

COLLISION REPAIR TECHNOLOGY NYS



Please note not all areas of national contest hands on content will be covered, but we will try to add more areas as contest sight space and time limits allows in the future. Reason that some standard and competencies found on national scope is not listed here.

PURPOSE

To evaluate each contestant's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of collision repair technology.

ELIGIBILITY

Open to active SkillsUSA members enrolled in programs with collision repair technology as the occupational objective.

CLOTHING REQUIREMENT

White crew neck short-sleeved T-shirt, work pants, safety glasses or goggles, leather or steel-toed work shoes. (Prescription glasses can be used only if they are equipped with side shields. If not, they must be covered with goggles.)

Note: Contestants must wear their official contest clothing to the contest orientation meeting. Also bring #2 pencil, resume, and safety assurance form.

EQUIPMENT AND MATERIALS

1. Supplied by the NYS chair/committee:
Basic equipment of a collision repair and refinishing laboratory
 - a. Materials for metalworking phase:
 1. Identical fenders to be repaired
 2. Plastic filler
 3. Various grits of sandpaper/DA sanders, hand sanding blocks, roloc

- discs
4. Plastic filler mixing boards and spreaders
- b. Materials for plastic repair phase:
 1. Cleaning solvent
 2. Plastic repair material
 3. Mixing boards and spreaders may be supplied.
 4. Abrasive discs and sheets
 5. Plastic parts to repair
 6. Clamps
- c. Materials for estimating phase:
 1. Vehicle owner's name and address
 2. Scratch pads
 3. Estimate sheets
 4. Estimate books
 5. Parts price list for car involved
2. Supplied by the contestant:
 - a. Dust respirator Hepa filter type
 - b. Body files
 - c. Mixing board
 - d. Various 4"-6" squeegees/filler applications
 - e. Dollies
 - f. Various metal finishing hammers
 - g. Die grinder with roloc disc attachment
 - h. Cartridge-type respirator (charcoal-filtered) Hepa filters
 - i. All welding attire expected.
 - j. Welding goggles
 - k. Welding gloves
 - l. Welding jacket
 - m. Skull cap (no "doo rags")
 - n. Welding respirator
 - o. Welding helmet
 - p. Several pair vice grip C-clamp for welding section
 - q. Face shield
 - r. 5" air grinder and grinding disks
 - s. $\frac{9}{16}$ " and $\frac{5}{8}$ " wrenches
 - t. Sanding pads
 - u. Sanding blocks
 - v. Air pressure gauge 25 foot air hose and various air ends.

- Universal quick coupler that fit your tools.
- w. Calculator pencils for estimating
- x. Two hard copy of resume
All competitors must create a one-page résumé using a word processor.
Resume to be handed in at the orientation meeting.

Note: This contest may also require a hard copy of your résumé as part of the actual contest. Check the Contest Guidelines and/or the updates page on the NYS SkillsUSA Web site:

<http://www.nysskillsusa.org/>

SCOPE OF THE CONTEST

The contest will be consistent with the Collision Repair/Refinishing Technician Task List outlined in the guidelines published by the National Institute for Automotive Service Excellence (ASE) and the National Technicians Education Foundation (NATEF), www.natef.org. Contestants will demonstrate their ability to perform jobs of skills selected from the standards mentioned above as determined by the SkillsUSA Championships technical committee. Committee membership includes: 3M Co., Automotive Service Association (ASA), Caliber Collision Centers, Car-O-Liner Co., CarStar Collision Centers, Chief Automotive Systems Inc., Continental Collision Center, General Motors Corp., I-CAR Tech Centre, Mike's Collision Center, Miller Electric Mfg. Co. Inc., National Institute for Automotive Service Excellence (ASE), Snap-on Inc., State Farm Insurance Companies, Toyota Motor Sales U.S.A. Inc., and Verifacts Automotive LLC.

Knowledge Performance

The contest includes a written knowledge test, which will consist of 50 questions covering three areas of the Collision Repair areas that are identified in the NATEF Collision Repair/Refinishing Program Standards and the ASE Official Study Guide: Collision Repair/Refinish, an estimating test and a structural test. The tests for the high school and college contests will be comprised of diagnosis and repair content from these skill areas: Non-structural Analysis and Damage Repair, Structural Analysis and Damage Repair, Mechanical and Electrical Components, and Estimating.

1. Nonstructural Analysis —22 questions in Nonstructural Analysis and Damage Repair (B3) ASE Certification Test in the content areas of: preparation, outer body panel repairs, replacements and adjustments, metal finishing and body filling, glass and hardware, welding, cutting and removal and plastic repair*
2. Structural Analysis — 14 questions in Structural Analysis and Damage Repair (B4) ASE Certification Test in the content areas of: frame inspection and repair, unibody inspection, measurement and repair, stationary glass and metal welding and cutting*
3. Mechanical and Electrical Components — 14 questions in Mechanical and Electrical Components (B5) ASE Certification Test in the content areas of: suspension and steering, electrical, brakes, heating and air conditioning, engine cooling systems, drive train, fuel intake and exhaust systems and restraint systems*

Note “*” Denotes this material is covered on a written test given Wed. night.

Skill Performance

Contestants will demonstrate their ability to perform jobs and skills based on the task list outlined by the National Institute for Automotive Service Excellence (ASE) and the National Automotive Technicians Education Foundation (NATEF). The competition includes a series of workstations to assess skills in the following areas: metal straightening, welding, plastic repair, and structural analysis. There will be a written test on estimating, structural analysis, and an ASE exam. The competition may also participate in an interview. The overall appearance of the finished product, speed and proper safety practices will be judged.

Standards and Competencies

CRT 1.0 — Repair depressed area(s) on a steel panel with plastic body filler to related tasks in National Automotive Technicians Foundation (NATE F) Collision Repair/Refinishing Non-Structural Analysis and Damage Repair Technical Standards (ASE B3 Test)

- 1.1 Model proper safety procedures
- 1.2 Clean contaminants from a damaged panel

- 1.3 Locate surface irregularities on a damaged panel
- 1.4 Remove finish from the damaged area(s) as necessary
- 1.5 Apply hammer and dolly techniques to repair damage
 - 1.5.1 Differentiate between pressure in relation to the concept of force to realign a component
 - 1.5.2 Straighten and rough out contours of damaged panels to a suitable condition for body filling using power tools, hand tools, and weld-on pull attachments
- 1.6 Mix and apply plastic body filler on a steel panel
 - 1.6.1 Determine the relative proportion of the desired versus the undesired ingredients or elements of a mixture, and determine if that proportion is within the manufacturer's specifications
 - 1.6.2 Describe chemical reactions that occur in various compounds and substances
 - 1.6.3 Identify the role an additive or catalyst plays in the mixing of plastic fillers
 - 1.6.4 Define the criticality of metals with different hardness depending upon the function and location of the metal as well as how plastic fillers adhere to metal
- 1.7 Rough sand cured body filler to contour
- 1.8 Finish sand

CRT 2.0 — Repair depressed area using shrinking techniques on a steel panel to related tasks in National Automotive Technicians Foundation (NATE F) Collision Repair/Refinishing Non-structural Analysis and Damage Repair Technical Standards (ASE B3 Test)

- 2.1 Model proper safety procedures
- 2.2 Clean contaminants from a damaged panel
- 2.3 Locate surface irregularities on a damaged panel
- 2.4 Remove finish from the damaged area(s) as necessary
- 2.5 Identify hammer and dolly techniques to repair damage
 - 2.5.1 Demonstrate understanding of pressure in relation to the

- concept of force to realign a component
- 2.6 Describe the cold shrinking process as necessary
- 2.7 Describe the heat shrinking process as necessary
 - 2.7.1 Straighten and rough out contours of damaged panels to a suitable condition for metal finishing using power tools, hand tools, and weld-on pull attachments
- 2.8 Demonstrate the cold shrinking process as necessary
- 2.9 Demonstrate the heat shrinking process as necessary
 - 2.9.1 Demonstrate an understanding of the effect that adding heat will cause in a state of matter, such as changing a solid to a liquid

CRT 3.0 — Repair depressed areas using metal finishing techniques on a steel panel to related tasks in National Automotive Technicians Foundation (NATE F) Collision Repair/Refinishing Non-Structural Analysis and Damage Repair Technical Standards (ASE B3 Test)

- 3.1 Model proper safety procedures
- 3.2 Clean contaminants from a damaged panel
- 3.3 Locate surface irregularities on a damaged panel
- 3.4 Remove finish from the damaged area(s) as necessary
- 3.5 Demonstrate various uses of the metal finishing tools

CRT 4.0 — Prepare steel panel for primer application to related tasks in National Automotive Technicians Foundation (NATE F) Collision Repair/Refinishing Painting and Refinishing Technical Standards (ASE B2 Test)

- 4.1 Model proper safety procedures
- 4.2 Clean contaminants from a damaged panel
- 4.3 Featheredge /E-coat as necessary
- 4.4 Sand/Scuff bare metal as necessary
 - 4.4.1 Demonstrate an understanding of the criticality of metals with different hardness depending on the function and location of the metal as well as how plastic fillers adhere to metal

CRT 5.0 — Demonstrate attachment methods needed for collision repair of steel and aluminum panels to related

tasks in National Automotive Technicians Education Foundation (NATEF) Collision Repair/Refinishing Nonstructural Analysis and Damage Repair Technical Standards, National Automotive Technicians Education Foundation (NATEF) Collision Repair/Refinishing Structural Analysis and Damage Repair Technical Standards, (ASE B3 and B4 Tests), and the I-CAR Welding and Training and Certification Tests)

- 5.1 Model proper safety procedures
- 5.2 Make a plug weld using steel coupons in a vertical position using a GMA (MIG) welder
 - 5.2.1 Set up and adjust the welder for proper stickout, voltage, polarity, flow rate and wire speed required for the metal being welded
 - 5.2.2 Determine work clamp (ground) location and attach
 - 5.2.3 Use the proper angle of the gun to the joint and the direction of gun travel for the type of weld being made in a vertical position
 - 5.2.4 Clean and prepare the metal to be welded, assure good fit-up, apply weld through primer if necessary, and clamp as required
 - 5.2.5 Perform a visual test on the vertical weld
- 5.3 Make a butt joint with backing weld using steel coupons in the vertical position using a GMA (MIG) welder
 - 5.3.1 Set up and adjust the welder for proper stickout, voltage, polarity, flow rate and wire speed required for the metal being welded
 - 5.3.2 Determine work clamp (ground) location and attach
 - 5.3.3 Use the proper angle of the gun to the joint and the direction of gun travel for the type of weld being made in a vertical position
 - 5.3.4 Clean and prepare the metal to be welded, assure good fit-up, apply weld through primer if necessary, and clamp as required
 - 5.3.5 Perform a visual test on the vertical weld
- 5.4 Make a fillet weld on lap using the steel coupons in the vertical position using a GMA (MIG) welder.
 - 5.4.1 Set up and adjust the welder for

proper stickout, voltage, polarity, flow rate and wire speed required for the metal being welded

- 5.4.2 Determine work clamp (ground) location and attach
- 5.4.3 Use the proper angle of the gun to the joint and the direction of gun travel for the type of weld being made in a vertical position
- 5.4.4 Clean and prepare the metal to be welded, assure good fit-up, apply weld through primer if necessary, and clamp as required
- 5.4.5 Perform a visual test on the vertical weld flow rate and wire speed required for the metal being welded
- 5.6.2 Determine work clamp (ground) location and attach
- 5.6.3 Use the proper angle of the gun to the joint and the direction of gun travel for the type of weld being made in an overhead position
- 5.6.4 Clean and prepare the metal to be welded, assure good fit-up, apply weld through primer if necessary, and clamp as required
- 5.6.5 Perform a visual test on the

CRT 6.0 — Complete backside reinforced cosmetic surface repair on a plastic vehicle part. Mix and apply appropriate material corresponding with the related tasks in The National Automotive Technicians Foundation (NATEF) Repair/Refinishing Non-Structural Analysis and Damage Analysis (ASE B3 Test). A 20-point scale is used for each segment. Participants will be expected to successfully complete each segment. Participants should have some basic knowledge in chemistry

- 6.1 Demonstrate proper safety procedures
- 6.2 Demonstrate an understanding of the importance to clean before making any repair
- 6.3 Damage preparation before adhesive work
- 6.4 Demonstrate an understanding of appropriate abrasive grade sequence for reinforcing plastic repair. (Typically 50 and 80)
- 6.5 Apply a light coating of adhesion promoter and allow to dry adequately
- 6.6 Demonstrate the ability to open, load, and equalize the cartridge, attach the

mixing nozzle, and discard the first pump of material

- 6.7 Demonstrate proper spreading techniques: Apply a thin, tight coat of material, then build a thin layer of adhesive followed by reinforcing mesh and an additional layer of adhesive

CRT 7.0 — Complete a front-side cosmetic surface repair on a plastic vehicle part. Mix and apply appropriate material corresponding with the related tasks in the National Automotive Technicians Foundation (NATE F) and the ASE Collision Repair/Refinishing Non-structural Analysis and Damage (B3) Certification Test. A 20-point scale is used for each segment. Participants will be expected to successfully complete each segment. Participants should have some basic knowledge in chemistry

- 7.1 Demonstrate proper safety procedures
- 7.2 Demonstrate an understanding of the importance of cleaning before making any repair
- 7.3 Damage preparation before adhesive work
- 7.4 Demonstrate an understanding of appropriate abrasive grade sequence for plastic repair (Typically 50, 80, adhesive application, 80, 180, 320)
- 7.5 Demonstrate an understanding of the need to keep very coarse grade scratches (80 grit) inside valley of repair and not on surrounding plastic, to avoid creating “fuzzies” that will be difficult to conceal in the finished paint work
- 7.6 Demonstrate understanding of the difference between “Veeing Out” a repair (incorrect) and “Dishing Out” a repair (correct), and how that relates to the finished product (no ghost lines)
- 7.7 Apply a light coating of adhesion promoter and allow to dry adequately
- 7.8 Demonstrate the ability to load, open, and equalize the cartridge, attach the mixing nozzle, and discard the first pump of material
- 7.9 Demonstrate proper spreading techniques: Apply a thin, tight coat of material, build in thin layers, and avoid air entrapment as they build slightly higher than the surrounding areas
- 7.10 Demonstrate test to determine readiness to sand (check with fingernail, see if it leaves a white mark in the adhesive)
- The next task may be required Tab repair

CRT 8.0 — Complete a tab repair on plastic vehicle part. Mix and apply appropriate material corresponding with the related tasks in The National Automotive Technicians Foundation (NATEF) and The ASE Collision Repair/Refinishing Non-Structural Analysis and Damage (B3) Certification Test. A 20-point scale is used for each segment. Participants will be expected to successfully complete each segment. Participants should have some basic knowledge in chemistry

- 8.1 Demonstrate proper safety procedures
- 8.2 Demonstrate an understanding of the importance of cleaning before making any repair
- 8.3 Demonstrate an understanding of appropriate abrasive grade sequence for tab repair (Typically 50 and 80)
- 8.4 Apply a light coating of adhesion promoter and allow to dry adequately
- 8.5 Demonstrate the ability to load, open and equalize the cartridge, attach the mixing nozzle, and discard the first pump of material
- 8.6 Demonstrate proper “molding” techniques, using contour sheeting, and form a new tab
- 8.7 Demonstrate test to determine readiness to sand (check with fingernail, see if it leaves a white mark in the adhesive)

CRT 9.0 — Complete surface preparation and related tasks in The National Automotive Technicians Foundation (NATE F) and the ASE Collision Repair/Refinishing Non-structural Analysis and Damage (B3) Certification Test. A 20-point scale is used for each segment. Participants will be expected to successfully complete each segment. Participants should have some basic knowledge in chemistry

- 9.1 Demonstrate proper use of safety
- 9.2 Demonstrate the ability to use 50 grit abrasive on a high speed grinder to rough shape the formed tab, followed by 180 grit on a DA to finely shape the tab, and lastly, a 320-grit abrasive to prepare the featheredge for the painting process
- 9.3 Demonstrate the ability to use an 80 grit abrasive to “knock down” the bulk of the excess cosmetic repair material without abrading the surrounding plastic, which would leave “fuzzies”
- 9.4 Demonstrate the ability to use 180-grit abrasive to successfully level the repair material and feather into the surrounding area
- 9.5 Finish sand the repair and surrounding area with 320-grit abrasive to prepare for

- painting process
- 9.6 Demonstrate the best practice of reapplying adhesion promoter after the final sanding step, to assure paint adhesion

CRT 10.0 — Plastic repair written test and basic plastic identification. A 20-point scale is used for each segment. Participants will be expected to successfully complete each segment. Participants should have some basic knowledge in chemistry

- 10.1 Students are expected to be able to identify the major types of plastics used in automobile construction
- 10.2 Students are expected to understand basic types of, and alternatives to, plastic repair
- 10.3 Students are expected to understand proper plastic preparation prior to a repair
- 10.4 Students are expected to identify proper use of adhesives for plastic repair

CRT 13.0 — Perform structural damage analysis and related information to related tasks in National Automotive Technicians Foundation (NATE F) Collision Repair and Refinishing Structural Analysis and Damage Repair Technical Standards* (ASE B4 Test)

- 13.1 Describe the structural damage analysis questions or complete the statement using the choices given

CRT 21.0 — Complete an estimate to related tasks in ASE Catalog of Collision Repair/Refinishing Tests B6 (Damage Analysis and Estimating)*

- 21.1 Report heading/legibility*
- 21.1.1 List entrant number on estimating test*
- 21.1.2 Locate provided “Vehicle Description and Labor Rate Page” and complete owner and vehicle information segment on estimate (e.g., owner name, address, phone numbers, license plate, vehicle year, series,

mileage, vehicle identification number)

- 21.1.3 Identify and record customer/vehicle information

- 21.1.4 Identify and record vehicle identification (VIN) information

- 21.1.5 Write legibly*

- 21.2 Identify parts replacement*

- 21.2.1 Locate and select vehicle to be estimated in the provided collision estimating guide*

- 21.2.2 Locate and list the correct part prices and replacement labor times and refinish labor times for the predetermined parts being replaced*

- 21.2.3 Estimate labor adjustments for vehicle options when appropriate*

- 21.2.4 Recognize and apply body labor overlap and refinish labor overlap where appropriate*

- 21.2.5 Consider and apply “included” and “not included” operations where appropriate*

- 21.2.6 Consider and apply labor footnotes (# signs) when necessary*

- 21.3 Prepare calculations*

- 21.3.1 Calculate and list the correct paint and materials allowance*

- 21.3.2 Calculate and list parts, body labor, refinish labor, paint and material column totals*

- 21.3.3 Calculate and list total labor hours (body labor plus refinish labor)*

- 21.3.4 Multiply total labor hours by providing labor rate and list labor dollar amount*

- 21.3.5 Calculate and list the total estimated amount*

CRT 25.0 — Complete job application and résumé to related tasks in National Automotive Technicians Foundation (NATEF) Collision Repair and Refinishing Standards

- 25.1 Properly and legibly complete a job application and résumé*