

ARCHITECTURAL BLUEPRINT READING CONTEST REGULATIONS

I. Purpose:

To evaluate each contestant’s working knowledge and understanding of reading architectural prints related to the industry.

II. Clothing Requirements:

SkillsUSA or appropriate business attire. Your school name should not appear on any clothing.

III. Eligibility:

Open to all SkillsUSA members who qualify to attend the SkillsUSA Nebraska Leadership & Skills conference.

IV. Tools and Equipment:

- 2- #2 Pencils
- Pocket calculator
- Architect’s Scale

If additional tools or equipment are required, they will be listed on the tool list sent out from the state SkillsUSA office.

V. Scope of the Contest:

Contestants will be given a set of prints to answer a series of questions pertaining to the following areas in Structural design and Mechanical systems within the industry.

- | | | |
|----------|-------------------|----------------|
| Masonry | Air Conditioning | Specifications |
| Plumbing | General Carpentry | Symbols |
| Heating | Electrical | |

VI. Scoring:

Criteria	Points	Contestant Number							
Written Test	100								
Clothing Penalty	-5								
Total									

VII. Suggested preparation:

Contestants should familiarize themselves with industry standards used in developing working plans. Contact your local city and/or county planning board for current industry standards and specifications.

NEBRASKA STATE CONTEST RULES

I. Purpose

The purpose of the Bridge Building contest is to design and build the most efficient bridge that will support an applied load over a given span using given material. Bridges must be built by the competing individual prior to coming to the *SkillsUSA Nebraska Leadership & Skills Conference*. The Bridge Building contest will test to determine the efficiency of the design, not the maximum load carried. Bridges may be disqualified if they do not meet all the identified criteria below.

II. Clothing Requirements

SkillsUSA or appropriate conference attire. School names should not appear on any clothing.

III. Eligibility

Any *SkillsUSA Nebraska* member who qualifies for *SkillsUSA Nebraska Leadership & Skills Conference* is eligible to participate. Participants are not required to be present during the testing. However, local advisors may require attendance.

IV. Bridge Construction and Materials

The bridge must be constructed entirely of wood. Any kind of wood may be used, but it must be 3/16" X 3/16" or less in cross-section.

The bridge must be bonded together with commercially available glue. Any type may be used.

Maximum bridge weight may NOT exceed 100 grams. The official weight of the bridge will be determined by the conference scale.

Not Allowed:

- Particle board
- Gussets – Any triangular structure that completely fills the corner will be considered a gusset. To be considered a structural member (not a gusset), daylight must exist between the two beams constructing the corner.
- Laminated wood – Layers of wood glued together to form the structural members (sticks/timbers), even if the total cross section is less than 3/16" x 3/16".
- Thread, string, or other materials used to wrap joints is not permitted.
- The bridge may not be coated with any type of material.
- Splines or dowels are not permitted.
- Tension members, if used, must be constructed of wood.

V. Scope of The Contest

The bridge dimensions must be in accordance with the following regulations:

1. **Span Length** – The bridge must be long enough to support itself on the test platforms. The bridge must be able to span a gap of *300mm*. The bridge may not exceed a maximum length of *350mm*.
2. **Width** – The bridge must have a minimum inside width of *50mm*. Any wood pieces added (outriggers) to the bridge only to satisfy dimensional constraints will not be allowed.
3. **Roadbed** – The bridge must contain a “roadbed” with a minimum inside width of **50mm** and a minimum length **305mm**.
 - a. The top of the roadbed is NOT to be a solid surface.
 - b. The roadbed must rest on the test platforms and be long enough to continuously support the bridge while deflecting under load testing.
 - c. The maximum thickness of the roadbed may NOT exceed $3/8$ ” thick.
 - d. Any part of the structure below the roadbed is to be considered the substructure.
4. **Substructure** – The bridge may have a substructure. The substructure may have a maximum length of *270mm* and can be no more than *75mm* below the top surface of the roadbed.

Except for the roadbed and substructure, there are no other height limitations.
5. The unloaded bridge must be symmetrical from side to side and left to right. (Top to bottom does not matter.)
6. The bridge does not have to have sides or a top.
7. The 50mm X 50mm support block must be supported by the roadbed. The loading rod must be allowed to pass through the roadbed and substructure.
8. A 3-view (front, top, and side) scale drawing with dimensions must accompany the bridge at time of contest.
9. The best efficiency rating (not the max load supported) will be used to determine the winner. The efficiency is max load divided by mass of bridge.

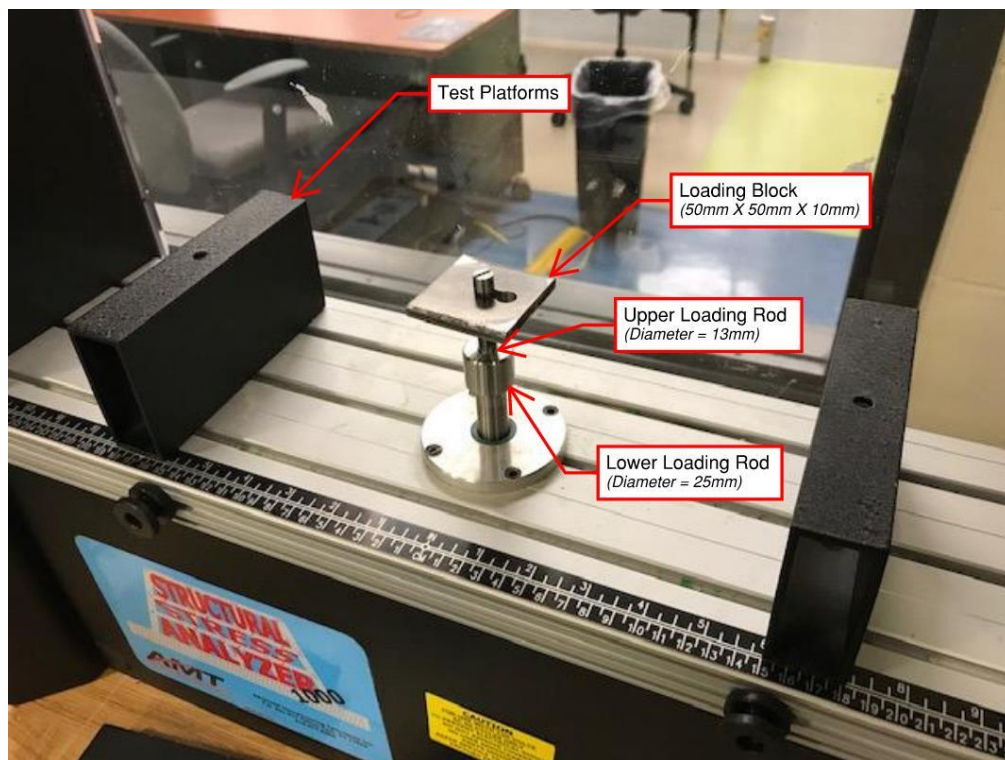
VI. Testing

1. Bridges must be checked in prior to the designated start time identified in the official program. After the start time, and once testing has begun, no additional entries will be accepted.
2. Bridges will remain in the possession of the judges until they are released at the end of the testing.
3. The construction requirements, dimensions, and materials will be checked prior to testing. Bridges which do not meet all requirements may be disqualified.
4. The bridge construction must fit properly within the test machine and accommodate the load plate and loading rod. Bridges which do not meet these requirements cannot be tested and will be disqualified.

SkillsUSA Nebraska

Bridge Building

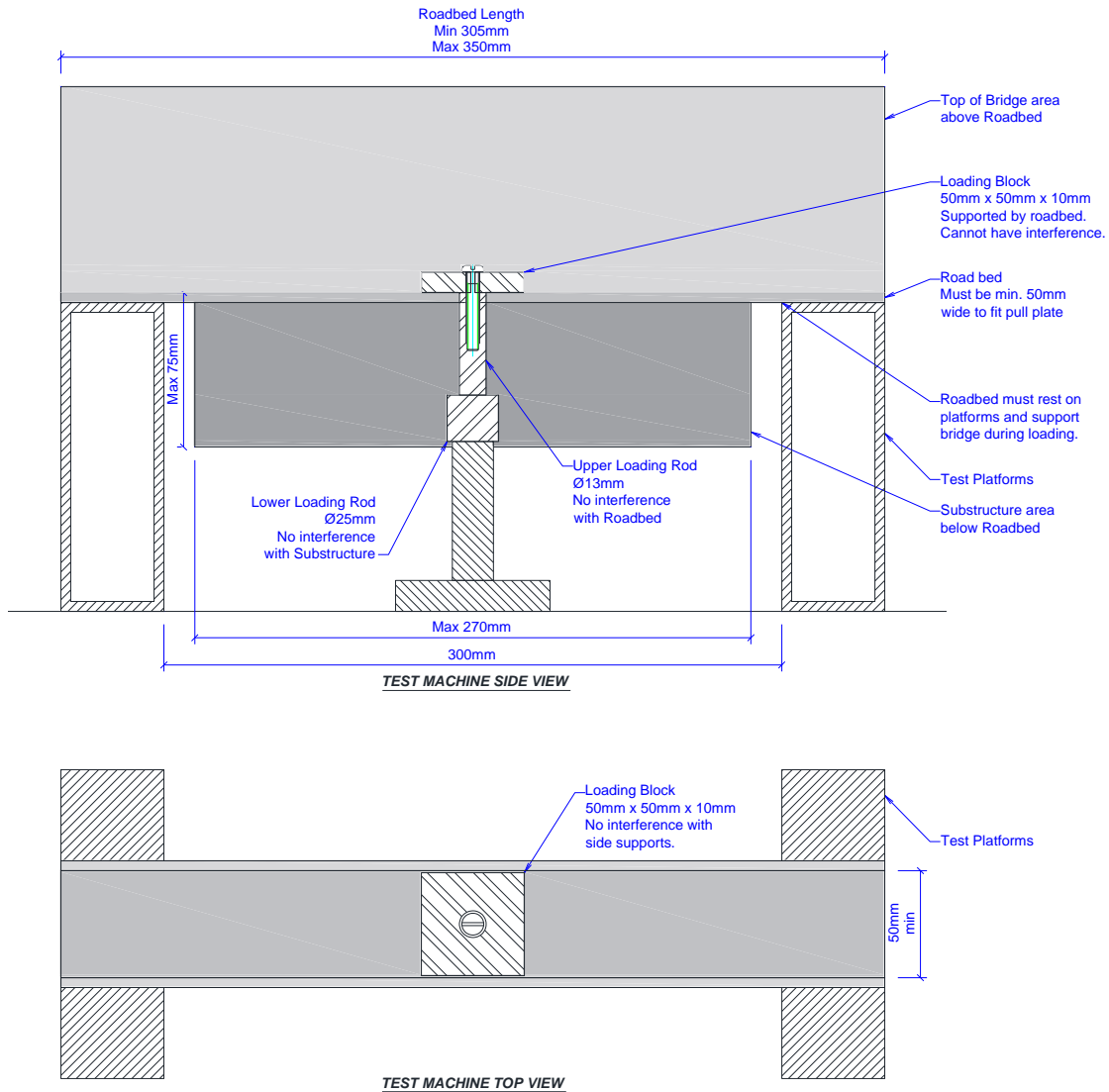
- a. Make certain the roadbed can support and allow the *50mm X 50mm X 10mm* Loading Block to fit.
 - b. The Upper Load Rod, which has a diameter of *13mm*, attaches to the pull plate and must pass through the center of the roadbed. The Lower Load Rod has a diameter of *25mm* which must be allowed to pass through any substructure.
 - c. Refer to the test machine picture and diagram below for further information.
5. The mass of the bridge will be weighed prior to testing.
 6. The bridge is loaded (tested) by the Loading Rod pulling down on the Loading Block. The Loading Block is a metal pull plate setting flat in the center of the roadbed. Bridges will be tested until failure or when the limits of the test machine have been reached. Failure is defined as the inability of the bridge to carry additional load (Maximum Load).
 7. No portion of the roadbed can be allowed to deflect more than *20mm* below the top of the test platforms, while at maximum load.



Test Machine Picture

SkillsUSA Nebraska

Bridge Building



VII. Scoring

1. Efficiency Rating is calculated by the following:

$$\text{Efficiency Rating} = \frac{\text{max. load supported by bridge [lbs]} \times 454}{\text{mass of bridge [grams]}}$$

- a. The mass of the bridge (in grams) is recorded prior to testing.
 - b. The Maximum Load [lbs] is determined by load testing.
2. Drawings are scored from zero to 20 points.
 3. Total Score = Efficiency Rating + Drawing Score
 4. In the event of a tie, the lightest bridge will be the winner.
 5. Example scorecard calculation:

Contestant Number	Deflection (20mm MAX)	Max Load	x 454 =	Weight of Bridge (100gm max)	Efficiency Rating = gm/lbs x weight	Plus Drawings (Up to 20 points)	Total Points
	[mm]	[lbs]	[gm/lbs]	[grams]			
Example	21	43	19522	49	398.41	17	415

Metric 500 Dragster CONTEST REGULATIONS

I. Purpose:

SkillsUSA contestants in the Metric 500 Dragster contest are required to design, draw, and build a model dragster powered by a blast of air. Design, speed, craftsmanship, and a drawing of the dragster are the primary elements judged. The purpose of the Metric 500 is to provide a means for SkillsUSA members to demonstrate their ability to design, draw, and build a product within a rigid set of specifications.

II. Clothing Requirements:

SkillsUSA or appropriate conference attire. Your school name should not appear on any clothing.

III. Eligibility:

Any SkillsUSA Nebraska member who qualifies for SkillsUSA Nebraska Leadership & Skills Conference. **Chapters are limited to 3 vehicles.**

IV. Time Limitations:

Contestants or designee must present drawing and dragster at the time specified in the conference program and must remove the drawing and the dragster at the time specified in the conference program.

V. Specific Regulations:

All entries must be turned in at the time designated. Each contestant will be responsible for obtaining the time schedule at registration.

All entries must be free of needed repair and/or maintenance at time of check-in.

CO2 cartridge will be used. Cars will be propelled by a blast of compressed air at the start. Car kits made for CO2 cartridges are acceptable.

Drawings:

Every entry must be submitted with a metric drawing of the completed dragster. A two-view (top and side) drawing with metric dimensions shall be made on the following paper sizes: 11" x 17", or 12" x 18". A three-view (top, side and end) drawing is acceptable, but will not change point allocations. Standard engineering procedures should be followed. Drawing may be made using ink or graphite. Computer aided drawings will be accepted. Originals, prints, or copies will be accepted. Title block will only include "Entry Number ____" which will be assigned at registration time, and placed on entry prior to turn-in.

State Only Contest Rules

Dragsters which fail to meet the specifications will be disqualified.

Wheels must be made entirely from plastic.

All contest entries will be judged according to the Metric 500 Rating Sheet, which includes criteria for drawing, design, race, speed, etc.

No repair or maintenance on entries will be allowed after entries have been registered. Any entry damaged during the race will be judged by the contest coordinator to determine whether or not the dragster will be allowed to race again. In the event that conference personnel damage the dragster, the Contest coordinator will make a ruling as to whether or not the dragster will run. This is the **only** reason a student would be allowed to touch his/her dragster after registration. Undamaged wheels, which come off during the race, may be replaced as determined by the Contest coordinator. Damaged wheels may not be replaced.

Racetrack length shall be twenty (20) meters (65' 7") from start gates to the timer and finish gate.

VI. Procedures

Contestants or designee will register with the Contest Coordinator at the time designated in the conference program.

Instructions and contest time lines provided at registration will be followed. It will be the responsibility of each contestant to obtain these instructions.

Dragsters will receive their official ranking (time - placing) during the time trials.

Based upon the time trial placing, the fastest 16 dragsters will compete in double elimination bracket to determine final placing in the speed portion of the contest.

VI. Required Personnel and Equipment:

Contest coordinator

Judges - three (3) or more

Two (2) persons assigned to check in/receive entries

Person assigned for security

Room - must be securable for equipment and entries. Size must accommodate a twenty (20) meter track and equipment. Two (2) rooms optional - one per level.

Table and chairs for judges.

Tables for entries (at least six -2' x 8' tables).

Twenty (20) meter track with start and finish gate.

State Only Contest Rules

VII. Scoring

Contestants shall be ranked in numerical order on the basis of final score to be determined by each judge without consultation with each other. The winner shall be that contestant whose total score is the highest. Other placing shall be determined in the same manner. In case of a tie, the judges shall consult each other to ascertain the winner.

Contest Coordinator will provide a sealed packet to the Competitive Events Coordinator containing the results.

All judges' ratings/results remain confidential.

Ratings shall be based upon the following maximum points:

Item Name	Total
Design	10
Appearance	5
Finish	5
Drawing	15
Accuracy	5
Neatness	5
Dimensions	5
Construction	15
Craftsmanship	10
Detail	5
1st Place	60
2nd Place	56
3rd Place	52
4th Place	48
5th	45
7th	40
12-Sep	35
13-16	30
17-24	25
25-32	20
All other finishes	10
Total Points:100	

MOUSE TRAP VEHICLE CONTEST REGULATIONS

I. Purpose:

To evaluate each contestant's ability to problem solve by designing, constructing and racing a vehicle powered by a mousetrap.

II. Clothing Requirements:

SkillsUSA or appropriate conference attire. Your school name should not appear on any clothing.

III. Eligibility:

Any SkillsUSA Nebraska member who qualifies for SkillsUSA Nebraska Leadership & Skills Conference.

IV. Scope of the Contest:

Vehicle Design and Construction

A. The vehicle must be powered by one standard household mousetrap. Additional springs, rubber bands, etc. will not be allowed (in the power apparatus). The base of the mousetrap cannot be cut or altered although a reasonable number of small holes can be drilled for mounting purposes only. The center "cheese holder" and arm retainer piece can be removed. The trap arm can be extended and/or bent.

B. The mousetrap must travel with the vehicle.

C. The frame, wheels, and axles may be made from any material. These parts have no size or weight restrictions other than to fit on the track.

NOTE: Wheels must be made from materials the student has designed or put together. Commercially made wheels will not be accepted. Various materials and everyday products such as paper, wood, cardboard, can lids, balls, etc. can be used.

D. The vehicle must be able to travel a 20 inch wide by 12 foot long track. The vehicle cannot be more than 16 inches long and 16 inches tall in its starting configuration.

E. If at any point a vehicle is determined to be in violation of one of these rules that vehicle will be disqualified from the competition.

V. Race Rules

- A. Cars will be lined up and inspected for Design and Construction requirements listed above. The cars which meet these requirements will advance to the track.
- B. Each car will make one run on the track and the time will determine their seed. The contestant will be allowed three attempts to establish a time. The time will be established from the first complete run. Each vehicle will begin with the front wheels behind the starting line. Time will stop when the front wheels cross the finish line.
- C. The fastest car will be determined by a double elimination tournament. The top seeded car will have the choice of lanes.
- D. The race officials will call false starts and tie finishes. The run will be repeated.
- E. A pit area will be provided but please bring your own tools.
- F. Contestants will be given time to prepare their cars for the race. Racers will be called to the track in the following order. Racers (car numbers) are UP. Racers (car number) are on DECK. Racers (car number) are IN THE HOLE. The cars that are UP position, race, and all other cars advance.
- G. These cars by nature are fragile, therefore, should a car need a minor repair (such as a string snap at the starting line) a reasonable amount of time will be allowed for the repair. Other cars in the bracket may continue their races. The repaired car race will be run at the end of the bracket.
- H. Contestants may make practice runs before the contest starts if they wish. No practice runs will be allowed after the car is checked in.
- I. The race officials will make every reasonable effort to maintain a clean and flat race track.
1. The track will be set up to ensure that the seam located at the mid-point of the track is smooth in both lanes and will not hinder the operations of the race cars.
 2. The track will be wiped clean of all dirt and debris. The track will be wiped again after the practice runs are completed and before the competition begins. Waxes or oil-based cleaners should not be used.

VI. Scoring

The winner is determined by double elimination.

PIN DESIGN CONTEST REGULATIONS

I. Purpose:

Create (either computer aided or free hand) a pin design and submit it during registration at the SkillsUSA Nebraska Leadership & Skills conference. The designs will be displayed during the conference and at the advisor breakfast. Judging will be done by the chapter advisors attending the breakfast.

Medals will be awarded for the first, second, and third place drawings. The first place drawing will be the design used for the following year's SkillsUSA Nebraska's Conference pin and National trading pin.

This contest is open to Secondary and Post-Secondary division contestants. There will only be one winner regardless of division.

II. Clothing Requirements:

There is no clothing requirement for the Pin Design Contest.

III. Eligibility:

Any SkillsUSA member is eligible to submit an entry which meets the guidelines below.

IV. Guidelines:

Your design will need to follow these parameters:

The word **Nebraska** must be incorporated somewhere on the design.

The letters **SkillsUSA** must be incorporated somewhere on the design.

The following state conference year must be displayed on the design.

Submit a full color copy of the design on 8 & 1/2" x 11" paper only. No picture frames, plastic sleeves or glossy paper are **NOT** to be used in submitting pin designs.

Submit a color copy that is 1 & 1/2" at its widest point (actual pin size). This copy must be affixed on the 8 & 1/2" x 11" full color copy.

The winning designer will be required to submit an electronic copy of the design. Contestant is limited to no more than 6 colors.

The theme and sub-theme are optional.

You need to fill out and staple the form provided on the page at the end of the contest rules

State Only Contest Rules

IV. General Information:

This pin will be no greater than 1&1/2" inches at its widest point.

Reduce the design on a copier to see what it will look like at 1&1/2" inches and submit with the original design.

Only solid colors should be used (**no shading, blending of colors**).

Narrow detailed color patterns often cannot be separated on a pin that size.

If possible, please use the Pantone Matching System (PMS) of numbering colors. A PMS color guide can be found at any printing company and some high school art or graphic departments.

The SkillsUSA Nebraska Board of Director and the SkillsUSA Nebraska Director reserve the right to alter the design used for the State Pin.

All designs become the property of SkillsUSA Nebraska and may be used for other promotions.

Pin Design Identification Sheet

Name _____

School _____

(Fill the following line out when you arrive at State Headquarters for State Conference Registration):

Contestant Registration Number _____

STATE T-SHIRT DESIGN CONTEST REGULATIONS

I. Purpose:

Create (either computer aided or free hand) a T-Shirt design.

A medal will be awarded for the first, second and third place designs. The first place winning design will be the design placed on the State T-Shirt.

This contest is open to Secondary and Post-Secondary division contestants. There will only be one winner regardless of division.

II. Clothing Requirements:

There is no clothing requirement for the State T-Shirt Design Contest

III. Eligibility:

Any SkillsUSA member is eligible to submit an entry which meets the guidelines below.

V. Guidelines:

Your drawing will need to follow these parameters:

The word **Nebraska** must be incorporated somewhere on the design.

The letters **SkillsUSA** must be incorporated somewhere on the design.

The current state conference year must be displayed on the design.

It is preferred that "Nebraska State Leadership and Skills Conference" appear somewhere on the design.

Submit a full color copy of the artwork on **8 & 1/2" x 11"** 16 lb. paper **only**. Glossy photo paper, plastic sleeves or picture frames of any kind are **NOT** to be used in submitting t-shirt designs.

The winning designer will be asked to send an electronic copy of the design to the State SkillsUSA office after the conference. The electronic copy will be sent to the company that prints the t-shirts.

Contestant is limited to no more than 4 colors.

The theme and sub-theme are optional.

You need to fill out and staple the form provided on the page at the end of the State Only T-Shirt Rules.

VI. General Information:

There is no restriction on the location or size of the design. The design can be on the front of the shirt, on the back of the shirt or the design can be on both the front and the back. If possible, please use the Pantone Matching System (PMS) of numbering colors. A PMS color guide can be found at any printing company and some high school art or graphic departments.

The SkillsUSA Nebraska Board of Director and the SkillsUSA Nebraska Director reserve the right to alter the design used for the State T-Shirt.

All designs become the property of SkillsUSA Nebraska and may be used for other promotions.

State T-Shirt Design Identification Sheet

Name _____

School _____

(Fill the following line out when you arrive at State Headquarters for State Conference Registration):

Contestant Registration Number _____

TECHNOLOGY TEAM PROBLEM SOLVING

I. Purpose:

To foster teamwork and problem solving skills through competition.

II. Clothing Requirements:

SkillsUSA or appropriate conference attire. Your school name should not appear on any clothing.

III. Eligibility:

Any SkillsUSA Nebraska member who qualifies for SkillsUSA Nebraska Leadership & Skills conference is eligible to serve on a **team of 3-5 members**.

IV. Equipment and Materials:

The competing teams will receive contest details, tools and materials necessary to develop a solution to a specific problem.

V. Procedures:

A. All members of a team must be present at the announced location and time for the start of the competition.

B. Each team will receive contest details, tools, supplies, and related materials necessary for a problem to be solved specifically for the competition. The solution to the problem must be created using the materials provided.

C. Each team will develop a solution to the problem by:

1. Identify the Problem
2. Brainstorm
3. Design
4. Build, Test & Evaluate, Redesign
5. Share Solution

D. Each team will work in a designated area. All construction work must be done in the assigned area with the materials provided. Also, appropriate safety procedures must be followed during the construction and testing phases.

E. Forms for sketches and procedures will be provided and are to be turned-in for evaluation at the end of the contest.

F. The solution to the problem must be completed and tested within the time announced for the activity.

G. Judges will evaluate the device built to solve the problem, related sketches and forms, and will witness the actual solution to the problem.

VI. Scoring:

Scoring can be based on: All team members present; Clothing Requirements; Identifying the Problem; Solution Design (Brainstorming, Sketch, Creativity); Solution Fabrication (Construction, Aesthetics); Solution Testing (Test Procedures, Evaluation); Solution Output (Fabrication, Results); and Rule Violations.