

THE UNIVERSITY OF ILLINOIS SOLAR DECATHLON
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...An American Icon Reborn



G A B L E

2009

Overview

The University of Illinois will compete in the 2009 Solar Decathlon competition occurring on the National Mall in Washington D.C. in October 2009. The competition invites teams from across the country to design, build and test homes along 10 categories. Each home will be constructed at their respective universities and transported in late September to Washington, D.C. where they will be assembled and tested for a period of three weeks. During this time, the public will be invited to tour each house and students will be tasked with the construction, transportation and continuous operation of each home.

As such, the need for a complete and comprehensive safety plan arises. Team Illinois is committed to protecting the safety of all individuals involved with the project at all points in time. Safety represents a primary concern for the team, because without a safe and efficient operation, nothing else is relevant. Through a safe and effective operation while on the National Mall, the team can achieve other design goals including education, research, outreach, and sustainability. The team will work in collaboration with the Solar Decathlon Event Organizers, including the Department of Energy, the National Renewable Energy Laboratory and local officials, to establish a safe environment and to respond effectively to any event that may arise during the course of the competition.

This safety plan is meant to serve as a guide for information concerning safety policies, emergency procedures, emergency communication plans, and local response services. The ultimate goal of the team, as stated above, is safety and that should precede to any guide stated in the following paragraphs.

Please refer to the Rules and Regulations Definitions document for definition of capitalized terms. The document is available on the Solar Decathlon Web site at:

http://www.eere.energy.gov/solar_decathlon/pdfs/sd07rr_defs.pdf.

This plan should remain available within the 2009 University of Illinois Solar Decathlon house at all times and should be discussed with all participants before entering the site. Each member of the team should understand the goals and strategies pertaining to safety and will uphold them at all times no matter the situation.

Statement of Policy

The Solar Decathlon is managed and developed by the Department of Energy and the National Renewable Energy Laboratory, together forming the Solar Decathlon Organizers. As a unit, the organizers “shall maintain a safe and healthful work environment by identifying and controlling potential safety and health hazards during the Event.” The Solar Decathlon Organizers will provide oversight and expertise to the Illinois Solar Decathlon Team in order to create the safest event possible. However, ultimately it is the responsibility of the Illinois Solar Decathlon Team to maintain a safe and healthy work environment throughout the event.

Located on the National Mall in Washington D.C., the University of Illinois and all members involved with the construction and presentation of the home fall subject to the policies and requirement of the National Park Service (NPS). Consequently, the team will follow the NPS requirements of compliance with Occupational Safety and Health Administration (OSHA) and all applicable codes and standards. Together with the Solar Decathlon Organizers, the University of Illinois Solar Decathlon team will require and enforce compliance with the NPS requirements, including OSCH regulations and applicable codes and standards.

This Event Safety Plan has been submitted in accordance with the requirements set forth by the Solar Decathlon Organizers and details all applicable requirements that are specifically related to the design of the 2009 Illinois Solar Decathlon home.

Assignment of Responsibility

The Solar Decathlon Organizers, including Richard King, Director are responsible for all event-wide Occupational Safety and Health activities during the Event. For all actions occurring beyond the perimeters of the Illinois Solar Decathlon home site, Lot 120, individuals should defer to the Health & Safety Plan provided by the Solar Decathlon Organizers. For specific locations and dimensions, refer to Solar Decathlon Organizer information or the Illinois Construction Document package. Responsibility for the administration, compliance, and interpretation of OSH-related activities for the overall competition has been delegated to appropriate Organizers and Event Staff. For additional information, refer to the Safety Plan produced by the Solar Decathlon Organizers. Within the Illinois site, however, the compliance and administration of all OSH-related activities is the responsibility of the Team Leaders and the Team Safety Officer. Each team member, however, retains responsibility for his or her own actions and should act in accordance with this plan, OSHA, applicable codes, and general judgment with a goal of Safety.

In accordance with the Solar Decathlon Organizers, the Illinois Solar Decathlon empowers all participants to question OSH-related activities when safety is questionable. In addition, team members may call for a “stop-work” if they feel that unsafe practices are in effect. Following a Stop-work call, the team shall work with the Solar Decathlon Organizers to resolve the issues and resume safe operations.

Emergency Procedures

In the event of an incident, people shall:

- 1) Work to remove any individuals from situations involving additional danger
- 2) Call appropriate response teams – 911 in Case of Emergency
- 3) Perform first aid, as required and if properly trained
- 4) Maintain control of the environment and prevent further injuries until professional help arrives.
- 5) Notify the Solar Decathlon Organizers, including available public safety organizers.

The Solar Decathlon Organizers will provide a list of local clinics and hospitals near the Washington D.C. metro area and the Illinois Solar Decathlon will store this information, along with this safety document, in an accessible location within the Competition Home. All team members and involved students will be informed of the location before beginning work on the site. In addition, the Solar Decathlon Organizers will provide an ambulance on-site 24 hours per day during the Assembly and Disassembly phases of the Event. For all other times during the competition, an EMT will be on site 24 hours per day. In addition, a United States Park Police office will be on location throughout the entire event. At the beginning of the competition, Illinois Solar Decathlon team members will be informed of this support service as well as proper contact information.

Accident Response

While it is the goal of the Illinois Solar Decathlon and this Safety Plan to prevent any unsafe practices that could result in an accident, in the event of an accident, the team should work to minimize damage and limit potential for future injury. After the occurrence, the Illinois Solar Decathlon Team will investigate the incident and identify the actions necessary for correcting the problem. Finally, the involved parties shall complete an “Incident Report Form”. This form can be found in the 2009 Safety Plan provided by the Solar Decathlon Organizers. Following submittal, the Organizers will review the occurrence and determine the appropriate actions to correct the situation and prevent future incidents. If necessary, the Event Organizers will be able to help the Illinois Solar Decathlon team through this process and ensure that proper preventative measures have been taken.

Potential Hazards

The Solar Decathlon involves transporting, installing and construction a fully functional home on the National Mall within a short time frame. As such, a number of potential hazards will be present and should be recognized. Hazards have already been recognized through our drawing development phase and the construction of a small mock up on our campus. Other potential hazards will be discovered as the process of designing and building the house continue forward. During the construction phase, the home will be delivered to the site by a low-bed semi-trailer and placed using a large crane. Most likely occurring at midnight, this induces numerous opportunities for injuries. During the installation of the house by crane, the Project Manager shall limit the total number of people within the Illinois Lot to the absolute minimum required for safe operation. Roofing and Installing Solar Panels is the next task that

involves a complex potential safety hazard. The team will also utilize railings and tie-downs for all work occurring on the home that is six feet above grade or higher. Other potential sources of injuries include energized sources such as photovoltaic systems, home power circuits, or power tools. The 24 hr aspect of construction also increases the possibilities of accidents. All these situations should be regarded with care and the team must remember that the number one goal is safety. Throughout the body of this document, the team will produce task specific safety strategies to potential hazards.

Regulation

The Illinois Solar Decathlon team shall follow all applicable codes including OSH requirements and procedures. These involve, but are not limited to, the following. Those events with responses specific to the National Mall Solar Decathlon competition have been annotated below. For all requirements, the team shall read and follow the standard OSH procures.

Access control: The Illinois Solar Decathlon is located on Lot 120 within the Solar Decathlon and the team will work to limit access to registered team members and Solar Decathlon Organizers throughout the duration of the assembly and deconstruction phase. Only members that have been authorized to work on the house and who are familiar with this safety document and applicable procedures shall be permitted access. Team Uniforms will also be used to make team members more visible and unauthorized individuals stand out when on Lot 120. In addition, potentially dangerous equipment such as power tools and electric inverters shall be stored in a locked location and the Project Manger will control the safe and effective use of this equipment.

Accident reporting: The team shall follow the accident reporting procedures outlined above in the “Accident Response” section.

Alcohol and drugs: At no time will alcohol or illegal drugs be permitted on the Illinois Solar Decathlon site, in accordance with the National Park Service regulation and the Solar Decathlon Organizer requirements.

Appropriate work clothing: When working on the house during the construction phase, at a minimum, the entire team is required to utilize steel-toed boots, hard-hats, long pants, shirts with at least 3” sleeves and safety glasses with side shields. In most cases, a team t-shirt or uniform will also be encouraged to maximize visibility and reduce the possibility for unauthorized individuals to enter the lot unnoticed. The Illinois Solar Decathlon will provide enough hard-hats and safety glasses to equip the entire construction team; however, individual members will be required to provide their own steel-toed boots. Appropriate clothing includes, but is not limited to: long pants or jeans, work appropriate gloves, and a shirt with at least 3” sleeves as well as all of the equipment listed at the top of this paragraph. Glasses and glove clips can be utilized to help organize safety equipment on site. If an appropriate solution is not obvious, the member shall consult with the Team Safety Officer, Project Manager, the Solar Decathlon Organizers, or refer to OSH Regulation.

Compressed air equipment: N/A. The Illinois Solar Decathlon Team will not use compressed air during the competition.

Compressed gas cylinders: N/A. The Illinois Solar Decathlon Team will not use compressed gas during the competition.

Cranes and rigging: The Illinois Solar Decathlon will utilize a crane and rigging for the installation of our home module, approximately 14' x 53' 6" onto a series of approximately 20 concrete footings with adjustable steel shims. This phase is extremely dangerous and will be handled with extreme care. All crane and rigging activity will be performed by a contractor which specializes in moves of this type. No Illinois Solar Decathlon Team members will be responsible for any crane or rigging activities. All members on Lot 120 at that time will be required to wear all safety equipment and an additional visible vest. All actions should flow through the project manager and the crane shall only be operated by a licensed individual holding all permits required for operation on the National Mall in Washington D.C.

Electrical systems and equipment, including photovoltaic systems: Team Illinois will use the NFPA 70E standard for electrical safety in the workplace as the guidelines for electrical safety in and around the Solar Decathlon project. This standard is related to the National Electric Code (NEC) which is regulated by the National Fire Protection Association. NFPA 70E attempts to protect workers from 3 different types of hazards: Electrical Shock and Electrocutation, Arc Flash, and Arc Blast. It also gives the main rules of electrical safety which the Illinois Solar Decathlon Team will follow. First and foremost, Team Illinois will work de-energized as much as possible through the use of a lockout/tagout system. This system will contain a lock on the tag to comply with OSHA standard CFR 1910.333 (b) (2). The voltage will be tested with a voltage probe, and other verification means such as the attempted use of circuit elements or electrical equipment will be employed to ensure lockout/tagout. Testing the zero energy state of the lockout/tagout system will be done with the utmost care using approved personal protective equipment and an approved metering device or test probe. Personal Protective equipment for testing the lockout/tagout system will consist of a hardhat, non conductive safety goggles, flame resistant long sleeve shirt, denim jeans, leather boots, voltage rated gloves, and voltage rated tools. A stamped category III or category IV Multimeter is the only acceptable way of testing voltage. Also, the team will use NEC labeling requirements to label all aspects of the electrical system and electrical/mechanical closet. Anyone who works on any part of the electrical system shall be trained and qualified to work on this system. Follow all standard OSH requirements and procedures.

Emergency response, first aid, and medical services: For detailed information see the "Accident Response" section near the beginning of this article. First Aid kits will be both in the house, and with the tools on the worksite. Medical services during construction and deconstruction will be nearby per the Organizers Safety Plan. A list of nearby medical facilities will be in the house at all times.

Erosion Control: At all points during the construction, the team shall work to limit erosion from the National Mall. The home has been designed to distribute rainwater across the building instead of draining to a single location and the footings are designed to rest on the mall with a weight less than

1000 psf. These erosion control techniques will be implemented as soon as our house is set on the site as the house will be placed with these features intact.

Fall protection: Whenever a team member is working on the Illinois Solar Decathlon Site at a height equal to or greater than six feet above grade, a fall arrest system will be implemented. The fall arrest system utilized by the Illinois Solar Decathlon team will include all necessary equipment which will include, but is not limited to Anchorage, Anchorage Connector, a Full-Body Harness, a Shock Absorbing (or Self-Retracting) Lanyard, and a Self-Retracting Lifeline. All support systems shall be OSHA approved devices and comply with applicable codes and standards including an anchorage and lanyard capable of holding 5000 lbs per worker, a full-body harness, and a compliant connector dependant on task which can be either a shock-absorbing lanyard or self-retracting lifeline, or both. The self-retracting lanyard and lifeline will limit the free-fall distance to around 2 feet from the normal 3.5 feet of a shock absorbing lanyard. The anchorage will be set into the structural ridge beam of the roof when installing roofing and PV panels and will be up to OSHA regulations. Pre event training and use of this equipment will be invaluable to the team in determining and eliminating risks.

Fire prevention and response: The home has been equipped with hard-wired smoke detectors including battery back-up. In addition, the home has been designed to meet the Solar Decathlon Building Code and International Building Code, utilizing 5/8" gypsum board interior finishes throughout. Fire response has been detailed thoroughly at the end of this document under the heading "Fire & Life Safety Plan."

General rules and regulations: The Illinois Solar Decathlon team will follow all safety rules outlined in this guidebook. All team members will be responsible for their knowledge of the rules outlined in this document. Adherence to all these rules and adapting to any changing safety situation as they arise is the top priority for the Illinois Solar Decathlon team. All members will follow all standard OSH requirements and procedures & Solar Decathlon Organizers supplemental rules.

Hand and power tools: Follow all standard OSH requirements and procedures. In addition, access to all hand and power tools will be regulated and controlled by the on-site project manager. When not in use, all equipment will be stored in a secured location. Only those members knowledgeable in the safe operation of any potentially dangerous tool will be allowed access. Jobsite electric tools to include: cordless drills, belt and orbital sander, circular saw, chop saw, and jig saw. Jobsite hand tools to include: screwdrivers, tape measure, utility knife, socket wrench, pliers, wire cutters, clamps, hammers, level, hand wrenches, and paint brushes. The guidelines the Illinois Solar Decathlon team will follow are: never carry a tool by the cord or hose, never pull the cord or hose to disconnect it, keep cords and hoses away from any hazards or sharp objects, disconnect tools when not in use and before servicing, secure objects with clamps or a vise to allow easier operation, follow all maintenance instructions, operate tools in specified areas, and store tools when not in use to prevent damage and abuse.

Hazard communication: Following OSHA Standard CFR 1910.1200, team members will be made aware of potential hazards. Within the Illinois Solar Decathlon house there will be a set of technical data and material safety data sheets for all products in use. The Illinois Solar Decathlon team will also provide any

training that may relate to the use of any hazardous substance used on Lot 120. The Illinois Solar Decathlon Team does not believe any hazardous material, chemical, drug, or cosmetic will be within Lot 120 besides normal household items such as cleaning products, wood, and touch up paint.

Hazardous waste: The Illinois Solar Decathlon team does not expect to generate any hazardous waste while competition on the National Mall in Washington D.C. A drip pan will be provided beneath any generators or gasoline powered equipment used during construction and any waste will be transferred to an approved container and disposed of legally and properly at an off-site location. The team shall not dispose of any hazardous materials in the Solar Decathlon Organizers or the National Park Service trash receptacles or facilities. If any question arises, a team member shall contact the Team Safety Officer or Event Supervisor.

Hazardous work permits (e.g., welding, confined space entry): The Illinois Solar Decathlon Team does not expect to require any hazardous work permits, but if this need arises all OSHA requirements shall be followed and applicable permits received.

Hearing conservation: The Illinois Solar Decathlon team will follow all standard OSH requirements and procedures including Standards 29-CFR Occupational noise exposure - 1926.52. Any exposure above these levels will be limited through use of personal ear protection such as ear plugs or ear muffs.

Heavy equipment operations: All crane, forklift, semi-trailer or other similar operators shall be trained and certified for the safe and effective use of their equipment. All standard OSH requirements and procedures will be followed.

Housekeeping: The Illinois Solar Decathlon will maintain a commitment to a clean and safe work space for all individual team members as well as visitors to the lot. All team members will be expected to participate in proper site maintenance and a thorough inspection of the entire site will be conducted at the end of each work day to ensure effective and safe operation. In addition, housekeeping or hazardous waste trays will be provided beneath all fossil-fueled equipment during operation to prevent any spillage onto the National Mall. Any potentially hazardous waste will be discarded off-site in a legal and appropriate fashion.

Ladders: The ladders used by the Illinois Solar Decathlon team will be specifically selected for the application they are being used for. All ladders should be set using the four-to-one rule to find the correct angle for the ladder. This means the base of the ladder should be one foot away from the building for every four feet of height. Any extension ladder will be extended at least 36 inches or 3 rungs above the area it serves. Basic ladder safety guidelines for the Illinois Solar Decathlon team are: raise and lower loads by hand line or hoist, keep three points of contact with the ladder at all times when climbing or descending, have only one person at a time on the ladder, keep the center of gravity of the body between the rails of the ladder, and always have help setting and moving ladders.

Scaffolds: A scaffolding system will be implemented to allow easier access to the roof. The system will consist of 6 towers, 3 on each side of the house, and 4 walkways 24' in length, 2 on each side of the

house. All of the towers and walkways will utilize a guardrail on the exterior edge to minimize the risk of a fall. Guardrails will be able to withstand a top rail load of 200 pounds. The top rail will be between 38" and 45" above the height of the platform surface and a middle rail will be placed midway between the top rail and the platform surface. However, if there is a clear distance of more than 19" in the rail system, a second rail will be used. Toe boards will also be implemented along the entire length. The platforms will be secured to the frames as to resist wind uplift. Pins will lock together the frames so that they do not have the opportunity to separate when in use. The footings for the scaffolding will be manufactured as to be large and stable as well as to spread the weight of the system across the ground per DOE and National Park rules. Walkways and platforms will be secured to each other to eliminate any potential movement in the system. Since the ratio of height to width is less than 4:1, no horizontal guide wires or other attachments to deal with lateral loads are necessary. Access to the scaffolding system will be by one ladder on each of the corner towers. Due to the short height of the towers, roof material can be handed from the ground to the walkways easily. If the objects are small and unable to be handed up, a hand line will be utilized. The area directly under the scaffolding will be blocked off for overhead protection. Pre event training and use of this equipment will be invaluable to the team in determining and eliminating risks. All training in this specific technique and equipment will be undertaken before use of the system. All standard OSH requirements and procedures will be followed. In addition, the team will require approved harnesses whenever a team member works more than six feet above grade if the scaffolding is somehow inadequate or compromised for any reason.

Lifting: General guidelines for lifting that the Illinois Solar Decathlon team will follow are: a) Assess the lift and know the weight, b) Bend knees and get a good grip, c) Keep the back straight and lift straight up with legs without twisting. Proper footwear, gloves, equipment and technique will be used for lifting. At this time the largest lifting concern for the team is the foundation pieces. All standard OSH requirements and procedures will be followed.

Lockout/Tagout: Refer to the "electrical systems and equipment" section above.

Material handling: A cart will be used to help move footings for the house over the larger distances. All standard OSH requirements and procedures will be followed.

Medical monitoring: We plan to monitor for basic health problems such as overheating/ heat exhaustion, dehydration, and overall exhaustion throughout the construction process as well as follow all standard OSH requirements and procedures.

Motor vehicle operations: Follow all standard OSH requirements and procedures. The team shall follow all Solar Decathlon Organizer requirements with respect to allowing motor vehicles on the National Mall and will only allow licensed and properly certified individuals to operate such equipment. All utilization of University of Illinois vehicles will also be limited to those individuals who have received adequate training from the Vehicle Pool at the Illinois Campus and who are current employees of the school. Any driving on the mall itself will utilize DuraDeck as a safety precaution for participants and the grass.

Personal protective equipment: Follow all standard OSH requirements and procedures. At all times during the assembly stage of operations, until the home has been approved for occupancy by the Solar Decathlon Organizers, the Illinois Team and any visitors to the lot will be required to wear appropriate clothing, hard-hats, protective eyewear and steel-toed boots. It is the responsibility of each individual to ensure that they obtain and understand all required equipment and the goal of the Team Safety Officer to ensure complete compliance. The Illinois Solar Decathlon will provide sufficient hard-hats and safety eyewear for all members of the team or construction sequence and will require each member to provide appropriate boots and clothing.

Signs and barricades: During the construction of the home, the team will work to limit traffic flow into and through the job site and will provide signs and barricades as necessary to encourage a safe, clean and efficient operation. During the tours, the team will limit public access to those areas that are deemed safe for occupancy and will secure any potentially hazardous equipment or services. All required signs or warnings for electrical or other equipment will be posted in accordance with applicable law. Follow all standard OSH requirements and procedures.

Storage Tanks: Follow all standard OSH requirements and procedures. Water shall be provided to the team at the beginning of the competition and stored in a clean water storage tank. During the competition, all gray water will be deposited in a separate storage tank. There will be no attempted re-use of gray water during the competition.

Welding, Cutting, and Hot work: N/A: At this time the Illinois Solar Decathlon team is not planning on any work of this type on Mall in Washington DC.

Training & Inspections

The Illinois Solar Decathlon will require all team members to read the safety plan and become familiar with the OSHA regulations and procedures regarding a safe work environment before participating in any construction activity, either at the University of Illinois Urbana-Champaign or on the National Mall in Washington D.C. Team members shall be prepared to attend and participate in periodic safety meetings and briefings conducted by the Solar Decathlon Team Organizers as required and shall assist any student or Event Safety Officer in determining or correcting the safety within the Illinois Lot. At least one member of the Illinois Solar Decathlon team will go through the OSHA 10 hour training course and receive their certification before the competition. At this time, the entire team is planning on taking the course through a special session with an OSHA certified instructor. One of these team members will be in charge of the fall protection system including the tasks of roofing and P.V. panel installation.

The Illinois Safety Officer shall be responsible for compliance with this Safety Plan and the successful implementation of a safe and secure job site during the assembly and deconstruction phases of the competition. This officer shall work in collaboration with the Solar Decathlon Organizers and any requirement for safety inspections. In addition, the team shall work together to ensure a safe environment during the public tour and contest week and will encourage an open and unbiased discussion about any possible situations.

The Illinois Solar Decathlon team will conduct daily inspections at the start of each workday and at the end of each workday. Depending on schedule of work, the Illinois Safety Officer and/or Faculty Advisor will carry out inspections at roughly four hour intervals during or following their lunch and dinner breaks.

The team shall feel free to report any suspected or determined deficiency to any member of the Illinois Team, including the Safety Officer or the Solar Decathlon Organizers. The team shall then contact the Safety Officer who will work to correct any potential deficiency.

Work Site Personal Protective Equipment

The Illinois Solar Decathlon will require all team members to comply with OSHA and Solar Decathlon Organizer regulations with regard to personal protective equipments at all times during the assembly and deconstruction phases of the competition, until the house is deemed safe for occupancy and during any subsequent activity that requires for protection to ensure a safe operation.

The team shall follow the requirements of the Solar Decathlon Organizers for PPE, as follows:

“Mandatory: During the Assembly and Disassembly phases, ALL Organizers, Event Staff, Team Members, Team Crew, and ALL visitors shall wear at all times, at a minimum, a hard hat, safety glasses, shirts with sleeve length greater than 3 in., long pants, and safety boots. Additional PPE, including but not limited to, hearing protection and an ANSI Class II reflective safety vest may be required, depending on the task.”

Work Site Personal Protective Equipment

The Illinois Solar Decathlon will monitor weather on a continuous basis, not only to determine the proper strategy for competition performance, but also with regard to safety. Potential situations include thunderstorms, heavy rain, winds, lightning, hurricanes and thunderstorms. The Illinois home has been designed to withstand 90 mph winds and resist uplift under these circumstances. In addition, the home has been grounded to protect against lightning strikes and should remain a safe area throughout the competition. If potentially dangerous situations arise, the team will be instructed to relocate to a local building, such as one of the nearby Smithsonian museums or Metro stops. All weather related concerns with regard to work stoppage will fall under the direction of the Solar Decathlon Event Organizers and the Team Safety Officer although each individual team member has the ability to request a “stop-work” order after discussions with the Project Manager and Team Safety Officer

Fire & Life Safety Plan

Possible fire and smoke sources to be aware of include the stove and microwave, the refrigerator, washer dryer and other mechanical equipment located throughout the home. Other possibilities include all electrical appliances and the lighting system. Depending on the source of the fire, tour guides will choose the safest route available to direct evacuees.

In the event of an emergency, the tour guides will move to the locations indicated on the interior and exterior evacuation plans and will follow the procedures outlined below. Primary tripping hazards include the coffee tables, the floor lamps, the office chair, the table, and the bed. In the event of an evacuation, tour guides will ensure that evacuees move calmly to avoid these hazards. All routes of egress comply with IBC 1003.3.

The closest available Illinois Tour Guide, usually Tour Guide 4, will move to the electrical box located inside the north hall closet and, if it is safe and appropriate to do so, will throw the appropriate switches, which will be clearly identified and labeled, including disconnects to interrupt power from the inverters to the house, disconnects to interrupt power from the PV Arrays, and disconnects to interrupt power from the Solar Decathlon Electric Grid to the house.

Before any team member becomes an Illinois Tour Guide, the Electrical Team Leader will show the member the location of each switch, the location of fire extinguishers and will be provided with emergency contact information. The guide nearest the electrical equipment and fire extinguisher, most likely Guide 4, will be required to have a cellular phone to be used in case of emergency. If appropriate, the Illinois Tour Guide will also retrieve the fire extinguisher from its location and wait for complete evacuation. The fire extinguisher will be used only if it is safe to do so.

Tour Guides 1 and 6 will move to the side of the house to direct evacuees coming from the South and West sides of the house to move to the other side of the street. These individual will also be responsible for preventing non-emergency personnel from entering the site. When the site is evacuated, T2 will continue to keep non-emergency personnel from entering the site.

Tour Guides 2 and 3 will maintain a position at the exterior doors to encourage movement out of the house and away from the building or potential situation.

Tour Guide 5 will move into a central location within the house and direct individuals toward the nearest exit. After the house is evacuated, team members shall assess whether it is safe to use a fire extinguisher. If it is not, the guide will evacuate and close doors.

Any additional tour guides on the site during an emergency evacuation will move to assist the nearest team primary tour guide, T1 through T6, which will be assigned at the beginning of each tour shift. In the event of an injury, team members should follow the emergency procedure, outlined previously.

Conclusion

The Illinois Solar Decathlon maintains a commitment to the safety of all individuals involved with the competition, including but not limited to students, faculty, organizers, vendors, visitors and event staff. A primary concern, the entire team will work together to maintain a safe and healthy work place throughout the competition. This Safety Plan should serve as a guide with regard to site operations and activities but should not be used in replacement of common sense or individual concerns. The team should feel open, at any time for any reason, to discuss concerns with the Team Safety Officer or Project Manager.

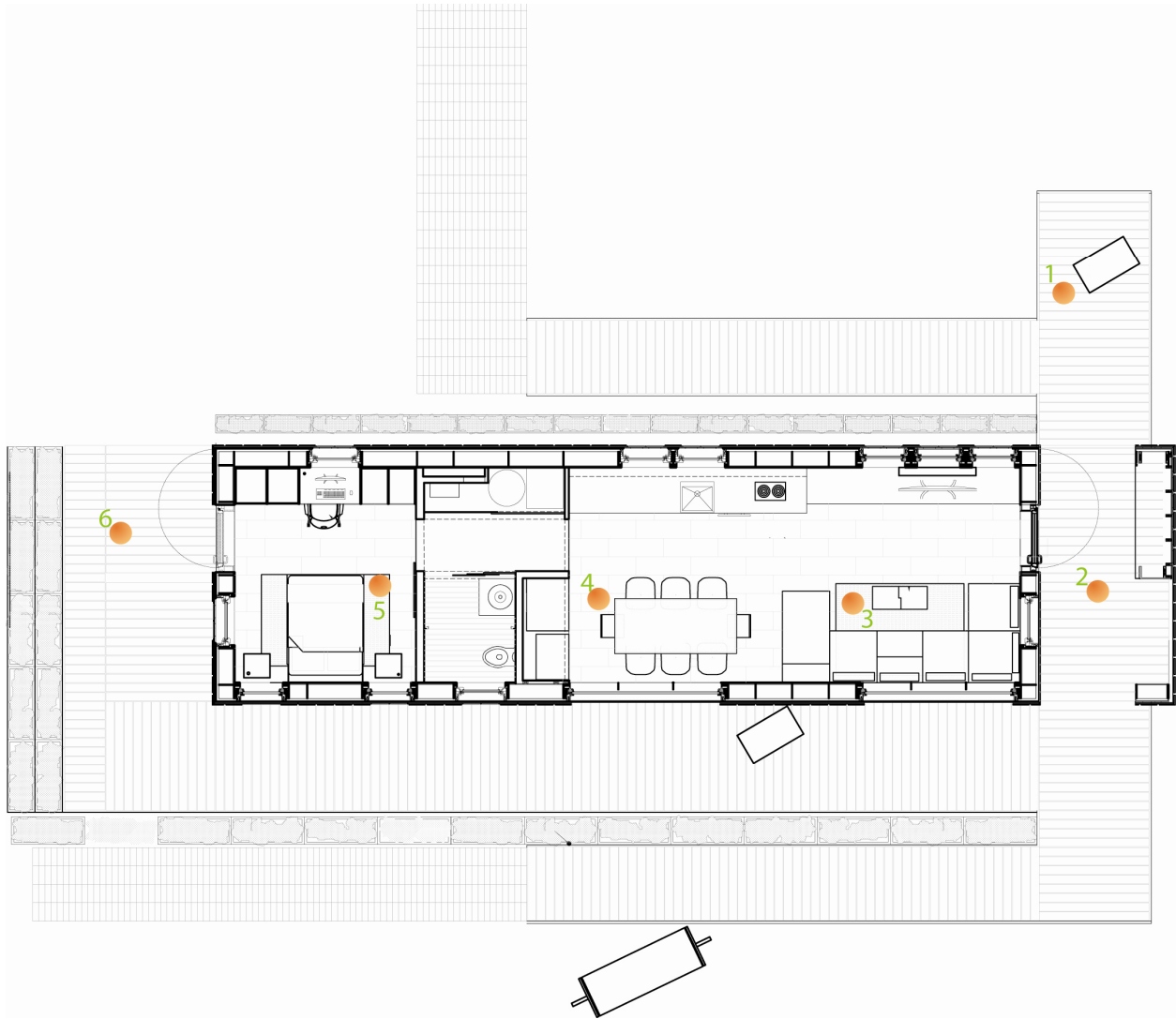


Figure 1. Tour Overview & Guide Location

Purpose

This form shall be used to report incidents and accidents that occur while transporting, assembling, maintaining, operating, or disassembling a Solar Decathlon house or any other equipment or structures associated with the Event. Incidents and accidents include, but are not limited to, any physical injury and any work-site incident or accident that did or could have resulted in injury or property damage (e.g., falling objects, any electrical shock (even a tingle), arcing, allergic reactions, headaches from fumes, back injury). An incident report form shall be completed and submitted to Solar Decathlon Headquarters even if no injury or property damage occurred.

Investigations and Corrective Actions

Usually, minor incidents lead to accidents with personal injury or property damage. The Team safety officer shall perform an investigation to identify causes. The Team should then perform any corrective actions. On a confidential basis, the information on this report shall be shared with other Solar Decathlon Teams to minimize the potential for recurrence.

THIS REPORT IS TO BE COMPLETED AND RETURNED TO SOLAR DECATHLON HEADQUARTERS PROMPTLY AFTER AN INCIDENT/ACCIDENT OCCURS.

Describe the following details of the incident/accident. Additional sheets may be used if necessary.

1. **Date:** _____

2. **Time:** _____

3. **Location:** _____

4. **Incident/Accident Description:**

5. **Causal Factors:** (List the basic causes. A basic cause is any cause that, if eliminated, would have prevented the incident/accident. Contributing causes may also be listed, but should not be confused with basic causes.)

6. **Corrective Actions to Prevent Recurrence:** (Indicate whether actions have been taken or are planned, as well as the person responsible for each action and the date by which planned actions shall be completed.)

7. **Lessons Learned:** (What would you communicate to other Solar Decathlon Teams as a result of this incident/accident?)

Completed by: _____ Date: _____

Faculty Advisor: _____ Date: _____

To be completed by Solar Decathlon Headquarters

Reviewed by: _____ Date: _____

Comments: