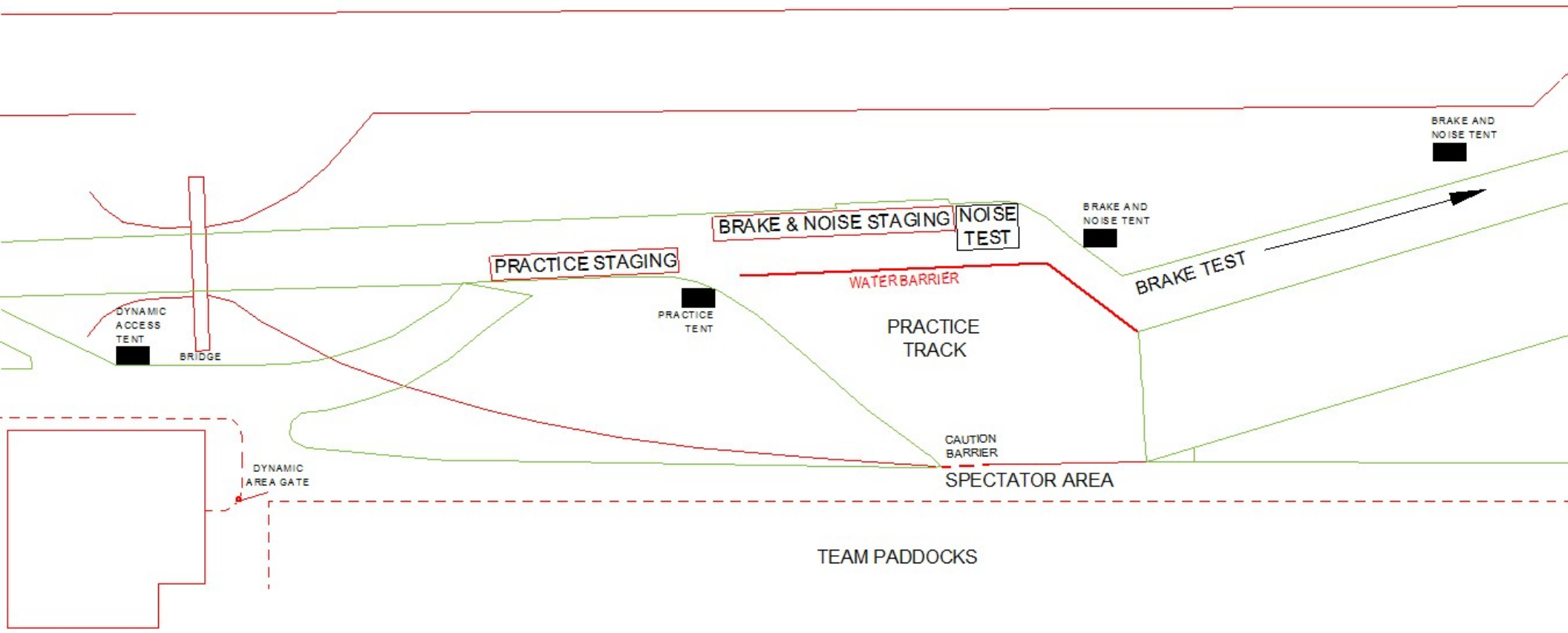
SPEED LIMIT 25 MPH ON ALL ACCESS ROADS

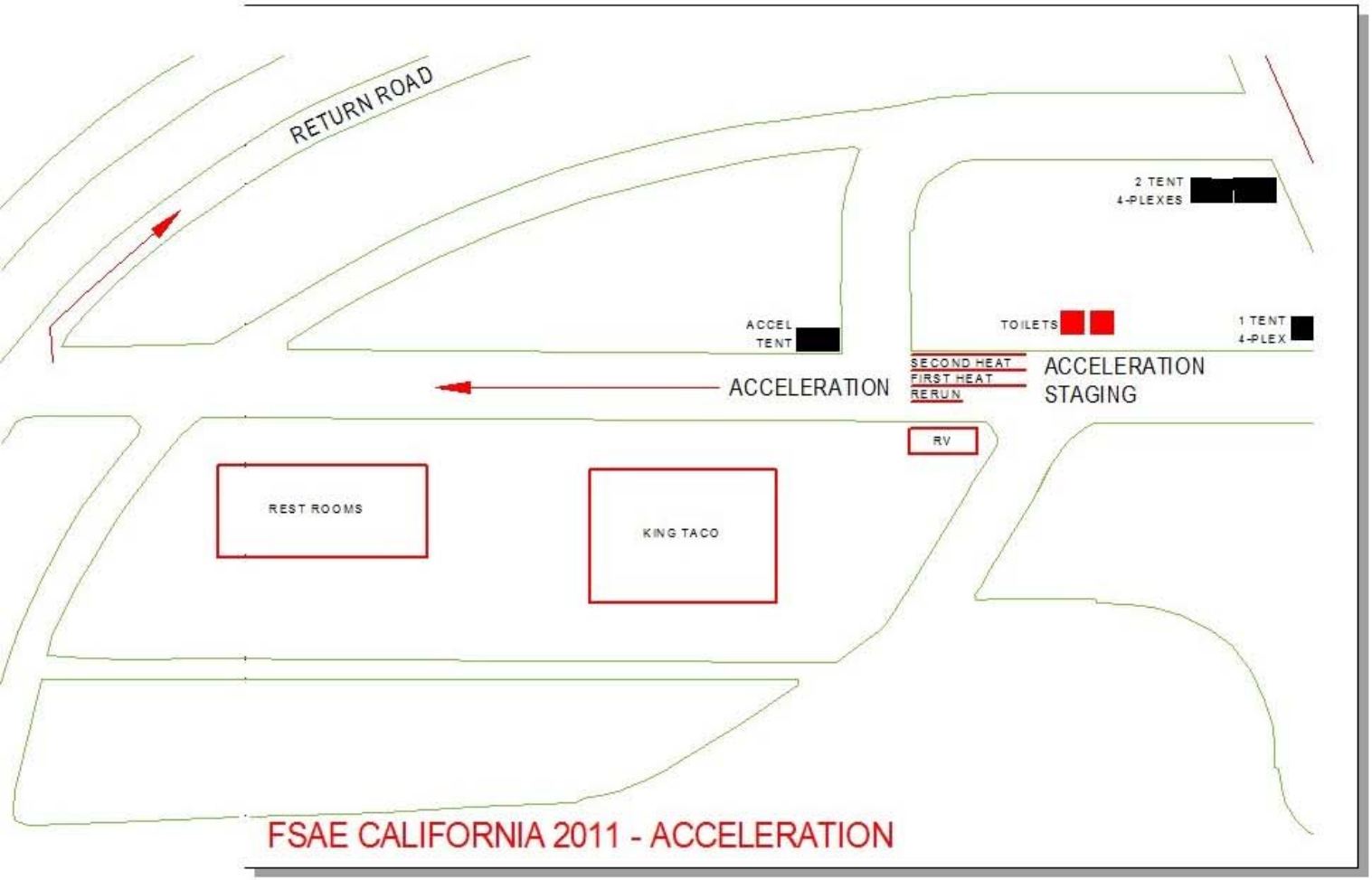
TEAM PADDOCKS

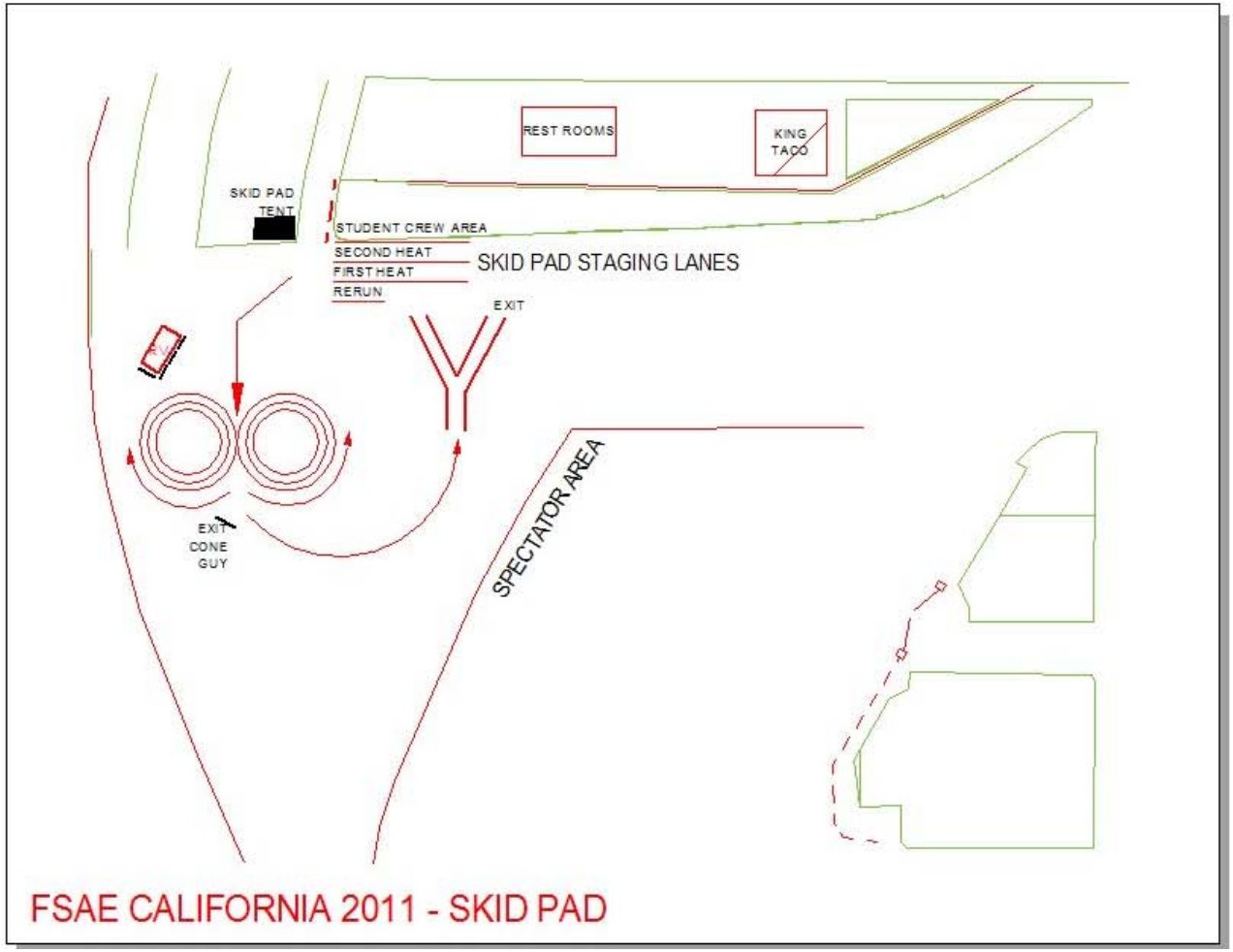




PRESENTATION JUDGING SUITES - 2ND LEVEL

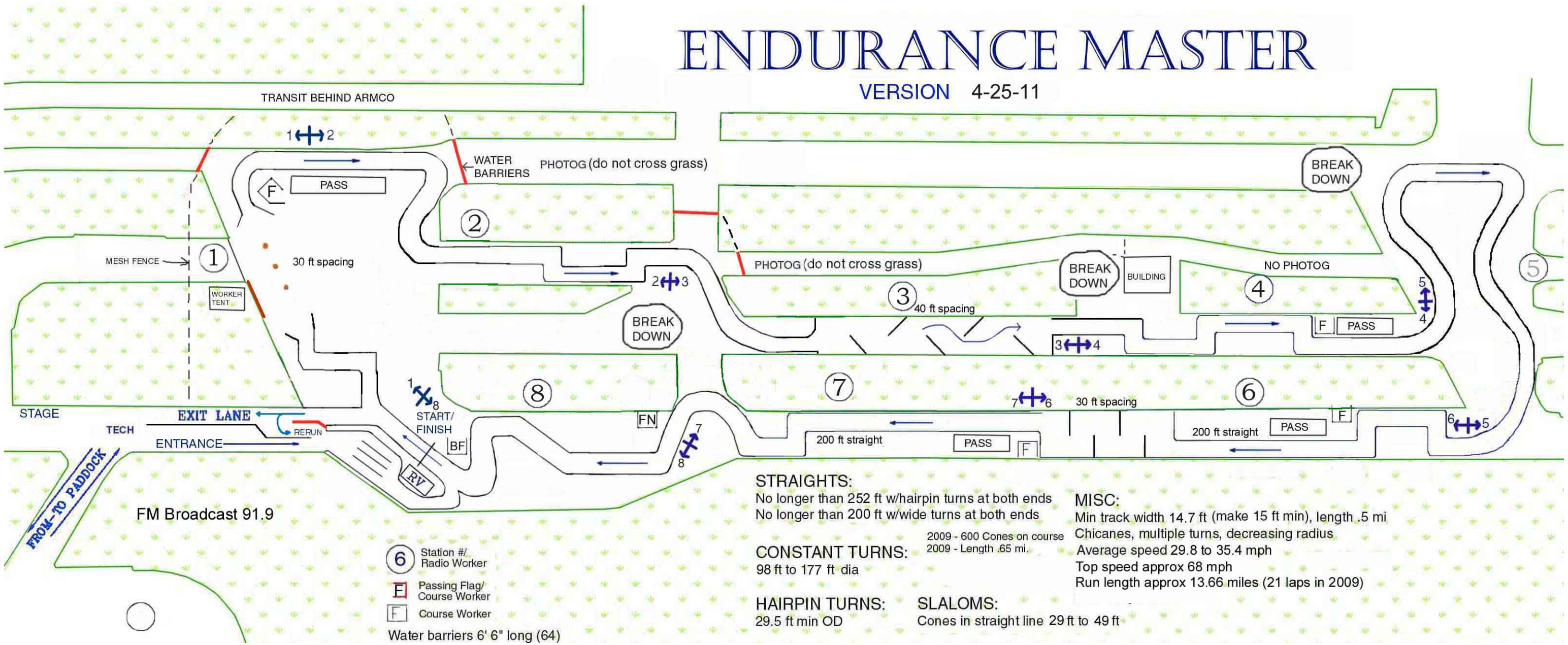

BRAKE AND
NOISE TENT
BRAKE & NOISE STAGING
NOISE
TEST
BRAKE AND
NOISE TENT
PRACTICE STAGING
WATER BARRIER
BRAKE TEST
DYNAMIC
ACCESS
TENT
BRIDGE
PRACTICE
TENT
PRACTICE
TRACK
CAUTION
BARRIER
DYNAMIC
AREA GATE
SPECTATOR AREA
TEAM PADDOCKS


RETURN ROAD
2 TENT
4-PLEXES
ACCEL
TENT
TOILETS
1 TENT
4-PLEX
SECOND HEAT
FIRST HEAT
RERUN
ACCELERATION
ACCELERATION
STAGING
RV
REST ROOMS
KING TACO
FSAE CALIFORNIA 2011 - ACCELERATION


REST ROOMS
KING TACO
SKID PAD TENT
STUDENT CREW AREA
SECOND HEAT
FIRST HEAT
RERUN
SKID PAD STAGING LANES
EXIT
EXIT CONE GUY
SPECTATOR AREA
FSAE CALIFORNIA 2011 - SKID PAD

ENDURANCE MASTER

VERSION 4-25-11



STRAIGHTS:
No longer than 252 ft w/hairpin turns at both ends
No longer than 200 ft w/wide turns at both ends

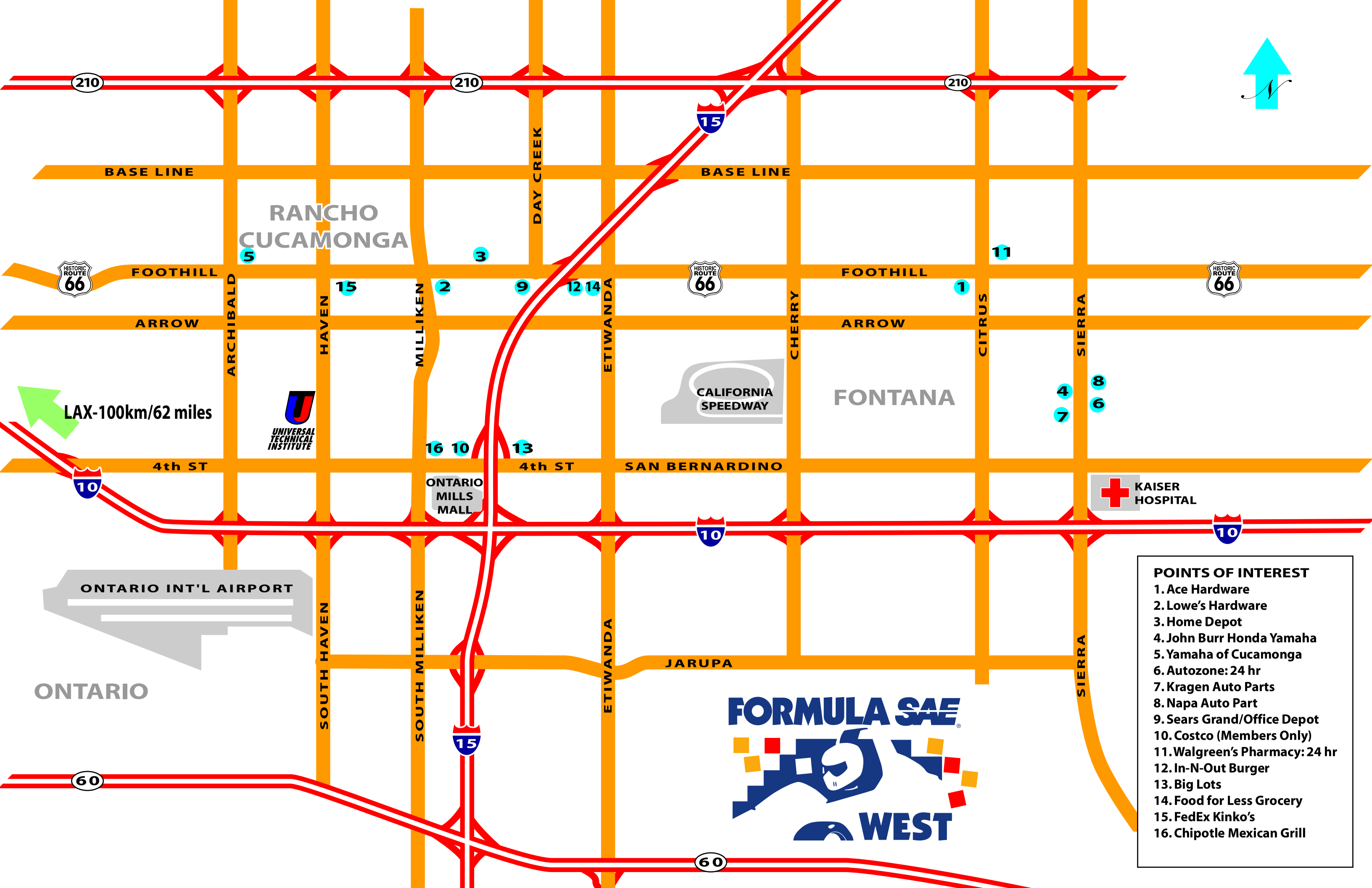
CONSTANT TURNS:
98 ft to 177 ft dia

2009 - 600 Cones on course
2009 - Length .65 mi.

HAIRPIN TURNS:
29.5 ft min OD

SLALOMS:
Cones in straight line 29 ft to 49 ft

MISC:
Min track width 14.7 ft (make 15 ft min), length .5 mi
Chicanes, multiple turns, decreasing radius
Average speed 29.8 to 35.4 mph
Top speed approx 68 mph
Run length approx 13.66 miles (21 laps in 2009)



POINTS OF INTEREST

1. Ace Hardware
2. Lowe's Hardware
3. Home Depot
4. John Burr Honda Yamaha
5. Yamaha of Cucamonga
6. Autozone: 24 hr
7. Kragen Auto Parts
8. Napa Auto Part
9. Sears Grand/Office Depot
10. Costco (Members Only)
11. Walgreen's Pharmacy: 24 hr
12. In-N-Out Burger
13. Big Lots
14. Food for Less Grocery
15. FedEx Kinko's
16. Chipotle Mexican Grill

AREA BUSINESSES NEAR THE AUTO CLUB SPEEDWAY

Racing Supplies
Racing Plus Open M-F 8:30am – 5:30pm; Sat 9am-1pm
3834 Wacker Drive
Mira Loma CA 91752
Phone: 800.700.2350; 951.360.5906
www.racingplus.com Email: info@racingplus.com

Motorcycle Shops
John Burr Cycles Open 9-6 Tue-Sat
9008 Sierra Ave
Fontana CA 92335
Phone: 909.823.1338
www.JohnBurrCycles.com

Yamaha of Cucamonga – Open 9-6 M-F; 9-5 Sat
9760 Foothill Blvd
Rancho Cucamonga CA 91730
Phone: 909.987.2411; 800.523.2414

Auto Parts Stores
Autozone – Open 24 hrs.
9535 Sierra Ave
Fontana CA 92335
Phone: 909.350.9011

Kragen/O'Reilly Auto Parts – Open 8-8 M-Sat; 9-6 Sun
9800 Sierra Ave
Fontana CA 92335
Phone: 909.350.8441

Napa Auto Parts – Open 8-6 M-F; 8-5 Sat; 9-4 Sun
9361 Sierra Ave
Fontana CA 92335
Phone: 909.822.8300

Hardware Stores:
FBI Supply – Open 7-7 M-F; Sat 8-6; Sun 9-6
(formerly ACE Hardware - Foothill Builders Mart)
15825 Foothill Blvd (1.6 miles east of Cherry Ave)
Fontana CA 92335
Phone: 909.829.2929
www.foothillace.com

Home Depot – Open 6-10 M-Sat; 7-8 Sun
11884 Foothill Blvd
Rancho Cucamonga CA 91730
909.948.9200

Lowe's – Open 6-10 M-Sat; 7-9 Sun
11399 Foothill Blvd
Rancho Cucamonga CA 91730
Phone: 909.476.9697

Office and Other Needs

FedEx Kinko's - Open 24 hrs M-Th; Sat 9-9; Sun 9-Midnight
10757 Foothill Blvd
Rancho Cucamonga CA 91730
Phone: 909.944.1819
Email: usa5202@FedEx.com

Office Depot – Open 8-9 M-F; 9-8 Sat; 10-7 Sun
8160 Day Creek Blvd, Suite #100
Rancho Cucamonga CA 91739
Phone: 909.463.1262

Office Max – Open 8-9 M-F; 9-8 Sat; 10-6 Sun
11070 Foothill Blvd
Rancho Cucamonga CA 91730
Phone: 909.484.3024

Staples – Open 8-9 M-F; 9-7 sat; 10-6 Sun
921 North Milliken Ave
Ontario CA 91761
Phone: 909. 987.9336

Target - Open M-Sat 8am-11pm; Sun 8am-10pm
16964 Slover Ave
Fontana CA 92337
Phone: 909.356.4242

Walgreen Pharmacy – Open 24 hrs.
16108 Foothill Blvd
Fontana CA 92335
Phone: 909.357.6800

Grocery Stores

WinCo Foods - Open 24 hrs; Note: **Cash or Debit Card only**
14338 Foothill Blvd (Cherry & Foothill)
Fontana CA 92335
Phone: 909.574.3032

Vons – Open 6am to Midnight
7390 Cherry Avenue
Fontana CA 92336
Phone: 909.429.3928

Fast & Popular Food (general clusters)

Corner of Cherry and Foothill (turn left as you leave Speedway):
McDonald's; Jack in the Box

Ontario Mills (NW corner of Interstates 10 and 15)
Rubio's; Dave & Buster's, Etc., Etc., Etc.

Haven Avenue and Foothill Blvd (Rancho Cucamonga)
Panera; Daphne's Greek Café; Omokaso Sushi
Chili's Bar & Grill; Baja Fresh; On the Border
Boston Market; Chipotle; Mimi's Cafe

Maps and directions for these and other locations at Information in Garage 3

Check with Information/Lost & Found in Garage 3 for more ideas and locations

Free Area Maps from AAA also available at Information/Lost & Found

ON-SITE CONTACT INFORMATION

On-Site Event Headquarters
The Registration/Headquarters Garage G3 will be staffed with SAE Staff, volunteers and the Official Announcer at all times that the competition is in progress. While onsite students may contact one of those individuals or nearest volunteer with a radio if there is an issue.

EMERGENCY NUMBER: (412) 719-2865
This number is to be used for after-hour emergencies only to reach FSAE California Program Coordinator, Kaley Zundel.

First Aid
An ambulance will be on-site during all hours of the event. If first aid is required, contact Competition Headquarters.

To expedite matters in case of accident or injury off-site and after-hours, teams can call 911.
Please be sure your team is aware of this.

Storm Shelter
In the event of severe weather, students and volunteers will be asked to take shelter in Garages 2 and 3.

Lost and Found – Please drop off any "found" articles at the registration area in G3.

Announcer – The announcer is located in G3

Hazmat Disposal – Hazardous Materials, fuels, oil, etc should be brought to the disposal area located at south end of garages near fence.

HOSPITALITY

Registration
Everyone must sign SAE's and the Auto Club Speedway's liability waivers in G3. You will receive your wristband, which must be worn at all times, when you sign the waivers and all your required registration information is checked.

Concessions
PIT STOP CAFÉ HOURS & MENU
Concession Stand located beneath the Suites, south of the garages. Door #G-16.
Open: Wed 10am – 2pm
Thu, Fri, Sat 8am – 5pm

BREAKFAST SANDWICH (served until 11am) - $3.00
DONUT, PASTRY- $1.00
CHICKEN TENDERS w/FRIES - $7.00
CHEESEBURGER - $5.00
SUB SANDWICH (Ham/Turkey) - $6.00
SALAD (Chef/Caesar) - $6.00
NACHOS - $5.00
HOT DOG - $3.00
FRENCH FRIES - $3.00
CHIPS, CANDY - $1.00
SODA (20 oz.) - $3.00
GATORADE (20 oz.) - $3.00
WATER (20 oz.) - $3.00
COFFEE/JUICE – $1.00

Teams may also bring food onsite; if cooking is required please refer to FSAE Paddock Patrol guidelines found in this handbook.

FSAE shirts
Solidworks is giving free T-shirts to all FSAE Competitors in 2011. There will not be any T-shirts available for purchase this year.

FSAE Hats and Event Programs
Each team member will receive a Formula SAE hat sponsored by SAE International. All teams will receive a total of 10 copies of the event programs.

All sponsored giveaway items will be provided at registration.

Cameras
There are no restrictions on camera use this year. For dynamic areas please reference *Formula SAE Rules for Team Photographers in the Dynamic Event Area* in this packet.

Welcome Ceremony – Stage between G2 – G3
Key players who are present will be introduced. All teams, faculty and any volunteers who are present are welcome to attend. There will also be several prize drawings for the teams in attendance.

Award Ceremony – Stage between G2 – G3
The Award Ceremony is scheduled for ~ 6:00 p.m. on Saturday, June 18th. All Static Events, Dynamic Events and the sponsored awards, and the Top Ten teams will receive their trophies. Overall results will be posted to SAE's website Monday, June 20, 2010. Paper copies will NOT be distributed.

**Don't miss your chance to win a FREE 2012 FSAE Registration – Team must be present to win.

Volunteers and spectators are welcome to attend.

Competition Radio Frequencies
Competition Announcer, Garage 3
(Wednesday through Saturday) @ 104.1 FM

Autocross Event
(Friday afternoon) @ 91.9 FM

Endurance Event
(Saturday) @ 91.9 FM

2011 EVENT SITE QUICK REVIEW – ADVICE, EXPECTATIONS AND 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, just 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. If we can't give you an immediate answer, (Confession – We don't know everything.) we know where to find the answer. It all starts with asking and remember, there are no dumb questions.

Ask for Help - If you need help – ask. Ask the officials Announcements requesting parts, tools or assistance can be made by the announcer in the Main Tent.

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. This is especially true if you're standing close to a running engine. 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. This is important and we appreciate your help. Also, the sound system will be FM Broadcasted.

Be on Time – The schedule is included in the Student Handbook and posted online. It's your responsibility to be on time.

Be Careful – Don't take any chances when working on your car - follow safe working practices. It's not just the pain - getting hurt delays what you're doing. Follow the instructions published on the Paddock Patrol sheet.

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 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.

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

Drivers Meetings – Attending drivers meetings is mandatory if you are planning to drive. Check the schedule.

Dynamic/Tech Area Passes - Each team is issued 4 dynamic area passes. You must have a pass to gain access to the dynamic events area on the back straight. This pass is also used for tech inspection as we limit the number of team members with the car in tech to 4.

Engine Running in the Paddocks – You can run your engine in the paddock provided your car has (1) passed tech and (2) is on an adequate stand with the wheels at least 4" off the ground or the wheels have been removed. Please be careful.

Entering and Exiting the Site – All teams and spectators should use main entrance to Auto Club Speedway off Cherry Avenue.

Event Closing Times – Remember that Acceleration and Skid Pad close at exactly 11:30 am and Autocross closes at 4:30 pm. Your car must have crossed the starting line by that time or you can't run. We recommend you to get in line early.

Keep the Officials Informed – Keep the officials informed if you run into any problems that (1) need our attention or (2) might push your team against a time limit. For example, if you need a quick re-inspection to get to an event before it closes let us know - the inspectors can be ready, but only if you keep us informed.

Keep your Paddock Clean – We are responsible for keeping the parts of track 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 registration area. Ask the Announcer -- he has a supply of trash bags. Please keep your paddock clean and make sure it completely clean before your team leaves at the end of the event. PLEASE DO NOT leave any furniture, used tires, etc. behind.

Photography - Synopsis – Teams are allowed to have 1 photographer and 1 spotter in the dynamic events area – and only when their car is running.
Photographers must register at the dynamic event gate, wear a photographer's vest and have a spotter. See the "2011 Rules for Photographers" in the Student Handbook.

Push Bar – You can only move your car if you use the push bar – That's the rule.

Removing Cars Overnight – Removing your car from the track overnight is entirely your decision. If you want to take your car off site you must take it to tech inspection and have an inspector remove part one of the tech sticker. When you return you'll need to have the items you've worked on re-inspected. Re-inspection shouldn't take long.

Restricted Areas – At Auto Club Speedway we are only authorized to use the infield, garages and certain surrounding facilities. We are not permitted on the other parts of the main oval or the buildings immediately adjacent to the main oval. Please respect these restrictions.

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.

Spectators – Spectators are welcome to attend FSAE. If you have friends or family who want to see the competition, tell them to enter through the main gate on Cherry Avenue. Spectators must park in the general parking area, watch for signs, then go to registration to sign the liability waiver.

Spectators over the age 18 who have signed the liability waiver and received a wristband are allowed to enter team paddock areas. **Please note to all spectators that they much wear closed toed shoes! No pets allowed; except Guide Dogs.**

Tech Inspection – Once you're ready for tech go get a tech number. Bring all your drivers' gear with you. Read "Tech Inspection Review for Teams"

Translators – If you have a driver who isn't fluent in English then you must have a translator. Translators must be in the dynamic events area and available to the officials when that driver is on the course. Translators will be issued an additional dynamic area pass. If you need a dynamic area pass for your translator - ask at the registration area.

Weather – In May the local weather can be unpredictable. We encourage you to be prepared for all weather types from sun to rain. Pack long and short sleeve apparel, sun block, coats and comfortable closed-toe shoes.

2011 RULES FOR ALL PHOTOGRAPHERS IN THE DYNAMICS AREA

SAE recognizes the importance of photographic and video records to teams, students and their universities and we want give every school the opportunity to have their participation covered by a photographer of their choice.

However, the smooth and efficient operation of the on-course events requires that photographers comply with the following rules.

Synopsis – Teams are allowed to have only 1 photographer and 1 spotter in the dynamic events area – and only when the team's car is running.

General Policies

Authorization – SAE staff is solely responsible for authorizing photographers/spotters to enter the dynamic event area. Photographers/spotters must (1) be registered for the competition, (2) sign all required waivers, (3) view any required material, (4) agree that they understand and have no questions regarding the policies and procedures for photographers, and (5) agree to abide by these policies and procedures at the risk of being escorted from the dynamic area.

Photographers/spotters will be issued and must wear "Photographer" vests upon entering the dynamic event area.
Videographers are classified as photographers
Photographers must have photographic equipment – cell phones are **not** cameras.
Photographers and spotters are explicitly restricted to photographic activities.

Dynamic Events Area – The "dynamic events area" includes all parts of the site where vehicles are running under power. This includes the (1) noise test area, (2) brake test area, (3) practice track and (4) dynamic event courses and associated staging areas.

Limit – Each university is limited to one (1) photographer and one (1) spotter within the dynamic event area at the same time. Additional photographers must remain outside the dynamic event area.

Access Policy – Properly credentialed photographers/spotters representing universities may only access the dynamic events area while their teams are actually running in an event. University photographers/spotters will **not** be granted dynamic area access independent of their team.

Photographer Access Captain - The "Photographer Access Captain" is responsible for issuing photographer vests and monitoring photographic activities within the dynamic event area. Photographers must obey the instructions of the Access Captain.

Photographer Vests – Photographers and spotters will be issued vests at the dynamic area control point. Only a limited number of vests are available and will they will only be issued to photographers for teams that are on, or about to enter, the track. Vests must be returned as soon as your car leaves the event.

Spotters - Photographers in the dynamic events area must be accompanied by a spotter at all times. Photographers are responsible for providing their own spotters.

The spotter is responsible for monitoring the course at all times and if necessary physically moving the photographer away from dangerous situations. Spotters and photographers must operate as a pair. Spotters must remain within "arms reach" of their photographer at all times.

Any photographer/spotter pair found to be beyond “arms reach” will be (a) immediately ejected from the dynamic events area and (b) the team’s photographer credentials will be immediately revoked.

Access Period – Photographers/spotters must enter and exit the dynamic events area along with their team.

Access Locations – Photographers must remain in the photographic locations designated by the Photographer Access Captain and the competition officials – and in no other locations. Photographers/spotters must remain standing at all times – sitting or lying down is prohibited.

Area Control – At all times photographers/spotters are under the control of the Photographer Access Captain and the Director of Operations. Instructions and commands from Captain, Director or nearest course marshal must be followed immediately and without question.

When vehicles are running photographers/spotters may only go beyond the staging area under the direction of the Access Captain. If you enter or leave the track area without permission you will be ejected.

Check-in – Photographers/spotters must check-in and check-out with dynamic events gate control.

Dress Code - All persons within the dynamic event area must have (1) closed-toe shoes, (2) covered shoulders and (3) long pants that reach below the top of the shoes.

Consequences – Failure to follow these rules will result in ejection and revocation of team’s photographer credentials.

Reminder – You are responsible for your own safety at all times

Cooperation – We need your help to make photographic access run smoothly. Please return your photographer’s vest as soon as your car is off the course. Other teams want to photograph their cars and the number of vests we can issue is limited. Thanks for your cooperation.

PADDOCK PATROL - ACCIDENT AVOIDANCE & RULE SUMMARY

Everyone (participants, volunteers, spectators) at Formula SAE wants to have an accident free event. The Paddock Patrol has been established to advise teams on potentially unsafe practices in the paddock/pit area. The actual FSAE events are under control of the event captains and the SCCA and are operated in a very safety conscious manner. Some rules and guidelines to remember:

- **Engine Running in the Paddock:** 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):
  (A) 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.
- **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").
- **Vehicle Movement:** Vehicles may not move under their own power anywhere but on the practice or competition tracks. Off track vehicles must be pushed at a normal walking pace by means of a "Push Bar", with all four (4) wheels on the ground, a team member sitting in the cockpit to steer and brake and with another team member walking beside the car (Rule D13.1).
- **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.
- **Fires:** 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 may be used only in the designated area, which is also the smoking area.
- **Fuel and 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. Once at the race site, the FSAE race cars cannot be fueled except by the Formula SAE provided fuel at the fuel station.
- **Fire Extinguishers:** Fire extinguishers should be close by the vehicle and readily accessible and all team members must be knowledgeable in 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.
- **Vehicle Modifications:** No unapproved modification to the vehicle after it has been through tech inspection. (Rule B1.2)
- **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)
- **Driving Practice:** Practice is only to take place in the designated areas during designated hours.
- **Tool Use:** Tools are expected to be used safely. Wear safety glasses when cutting, grinding, etc. Wear appropriate eye protection while welding.
- **UNDER NO CIRCUMSTANCES ARE PASSENGER VEHICLES TO BE DRIVEN ON THE TRACK.** Exception – crossing the track upon arrival to and departure from MIS is permitted under supervision.

A special note for drivers: All drivers should perform a check of critical fasteners and components on their vehicles to assure complete control during the driving events. Fasteners do come loose, parts do fatigue, and occasionally someone forgets to torque a nut – you will be intimately involved if this happens. It is OK to use the kill switch in the event of engine or brake malfunction.

Note: If there is a conflict between this summary of the rules and the complete 2011 Formula SAE rules, the complete rules prevail.

ACCELERATION EVENT DESCRIPTION

Event Captain: Lisa Severy
Assistant Captain: Robin Allen
Event Director: Bill Chin
Date/Time: Friday, June 17, 2011 from 8:00 a.m. until 11:30 a.m.
Location: Dynamic Area

Event Concept:
The objective of the Acceleration Event is to evaluate vehicle 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 11:30 a.m.
- NO tools and/or spare parts are allowed in the staging lanes.
- NO "traction enhancing" agents may 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 fully 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 0.3 m (1 ft) behind the start line.

The driver is permitted to start an Acceleration run only when the Event starter 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 in the morning. Each car must exit the staging area before changing drivers.

Penalties:
A two-second penalty will be assessed to each Acceleration run per cone knocked down or out of position.

A DNF (Did Not Finish) penalty will be assessed to the Acceleration run when deemed appropriate for cars that go off course or commit other rules infractions.

AUTOCROSS EVENT DESCRIPTION

Event Captain: Jim Reyenga
Assistant Captain: Chris Floren
Event Director: John Fendel
When: Friday, June 17, 2011, tentatively from 1:30 p.m. to 4:30 p.m.
Where: Dynamic Area, Auto Club Speedway of Southern California, Fontana, CA

Event Concept:
The Autocross Event is designed to test a car's handling qualities without the hindrance of competing cars. The course length is approximately 800m (2600 ft).

Event Format:
The Autocross Event has two heats. A heat consists of one driver making two runs of the course. Each heat has a different driver. 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 an average speed of 80% of the fastest car will not be awarded points.

Event Procedure:
Cars enter the Autocross course through a starting grid consisting of first heat and second heat staging lines. The first heat staging line is formed on a first-come, first-served basis from cars that have not run the course. The second heat line is formed from cars waiting, after a driver change, to start the second heat. A safety inspection (helmet, belts, kill switch, tires, etc.) is performed in these lines. The first heat line and the second heat line are connected to a final staging area where the starter positions cars at the starting line. In addition, a rerun path connects the course finish line to the final staging area so that drivers finishing their first run have a first-priority position to enter the final staging area and finish their heat. The starting grid will open two minutes prior to the start of the Autocross Event.

Following the 1:30 p.m. announcement of the start of the Event, a grid boss starts signaling cars from the rerun, first heat or second heat line, in that priority order, to enter the final staging area. In the final staging area, the Event starter places each car 6.0 m (19.7 ft) before the starting line. When the starter signals the driver with a green flag, the driver accelerates the car from a standing start, across the starting line, around the course to the finish line. From the finish line, cars that have just finished a first run may enter the rerun line or go to the Event exit. Cars that have just finished a heat will either change drivers and go to the second heat line in the grid, or they proceed to the Event exit.

Between runs and between heats, cars may exit the Autocross Event and go back to the paddock for repair or adjustments. After a first run, a driver has the option of taking the second run immediately, or exiting the Event and finishing the heat later.

If there are no cars in the rerun or first heat staging lines, cars in the second heat line are allowed to run. Cars that have not completed a first heat have precedence over second heat cars. The second heat may be cancelled or cut short due to weather or time, so it is important to arrive early in the afternoon for the first heat, and drivers are encouraged to join the second heat line immediately following the completion of the first heat.

At 4:30 p.m., entry into the Autocross Event will be closed. No additional cars will be allowed into the Event. Only cars that are in a grid line and fully functional will be allowed to run after this time. At 4:45 p.m., the course will be closed, and no more cars will be allowed to run. These times may be adjusted due to track or other conditions. The Autocross Event Captain is the only person that can alter them. A few minutes before the course is closed, a warning announcement may be made, but it is not mandatory.

Penalties:
A two-second penalty will be imposed for each cone knocked down or out of position (indicated by a chalk square at the base of the cone). Cone penalties can be imposed for all cones in the dynamic area. This includes cones before the start line and after the finish line.

A twenty-second penalty will be imposed for going off course and not re-entering at a point at or before the point where the car went off course.

Notes:
Please be aware that several cars may be running the course at the same time.

A driver's run may be slowed or stopped by a course worker (indicated by a waving yellow or red flag or a hand gesture). The driver must then follow the direction of the course workers. Once past the finish line, the driver should attempt to enter the rerun line. If the course condition is judged by the Event officials not to be a hindrance, a re-run will not be allowed. The driver will either be told that a rerun is allowed, or be directed to a heat line or the Event exit.

Caution – course workers may signal a car due to a safety concern (broken suspension, muffler etc.). If this occurs, the car must be driven off course and brought to a controlled stop as soon as possible. If a car fails during a driver's first run of a heat, repairs to the car can be made, and the driver can return to execute the second run of the heat. If a car fails during the second run of the first heat, Repairs to the car can be made and the second driver can enter the course through the second heat line in the grid. NOTE: Course workers will push cars that fail on course off onto the grass at the side of the course. Student team members may not enter the hot area to retrieve cars that failed on course without a course worker escort. When it is safe and does not interfere with the operation of the course, course workers will tow the failed car out of the hot area and return it to the student team. Continued, safe operation of the course takes precedence over return of failed cars to student teams.

Once a car passes the start timing line, a run has been officially attempted and will be counted as such; restarts are not allowed. If a car stalls before the start line, it can be pushed back for a restart.

Once past the finish line, drivers must immediately slow their car and proceed in a controlled manner. Do not park a car between the finish line and the various grid lines or the Event exit. This would cause a traffic back-up.

An Autocross Drivers Meeting, mandatory for all Autocross drivers, is scheduled for 12:15 p.m. to 12:45 p.m. in the G2 Drivers Meeting Room. An Autocross course walk, mandatory for all Autocross drivers, is scheduled for 12:45 p.m. to 1:15 p.m. at the Autocross course.

BRAKE & NOISE TEST EVENT DESCRIPTION

Event Captain: Garett Chang
Assistant Captain: Mike Aylward
Dates/Times: Thursday, June 16, 2011 from 8:00 a.m. to 5:00 p.m.
Friday, June 17, 2011 from 8:00 a.m. to 5:00 p.m.
Saturday, June 18, 2011 from 8:00 a.m. to 1:00 p.m.
Location: Dynamic Area

Event Concept:
The Noise test station checks the vehicle engine and exhaust noise for compliance with the FSAE sound level rules. Vehicles must first pass Tech Inspection and Tilt Table Test before they are permitted at the Noise Test station. Proof of passing these is the two "tech" stickers, which must be applied to the car.

Event Format:
The static sound level test shall occur at a station outside of the Brake Test Area. The vehicle will be placed in the station at a designated point with the engine running and the transmission in neutral. A sound level detector will be positioned 0.5m from and level with the exhaust outlet. The pickup will be positioned at an angle of 45 degrees from the exhaust outlet in the horizontal plane. In the case of dual exhausts, both exhausts will be tested with the loudest one being the basis for judgment.
PLEASE NOTE – If your vehicle does not have a working tachometer, it is the team's 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. It is calculated by taking 2X stoke in mm and dividing it into 914.4X1000. If a rev-limiter interferes with being able to reach the target test speed, you must disengage it or set it higher.

Event Procedure:
An RPM sweep from idle to the designated test speed for the vehicle engine shall be used during the noise evaluation. The designated test speed is approximately ¾ of the maximum engine speed. Sound level shall not exceed 110dBA (margin of error +/- .5dBA). Meters are calibrated and will be checked and verified on-site on a regular basis!

ALL TEAMS MUST HIT THE TARGET ENGINE RPM – NO EXCEPTIONS!

Notes:
PLEASE NOTE – An official will conduct a functional test of the External Master Kill Switch with engine running as part of the Noise Test Event and / or Brake Test Event.

If a car is unable to pass Noise Test in three attempts, it must be repaired and brought back for retest. After a car passes Noise Test, it may go to Brake Test. The tech sticker will be awarded after the car passes Brake Test.

Operation of Noise Test area in DAMP conditions is at the discretion of the Event Captain.
Vehicles may, at any time, be required to return to the Noise Test station for re-certification should the officials deem it necessary.

Safety Guidelines for the Noise Test Station:

Allow only one car at a time in the Test area. Do not allow a second car into the area until the last one has completed its exit.

Do not attempt testing of any vehicle without enough workers. Three workers are recommended at Noise station.

Never place yourself in the line of travel of any car. Stay well away from the “hot” area.

Use hay bales or water barriers for protection of workers and equipment.

Have fire extinguishers handy.

Report any vehicle damage or contact to the Test Station Captain.

Do not work on a car inside the Noise Station. Car repairs must be performed outside of the testing area. A specially marked area will be set-up for this. Following repair, cars can return to the testing area at the discretion of the Test Station Captain.

COST EVENT DESCRIPTION

Event Captain: Stephen Soroosh
Assistant Captain: Roger Horn
Dates/Times: Thursday, June 16, 2011
Check the final schedule posted at the event. Slight changes may be made to accommodate needs of the competition.
Location: Garage 2

Event Concept:
The concept of the Cost and Manufacturability Event is for teams to consider cost and manufacturing during the design phase, resulting in a low cost car that is easy to manufacture and meets the requirements of the customer. In addition, teams must understand and accurately report and present the vehicle cost and manufacturability for the limited production of 3,000 units per year.

Event Format:
The Event can be divided into three separate sections: Cost Report analysis, visual inspection/evaluation of manufacturing feasibility and the Real Case Scenario. The team with the best combined score for lowest corrected cost, report, visual inspection/manufacturing feasibility and best Real Case Scenario will win the event.

Each student team will prepare and submit a Cost Report to be evaluated and scored by the Event judges prior to the Event. The Report is, in effect, a cost proposal to the senior management of a company which is considering investing in the product line your team has developed. The more accurate the information a team supplies and the more professional the look of the materials, the more likely it is that the company will be willing to look at the vehicle itself. The Cost Report will include a full breakdown of the cost of the car, including materials, tooling and assembly costs, a Bill of Materials in hard copy and electronic format, component and assembly drawings and detailed process descriptions required to assemble the car. These elements of the Cost Report enable the Event judges to evaluate not only the cost of the car, but also the team's ability to prepare accurate engineering and manufacturing cost estimates.

At an assigned time on Thursday, June 16, each student team will present themselves and their car to the Event judges for a visual inspection and discussion. In the visual inspection, the judges will compare the car to what is reported in the Cost Report and assess its manufacturability and cost report accuracy. In the discussion, the judges will assess a team’s ability to answer questions regarding lean manufacturing and how parts are made. In addition, teams will be asked to provide their response to the Real Case Scenario. See Real Case Scenario options below.

Event Procedure:
A team must mail or ship its Cost Report to the Competition **to be received** not later than May 1, 2011. Reports received after that deadline will incur a ten-point penalty for each late day. Cost Reports must be received before the Competition so that the judges will have time to analyze them.

Cost Report Analysis

Vehicle cost is determined based on the cost of parts and fabrication given in the Cost Report and confirmed during the Event Day visual inspection. The judges award penalties equal to twice the cost error if there are errors, items omitted, or deviations from standard cost. Cost errors are estimated by the judges and are not subject to negotiation by teams.

A Cost Report is analyzed and judged on the basis of its conformance to the Cost Report guidelines set forth in the published FSAE rules as well as its quality of detail, communication and appearance. Teams are to use established manufacturing practices and apply "Lean Manufacturing" principles to build the car. The judges determine if all car parts and fabrication processes are included in the Report and if any costs are omitted or deviate from the published standard costs.

Visual Inspection/Discussion and Appointment:

On June 16, 2011, the Cost Judges staff Cost Bays in Garage 2 with team appointments scheduled per 2011 Static Schedule. This is a critical step in the Cost and Manufacturability Event. It can only help the student team. If the visual inspection/discussion (20 points) and (20 points) appointment is missed, the team will sacrifice all points for this portion of the Event.

The allotted time per team is broken down as follows:

- Check-in
- Visual Inspection and Manufacturing Feasibility Evaluation
- Discussion
    - Feasibility Evaluation
    - 1st Random Area Concentration
    - 2nd Random Area Concentration
    - 3rd Random Area Concentration
- team response

At check-in time, the cost judges will:

- Do introductions and outline how the appointment time will be spent.
- Discuss and clarify the Cost Report score with the team. Addenda to the Cost Report covering any changes made after the Cost Report was submitted will be taken into consideration. These addenda can be accepted only at the time of student team registration at the Formula SAE California Competition and must be in the format prescribed by the rules (Page 100 of the rules).

The judges will then visually inspect the vehicle and evaluate the cost effective manufacturing feasibility of various components on the car. In order to ensure that the parts in the vehicle match those reported in the Cost Report, the judges will evaluate three random areas on the car, comparing the reported costs to those found on the vehicle at the time of the competition.

Finally, the judges will ask the team to respond to the Real Case Scenario (see below). Teams should have a prepared response with charts, graphs, pictures, updated cost calculations per the cost template etc. to justify their answer. There will not be accommodation for electronic presentations; team must use hard copy visual aids.

At the end of the day, Thursday, the Cost and Manufacture Event scores are tabulated and presented to the National Scorekeeper. By 10:00 am on Friday afternoon, the Event scores are posted for student

team viewing. Once posted, a team may protest its score for 30 minutes. After that, the scores are final.

Scoring

Cost Score. The cost score is determined by using the following formula:

Cost Score = 30 * (Pyour) / (Pmin) for your Pyour < $25,000

(Note: Pyour is the adjusted cost of the team's car with penalties; Pmin is the adjusted cost of the lowest cost car in the competition)

Report Score. The Report score is determined by assessing the quality of the Report and its overall presentation. The Report score ranges from 0 to 25 points.

Total Event Score. The total Event score is determined as follows:

TOTAL EVENT SCORE =

Cost Score (max 40) + Report Score (max 25, normalized to 20) + Visual Inspection/Discussion Score (max 20) + Score (max 20)

2011 FORMULA SAE CALIFORNIA 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. Each team should select a Real Case Scenario prior to the competition and prepare a response to present to the Cost and Manufacturing Judges during the Vehicle Inspection/Discussion time allotted on June 16th.

Scenario 1:

A major manufacturing firm has reviewed your team's Cost Report and has determined that the cost of the **Intake System** on your car is substantially higher than expected. They have also indicated that your vehicle's reported weight is ideal for their customer and must not increase.

Your task at the event is to present the Cost Judges with your proposal to reduce the cost of the **Intake System (from the restrictor to the engine head)** on your car by 15% **while maintaining zero increase in weight** or achieving a weight reduction. Provide as much information as required to justify your solution both from a cost standpoint and a weight standpoint.

Scenario 2:

A major manufacturing firm has reviewed your team's Cost Report and has determined that the cost of the **Brake System** on your car is substantially higher than expected. They have also indicated that your vehicle's reported weight is ideal for their customer and must not increase.

Your task at the event is to present the Cost Judges with your proposal to reduce the cost of the **Brake System (brake pedal to calipers, including discs and plumbing)** on your car by 15% **while maintaining zero increase in weight** or achieving a weight reduction. Provide as much information as required to justify your design both from a cost standpoint and a weight standpoint.

Scenario 3:
A major manufacturing firm has reviewed your team's Cost Report and has determined that the cost of the **Drivetrain** on your car is 15% lower than expected but that your vehicle's reported weight is above the threshold for their ideal customer.

> Your task at the event is to present the Cost Judges with your proposal to trade weight for cost, **increasing** the cost of your **Drivetrain (front sprocket through the wheel ends, including the chain/belt, differential and chassis mounting hardware)** on your car by 15% **while achieving the maximum weight reduction possible.** Provide as much information as required to justify your design both from a cost standpoint and a weight reduction standpoint.

The presentation must fulfill the following requirements:

- No longer than 10 minutes
- Flip chart pages or standing visual aids (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, including cost and weight justification

The team's presentation skills will NOT be scored.

Tips for a Good Cost Report:

- Follow the rules. Put items and processes where the guidelines tell you to put them.
- Include an EBOM (Electronic Bill of Material) on disk (CD in MS Excel) that follows the format given in the 2011 FSAE Rules.
- View the PowerPoint presentation on Formula SAE Forum entitled – "Inside the Cost Report".
- Use the provided electronic BOM using Excel also found on the Formula SAE Forum.
- Include photographs, pictures, drawings, blue prints etc. in the appropriate sections of the book to facilitate an understanding of the design processes used to design and manufacturing the vehicle.
- The retail limit for the vehicle is $25,000.
- Don't forget to include labor as well as set-up times and tooling in your costs. This is one of the biggest causes of errors in the Cost Reports. Remember to account for every person used in the manufacturing process. In estimating, err on the high side rather than risk incurring a penalty for under-estimating.

DESIGN EVENT DESCRIPTION

Design Judging Chief: Mike O'Neil

Design Technical Managers:

Suspension: Chris Billings
Frame/Aero: Neil Roberts
Brakes/Controls/Cockpit: Jason Wahl
Drivetrain: Marvin "Bob" Riley

Date/Times: Thursday, June 16, 2011 from 8:30 a.m. to 11:50 p.m. and 12:40 p.m. to 4:50 p.m**.** Check the final schedule posted at the event. Slight changes may be made to accommodate needs of the competition.

Where:
Garage 3 East Side, Auto Club Speedway of Southern California, Fontana, CA.

Event Concept:
The purpose of the Design Event is to identify the vehicle developed with the most highly executed design processes and testing.

Event Format:
Each competing student team must provide a Design Summary and a Design Spec Sheet to the Design judges prior to the Competition.

On Thursday, June 16, vehicle and team examination by the Design judges will start promptly at 8:30 a.m. (see Competition and Static Schedules). The day will be divided into time slots. Each time slot will be 50 minutes long with 40 minutes for the judges to examine and judge the entry and approximately 10 minutes to determine scores.

Design Semi-Finalist teams will be announced and Design Semi-Finals will start at 5:30 p.m. on Thursday.

Design Judges will observe the cars running in the Dynamic Events on Friday and Saturday.

Design Finals will start Saturday afternoon and end before 6:00 p.m. on Saturday to determine the final standing of teams in the Design Event.

Event Procedure:
<u>Design Summary and Spec Sheet Review</u>
Prior to the Thursday, June 16, vehicle and team examination, the Design judges will review the Design Summary and a Design Spec Sheet submitted by each student team. The purpose of this review is to allow the judges to properly prepare for the event. Teams that do not submit both a Design Summary and Design Spec Sheet will be disqualified from the Design Event and receive zero points. The Design Summary should include: up to four pages of text, three pages of vehicle drawings, and one page of optional material (for a total of eight pages, maximum). The Design Summary is the team's opportunity to make a good first impression showing design goals, why those goals were

chosen, and how they were achieved. The Design Spec Sheet is based on a fixed template located on the official FSAE website, which contains detailed system and component level specifications.

Vehicle and Team Examination

Design judges should arrive at the Competition at 7:00 a.m. to register. A meeting of all Design, Cost and Presentation judges is held in the G2 Drivers Meeting Room at 8:00. Design judges will meet in the G3 Design judging area at 7:40 a.m. to prepare for the first time slot. The design finals will occur Saturday afternoon in the garage area.

Cars should be through Tech Inspection before they appear in Design Judging. It is to the team's advantage for the judges to see the inspection sticker on the nose indicating that the car passes technical inspection. Technical Inspection will be open on Wednesday afternoon.

All cars must pass through the Weigh Station before appearing for design judging. Cars must be submitted to the scales in ready-to-race condition. Lubrication and cooling systems must be full. A small amount of fuel must be available so that the team can start the car if requested. Tires and wheels on the car must be those used in the dynamic events. An average sized driver will be asked to sit in the car on the scales so that the weight distribution can be measured with a driver in the car as well as the vehicle weight without the driver.

Teams must show up for the judging time slot on time and prepared. Teams that are late will have less judging time available and may lose points as a result. Teams that miss their time slot may be assigned a new time slot *if time allows* at the discretion of the Design Event Captain.

The car must be presented to the judges in ready-to-race condition. Loose jam nuts, missing fasteners, and other ill-prepared items may result in point deductions.

There will be several design judges examining each car. The teams are required to answer questions on all technical aspects. Not having the person available who designed the questioned item will be detrimental to the team's score. Supporting documentation for all calculations, tests, and results will benefit the team. Clear graphics and test parts in hand are encouraged.

Time permitting, the judges will provide the teams with written feedback. This is supplied as a courtesy to help with the educational process and cannot be used as a basis for a protest.

Judges will be available to provide feedback on the designs on Friday in the garage area for those not in the Design finals. Teams are strongly encouraged to stop by with their cars during their scheduled appointments for in-depth, two-way discussions with the judges. This information is of much more educational value than what can be provided on a score sheet during limited scoring time available.
It is the team's responsibility to prove to the judges that their vehicle is a first-year car, since second-year cars are not allowed. If the structure of the car frame is not obviously a completely new design from previous years, then thorough photo documentation must 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.

After the first round of judging the judges will send approximately 8-10 teams to the semi-final round. Each judge group will advance zero to two teams. Roving judges can assist in determining how the entries in one judge group rank against those in another judge group. After a dinner break (~5:00 p.m.), the semi-finalists will be called to the G3 Design area for Design Semi-Finals judging. During Semi-Finals, there can be only two team members with the vehicle at any time to speak with the judges unless others are requested by the judges. Any remaining students will be asked to exit the judging area. Teams with more than two students remaining in the judging area will be penalized, regardless of whether their vehicles are present. Team members may switch places to have the proper systems represented. By the end of the night, the judges will have identified the vehicles to move on to the Design Finals. Scores will be posted the following day, Friday June 17th.

Design Finals will occur on Saturday afternoon, before the Awards Ceremony. The Design Finalists will assemble at Auto Club Speedway garage G3 when the Event is announced. Before 6:00 p.m. a winner will be announced and judges will review the designs of each Design Finalist for the audience. All participants are invited to this presentation. This presentation typically includes information useful (especially to less experienced teams) for identifying the expectations of the judges and design qualities they are looking for in a competitive vehicle.

FSAE CALIFORNIA 2011 JUDGE BIOGRAPHIES

Jude Berthault worked as Mechanical Design Engineer for the Joe Gibbs Racing NASCAR Sprint Cup Team helping them to win 11 of 36 races during his tenure. He currently works in the Engineering Department of Essex Parts Services developing their brake system dynamometer and providing technical support to NASCAR and other race teams. As a student guided the ETS (Ecole de Technolgie Superieure) FSAE entries to wins in every dynamic event except Acceleration, four Design, events and a third overall. Outside of work he is a competitive hockey player and avid mountain bike enthusiast.

Chris Billings graduated from Oregon State University where he studied automotive engineering. Soon after receiving his Professional Engineering license he started a consulting engineering firm from which he retired 1998. This allowed him to devote more time to his club racing efforts. Wanting to learn more about shock tuning, he purchased a shock absorber dynamometer in 1999. In 2003 he opened The Shock Shop offering sales, service and tuning advice based upon engineering analysis of vehicle data. His efforts have helped racers win numerous national championships. He has judged FSAE suspension design since 2004.

Scooter Brothers is the Chief Operating Officer of the COMP Performance Group in Memphis, TN. The COMP companies manufacture just about everything in the power train including cams, valve train, EFI controllers, intake manifolds, clutches, and automatic transmissions and converters. Scooter has been as SAE member for over 20 years and has been involved with FSAE for the past four. Scooter is also the Chairman of SEMA, the trade association for the high performance industry, and is chairman of their Scholarship Committee, working with college students to help them pay for their education.

Matt Brown participated as a student in the Formula SAE competition at the University of Oklahoma before graduating and joining Furniture Row Racing to participate in the NASCAR Cup series. He is currently helping to shape the future of automotive technology at Tesla Motors. When not working 65 hours a week, he splits his time between building a land speed racing motorcycle, rebuilding a 1964 Honda roadster, working towards a Master's degree from UCLA, and not getting nearly enough sleep.

Jack Burns is the owner and founder of Burns Stainless LLC, an engineering and exhaust components supplier in professional motorsports. With his partner he has developed Burns Stainless into a premier company in the motorsports arena. With a non-compromising, detail oriented approach he assisted professional race teams to win championships at top series including NASCAR Sprint Cup, NHRA, ALMS, and FIA. The son of a Ford dealer, Jack acquired a keen interest in all things automotive building a V-8-powered Anglia Gasser in his teens, circle boat racing in his mid-20s and 30s, and now races TAG karts as a hobby.

David Currier, VP of Engine Engineering, has invested 14 years into Toyota Racing Development (TRD). Engine programs with which he has had significant involvement include the CART Championship winner, IRL Indy 500 winner and Championship, Grand Am Championship, USAC Midget, Sprint and Silver Crown, Phase 9 NASCAR Craftsman Truck Series championship winner, and current NASCAR Sprint Cup, Nationwide, and Truck programs. He has been a Design Judge

every year of the Formula SAE West competition and rounds out his overwhelming experience with participation in time trials on the weekends.

Brian Davison comes to the event with 12 years of production car and motorsport engine development experience. He is a Formula SAE alumnus and has several years of drivetrain judging experience.

Rob Giovenale co-led the award winning WWU F-SAE/Student team from 1999 to 2001 including the VRI V-8 car. He has nine years of engineering experience at Toyota Racing Development for CART, IRL, Grand AM, NASCAR and other programs. He had and continues to participate in race, rally, and vintage car construction as well as specialty vehicle construction. He enjoys karting, dirt and dune riding, and wrenching on vintage cars.

Ken Gordon has been involved in motorsports for 38 years, starting as an SCCA corner worker in the heyday of the Can-Am, Trans Am, IMSA, and Formula 5000 series and then as a team owner and driver of both Formula Vee and Formula Ford race cars for many years. Ken has worked in the racing business for the past 25 years and is now President of Essex Parts Services, the North America importer for AP Racing products for Stock car racing. He has recently added a pilot's license to his resume flying his Cessna 182 for both business and pleasure.

Mark Hansen was hooked on the mechanics of cars at an early age. Three top-ten LTU FSAE cars later, the die was cast. He had several seasons of successful autocross and kart racing. Fifteen years in Ford Truck Vehicle Dynamics, several as the Truck Motorsports Manager, and years in most aspects of vehicle development, finally led to forming Vehicle DynamiX, Inc. specializing in vehicle design and development. VDX has had tremendous success in the off-road racing arena since 2006. Vehicle DynamiX is currently working to design and develop several highly-off-road-capable on-highway trucks and SUVs for Pi Makina in Turkey.

Jack Horowitz started work for Fabcar Engineering as an apprentice engineer, progressed to working with Dave Klym on the detailed design for the Porsche Motorsports 944 Trans-Am project, and then built the cars. He is now the General Manager of Essex Parts Services, a company that supplies leading technology brake systems to the demanding NASCAR market. Through the years he has driven in a variety of series including national level Formula Fords, pavement Late Models, and the NASCAR Nationwide series. He has also built and technically supported the cars of other racers.

Davis Jensen has been a design judge for FSAE West since 2007. He is currently a senior project engineer with Honeywell Aerospace in Southern California, performing turbo machinery development for the F-35 fighter. He has been involved as a team member/car builder on USAC Midgets, Sprints, Silver Crown cars, Indy Lights, and IMSA sports cars, and managed Cosworth Racing's NASCAR engine program. He has a BSME from Northeastern University.

John Kessler participated as a student in the Formula SAE competition with Ohio State University, from where he graduated with a BSME. He first worked for Honda Research and Development as an engine design engineer. In 2005 he transferred to Honda Performance Development (HPD) where he is now a Senior Design Engineer functioning as a technical specialist for lower end engine parts. There he has designed many of the engine components in the HPD ALMS prototype cars (formerly campaigned under the Acura badge). He also crews for a 1500 class off road car and has raced in amateur ATV hare scrambles.

Cameron Kurth first became involved with FSAE in 1990 at the University of Texas as a student. After a couple years designing aircraft, he entered the auto industry as a motorcycle and car tire test driver for Bridgestone. Later he worked at Ford as a chassis tuner and developed tires, suspension, and steering systems. He currently works for Hyundai-Kia Motors as a chassis tuner in Irvine, California. Outside of work Cameron has raced motorcycles since 1999 and in 2005 built an experimental aircraft. 2011 will be his 5th year as a design judge.

Philip LaPointe is the Chassis Design and Development Manager at Honda Performance Development. From 1991 to 2007 he worked at Honda R&D Americas. Projects included: Chassis Project Leader for the Honda Element and Pilot, and Chassis Design Manager for the Honda Ridgeline and Civic Si. For HPD he was in the UK for 2 years guiding Wirth Research and designing the suspension and engine installation for the LMP2 car and the steering, pedals, brakes, safety systems, driver ergonomics, and electronic packaging for the LMP1 car. Current projects include grassroots motorsports and 2012 IRL engine and chassis integration with Dallara.

Bill Mitchell has been involved with Formula SAE for twenty-plus years as a reporter and Design Judge. He has also sponsored the Best Rookie Award for many years supplying as a prize a copy of his Racing by the Numbers software. This is used by students and professional teams for suspension geometry and other racecar analysis. His talents in suspension geometry and vehicle dynamics have been employed by the likes of the Roush Racing Trans-Am team and Chip Ganassi's CART team. With degrees from CalTech and Stanford, his background in math and computers makes him exceptionally strong in these areas.

Chris Norris graduated from Queen Mary College, University of London with a degree in Mechanical Engineering. After several years of club racing he joined the world of professional motor racing in 1985. In England he worked for several motorsports companies including Dymag, Ecurie Ecosse, Aston Martin Racing, Ray Mallock Limited and British Racing Motors. In 1992 he moved to California to work for Nissan Performance Technology Inc. Following the closure of NPTI in 1993 he worked at Walt Disney Imagineering and at Toyota Racing Development before joining Swift Engineering in June 1996 where he is now Chief Design Engineer.

Mike O'Neil has been the California event Chief Design Judge since its inception. With 14 years as Managing Engineer at Tilton Engineering and now Technical Director at Essex Parts Services, Inc., he has 16 years of experience designing clutch, brake, starter, and other systems for Grand AM, NASCAR, open-wheel, and several other racing formats. He has raced karts and autocross, taught track day events, and is a 2009 AMA flat track motorcycle national champion. His BSME and MSME are both from The University of Akron, where he was team captain for their FSAE efforts. He possesses 16 vintage racing motorcycles.

Dennis Palatov has taken on a wide variety of engineering, design and management roles and has successfully brought numerous products to market. His hands-on experience includes complete ground-up vehicle design, development and manufacture as well as project and team management. Dennis holds nine US patents with additional applications pending. He is the founder of Palatov Motorsport LLC (www.palatov.com). His automotive blogs can be found at www.dpcars.net

Brian Reese is the V.P. of Engineering & Business Development at COMP Performance Group. He is an FSAE alumnus of Ohio State University with an MSME and Masters in Automotive Business Management. Reese is a hands-on engine guy with an Associate Degree in Automotive Technology and is a certified Master ASE Technician. He has been an engine machining apprentice at NAPA Auto Parts, in development engineering at General Motors, and Director of Engineering at SLP Performance Parts. He is an avid motorcyclist and dirt bike rider. He spends his weekends with his wife Karissa and two year old son Brayden.

Bill Riley graduated from Cornell University in 1999 after three years of FSAE experience including one year as team leader. After graduation he was employed by Ford taking on chassis and composites analysis with the Jaguar Formula 1 team followed by five years in Ford's Advanced Engine Engineering working with valve train and cylinder head design. He moved to General Motors for three years with combustion and cylinder heads. In 2010 he joined Space Exploration Technologies (SpaceX). He has served on the FSAE Rules Committee since 2002, is currently the Chairman, and been the Design Event Co-Captain in Michigan since 2008.

Marvin Riley was turning wrenches on the University of Michigan's Formula SAE car before he even started his first day of classes. He attended five competitions as a student with a best finish of 4th in Detroit as Engine Group Leader. He has spent the last 6 years engineering Le Mans and IRL engines at Honda Performance Development. Meanwhile, he has remained active with Formula SAE assisting in Design Judging. In his spare time he can be found running a '94 Golf at the 24 Hours of Lemons, autocrossing his 135i, or mountain biking the steeper mountains of Southern California.

Neil Roberts is an aerospace engineer, a 25 year SCCA member, a professional race car designer at Swift Engineering, and the author of **Think *Fast* – The Racer's Why-To Guide to Winning**. Neil competed successfully in autocross and SCCA club racing for 20 years, then engineered for the Hall/VDS Racing Indycar team for 4 years. Neil has been a major contributor to every Swift race car design since 1996, specializing in suspension and structural design optimization. Neil is the lead frame/body/aero design judge at FSAE California, and is a lecturer in the SAE Industrial Lecture program.

Vincent P. Roman (Vince) is Technical Director of Burns Stainless LLC, an engineering and exhaust components supplier in the professional motorsports industry. Vince consults with engine builders, race teams, and racers to design headers and exhaust systems to maximize performance. He has had a lifelong passion for automobiles and has a penchant for Porsches. The 2010 FSAE competition will be his sixth event as an event judge. As a university student, he participated in the SAE Mini-Baja competition. Vince has BS and MS degrees in mechanical engineering from the University of California, Irvine.

Claude Rouelle is a high performance and racecar designer, research and development engineer with 30 years of experience in design, test, and racecar engineering. Currently the owner and president of OptimumG, a vehicle dynamics company that works on consulting projects, provides public seminars and lectures, and develops software programs, Claude started in automotive engineering at the Institute Gramme in Belgium in 1978. Throughout his career, Claude has worked as an engineer, technical adviser and manager on dozens of circuits and rallies with various drivers and cars, from F1 and CART cars to Touring Cars, endurance cars to sprint cars.

Tim Schank's FSAE involvement began as a student at Iowa State University. This is his fourth year as a brake and controls judge. He has worked as a Brake Design Engineer for Tilton Racing. Currently he designs turbo machinery for the gas processing industry. In his free time he races in the 24 Hours of Lemons series where he still has to go through a cost analysis and the engineering is done with even less of a budget than in his FSAE days.

Jared Utz is a Bridgestone Product Development Engineer focusing on performance aftermarket tires. Previously, he was a Bridgestone Test Engineer. Outside of work he has 14 years of autocross experience and four seasons in SCCA F500. He still participates in autocross and track day events with his BMW M3 and is working on an MBA at his FSAE alma mater, The University of Akron.

Robert Wilmot grew up weekdays in his father's 13 bay garage and spent weekends at SCCA road races and rallies. He received his aerospace engineering degree from Auburn University, where he was heavily active on the FSAE team. From there he went to work with Panoz (Élan Motor Sports) involved with Champ Car, Van Diemen, and then the Super League project, for which he travelled across Europe overseeing a grid of 21 cars as the Support Engineer. In 2009 Robert moved to Penske Racing's IRL team. His spare time usually involves historic rally cars and autocrosses.

ENDURANCE EVENT DESCRIPTION

Event Captain: Michael A Moyer
Assistant Captain: Shawn Merritt
Event Director: Bob Beamesderfer
Date/Time: Saturday, June 18, 2011 from 8:00 a.m. to ~4:00 p.m.
Location: Dynamic Area

Event Concept:
The goals of the Endurance and Fuel Economy Events are to test the durability of the vehicles and to determine the fuel efficiency of the vehicles. The car that runs the Endurance course in the shortest time, including penalties, is awarded first place in the Endurance Event. The car that uses the least fuel while running the course is awarded first place in the Fuel Economy Event.

The Endurance and Fuel Economy Events run concurrently. They have a dual nature that can lead to compromises. The Endurance course layout and approximately 22 km length test the vehicle's durability. To ensure that the course design and length adequately stress the vehicle, first place is awarded to the car that runs the course in the shortest time. Attaining the faster speeds and higher power needed to win the Endurance Event can lower the fuel efficiency needed to win the Fuel Economy Event. A corrected mileage of 26 liters/100 km is required to avoid penalties.

Event Format:
The length of the Endurance Event is approximately 22 km. Two drivers will compete for each team. Each driver will run laps to complete an 11-km segment of the Event. Each team is given three minutes to complete the driver change between segments before any penalty is incurred. No refueling is allowed during the Event. The course design includes short and long radius turns, slaloms and straight-ways in various combinations along with four passing lanes. A final staging area for cars entering the course, a black flag penalty box and a driver change area are connected to the course. Flag stations are placed at the corners, prior to the passing lanes and prior to the black flag penalty box.

The Endurance Event run order is based primarily on the Autocross Event. If a vehicle did NOT score in the Autocross Event, it will run after the vehicles that did score in the Autocross, with the order based first on the finishing order of the Acceleration Event, and then on the finishing order of the Skid Pad Event. Finally, any teams that did not score points in any of the prior events will be run first come, first served. If the weather or track conditions during the Autocross Event were variable, the Endurance Captain may substitute the finish order of either the Skid Pad or the Acceleration Event for the finish order of the Autocross Event as a basis for determining the Endurance Event run order. Multiple cars may be on the Endurance course at the same time. The number of cars on the course is managed by Control (the Chief Marshal). NOTE: **NO REPAIRS OR WORK MAY BE PERFORMED ON A VEHICLE DURING THE EVENT** (with the exception of tire changes due to weather conditions).

Event Procedure:
Cars enter the Endurance course through a starting grid in the prescribed run order. Each team must have a fully fueled (see Fuel Economy Procedure), ready-to-run vehicle in the starting grid at the appointed time with the first driver strapped in. The starting grid is connected to a final staging area

where the starter positions cars at the starting line. The driver change area is also connected to the final staging area. Only the car driver, one crewmember and the other driver are allowed in the starting grid and the driver change area. A safety inspection (helmet, belts, kill switch, tires, etc.) is performed in both the starting grid and the driver change area.

Once the Event is running, the grid boss directs cars to start their engines and enter the final staging area. Cars in the driver change area that have completed a driver change are given priority over cars in the grid. In the final staging area, the Event starter positions the front wheels of each car on a starting line at a safe distance back from the course. When there is a space for the vehicle on the course, the timing/scoring system is set and there is an opening on the track, the starter waves a green flag signaling the driver to accelerate the car from a standing start onto the course. If the vehicle stalls, the driver **must wait for another green flag** before entering the course. If a vehicle starting the first segment is not ready when the grid boss signals it into the final staging area or the official starter signals it to start, a two-minute penalty will be assessed and the team will lose their time slot to run the Event. (The team may then be allowed to run after all the other competitors in the Event if time permits.) If a vehicle on course or starting the second segment cannot be restarted without external assistance, **THE CAR IS DEEMED DISABLED AND WILL BE DISQUALIFIED.**

The car then does laps around the course. Limited passing is controlled by flaggers who use blue flags to direct cars being overtaken into a passing lane while the overtaking car goes by. At the start of the last lap of each segment, a course worker displays a white flag to the driver, indicating that this is the last lap. At the end of the last lap of each segment, Control has the car flagged into the course exit with a checkered flag. **It is the driver's responsibility to exit the course; any person directing the car off the course is an additional aid only.** If the car is completing the first 11-km segment, the driver enters the driver change area and turns off the car engine. If the car is completing the second 11-km segment, the driver goes to the "return to fueling" staging line and turns off the car engine. Car team members push the car from the "return to fueling" staging line to the fueling station where the fuel economy is determined.

Only the second driver and one team crewmember are allowed in the driver change area with the vehicle and the first driver. Once a vehicle has arrived in the driver change area, the student team has three minutes to get the second driver seated, belted in, and rolling out of the driver change area before any penalty is incurred. Only adjustments to fit the second driver may be performed on the vehicle. **No other work is allowed**.

Penalties:
A two-second penalty is imposed for each cone knocked down or out of position (indicated by a chalk square at the base of the cone). Cone penalties can be imposed for all cones in the dynamic area. This includes cones before the start line and after the finish line.

A 20-second penalty is imposed for going off course and not re-entering at a point at or before the point where the car went off course. A 20-second penalty is also imposed for missing a station. Control may impose a black flag penalty for rule or safety reasons involving the car or driver behavior. Black flagged cars must enter the black flag penalty box and remain there until released by Control.

If a driver change goes beyond the 3 minutes allowed, the team has 2 minutes, which is counted against them, before DNF occurs.

Weather Conditions:

Teams must fit rain tires to their vehicle if the course is declared Wet.
Teams have the option of using dry or rain tires if the course is declared Damp.
Teams may change tires at any time while their car is in the grid 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 a vehicle other than a tire change in the driver change area.
Teams are allowed 10 minutes to change 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 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 possible track condition changes, the team's options, and the time allotted for changes.

Starting Track Condition	Current Tire Choice	Track Declared	Tire Change?	Time Help	Allowed at Driver Change?
Dry	Dry	Damp	Optional	10 minutes	Y
Dry	Dry	Wet	Mandatory	10 minutes	Y
Damp	Dry	Wet	Mandatory	10 minutes	Y
Damp	Rain	Wet	---	---	---
Damp	Dry	Dry	---	---	---
Damp	Rain	Dry	Optional	zero	N
Wet	Rain	Damp	Optional	zero	N
Wet	Rain	Dry	Optional	zero	N

Example: The track is Dry, and 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, and it can be done during the driver change.

Notes:

Please be aware that several cars may be running the course at the same time.
Each vehicle is expected to be ready to run with the first driver at the team’s start time. If the Event is running late, the vehicle is still expected to be ready when there is an opening for the vehicle on the course.

A driver’s run may be slowed or stopped by a course worker waving a yellow or red flag or giving a hand signal. The driver must then follow the direction of the course worker. If a red flag is displayed, the course will be cleared of all cars. When the course is again safe, cars will be allowed to re-enter the course from the grid in the order they were in and at the start of the lap they were on when the red flag was displayed.

A driver change is treated as an extra, un-scored, long lap. Scoring will assume that a driver 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 during a driver change. The official will keep track of each team's time and will notify Scoring if a team exceeds the three-minute limit (from the time the vehicle arrives in driver change area to the time the vehicle leaves area). There is no competitive advantage to changing drivers in less than three minutes. Tire changes from dry to rain tires are scored as an extra, un-scored, long lap. Scoring will assume 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 the time the vehicle arrives in the driver change area to the time the vehicle leaves the 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 taken to change tires added to the team's total time. The time taken to get into 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 taken to change tires (from the time the vehicle arrives in driver change area to the time the vehicle leaves area).

No toolboxes are allowed in the grid, final staging area 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.

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. The vehicle will NOT be allowed to return to the course.

A vehicle may be restarted if it stalls on the course, but external assistance is not allowed.
A driver may pull off the course to have belts re-tightened, if necessary. However, the additional time taken for this procedure is counted.

A driver may also pull a vehicle off course to remove any cones that may become trapped. However, the additional time taken will count against the team.

Lap times for each vehicle are monitored. If a vehicle is not running within 133% 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 for that car.

In the event that Track Officials decide to use street vehicles to attempt to expedite drying the track, any team caught on the track in their personal vehicles will be disqualified from any further competition.

Course Preparation:
The Endurance course is set up on Friday night. Student drivers are allowed and encouraged to walk the course during the 7:45 a.m. to 8:15 a.m. Course Walk time period posted in the Competition Schedule.

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

FUEL ECONOMY EVENT DESCRIPTION

Event Captain: David Montelongo
Assistant Captain: Zak White
Dates/Times: Saturday, June 18, 2011 from 8:00 a.m. to ~4:30 p.m.
Location: Fuel Station

Event Concept:
The vehicle that uses the least amount of fuel to complete the 22-km Endurance course wins the Fuel Economy Event.

Event Procedure:
Prior to the start of the Endurance Event, the Timing and Scoring Event Captain will provide a list of the "Top-20" teams to the Tech Inspection Captain, the Endurance Captain, and the Fueling and Fuel Economy Captain so that they can identify and monitor the "Top-20" teams.

Prior to running in the Endurance Event, teams will take their cars to the fuel station where Fueling and Fuel Economy workers will fill the fuel tank of the cars to the "full" mark with fuel. The car engines will then not be started until the car is ready to enter the Endurance course.

Fueling and Fuel Economy workers will escort the "Top-20" cars that successfully finish the Endurance Event from the Event back to the fueling station. "Top-20" cars that arrive at the fueling station after the Endurance Event without an escort will be given a zero score for the Fuel Economy Event. Cars that are not in the "Top-20" may return from the Endurance Event to the fuel station without an escort.

Calculation of fuel consumption is made by the Fueling and Fuel Economy workers and is based upon the weight of the fuel consumed.

Each vehicle will start the Endurance Event fueled to the 'full' mark. After completing the Endurance Event, the vehicle will return to fueling station and be refueled. The weight of the fuel consumed is determined by:

- Filling a fuel container with the fuel type to be put into a car
- Weighing the filled fuel container
- Filling the vehicle gas tank to the 'full' mark
- Weighing the fuel container again
- Calculating the difference of the two weight measurements
-

The 'full' mark is a clearly defined scribe line in the filler neck or sight tube as defined by Rule 3.5.3.3. The vehicle is 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. No shaking of the vehicle is permitted during initial fill (prior to Endurance event) nor final fill (after the Endurance event). The volume of fuel used is computed from the weight of the fuel used and entered in the Fuel Economy Event score sheet.

FUEL AREA DESCRIPTION

Event Captain: David Montelongo
Assistant Captain : Zak White
Dates/Times: Thursday, June 16, 2011 from 8:00 a.m. to 5:00 p.m.
Friday, June 17, 2011 from 8:00 a.m. to 5:00 p.m.
Saturday, June 18, 2011 from 7:30 a.m. to ~5:00 p.m.
Location: Fuel station

Event Concept:
Provide fuel to formula cars competing in the FSAE California Competition.

Event Format:
A car must be fueled before going to the Tilt Table.
A car may be fueled before going to Brake and Noise, Practice Track, Acceleration or Autocross.
A car must be fueled before going to and after leaving the Endurance Event.

Event Description:
The fuel station provides unleaded racing gasoline (91 or 100 octane) or E85 (ethanol) to each car as needed. No other fuel or additives are permitted. Vehicles requiring E85 must have a special sticker located near the filler. (This sticker is obtained at Tech Inspection.)

No vehicle will be provided with fuel until it has passed Tech Inspection. The first portion of a three-part sticker is applied in a conspicuous location near the front of the vehicle by Tech Inspection when the vehicle passes inspection.

<u>Follow specific safety guidelines while in the fueling area:</u>

1. All engines must be off; cars are to be pushed to and from fueling.
2. Only the driver in a driving suit and fuel station workers in protective clothing are permitted in the marked area around the car as fuel is dispensed.
3. A scribed line or similar identifying mark must be used to indicate the “full” level.
4. A formula car fuel task must be filled to “full” mark each time fuel is received.

PRACTICE TRACK AREA DESCRIPTION

Event Captain: Garett Chang
Assistant Captain: Mike Aylward
Dates/Times: Thursday and Friday, June 16 and 17, 2011 from 8:00 a.m. to 5:00 p.m.
Saturday, June 18, 2011 from 8:00 a.m. to 1:00 p.m.
Location: In the Dynamic Event Area

Event Concept:
Provide and open test area in which student formula teams can conduct brief, dynamic tests of their cars and practice driving.

Event Format:
The Practice Track is a relatively large (100' x 150'), flat, level, cone and water barrier delimited test area.

Event Description:
No vehicle is permitted to enter the Practice Track unless it has:

a) passed Tech Inspection
b) passed the Tilt Table Test
c) passed the Brake & Noise Inspection Test
d)

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

Only one car at a time is allowed on the Practice Track. The practice time is five minutes. On the Track, drivers must wear complete and proper safety equipment and observe proper safety rules at all times. Once signaled to enter the Track, a driver is free to perform any test maneuvers he or she feels necessary to evaluate a vehicle. A Practice Track official will 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 of a practice period.

If during the course of dynamic testing a 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 Track official, thus requiring a repeat Tech Inspection prior to participating in any additional dynamic tests or events. PLEASE NOTE – Operation of the Practice Track in **DAMP** conditions is at the discretion of the Practice Track officials.

Practice Track Safety Guidelines:

1. Allow only one car at a time on the Practice Track. The next car will not be permitted to enter the Track until the last one has completed its exit.
2. Keep at least three volunteers present to manage the operation of the Practice Track.
3. 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 safety barriers.
4. Have fire extinguishers handy.
5. Use brooms and oil-dry as needed to keep the Practice Track clean and dry.

6. Report any vehicle damage or contact to the Competition officials. In addition, remove the first, “Tech,” sticker from the car and report the car number and incident to the Tech Inspection Captain so car can be re-inspected after it is repaired by the student team.
7. Do not permit spectators to sit or lean on the safety barriers surrounding the Practice Track.

PRESENTATION EVENT DESCRIPTION

Event Captain: Dean Case
Assistant Captain: Robin Allen
Dates/Times: Thursday, June 16, 2011 9:00 a.m. - 4:00 p.m.
Check the final schedule posted at the event. Slight changes may be made to accommodate needs of the competition.
Location: Auto Club Speedway Suites

Event Concept:
After a year of planning, fabricating, and testing a new, prototype vehicle, each team aspires to sell their vehicle design to a make-believe racing manufacturer. The competitors in this event will be judged on their ability to create and deliver a presentation that clearly explains the merits of their design. The team that makes the best presentation (regardless of the car quality) will win the event and score 75 points.

Event Format:
Competitors are to make a presentation to upper level executives of an imaginary manufacturer. The presentation should tie together all factors that would influence the marketability and manufacturing feasibility of their design. It should include an understanding of the marketplace and target customer, and show how their design meets the requirements for each. Competitors must convince the judges that their prototype represents a profitable enterprise for the manufacturer.

Event Procedure:
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) will be strictly enforced. The presentation should last no longer than ten minutes. A five-minute question and answer period will immediately follow. Only judges may ask questions during this time and only presenters may answer. The audience may not ask questions or make comments. It is okay if a presenter only participates in the question and answer section.

A team of two or three judges will grade the competitors. The judges will use the form in Appendix A-5 of the FSAE rules for event scoring. This form breaks the scoring down into five equally weighted categories: Content, Organization, Visual Aids, Delivery, and Q&A period. 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 the other five judging teams. The competitor's final score will be calculated using the following equation:

PRESENTATION SCORE = 75 * Pteam /Pmax

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

Presentation Tips from Previous Experience:
- Spell-check all overheads, handouts, slides etc.
- There is no dress code; however, bad first impressions are difficult to remedy.
- Remember: equipment has been known to fail; copies can be ruined in transit, etc. Consider alternatives in case something goes wrong. Each team is responsible for their equipment.

- Have someone from your team video your presentation and the judges' comments afterward for your team's future FSAE efforts. Teams may have as many spectators as 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. Choose someone who is charismatic and good at public speaking.

SKID PAD EVENT DESCRIPTION

Event Captain: David Takamoto
Assistant Captain: Mike Guidry
Event Director: Craig Naylor
Dates/Times: Friday, June 17, 2011 from 8:00 a.m. to 11:30 a.m.
Location: Dynamic Area, Auto Club Speedway of Southern California, Fontana, CA

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 to maximum lateral grip, and minimize the effect of driver reflexes during transitional maneuvers.

Event Format:
Two drivers are required per car; two runs per driver. Each run consists of a driver completing two right-hand laps immediately followed by two left-hand laps of the course. Lap times will be recorded for the second lap of both the right-hand and the left-hand circle. (The first lap of each circle is not timed.) Driver 1 will make up to two attempts on Skid Pad 1, and Driver 2 will make up to two attempts on Skid Pad 2.

Scoring:
Lap times will be recorded for the second 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 four runs will be used to calculate a score for that vehicle.

Staging:
Stage your car in the appropriate line for either Driver 1 or Driver 2. This will help prioritize the running order. A person holding a Green Flag will motion a car to approach the starting line, which is located approximately 20 m (65.62 ft) 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 two laps, the driver must continue onto the LEFT-HAND circle and complete two more laps. After completing the second left-hand lap (the fourth lap in total) the driver will exit the Skid Pad. After the first run, each driver has the option of immediately taking a second run or leaving the staging area and running later in the day. Each car must exit the staging area before changing drivers. No toolboxes and/or spare parts are allowed in the queue area or staging lanes unless deemed necessary for starting the vehicle's engine.
<u>All cars must complete all Skid Pad runs by 11:30 a.m.</u>

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.

TECHNICAL INSPECTION EVENT DESCRIPTION

Car Prep Chief: Gerry LaRue
Event Captain: Matt James
Assistant Captains: Richard Lloyd, Michael Lardy

Dates/Times:	Wednesday, 15 June, 2011	1:00 p.m. – 7:00 p.m.
	Thursday, 16 June, 2011	8:00 a.m. – 5:00 p.m.
	Friday, 17 June, 2011	By appointment. See the Announcer in Garage 3
	Saturday, 18 June, 2011	By appointment. See the Announcer in Garage 3

Going through Tech on Wednesday or Thursday is advised if you wish to compete in all the dynamic events.

Location: Garage 2, Auto Club Speedway of Southern California, Fontana CA

Purpose:
The purpose of the Tech Inspection is to check that the cars meet the Formula SAE rules for:

- Rules compliance
- Safety equipment
-

Procedure:
On Wednesday, June 15th, the teams with the first 8 sequence numbers should be at the Tech Inspection (Garage 2) ready to go inside by 2:00 pm. Depending on the number of volunteers available at 1:00 p.m., inspection may or may not start on all cars at once, but the first 8 cars should be ready to begin inspection at that time. See Tech Inspection Sequence below for more detailed description of the sequencing process.

Line up at the "Tech Inspection Line" sign at the northwest corner of Garage 2. With you, you must have:

- The car (obviously)	
- The push bar	
- Copies of any Structural Equivalency Forms	
- The Tech. Form	This form is in the registration packet.
- <u>All</u> helmets to be used in the Competition	
- <u>All</u> the drivers' suits and other safety gear	We will test <u>all</u> drivers for the roll bar height and egress checks. Any driver not in attendance at the initial Tech Inspection may be required to return with the car for additional egress and roll bar height checks.
- <u>All</u> the drivers	
- Your "dry" **&** "wet" tires	**Per 3.2.3.2, put your dry tires on the car for Tech Inspection.**
- Two 2-lb fire extinguishers	These are required by rule 3.4.10.2, (page 44).
- Pictures of last year's car	

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.
When you have completed (passed) Tech Inspection, the first part of the Tech Form will be retained by the Tech Crew and you will be given the first of three (3) parts of the inspection sticker. You should then proceed to the Fuel Station and the Tilt Table. The second and third parts of the sticker will be given at the Tilt Table and the Brake & Noise Test respectively. Only when you have all three 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 Inspection again.
(Note: No car will be allowed to run on the chassis dynamometer (if one is available) until it has passed all parts of Technical Inspection and has been issued all three parts of the inspection sticker).

TECH INSPECTION SEQUENCE

Tech Number Assignment - Technical inspection sequence numbers, "Tech Numbers", for 2011 FSAE California have been randomly assigned in advance. The Tech Number list was released on the FSAE News Page. The pre-assigned Tech Numbers will follow the same process that applied for the former "take a number" method.

Picking up your Tech Number - When your team registers on site at FSAE California you will be given a tag with your assigned tech number. Bring this tag with you to Tech Inspection and give it to the Tech Captain logging cars into the tech bays.

"Now Inspecting" - The highest numbered tag currently in Tech will be posted outside the garage so teams may estimate approximately when they should to arrive to be inspected. It is each team's responsibility to be at the garage with their vehicle, team members, equipment and documentation (See Rule C2.4) when it is their turn to be inspected.

"Out of Sequence" Inspections – If your car isn't in line and ready for inspection when your number is called, then it will be classified as "out of sequence" and inspected after all the cars in sequence have been examined. "Out of sequence" inspections will be done "first-come-first-served" after the in sequence cars have been finished.

Inspection Process - The Tech Garage will accommodate 8 cars. On Wednesday, June 15th, the teams with the first 8 sequence numbers should be at the Tech Inspection (Garage 2) ready to go inside by 2:00 pm. Depending on the number of volunteers available at 1:00 p.m., inspection may or may not start on all cars at once, but the first 8 cars should be ready to begin inspection at that time..

Inspections will be conducted in tech number sequence order. As soon as a car is released from inspection, the car with the next number will be brought in. Should that car not be present, then the next highest number will be inspected.

Each team is responsible for having their car in line and ready with all gear, required equipment and documentation when their number is called.

A team arriving after their tech number has come up is considered "Out of Sequence".

Trading Numbers– Teams may trade tech numbers. If you don't think you'll be ready for inspection when your slot opens, then you may want to trade numbers with another team.

2011 ASSIGNED TECHNICAL INSPECTION ORDER

Car #	School	Tech Inspection Order
37	Univ of Calgary	**1**
46	Univ of Delaware	**2**
28	Concordia University	**3**
51	California State Univ - Los Angeles	**4**
73	Rutgers Univ	**5**
43	Univ of Calif - San Diego	**6**
53	Univ of Calif - Davis	**7**
69	Penn State Univ - University Park	**8**
48	Univ of Arizona	**9**
19	Univ of Saskatchewan	**10**
23	Montana State Univ - Bozeman	**11**
64	California State Poly Univ - Pomona	**12**
35	California State Univ - Sacramento	**13**
9	Oregon State Univ	**14**
50	Oregon Inst of Tech	**15**
79	IPN - ESIME UP Ticoman	**16**
65	Univ of Illinois - Urbana Champaign	**17**
86	Interamerican Univ of Puerto Rico	**18**
41	Univ of Southern California	**19**
59	McMaster Univ	**20**
4	Univ of Alberta	**21**
47	Wichita State Univ	**22**
83	Faculdade de Engenharia de Sorocaba	**23**
32	Univ of Bath	**24**
13	Univ of Victoria	**25**
81	Lawrence Technological Univ	**26**
77	California State Univ - Fresno	**27**
40	Kettering Univ	**28**
74	University of California - Merced	**29**
63	Ryerson Univ	**30**
85	Univ of Calif - Irvine	**31**
52	Columbia Univ	**32**
62	Univ of Kansas - Lawrence	**33**
72	Univ of Wisconsin - Madison	**34**
26	Vel Tech University	**35**
3	Univ of Washington	**36**
54	Xiamen University of Technology	**37**
75	Arizona State Univ - Tempe	**38**
44	Portland State Univ	**39**
22	Western Washington Univ	**40**
45	Univ of Hartford	**41**
70	Univ of Guelph	**42**
18	Univ of Utah	**43**
36	Universidad Nacion Autonoma De Mex	**44**
31	California Polytechnic State Univ-SLO	**45**
15	California State Univ - Northridge	**46**
55	Drexel Univ	**47**

34	Honda Technical College Kansai	**48**
17	Univ of New Mexico	**49**
84	Oakland University	**50**
60	Ecole De Technologie Superieure	**51**
27	Univ of Texas - Austin	**52**
67	San Jose State University	**53**
38	Washington State Univ	**54**
61	Rensselaer Polytechnic Inst	**55**
66	Queen's Univ - Ontario Canada	**56**
30	Ohio State Univ	**57**
12	Universidade Estadual Paulista	**58**
21	San Diego State Univ	**59**
68	Univ of Manitoba	**60**
57	New Jersey Inst\Tech(Newark Coll)	**61**
14	Univ of Calif - Berkeley	**62**
82	Instituto Politecnico Nacional	**63**
20	Univ of Wisconsin - Platteville	**64**
42	Universidad Autonoma Estado Mexico	**65**
2	Univ of Oklahoma	**66**
39	South Dakota State Univ	**67**
80	IPN Esime Zacatenco	**68**
11	Univ of Maryland - College Park	**69**
24	Polytechnic Univ of Puerto Rico	**70**
78	ESIA San Luis Potosi	**71**
29	Instituto Tecnologico de Chihuahua	**72**
25	Kansas State Univ	**73**
10	Missouri University of Science and Tech	**74**
16	Univ of British Columbia	**75**
71	Univ of South Florida	**76**
8	Massachusetts Inst of Tech	**77**
49	Universidad Catolica Andres Bello	**78**
33	California State Univ - Fullerton	**79**
58	Hunan Univ	**80**

TILT TABLE EVENT DESCRIPTION

Event Captain: Norm Porter
Dates/Times: Thursday, June 16, 2011 from 8:00 a.m. to 5:00 p.m.
Friday, June 17, 2011 by appointment See the Announcer in Garage 3.
Saturday, June 18, 2011 by appointment See the Announcer in Garage 3.
Location: Outside on South End of Garage 3

Event Concept:
Demonstrate that a formula car being tested remains stable and flat on the Tilt Table and does not leak fluids at any tilt angle up to 60 degrees. Note: A 60-degree tilt angle subjects a car to a 1.5 g-force.

Event Format:
A formula car is pushed onto the Tilt Table.

The Tilt Table is raised to angles of 45 and 60 degrees before being lowered back to level. Checks for leaks and that the car remains stable with all four wheels on the Table are done at each angle.
The car is pushed off of the Table.

Event Description:
After a formula car is fueled to the "full" mark for the first time, it is pushed to the Tilt Table. Checks for full fuel level, no fluid leakage, no loose parts and that the team's tallest driver in full gear is seated and strapped in to the driver's seat are done. *The vehicle is oriented with respect to the Tilt Table in the direction that is most likely to create fluid leakage, i.e., filler neck to downward side,* and is then pushed onto the Table. The Table is then 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 simulates a cornering force of 1.5 Gs. If the upper wheels remain on the Table and there are no leaks, the car passes. (Some cars may lift one wheel. The person in charge of the Tilt Table 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 second, "tilt" sticker is applied next to the "tech" sticker on the car, to indicate passing the Tilt Table test. The car is now ready to be pushed to the Brake and Noise test area. Should the car fail at either test angle, it must be repaired and re-tested.

Vehicles may be required to return to the Tilt Table test station for re-certification at the discretion of the Competition officials. This may be due to work that was performed on the vehicle's fuel system after having passed the Tilt test, or due to an incident that results in damage to the vehicle.

<u>Follow specific safety guidelines while in the Tilt Table area:</u>

1. The car engine must be off at all times. Push the car on and off the Table. Take care to avoid damage to the vehicle when pushing it onto and off of the Tilt Table.
2. The inside wheels of the car must be placed against the "down-side" guard of the Tilt Table.
3. Attach a strap to the car rollover hoop and the side of the Table which is to be elevated. Allow a little slack. (Team members may be used to spot, if a strap is not available).
4. Be sure the Tilt Table is clear before rising, and especially when lowering, it. Inform people in the area when raising or lowering the Table (e.g. "Coming Down").
5. Use absorbent material to soak up leaks. (May be obtained at fuel station).
6. Keep a fire extinguisher handy.

2011 FORMULA SAE 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.
The protest window opens when the scores for the event involved in the protest are posted.
Return protest forms to the event captain or competition official in the score posting area.