

# Smart Move

## Missions, Game Q&A, Field Setup, Project

### MISSIONS

#### Robot Game Overview

The Smart Move Robot Game gives you first-hand experience in getting a sensor-equipped vehicle (your robot) to ***gain access to places and things***, while ***avoiding or surviving impacts***, all in a test environment...

Imagine if you could program a vehicle to take you places, or even go by itself...

Imagine if each vehicle knew where all the other ones were...

Imagine if vehicles could avoid each other and the things around them...

Imagine if vehicles could be programmed to avoid causing or driving into traffic jams...

Would traffic signals be needed any more?

If these vehicles did hit each other...

How might they be built to really keep passengers safe?

How might they be built to avoid getting stuck or damaged?

Have you noticed that most vehicles near where you live are only used part of the day?

How might the number of vehicles in your area be reduced?

What new technologies could sometimes eliminate your need to travel?

Now in addition to imagining and wondering... Try some of this yourself!

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 **MISSION: GAIN ACCESS TO PLACES (choose one)...** Required Condition: Your vehicle needs to be in one of these positions exactly as the match ends (this mission does not affect others):

 **TARGET SPOT** - Required Condition: Parked with its drive wheels or treads touching the round target.

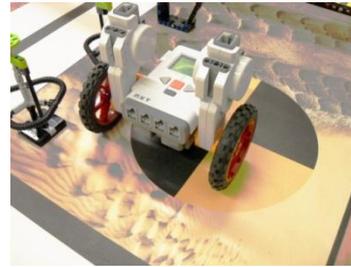
Value: 25 points.



Before



Scoring Example



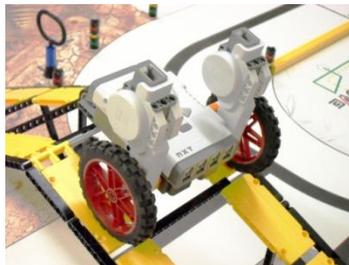
Scoring Example

**YELLOW BRIDGE DECK** - Required Condition: Parked with its drive wheels or treads touching your yellow bridge decking, but not touching any red decking or the mat.

Value: 20 points.



Before



Scoring Example



Scoring Example

**VEHICLE SHARING** - Required Condition: Parked with its drive wheels or treads touching your red bridge decking, but not touching the mat.

Value: 25 points.



Before



Scoring Example



Scoring Example

**MISSION: GAIN ACCESS TO THINGS...**

**ACCESS MARKERS** - Required Condition: Access markers need to be in their "down" position.

Value: 25 points each.



Before



Scoring Example



Scoring Example

**MISSION: GAIN ACCESS TO THINGS...**

**LOOPS** - Required Condition: Loops need to be in Base.

Value: 10 points each.



Before



Scoring Example



Scoring Example

**BONUS:** New technologies can sometimes eliminate your need to travel. They are hard to develop, but each new one makes the next come easier... If all three gray loops have reached Base, you may take one red loop into Base by hand. Independent from that, if all three red loops have reached Base, you may take one loop of any color into Base by hand. Once earned, these hand freedoms (which are a special exception to the rules) may be used any time before the match ends.



**MISSION: AVOID IMPACTS...**

**WARNING BEACONS** - Required Condition: Warning beacons need to be upright (square to the mat).

Value: 10 points each.

ALSO: Warning beacons are the touch penalty objects for the Smart Move Robot Game. This means each time you touch your vehicle while it's completely out of Base, the referee removes one upright beacon. The beacons are removed in order from south to north, then from west to east. If there are no upright beacons at the time of the touch, there is no penalty.



Before



Scoring Example



Scoring Example

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## MISSION: AVOID IMPACTS...

**SENSOR WALLS (AVOIDANCE OPTION):** Required Condition: Sensor walls need to be upright (square to the mat). Any four walls can count. Only four walls can count. Each upright sensor wall also requires a "down" access marker. Example: If there are four upright walls but only three access markers down, only three walls count.

Value: 10 points each, max 40.



Before



Scoring Example



Scoring Example

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**MISSION: SURVIVE IMPACTS...**

**SENSOR WALLS (IMPACT OPTION):** Required Condition: No (zero) sensor walls are upright.

Value: 40 points.



Before



Scoring Example



Scoring Example

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**MISSION: SURVIVE IMPACTS...**

**VEHICLE IMPACT TEST:** Required Condition: The truck needs to no longer touch the ramp's red stopper beam. Your entire vehicle needs to be completely out of Base when it produces the required condition, otherwise the referee removes two upright warning beacons (in the same manner as two touch penalties).

Value: 20 points.



Before



Scoring Example



Scoring Example

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**MISSION: SURVIVE IMPACTS...**

**SINGLE PASSENGER RESTRAINT TEST:** Required Conditions: The crash-test figure needs to be aboard your vehicle for the entire match. The first time your vehicle is without the figure, the referee removes the figure. Any constraint system is okay as long as the figure can be separated quickly after the match.

Value: 15 points.



Before



Scoring Example



Scoring Example

## MISSION: SURVIVE IMPACTS...

**MULTIPLE PASSENGER SAFETY TEST:** Required Condition: All four people are sitting or standing in or on a transport device of your design, and some portion of that object is in the round target area.

Value: 10 points.



Before



Scoring Example



Scoring Example

## GAME Q&A

### 1 - STUCK LOOPS

The loops on axles on the south-most wall should be placed there gently and not pressed on.

## 2 - YELLOW "GUIDE" WALL PLACEMENT

We are seeing up to 1/4" (6mm) shortness in production mat length east/west when measured from mat center. Be aware of this while designing and programming. Also, this causes the yellow "Guide Wall" models to sometimes appear too long and not fit on their mat markings. Our consistent response to this shall be to fit the non-elbow end of each guide wall into the mark, and accept any imperfection at the elbow end. North/South dimensions are okay.

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## 3 - COLOR SENSOR

Since the "Color Sensor" contained in commercially available LEGO sets does not appear on the list of allowable electrical parts in Rule 2, it's not allowed, even if you were hoping to use it as a light sensor.

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## 4 - DRIVE WHEEL(S)

Where the plural form of "wheels or treads" causes you confusion, at least one wheel or tread will work. Re-re-stated: One or more will work.

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## 5 - TETHER ANCHOR

Rule 23 applies whether or not there happens to be an anchor at the end of the tether.

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## 6 - FIFTH WALL

The wall on top of the columns is not upright. In fact, it's as far from upright as a wall can get. But that wall is still a wall, and at the end of the match, the referee will either record it as upright, or not upright.

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## 7 - STRAY OBJECT EXCEPTIONS - 1

Exception to the third bullet in Rule 25: The truck when not in contact with the red beam may be considered stray. The red beam with no truck will still be worth points.

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## 8 - ADDING TO MISSION MODELS

Your hands can only operate in Base to add pieces to models. 2009 Rule Change A does not give you any new freedom to touch models outside Base. That would violate Rules 17 and 27.

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#### 9 - PARKED

Where the robot is required to be PARKED at the end of the match, it must be permanently stopped by the time the end-of-match signal starts.

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#### 10 - EXTENDING TO BASE IS NOT REACHING BASE

The 5th part of Rule 17 was offered as a friendly relief for robots which were engineered to return to Base, but needed a break upon entering, due to kid excitement or a bad angle. But in the face of growing over-interpretation of that rule change, you are informed here that the term "reaches Base" as used in Rules 17 and 30 shall only apply at the completion of an actual/obvious trip to Base. Extensions which drop, uncoil, shoot, telescope, etc., for the obvious purpose of avoiding the penalty for truly failing or not even trying to engineer a trip to Base will be treated like tethers, and not considered part of the robot.

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#### 11 - QA11 WAS NOT NEEDED

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#### 12 - CRASH-TEST FIGURE

The entire figure must be part of your robot (see Rule 11) from buzzer to buzzer. Rule 16 allows you to place/load the figure aboard the robot before the start. The figure can touch the mat, but it has to stay intact.

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#### 13 - DRIVE WHEEL(S) DEFINED

Drive wheels/treads are those that would continue to move even after you pick your robot up.

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#### 14 - REWARDS

The bridge is the most exciting and challenging model for climbing in the history of FLL. It was designed for pure risk-takers and fun-seekers. But if I valued it for what it's worth, point-chasers would attempt it as well. To see just how many teams would try the bridge without an obvious point-incentive, I assigned the same or less points for it than the target option.

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## 15 - SEPARATED QUICKLY

Please be sure that anything you add to mission models can be removed in about 15 seconds when the ref gives the okay after the match.

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## 16 - ROBOT CAN'T TOUCH MAT

For end-of-match options where the robot's drive wheels are touching yellow or red bridge decking, the robot must not be touching the mat.

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## 17 - STRAY OBJECT EXCEPTIONS - 2

Since sensor walls could score while "upright" as well as "not upright," they could never be removed as stray objects under the original Rule 25. Yet teams are still writing in, wishing to have them removed. So this exception is being given: If a sensor wall has been moved, you may declare it stray, but once any wall is removed from the field, the referee will record the end-of-match condition of all walls to be "only one wall upright," no matter what the actual condition of the walls is. This reduces the max possible overall score you can get for walls to 10 points, so be sure the trade-off is worth it. This wording replaces previous wording from QA7.

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## 18 - OBJECTS AT REST

Objects about to become "stray" (removable) are not actually stray until they come to rest. For example, the truck may NOT be interrupted by hand while it's moving.

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## 19 - TIE-BREAKING

Sorry for rewording this again! In possible/rare cases this year when it's important to break a tie, but the usual tie-breaking comparisons are insufficient, some tournaments may pick a method using stopwatches, or they might hold head-to-head elimination matches. Still others may be able to give out multiple Performance Awards. These and other fair options are possible as decided locally by the people running each event.

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## 20 - NO DUAL LOCK ON ROBOT

Where the Missions tell you "any constraint system is okay," for your crash-test figure aboard your robot, that doesn't mean you can ignore the Parts rule (Rule #2). "Everything you compete with must be made of LEGO elements..." (Dual Lock is not allowed).

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## 21 - STRAY OBJECT SCOPE

The scope of objects that could become stray includes loose, valueless objects (such as the black pillars) as well as loose valuable objects and strategic objects. However, if a Dual-Locked object gets separated from the mat, that's considered "Field Damage" and the referee will restore it (Rule 27).

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## 22 - ROBOT AFTER FIELD DAMAGE

Under Rule 27, the referee is supposed to restore the field to the condition it was in right before the damage. That would (unrealistically) include the robot. Unlike other objects in the field, the robot often continues moving, and may even make new changes before the referee gets to the scene. So these rulings are needed, mostly for referees:

---If the robot damages an access marker while driving over it or getting stuck on it, the team must immediately interrupt the robot, bring it to Base, and lose an upright beacon, if there is one available at that time. Any changes made by the robot after the damage will also be "undone."

---If the robot damages an access marker and either backs or turns successfully away from it, the referee will decide if the damage was obviously intentional.

\*If the damage was obviously intentional, the robot will be interrupted as described above.

\*If the damage had any chance of being accidental, or due to a poor Dual Lock connection, the ref will simply fix the damage, and the robot will not be interrupted.

---Loops and yellow guide walls are known to be fragile, and damage to these will always draw a "benefit of the doubt" call (robot won't be interrupted unless the team wants it). BUT...Don't count on them breaking - tournament organizers have permission to glue them.

---I'm officially not worried about the remaining models.

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## 23 - LOOP BONUSES

The Missions page tells you that the gray loop bonus is independent from the red loop bonus. This means they have nothing to do with each other. This does not mean you can only earn one. You can earn both.

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## 24 - BROKEN LOOPS

Regarding benefit-of-the-doubt calls for broken loops (as provided in QA22) - At the south wall, the referee needs to see a LIFTING attempt in order to doubt the loop or its

setup. When a loop breaks after a tried/failed lift attempt, if the robot can get part of it to Base, it will score. Pulling on it sideways, back & forth, etc., until it snaps will be seen as intentional field damage, and any portion that reaches Base will be taken off the field (no score).

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## 25 - SETUP CALIBRATION

Calibration of light sensors is allowed as part of your setup routine, and it's understood that this needs to be done outside Base. Don't go any farther out of Base than you need to, and don't touch anything but your robot.

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## 26 - MORE FIELD DAMAGE

QA22 was not a license for you to trash the field. Obviously intentional field damage is never allowed. Where QA22 says you can expect a Benefit-Of-The-Doubt call, be sure you're familiar with the last part of Rule 32. There has to be at least some DOUBT - If your robot has just broken or peeled up a yellow wall, for example: If the referee is SURE your strategy was one you knew could regularly break a properly prepared wall, and you either designed it that way or did nothing about it, you'll get this rare but serious "intentional field damage" call. The robot will be interrupted and need to restart, all field changes will be undone, and you could lose a beacon. If you're tempted to either ask about or try to defend your particular wall-wrecking strategy, you should probably skip that step and focus on the robot.

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## 27 - SOME ALLOWABLE STRATEGIES

With tournaments starting soon, it is time for me to share with all teams and referees, confirmation that the following stuff is allowed and/or scorable (there are no new interpretations here - all this comes from a solid knowledge of the missions and rules):

- The robot itself can count as a "transport device of your own design."
- Sensor walls can count as upright anywhere, including Base, and off the edges of the mat.
- Warning beacons in Base can be stood up by hand any time and count as upright there.
- Sitting/standing could be with respect to the vehicle OR the horizon. Either is okay.
- A robot penetrating Base from the north should be treated no differently than one arriving from the east. As soon as it reaches, it can be picked up and taken into Base along with its cargo (if the robot and its attachments otherwise live up to the provisions in QA10 - all features, including the SIZE/LENGTH of the robot need to have an actual function other than being long and reaching Base).

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## 28 - LEGO RUBBER BANDS

Yes, the robber bands/belts that came in your kit are allowable LEGO elements. You'll see them in a variety of colors including red, blue, yellow, and white. Thinner black rubber bands of various sizes are also a common allowable LEGO element.

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## 29 - FIGURE AND ROBOT

No change. The original mission requirement for the figure to be "aboard" the robot was mysterious to many people. So QA12 was written and ruled the figure has to be part of the robot. Rule 11 says to be part of the robot, an object must not fall off when the robot is turned over and shaken. That means the situations in the pictures near the mission text no longer score. Those of you who are confused by this are referred to Rule 33. QA12 applies.

## **FIELD SETUP**

### **OVERVIEW**

- The field is where the Robot Game takes place.
- It consists of a field mat, on a table, with mission models arranged on top.
- The field mat and the LEGO pieces for building the mission models are part of your Field Setup Kit.
- The instructions for building the mission models are on a CD, in the same box as the LEGO pieces.
- The instructions for how to build the table and how to arrange everything on it are here...

### **TABLE CONSTRUCTION**

The Robot Game takes place on a specially designed table, so you'll need to build one to practice on if you don't already have access to one. With safety, weight, height, and cost in mind, a simple design is offered here, but as long as your surface is smooth, and your border walls are located properly, how you build the understructure is up to you. The construction is simple, but does require some wood-working skills.

At a tournament, two tables are placed back to back, but you only operate on one table, so you only need to build one table to practice on. Since a tournament setup has a double wall at the interactive area where the two tables meet, practice tables need an extra wall of type **B** on the corresponding side. So here are the instructions for building one "half-table" including a double north wall:

## Materials

Material	Quantity
Field Setup Kit (mission model LEGO elements, mat, CD, Dual Lock)	1
sanded plywood (or other very smooth board) 96" X 48" X 3/8" or thicker	1
two-by-four, 8' (actual cross-section = 1-1/2" by 3-1/2")	4
two-by-three, 8' (actual cross-section = 1-1/2" by 2-1/2")	2
flat black paint	1 pt. or spray can
coarse drywall screws, 6 X 2-1/2"	1/2 lb.
saw horses, about 24" high and 36" wide	2

## Parts

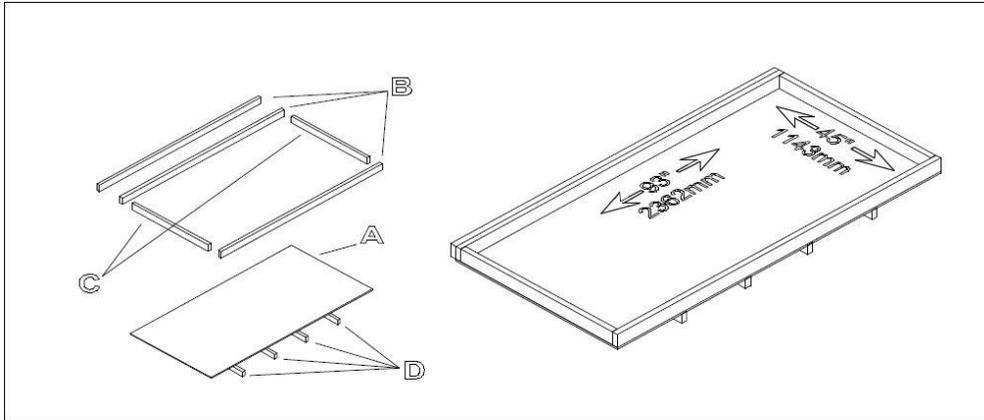
Part	Make From	Dimensions	Paint	Quantity
table surface (A)	plywood	96" X 48"	no	1
long border wall (B)	two-by-four	96"	yes	3
short border wall (C)	two-by-four	45"	yes	2
stiffener (D)	two-by-three	48"	no	4
saw horse	purchase	H » 24" W » 36"	no	2

## Assembly

**Step 1** - Determine which face of the plywood (A) is least smooth, and consider that the bottom face. On the bottom face, locate, clamp, and screw on the stiffeners (D) (about every 18 inches). Be sure screw head tops are flush. Sand any splinters.

**Step 2** - On the top face of the plywood, locate, clamp, and screw on the border walls (B,C) around the top perimeter. The wall-to-wall dimensions must measure  $93 \pm 1/8"$  by  $45 \pm 1/8"$  ( $2362 \pm 3\text{mm}$  by  $1143 \pm 3\text{mm}$ ).

**Step 3** - With the help of another person, place this table top on short saw horses (or milk crates, or anything else short and solid).



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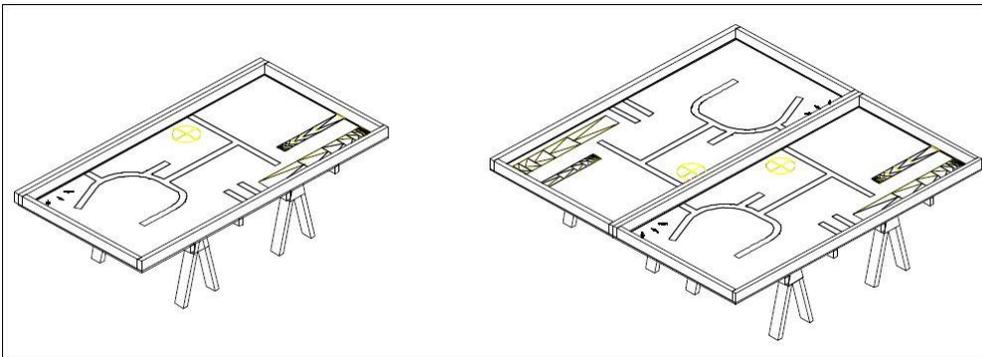
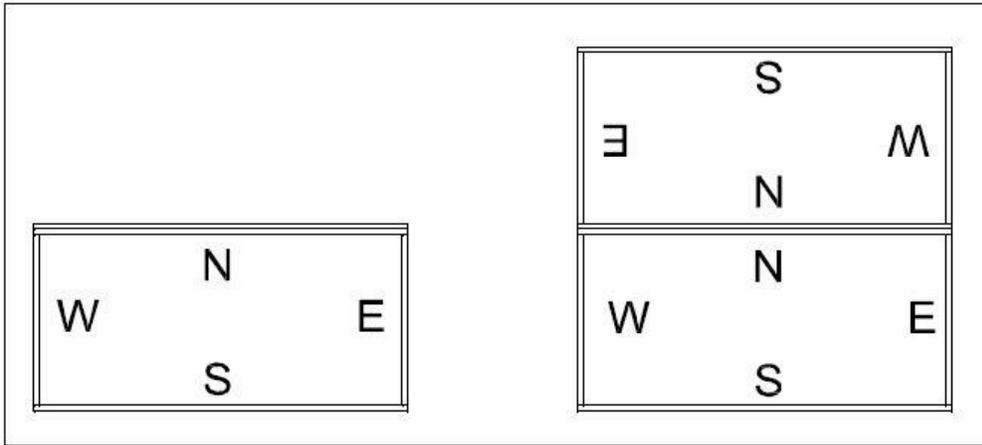
## FIELD MAT PLACEMENT

**Step 1** - Vacuum the table top. Even the tiniest particle under the mat can give the robot trouble. After vacuuming, run your hand over the surface and sand or file down any protruding imperfections you find. Then vacuum again.

**Step 2** - On the vacuumed surface (never unroll the mat in an area where it could pick up particles), unroll the mat so the image is up and its north edge is near the north/double border wall (note the location of the double wall in each table sketch below).

**Step 3** - The mat is smaller than the playing surface by design. Slide and align it so that there is no gap between the south edge of the mat and the south border wall. Center the mat in the east-west direction (look for equal gaps at left and right).

**Step 4** - With help from others, pull the mat at opposite ends and massage out any waviness away from the center and re-check the requirement of Step 3. It is expected that some waviness will persist, but that should relax over time. Some teams use a hair dryer to speed the relaxation of the waviness.



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## MISSION MODEL CONSTRUCTION

Build the mission models - Use the LEGO elements and instruction CD from your Field Setup Kit. It should take a single person between two and three hours to do this, so it's best done in a work party. If there are any team members with little or no experience building with LEGO elements, mission model construction is a great way to learn. This step is also a nice time for new team members to get acquainted with each other.

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## MISSION MODEL ARRANGEMENT - DUAL LOCK

### Dual Lock

For models where "Dual Lock Needed" appears in the mission model details below, that means the model needs to be secured to the mat during use. The connection is made using the re-usable fastening material from 3M called Dual Lock, which comes in the flat clear bag with the LEGO elements in your Field Setup Kit. Dual Lock is designed to stick or "lock" to itself when two faces of it are pressed together, but you can unlock it

too, for ease of transport and storage. The application process for the Dual Lock is only needed once. Later, the models can simply be locked onto the mat or unlocked. To apply Dual Lock:

**Step 1** - Stick one square, adhesive side down, on each box you see on the mat with an "X" in it.

**Step 2** - Press a second square on top of each of those, "Locking" them on, adhesive side up. TIP: Instead of using your finger, use a bit of the wax paper the squares came on.

**Step 3** - Lower the model onto the squares.

**CAUTION** - Be sure to place each square precisely on its box, and each model precisely over its marks.

**CAUTION** - When pressing a model down, press down on its lowest solid structure instead of crushing the whole model. Pull on that same structure if you later need to separating the model from the mat.

**TIP:** For large/flexible models, apply only one or two sets at a time.

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## ■ MODEL DETAILS - BRIDGE

**Bridge** - Dual Lock Needed - Get familiar with the bridge's exact placement before applying Dual Lock, then apply Dual Lock at one or two locations at a time, from south to north. After the six mat contacts are done, use three Dual Lock pairs to secure the red deck to the border wall (one pair at each end, and one pair at center). Prop up the hinged black deck by standing its swivel beam's end on the tiny black mark.



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## MODEL DETAILS - CRASH-TEST RAMP

**Crash-Test Ramp** - Dual Lock Needed - CAUTION: Be sure to not distort this model as you secure it. Set the hinged fence-like structure vertical (with the red beam being at its highest point as can be determined by eye).

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## MODEL DETAILS - TRUCK

**Truck** - (NO Dual Lock) - The truck is pointed down the ramp with its rear axle being held by the ramp's red beam. The truck should be centered side-to-side on the ramp, and parallel to it. The truck's centering and parallelism should be as perfect as can be determined by eye, with the understanding that imperfection here adds expected/acceptable variability to the game.



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## MODEL DETAILS - ACCESS MARKERS

**Access Markers** - Dual Lock Needed – The access markers are directional. Be sure to place their oval feature over their mark on the mat. Once each model is secured, it needs to be “set.” Pull up on the green wheel, wait a few seconds until the black bumper stops swinging, then lower the wheel. A ball under the center of the bumper will settle into a cup. The exact rotation of the bumper is variable, but be sure there is some free space around the solid post/axle.



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### ■ MODEL DETAILS - GUIDE WALLS

**Guide Walls** - Dual Lock Needed - Two guide walls are placed in the southeast, and one is just north of Base. Quite simple!

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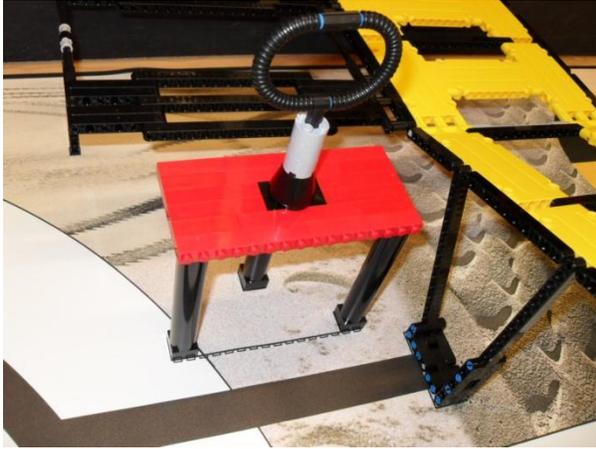
### ■ MODEL DETAILS - DYNAMOMETER

**Dynamometer** - Dual Lock Needed - This model is in the middle of the east half of the field, and both ends are identical. After pressing it down, test to be sure its rollers spin freely. If they don't, be sure the model is pressed all the way down evenly, be sure there is north-south free-play for the axles, and be sure they're not bent.

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### ■ MODEL DETAILS - SENSOR WALLS

**Sensor Walls** - (NO Dual Lock) - Stand four sensor walls on their marks in the northeast, studs up. The last one lies flat across the tops of the three tall black cylindrical columns. Place the square bases of those columns on their marks west of the bridge, toward the north, then carefully balance the sensor wall on top, with its studs facing south.



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## MODEL DETAILS - WARNING BEACONS

**Warning Beacons** - (NO Dual Lock) - Stand each of the eight warning beacons on its small black circle, studs up. Five go between Base and the bridge, and three are just north of the east guide wall.

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## MODEL DETAILS - LOOPS

**Loops** - (NO Dual Lock) - There are eleven loops. Eight of them stand on the mat on their corresponding colored marks with their loops aligned as each mark shows. The remaining two gray and one red are placed on other models, with their loops aligned parallel to the long border walls as follows: Stand one gray loop centered on the sensor wall which is on columns. Stand the other gray loop centered on the southwest axle of the south guide wall. Stand the red loop centered on the east-most axle of the south guide wall. Be sure all loops are vertical.



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## ■ MODEL DETAILS - PEOPLE AND CRASH-TEST FIGURE

**People and Crash-Test Figure** - (NO Dual Lock) - Place these five models in Base. Their exact position is unimportant.

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## ■ FIELD MAINTENANCE

- **Border Walls** - Remove any obvious splinters, and cover any obvious holes.
- **Field Mat** - Make sure the mat touches the south border wall, and is centered east to west. Avoid cleaning the mat with anything that will leave a residue. Any residue, sticky or slippery, will affect the robot's performance compared to a new mat (many tournaments use new mats). Use a vacuum and/or damp cloth for dust and debris (above and below the mat). When moving the mat for transport and storage, be sure not to let it bend into a sharp kink point, which could affect the robot's movement. Tournaments using new mats should unroll the mats as far in advance of the tournament day as possible. For control of extreme curl at the east or west edges of the mat, tape is allowed, with a maximum of ¼" (6 mm) overlap. Foam tape is not allowed.
- **Mission Models** - Keep the models in original condition by straightening and tightening solid connections often. Ensure that spinning axles spin freely by checking for end-to-end play and replacing any that are bent.

## THE PROJECT

### Think About It

Each and every day, transportation touches your lives. Your team travels to the places where they learn, to the places where they play, to visit friends and family. Things we want, clothes we wear, the food we eat, the water we drink, medicines we need—all these travel over highways, on paths and trails, along railroad tracks, up and down rivers, across oceans, over mountains and deserts, along the streets we live on. Information travels to us from experts, teachers, friends, and family. It comes to us by word-of-mouth, over the phone, in books, from websites, in text messages.

Now, consider. A potato chip can travel through a factory—flying from machine-to-machine without being broken—but more than 50,000 kids who traveled on skateboards had to be taken to the hospital. Is all this travel as safe as it could be? Millions of people (and the things they need) get stuck in transit every day. Is all this travel as efficient as it could be?

Your challenge this season is to look at your community and discover how people, animals, information, and things travel. Once you know how people and things move in your community, pick one main mode of transportation and do some research. What kinds of problems keep people and things from getting where they are going safely? What kind of problems keep people and things from moving efficiently, getting where they are going quickly and using the least amount of energy? How could your team help solve one of those problems?

### **Identify a Problem**

Begin your project by describing your community. This season, it is up to your team to define your community. Is it your school? your neighborhood? your city, village, or town? your country? the world? Be prepared to share how you defined your community.

Next, create a list of the ways that people, animals, information, and things move in, around, to, and through your community. Be creative. Be silly. Be serious. Think about *everything* that gets moved, including yourselves!

Once your list is complete, pick one way that people and things move in your community and learn more about it!

Whether your team chooses planes, boats, trains, cars, trucks, skateboards, rollerblades, bicycles, donkeys, llamas, camels, your feet...it's time to research. What makes your mode of transportation dangerous? What prevents people, information, animals, and things from getting where they need to go? What makes them take longer? What makes them burn more fuel? Search out the problems. Look at reports. Read books. Browse websites. Conduct a survey. Check with experts who work in and around your community. Use any research tools you have available. Be prepared to share your information sources.

### **Create an Innovative Solution**

Choose one of the problems and suggest a solution. What can be done to fix the problem? What will it take to make your team's solution happen? How will your solution help your community? How can your team make moving from one place to another safer and easier? A great solution might take all the imagination and ingenuity your team can muster. It might seem so obvious that you wonder why the problem even exists. And remember, the most important thing is to have fun while you make a Smart Move.

### **Share with your Community**

Now, tell your community about the problem you researched, and how your solution can help. You choose how to share what you've learned. Give a talk for parents. Create

a website. Perform a skit. Make a comic book. Rap. Create a poster. Pass out flyers. Write a poem, song, or story. Present your research and solution to lawmakers.

Your presentation to the judges can be simple or elaborate, serious or designed to make people laugh while they learn—but to be eligible for project awards at tournaments, it must:

- Describe your community, the problem, and your team's solution
- Show that your team did the research and tell about your information sources
- Be shared with someone outside of your team

Note: The total length of your project presentation at a tournament or qualifier should be no more than five minutes, including any setup time.