TRANSPORTATION MODELING

OVERVIEW

Using only designated materials and following required specifications, participants design and produce a scale model of a vehicle that fits the annual design problem and that takes appearance and realism into consideration.

The design problem for 2015 is helicopters.

The design problem for 2016 is riding lawnmowers.

PURPOSE

Participants experience the vehicle design process, from researching and conceptualizing a design, to making drawings, and building and testing a scaled model.

ELIGIBILITY

Participants are limited to one (1) individual per chapter, one (1) entry per individual.

TIME LIMITS

Entries must be started and completed during the current school year.

ATTIRE

Competition attire, as described in National TSA Dress Code (www.tsaweb.org/Dress-Code), is required for this event.

PROCEDURE

A. Participants check in their entries at the time and place stated in the conference program.

B. Evaluators review entries. Neither students nor advisors are present at this time.

C. Documentation (the portfolio), model, and display are combined to determine final standings.
It is essential that students and advisors routinely check the TSA website (www.tsaweb.org) for updated information about TSA general rules and competitive events. This information is found on the website under Competitions/Updates and Clarification. When students participate in any TSA competitive event, they are responsible for knowing of updates, changes, or clarification related to that event.

REGULATIONS

A. Chapter entries must include a scale model, a display, and documentation (a portfolio).

B. The model, display and documentation (a portfolio) must meet the following specifications:

**Model and Display**

1. The scale model must accurately reflect the annual design problem.

2. The model must be presented for evaluation on a display not to exceed 15" deep x 24" wide x 24" high (including the model). The portfolio is not considered part of the display but is placed with it. TSA will not provide electrical access for displays. The use of dry cell batteries is permissible, but they must be contained within the stated display space.

3. The model main body itself must be made from wood.

   *Using pre-manufactured model vehicle bodies is prohibited (including hoods, fenders, wings, propellers, etc.). It is permissible to use pre-manufactured parts such as body strengtheners, plastic canopy, exhausts, head and tail lights, windshields, and antennae. They may be attached to or enclosed within the vehicle and may be constructed from materials other than wood, excluding glass or liquids. These parts must be fastened securely.*

4. The finished vehicle size must fit inside the display space noted above.

5. The designer must choose a scale for the vehicle so that it meets Regulation 4; the scale must be specified in the documentation.

6. When included, wheels must roll; their dimensions must be consistent with the scale of the vehicle body.

**Documentation**

1. Documentation for this event must not include the name of the chapter or state. All ideas, text or images from sources
other than the designer must be cited. Cited works must be in MLA format. Pages that are 11" x 17" in size are to be folded to fit in the portfolio, described below.

2. Documentation materials (comprising a "portfolio") are required and should be secured in a clear front report cover. In addition to the 11" x 17" pages noted below, the report cover must include the following single-sided, 8½" x 11" pages, in this order:
   a. Title page with the event title, the conference city and state, and the year; one (1) page
   b. Table of contents; pages as needed
   c. Description of designer’s vehicle, making note of the scale used, inspiration for the choice and design of the vehicle, history and evolution of the original vehicle, as well as design elements that set the vehicle apart from others (e.g. fuel used, unique features); one (1) page
   d. Photos of current or past vehicles that are similar to this year’s theme or that inspired this entry; one page.
   e. Concept drawings/detailed sketches or 3D CAD modeling; two (2) pages (11" x 17" size)
   f. Photos of the clay, foam, or wax mock-up; one (1) page
   g. Final technical illustrations (orthographic); two (2) pages (11" x 17" size)
   h. Photos of the production of the model; one page.

EVALUATION

Entries are evaluated by a combination of points earned from the documentation portfolio and the model.
STEM INTEGRATION

This event aligns with the STEM educational standards noted below. Please refer to the STEM Integration section of this guide for more information.

Science, Technology, Engineering, Mathematics

COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

PRIMARY LEADERSHIP SKILLS

Leadership skills promoted in this event:

- COMMUNICATION — Students document their research and design process. Suggested leadership lessons: Fact or Fiction and Promote It
- CRITICAL THINKING — Students analyze research in order to create an appropriate and unique model. Suggested leadership lessons: Critical Thinking Tips and Put Yourself In Their Shoes
- PROBLEM SOLVING — Students determine the design of their entry based on research. Suggested leadership lessons: Lend A Hand and Problem Solving Steps

Additional leadership skills promoted in this event: ethics, evaluation, creative thinking

TSA AND CAREERS

This competition connects to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use The 16 Career Clusters chart and the TSA Competitions and The 16 Career Clusters grid as resources for information about careers.

CAREERS RELATED TO THIS EVENT

- Automotive designer
- Automotive engineer
- Digital modeling technician
- Industrial designer
- Industrial engineer
TRANSPORTATION MODELING
EVENT COORDINATOR INSTRUCTIONS

PERSONNEL
A. Event coordinator
B. Assistants, two (2)
C. Evaluators, two (2) or more

MATERIALS
A. Coordinator’s notebook containing:
   1. Event guidelines, one (1) copy for the coordinator and for each evaluator
   2. Official rating forms
   3. List of entries with finalist report
   4. List of evaluators/assistants
   5. Summary sheets
   6. Results envelope

RESPONSIBILITIES
A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator’s notebook. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.

B. Inspect the area(s) in which the event is being held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.

C. Check in the entries at the time stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC chairperson. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant’s control. Requirements for attire do NOT apply during check-in.

D. Secure the entries in the designated area.

E. One (1) hour before the event is scheduled to begin, meet with your evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
F. For participants who violate the rules, the decision either to deduct 20% of the total possible points or to disqualify the entry must be discussed and verified with the evaluators, event coordinator, and a CRC manager; all must initial either of these actions on the rating form.

G. Collect and position the Transportation Modeling portfolios and models for viewing by the evaluators, and assist them as necessary during the event.

H. When it is necessary to move model vehicles, only evaluators and official personnel should handle the models. Extreme care should be taken to avoid damage to the entries.

I. Complete and submit the finalist report, which includes a ranking of the ten (10) finalists, and all related forms in the results envelope to the CRC room.

J. At the designated time, return models, displays, and portfolios to student owners after verifying official conference identification.
Transportation Modeling

Participant/Team ID# _________________________________

TRANSPORTATION MODELING

2015 & 2016 OFFICIAL RATING FORM

Model and Display (50 points)

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>Minimal performance 1-4 points</th>
<th>Adequate performance 5-8 points</th>
<th>Exemplary performance 9-10 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production quality (X1)</td>
<td>The body exhibits poor production quality; the surface is rough; there is little or no attention to detail.</td>
<td>There is some evidence of proper production techniques; the body is adequate.</td>
<td>The body demonstrates excellent production techniques with obvious effort and attention to detail.</td>
</tr>
<tr>
<td>Paint and finish (X1)</td>
<td>Surface imperfections are evident; the model is sticky, and/or the painting quality is low.</td>
<td>The quality of the painted surface is acceptable, with some imperfections visible.</td>
<td>The painted surface is exceptional, with little or no visible imperfections.</td>
</tr>
<tr>
<td>Appropriate to designated problem (X1)</td>
<td>The model does not relate to the stated annual design theme.</td>
<td>The model generally relates to the stated annual design theme.</td>
<td>The model effectively represents and portrays the stated annual design theme.</td>
</tr>
<tr>
<td>Details (X1)</td>
<td>There is a very weak and limited attempt to include identifying characteristics and/or additional parts to help create a realistic appearance.</td>
<td>The model includes some identifying characteristics and/or additional parts that give it a sense of realism.</td>
<td>The model displays exemplary effort to include identifying characteristics and/or additional parts that give the final model a realistic appearance.</td>
</tr>
<tr>
<td>Display (X1)</td>
<td>The quality of the display is extremely poor and/or exceeds size requirements.</td>
<td>The display is adequately created and meets the size specifications.</td>
<td>The display is exemplary, includes eye-catching details and meets the size specifications.</td>
</tr>
</tbody>
</table>

SUBTOTAL (50 points)

Documentation (70 points)

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>Minimal performance 1-4 points</th>
<th>Adequate performance 5-8 points</th>
<th>Exemplary performance 9-10 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio components See Regulation B.1., Documentation (X1)</td>
<td>The portfolio is missing several components, and/or it is unorganized; it is messy and lacks quality.</td>
<td>Most components are included in the portfolio; it is adequately organized.</td>
<td>All portfolio components are included and completely organized; effort and quality of work are evident.</td>
</tr>
<tr>
<td>Vehicle description including history; research report; scale of model (X1)</td>
<td>The description is inadequate; research and reference to credible sources is lacking; the scale is incomplete.</td>
<td>The description is adequate; research is evident with some documentation; scale is stated and accurate.</td>
<td>An excellent description is included, with necessary research referenced and documented to support the model solution; the scale is stated and accurate.</td>
</tr>
<tr>
<td>Concept drawings, detailed sketches or 3D CAD modeling (X1)</td>
<td>Drawings are not to scale; the quality is poor, there are missing parts and dimensions; the drawings are not on 11&quot; x 17&quot; paper.</td>
<td>Drawings are acceptable, true to scale, and representative of the vehicle, with some details/dimensions included; the drawings are produced on 11&quot; x 17&quot; paper.</td>
<td>Drawings are accurate and complete; they include all necessary details/dimensions; they are drawn on 11&quot; x 17&quot; paper.</td>
</tr>
</tbody>
</table>
**TRANSPORTATION MODELING (continued)**

<table>
<thead>
<tr>
<th>Documentation (70 points) (continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Photo examples of current/past similar vehicles (X1)</strong></td>
</tr>
<tr>
<td><strong>Photos of clay/foam or wax model (X1)</strong></td>
</tr>
<tr>
<td><strong>Final technical illustrations (orthographic plans) (X1)</strong></td>
</tr>
<tr>
<td><strong>Photos of production of the model (X1)</strong></td>
</tr>
</tbody>
</table>

**SUBTOTAL (70 points)**

Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator, and manager of the event. Record the deduction in the space to the far right.

Indicate the rule violated: __________

(To arrive at TOTAL score, add any subtotals and subtract rules violation points, as necessary. Check your math twice!) **TOTAL (120 points)**

Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: __________________________ Signature: __________________________

Evaluator

Printed name: __________________________ Signature: __________________________