Engineering And Robotics Learned Young
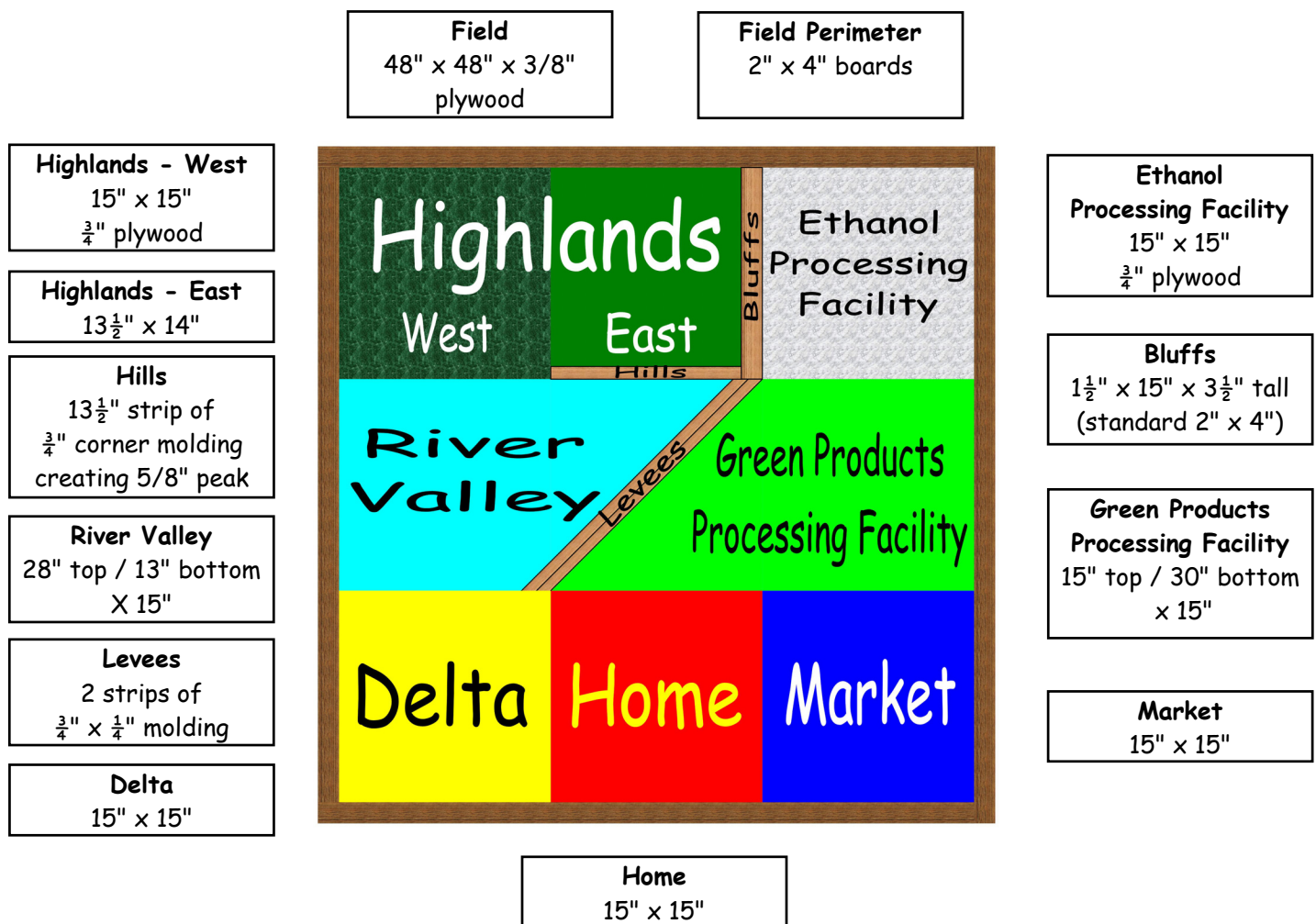## ◈ EARLY ◈
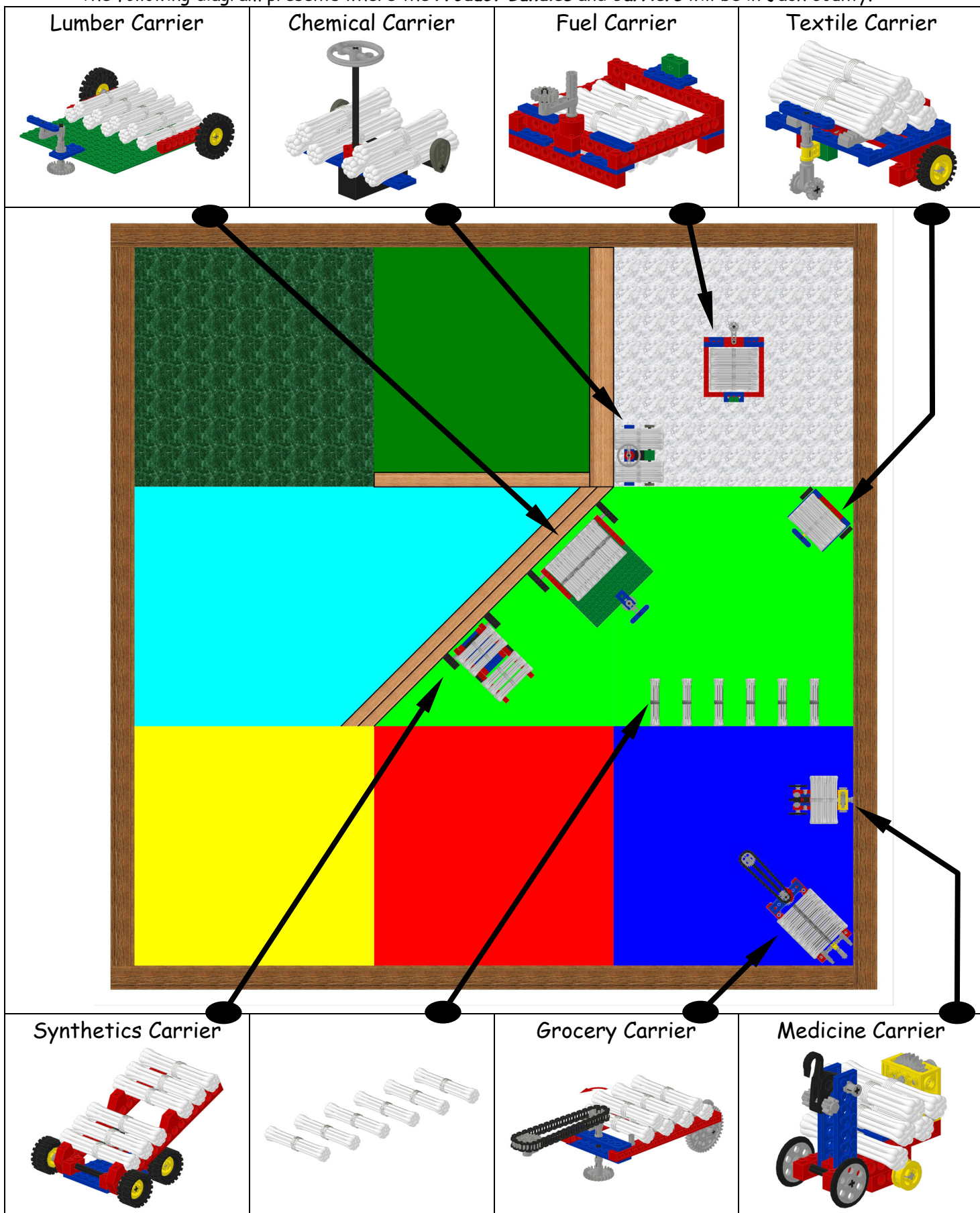### Spring 2007 Robotics Competition

Roboticists, the Jack County Cooperative Farmers thank you for your incredible effort of harvesting and transporting crops to the Market, Green Products Processing Facility, and Ethanol Processing Facility! The Jack County families now need your help transporting the finished products from the Market, Green Products Processing Facility, and Ethanol Processing Facility to the Delta, River Valley, and Highlands. Please help Jack County distribute its renewable products to their families!

Below is everything that we know about the mission.

- The team must be ready to execute the mission for your EARLY Tournament.
- The equipment available for a team to build a robot or robots is 3 LEGO Motorized Simple Machines Kits.
- The following diagram presents the environment that will be encountered.

Field
48" x 48" x 3/8" plywood

Field Perimeter
2" x 4" boards

Highlands - West
15" x 15"
¾" plywood

Highlands - East
13½" x 14"

Hills
13½" strip of
¾" corner molding
creating 5/8" peak

River Valley
28" top / 13" bottom
X 15"

Levees
2 strips of
¾" x ¼" molding

Delta
15" x 15"

Ethanol Processing Facility
15" x 15"
¾" plywood

Bluffs
1½" x 15" x 3½" tall
(standard 2" x 4")

Green Products Processing Facility
15" top / 30" bottom
x 15"

Market
15" x 15"

Home
15" x 15"

- The following diagram presents where the **Product Bundles** and **Carriers** will be in Jack County.

Lumber Carrier	Chemical Carrier	Fuel Carrier	Textile Carrier

Synthetics Carrier		Grocery Carrier	Medicine Carrier

Mission Rules

1. The team has 2 minutes to complete the mission.

2. There will be 52 *Product Bundles* on the playing field at the beginning of each mission, represented by bundles of ten cotton swabs bound together tightly with a rubber band.

3. The team's score is determined at the end of the 2-minute mission.

4. If a *Product Bundle* is moving when time expires, the referee will wait until the *Product Bundle* has stopped moving before determining the *Product Bundle's* scoring position.

5. The team scores **2** point for each *Product Bundle* in the DELTA.

6. The team scores **3** points for each *Product Bundle* in the RIVER VALLEY.

7. The team scores **4** points for each *Product Bundle* in the HIGHLANDS.

8. A *Product Bundle* counts as in the DELTA if it is breaking the plane of the DELTA.

9. A *Product Bundle* counts as in the RIVER VALLEY if it is breaking the plane of the RIVER VALLEY.

10. A *Product Bundle* counts as in the HIGHLANDS if it is breaking the plane of the HIGHLANDS.

11. A *Product Bundle* in two scoring zones simultaneously (i.e. straddling two scoring zones) counts in the higher value scoring zone.

12. A *Product Bundle* may not go into the HOME area. Any *Product Bundle* that breaks the plane of the HOME will be removed from the field. In addition, if a *Product Bundle* breaks the plane of the HOME AND is on a *Carrier*, the *Carrier* along with all the *Product Bundles* on the carrier shall be removed from the field. Therefore, teams may not return *Product Bundles* to the HOME and then transport them to the DELTA, RIVER VALLEY, or HIGHLANDS. *Please note that Product Bundles were allowed in the HOME in the EARLY Fall Challenge; this rule is to make the Spring Challenge more challenging than the Fall Challenge.*

13. The LEVEES are part of the RIVER VALLEY.

14. The BLUFFS and HILLS are part of the EAST HIGHLANDS.

15. Only the parts that are contained in three Motorized Simple Machine kits may be used to construct the robot (i.e. no other materials such as glue may be used on the robot). The kit parts may not be altered.

16. The team's robot/robots and all parts must start inside the HOME at the beginning of the 2-minute mission (i.e. no part of the robot may be off the playing field when the mission starts). However, the parts do NOT have to be assembled together. Parts can be removed and returned to the field during the 2-minute mission.

17. The HOME is the 15" x 15" boundary extended vertically (i.e. the robot can not hang over the line at the beginning of the mission).

18. The team can touch their robot without penalty when the robot is partially inside the HOME but after touching, the robot must be completely inside the HOME to continue the mission.

19. Any *Product Bundle*, along with any *Carrier* that is containing the *Product Bundle*, remaining with the robot when the robot is retrieved shall be removed from the field.

20. The team's robot/robots must start inside of the HOME every time it is returned to the HOME during the mission (i.e. no part of the robot may be breaking the plane of the HOME line after being touched by a team member).

21. A penalty of 10 points will be assessed if a team touches their robot, including parts that have become separated from the robot, which is outside of the HOME.

22. If a robot is touched, the robot must be returned to the HOME to continue the mission.

23. The controllers and wires are NOT considered part of the robot.

24. The robot shall not have any elastic stored energy (i.e. stretched rubber band) when the mission begins or when the robot is returned to the **Home** but elastic stored energy can be generated from activating a motor.

25. The controller and wire can ONLY be used to provide electrical power to robot motors (i.e. it can not be used to drag the robot, corral *Product Bundles* or *Carriers*, etc.).

26. If a controller or wire is used illegally (referee's judgment), the team will be required to immediately place the robot back in the HOME to continue the mission.

27. If a *Carrier* is illegally touched, the *Carrier* along with any *Product Bundles* it is holding will be removed from play for the remainder of the mission.

28. A *Carrier* is NEVER considered part of the robot.

29. *Product Bundles* are very valuable. A penalty of 10 points will be assessed for each *Product Bundle* that leaves the playing field.

30. All referees' rulings are final and may not be appealed.

Please visit the EARLY Neighborhood Forums at www.EARLYrobotics.org or contact Mission.Control@EARLYrobotics.org with any questions or comments.

Thank you for maintaining the spirit of the game!