

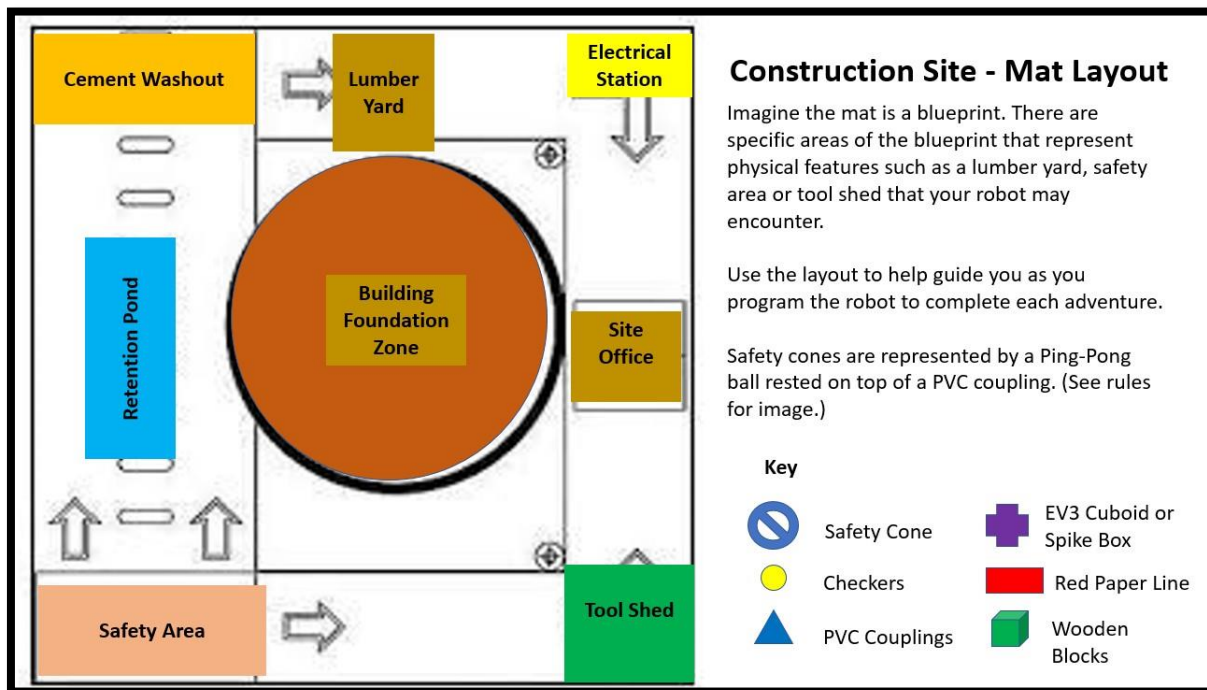


Construction Site Jobs

In “Building a Brighter Future” a team’s robot will have five minutes to complete various jobs. The jobs will be set-up in the following order: Job #1, Job #2, Job #3, and, for Middle School, Job #4. Jobs must be completed in order (1,2,3,4) and once a team moves onto the next job, they may not reattempt a previous job. Remember that each job completed by the robot accumulates points, and the points for each job will be assessed as the job is completed. Jobs allow for the opportunity to earn partial points and students should be encouraged to allow the robot to run its program rather than resetting multiple times, as they may still earn points. For Middle School, the additional job, #4, comes after jobs 1-3.

Site Office

The Site Office area is where your robot will start and finish all events. The various areas of the mat are shown below. To begin each job, robots must have both drive wheels touching the Site Office area on the mat in order to be considered “IN” the Site Office. Robots can earn additional points if one wheel is in the Site Office at the end of a job (except for job #3 and #4, (see details below for ending requirements)). One wheel must remain on the mat at all times. If both wheels leave the mat, the team will receive a point deduction. **Note:** Job #3 and 4 will possibly utilize the robotic container tub and the judge will determine the placement of the tub once the job begins. Please see jobs #3 and 4 for more details related to these scenarios. Also, for job #4, the judge will instruct students to scan either a blue or green piece of paper which will result in different actions based on the scanned color.



Safety Cones

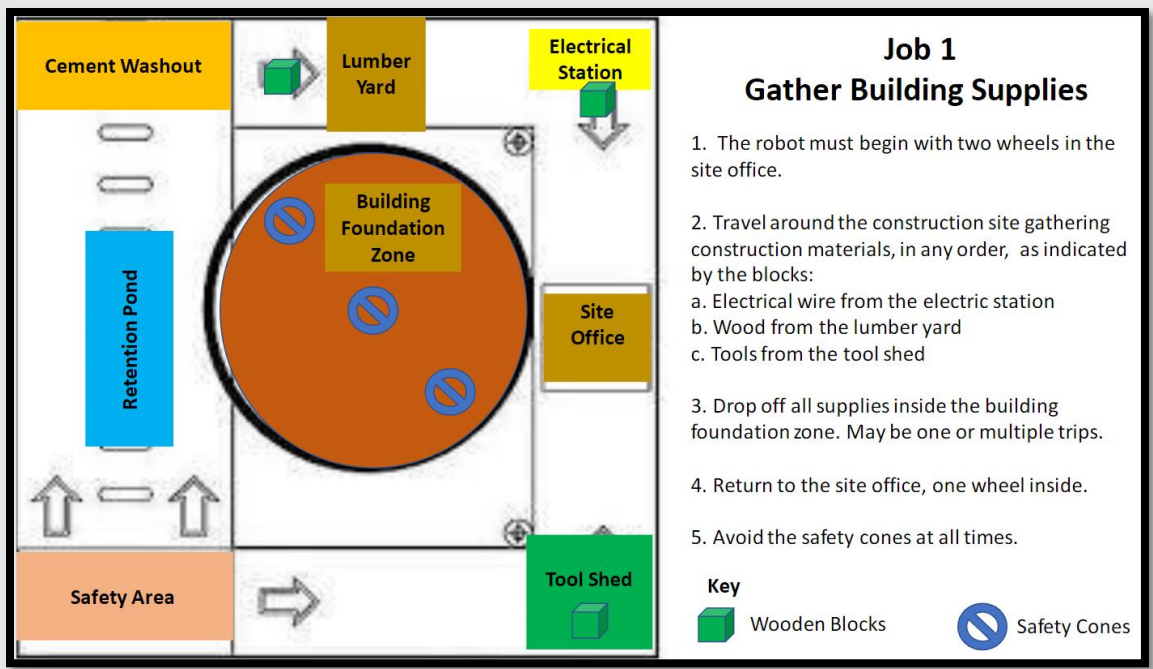
During the competition the robot must avoid the safety cones. Safety cones are created by placing a ping pong ball on top of the PVC coupling. A safety cone is considered touched if the ping pong ball is knocked off the PVC coupling. Neither the PVC coupling nor the ping pong balls should be altered, glued, or modified in any way to prevent them from falling off.





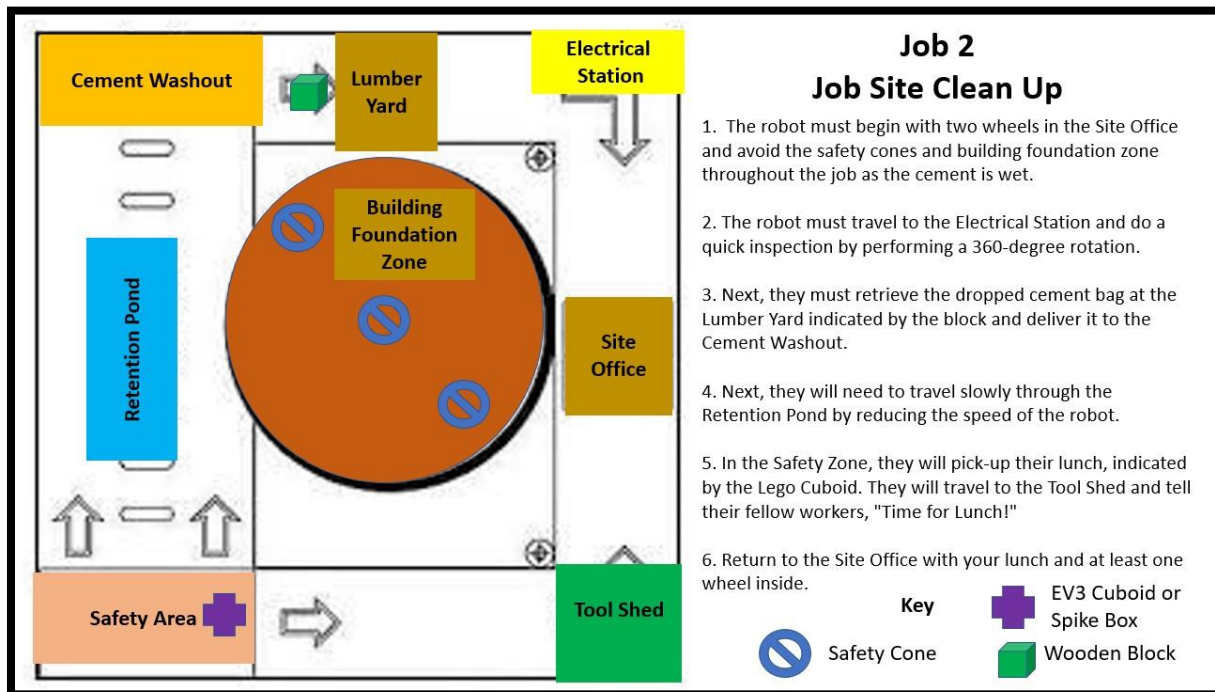
Job 1 – Gather Building Supplies

The robot will start with two wheels in the Site Office. The robot must travel around the construction site gathering building supplies to complete their building project. The items needed are represented by the green wooden blocks on the map. The materials may be collected on one or multiple trips and in any order. All materials must be returned and remain in the Building Foundation Zone. If an item is pushed out of the Building Foundation Zone, even if already left there, it will not be considered dropped off. The robot may enter the Building Foundation Zone but must avoid disturbing the safety cones, represented by the ping-pong balls resting on PVC couplings. To end the job, the robot must return to the Site Office with at least one wheel inside the Site Office.



Job 2 – Job Site Clean Up

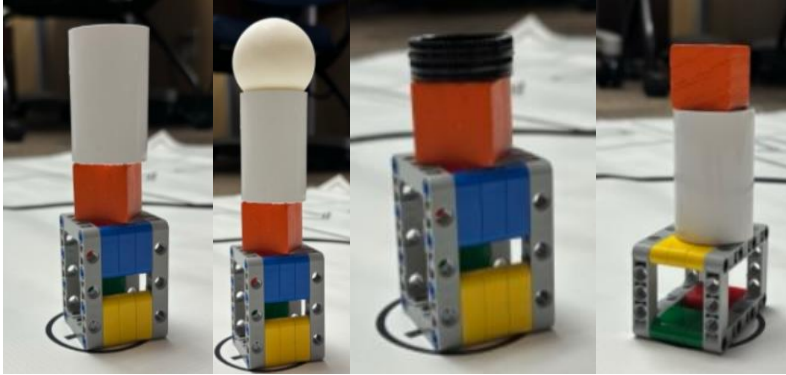
The robot will begin with two wheels in the Site Office and then travel to the Electrical Station. While travelling through the job site to clean up, the robot must not touch the safety cones or Building Foundation Zone, as the cement is wet. Once in the Electrical Station, the robot will do a quick inspection by performing a 360-degree rotation. Then, the robot must travel to the Lumber Yard to retrieve the dropped cement bag (represented by the block) and deliver it to the Cement Washout. Next, the robot will travel slowly through the retention pond, by reducing the speed of the robot. After the robot goes through the retention pond, it will travel to the Safety Zone to pick up lunch (represented by the EV3 Cuboid or Spike Prime Box). With the lunch, it will need to travel to the Tool Shed and tell fellow workers, "Time for Lunch!" Afterwards, the robot will return to the Site Office with lunch. Stop with lunch (at least 1 wheel inside the Site Office).



Job 3 – Demolition Time

The robot must begin with two wheels inside the Site Office. The robot must enter the Building Foundation Zone and demolish the scaffold. A successful demolition is when the top item is knocked down from the scaffold.

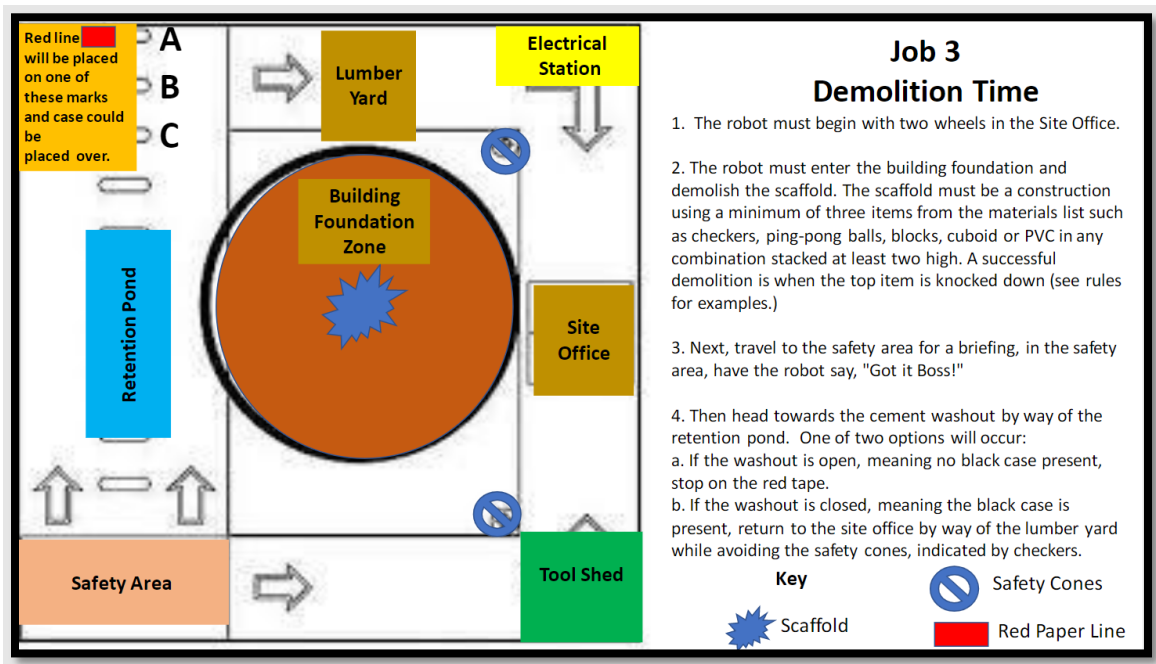
Examples of scaffolds that could be build:



The robot will then travel through the Tool Shed before stopping at the Safety Area for a briefing. The robot must have both wheels in the Safety Area and say, "Got it Boss!"

The robot will then leave the Safety Area and head to the Cement Washout by way of the Retention Pond. As they approach the Retention Pond, the robot will have two scenarios:

- Scenario #1: If the Washout is open, meaning no black case is present, the robot will need to stop where the Red Tape has been placed (judge will indicate if it is line A B or C).
- Scenario #2: If the Washout is closed, the black Lego case will be present and the robot will need to stop before touching the case.



Job 4 – Design and Construction

The robot must start with both wheels inside of the Site Office. A blue or green piece of paper will be given to the workers in which they must scan. Based on the color scan, the robot will perform one of two tasks:

- Scenario #1 - If a blue strip of paper is scanned, the robot must travel to the Electric Station, raise its arm up and down and then travel to the Cement Washout Area.
- Scenario #2 - If a green strip of paper is scanned, the robot must travel to the Tool Shed and raise its arm up and down before traveling to the Safety Area.

At any time during this job, the Lego Case may come into play.

- Scenario #1 – If the case becomes present, the robot must stop, turn around, and say “Time to Go Home!”
- Scenario #2 – If the case is not present, then the robot must continue with its current program.

Throughout the competition, the robot must avoid knocking over the safety cones.

