2017 INTERNATIONAL BUS ROADEO HANDBOOK

Published by the
International Bus Roadeo Committee

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FOREWORD

The American Public Transportation Association is proud to present the APTA International Bus Roadeo Handbook. The International Bus Roadeo includes competition events for both bus operators and bus technicians. Awards are given in each practice area and there is an overall grand prize for the transit system with the highest combined score for the bus operator and bus maintenance team.

The International Bus Roadeo Competition takes place the Sunday prior to APTA's Bus and Paratransit Conference. Roadeo activities begin on the Friday before the conference with an orientation and culminate on Tuesday night at the Roadeo Banquet.

The International Bus Roadeo Committee's goals are to provide the most equitable competition possible, encourage the highest degree of professionalism in bus operators and technicians, and build camaraderie among all those who compete. Through sportsmanship and pride of work, the APTA International Bus Roadeo stands as a symbol of the important role bus operators and technicians play in providing transit's customers with safe, reliable service. We look forward to your support and participation in this year's International Bus Roadeo competition. This handbook contains rules and guidance for Roadeo participants.

> **PLEASE NOTE:** Roadeo courses, problems, and distances are depicted here as guidelines, with distances and measurements of approximate value. They should be used as a general resource in helping the participant prepare for the competition, but may not reflect the specific measurements on the day of the Roadeo.

Thank you for your interest and participation. Good luck!

Schedule for the 2017 International Bus Roadeo

Thursday, May 4
Roadeo Committee Course Setup
Mechanics teams and operators register

Friday, May 5
Mechanics teams and operators orientation

Saturday, May 6
Mechanics teams written test
Mechanics teams training sessions
Operators driving course practice, Pre-Trip Competition and Customer Service Challenge Interviews

Sunday, May 7
International Bus Roadeo Competition
Swap Meet

Monday, May 8

Operator Workshops:
Verbal and Postural De-escalation Techniques, Behaviors of Concern, Predicting & Avoiding Incidents

Maintenance Workshops:
Introduction to IntelligAIRE III

Bus Display & Lunch

Tuesday, May 9

Roadeo Committee Debrief

Operator Workshop:
Use of Force Continuum, Self-defense Within the Guidelines of the Law

Maintenance Workshop:
Transmissions: I have an oil Analysis report but how do I use it?

Product Showcase & Lunch

International Bus Roadeo Awards Banquet

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APTA's Vision Statement
Be the leading force in advancing public transportation.

APTA's Mission Statement
To strengthen and improve public transportation, APTA serves and leads its diverse membership through advocacy, innovation, and information sharing. APTA and its members and staff work to ensure that public transportation is available and accessible for all Americans in communities across the country.

APTA's Core Values Statement
Leadership, Integrity, Excellence, Diversity, Inclusiveness, Fairness and Equity, Teamwork, Professionalism, and Accountability

APTA's Policy on Diversity
APTA recognizes the importance of diversity for conference topics and speakers and is committed to increasing the awareness of its membership on diversity issues. APTA welcomes ideas and suggestions on how to strengthen its efforts to meet these important diversity objectives.

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GENERAL INFORMATION

NOTE: Each APTA member transit system is entitled to send one (1) operator in either the 40+ foot **or** 35- foot category and/or one (1) maintenance team (maximum of 3 contestants) to the International Bus Roadeo Competition. APTA reserves the right to interpret this rule according to the transit system's membership status.

1. Contestant qualifications

In order to compete in the APTA International Bus Roadeo, contestants are required to meet certain qualifications. Local transit systems are expected to enforce the following eligibility requirements. Contestants must:

1. Be employees of an APTA member transit system or represent a Community Transportation Association of America (CTAA) member organization
2. Have worked, full-time or part-time, in the field in which they are competing (operator or technician) for not less than one year prior to the date of the Roadeo and must have a job description that matches that position
3. Meet their local transit system's guidelines on sickness and absenteeism
4. Possess a Commercial Driver's License (CDL)

2. Ineligibility

Any of the following conditions during the span of (one) 1 year prior to the Roadeo competition date make an employee ineligible to compete:

1. A preventable or chargeable accident
2. A suspension as a result of punitive action
3. Compensation for and/or functioning as an instructor/trainer for 60 days or more in the previous year

NOTE: Contestants are not permitted to receive compensation for practice time during the time between their local Roadeo and the APTA International competition. For purposes of the Roadeo, compensation is considered to be paid time.

3. Team registration

International Bus Roadeo badges, program, and banquet tickets will be available at the APTA Roadeo team registration area.

4. Schedule

The general Roadeo schedule is listed below. A more detailed schedule with times and locations is located in Appendix 8 and at registration.

- **Friday:** Orientation
- **Saturday:** Operator Pre-Trip Inspection Competition, Operator Practice, , Customer Service Challenge preliminary interview and maintenance training sessions
- **Sunday:** Competition, Swap Meet
- **Monday:** Training Workshops
- **Tuesday:** Training Workshops, International Bus Roadeo Grand Awards Banquet

5. Spectators

Spectators are welcome in the spectator areas but are not allowed on the operator obstacle course. The availability of spectator area for the maintenance events varies from year to year based on space. Due to the nature of the maintenance events, a common spectator area is not available. However, family and property members may observe their team compete in each of the events. Still photos are allowed during the competition. Absolutely no video cameras or videotaping are allowed in the maintenance competition area.

AWARDS/SCORING

1. General

Each International Bus Roadeo contestant will receive a Participant's Award.

Award winners will be announced at the International Bus Roadeo Grand Awards Banquet on Tuesday evening.

Final scores and order of finish for all contestants will be available immediately following the banquet from the Roadeo Committee members.

Other prizes will be mailed to the winners following the Roadeo.

2. Grand champion and combined competition awards

1. Only those transit agencies with participants in both the Operators' and Technician's events are eligible to compete for the Grand Champion Award.
2. The Grand Champion will be determined by the averaged percentage of scored points for both events. The percentage is determined by dividing the points scored by the points possible. For example:

Total possible points:	Operator: 700	Maintenance: 2,575
Team A	Operator: 675	Maintenance: 2,225
Team B	Operator: 625	Maintenance: 2,375

Team A's score would be calculated as follows:
Operator Score: 96.43 % (675/700)
Maintenance Score: 86.41% (2225/2575)
Add the percentages together: 96.43 % + 86.41% = 182.84 %
Divide by 2: 182.84 ÷ 2 = **91.42**

Team B's score would be calculated as follows:
Operator Score: 89.29 % (625/700)
Maintenance Score: 92.23 % (2375/2575)
Add the percentages together: 89.29 % + 92.23 % = 181.52 %
Divide by 2: 181.52 % ÷ 2 = **90.76**

Team A would win the Grand Champion Award.

1. The Grand Champion team members will each receive $1,500 in U.S. currency and award. The transit system of the Grand Champion winners will also receive a plaque/trophy.
2. Ties for the Grand Champion will have the following tiebreaker formula: the lowest total combination of the elapsed time for the designated bus operator plus the total elapsed times for the Allison Power Train, Cummins/Voith Power Train, and Brake Board events.
3. Teams placing second and third in the combined competition will receive plaques/trophies.

3. Operator/maintenance awards

1. The first place winners in each of the competitions, 35'-/40'+ Operator and Maintenance, will each receive $1,000 in U.S. currency, a plaque/trophy and a Champion's ring. The transit systems of the first place winners will also receive a plaque/trophy.
2. The second place winners in each of the competitions, 35'-/40'+ Operator and Maintenance, will each receive $500 in U.S. currency and a plaque/trophy. The transit system of the second place winners will also receive a plaque/trophy.
3. The third place winners in each of the competitions, 35'-/40'+ Operator and Maintenance, will each receive $250 in U.S. currency and a plaque/trophy. The transit system of the third place winners will also receive a plaque/trophy.
4. The highest scores for the 35'- and 40'+ Operators will be recognized by a separate award.

5. The highest scores in each of the maintenance events will be recognized by a separate award.
6. Sponsors of the Maintenance events and the Operator Pre-Trip also provide prizes.

4. Customer Service Challenge Award

1. The first place winner in the Customer Service Challenge will receive a plaque/trophy. The winner's transit system will also receive a plaque/trophy.
2. The Customer Service Challenge is not included in the scoring for the Grand Championship.

OPERATORS' ROADEO

1. Scheduled activities

Please refer to Appendix 8 for a more detailed schedule of events, times and places.

1.1 Friday

Orientation

1. The final course layout will be distributed.
2. Official starting time schedules and course diagrams will be distributed.
3. On Field Roadeo Officials will be identified.
4. Customer Service interview times will be confirmed.
5. Question and Answer Session regarding the published rules

1.2 Saturday

Driving practice

1. Visual inspection of the roadeo obstacles is only allowed while outside of the designated course perimeter on practice day and competition day.
2. Contestants will be allowed to inspect the course visually (from the course periphery only) on practice day only.
3. On practice day, contestants are required to check in at the on-site registration area at least 60 minutes prior to their scheduled start time. Contestants who report late on practice day will not be allowed to make the practice run.
4. Each contestant will be allowed one practice run.
5. While the practice run is not mandatory, contestants are strongly encouraged to participate.
6. Uniforms are optional for practice, but proper footwear must be worn.

Pre-trip inspection

1. Operators will perform a Pre-Trip Inspection that will be scored.
2. There is no practice for this event. Operators will be assigned a time to report for the Pre-Trip Inspection Competition.
3. Operators should report 15 minutes prior to their assigned time to the Pre-Trip Inspection report area.
4. The Pre-Trip Inspection Competition is mandatory for all competing operators and is included in the final scoring.

Customer service preliminary round (to qualify for customer service challenge on Monday)

1. This is an optional event. It is scored separately from the Roadeo. It is not part of the Roadeo and the results will not be included in the Roadeo competition score.
2. Operators interested in competing in the Customer Service Challenge must participate in a face-to-face interview with the judging panel on Saturday.
3. Operators can sign up on Friday at Orientation.
4. The Customer Service Challenge judges will be located at the Roadeo site and will interview interested contestants starting at 9 a.m.
5. Interviews will take no more than 10 minutes.

1.3 Sunday

Competition

1. Operators are required to report to the Registration area at the Roadeo site at least 60 minutes prior to their scheduled competition start time. Operators who report late on competition day may be disqualified from competition.
2. On competition day, operators will be judged on appearance and driving skills only.
3. On competition day, operators will not be tested with a safety quiz or defective bus test.
4. Operators must be in the full regulation uniform of their transit system for competition inspection. Upon completion of the inspection, operators will be allowed to remove coats and ties, if desired.
5. Each course is uniquely engineered for every Roadeo. Therefore, the order of events (obstacles) may be laid out differently than shown in this handbook. However, the construction of each obstacle will be in accordance with the provisions stated in this handbook.
6. Roadeo Officials will attempt to utilize the measurements set forth in this handbook; however, Roadeo Officials reserve the right to make changes based on the space available at the Roadeo site and equipment variations. The course will be verified by the On-field Officials to ensure that all obstacles are negotiable with the equipment provided.

2. Equipment

1. Operators will compete using either a 40+ or 35- foot bus.
2. The buses will be equipped with bike racks if used by the host property.
3. Operators must drive the vehicle size selected when initially registered.
4. Competition vehicle specification sheets can be found in the Host Information section of this handbook.

3. TrackIT

This palm-sized device will *objectively* measure braking and cornering forces and produce an automatic 'smoothness of operation score', to determine the driver's ability to smoothly navigate the obstacles. TrackIt will also be used for automatic timekeeping and data collection to assist on-board judges in scoring the event.

4. Competition events

4.1 Pre-trip inspection

4.2 Competition – Saturday

The Pre-Trip Inspection competition is mandatory and an important part of your overall score. This can sometimes be the difference between being the champion or not. In order to identify the planted defects, it is important to have a systematic approach to the pre-trip inspection to ensure complete coverage of the bus. It is highly recommended you prepare for this competition event and you spend time in the display bus to familiarize yourself with the model and series of the bus.

4.2.1 Defects

1. Eight (8) equipment-related defects and one (1) security hazard are planted on or in a bus. These defects would make a bus operationally unready or unsafe.
2. Defects are of a type that an operator would find when performing a pre-trip inspection.
3. Identification of defects does not require starting the bus or crawling under the bus.
4. Operators will not be allowed to have a checklist of defects to refer to during the competition.
5. Eligible defects might include broken, loose, bad, missing, or incorrect:
    - seats
    - any type of lights
    - windows
    - stanchions
    - flooring
    - fire extinguisher
    - windshield
    - wipers
    - mirrors
    - number
    - doors
    - license plate
    - bell cord

    And a security hazard such as an abandoned package or briefcase.

6. Ineligible defects include:
    - defects under the bus
    - exterior body damage
    - paint problems
    - wheelchair operations
    - kneeling functions
    - radios
    - fare boxes
    - destination signs
    - battery compartment
7. Equipment where multiple defects are possible will be counted only once i.e., seats, windows, lights.
8. Front and rear windows, headlights, tail lights, brake lights, mirrors, and turn signals will each count as separate defects.

4.2.2 Time

1. Each operator will be allotted eight (8) minutes to inspect, locate, identify, and legibly record any defects found.
2. Time warnings will be given to the operator at the two (2) minute, one (1) minute, and 30 second time marks.
3. Recording defects, returning bus to original condition and securing doors will not be allowed after time has elapsed.

4.2.3 Scoring

1. Five (5) points will be awarded for each of eight (8) planted defects found, and ten (10) points will be awarded for one (1) planted security challenge for a maximum of fifty (50) points.
2. Points will be awarded only for those recorded defects that were planted by the judges. No points will be awarded for identification of defects which were not planted.
3. The operator will notify the judge when finished. Once notice is given, the operator may not list additional defects.
4. The judge will review the list of defects with each operator for clarification.
5. A penalty of one (1) point will be assessed for each instance where the bus is not returned to its original condition; for example, one (1) point assessed for lights left on, wipers left running, master switch on, windows open, and escape hatches open, etc.

Starting the bus constitutes a safety violation and will result in the operator being disqualified from this event. The inspection bus will be supplied with necessary electrical power and air pressure

4.3 Operators' Obstacle Course

The eleven driving obstacles are worth 50 points each. See Appendix 4 for operators obstacle descriptions.
Reckless use of equipment and flagrant disregard for the safety of others may result in immediate disqualification.

4.3.1 Serpentine

1. This obstacle tests the operator's ability to negotiate tight turns. The driver enters the course through a 'gate' and steers in and out through three (3) cones and exits the course through a 'gate.'
2. Points will be deducted for:
    - touching cones
    - shifting into reverse
    - not completing course as designed

4.3.2 Offset Street

1. This obstacle requires the operator to drive through two separate narrow lanes that are offset to the right one full lane's width from each other.
2. Points will be deducted for:
    - touching cones
    - shifting into reverse
    - not completing course as designed

4.3.3 Rear Duals Clearance

1. This is an obstacle where the operator must drive through a lane with the right dual tires. The lane is only slightly wider than the total outside width of a pair of rear duals and is marked with large flat washers and tennis balls. The lane diminishes in width from the entrance to the exit.
2. Points will be deducted for:
    - touching balls
    - shifting in reverse
    - not completing course as designed

4.3.4 Right-Hand Turn

1. This obstacle tests the operator's ability to negotiate a tight 90° turn. The corner is marked with cones and the right rear tire of the bus is to pass within six (6) inches of the corner cone.
2. Points will be deducted for:
    - touching cones
    - shifting into reverse
    - excessive right rear tire clearance
    - not completing course as designed

4.3.5 First Customer Stop

1. This event simulates a customer stop. The operator should stop the vehicle with the front tires within six (6) inches of the simulated curb. Rear tires must be within 15 inches of the simulated curb. After stopping the vehicle, the operator is required to open the door to complete the test. An ADA stop announcement must be made prior to exiting the passenger stop.
2. Points will be deducted for:
    - touching cones
    - touching 'curb'
    - front tire measurement over six (6) inches
    - rear tire measurement over 15 inches
    - shifting into reverse
    - not completing the course as designed

4.3.6 Left-Hand Reverse

1. This obstacle tests the operator's ability to back the vehicle between two obstacles which requires the vehicle to back up to the left.
2. Points will be deducted for:
    - touching cones
    - shifting into reverse after the initial reverse
    - rear clearance beyond 36 inches
    - not completing the course as designed

4.3.7 Left-Hand Turn

1. This obstacle tests the operator's ability to make a tight left turn in a close situation. The contestant is required to steer the vehicle into a 90° turn without touching any of the cones.
2. Points will be deducted for:
    - touching cones
    - shifting into reverse
    - not completing course as designed

4.3.8 Second Customer Stop

1. This event simulates another customer stop. The operator should stop the vehicle with the front tires within (six) 6 inches of the simulated curb. Rear tires must be within 15 inches of the simulated curb. After stopping the vehicle, the operator is required to open the door to complete the test. An ADA stop announcement must be made prior to exiting the passenger stop.
2. Points will be deducted for:
    - touching cones
    - touching 'curb'
    - front tire measurement over six (6) inches
    - rear tire measurement over 15 inches
    - shifting into reverse
    - not completing the course as designed

4.3.9 Right-Hand Reverse

1. This obstacle tests the operator's ability to back up the vehicle between two obstacles which requires the vehicle to back up to the right.
2. Points will be deducted for:
    - touching cones
    - shifting into reverse after the initial reverse
    - rear clearance beyond 36 inches
    - not completing the course as designed

4.3.10 Diminishing Clearance

1. This obstacle tests the operator's ability to judge the position and speed of his/her vehicle. The contestant is required to drive through a narrowing, V-shaped channel outlined with barrels. The bus must obtain a minimum speed of 20 miles per hour within the obstacle.
2. Points will be deducted for:
    - touching barrels
    - speed below 20 miles per hour
    - not completing the course as designed

4.3.11 Judgment Stop

1. This event tests the operator's ability to judge stopping distances between the bus and a small object directly ahead. A small cone is placed on the final stop. The operator must stop with the front bumper or bike rack within six (6) inches of the cone.
2. Points will be deducted for:
    - touching cone
    - excessive total stops
    - excessive clearance beyond six (6) inch limit
    - not completing the course as designed

4.4 Other scored events

4.4.1 Safety Habits

1. The operator's safety habits will be reviewed while operating the vehicle.
2. This event category is worth 25 points.
3. Points will be deducted for:
    - failure to use proper turn signals
    - failure to sound horn before backing up
    - failure to use flashers while backing up
    - moving vehicle with door open
    - poor posture
    - poor use of mirrors
    - poor use of hands
    - poor use of feet

4.4.2 Smoothness of Operation

1. The operator's ability to deliver a smooth ride will be evaluated during the driving events.
2. This event category is worth 25 points.
3. Points will be deducted for:
    - failure to make ADA announcements
    - sudden stops
    - sudden starts
    - abrupt turns

4.4.3 Personal Appearance

1. The operator's personal appearance will be evaluated for neatness, cleanliness and professionalism. The contestant must report wearing the uniform appropriate for his/her transit system.
2. This event category is worth 50 points.
3. Points will be deducted for:
    - wrinkled, dirty, incomplete uniform
    - unpolished or dirty shoes
    - unkempt personal appearance
4. Operators who report wearing shoes with heels that exceed 1½ inches will not be allowed to compete unless the shoes are changed prior to competing. Shoe heels built up for medical/corrective purposes will be allowed based on approval by the course judge (chairman or vice chairman).

4.4.4 Total course time

1. Operators are timed for each driving course event. Timing begins when the operator begins the course and ends with the completion of the judgment stop.
2. Time is stopped for mechanical trouble, any type of course blockage that would impede the operator progress and where measurements are required for event scoring.
3. One point is deducted for each second over the seven (7) minutes allotted to complete the course. Maximum deduction is 180 points.
4. A maximum of 10 minutes will be allowed to complete the course. Operators will be required to vacate the course after 10 minutes.

5. Operator scoring

Operator Score Sheets can be found in Appendix 5.

5.1 Driving Competition

1. The 40+ and 35- competitions are two separate competitions.
2. There will be a first, second and third place award in each competition.
3. There are 700 maximum points for the driving portion of the competition.
4. Fifty (50) points will be deducted for obstacles attempted in the wrong order.
5. Ten (10) points will be deducted for any course marker not associated with an event (obstacle) touched.
6. The full value of the event (obstacle) will be deducted for any event not attempted or completed as designed.
7. In case of tie, the tie breakers will be as follows
    - Lowest time on the course
    - Closest measurement to the Judgment Stop cone.
8. Judgment of events (obstacles) will be the responsibility of the Event Judges. All decisions made by Event Judges are final.
9. Procedural questions must be directed to appropriate On-field Roadeo Officials (Chairman or Vice Chairman).
10. Contestants are only allowed on the course when competing.
11. Contestants are not permitted to talk to Event Judges at any time during the competition.
12. Roadeo Officials will enforce all Roadeo 'Rules and Regulations', supervise event judges, and provide on-the-spot procedural decisions. The Chair of the International Bus Roadeo Committee is the Chief Roadeo Official.

5.2 Pre-Trip Inspection

1. There are a maximum of 50 points for the Pre-Trip Inspection.
2. The highest score for the Pre-Trip Inspection will be recognized by a separate award. The sponsor USSC will provide an award to the winner of this event.

TECHNICIANS' ROADEO

1. General information

1. Maintenance teams normally consist of three (3) maintenance employees. Two member maintenance teams may compete but must compete without concessions.
2. All members of the maintenance team may participate in all events.
3. Contestant teams must arrive at the on-site check in 60 minutes prior to competition time and must arrive at the maintenance holding area at least 30 minutes prior to their scheduled competition time. Teams arriving late may be disqualified from the competition.
4. Each team member will be supplied with a clipboard, paper, pencil, flashlight, necessary rags, and compartment door T-key. Each team will be supplied with team numbers and team stickers for each event.
5. Each team member will be issued safety glasses when they report to on-site check in on competition day. Safety glasses where required by event shall be worn. Maintenance team members may bring their own safety glasses which will be subject to examination at on-site check in to ensure they meet safety requirements.
6. Hearing protection will be provided at both engine modules. Mechanic team members may bring their own hearing protection which will be subject to an examination at on-site check in to ensure they meet safety requirements.
7. Abbreviations used in the shop or industry are allowed as long as they are understandable to the judges.
8. A general location must be given when identifying multiple equipment defects, i.e., window RR.
9. Teams will incur penalties whenever they use tools/test equipment improperly and/or violate safety rules.
10. When listing defects, write legibly.
11. For events that only allow a limited number of defect listings, team members may cross out unwanted listings during the allotted time or they will be counted in the order they are listed.
12. Any Maintenance team member seen at the Roadeo site on Saturday (practice day) may cause their team to be immediately disqualified.
13. On competition day, contestants may not watch or be in any of the competition areas either before or after competing.
14. Still photos are allowed during the competition. There will be absolutely no video cameras and/or videotaping in the maintenance competition area.
15. Maintenance teams must wear proper clothing including closed toe footwear and long pants (no shorts) for the competition.

2. Competition events

Technicians are required to diagnose and repair complaints of low power, excessive smoke, harsh shifting and/or other performance related problems. Proper diagnostic and troubleshooting techniques then become essential in insuring that buses meet the required levels of performance for daily revenue service. This, then, becomes another means of testing and measuring a team of technicians' knowledge, skills and abilities.

The Technicians Competition Events include the following:

1. Written Test
2. USSC Vehicle Inspection
3. Allison Transmission/Cummins/EMP Power Train Event
4. Custom Training Aid/Bendix Air Brake Board Event
5. Cummins/Voith Power Train Event
6. Thermo King HVAC IntelligAIRE Event
7. MCI Multiplex Module
8. Vapor Door Event

2.1 Written Test

1. **Description:**
    - Each maintenance team will jointly take a written test of 50 questions.
    - The test will use the ASE format with questions split between general knowledge, engine, HVAC, brakes, electrical and transmission.
2. **Time:**
    - Team members are allotted 30 minutes to answer all test questions
    - Time warnings will be given to the team at two (2) minutes, one (1) minute, and 30 second time marks;
3. **Scoring:**
    - Each question is worth 2.5 points.
    - There is a maximum of one hundred twenty five (125) points.
4. **Tie breakers on the written test will be as follows:**
    - First tie breaker: least amount of time to complete the test
    - Second tie breaker: correct answers for four (4) identified questions

2.2 USSC Vehicle Inspection

2.2.1 Defects

1. Fourteen (14) equipment-related defects are planted on or in a bus. These defects would make a bus operationally unready. Defects are of a type that a technician should find during a minor mechanic inspection.
2. Each team member may list unlimited defects.
3. Identification of defects does not require starting the bus or crawling under the bus.
4. Teams will not be allowed to have a checklist of defects to refer to during the competition.
5. Eligible defects might include broken, loose, bad, missing, or incorrect:
    - seats
    - all type of lights
    - windows
    - stanchions
    - flooring
    - fire extinguisher
    - door engines
    - wipers
    - windshield
    - number
    - mirrors
    - license plate
    - doors
    - dipsticks
    - bell cord
    - a security hazard
6. Ineligible defects include:
    - defects under the bus
    - exterior body damage
    - paint problems
    - wheelchair operations
    - kneeling functions
    - radios
    - fareboxes
    - destination signs
    - battery compartment
7. Equipment where multiple defects are possible will be counted only once, i.e., seats, windows, lights.
8. Front and rear windows, headlights, tail lights, brake lights, mirrors, and turn signals will each count as separate defects.

2.2.2 Time

1. All members of a team are allotted seven (7) minutes to inspect, locate, identify, and legibly record any defects found.
2. Time warnings will be given to the team at the two (2) minute, one (1) minute, and 30 second time marks.
3. Recording defects and securing doors will not be allowed after time has elapsed.

2.2.3 Scoring

1. Twenty-five (25) points are awarded for each planted defect found, with a maximum of three hundred and fifty (350) points.
2. Points will be awarded only for those recorded defects that were planted by the judges. No points will be awarded for identification of defects which were not planted.

3. The team will notify the judges when they are finished. Once notice is given, the team may not list additional defects.
4. The judges will review the list of defects with each team for clarification.
5. A penalty of ten (10) points will be assessed for each instance where the bus is not returned to its original condition; for example, ten (10) points assessed for each compartment door not secured including the entrance door, lights left on, wipers left running, master switch on, windows open, and escape hatches open, etc.
6. A penalty of ten (10) points will be assessed for each incident of unsafe practice during the vehicle inspection.
7. Starting the bus constitutes a safety violation and will result in the team being disqualified from this event. The inspection bus will be supplied with necessary electrical power and air pressure.

2.3 Allison Transmission / Cummins / EMP Power Train Event

2.3.1 Description

The Allison Transmission / Cummins / EMP Power Train Module is composed of a Cummins EPA 2010 ISL9 engine combined with an Allison B400R transmission and EMP's Mini-Hybrid® system mounted on a portable frame. Laptops will be supplied to interface with the Allison DOC® for PC, Cummins INSITE™ and EMPower Connect™ diagnostic software programs. The Power Train Modules feature simulations of typical transit bus vehicle interfaces.

1. Cummins engine specifications are:
   - Cummins EPA 2010 ISL9
     - 540 cubic inch displacement
     - 280 hp (209 kW)
     - 900 lb-ft (1220 N-m) @ 1300 RPM
     - 2200 RPM governed speed
   - Cummins XPI Fuel System
     - CM2250 control module
     - J1939 CAN interface
     - High pressure common rail system
   - VGT™ Turbocharger
     - HE431VE variable geometry turbocharger
   - Fuel Pro Fuel Filter
     - Primary & secondary assembly
     - Integrated water separator
   - EcoFit™ Ultra-Low Emission System
     - SCR technology & DEF injection

2. Allison transmission specifications are:
   - Allison B400R Bus Series
   - 300 hp (224 kW) 925 lb-ft (1254 N-m) rating
     - TC418 Torque converter (1.98 stall torque ratio)
     - Integral output retarder
       - Low setting
       - 1100 lb-ft (1490 N-m) 400 hp (298 kW)
     - Air-actuated retarder accumulator
     - Integral sump cooling
     - Allison TransSynd TES295™ synthetic oil
   - Allison Optimized Smart Controls
     - Allison 5th Generation controls
     - Load-Based Shift Scheduling (LBSS)
     - Allison Prognostics
     - Reduced Engine Load at Stop (RELS)
     - Vehicle Acceleration Control (VAC)
     - Increased lockup availability
     - Retarder enable
     - Multi-level retarder apply system
     - Secondary shift schedule
     - Auxiliary function range inhibit

3. EMP cooling & charging system specifications are:
    - EMP Mini-Hybrid®
    - Radiator and Charge Air Cooler
        - Brazed aluminum bar/plate construction
    - Diagnostic capability
    - 4 EMP FIL-15 24 VDC Pusher fans
    - Integrated fan controllers + system controller
    - J1939 CAN Interface for system to vehicle
    - Fan reversal & diagnostic LED panel
    - Amperage – 55 amp max @ 24 VDC each fan
    - Power 450 brushless alternator
        - 450 Amp 28 VDC
        - Air cooled
        - Turn-on speed – 1250 RPM
        - Maximum speed – 6500 RPM
        - Maximum ripple voltage – 300 mV
        - Weight – 100 lbs. (45.4 kg)

2.3.2 Defects

1. Seven (7) defects or problems related to transmission, engine and cooling system malfunctions are planted. One defect will render the engine inoperable. For purposes of the Roadeo, inoperable means that the engine will not start or when started will not maintain an idle RPM that meets engine manufacturer's specification. This is the only defect that must be repaired.
2. A battery disconnect switch is located next to the batteries. It is to be returned to the OFF position at the end of the event.
3. A team may attempt to start the engine at any time to check for defects.
4. Types of defects could include:
    - Improper activation of components
    - Malfunctioning fuel system
    - Obstruction with the flow of air, water, exhaust, fuel or oil
    - Improper fluid levels
    - Defective sensors, wires and/or connectors
    - Missing assemblies or parts thereof
    - Loose or missing caps or covers

5. Defects do NOT include fluid leaks such as oil, water, fuel, etc.
6. The judges will review the list of defects with each team upon completion of time to clarify their list of defects. The team does not have to replant the one (1) repaired defect.
7. Defect determination which normally would require a running engine will not be scored if the engine is not started.

2.3.3 Time

1. Team members will be allotted ten (10) minutes to inspect, trouble shoot, diagnose, correct, and legibly record the planted defects.
2. The team is only required to correct that defect which prevents the power train from starting and/or maintaining an idle RPM that meets engine manufacturer's specification.
3. Time warnings will be given to the team at the two (2) minute, one (1) minute, and 30 second time marks.

2.3.4 Scoring

1. Fifty (50) points are awarded for each planted defect found, with a maximum of 350 points.
2. Points will be awarded for each defect correctly identified, recorded, and, in the case of that defect which renders the power train inoperable, corrected. Only those defects planted by the judges will be considered for scoring purposes.
3. Only seven defects are to be listed. If more than seven are listed, only the first seven listed will count for scoring purposes. If more than seven were initially listed, unwanted listings may be crossed out to leave the top choices, but must be completed prior to time expiration.

4. The team will notify the judges when they are finished. Once notice is given, the team may not list additional defects.
5. The judges will review the list of defects with each team for clarification.
6. A team will be penalized fifty (50) points for not having the power train in operational condition before an engine start is attempted, i.e., air cleaner removed, fuel lines disconnected etc.
7. The team will be penalized ten (10) points for misuse of any diagnostic/test equipment.
8. The team will be penalized ten (10) points for each safety violation incident.
9. In the event of a tie, the fastest time to correct the defect and start the engine which renders the engine inoperable will determine the winner.

2.4 Cummins/Voith Power Train Event

The Cummins/Voith engine transmission module is composed of a Cummins ISL 280 engine combined with a Voith 864.5 transmission and EMP's Mini-Hybrid® system mounted on a moveable frame. The engine, transmission and Mini-Hybrid® utilize the latest diagnostic software, ALADIN for Voith, INSITE™ for Cummins and EMPower Connect™ for EMP. The engine is outfitted with a non - functional air compressor.

The Cummins engine specifications are:

- The engine is a 2010 EPA Certified Cummins ISL 280 engine, six cylinders displacing 540 cubic inches. The engine is governed to 2200 rpm and produces 900 ft-lb of torque at 1300 RPM.
- It incorporates a CM 2250 Cummins ECM engine control using a J1939 signal for communication to the transmission.

- The fuel injection system is the XPI high pressure common rail system incorporated with a primary and secondary fuel filter assembly with an integrated water separator.
- The engine also utilizes a Variable Geometry HE431VE turbocharger which feeds into the Cummins After treatment System that utilizes the latest SCR technology and DEF injection.

The Voith transmission specifications are:

- The transmission is an 864.5
- There is a 6 button pushbutton selector and switches to simulate brake stage 1, 2 and 3 to activate the retarder.
- Transmission shifting functions are controlled by the latest version of the E300 controller which has had the latest version of Voith's performance and fuel savings software (SensoTop) installed.
- There are two gauges mounted on a panel which show main operating pressure and converter pressure.
- The retarder is internal to the transmission and uses Voith technology to accelerated and decelerate the unit.
- The transmission design features an integrated heat exchanger which eliminates lines to the cooler for easier installation.
- The transmission is filled with the highest quality ATF and meets the specifications listed in our most recent Service Bulletin SB118.

The EMP Mini-Hybrid® cooling system specifications are:

- There are 4 EMP FIL-15 24VDC pusher fans with integrated controllers which are commanded by the TMC system controller via EMP-link and are reversible.
- The cooling is achieved through the use of a Brazed aluminum bar/plate radiator and charge air cooler.
- Cooling system diagnostics utilize the J1939 CAN interface for system to vehicle diagnostics. Diagnostic capabilities are available either through the service tool, EMPower Connect™, or the LED lamp located near the system itself.

The EMP alternator specifications are:

- A P450 is an air cooled brushless alternator providing up to 450 amps at 28VDC.
- It has a turn on RPM of 1250 RPM with a Maximum speed of 6500 RPM.
- Alternator and fans are fully guarded to prevent injury.

2.4.1 Defects

1. Seven (7) defects or problems related to engine and transmission malfunctions are planted. One defect will render the engine inoperable. For purposes of the Roadeo, inoperable means that the engine will not start or when started will not maintain an idle of 700 rpm.
2. A team may attempt to start the engine at any time to check for defects.
3. Types of defects could include:
    - Improper activation of components
    - Malfunctioning fuel injector
    - Obstruction with the flow of air, water, exhaust, fuel or oil
    - Improper fluid levels
    - Defective sensors, wires and/or connectors
    - Missing assemblies or parts thereof
4. Defects do NOT include fluid leaks such as oil, water, fuel, etc.
5. The judges will review the list of defects with each team upon completion of time to clarify their list of defects. The team does not have to replant the one (1) repaired defect."

6. Defect determination which normally would require a running engine will not be scored if the engine is not started.

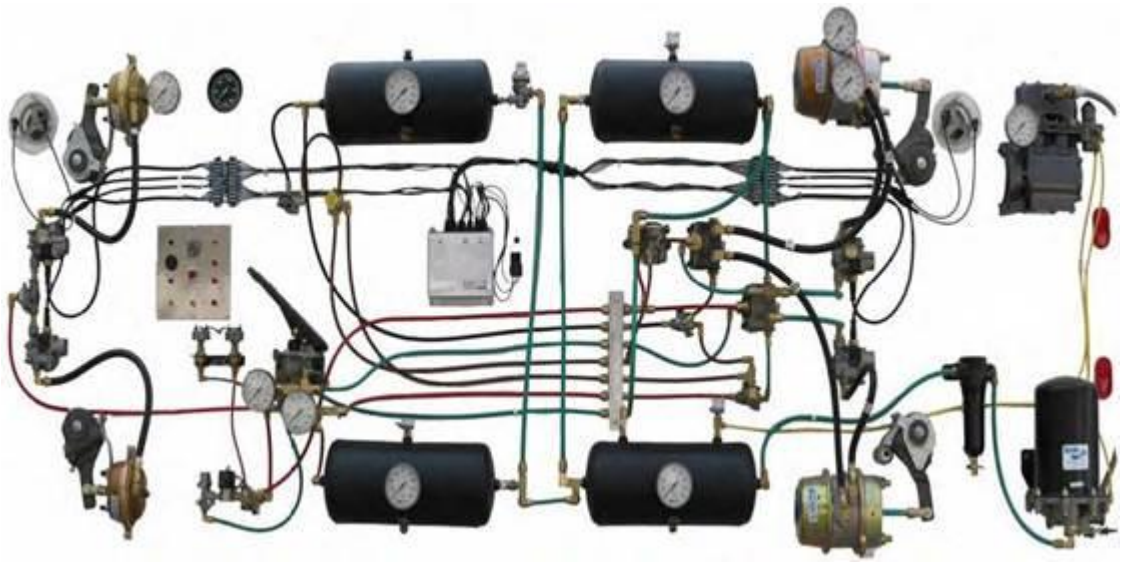
2.4.2 Time

1. Team members will be allotted ten (10) minutes to inspect, trouble shoot, diagnose, correct, and legibly record the planted defects.
2. The team is only required to correct that defect which prevents the power train from starting and/or maintaining an idle speed of 700 rpm.
3. Time warnings will be given to the team at the two (2) minute, one (1) minute, and 30 second time marks.

2.4.3 Scoring

1. Fifty (50) points are awarded for each planted defect found, with a maximum of 350 points.
2. Points will be awarded for each defect correctly identified, recorded, and, in the case of that defect which renders the power train inoperable, corrected. Only those defects planted by the judges will be considered for scoring purposes.
3. Only seven defects are to be listed. If more than seven are listed, only the first seven listed will count for scoring purposes. If more than seven were initially listed, unwanted listings may be crossed out to leave the top choices, but must be completed prior to time expiration.
4. The team will notify the judges when they are finished. Once notice is given, the team may not list additional defects.
5. The judges will review the list of defects with each team for clarification.
6. A team will be penalized fifty (50) points for not having the power train in operational condition before an engine start is attempted, i.e., air cleaner removed, fuel lines disconnected etc.
7. The team will be penalized ten (10) points for misuse of any diagnostic/test equipment.
8. The team will be penalized ten (10) points for each safety violation incident.
9. In the event of a tie, the fastest time to correct the defect and start the engine which renders the engine inoperable will determine the winner.

2.5 Custom Training Aids/Bendix Air Brake System (ABS) Event



The competition will be conducted using a fully functional air brake system with Antilock Brake System (ABS) components. The components of the system will be functional with the exception of the air compressor.

2.5.1 Description

NOTE: The description, drawing and component list contains the most current information and is subject to change.

The air brake demonstration board represents a current model year 40'-2 axle transit bus equipped with an antilock brake system. The board is manufactured to current Federal Motor Vehicle Safety Standard 121. Air reservoirs and brake chambers are reduced in size to limit air consumption while maintaining precise control and operation of system components. The foundation brake system represents an 'S' Cam spring braked vehicle. Anti-lock brake system is a Wabco 'D' version 4S/4M 12 volt system controlled by a cab mount electronic control module with transmission retarder control relay. Brake valves are manufactured by Bendix and are common to most current transit buses meeting FMVSS 121. All air system components are fully functional with exception of the air compressor. The air compressor is a cut-away demonstration unit with fully functional unloader valves.

2.5.2 System components

- Tu-Flo 700 Air compressor
- D-2 Air Governor, cutout set to 125 PSI
- AD-9 Air Dryer
- Puraguard oil separator mounted after the air dryer
- E-6 Brake application valve
- R-12DC Service brake relay valve with a crack pressure of 5.5 PSI
- R-14 Spring brake relay valve with a crack pressure of 4.0 PSI
- QR-1 Front service brake valve
- SR-1 Spring brake modulation valve
- SL-5 Stop light switches which light the 2 LED stop lights at 5 PSI
- LP-3 Low-pressure switches rated at 70 PSI
- RV-1 Interlock pressure regulator adjusted to 45 PSI
- PR-3 Pressure protection valve mounted on accessory reservoir opens at 80 PSI
- PP-1 Control valve with an application pressure of 40 PSI
- RD-3 Spring brake emergency release valve
- Duplex instrument panel air pressure gauge with green and red needles representing Primary and Secondary air brake systems.
- ST-3 Safety valve, 150 PSI
- SC-3 single check valves
- DC-4 double check valves
- Wabco open style modulator valves
- Haldex automatic slack adjusters
- Type-20 front service brake chambers
- Type-24 Service/Spring brake chambers

Air Lines are color coded to represent:

- **Supply air system:** Black
- **Primary brake system:** Green
- **Secondary brake system:** Red
- **Emergency system:** Brown
- **Governor control:** Yellow

2.5.3 Defects

Part I – Air Brake System Electrical/Pneumatics Diagnostics

1. The team will be required to use a Digital Volt Ohm Meter (DVOM) to diagnose an electrical component. The electrical component may include, but is not limited to: electrical relays, sensors, wiring harness, etc.
2. Part I will be timed and will be used as a tie breaker for the event.

Part II – Air Brake System Trouble Shooting

3. The team will be required to inspect, locate, identify, and legibly record, including location, the six (6) planted defects.
4. Defects will be mechanical in nature, but will not be air line or connection leaks.

5. Identification of defects will not require the system to be repaired, taken apart, or disconnected.

2.5.4 Time

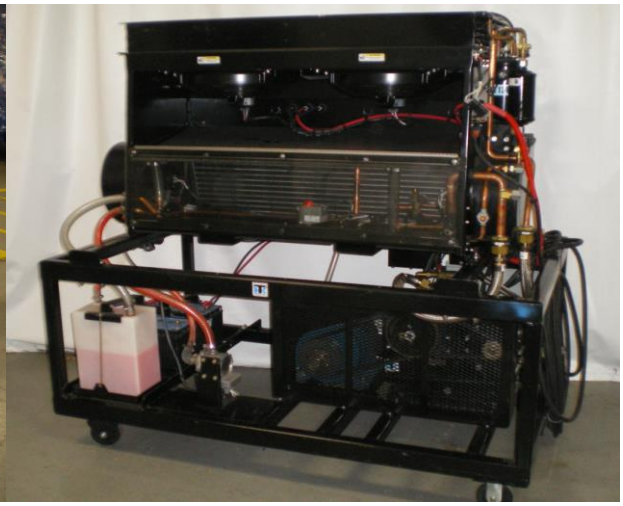
6. Seven (7) minutes will be allotted for this event.
7. Time warnings will be given to the team at the remaining time of two (2) minutes, one (1) minute, and 30 seconds.

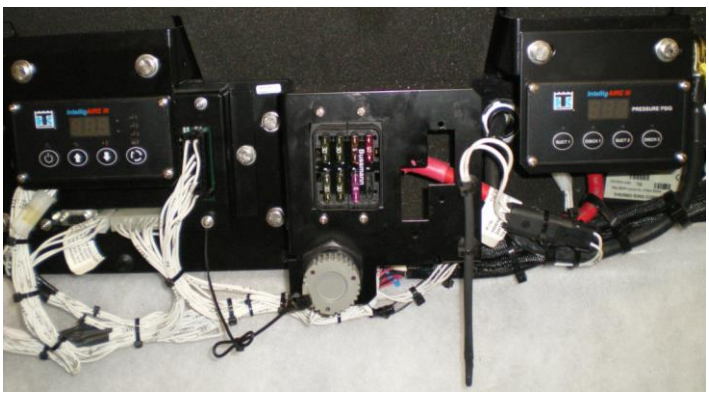
2.5.5 Scoring

8. Total Possible Points for this event is 350.
9. Fifty (50) points will be awarded for the successful diagnosis of Part I, Air Brake System Electrical/Pneumatics Diagnostics.
10. Part II, Air Brake System Trouble Shooting, will be worth 300 points. Fifty (50) points will be awarded for each of the six (6) planted defects found in the Air Brake System.
11. Points will be given only for those recorded defects that were planted by the judges. No consideration will be given for listed defects not planted.
12. Only six defects are to be listed. If more than six are listed, only the first six listed will count for scoring purposes. If more than six were initially listed, unwanted listings may be crossed out to leave the top choices but must be done prior to time expiration.
13. The team will be penalized ten (10) points for misuse of any diagnostic/test equipment.
14. The team will be penalized ten (10) points for each safety violation incident.
15. The team will be penalized ten (10) points if the ABS board is not returned to its original status, i.e. Air: on/off, Power: on/off.
16. The team will notify the judges when they are finished. Once notice is given, the team may not list additional defects.
17. The judges will review the list of defects with each team for clarification.

In the event of a tie, the fastest time to diagnose and record the defects in Part I Air Brake System Electrical/Pneumatics Diagnostics will determine the winner

2.6 Thermo King HVAC IntelligAIRE Event





2.6.1 Description

The competition will be conducted on a fully operational bus air conditioning maintenance training simulator.

2.6.2 Components

- Thermo King Model T Series rear mount bus air conditioning unit
- IntelligAIRE III controls
- Thermo King brushless motors
- QS391 compressor and clutch assembly
- Belt driven 150 amp, 27 VDC Battery-less alternator
- 460VAC/3 phase, 20 horsepower electric motor and batteries

2.6.3 Equipment

The following equipment will be provided for this event:

1. Laptop computer with interface cable
2. Thermo King IntelligAIRE III CANDiag software to provide diagnostic capabilities
3. Digital Multi-meter with test leads

No other hand tools will be needed for the competition.

2.6.4 Defects

1. One defect will render the air conditioning system inoperable. For purposes of the Roadeo, inoperable will mean that the 20 horsepower electric motor which is belt driving the compressor/alternator is running, however, the air conditioning unit does not operate.
2. The team will only have to correct the defect that prevents the air conditioning unit from starting.
3. Defects will be mechanical or electrical in nature, but leakage of refrigerant or oil will not be considered a defect.
4. Defects will be such that they do not require the A/C system to be repaired or taken apart.

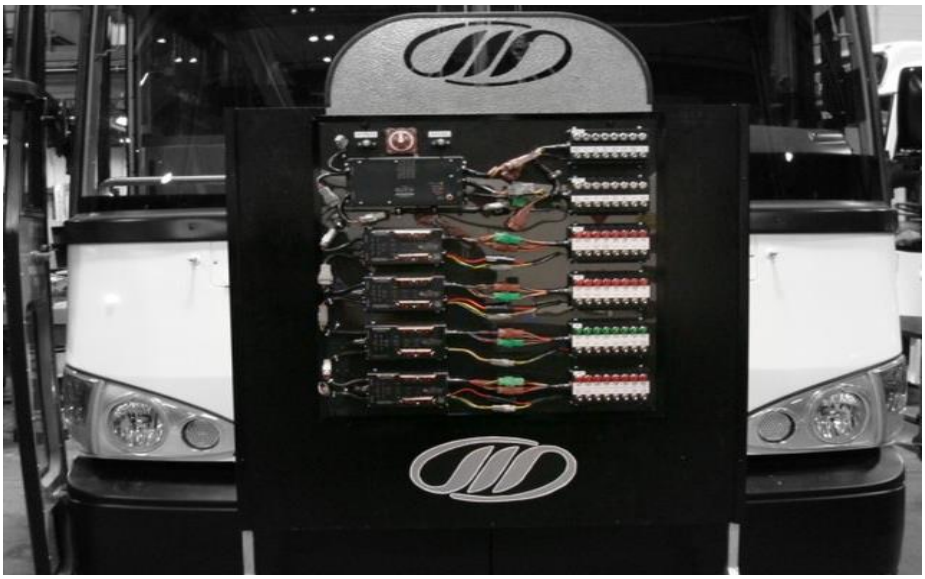
2.6.5 Time

1. The team will be allotted ten (10) minutes to inspect, troubleshoot, diagnose, and legibly record the planted defects.
2. Time warnings will be given to the team at the two (2) minute, one (1) minute and 30 second time marks.

2.6.6 Scoring

1. Points for this event total 350.
2. Fifty (50) points are awarded for each of six (6) planted defects found and recorded including one (1) defect that must be recorded and corrected to enable the air conditioning unit to function.
3. Fifty (50) points will be awarded for recording all active logged codes.
4. Points will be given only for those six (6) defects and one logged code that are planted by the judges. No consideration will be given for listed defects or codes not planted.
5. Only six defects are to be listed. If more than six are listed, only the first six listed will count for scoring purposes. If more than six were initially listed, unwanted listings may be crossed out to leave the top choices but must be completed during the competition allowed time.
6. When finished all team members are to return behind the start/finish line and notify judges. The clock will then be stopped.
7. Once notice is given, the team may not list additional defects or make additional corrections to the air-conditioning system.
8. The team will be penalized ten (10) points for not returning the A/C unit simulator to original status when they are finished.
9. The team will be penalized ten (10) points for misuse of any diagnostic/test equipment or tools.
10. The team will be penalized ten (10) points for each safety violation incident.
11. In the event of a tie, the fastest time to get the compressor running will determine the winner.

2.7 MCI I/O Controls Module



2.7.1 Description

The competition will be conducted on a operational board using the Dinex I/O T2 Control electrical system. The board will have multiple electrically related defects.

2.7.2 Components

Two (2) Motor Coach Industries I/O boards similarly equipped with I/O T2 Controls Multiplex Electrical System will be used for this competition.

2.7.3 Equipment

The following equipment will be provided for this event:

1. Digital Multi-meter with test leads
2. I/O Control ladder logic
3. Hand tools as required

2.7.4 Defects

1. Defects will be electrical in nature.
2. A total of seven (7) defects will be inserted into the I/O electrical board.

2.7.5 Time

1. The team will be allotted seven (7) minutes to inspect, troubleshoot, diagnose, and legibly record the planted defects.
2. Time warnings will be given to the team at the two (2) minute, one (1) minute and 30 second time marks.

2.7.6 Scoring

1. Possible points for this event total 350.
2. Fifty (50) points are awarded for each of the seven (7) planted defects found including recording and defining the cause and symptom of the defect.
3. Points will be given only for those seven (7) defects that were planted by the judges. No consideration will be given for listed defects not planted.
4. Only seven defects are to be listed. If more than seven are listed, only the first seven listed will count for scoring purposes. If more than seven are initially listed, unwanted listings may be crossed out, but must be completed prior to time expiration.
5. Points will be awarded for each defect correctly identified, and recorded
6. The team will notify the judges when they are finished. Once notice is given, the team may not list additional defects.

7. The team will be penalized ten (10) points for misuse of any diagnostic/test equipment or tools.
8. The team will be penalized ten (10) points for each safety violation incident.
9. In the event of a tie, the fastest time to complete the event will determine the winner.

2.8 Vapor Door Event

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2.8.1 Description

The competition will be conducted on a fully operational, half-height bus door system mockup.

2.8.2 Components

Vapor rear-door, slide-glide door system. Pneumatic actuator baseplate assembly includes a Vapor Activair® door engine, connecting rods, door shaft levers, pressure wave switches, wiring and air hoses. Also included: two (2), half-height Vapor Ameriview® door panels equipped with Vapor mechanical touch bars and sensitive leading edges, roller brackets, brushes and door seals; vertical shafts and arms; emergency release mechanism; and a driver's door controller handle. An air compressor will provide 90-120psi air supply to the door system.

2.8.3 Equipment

All necessary tools and equipment required to compete in this event will be provided.

2.8.4 Time

1. The team will be allotted seven (7) minutes to inspect, locate, identify and legibly record the planted defects.
2. Time warnings will be given to the team at the remaining time of two (2) minutes, one (1) minute, and thirty (30) seconds.

2.8.5 Defects

The competition will consist of seven (7) planted defects.

1. The defects will be mechanical or electrical in nature. The team will not be required to repair the defect. Leakage of air will not be considered a defect.
2. The team may attempt to open and close the doors to check for defects.

2.8.6 Safety

Each team will designate a team member as the "Door Opener".

1. Door Opener to yell "CLEAR" prior to moving the door control handle. Must hear verbal acknowledgement "CLEAR" from each of the other team members before moving the door control handle.
2. A 10 point Safety Violation will be accessed for each instance this procedure is not followed.
3. A team member is allowed to stand on the inboard side (inside) of the mockup only. A 10 point safety violation will be assessed for each attempt to stand on the outboard side (outside) of the mockup.

2.8.7 Scoring

1. Fifty (50) points are awarded for each planted defect found, with a maximum of three hundred and fifty (350) points.
2. Only those defects planted by the judges will be considered for scoring purposes. No consideration will be given for listed defects not planted.
3. Only seven (7) defects are to be listed. If more than seven are listed, only the first seven will count for scoring purposes. If more than seven were initially listed, unwanted listings may be crossed out to leave the top choices, but must be completed prior to the time expiration.
4. The team will notify the judges when they are finished. Once notice is given, the team may not delete or add additional defects.
5. The judges will review the list of defects with each team for clarification.
6. The team will be penalized ten (10) points for each safety violation incident.
7. In the event of a tie, the fastest time to identity and record the planted defects will determine the winner.

3. Maintenance scoring

Maintenance Score Sheets can be found in Appendix 6

Overall maintenance awards

1. There will be a first, second and third place award for the overall maintenance competition. The awards will be determined by highest point values.
2. In case of a tie for any place, the tie will be settled in the order as follows:
    - The highest combined score from the Cummins/Allison and Cummins/Voith Power Train Event Problems;
    - The highest vehicle inspection score;
    - The lowest combined time required on the Cummins/Allison and Cummins/Voith Power Train Event Problems.
3. All decisions of the event judges are final.

Individual maintenance events:

1. The highest scores in each of the maintenance events will be recognized by a separate award.
2. Sponsors of the Maintenance events also provide prizes.

CUSTOMER SERVICE CHALLENGE

4. Qualifications

1. Qualifying contestants must be bus operators who meet all the qualifying criteria of an operator competing in the International Bus Roadeo. (See General Information, A & B)
2. Qualified operators need not be competing in the International Bus Roadeo to be eligible to compete in the Customer Service Challenge. However, those contestants not competing in the driving portion of the roadeo must inform APTA that they will compete in the preliminary portion of the Customer Service Challenge.

NOTE: Operators are not guaranteed a competition position in the final portion of the Customer Service Challenge. Only a maximum of seven competitors will advance to the final round on Monday. Operators selected for the final round will be notified via phone call, no later than 2:00 pm Sunday.

5. General information

5.1.1 Preliminary judging – Saturday

1. Interested contestants must participate in a preliminary judging event during the Saturday practice of the International Bus Roadeo. The preliminary judging will be based on a brief face-to-face interview with a judging panel.
2. Competing operators may not watch or be in the competition area before or after completing the preliminary interview.
3. After interviewing all interested contestants, the judging panel will select up to seven contestants from the preliminary interview process to advance to the Customer Service Challenge finals.

5.1.2 Final judging

1. Operators selected as finalists from the preliminary judging round will participate in the finals of the Customer Service Challenge on Monday afternoon.
2. Operators must arrive at the Customer Service Challenge check-in at least 60 minutes prior to the event. Operators arriving late may be disqualified from the competition.
3. Operators are encouraged to wear their uniform.
4. Operators may not watch or be in the competition area before competing.

6. Competition event

6.1 Preliminary judging

1. Operators will meet face-to-face with a panel of judges.
2. A brief interview will be the basis for the preliminary round.
3. Operators will be asked to respond to a series of questions related customer service.

6.1.1 Final judging

1. All operators will be presented with three customer service challenges presented by a 'passenger(s).'
    - All operators will be asked to greet at least one 'passenger' as the 'passenger(s)' board the vehicle.
    - The second challenge will be a scenario to which all operators will respond.*
    - The last challenge will be a unique customer service challenge.

    * Additional scenario elements may be randomly assigned to add reality to the challenge. These scenario conditions could be complicating factors such as: adverse weather conditions, road construction, etc. These conditions or elements will be communicated to the audience.

7. Time

7.1 Preliminary judging

1. All interviews will last no longer than ten minutes.
2. Operators will be signaled when time has elapsed.

7.2 Final judging

1. All operators will have an equal amount of time to complete each challenge. This time will be no more than 3 minutes.
2. Operators will be signaled when time has elapsed.

8. Scoring

1. Operators will be evaluated on a 1-5 scale, with 1 signifying poor customer service and 5 signifying outstanding customer service.
2. There will be three judges.
3. The maximum points for this event are 45.
4. Each judge can award a maximum of 15 points, five for each of the three challenges that are presented to the contestant.
5. The following desirable attributes will be considered by the judges in assigning scores:
    - Professionalism
    - Eye contact
    - Persuasion/Negotiation skills
    - Incident management
    - Problem solving creativity
    - Non-confrontational behaviour
6. **Scores from the Customer Service Challenge will NOT be included in the overall scoring for the International Bus Roadeo Operator or International Grand Champion scoring.**

QUESTIONS

Additional information regarding the Roadeo may be found at www.apta.com under the link to the International Bus Roadeo.

Questions about the International Bus Roadeo should be directed to Saahir Brewington, Staff Advisor to the APTA International Bus Roadeo Committee, at (202) 496-4834, or e-mail at sbrewington@apta.com

Questions concerning the Customer Service Challenge should be directed to Jack Gonzalez at (202) 496-4824 or e-mail at jgonzalez@apta.com

Registration questions for the Roadeo should be directed to Anitha Atkins at (202) 496-4839 or email at aatkins@apta.com

The Roadeo course and problems which are attached as appendices in this Handbook may provide helpful information and assistance in the organization of your Roadeo.

HOST INFORMATION

The 2017 bus roadeo takes place on parking lot #6 of the hotel grounds.

REGIONAL TRANSPORTATION COMMISSION
Metropolitan Planning - Public Transportation & Operations Engineering & Construction
Metropolitan Planning Organization of Washoe County, Nevada

Welcome to Nevada!

It's my pleasure to welcome you to Reno the "Biggest Little City in the World" and northern Nevada for the 2017 APTA Bus and Paratransit Conference and International Bus Roadeo!

Situated on the eastern edge of the Sierra Nevada Mountains, the Reno/Sparks area is a premier conference destination home to world-class resorts, the world's tallest climbing wall and vibrant entertainment, dining and recreation amenities. It's all accessible by public transportation that is on the cutting edge for the 21^{51} century. The RTC provides 7.65 million rides each year, which includes all-electric zero-emissions buses in our fleet – the first public transit agency in the state of Nevada to use this technology.

The RTC is committed to safety, efficiency and unparalleled customer service. You will have the opportunity to demonstrate your commitment to these values during this year's roadeo competition!

We're excited to show you some of the unique transportation projects now underway in our region. This includes the 4th Street/Prater Way Bus RAPID Transit Project an all-electric BRT service scheduled to open in 2019 and the Virginia Street Bus RAPID Transit Extension Project which is in design and will feature our premier RAPID BRT service extending to the University of Nevada, Reno connecting our downtown and Midtown districts to the campus.

During your stay in the Reno-Sparks area, I encourage you to visit many of the attractions throughout the Truckee Meadows and majestic Lake Tahoe, including the National Automobile Museum, Base Camp Reno climbing wall, the Nevada Museum of Art, the Truckee River, area gaming resorts and Reno Aces Baseball.

On behalf of the RTC Board of Commissioners and staff, I welcome you and wish you success in this year's exciting competition!

Sincerely,

Lee G. Gibson, AICP
Executive Director

2017 APTA INTERNATIONAL BUS ROADEO

MAINTENANCE INSPECTION AND PRE-TRIP BUS
35- COMPETITION BUS

2006 35’ Gillig Hybrid Low Floor	
Unloaded Weight	27,754 pounds
GVRW	39,600 pounds
GVRW Front	14,600 pounds
GVRW Rear	25,000 pounds
Overall Length	35’ 11”
Turning Radius	11.5’ at the bumper
Overall Height	131.5 inches
Overall Width	102 inches
Front Step Height	15.75 inches
Approach/Departure Angle	N/A
Engine	Cummins ISB 260H
Transmission	Allison Hybrid Drive EP40
Advertised Horsepower	260HP
Peak Torque	600 LB-FT
Governed Speed	2300 RPM
Number of Cylinders	6 Cylinders

2017 APTA INTERNATIONAL BUS ROADEO

MAINTENANCE INSPECTION AND PRE-TRIP BUS
40+ COMPETITION BUS:

2015 Gillig Low Floor BRT Plus CNG	
Unloaded Weight	31,900 pounds
GVRW	41,600 pounds
GVRW Front	14,600 pounds
GVRW Rear	27,000 pounds
Overall Length	40’
Turning Radius	43’ 3” at the bumper
Overall Height	135 inches
Overall Width	102 inches
Front Step Height	16 inches
Approach/Departure Angle	N/A
Engine	Cummins ISL G 8.9
Transmission	Voith D864.5
Advertised Horsepower	280HP
Peak Torque	900 LB-FT
Governed Speed	2200 RPM
Number of Cylinders	6 Cylinders
Mirrors	Left: 8” x 11”, Right: 8” x 15”

APPENDICES

APPENDIX 1: SWAP MEET

All Roadeo participants, managers, supervisors, vendors, family and friends are welcome to attend the APTA Bus Roadeo Swap Meet. The Swap Meet is a place where Roadeo memorabilia, transit related pins, hats, shirts, patches, and other items are traded, exchanged or distributed.

Attendees are encouraged to bring items for exchange and join the group for a memorable, gala social evening. However, trading or exchanging memorabilia and other items is not a requirement to participate in the Swap Meet.

Mailing instructions will be included in the informational packet and posted on the APTA International Bus Roadeo webpage.

The Swap Meet is held on Sunday night after the Roadeo, unless there is a joint Welcome Reception. See Appendix 8, Schedule for Competitors, for location and time.

Notes:

- There may be a charge from the hotel to receive/store boxes shipped for the swap meet.
- Selling of Roadeo material or swap items is prohibited.

APPENDIX 2: FREQUENTLY ASKED QUESTIONS AND ANSWERS

> **NOTE:** Questions and answers are provided to assist Roadeo contestants with familiarization of the Roadeo competition. On-field officials are responsible for interpretations and decisions during competition.

OPERATOR:

1. Can someone ride with me?
A: Yes. On course orientation day, as long as they are not disruptive. On competition day, no.

2. Are you going to guide me through the course?
A: No. You will be provided with a diagram of the course and it is your responsibility to negotiate the obstacles in proper order.

3. Do I have to use the horn and turn signals?
A: Yes. If you fail to use your horn and/or signals, you will lose points from the on-board safety judge.

4. Am I allowed to go outside the line of perimeter cones?
A: No. You must stay within the course lines. Each course marker or perimeter cone touched will count as a penalty.

5. May I take off my jacket when I compete?
A: Yes. Make yourself comfortable after the personal appearance inspection.

6. Can I use the mirrors that I am used to?
A: No. You must use the mirrors provided on the host property buses.

7. Will I be driving the same type of bus that I drive in my system?
A: You will be driving the vehicle provided by the host property for either or 40+' or 35-‘ competition. Vehicle information is provided in the Host property information appendix.

8. On practice day do I have to wear my uniform?
A: No, but proper footwear is required.

9. Can I go through the course more than once on practice day?
A: No. Time permits only one trip on practice day (10 minute max. time limit).

10. Do I have to be on time for practice and competition?
A: Yes. Everyone is scheduled for a certain time and the schedule must be maintained. You must report to **on-site registration** at least 60 minutes prior to competition time and to the starter no later than 30 minutes prior to the competition time listed in the official schedule.

11. Will there be transportation from the Hotel to the Roadeo site?
A: Yes. Refer to Appendix 8, Roadeo Schedule or APTA website for additional information.

12. Do I have to take a safety quiz?
A: No.

13. Do I go through the defect bus?
A: Yes. The Operator competition includes a scored pre-trip inspection. The Pre-Trip Inspection takes place on Saturday.

14. Do I get a personal appearance inspection?
A: Yes.

15. May I adjust my mirrors?
A: Yes. You are responsible for adjusting your mirrors.

16. Do I lose points if I back up?
A: Yes. In all course events except for the first backup in the left and right reverses, you will lose points each time you reverse.

17. If I hit the same cone twice do I lose double points?
A: No. Once you are charged with hitting a cone you are not charged for it the second time.

18. If I just touch the base of a cone does it count against me?
A: Yes. Hitting or even touching any portion of the cone counts as a hit.

19. Is my manager allowed to walk behind my bus when I am competing?
A: No. Only Roadeo Officials and judges are allowed on the course while competition (or practice) is in progress. Spectators may watch from the spectator areas.

20. Will I be allowed to walk through the course?
A: No. Familiarize yourself with the course through the materials provided and your practice trip. You may observe the course from the perimeter on practice day.

21. Does time on the course count?
A: Yes. The course time limit is seven (7) minutes. Points will be deducted for every second over seven (7) minutes.

22. Does smoothness of operation count?
A: Yes. You will be observed by the On-Board Judge and recorded by the Vigil System.

23. Does speed count?
A: Your speed within the diminishing clearance obstacle must be at least 20 mph (32 kph).

24. Do you award dual prizes for a tie score?
A: No. The contestant with the lowest time through the course wins.

25. How many prizes are awarded?
A: First, Second and Third prizes in the 35-' category, First, Second and Third prizes in the 40+' category.

26. Do I have to wear my badge or name plate?
A: Only if it's part of your uniform.

27. Can I wear sneakers?
A: Wear the same kind of shoes you wear when you are operating in passenger service at your transit system.

28. Will there be refreshments/lunch?
A: Refreshments will be available on competition day.

29. Can I bring my family?
A: Yes. Come and enjoy the festivities and competition. Spectator areas are available for the Operator course.

30. Do I have to come to orientation?
A: No. You are strongly encouraged to come to orientation.

31. Do I have to use a seat belt?
A: Yes. 5 Points will be deducted for failure to use your seat belt.

32. Is the course set up as shown in the APTA handbook?
A: Obstacle configurations are the same, but dimensions and sequence may be different. The course will be set up on practice day in competition sequence.

33. How is the decision made about which category bus goes first each year?
A: In odd number years 35-' buses go first. In even years 40+' buses go first.

34. Is the rear cone in the backups fixed or does it vary?
A: The rear cone is fixed.

35. Will there be a bus available for familiarization purposes?
A: Yes. On practice day both 35-' and 40+' buses will be available.

36. Do I only have to call ADA announcements at the passenger stops?
A: Yes. You must call the stop before you start forward movement out of the bus stop.

37. Can I get out of the bus during practice?
A: No.

38. Do I need to use the P.A. (Public Announcement) System to announce ADA Stops?
A: No.

39. On the Right and Left reverses do I start at a 45 degree angle?
A: You can start at whatever angle you prefer.

40. Do the buses have bike racks?
A: Yes, if provided by the host property, the bike racks will remain on the buses.

41. Can I palm the steering wheels on Turns?
A: No.

42. When do I have to turn on the flashers?
A: Before you back your bus at the left and right reverses and any time you back your bus.

43. Do hazard light have to be on in the passenger stop?
A: No. Only turn signals have to be used.

44. Do I practice in the same bus I compete in?
A: Yes. Unless a bus becomes disabled, then all the remaining buses will be mixed up.

45. Do I apply the passenger/parking/emergency brake on passenger stops or reverses?
A: No.

46. Can I shift the bus from drive to reverse without going into neutral?
A: It depends on the bus type used.

47. Do I open the doors at passenger stops?
A: Yes.

48. On the Right and Left Reverses, does the clock stop when I open the doors?
A: You do not open the doors. You will honk your horn when you have completed your backing. The clock will stop until you start forward movement.

49. Will the time for practice be the same time on competition day?
A: Yes

50. Whenever the bus is disabled, does my time stop?
A: Yes.

51. If the doors are open when you drive off, will points be deducted?
A: Yes. It is a safety issue. Most buses will not let the bus move when the doors are open.

52. On the right and left reverses, do I need to turn on my flashers and honk my horn before backing?
A: Yes. You must use the flashers and horn anytime you back on the course.

53. Do I need to use my turn signals on free turns?
A: Yes. Any time you move right or left on the course, you must use your turn signals.

54. On my practice day, may my rider open the emergency window to see how close I am?
A: No. The emergency windows are never to be opened while practicing on the course.

55. Will there be judges on board the bus on practice day?
A: No.

56. Will someone ride with me on the practice day to show me the course?
A: No. A course map will be given to you at orientation the night before.

57. Can my support person get out of the bus on practice day?
A: No. They must remain on the bus.

58. When I back into the reverses and stop and then continue backing into the reverses, will I be penalized?
A: No, you will only be penalized if you pull forward and back in a second time.

59. How will the judges know when I have completed my backing into the reverses?
A: You will honk your horn.

60. On practice day will I be told how far I am from the curb?
A: Yes.

61. How long may I be on the course on practice day?
A: 10 minutes. After 10 minutes you will be asked to exit the course.

62. Do I have to compete in my uniform?
A: Yes. If applicable, you may remove your tie and coat to become more comfortable.

63. Do I have to wear my uniform on practice day?
A: No.

Pre-trip inspection

64. Was 2008 the first year that the Pre-Trip event counted towards our score?
A: Yes

65. How early should we check in before our scheduled pre-trip time?
A: Check in at the pre-trip inspection no less than 15 minutes before your assigned time.

66. At the Pre-Trip Inspection, will we get a count down on our time left?
A: Yes. 2 minute, 1 minute and 30 second warnings will be given.

67. At the Pre-Trip Inspection, can we walk around the bus and then record the defects?
A: Yes, anyway you want to do it is acceptable.

68. Will there be a judge writing down the defects for us as we find them?
A: No, you must write them down yourself in as legible a manner as possible.

69. Wheels are under the bus aren't they? Then we don't have to check them?
A: Just don't crawl under the bus.

70. Will there be a similar bus to check out ahead of time?
A: Yes, there will be a display coach for you to become familiar with.

71. Will the Pre-Trip Inspection be performed on a 35-' or 40+' bus?
A: Whichever is available.

72. Does checking the bus windows mean opening the windows?
A: Do what you would do to check them for defects.

73. Why don't we have the Pre-Trip on Roadeo competition day before the contestant drive?
A: This has been discussed. There are concerns that scheduling the Pre-Trip prior to driving on competition day might impact the timing of the driving competition. As we have more experience with the Pre-Trip the Roadeo committee may decide to change it, but at this time it remains on the practice day.

Technician

1. Can my team's competition be videotaped?
A: There will be absolutely no video cameras or videotaping in the competition area.

2. Can photos be taken of the events?
A: Still photos may be taken but anyone taking photos must not interfere or distract the contestants.

3. What type of ABS system is used in the Roadeo?
A: Wabco 'D' 45/4M

4. How many members can a Maintenance team have?
A: The standard maintenance team is made up of three technicians. Two person teams may compete but no special compensation will be made for them.

5. Can all team members participate in each of the Maintenance problems?
A: All members can work on all problems. Each team must decide the best use of team members and not create a safety issue due to space constraints.

6. Are the Saturday maintenance training sessions mandatory?
A: No. They are not mandatory but strongly encouraged. Teams that attend are brought up to date on the latest information regarding the maintenance tasks and are provided important information about the competition modules.

7. Do I have to come to orientation?
A: No. You are encouraged to come to orientation, but it is not mandatory.

8. Why was driving removed from the Maintenance Roadeo?
A: The Roadeo Committee determined that the amount of time to complete the Roadeo was creating a safety and fairness issue. They also wanted to keep the focus of the Maintenance competition on the primary maintenance skills.

9. Will the defects be revealed after the event is completed?
A: No.

10. Will there be transportation from the Hotel to the Roadeo site?
A: Yes: www.apta.com website for additional information.

11. Do I get a personal appearance inspection?
A: No. You must wear safe clothing, including proper shoe, ear, and eye protection

12. Can I bring my family?
A: Yes. Come and enjoy the festivities and competition.

13. Are my family, manager, friends allowed with the team while we compete?
A: Maybe. Some years there isn't room for spectators in the Maintenance events. Your team manager(s) will be allowed in the area. Note: We cannot hold up the competition waiting for anyone to arrive.

14. Will there be refreshments/lunch?
A: Refreshments will be available on competition day.

15. Will there be a bus available for familiarization purposes?
A: Yes. Both 35-' and 40+' buses will be available.

16. What time should I arrive to compete?
A: Contestant teams must arrive at the on-site check in 60 minutes prior to competition time and must arrive at the maintenance holding area at least 30 minutes prior to their scheduled competition time. Teams arriving late may be disqualified from the competition.

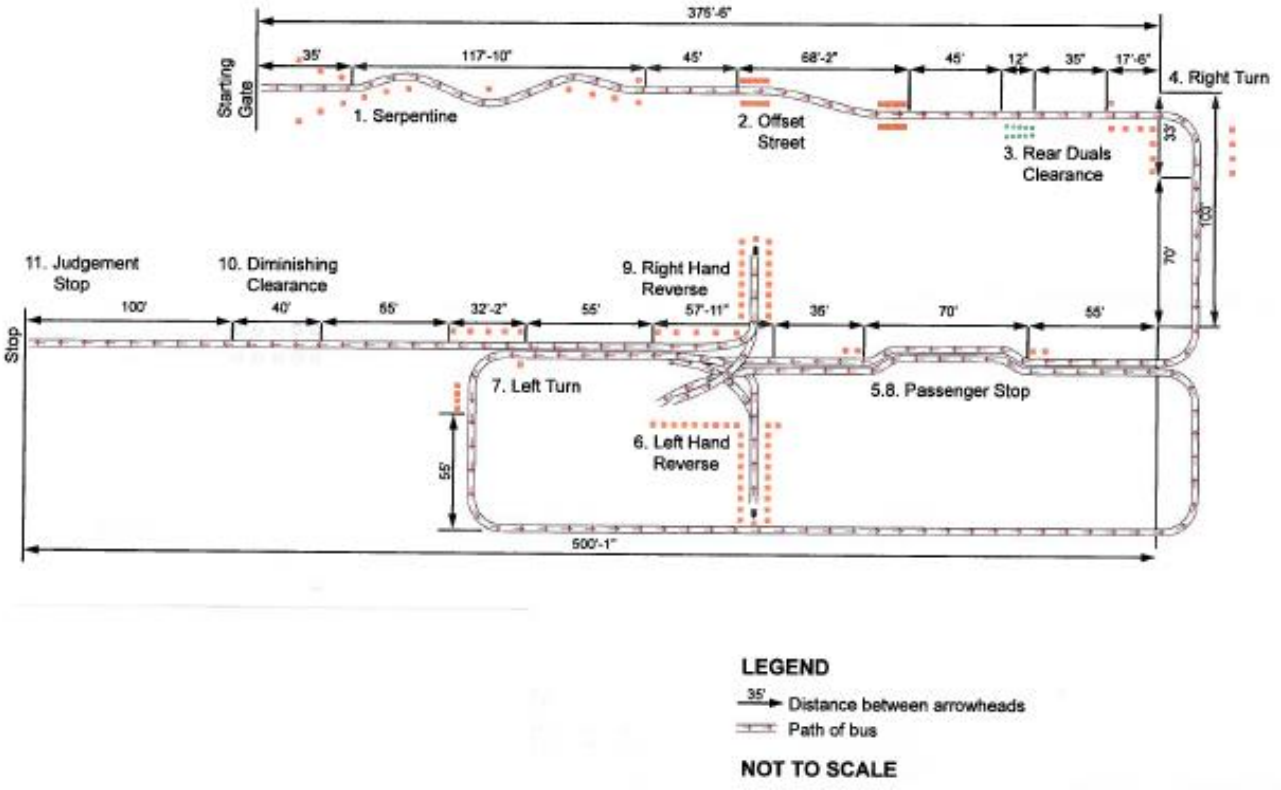
17. What if I am late to the competition?
A: Teams who report late to the Maintenance check-in may be disqualified from the competition. Allow enough time to arrive at the Roadeo site early.

18. Can I go to the Roadeo site prior to the Sunday competition?
A: No. Maintenance team members are not allowed at the Roadeo site prior to the day of competition. Any violation of this policy may cause your team to be disqualified from competition.

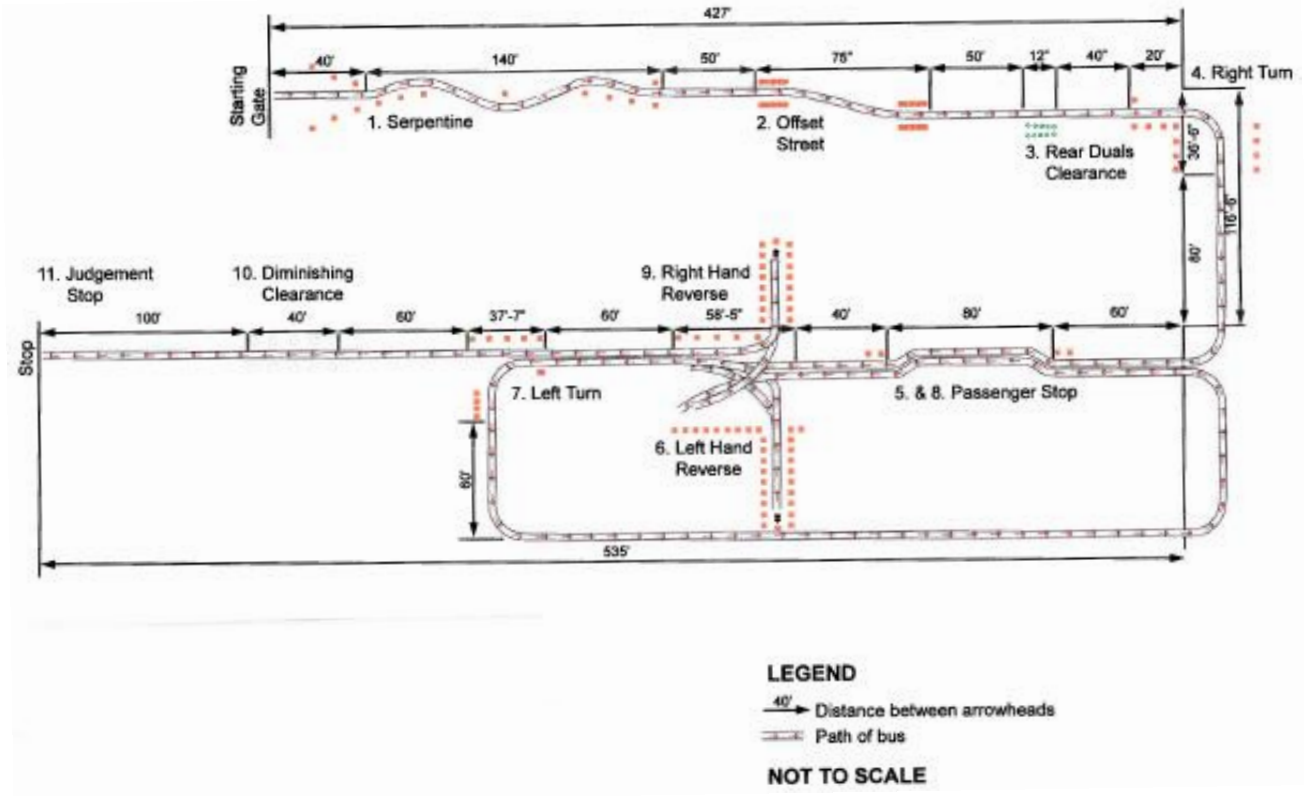
APPENDIX 3: OPERATORS' COURSE DESCRIPTIONS

Both course layouts are typical. The order of the obstacles may vary in the International Bus Roadeo competition.

Bus Operators' Roadeo Course: 35 ft. Bus



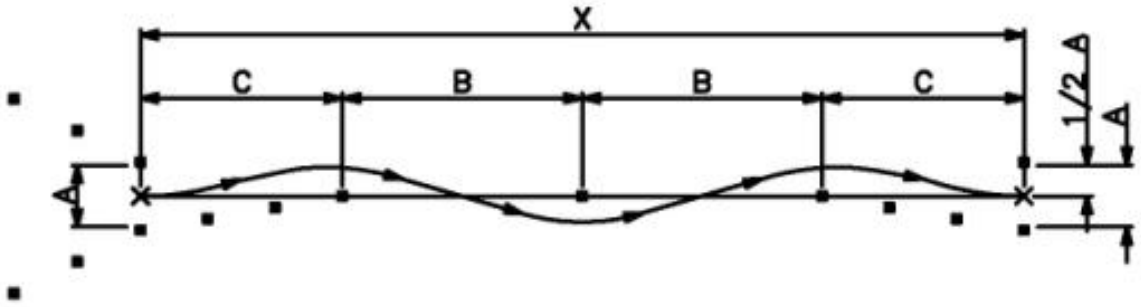
Bus Operators' Roadeo Course: 40 ft. Bus



APPENDIX 4: OPERATOR'S OBSTACLE DESCRIPTIONS

Serpentine

This obstacle tests a driver's ability to negotiate tight turns. The driver is required to enter a gate, steer in and out through three cones, and exit the obstacle through another gate. The bus is not permitted to touch any portion of any cone.



40' x 102" BUS:

A = 9'–6"
B = 36'–0"
C = 32'–0"
X = 136'–0"

35' x 96" BUS:

A = 9'–0"
B = 32'–0"
C = 25'–7"
X = 115'–0"

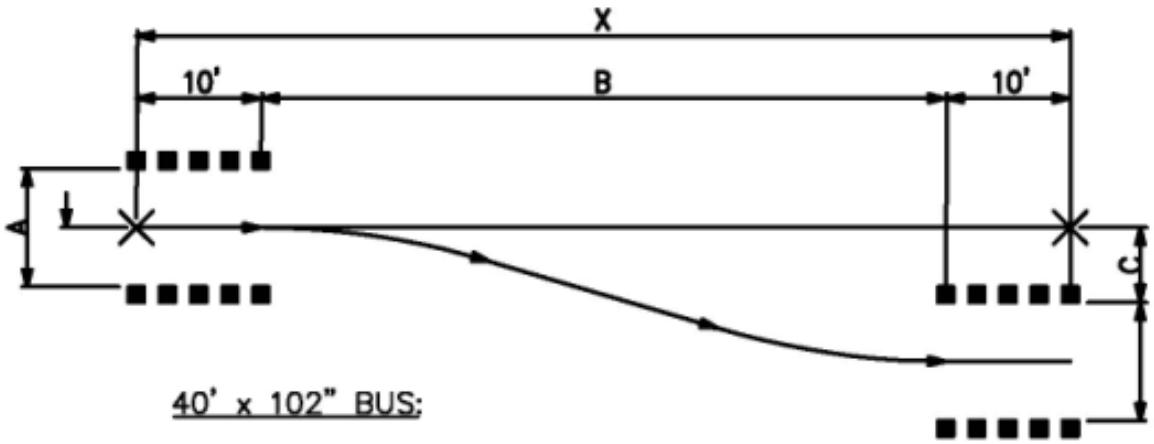
LEGEND

- 28" CONE
- PATH OF BUS
- SURVEY BASELINE

NOT TO SCALE

Offset Street

In this obstacle, the driver is required to drive through two separate narrow lanes that are offset to the right one full lane's width from each other.



40' x 102" BUS:

A = 9'–6"
B = 55'–0"
C = 6'–0"
X = 75'–0"

35' x 96" BUS:

A = 9'–0"
B = 48'–0"
C = 4'–9"
X = 68'–0"

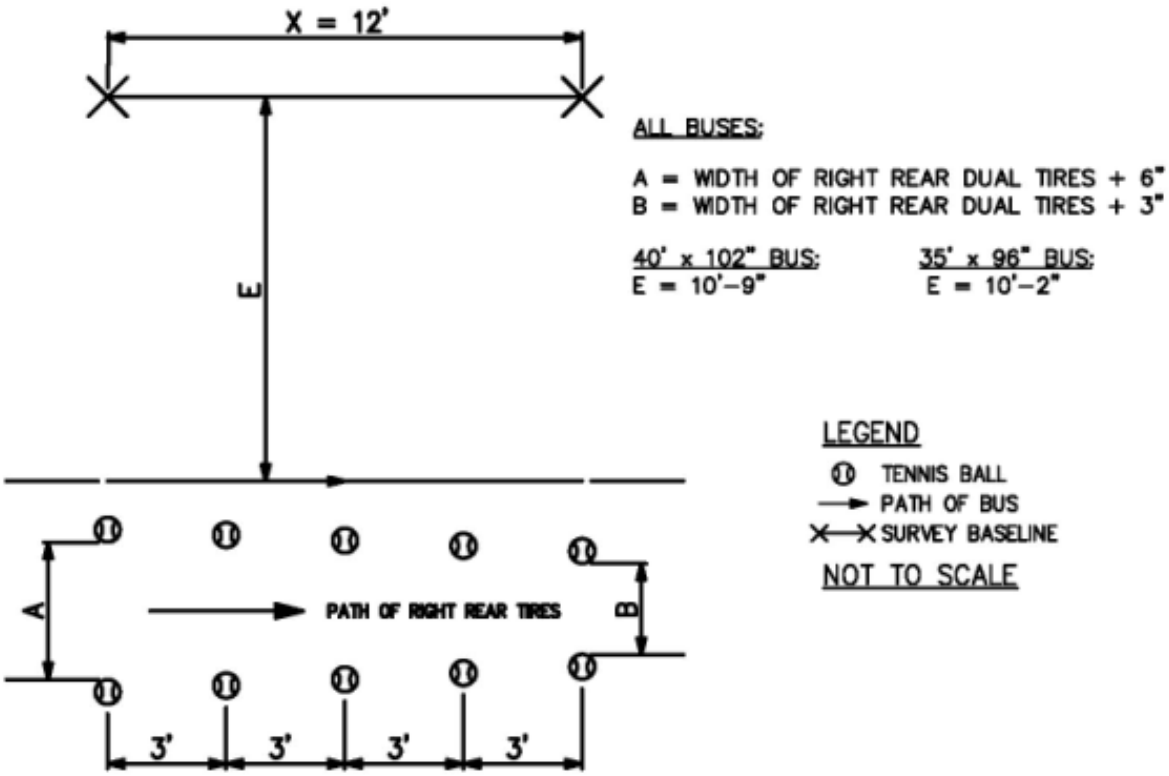
LEGEND

28" CONE
PATH OF BUS
SURVEY BASELINE

NOT TO SCALE

Rear Duals Clearance

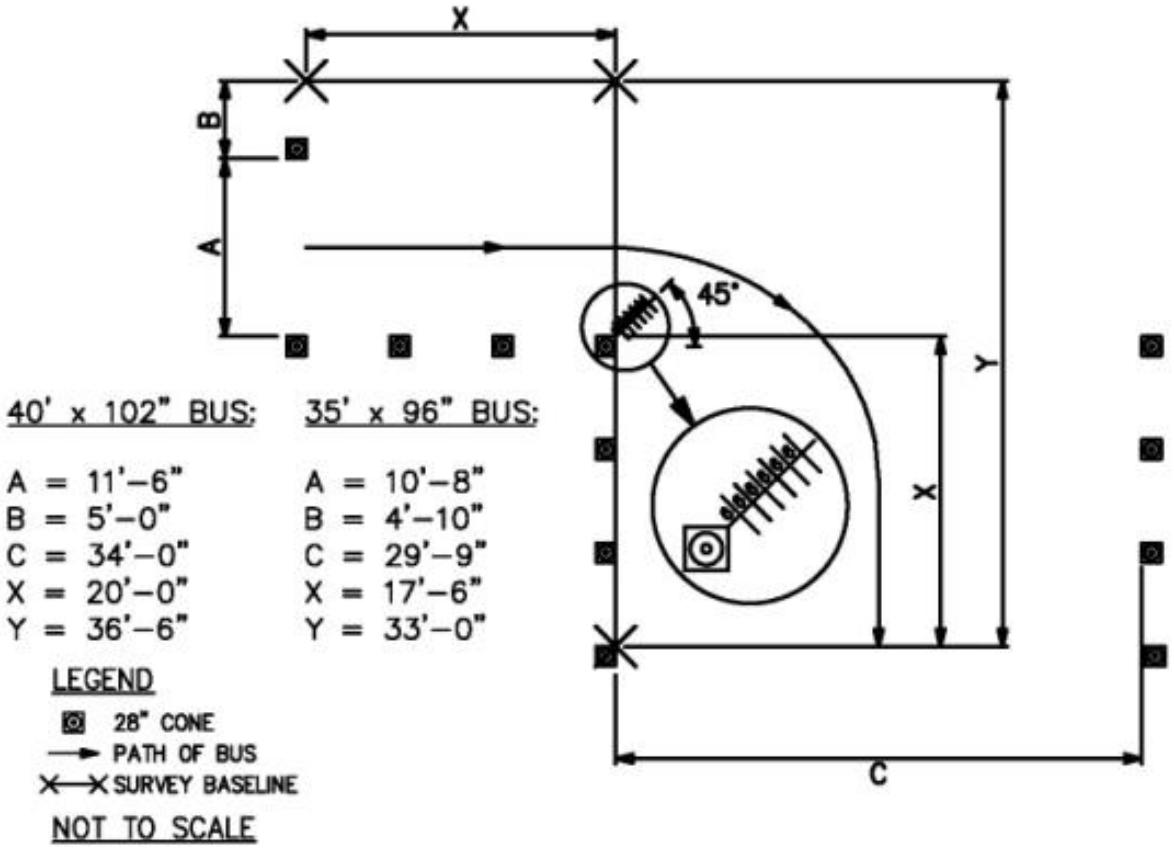
This is a judgment obstacle in which the driver must drive through a line with their right dual tires. The lane is only slightly wider than the total outside width of a pair of rear duals and is marked out with large flat washers and tennis balls. It is wider at the entrance and narrower at the exit.



Right Hand Turn

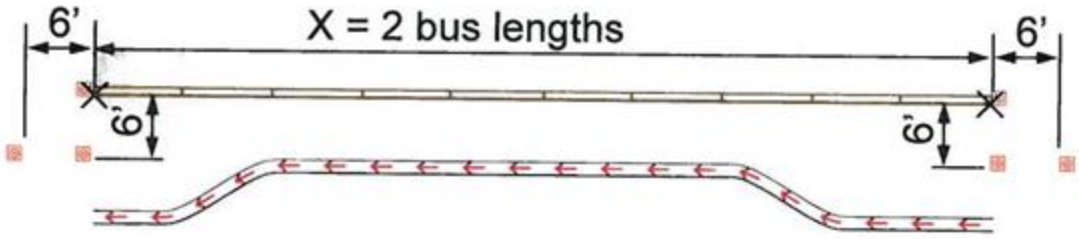
This obstacle tests a driver's ability to negotiate a right 90 degree turn. The corner is marked with cones and the rear tire of the bus is to pass within 6 inches of the corner pivot cone.

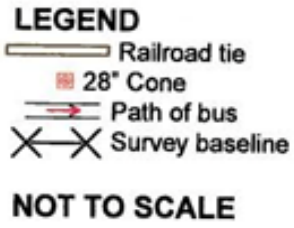
To measure this, a line should be marked out of 45 degrees from the corner and divided into six inch segments. The judge has only to see which segment the outside of the tire passes over in order to judge the driver.



First & Second Customer Stop

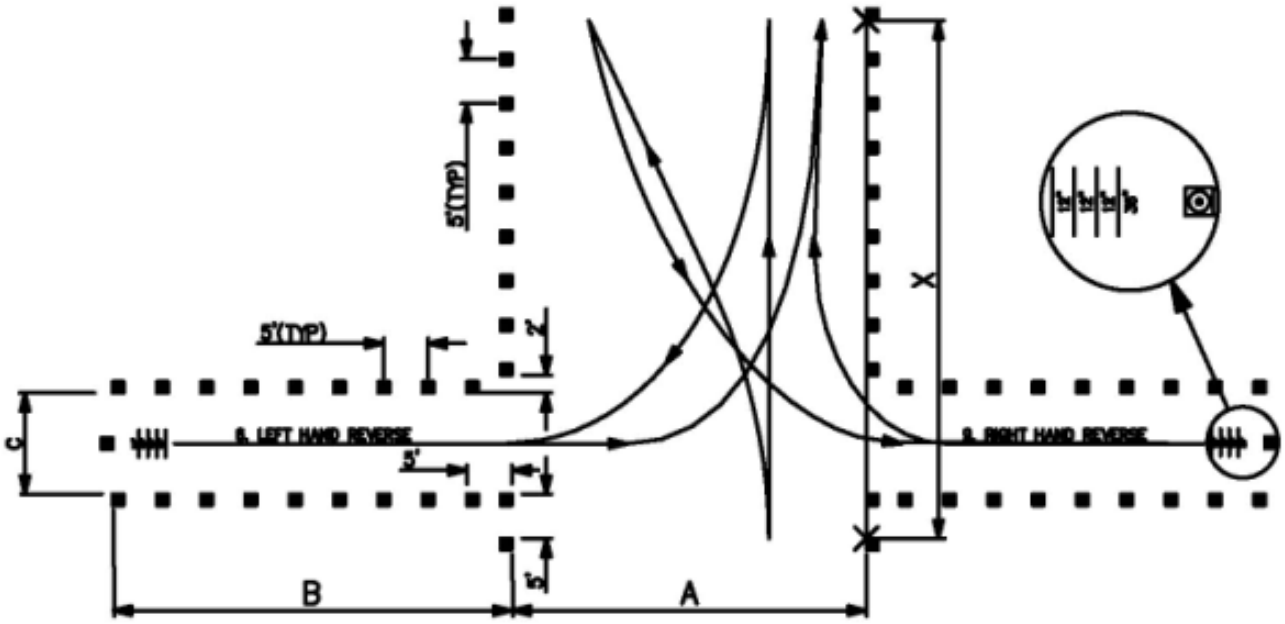
In this obstacle the operator is required to stop the bus with the front wheels within 6 inches of the curb and the rear wheels within 15 inches of the curb.





Left- and Right-Hand Reverse

This obstacle requires the operator to reverse the bus to the right or left between a set of cones stopping with the rear bumper within 36 inches of the cone in the rear without touching any of the cones.



40' x 102" BUS:	35' x 96" BUS:
A = 40'–0"	A = 35'–0"
B = 45'–0"	B = 40'–0"
C = 11'–5"	C = 10'–11"
X = 58'–5"	X = 57'–11"

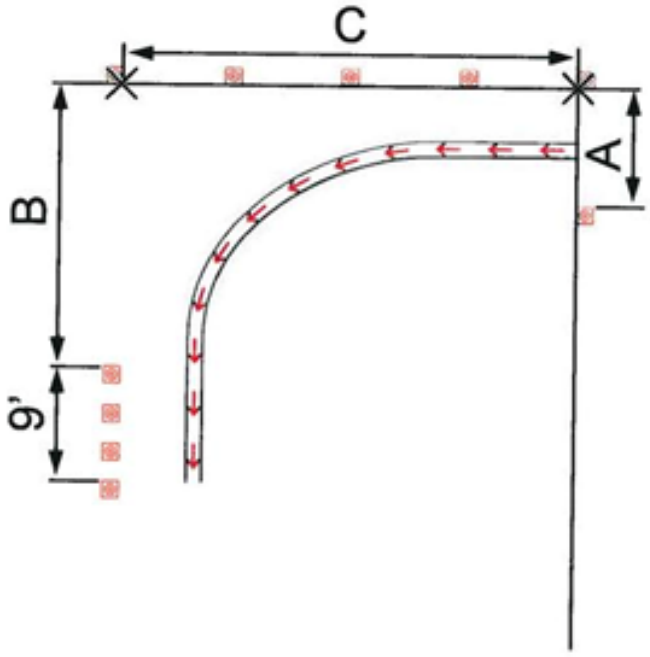
LEGEND

- 28" CONE
- PATH OF BUS
- SURVEY BASELINE

NOT TO SCALE

Left Hand Turn

This obstacle tests a driver's ability to make a tight left turn in a close situation. The driver is required to steer the bus into a 90 degree turn and not hit any of the cones outlining the obstacle.



40' x 102" Bus:

A = 9'-9"
B = 23'-0"
C = 36'-7"

35' x 96" Bus:

A = 9'-3"
B = 20'-3"
C = 32'-2"

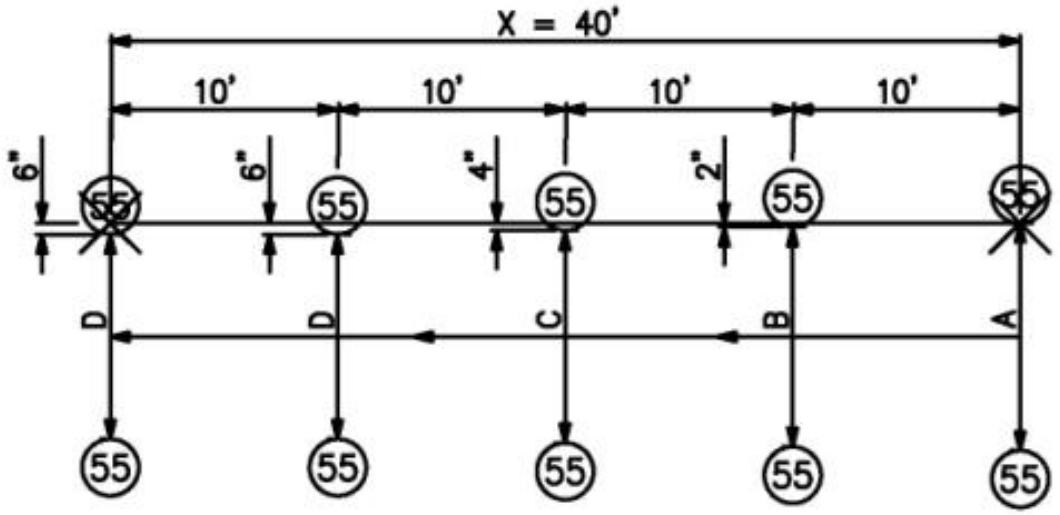
LEGEND

28" Cone
Path of bus
Survey baseline

NOT TO SCALE

Diminishing Clearance

This obstacle tests the driver's ability to judge position and speed of their vehicles. The driver is required to drive through a narrowing v-shaped channel outlined with barrels, while maintaining a minimum speed of 20 miles per hour.



40' x 102" BUS:	35' x 96" BUS:
A = 10'–0"	A = 9'–6"
B = 9'–8"	B = 9'–2"
C = 9'–4"	C = 8'–10"
D = 9'–0"	D = 8'–6"
X = 40'–0"	X = 40'–0"

LEGEND

55 55 GALLON DRUM

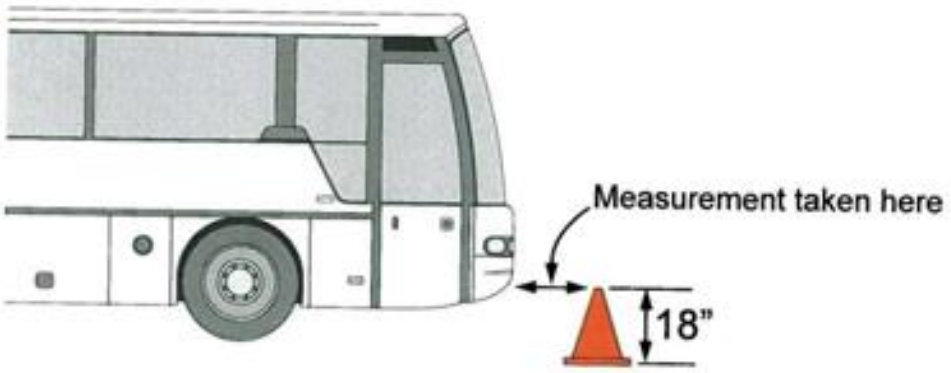
PATH OF BUS

SURVEY BASELINE

NOT TO SCALE

Judgment Stop

This obstacle tests a driver's ability to judge stopping distances between the bus and a small object directly ahead. A small (18 inch) cone is placed on the finish line, the driver's final stop. The bus must stop with the front bumper within 6 inches of the cone.



APPENDIX 5: OPERATORS' SCORE SHEETS

1. PRE-TRIP INSPECTION

Pre-Trip Inspection Report Form

Defects:

_____

_____

_____

_____

_____

_____

_____

_____

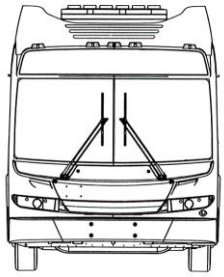
_____

_____

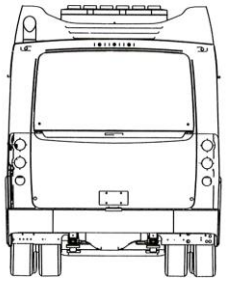
Security item:

_____

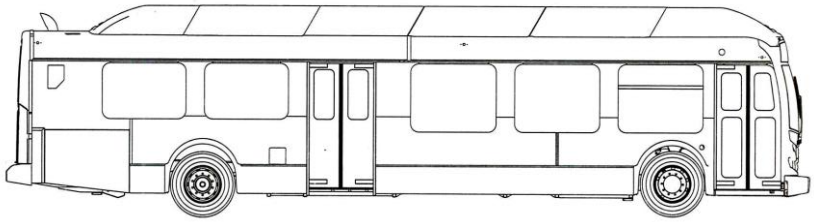
Front



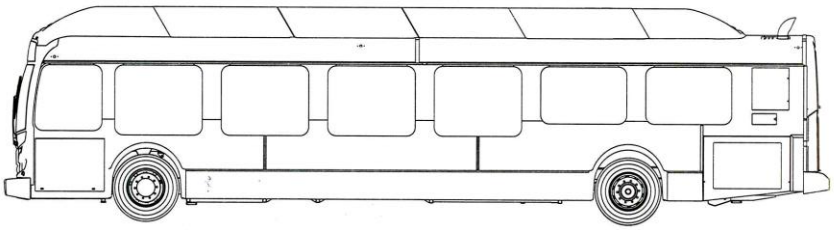
Rear

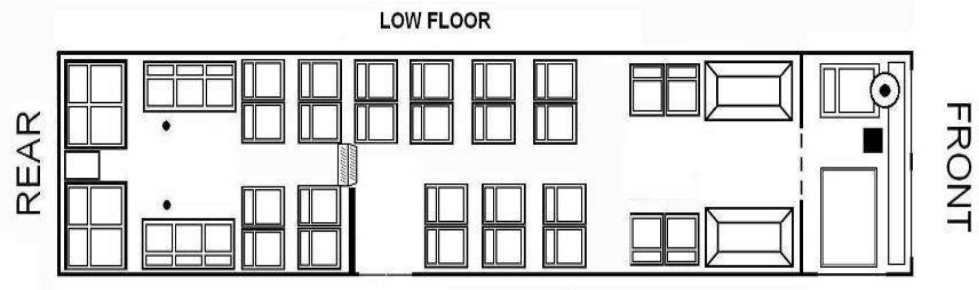


Curb Side



Driver Side





Pre-Trip Inspection Score Sheet

Operator Number: _____ Bus Number: _____

A. Points Earned

Identify and record eight (8) planted defects (5 points each).
Identify and record one (1) security problem (10 points).

1. **Number of planted defects found _____ x 5 = _____**

2. **Security problem found (enter 0 or 10) _____**

Total Points Earned A. _____

B. Penalty

Deduct 1 point for each item not returned to original condition.
(examples: compartment doors, lights, windows, etc.)

1. **Number of items not returned to original condition**
_____x **1**

Total Points Deducted B. _____

TOTAL POINTS EARNED (A-B)

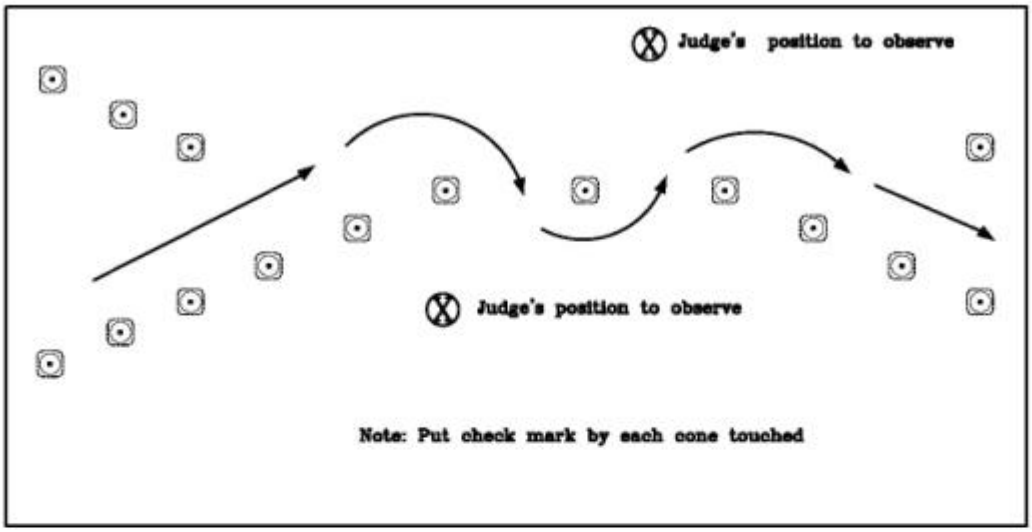
(Maximum Possible 50 points)

Judge's Signature:_____

Judge's Signature: _____

2. SERPENTINE

Contestant's Number:_____ Bus Number:_____



Penalties

1. 10 points off for each cone touched.
2. 10 points off for each transmission shift into reverse.
3. 25 points off for touching pivot cone.
4. 50 points off for not completing test as designed.

Score

1. Cones touched	_____ x 10 =_____
2. Shifted into reverse	_____ x 10 =_____
3. Pivot cone touched	_____ x 25 =_____
4. Not completing test as designed	_____ x 50 =_____

TOTAL POINTS OFF (Add 1 thru 4)_____

Note: Maximum Penalty Points=50

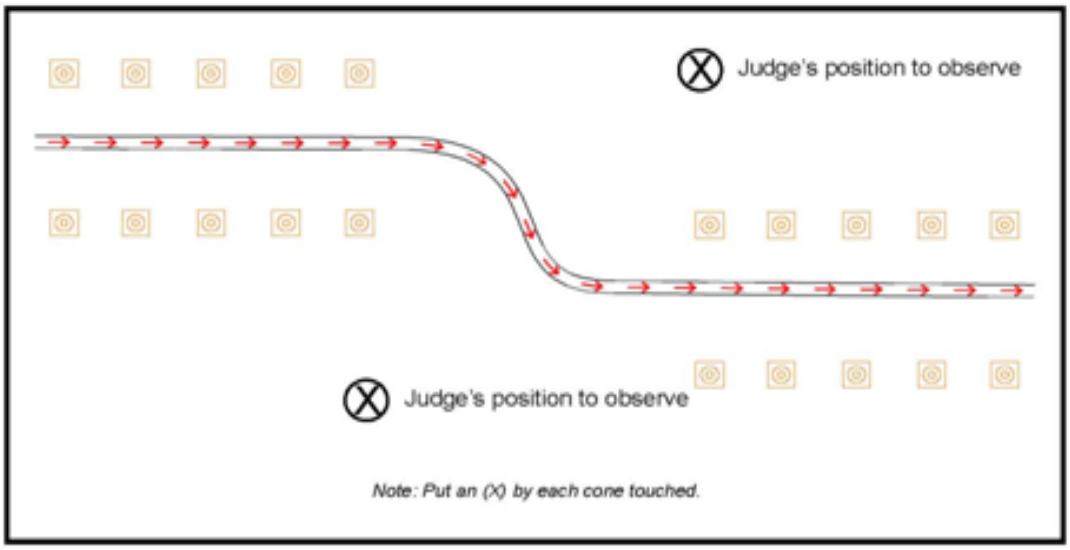
JUDGE'S SIGNATURE:_____ Total Points Possible 50

JUDGE'S SIGNATURE:_____ Less Total Points Off _____

POINTS EARNED ☐

3. OFFSET STREET

Contestant's Number: _____ Bus Number: _____



Penalties

1. 10 points off for each cone touched.
2. 10 points off for each transmission shift into reverse.
3. 50 points off for not completing test as designed.

Score

1. Cones touched _____ x 10 = _____
2. Shifted into reverse _____ x 10 = _____
3. Not completing test as designed _____ x 50 = _____

Total Points Off (add 1 thru 3) _____

Note: Maximum Penalty Points = 50

Judge's Signature: _____

Judge's Signature: _____

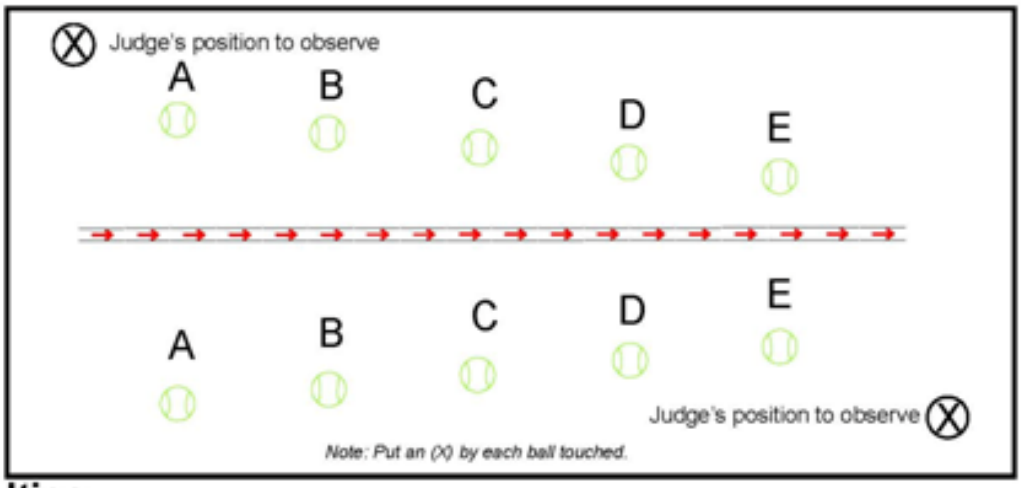
Total Points Possible 50

Total Points Off _____

POINTS EARNED ☐

4. REAR DUALS CLEARANCE

Contestant's Number: _____ Bus Number: _____



Penalties

1. 20 points off for each "A" ball touched.
2. 16 points off for each "B" ball touched.
3. 8 points off for each "C" ball touched.
4. 4 points off for each "D" ball touched.
5. 2 points off for each "E" ball touched.
6. 10 points off for each transmission shift into reverse.
7. 50 points off for not completing test as designed.

Score

1. "A" ball touched	_____ x 20 =	_____
2. "B" ball touched	_____ x 16 =	_____
3. "C" ball touched	_____ x 8 =	_____
4. "D" ball touched	_____ x 4 =	_____
5. "E" ball touched	_____ x 2 =	_____
6. Shifted into reverse	_____ x 10 =	_____
7. Not completing test as designed	_____ x 50 =	_____

Total Points Off (add 1 thru 7) _____

Note: Maximum Penalty Points = 50

Judge's Signature: _____

Judge's Signature: _____

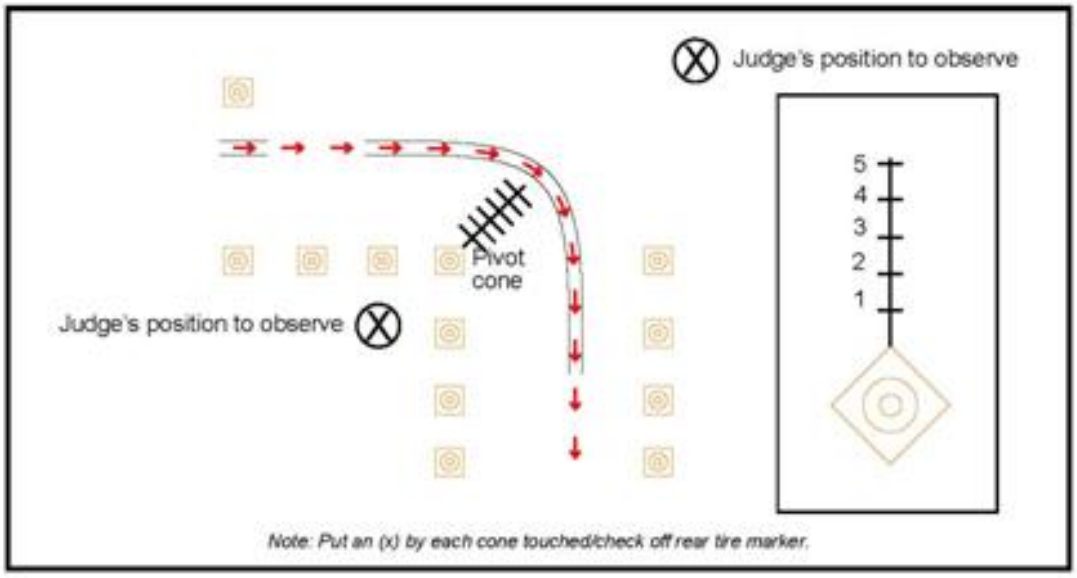
Total Points Possible 50

Total Points Off _____

POINTS EARNED ☐

5. RIGHT HAND TURN

Contestant's Number: _____ Bus Number: _____



Penalties

1. 10 points off for each cone touched.
2. 5 points off for each 6" segment beyond the first 6" of the pivot cone.
3. 10 points off for each transmission shift into reverse.
4. 25 points off for touching pivot cone.
5. 50 points off for not completing test as designed.

Score

1. Cones touched	_____ x 10 =	_____
2. Excessive rear tire clearance	_____ x 5 =	_____
2. Shifted into reverse	_____ x 10 =	_____
3. Pivot cone touched	_____ x 25 =	_____
4. Not completing test as designed	_____ x 50 =	_____

Total Points Off (add 1 thru 5) _____

Note: Maximum Penalty Points = 50

Judge's Signature: _____

Judge's Signature: _____

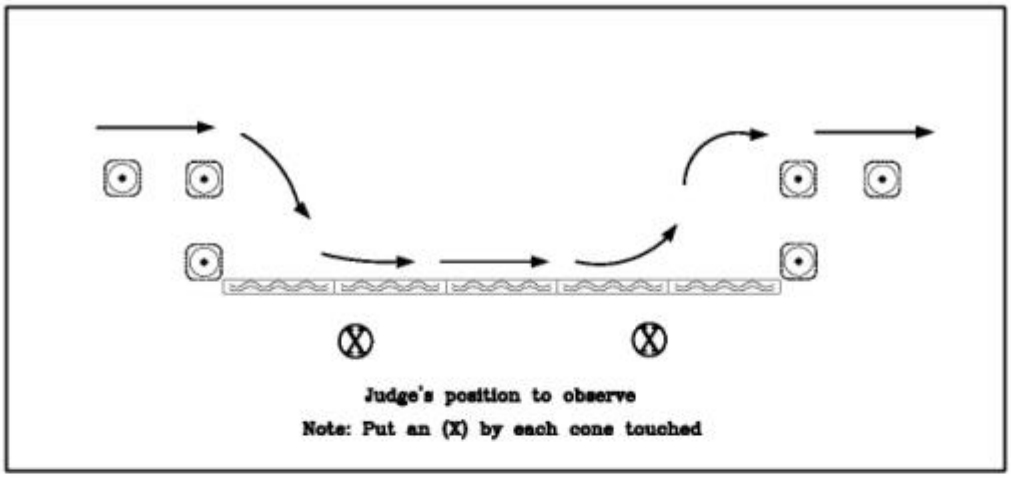
Total Points Possible 50

Total Points Off _____

POINTS EARNED ☐

6. FIRST CUSTOMER STOP

Contestant's Number:_____ Bus Number:_____



Judge's position to observe

Note: Put an (X) by each cone touched

Penalties

1. 25 points off for touching cones at either end of passenger stop
2. 25 points off for touching curb with tires
3. 1 point off per inch beyond 6" segment from curb (FRONT TIRE)
4. 1 point off per inch beyond 15" segment from curb (REAR TIRE)
5. 10 points off for each transmission shift into reverse
6. 50 points off for not completing test as designed

Score

1. Entrance cones touched	_____x25=_____
2. Touched curb	_____x25=_____
3. Front tire actual measurement	_____"–6=_____
4. Rear tire actual measurement	_____"–15=_____
5. Exit cones touched	_____x25=_____
6. Shifted into reverse	_____x10=_____
7. Not completing test as designed	_____x50=_____

TOTAL POINTS OFF (Add 1 thru 7)_____

Note: Maximum Penalty Points=50

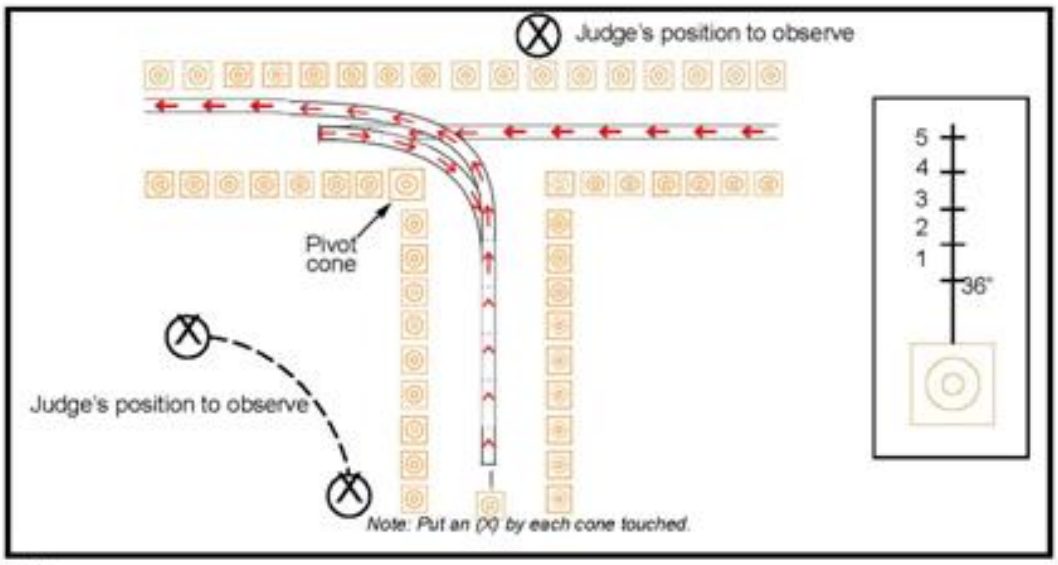
JUDGE'S SIGNATURE:_____ Total Points Possible 50

JUDGE'S SIGNATURE:_____ Total Points OFF _____

POINTS EARNED ☐

7. LEFT HAND REVERSE

Contestant's Number: _____ Bus Number: _____



Penalties

1. 10 points off for pivot cone touched.
2. 5 points off for each cone touched.
3. 5 points off for each 12" segment beyond 36" limit from rear cone.
4. 10 points off for each transmission shift into reverse after initial shift into reverse.
5. 25 points off for touching rear cone.
6. 50 points off for not completing test as designed.

Score

1. Pivot cone touched	_____ x 10 =	_____
2. Cones touched	_____ x 5 =	_____
3. Rear clearance beyond 36"	_____ x 5 =	_____
4. Shifted into reverse	_____ x 10 =	_____
5. Rear cone touched	_____ x 25 =	_____
6. Not completing test as designed	_____ x 50 =	_____

Total Points Off (add 1 thru 6) _____

Note: Maximum Penalty Points = 50

Judge's Signature: _____

Judge's Signature: _____

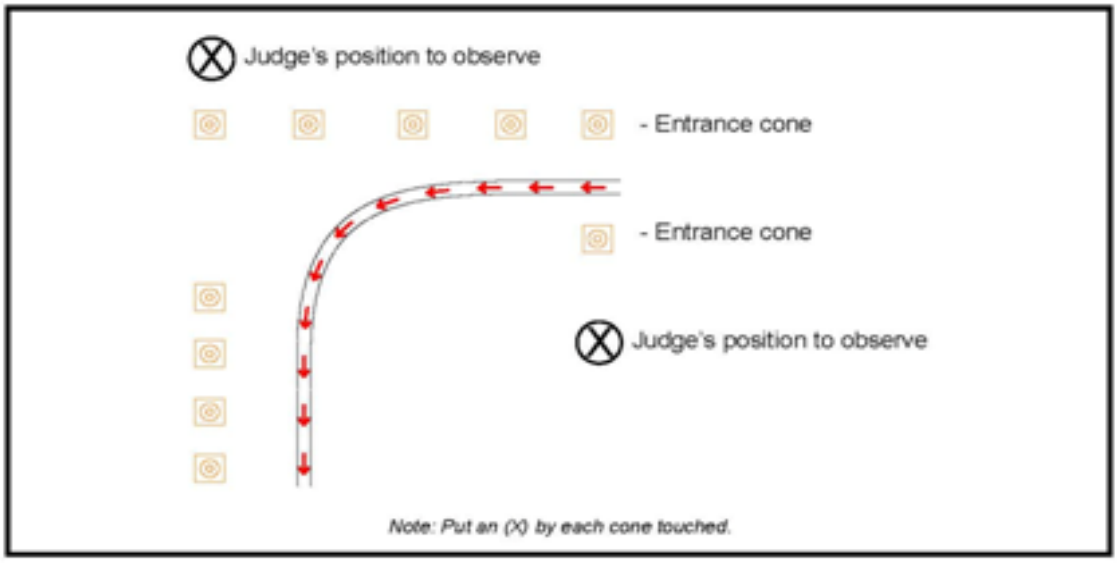
Total Points Possible 50

Total Points Off _____

POINTS EARNED ☐

8. LEFT HAND TURN

Contestant's Number: _____ Bus Number: _____



Penalties

1. 10 points off for each cone touched.
2. 10 points off for each transmission shift into reverse.
3. 25 points off for touching entrance cone.
4. 50 points off for not completing test as designed.

Score

1. Cones touched	_____ x 10 =	_____
2. Shifted into reverse	_____ x 10 =	_____
3. Entrance cone touched	_____ x 25 =	_____
4. Not completing test as designed	_____ x 50 =	_____

Total Points Off (add 1 thru 4) _____

Note: Maximum Penalty Points = 50

Judge's Signature: _____

Judge's Signature: _____

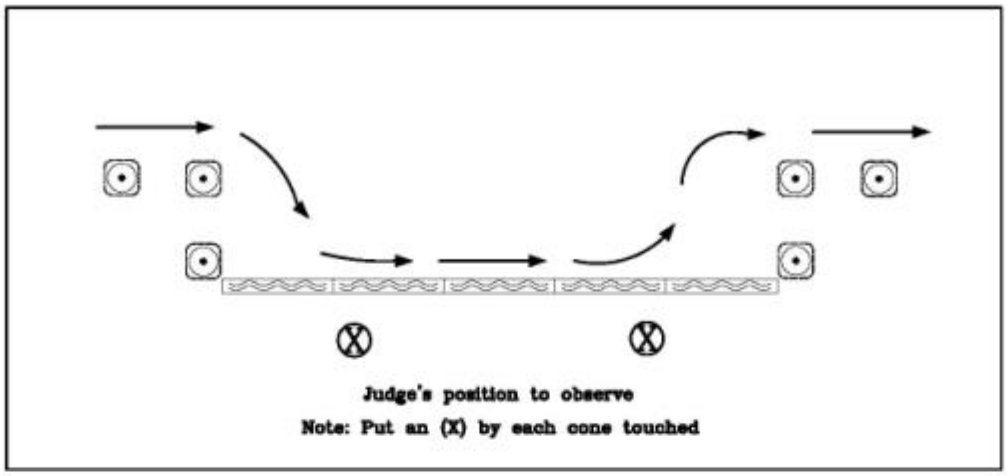
Total Points Possible 50

Total Points Off _____

POINTS EARNED ☐

9. SECOND CUSTOMER STOP

Contestant's Number:_____ Bus Number:_____



Judge's position to observe

Note: Put an (X) by each cone touched

Penalties

1. 25 points off for touching cones at either end of passenger stop
2. 25 points off for touching curb with tires
3. 1 point off per inch beyond 6" segment from curb (FRONT TIRE)
4. 1 point off per inch beyond 15" segment from curb (REAR TIRE)
5. 10 points off for each transmission shift into reverse
6. 50 points off for not completing test as designed

Score

1. Entrance cones touched	_____x25=_____
2. Touched curb	_____x25=_____
3. Front tire actual measurement	_____"–6=_____
4. Rear tire actual measurement	_____"–15=_____
5. Exit cones touched	_____x25=_____
6. Shifted into reverse	_____x10=_____
7. Not completing test as designed	_____x50=_____

TOTAL POINTS OFF (Add 1 thru 7)_____

Note: Maximum Penalty Points=50

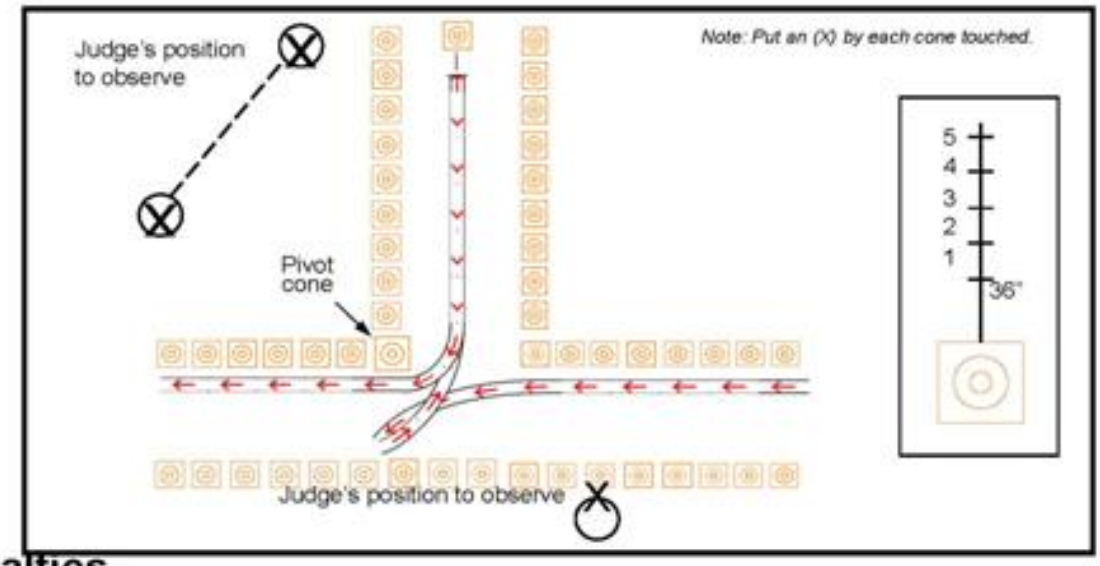
JUDGE'S SIGNATURE:_____ Total Points Possible 50

JUDGE'S SIGNATURE:_____ Total Points OFF _____

POINTS EARNED ☐

10. RIGHT HAND REVERSE

Contestant's Number: _____ Bus Number: _____



Penalties

1. 10 points off for pivot cone touched.
2. 5 points off for each cone touched.
3. 5 points off for each 12" segment beyond 36" limit from rear cone.
4. 10 points off for each transmission shift into reverse after initial shift into reverse.
5. 25 points off for touching rear cone.
6. 50 points off for not completing test as designed.

Score

1. Pivot cone touched	_____ x 10 =	_____
2. Cones touched	_____ x 5 =	_____
3. Rear clearance beyond 36"	_____ x 5 =	_____
4. Shifted into reverse	_____ x 10 =	_____
5. Rear cone touched	_____ x 25 =	_____
6. Not completing test as designed	_____ x 50 =	_____

Total Points Off (add 1 thru 6) _____

Note: Maximum Penalty Points = 50

Judge's Signature: _____

Judge's Signature: _____

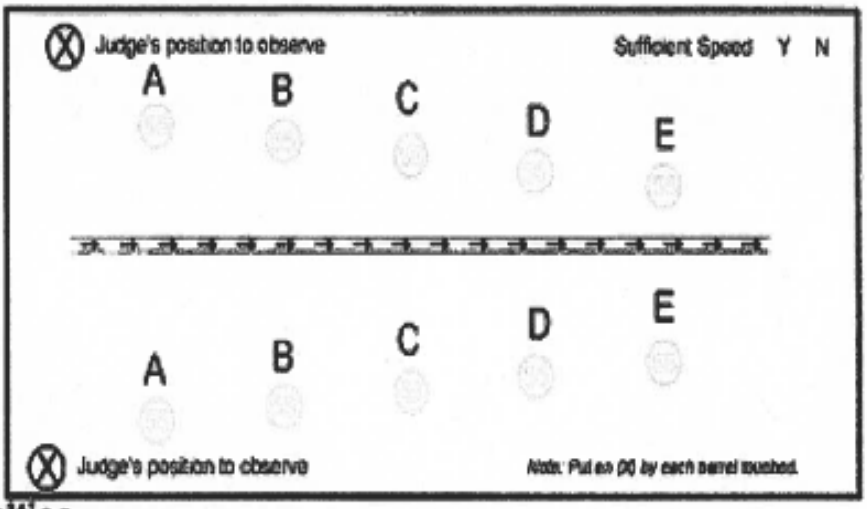
Total Points Possible 50

Total Points Off _____

POINTS EARNED ☐

11. DIMINISHING CLEARANCE

Contestant's Number: _____ Bus Number: _____



Penalties

1. 20 points off for each "A" barrel touched.
2. 16 points off for each "B" barrel touched.
3. 8 points off for each "C" barrel touched.
4. 4 points off for each "D" barrel touched.
5. 2 points off for each "E" barrel touched.
6. 25 points off for insufficient speed (20 mph).
7. 50 points off for not completing test as designed.

Score

1. "A" barrel touched	_____ x 20 =	_____
2. "B" barrel touched	_____ x 16 =	_____
3. "C" barrel touched	_____ x 8 =	_____
4. "D" barrel touched	_____ x 4 =	_____
5. "E" barrel touched	_____ x 2 =	_____
6. Insufficient speed	_____ x 25 =	_____
7. Not completing test as designed	_____ x 50 =	_____

Total Points Off (add 1 thru 7) _____

Note: Maximum Penalty Points = 50

Judge's Signature: _____

Judge's Signature: _____

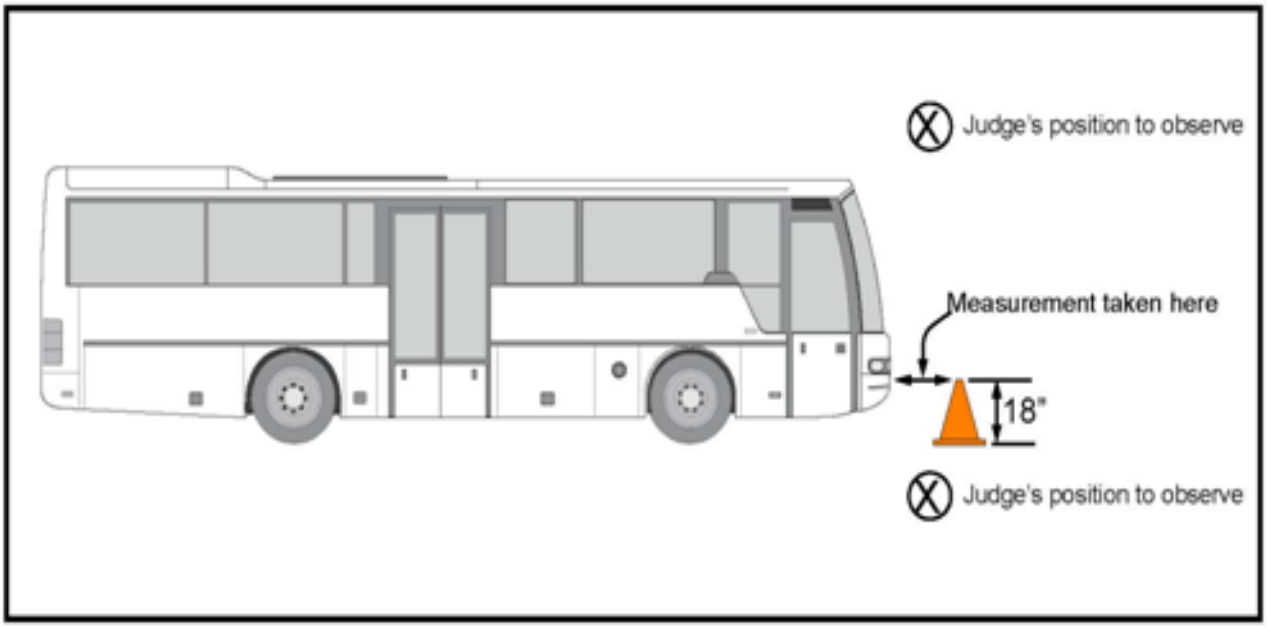
Total Points Possible 50

Total Points Off _____

POINTS EARNED ☐

12. JUDGMENT STOP

Contestant's Number: _____ Bus Number: _____



Penalties

1. 50 points off for the 18" marker being touched.
2. 1 point off for each 1" beyond the initial 6".
3. 25 points off for making more than one full stop.
4. 50 points off for not completing test as designed.

Score

1. 18" marker touched _____yes_____no = _____
2. Excessive clearance beyond 6" limit
   Actual measurement _____-6 = _____
3. Excessive total stops _____x 25 = _____
4. Not completing test as designed _____x 50 = _____

Total Points Off (add 1 thru 4) _____

Note: Maximum Penalty Points = 50

Judge's Signature: _____

Judge's Signature: _____

Total Points Possible 50

Total Points Off _____

POINTS EARNED ☐

13. SAFETY HABITS

Contestant's Number _____ Bus Number _____

A. Total Points Possible A: 25

B. Deductions

1. Deduct 1 point for each instance of failing to use proper turn signals _____x 1 = _____
2. Deduct 3 points for each instance of failing to sound the horn before backing up _____x 3 = _____
3. Deduct 3 points for each instance of failing to use flashers while backing up _____ x 3 =_____
4. Deduct 3 points for each instance of moving bus with door opened _____ x 3 = _____
5. Deduct 5 points for failing to use seat belt _____ x 5 = _____
6. Deduct 2 points if the Operator exhibits poor:
   a. Posture Enter 0 or 2 _____
   b. Use of mirrors Enter 0 or 2 _____
   c. Use of hands Enter 0 or 2 _____
   d. Use of feet Enter 0 or 2 _____

Total Points Deducted (Add 1 - 6) **B:** _____
(maximum penalty points – 25)

TOTAL POINTS AWARDED (A– B)
(maximum 25 points)

Judge's Signature _____

Judge's Signature _____

14. SMOOTHNESS OF OPERATION

Contestant's Number_____ Bus Number _____

Evaluate each contestant on his/her ability to deliver a smooth ride. The following criterion is to be employed in making each evaluation:

A. Total Points Possible A: 25

B. Penalties:

Deduct 10 points for each A.D.A. announcement not made.
Deduct one point for each occurrence of sudden stops, sudden starts and abrupt turns.

1. A.D.A. Announcements _____x 10 =_____
2. Sudden Stops _____x 1 = _____
3. Sudden Starts _____ x 1 = _____
4. Abrupt turns _____x 1 = _____

TOTAL POINTS DEDUCTED (Add 1 - 4) **B:** _____
(maximum penalty points – 25)

TOTAL POINTS AWARDED (A-B)
(maximum 25 points)

Judge's Signature _____

Judge's Signature _____

15. PERSONAL APPEARANCE

Contestant's Number _____ Bus Number _____

A. Total Points Possible **A: 50**

B. Deductions:

Deduct 10 points for each instance of poor personal appearance
(examples: wrinkled uniform, unkempt personal appearance, unpolished or dirty shoes)

Number of Deductions Noted: _____ x 10 =
(maximum of 5 deductions) **B: _____**

Explanation of Deductions Noted:_____
_____
_____
_____
_____

TOTAL POINTS AWARDED (A-B)
(maximum 50 points)

Judge's Signature _____

16. TIMEKEEPER'S RECORD

Contestant's Number _____ **Bus Number _____**

NOTE: Time stops for mechanical trouble and at each course problem where measurements are taken. Time stops at the completion of the judgment stop.

A. Elapsed Time: _____ minutes _____ seconds

B. Penalty of one point per second over seven minutes.
(Maximum penalty of 180 points)

POINTS PENALIZED ☐

TIMEKEEPER'S SIGNATURE _____

SCORE SHEET SUMMARY

Contestant's Number _____ Bus Number _____

	EVENT	POINTS POSSIBLE	POINTS EARNED
1.	Pre-Trip Inspection	50	_____
2.	Serpentine	50	_____
3.	Offset Street	50	_____
4.	Rear Duals Clearance	50	_____
5.	Right Hand Turn	50	_____
6	1st Customer Stop	50	_____
7.	Left Hand Reverse	50	_____
8.	Left Hand Turn	50	_____
9.	2nd Customer Stop	50	_____
10.	Right Hand Reverse	50	_____
11.	Diminishing Clearance	50	_____
12.	Judgment Stop	50	_____
13.	Safety Habits	25	_____
14.	Smoothness of Operations /A.D.A	25	_____
15.	Personal Appearance	50	_____
	TOTAL	**700**	

OPERATORS SUB-TOTAL _____

16. Timekeeper's Record

A: Elapsed Time: _____ Minutes _____ Seconds

B: Overtime Penalty _____

(Deduct 1 point for each second over 7 minutes not to exceed maximum penalty of 180 points)

OPERATOR GRAND TOTAL _____

Recorder's Signature: 1st Tally _____ Recheck _____ Date_____/_____/_____

Recorder's Signature: 1st Tally _____ Recheck _____ Date_____/_____/_____

Recorder's Signature: 1st Tally _____ Recheck _____ Date_____/_____/_____

APPENDIX 6: TECHNICIAN'S SCORE SHEETS

1. WRITTEN TEST

Team ID Place Team Sticker Here

1) A B C D	18) A B C D	35) A B C D
2) A B C D	19) A B C D	36) A B C D
3) A B C D	20) A B C D	37) A B C D
4) A B C D	21) A B C D	38) A B C D
5) A B C D	22) A B C D	39) A B C D
6) A B C D	23) A B C D	40) A B C D
7) A B C D	24) A B C D	41) A B C D
8) A B C D	25) A B C D	42) A B C D
9) A B C D	26) A B C D	43) A B C D
10) A B C D	27) A B C D	44) A B C D
11) A B C D	28) A B C D	45) A B C D
12) A B C D	29) A B C D	46) A B C D
13) A B C D	30) A B C D	47) A B C D
14) A B C D	31) A B C D	48) A B C D
15) A B C D	32) A B C D	49) A B C D
16) A B C D	33) A B C D	50) A B C D
17) A B C D	34) A B C D	

Number Correct _____ **x 2.5 =**

TOTAL POINTS EARNED

(maximum 125 points)

Tie Breaker: Time To Complete _____:_____
(min:sec)

Judge's Signature _____ Judge's Signature _____

2. USSC VEHICLE INSPECTION

Team ID Place Team Sticker Here

A. Points Earned

Identify and record 14 Planted defects worth 25 points each.

1. Number of planted defects found _____ x 25 =

TOTAL POINT EARNED A. _____

B. Penalties

Deduct 10 points for each item not returned to original condition.
(examples: compartment door, lights, windows, etc.)

Deduct 10 points for unsafe inspection practices.
(examples: crawling under the bus)

1. **Number of items not returned to original condition _____X 10 = _____**
2. **Unsafe practices during inspection _____X 10 =_____**

TOTAL PENALTY POINTS B. _____

TOTAL POINTS EARNED (A - B)

(maximum 350 points)

ATTEMPT TO START THE VEHICLE- DISQUALIFIED ☐
(check if applicable)

Judge's Signature _____

Judge's Signature _____

3. ALLISON/CUMMINS POWER TRAIN EVENT

Place Team Sticker Here

Team ID

A. Points Earned

Identify and record 6 planted defects (50 points each).
Identify, record, and correct defect which renders the power train inoperable (50 points).

1. **Number of planted defects found _____ x 50 each = _____**

2. **Disabling defect found and corrected (enter 0 or 50) _____**

Total Points Earned A. _____

B. Penalties

1. **Engine not returned to original status (enter 0 or 50) = _____**
   (excluding disabling defect)

2. **Improper use of tools/test equipment (enter 0 or 10) = _____**

3. **Safety violation(s) (ten points each) ___ x 10 = _____**

Total Penalty Points B. _____

TOTAL POINTS EARNED (A - B)

(maximum 350 points)

C. Tie Breaker

1. **Time to Correct Disabling Defect ____:_____**
   (min:sec:)

Judge's Signature _____

Judge's Signature _____

4. CUMMINS/VOITH POWER TRAIN EVENT

Team ID

Place Team Sticker Here

A. Points Earned

Identify and record 6 planted defects (50 points each).
Identify, record, and correct defect which renders the power train inoperable (50 points).

1. **Number of planted defects found _____ x 50 each = _____**

2. **Disabling defect found and corrected (enter 0 or 50) _____**

Total Points Earned A. _____

B. Penalties

2. **Engine not left in proper working order (enter 0 or 50) = _____**
   (excluding planted defects) (or returned to original status)

3. **Improper use of tools/test equipment (enter 0 or 10) = _____**

4. **Safety violation(s) (ten points each) ____ x 10 = _____**

Total Penalty Points B. _____

TOTAL POINTS EARNED (A - B)

(maximum 350 points)

C. Tie Breaker

1. **Time to Correct Disabling Defect ____:_____**
   (min:sec:tenchs)

Judge's Signature _____

Judge's Signature_____

5. CUSTOM TRAINING AIDS AIR BRAKE BOARD EVENT

Team ID Place Team Sticker Here

A. Points Earned

Diagnosis planted electrical defect (50 points)
Identify and record 6 planted Air Brake System defects (50 points each)

1. **Correct diagnosis of electrical planted defect**
   (enter 0 or 50 points) _____

2. **Number of Air Brake System defects found**
   _____ **X 50 each =** _____

Total Points Earned A. _____

B. Penalty

1. **Air Brake System not returned to original status**
   (excluding planted defects)
   (enter 0 or 10) = _____

2. **Improper use of tools/test equipment (enter 0 or 10) =** _____

3. **Safety Violation(s)(ten points each)** ____ **x 10 =** _____

Total Penalty Points B. _____

TOTAL POINTS EARNED (A-B)

(Maximum 350 Points)

C. Tie Breaker

1. **Elapsed Time for Electrical Defect Portion** _____:____
   (min:sec)

Judge's Signature _____

Judge's Signature _____

6. THERMO KING HVAC INTELLIGAIRE EVENT

Team ID Place Team Sticker Here

A. Points Earned

Identify, record and correct one disabling defect (50 points)
Identify and record five (5) other defects (50 points each)
Record and identify all logged alarm code(s) (50 points)

1. **Disabling defect found and corrected (enter 0 or 50)** _____
2. **Number of planted defects found _____ x 50 each =** _____
3. **Record and identify all logged alarm code(s) (enter 0 or 50)** _____

Total Points Earned A. _____

B. Penalty

1. **A/C unit & simulator not returned to original status** (excluding planted defects)**(enter 0 or 10)** _____
2. **Improper use of tools/test equipment (enter 0 or 10)** _____
3. **Safety violation(s) (ten points each) _____x 10) =** _____

Total Penalty Points B. _____

TOTAL POINTS EARNED (A - B)

(Maximum 350 points)

C. Tie Breaker

1. **Elapsed Time for HVAC event: _____:_____**
   (min:sec)

Judge's Signature _____

Judge's Signature _____

7. MCI MULTIPLEX EVENT

Team ID

Place Team Sticker Here

A. Points Earned

Identify and record seven planted multiplex defects (50 points each).

1. **Number of planted defects found _____ x 50 each**

Total Defect Points A. _____

B. Penalty

1. **Improper use of tools/test equipment (enter 0 or 10) = _____**
2. **Safety violation(s) (ten points each) ____x 10) = _____**

Total Penalty Points B. _____

TOTAL POINTS EARNED (A – B)

C. Tie Breaker

1. **Elapsed Time for Complete Event: _____**

Judge's Signature _____

Judge's Signature _____

8. VAPOR DOOR EVENT

Team ID Place Team Sticker Here

A. Points Earned

Identify and record seven planted Door defects (50 points each).

1. **Number of planted defects found_____ x 50 each**

Total Defect Points A. _____

B. Penalty

1. **Improper use of tools/test equipment (enter 0 or 10) =** _____
2. **Safety violation(s) (ten points each) _____x 10) =** _____

Total Penalty Points B. _____

TOTAL POINTS EARNED (A – B) _____

C. Tie Breaker:

1. **Elapsed Time for Door Event: _____:_____**
   (min:sec)

Judge's Signature _____

Judge's Signature _____

TECHNICIANS SCORE SHEET SUMMARY

Team ID

Place Team Sticker Here

Maintenance Tests	Base Score	Points Earned
1. Written Test	125	_____
2. USSC Vehicle Inspection	350	_____
3. Cummins/Allison Power Train Event	350	_____
4. Cummins/Voith Power Train Event	350	
5. Custom Training Aid Air Brake Board Event	350	_____
6. Thermo King HVAC Event	350	_____
7. MCI Multiplex Event	350	_____
8. Vapor Door Event	350	_____
TOTAL POINTS POSSIBLE	**2,575**	

Technician Grand Total

Recorder's Signature: 1st Tally _____ Recheck _____ Date_____/_____/_____

Recorder's Signature: 1st Tally _____ Recheck _____ Date_____/_____/_____

Recorder's Signature: 1st Tally _____ Recheck _____ Date_____/_____/_____

CUSTOMER SERVICE CHALLENGE

Operator Number: _____ Judge Number:_____

Score

Passenger #1……Points earned _____ (5 Max)

Passenger #2……Points earned_____ (5 Max)

Passenger #3……Points earned_____ (5 Max)

TOTAL POINTS EARNED

(Max 15 points)

Judge's Signature**: _____**

Appendix 8: APTA INTERNATIONAL BUS ROADEO SCHEDULE

AMERICAN PUBLIC TRANSPORTATION ASSOCIATION
2017 INTERNATIONAL BUS ROADEO

HOSTED BY
Regional Transportation Commission of Washoe County

Host Hotel:
Grand Sierra
2500 East Second Street
Reno, NV 89595

Roadeo Site:
Grand Sierra
Parking Lot 6

APTA Bus & Paratransit Conference & International Bus Roadeo Workshops:
Grand Sierra

COMMITTEE & CONTESTANT SCHEDULE

Wednesday, May 3

Committee Members begin arriving

Thursday, May 4

Bus Roadeo Committee Course Set-Up	**8:00 am – Until**
Roadeo Registration *Grand Salon*	**4:00 – 6:00 pm**

Friday, May 5

Bus Roadeo Committee Driving Course & Maintenance Set-Up	**8:00 am – Until**
Roadeo Registration *Grand Salon*	**2:00 – 7:00 pm**
International Bus Roadeo Committee Meeting *Crystal 1-2*	**3:00 – 4:00 pm**
Operators' Orientation *Carson 1-2*	**7:00 – 8:30 pm**
Technician Orientation *Carson 3-4*	**7:30- 8:30 pm**

Saturday, May 6

Roadeo Registration **7:00 – 9:00 am**
Grand Salon

Operators Driving Course Practice, and Pre-Trip Competition **8:00 am – Until**
Parking lot 6

Technician Written Test **8:00 – 8:45 am**
Carson 1-2

Technician Training **9:00 am – 4:00 pm**
Carson 3-4

Sunday, May 7

Bus Roadeo Committee & Judges Onsite **7:00 am – Until**

International Bus Roadeo Competition **8:00 am – Until**
Parking lot 6

International Bus Roadeo Swap Meet **6:30 pm – 8:00 pm**
Nevada Foyer & Room

Monday, May 8

APTA Bus & Paratransit Conference & International Bus Roadeo Workshops Designed for Bus Roadeo Contestants:
** Roadeo committee, competitors and supervisors are welcome at all conference activities. These highlighted sessions are formatted for Roadeo participants. More information can be found in the Bus & Paratransit conference program/App.

Operator Workshop: **8:30 – 10:30 am**
Verbal and Postural De-escalation Techniques, Behaviors of Concern, Predicting & Avoiding Incidents
Nevada 6-7

This workshop will address verbal and non-verbal indicators of violence, de-escalation techniques, detecting concealed weapons and more.

Jeff L. May, President, Apex-SCF LLC, Carson City, NV

Paul Pabón, Apex-SCF LLC, Carson City, NV

Technician Workshop: **8:30 – 10:30 am**
Introduction to IntelligAIRE III
Nevada 8-10

Technicians will learn operation of the IntelligAIRE III controller. In addition, technicians will learn CanDIAG troubleshooting procedures as well as flash loading software and use of diagnostic tools.

Workshop is sponsored by Thermo King Corporation

Steve Morris, Product Service Manager, Bus, Thermo King Corporation, Minneapolis, MN

Bus Display & Lunch **11:00 am – 2:00 pm**
Parking Lot 7

Operator Workshop: **2:00 – 4:00 pm**
Nevada 6-7

Technician Workshop: **2:00 – 4:00 pm**
Electric Fan Engine Cooling System Operation, Diagnostics and Troubleshooting
Nevada 8-10

EMP's Mini-Hybrid® engine cooling system is part of the Roadeo Mechanic's competition in both the Cummins-Allison and Cummins-Voith modules. Come see the newest product which utilizes EMP's new 15" fan and learn more about how the system works and get diagnostic and troubleshooting tips. A functioning Gen IV system and a vehicle simulator will be used to demonstrate the service tool and real failure examples will be used to explain the troubleshooting process.

EMP's Technical Service Team -
Jim Stark, Regional Sales and Service Manager - Midwest
Susan Bucheger, Technical Services Manager
Eddy Mercon, Regional Service Project Manager - Northeast
Mike Santillanez, Regional Service Project Manager - West
Steven Babin, Regional Service Project Manager - Southeast

Customer Service Challenge **2:30 – 4:00 pm**
Reno Ballroom

Tuesday, May 9

Operator Workshop: **8:30 – 10:30 am**
Use of Force Continuum, Self-defense Within the Guidelines of the Law
Nevada 6-7

The focus of this work shop will be guidelines for individuals present during an active shooting/workplace violence incident, understanding the levels and use of force within the law, and techniques on Command Presence.

Paul Pabón, Apex-SCF LLC, Carson City, NV

Technician Workshop: **8:30 – 10:30 am**
Transmissions: I have an oil Analysis report but how do I use it?
Nevada 8-10

This will be a class on the basics of ATF transmission fluid analysis but we will also discuss engine oils. The class will cover the standard tests that are used in fluid analysis, what they mean, and how to use them most effectively. We will discuss when, where and how to take samples so you get the most accurate results from a testing program. In addition to looking at individual results and their meaning we will also discuss trend analysis of the results and its role in a predictive maintenance program.

Workshop is sponsored by Voith Turbo, Inc.

Mark Bair, Certified Lubrication Specialist and oil Monitoring Analyst I
Member of the Society of Tribologists and Lubrication Engineers
Senior Warranty Administrator, Voith Turbo Inc., York, PA

Product Showcase & Lunch **10:30 am – 2:00pm**
Summit Pavilion

International Bus Roadeo Grand Awards Banquet **7:00 – 9:30 pm**
Reno Ballroom

Wednesday, May 10

International Bus Roadeo Committee Meeting – Debrief **7:00 am – 8:00 am**
Crystal 3-4

** Roadeo committee, competitors and supervisors are welcome at all conference activities. These highlighted sessions are formatted for Roadeo participants. More information can be found in the Bus & Paratransit Conference program/App.