

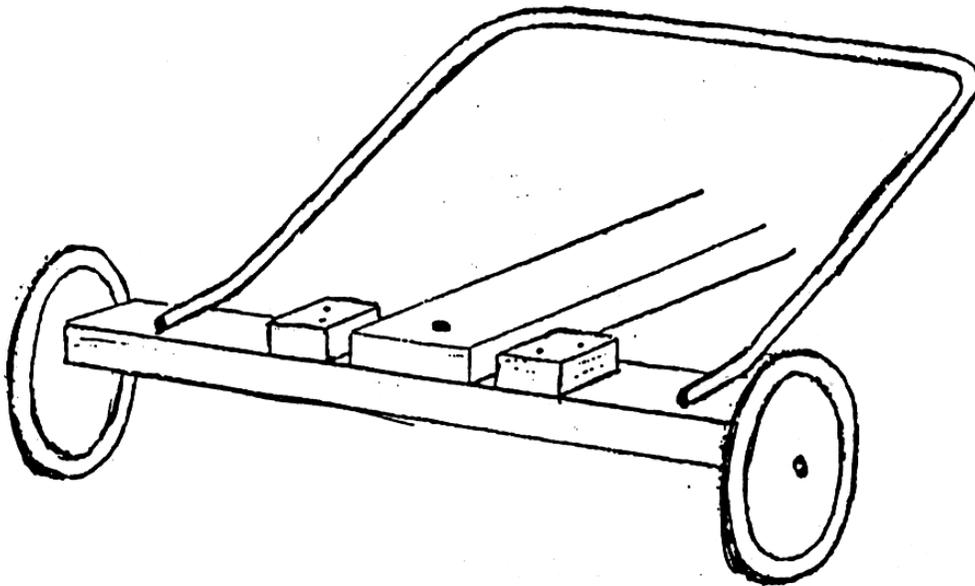
## SOAP BOX DERBY CAR CONSTRUCTION SUGGESTIONS

### General

1. This race evolved in several cities over the decades. It has no actual affiliation with the International Soap Box Derby. Certain rules may seem somewhat odd (replace wheel bearings with bushings), but these restrictions limit the technology, cost, and speed to reasonable levels. Safety and fun are the two most important reasons for the success of the event.
2. Think of the car as an investment in a multi-year activity that your driver can race each year. The car can be improved upon (talk to the veterans about speed tips) and become faster and more competitive with each race. The biggest investment in time and money is the first year.

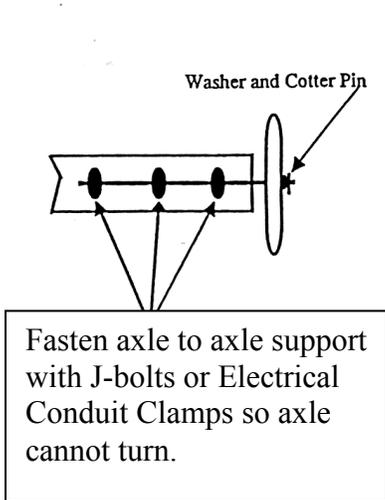
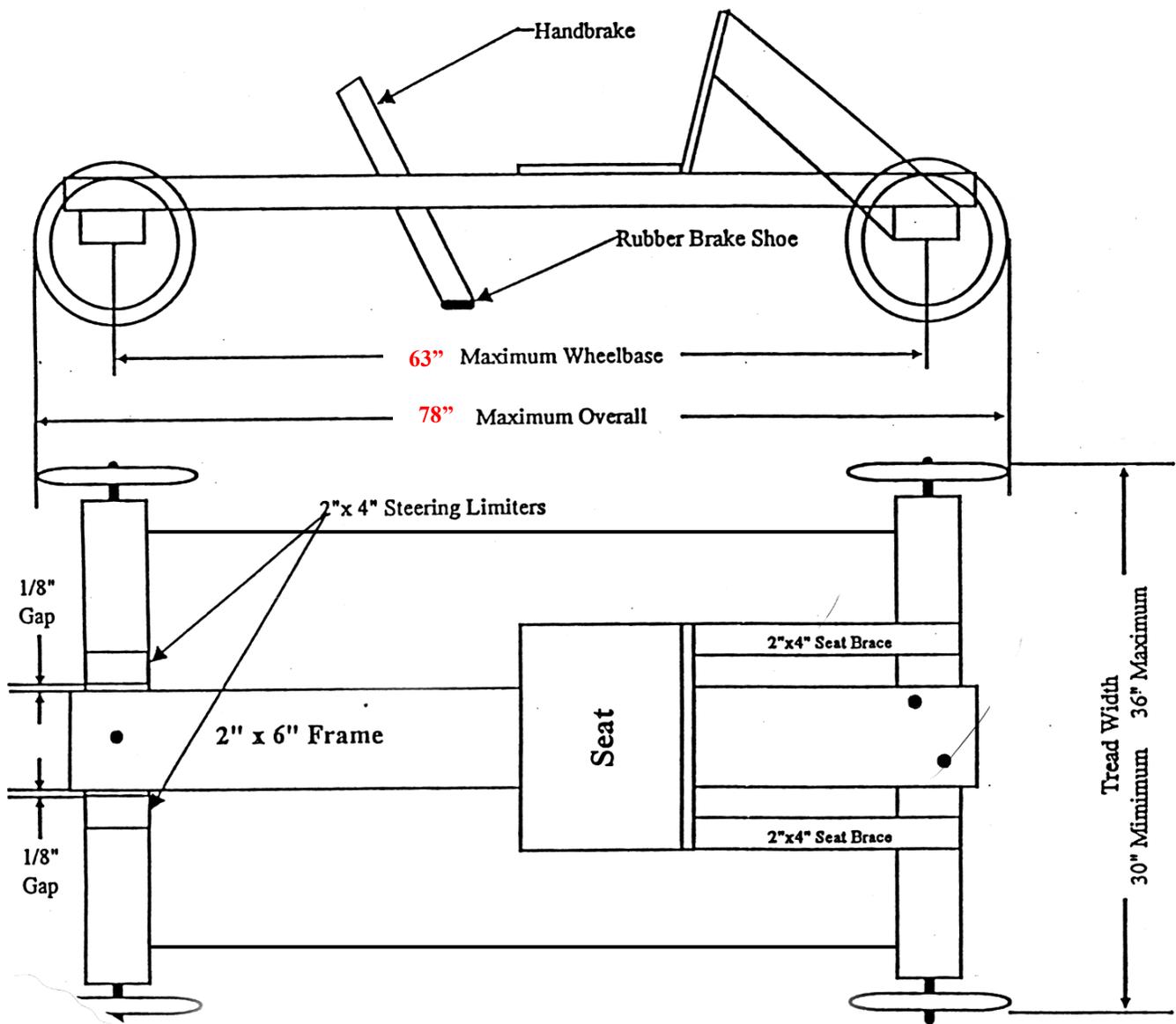
### Car Construction

1. The official Soap Box Derby wheels are highly recommended. Axles can be made from  $\frac{1}{2}$  inch or larger steel rod or stock. Contact a local (small) machine shop to help with the axles and bushings; they may donate their time if you tell them it is for the community. Bushings can be made of many materials (steel, brass, plastic, etc.). Any type of lubricant is allowed (oil, graphite, etc.).
2. A steering approach has evolved that younger drivers feel more comfortable with than the older rope/feet method: the tiller (see illustration). The handle bar or tiller is made from  $\frac{1}{2}$  or  $\frac{5}{8}$  inch electrical conduit, bent to the shape shown. It is attached to the front axle 2 x 4 with carriage bolts; a wood dowel inserted into the conduit will keep the bolt from crushing the conduit. This device is recommended for younger drivers.



Tiller-style steering.

# Suggested Soap Box Derby Car Basics



Maximum wheel size is 12" diameter. Use sleeve or graphite bushings.

**Do not use ball or roller bearings**

Fasten axle to axle support with electric conduit clamps or J-bolts. The axles must be fixed so they can't turn.

A seat belt is passed through slots cut in the seat back and bolted to the frame behind the seat.

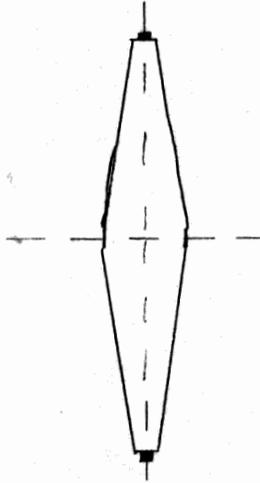
A rope or other device is attached securely to the front axle support for steering.

**NOTES:**

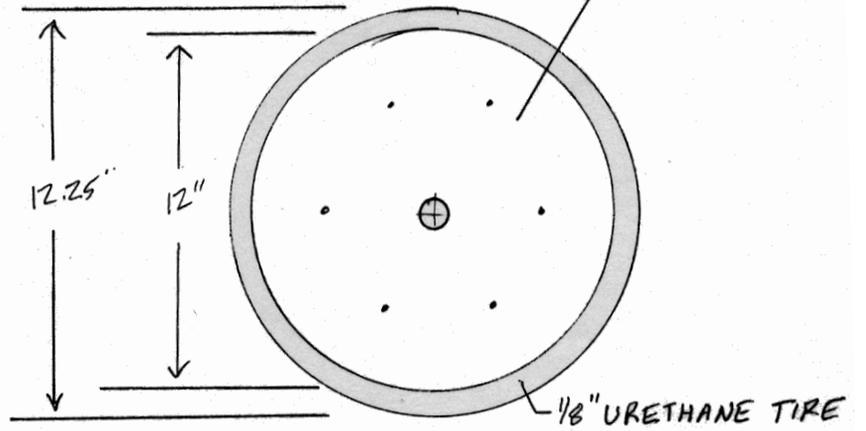
**Car may be imaginatively festooned by adding custom bodywork, exhaust pipes, etc., provided the basic dimensions and material specifications shown here are adhered to.**

Cars lacking the materials, running gear, and safety equipment equivalent to that shown here will not be permitted to run.

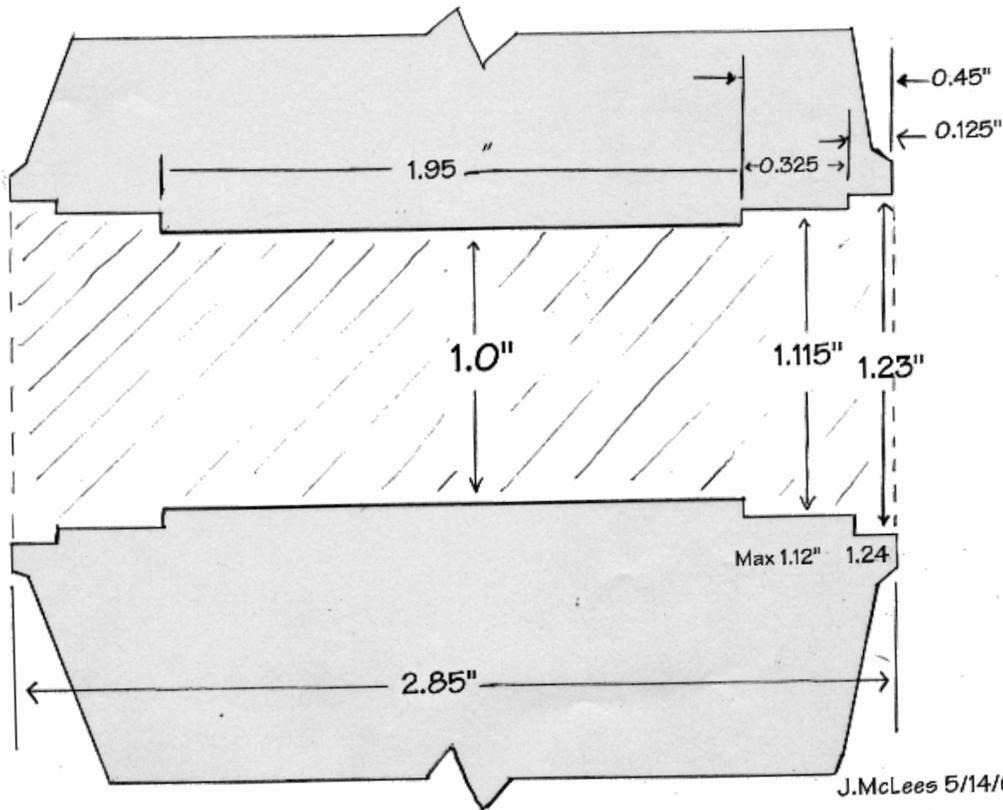
**OFFICIAL SOAP BOX DERBY  
Z-GLASS WHEELS**



**DUPONT ZYTEL NYLON RIM**



**HUB DIMENSIONS (not to scale)**



## Soap Box Derby - Suggested Parts List for 60" length car

### Wood Parts

<b>2 x 4</b>	Rear Axle	31.5 "	This may vary with The type of wheel used
	Front Axle	31.5 "	
	Seat Brace	20.0 "	figure about 10 feet
	Seat Brace	20.0 "	
	Limiter	3.50 "	
	Limiter	3.50 "	
<b>Total</b>	<b>110.0 "</b>		
<b>2 x 6</b>	Frame	51.5 "	With 12" wheels
	Frame	53.5 "	With 10" wheels
	<b>Total</b>		figure about 5 feet
<b>2 x 2</b>	Brake	20.0 "	figure about 2 feet
<b>½ " plywood</b>	Seat back	12 x 14 "	2ft x 2ft square
	Seat bottom	12 x 14 "	

### Hardware

Qty	Part Name	Use
4	10" or 12" diameter narrow wheels *	
2	½" diameter steel rod 36" long	axle
8	½" electrical conduit clamps	axle
16	#8 x 1" round head wood screws	axle
18	½" washers	wheels
1	½" x 4" bolt (hex)	front pivot
1	½" nut	front pivot
1	5/16" x 4" lag screw	brake
2	5/16" x 4" bolts (hex)	rear axle
3	5/16" nuts	rear axle
1	5/16" x 2 ½" bolt (hex)	seat belt
7	5/16" washers	rear axle
10	#8 x 2" round head wood screws	seat
4	#8 x 2 ½" round head wood screws	seat
4	¼" x 3 ½" bolts (hex)	limiters
4	¼" nuts	limiters
8	¼" washers	limiters

\* optional - Official Soap Box Derby Z-Glas wheels from  
International Soap Box Derby, Inc., P.O. Box 7225, Akron, OH 44306-7225