# STRANDS AND STANDARDS
## COLLISION NON-STRUCTURAL REPAIR

Learning that works for Utah
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## Course Description

This course prepares individuals to perform non-structural repair, replacement, and adjustment of automotive outer body panels and uni-body components. This course is based on the Automotive Service Excellence (ASE) automotive collision task list and the I-CAR training program. Work ethics and productivity are an integral part of the classroom and laboratory activities of this program.

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| **Intended Grade Level** | 10-12 |
| Units of Credit | 0.5-1.0 |
| Core Code | 40.09.00.00.010 |
| Concurrent Enrollment Core Code | 40.09.00.13.010 |
| Prerequisite | Basic Automotive Collision Repair |
| Skill Certification Test Number | N/A |
| Test Weight | N/A |
| **License Area of Concentration** | CTE and/or Secondary Education 6-12 |
| **Required Endorsement(s)** | |
| Endorsement 1 | Automotive Collision Repair |

# STRAND 1: SAFETY

**Students will understand and demonstrate safety and environmental practices.**

### Standard 1

Successfully complete a safety program before entering a shop space.

### Standard 2

Locate and understand basic and hazardous information from a Safety Data Sheet (SDS) for products used in the collision repair industry.

- Proper product labeling

### Standard 3

Identify, select, inspect, and properly use appropriate personal protective equipment (PPE).

- Eye protection
- Hand protection
- Body protection
- Respiratory protection
- Hearing protection

### Standard 4

Comply with OSHA regulations.

### Standard 5

Locate Original Equipment Manufacturer (OEM) procedures to identify material and composition of the vehicle being repaired (mild steel, high strength steel, ultra-high strength steel, aluminum, etc.).

### Standard 6

Differentiate and understand safety precautions between alternative fuel vehicles, supplemental restraint system (SRS) systems, advanced driver assistance systems (ADAS).

### Performance Skills

- Pass a safety test with 100% accuracy.
- Locate, name, and demonstrate all safety equipment and procedures.
- Demonstrate correct use of PPE.
- Recognize and report potential safety hazards.
- Identify proper material labeling.
- Develop a logical repair plan and methods.
- Perform vehicle clean-up; complete quality control using a checklist on operations performed.

## STRAND 2: VEHICLE PREPARATION

**Students will understand and demonstrate vehicle preparation.**

### Standard 1

Interpret a damage report to determine appropriate tools, equipment, and methods for overall repair; develop and document a repair plan.

### Standard 2

Inspect, remove, protect, label, store, inventory, and reinstall parts for vehicle refinishing.

- Exterior trim and moldings
- Interior trim and components
- Outer body panels
- Electrical components

### Standard 3

Determine methods for protecting adjacent panels to the repair area.

- Panels
- Glass
- Interior parts
- Automotive lighting

### Standard 4

Differentiate between prior related/unrelated, supplemental, and comprehensive damage.

### Performance Skills

- Demonstrate proper use of tools and equipment.
- Demonstrate proper use of PPE.
- Perform vehicle clean-up; complete quality control using a checklist on operations performed.
- Read and understand a damage report.
- Disassemble and organize noted parts on a damage report for repairs.
- Analyze vehicle for supplemental damage.

## STRAND 3: BOLTED-ON PANELS

**Students will demonstrate bolted-on panel repairs, replacements, and adjustments.**

### Standard 1

Interpret a damage report to determine needed repair or replacement for bolted-on panels.

### Standard 2

Identify part sources for bolted-on panels.

- OEM
- Aftermarket
- Used

### Standard 3

Demonstrate basic skills used in bolted-on part repair/replacement.

### Standard 4

Identify parts of bolted-on panel assemblies.

- Emblems
- Moldings
- Clips (reusable/non reusable)
- Accessories (door handles, mirrors, etc.)

### Standard 5

Explain how to remove, install, and align damaged bolted-on parts.

- Bumpers
- Fenders
- Hoods
- Doors
- Deck Lids
- Hatches
- Side Skirts
- Spoilers/Rear Wing
- Tailgate
- Bedside
- Pickup Box
- Cab Assemblies

### Performance Skills

- Demonstrate proper use of tools and equipment.
- Demonstrate proper use of PPE.
- Perform vehicle clean-up; complete quality control using a checklist on operations performed.
- Critique panel gaps to ensure proper alignment.
- Inspect, remove, replace, and align bolted-on parts.

## STRAND 4: WELDED-ON PANELS

**Students will demonstrate welded-on panel repairs, replacements, and adjustments.**

### Standard 1

Interpret a damage report to determine needed repair or replacement for welded-on panels.

### Standard 2

Identify part sources for welded-on panels.

- OEM
- Aftermarket
- Used

### Standard 3

Demonstrate skills used in welded-on part repair/replacement.

- Spot Weld Drilling
- Sectioning
- Preparation for Welding

### Standard 4

Identify parts of welded-on panel assemblies.

- Emblems
- Moldings
- Stationary Glass
- Inner Panels (inner roof and quarter)

### Standard 5

Explain how to remove, install, and align damaged welded-on parts.

- Roof
- Quarter Panel
- Bedside

### Standard 6

Explain resistance welding techniques.

- Preparation
- Use of equipment

### Standard 7

Differentiate between various panel joining techniques.

- Self-Piercing Rivet
- Adhesive
- Squeeze-Type Resistance Spot Welding (STRSW)

### Standard 8

Identify, remove, and replace corrosion protection and sound deadening materials.

- Foams
- Sound Deadening Material
- Corrosion Protection (wax, undercoating, etc.)

## Performance Skills

- Demonstrate proper use of tools and equipment.
- Demonstrate proper use of PPE.
- Perform vehicle clean-up; complete quality control using a checklist on operations performed.
- Critique panel gaps to ensure proper alignment.
- Inspect, remove, replace, and align welded-on parts.
- Locate and remove spot welds.
- Demonstrate various panel joining techniques.
- Demonstrate OEM procedures for specific bonded and welded non-structural panels.

## STRAND 5: METAL FINISHING & FILLER MATERIAL

**Students will understand and demonstrate metal finishing and body filler.**

### Standard 1

Select proper PPE, tools, and equipment for metal finishing and body filler processes.

- Dust Mask/Respirator
- Body Hammers & Dollies
- Weld-Pulling Equipment
- Glue-Pulling Equipment
- Fiberglass, Plastic Filler, and Glaze

### Standard 2

Demonstrate rough-shaping techniques with proper tools and equipment.

### Standard 3

Demonstrate proper metal finishing techniques.

### Standard 4

Compare various uses of filler materials.

### Standard 5

Apply concepts learned about various sanding techniques.

- Cross Hatching
- Body Line Separation
- Grit Sizes
- Sanding Blocks
- Feather Edging

### Performance Skills

- Demonstrate proper use of tools and equipment.
- Demonstrate proper use of PPE.
- Perform vehicle clean-up; complete quality control using a checklist on operations performed.
- Restore the contour of a panel.
- Demonstrate various techniques for repairing different types of metals.

## STRAND 6: GLASS & HARDWARE SERVICE

**Students will understand and demonstrate replacement and adjustment of moveable/stationary glass and hardware.**

### Standard 1

Differentiate between automotive glass types and ratings.

- Tempered
- Laminated Safety
- Tinted

### Standard 2

Determine vehicle options for proper glass replacement.

- Sensors
- OEM/Department of Transportation (DOT) Ratings

### Standard 3

Illustrate the structure and components of movable and stationary glass.

- Window regulator types and calibrations
- Window tracks
- Window frames
- Sliding glass windows
- Sunroof
- T-tops and convertibles
- Seals (urethane, rubber)

### Standard 4

Inspect, remove, and reinstall movable glass and hardware.

- Care and handling of glass components

### Standard 5

Perform checks to verify repairs.

- Operation
- Leaks

### Performance Skill

- Demonstrate proper use of tools and equipment.
- Demonstrate proper use of PPE.
- Perform vehicle clean-up; complete quality control using a checklist on operations performed.
- Successfully replace and adjust both movable and stationary glass and related hardware.

## STRAND 7: PLASTICS & ADHESIVES

**Students will understand and demonstrate plastics, adhesives, and welding.**

### Standard 1

Properly use PPE when grinding or sanding plastic.

### Standard 2

Analyze various plastic characteristics.

- Thermoplastic
- Thermoset Plastic
- Flexible Plastic
- Semi-Rigid Plastic
- Rigid Plastic

### Standard 3

Understand and locate International Organization for Standardization codes (ISO).

### Standard 4

Analyze plastic damage and determine repair methods.

- Reshaping
- Plastic Welding
- Adhesive Bonding

### Standard 5

Perform a single-sided cosmetic repair.

- Adhesive bonding
- Airless welding
- Nitrogen hot air welding

### Standard 6

Perform a double-sided cosmetic repair.

- Adhesive bonding
- Airless welding
- Nitrogen hot air welding

### Standard 7

Perform a tab repair.

- Adhesive bonding
- Airless welding
- Nitrogen hot air welding

### Performance Skills

- Demonstrate proper use of tools and equipment.
- Demonstrate proper use of PPE.
- Perform vehicle clean-up; complete quality control using a checklist on operations performed.
- Properly and safely perform a single-sided cosmetic repair.
- Properly and safely perform a double-sided cosmetic repair.

## STRAND 8: CTSOs & WORKPLACE SKILLS

**Students will be encouraged to participate in a relevant CTSO through the demonstration of automotive collision repair & refinishing workplace and career readiness skills. These standards will not appear on state skill certification exams, but should be taught throughout the duration of the course.**

### Standard 1

Students will display personal skills related to the essential values, personality traits, and personal characteristics for success in automotive collision repair & refinishing and life.

- **Integrity** - demonstrate honesty and personal responsibility for actions in repairing and maintaining automotive collision repair and refinishing.
- **Work ethic** - demonstrate tenacity, hard work, excellence, punctuality, meet deadlines; and be self-directed when completing tasks in the automotive collision repair and refinishing classroom or shop.
- **Professionalism** - demonstrate maturity, self-confidence; and a positive image when working with teammates or clients on automotive collision repair or refinishing jobs/projects.
- **Responsibility** - demonstrate dependability, consistency, and personal well-being when safely completing automotive collision repair or refinishing tasks.
- **Adaptability/Flexibility** - Foster creativity, new ideas, and resilience when working to solve problems in automotive collision and repair or refinishing tasks.
- **Self-motivated** - demonstrate a willingness to learn, independence, initiative, and a positive attitude when approaching new information

### Standard 2

Students will display workplace skills related to the essential attitudes and abilities for success in the automotive collision repair and refinishing industry.

- **Communication** – Demonstrates skills in listening and speaking; communicates professionally with teammates, supervisors, and customers in relation to automotive collision repair and refinishing.
- **Decision making** – Analyzes key facts, data, and situations to employ reasoning skills for completing automotive collision repair and refinishing tasks.
- **Teamwork** – Builds trusting relationships, works cooperatively with others and utilizes individual strengths of team members when completing automotive collision repair and refinishing tasks.
- **Planning, organizing, and management** – Designs, prepares, and implements automotive collision repair and refinishing tasks within a desired timeframe; Sets priorities and responds to changing priorities.
- **Leadership** – Builds positive relationships and mitigates conflict.

### Standard 3

Students will display technical skills that are grounded in automotive collision repair and refinishing that deliver essential knowledge and competencies for success in the industry.

- **Computer and technology literacy** – specific to the program area.
- **Job specific skills** – specific to the program area.
- **Safety and health** - specific to the program area.
- **Service orientation** – responds to internal and external customers; demonstrates focus and presence; attends to personal matters away from the classroom.
- **Professional development –** demonstrates openness to learn, grow, and change in the automotive collision repair and refinishing industry.

# Skill Certification Test Points by Strand

| Test Name | Test # | Number of Test Points by Strand | | | | | | | | | | Total Points | Total Questions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | |
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